



- 01 **Hardworking:** Built to last in the elements and work flawlessly for years
- 02 **Versatile:** Available in an array of configurations to fit virtually any system
- 03 **Practical:** Low-flow capabilities allow use with Hunter micro irrigation products

## PGV VALVES

### *Professional-Grade Valves Deliver Top Performance in Any Setting*

Available in an array of configurations, this hardworking, heavy-duty valve offers extreme durability to handle the rigors of residential and light commercial sites. For smaller landscape applications, the PGV is available in two 25 mm body configurations: globe or male x male. Each model is available with or without flow control. For larger landscape applications, the PGV comes in both 40 mm and 50 mm globe/angle models (with flow control). All models feature robust high-grade construction and a rugged diaphragm designed to prevent stress failure.

#### PGV Jar-Top Valves

All it takes is a simple twist of the wrist to unscrew the top of the valve for the fastest service in the industry.



#### Accu Sync® Pressure Regulators

Reliable and efficient Accu Sync Pressure Regulators are compatible with all Hunter valves.



# PGV VALVE FEATURES & SPECIFICATIONS

## Features

- Application (PGV-100): Residential
- Application (PGV-101, 151, 201): Residential/light commercial
- Sizes: 1" (25 mm); 1½" (40 mm); 2" (50 mm)
- External and internal manual bleed allows quick and easy "at the valve" activation
- Double-beaded diaphragm seal design for superior leak-free performance
- Optional: DC-latching solenoids enable Hunter's battery-powered controllers (P/N 458200)
- Captive bonnet bolts provide hassle-free valve maintenance
- Low-flow capability allows use with Hunter micro irrigation products
- Encapsulated 24 VAC solenoid with captive plunger for hassle-free service (P/N 606800)
- Temperature rating: 66°C
- Warranty period: 2 years

## Operating Specifications

- Flow rate:
  - PGV-100: 0.05 to 9 m³/hr, 0.7 to 150 l/min
  - PGV-101: 0.05 to 9 m³/hr, 0.7 to 150 l/min
  - PGV-151: 5 to 27 m³/hr, 75 to 450 l/min
  - PGV-201: 5 to 34 m³/hr, 75 to 570 l/min
- Recommended pressure range: 1.5 to 10 bar; 150 to 1,000 kPa

## Solenoid Specifications

- 24 VAC solenoid:
  - 350 mA inrush, 190mA holding, 60 Hz
  - 370 mA inrush, 210mA holding, 50 Hz

## PGV VALVES

Model	Description
PGV-100G -B	1" (25 mm) plastic globe valve
PGV-101G -B	1" (25 mm) plastic globe valve with flow control
PGV-100-MM-B	1" (25 mm) plastic globe valve, no flow control, male thread x barb
PGV-101-MM-B	1" (25 mm) plastic globe valve, with flow control, male thread x barb
PGV-100-JT-G-B	1" (25 mm) plastic globe valve, jar-top bonnet, no flow control
PGV-101-JT-G-B	1" (25 mm) plastic globe valve, jar-top bonnet, with flow control
PGV-100-JT-MM-B	1" (25 mm) plastic globe valve, jar-top bonnet, no flow control, male x male thread
PGV-101-JT-MM-B	1" (25 mm) plastic globe valve, jar-top bonnet, with flow control, male x male thread
PGV-151-B	1½" (40 mm) plastic angle/globe valve with flow
PGV-201-B	2" (50 mm) plastic angle/globe valve with flow

## PGV PRESSURE LOSS IN BAR

Flow m³/hr	1" (25 mm) Globe	1½" (40 mm) Globe	1½" (40 mm) Angle	2" (50 mm) Globe	2" (50 mm) Angle
0.3	0.1				
1.0	0.1				
2.5	0.1				
3.5	0.2				
4.5	0.2	0.2	0.2	0.1	0.1
7.0	0.4	0.2	0.2	0.1	0.1
8.0	1.0	0.2	0.2	0.1	0.1
9.0	1.0	0.2	0.2	0.1	0.1
11.0		0.3	0.2	0.1	0.1
13.5		0.3	0.3	0.1	0.1
18.0		0.4	0.4	0.2	0.1
22.5		0.6	0.5	0.3	0.2
27.0		0.8	0.8	0.4	0.3
30.5				0.6	0.5
34.0				0.7	0.6



**Website** [hunterindustries.com](http://hunterindustries.com) | **Customer Support** +1-760-744-5240 | **Technical Service** +1-760-591-7383

Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

*Gene Smith*

Gene Smith, President, Landscape Irrigation and Outdoor Lighting

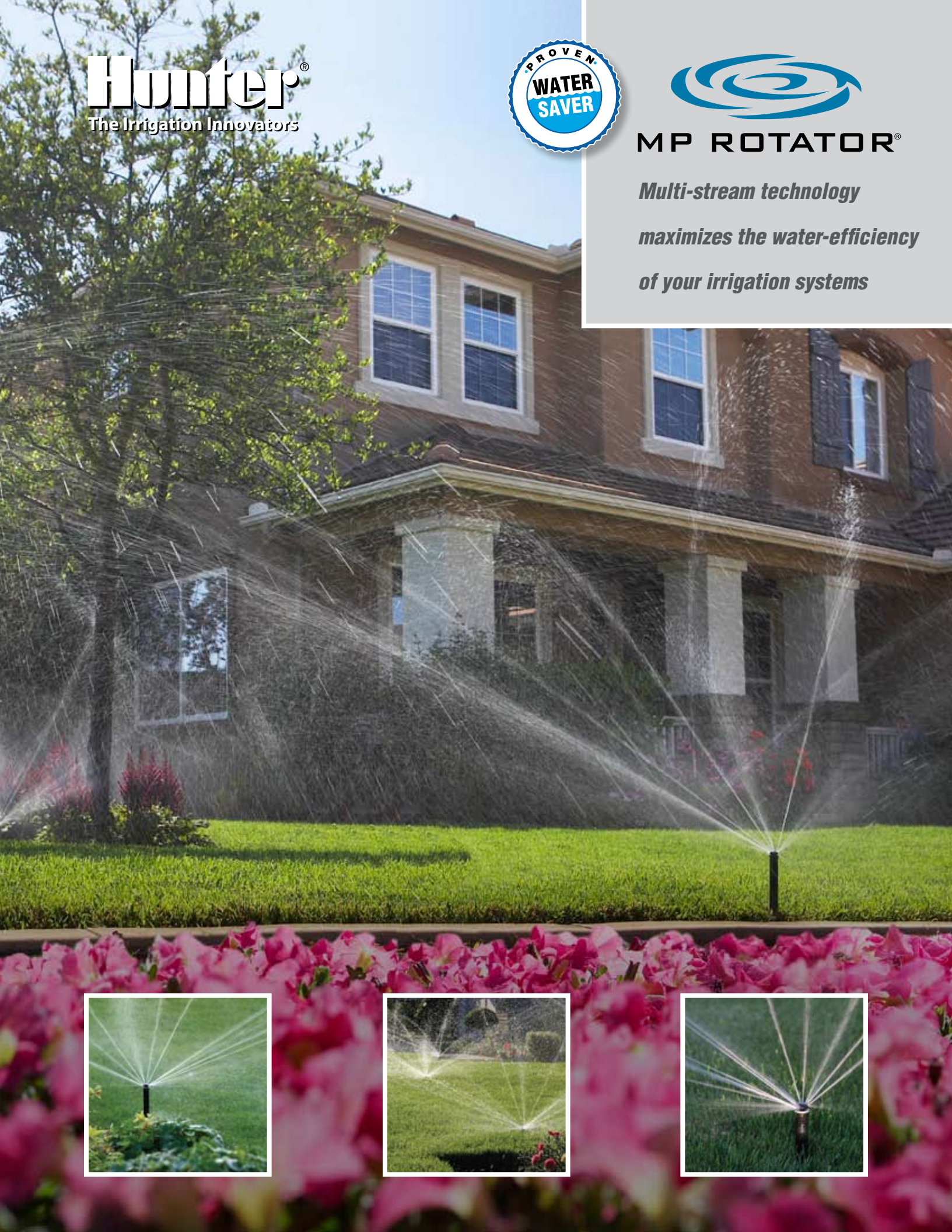


**Hunter**<sup>®</sup>  
The Irrigation Innovators



**MP ROTATOR<sup>®</sup>**

*Multi-stream technology  
maximizes the water-efficiency  
of your irrigation systems*





**F**eaturing a unique, multi-trajectory rotating stream delivery system that achieves water-conserving results, the MP Rotator is a revolutionary product, unlike anything else in the field of irrigation.

A multi-stream rotor the size of a spray nozzle, the MP Rotator features only one moving part...technology that assures proven reliability. It fits any conventional spray head body or shrub adapter, transforming one into a high uniformity, low precipitation rate sprinkler that boasts an industry first: true matched precipitation at any arc and any radius.

The MP Rotator is ideal for new systems, with ultimate design flexibility (from 4' strip to 30' radius), as well as lower installation costs and better system efficiency. It's also perfect for revitalizing older systems—a retrofit can solve both low pressure and poor coverage problems. Plus, it's the solution for slopes and tight soils, as the low precipitation rate radically reduces runoff.

To save water, solve problems, and simply do a better job of irrigating, make the switch to the MP Rotator.



MP 1000



MP 2000



MP 3000



MP Strips



MP Corner

## Features & Benefits



### Superior Efficiency

Multiple rotating streams provide excellent uniformity

### Matched Precipitation

Automatic matched precipitation even after arc and radius adjustment

### Minimal Runoff

Low precipitation rate reduces runoff on slopes and tight soils

### Rotator® Technology

Proven in demanding agricultural conditions since 1987

### Superior Dirt Tolerance

"Double-pop" flushes on start-up and shut-down

### Simple and quick adjustments

Easy arc adjustment, easy radius adjustment up to 25%, no nozzle to change

## Revitalize Old Systems

*With so many models to choose from, the MP Rotator has the perfect solution for rejuvenating an older spray system without requiring a new point of connection, new lateral lines, or new valves. Some models even make it possible to eliminate existing heads, saving additional labor and material costs. Even better, independent water audits have shown potential water savings of up to 30% when systems are retrofitted with MP Rotators.*



## Setting a New Standard for Water Efficiency in the Turf and Landscape Industry



The MP Rotator's multi-trajectory, revolving streams apply water much more slowly and uniformly than conventional sprays—especially after adjustment has been made to both the radius and the arc. On slopes and clay-like soils, this allows water to soak into the landscape instead of running off and being wasted. In fact, independent audits have shown that water usage can be reduced by up to nearly one-third of current levels when conventional sprays are replaced with MP Rotator sprinklers. Additional water-saving advantages include better wind-resistance, less misting, and the ability to handle reclaimed water.

### Rotating Multiple Streams: Actually a Powerful Conservation Tool



The MP Rotator's multiple, rotating streams are fascinating to watch. But form follows function in a quality irrigation product, so each MP Rotator stream is designed to complement its partners. The MP Rotator's wind-resistant, multi-trajectory streams apply water much more slowly and uniformly than conventional misters and sprays—especially after adjustments. This prevents unwanted wet spots and ugly brown spots from appearing during the heat of the summer.

### Hunter's Line of "Proven Water Saver" Products: Because Every Drop Counts

As our population grows, but our sources of water do not, there will be less of the wet stuff to go around. Never before has water conservation seemed so important.

To that end, Hunter has assembled a family of products that makes it possible for you to create a more efficient system. In fact, no other manufacturer offers such a wide array of water-saving components that covers all aspects of irrigation. Visit [www.HunterIndustries.com](http://www.HunterIndustries.com) to see all our Proven Water Savers.



### Say hello to the MPR40!

Until now MP Rotator has been seen on many different spray bodies, but never has a spray body been created just for the MP Rotator. Introducing the MPR 40, a spray body that optimizes the performance of the MP Rotator. It provides the perfect combination of Hunter's famous Pro-Spray™ body with a specially calibrated pressure regulator. This gives the MP Rotator a consistent 40 PSI output, meaning even coverage and optimal performance.

Pressure regulated to 40 PSI for optimum efficiency with the MP Rotator.




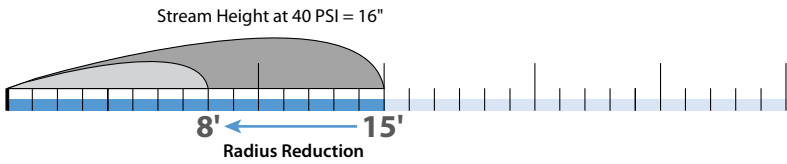


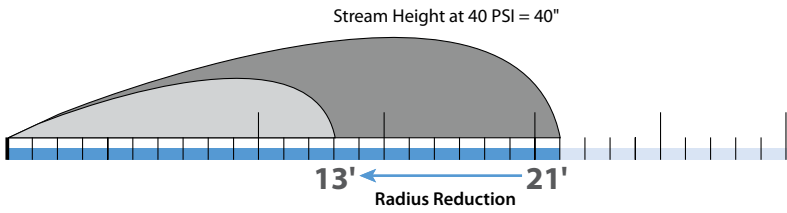



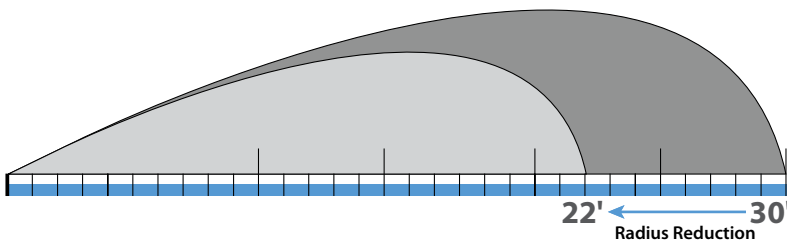



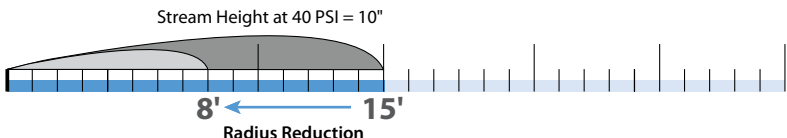

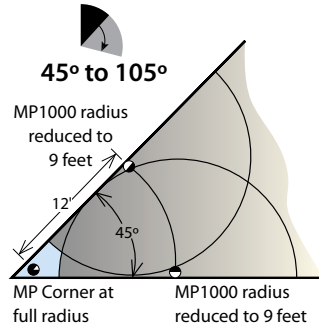
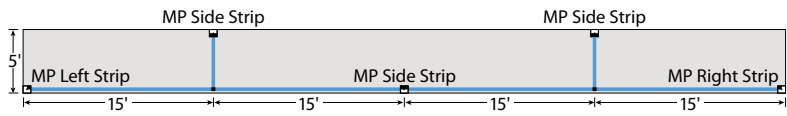



The extra tough co-molded wiper seal prevents leaks even at higher pressures.

Two-piece ratchet design makes head adjustment quicker and more precise.

Heavy-duty body and cap construction with multi-thread buttress design withstands the harshest environments.



# Maintain Matched Precipitation – Any Model, Any Arc, Any Radius

Adjustable Radius		Adjustable Arc		
<p>All models of the MP Rotator allow for easy radius adjustment of up to 25% while maintaining automatic matched precipitation.</p>		 <b>90° to 210°</b>	 <b>210° to 270°</b>	 <b>360°</b>
<b>MP1000</b> 		MP1000-90-210  Maroon	Not Available	MP1000-360  Olive
<b>MP2000</b> 		MP2000-90-210  Black	MP2000-210-270  Green	MP2000-360  Red
<b>MP3000</b> 		MP3000-90-210  Blue	MP3000-210-270  Yellow	MP3000-360  Gray
<b>MP Corner</b>  <p>The MP Corner is designed for tight corners that are difficult to irrigate properly with conventional sprinklers. It has an adjustable arc from 45° to 105°, maintains MPR at any arc, any radius and can be placed on the same zone with any other MP Rotator model.</p>		MPCorner  Turquoise		
<b>MP Strip</b> <p>Example with triangular spacing.</p>  <p>The three MP Strip models of the MP Rotator family offer an exciting alternative to irrigate strip areas. Strip models offer improved uniformity and excellent wind-fighting ability. The reduced flow rate compared to conventional sprays makes longer runs and/or fewer zones possible.</p>		MPLCS (Left Strip)  Ivory	MPCSS (Side Strip)  Brown	MPRCS (Right Strip)  Copper

MP Rotator Performance Data																			
		MP1000*					MP2000*					MP3000**							
		Radius: 8' to 15'*** Adjustable Arc and Full Circle Color Code: Maroon or Olive					Radius: 13' to 21'*** Adjustable Arc and Full Circle Color Code: Black, Green, or Red					Radius: 22' to 30'*** Adjustable Arc and Full Circle Color Code: Blue, Yellow, or Gray							
Arc	Pressure PSI	Color	Radius ft.	Flow GPM	Flow GPH	■ Precip in/hr ▲	Color	Radius ft.	Flow GPM	Flow GPH	■ Precip in/hr ▲	Color	Radius ft.	Flow GPM	Flow GPH	■ Precip in/hr ▲			
<div>90°</div>	25	Maroon	—	—	—	—	Black	17'	0.31	18.6	0.41	Blue	25'	0.69	41.4	0.43			
	30		12'	0.16	9.6	0.43		0.50	18'	0.33	19.8		0.39	0.45	27'	0.74	44.4	0.39	0.45
	35		13'	0.18	10.8	0.40		0.46	19'	0.37	22.2		0.39	0.46	28'	0.80	48	0.39	0.45
	40		14'	0.19	11.4	0.39		0.45	20'	0.40	24		0.39	0.44	30'	0.86	51.6	0.37	0.43
	45		14'	0.20	12	0.39		0.45	21'	0.42	25.2		0.37	0.42	30'	0.91	54.6	0.39	0.45
	50		14'	0.21	12.6	0.38		0.43	21'	0.44	26.4		0.35	0.40	30'	0.96	57.6	0.41	0.47
	55		15'	0.22	13.2	0.37		0.43	21'	0.47	28.2		0.37	0.43	30'	1.01	60.6	0.43	0.50
<div>180°</div>	25	Maroon	—	—	—	—	Black	16'	0.58	34.8	0.44	Blue	25'	1.44	86.4	0.44	0.51		
	30		12'	0.32	19.2	0.43		0.50	17'	0.63	37.8		0.42	0.49	27'	1.58	94.8	0.42	0.48
	35		13'	0.35	21	0.40		0.46	18'	0.69	41.4		0.41	0.47	28'	1.70	102	0.42	0.48
	40		14'	0.37	22.2	0.39		0.45	19'	0.74	44.4		0.39	0.45	30'	1.82	109.2	0.39	0.45
	45		14'	0.40	24	0.39		0.45	20'	0.78	46.8		0.38	0.43	30'	1.93	115.8	0.41	0.48
	50		15'	0.41	24.6	0.38		0.43	21'	0.83	49.8		0.36	0.41	30'	2.04	122.4	0.44	0.50
	55		15'	0.43	25.8	0.37		0.43	21'	0.85	51		0.37	0.43	30'	2.13	127.8	0.46	0.53
<div>210°</div>	25	Maroon	—	—	—	—	Green	16'	0.68	40.8	0.44	Yellow	25'	1.68	100.8	0.44	0.51		
	30		12'	0.37	22.2	0.43		0.50	17'	0.74	44.4		0.42	0.49	27'	1.84	110.4	0.42	0.48
	35		13'	0.41	24.6	0.40		0.46	18'	0.80	48		0.41	0.47	28'	1.99	119.4	0.42	0.48
	40		14'	0.43	25.8	0.39		0.45	19'	0.86	51.6		0.39	0.45	30'	2.12	127.2	0.39	0.45
	45		14'	0.46	27.6	0.39		0.45	20'	0.92	55.2		0.38	0.43	30'	2.25	135	0.41	0.48
	50		15'	0.48	28.8	0.38		0.43	21'	0.97	58.2		0.36	0.41	30'	2.37	142.2	0.43	0.50
	55		15'	0.50	30	0.37		0.43	21'	1.01	60.6		0.37	0.43	30'	2.49	149.4	0.46	0.53
<div>270°</div>	25	Maroon	—	—	—	—	Green	16'	0.87	52.2	0.44	Yellow	25'	2.19	131.4	0.45	0.52		
	30		12'	0.32	19.2	0.43		0.50	17'	0.95	57		0.42	0.49	27'	2.37	142.2	0.42	0.48
	35		13'	0.35	21	0.40		0.46	18'	1.03	61.8		0.41	0.47	28'	2.55	153	0.42	0.48
	40		14'	0.37	22.2	0.39		0.45	19'	1.10	66		0.39	0.45	30'	2.73	163.8	0.39	0.45
	45		14'	0.40	24	0.39		0.45	20'	1.17	70.2		0.38	0.43	30'	2.89	173.4	0.41	0.48
	50		15'	0.41	24.6	0.38		0.43	21'	1.23	73.8		0.36	0.41	30'	3.06	183.6	0.44	0.50
	55		15'	0.43	25.8	0.37		0.43	21'	1.30	78		0.37	0.43	30'	3.22	193.2	0.46	0.53
<div>360°</div>	25	Olive	—	—	—	—	Red	16'	1.16	69.6	0.44	Gray	25'	2.88	172.8	0.44	0.51		
	30		12'	0.65	39	0.43		0.50	17'	1.27	76.2		0.42	0.49	27'	3.15	189	0.42	0.48
	35		13'	0.71	42.6	0.40		0.47	18'	1.37	82.2		0.41	0.47	28'	3.40	204	0.42	0.48
	40		14'	0.75	45	0.39		0.46	19'	1.47	88.2		0.39	0.45	30'	3.64	218.4	0.39	0.45
	45		14'	0.80	48	0.39		0.45	20'	1.56	93.6		0.38	0.43	30'	3.86	231.6	0.41	0.48
	50		15'	0.84	50.4	0.38		0.44	21'	1.64	98.4		0.36	0.41	30'	4.07	244.2	0.44	0.50
	55		15'	0.87	52.2	0.37		0.43	21'	1.70	102		0.37	0.43	30'	4.27	256.2	0.46	0.53

\* To obtain full radius reduction for the MP1000 and MP2000, operate at a maximum of 30 PSI.

\*\* When operating the MP3000 at full radius reduction maintain a minimum pressure of 40 PSI to assure reliable operation.

\*\*\* Lower end radius is achieved by using radius adjustment screw. Flow adjusts with radius to maintain matched precipitation.

Note: Precipitation rates are based on head-to-head throw coverage.

MP Rotator Performance Data					
		MPCorner			
		Radius: 8' to 15' Adjustable Arc Color Code: Turquoise			
Arc	Pressure PSI	Color	Radius ft.	Flow GPM	Flow GPH
45°	25	Turquoise = 45° to 105°	—	—	—
	30		12'	0.17	10.2
	35		13'	0.18	10.8
	40		14'	0.19	11.4
	45		14'	0.21	12.6
	50		14'	0.22	13.2
	55		15'	0.23	13.8
90°	25	Turquoise = 45° to 105°	11'	0.31	18.6
	30		12'	0.34	20.4
	35		13'	0.36	21.6
	40		14'	0.39	23.4
	45		14'	0.41	24.6
	50		15'	0.43	25.8
	55		15'	0.46	27.6
105°	25	Turquoise = 45° to 105°	11'	0.36	21.6
	30		12'	0.39	23.4
	35		13'	0.42	25.2
	40		14'	0.45	27
	45		14'	0.48	28.8
	50		15'	0.51	30.6
	55		15'	0.53	31.8

MP Rotator Performance Data					
		MPLCS515 MPRCS515 MPSS530			
Nozzle Model	Pressure PSI	Color	Width x Length	Flow GPM	Flow GPH
MP Left Strip	30	Ivory	4' x 14'	0.19	11.4
	35		5' x 15'	0.21	12.6
	40		5' x 15'	0.22	13.2
	45		5' x 15'	0.23	13.8
	50		6' x 16'	0.25	15
	55		6' x 16'	0.26	15.6
MP Right Strip	30	Copper	4' x 14'	0.19	11.4
	35		5' x 15'	0.21	12.6
	40		5' x 15'	0.22	13.2
	45		5' x 15'	0.23	13.8
	50		6' x 16'	0.25	15
	55		6' x 16'	0.26	15.6
MP Side Strip	30	Brown	4' x 28'	0.38	22.8
	35		5' x 30'	0.41	24.6
	40		5' x 30'	0.44	26.4
	45		5' x 30'	0.47	28.2
	50		6' x 32'	0.49	29.4
	55		6' x 32'	0.51	30.6





## Models

### MP1000 (Female Thread) & MP1000HT (Male Thread)

Radius Range – 8'-15' including all pressure and radius adjustment influence  
Pressure Range – 25-55 PSI

#### Application Notes

- Low trajectory, perfect for smaller areas
- For minimum radius, recommended install on a 30 PSI regulated Institutional Spray body
- Not available in a 210-270 model

### MP2000 (Female Thread) & MP2000HT (Male Thread)

Radius Range – 13'-21' including all pressure and radius adjustment influence  
Pressure Range – 25-55 PSI

#### Application Notes

- Flow rate is about 1/3 of a 15' spray head; and yet has greater radius and higher uniformity
- For minimum radius, recommended install on a 30 PSI regulated Institutional Spray body

### MP3000 (Female Thread) & MP3000HT (Male Thread)

Radius Range – 22'-30' including all pressure and radius adjustment influence  
Pressure Range – 25-55 PSI

#### Application Notes

- Flow rate is about the same as a 15' spray head; and yet has greater radius and higher uniformity
- For minimum radius, provide adjustable zone pressure regulation; Installation on a 30 PSI pressure regulated Institutional Spray body is not recommended if radius reduction is needed
- For maximum radius, provide pressures over 40 PSI

### MPCorner (Female Thread) & MPMCornerHT (Male Thread)

Radius Range – 8'-15'; Pressure Range – 30-55 PSI

#### Application Notes

- Designed for application in areas with less than 90 degrees of arc area necessary
- Does not require adjacent sprinklers to reach into the first 3-5' of coverage

### MPLCS515 (Female Thread) & MPLCSHT515 (Male Thread)

Flow Range – 0.14 GPM @ 30 PSI (Min. radius)  
0.26 GPM @ 55 PSI (Max. radius)

Pressure Range – 25-55 PSI

#### Application Notes

- Matched precipitation even after radius reduction with head to head spacing
- Can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation
- Adjustable right edge

### MPSS530 (Female Thread) & MPSSHT530 (Male Thread)

Flow Range – 0.27 GPM @ 30 PSI (Min. radius)  
0.51 GPM @ 55 PSI (Max. radius)

Pressure Range – 25-55 PSI

#### Application Notes

- Matched precipitation even after radius reduction with head to head spacing
- Can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation
- Adjustable right edge to fit curved strips

### MPRCS515 (Female Thread) & MPRCSHT515 (Male Thread)

Flow Range – 0.14 GPM @ 30 PSI (Min. radius)  
0.26 GPM @ 55 PSI (Max. radius)

Pressure Range – 25-55 PSI

#### Application Notes

- Matched precipitation even after radius reduction with head to head spacing
- Can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation
- Edges are fixed

## A Closer Look at the MP Rotator

### Color Coded

### Identification Ring

Model number and arc clearly visible whether the system is on or off!

### Left Edge Indicator

Arc is clockwise from this mark.

### Inlet Screen

CAUTION: Do not run the MP Rotator without the inlet screen provided!.

### Radius Adjustment Screw

Turn clockwise to decrease radius, built-in slip clutch prevents damage from over adjustment.

### Arc Adjustment Ring\*

Turn clockwise to increase the radius.

The MP Rotator can be adjusted with just a screwdriver and your hand, but the MPR Tool makes adjustments even easier!

\* While water is on, use orange tool to engage built-in ratchet; move past the left or right stop until edge is aligned



## Versatility of MP Side Strips

Yet another technological breakthrough, the MP Rotator Strip. You are now able to take all the benefits of the MP Rotator into spaces you never thought possible. The MP Rotator strip is the perfect solution for small areas of turf or plants. As the name suggests, you have total control in watering strips and still maintain unsurpassed uniformity and performance. A new dimension in watering flexibility is available now.

### SPECIFICATION GUIDE

EXAMPLE: **MP2000\* - 90-210**

MODEL	ADJUSTABLE ARC
MP1000	90-210 = 90° to 210°
MP2000	210-270 = 210° to 270° (Not available for MP1000)
MP3000	360 = 360°
MPCORNER	45-105 = 45° to 105°
MPLCS515	LEFT
MPRCS515	SIDE
MPSS530	RIGHT

\* Note: Add "HT" to specify male thread.





- 01 **Compact:** Get all the benefits of a rotor in a spray-sized package
- 02 **Short Radius:** Get close-in rotor coverage with a 4.3 m minimum radius
- 03 **Reliable:** The PGJ is engineered to take on harsh conditions for years on end

## PGJ ROTOR

### *The PGJ Delivers All the Benefits of a Rotor in a Compact, Spray-Sized Package*

The PGJ was built to bring all the efficient benefits of rotary sprinklers to applications that typically call for a spray. Its many features include a rack of easy-to-install-and-change, water-efficient nozzles, easy arc adjustment, and all the safety and durability that comes with a rubber cover. The PGJ is capable of working in tandem with larger rotors to combine big and small areas in a single zone, offering a convenience and efficiency that sprays do not. When used in the right application, the PGJ allows fewer heads to perform more efficiently at a more economical price.

# PGJ FEATURES & SPECIFICATIONS

## Features

- Models: Shrub, 10 cm, 15 cm, 30 cm
- Arc setting: 40 to 360 degrees
- Nozzle choices: 8
- Nozzle range: 0.75 to 5.0
- Standard factory installed nozzle: 2.0 only
- Factory installed rubber cover
- Through-the-top arc adjustment
- Quick check arc mechanism
- Water lubricated gear-drive
- Warranty period: 2 years

## Specifications

- Radius: 4.3 to 11.6 m
- Flow rate: 0.13 to 1.23 m<sup>3</sup>/hr; 2.2 to 20.5 l/min
- Recommended pressure range: 1.7 to 3.8 bar; 170 to 380 kPa
- Operating pressure range: 1.4 to 7.0 bar; 140 to 700 kPa
- Precipitation rates: 15 mm/hr approx.
- Nozzle trajectory: 14 degrees approx.

### PGJ - SPECIFICATION BUILDER: ORDER 1 + 2 + 3

1	Model	2	Standard Features	3	Feature Options
	<b>PGJ-00</b> = Shrub	Adjustable arc, 8 standard nozzles			<b>(blank)</b> = No option
	<b>PGJ-04</b> = 10 cm Pop-up				<b>V</b> = Drain check valve
	<b>PGJ-06</b> = 15 cm Pop-up				<b>R</b> = Drain check valve and reclaimed water ID
	<b>PGJ-12</b> = 30 cm Pop-up				

#### Examples:

**PGJ-04** = 10 cm pop-up, adjustable arc

**PGJ-06 - V** = 15 cm pop-up, adjustable arc, with drain check valve

**PGJ-12 - R** = 30 cm pop-up, adjustable arc, with drain check valve and reclaimed water ID

## Model



### PGJ-00

Overall Height 18 cm  
Pop-up Height: N/A  
Exposed Diameter: 3 cm  
Inlet Size: ½"



### PGJ-04

Overall Height: 18 cm  
Pop-up Height: 10 cm  
Exposed Diameter: 3 cm  
Inlet Size: ½"



### PGJ-06

Overall Height: 23 cm  
Pop-up Height: 15 cm  
Exposed Diameter: 3 cm  
Inlet Size: ½"



### PGJ-12

Overall Height: 41 cm  
Pop-up Height: 30 cm  
Exposed Diameter: 3 cm  
Inlet Size: ½"

## Advanced Features

### NOZZLES SELF-ALIGN

For easy installation and removal; marked for easy identification.



### RECLAIMED WATER ID

Purple caps indicate where non-potable irrigation water is being used.




### EASILY FINE-TUNE

Nozzle adjustments through the top of the sprinkler with screwdriver or Hunter wrench.



**Website** [hunterindustries.com.au](http://hunterindustries.com.au) | **Customer Support** +1 760-744-5240 | **Technical Service** +1 760-591-7383

Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

  
Gregory R. Hunter, President of Hunter Industries



# ACC2 DECODER

## Controller

RESIDENTIAL & COMMERCIAL IRRIGATION  
*Built on Innovation®*

**Hunter®**



Powerful.  
Intelligent.  
Flexible.

# ACC2 Decoder

## *Powerful. Intelligent. Flexible.*

---

Hunter's next-generation ACC2 Decoder controller provides powerful irrigation management and monitoring capabilities for complex commercial projects.

The ACC2 Decoder controller is specifically designed to manage Hunter ICD decoders on large projects, and is expandable to 225 stations. The controller offers extreme flexibility, with 32 independent programs, 10 start times, and a variety of overlapping, stacking, and management configurations.

The powerful Flow Manager takes full advantage of sophisticated irrigation designs, watering as much as possible in the shortest possible amount of time — up to 30 simultaneous solenoids (20 per output module).

The all-new design features a full-color, backlit LCD display in a reversible facepack that operates all functions in either position, making field service a breeze. Finally, advanced features such as Flow Monitoring deliver fast diagnostics of abnormal flow conditions and accurate histories for up to six flow zones.

For the ultimate reliability in large-scale commercial irrigation management, the ACC2 Decoder controller is second to none.



The ACC2 Decoder controller uses two-wire decoder technology to control hundreds of stations.



The reversible facepack has a full-color, easy-to-read backlit display. The facepack is fully operational in either position, allowing programming and diagnostics while facing the modules and wiring.



# ACC2 Specifications

---

Robust functionality allows for maximum design flexibility and easy installation in the field.

## Features and Benefits

- Number of stations: 75 to 225
- Type: modular decoder
- Enclosure: outdoor metal, stainless steel, plastic pedestal
- Full-color, high-resolution backlit display (reversible)
- Independent programs: 32
- Start times per program: 10
- Station run times: 15 seconds to 12 hours
- Optional Block programming for up to 64 groups of up to eight stations
- Up to 30 simultaneous solenoids (20 per output module)
- Optional Wi-Fi interface
- Real-time flow monitoring (up to six flow meters and flow zones)
- Up to six Pump/Master Valve outputs, Normally Open or Normally Closed
- Flow Management (runs flow zones to specified capacity)
- Monthly flow budgeting
- Built-in Solar Sync® logic/Solar Sync Delay feature
- SD card updates and log storage
- 12 selectable languages

## Electrical Specifications

- Transformer input: 120/230 VAC, 50/60 Hz
- Max AC current draw: 120 VAC, 2 A/230 VAC, 1 A
- Transformer output: 24 VAC, ~3 A
- P/MV outputs (24 VAC): up to six; three dedicated outputs (0.8 mA) or optional assignment to decoders
- Simultaneous solenoid operation: up to 30 (20 per output module)
- Sensor inputs: three Klik, one Solar Sync, and six flow sensor

## Advanced Features

- Operates all Hunter ICD decoders
- Three two-wire paths per output module
  - Up to 10,000' (3 km) on 14 AWG (2 mm<sup>2</sup>) wire
  - Up to 15,000' (4.5 km) on 12 AWG (3.3 mm<sup>2</sup>) wire
- Replaceable automotive fuses included in each output module
- P/MV and flow sensor assignments either locally or via two-wire path
- Decoder inventory and update via two-wire path
- Decoder/solenoid finder
- Wire Test Mode for field diagnostics
- ICD-HP wireless programmer compatible
- Conditional Response programming allows program or station activation on sensor input

## Approvals

- CE, UL, c-UL, RCM, FCC
- Enclosure ratings:
  - Steel, IP44
  - Plastic pedestal, IP24





## ACC2 DECODER: WALL MOUNT

Height	15.7" (40 cm)
Width	15.7" (40 cm)
Depth	6.8" (18 cm)

Model	Description
A2C-75D-M	75-station gray steel wall mount, outdoor
A2C-75D-SS	75-station stainless steel wall mount, outdoor



## METAL PEDESTAL

Height	37" (94 cm)
Width	15.5" (39 cm)
Depth	5" (13 cm)

Model	Description
ACC-PED	Gray metal pedestal, for use with ACC2
PED-SS	Stainless steel pedestal, for use with ACC2



## PLASTIC PEDESTAL

Height	39.5" (100 cm)
Width	23.5" (60 cm)
Depth	17" (43 cm)

Model	Description
A2C-75D-PP	75-station plastic pedestal



## MODULES

Model	Description
A2C-D75	75-station decoder expansion module
A2C-F3	3-input flow meter expansion module
A2C-WI-FI	Internal Wi-Fi module

*Each A2C-D75 output module is color-coded for easy installation, and includes standard automotive fuses for additional surge protection.*



## DECODER MODULES

1-, 2-, 4-, or 6-station decoders, and 2-input sensor decoders with surge suppression and ground wire

*ACC2 Decoder is designed for operation with the field-proven, ultra-reliable ICD family of decoders.*



## ICD-HP

Wireless handheld decoder programmer

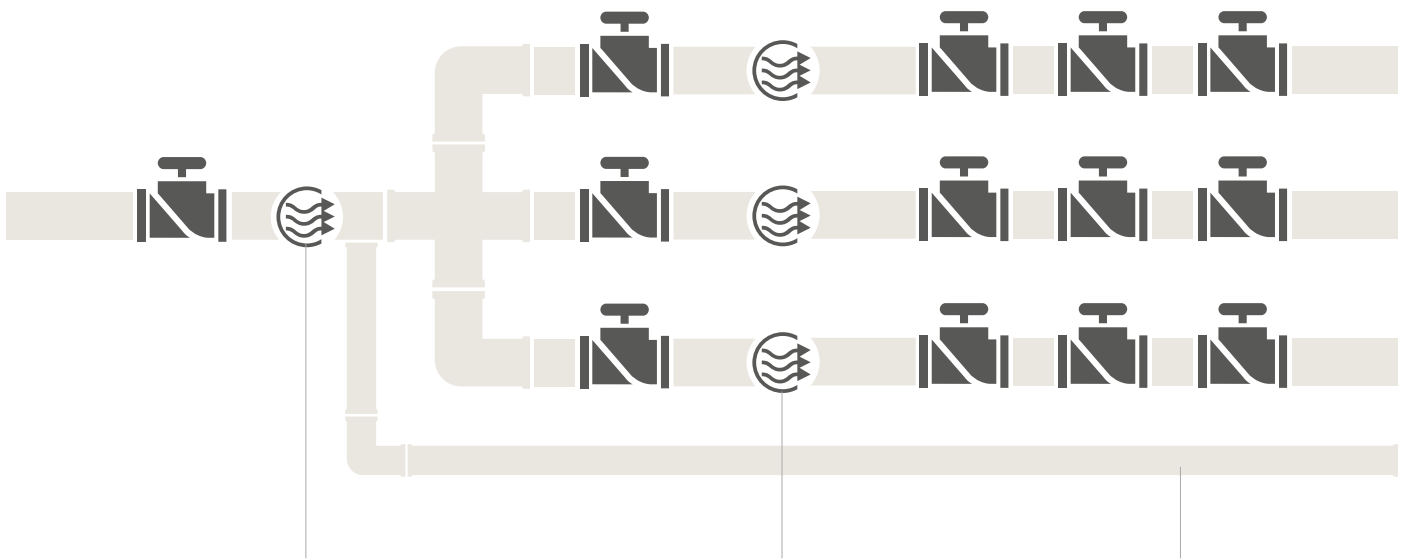
*The ICD-HP permits a full range of programming, diagnostic, and operational features, without removal of waterproof connectors.*

# FLOW Management

## *Multiple stations. Safe flow targets.*

The ACC2 includes a suite of flow management features for up to six separate flow zones, including flow scheduling, and real-time flow monitoring for the ultimate in system protection. Water source monitoring allows a new and separate level of security above the flow zone level, including mainline protection and monthly budgeting.

- Includes three flow inputs and three pump/master valve outputs, both expandable to six
- Full normally open and normally closed P/MV support
- Flow scheduling in up to six flow zones (automatically operates stations to user programmable flow target)
- Real-time flow monitoring of up to six flow zones
- Max flow and unscheduled flow alarms and allowances for manual watering
- Flow budgeting for monthly usage limits
- MainSafe™ master water source programming to protect long mainline runs
- Expanded range of compatible flow sensors



*One MainSafe sensor and normally open master valve monitors the entire water source, including total monthly usage.*

*Three separate Flow Zones each schedule stations on to safe, optimum target flow rates for the specific diameter of mainline pipe.*

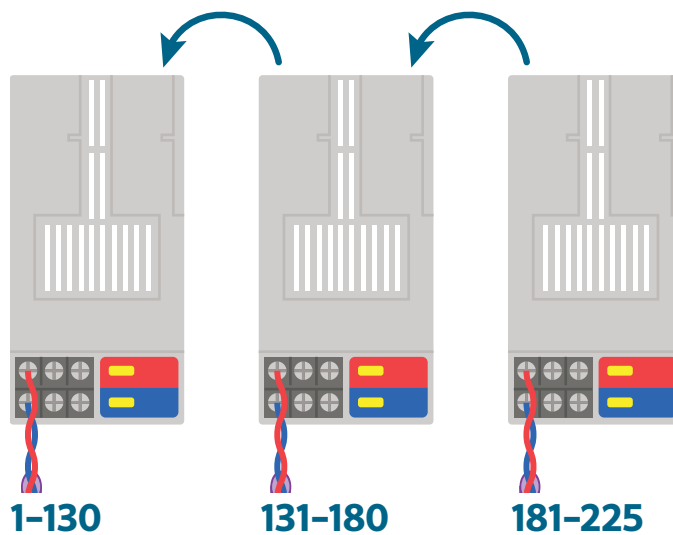
*One manual irrigation line provides always-on irrigation on demand, but is still monitored by the upstream MainSafe master.*

# FLEXIBILITY *in Design*

Each A2C-D75 decoder output module enables 75 stations, and allows up to three two-wire paths to the field. You can easily connect more than 75 stations to a single wire path, by assigning stations from one module to another.

As long as all three modules are present, you can install 200+ stations on a single wire path. This could, however, limit the total number of stations that can run simultaneously. See the Hunter Decoder Design Guide for complete details.

Example:



## Station Assignments

☒ Enable Station Assignment Changes

Decoder Module Station Assignments

	Lower	Upper
Decoder Module #1	1	130
Decoder Module #2	131	180
Decoder Module #3	181	225





Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

A stylized, handwritten signature in white ink, appearing to read "G.R. Hunter".

Gregory R. Hunter, CEO of Hunter Industries

**Website** [hunterindustries.com](http://hunterindustries.com) | **Customer Support** 1-800-383-4747 | **Technical Service** 1-800-733-2823

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# **SportsPro**<sup>TM</sup>

IRRIGATION PIPE

## **SportsPro**<sup>TM</sup>

IRRIGATION PIPE



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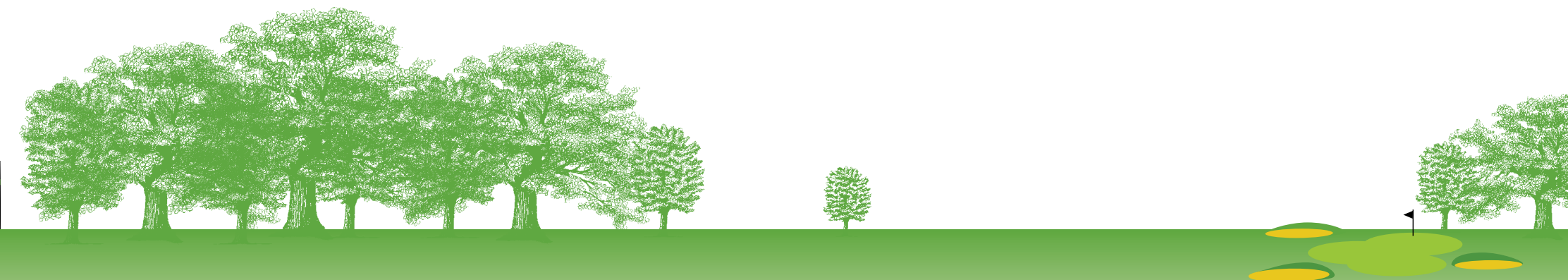


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# Breaking The Mould for Professional Irrigation Products

When Revaho first started producing their own polyethylene pipes there was one driver above all else that fuelled the considerable investment in plant, machinery and know-how – and this was the need to have reliable pipes with a consistent quality which could live up to the existing quality standards within the Revaho organisation.

As one of the leading irrigation wholesale companies in Europe and originating out of the extremely exacting Dutch glasshouse industry, Revaho are synonymous with exacting standards throughout the whole of the company. Long term success – in Revaho's case since 1937 – is a constant process of innovation combined with structured development. Revaho have six production lines with a capacity of 10,000 tonnes per year. The range of outside diameters available is 3mm to 250mm which cover over 300 specific or branded products. The factory now exports to over 30 countries.

In 1993, Revaho achieved the KIWA certificate for the production of potable water pipes and additionally in 1998, the GASTEC QA approval specification. Revaho now supply pipes for drinking water, gaseous fuels, sewer pressure systems, cable protection and heating. Innovation indeed! However, in 2006 we have the latest new development for Revaho.....**SportsPro 100**.

**SportsPro**  
IRRIGATION PIPES

**SportsPro 100** has been developed using the very latest raw materials and extruding techniques to offer the sports irrigation market and particularly the golf industry, a pipe with excellent installation and long term operational properties. Using XS10B Total petrochemical granules which are of such quality standards that they have been tested for use not only in water but gaseous fuel installations – you would get more than just a wet fairway if one of these pipes fails! – **SportsPro 100** exceeds existing standards that are present in the sports industry giving all concerned, the consultant, the installer and the end user, the confidence to install **SportsPro 100** for all occasions.

**SportsPro 100** is available in 10, 12.5 and 16 bar configurations and although the standard lengths are 50m and 100m, Revaho prides itself on being able to offer a 'bespoke' service; we can offer a full range of specific lengths dependent upon your requirements. The length of coil limits are only the physical limitations of unwinding on site. **SportsPro 100** has an identification systems of four light green lines along the length of the pipe. No other pipe has this identification system. **SportsPro 100** is designed to have maximum strength with minimum wall thickness; this of course achieves a higher dynamic performance for the pipe meaning longer run lengths or lower power inputs. Plus, its increased tensile strength and high resistance to scoring, makes Sportspro more suitable to mole plough installation than PE80 pipes. **SportsPro 100** can be used with all approved fitting systems although we recommend +GF+ compression and fusion fittings.

## Manufactured to Surpass The Most Exacting of Standards

The key to the success of any pipe is the quality control systems in place. As expected, at Revaho we have some very exacting standards based on raw material testing, auto control and batch release tests. On every raw material batch, Revaho perform a number of exhaustive tests and produce approved documentation to cover the suitability of the material. A sample of the material is stored and referenced for any future requirements along with a series of tests and procedures to confirm the certification from the manufacturers, the melt flow index, granulate size and density.

The auto control systems confirm the extrusion parameters for pressure, speed and temperature, together with a dimension test interval, exterior and interior surface checks and controls, in tandem with monitoring of the printing and packaging. Throughout the whole production process and in addition to any formal requirements there are random quality tests performed by the laboratory department. The final area of control are the release tests which are performed within the laboratory. Briefly this entails that every batch has burst pressure, tensile strength, carbon black, density, stress cracking, dimensional and exterior and interior tests before any goods can be released to the general despatch area. Any failure for whatever reason, results in the complete production of that batch to be scrapped and removed from the factory for use in a non critical product.

The traceability is the final procedural control for the production unit. All production runs are given a unique order number which is printed on the pipe. From this number, Revaho has access to all the data during the production run of that particular meter of pipe – from incoming goods control to batch release – and this data, along with the original sample, is stored for 10 years.







# So Strong & Durable

## it Meets the Most Demanding Uses

**MRS** = Minimum Required Strength [MPa].  
**MRS value** (series of Renard. .... 4 – 5 – 6,3 – 8 – 10).  
**PE class:** PE40 – PE50 – PE63 – PE80 – PE100  
**SDR** = Standard Dimension Ratio =  $\phi$ /wt  
**Max. allowable wall tension [MPa]** = wall tension used to calculate max. working pressure.  
**C** = **Max. design stress** = max. allowable wall tension divided by C - Safety factor  
**PN** = **Max. design stress** = max. allowable wall tension divided by C - Max. working pressure [bar]

### PE Class Properties

PE Type	MRS Value (MPa)	MRS-value [MPa] Safety Coefficient ( C )	Maximum design stress [MPa]
PE-40	4	1.6 (BRL)	2.5
PE-63	6.3	1.25	5
PE-80	8	1.25	6.3
PE-100	10	1.25	8

### PE Class SDR / Pressure Data

SDR Class PE Type	SDR 21 max pressure (Bar)	SDR 17 max pressure (Bar)	SDR 13.6 max pressure (Bar)	SDR 11 max pressure (Bar)	SDR 9 max pressure (Bar)
PE-40	-	-	-	-	6.3
PE-63	5	6.3	8	10	-
PE-80	6.3	8	10	12	-
PE-100	8	10	12	16	-

# Time to Rewrite the Rule Book



TEST	STANDARD	REVAHO SPORTSPRO		WIS*		BS**		KIWA/ISO	
		Mat. test	Pipe test	Mat. test	Pipe test	Mat. test	Pipe test	Mat. test	Pipe test
Carbon black content	ISO 6964	✓		✓		✓		✓	
Carbon black dispersion	ISO 11420 / ISO 18553:2002	✓		✓		✓		✓	
Antioxidants	-	✓						✓	
Density	ISO 1183 (part1)	✓		✓		✓		✓	
MFR	ISO 1133	✓		✓		✓		✓	
Moisture	ISO 760 / EN 12118	✓		✓		✓		✓	
Volatile content	EN 12099	✓						✓	
OIT	ISO/TR 10837	✓		✓		✓		✓	
Stress-Strain Response	-	✓		✓				✓	
Slow crack growth pipe size 110 or 125mm SDR11	EN ISO 13479	✓						✓	
Long term Stress Crack Resistance at 80 °C: on notched pipe	EN ISO 13479	✓	✓	✓	✓			✓	
Long term MRS at 20 °C	NEN-EN-ISO 9080:2003	✓		✓			✓	✓	
Resistance to gas condensates at 80 °C, 2,0MPa	EN 921 + NEN-EN-1555	✓						✓	
Resistance to fracture by impact (Gc)	EN-ISO 179:1997	✓		✓				✓	
RCP (Full Scale Test)	ISO 13478	✓		✓				✓	
Welding Characteristics		✓		✓				✓	
Dimensions	NEN-EN-12201 / NEN-EN-1555		✓		✓		✓		✓
Marking	NEN-EN-12201 / NEN-EN-1555		✓		✓		✓		✓
Tensile yield stress	EN-ISO 6259		✓		✓				✓
Elongation at break	EN-ISO 6259		✓		✓		✓		✓
Appearance	NEN-EN-12201 / NEN-EN-1555		✓		✓		✓		✓
Long term hydrostatic at 20 °C (Cross checks)	ISO 1167	✓			✓			✓	
Long term hydrostatic at 20 °C (Squeezed pipe)	EN 12106:1998	✓			✓			✓	
Hydrostatic pressure resistance at 20 °C / 1h	EN 921		✓				✓		✓
Hydrostatic pressure resistance at 80 °C / 165h	EN 921		✓				✓		✓
Water Quality	BRL K533/03 / NEN-EN-12201	✓			✓			✓	
Gas Quality	NEN-EN-1555	✓							
Green Stripes	Internal standard		✓						

\*WIS 4-32-17   \*WIS 4-32-09-1991   \*\*BS6730 : 1986   \*\*BS6572 : 1985

# Glossary of Terms

**Carbon Black content (ISO 6964)**

Test for the determination of carbon black content in raw material or material taken from a pipe. The test is based on pyrolysis of a specified quantity of material at 550C° ±50C° in a stream of nitrogen for 45 minutes and calcinations at 900C° ±50C°. Calculation of the carbon black content from the difference in mass before and after calcinations and pyrolysis. The specification of the carbon black content according the several standards is 2 – 2,5%.

**Carbon Black dispersion (ISO 18553:2002)**

Describes a method with two procedures for the assessment of pigment or carbon black particle and agglomeratie size and dispersion in polyolefin pipes, fittings and compounds. The method is applicable to polyolefin pipes and fittings, as well as raw material in pellet form, with the choice of procedure to be determined by the referring specification. The method is applicable to carbon black pigmented polyolefin pipes, fittings and compounds with a carbon black content of less than 3%.

**Density (ISO 1183:1987)**

Methode for determination the density of plastics . Our test is based on a calculation of a piece material that has been measured on a balance in the open air and under water.

**MFR (ISO 1133:2005)**

This International Standard specifies the procedure for the determination of the melt mass-flow rate (MFR) of thermoplastic materials under specified conditions of temperature and load.

**Moisture (EN-ISO 12118)**

This International Standard specifies a method for the determination of moisture content in thermoplastics. This method is only applicable to thermoplastics for which the melting point is below 160 °C. The method is suitable for measuring the moisture content down to 0,0005 %. This method determines the total moisture content in the test piece and included surface moisture and moisture contained within the test piece. Because the test piece is converted to a molten state, it is assumed that all moisture is expelled.

**Volatile content (EN-ISO 12099)**

Specifies a method for determining the content of material volatile at 105 °C in polyethylene (PE) piping materials. This method is applicable to moulding and extrusion materials. It also can be applicable to components in PE piping systems.

**OIT (ISO/TR 10837:1991)**

Specifies a method of measuring the oxidative thermal stability in oxygen at typical processing and welding temperatures. The thermal stability measured by this method depends on mass and size of the test specimen used.

**Short term surge pressure resistance (ING 4-37-02)**

This test is done on a pipe with diameter > 90mm. The pipe is notched according EN-ISO 13479 and shall be pressurised to either give failure or attainment of at least 2,5 times the pressure rating (PN) at a loading of 8 bar/sec.

**Slow crack growth pipe size 110 – 125 or 180mm SDR-11 (EN-ISO-13479)**

**Long term stress crack resistance at 80°C: on notched pipe (EN-ISO-13479)**

Specifies a method for determining the resistance to slow crack growth of a polyethylene (PE) pipe expressed in terms of time to failure in a hydrostatic stress rupture test of a pipe with longitudinal notches machined in the outer surface. According EN-ISO-13479 the pipe shall not fail within 165h when pressurised at 9,2 bar (PE-100) or 8 bar (PE-80)

**Long term MRS at 20°C (NEN-EN-ISO-9080:2003)**

Describes a method for estimating the long-term hydrostatic strength of thermoplastics materials by statistical extrapolation. This method is applicable to all types of thermoplastics pipes at applicable temperatures. This method was developed on the basis of test data from pipe systems. The pipe dimensions to be tested can be specified in the relevant product/system standards and have to be included in the test report.

**Resistance to gascondensates at 80°C, 2,0MPa (NEN-EN- 1555-1:2002 + EN-921)**

The EN-921 standard (is going to be replaced by NEN-EN-ISO 1167) specifies a method for determining the resistance of thermoplastics pipes to constant internal water pressure at constant temperature. This standard applies to thermoplastics pipes intended for the transport of fluids. The NEN-EN-1555 gives the specific test parameters for this special test.

**Resistance to fracture by impact (Gc) (EN-ISO 179:1997)**

Specifies a method for determining the Charpy impact strength of plastics under defined conditions. A number of different types of specimen and test configurations are defined. Different test parameters are specified according to the type of material, the type of test specimen and the type of notch.

**RCP (Full Scale Test) (EN-ISO 13478)**

This International Standard specifies a full-scale method of test for determination of arrest or propagation of a crack initiated in a thermoplastics pipe at a specified temperature and internal pressure. It is applicable to the assessment of the performance of thermoplastics pipes intended for the supply of gases or liquids, in the latter case when air may also be present in the pipe.

**Dimensions (NEN-EN-12201 and NEN-EN-1555)**

These standards specifies the dimensions of the pipe.

**Marking (NEN-EN-12201 and NEN-EN-1555)**

These standards specifies the marking of the pipe.

**Tensile Yield Stress (ISO 6259)**

Specifies a method of determining the tensile properties of polyolefin (polyethylene, cross-linked polyethylene, polypropylene and polybutene) pipes, and in particular the following properties: - stress at yield point; - elongation at break.

**Elongation at break (ISO 6259)**

Specifies a method of determining the tensile properties of polyolefin (polyethylene, cross-linked polyethylene, polypropylene and polybutene) pipes, and in particular the following properties: - stress at yield point; - elongation at break.

**Appearance (NEN-EN-12201 and NEN-EN-1555)**

These standards specifies the appearance of the pipe.

**Long term hydrostatic at 20°C (cross checks) (prNEN-EN-ISO-1167)**

Specifies a general test method for determination of the resistance to internal hydrostatic pressure at a given temperature of thermoplastics pipes, fittings and piping systems for the transport of fluids. The preparation of test pieces to be used is described in the appropriate parts 2, 3 or 4 of this international standard.

**Long term hydrostatic at 20°C (squeezed pipe) (NEN-EN-12106:1998)**

Specifies a test method for the hydrostatic-strength of polyethylene (PE) pipes after being subjected to a squeeze-off procedure.

**Hydrostatic pressure resistance at 20°C (1h) and 80°C (165h) (EN-921)**

The EN-921 standard (is going to be replaced by NEN-EN-ISO 1167) specifies a method for determining the resistance of thermoplastics pipes to constant internal water pressure at constant temperature. This standard applies to thermoplastics pipes intended for the transport of fluids.

**Water Quality (NEN-EN-12201)**

Pipe made according to this standard is suitable for supply of drinkingwater.

**GAS Quality (NEN-EN-1555)**

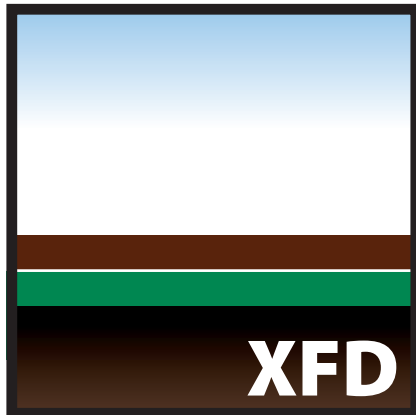
Pipe made according this standard is suitable for supply of gaseous fuels.

**Green Stripes (intern methode)**

The green stripe indicates that the pipe is Revaho **SportsPro 100** and it is especially made for the professional irrigation industry.

## XFD Dripline With Greater Flexibility

### Dripline Series



### ON-SURFACE

### Applications

Rain Bird XFD Dripline is the latest innovation in the Rain Bird Xerigation® family. Because it is the most flexible, kink-resistant tubing available, it's ideal for irrigating areas where traditional drip tubing is difficult to install. XFD dripline is perfect for small, narrow and tight planting areas, as well as areas with tight curves or many switchbacks.

Because it accepts 17mm insert fittings, XFD Dripline Insert Fittings, Rain Bird Easy-Fit compression fittings and LOC fittings makes it easier than ever to design with, and install Rain Bird dripline. XFD Dripline is simple, reliable and durable.

### Features

#### Simple

- Unique material offers significantly greater flexibility and kink-resistance for fast, easy installation.
- The bend radius for XFD dripline is 3" no matter which way you bend the tube. Other driplines will bend 4" if bending with the natural curve of the coil and only 7" if bending against the natural curve of the coil.

- Greater flexibility assures design capability of tight curves and spaces.
- Accepts Rain Bird Easy Fit Compression Fittings, 17mm insert fittings and LOC fittings.
- Variety of flow rates, spacing and coil lengths provides design flexibility for a number of non- turfgrass applications.

#### Reliable

- 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 (brown over black or purple over black) provides unmatched resistance to chemicals, algae growth and UV damage.

### Operating Range

- **Pressure:** 8.5 to 60 psi (.58 to 4,14 bar)
- **Flow rates:** 0.4, 0.6, and 0.9 gph (1,5, 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

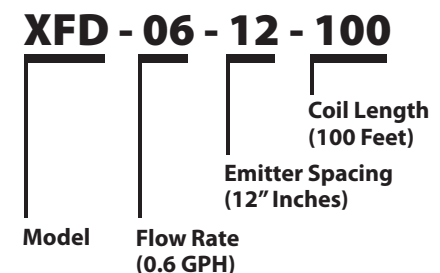
- **OD:** 0.634"
- **ID:** 0.536"
- **Thickness:** 0.049"
- **12", 18", 24"** (30,5 cm, 45,7 cm, 61,0 cm) spacing
- **Available in 100', 250' and 500'** (30,5 m, 76,5 m and 152,9 m) coils
- **Coil Color:** Brown



### XFD Dripline Models

XFD-04-12-100	XFD-09-12-250
XFD-04-12-500	XFD-09-12-500
XFD-04-18-100	XFD-09-18-100
XFD-04-18-500	XFD-09-18-250
XFD-06-12-100	XFD-09-18-500
XFD-06-12-250	XFD-09-24-500
XFD-06-12-500	<b>XFDP-04-12-500</b>
XFD-06-18-100	<b>XFDP-04-18-500</b>
XFD-06-18-250	<b>XFDP-06-12-500</b>
XFD-06-18-500	<b>XFDP-06-18-500</b>
XFD-06-24-500	<b>XFDP-09-12-500</b>
XFD-09-12-100	<b>XFDP-09-18-500</b>

### How To Specify



***XFDP = Purple to indicate models that use non-potable water***



XFD Dripline offers increased flexibility for easy installation



# XFD Dripline With Greater Flexibility

## Dripline Series



### Specifications

The flexible polyethylene tubing shall have factory installed pressure-compensating, inline emitters installed every 12-24 inches. The flow rate from each installed inline emitter shall be 0.4, 0.6 or 0.9 gallons per hour when inlet pressure is between 8.5 and 60 psi.

The inline emitter diaphragm shall have a pressure-regulating diaphragm with a spring action allowing it to self-rinse if there is a plug at the outlet hole. The bend radius shall be 3 inches whether bending the tubing with the natural bend of the coil or against it.

The inline emitter inlet shall be raised off the inside tube wall to minimize dirt intrusion. The XFD Series Dripline inline tubing shall be manufactured by Rain Bird Corporation, Azusa, California.

**XFD Dripline Maximum Lateral Length (Feet)**

Inlet Pressure psi	Maximum Lateral Length (feet)		
	12" Spacing		
	Nominal Flow (GPH):		
	0.4	0.6	0.9
15	352	273	155
20	399	318	169
30	447	360	230
40	488	395	255
50	505	417	285
60	573	460	290

18" Spacing			
Nominal Flow (GPH):			
	0.4	0.6	0.9
15	374	314	250
20	417	353	294
30	481	413	350
40	530	465	402
50	610	528	420
60	734	596	455

24" Spacing		
Nominal Flow (GPH):		
	0.6	0.9
15	424	322
20	508	368
30	586	414
40	652	474
50	720	488
60	780	514

**XFD Dripline Maximum Lateral Length (Meters)**

Inlet Pressure bars	Maximum Lateral Length (meters)		
	30.5 cm Spacing		
	Nominal Flow (l/h):		
	1.5	2.3	3.41
1.0	107.2	83.2	47.2
1.4	121.6	96.9	51.5
2.1	136.2	109.7	70.1
2.8	148.7	120.4	77.7
3.5	153.9	127.1	86.9
4.1	174.6	140.2	88.4

45.7 cm Spacing			
Nominal Flow (l/h):			
	1.5	2.3	3.41
1.0	114	95.7	76.2
1.4	127.1	107.6	89.6
2.1	146.6	125.9	106.7
2.8	161.5	141.7	122.5
3.5	185.9	160.9	128.0
4.1	223.7	181.7	138.7

61.0 cm Spacing		
Nominal Flow (l/h):		
	2.3	3.41
1.0	129.2	98.2
1.4	154.8	112.2
2.1	178.6	123.2
2.8	198.7	144.5
3.5	219.5	148.7
4.1	237.7	156.7

### LEED Compliant



Contains at least 20% post consumer recycled polyethylene which qualifies for LEED credit 4.2



**Rain Bird's Professional  
Customer Satisfaction Policy**

**XF Series Dripline offers five (5) years on product workmanship  
and seven (7) years on environmental stress cracking**

**Rain Bird Corporation**  
6991 E. Southpoint Road  
Tucson, AZ 85756  
Phone: (520) 741-6100  
Fax: (520) 741-6522

**Rain Bird Technical Services**  
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**Rain Bird Corporation**  
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Azusa, CA 91702  
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Fax: (626) 812-3411

**Specification Hotline**  
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**Rain Bird International, Inc.**  
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Fax: (626) 852-7343

The Intelligent Use of Water™  
[www.rainbird.com](http://www.rainbird.com)



## VB-SPR

### Super Jumbo Series Valve Boxes

#### Primary Application

Protects in-ground irrigation valves. Functions as a durable enclosure that provides easy access to valves for maintenance. Used in turf applications to house single valves, multiple valves, or other subsurface components of an irrigation system.

#### Features

- Easily removable knock-outs simplify pipe placement and reduce installation time. Thirteen large knock-outs accommodate up to 3.5" diameter pipe.
- Large top opening area provides unobstructed access to valves.
- Knock-out retainers hold removed knock-outs in place above the pipe to help keep dirt out during backfill.
- Corrugated sides provide strength both before and after knock-outs are removed.
- Two shovel access slots on body allow for easy lid removal.
- Two wrench grips on lid make it easier to remove the lid.
- 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.
- Two stainless steel bolts and clips securely fasten the lid to the body.
- Lid marking area provides dedicated location for valve identification.
- Available lid colors are green and purple (to indicate non-potable water).

#### Models and Dimensions

##### Maxi Jumbo Series Valve Boxes

VB-SPR-L (SKU A61471)

VB-SPR-H (SKU A61473)\*

VB-SPR-PL (SKU A61475)

##### Top Opening:

22.5" x 13.0" (57.1 cm x 33.0 cm)

##### Maximum Top:

27.2" x 17.8" (69.1 cm x 45.2 cm)

##### Bottom Opening:

28.8" x 19.5" (73.1 cm x 49.6 cm)

##### Maximum Bottom:

33.1" x 23.9" (84.1 cm x 60.6 cm)

##### Height:

15.0" (38.1 cm)

**Knockouts:** 13 total (4 on one side, 3 on the other side and 3 on each end)

Height 7.0" x Max Width 3.8"

(17.8 cm x 8.9 cm)

##### Pallet Quantity (body + lid)

• VB-SPR = 10

*\*Includes 2 hex head  $\frac{3}{8}$ " x 3.0" (1.0 x 7.6 cm) bolts, washers, and clips.*



VB-SPR

#### How to Specify

##### VB - SPR - XX

##### Model

VB-SPR Super Jumbo  
Series Valve Box

##### Options

H: Black Body, Green Lid,  
(2) Hex Locking Bolts

L: Green Lid only

PL: Purple Lid only

## Specifications

### VB-SPR Series

Valve boxes shall be used as durable, rigid enclosures for valves or other irrigation system components requiring subsurface protection for installation or maintenance. The valve box shall be made of structural foam HDPE resin that is resistant to UV light, weather, moisture and chemical action of soils.

Valve box body shall be composed of 100% recycled HDPE.

The super jumbo rectangular body shall have knock-outs molded into the sides that can be readily removed. The knock-outs shall remain an integral part of the body unless removed to run pipes or wires through the valve box.

The valve box shall have corrugated sides. The valve box shall have a grooved feature on one side, just below the lid at the top of the box, for inserting a shovel blade or other prying tool to provide easy lid removal. This is useful following compaction of the surrounding soil or after the eventual accumulation of thatch over the valve box.

Boxes shall have a stepped feature on the bottom that securely interlocks two boxes together when mated bottom-to-bottom for use in a deep installation.

Lids shall have beveled edges to minimize potential damage from lawn equipment. Lids shall be clearly marked with the words "Irrigation Control Valve" molded onto the top. Lids shall have a marking area measuring at least 6.0" by 2.0" that is suitable for branding or other means of identification.

The locking bolt, washer and clip shall be made of stainless steel.

The valve box shall be manufactured by Rain Bird Corporation, Glendora, California.



**Rain Bird Corporation**  
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[www.rainbird.com](http://www.rainbird.com)



Creating a Set Point:

Water Switch default set point is position 3. This should be adjusted to suit your irrigation needs. Rotate dial to desired position. Leave in position for at least 5 seconds. Wait for Long Red LED Flash. This creates set point.

LED Light Interpretation:

RED LED = Allowing Irrigation (Dry)  
GREEN LED = Not Allowing Irrigation (Wet)

During Irrigation Runtime:

2 Quick Red LED flashes = low battery  
2 Quick Green LED flashes = Timed Bypass mode  
Red and then Green LED Sequence = sensor wire short  
Green and then Red LED Sequence = sensor wire open

Timed Bypass:

When the dial is turned to BYPASS, it will switch to allow irrigation regardless of moisture status for 60 minutes. After it has timed out, then it will operate according to the previously selected preset position regardless of whether the dial is rotated back. If left in BYPASS until the next time a manual operation is needed, then the dial will have to be rotated to the preset position until it flashes and then can be turned back to BYPASS for another 60 minutes. This feature avoids having the system uncontrolled by mistake. If BYPASS is needed for an extended period of time, such as plant establishment, use your controller's sensor bypass feature (if applicable) or the WaterSwitch wiring will need to be temporarily modified to remove power from the module. Without power the module will default to allow irrigation.

Testing Your System:

Set Moisture Control dial to "BYPASS" position. All valves should operate on a manual controller/time clock sequence. Set Moisture Control dial to a "DRY" position. Sensor will override valve (prevent operation) when soil is wet. Set Moisture Control dial in the "WET" range. When soil has been allowed to dry sufficiently, sensor will allow valves to operate on the programmed controller/time clock sequence. Verify soil water status in sensor area with a soil probe

**WARRANTY:** The IRROMETER COMPANY warrants its products against defective workmanship or materials under normal use for one year from date of purchase. Defective parts will be replaced at no charge for either labor or parts if returned to the manufacturer during the warranty period. The seller's or manufacturer's only obligation shall be to replace the defective part and neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or inability to use the product. This warranty does not protect against abuse, shipping damage, neglect, tampering or vandalism, freezing or other damage whether intentionally or inadvertently caused by the user.

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**www.IRROMETER.com**



(2/21) #725  
LITHO U.S.A.

INSTALLATION AND OPERATING INSTRUCTIONS



SOIL MOISTURE SENSOR AND SWITCH

**WS-DC**  
The WaterSwitch-DC  
Automates Battery  
Powered Controller/Valve  
to Water ONLY when  
Necessary



The WaterSwitch and Watermark Sensor is used to control irrigation for all valves on a controller.

The WATERMARK Soil Moisture Sensor is installed in an active root system area representative of the plant material which is being used as the control point for the entire controller. You should select the area of greatest water demand for this control point. In selecting the site, factors such as sprinkler distribution, topography, appearance of the turf or plant material and the amount of sun exposure should be considered. It would be preferable to locate the sensor in a drier area, avoiding low spots which may be on the wetter side due to runoff and drainage. Wires from the sensor are run back to the location where the WaterSwitch is mounted.

WATERMARK Sensor Installation

**Step 1** - Soak the WATERMARK sensor in water before the installation. **Always install a "wet" sensor.**

**Step 2** - Install the WATERMARK sensor beneath the ground with a sensor in the active root system of the turf or plant being monitored. Depth of placement varies with the rooting depth of the plant material.



Typical Installation Depths:

- Cool Season Turf ..... 2" to 5" deep (in root system)
- Warm Season Turf ..... 6" to 8" deep (in root system)
- Shrubs/Ground Cover ..... 8" to 14" deep (in root system)
- Trees ..... 16" to 24" deep (in root system)

**Step 3** - Install a splice box (Ametek #182001/2 Econo Box or equal) within 2-3 feet (61-91cm) of the sensor location and cut a trench from the splice box to the sensor location to bury the sensor wire.

*NOTE: The sensor wires can be run in conduit if desired. The top of the sensor will socket inside 1/2" (13mm) class 315 PVC or 3/4" (19mm) SDR 11 CPVC pipe, and can be attached with a transition solvent PVC to ABS cement.*



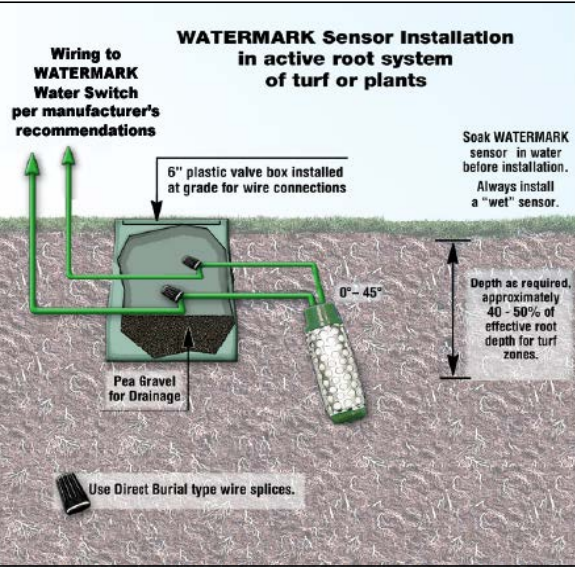
**Step 4** - At the end of the trench, excavate a hole to the depth required for the sensor to be installed. Fill the bottom of the hole with a thick slurry made of soil removed from the hole and water, then firmly push the sensor down into the mud

in the bottom of the hole. This will "grout in" the sensor to ensure maximum surface contact between the sensor surface and the surrounding soil. Alternately the sensor can be firmly pushed to the bottom of the access hole as long as it is a tight enough fit to ensure adequate contact; a snug fit is absolutely necessary. A piece of 1/2" PVC pipe (class 315) can be used as an insertion tool to push the sensor in, being careful not to pinch the wires. Be sure the sensor are installed in the active root system of the turf, shrubs or trees. The sensor should be installed vertically or to a 45° downward angle into the soil. For deeper placement, a vertical borehole can be made with a piece of pipe and the sensor inserted to the bottom of the hole, into the thick slurry mixture. The sensor **MUST** be firmly packed in the soil.

**Step 5**-Backfill the sensors firmly to ensure a snug fit and run the sensor wires to the splice box. Backfill the sensor wire trench.

**Step 6** - Separate the two sensor wires and strip insulation for making the waterproof splices. Then splice the wire to the wires running back to the site where the WaterSwitch is located. Refer to *Sensor Wire Sizing Chart*.

Figure 1.



Sensor Wire Sizing Chart

- Up to 1000' ..... #18 AWG-UF Valve Wire
- 1000' to 2000' ..... #16 AWG-UF Valve Wire
- 2000' to 3000' ..... #14 AWG-UF Valve Wire

**PLEASE NOTE: Sensors must be installed in the area irrigated by the last valve to run. Re-sequence valves to accomplish this as necessary. All valves must have the opportunity to irrigate before the area where the sensor is located is watered.**

After you have mounted the Water Switch module near the irrigation controller, attach the switch wires to the sensor connections on the controller (may be labeled rain sensor) (Figure 2).

Blue & White = closed switch to irrigate,  
Brown & White = open switch to irrigate.

NOTE: The Water Switch, a rain switch and a freeze switch can all be wired in series to the sensor connections.

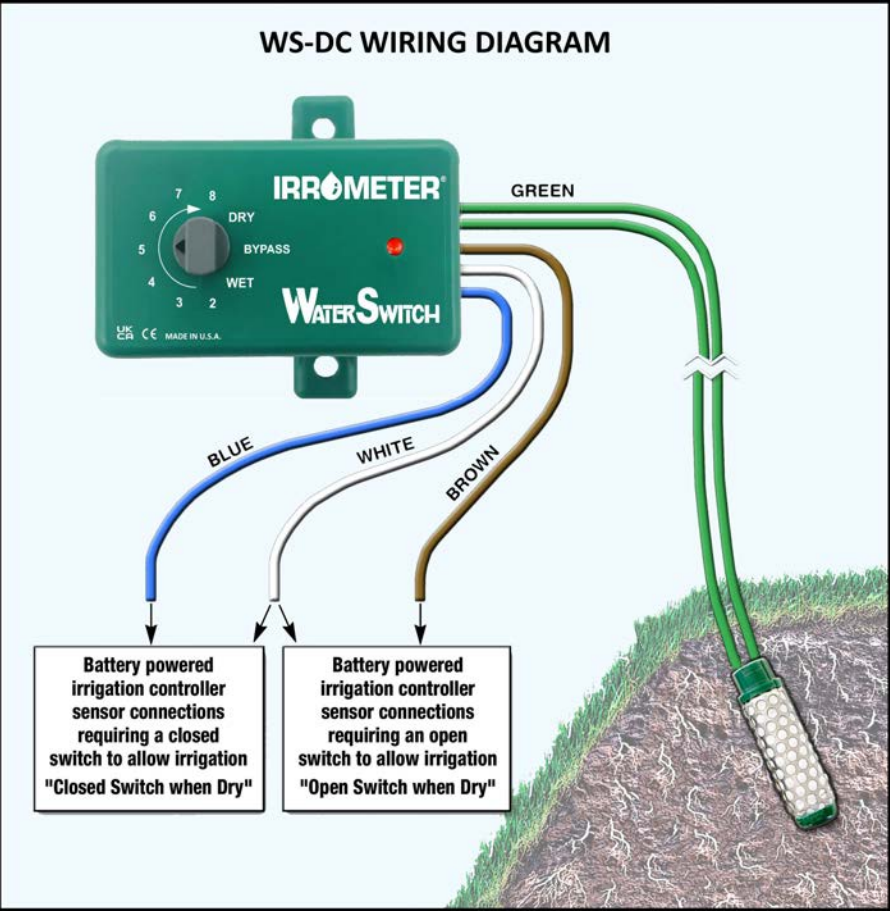


Figure 2

The Water Switch is powered by a 9-volt battery that should be changed when indicated.

To replace battery, remove the rubber plug in the bottom to access the 9-volt battery. Be sure the clip is tight on the new battery terminals. Insert the battery into the rubber plug. Insert the plug into the housing by placing the battery bottom end in first, then working the rest of the plug in. A final 'burp' of air should be released from the opposite end when fully in place. Inserting a narrow screwdriver, or other smooth small diameter object, in the gap at the terminal end when inserting the plug will help to fully seat it in place. Then pull out the tool once fully inserted.

# Operation Information

The WaterSwitch is adjustable from 10 to 85 centibars and has a BYPASS position for temporarily overriding the sensors.

The adjustment dial gives you from very WET (Position#1) to very DRY (Position#9).

Positions #1 to #4 (approximately 10 centibars to 25 centibars): This is the normal range for most water sensitive turf or plant material.

Positions #5 to #8 (approximately 35 centibars to 70 centibars): This is the intermediate to drier soil moisture and is useful for most shrubs and ground cover.

Position #9 (approximately 85 centibars): This is the very dry end of the soil moisture range and should be used with caution. Some deep-rooted, drought tolerant plant material may be able to tolerate this level of dryness.

Keep in mind that the Soil Moisture Sensor only serves to override your irrigation controller/time clock to prevent excessive or unnecessary irrigation and must be watered by the last valve in sequence. The irrigation controller is still "in control" and determines "when" irrigation can occur and "how long" a given valve can run. Thus, the key to successful use of this entire system depends on properly programming your irrigation controller.

The correct programming procedure is as follows: Allow the controller to come on as often as possible (except maybe the night before, or morning of, the mowing day). This means the controller is frequently "asking" the moisture sensor if irrigation is needed. It will operate ONLY when the sensor say it is necessary. Set the valve cycle timer (duration/run time) for short cycles. This prevents the runoff you often see with longer cycles. The soil can absorb the water only so fast, and long cycles usually don't permit all the water to penetrate the soil where it is needed. With the short cycles, you'll need to have several repeat cycles, or start times, each day. You may want to seek the advice of a professional irrigation consultant to help you set up a program of this type to meet peak consumptive use based on your specific system and plant material.

Since this program can be used year-round (except in freezing climates) with your moisture sensor control, you will eliminate the need for seasonal program adjustments. The sensor will automatically adjust the irrigation to whatever is needed, regardless of the weather. Monitor your system and plant material to fine tune your moisture settings for proper balance and correct plant response.

You can fine tune by:

Adjusting the moisture setting for a wetter or dryer control.

Changing the programmed cycle duration to prevent excessive runoff.

Changing the repeat cycles, or start times, to increase or decrease total irrigation "potential" to meet the peak consumptive use of the turf or plants.

Once you have established a balanced program, further adjustments become less necessary. All you need to do is monitor the results, thus eliminating the constant programming of the Controller for seasonal needs.

A free software program is available to assist you in creating the optimum schedule for your landscape. You can download our WaterPerfect program by visiting our website at [www.IRROMETER.com](http://www.IRROMETER.com), go to "downloads", select "WaterPerfect". When prompted, use the word "conserve" for both the user name and password. If you perform an irrigation audit on your landscape, you will have all the data necessary to input into the program, which will then generate a recommended schedule to be programmed into the controller.