

SUBMITTAL



Submittal number	61.0	Date	08/01/2019
Project	TRAILS AT CROWFOOT F1 & 9	6954 N. CROWFOOT VALLEY RD. PARKER, CO 80134	
Project number	201810		
Spec section			
Subsection		Status	Open
Current action	Submitted	Ball in court	
Topic	Irrigation Submittal Package		

Submitter	
Reviewer	
Cc	

Date submitted	08/02/2019	Submission due date	08/02/2019
Released for review	08/02/2019	Review due date	08/09/2019
Date returned		Required on site date	
Date closed			

Notes

Please see attached ELCI Submission #1: Irrigation Products Submittals



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Irrigation Product Submittals

Project: Trails at Crowfoot Filings 1, 9, Park

Contract Job #: 19-013

Submission #: 1

Date: 4/1/2019

DESCRIPTION	MANUFACTURER	SUPPLIER
IRRIGATION SECTION		
PROS-06-PRS30-CV Pop-Up Spray Heads	Hunter	TBD
Precision Series Spray Nozzles	Toro	TBD
PROS-06-PRS40-CV Pop-Up Spray Heads	Hunter	TBD
MP Rotator Nozzles	Hunter	TBD
I-20-06-SS Pop-Up Turf Rotor	Hunter	TBD
LVCZS8010075-HF Drip Valve Assembly Control Kit	Netafim	TBD
TLFV-1 Drip Flush Valve Assembly	Netafim	TBD
ICV Electric Remote Control Valves	Hunter	TBD
HQ-5RC Quick Coupler Valve Assembly	Hunter	TBD
514TX Brass Gate Valve	Matco-Norca	TBD
3100 Brass Master Valve	Buckner-Superior	TBD
UL10 Air Relief Valve Assembly	Crispin	TBD
375BOF Reduced Pressure Backflow Preventer	Wilkins	TBD
SL9600TW Two-Wire Irrigation Controller	Weathermatic	TBD
SLW5 Weather Station	Weathermatic	TBD
SLPED-ENC-SS-4800 Stainless Steel Pedestal	Weathermatic	TBD
SLGDT Lightning Arrestor	Weathermatic	TBD
Copper Grounding Rods	Paige	TBD
FSI-T Flow Sensor	CST	TBD
3/4" Drip Irrigation Polyethylene Pipe	Toro	TBD
Class 200 PVC Lateral Pipe	Silver-Line	TBD
Class 200 PVC Mainline Pipe	Silver-Line	TBD
Class 200 PVC Sleeving Pipe	Silver-Line	TBD
PE39 Shielded Cable	Regency	TBD
Hydrometer Assembly with Reed Switch Register	Netafim	TBD
523T PVC Inline Check Valve Assembly	Matco-Norca	TBD
SL1600 Controller with SLM48DM Decoder Module	Weathermatic	TBD
SLPED-ENC-SS-1600 Stainless Steel Pedestal	Weathermatic	TBD
1806-SAM-PRS Pop-Up Spray Heads	Rain Bird	TBD
1806-SAM-P45 Pop-Up Spray Heads	Rain Bird	TBD
I-40-06-SS Pop-Up Turf Rotor	Hunter	TBD
I-40-04-SS-ON Pop-Up Turf Rotor	Hunter	TBD
EFB-CP Brass Remote Control Valve	Rain Bird	TBD
LVCZS8010075-LF Drip Valve Assembly Control Kit	Netafim	TBD
Agrifim CEP 900 Compression End Flush Cap	NDS	TBD
TLAVRV Air/Vacuum Relief Valve	Netafim	TBD
TLHCVXR3-12 Pressure Compensating Dripline	Netafim	TBD
EFB-CP-PRS-D Brass Remote Control Valve	Rain Bird	TBD
44-RC Quick Coupling Valve	Rain Bird	TBD
SB-24-PSI 24 Station Modular Sentinel Field Controller	Toro	TBD



Type K Copper Pipe	Mueller Industries	TBD
SBBC-30AL Backflow Enclosure	Strong Box	TBD
DBR/DBY Wire Splice	3M	TBD
Valve Boxes	Rain Bird	TBD
Schedule 80 Nipples	Spears	TBD
Schedule 40 Nipples	Spears	TBD
Schedule 80 Fittings	Spears	TBD
PVC True Union Ball Valve	Spears	TBD
SJ-712 Swing Joint Assembly	Hunter	TBD
XQ 1/4" Distribution Tubing	Rain Bird	TBD
DBC025 Diffuser Bug Cap	Rain Bird	TBD
TS025-1/4" Tubing Stake	Rain Bird	TBD
Xeri-Bug Drip Emitters	Rain Bird	TBD
Techline Fittings	Netafim	TBD
Pipe Fittings with Joint Restraints	Leemco	TBD
825YA Reduced Pressure Backflow	Febco	TBD
GS1 Backflow Enclosure	Guard Shack	TBD
6001 Ball Pattern Stop and Waste Valve	AY Mcdonald	TBD
QKCHK-100 Basket Filter	Rain Bird	TBD
PVC Union Model 898	Spears	TBD
PVC True Union Ball Valve Model 1821-SR	Spears	TBD
SBE-050 Spiral Barbed Elbow	Rain Bird	TBD
SPX-100 Swing Pipe	Rain Bird	TBD
Compact Ball Valve	Spears	TBD
430-005 PVC Straight Coupling	Spears	TBD
PVC-11 Gray Glue	Spears	TBD
P-70 Primer	Weld-On	TBD

NOTE: WORK WILL NOT BE PERFORMED WITHOUT APPROVAL

Submittal Approval: _____

Date: _____

PRS30

PRESSURE REGULATED

Models: **Shrub, 4", 6", 12"**
Pressure Regulation: **30 PSI**

FEATURES

- Models: Shrub, 4", 6", 12"
- Side inlet (SI) version available in 6" and 12"
- Identification cap is brown for easy field ID
- Innovative directional flush plug design
- Warranty period: 5 years
- ▶ Co-molded wiper seal
- ▶ Heavy-duty spring
- ▶ Industry's strongest spray body
- ▶ Innovative seal design
- ▶ Pro-Spray check valve
- ▶ Pressure regulated to 30 PSI

OPERATING SPECIFICATIONS

- Operational pressure range: 15 to 100 PSI

FACTORY INSTALLED OPTIONS

- Drain check valve (up to 14' of elevation)
- Check valve available on 4", 6", 12"
- Reclaimed water ID cap

USER INSTALLED OPTIONS

- Vandal-proof cap (P/N PROS-PRS30-VPC)
- Drain check valve (up to 14' of elevation; P/N 457400)
- Reclaimed water ID cap (P/N 458560)
- Snap-on reclaimed cover (P/N PROSRCCAP)

▶ = Advanced Feature descriptions on page 50



PRS30 Reclaimed

PRS30 models include optional factory-installed purple reclaimed caps



Related Solutions: Works Best With

Pro-Spray® Fixed Arc Nozzles and Precision Distribution Control™ Adjustable Nozzles work best with PRS30



PROS-00-PRS30
Retracted height: 4½"
Inlet size: ½"



PROS-04-PRS30
Retracted height: 5⅞"
Pop-up height: 4"
Exposed diameter: 2¼"
Inlet size: ½"



[A] **PROS-06-SI-PRS30**
[B] **PROS-06-PRS30**

Retracted height: 8¾"
Pop-up height: 6"
Exposed diameter: 2¼"
Inlet size: ½"



[A] **PROS-12-SI-PRS30**
[B] **PROS-12-PRS30**

Retracted height: 16⅞"
Pop-up height: 12"
Exposed diameter: 2¼"
Inlet size: ½"

PRS30 - SPECIFICATION BUILDER: ORDER 1 + 2

1 Model	2 Options
PROS-00-PRS30 = 30 PSI regulated shrub adapter	<p>(blank) = No option</p> <p>CV = Factory-installed drain check valve (Pop-up models only 6" and 12" models ordered as CV will come as no side inlet)</p> <p>R = Factory-installed reclaimed body cap (Shrub molded in purple)</p>
PROS-04-PRS30 = 30 PSI regulated 4" Pop-up	
PROS-06-SI-PRS30 = 30 PSI regulated 6" Pop-up with side inlet	
PROS-06-PRS30 = 30 PSI regulated 6" Pop-up (no side inlet)	
PROS-12-SI-PRS30 = 30 PSI regulated 12" Pop-up with side inlet	
PROS-12-PRS30 = 30 PSI regulated 12" Pop-up (no side inlet)	

Examples:

PROS-04-PRS30 = 4" Pop-up regulated at 30 PSI

PROS-06-PRS30-CV = 6" Pop-up regulated at 30 PSI, drain check valve

PROS-12-PRS30-CV - R = 12" Pop-up regulated at 30 PSI, drain check valve, and reclaimed body cap

TORO®

PRECISION™ SERIES SPRAY NOZZLES

**WATER
SMART®**

Toro® Precision™ Series Spray Nozzles are the most efficient spray nozzles available and feature proprietary H²O Chip Technology. With a precipitation rate of 1" per hour, Precision™ Series Spray Nozzles help irrigation professionals better manage water usage, eliminate runoff, and reduce their customers' water bills. These nozzles are available in a wide variety of arcs and radii, as well as Toro (male) and female-threaded bodies, making them ideal for large scale installations and retrofits. In addition, the best-in-class Precision™ Series Spray nozzles are available with factory-installed Pressure Compensating Discs (PCD).

FEATURES & BENEFITS

Patented H²O Chip Technology

Each nozzle contains one or more H²O chips that create a high frequency oscillating stream and deliver a precipitation rate of 1" per hour – an industry first – while using up to 35% less water than a standard MPR nozzle.

Pressure-Compensating Versions Available

At a fraction of the cost of a pressure-regulating spray head, pressure-compensating Precision™ Series Spray Nozzles maintain a 1" per hour precipitation rate and minimize misting and water waste that results from higher pressure systems.

Design and Retrofit Effectiveness

The lower flow rate of Precision™ Series Spray Nozzles maximizes design efficiency and helps reduce overall material costs based on the need for fewer valves and controller stations.

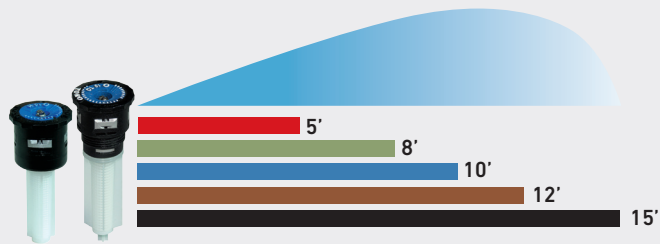


Precision™ Series Spray Nozzles with Pressure Compensation maintain a 1" per hour precipitation rate and minimize misting and atomizing when system pressure exceeds 40 psi. Integrated pressure compensation can minimize the need for a regulating head at a fraction of the cost.



Time Savings

All Precision™ Series Spray Nozzles can be combined on the same zone for greater design and installation flexibility, which equates to time savings on the job site. Whether a new installation or retrofit project, the comprehensive range of Precision™ nozzles meets the needs of any project and all models are available in Toro (Male) and Female threads.



Nine Arcs, Plus Side and Center Strips Available



Side and Corner Strips Available



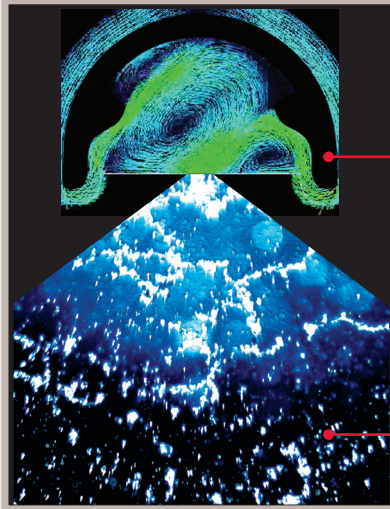
PRECISION™ SERIES SPRAY NOZZLES

5' Radius				8' Radius				10' Radius				12' Radius				15' Radius				Side and Corner Strips			
Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)
5-60	20	0.04	4.7	8-60	20	0.10	7.6	10-60	20	0.16	9.5	12-60	20	0.24	11.5	15-60	20	0.35	14.0	4X30 SST	20	0.62	4x28
	30	0.04	5.0		30	0.11	8.0		30	0.17	10.0		30	0.25	12.0		30	0.39	15.0		30	0.66	4x30
	40	0.04	5.0		40	0.12	8.1		40	0.18	10.0		40	0.26	12.1		40	0.40	15.1		40	0.67	4x30
5-Q	20	0.06	4.6	8-Q	20	0.14	7.0	10-Q	20	0.26	9.5	12-Q	20	0.34	12.0	15-Q	20	0.53	14.2	4X15 LCS	20	0.32	4x15
	30	0.06	5.0		30	0.17	8.0		30	0.23	10.0		30	0.37	12.1		30	0.58	15.0		30	0.33	4x15
	40	0.06	5.0		40	0.18	8.2		40	0.28	10.2		40	0.39	11.4		40	0.60	15.1		40	0.34	4x15
5-T	20	0.07	4.4	8-T	20	0.20	7.6	10-T	20	0.31	9.5	12-T	20	0.46	11.5	15-T	20	0.72	14.3	4X15 RCS	20	0.32	4x15
	30	0.09	5.0		30	0.22	8.0		30	0.34	10.0		30	0.49	12.0		30	0.77	15.0		30	0.33	4x15
	40	0.09	5.2		40	0.23	8.2		40	0.36	10.0		40	0.51	12.2		40	0.81	15.3		40	0.34	4x15
5-150	20	0.07	4.0	8-150	20	0.25	7.5	10-150	20	0.41	9.8	12-150	20	0.60	11.6	15-150	20	0.92	14.7	4X18 SST	20	0.36	4X18
	30	0.11	5.0		30	0.27	8.0		30	0.43	10.0		30	0.62	12.0		30	0.96	15.0		30	0.37	4X18
	40	0.12	5.2		40	0.28	8.1		40	0.44	10.2		40	0.63	12.2		40	1.00	15.2		40	0.38	4X18
5-H	20	0.10	4.4	8-H	20	0.26	7.0	10-H	20	0.48	9.7	12-H	20	0.70	11.5	15-H	20	1.10	14.5	4X9 LCS	20	0.18	4X9
	30	0.13	5.0		30	0.33	8.0		30	0.51	10.0		30	0.74	12.0		30	1.16	15.0		30	0.19	4X9
	40	0.14	5.1		40	0.34	8.0		40	0.55	10.3		40	0.79	12.3		40	1.25	15.4		40	0.20	4X9
5-210	20	0.10	4.4	8-210	20	0.33	7.6	10-210	20	0.56	9.8	12-210	20	0.76	11.6	15-210	20	1.15	14.5	4X9 RCS	20	0.18	4X9
	30	0.15	5.2		30	0.36	8.0		30	0.58	10.0		30	0.82	12.0		30	1.20	15.0		30	0.19	4X9
	40	0.16	5.3		40	0.37	8.1		40	0.60	10.4		40	0.84	12.3		40	1.30	15.5		40	0.20	4X9
5-TT	20	0.14	4.3	8-TT	20	0.34	7.0	10-TT	20	0.63	9.6	12-TT	20	0.90	11.4	15-TT	20	1.45	14.5		20	1.45	14.5
	30	0.17	5.0		30	0.44	8.0		30	0.69	10.0		30	0.99	12.0		30	1.54	15.0		30	1.78	15.0
	40	0.19	5.0		40	0.46	8.0		40	0.73	10.3		40	1.04	12.3		40	1.58	15.2		40	1.82	15.0
5-TQ	20	0.15	4.3	8-TQ	20	0.41	7.2	10-TQ	20	0.71	9.5	12-TQ	20	1.05	12.4	15-TQ	20	1.61	15.3		20	1.72	14.5
	30	0.20	5.0		30	0.49	8.0		30	0.79	10.0		30	1.15	12.0		30	1.78	15.0		30	2.31	15.0
	40	0.21	5.0		40	0.54	8.0		40	0.84	10.3		40	1.19	12.2		40	1.82	15.0		40	2.35	15.2
5-F	20	0.17	4.0	8-F	20	0.55	7.0	10-F	20	0.95	9.6	12-F	20	1.35	11.5	15-F	20	2.20	14.5		20	2.20	14.5
	30	0.26	5.0		30	0.66	8.0		30	1.03	10.0		30	1.48	12.0		30	2.31	15.0		30	2.31	15.0
	40	0.26	5.0		40	0.68	8.0		40	1.08	10.3		40	1.59	12.4		40	2.35	15.2		40	2.35	15.2
	50	0.26	5.0	50	0.71	8.0	50	1.12	10.4	50	1.60	12.5	50	2.40	15.3	50	2.40	15.3	50	2.40	15.3		

Precipitation rate (50% square spacing): 1" per hour even after radius reduction of 20%.

Patented H²O Chip Technology

On the outside, Precision™ Series Spray Nozzles look like standard spray nozzles, but the performance of the patented H²O Chip Technology on the inside is unmatched. The H²O Chips create high-frequency streams of water that oscillate at a rate of 200 cycles per second. The result is a matched precipitation rate of 1" per hour – an industry first – while using up to 35% less water than a standard spray nozzle.



Water enters a specially designed chamber within the H²O Chip where the water expands and collapses, which creates an oscillating effect.

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

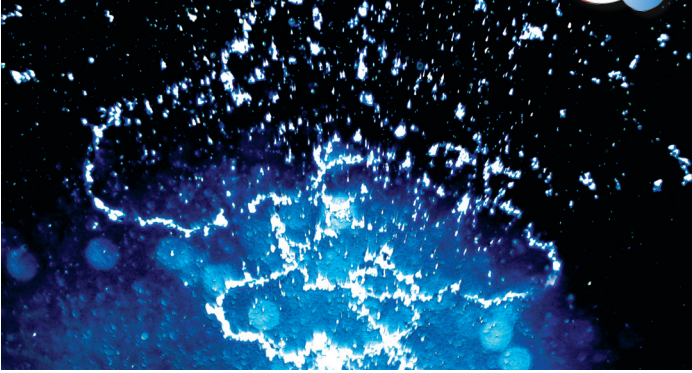


PRECISION™ SERIES SPRAY NOZZLES WITH PRESSURE COMPENSATION

5' Radius*				8' Radius				10' Radius				12' Radius				15' Radius				Side and Corner Strips			
Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)	Model (0-XX-XX)	PSI	GPM	Radius (ft)
5-60P	40	0.07	6.0	8-60P	40	0.11	7.5	10-60P	40	0.16	9.5	12-60P	40	0.30	13.0	15-60P	40	0.36	14.0	4X30-SSTP	40	0.62	4x30
	50	0.07	5.5		50	0.11	7.5		50	0.18	10.5		50	0.30	13.0		50	0.41	15.0		50	0.65	4x30
	60	0.07	6.0		60	0.12	7.5		60	0.20	11.0		60	0.30	13.0		60	0.45	15.0		60	0.67	4x30
5-QP	40	0.06	4.6	8-QP	40	0.14	7.0	10-QP	40	0.26	9.5	12-QP	40	0.34	12.0	15-QP	40	0.53	14.2	4X15-LCSP	40	0.32	4x15
	50	0.08	5.1		50	0.17	7.7		50	0.28	10.0		50	0.39	12.2		50	0.59	14.5		50	0.33	4x15
	60	0.09	5.6		60	0.20	8.4		60	0.29	10.5		60	0.43	12.5		60	0.64	14.8		60	0.34	4x15
5-TP	40	0.11	6.2	8-TP	70	0.23	9.1	10-TP	70	0.31	11.1	12-TP	70	0.48	12.7	15-TP	70	0.70	15.1	4X15-RCSP	70	0.35	4x15
	40	0.07	4.4		40	0.20	7.6		40	0.31	9.5		40	0.46	11.5		40	0.72	14.3		40	0.32	4x15
	50	0.11	4.9		50	0.24	8.0		50	0.36	10.0		50	0.50	11.8		50	0.77	14.8		50	0.33	4x15
5-150P	40	0.15	5.5	8-150P	60	0.27	8.5	10-150P	60	0.41	10.5	12-150P	60	0.54	12.0	15-150P	60	0.82	15.2	4X18-SSTP	60	0.34	4x15
	60	0.14	6.0		60	0.32	8.0		60	0.51	10.0		60	0.72	12.0		60	1.04	14.5		60	0.38	4x18
	70	0.14	6.0		70	0.32	8.0		70	0.53	10.5		70	0.78	12.0		70	1.23	14.5		70	0.39	4x18
5-HP	40	0.10	4.4	8-HP	40	0.26	7.0	10-HP	40	0.48	9.7	12-HP	40	0.70	11.5	15-HP	40	1.10	14.5	4X9-LCSP	40	0.18	4x9
	50	0.13	4.9		50	0.33	7.6		50	0.53	10.1		50	0.75	11.8		50	1.20	14.3		50	0.19	4x9
	60	0.16	5.4		60	0.39	8.1		60	0.57	10.4		60	0.80	12.2		60	1.29	14.0		60	0.20	4x9
5-210P	70	0.19	6.0	8-210P	70	0.46	8.7	10-210P	70	0.62	10.8	12-210P	70	0.85	12.5	15-210P	70	1.39	13.8	4X9-RCSP	70	0.21	4x9
	40	0.16	5.0		40	0.34	8.0		40	0.57	9.5		40	0.86	11.0		40	1.23	14.0		40	0.18	4x9
	50	0.18	5.5		50	0.38	8.0		50	0.64	10.0		50	0.96	11.5		50	1.44	14.0		50	0.19	4x9
5-TTP	60	0.20	6.0	8-TTP	60	0.42	8.0	10-TTP	60	0.70	10.0	12-TTP	60	1.05	12.0	15-TTP	60	1.56	14.0	4X9-RCSP	60	0.20	4x9
	70	0.21	6.0		70	0.45	8.0		70	0.75	10.0		70	1.13	12.0		70	1.70	15.0		70	0.21	4x9
	40	0.14	4.3		40	0.34	7.0		40	0.63	9.6		40	0.90	11.4		40	1.45	14.5		40	0.18	4x9
5-TQP	50	0.20	4.9	8-TQP	50	0.43	7.8	10-TQP	50	0.70	9.9	12-TQP	50	1.03	11.5	15-TQP	50	1.57	14.8	4X9-RCSP	50	0.19	4x9
	60	0.25	5.4		60	0.52	8.5		60	0.77	10.3		60	1.16	11.5		60	1.68	15.0		60	0.20	4x9
	70	0.31	6.0		70	0.61	9.3		70	0.84	10.6		70	1.29	11.6		70	1.80	15.3		70	0.21	4x9
5-FP	40	0.15	4.3	8-FP	40	0.41	7.2	10-FP	40	0.71	9.5	12-FP	40	1.05	11.4	15-FP	40	1.60	14.0	4X9-RCSP	40	0.18	4x9
	50	0.21	4.9		50	0.48	7.9		50	0.77	9.9		50	1.14	11.7		50	1.70	14.4		50	0.19	4x9
	60	0.26	5.6		60	0.55	8.6		60	0.82	10.3		60	1.23	12.0		60	1.80	14.8		60	0.20	4x9
5-FP	70	0.32	6.2	8-FP	70	0.62	9.3	10-FP	70	0.88	10.7	12-FP	70	1.32	12.3	15-FP	70	1.90	15.1	4X9-RCSP	70	0.21	4x9
	40	0.17	4.0		40	0.55	7.0		40	0.95	9.6		40	1.35	11.5		40	2.20	14.5		40	0.20	4x9
	50	0.24	4.8		50	0.65	7.5		50	1.06	10.0		50	1.49	11.8		50	2.36	14.8		50	0.20	4x9
5-FP	60	0.31	5.5	8-FP	60	0.74	8.0	10-FP	60	1.16	10.5	12-FP	60	1.63	12.2	15-FP	60	2.52	15.1	4X9-RCSP	60	0.21	4x9
	70	0.38	6.3		70	0.84	8.5		70	1.27	10.9		70	1.77	12.5		70	2.68	15.4		70	0.21	4x9

Precipitation rate (50% square spacing): 1" per hour even after radius reduction of 20%.

WATER MANAGEMENT HIGHLIGHT



Patented H²O Chip Technology

Water expands and collapses inside the H²O chip, creating a high frequency oscillating stream that meets the desired distance of throw using 35% less water.

SPECIFICATIONS

Operational

- Radius: 5'-15'
- Operating pressure range: 20-75 psi
- Recommended operating pressure: non-Pressure Compensating—30 psi, Pressure Compensating—50 psi
- Flow Rate: 0.04-2.4 gpm
- Nozzle trajectory:
 - 5': 5°
 - 8': 10°
 - 10': 15°
 - 12': 20°
 - 15': 27°
 - Corner and Side Strips: 20°

Warranty

- Two years

Water Savings

Precision™ Series Spray Nozzles are more efficient than standard spray nozzles because they apply water more slowly and evenly. For example, with 32% percent lower flow than a standard 12H spray nozzle, a 12H Precision™ Series nozzle still achieves the same distance of throw. At 30 psi the comparative water usage is:

12-H Spray Nozzle	1.09 gallons per minute
Precision O-T-12-H	0.74 gallons per minute
WATER SAVINGS	0.35 gallons per minute or 32%

When consideration for water saved is taken for an entire system and multiplied across a full irrigation season, the water savings presented by using Precision™ Series Spray Nozzles could equate to thousands of gallons of water saved per year.

Cost Savings

More nozzles can be designed into a zone due to the lower flow rates of Precision™ Series Spray Nozzles, which could present lower system costs given the need for fewer valves, and in some cases, a less expensive controller. The following table illustrates the system cost efficacy of using 12H Precision™ Series Spray Nozzles versus standard 12H spray nozzles (assumes a 30 psi operating pressure):

AWWA Meter Size	Flow (gpm)	Friction loss (psi)	# of functional Standard 12H Sprays	# of functional Precision™ 12H Sprays
5/8"	12	5.1	9	16
3/4"	18	5.2	13	24
1"	30	5.3	23	40

Specifying Information-Precision™ Series Spray Nozzle

O-X-XXXX-XXXX-P				
Nozzle	Thread	Radius	Arc	PCD
O	X	XXXX	XXXX	P
0—1" Per Hour	T—Toro Male-Threaded Nozzle Blank—Female-Threaded Nozzle	5—5' 8—8' 10—10' 12— 12' 15—15' 4X15—4'X15' 4X30—4'X30' 4X9—4'X9' 4X18—4'X18'	60—60° Q—90° T—120° 150—150° H—180° 210—210° TT—240° TQ—270° F—360°—Full-circle LCS—Left Corner RCS—Right Corner SST—Side Strip	P—Pressure Compensating
<p>Example: A female-threaded Precision™ Series Spray with a spray radius of 12' and a 90° arc would be specified as: O-12-Q</p> <p>Example 2: A male-threaded Pressure-Compensating Precision™ Series Spray with a spray radius of 10' and a 180° arc would be specified as O-T-10-HP</p>				



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PRS40

PRESSURE REGULATED

Models: **Shrub, 4", 6", 12"**
Pressure Regulation: **40 PSI**

FEATURES

- Models: Shrub, 4", 6", 12"
- Gray identification cap for easy field ID
- Innovative directional flush plug design
- 6" and 12" models come standard as no side inlet, ensuring proper installation with check valve
- Drain check valve installed (14' of elevation) comes standard
- Warranty period: 5 years
- ▶ Co-molded wiper seal
- ▶ Heavy-duty spring
- ▶ Industry's strongest spray body
- ▶ Innovative seal design
- ▶ Pro-Spray check valve
- ▶ Pressure regulated to 40 PSI
- ▶ FloGuard™ technology

OPERATING SPECIFICATIONS

- Operational pressure range: 15 to 100 PSI

FACTORY INSTALLED OPTIONS

- Reclaimed water ID cap
- FloGuard technology available for check valve models

USER INSTALLED OPTIONS

- Reclaimed water ID cap (P/N 458562)
- Snap-on reclaimed cover (P/N PROS-RC-CAP)
- ▶ = *Advanced Feature descriptions on page 52*



PRS40 Reclaimed

PRS40 models include optional factory-installed purple reclaimed caps



Related Solutions: MP Rotator

PRS40 is designed specifically for the MP Rotator®



PROS-00-PRS40

Retracted height: 4½"
Inlet size: ½"



PROS-04-PRS40-CV

Retracted height: 5⅞"
Pop-up height: 4"
Exposed diameter: 2¼"
Inlet size: ½"



PROS-06-PRS40-CV

Retracted height: 8¾"
Pop-up height: 6"
Exposed diameter: 2¼"
Inlet size: ½"



PROS-12-PRS40-CV

Retracted height: 16⅞"
Pop-up height: 12"
Exposed diameter: 2¼"
Inlet size: ½"

PRS40 – SPECIFICATION BUILDER: ORDER 1 + 2

1 Model	2 Specialty Options
<p>PROS-00-PRS40 = 40 PSI regulated shrub adapter</p> <p>PROS-04-PRS40-CV = 40 PSI regulated 4" pop-up with drain check valve</p> <p>PROS-06-PRS40-CV = 40 PSI regulated 6" pop-up with drain check valve</p> <p>PROS-12-PRS40-CV = 40 PSI regulated 12" pop-up with drain check valve</p>	<p>(blank) = No option</p> <p>R = Factory-installed reclaimed body cap</p> <p>F = FloGuard technology</p> <p>F-R = FloGuard technology with reclaimed body cap</p>

Examples:

- PROS-04-PRS40-CV = 4" Pop-up regulated at 40 PSI, drain check valve
- PROS-06-PRS40-CV-F = 6" Pop-up regulated at 40 PSI, drain check valve, with FloGuard technology
- PROS-12-PRS40-CV-R = 12" Pop-up regulated at 40 PSI, drain check valve, reclaimed body cap

SPRAYS

MP ROTATOR®

Radius: 8' to 35'

FEATURES

- Radius can be reduced up to approximately 25%
- Easy arc adjustment
- Color-coded for easy identification
- Removable filter screen ensures hassle-free service
- Wind-resistant multi-stream technology
- ▶ Automatic matched precipitation
- ▶ Double-pop
- ▶ Distribution uniformity
- ▶ Low precipitation rate

OPERATING SPECIFICATIONS

- Recommended operating pressure: 40 PSI
- Recommended filtering when operating on dirty water

OPTIONS

- Specify Pro-Spray® PRS40 pop-up for accurate pressure regulation at 40 PSI
- Adding "HT" will specify male threaded nozzles
- ▶ = *Advanced Feature descriptions on page 41*

MP1000 8' to 15' radius



MP1000-90
90° to 210°

MP1000-210
210° to 270°

MP1000-360
360°

MP2000 13' to 21' radius



MP2000-90
90° to 210°

MP2000-210
210° to 270°

MP2000-360
360°

MP3000 22' to 30' radius



MP3000-90
90° to 210°

MP3000-210
210° to 270°

MP3000-360
360°

MP3500 31' to 35' radius



MP3500-90
90° to 210°

MP ROTATOR - SPECIFICATION BUILDER: ORDER 1 + 2

1 Model	2 Options
MP1000-90 = 8' to 15' radius, adjustable from 90° to 210°	(blank) = No option HT = Male threaded version <i>(Not available in 3500)</i>
MP1000-210 = 8' to 15' radius, adjustable from 210° to 270°	
MP1000-360 = 8' to 15' radius, 360°	
MP2000-90 = 13' to 21' radius, adjustable from 90° to 210°	
MP2000-210 = 13' to 21' radius, adjustable from 210° to 270°	
MP2000-360 = 13' to 21' radius, 360°	
MP3000-90 = 22' to 30' radius, adjustable from 90° to 210°	
MP3000-210 = 22' to 30' radius, adjustable from 210° to 270°	
MP3000-360 = 22' to 30' radius, 360°	
MP3500-90 = 31' to 35' radius, adjustable from 90° to 210°	
MPLCS515 = Left corner strip, 5' x 15'	
MPRCS515 = Right corner strip, 5' x 15'	
MPSS530 = Side strip, 5' x 30'	
MPCORNER = 8' to 15' radius, adjustable from 45° to 105°	

Examples:

MP1000-210 = 8' to 15' radius, adjustable from 210° to 270°
PROS-06 - PRS40-CV - MP2000-90 = 6" pop-up regulated at 40 PSI, drain check valve, with MP 2000-90.

I-20

Radius: **4.9 to 14.0 m**
 Flow: **0.07 to 3.23 m³/hr; 1.2 to 53.8 l/min**
 Inlet: **¾"**

FEATURES

- Models plastic riser: Shrub, 10 cm, 15 cm, 30 cm
 - Models stainless steel riser: 10 cm, 15 cm
 - Arc setting: 50° to 360°
 - Factory installed rubber cover
 - Through-the-top arc adjustment
 - QuickCheck™ arc mechanism
 - Water lubricated gear-drive
 - Nozzle choices: 34
 - Nozzle racks: 1.5 to 8.0 Blue, 2.0 to 4.0 Low Angle Grey, 0.50 to 3.0 Short Radius Black, 6.0 to 13.0 Green, MPR-20, MPR-30, MPR-35
 - Warranty period: 5 years
- ▶ Automatic arc return
 - ▶ Non-strippable drive
 - ▶ Part- and full-circle in one model
 - ▶ Headed and slotted set screw
 - ▶ FloStop® control
 - ▶ Optional reclaimed water ID
 - ▶ Stainless steel riser
 - ▶ Drain check valve (up to 3 m of elevation)

OPERATING SPECIFICATIONS

- Radius: 4.9 to 14.0 m
- Flow: 0.07 to 3.23 m³/hr; 1.2 to 53.8 l/min
- Recommended pressure range: 1.7 to 4.5 bar; 170 to 450 kPa
- Operating pressure range: 1.4 to 7.0 bar; 140 to 700 kPa
- Precipitation rates: 10 mm/hr approximately
- Nozzle trajectory: Standard = 25°, Low angle = 13°

▶ = *Advanced Feature descriptions on page 22*



I-20 Reclaimed
 Available as a factory installed option on all models



I-20-00
 Overall height: 20 cm
 Exposed diameter: 4.5 cm
 Inlet size: ¾"



I-20-04
 Overall height: 19 cm
 Pop-up height: 10 cm
 Exposed diameter: 4.5 cm
 Inlet size: ¾"



I-20-06
 Overall height: 25 cm
 Pop-up height: 15 cm
 Exposed diameter: 4.5 cm
 Inlet size: ¾"



I-20-12
 Overall height: 43 cm
 Pop-up height: 30 cm
 Exposed diameter: 4.5 cm
 Inlet size: ¾"

I-20 (PLASTIC) - SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Standard Features	3 Feature Options	4 Nozzle Options
I-20-00 = Shrub I-20-04 = 10 cm Pop-up I-20-06 = 15 cm Pop-up I-20-12 = 30 cm Pop-up	Adjustable arc, plastic, check valve, 8 standard nozzles, and 4 low-angle nozzles	(blank) = no option NCV = Without check valve (only available on 10 cm model) R = Reclaimed water ID	Blue 1.5 - 8.0 Grey Low Angle Black Short Radius Green High Flow MPR-25-Q, T, H, F MPR-30-Q, T, H, F MPR-35-Q, T, H, F 1.5 to 4.0 = only nozzles 1.5 - 4.0 can be factory-installed

I-20 (STAINLESS STEEL) - SPECIFICATION BUILDER: ORDER 1 + 2 + 3 + 4

1 Model	2 Standard Features	3 Feature Options	4 Nozzle Options
I-20-04-SS = 10 cm Pop-up I-20-06-SS = 15 cm Pop-up	Adjustable arc, stainless steel, check valve, 8 standard nozzles, and 4 low-angle nozzles	(blank) = no option NCV = Without check valve (only available on 10 cm model) R = Reclaimed water ID	Blue 1.5 - 8.0 Grey Low Angle Black Short Radius Green High Flow MPR-25-Q, T, H, F MPR-30-Q, T, H, F MPR-35-Q, T, H, F 1.5 to 4.0 = only nozzles 1.5 - 4.0 can be factory-installed

Examples:

- I-20-04 = 10 cm Pop-up, adjustable arc
- I-20-12 - R - 4.0 = 30 cm Pop-up, adjustable arc, check valve, with reclaimed water ID, and 4.0 nozzle
- I-20-06-SS - R - 3.0 = 15 cm Pop-up, adjustable arc, stainless steel riser, with reclaimed water ID, and 3.0 nozzle



LOW VOLUME CONTROL ZONE KITS

Low Flow and High Flow Zones

APPLICATIONS

- Designed for all dripline, drip and micro-spray zones
- Residential or commercial landscape irrigation applications
- For zones between 0.25 and 35 GPM

SPECIFICATIONS

3/4" and 1" Low Flow Kits:

Flow range: 0.25 - 4.4 GPM
Regulated pressure: 42 psi

3/4" and 1" High Flow Kits:

Flow range: 4.5 - 17.6 GPM

1 1/2" Kits:

Flow range: 11 - 35 GPM

- Filter mesh: 140
- 3/4" High Flow and 1 1/2" Kits maximum pressure: 140 psi

FEATURES & BENEFITS

PRE-ASSEMBLED VALVE, FILTER AND PRESSURE REGULATOR

Saves installation and labor costs.

COMPACT DESIGN

3/4", 1" and 1 1/2" kits fit into standard 12" rectangular valve box.

WIDE RANGE OF FLOW RATES







For a variety of applications.

PROVEN DISC FILTER DESIGN

Provides superior filtration with 25 square inches of filtering surface.

AVAILABLE IN TWO STYLES

With a control valve or with no control valve.

APPLICATION	WITH VALVES	WITHOUT VALVES
COMMERCIAL High Flow: 11 to 35 GPM	 <p>KIT WITH 1 1/2" CONTROL VALVE (1 1/2" FPT Inlet x 1 1/2" MPT Outlet) LVCZ-150</p>	 <p>KIT WITH NO CONTROL VALVE (1 1/2" MPT Inlet x 1 1/2" MPT Outlet) LVCZ-150-NV</p>
RESIDENTIAL & COMMERCIAL High Flow: 4.5 to 17.6 GPM	 <p>HIGH FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x 3/4" MPT Outlet) LVCZS8010075-HF</p>	 <p>HIGH FLOW KIT WITH NO CONTROL VALVE (3/4" MPT Inlet x 3/4" MPT Outlet) LVCZNV10075-HF</p>
RESIDENTIAL & COMMERCIAL Low Flow: 0.25 to 4.4 GPM	 <p>LOW FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x 3/4" FPT Outlet) LVCZS8010075-LF</p>	 <p>LOW FLOW KIT WITH NO CONTROL VALVE (3/4" MPT Inlet x 3/4" FPT Outlet) LVCZNV10075-LF</p>

LOW VOLUME CONTROL ZONE KITS COMPARISON CHART

Inlet x Outlet	RESIDENTIAL AND COMMERCIAL LOW FLOW		RESIDENTIAL AND COMMERCIAL HIGH FLOW		COMMERCIAL	
	1" FPT INLET x 3/4" FPT OUTLET	3/4" MPT INLET x 3/4" FPT OUTLET	1" FPT INLET x 3/4" MPT OUTLET	3/4" MPT INLET x 3/4" MPT OUTLET	1 1/2" FPT INLET x 1 1/2" MPT OUTLET	1 1/2" MPT INLET x 1 1/2" MPT OUTLET
VALVE SPECIFICATIONS:						
SIZE	1"	No Valve	1"	No Valve	1 1/2"	No Valve
FLOW RANGE	0.01 to 44 GPM	No Valve	0.01 to 44 GPM	No Valve	0.25 to 110 GPM	No Valve
PRESSURE REGULATOR SPECIFICATIONS:						
SIZE	3/4"	3/4"	3/4"	3/4"	1 1/2"	1 1/2"
FLOW RANGE	0.25 to 4.4 GPM	0.25 to 4.4 GPM	4.5 to 17.6 GPM	4.5 to 17.6 GPM	11 to 35 GPM	11 to 35 GPM
REGULATED PRESSURE	42 psi	42 psi	45 psi	45 psi	45 psi	45 psi
MAXIMUM OPERATING PRESSURE	145 psi	145 psi	145 psi	145 psi	145 psi	145 psi
MANUAL FILTER SPECIFICATIONS:						
SIZE	3/4"	3/4"	3/4"	3/4"	1 1/2"	1 1/2"
MESH	140 Mesh	140 Mesh	140 Mesh	140 Mesh	140 Mesh	140 Mesh
FLOW RANGE	0 to 17 GPM	0 to 17 GPM	0 to 17 GPM	0 to 17 GPM	0 to 35 GPM	0 to 35 GPM
MAXIMUM PRESSURE	140 psi	140 psi	140 psi	140 psi	140 psi	140 psi
FILTER TYPE	Disc	Disc	Disc	Disc	Disc	Disc

Note: Specifications of the "Kit" are determined by the combination of the individual components. For example, the Flow Range of the 3/4" and 1" high flow kits is 4.5 to 17.6 GPM. This specifications table is shown for reference only for the individual components.

DIMENSIONS & WEIGHT

	LOW VOLUME WITH VALVE	LOW VOLUME NO VALVE	HIGH VOLUME WITH VALVE	HIGH VOLUME NO VALVE	HIGH VOLUME 1.5" WITH VALVE	HIGH VOLUME 1.5" NO VALVE
LENGTH	12 1/2"	9"	12 1/2"	9"	21 1/2"	15"
HEIGHT	5"	5"	5"	5"	10 1/4"	10 1/4"
WIDTH	3 7/8"	3 7/8"	3 7/8"	3 7/8"	3 7/8"	3 7/8"
WEIGHT	1.75 lbs.	.90 lbs.	1.90 lbs.	1.05 lbs.	5.3 lbs.	3.3 lbs.

ORDERING INFORMATION

DESCRIPTION	QTY	MODEL NUMBER
1" VALVE WITH 3/4" LOW FLOW REGULATOR WITH 3/4" FILTER	1	LVCZS8010075-LF
	6	LVCZS8010075-LF-B
1" VALVE WITH 3/4" HIGH FLOW REGULATOR WITH 3/4" FILTER	1	LVCZS8010075-HF
	6	LVCZS8010075-HF-B
1 1/2" VALVE WITH 1 1/2" HIGH FLOW REGULATOR WITH 1 1/2" FILTER	1	LVCZ-150
3/4" LOW FLOW REGULATOR WITH 3/4" FILTER, NO VALVE	1	LVCZNV10075-LF
	10	LVCZNV10075-LF-B
3/4" HIGH FLOW REGULATOR WITH 3/4" FILTER, NO VALVE	1	LVCZNV10075-HF
	10	LVCZNV10075-HF-B
1 1/2" HIGH FLOW REGULATOR WITH 1 1/2" FILTER, NO VALVE	1	LVCZ-150-NV



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DRIPLINE COMPONENTS

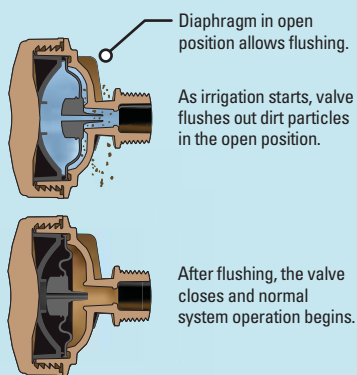
AUTOMATIC FLUSH VALVES

APPLICATIONS

- Drip irrigation systems
- Clean or dirty water

SPECIFICATIONS

- Not required with Techline® HCVXR and CV
- Flushing water volume: approximately 1 gallon per cycle
- Maximum zone flow rate per valve flush: 15 GPM
- Minimum pressure required: 1.5 psi
- Maximum operating pressure: 57 psi



FEATURES & BENEFITS

FLUSHING REDUCES SEDIMENT BUILD-UP

Eliminates clogging. Promotes long-term performance of the drip irrigation system.

AUTOMATIC CLEANING OPERATION

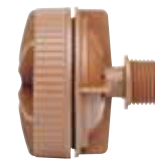
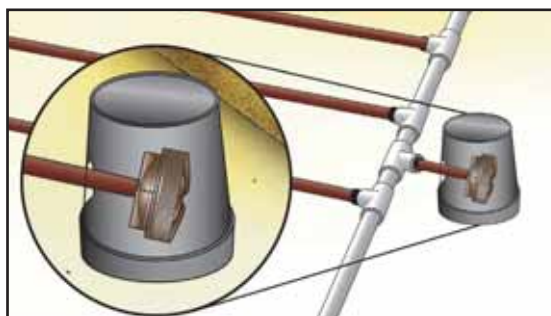
Eliminates periodic manual flushing.

UNIQUE DESIGN REACTS TO FLOW, NOT PRESSURE

Allows operation even at full line pressure.

DISASSEMBLES FOR WINTERIZATION 'BLOWOUT'

Protects your drip system.



AUTOMATIC FLUSH VALVE 1/2" MPT INLET
Model TL050MFV-1



AUTOMATIC FLUSH VALVE INSERT INLET
Model TLFV-1

MPT = Male Pipe Thread

IN-LINE CHECK VALVE

APPLICATIONS

- Prevents backflow of water and drainage of the system into low areas
- Eliminates the need for system water refill at the beginning of the next irrigation cycle
- For irrigating slopes where draining of the headers and laterals is common
- Designed to hold back up to a 13.4' column of water
- Rule of thumb: Every 1' of water exerts 0.433 psi of pressure at the base of the column. As such, a 100' column of water exerts 43.3 psi at the base.

SPECIFICATIONS

- Flow rate: 0.9 - 4.4 GPM
- Closing pressure: 5.8 psi (13.4 feet column of water)
- Opening pressure: 10.2 psi

FEATURES & BENEFITS

MANUFACTURED FROM DURABLE MATERIALS

For reliable operation.

LARGE INLET OPENING

Reduces headloss.

WIDE FLOW RANGE

For use in a number of applications.



IN-LINE CHECK VALVE 1/2" MPT
Model TLCV050M1-B

FLOW RATE VS. PRESSURE LOSS

FLOW RATE (GPM) VS. PRESSURE LOSS (psi)									
0.5	1	1.5	2	2.5	3	3.5	4	4.5	
-	0.22	0.54	0.96	1.55	2.25	2.99	4.04	-	

MPT = Male Pipe Thread

The top-of-the-line valve you can count on for superior durability and ability to handle exceptionally high pressures



1" Globe



1½" Globe



2" Globe

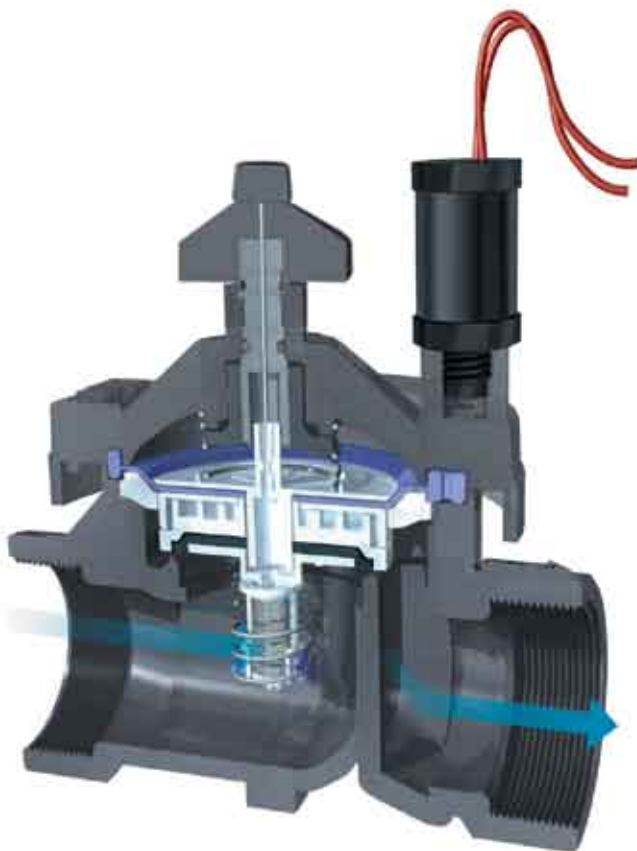


3" Globe/Angle

For a long-lasting valve that can deliver dependable performance at commercial sites, this is the heavy-duty workhorse you can count on. Created to handle the wide range of conditions different sites will bring, this valve includes both a fabric reinforced diaphragm and flow control as standard features, and can consistently withstand pressures of up to 220 PSI

while handling the continual hammer that such forces will produce. The ICV also offers the added option of the Accu-Set™ pressure regulator to maintain a safe, constant water pressure level. Plus, it's exceptionally easy to service, with bonnet fasteners that can be loosened and tightened using a variety of common contractor tools.

Features & Benefits



Glass-filled nylon construction

220 PSI rated for maximum strength and sturdiness

Internal and external manual bleed

Two options for manual operation

Captive solenoid plunger

No more lost parts when servicing

Captive bonnet bolts with matching brass body inserts

Provides ease of service, eliminates lost parts

Fabric reinforced EPDM diaphragm and EPDM seat

Provides reliable operation up to 220 PSI in all water conditions

Optional reclaimed water identification handle

For field identification of non-potable water supply

Models

- ICV-101G – 1" plastic globe valve
- ICV-151G – 1½" plastic globe valve
- ICV-201G – 2" plastic globe valve
- ICV-301E – 3" plastic globe/angle valve
- Accu-Set™ Pressure Regulator

Dimensions

- ICV-101G
5½" H x 4¾" L x 4" W
(14 cm H x 12 cm L x 10.2 cm W)
- ICV-151G
7⅞" H x 6⅞" L x 5½" W
(18 cm H x 17.5 cm L x 14 cm W)
- ICV-201G
7⅞" H x 6⅞" L x 5½" W
(18 cm H x 17.5 cm L x 14 cm W)
- ICV-301E
10¾" H x 9¼" L x 7⅞" W
(27.3 cm H x 23.5 cm L x 18.7 cm W)
- Female inlet/outlet: 1", 1½", 2" & 3" NPT or BSP

Operating Specifications

- Flow: 0.10 to 300 GPM (0.06 to 68.10 m³/hr; 0.9 to 1,135.5 l/min)
- Pressure: 20 to 220 PSI (1.4 to 15.0 bars; 138 to 1500 kPa)
- Temperature: up to 150°F (66°C)
- Heavy-duty solenoid: 24VAC, 370mA inrush current, 190mA holding current, 60 cycles; 475mA inrush current, 230mA holding current, 50 cycles
- Accu-Set: 20 PSI (1.4 bars, 138 kPa) minimum operating pressure. Regulates from 20 to 100 PSI (1.4 to 7.0 bars; 138 to 689 kPa)

Options Available

- Accu-Set pressure regulator
- Reclaimed water ID handle (part # 561205 - 1", 1½" & 2") (part # 515005 - 3")
- DC latching solenoid (part # 458200)
- Solenoid conduit cover (part # 464322)
- Drip Irrigation Valve Kit (part # ICZ10125 or ICZ10140)



Filter Sentry™: A Superior Self-cleaning System

Many traditional valve filters could become clogged by large amounts of small debris commonly found in reclaimed water, wells, or in lakes and ponds. But with Filter Sentry, the filter is scoured clean by a wiper that slides up and strokes the full length of the filter when the valve opens. The wiper continues to provide scrubbing action on the upper part of the filter during valve operation. For your convenience, Filter Sentry can be added easily after the valve is installed.



Accu-Set™: Finally, a Pressure Regulator That's Easy to Set

With the added option of Accu-Set on a Hunter ICV valve, you can reliably adjust and regulate pressures anywhere from 20 to 100 PSI, and be certain the setting you select will never waver. Accu-Set can be field installed to any ICV valve in seconds, without tools. Plus, the best part is the ease of setting the unit—just turn to the pressure you want on the easy-reading dial. No other pressure regulating device is as simple to use (just one more reason to choose Hunter).



ICV Pressure Loss in PSI

GPM	3"			
	1"	1½"	2"	Globe Angle
0.1	2.0			
0.5	2.0			
1.0	2.0			
5.0	4.0			
10.0	3.0			
15.0	3.0			
20.0	3.0	1.5		
30.0	4.0	1.5		
40.0	7.0	1.7	0.8	
50.0		2.2	1.2	
60.0		3.0	1.7	
75.0		3.9	2.4	
90.0		5.5	3.2	
100.0		7.0	4.2	
120.0		10.9	6.5	
135.0		12.7	7.9	
150.0		16.2	9.8	2.5
175.0			13.3	3.0
200.0			17.7	4.1
225.0				5.3
250.0				6.7
275.0				8.3
300.0				10.1

Charts based on full-open flow control position.

Hunter recommends sizing valves based on flow requirements in main line not to exceed 7.5 ft/sec (2.29 m/sec). Where pressure loss values are not listed, the corresponding flow and valve size are not recommended.



SPECIFICATION GUIDE

EXAMPLE: **ICV - 201G - FS - AS**

MODEL ICV	FEATURES	OPTIONS FACTORY INSTALLED	OPTIONS USER INSTALLED
101G	1" Globe Valve	FS = Filter Sentry™	AS = Accu-Set™ Pressure Regulator
151G	1½" Globe Valve	B = BSP Threads	R = Reclaimed Water Identification Handle
201G	2" Globe Valve	DC = DC Latching Solenoid	CC = Conduit Cover
301E	3" Globe Valve		

Hunter Industries Incorporated • The Irrigation Innovators

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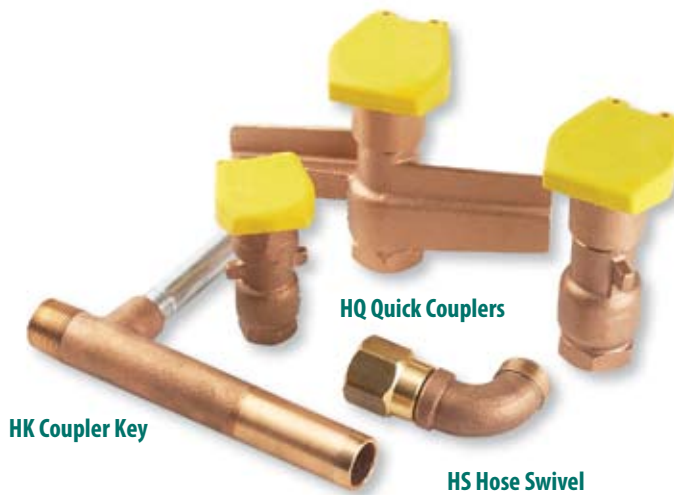
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LIT-233

4/07

**Quick
Coupling
Valves**

*Heavy-duty
red brass and
stainless steel
construction with
TuffTop™ spring-
loaded covers*



HK Coupler Key

HQ Quick Couplers

HS Hose Swivel

Hunter's HQ Quick-Coupling Valves are innovative, high-value products designed specifically for all projects that require quick water access while maintaining in-ground durability and vandal resistance. Our HQs are engineered for years of daily use and designed for maximum reliability. With heavy-duty red brass and stainless steel construction, all HQs feature our TuffTop™ spring-loaded locking or non-locking covers. The unique WingThing™ models feature anti-rotation

stabilizers for added vandal-resistance and operational durability. One-piece and two-piece models are available. The two-piece body design allows field maintenance of valve's upper seal without depressurizing the irrigation system. All locking cover models have a purple cover option making them suitable for use on reclaimed water projects. All models are configured for retro-compatibility with the popular brands installed over the years. HQ—the Hunter Tough quick-coupler product line.

Features & Benefits



100% interchangeable with Rain Bird®, Toro®, and Buckner®

Protects your investment and simplifies ease of use

Red brass and stainless steel construction

Heavy-duty construction for long life and rugged performance

TuffTop™ thermoplastic locking and non-locking covers

Safety and durability over the years to come

WingThing™ stabilization and Acme key connection

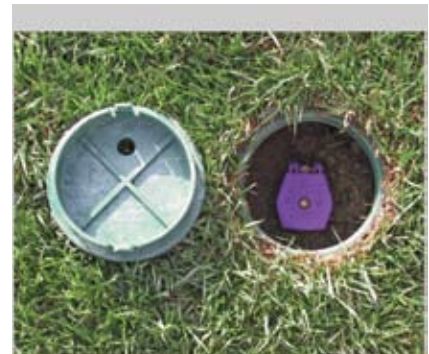
Unique anti-rotation model also includes adjustable flow control

Stainless steel lug on 1" and 1¼" keys

Non-wearing lug offers easy engagement and smooth operation

Spring-loaded covers with stainless steel springs

Positive closing and protection for valve's sealing components



Installing a quick coupler allows your site to have water wherever it's needed.



All locking models have an optional purple TuffTop™ cover for sites using reclaimed water.

HQ – Quick Couplers:

MODEL	INLET THREADS	SLOTS	BODY	COLOR*	LOCKING	KEY	SWIVELS
HQ-3RC	¾" NPT	2	1-Piece	Yellow	No	HK-33	HS-0
HQ-33DRC	¾" NPT	2	2-Piece	Yellow	No	HK-33	HS-0
HQ-33DLRC	¾" NPT	2	2-Piece	Yellow	Yes	HK-33	HS-0
HQ-44RC	1" NPT	1	2-Piece	Yellow	No	HK-44	HS-1 or HS-2
HQ-44LRC	1" NPT	1	2-Piece	Yellow	Yes	HK-44	HS-1 or HS-2
HQ-44RC-AW	1" NPT	Acme	2-Piece Wing**	Yellow	No	HK-44A	HS-1 or HS-2
HQ-44LRC-AW	1" NPT	Acme	2-Piece Wing**	Yellow	Yes	HK-44A	HS-1 or HS-2
HQ-5RC	1" NPT	2	1-Piece	Yellow	No	HK-55	HS-1 or HS-2
HQ-5LRC	1" NPT	2	1-Piece	Yellow	Yes	HK-55	HS-1 or HS-2
HQ-5RC-B	1" BSP	2	1-Piece	Yellow	No	HK-55	HS-1-B or HS-2-B
HQ-5LRC-B	1" BSP	2	1-Piece	Yellow	Yes	HK-55	HS-1-B or HS-2-B

* All locking cover models are available with purple covers for reclaimed water applications. ** Anti-rotation stabilization wings.

HK – Keys:

MODEL	INLET STYLE	OUTLET THREADS	COUPLERS	SWIVELS
HK-33	¾" w/Single Lug	¾" Male NPT and ½" Female NPT	HQ-3RC, HQ-33DRC, HQ-33DLRC	HS-0
HK-44	1" w/Single Stainless Lug	1" Male NPT and ¾" Female NPT	HQ-44RC, HQ-44LRC	HS-1 or HS-2
HK-44A	1" w/Acme Thread	1" Male NPT and ¾" Female NPT	HQ-44RC-AW, HQ-44LRC-AW	HS-1 or HS-2
HK-55	1¼" w/Single Stainless Lug	1" Male NPT	HQ-5RC, HQ-5LRC, HQ-5RC-B, HQ-5LRC-B	HS-1, HS-2, HS-1-B, HS-2-B

HS – Swivels:

MODEL	INLET x OUTLET THREADS	COUPLERS	KEYS
HS-0	¾" Female NPT x ¾" Male Hose	HQ-3RC, HQ-33DRC, HQ-33DLRC	HK-33
HS-1	1" Female NPT x ¾" Male Hose	HQ-44RC, HQ-44LRC, HQ-44RC-AW, HQ-44LRC-AW, HQ-5RC, HQ-5LRC	HK-44, HK-44A, HK-55
HS-2	1" Female NPT x 1" Male Hose	HQ-44RC, HQ-44LRC, HQ-44RC-AW, HQ-44LRC-AW, HQ-5RC, HQ-5LRC	HK-44, HK-44A, HK-55
HS-1-B	1" Female NPT x ¾" Male BSP	HQ-5RC-B, HQ-5LRC-B	HK-55
HS-2-B	1" Female NPT x 1" Male BSP	HQ-5RC-B, HQ-5LRC-B	HK-55

HLK – Locking Cover Key:

MODEL	COUPLERS
HLK	HQ-33DLRC, HQ-44LRC, HQ-44LRC-AW, HQ-5LRC, HQ-5LRC-B

Cross Reference Charts

HQ – Quick Couplers:

HUNTER	RAIN BIRD	TORO	BUCKNER
HQ-3RC	3RC	473-00, 473-01	QB3RC07
HQ-33DRC	33DRC		QB33RC07
HQ-33DLRC	33DLRC, 33DNP		QB33LRC07, QB33NP07
HQ-44RC	44RC	474-21	QB44RC10
HQ-44LRC	44LRC, 44NP	474-24	QB44LRC10, QB44NP10
HQ-44RC-AW		474-21	QB44RCATAR10
HQ-44LRC-AW	4NP-Acme	474-44	QB44LRC-CATAR10, QB44NPATAR10
HQ-5RC	5RC	475-00, 475-01	QBRB5RC10
HQ-5LRC	5LRC, 5NP	475-03, 475-04	QBRB5LRC10, QBRB5NP10
HQ-5RC-B	5RC-BSP		QBRB5RC10BS
HQ-5LRC-B	5LRC-BSP		QBRB5LRC10BS, QBRB5NP10BS

HK – Keys:

HUNTER	RAIN BIRD	TORO	BUCKNER
HK-33	33K, 33DK	463-01	QB33K07
HK-44	44K	464-01	QB44K10
HK-44A	4K-Acme	464-03	QB44KAT10
HK-55	55K-1	465-01	QB55K10

HS – Swivels:

HUNTER	RAIN BIRD	TORO	BUCKNER
HS-0	SH-0	477-00	HS075
HS-1	SH-1	477-01	HS100
HS-2	SH-2	477-02	HS101
HS-1-B			HS100BS
HS-2-B			HS101BS



SPECIFICATION GUIDE

EXAMPLE: **HQ-44-LRC-AW**

MODEL HQ = Quick Coupler	BODY 3 = ¾" inlet, 1-piece body 5 = 1" inlet, 1-piece body 33D = ¾" inlet, 2-piece body 44 = 1" inlet, 2-piece body	COVER RC = Yellow rubber cover LRC = Yellow locking rubber cover	OPTIONS AW = Acme key with anti-rotation wings* B = BSP threads** R = Purple locking cover (for reclaimed water sites)***
HK = Coupler Key	33 = ¾" valve, ¾" key inlet 44 = 1" valve, 1" key inlet 44A = 1" valve, acme key inlet 55 = 1" valve, 1¼" key inlet		* Only Available in Body 44 ** Only Available in Body 5 *** Only Available for LRC Models
HS = Hose Swivel	0 = ¾" inlet x ¾" hose outlet 1 = 1" inlet x ¾" hose outlet 2 = 1" inlet x 1" hose outlet 1B = 1" inlet x ¾" BSP outlet 2B = 1" inlet x 1" BSP outlet		

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21-995

6/06

514T Full Port Gate Valve • Spec Sheet



FEATURES & BENEFITS

- ISO-9001
- 200 WOG - 125 SWP
- Full Port
- Cast Brass
- Non-rising Stem
- Threaded Bonnet
- Threaded Ends Conform to ANSI Standards B2.1
- Complies w/ NSF-61 for Low Lead
- Valves are Tested in Accordance w/ MSS-SP-82
- Sizes 1/4" - 4"

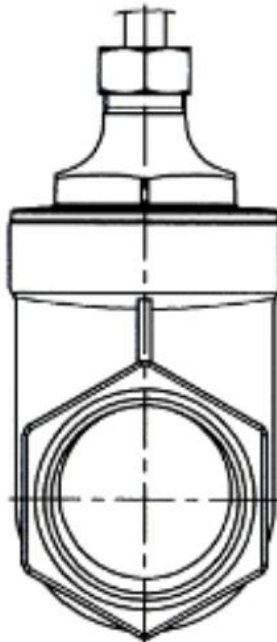
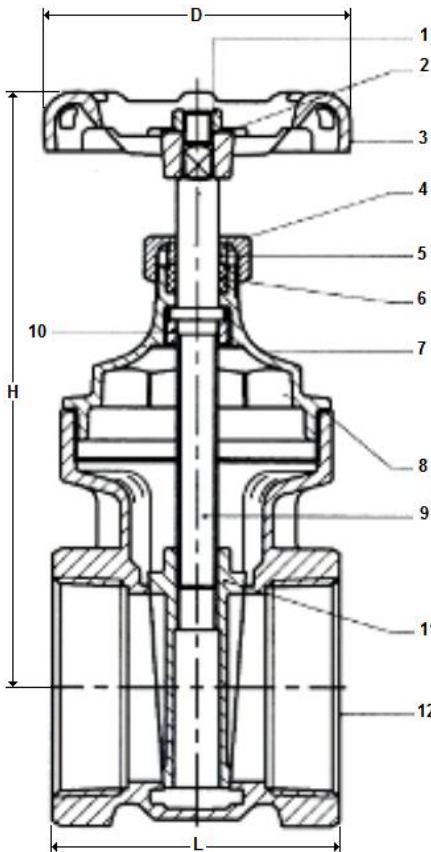
*Available with Brass Cross Handle or 5 Point Crown Wheel Handle

DIMENSIONS

Size	Part #	D	H	L
1/4"	514T01	2.09	2.92	1.71
3/8"	514T02	2.09	2.92	1.71
1/2"	514T03	2.09	2.92	1.71
3/4"	514T04	2.52	3.31	1.81
1"	514T05	2.48	3.90	2.13
1-1/4"	514T06	2.72	4.61	2.25
1-1/2"	514T07	3.15	5.08	2.44
2"	514T08	3.53	5.99	2.70
2-1/2"	514T09	3.98	7.88	3.70
3"	514T10	4.37	8.83	4.02
4"	514T11	5.00	9.89	4.53

APPLICATIONS:

Commercial & Light Industrial
Steam, Water, Oil or Gas



MATERIAL SPECIFICATIONS

No.	Part	Material	ASTM Spec
1	Wheel Nut	Hot Rolled	SAE 1010R
2	Name Plate	Aluminum	A1100
3	Handwheel	Cast Iron	JIS ZZ2202
4	Packing Nut	Brass	B16 C36000
5	Gland Ring	Brass	B16 C36000
6	Gland Packing	Graphite	LK 33 NAFG
7	Bonnet	Brass	B584 C85710
8	Packing	Fiber "H"	Non Asbestos
9	Stem	Brass 1/4" - 2"	B16 C36000
		Brass 2-1/2" - 2"	B584 C85710
10	Lock Nut	Brass	B16 C36000
11	Disc	Brass	B584 C85710
12	Body	Brass	B584 C85710



MATCO-NORCA

Global sourcing. National compliance. Local service.

Master Valve Solutions for Every Application

Superior is a recognized leader in the manufacture of normally open and normally closed master valves. Performance options include “No Minimum Flow” feature to handle full-flow, low-flow, and extreme low-flow conditions.

- **Industry’s Most Complete Line of Master Valves!**

Offering master valves in normally open and normally closed design for potable and recycled water applications.

- **“No Minimum Flow” Capability**

Selected models include “No Minimum Flow” feature, which ensures reliable opening and closing of the valve in extreme high or low-flow scenarios.

- **Industry’s Widest Range of Sizes**

Superior master valves are available in 1” through 3” sizes.



Normally-Closed

Provides protection against unauthorized system use and minimizes water waste in the event of zone valve malfunction

Normally-Open

Allows for constant system pressurization and on-demand access to manual irrigation and quick coupler use

Dirty Water Protection

Protection is afforded by the removable filter and self-cleaning metering rod assembly

Purple Cross Handle

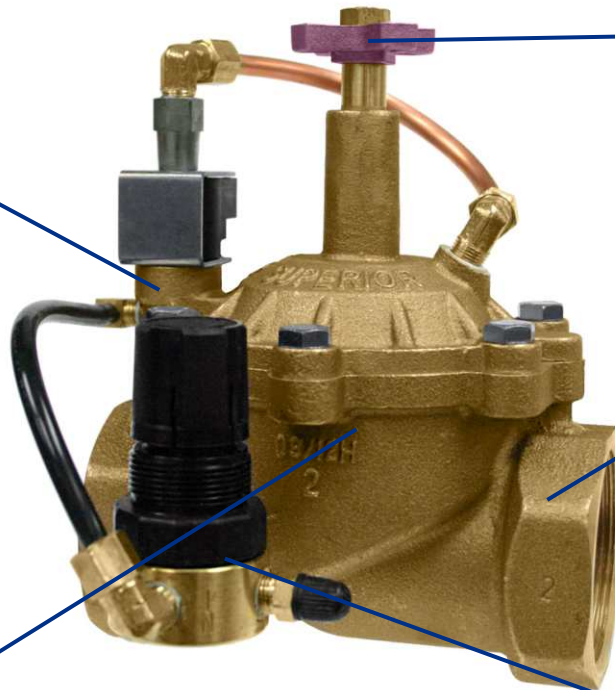
Purple Handle “RW” option available to indicate recycled water system

“No Minimum Flow” Feature

3200 and 3300 models include “No Minimum Flow” capability, which ensures reliable opening and closing of the valve in extreme high or low-flow scenarios

Pressure Regulation

Pressure Regulating System (PRS) option available on 3100 model



Normally Closed Master Valves

3000 Series

Normally Closed



Size	Models	Dimensions (Inches)	
		Height	Length
1"	3000100	4-1/2	4-3/8
1-1/4"	3000125	5-1/2	5
1-1/2"	3000150	8	6
2"	3000200	9	7
2-1/2"	3000250	10	11-5/8
3"	3000300	10	11-5/8

Operating Ranges

Flow: 5 - 320 gpm
 Pressure: 20 - 200 psi

3200 Series

Normally Closed, "No Minimum Flow" Feature



Size	Models	Dimensions (Inches)	
		Height	Length
1-1/2"	3200150	8	6
	3200150A	8-1/4	5-1/2
2"	3200200	9	7
	3200200A	8-1/4	5-1/2
2-1/2"	3200250	10	11-5/8
3"	3200300	10	11-5/8

A = Angle Valve Body

Operating Ranges

Flow: 0 - 360 gpm
 Pressure: 20 - 150 psi

Normally Open Master Valves

3100 Series

Normally Open



Size	Models	Dimensions (Inches)	
		Height	Length
1"	3100100	4-1/2	4-3/8
	3100100A	7	4-3/4
1-1/4"	3100125	5-1/2	5
1-1/2"	3100150	8	6
	3100150A	8-1/4	5-1/2
2"	3100200	9	7
	3100200A	8-1/4	5-1/2
2-1/2"	3100250	10	11-5/8
3"	3100300	10	11-5/8

A = Angle Valve Body
 PRS = Pressure Regulation System

Operating Ranges

Flow: 5 - 320 gpm
 Pressure: 20 - 200 psi



3300 Series

Normally Open, "No Minimum Flow" Feature



Size	Models	Dimensions (Inches)	
		Height	Length
1-1/2"	3300150	8	7
2"	3300200	9	7
2-1/2"	3300250	10	11-5/8
3"	3300300	10	11-5/8

Operating Ranges

Flow: 0 - 360 gpm
 Pressure: 20 - 150 psi

Pressure Loss in PSI

GPM	5	10	15	20	30	40	50	60	70	80	90	100	120	140	160	200	240	260	320	360	
1"	0.16	0.75	1.5	2.6	5.7	10															
1-1/4"		0.48	0.85	1.9	3.5	5.3	7.6	10.1													
1-1/2"		0.45	1	1.7	2.65	3.8	5.1	6.6	8.3	10.9											
2"			0.53	0.82	1.2	1.6	2.05	2.6	3.2	4.6	6.3	8	13.9								
2-1/2"										2.38	2.45	2.5	2.9	4	6	8.2	10.7	13.2			
3"										2.38	2.45	2.5	2.9	4	6	8.2	10.7	13.2			



RW Option Available

Reclaimed Water Cross Handle available by adding "RW" to the valve model number (ex. 3000100RW)

Solenoid Specifications

Standard 24 VAC

In-rush current: .45 A (10.8 VA)
 Holding current: .30 A (7.2 VA)

Optional 110 VAC

In-rush current: 95 mA (10.5 VA)
 Holding current: .65 mA (7.2 VA)

The UL Series Universal Air Release Valves

**Compound Lever System
NPT Screwed or ANSI Class Flanges Available**



Crispin
Since 1905

**Crispin Multiplex Manufacturing Co. • 600 Fowler Avenue • Berwick, PA 18603 • 1-800-247-VALV
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UL SERIES

Universal Air Release Valves

Universal Air Release Valve

Valve Function

- Allows air to escape a pipeline as it is being filled
- Allows air to enter a pipeline as it is being emptied
- Allows accumulating air to escape while a line is in operation and under pressure

Features Include

- Meets AWWA C-512
- Compound lever system
- NPT screwed or ANSI Class Flanges

If accumulating air rises into the valve while the line is in operation and under pressure, it will displace the liquid at the top of the valve body and the float will drop as the liquid recedes. As this occurs, the pressure valve will open, permitting the escape of the accumulated air, after which the liquid level will rise and the valve will close.

Should the pipeline be drained through natural processes or should a large break develop, the float will drop all the way down as the liquid level drains from the valve body. The valve will then stay in the full open position permitting the entrance of air and eliminating the danger of pipeline collapse due to vacuum.

These cycles will repeat automatically as each condition presents itself, and the valve will function satisfactorily with hot or cold water, and in the presence of many chemicals and oilbase liquids.

With Stainless Steel Trim or Bronze and Stainless Steel Trim

The Universal Air Valve is designed to permit the automatic escape of large quantities of air from a pipeline when the line is being filled, and to permit air to enter the pipeline when the line is being emptied. It also allows accumulating air to escape while the line is in operation and under pressure. This is accomplished with a compound lever system functioning in conjunction with a large and small orifice in one integral body casting.

As the liquid rises into the valve, air escapes through the large orifice to the atmosphere. Liquid entering the valve raises the float and lever system, carrying with it the pressure plunger and the main valve.

When the liquid has raised the float to its limit, the stainless steel main valve rests against the seat. The pressure plunger also rests against its seat, which is the main valve. In this position, the valve is closed and no liquid can escape.

Model Information

Size of Valve	1"	2"	3"	4"
Model No.	UL10.1	UL20.1	UL30.1	UL40.1
Screwed Inlet	UL10	UL20	UL30	UL40
125#		UL21.1	UL31.1	UL41.1
Flanged Inlet		UL21	UL31	UL41
250#		UL22.1	UL32.1	UL42.1
Flanged Inlet		UL22	UL32	UL42

Discharge in SCFM

Operating Pressure (PSIG)	ORIFICE SIZE				
	3/32"	1/8"	5/32"	3/16"	1/4"
150	13.8	24.4	37.9	54.6	98
200	17.9	31.9	49.5	72	127
250	22.1	39.2	61.1	88	157
300	26.4	46.7	73	105	187

Orifice Sizing Information

Valve Size	MAXIMUM OPERATING PRESSURE IN PSI			
	Max. 150	Max. 200	Max. 250	Max. 300
1"	3/16"	3/32"	3/32"	3/32"
2"	1/4"	3/16"	3/16"	1/8"
3"	1/4"	3/16"	3/16"	1/8"
4"	1/4"	3/16"	3/16"	1/8"
6"	1/4"	3/16"	3/16"	1/8"
8"	1/4"	3/16"	3/16"	1/8"

For 6" and 8" dimension and weight information, see the following page.

Universal Air Release Valves



UL SERIES

Universal Air Release Valve

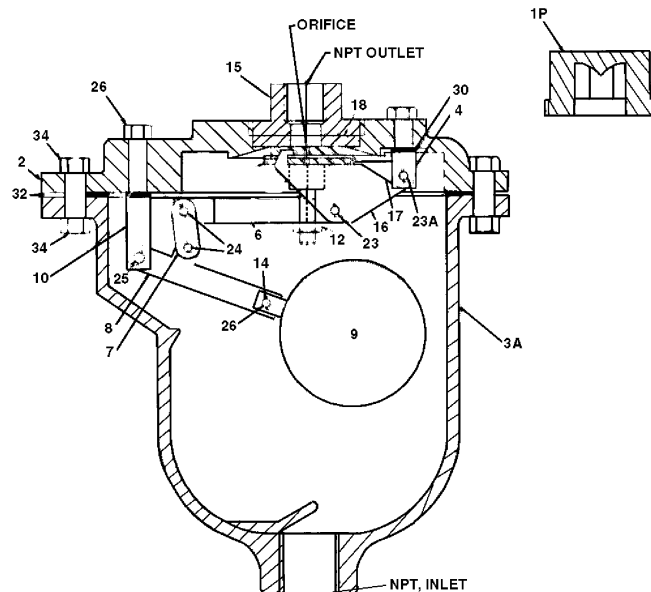
Universal Valves

Parts List: 1"-4" Valves

PART NO.	ITEM	MATERIAL
1P*	PROTECTOP	Cast Iron
1S*	TOP	Cast Iron
2	FLANGE	Cast Iron
3*	BODY, SCREWED	Cast Iron
3F*	BODY, 125 LB FLG.	Cast Iron
3FH*	BODY, 250 LB FLG	Cast Iron
4	A&V FULCRUM	Stainless Steel
5&16	PRESSURE FULCRUM	Stainless Steel
6	VALVE LEVER	Stainless Steel
7	LINK	Stainless Steel
8	BALL LEVER	Stainless Steel
9	BALL FLOAT	Stainless Steel
10	BALL FULCRUM	Stainless Steel
13	NUT	Stainless Steel
14	PRESSURE VALVE PLUNGER	Rubber/S/S
15	PRESSURE SEAT	Stainless Steel
17	SEAT CAGE	Stainless Steel
18	A&V SEAT	Rubber
21	PRESS LIMIT STOP	Stainless Steel
23	BEARING PIN	Stainless Steel
23A	BEARING PIN	Stainless Steel
24	BEARING PIN	Stainless Steel
25	BEARING PIN	Stainless Steel
26	PIN CLIP	Stainless Steel
28	SCREW	Stainless Steel
29	DRAIN PLUG	Steel
30	FULCRUM WASHER	Fibre
31	FULCRUM WASHER	Fibre
32	FLANGE GASKET	Armstrong
33	FLANGE BOLT	Steel
34	FLANGE NUT	Steel
35	A&V FULCRUM NUT	Steel
36	BALL FULCRUM NUT	Steel

Dimensions and Weights

MODEL	INLET	TRIM	HEIGHT	WIDTH	LENGTH	WT(LBS)
UL10	1" NPT	S/S	10 1/4"	6 7/8"	9 3/4"	27
UL10.1	1" NPT	S/S/BRASS	10 1/4"	6 7/8"	9 3/4"	27
UL20	2" NPT	S/S	13 1/2"	8 3/8"	12 3/8"	72
UL20.1	2" NPT	S/S/BRASS	13 1/2"	8 3/8"	12 3/8"	72
UL21	2" 125# Flg.	S/S	17"	8 3/8"	12 3/8"	74
UL21.1	2" 125# Flg.	S/S/BRASS	17"	8 3/8"	12 3/8"	74
UL22	2" 250# Flg.	S/S	17 1/4"	8 3/8"	12 3/8"	75
UL22.1	2" 250# Flg.	S/S/BRASS	17 1/4"	8 3/8"	12 3/8"	75
UL30	3" NPT	S/S	17 1/4"	10 1/4"	14 3/4"	111
UL30.1	3" NPT	S/S/BRASS	17 1/4"	10 1/4"	14 3/4"	111
UL31	3" 125# Flg.	S/S	20 5/8"	10 1/4"	14 3/4"	131
UL31.1	3" 125# Flg.	S/S/BRASS	20 5/8"	10 1/4"	14 3/4"	131
UL32	3" 250# Flg.	S/S	21"	10 1/4"	14 3/4"	133
UL32.1	3" 250# Flg.	S/S/BRASS	21"	10 1/4"	14 3/4"	133
UL40	4" NPT	S/S	20"	11 3/4"	16 3/4"	163
UL40.1	4" NPT	S/S/BRASS	20"	11 3/4"	16 3/4"	163
UL41	4" 125# Flg.	S/S	23"	11 3/4"	16 3/4"	180
UL41.1	4" 125# Flg.	S/S/BRASS	23"	11 3/4"	16 3/4"	180
UL42	4" 250# Flg.	S/S	23 5/16"	11 3/4"	16 3/4"	183
UL42.1	4" 250# Flg.	S/S/BRASS	23 5/16"	11 3/4"	16 3/4"	183



* The above parts are interchangeable at the customer's request.



Submittal Sheet for Crispin UL Series

1" Universal Air Release Valve

Manufactured in compliance with ANSI/AWWA C512

Date: 2016

Orifice Options

DIAMETER	MAX. PRESSURE	FLOW RATE
3/16	150 PSIG	54.6 SCFM
3/32	300 PSIG	26.4 SCFM

Size Specifications

MODEL	INLET SIZE	OUTLET SIZE	A	B	WHT.
UL10	1" NPT	1" NPT	9.75	10.75	27
UL10.1	1" NPT	1" NPT	9.75	10.75	27

Parts List

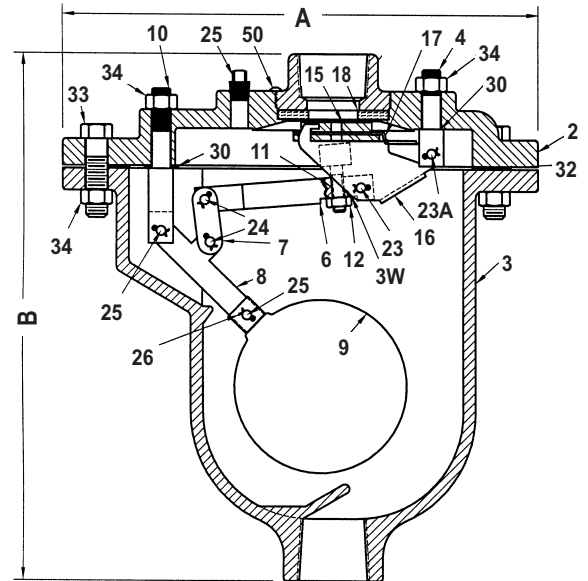
ITEM	DESCRIPTION	MATERIAL	ASTM
1S	TOP	CAST IRON	A126 CL.B
2	FLANGE	CAST IRON	A126 CL.B
3	BODY	CAST IRON	A126 CL.B
3W	LOCK WASHER	STAINLESS STEEL	A240
4	AIR & VAC FULCRUM	STAINLESS STEEL	A240
**6	VALVE LEVER	STAINLESS STEEL	A582
7	LINK	STAINLESS STEEL	A240
8	BALL LEVER	STAINLESS STEEL	A240
9	FLOAT	STAIN LESS STEEL	A240
10	BALL FULCRUM	STAINLESS STEEL	A582
11	VALVE PLUNGER	STAINLESS STEEL & BUNA-N RUBBER	A193
12	PLUNGER NUT	STAINLESS STEEL	A194
15	PRESSURE SEAT	STAINLESS STEEL	A582
16	PRESSURE FULCRUM	STAINLESS STEEL	A240
17	SEAT CAGE	STAINLESS STEEL	A240
18	AIR & VAC SEAT	BUNA—N RUBBER	N/A
23	BEARING PIN	STAINLESS STEEL	A582
23A	BEARING PIN	STAINLESS STEEL	A582
24	BEARING PIN	STAINLESS STEEL	A582
25	BEARING PIN	STAINLESS STEEL	A582
26	COTTER PIN	STAINLESS STEEL	A313
29	DRAIN PLUG	BRASS	B505
30	FULCRUM WASHER	FIBER	N/A
32	FLANGE GASKET	ARMSTRONG N—8092	N/A
33	FLANGE BOLT	STEEL	A307
34	NUT	STEEL	A563
50	INTERFERENCE PIN	STAINLESS STEEL	A582

** Material for UL10.1 will be brass

Option: A protectop will be supplied to prevent debris from entering the outlet of the valve.

Option: (Where pressures are greater than 300 PSIG), the valve(s) shall be ANSI Class _____ flanged inlet connection, and shall have a (steel, stainless steel, or ductile iron) body, top and inlet flange.

Standard operating pressure for Crispin Air Valves is 20 to 150 PSIG. Please check one of the following if your operating needs differ:
 _____ 2 to 40 PSIG _____ 151 to 300 PSIG



Specifications

The valve(s) shall be installed at the high points in the system or at points selected by the engineer. This will permit discharging the surge of air from an empty line when filling, and relieve the vacuum when draining the system. The valve(s) shall also release an accumulation of air when the system is under pressure. This shall be accomplished in a single valve body.

The valve(s) shall operate through a compound lever system which will seal both the pressure orifice and the air and vacuum orifice simultaneously. This lever system shall permit a _____" orifice to release an accumulation of air from the valve body at a capacity of _____ SCFM of air and pressure of _____ PSIG.

The function of the lever system shall also permit a positive disengagement of the main valve from the large orifice, as the float drops and pressure decreases. The disengagement shall be immediate and not limited to the initial draw of a vacuum.

The valve(s) shall be Crispin Model _____ Universal Air Valve as manufactured by Multiplex Manufacturing Co., Berwick, PA. The valve(s) shall be _____" NPT screwed or ANSI Class (125, 250) flanged inlet connection, and shall have a cast iron body, top and inlet flange (where required), stainless steel float and trim with Buna-N seat. Valves which operate the pressure plunger via a single lever and fulcrum will not be acceptable.

SUBMITTAL SHEET FOR UL SERIES

Submittal Sheet for Crispin UL Series

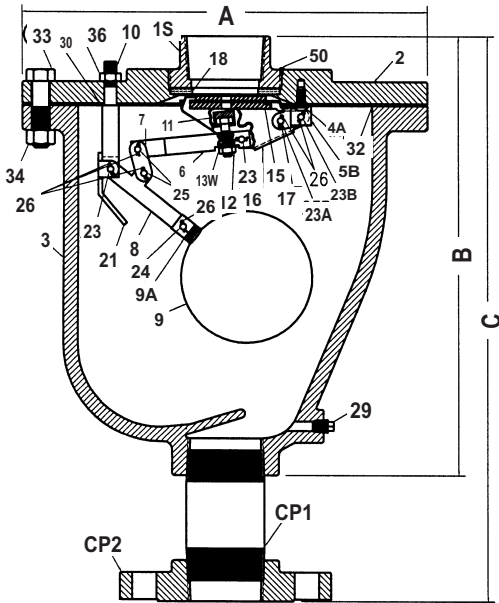


2" Universal Air Release Valve

Manufactured in compliance with ANSI/AWWA C512

Date: 2016

SUBMITTAL SHEET FOR UL SERIES



Specifications

Orifice Options

DIAMETER	MAX. PRESSURE	DISCHARGE RATE
1/4"	150 PSIG	98 SCFM
3/16"	250 PSIG	88 SCFM
1/8"	300 PSIG	46.7 SCFM

Size Specifications

MODEL	INLET SIZE	OUTLET SIZE	A	B	C	WHT.
UL20	2" NPT	2" NPT	12.50	13.50		72
UL20.1	2" NPT	2" NPT	12.50	13.50		72
*UL21	2" 125# FLG	2" NPT	12.50		17.00	78
UL21.1	2" 125# FLG	2" NPT	12.50		17.00	78
UL22	2" 250# FLG	2" NPT	12.50		17.25	89
UL22.1	2" 250# FLG	2" NPT	12.50		17.25	89

* Includes ANSI Class 125 or 250 Companion FLG and NPL

Parts List

ITEM	DESCRIPTION	MATERIAL	ASTM
1S	TOP	CAST IRON	A126 CL.B
2	FLANGE	CAST IRON	A126 CL.B
3	BODY	CAST IRON	A126 CL.B
4A	CAP SCREW	STAINLESS STEEL	A193
5B	AIR & VAC FULCRUM	STAINLESS STEEL	A240
**6	VALVE LEVER	STAINLESS STEEL	A582
7	LINK	STAINLESS STEEL	A240
8	BALL LEVER	STAINLESS STEEL	A240
9	FLOAT	STAINLESS STEEL	A240
9A	FLOAT ROD	STAINLESS STEEL	A582
10	BALL FULCRUM	STAINLESS STEEL	A582
11	VALVE PLUNGER	STAINLESS STEEL & BUNA-N RUBBER	A193
12	PLUNGER NUT	STAINLESS STEEL	A194
13W	LOCK WASHER	STAINLESS STEEL	A240
15	PRESSURE SEAT	STAINLESS STEEL	A582
16	PRESSURE FULCRUM	STAINLESS STEEL	A240
17	SEAT CAGE	STAINLESS STEEL	A240
18	AIR & VAC SEAT	BUNA-N RUBBER	N/A
21	PRESSURE LIMIT STOP	STAINLESS STEEL	A240
23	BEARING PIN	STAINLESS STEEL	A582
23A	BEARING PIN	STAINLESS STEEL	A582
23B	BEARING PIN	STAINLESS STEEL	A582
24	BEARING PIN	STAINLESS STEEL	A582
25	BEARING PIN	STAINLESS STEEL	A582
26	COTTER PIN	STAINLESS STEEL	A313
29	DRAIN PLUG	BRASS	B505
30	FULCRUM WASHER	FIBER	D710
32	FLANGE GASKET	ARMSTRONG N-8092	N/A
33	FLANGE BOLT	STEEL	A307
34	NUT	STEEL	A563
36	BALL FULCRUM NUT	STEEL	A563
50	INTERFERENCE PIN	STAINLESS STEEL	A582

FLANGE CONNECTION PARTS

CP1	NIPPLE	STEEL	A53
CP2	COMPANION FLANGE	CAST IRON	A126 CL. B

The valve(s) shall be installed at the high points in the system or at points selected by the engineer. This will permit discharging the surge of air from an empty line when filling, and relieve the vacuum when draining the system. The valve(s) shall also release an accumulation of air when the system is under pressure. This shall be accomplished in a single valve body.

The valve(s) shall operate through a compound lever system which will seal both the pressure orifice and the air and vacuum orifice simultaneously. This lever system shall permit a _____ orifice to release an accumulation of air from the valve body at a capacity of _____ SCFM of air and pressure of _____ PSIG.

The function of the lever system shall also permit a positive disengagement of the main valve from the large orifice, as the float drops and pressure decreases. The disengagement shall be immediate and not limited to the initial draw of a vacuum.

The valve(s) shall be Crispin Model _____ Universal Air Valve as manufactured by Multiplex Manufacturing Co., Berwick, PA. The valve(s) shall be _____ NPT screwed or ANSI Class (125, 250) flanged inlet connection, and shall have a cast iron body, top and inlet flange (where required), stainless steel float and trim with Buna-N seat. Valves which operate the pressure plunger via a single lever and fulcrum will not be acceptable.

Option: A protectop will be supplied to prevent debris from entering the outlet of the valve.

Option: (Where pressures are greater than 300 PSIG), the valve(s) shall be ANSI Class _____ flanged inlet connection, and shall have a (steel, stainless steel, or ductile iron) body, top and inlet flange. All Crispin Valves are hydrostatically tested at 150% of their maximum working pressure. Standard operating pressure for Crispin Air Valves is 20 to 150 PSIG. Please check one of the following if your operating needs differ: _____ 2 to 40 PSIG _____ 151 to 300 PSIG

** Material for UL20.1 valve lever will be brass



Submittal Sheet for Crispin UL Series

3"–4" Universal Air Release Valve

Manufactured in compliance with ANSI/AWWA C512

Date: 2016

Orifice Options

DIAMETER	MAX. PRESSURE	DISCHARGE RATE
1/4"	150 PSIG	98 SCFM
3/16"	250 PSIG	88 SCFM
1/8"	300 PSIG	46.7 SCFM

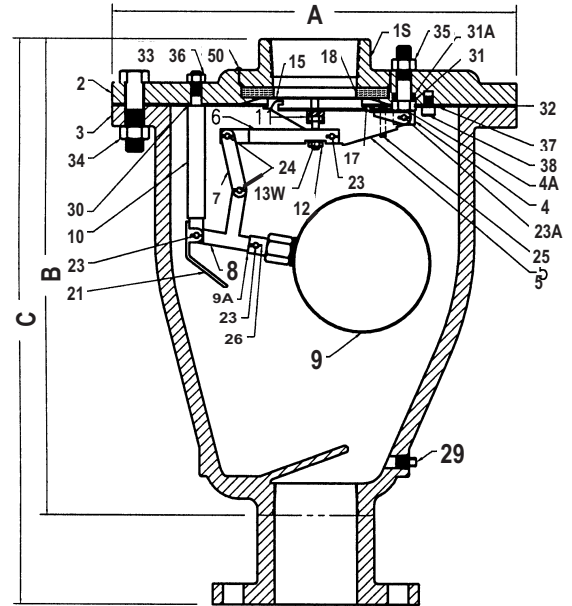
Size Specifications

MODEL	INLET SIZE	OUTLET SIZE	A	B	C	WHT.
UL30	3"NPT	3" NPT	14.75	18.00		114
UL31	3" 125# FLG	3" NPT	14.75		20.50	125
UL32	3" 250# FLG	3" NPT	14.75		21.00	131
UL30.1	3" NPT	3" NPT	14.75	18.00		114
UL31.1	3" 125# FLG	3" NPT	14.75		20.50	125
UL32.1	3" 250# FLG	3" NPT	14.75		21.00	131
UL40	4" NPT	4" NPT	16.75	20.00		162
UL41	4" 125# FLG	4" NPT	16.75		23.00	177
UL42	4" 250# FLG	4" NPT	16.75		23.25	188
UL40.1	4" NPT	4" NPT	16.75	20.00		162
UL41.1	4" 125# FLG	4" NPT	16.75		23.00	177
UL42.1	4" 250# FLG	4" NPT	16.75		23.25	188

Parts List

ITEM	DESCRIPTION	MATERIAL	ASTM
1S	TOP	CAST IRON	A126 CLB
2	FLANGE	CAST IRON	A126 CLB
3	BODY	CAST IRON	A126 CLB
4	AIR/VAC FULCRUM	STAINLESS STEEL	A240
4A	FULCRUM BOLT	STAINLESS STEEL	A193
5	PRESSURE FULCRUM	STAINLESS STEEL	A240
**6	VALVE LEVER	STAINLESS STEEL	A582
7	LINK	STAINLESS STEEL	A240
8	BALL LEVER	STAINLESS STEEL	A240
9	FLOAT	STAINLESS STEEL	A240
9A	FLOAT ROD	STAINLESS STEEL	A582
10	BALL FULCRUM	STAINLESS STEEL	A582
11	VALVE PLUNGER	STAINLESS STEEL & BUNA-N RUBBER	A193/D2000
12	PLUNGER NUT	STAINLESS STEEL	A194
13W	LOCK WASHER	STAINLESS STEEL	A240
15	PRESSURE SEAT	STAINLESS STEEL	A582
17	SEAT CAGE	STAINLESS STEEL	A240
18	AIR & VAC SEAT	BUNA-N RUBBER	D2000
21	PRESSURE LIMIT STOP	STAINLESS STEEL	A240
23	BEARING PIN	STAINLESS STEEL	A582
23A	BEARING PIN	STAINLESS STEEL	A582
24	BEARING PIN	STAINLESS STEEL	A582
25	BEARING PIN	STAINLESS STEEL	A582
26	COTTER PIN	STAINLESS STEEL	A313
29	DRAIN PLUG	BRASS	B505
30	FULCRUM WASHER	FIBER	D710
31	FULCRUM WASHER	FIBER	D710
31A	FULCRUM WASHER	FIBER	D710
32	FLANGE GASKET	ARMSTRONG N-8092	N/A
33	FLANGE BOLT	STEEL	A307
34	NUT	STEEL	A563
35	AIR/VAC FULCRUM NUT	STEEL	A563
36	BALL FULCRUM NUT	STEEL	A563
37	ADJUSTING PLATE	STAINLESS STEEL	A240
38	BOLT	STAINLESS STEEL	A193
50	INTERFERENCE PIN	STAINLESS STEEL	A582

** Material for UL30.1, UL31.1, UL40.1, UL41.1, UL42.1 will be brass



Specifications

The valve(s) shall be installed at the high points in the system or at points selected by the engineer. This will permit discharging the surge of air from an empty line when filling, and relieve the vacuum when draining the system. The valve(s) shall also release an accumulation of air when the system is under pressure. This shall be accomplished in a single valve body.

The valve(s) shall operate through a compound lever system which will seal both the pressure orifice and the air and vacuum orifice simultaneously. This lever system shall permit a _____ orifice to release an accumulation of air from the valve body at a capacity of _____ SCFM of air and pressure of _____ PSIG.

The function of the lever system shall also permit a positive disengagement of the main valve from the large orifice, as the float drops and pressure decreases. The disengagement shall be immediate and not limited to the initial draw of a vacuum.

The valve(s) shall be Crispin Model _____ Universal Air Valve as manufactured by Crispin-Multiplex Manufacturing Co., Berwick, PA. The valve(s) shall be _____ NPT screwed or ANSI Class (125, 250) flanged inlet connection, and shall have a cast iron body, top and inlet flange (where required), stainless steel float and trim with Buna-N seat. Valves which operate the pressure plunger via a single lever and fulcrum will not be acceptable.

Option: A protectop will be supplied to prevent debris from entering the outlet of the valve.

Option: (Where pressures are greater than 300 PSIG), the valve(s) shall be ANSI Class _____ flanged inlet connection, and shall have a (steel, stainless steel, or ductile iron) body, top and inlet flange.

Standard operating pressure for Crispin Air Valves is 20 to 150 PSIG. Please check one of the following if your operating needs differ:

____ 2 to 40 PSIG ____ 151 to 300 PSIG

SUBMITTAL SHEET FOR UL SERIES

SPECIFICATION SUBMITTAL SHEET



FEATURES

Sizes: 1/2" 3/4" 1" 1-1/4" 1-1/2" 2"
 Maximum working water pressure 175 PSI
 Maximum working water temperature 180°F
 Hydrostatic test pressure 350 PSI
 End connections Threaded FNPT ANSI B1.20.1

OPTIONS

- (Suffixes can be combined)
- with full port QT ball valves (standard)
 - XL - with low lead ball valves (See 375XL)
 - S - with bronze "Y" type strainer
 - SE - with street elbows
 - FT - with integral male 45° flare SAE test fitting
 - AG - with air gap
 - SAG - with bronze "Y" strainer and air gap
 - BOF - with Blow out/Flush fitting

ACCESSORIES

- Repair kits
- Thermal expansion tank (Mdl. XT)
- Soft seated check valve (Mdl. 40XL)
- Shock arrester (Model 1250)
- QT-SET Quick Test Fitting Set
- Test Cock Lock (Model TCL24)
- Blow out / Flush fitting (RK34-375BOF (1/2" or 3/4"), RK1-375BOF or RK114-350-375BOF)

APPLICATION

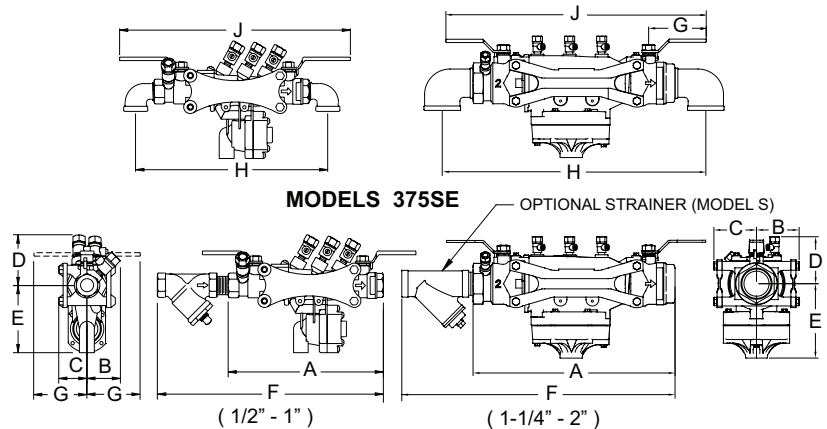
Designed for installation on potable water lines to protect against both backsiphonage and backpressure of contaminated water into the potable water supply. Assembly shall provide protection where a potential health hazard exists.

STANDARDS COMPLIANCE (3/4" - 2")

- ASSE® Listed 1013
- IAPMO® Listed
- CSA B64.4
- AWWA compliant C511
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California
- Contact Factory for 1/2" Approvals

MATERIALS

Housing	Reinforced Nylon, FDA approved
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA Approved) Buna Nitrile (FDA Approved)
Internals	Delrin, Nylon, NSF Listed
Springs	Stainless steel, 300 series
Ball Valves	Cast Bronze, ASTM B 584
Struts	Forged Brass, ASTM B 124

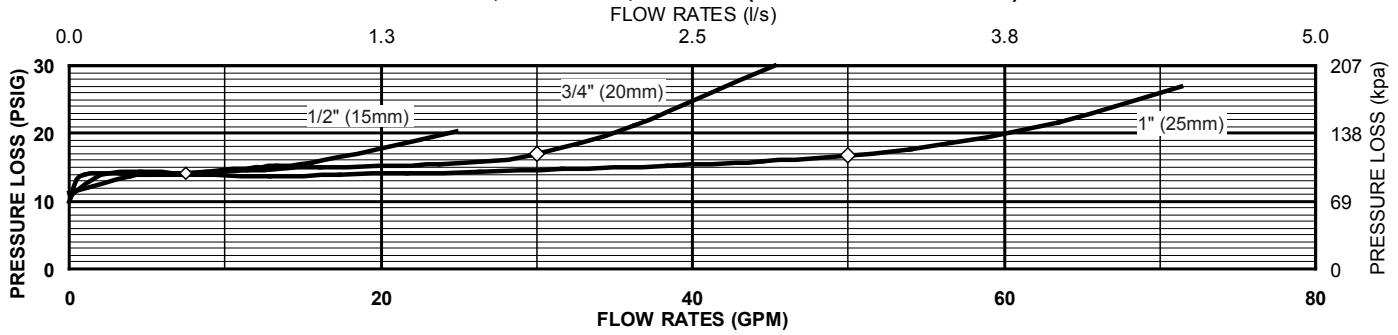


DIMENSIONS & WEIGHTS (do not include pkg.)

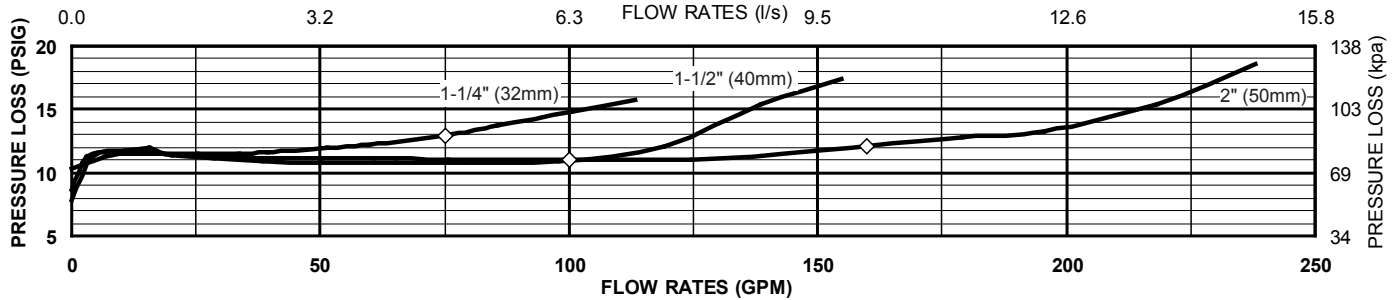
MODEL 375 SIZE	DIMENSIONS (approximate)																		WEIGHT				
	A		B		C		D		E		F		G		H		J		LESS BALL VALVES		WITH BALL VALVES		
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg	
1/2	20	8 7/8	225	115/16	49	1 5/8	41	2 15/16	75	3 7/8	98	12 1/4	311	3	76	10 7/8	276	12 1/4	311	4.7	2.1	5.7	2.6
3/4	20	8 7/8	225	115/16	49	1 5/8	41	2 15/16	75	3 7/8	98	12 5/8	321	3	76	11	279	12 1/4	311	4.7	2.1	5.7	2.6
1	25	11 3/16	284	2 1/4	57	2 1/4	57	3 7/16	87	4	102	14 9/16	370	4	102	13 3/4	349	15 1/4	387	8.2	3.7	9.7	4.4
1-1/4	32	14 7/8	378	3 3/8	86	3 3/8	86	3 3/4	95	5 3/4	146	20 1/2	521	3 3/4	95	18	457	18 1/2	470	18.7	8.5	20.5	9.3
1-1/2	40	15 1/4	387	3 3/8	86	3 3/8	86	3 3/4	95	5 3/4	146	22	559	4 1/2	114	18 3/4	476	20 1/4	514	18.3	8.0	21.5	9.8
2	50	16	406	3 3/8	86	3 3/8	86	3 3/4	95	5 3/4	146	24	610	4 3/4	120.7	20 3/4	527	20 3/4	527	19.4	8.8	23.5	10.7

FLOW CHARACTERISTICS

MODEL 375, 375XL 1/2", 3/4" & 1" (STANDARD & METRIC)



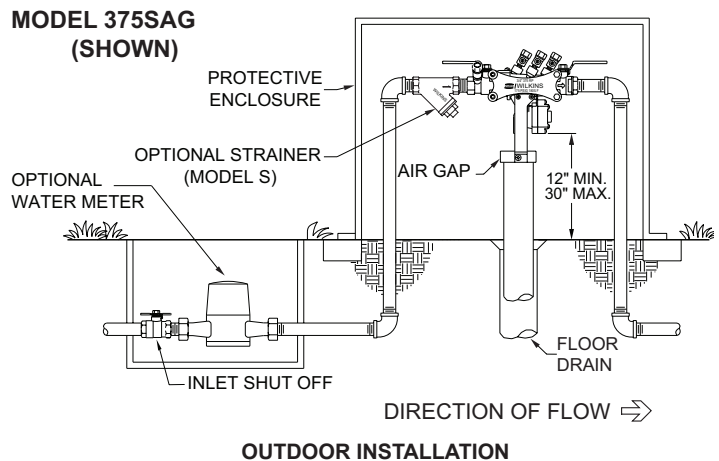
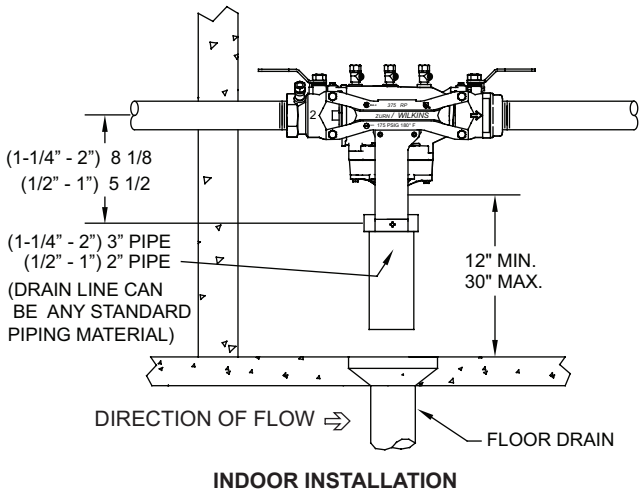
MODEL 375, 375XL 1-1/4" - 2" (STANDARD & METRIC)



TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
3/8"	3	4	6	9
1/2"	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



SPECIFICATIONS

The Reduced Pressure Principle Backflow Preventer shall be ASSE® Listed 1013, rated to 180°F and supplied with full port ball valves. The main body shall be Nylon and the seat disc elastomers shall be silicone. If installed indoors, the installation shall be supplied with an air gap adapter. The Reduced Pressure Principle Backflow Preventer shall be a WILKINS Model 375.

SmartLine[®]

The Smart Irrigation Controller





With over 350,000 SmartLine Controllers saving vast amounts of water around the world, your next project will be added to the growing list. The SmartLine feature set exceeds that of most high-end controllers, yet was engineered to make ET -Based Water Management affordable for any sized project.

1 TWO CONTROLLERS IN ONE

The “Basic” mode programs exactly like the conventional controllers used by most manufacturers. There’s no need to learn a new method. The “Smart” mode is where the power lies. Combined with our SLW Series Weather Stations, SmartLine becomes an ET-Based water-saving controller that adjusts watering times 365 days a year.

2 SMART MODE

ET Watering adjusts the duration, frequency, and soak time by several factors. Weather Data combined with geographical location, sprinkler type, plant type, soil type, and a fine tuning option, enables your SmartLine controller to make precise watering decisions.

3 ACCESS YOUR SMARTLINE CONTROLLERS FROM VIRTUALLY ANYWHERE

The days of irrigation controllers being programmed once, and left alone for months, is over. The SmartLink Network gives you access to your SmartLine controllers via your Computer, Tablet, or Smartphone. Irrigation Management made simple, affordable, and packed with features.

4 BACKLIT LCD / REAL TIME CLOCK / CALENDAR & NON-VOLATILE PROGRAM MEMORY

No flashlight required in dark basements and garages. No battery required! On board memory chip retains time, date and program information even during a power outage.

5 OMIT TIMES/DAYS/DATES SEASONAL % ADJUST BY MONTH BY PROGRAM

Automatically comply with local water restrictions; eliminate irrigated water lost to evaporation in the heat of the day; stop irrigation on lawn maintenance days; never water on the date of an annual event (ex: July 4th). A monthly watering budget % can be set up by program to automatically adjust zone run times for seasonal changes.

6-10 ADVANCED MENU

The Advanced Menu contains 17 tools, ranging from diagnostics, troubleshooting, and advanced water management tools. Below only scratches the surface.

6 BUILT-IN VALVE LOCATOR

Locate hidden valves by simply listening for the audible chatter of the solenoid created by a unique electrical frequency. (U.S. Pat #7406363)

7 ON-BOARD MULTI-METER

Displays the electrical current reading of each zone for quick troubleshooting and a proactive approach to maintenance.

8 MASTER VALVE/PUMP SETTINGS

Achieve hydraulic control with settings for zone-to-zone delays, master valve timing, and master valve On/Off by zone

9 BACKTRACK STORED PROGRAM™ FEATURE

Allows contractor to easily store a default program and retrieve the saved program in the event a customer improperly reprograms the controller. Perfect for Grow-in periods too.

10 RUNOFF ELIMINATOR

Eliminate runoff by setting the maximum allowable run time and minimum soak time by program



THE SMARTLINE® SERIES

STEP 1

Match the right SmartLine® Controller for your next project.



SL4800 - 12 to 48 ZONES
SL9600TW - 96 ZONES 2-WIRE



SL1600 - 4 TO 16 ZONES
SL1620 - 20 ZONE
SL1624 - 24 ZONE



SL800 - 4 TO 8 ZONE

STEP 2

Select the zone modules needed to achieve your project's requirements.



SLM12 MODULE
12 ZONE
Use with: SL4800
base model = 12 zones



SLM4 MODULE
4 ZONE
Use with: SL1600
base model = 4 zones



SLM2 MODULE
2 ZONE
Use with: SL800
base model = 4 zones



Alternatively, convert the SL1600 Controller into a 2-Wire Decoder System up to 48 zones with SmartWire®
Note: SL9600TW does not require a SmartWire module addition.

SLM48DM - Decoder Module



SLDEC1 - 1 VALVE DECODER
SLDEC2 - 2 VALVE DECODER
SLDEC4 - 4 VALVE DECODER
SLGDT - Lightning Arrestor

STEP 3

Enhance your SmartLine® Controller with irrigation management tools.



SLW5 Wireless Weather Station

Turns the SmartLine® Controller into a EPA Water Sense Certified system.

SLW1 - Wired Weather Station Available



SLFSI-S / SLFSI-T / SLFSI-B
Flow Sensor

Adds complete flow sensing capabilities to the SmartLine® Controller when connected to the SmartLink™ Network.



SmartLink™ AirCard
Standard / with Flow

Connects your SL1600/4800 to the SmartLink™ Network.

Flow sensing is only available via the SmartLink AirCard.



The SmartLink™ Network

Access, and manage your SmartLine® Controller with the truly affordable web-based SmartLink™ Network.
learn more: smartlinknetwork.com

ENCLOSURES

Protect your SmartLine® Controller with these options.



Stainless Steel Enclosure
with Pedestal

SLPED-ENC-SS
for SL1600, SL4800 / SL9600TW



High-Grade Plastic
Pedestal

SL4800PE-PED
for SL4800 (SL4800 included)



Powder-coated Metal
Enclosure with Pedestal

SLPED-ENC-M
for SL1600, SL4800 / SL9600TW

Stainless Steel Wall Mount Cabinet
SLWM-SS for SL1600, SL4800 / SL9600TW

Powder-coated Metal Wall
Mount Cabinet
SLWM-M for SL1600, SL4800 / SL9600TW

Stainless Steel Pedestal
SLPED for SL1600, SL4800 / SL9600TW

SOLAR POWERED

Convert the SL4800 into a powerful Solar Powered controller and still keep using your 24vac control valves.

SLSOLAR48 - 48 Zone
Solar System



MODELS

SL800

4-Zone base model: Expandable to 8 zones
2-Zone hot-swappable modules (SLM2)

SL1600

4-Zone base model: Expandable to 16 zones
4-Zone hot-swappable modules (SLM4)

SL1620

20-Zone fixed station count

SL1624

24-Zone fixed station count

SL4800

12-Zone base model: Expandable to 48 zones
12-Zone hot-swappable modules (SLM12)

SL9600TW

96-Zone 2-Wire model

BASIC FEATURES

4 programs: A, B, C; program D can operate concurrently
8 start times: Per program
Indoor/Outdoor Rated
Zone run times settable from 1 min. to 9 hrs. 55 min.
Rain/Freeze sensing on/off button with Tri-Color LED indicator
Rain delay of 1 – 7 days
SLW1/SLW5 Weather Stations extended rain delay programmable from 0 – 99 hours
Seasonal % adjust by program, by month
Omit time of day window, day(s) of week, and up to 7 calendar dates
Programmable zone-to-zone delay 1 min. – 3 hrs.
Watering day selections: custom days of the week, odd/even, or interval days
Run/Soak cycles by program
Large backlit LCD display
Non-volatile memory – with no battery required
Internal 120VAC/230VAC transformer with pre-installed 6' line cord
2 Watering modes: Basic Mode and Smart Mode
Basic Mode: User controlled conventional programming
Smart Mode: Daily automatic station runtime adjustments

SMART WATERING FEATURES

ZIP Code input or Latitude input
Sprinkler type input
Plant type input
Soil type input
More/Less ET Tuning
Watering run times adjusted automatically
Review menu displays accumulated ET deficits by zone
Displays maximum run time and minimum soak time
Displays temperature readings (daily high/low) for previous 5 days
Accumulates total run times by zone from the last reset date
Clear deficits for all zones
Extended rain delay programmable from 0 – 99 hours

MANUAL OPERATION

Manual test runs each zone with zone run times from 10 sec. – 10 min.
Manual zone operation of a single zone from 1 min. to 9 hrs. 55 min.
Push button manual start of a program from control panel

ON-SITE DIAGNOSTIC/TROUBLESHOOTING FEATURES

Fault review displays all faults, including open and shorted zones
Test function using on-board multi-meter
Built-in valve locator
Backtrack Stored Program™ with Grow-in option

ADDITIONAL FEATURES

Zone-to-zone delay
Master valve timing sequence with zone valve programmable
Master valve/pump start operation assignable On/Off by zone
Clear program function
Clear All function

HOW TO SPECIFY

WEATHERMATIC.COM

SmartLine® Specification		Modules
Model	Description (Indoor/Outdoor)	Increase Station Count
SL800	4 - Zone Base Model (<i>Indoor</i>)	SLM2 - 2 Zone / up to 8 Zones
SL1600	4 - Zone Base Model	SLM4 - 4 Zone / up to 16 Zones
SL1620	20 - Fixed Zones	N/A
SL1624	24 - Fixed Zones	N/A
SL4800	12 - Zone Base Model	SLM12 - 12 Zone / up to 48 Zones
SL9600TW	96 - Zone/2-Wire System	SmartLine controller and 96 Zone decoder module

Plastic Enclosure / SmartLine® Specification		Modules
Model	Description	Increase Zone Count
SL4800PE-PED	High Grade Polyethylene Enclosure with the SmartLine SL4800 12-Zone Controller (Base Model) Installed	SLM12 - 12 Zone Maximum of 48 zones

SmartLine® Enclosures Specification	
Model	Description
SLPED-ENC-SS-4800	Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-M-4800	Powder-coated Metal Enclosure with Pedestal for Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-SS-1600	Stainless Steel Enclosure with Pedestal for PL1600/SL1600
SLPED-ENC-M-1600	Powder-coated Metal Enclosure with Pedestal for PL1600/SL1600
SLWM-SS-4800	Stainless Steel Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-M-4800	Powder-coated Metal Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-SS-1600	Stainless Steel Wall Mount Cabinet for PL1600/SL1600
SLWM-M-1600	Metal Wall Mount Enclosure for SL1600
SLPED-1600	Stainless Steel Pedestal for the SL1600/1620/1624
SLPED-4800	Stainless Steel Pedestal for the SL4800

SmartLine® Weather Sensor Specification	
Model	Description
SLW1	Wired Weather Sensor for ET Based Watering * 35ft of cable provided
SLW5	Wireless Weather Sensor for ET Based Watering * 900mhz - 1500' LOS Range

SmartWire® 2-Wire Specification	
Model	Description
SLM16DM	16 - Zone Decoder Programming Module
SLM24DM	24 - Zone Decoder Programming Module
SLM48DM	48 - Zone Decoder Programming Module
SLDEC1	1 -Valve Decoder
SLDEC2	2 -Valve Decoder
SLDEC4	4 -Valve Decoder
SLGDT	Lightning Arrestor
SLWIRE142-1000	2 - Conductor/14 - Gauge Wire (1000')
SLWIRE142-2500	2 - Conductor/14 - Gauge Wire (2500')
SLWIRE122-1000	2 - Conductor/12 - Gauge Wire (1000')
SLWIRE122-2500	2 - Conductor/12 - Gauge Wire (2500')



Technical Specifications

SLW ON-SITE WEATHER STATION

FEATURES

- Microprocessor records and processes weather data for use in establishing Auto Adjust run times on any SmartLine® controller
- Easily installs in minutes in any SmartLine® controller with the SLHUB
- Once the SLW is connected to SmartLine® all of the “Smart” features become available, saving you a significant amount of water.
- Rain shut-off settable from 1/8 – 3/4” (3 – 19mm)
- Extended rain delay adds time to rain events before deficits begin to accumulate
- Rain events decrement current deficits in the SmartLine® controller
- Freeze shut-off activated at 37°F (3.0°C)
- Unit can be mounted in sunlight or shade and in close proximity to the roofline
- On-board diagnostics indicate battery and communication status
- Remote battery strength measurement from the SmartLine® controller
- Weather data is used to create powerful reporting when connected to the SmartLink™ Network
- SLW1 – Includes 35 feet of cable. Maximum run distance for shielded cable wired units is 200 feet
- SLW5 – Maximum wireless distance from controller to weather station is 1,500 feet line of sight.

CONSTRUCTION

- Protective white solar shields allow normal air flow while protecting sensor from direct sunlight for accurate temperature readings and eliminating the need for regular cleaning and maintenance of the weather station
- Adjustable arm aluminum bracket for gutter thumb screw or wall mounting

ELECTRICAL SPECIFICATIONS

- SLW1 – No power/batteries required
- SLW5 – (3) AAA Lithium Batteries – 10-year battery life



SmartLine Weather Station	
Model	Description
SLW1	Wired Weather Station
SLW5	900MHz Wireless Weather Station

Technical Specifications

SLW ON-SITE WEATHER STATION

WEATHER STATION(S) shall be model SLW1 manufactured by Weathermatic Sprinkler Division of Telsco Industries. Weather stations must be compatible for use with SmartLine irrigation controls.

CONSTRUCTION: Weather station shall be wired in design using bi-directional communication. Weather station shall have integrated on-site sensors for rain-shut off, freeze shut-off and calculation of daily evapotranspiration irrigation deficits. Weather station shall have an integral mounting bracket with a two-point articulating arm made from aluminum. Weather station shall be suitable for outdoor mounting in commercial or residential environments. Weather station shall be capable of two-way communications with the SmartLine controls and have independent power supply, self-diagnostic circuit and microprocessor.

OPERATION: Weather stations rain sensor shall be adjustable to interrupt irrigation after a user selected precipitation amount of 1/8th", 1/4", 1/2", 3/4". Weather station shall be capable of interrupting irrigation after temperatures reach below 37 degrees Fahrenheit. Weather station shall provide instant notification to the controller of either a rain or freeze event and upon clearing of the same. Evapotranspiration deficits shall be calculated daily and transferred to the SmartLine controller each day.

WARRANTY: Weather station shall have a manufacturer's limited warranty of two (2) years.

WEATHER STATION(S) shall be model SLW5 manufactured by Weathermatic Sprinkler Division of Telsco Industries. Weather stations must be compatible for use with SmartLine irrigation controls.

CONSTRUCTION: Weather station shall be 900 MHz wireless in design using bi-directional communication. Weather station shall have integrated on-site sensors for rain-shut off, freeze shut-off and calculation of daily evapotranspiration irrigation deficits. Weather station shall have an integral mounting bracket with a two-point articulating arm made from aluminum. Weather station shall be suitable for outdoor mounting in commercial or residential environments. Weather station shall be capable of two-way communications with the SmartLine controls and have independent power supply, self-diagnostic circuit and microprocessor.

OPERATION: Weather stations rain sensor shall be adjustable to interrupt irrigation after a user selected precipitation amount of 1/8th", 1/4" or 1/2", 3/4". Weather station shall be capable of interrupting irrigation after temperatures reach below 37 degrees Fahrenheit. Weather station shall provide instant notification to the controller of either a rain or freeze event and upon clearing of the same. Evapotranspiration deficits shall be calculated daily and transferred to the SmartLine controller each day.

WARRANTY: Weather station shall have a manufacturer's limited warranty of two (2) years.

Technical Specifications

SMARTWIRE 2-WIRE CONTROL SYSTEM

SLM48DM DECODER MODULE FEATURES

- SLM48DM – Converts the SmartLine® SL1600 or ProLine® PL1600 Controller to a 2-wire system for a maximum of 48 zones plus master valve
- Hot-swappable installation
- Connections for up to 3 different 2-wire paths for maximum installation flexibility
- Programs and operates SmartWire™ SLDEC Series decoders
- LED display and status lights for programming, operation status, and troubleshooting with error codes

SLDEC – VALVE DECODERS FEATURES

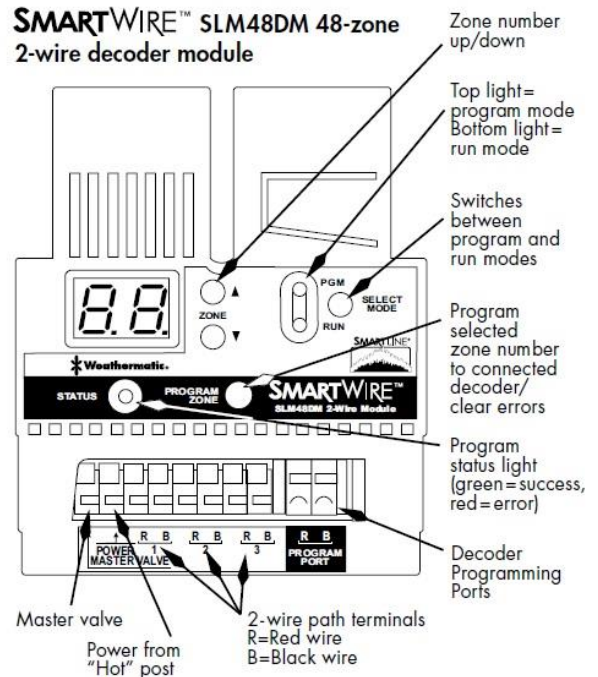
- Decodes signals from SLM48DM to open and close valves
- Fully programmable for valve addresses using SLM48DM
- Input voltage 24 – 28VAC from 2-wire path
- Shock resistant
- Freeze/heat resistant (-20° to 60°C)
- 14 gauge PVC-coated connecting wires
- Sealed electrical components for protection from water and dirt
- Surge protection
- Operates valves to a maximum of 100' (30m) from decoder
- Diagnoses and reports failed solenoids to the SLM48DM
- Auto shutdown if communication with SLM48DM is lost

SLWIRE – DECODER WIRE FEATURES

- 2-conductor, jacketed, UL/UF approved for direct burial
- Sunlight resistant

SLGDT – DECODER LIGHTNING ARRESTOR FEATURES

- Protects the 2-wire system from excessive static charges created by a lightning strike.
- Sealed and impervious to moisture, salts, fertilizers and mild chemicals. Can be buried directly in the soil.
- Shock resistant
- Freeze/heat resistant (-20° to 60° C)
- No electrical contact with the soil
- Each Lightning Arrestor protects a 300-foot radius
- Requires no power from the 2-wire system
- Can only be connected to SmartWire™ 2-wire systems



SLDEC1



SLWIRE



SLGDT SURGE ARRESTOR

Technical Specifications

SMARTWIRE 2-WIRE CONTROL SYSTEM

DECODER(S) shall be model SLDEC(1), (2) or (4) as manufactured by Weathermatic Sprinkler Division of Telsco Industries.

OPERATION: Decoders shall be reprogrammable on the job site using the SLM48DM module's programming port and shall be electrically compatible with any Weathermatic commercial grade 24 VAC low voltage solenoid over the full range of maximum rated operating pressures. Each decoder output shall be capable of operating up to a maximum of two electrical solenoid valves. Decoders shall have two way communications between the controller module and decoders allowing for self-diagnostic testing to indicate a solenoid short, open solenoid, and wire path over-current or communications errors. Each decoder shall have an indelible marking label that to indicate the color code and station for each valve operated by the decoder and that may be marked by the installer for identification.

WARRANTY: Decoders shall have a manufacturer's limited warranty of three (3) years only when installed with two wire cable model SLWIRE supplied by Weathermatic Sprinkler Division of Telsco Industries and connected using model SLCONN aluminum connectors and dry splice connections supplied with the decoders.

CONTROLLER(S) shall be model SL1600 or PL1600 with SLM48DM decoder module as manufactured by Weathermatic Sprinkler Division of Telsco Industries. All two-wire operation shall include two-way communication between the controller and decoder to notify the user of any error in operation or electrical faults. Controller(s) shall be a four (4) program, stand-alone controllers capable of operating up to 48 remote control valves. Controllers shall be compatible with SLW series weather station for fully automatic adjustment of seasonal irrigation schedules (SL1600 only).

OPERATION: Controller may be programmed to operate with either user supplied station run times or automatically calculated station run times based on SLW weather station data, sprinkler type, plant type, soil type and slope (SL1600 only). Automatic water conservation shall be available using either twelve programmable monthly seasonal percentage adjustments (PL1600 or SL1600) or automatic ET based adjustments based on SLW series weather station real-time, on-site climate data (SL1600 only). The user may select to move between timed station mode or ET mode without loss of programming information (SL1600 only). Each program shall have eight independent start times, calendar schedules, watering budgets, and cycles for varying sprinkler types and soil percolation rates. Controller shall have a user-selectable cycle and soak feature, by program (PL1600 or SL1600), and fully automatic cycle and soak based on sprinkler precipitation rates, soil type and slope for reduction of run-off (SL1600 only). The controller shall be capable of storing a user-created default program which may be retrieved at a later date to replace any overrides or adjustments to scheduled operation. Controller shall have a standard pump start or master valve output which shall be programmable to operate on demand from any selected controller station. A programmable pump start/master valve delay shall be included in the pump circuit.

WARRANTY: Decoders shall have a manufacturer's limited warranty of three (3) years only when installed with two wire cable model SLWIRE supplied by Weathermatic Sprinkler Division of Telsco Industries and connected using model SLCONN aluminum connectors and dry splice connections supplied with the decoders.

IRRIGATION CONTROL WIRE(S) shall be SmartWire model SLWIRE122-XXXX or SLWIRE142-XXXX as manufactured by Weathermatic Sprinkler Division of Telsco Industries.

CONSTRUCTION: Conductors must be soft drawn, annealed, solid copper conforming to ASTM 33. Conductor insulation must be 4/64-inch thick polyvinyl chloride (PVC) conforming to UL #493. Two insulated conductors shall be laid in parallel and encased in a single outer jacket of 3/64-inch thick, high density, sunlight resistant polyethylene conforming to ICEA S-61-402 and NEMA WC5, having a minimum wall thickness of .045-inch. The two conductors must be color-coded: normally one conductor red and the other black. Both conductors shall be the same size.

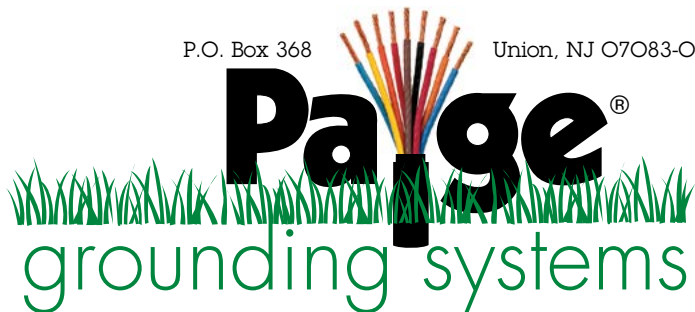
OPERATION: Wire shall be sized as either 12 or 14 AWG as indicated on the irrigation plan, but shall not exceed manufacturer's published limits for maximum wire distances. All connections to the irrigation control wires along the two-wire path shall be made using SLCONN splice kits supplied by Weathermatic Sprinkler Division of Telsco

WARRANTY: SLWIRE shall have a manufacturer's limited warranty of three (3) years.

LIGHTNING SURGE ARRESTOR(S) shall be SmartWire model SLGDT as manufactured by Weathermatic Sprinkler Division of Telsco Industries.

OPERATION: Weathermatic SLGDT gas discharge tube lightning arrestors must be used on all 2-wire grids. The SLGDT lightning arrestor attaches directly to the 2-wire system and helps dissipate static electricity generated by a nearby lightning strike. While Weathermatic components have lightning arresting features, the SLGDT provides an extra measure of protection.

WARRANTY: SLGDT shall have a manufacturer's limited warranty of three (3) years provided proper grounding procedures are followed according to the manufacturer's recommendation.



spec P7345D - Rev 11

BARE COPPER WIRE

- Soft-Annealed, uncoated copper, 18AWG - 1/0AWG.
- 250, 500, and 1,000 foot spools. Custom lengths possible.
- Solid or stranded.
- Paige part numbers:



Wire Size (AWG)										
	18	16	14	12	10	8	6	4	2	1/0
Solid	160120	160137	160248	160364	160465	160629	160635	160678	160738	-
Stranded	-	-	-	160365	160466	160630	160636	160679	160739	160074

GROUNDING, BONDING AND SHIELDING PRODUCTS

COPPER GROUND PLATES WITH WELDED INSULATED CONDUCTOR

- MADE TO COMPLY WITH ARTICLE 250.52(7) OF THE NATIONAL ELECTRICAL CODE.



Part #	Ground Plate	Thickness	Wire AWG	Wire Feet
182199IC	4" x 96"	0.060"	6	25
182201IC	4" x 36"	Minimum	10	10

UL[®] LISTED COPPER-CLAD GROUND RODS

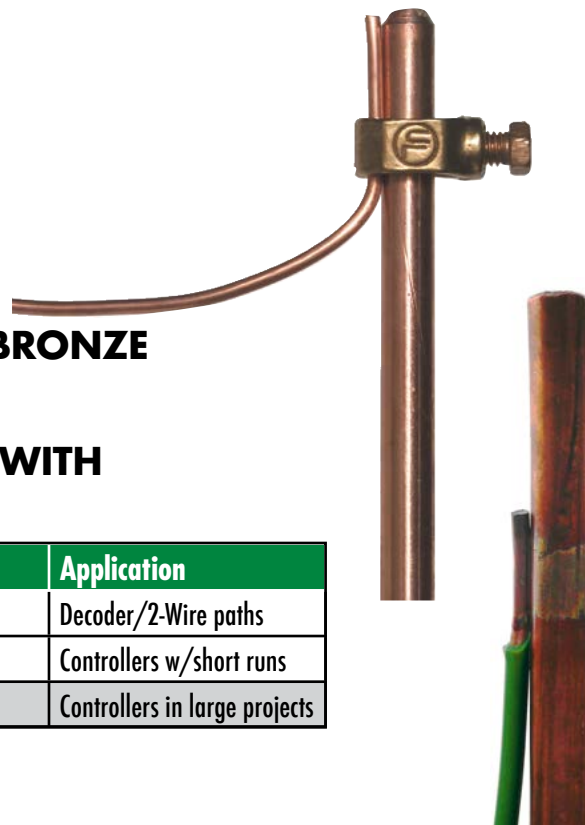
Part #	Description
182000	5/8" x 8'
182007	5/8" x 10'

UL[®] LISTED GROUND ROD CLAMPS, CAST BRONZE

For 5/8" Diameter ground rods. Paige part number 182005

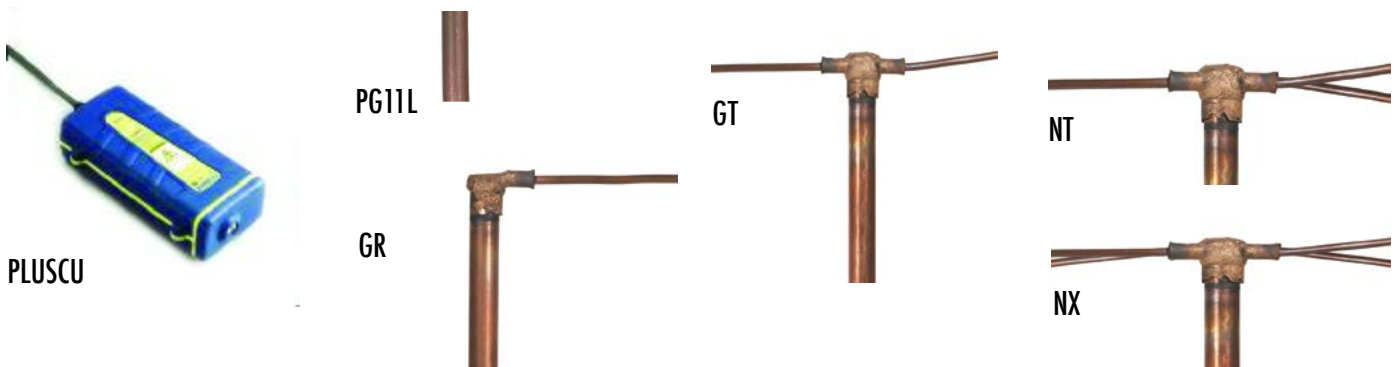
UL[®] LISTED COPPER-CLAD GROUND RODS WITH WELDED INSULATED CONDUCTOR

Part #	Ground Rod	Wire AWG	Wire Feet	Application
182000IC10	5/8" x 8'	10	15	Decoder/2-Wire paths
182000IC6	5/8" x 8'	6	15	Controllers w/short runs
182007IC6	5/8" x 10'	6	25	Controllers in large projects



CADWELD PLUS "ONE-SHOT"

- Permanently welds multiple bare copper wires together or bare copper wire to 5/8" diameter ground rods, so the connection doesn't loosen or corrode
- UL® listed. Exothermic reaction welding process meets National Electrical Code® requirements



CADWELD CONNECTIONS			
Wire Sizes (AWG)	No. of Connections	Cadweld Part No.	Paige Part No.
6 & 8	1	GR1161GPLUS	1820037P
6 & 8	2	GT1161GPLUS	1820039P
6 & 8	3	NT1161GPLUS	1820038P
6 & 8	4	NX1161GPLUS	1820060P
4	1	GR1161LPLUS	1820043P
4	2	GT1161LPLUS	1820053P
4	3	NT1161LPLUS	1820054P
4	4	NX1161LPLUS	1820061P
6 & 8	4	PG11LPLUS	1820074P
PLUSCU Battery Control Unit			1820040CU

GROUND ENHANCEMENT MATERIALS/EARTH CONTACT BACKFILLS

- Superior conductive material that improves the effectiveness of ground rods/plates.
- It permanently reduces resistance-to-ground, regardless of soil conditions.
- Ideal for use in dry conditions, rocky ground and sandy soils.
- 50 pound bags
- PowerSet™ hardens when wetted and can be used in any application. Paige part number 1820058.
- PowerFill™ is non-hardening and must be used in non-porous soils. Paige part number 1820059.
- Non-flammable. Safe to use while igniting CADWELDS and in storage





FSI-T Series PVC Flow Sensor

Creative Sensor Technology FSI series flow sensors feature proven impeller based technology designed for flow monitoring/flow control applications in irrigation, water conservation and related industries.

The PVC sensor with socket connections is offered for service in PVC piping systems.

Designed by the same team who created the original impeller flow sensor, this sensor is a completely new custom molded design. The sensor features a digital output signal proportional to flow. The electrical characteristics of the output signal duplicate existing impeller flow sensor signals making the FSI series sensor compatible with all manufacturer's control products.

The pulse signal will travel up to 2,000 feet without amplification.

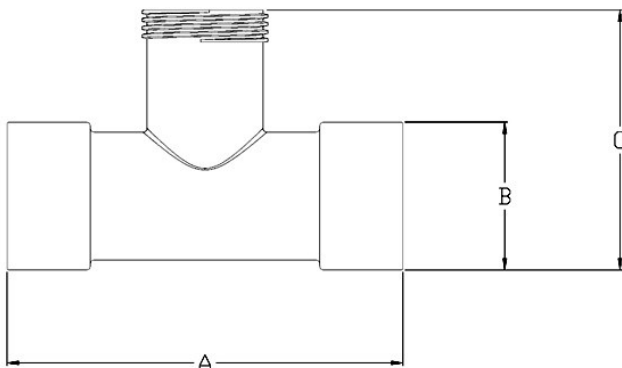
The key elements of this new technology are a proprietary mounting tee, ultra-lightweight impeller and solid state sensing electronics giving the FSI series sensor improved performance.



Applications

- Flow sensing applications in PVC piping systems above and below grade
- Flow sensing input to irrigation control systems
- Flow sensing input to pump monitoring or control systems
- Flow sensing applications for water recycling, water harvesting or water reclamation applications

Flow Sensor Dimensions



SIZE	A LENGTH	B DIAMETER	C HEIGHT
1"	5.625" (143 mm)	1.710" (43 mm)	3.487" (88 mm)
1 1/2"	6.188" (157 mm)	2.310" (58 mm)	4.065" (103 mm)
2"	7.00" (178 mm)	2.875" (73 mm)	4.573" (116 mm)

Allow 3/4" clearance above the branch of the tee to remove flow sensor insert for service.



Specifications

Flow Range

- 0.25 to 15 FPS

Pressure Rating

- 240 PSI Maximum working pressure

Temperature Range

- 32°F to 140° F (0° to 60° C)

Wetted Materials

- Impeller – HDPE (High Density Polyethylene)
- Mounting Tee - Type 1 PVC
- O-ring — BUNA N
- Retaining Nut — Type 1 PVC
- Sensor Insert — Type 1 PVC
- Shaft – Tungsten Carbide

Output Signal

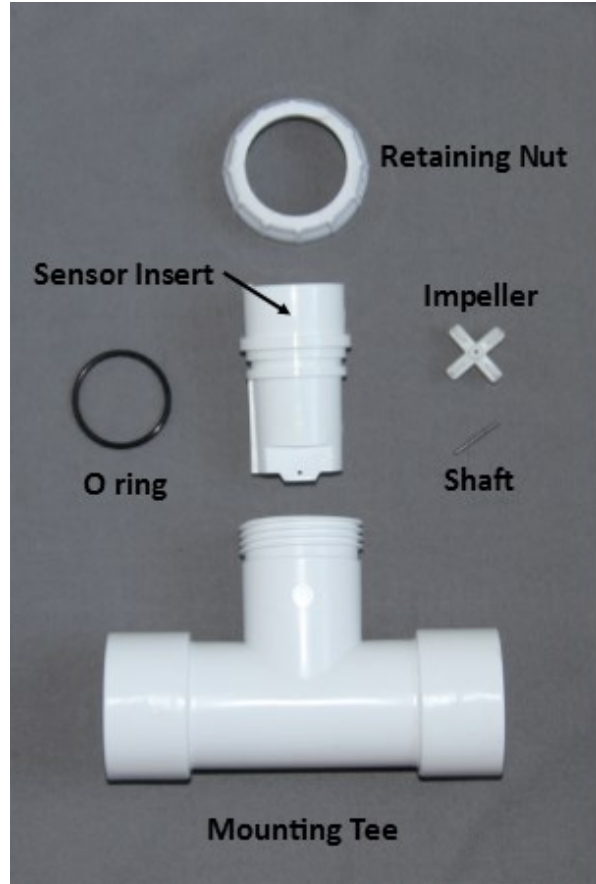
- Frequency Range 0.3 Hz to 200 Hz

Transducer Excitation - all electronics versions except – sensor suffix 009

- Quiescent current 120 uA@8 VDC to 35 VDC max.
- Off State (VHigh) = Supply Voltage - (120 uA X Source Resistance)
- On State (VLow) = Max. 0.85 Volts@50mA (10Ω+0.7VDC)

Electrical Cable

- Standard electronics –001 version is equipped with 2 single conductor solid copper #18 AWG leads with direct burial insulation.
- Lead length 48 inches.
- Wiring may be extended up to 2,000 feet with direct burial, twisted pair shielded



Ordering Information



Description	Size	Part number
Complete flow sensor	1 inch	FSI-T10-001
	1 1/2 inch	FSI-T15-001
	2 inch	FSI-T20-001



Flow sensor insert only		FSI-EA0-001
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Impeller Repair Kit		FSI-T00-001
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Residential, commercial

Feature and Benefit Highlights

- Manufactured from premium grade linear low density polyethylene for the most dependable operation
- Minimum 2% carbon black added for ultraviolet (UV) deterioration
- Available in a wide range of diameters, wall thicknesses, coil lengths and working pressures
- Available with a blue, white or purple stripe for easy on-site identification of drip zones or applications during installation and operation



Blue Stripe hose is available in a variety of sizes, lengths and color configurations to meet any landscape application.

Additional Features

- Conforms to A.S.A.E. standards for minimum inside diameters and wall thickness
- Available in OD Controlled configurations
- High manufacturing quality control standards & specifications
- Superior quality and durability
- Available in purple for reclaimed water applications or in brown as another alternative
- 7 year non-prorated warranty - longest in business

Specifications

ID Controlled Hose

Part Number	Hose Size		Nominal Hose Size			Coil Length	Internal Diameter		Wall Thickness		Coil Weight		Pressure Rating
	ID Inch	ID mm	ID Inch	OD Inch	Wall Inch	Ft.	Min. Inch	Max. Inch	Min. Inch	Max. Inch	Min. Lbs.	Max. Lbs.	psi
Blue Stripe® Round Hose - Coil Stretch Wrapped													
EHW1554-050	-	15	0.570	0.685	0.058	500	0.569	0.574	0.054	0.059	21.5	23.9	77
EHW1645-010	5/8"	16	0.620	0.710	0.045	100	0.613	0.618	0.047	0.052	4.0	4.5	64
EHW1645-050	5/8"	16	0.620	0.710	0.045	500	0.613	0.618	0.045	0.050	18.9	21.3	61
Blue Stripe® Round Hose - Coil Banded													
EHD1554-050	-	15	0.570	0.685	0.058	500	0.569	0.574	0.054	0.059	21.5	23.9	77
x EHD1554-100	-	15	0.570	0.685	0.058	1,000	0.569	0.574	0.054	0.059	43.0	47.7	77
pwx EHD1645-050	5/8"	16	0.620	0.710	0.045	500	0.613	0.618	0.045	0.050	18.9	21.3	61
pwx EHD1645-100	5/8"	16	0.620	0.710	0.045	1,000	0.613	0.618	0.045	0.050	37.8	42.7	61
pwx EHD2057-050	3/4"	20	0.805	0.925	0.060	500	0.804	0.809	0.057	0.063	31.4	35.1	59
px EHD2057-100	3/4"	20	0.805	0.925	0.060	1,000	0.804	0.809	0.057	0.063	62.7	70.2	59
pw EHD2667-066	1"	26	1.060	1.200	0.070	660	1.056	1.061	0.067	0.073	63.4	69.8	53

OD Controlled Hose

Part Number	Hose Size		Nominal Hose Size			Coil Length	Outside Diameter		Wall Thickness		Coil Weight		Pressure Rating
	ID Inch	ID mm	ID Inch	OD Inch	Wall Inch	Ft.	Min. Inch	Max. Inch	Min. Inch	Max. Inch	Min. Lbs.	Max. Lbs.	psi
Blue Stripe® OD Controlled Hose - Coil Stretch Wrapped													
EHW1650-010	5/8"	16	0.600	0.700	0.050	100	0.697	0.702	0.047	0.052	3.9	4.4	65
EHW1650-050	5/8"	16	0.600	0.700	0.050	500	0.697	0.702	0.047	0.052	19.4	21.8	65
Blue Stripe® OD Controlled Hose - Coil Banded													
EHO1650-050	5/8"	16	0.600	0.700	0.050	500	0.697	0.702	0.047	0.052	19.4	21.8	65
EHO1650-100	5/8"	16	0.600	0.700	0.050	1,000	0.697	0.702	0.047	0.052	38.7	43.5	65
EHO2055-050	3/4"	20	0.830	0.940	0.055	500	0.935	0.940	0.052	0.057	29.2	32.3	53
EHO2055-100	3/4"	20	0.830	0.940	0.055	1,000	0.935	0.940	0.052	0.057	58.3	64.7	53

Blue Stripe is a registered trademark of The Toro Company.

- p = Also available as Purple Stripe Hose for reclaimed water
- x = Also available as White Blue Stripe Hose
- w = Also available as Blue Stripe White Hose
- Also available without stripe on special request

Note: Please refer to page 9 for fittings and accessories information.

Silver-Line Plastics

PVC SDR 26 PR 160 PVC 1120 TYPE I GRADE 1

Nominal Size	Item Number	Bar Code 717141	Outside Diameter	Min. Wall Thickness	Wt/100'	Ft/Pallet	Max Working Pressure at 73° F
1-1/4"	32.122	32122 1	1.660	0.064	21	5,000	160 PSI
1-1/2"	32.152	32152 8	1.900	0.073	28	4,500	160 PSI
2"	32.202	32202 0	2.375	0.091	43	2,800	160 PSI
2-1/2"	32.252	32252 5	2.875	0.110	62	1,160	160 PSI
3"	32.302	32302 7	3.500	0.135	93	1,500	160 PSI
4"	32.402	32402 4	4.500	0.173	156	1,140	160 PSI
5"	32.502	32502 1	5.563	0.214	240	460	160 PSI
6"	32.602	32602 8	6.625	0.255	320	520	160 PSI

Note: 2" – 6" are Laying Length

NSF- pw

PVC SDR 26 conforms to ASTM D 2241; 4" - 6" also meets ASTM F 480

Material complies with ANSI / NSF Standard 61

TOO MUCH CEMENT WILL DAMAGE THE PIPE
PVC PIPE NOT RECOMMENDED FOR AIR PRESSURE

Silver-Line Plastics

PVC SDR 21 PR 200 PVC 1120 TYPE I GRADE 1

BELLED END 20 FT. LENGTHS

Nominal Size	Item Number	Bar Code 717141	Outside Diameter	Min. Wall Thickness	Wt/100'	Ft/Pallet	Max Working Pressure at 73° F
1/2"	34.052	34052 9	0.840	0.062	10	9,600	315 PSI
3/4"	34.072	34072 7	1.050	0.060	12	8,000	200 PSI
1"	34.102	34102 1	1.315	0.063	16	7,800	200 PSI
1-1/4"	34.122	34122 9	1.660	0.079	25	5,000	200 PSI
1-1/2"	34.152	34152 6	1.900	0.090	33	4,500	200 PSI
2"	34.202	34202 8	2.375	0.113	53	2,800	200 PSI
2-1/2"	34.252	34252 3	2.875	0.137	77	1,160	200 PSI
3"	34.302	34302 5	3.500	0.167	114	1,500	200 PSI
4"	34.402	34402 2	4.500	0.214	189	1,140	200 PSI
5"	34.502	34502 9	5.563	0.265	295	460	200 PSI
6"	34.602	34602 6	6.625	0.316	390	520	200 PSI

Note: 2"– 6" are Laying Length

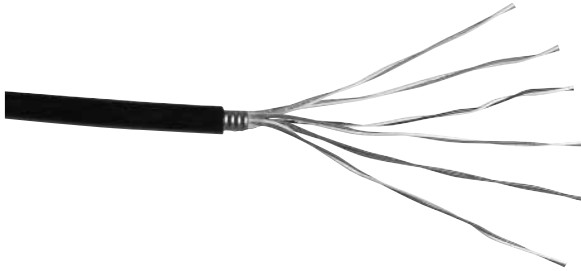
NSF- pw

All SDR 21 conforms to ASTM D 2241; 2" - 6" also meets ASTM F 480; 1/2" is SDR 13.5 and conforms to ASTM D 2241
5" SDR 21 / SCH 40 is dual rated and conforms to D 1785 and D 2241

Material complies with ANSI / NSF Standard 61

TOO MUCH CEMENT WILL DAMAGE THE PIPE
PVC PIPE NOT RECOMMENDED FOR AIR PRESSURE

PE – 39 COMMUNICATION CABLE



DESCRIPTION:

Regency's PE – 39 Communication Cable is a six (6) pair cable manufactured for the purpose of direct burial systems communication applications in accordance with the National Electric Code.

Conductor construction is soft drawn bare copper meeting the requirements of ASTM Specification B-3. The conductors are 19 awg solid copper.

The conductors are insulated with polyethylene (PE) in distinctive colors to facilitate pair identification and are twisted into pairs with varying lays to minimize crosstalk.

The interstices between the pairs are filled with Waterbloc compound and covered with a non-hygroscopic core wrap. The inner and outer surfaces of the core wrap are coated with Waterbloc compound.

The assembly is then longitudinally wrapped with a corrugated .008" (0.2 mm) thick copolymer-coated aluminum tape. This tape reduces the possibility of shield corrosion and lightning damage. The outer surface of the shield is flooded with Enviroblock compound. The outer jacket is polyethylene (PE).

APPLICATION:

Suitable for use as direct burial communication applications where protection against water and moisture entry is a critical requirement. PE – 39 is recommended where rodent attack is possible.

CONSTRUCTION:

CONDUCTOR: Soft drawn bare copper (ASTM Spec. B-3).
Solid (19 awg)

INSULATION: Polyethylene (PE)

OUTER JACKET: Polyethylene (PE)

TEMPERATURE: 60° C

VOLTAGE: 600 Volts

RESISTANCE: 8.523 OHMS PER M FEET at 68 DEG. F

Number of Pairs	Outside Diameter	Cable Weight
6	.61 in.	137/M'

HYDROMETERS

Combination Master Valve and Water Meter/Flow Sensor

APPLICATIONS

- For commercial, institutional and sports field irrigation applications
- Ideal for retrofits
- Designed for high pressure, remote operated applications
- Water meter can communicate with irrigation controllers and central control units
- Valve can function as a remote master valve for automated operation
- Multiple pilot options: manual electric and manual electric pressure reducing

SPECIFICATIONS

- Sizes: 1 1/2", 2", 3", 4", 6" and 8"
- Maximum working pressure:
 - Manual Electric - 235 psi
 - Pressure Reducing Manual Electric - 140 psi
- Body: cast iron, polyester coated
- Valve diaphragm: reinforced natural rubber
- End connections:
 - 1 1/2" - male pipe thread
 - 2" - female pipe thread
 - 3", 4", 6" 8" - flanged
- Flanges: drilled according to ANSI specification
- Standards: EEC approval (class A)
- Installation of a continuous acting air vent before the Hydrometer is highly recommended for accurate flow readings

FEATURES & BENEFITS

GLOBE CONFIGURATION WITH BUILT-IN STRAIGHTENING VANE

Requires no straight pipe for installation - saving space.

± 2% ACCURACY ACROSS FLOW RANGES

No more false alarms.

RUGGED, HEAVY DUTY CONSTRUCTION

Cast Iron with corrosion resistant coating.

REGISTERS ARE STAINLESS STEEL/COMPOSITE ENCAPSULATED

Guaranteed against fogging due to moisture.

CONFIGURED WITH ANY COMBINATION OF PILOT CONTROL

Manual electric and pressure reducing manual electric. Normally open or normally closed.

DOUBLE-CHAMBERED VALVE

Provides quick acting and positive opening and closing.

SUB-METERING

Meter dedicated to landscape irrigation water.



REED SWITCH (RS) REGISTER

The reed switch register is a dry contact or simple switch closure for communicating with control and monitoring equipment. Flows are totaled in U.S. Gallons based on the multiplication factors indicated on the dial face.



PHOTO DIODE HIGH FREQUENCY (PDH) REGISTER

A photo coupler sensor that provides pulse output for communicating with control and monitoring equipment. Flows are totaled in U.S. Gallons based on the multiplication factors indicated on the dial face.



DIGITAL (ER) REGISTER

Combines standard digital register features with dry pulse output for communicating with control and monitoring equipment. Rate of flow and volume readings in U.S. Gallons are clearly indicated on the LCD display.

FRICITION LOSS vs. PRESSURE LOSS (psi)

		FLOW RATE (GPM)																												
		1.8	4.4	5.3	14	20	21	53	55	79	95	97	125	150	198	220	250	300	357	380	400	500	700	860	900	950	1000	1250	1500	
SIZE	1 1/2"	0.01	0.04	0.1	0.4	0.8	0.8	5.3	5.7																					
	2"			0.02	0.2	0.3	0.4	2.3	2.5	5.1	7.4	7.7																		
	3"				0.02	0.05	0.1	0.3	0.4	0.7	1.1	1.1	1.8	2.7	4.5	5.7														
	4"						0.02	0.1	0.2	0.3	0.5	0.5	0.8	1.2	2.0	2.5	3.2	4.7	6.6	7.5										
	6"							0.02	0.03	0.05	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.7	1.1	1.2	1.3	2.1	4.1	6.1						
	8"												0.02	0.02	0.04	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.6	1.3	1.9	2.1	2.3	2.6	4.0

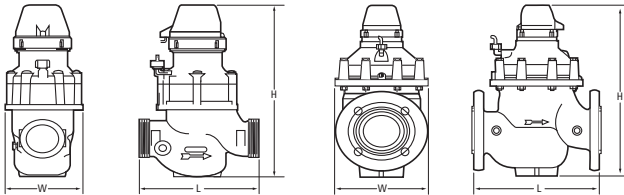
±2% Accuracy

±5% Accuracy

ORDERING INFORMATION

ORDERING INFORMATION				MODEL NUMBER			
METER SIZE	REGISTER OUTPUT TYPE	PULSE PER GALLON	GALLONS PER PULSE	MANUAL ELECTRIC	PRESSURE REDUCING MANUAL ELECTRIC	PRESSURE REDUCING MANUAL ELECTRIC HIGH PRESSURE (30-130 psi)	PRESSURE REDUCING MANUAL ELECTRIC HIGH PRESSURE (100-285 psi)
1 1/2"	RS	1	1	LHM15TG1-MEL	LHM15TG1-PRMEL	LHM15TG1PREHR	LHM15TG1PREHB
	PDH	187.900	0.0053	LHM15TG0053-MEL	LHM15TG0053-PRMEL	LHM15TG0053PREHR	LHM15TG0053PREHB
	ER	10	0.1	LHM15EM11AAFMEML	LHM15EM11AAFPRMEL	LHM15EM11AAFPREHR	LHM15EM11AAFPREHB
2"	RS	1	1	LHM2TG1-MEL	LHM2TG1-PRMEL	LHM2TG1PREHR	LHM2TG1PREHB
	PDH	117.000	0.0085	LHM2TG0085-MEL	LHM2TG0085-PRMEL	LHM2TG0085PREHR	LHM2TG0085PREHB
	ER	10	0.1	LHM2EM11AAFMEML	LHM2EM11AAFPRMEL	LHM2EM11AAFPREHR	LHM2EM11AAFPREHB
3"	RS	1	1	LHM3FG1-MEL	LHM3FG1-PRMEL	LHM3FG1PREHR	LHM3FG1PREHB
	PDH	48.710	0.0205	LHM3FG0205-MEL	LHM3FG0205-PRMEL	LHM3FG0205PREHR	LHM3FG0205PREHB
	ER	10	0.1	LHM3EM11AAFMEML	LHM3EM11AAFPRMEL	LHM3EM11AAFPREHR	LHM3EM11AAFPREHB
4"	RS	1	1	LHM4FG1-MEL	LHM4FG1-PRMEL	LHM4FG1PREHR	LHM4FG1PREHB
	PDH	17.933	0.0566	LHM4FG0566-MEL	LHM4FG0566-PRMEL	LHM4FG0566PREHR	LHM4FG0566PREHB
	ER	10	0.1	LHM4EM11AAFMEML	LHM4EM11AAFPRMEL	LHM4EM11AAFPREHR	LHM4EM11AAFPREHB
6"	RS	0.1	10	LHM6FG10-MEL	LHM6FG10-PRMEL	LHM6FG10PREHR	LHM6FG10PREHB
	PDH	5.747	0.1741	LHM6FG1739-MEL	LHM6FG1739-PRMEL	LHM6FG1739PREHR	LHM6FG1739PREHB
	ER	1	1	LHM6EM11AAFMEML	LHM6EM11AAFPRMEL	LHM6EM11AAFPREHR	LHM6EM11AAFPREHB
8"	RS	0.1	10	LHM8FG10-MEL	LHM8FG10-PRMEL	LHM8FG10PREHR	LHM8FG10PREHB
	PDH	3.152	0.317	LHM8FG317-MEL	LHM8FG317-PRMEL	LHM8FG317PREHR	LHM8FG317PREHB
	ER	1	1	LHM8EM11AAFMEML	LHM8EM11AAFPRMEL	LHM8EM11AAFPREHR	LHM8EM11AAFPREHB

Netafim Hydrometers are standard in a manually closed configuration. To order a Normally Open (NO) configuration, call Netafim Customer Service at 1 (888) 638-2346 for ordering information.



HYDROMETER DIMENSIONS

	SIZE	1 1/2"	2"	3"	4"	6"	8"
GLOBE	LENGTH (L)	6 5/16"	8 11/16"	11 1/4"	14 3/16"	19 11/16"	23 9/16"
	WIDTH (W)	4 15/16"	4 15/16"	8 1/16"	9"	14 15/16"	17 11/16"
	HEIGHT (H)	10 7/16"	13"	17"	18 1/16"	24 13/16"	30 11/16"
	WEIGHT	4 LBS.	7 LBS.	52 LBS.	65 LBS.	245 LBS.	309 LBS.

Installation Requirements: Globe configuration hydrometers have no straight pipe installation requirements.

PERFORMANCE DATA (GPM)

SIZE	LOWEST FLOW WITHIN ± 5% ACCURACY	LOWEST FLOW WITHIN ± 2% ACCURACY	NOMINAL FLOW WITHIN ± 2% ACCURACY	MAXIMUM FLOW WITHIN ± 2% ACCURACY
1 1/2"	1.8	4.4	44	55
2"	5.3	20	66	95
3"	14	53	176	220
4"	21	79	264	380
6"	53	198	660	860
8"	97	357	1,189	1,500



NETAFIM USA
(888) 638 2346

www.netafimusa.com

LTHYDRO 10/16

523 PVC In-Line Check Valve • Spec Sheet



FEATURES & BENEFITS

- In-Line Check Valve-Spring Loaded
- 200 PSI at 77 Deg. F (25 Deg. C)
- Threaded or Solvent Ends
- One aPiece
- .5 PSI Spring Loaded
- .516 Crack Pressure
- Maintenance Free Operation
- Sizes 1/2" - 2"

APPLICATIONS

Stops Backflow & Syphoning for Swimming Pools, Hot Tubs & Spas, Industrial Applications, Agricultural, & Solar Installations

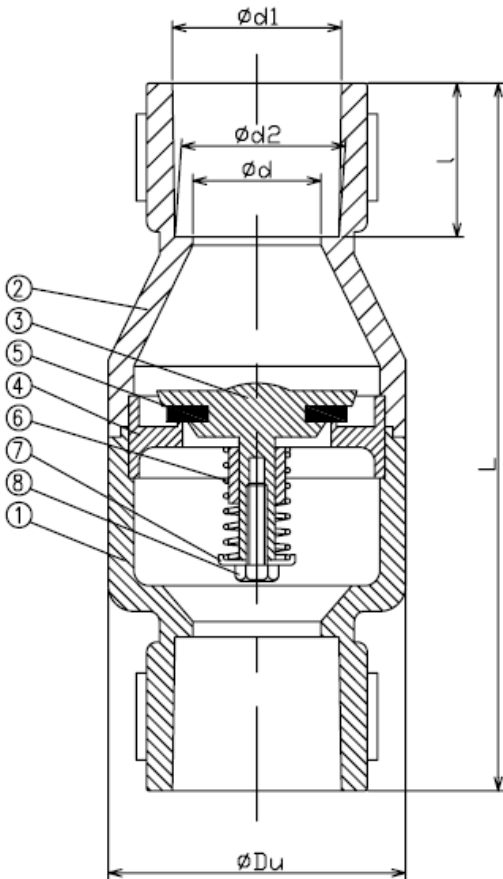
MATERIAL SPECIFICATIONS

No.	Part	Material
1	Body Entrance	PVC
2	Body Exit	PVC
3	Valve Gate	PVC
4	Spigot	PVC
5	Sealing Ring	EPDM
6	Spring	SS304
7	Spring Washer	SS302
8	Bolt	SS302

DIMENSIONS

Size	Part # (Threaded)	Part # (Solvent)	L	Ød	Ødu	Ød1	Ød2	I	*CV
1/2"	523T03	523S03	4.10	0.67	1.77	0.85	0.84	0.91	7.16
3/4"	523T04	523S04	4.53	0.87	1.77	1.06	1.05	1.02	7.93
1"	523T05	523S05	5.48	1.06	2.32	1.33	1.31	1.18	16.53
1-1/4"	523T06	523S06	5.48	1.28	3.19	1.67	1.66	1.30	27.52
1-1/2"	523T07	523S07	6.38	1.52	3.19	1.91	1.90	1.42	32.14
2"	523T08	523S08	7.74	1.97	4.20	2.39	2.37	1.62	47.46

*The Cv Factor is the gallons of water per minute passed through the valve with a 1PSI pressure drop.



MATCO-NORCA

Global sourcing. National compliance. Local service.

SmartLine®

The Smart Irrigation Controller





With over 350,000 SmartLine Controllers saving vast amounts of water around the world, your next project will be added to the growing list. The SmartLine feature set exceeds that of most high-end controllers, yet was engineered to make ET -Based Water Management affordable for any sized project.

1 TWO CONTROLLERS IN ONE

The “Basic” mode programs exactly like the conventional controllers used by most manufacturers. There’s no need to learn a new method. The “Smart” mode is where the power lies. Combined with our SLW Series Weather Stations, SmartLine becomes an ET-Based water-saving controller that adjusts watering times 365 days a year.

2 SMART MODE

ET Watering adjusts the duration, frequency, and soak time by several factors. Weather Data combined with geographical location, sprinkler type, plant type, soil type, and a fine tuning option, enables your SmartLine controller to make precise watering decisions.

3 ACCESS YOUR SMARTLINE CONTROLLERS FROM VIRTUALLY ANYWHERE

The days of irrigation controllers being programmed once, and left alone for months, is over. The SmartLink Network gives you access to your SmartLine controllers via your Computer, Tablet, or Smartphone. Irrigation Management made simple, affordable, and packed with features.

4 BACKLIT LCD / REAL TIME CLOCK / CALENDAR & NON-VOLATILE PROGRAM MEMORY

No flashlight required in dark basements and garages. No battery required! On board memory chip retains time, date and program information even during a power outage.

5 OMIT TIMES/DAYS/DATES SEASONAL % ADJUST BY MONTH BY PROGRAM

Automatically comply with local water restrictions; eliminate irrigated water lost to evaporation in the heat of the day; stop irrigation on lawn maintenance days; never water on the date of an annual event (ex: July 4th). A monthly watering budget % can be set up by program to automatically adjust zone run times for seasonal changes.

6-10 ADVANCED MENU

The Advanced Menu contains 17 tools, ranging from diagnostics, troubleshooting, and advanced water management tools. Below only scratches the surface.

6 BUILT-IN VALVE LOCATOR

Locate hidden valves by simply listening for the audible chatter of the solenoid created by a unique electrical frequency. (U.S. Pat #7406363)

7 ON-BOARD MULTI-METER

Displays the electrical current reading of each zone for quick troubleshooting and a proactive approach to maintenance.

8 MASTER VALVE/PUMP SETTINGS

Achieve hydraulic control with settings for zone-to-zone delays, master valve timing, and master valve On/Off by zone

9 BACKTRACK STORED PROGRAM™ FEATURE

Allows contractor to easily store a default program and retrieve the saved program in the event a customer improperly reprograms the controller. Perfect for Grow-in periods too.

10 RUNOFF ELIMINATOR

Eliminate runoff by setting the maximum allowable run time and minimum soak time by program



THE SMARTLINE® SERIES

STEP 1

Match the right SmartLine® Controller for your next project.



SL4800 - 12 to 48 ZONES
SL9600TW - 96 ZONES 2-WIRE



SL1600 - 4 TO 16 ZONES
SL1620 - 20 ZONE
SL1624 - 24 ZONE



SL800 - 4 TO 8 ZONE

STEP 2

Select the zone modules needed to achieve your project's requirements.



SLM12 MODULE
12 ZONE
Use with: SL4800
base model = 12 zones



SLM4 MODULE
4 ZONE
Use with: SL1600
base model = 4 zones



SLM2 MODULE
2 ZONE
Use with: SL800
base model = 4 zones



Alternatively, convert the SL1600 Controller into a 2-Wire Decoder System up to 48 zones with SmartWire®
Note: SL9600TW does not require a SmartWire module addition.

SLM48DM - Decoder Module



SLDEC1 - 1 VALVE DECODER
SLDEC2 - 2 VALVE DECODER
SLDEC4 - 4 VALVE DECODER
SLGDT - Lightning Arrestor

STEP 3

Enhance your SmartLine® Controller with irrigation management tools.



SLW5 Wireless Weather Station

Turns the SmartLine® Controller into a EPA Water Sense Certified system.

SLW1 - Wired Weather Station Available



SLFSI-S / SLFSI-T / SLFSI-B
Flow Sensor

Adds complete flow sensing capabilities to the SmartLine® Controller when connected to the SmartLink™ Network.



SmartLink™ AirCard
Standard / with Flow

Connects your SL1600/4800 to the SmartLink™ Network.

Flow sensing is only available via the SmartLink AirCard.



The SmartLink™ Network

Access, and manage your SmartLine® Controller with the truly affordable web-based SmartLink™ Network.
learn more: smartlinknetwork.com

ENCLOSURES

Protect your SmartLine® Controller with these options.



Stainless Steel Enclosure with Pedestal

SLPED-ENC-SS
for SL1600, SL4800 / SL9600TW



High-Grade Plastic Pedestal

SL4800PE-PED
for SL4800 (SL4800 included)



Powder-coated Metal Enclosure with Pedestal

SLPED-ENC-M
for SL1600, SL4800 / SL9600TW

Stainless Steel Wall Mount Cabinet
SLWM-SS for SL1600, SL4800 / SL9600TW

Powder-coated Metal Wall Mount Cabinet
SLWM-M for SL1600, SL4800 / SL9600TW

Stainless Steel Pedestal
SLPED for SL1600, SL4800 / SL9600TW

SOLAR POWERED

Convert the SL4800 into a powerful Solar Powered controller and still keep using your 24vac control valves.

SLSOLAR48 - 48 Zone Solar System



MODELS

SL800

4-Zone base model: Expandable to 8 zones
2-Zone hot-swappable modules (SLM2)

SL1600

4-Zone base model: Expandable to 16 zones
4-Zone hot-swappable modules (SLM4)

SL1620

20-Zone fixed station count

SL1624

24-Zone fixed station count

SL4800

12-Zone base model: Expandable to 48 zones
12-Zone hot-swappable modules (SLM12)

SL9600TW

96-Zone 2-Wire model

BASIC FEATURES

4 programs: A, B, C; program D can operate concurrently
8 start times: Per program
Indoor/Outdoor Rated
Zone run times settable from 1 min. to 9 hrs. 55 min.
Rain/Freeze sensing on/off button with Tri-Color LED indicator
Rain delay of 1 – 7 days
SLW1/SLW5 Weather Stations extended rain delay programmable from 0 – 99 hours
Seasonal % adjust by program, by month
Omit time of day window, day(s) of week, and up to 7 calendar dates
Programmable zone-to-zone delay 1 min. – 3 hrs.
Watering day selections: custom days of the week, odd/even, or interval days
Run/Soak cycles by program
Large backlit LCD display
Non-volatile memory – with no battery required
Internal 120VAC/230VAC transformer with pre-installed 6' line cord
2 Watering modes: Basic Mode and Smart Mode
Basic Mode: User controlled conventional programming
Smart Mode: Daily automatic station runtime adjustments

SMART WATERING FEATURES

ZIP Code input or Latitude input
Sprinkler type input
Plant type input
Soil type input
More/Less ET Tuning
Watering run times adjusted automatically
Review menu displays accumulated ET deficits by zone
Displays maximum run time and minimum soak time
Displays temperature readings (daily high/low) for previous 5 days
Accumulates total run times by zone from the last reset date
Clear deficits for all zones
Extended rain delay programmable from 0 – 99 hours

MANUAL OPERATION

Manual test runs each zone with zone run times from 10 sec. – 10 min.
Manual zone operation of a single zone from 1 min. to 9 hrs. 55 min.
Push button manual start of a program from control panel

ON-SITE DIAGNOSTIC/TROUBLESHOOTING FEATURES

Fault review displays all faults, including open and shorted zones
Test function using on-board multi-meter
Built-in valve locator
Backtrack Stored Program™ with Grow-in option

ADDITIONAL FEATURES

Zone-to-zone delay
Master valve timing sequence with zone valve programmable
Master valve/pump start operation assignable On/Off by zone
Clear program function
Clear All function

HOW TO SPECIFY

WEATHERMATIC.COM

SmartLine® Specification		Modules
Model	Description (Indoor/Outdoor)	Increase Station Count
SL800	4 - Zone Base Model (<i>Indoor</i>)	SLM2 - 2 Zone / up to 8 Zones
SL1600	4 - Zone Base Model	SLM4 - 4 Zone / up to 16 Zones
SL1620	20 - Fixed Zones	N/A
SL1624	24 - Fixed Zones	N/A
SL4800	12 - Zone Base Model	SLM12 - 12 Zone / up to 48 Zones
SL9600TW	96 - Zone/2-Wire System	SmartLine controller and 96 Zone decoder module

Plastic Enclosure / SmartLine® Specification		Modules
Model	Description	Increase Zone Count
SL4800PE-PED	High Grade Polyethylene Enclosure with the SmartLine SL4800 12-Zone Controller (Base Model) Installed	SLM12 - 12 Zone Maximum of 48 zones

SmartLine® Enclosures Specification	
Model	Description
SLPED-ENC-SS-4800	Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-M-4800	Powder-coated Metal Enclosure with Pedestal for Stainless Steel Enclosure with Pedestal for PL4800/SL4800/SL9600TW
SLPED-ENC-SS-1600	Stainless Steel Enclosure with Pedestal for PL1600/SL1600
SLPED-ENC-M-1600	Powder-coated Metal Enclosure with Pedestal for PL1600/SL1600
SLWM-SS-4800	Stainless Steel Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-M-4800	Powder-coated Metal Wall Mount Cabinet for PL4800/SL4800/SL9600TW
SLWM-SS-1600	Stainless Steel Wall Mount Cabinet for PL1600/SL1600
SLWM-M-1600	Metal Wall Mount Enclosure for SL1600
SLPED-1600	Stainless Steel Pedestal for the SL1600/1620/1624
SLPED-4800	Stainless Steel Pedestal for the SL4800

SmartLine® Weather Sensor Specification	
Model	Description
SLW1	Wired Weather Sensor for ET Based Watering * 35ft of cable provided
SLW5	Wireless Weather Sensor for ET Based Watering * 900mhz - 1500' LOS Range

SmartWire® 2-Wire Specification	
Model	Description
SLM16DM	16 - Zone Decoder Programming Module
SLM24DM	24 - Zone Decoder Programming Module
SLM48DM	48 - Zone Decoder Programming Module
SLDEC1	1 - Valve Decoder
SLDEC2	2 - Valve Decoder
SLDEC4	4 - Valve Decoder
SLGDT	Lightning Arrestor
SLWIRE142-1000	2 - Conductor/14 - Gauge Wire (1000')
SLWIRE142-2500	2 - Conductor/14 - Gauge Wire (2500')
SLWIRE122-1000	2 - Conductor/12 - Gauge Wire (1000')
SLWIRE122-2500	2 - Conductor/12 - Gauge Wire (2500')



1800™ Series Spray Heads

Industry's Leading Spray Heads

Trusted for over 30 years, 1800 Series Spray Heads have provided unmatched durability, reliability, and performance.

Superior components and features make the 1800 Series Spray Head the spray head of choice for a wide variety of applications.

Features

Co-molded, pressure-activated, multi-functional wiper seal assures positive seal without excess "flow-by" which enables more heads to be installed on the same valve.

- Designed for use with all Rain Bird plastic spray head nozzles – Rotary Nozzles, U-Series, MPR, VAN and XPCN Series.
- Precision controlled flush at pop-down clears debris from unit, assuring positive stem retraction in all soil types.
- Strong stainless steel spring provides reliable stem retraction.
- Ratchet mechanism on all models allows easy nozzle pattern alignment without tools.
- Pre-installed 1800 Pop-Top™ flush plug blocks debris 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 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 1806, 1806PRS, 1812, and 1812PRS models only.
- Five-year trade warranty.

Operating Range

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

Specifications

- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise

Dimensions/Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
 - 1802:** 4" (10 cm) body height; 2" pop-up height (5 cm)
 - 1803:** 4⅞" (12 cm) body height; 3" pop-up height (7.6 cm)
 - 1804:** 6" (15 cm) body height; 4" pop-up height (10 cm)
 - 1806:** 9⅜" (24 cm) body height; 6" pop-up height (15 cm)
 - 1812:** 16" (40 cm) body height; 12" pop-up height (30 cm)
- Exposed surface diameter: 2¼" (5.7 cm)



How To Specify

1804 - SAM - PRS - P45

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

Note: SAM feature included with P45 models



PRS



SAM

How To Specify

1804 - SAM-P45 - R13-18Q

<p>Optional Feature SAM: Seal-A-Matic™ check valve</p> <p>P45: 45psi (3.1 bar) in-stem pressure regulation</p>	<p>Nozzle Rotary Nozzle</p> <p>Radius Range 13-18' (4.0 – 5.5m) 17-24' (5.2 – 7.3m)</p> <p>Pattern F: Full (360°) TQ: Three Quarter (270°) TT: Two Third (240°) H: Half (180°) T: Third (120°) Q: Quarter (90°)</p>
--	--

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

Note: Specify sprinkler bodies and nozzles separately.



SAM-PRS



SAM-PRS-P45

1800° SAM Series

Ideal for use in areas with changing elevations, the 1800 SAM Series offers all 1800 Series features plus:

- 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/or erosion.
- Helps retain water in lateral pipes which reduces wear on system components by minimizing water hammer during start-up.
- 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 7.3 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 (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise
- Installation: bottom inlet only

Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 SAM - 6" (15 cm), 1806 SAM - 9¾" (24 cm), 1812 SAM - 16" (40 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

Models

- 1804 SAM: 4" pop-up height (10 cm)
- 1806 SAM: 6" pop-up height (15 cm)
- 1812 SAM: 12" pop-up height (30 cm)

1800 PRS Series

Designed for areas with high and/or widely fluctuating water pressures, the 1800 PRS Series has all 1800 Series features plus:

- **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 30psi (2.1 bar). Spray nozzles perform best at 30psi. Ensures maximum nozzle performance, even with varying inlet pressures. Maintains constant pressure regardless of nozzles used.
- 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.
- Ensures consistent performance throughout zone if nozzle is removed or damaged. Keeps plant life covered by other spray heads properly irrigated.
- Ends misting and fogging caused by high pressure. Stops water waste. Ensures necessary watering occurs in high pressure or wind conditions.
- 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 7.3 m)
- Pressure: 15 to 70 psi (1 to 5 bar)

Specifications

- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 70 psi (4.8 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise
- Installation: side or bottom inlet
- Side inlet installation not recommended in freezing climates

Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 PRS - 6" (15 cm), 1806 PRS - 9¾" (24 cm), 1812 PRS - 16" (40 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

Models

- 1804 PRS: 4" pop-up height (10 cm)
- 1806 PRS: 6" pop-up height (15 cm)
- 1812 PRS: 12" pop-up height (30 cm)

1800 SAM-PRS Series

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

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 (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise
- Installation: bottom inlet only
- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 70 psi (4.8 bar)

Dimensions

- ½" (15/21) NPT female threaded inlets
- Body height: 1804 SAM-PRS - 6" (15 cm), 1806 SAM-PRS - 9¾" (24 cm), 1812 SAM-PRS - 16" (40 cm)
- Exposed diameter: 2¼" (5.7 cm)

Models

- 1804 SAM-PRS: 4" pop-up height (10 cm)
- 1806 SAM-PRS: 6" pop-up height (15 cm)
- 1812 SAM-PRS: 12" pop-up height (30 cm)

1800 SAM-P45 Series

Meets the needs of spray body applications using Rotary Nozzles regardless of changing elevation or water pressures. Incorporates 1800 Series SAM feature and regulates operating pressure at 45psi (3.1 bar).

- Designed to maximize application efficiency when using Rotary Nozzles.
- Maintains constant outlet pressure at 45psi (3.1 bar) at varying inlet pressures. Maintains constant pressure regardless of nozzle used.
- “SAM-PRS-45” stamped on cap for easy identification and maintenance.
- Five-year trade warranty.

Operating Range

- Spacing: 13 to 24 feet (4.0 to 7.3 m)
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

Specifications

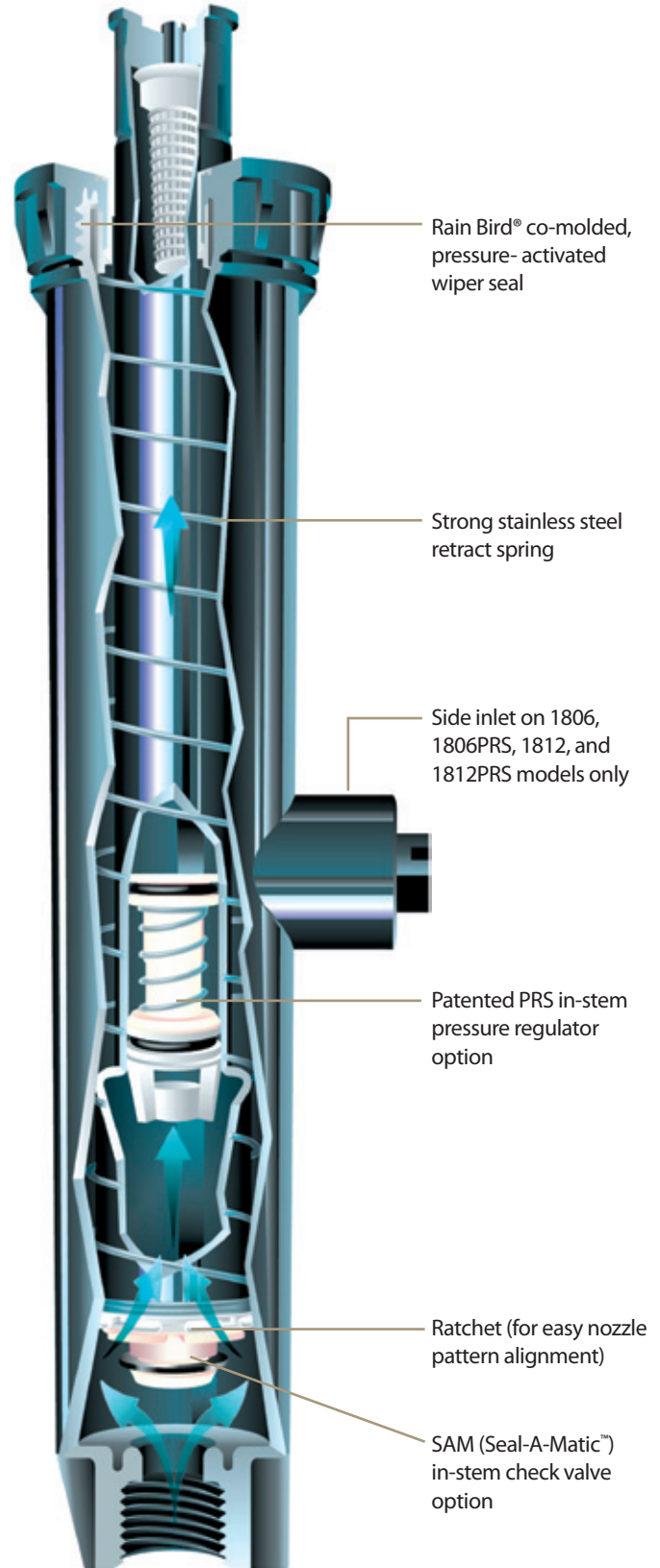
- Regulates nozzle pressure to an average 45 psi (3.1 bar) with inlet pressures of up to 70 psi (4.8 bar)
- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.3 bar)
- Flow-by: 0 at 8 psi (0.6 bar) or greater; 0.1 gpm (0.02 m³/h; 0.006 l/s) otherwise
- Installation: bottom inlet only

Dimensions

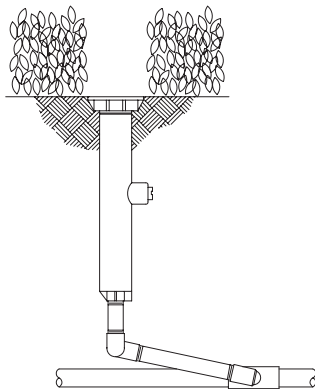
- ½” (15/21) NPT female threaded inlets
- Body height: 1804 SAM-P45 - 6” (15 cm), 1806 SAM-P45 - 9¾” (24 cm), 1812 SAM-P45 - 16” (40 cm)
- Exposed diameter: 2¼” (5.7 cm)

Models

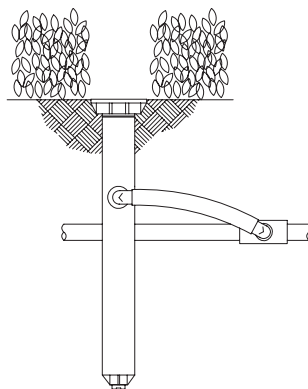
- 1804 SAM-P45: 4” pop-up height (10 cm)
- 1806 SAM-P45: 6” pop-up height (15 cm)
- 1812 SAM-P45: 12” pop-up height (30 cm)



1806 with Swing Joint on Bottom Inlet



1812 with Swing Pipe on Side Inlet





Specifications

1802, 1803, 1804, 1806 and 1812 Pop-up Full or Part Circle Spray Sprinkler

The sprinkler body, stem, nozzle and screen shall be constructed of heavy-duty, ultra-violet resistant plastic. It shall have a heavy-duty stainless steel retract spring for positive pop-down and a ratcheting system for easy alignment of the pattern. The sprinkler shall have a soft elastomer pressure-activated co-molded wiper seal for cleaning debris from the pop-up stem as it retracts into the case to prevent the sprinkler from sticking up to minimize "flow-by."

The sprinkler shall have a matched precipitation rate (MPR) plastic or brass nozzle with an adjusting screw capable of regulating the radius and flow. The sprinkler shall be capable of housing protective, non-clogging filter screens or pressure compensating screens (PCS) under the nozzle. The screen shall be used in conjunction with the adjusting screw for regulating. The 6" (15 cm) and 12" (30 cm) models shall have both a side and a bottom 1/2" (15/21) (FNPT) inlet for ease of installation.

The sprinkler shall have a Pop-Top™ Flush Plug pre-installed. The plug shall prevent debris from clogging the sprinkler during installation and allow for the system to be flushed before nozzle. The plug shall be bright orange in color and constructed of polypropylene material.

1804 SAM, 1806 SAM and 1812 SAM Full or Part Circle Seal-A-Matic™ Pop-up Spray Sprinkler

Optional Feature Specifications:

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinklers shall also include a Seal-A-Matic (SAM) check valve to prevent low-head drainage of up to 14 feet of head. This feature shall require the use of the bottom inlet only. These units shall be identifiable from the top with "SAM" marking on the cap. The sealing device shall be an integral part of the pop-up stem, removable through the top of the sprinkler, and shall seal against the bottom case inlet. It shall create no more than 1 psi pressure drop at the maximum rated flow.

1804 PRS, 1806 PRS and 1812 PRS Full or Part Circle Pressure Regulating Pop-up Spray Sprinkler

Optional Feature Specifications:

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a pressure regulating (PRS) device to prevent high pressure fogging to the nozzle stream. This regulating device shall be an integral part of the pop-up stem, removable through the top of the case. These units shall be identifiable from the top with "PRS" markings on the cap.

The device shall regulate the nozzle pressure to 30 psi for inlet pressures from 35 to 70 psi. Below 35 psi the pressure loss shall not exceed 6 psi.

1804 SAM-PRS, 1806 SAM-PRS and 1812 SAM-PRS Full or Part Circle Seal-A-Matic Pressure Regulating Pop-up Spray Sprinkler

Optional Feature Specifications:

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a Seal-A-Matic (SAM) check valve and a pressure regulating (PRS) device. These units shall be identifiable from the top with "SAM-PRS" markings on the cap.

The check valve shall prevent low-head drainage of up to 14 feet of head. The pressure regulating device shall prevent high pressure fogging of the nozzle stream by regulating the nozzle pressure to 30 psi for inlet pressures from 35 to 70 psi. Below 35 psi the pressure loss shall not exceed 6 psi. These models shall utilize the bottom inlet only.

1804 SAM-P45, 1806 SAM-P45, and 1812 SAM-P45 Full or Part Circle Seal-A-Matic Pressure Regulating Pop-up Spray Sprinkler

Optional Feature Specifications:

When so indicated on the design, the 4", 6" or 12" high pop-up spray sprinkler shall also include a Seal-A-Matic (SAM) check valve and a 45 psi pressure regulating (P45) device. These units shall be identifiable from the top with "SAM-PRS-45" markings on the cap.

The check valve shall prevent low-head drainage of up to 14 feet of head. The pressure regulating device shall prevent high pressure misting and undesirable performance of the nozzle stream by regulating the nozzle pressure to 45 psi for inlet pressures from 50 to 70 psi. Below 50 psi the pressure loss shall not exceed 6 psi. These models shall utilize the bottom inlet only.

The sprinkler shall be as manufactured by Rain Bird Corporation, Azusa, California.

Rain Bird Corporation

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

Rain Bird Technical Services

(800) RAINBIRD (1-800-724-6247)
(U.S. and Canada)

Rain Bird Corporation

970 West Sierra Madre Avenue
Azusa, CA 91702
Phone: (626) 812-3400
Fax: (626) 812-3411

Specification Hotline

800-458-3005 (U.S. and Canada)

Rain Bird International, Inc.

1000 West Sierra Madre Ave.
Azusa, CA 91702
Phone: (626) 963-9311
Fax: (626) 852-7343

The Intelligent Use of Water™
www.rainbird.com

ROTORS SPRAYS VALVES CONTROLLERS SENSORS CENTRAL CONTROLS MICRO

I-40

ultra

Hunter®



The Spotlight is on the I-40 *Ultra* Performance Rotor

The I-40 *Ultra* is the number one choice for sports facilities worldwide. Ideal for parks and commercial sites. A tough commercial rotor that delivers with accuracy at watering distances up to 70 feet. From stadiums to practice fields and other sites, this group performs. Plus, the aesthetics and strength of stainless steel is undeniable. Looks good, made to last. Choose the I-40 *Ultra* for ultimate performance, effective irrigation, and beautiful results.



STAINLESS STEEL RISES TO THE TOP

Why stainless steel? Nothing is better. Whether you're dealing with unpredictable soil conditions, unforgiving climates or heavy foot traffic, this solid riser takes it all in stride. Stainless steel risers come standard on I-60 and I-40 *Ultra* rotors, as an option on I-35 Sierra, I-25 *Ultra* and I-20 *Ultra*. Take a Hunter rotor, add a stainless steel riser, and you've got an equation for lasting muscle.



OPPOSING DESIGN FOR ALL SIDES

The I-40-ON gives you all the winning features of our other I-40 models and an opposing nozzle design for excellent water distribution. With primary and secondary nozzles on opposing sides of the turret, streams arc in opposite directions as the sprinkler rotates. You get outstanding midrange and close-in watering.



PROTECH™ SAFETY SYSTEM EQUALS THE BEST DEFENSE

The ProTech™ safety system makes the exposed portion of its heavy-duty rubber cover as small as possible to avoid players or children. The rubber boot around the cover ensures that no metal or hard plastic pieces cause added injury either. So the tops of our ergonomically-designed I-40, I-35 Sierra and I-25. Plus commercial rotors are flexible and made to minimize contact.

INDIVIDUAL UNIFORMITY AND CLOSE-IN COVERAGE

Get the uniformity and close-in coverage you need.

TRIPLE NOZZLE SYSTEM COVERS THREE BASES.

The I-40's triple nozzle system with unyielding wind resistance delivers the ultimate in uniform distribution. You get six free interchangeable main stream nozzles that water accurately up to 70 feet. In addition, two built-

in secondary nozzles ensure thorough midrange and close-in coverage.



Proven and tested water-lubricated gear drive system.



Reclaimed option available.



ULTRA
Easy arc adjustment (50° - 360°): Up, down, wet or dry with through-the-top convenience, non-reversing.



ULTRA
Automatic arc return: returns to the original arc regardless of where the turret is turned.

ULTRA
Non-strippable, vandal-proof drive mechanism enables the turret to be turned without causing damage.

Primary nozzle system has six interchangeable nozzles for consistent coverage with a radius from 45' to 70'.

Secondary nozzles offer exceptional coverage for mid-range and close-in coverage.

Proven water-lubricated gear drive: Time-tested and improved for even longer life.

Available in 4" or 6" pop up.



Charts and Specs

I-40 Ultra Nozzle Performance Data					
Nozzle	Pressure PSI	Radius ft.	Flow GPM	Precip in/hr	
				■	▲
40	40	45'	7.0	0.67	0.77
	50	46'	8.0	0.73	0.84
	60	46'	8.5	0.77	0.89
41	50	50'	10.2	0.79	0.91
	60	51'	11.1	0.82	0.95
	70	52'	12.1	0.86	0.99
	80	53'	13.0	0.89	1.03
42	50	51'	11.0	0.81	0.94
	60	53'	12.3	0.84	0.97
	70	55'	13.1	0.83	0.96
	80	56'	13.9	0.85	0.99
43	50	56'	13.5	0.83	0.96
	60	57'	15.1	0.89	1.03
	70	59'	16.1	0.89	1.03
	80	61'	17.5	0.91	1.05
44	60	63'	20.0	0.97	1.12
	70	65'	21.8	0.99	1.15
	80	66'	23.4	1.03	1.19
	90	67'	24.9	1.07	1.23
45	60	66'	22.7	1.00	1.16
	70	68'	24.7	1.03	1.19
	80	69'	26.4	1.07	1.23
	90	70'	28.2	1.11	1.28

I-40 Ultra High Speed Nozzle Performance Data					
Nozzle	Pressure PSI	Radius ft.	Flow GPM	Precip in/hr	
				■	▲
40	40	41'	7.0	0.80	0.93
	50	42'	8.0	0.87	1.01
	60	42'	8.5	0.93	1.07
41	50	44'	10.2	1.01	1.17
	60	44'	11.1	1.10	1.27
	70	45'	12.1	1.15	1.33
	80	46'	13.0	1.18	1.37
42	50	46'	11.0	1.00	1.16
	60	47'	12.3	1.07	1.24
	70	49'	13.1	1.05	1.21
	80	50'	13.9	1.07	1.24
43	50	51'	13.5	1.00	1.15
	60	52'	15.1	1.07	1.24
	70	52'	16.1	1.15	1.32
	80	53'	17.5	1.20	1.38
44	60	58'	20.0	1.14	1.32
	70	58'	21.8	1.25	1.44
	80	60'	23.4	1.25	1.44
	90	60'	24.9	1.33	1.54
45	60	60'	22.7	1.21	1.40
	70	62'	24.7	1.24	1.43
	80	64'	26.4	1.24	1.43
	90	65'	28.2	1.28	1.48

Note: All precipitation rates are calculated for 180 degree operation.
For the precipitation rate for a 360 degree sprinkler, divide by 2.

I-40 Ultra Dual Opposing Nozzle Performance Data					
Nozzle	Pressure PSI	Radius ft.	Flow GPM	Precip in/hr	
				■	▲
15 Gray	50	52'	13.0	0.46	0.53
	60	54'	13.2	0.44	0.50
	70	56'	14.4	0.44	0.51
18 Red	60	58'	13.7	0.39	0.45
	70	60'	15.2	0.42	0.49
	80	62'	16.6	0.44	0.51
20 Dk. Brown	60	63'	19.1	0.46	0.53
	70	64'	20.9	0.49	0.57
	80	66'	22.3	0.49	0.57
23 Dk. Green	60	66'	23.9	0.53	0.61
	70	65'	20.4	0.46	0.54
	80	66'	22.3	0.49	0.57
25 Dk. Blue*	60	67'	24.0	0.51	0.59
	70	68'	25.6	0.53	0.62
	80	66'	22.0	0.49	0.56
28 Black	70	68'	24.0	0.50	0.58
	80	69'	25.9	0.52	0.60
	90	70'	27.2	0.53	0.62
28 Black	70	70'	28.9	0.57	0.66
	80	72'	30.9	0.57	0.66
	90	74'	32.9	0.58	0.67
	100	76'	33.7	0.56	0.65

* Factory-installed nozzle

Note: All precipitation rates calculated for 360 degree operation.

SPECIFICATIONBUILDER

MODEL	FEATURES	OPTIONS
I-40-04 = 4" Pop-up I-40-06 = 6" Pop-up	SS, SS-R SS-HS, SS-HS-R SS-ON, SS-ON-R	40-45 = Factory installed nozzle number 15-28 = Factory installed nozzle number (Models SS-ON & SS-ON-R only) B = BSP Inlet
▶ I-40-06	▶ SS-R	▶ 44

EXAMPLE ▶ I-40-06 - SS-R - 44

KEY TO FEATURES:

- SS = Adjustable arc, 50-360 degrees, stainless riser, with Check Valve
- SS-R = Adjustable arc, 50-360 degrees, stainless riser, with Check Valve and reclaimed water ID
- SS-HS = High Speed, ADJ arc, 50-360 degrees, stainless riser, with Check Valve
- SS-HS-R = High Speed, ADJ arc, 50-360 degrees, stainless riser, with Check Valve and reclaimed water ID
- SS-ON = Full-circle, with dual opposing nozzles, stainless riser, with Check Valve
- SS-ON-R = Full-circle, with dual opposing nozzles, stainless riser, with Check Valve and reclaimed water ID

EFB-CP Series

Rain Bird's Toughest, Most Reliable Brass Valves

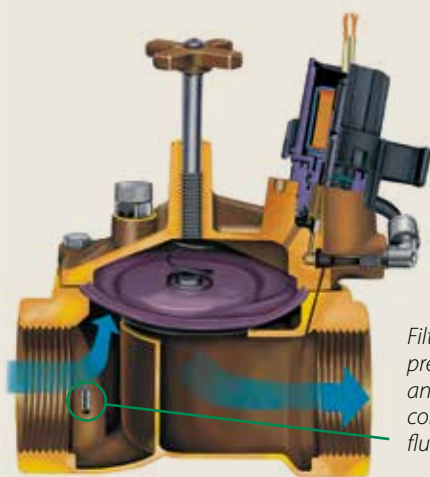
Electric remote control valves don't come any better than the Rain Bird EFB-CP Series red brass valves. Featuring a contamination-proof, self-flushing screen that cleans itself and resists debris build-up in dirty water, Rain Bird's EFB-CP Series is your best choice.

Self-Flushing System

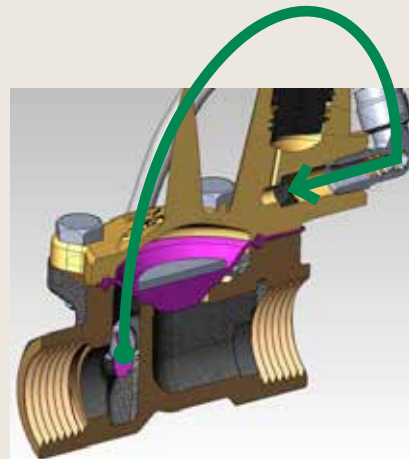
With a unique self-flushing system, debris doesn't stand a chance with the EFB-CP Series valves.

- The EFB-CP Series features a filter location that stops grit and debris before it can enter the system.
- Water flow continuously flushes the screen, dislodging particles and debris before they can accumulate and clog the filter.
- Filtered water then enters the contamination-proof bypass tube to provide reliable operation year-after-year, even in the dirtiest conditions.
- The fluid resistor slows flow through the solenoid, reducing closing speed and preventing water hammer and system damage.
- The external bypass flow tube makes troubleshooting a breeze. The durable, nylon tube can easily be removed and inspected without having to take apart the valve.

With a reclaimed water valve configuration, the EFB-CP Series is designed to handle chlorine and other harsh chemicals found in reclaimed water systems.



Filter location prevents clogging and water continuously flushes screen.



Filtered water flows directly through the contamination-proof bypass tube.

New Solenoid

With a robust electrical design, the EFB-CP Series valves deliver years of quiet, reliable performance. So, not only will you have peace of mind, you'll have peace and quiet.

- Lower activation voltage
- Quieter performance
- Stronger spring for reliable operation



Additional Features

- Red brass body and bonnet for longer life and more rugged performance at 200 psi (13,80 bar).
- Reverse flow feature ensures valves fail in the closed position if the diaphragm tears or rips. Prevents flooding, water waste and landscape damage.
- One-piece solenoid design with captured plunger and spring for easy servicing. Prevents loss of parts during field service.
- Low-power requirement allows for longer wire runs without increased wire gauge.
- Manual internal and external bleed.
- Adjustable flow control.
- Three-year trade warranty.

EFB-CP Series Models

Product ID	Model	Description
B32553	100EFBCP	ECB-CP-R Series, 1" Electrical Valve 24 VAC
B32753	125EFBCP	EFB-CP-R Series, 1 ¼" Electric Valve 24 VAC
B32853	150EFBCP	EFB-CP-R Series, 1 ½" Electric Valve 24 VAC
B32953	200EFBCP	EFB-CP-R Series, 2" Electric Valve 24 VAC

► **Contact your local Rain Bird distributor to learn more about the EFB-CP today!**



LOW VOLUME CONTROL ZONE KITS

Low Flow and High Flow Zones

APPLICATIONS

- Designed for all dripline, drip and micro-spray zones
- Residential or commercial landscape irrigation applications
- For zones between 0.25 and 35 GPM

SPECIFICATIONS

3/4" and 1" Low Flow Kits:

Flow range: 0.25 - 4.4 GPM
Regulated pressure: 42 psi

3/4" and 1" High Flow Kits:

Flow range: 4.5 - 17.6 GPM

1 1/2" Kits:

Flow range: 11 - 35 GPM

- Filter mesh: 140
- 3/4" High Flow and 1 1/2" Kits maximum pressure: 140 psi

FEATURES & BENEFITS

PRE-ASSEMBLED VALVE, FILTER AND PRESSURE REGULATOR

Saves installation and labor costs.

COMPACT DESIGN

3/4", 1" and 1 1/2" kits fit into standard 12" rectangular valve box.

WIDE RANGE OF FLOW RATES







For a variety of applications.

PROVEN DISC FILTER DESIGN

Provides superior filtration with 25 square inches of filtering surface.

AVAILABLE IN TWO STYLES

With a control valve or with no control valve.

APPLICATION	WITH VALVES	WITHOUT VALVES
COMMERCIAL High Flow: 11 to 35 GPM	 <p>KIT WITH 1 1/2" CONTROL VALVE (1 1/2" FPT Inlet x 1 1/2" MPT Outlet) LVCZ-150</p>	 <p>KIT WITH NO CONTROL VALVE (1 1/2" MPT Inlet x 1 1/2" MPT Outlet) LVCZ-150-NV</p>
RESIDENTIAL & COMMERCIAL High Flow: 4.5 to 17.6 GPM	 <p>HIGH FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x 3/4" MPT Outlet) LVCZS8010075-HF</p>	 <p>HIGH FLOW KIT WITH NO CONTROL VALVE (3/4" MPT Inlet x 3/4" MPT Outlet) LVCZNV10075-HF</p>
RESIDENTIAL & COMMERCIAL Low Flow: 0.25 to 4.4 GPM	 <p>LOW FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x 3/4" FPT Outlet) LVCZS8010075-LF</p>	 <p>LOW FLOW KIT WITH NO CONTROL VALVE (3/4" MPT Inlet x 3/4" FPT Outlet) LVCZNV10075-LF</p>

LOW VOLUME CONTROL ZONE KITS COMPARISON CHART

Inlet x Outlet	RESIDENTIAL AND COMMERCIAL LOW FLOW		RESIDENTIAL AND COMMERCIAL HIGH FLOW		COMMERCIAL	
	1" FPT INLET x 3/4" FPT OUTLET	3/4" MPT INLET x 3/4" FPT OUTLET	1" FPT INLET x 3/4" MPT OUTLET	3/4" MPT INLET x 3/4" MPT OUTLET	1 1/2" FPT INLET x 1 1/2" MPT OUTLET	1 1/2" MPT INLET x 1 1/2" MPT OUTLET
VALVE SPECIFICATIONS:						
SIZE	1"	No Valve	1"	No Valve	1 1/2"	No Valve
FLOW RANGE	0.01 to 44 GPM	No Valve	0.01 to 44 GPM	No Valve	0.25 to 110 GPM	No Valve
PRESSURE REGULATOR SPECIFICATIONS:						
SIZE	3/4"	3/4"	3/4"	3/4"	1 1/2"	1 1/2"
FLOW RANGE	0.25 to 4.4 GPM	0.25 to 4.4 GPM	4.5 to 17.6 GPM	4.5 to 17.6 GPM	11 to 35 GPM	11 to 35 GPM
REGULATED PRESSURE	42 psi	42 psi	45 psi	45 psi	45 psi	45 psi
MAXIMUM OPERATING PRESSURE	145 psi	145 psi	145 psi	145 psi	145 psi	145 psi
MANUAL FILTER SPECIFICATIONS:						
SIZE	3/4"	3/4"	3/4"	3/4"	1 1/2"	1 1/2"
MESH	140 Mesh	140 Mesh	140 Mesh	140 Mesh	140 Mesh	140 Mesh
FLOW RANGE	0 to 17 GPM	0 to 17 GPM	0 to 17 GPM	0 to 17 GPM	0 to 35 GPM	0 to 35 GPM
MAXIMUM PRESSURE	140 psi	140 psi	140 psi	140 psi	140 psi	140 psi
FILTER TYPE	Disc	Disc	Disc	Disc	Disc	Disc

Note: Specifications of the "Kit" are determined by the combination of the individual components. For example, the Flow Range of the 3/4" and 1" high flow kits is 4.5 to 17.6 GPM. This specifications table is shown for reference only for the individual components.

DIMENSIONS & WEIGHT

	LOW VOLUME WITH VALVE	LOW VOLUME NO VALVE	HIGH VOLUME WITH VALVE	HIGH VOLUME NO VALVE	HIGH VOLUME 1.5" WITH VALVE	HIGH VOLUME 1.5" NO VALVE
LENGTH	12 1/2"	9"	12 1/2"	9"	21 1/2"	15"
HEIGHT	5"	5"	5"	5"	10 1/4"	10 1/4"
WIDTH	3 7/8"	3 7/8"	3 7/8"	3 7/8"	3 7/8"	3 7/8"
WEIGHT	1.75 lbs.	.90 lbs.	1.90 lbs.	1.05 lbs.	5.3 lbs.	3.3 lbs.

ORDERING INFORMATION

DESCRIPTION	QTY	MODEL NUMBER
1" VALVE WITH 3/4" LOW FLOW REGULATOR WITH 3/4" FILTER	1	LVCZS8010075-LF
	6	LVCZS8010075-LF-B
1" VALVE WITH 3/4" HIGH FLOW REGULATOR WITH 3/4" FILTER	1	LVCZS8010075-HF
	6	LVCZS8010075-HF-B
1 1/2" VALVE WITH 1 1/2" HIGH FLOW REGULATOR WITH 1 1/2" FILTER	1	LVCZ-150
3/4" LOW FLOW REGULATOR WITH 3/4" FILTER, NO VALVE	1	LVCZNV10075-LF
	10	LVCZNV10075-LF-B
3/4" HIGH FLOW REGULATOR WITH 3/4" FILTER, NO VALVE	1	LVCZNV10075-HF
	10	LVCZNV10075-HF-B
1 1/2" HIGH FLOW REGULATOR WITH 1 1/2" FILTER, NO VALVE	1	LVCZ-150-NV



NETAFIM USA
 5470 E. Home Ave.
 Fresno, CA 93727
 CS 888 638 2346
 F 800 695 4753

www.netafimusa.com

LVCZ 5/12

3/4" AGRIFIM DRIP IRRIGATION COMPRESSION END CAP



The Agrifim CEP 900 3/4" Drip Irrigation Compression End Cap Fitting, Gray, can be used at the end of 3/4" drip tubing (.830ID X .940OD) to stop the water flow. Unscrew the cap of a gray 3/4" Agrifim drip irrigation compression end cap fitting to flush the 3/4" drip tubing at least twice a year. Easily installed by rocking the 3/4" drip tubing up and down while pushing the tubing into the compression fitting opening.

Specifications

Connection Size / Type	Fits .940" OD tubing
Fitting Type	Compression
Construction Material	Plastic

DRIPLINE COMPONENTS

AIR/VACUUM RELIEF AIR VENTS

APPLICATIONS

1/2" AIR VENTS

- Install in subsurface systems
- Not required when installing Techline® HCVXR and CV or on-surface installations

3/4", 1" AND 2" AIR VENTS

- Install in subsurface systems
- Not required when installing Techline HCVXR and CV or on-surface installations
- On sloping terrain to prevent collapsing of pipes caused by vacuum when pipe networks drain
- For air discharge during system start-up

SPECIFICATIONS

1/2" AIR VENTS

- Maximum operating pressure: 140 psi

3/4", 1" AND 2" AIR VENTS

- Maximum operating pressure: 150 psi
- Made of corrosion-resistant reinforced UV protected composite materials - no metal parts to rust or corrode, no need for spare parts



1/2" MPT
Model TLAVRV



GUARDIAN

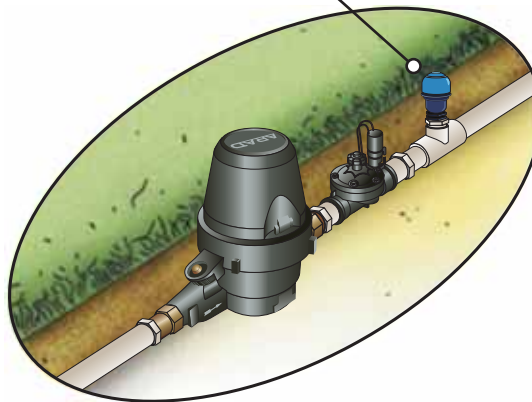
3/4" MPT **1" MPT**
Model 65ARIA075 Model 65ARIA100



2" FPT
Model 65ARIA2

MPT = Male Pipe Thread
FPT = Female Pipe Thread

Guardian air/vacuum
relief vent



COMBINATION AIR VENTS

APPLICATIONS

- For discharge of large volumes of air, along mains and at the end of mainlines
- Place before water meters and automatic metering valves for accurate flow readings
- Place at high points in pipe network or upstream of manifolds

SPECIFICATIONS

MINI

- Continuous acting
- Maximum operating pressure: 150 psi
- Sizes: 1/2" and 3/4" MPT (2.4"w x 4.5"h)

COMBINATION

- Continuous acting
- Maximum operating pressure: 150 psi
- Size: 1" MPT (3.9"w x 5.5"h)

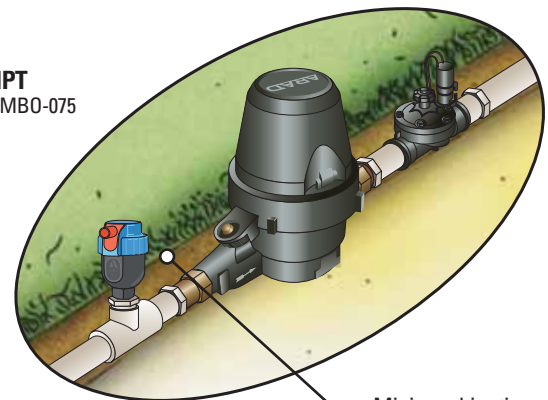


MINI

1/2" MPT **3/4" MPT**
Model AV-COMBO-050 Model AV-COMBO-075



COMBINATION
1" MPT
Model 65ARIB1-150



Mini combination
air vent

MPT = Male Pipe Thread



TECHLINE® HCVXR

17mm DRIPLINE

THE INDUSTRY'S BEST PROTECTION AGAINST ROOT INTRUSION

Cupron® copper oxide is molded into the emitter providing a long lasting solution to root intrusion

HIGH CHECK VALVE IN EACH EMITTER

All emitters turn on and off at the same time holding back up to 8.5' of water making it ideal for elevation changes and high slopes

ANTI-SIPHON FEATURE PROTECTS AGAINST DEBRIS

Emitter outlet is sealed at system shut-down blocking debris from entering the dripline after irrigation

LASER ETCHING ON THE DRIPLINE

Permanent identification of the model, flow rate and emitter spacing right on the dripline for quick and easy reference



Cupron®
copper oxide

SUPERIOR PROTECTION

Netafim's Techline products provide a wide range of CV emitter options to address a variety of installation requirements from flat surfaces, slopes to subsurface (buried). Building on the 15+ years of success with our CV emitter, we've now added Cupron® copper oxide and a high check valve feature to this proven emitter.

Techline® HCVXR is a revolutionary new dripline which provides superior root intrusion resistance. It's also the longest lasting solution that continues to function even after years of use because the Cupron® copper oxide is infused in the material used to make the emitter. In addition to the copper oxide, Techline HCVXR has a unique patented emitter design with physical root barrier for even more root intrusion protection.

FEATURES & BENEFITS

LONG LASTING PROTECTION THROUGHOUT THE LIFE OF THE DRIPLINE

Cupron® copper oxide will not wash off, wear off and does not leach out of the emitter providing superior root intrusion resistance.

HIGH CHECK VALVE IN EACH EMITTER

The high check valve is great on slopes because it holds back 8.5' of water (elevation change) keeping the dripline charged for even distribution of water with no low emitter drainage.

NEW COLOR FOR EASY IDENTIFICATION

The dripline has a new color for easy identification as Techline HCVXR.

FOUR NEW EMITTER FLOW RATES

Achieve maximum design flexibility with four new emitter flow rates - the most options offered in the industry.

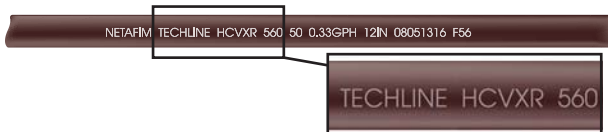
Techline HCVXR dripline also has the same superior features and benefits as Techline CV which include:

- **Physical Root Barrier** - the offset flow path, extra large bath area and raised outlet provide additional root intrusion protection
- **Anti-Siphon Feature** - prevents debris from entering the emitter outlet at system shut-down. Surface and subsurface installations don't require air relief valves
- **Pressure Compensating** - delivers precise, equal amounts of water over a broad pressure range
- **Continuous Self-flushing Emitter** - flushes debris as it's detected
- **Laser Etching** - permanent identification for model and flow rate right on the dripline
- **One-Piece Dripline Construction** - reliable, easy installation
- **Flexible UV Resistant Tubing** - bending radius of 7" adapts to any planting area shape

NEW!

LASER ETCHING ON THE DRIPLINE

Now there's a quick and easy way to identify the dripline model, flow rate and emitter spacing - it's permanently etched onto the surface of the dripline.



HERE'S HOW IT WORKS

Cupron® copper oxide (Cu_2O) technology effectively deters roots from growing in the HCVXR emitter. During the manufacturing process, the copper oxide is mixed with the emitter resin material infusing the copper oxide in the emitter. It will not wash off, wear off or leach out of the emitter. The copper colored top portion of the emitter contains the embedded copper oxide.



Top with embedded copper oxide



Diaphragm



Bottom with large filtration area

LONG LASTING SOLUTION

APPLICATIONS

- Subsurface or on-surface applications
- Turf, shrubs, trees and flowers
- Sports turf, tennis courts, golf courses
- Slopes
- Curved, angular or narrow planting areas
- High traffic/high liability areas
- Areas subject to vandalism
- At-grade windows
- Green walls, green roofs
- Raised planters

SPECIFICATIONS

- Emitter flows: 0.33, 0.53, 0.77, 1.16 GPH
- Emitter spacings: 12", 18", 24" (24" spacing available on 1,000 coils only)
- Pressure compensation range: 21.8 to 58 psi (stainless steel clamps recommended above 50 psi)
- High Check Valve: holds back 8.5' of water
- Bending radius: 7"
- Maximum recommended system pressure: 58 psi
- Minimum pressure required: 21.8 psi
- Tubing diameter: 0.66" OD; 0.56" ID, 0.050" wall
- Coil lengths: 100', 250', 500', 1,000'
- Recommended minimum filtration: 120 mesh
- Diaphragm: molded silicon



A LITTLE BIT MORE ABOUT CUPRON TECHNOLOGY

Cupron® technology remains effective throughout the life of the product.

- This technology was used in 2010 in the socks given to Chilean Miners on day 36 of being trapped underground. For the miners, these anti-odor socks prevented 99.9% of bacteria and fungi while improving the overall appearance of the skin.



- The Israeli Defense Force became the first army in the world to supply their troops with anti-microbial socks based on this innovative copper technology.

TECHLINE HCVXR-RW

Now available for reclaimed water use - Techline HCVXR dripline with a purple stripe, high check valve and root intrusion protection.



RELIABILITY WITH THE LANDSCAPE INDUSTRY'S LONGEST ROOT INTRUSION WARRANTY

15 YEARS

Netafim stands behind Techline HCVXR with an unprecedented limited warranty for root intrusion. We warrant Techline HCVXR to be free of emitter plugging due to root intrusion for a period of 15 years* from the date of original delivery.

* Refer to the Landscape & Turf Catalog for warranty details

GENERAL GUIDELINES	TURF											SHRUB & GROUND COVER												
	CLAY SOIL			LOAM SOIL			SANDY SOIL			COARSE SOIL		CLAY SOIL		LOAM SOIL		SANDY SOIL		COARSE SOIL						
EMITTER FLOW	0.33 GPH			0.53 GPH			0.77 GPH			1.16 GPH		0.33 GPH		0.53 GPH		0.77 GPH		1.16 GPH						
EMITTER SPACING	18"			12"			12"			12"		18"		18"		12"		12"						
LATERAL (ROW) SPACING	18"	20"	22"	12"	18"	20"	12"	14"	16"	12"	14"	16"	18"	21"	24"	18"	21"	24"	16"	18"	20"	16"	18"	20"
BURIAL DEPTH	Bury evenly throughout the zone from 4" to 6"											On-surface or bury evenly throughout the zone to a maximum of 6"												
APPLICATION RATE (INCHES/HOUR)	0.24	0.21	0.19	0.85	0.56	0.51	1.23	1.05	0.92	1.86	1.60	1.40	0.24	0.20	0.18	0.38	0.32	0.28	0.92	0.82	0.74	1.40	1.24	1.12
TIME TO APPLY ¼" OF WATER (MINUTES)	64	71	78	18	27	30	12	14	16	8	9	11	64	74	85	40	46	53	16	18	20	11	12	13

Following these maximum spacing guidelines, emitter flow selection can be increased if desired by the designer.
1.16 GPH flow rate available for areas requiring higher infiltration rates, such as coarse sandy soils.

TECHNICAL INFORMATION

SPECIFYING MODEL NUMBER

Reference for Ordering Information Chart

A Techline HCVXR = TLHCVXR Dripline

SAMPLE MODEL NUMBER

TLHCVXR3-1210

1 **EMITTER FLOW RATE**
0.33 GPH = **3**
0.53 GPH = **5**
0.77 GPH = **7**
1.16 GPH = **11**

2 **EMITTER SPACING**
12" = **12**
18" = **18**
24" = **24**

3 **COIL LENGTH**
100' = **01**
250' = **025**
500' = **05**
1,000' = **10**



RECYCLED CONTENT

Techline HCVXR qualifies for LEED credit 4.2 as it contains a minimum of 20% polyethylene post-consumer recycled material.

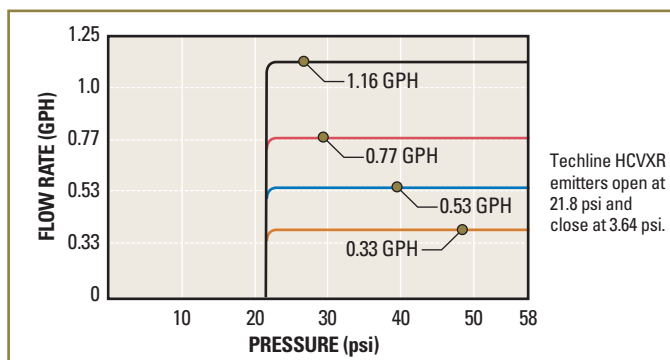
FLOW PER 100 FEET

EMITTER SPACING	0.33 EMITTER		0.53 EMITTER		0.77 EMITTER		1.16 EMITTER	
	GPH	GPM	GPH	GPM	GPH	GPM	GPH	GPM
12"	33.0	0.55	53.0	0.88	77.0	1.28	116.0	1.93
18"	22.0	0.37	35.3	0.59	51.3	0.86	77.3	1.29
24"	16.5	0.28	26.5	0.44	38.5	0.64	58.0	0.97

ORDERING INFORMATION

FLOW RATE	EMITTER SPACING	COIL LENGTH	MODEL NUMBER
0.33 GPH	12"	100'	TLHCVXR3-1201
		250'	TLHCVXR3-12025
		500'	TLHCVXR3-1205
		1,000'	TLHCVXR3-1210
	18"	100'	TLHCVXR3-1801
		250'	TLHCVXR3-18025
		500'	TLHCVXR3-1805
	24"	1,000'	TLHCVXR3-1810
		1,000'	TLHCVXR3-2410
0.53 GPH	12"	100'	TLHCVXR5-1201
		250'	TLHCVXR5-12025
		500'	TLHCVXR5-1205
		1,000'	TLHCVXR5-1210
	18"	100'	TLHCVXR5-1801
		250'	TLHCVXR5-18025
		500'	TLHCVXR5-1805
	24"	1,000'	TLHCVXR5-1810
		1,000'	TLHCVXR5-2410
0.77 GPH	12"	100'	TLHCVXR7-1201
		250'	TLHCVXR7-12025
		500'	TLHCVXR7-1205
		1,000'	TLHCVXR7-1210
	18"	100'	TLHCVXR7-1801
		250'	TLHCVXR7-18025
		500'	TLHCVXR7-1805
	24"	1,000'	TLHCVXR7-1810
		1,000'	TLHCVXR7-2410
1.16 GPH	12"	100'	TLHCVXR11-1201
		250'	TLHCVXR11-12025
		1,000'	TLHCVXR11-1210
	18"	100'	TLHCVXR11-1801
		250'	TLHCVXR11-18025
		1,000'	TLHCVXR11-1810
24"	1,000'	TLHCVXR11-1810	
	1,000'	TLHCVXR11-2410	
BLANK TUBING		100'	TLHCVXR001
		250'	TLHCVXR0025
		500'	TLHCVXR005
		1,000'	TLHCVXR010

FLOW RATE VS. PRESSURE



MAXIMUM LENGTH OF A SINGLE LATERAL (FEET)

EMITTER SPACING		12"				18"				24"	
EMITTER FLOW (GPH)		0.33	0.53	0.77	1.16	0.33	0.53	0.77	1.16	0.77	1.16
INLET PRESSURE	25 psi	237	173	136	103	335	246	192	146	244	184
	30 psi	327	240	187	142	464	341	266	203	338	258
	35 psi	385	282	221	168	546	401	314	239	400	304
	40 psi	429	315	247	187	611	449	351	267	446	340
	45 psi	467	342	268	203	663	488	381	290	486	370
	50 psi	499	366	287	218	710	521	408	311	520	396
	55 psi	528	387	303	230	752	552	432	329	550	418
60 psi	554	406	318	241	788	579	453	345	578	440	



NETAFIM USA

5470 E. Home Ave.
Fresno, CA 93727

CS 888 638 2346

www.netafimusa.com

GB, EFB-CP, and EFB-CP-R Series Valves

Classic Hardware. Classic Performance.

Electric remote control valves don't come any better than GB and EFB-CP Series red brass valves. Looking for heavy duty performance in clean water applications? Choose the GB! Need a contamination-proof, self-flushing screen that cleans itself and resists debris build-up in dirty water? The EFB-CP's the one! Also available in a reclaimed water valve configuration, the EFB-CP-R, is designed to handle chlorine and other harsh chemicals found in reclaimed water systems. All Rain Bird brass valves offer long life and superior performance in high pressure applications.

Features

- Red brass body and bonnet for longer life and more rugged performance at 200 psi (13,80 bar).
- Reverse flow feature ensures valve will fail in the closed position if a tear or rip in the diaphragm occurs. Prevents flooding, water waste and landscape damage.
- Fluid resistor slows flow through the solenoid, reducing closing speed and preventing water hammer and system damage.
- One-piece solenoid design with captured plunger and spring prevents loss of parts.
- Low power requirement allows for longer wire runs without increased wire gauge size.
- Manual internal and external bleed.
- Adjustable flow control.
- EFB-CP and EFB-CP-R Valves: 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.

Options (order separately)

- Accommodates optional, field installed PRS-D pressure regulating module.
- Optional purple flow control handle for easy identification of non-potable water system. (EFB-GB-NP-HAN)
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10,35 bar).

Operating Range

- Pressure: 15 to 200 psi (1,04 to 13,80 bar)
- Flow with/without PRS-D: 5 to 200 gpm (1,14 to 45,40 m³/h; 19,2 to 757 l/m)
- Temperature: up to 150° F (66° C)

Electrical Specifications

- Power: 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60 Hz
- Holding current: 0.28 A (6.72 VA) at 60 Hz

Models

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

*BSP threads available; specify when ordering.

Brass Valves Pressure Loss (psi)											
Flow gpm	GB				EFB-CP				EFB-CP-R		
	100	125	150	200	100	125	150	200	100	150	200
5	0.4				0.2				0.2		
10	0.8				0.7				0.6		
15	1.2				1.2				1.2		
20	2.1	1.4	2.3	0.6	2.1	1.4	2.3	0.5	2.2	0.6	0.4
30	5	2.3	2.9	0.7	5	2.3	2.9	0.6	4.9	1.3	0.5
40	8.2	4.1	2	0.9	8.2	4.1	2	0.8	8.6	2.2	0.7
50	13	6.8	3.3	1.1	13	6.8	3.3	1.1	13.4	3.4	1
60	-	9.8	4.6	1.7	-	9.8	4.6	1.8	-	4.9	1.5
80	-	16.5	7.5	2.6	-	16.5	7.5	2.4	-	8.5	2.5
100	-	-	11.8	3.9	-	-	11.8	3.8	-	13.2	3.9
120	-	-	16.6	5.9	-	-	16.6	5.9	-	18.6	5.8
140	-	-	-	7.8	-	-	-	7.8	-	-	7.3
160	-	-	-	10	-	-	-	10	-	-	9.2
180	-	-	-	12.4	-	-	-	12.5	-	-	11.8
200	-	-	-	15.1	-	-	-	15.8	-	-	14.5

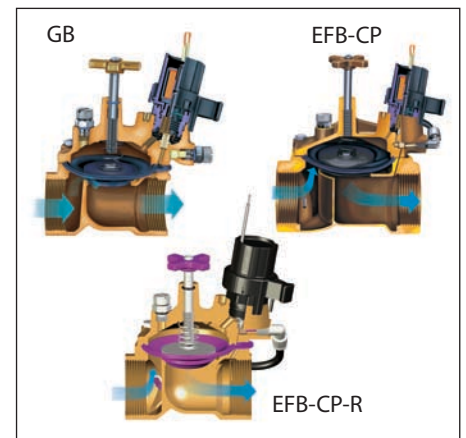
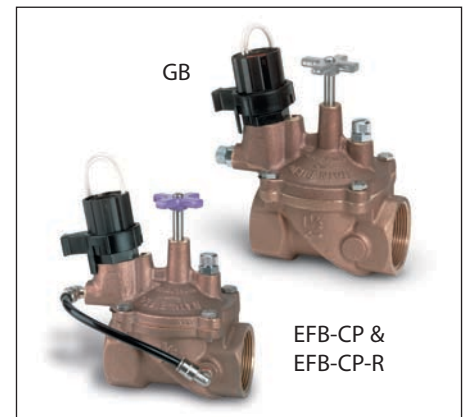
Brass Valves Pressure Loss (bar)												
Flow m ³ /h	Flow l/m	GB				EFB-CP				EFB-CP-R		
		100	125	150	200	100	125	150	200	100	150	200
1	19	0,03				0,01				0,15		
3	50	0,07				0,07				0,99		
6	100	0,27	0,14	0,19	0,05	0,27	0,14	0,19	0,04	3,93	1,05	0,46
9	150	0,56	0,28	0,14	0,06	0,56	0,28	0,14	0,05	8,46	2,17	0,69
12	200	-	0,53	0,25	0,09	-	0,53	0,25	0,09	-	3,83	1,14
15	250	-	0,82	0,38	0,14	-	0,82	0,38	0,14	-	5,99	1,80
18	300	-	1,12	0,51	0,18	-	1,12	0,51	0,16	-	8,37	2,46
21	350	-	-	0,70	0,24	-	-	0,70	0,23	-	11,43	3,37
24	400	-	-	0,91	0,31	-	-	0,91	0,30	-	14,73	4,44
27	450	-	-	1,13	0,40	-	-	1,13	0,40	-	18,30	5,69
30	500	-	-	-	0,49	-	-	-	0,49	-	-	6,71
33	550	-	-	-	0,58	-	-	-	0,58	-	-	7,80
36	600	-	-	-	0,68	-	-	-	0,68	-	-	9,06
39	650	-	-	-	0,79	-	-	-	0,79	-	-	10,72
42	700	-	-	-	0,90	-	-	-	0,92	-	-	12,46
45	757	-	-	-	1,04	-	-	-	1,09	-	-	14,25

Notes

- 1) Loss values are with flow control fully open.
- 2) GB: PRS-D module recommended for use in shaded areas only.
- 2) EFB-CP and EFB-CP-R: PRS-D module recommended for all flow ranges.

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 m³/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 m³/h; 37,8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position.

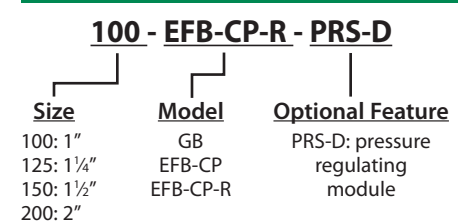


Dimensions

Size	Height	Length	Width
100GB	6" (15,2 cm)	4½" (11,4 cm)	2¼" (5,7 cm)
125GB	5½" (14,6 cm)	5" (12,7 cm)	3" (7,6 cm)
150GB	6½" (16,5 cm)	5½" (14 cm)	4" (10,2 cm)
200GB	7" (17,8 cm)	6½" (17,1 cm)	5½" (13,3 cm)
100EFB-CP	6" (15,2 cm)	4½" (11,4 cm)	3¼" (8,3 cm)
125EFB-CP	5½" (14,6 cm)	5" (12,7 cm)	3¼" (8,3 cm)
150EFB-CP	6½" (16,5 cm)	5½" (14 cm)	4½" (11,4 cm)
200EFB-CP	7" (17,8 cm)	6½" (17,1 cm)	5¼" (14,6 cm)
100EFB-CP-R	6" (15,2 cm)	4½" (11,4 cm)	3¼" (8,3 cm)
150EFB-CP-R	6½" (16,5 cm)	5½" (14 cm)	4½" (11,4 cm)
200EFB-CP-R	7" (17,8 cm)	6½" (17,1 cm)	5¼" (14,6 cm)

Note: The PRS-D option adds 2" (5,1 cm) to valve height.

How to Specify/Order



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



Specifications

The electric remote control valve shall be a normally closed 24 VAC 50/60 Hz (cycles/sec) solenoid actuated globe pattern with a balanced pressure diaphragm design. The valve pressure rating shall not be less than 200 psi (13,80 bar). The valve shall have the following characteristics (circle one):

Flow rate: _____ gpm m³/h l/m

Pressure loss not to exceed: _____ psi bar

The valve body and bonnet shall be constructed of heavy cast red brass; diaphragm shall be of nylon reinforced nitrile rubber (GB & EFB-CP) or nylon reinforced EPDM rubber (EFB-CP-R). All other internal parts shall be made of bronze, brass, and stainless steel to ensure corrosion resistance.

The valve shall have both internal and external manual open/close control (internal and external bleed) for manually opening and closing the valve without electrically energizing the solenoid. The valve shall have internal manual bleed to prevent flooding of the valve box.

The valve shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing and a leverage handle for easy turning. This 24 VAC 50/60 Hz solenoid shall open with 19.6 VAC minimum at 200 psi (13,80 bar). At 24 VAC, average inrush current shall not exceed 0.41 amps. Average holding current shall not exceed 0.28 amps.

The valve shall have a stainless steel flow control stem with cross handle for regulating or shutting off the flow of water. The valve must open or close in less than one minute at 200 psi (13,80 bar), and less than 30 seconds at 20 psi (1,38 bar).

The valve construction shall be such as to provide for all internal parts to be removable

from the top of the valve without disturbing the valve installation.

GB only: The valve shall have a control port filter screen to filter out grit and prevent clogging of hydraulic control ports.

EFB-CP only: The valve shall have a contamination proof (CP) self-flushing nylon screen located at the valve inlet to filter out grit and prevent clogging of hydraulic control ports and assure reliable operation.

EFB-CP-R only: The valve shall have a contamination proof (CP) self-flushing stainless steel screen located at the valve inlet to filter out grit and prevent clogging of hydraulic control ports and assure reliable operation. The valve shall also have a purple flow control handle and chlorine resistant diaphragm.

Optional Feature Specification

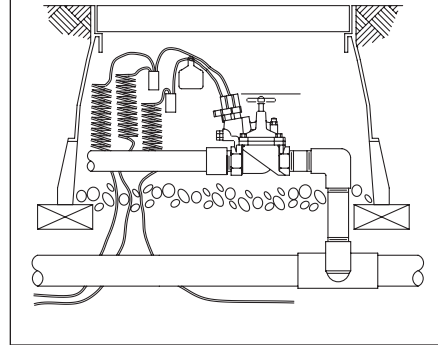
When so indicated on the design, the 1", 1½", 1¾", and 2" electric remote control valves shall have a pressure regulating module (PRS-D) capable of regulating outlet pressure between 15 and 100 psi (±3 psi) (1,04 and 6,90 bar (±0,21 bar)).

The PRS-D module shall have an adjusting knob for setting pressure and Schrader valve connection for monitoring pressure. Pressure shall be adjustable from the PRS-D when the valve is internally manually bled or electrically activated.

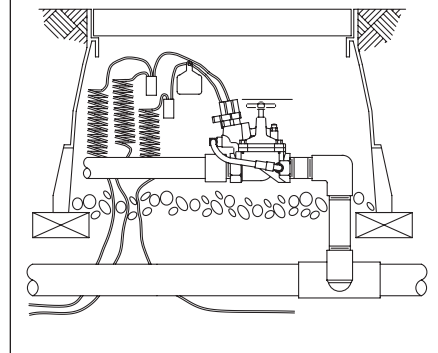
Non-Potable Flow Control Handle EFB-GB-NP-HAN

When so indicated on the design, the valve shall have a purple flow control handle to indicate to the user that non-potable water is being used. There shall be no difference between the brass and purple handles except for the color.

Brass Electric Remote Control GB Valve



Brass Electric Remote Control
EFB-CP & EFB-CP-R Valve



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

Rain Bird Corporation

6991 E. Southpoint Road, Tucson, AZ, 85706, U.S.A.
Phone: (520) 741-6100 Fax: (520) 741-6522

Rain Bird Corporation

970 W. Sierra Madre Avenue, Azusa, CA, 91702, U.S.A.
Phone: (626) 812-3400 Fax: (626) 812-3411

Rain Bird International, Inc.

P.O. Box 37, Glendora, CA, 91740-0037, U.S.A.
Phone: (626) 963-9311 Fax: (626) 852-7343

Technical Service and Support

(800) RAINBIRD (U.S. and Canada only)

Specification Hotline

(800) 458-3005 (U.S. and Canada only)

www.rainbird.com

The Intelligent Use of Water™ — Visit www.rainbird.com to learn about our efforts

Quick-Coupling Valves

Convenient water access in potable and non-potable systems

Features

- 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 leak proof operation with strong corrosion-resistant stainless steel spring.
- 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-DLRC, 33-DRC, 44-LRC, 44-RC, 33-DNP, 44-NP, and 44-NP ACME)
- Thermoplastic rubber cover for durability
- 33-DNP, 44-NP, 44-NP ACME, and 5-NP covers marked with "Do Not Drink!" warnings in English and Spanish
- Three-year trade warranty

Specifications

- 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)

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: 1 1/2" (40/49) Metal Cover, 1-Piece Body
- 5-RC-BSP: 1" (26/34) Rubber Cover, 1-Piece Body, BSP threaded



Quick Coupling Valves



Quick-Coupling Valve Cutaway



33-DNP, 44-NP, 44-NP ACME



7



3-RC, 5-RC, 5-LRC



33-DRC, 33-DLRC, 44-RC, 44-LRC

- 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
- 44-NP ACME: 1" (26/34) Non-potable, Purple Locking Rubber Cover, 2-Piece Body, ACME thread
- 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

Dimensions (height)

- 3-RC: 4 1/4" (10.8 cm)
- 33-DRC: 4 3/8" (11.1 cm)
- 33-DLRC: 4 5/8" (11.7 cm)
- 44-RC: 6" (15.2 cm)
- 44-LRC: 6" (15.2 cm)
- 5-RC: 5 1/2" (14.0 cm)

- 5-LRC: 5 1/2" (14.0 cm)
- 7: 5 3/4" (14.6 cm)
- 33-DNP: 4 3/8" (11.1 cm)
- 44-NP: 6" (15.2 cm)
- 44-NP ACME: 6" (15.2 cm)
- 5-NP: 5 1/2" (14.0 cm)

How To Specify

33 - DLRC

Model	Cover	Thread
33	RC	Blank: NPT
44	DRC	BSP: 5-RC, 5-IRC only
5	DLRC	ACME: 44-NP only
7	LRC	
	DNP	
	NP	

Note: This specifies a 33-DLRC valve: 3/4" (20/27) quick coupling type; optional locking cover.

Specifications

33-DNP, 44-NP, 44-NP ACME - Two Piece Quick Coupling Valve (Non-Potable)

The quick coupling valve shall be a two piece type capable of having a discharge rate of ___ units with a pressure loss not to exceed ___ units.

The valve shall be constructed of red brass and shall have a purple, thermoplastic, locking rubber cover with molded-in warnings of "DO NOT DRINK" in English and Spanish, for use on systems using non-potable water.

The valve shall be opened and closed by a brass key of the same manufacturer having a ___" (MNPT) and ___" (FNPT) outlet. The valve throat shall have a key-way with detent positions for regulating water flow.

QUICK COUPLING VALVES - 3-RC, 5-RC, 5-LRC, 7 - One Piece Quick Coupling Valve

The quick coupling valve shall be a one-piece type capable of having a discharge rate of ___ units with a pressure loss not to exceed ___ units.

The valve body shall be constructed of red brass. The cover shall be a durable, protective self-closing rubber cover. When so specified, the cover shall be a locking rubber cover (LRC).

The valve shall be opened and closed by a brass key of the same manufacturer having a ___" (MNPT) and ___" (FNPT) outlet. The valve throat shall have a key-way with detent positions for regulating water flow.

* Cover Key - Model 2049

- Locks and unlocks the optional locking cover (LRC) on quick coupling valves.
- Operates the valve marker compression lock.

33-DRC, 33-DLRC, 44-RC, 44-LRC - Two Piece Quick Coupling Valve

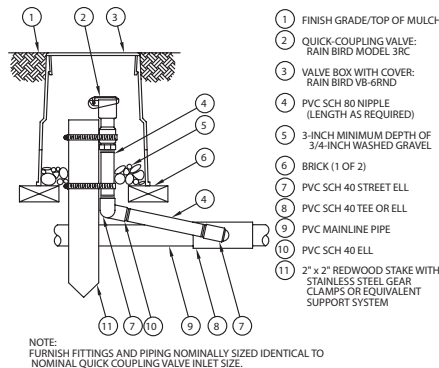
The quick coupling valve shall be a two piece type capable of having a discharge rate of ___ units with a pressure loss not to exceed ___ units.

The valve body shall be constructed of red brass. The cover shall be a durable, protective self-closing rubber cover. When so specified, the cover shall be a locking rubber cover (LRC).

The valve shall be opened and closed by a brass key of the same manufacturer having a ___" (MNPT) and ___" (FNPT) outlet. The valve throat shall have a key-way with detent positions for regulating water flow.

Quick Coupling Valve Keys

TOP PIPE THREADS					
VALVE	KEY		MALE		FEMALE
3-RC	33DK	3/4"	19 mm	1/2"	13 mm
33-DRC	33DK	3/4"	19 mm	1/2"	13 mm
33-NP	33DK	3/4"	19 mm	1/2"	13 mm
44-NP	44K	1"	25 mm	3/4"	19 mm
44-NP ACME	44KA	1"	25 mm	3/4"	19 mm
44-RC	44K	1"	25 mm	3/4"	19 mm
5-RC	55K1	1"	25 mm	—	—
5-NP	55K1	1"	25 mm	—	—
7	7K	1 1/2"	38 mm	—	—



Quick-Coupling Valves Pressure Loss (psi)

Flow	3-RC	33-DRC 33-DLRC 33-DNP	44-RC 44-LRC 44-NP 44-NP ACME	5-RC 5-LRC 5-NP	7
gpm	3/4"	3/4"	1"	1"	1 1/2"
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 44-NP ACME	5-RC 5-LRC 5-NP	7
m ³ /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

*Loss values are with flow control fully open.

1) 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.

2) For flows below 5 gpm (1 m³/h; 32 l/s) Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm.

3) For flows below 10 gpm (2 m³/h; 63 l/s) Rain Bird recommends that the flow control stem be turned down two full turns from the fully open position.

PRS-B module is recommended for use only at flow rates in areas below solid line.

Rain Bird Corporation

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

Rain Bird Technical Services

(800) RAINBIRD (1-800-724-6247)
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1000 West Sierra Madre Ave.
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The Intelligent Use of Water™

www.rainbird.com

TORO

SENTINEL® CENTRAL CONTROL



Leveraging cutting-edge wireless communication and sensing technologies, Toro's line of Sentinel® central control products offers maximum flexibility and control in an easy-to-use package for sites both large and small.



Powerful, Reliable & Versatile



Model	Conventional Output Boards	Wireless Output Boards	DC Two-Wire	AC Two-Wire	No Keypad Option	Maximum Stations	Dimensions	Warranty
WS1 Small Powder-Coated Wall-Mount Enclosure	X	X		X	X	48 Conventional or Wireless; 204 two-wire	10 1/4" W x 15 1/4" H x 5 1/4" D	Five years
WS5 Large Stainless Steel Wall-Mount Enclosure	X	X	X	X		48 Conventional or Wireless; 204 two-wire	17 1/8" W x 30 3/4" H x 8 5/8" D	Five years
PS1 Stainless Steel Pedestal	X	X	X	X		48 Conventional or Wireless; 204 two-wire	17 1/8" W x 34 1/2" H x 8 5/8" D	Five years
PP1 Plastic Pedestal	X	X	X	X		48 Conventional; 96 wireless; 204 two-wire	17" W x 40" H x 16" D	Five years
WS3 Small Stainless Steel Wall-Mount Enclosure	X				X	18 Conventional	10 3/4" W x 9 3/4" H x 3 1/2" D	Five years
WS2 Medium Powder-Coated Wall-Mount Enclosure			X			204 two-wire	14" W x 13" H x 6" D	Five years



Sentinel Central Control from Toro® is a powerful system that literally “stands guard” over irrigation sites. With the ability to control up to 999 field satellites from one location, users have a water management tool that provides ultimate customizability and reliability.

FEATURES & BENEFITS

Simple To Use

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

Features For Water Management

ET-based watering, flow sensing and optimization, water usage report with historical comparison maximize system efficiency.

Smartphone and Tablet Connectivity

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

Multiple Communication Options

Communication options like radio, Wi-Fi, cellular, and Ethernet can be mixed and matched to meet system requirements.

Distributed Programming

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

Toro NSN® Support

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



iPhone® and iPad® Connectivity



Remote Ready

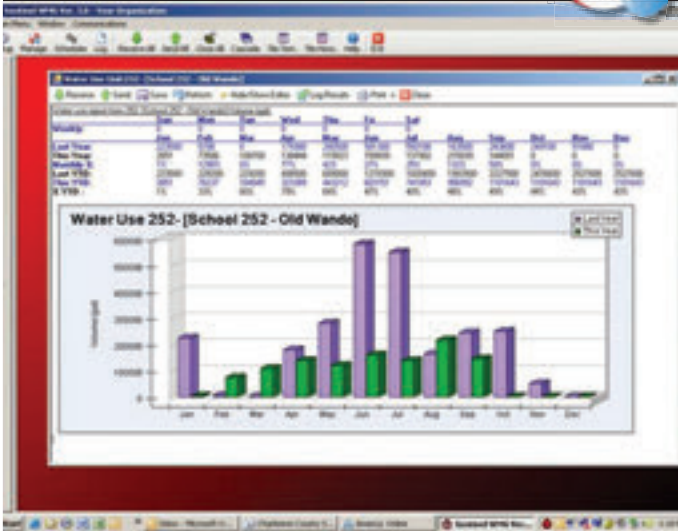


Soil Sensing Option



ET Adjust

WATER MANAGEMENT HIGHLIGHTS



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



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

SPECIFICATIONS

Electrical

- Control up to 999 field satellites
- Group controllers into “systems” for system-wide adjustments:
 - Rain Days
 - Percent Adjust
 - ET-Adjustment from shared weather source
- Field changes to controller programs can be uploaded to computer
- Support for the System Administration
 - Set system, program and satellite descriptions
 - Map valve positions on site maps
 - Mark special dates on on-screen calendar
- Alarm reporting of any system component failure, including communications, over/under-flow conditions, electrical problems or power failure
- Extensive reporting features:
 - Run time reports
 - Water usage
 - Alarms
 - Logging of system changes

Warranty

- Two year extendable by continuous NSN subscription

Additional Features

- ✓ Flow optimizing to maintain optimum flow and shorten water window
- ✓ Ability to redefine valve sequence without physically changing wire terminations in field satellite
- ✓ Information overview by group and satellite
- ✓ System status indications for individual field satellite
- ✓ On-line help screens
- ✓ Map-based feedback on system status
- ✓ Standard internet connection allows for remote access to central software via NSN® Connect

SENTINEL CENTRAL MODEL LIST

Model	Description
CENTRAL SOFTWARE/COMPUTER MODELS	
SGIS-1-T	Software Only with 2 years of NSN Support
SGIS-0-1	Software, Peripheral Hardware with 2 years of NSN Support
SGIS-1-0	Software, Computer Equip, Peripheral Hardware with 2 years of NSN Support
NSN SUPPORT EXTENSION MODELS	
SSE-T-1	1 year Extension for SGIS-0-1 of SGIS-1-T
SSE-T-3	3 year Extension for SGIS-0-1 of SGIS-1-T
SSE-C-1	1 year Extension for SGIS-1-0 (with computer warranty)
SSE-C-3	3 year Extension for SGIS-1-0 (with computer warranty)

Specifying Information—Sentinel Central Control

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

TORO®**SENTINEL® CONTROLLERS****WATER
SMART**

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

FEATURES & BENEFITS

Flow Sensing

Reads, displays and reacts to under and over flow situations and tracks water usage. No additional circuit boards are required.

Expanded Wireless Connectivity

Sentinel offers true two-way communication via several different connectivity options that can be mixed and matched to meet system requirements.

Firmware Updating

Firmware is now easier than ever to update or upgrade by simply inserting a USB thumb drive.

Weather-Based Irrigation

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

Advanced Troubleshooting

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



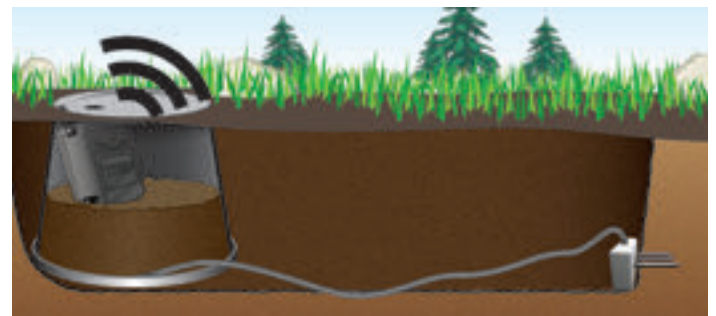
The newly-redesigned satellite controller offers a number of new features and enhancements, including a completely-redesigned interface for easier standalone programming that incorporates a large backlit graphical display, new shortcut buttons for frequently-used functions, as well as a number of other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

WATER MANAGEMENT HIGHLIGHT



Pro Series™ Soil Sensor

The new satellite controller can easily be upgraded to operate with the new Toro Pro Series™ Soil Sensor, communicating directly with up to 16 sensors per controller (1 per program), continually measuring moisture levels in the soil, and adjusting irrigation as needed. See page 89 for more details.

Remote
ReadyFlow
Sensor
CompatibleSoil
Sensing
Option

CABINET CHOICES



WS1
Powder-coated, wall-mount enclosure



WS5 Stainless Steel Wall Mount
16-gauge stainless steel, front-entry, wall-mount enclosure with backplate and junction box



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



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

SPECIFICATIONS

Operational

- 16 programs
- Eight start times per program
- 6-week scheduling calendar
- Station runtimes from one minute to 4 hours and 15 minutes
- Global adjustment from 0-255%
- Handheld remote ready
- ET and Soil Sensing options
- Two sensor inputs included for rain sensors or other switch sensors
- Operating temperature: 14° to 140°F
- Two flow sensor inputs
- Lower cost "faceless" controller option without faceplate (handheld and central programming only)

Dimensions

- Small wall-mount: 10¹/₄" W x 15¹/₄" H x 5¹/₄" D
- Stainless steel wall-mount: 17¹/₈" W x 30³/₄" H x 8⁵/₈" D
- Stainless steel pedestal-mount: 17¹/₈" W x 34¹/₂" H x 8⁵/₈" D
- Plastic Pedestal-mount: 17" W x 40" H x 16" D
- Weight:
 - Small Metal Wall-mount: 21 lbs
 - Stainless steel wall-mount: 47 lbs
 - Stainless steel pedestal-mount: 64 lbs
 - Plastic Pedestal: 60 lbs

Electrical

- Input power:
 - 120 VAC, 60 Hz
- Station output power:
 - 24 VAC
 - 1.0 amps per station maximum
 - 2.0 amps total load
- Surge protection: 24 V output boards, 20 KV @ 10 KVA

Optional Accessories

- TRS – Wired RainSensor
- TWRS/TWRFS – Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS Flow Sensors
- SHHR – Handheld Remote
- TPS-RX – Toro Pro Series™ Soil Sensor Receiver
- TPS-SS – Toro Pro Series Soil Sensor

Warranty

- Five years

Additional Features

- ✓ Upgrade to a central computer system without additional field satellite hardware or costs
- ✓ Program single or multiple stations to operate sequentially or start a program or multiple programs with just a few keystrokes
- ✓ Ability to read open- or closed-contact switches in any station count configuration
- ✓ Current monitor will disable a station if excessive amp draw is detected
- ✓ Non-volatile memory will retain all programming and real-time data for ten years
- ✓ Multi-language display: English, Spanish, French, and Italian

Specifying Information—Sentinel

SB-X-XX-XXX-U			
<i>Configuration</i>	<i>Station Count</i>	<i>Enclosure</i>	<i>Communication</i>
SB-X	XX	XXX	U
SB—Conventional Wired SBW—Short-range Wireless SBN—No Keypad (WS1 Conventional)	12—12-station 24—24-station 36—36-station 48—48-station	WS1—Powder-coated Wall Mount (Small) WS5—Stainless Steel Wall Mount (Large) PP1— Plastic Pedestal Mount (Large) PS1— Stainless Steel Pedestal Mount (Large)	U—UHF radio
Example: A 24-station Sentinel conventional controller in a small powder-coated wall-mount enclosure with UHF communication would be specified as: SB24WS1U			

TORO

SENTINEL® WIRELESS OUTPUT BOARDS



SPECIFICATIONS

Operational

- Wireless Output Controllers (SBW models) are expandable from 12 to 96-stations
- Ability to mount outputs remote from Sentinel® Control Module
 - No cabling between output boards and control module improves protection of control module from power surges
- Improved sensing includes real-time current draw per station
- Manual station activation switches
- High surge protection

Options

- Multiple Enclosure Options

Warranty

- Five years

Sentinel Wireless Output Boards utilize spread spectrum radio communication between the control module and the output boards, allowing nearly unlimited installation flexibility while virtually eliminating surge damage to the control module. Retrofits and remote flow sensing are a snap as hardscape crossing issues are eliminated.

TORO

SENTINEL® CUSTOM CONTROL SERIES



Remote
Ready



Flow
Sensor
Compatible

Sentinel Custom Control satellites are built to fit your needs and to avoid overkill on small sites. These satellites ship without manual interface keypad or display, minimizing expense without sacrificing capabilities. All the features expected of a Sentinel controller, but cost-effective for your small site needs.

SPECIFICATIONS

Operational

- All the capabilities of a Sentinel Controller, including 16 programs and eight start times per program
- 9, 12, and 18 station models
- 6-week scheduling calendar
- Station runtimes from one minute to four hours and 15 minutes
- Global adjustment from 0-255%
- Percent adjust by program from 0-255%
- Two sensor inputs included for rain sensors or other switch sensors
- Flow Monitoring Only units available (no stations) for water supply flow monitoring
- Lower cost "faceless" controller option without keypad (handheld and central programming only)

Warranty

- Five years

Specifying Information—Sentinel® Custom Control Series

SCX-XX-WS3-U			
Configuration	Station Count	Enclosure	Enclosure
SBD	XX	WS3	U
SC – Conventional SCN – No Keypad	9—9-station 12—12-station 18— 18-station	WS3 Small Station Stainless Wall-mount	U – UHF Radio



SPECIFICATIONS

Operational

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

Electrical (AC Models)

- Input power:
 - 120 VAC (60 Hz)
- Output power:
 - Up to 2 standard solenoids per station
 - Up to 4 standard solenoids per decoder
 - Up to 8 simultaneous standard solenoids per system
- Two-wire path wiring (jacketed, twisted pair):
 - 14 AWG: 5,000 ft max, 10,000 looped
 - 12 AWG: to 8,000 ft max, 16,000 looped
- Decoder-to-solenoid wiring:
 - 14 AWG: 150 ft max

Electrical (DC Models)

- Input power:
 - 120 VAC or 220/240 VAC (50/60 Hz)
- Output power:
 - Up to 2 DC solenoids per station
 - Up to 16 simultaneous DC solenoids
- Two-wire path wiring (jacketed, twisted pair):
 - 14 AWG: 15,000 ft max
 - 16 AWG to 8,450 ft max
- Decoder-to-solenoid wiring:
 - 14 AWG: 400 ft max

Dimensions

- Small wall-mount: 14" W x 13" H x 6" D
- Stainless steel wall-mount: 17 1/8" W x 30 3/4" H x 8 5/8" D
- Stainless steel pedestal-mount: 17 1/8" W x 34 1/2" H x 8 5/8" D
- Plastic pedestal-mount: 17" W x 40" H x 16" D
- Weight:
 - Small metal wall-mount: 21 lbs
 - Stainless steel wall-mount: 47 lbs
 - Stainless steel pedestal-mount: 64 lbs
 - Plastic Pedestal: 60 lbs

Optional Accessories

- TRS – Wired RainSensor
- TWRS/TWRFS – Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS – Flow Sensors
- SHHR – Handheld Remote
- TPS-RX – Toro Pro Series™ Soil Sensor Receiver Base Station Module for Sentinel Satellite Connectivity
- TPS-SS – Toro Pro Series Soil Sensor

Warranty

- Five years

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



Remote Ready



Flow Sensor Compatible



Soil Sensing Option

AC SENTINEL TWO-WIRE STATION DECODERS*

Model	Description
SB-DAC-1	1-station AC decoder
SB-DAC-2	2-station AC decoder
SB-DAC-4	4-station AC decoder
SB-BLA	AC in-line surge protection

*Decoders only compatible with new "SBA" Sentinel controller models.

DC SENTINEL TWO-WIRE STATION DECODERS

Model	Description
SB-DDC-1	1-station with integrated surge protection (Operates up to two DC)
SB-DDC-2	2-station with integrated surge protection (Operates up to four DC)
SB-DDC-4	4-station with integrated surge protection (Operates up to eight DC)
SB-TWD-ISP	Sentinel two wire DC inline surge protection

Specifying Information-Sentinel 2-Wire Controller

SBX-XXX-U		
Configuration	Station Count	Enclosure
SBX	XXX	U
SBA – Sentinel AC Decoder Controller	WS1—Powder-coated Wall-mount (Medium) AC Only WS2—Powder-coated Wall-mount (Medium) DC Only WS5—Stainless Steel Wall-mount (Large) PP1—Plastic Pedestal-mount (Large) PS1—Stainless Steel Pedestal-mount (Large)	U – UHF Radio
SBD – Sentinel DC Decoder (two-wire) Controller		

Example: A Sentinel DC two-wire controller in a medium powder-coated wall-mount enclosure with UHF communication would be specified as: **SBDWS2PU**

Refer to page 99 for enclosure compatibility.



Maximize efficiency on your Sentinel system by using ET-Based watering. ET-Based watering automatically schedules irrigation based on individual landscape needs and local weather conditions. The result is higher property values, lower water bills and a healthier environment. Unlike competitive systems, Sentinel works in conjunction with multiple weather sources including on-site weather stations and Toro's wireless, web-based Precision™ ET.

FEATURES & BENEFITS

Precision™ ET

Precision™ ET is a web-based ET source that users subscribe to through the Toro National Support Network. Virtual Weather Stations are assigned based on latitude and longitude coordinates. Each "location" will require a yearly fee, however, unlimited controllers may be assigned to any latitude and longitude.

On-Site Weather Stations*

Choose from a number of manufacturer's weather stations to meet your customer's needs. Choose wired or wireless versions to best suit the installation method needed.

*CIMIS (CA Only)
Freely access a network of over 120 automated weather stations in the State of California managed by the California Department of Water Resources (DWR).

SPECIFICATIONS

Recommendation On-Site Weather Station

- Davis Vantage Pro 2 Plus™
 - Cabled (6162C)
- Less Expensive
- 100' feet of cable provided
- 1000' possible
 - Wireless (6162)
- No cable necessary
- Repeaters can be used
 - Wireless Repeaters (7654)
- AC powered
- Solar
- Used with 6162 Davis Station
- WeatherLink® Software (6510 SER)

Supported Weather Sources:

- Precision™ ET (Virtual)
- CIMIS (Free CA only)
- Davis Instruments®
 - Vantage Pro 2 Plus™
 - Grow Weather™
- Campbell Scientific®
 - ET 106
 - Turf Weather
- Irrisoft™
 - Weather Reach™

SENTINEL SMART IRRIGATION MODEL LIST

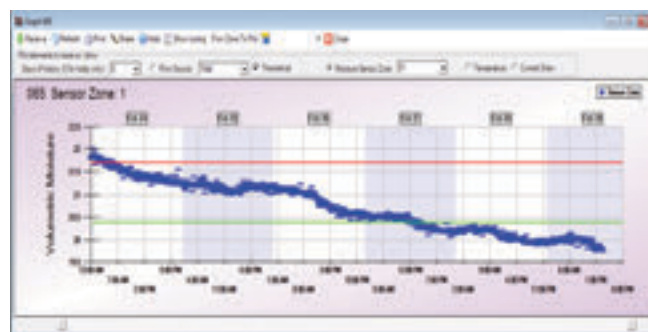
Model	Description
T-PREC-ET	Precision™ ET Renewal

On-site weather stations ordered separately.



SPECIFICATIONS

- 1 sensor assignable per program
- 16 sensors per controller
- Sensor data read every 5 minutes
- Ability to work in conjunction with ET-based control
- Refer to page 89 for additional information on the Toro® Pro Series™ Soil Sensor.



SOIL SENSING MODEL LIST

Model	Description
TPS-RX	Toro Pro Series Receiver for Sentinel controllers
TPS-SS	Toro Pro Series soil sensor
TG-S2-R	Turf Guard soil sensor

Using either the new wireless Toro® Pro Series™ Soil Sensor or the full-featured Turf Guard® soil sensor, Sentinel users can set upper and lower moisture level “trip points” in the software to regulate when irrigation is allowed, as well as view the trends over time on an at-a-glance dashboard.



SPECIFICATIONS

- Two flow inputs standard on all Sentinel controllers
- High, low, and zero flow detection by station or group of stations
- Unexpected flow detection outside of scheduled watering
- Volumetric flow shutdown option
- Projected and actual flow graphing
- Data exportable to customized Excel spreadsheets
- Each controller stores two years of flow data

FLOW SENSING MODEL LIST

Model	Description
TFS-100	1" sensor (5–50 gpm)
TFS-150	1.5" sensor (5–100 gpm)
TFS-200	2" sensor (10–200 gpm)
TFS-300	3" sensor (20–300 gpm)
TFS-400	4" sensor (40–500 gpm)

Toro Sentinel satellites have extensive flow reading, reaction, and reporting capabilities. All controllers come standard with two flow inputs and two alarm inputs, and are compatible with both standard flow sensors as well as most hydrometers, including reed-switch and 3-wire pulse-diode models.



SPECIFICATIONS

Operational

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

Dimensions

- Transmitter size (with antenna):
2³/₈" W x 1³/₄" D x 11" H

Warranty

- Two years

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

SENTINEL HANDHELD REMOTE MODEL LIST

Model	Description
SHHR	Sentinel Handheld Remote



SPECIFICATIONS

Operational

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

Dimensions

- 5 1/2" W x 5 1/2" L x 1 1/2" H

Accessories

- SHHR – Sentinel Handheld Remote

Warranty

- Two years

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

SENTINEL RETRO LINK MODEL LIST

Model	Description
SB-RLS-U2-RB	Sentinel Retro-Link Assembly (Rain Bird ESP-MC)



SPECIFICATIONS

Support for the Sentinel® Central Control

- Every Sentinel central package comes standard with 2-years NSN support
- Unlimited 24-hour toll-free support with 24/7/365 emergency paging
- Technical assistance by email with next business day response
- Remote PC assistance where connectivity is available
- Support of Microsoft® operating system software when purchased from NSN
- NSN lab for field issue duplication and diagnostics
- Technical bulletins
- Remote data storage for duration of subscription period
- Extended warranty on central hardware components with continuous subscription
- User training both hardware and software
- For more information on products, services or training, contact:

Toro NSN
 P.O. Box 3339,
 Abilene, TX 79604
 Phone: 888-676-8676
 Website: toronsn.com

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

FEATURES & BENEFITS

24-Hour, Seven-Day, 365 Support

Worldwide, Toro NSN is always available to answer your questions, troubleshoot your system and solve your problems. And if needed, our 24-hour central computer and component replacement service ensures minimal disruption to the operation of your irrigation system (U.S.).

Industry-Best Training – Classroom and Internet-Based

Classroom instruction is available at regional locations and at the NSN Training Center—where classes feature hands-on computer training and the operation of Toro hardware. NSN's new internet-based Training In Ten™ features critical instruction that can be learned in ten minutes or less and quickly applied right on-the-job!

The Confidence of Working with the Best in the Business

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

New System Support, Flexible Options to Renew

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

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

Specifying Information—NSN/Sentinel Support Extensions

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

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

toro.com/irrigation • The Toro Company • Irrigation Division • 5825 Jasmine St. • Riverside, CA • 92504 • 877-345-8676
 Specifications subject to change without notice. For more information, contact your local Toro distributor.

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REFERENCE INFORMATION*

COPPER TUBE

Size		Type K		Type L/ACR		Type M		DWV	
NOM	O.D.	HARD	COILS	HARD	COILS	HARD	COILS	HARD	
STANDARD LENGTHS		20' Lengths	60' thru 1-1/2 100' thru 1-1/4 40' and 60'-2" only	20' Lengths	60' thru 1-1/2 100' thru 1-1/4 40' - 2" only	20' Lengths	Consult	20' Lengths	
NOM	O.D.	WALL	WGT/FT	WALL	WGT/FT	WALL	WGT/FT	WALL	WGT/FT
1/4"	3/8"	.035	.145	.030	.126	.025	.106	—	—
3/8"	1/2"	.049	.269	.035	.198	.025	.145	—	—
1/2"	5/8"	.049	.344	.040	.285	.028	.204	—	—
5/8"	3/4"	.049	.418	.042	.362	.030	.263	—	—
3/4"	7/8"	.065	.641	.045	.455	.032	.328	—	—
1"	1-1/8"	.065	.839	.050	.655	.035	.465	—	—
1-1/4"	1-3/8"	.065	1.04	.055	.884	.042	.682	.040	.650
1-1/2"	1-5/8"	.072	1.36	.060	1.14	.049	.940	.042	.809
2"	2-1/8"	.083	2.06	.070	1.75	.058	1.46	.042	1.07
2-1/2"	2-5/8"	.095	2.93	.080	2.48	.065	2.03	—	—
3"	3-1/8"	.109	4.00	.090	3.33	.072	2.68	.045	1.69
3-1/2"	3-5/8"	.120	5.12	.100	4.29	.083	3.58	—	—
4"	4-1/8"	.134	6.51	.110	5.38	.095	4.66	.058	2.87
5"	5-1/8"	.160	9.67	.125	7.61	.109	6.66	.072	4.43
6"	6-1/8"	.192	13.90	.140	10.20	.122	8.92	.083	6.10
8"	8-1/8"	.271	25.90	.200	19.30	.170	16.46	—	—

FOR SPECIAL LENGTHS OR TEMPER CONSULT TUBE PRODUCTS DIVISION FOR PRICE AND AVAILABILITY

REFRIGERATION SERVICE TUBE

O.D. Size	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1-1/8"	1-3/8"	1-5/8"
WALL THICKNESS	.030	.030	.030	.032	.032	.032	.035	.035	.045	.050	.055	.060
WEIGHT PER FOOT	.0347	.0575	.0804	.109	.134	.182	.251	.305	.455	.655	.884	1.14
WEIGHT PER COIL+	1.74	2.88	4.02	5.45	6.70	9.10	12.55	15.25	22.75	32.75	44.20	57.00
COIL DIAMETER	14-3/4"	14-3/4"	14-3/4"	16-1/2"	16-1/2"	20"	22"	25"	27-1/2"	34-1/2"	39-1/2"	42"
COILS PER MASTER	10	10	10	10	10	5	5	3	3	—	—	—
WEIGHT PER MASTER	17.4	28.80	40.20	54.50	67.00	45.50	62.75	45.75	22.75	32.75	44.20	57.00

+STANDARD 50 FT. COIL – 100 FT COILS ALSO AVAILABLE AS STANDARD STOCK ITEM

TEMPERATURE CONTROL TUBE

PACKED 2000 FT PER WOOD BOX

O.D.	WALL	WGT/FT
1/4	.025	.0685

O.D.	WALL	WGT/FT
1/4	.032	.0849

*REFERENCE WALL THICKNESS, WEIGHTS , AND WGT/FT ARE NOMINAL.



Date_____

Product Certification

Mueller Copper Tube products are all manufactured in the USA. All tubing produced in Fulton, MS, and Wynne, AR, is seamless and of UNS C12200 grade of copper and is manufactured to meet the chemical and mechanical properties of the applicable ASTM specifications set forth below. When specified at order placement, Mueller Copper Tube can supply Certified Tube to meet all requirements of the current applicable ASTM specification, at an additional cost.

Streamline Copper Water Tube (Types K,L,M)
ASTM B88 and ANSI/NSF 61

Streamline Copper Refrigeration Service Coils
ASTM B280

Streamline Nitrogenized ACR Hard Drawn
Copper Tube - ASTM B280

Streamline Copper Drainage Tube (DWV)
ASTM B306

- * Please contact Technical Services for certification in Oxygen and Medical service tube. (1.662.862.1700)
Oxygen & Medical Service Tube - To ASTM B819 (Types K & L) Hard Drawn Straight Lengths Only in Accordance To CGA Cleanness Specification; CGA G4.1 (Compressed Gas Association); & NFPA 99 (Health Care Facilities).

NSF 61 Restriction Statement: "Copper Tube (Alloy C12200) is certified by NSF to ANSI/NSF Standard 61 for public water supplies meeting or in the process of meeting the U.S. EPA Lead and Copper Rule (56FR 26460, June 7, 1991). Water supplies with pH less than 6.5 may require corrosion control to limit copper solubility in drinking water."

P. O. BOX 849 ♦ FULTON, MS 38843 ♦ (662) 862-1700 ♦ FAX (662) 862-3002

P. O. BOX 309 ♦ WYNNE, AR 72396 ♦ (870) 238-3201 ♦ FAX (870) 238-8724

**VANDAL-RESISTANT EASY ACCESS
BACKFLOW ENCLOSURE**

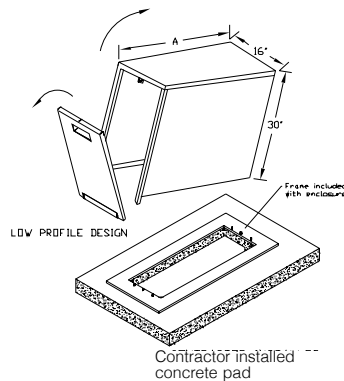
- Marine grade aluminum alloy construction provides lasting durability and strength, with light weight for ease of handling
- 100% stainless steel hardware assures long-term, rust proof durability and additional strength
- Enclosures secured to mounting hardware providing easy access for service and repair
- Flush-mounted locking mechanism and solid sheet construction ensures maximum security
- Chameleon effect of the natural finish provides an unobtrusive quality
- Five year limited warranty
- All aluminum enclosures may be powder coated in many colors at an extra charge

Low Profile Enclosure

	"A" Length	Height	Width
SBBC-22AL	22"	30"	16.25"
SBBC-30AL	30"	30"	16.25"
SBBC-45AL	45"	30"	16.25"

Note: For inside dimensions, see Backflow Cover Sizing Chart on pages 14-15.

- Marine grade aluminum
- Stainless steel hardware
- Weather resistant
- Patented locking system accepts padlock



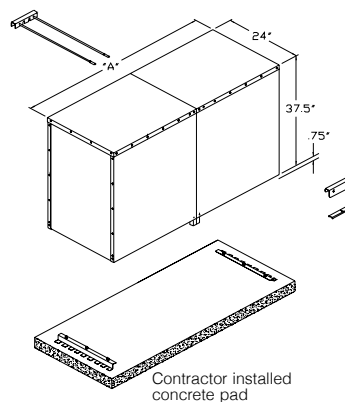
SPECIFICATION ON PAGE 48

High Profile Two Piece Enclosure

	"A" Length	Height	Width
SBBC-40ALHP	40"	39"	24"
SBBC-60ALHP	60"	39"	24"
SBBC-75ALHP	75"	39"	24"
SBBC-90ALHP	90"	39"	24"

Note: For inside dimensions, see Backflow Cover Sizing Chart on pages 14-15.

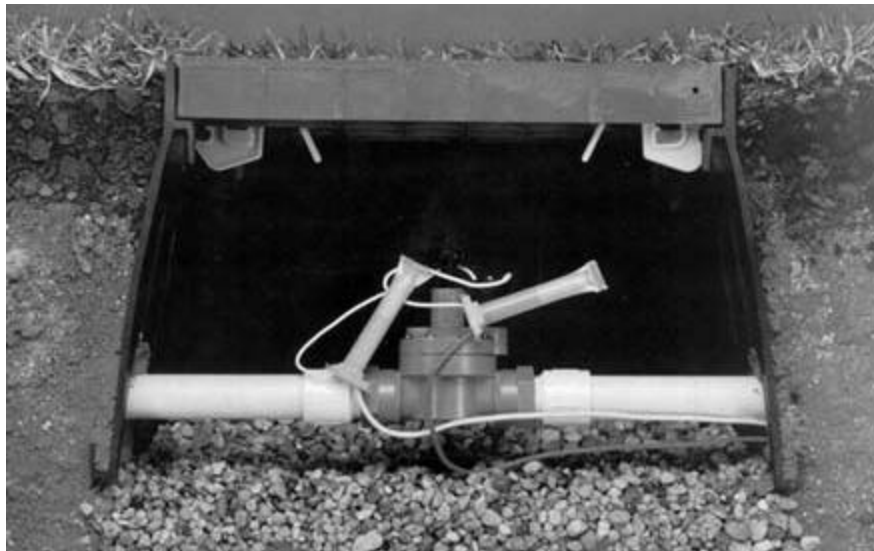
- Marine grade aluminum
- Stainless steel hardware
- Weather resistant
- Patented locking system accepts padlock



SPECIFICATION ON PAGE 49

DBY/DBR and DBY-6/DBR/6

Direct Bury Splice Kits



3M Has Your Wiring Needs Covered

3M DBY/DBR Direct Bury Splice Kits are real time savers when installing underground electrical systems. Every component for the splice is included in the kit. The insulator tube is pre-filled, eliminating the chance of the installer using too much or too little sealant.

No crimping tools, no waste, no mess. Just quick, reliable underground splices for irrigation and sprinkler systems, landscape lighting and other underground projects. The splice may be re-entered without cutting the wires (new tube required)

Flexibility

- The DBY and DBY-6 splice kit connects a wire range of 2-5 #18 AWG through 2 #12 plus 1 #16 AWG solid or stranded copper wire.
- The DBR and DBR-6 splice kit connects a wire range of 5 #16 AWG through 3 #10 AWG solid or stranded copper wire.

- Sealant does not set up hard, allowing splice to be reworked without cutting wires (new tube required).
- Application temperature range: 32° - 120°F (0° - 49°C).
- Storage Temperature: 120°F (49°C) maximum.
- Non-U.V. Stable

Economy

- Insulating gel is already contained in the tube.
- Long-term electrical properties reduce callbacks and rework.

Dependability

- Locking fingers in the tube ensure that the Scotchlok™ connector (wire nut) stays in position.
- The closed tube cover provides strain relief
- Design protects against corrosion failure.

The Scotchlok™ Y and R connectors (wire nuts) are UL listed. When assembled in the tubes of the DBY-6 and DBR-6 products, the splices are UL listed for 600 volts maximum as a wire connector system for use with underground conductors.

For Use In:

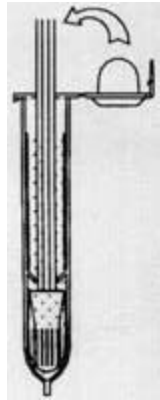
- Sprinkler Systems
- Outdoor Lighting
(Decks, driveways, lamp posts, landscape)
- Septic Systems
- Golf Courses
- Other underground electrical wiring applications

Product	Wire Range	Voltage Rating	Agency Listing
DBY	18-12 AWG	30V	-
DBR	16-10 AWG		-
DBY-6	18-12 AWG	600V	UL, CSA
DBR-6	16-10 AWG		UL, CSA

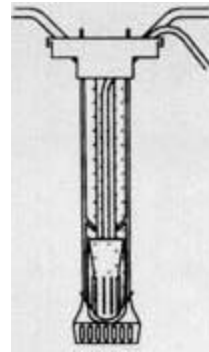
Easy as 1, 2, 3



1. Strip wires, apply the Scotchlok electrical connector and twist in a clockwise direction.



2. Insert the splice into the gel-filled insulator tube. Push past the locking fingers to hold the Scotchlok connector in place.



3. Position wire channels and snap insulator tube cover closed.

3M and Scotchlok are trademarks of 3M.



IMPORTANT NOTICE TO PURCHASER:
All statements, technical information and recommendations related to the Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use.

All statements or recommendations of the Seller which are not contained in the Seller's current publications shall have no force or effect unless contained in an agreement signed by an authorized officer of the Seller. The statements contained herein are made in lieu of all warranties expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose which warranties are hereby expressly disclaimed.

SELLER SHALL NOT BE LIABLE TO THE USER OR ANY OTHER PERSON UNDER ANY LEGAL THEORY, INCLUDING BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY, FOR ANY INJURY OR FOR ANY DIRECTOR CONSEQUENTIAL DAMAGES SUSTAINED OR INCURRED BY REASON OF THE USE OF ANY OF THE SELLER'S PRODUCTS.

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3M Electrical Products Division
6801 River Place Blvd.
Austin, Texas 78726 - 9000





VB-STD

Standard 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. Two large center knock-outs accommodate up to 3.5" diameter pipe and eleven knock-outs accommodate up to 2.0" diameter pipe. (Extensions do not have knock-outs.)
- 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.
- Shovel access slot on body allows for easy lid removal.
- Beveled lid edges help prevent damage to lids from lawn equipment.
- Bolt hole knock-out in the lid keeps insects out of the box when bolt is not used.
- Interlocking bottoms allow boxes to mate securely together bottom-to-bottom for deep installations.
- Optional stainless steel bolt and clip securely fasten the lid to the body.
- Lid marking area provides dedicated location for valve identification.
- Available lid colors are green, black and purple (to indicate non-potable water).
- Wide flange anchors box to grade, minimizing settling and service call backs.

Models and Dimensions

VB-STD: Standard Rectangular Valve Boxes

- VB-STD (SKU A11400)
- VB-STD-P (SKU A11401)
- VB-STD-B (SKU A11403)
- VB-STD-L (SKU A11404)
- VB-STD-PL (SKU A11405)
- VB-STD-BKL (SKU A11407)
- VB-STD-H (SKU A11408)*
- VB-STD-6EXT-B (SKU A11420)
- VB-STD-6EXT (SKU A11421)

Top Opening:

14.5" x 9.4" (36.8 cm x 23.9 cm)

Maximum Top:

17.5" x 13.0" (44.4 cm x 33.1 cm)

Bottom Opening:

18.7" x 14.1" (47.6 cm x 35.9 cm)

Maximum Bottom:

23.2" x 19.3" (59.0 cm x 49.0 cm)

Height:

12.1" (30.7 cm)

Knockouts: 13

Small knockouts – 11 total (4 on one side, 3 on the other side and 2 on each end)
Height 4.4" x Max Width 2.5"
(11.1 cm x 6.4 cm)

Large knockouts – 2 total (1 on each end)
Height 5.9" x Max Width 3.8"
(30.7 cm x 9.5 cm)

• VB-STD-6EXT Standard Extension

Top Opening:

15.3" x 10.2" (39.0 cm x 26.0 cm)

(note, no secondary, internal lid rest lip as found on the VB-STD models)

Maximum Top:

17.5" x 12.1" (44.3 cm x 30.8 cm)

Bottom Opening:

15.5" x 11.1" (39.3 cm x 28.3 cm)

Maximum Bottom:

20.0" x 14.8" (50.8 cm x 37.5 cm)

Height:

6.8" (17.2 cm)

Pallet Quantity (body + lid)

- STD = 52

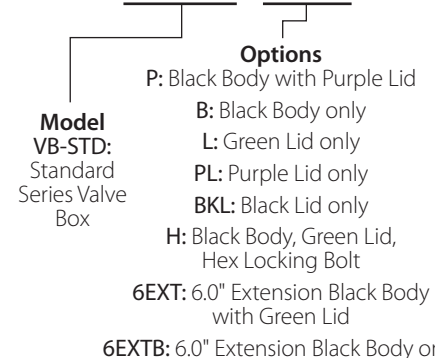
VB-STD



VB-STD-6EXT

How to Specify

VB – STD – XXXXX



* Includes 2 hex head 3/8" x 3.0" (1.0 x 7.6 cm) bolts, washers and clips.

VB-STD 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 and black lid shall be composed of 100% recycled HDPE.

The standard 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. Rectangular valve boxes 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.

Extension models shall have vertical ribs inside that make them capable of being mounted directly over the top of another 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.

There shall be no hole in the valve box lid unless the bolt-hole knock-out is removed in order to use the locking bolt. 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
970 West Sierra Madre Ave.
Azusa, CA 91702
Phone: (626) 812-3400
Fax: (626) 812-3411

Technical Services and Support
(800) RAINBIRD (U.S. and Canada only)

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

Specification Hotline
(800) 458-3005 (U.S. and Canada only)

Rain Bird International, Inc.
1000 West Sierra Madre Ave
Azusa, CA 91702
Phone: (626) 963-9311
Fax: (626) 852-7343

www.rainbird.com

Nipples PVC, CPVC & PE Nipples



PVC Schedule 80 Nipple

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/8" Diameter						
1/8XCLOSE	879-005 1.18	1879-005 1.18	879-005P 1.18	25	800	120
1/8X1-1/2	879-015 1.18	1879-015 1.18	879-015P 1.18	25	800	120
1/8X2	879-020 1.34	1879-020 1.34	879-020P 1.34	25	800	120
1/8X2-1/2	879-025 1.41	1879-025 1.41	879-025P 1.41	25	800	120
1/8X3	879-030 1.41	1879-030 1.41	879-030P 1.41	25	800	120
1/8X3-1/2	879-035 1.56	1879-035 1.56	879-035P 1.56	25	800	120
1/8X4	879-040 1.56	1879-040 1.56	879-040P 1.56	25	800	120
1/8X4-1/2	879-045 1.76	1879-045 1.76	879-045P 1.76	25	600	120
1/8X5	879-050 1.76	1879-050 1.76	879-050P 1.76	25	600	120
1/8X5-1/2	879-055 2.01	1879-055 2.01	879-055P 2.01	25	600	120
1/8X6	879-060 2.01	1879-060 2.01	879-060P 2.01	25	600	120
1/8X7	879-070 2.34	1879-070 2.34	879-070P 2.34	25	450	120
1/8X8	879-080 2.65	1879-080 2.65	879-080P 2.65	25	600	120
1/8X9	879-090 2.79	1879-090 2.79	879-090P 2.79	25	400	120
1/8X10	879-100 3.20	1879-100 3.20	879-100P 3.20	25	400	120
1/8X11	879-110 3.47	1879-110 3.47	879-110P 3.47	25	400	120
1/8X12	879-120 3.47	1879-120 3.47	879-120P 3.47	25	400	120
1/8X13	879-130 4.48	1879-130 4.48	879-130P 4.48	25	400	120
1/8X14	879-140 4.89	1879-140 4.89	879-140P 4.89	25	250	120
1/8X15	879-150 5.14	1879-150 5.14	879-150P 5.14	25	300	120
1/8X16	879-160 5.68	1879-160 5.68	879-160P 5.68	25	250	120
1/8X17	879-170 5.91	1879-170 5.91	879-170P 5.91	25	250	120
1/8X18	879-180 6.07	1879-180 6.07	879-180P 6.07	25	0	120
1/8X19	879-190 6.46	1879-190 6.46	879-190P 6.46	5	0	120
1/8X20	879-200 6.89	1879-200 6.89	879-200P 6.89	25	0	120
1/8X22	879-220 7.35	1879-220 7.35	879-220P 7.35	25	0	120
1/8X24	879-240 8.02	1879-240 8.02	879-240P 8.02	25	0	120
1/8X30	879-300 10.22	1879-300 10.22	879-300P 10.22	25	0	120
1/8X36	879-360 12.04	1879-360 12.04	879-360P 12.04	25	0	120
1/8X42	879-420 14.02	1879-420 14.02	879-420P 14.02	25	0	120
1/8X48	879-480 16.03	1879-480 16.03	879-480P 16.03	25	0	120

1/4" Diameter

1/4XCLOSE	880-005 1.23	1880-005 1.23	880-005P 1.23	25	1200	120
1/4X1-1/2	880-015 1.23	1880-015 1.23	880-015P 1.23	25	1200	120
1/4X2	880-020 1.51	1880-020 1.51	880-020P 1.51	25	500	120
1/4X2-1/2	880-025 1.51	1880-025 1.51	880-025P 1.51	25	500	120
1/4X3	880-030 2.01	1880-030 2.01	880-030P 2.01	25	550	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/4" Diameter						
1/4X3-1/2	880-035 2.01	1880-035 2.01	880-035P 2.01	25	500	120
1/4X4	880-040 2.34	1880-040 2.34	880-040P 2.34	25	300	120
1/4X4-1/2	880-045 2.34	1880-045 2.34	880-045P 2.34	25	250	120
1/4X5	880-050 2.54	1880-050 2.54	880-050P 2.54	25	250	120
1/4X5-1/2	880-055 2.54	1880-055 2.54	880-055P 2.54	25	250	120
1/4X6	880-060 2.65	1880-060 2.65	880-060P 2.65	25	250	120
1/4X7	880-070 2.74	1880-070 2.74	880-070P 2.74	25	250	120
1/4X8	880-080 2.89	1880-080 2.89	880-080P 2.89	25	250	120
1/4X9	880-090 2.97	1880-090 2.97	880-090P 2.97	25	250	120
1/4X10	880-100 3.04	1880-100 3.04	880-100P 3.04	25	250	120
1/4X11	880-110 3.26	1880-110 3.26	880-110P 3.26	25	250	120
1/4X12	880-120 3.59	1880-120 3.59	880-120P 3.59	25	250	120
1/4X13	880-130 5.22	1880-130 5.22	880-130P 5.22	25	250	120
1/4X14	880-140 5.26	1880-140 5.26	880-140P 5.26	25	250	120
1/4X15	880-150 5.58	1880-150 5.58	880-150P 5.58	25	500	120
1/4X16	880-160 7.02	1880-160 7.02	880-160P 7.02	25	250	120
1/4X17	880-170 7.38	1880-170 7.38	880-170P 7.38	25	300	120
1/4X18	880-180 7.53	1880-180 7.53	880-180P 7.53	25	300	120
1/4X19	880-190 7.89	1880-190 7.89	880-190P 7.89	25	300	120
1/4X20	880-200 8.01	1880-200 8.01	880-200P 8.01	25	200	120
1/4X22	880-220 8.38	1880-220 8.38	880-220P 8.38	25	300	120
1/4X24	880-240 8.53	1880-240 8.53	880-240P 8.53	25	200	120
1/4X30	880-300 10.47	1880-300 10.47	880-300P 10.47	25	0	120
1/4X36	880-360 12.68	1880-360 12.68	880-360P 12.68	25	0	120
1/4X42	880-420 14.92	1880-420 14.92	880-420P 14.92	25	0	120
1/4X48	880-480 16.59	1880-480 16.59	880-480P 16.59	25	0	120

3/8" Diameter

3/8XCLOSE	881-005 1.28	1881-005 1.28	881-005P 1.28	25	800	120
3/8X1-1/2	881-015 1.28	1881-015 1.28	881-015P 1.28	25	800	120
3/8X2	881-020 1.64	1881-020 1.64	881-020P 1.64	25	600	120
3/8X2-1/2	881-025 1.64	1881-025 1.64	881-025P 1.64	25	600	120
3/8X3	881-030 1.64	1881-030 1.64	881-030P 1.64	25	400	120
3/8X3-1/2	881-035 2.34	1881-035 2.34	881-035P 2.34	25	400	120
3/8X4	881-040 2.54	1881-040 2.54	881-040P 2.54	25	300	120
3/8X4-1/2	881-045 2.54	1881-045 2.54	881-045P 2.54	25	250	120
3/8X5	881-050 2.74	1881-050 2.74	881-050P 2.74	25	250	120
3/8X5-1/2	881-055 2.74	1881-055 2.74	881-055P 2.74	25	250	120



Nipples PVC, CPVC & PE Nipples

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3/8" Diameter						
3/8X6	881-060 2.83	1881-060 2.83	881-060P 2.83	25	250	120
3/8X7	881-070 2.91	1881-070 2.91	881-070P 2.91	25	200	120
3/8X8	881-080 3.13	1881-080 3.13	881-080P 3.13	25	200	120
3/8X9	881-090 3.36	1881-090 3.36	881-090P 3.36	25	200	120
3/8X10	881-100 3.47	1881-100 3.47	881-100P 3.47	25	200	120
3/8X11	881-110 3.67	1881-110 3.67	881-110P 3.67	25	200	120
3/8X12	881-120 3.89	1881-120 3.89	881-120P 3.89	25	200	120
3/8X13	881-130 5.60	1881-130 5.60	881-130P 5.60	25	0	120
3/8X14	881-140 5.80	1881-140 5.80	881-140P 5.80	25	200	120
3/8X15	881-150 6.08	1881-150 6.08	881-150P 6.08	25	200	120
3/8X16	881-160 6.24	1881-160 6.24	881-160P 6.24	25	200	120
3/8X17	881-170 6.46	1881-170 6.46	881-170P 6.46	25	0	120
3/8X18	881-180 6.69	1881-180 6.69	881-180P 6.69	25	200	120
3/8X19	881-190 6.83	1881-190 6.83	881-190P 6.83	25	0	120
3/8X20	881-200 7.02	1881-200 7.02	881-200P 7.02	25	250	120
3/8X22	881-220 7.60	1881-220 7.60	881-220P 7.60	25	0	120
3/8X24	881-240 7.78	1881-240 7.78	881-240P 7.78	25	0	120
3/8X30	881-300 10.49	1881-300 10.49	881-300P 10.49	25	0	120
3/8X36	881-360 13.45	1881-360 13.45	881-360P 13.45	25	0	120
3/8X42	881-420 15.13	1881-420 15.13	881-420P 15.13	25	0	120
3/8X48	881-480 17.13	1881-480 17.13	881-480P 17.13	25	0	120

1/2" Diameter

1/2XCLOSE	882-005 1.11	1882-005 1.11	882-005P 1.11	25	675	120
1/2X1-1/2	882-015 1.11	1882-015 1.11	882-015P 1.11	25	600	120
1/2X2	882-020 1.18	1882-020 1.18	882-020P 1.18	25	150	120
1/2X2-1/2	882-025 1.18	1882-025 1.18	882-025P 1.18	50	600	120
1/2X3	882-030 1.34	1882-030 1.34	882-030P 1.34	25	300	120
1/2X3-1/2	882-035 1.34	1882-035 1.34	882-035P 1.34	25	300	120
1/2X4	882-040 1.56	1882-040 1.56	882-040P 1.56	25	300	120
1/2X4-1/2	882-045 1.56	1882-045 1.56	882-045P 1.56	25	300	120
1/2X5	882-050 1.74	1882-050 1.74	882-050P 1.74	25	300	120
1/2X5-1/2	882-055 1.74	1882-055 1.74	882-055P 1.74	25	300	120
1/2X6	882-060 1.82	1882-060 1.82	882-060P 1.82	25	300	120
1/2X7	882-070 2.12	1882-070 2.12	882-070P 2.12	25	200	120
1/2X8	882-080 2.27	1882-080 2.27	882-080P 2.27	25	0	120
1/2X9	882-090 2.34	1882-090 2.34	882-090P 2.34	25	0	120
1/2X10	882-100 2.48	1882-100 2.48	882-100P 2.48	25	0	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/2" Diameter						
1/2X11	882-110 2.65	1882-110 2.65	882-110P 2.65	25	0	120
1/2X12	882-120 2.74	1882-120 2.74	882-120P 2.74	25	0	120
1/2X13	882-130 3.13	1882-130 3.13	882-130P 3.13	25	0	120
1/2X14	882-140 3.19	1882-140 3.19	882-140P 3.19	100	0	120
1/2X15	882-150 3.44	1882-150 3.44	882-150P 3.44	100	0	120
1/2X16	882-160 3.84	1882-160 3.84	882-160P 3.84	100	0	120
1/2X17	882-170 3.95	1882-170 3.95	882-170P 3.95	100	0	120
1/2X18	882-180 4.19	1882-180 4.19	882-180P 4.19	25	100	120
1/2X19	882-190 4.33	1882-190 4.33	882-190P 4.33	100	0	120
1/2X20	882-200 4.44	1882-200 4.44	882-200P 4.44	100	0	120
1/2X22	882-220 4.44	1882-220 4.44	882-220P 4.44	100	0	120
1/2X24	882-240 5.42	1882-240 5.42	882-240P 5.42	25	100	120
1/2X30	882-300 6.83	1882-300 6.83	882-300P 6.83	25	0	120
1/2X36	882-360 9.25	1882-360 9.25	882-360P 9.25	25	0	120
1/2X42	882-420 12.34	1882-420 12.34	882-420P 12.34	25	0	120
1/2X48	882-480 12.98	1882-480 12.98	882-480P 12.98	25	0	120

3/4" Diameter

3/4XCLOSE	883-005 1.18	1883-005 1.18	883-005P 1.18	25	450	120
3/4X1-1/2	883-015 1.18	1883-015 1.18	883-015P 1.18	25	500	120
3/4X2	883-020 1.18	1883-020 1.18	883-020P 1.18	25	150	120
3/4X2-1/2	883-025 1.34	1883-025 1.34	883-025P 1.34	25	150	120
3/4X3	883-030 1.34	1883-030 1.34	883-030P 1.34	25	300	120
3/4X3-1/2	883-035 1.56	1883-035 1.56	883-035P 1.56	25	300	120
3/4X4	883-040 1.82	1883-040 1.82	883-040P 1.82	25	300	120
3/4X4-1/2	883-045 1.82	1883-045 1.82	883-045P 1.82	25	200	120
3/4X5	883-050 2.18	1883-050 2.18	883-050P 2.18	25	200	120
3/4X5-1/2	883-055 2.18	1883-055 2.18	883-055P 2.18	25	200	120
3/4X6	883-060 2.27	1883-060 2.27	883-060P 2.27	25	200	120
3/4X7	883-070 2.34	1883-070 2.34	883-070P 2.34	25	200	120
3/4X8	883-080 2.65	1883-080 2.65	883-080P 2.65	25	0	120
3/4X9	883-090 2.74	1883-090 2.74	883-090P 2.74	25	0	120
3/4X10	883-100 3.04	1883-100 3.04	883-100P 3.04	25	0	120
3/4X11	883-110 3.26	1883-110 3.26	883-110P 3.26	25	0	120
3/4X12	883-120 3.44	1883-120 3.44	883-120P 3.44	25	0	120
3/4X13	883-130 3.72	1883-130 3.72	883-130P 3.72	25	0	120
3/4X14	883-140 3.72	1883-140 3.72	883-140P 3.72	100	0	120
3/4X15	883-150 3.89	1883-150 3.89	883-150P 3.89	100	0	120

Nipples PVC, CPVC & PE Nipples



PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3/4X16	883-160 4.33	1883-160 4.33	883-160P 4.33	100	0	120
3/4X17	883-170 4.44	1883-170 4.44	883-170P 4.44	100	0	120
3/4X18	883-180 4.54	1883-180 4.54	883-180P 4.54	25	100	120
3/4X19	883-190 5.07	1883-190 5.07	883-190P 5.07	100	0	120
3/4X20	883-200 5.39	1883-200 5.39	883-200P 5.39	100	0	120
3/4X22	883-220 5.59	1883-220 5.59	883-220P 5.59	100	0	120
3/4X24	883-240 6.52	1883-240 6.52	883-240P 6.52	25	100	120
3/4X30	883-300 9.02	1883-300 9.02	883-300P 9.02	25	0	120
3/4X36	883-360 11.17	1883-360 11.17	883-360P 11.17	25	0	120
3/4X42	883-420 13.06	1883-420 13.06	883-420P 13.06	25	0	120
3/4X48	883-480 14.75	1883-480 14.75	883-480P 14.75	25	0	120

1" Diameter

1XCLOSE	884-005 1.56	1884-005 1.56	884-005P 1.56	25	300	120
1X1-1/2	884-015 1.74	1884-015 1.74	884-015P 1.74	25	300	120
1X2	884-020 1.74	1884-020 1.74	884-020P 1.74	25	300	120
1X2-1/2	884-025 1.82	1884-025 1.82	884-025P 1.82	25	300	120
1X3	884-030 1.98	1884-030 1.98	884-030P 1.98	25	200	120
1X3-1/2	884-035 2.12	1884-035 2.12	884-035P 2.12	25	200	120
1X4	884-040 2.27	1884-040 2.27	884-040P 2.27	25	200	120
1X4-1/2	884-045 2.48	1884-045 2.48	884-045P 2.48	25	200	120
1X5	884-050 2.74	1884-050 2.74	884-050P 2.74	25	0	120
1X5-1/2	884-055 3.04	1884-055 3.04	884-055P 3.04	25	0	120
1X6	884-060 3.13	1884-060 3.13	884-060P 3.13	25	0	120
1X7	884-070 3.44	1884-070 3.44	884-070P 3.44	25	0	120
1X8	884-080 3.67	1884-080 3.67	884-080P 3.67	25	0	120
1X9	884-090 4.16	1884-090 4.16	884-090P 4.16	25	0	120
1X10	884-100 4.33	1884-100 4.33	884-100P 4.33	25	0	120
1X11	884-110 4.67	1884-110 4.67	884-110P 4.67	25	0	120
1X12	884-120 5.01	1884-120 5.01	884-120P 5.01	25	0	120
1X13	884-130 5.77	1884-130 5.77	884-130P 5.77	25	0	120
1X14	884-140 5.77	1884-140 5.77	884-140P 5.77	50	0	120
1X15	884-150 6.17	1884-150 6.17	884-150P 6.17	50	0	120
1X16	884-160 6.21	1884-160 6.21	884-160P 6.21	50	0	120
1X17	884-170 7.02	1884-170 7.02	884-170P 7.02	50	0	120
1X18	884-180 7.38	1884-180 7.38	884-180P 7.38	50	0	120
1X19	884-190 7.55	1884-190 7.55	884-190P 7.55	50	0	120
1X20	884-200 7.91	1884-200 7.91	884-200P 7.91	50	0	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1X22	884-220 8.06	1884-220 8.06	884-220P 8.06	50	0	120
1X24	884-240 8.32	1884-240 8.32	884-240P 8.32	50	0	120
1X30	884-300 11.63	1884-300 11.63	884-300P 11.63	15	0	120
1X36	884-360 15.47	1884-360 15.47	884-360P 15.47	15	0	120
1X42	884-420 18.89	1884-420 18.89	884-420P 18.89	15	0	120
1X48	884-480 19.73	1884-480 19.73	884-480P 19.73	15	0	120

1-1/4" Diameter

1-1/4XCLOSE	885-005 2.27	1885-005 2.27	885-005P 2.27	25	200	120
1-1/4X2	885-020 2.34	1885-020 2.34	885-020P 2.34	25	200	120
1-1/4X2-1/2	885-025 2.56	1885-025 2.56	885-025P 2.56	25	200	120
1-1/4X3	885-030 2.65	1885-030 2.65	885-030P 2.65	25	0	120
1-1/4X3-1/2	885-035 3.04	1885-035 3.04	885-035P 3.04	25	0	120
1-1/4X4	885-040 3.04	1885-040 3.04	885-040P 3.04	25	0	120
1-1/4X4-1/2	885-045 3.47	1885-045 3.47	885-045P 3.47	25	0	120
1-1/4X5	885-050 3.47	1885-050 3.47	885-050P 3.47	25	0	120
1-1/4X5-1/2	885-055 3.89	1885-055 3.89	885-055P 3.89	25	0	120
1-1/4X6	885-060 3.89	1885-060 3.89	885-060P 3.89	25	0	120
1-1/4X7	885-070 4.44	1885-070 4.44	885-070P 4.44	25	0	120
1-1/4X8	885-080 4.67	1885-080 4.67	885-080P 4.67	25	0	120
1-1/4X9	885-090 5.07	1885-090 5.07	885-090P 5.07	25	0	120
1-1/4X10	885-100 5.45	1885-100 5.45	885-100P 5.45	25	0	120
1-1/4X11	885-110 5.83	1885-110 5.83	885-110P 5.83	25	0	120
1-1/4X12	885-120 6.17	1885-120 6.17	885-120P 6.17	25	0	120
1-1/4X13	885-130 7.15	1885-130 7.15	885-130P 7.15	25	0	120
1-1/4X14	885-140 7.41	1885-140 7.41	885-140P 7.41	25	0	120
1-1/4X15	885-150 7.82	1885-150 7.82	885-150P 7.82	25	0	120
1-1/4X16	885-160 8.15	1885-160 8.15	885-160P 8.15	25	0	120
1-1/4X17	885-170 8.93	1885-170 8.93	885-170P 8.93	25	0	120
1-1/4X18	885-180 9.74	1885-180 9.74	885-180P 9.74	25	0	120
1-1/4X19	885-190 10.83	1885-190 10.83	885-190P 10.83	25	0	120
1-1/4X20	885-200 11.05	1885-200 11.05	885-200P 11.05	25	0	120
1-1/4X22	885-220 11.26	1885-220 11.26	885-220P 11.26	25	0	120
1-1/4X24	885-240 11.43	1885-240 11.43	885-240P 11.43	25	0	120
1-1/4X30	885-300 14.92	1885-300 14.92	885-300P 14.92	10	0	120
1-1/4X36	885-360 16.31	1885-360 16.31	885-360P 16.31	10	0	120
1-1/4X42	885-420 20.71	1885-420 20.71	885-420P 20.71	10	0	120
1-1/4X48	885-480 21.55	1885-480 21.55	885-480P 21.55	10	0	120



Nipples PVC, CPVC & PE Nipples

PVC Schedule 80 Nipple

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1-1/2" Diameter						
1-1/2XCLOSE	886-005 2.48	1886-005 2.48	886-005P 2.48	25	0	120
1-1/2X2	886-020 2.74	1886-020 2.74	886-020P 2.74	25	0	120
1-1/2X2-1/2	886-025 2.91	1886-025 2.91	886-025P 2.91	25	0	120
1-1/2X3	886-030 3.13	1886-030 3.13	886-030P 3.13	25	0	120
1-1/2X3-1/2	886-035 3.47	1886-035 3.47	886-035P 3.47	25	0	120
1-1/2X4	886-040 4.16	1886-040 4.16	886-040P 4.16	25	0	120
1-1/2X4-1/2	886-045 4.16	1886-045 4.16	886-045P 4.16	25	0	120
1-1/2X5	886-050 4.67	1886-050 4.67	886-050P 4.67	25	0	120
1-1/2X5-1/2	886-055 4.67	1886-055 4.67	886-055P 4.67	25	0	120
1-1/2X6	886-060 5.01	1886-060 5.01	886-060P 5.01	25	0	120
1-1/2X7	886-070 5.59	1886-070 5.59	886-070P 5.59	25	0	120
1-1/2X8	886-080 6.17	1886-080 6.17	886-080P 6.17	25	0	120
1-1/2X9	886-090 6.54	1886-090 6.54	886-090P 6.54	25	0	120
1-1/2X10	886-100 6.89	1886-100 6.89	886-100P 6.89	25	0	120
1-1/2X11	886-110 7.41	1886-110 7.41	886-110P 7.41	25	0	120
1-1/2X12	886-120 8.32	1886-120 8.32	886-120P 8.32	25	0	120
1-1/2X13	886-130 8.54	1886-130 8.54	886-130P 8.54	25	0	120
1-1/2X14	886-140 9.25	1886-140 9.25	886-140P 9.25	25	0	120
1-1/2X15	886-150 9.65	1886-150 9.65	886-150P 9.65	25	0	120
1-1/2X16	886-160 10.41	1886-160 10.41	886-160P 10.41	25	0	120
1-1/2X17	886-170 10.64	1886-170 10.64	886-170P 10.64	25	0	120
1-1/2X18	886-180 11.33	1886-180 11.33	886-180P 11.33	25	0	120
1-1/2X19	886-190 12.58	1886-190 12.58	886-190P 12.58	25	0	120
1-1/2X20	886-200 12.98	1886-200 12.98	886-200P 12.98	25	0	120
1-1/2X22	886-220 13.13	1886-220 13.13	886-220P 13.13	25	0	120
1-1/2X24	886-240 13.51	1886-240 13.51	886-240P 13.51	25	0	120
1-1/2X30	886-300 18.43	1886-300 18.43	886-300P 18.43	5	0	120
1-1/2X36	886-360 19.34	1886-360 19.34	886-360P 19.34	5	0	120
1-1/2X42	886-420 25.96	1886-420 25.96	886-420P 25.96	5	0	120
1-1/2X48	886-480 27.44	1886-480 27.44	886-480P 27.44	5	0	120

2" Diameter

2XCLOSE	887-005 3.26	1887-005 3.26	887-005P 3.26	25	0	120
2X2	887-020 3.79	1887-020 3.79	887-020P 3.79	25	0	120
2X2-1/2	887-025 3.84	1887-025 3.84	887-025P 3.84	25	0	120
2X3	887-030 3.89	1887-030 3.89	887-030P 3.89	25	0	120
2X3-1/2	887-035 4.54	1887-035 4.54	887-035P 4.54	25	0	120
2X4	887-040 5.39	1887-040 5.39	887-040P 5.39	25	0	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
2" Diameter						
2X4-1/2	887-045 5.39	1887-045 5.39	887-045P 5.39	25	0	120
2X5	887-050 5.83	1887-050 5.83	887-050P 5.83	25	0	120
2X5-1/2	887-055 5.83	1887-055 5.83	887-055P 5.83	25	0	120
2X6	887-060 7.15	1887-060 7.15	887-060P 7.15	25	0	120
2X7	887-070 7.41	1887-070 7.41	887-070P 7.41	25	0	120
2X8	887-080 7.91	1887-080 7.91	887-080P 7.91	25	0	120
2X9	887-090 8.54	1887-090 8.54	887-090P 8.54	25	0	120
2X10	887-100 9.25	1887-100 9.25	887-100P 9.25	25	0	120
2X11	887-110 9.68	1887-110 9.68	887-110P 9.68	25	0	120
2X12	887-120 10.43	1887-120 10.43	887-120P 10.43	25	0	120
2X13	887-130 10.83	1887-130 10.83	887-130P 10.83	25	0	120
2X14	887-140 11.04	1887-140 11.04	887-140P 11.04	20	0	120
2X15	887-150 11.95	1887-150 11.95	887-150P 11.95	20	0	120
2X16	887-160 12.75	1887-160 12.75	887-160P 12.75	20	0	120
2X17	887-170 13.92	1887-170 13.92	887-170P 13.92	20	0	120
2X18	887-180 15.53	1887-180 15.53	887-180P 15.53	20	0	120
2X19	887-190 16.63	1887-190 16.63	887-190P 16.63	25	0	120
2X20	887-200 16.86	1887-200 16.86	887-200P 16.86	20	0	120
2X22	887-220 17.29	1887-220 17.29	887-220P 17.29	20	0	120
2X24	887-240 17.38	1887-240 17.38	887-240P 17.38	20	0	120
2X30	887-300 22.44	1887-300 22.44	887-300P 22.44	5	0	120
2X36	887-360 29.81	1887-360 29.81	887-360P 29.81	5	0	120
2X42	887-420 36.26	1887-420 36.26	887-420P 36.26	5	0	120
2X48	887-480 38.37	1887-480 38.37	887-480P 38.37	5	0	120

2-1/2" Diameter

2-1/2XCLOSE	888-005 11.17	1888-005 11.17	888-005P 11.17	25	0	120
2-1/2X2-1/2	888-025 12.73	1888-025 12.73	888-025P 12.73	25	0	121
2-1/2X3	888-030 12.73	1888-030 12.73	888-030P 12.73	30	0	120
2-1/2X3-1/2	888-035 14.55	1888-035 14.55	888-035P 14.55	25	0	120
2-1/2X4	888-040 16.46	1888-040 16.46	888-040P 16.46	25	0	120
2-1/2X4-1/2	888-045 16.46	1888-045 16.46	888-045P 16.46	25	0	120
2-1/2X5	888-050 18.54	1888-050 18.54	888-050P 18.54	25	0	120
2-1/2X5-1/2	888-055 18.54	1888-055 18.54	888-055P 18.54	25	0	120
2-1/2X6	888-060 20.31	1888-060 20.31	888-060P 20.31	25	0	120
2-1/2X7	888-070 21.40	1888-070 21.40	888-070P 21.40	16	0	120
2-1/2X8	888-080 22.44	1888-080 22.44	888-080P 22.44	16	0	120
2-1/2X9	888-090 25.96	1888-090 25.96	888-090P 25.96	16	0	120

Nipples PVC, CPVC & PE Nipples



PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
2-1/2" Diameter						
2-1/2X10	888-100 27.51	1888-100 27.51	888-100P 27.51	16	0	120
2-1/2X11	888-110 29.81	1888-110 29.81	888-110P 29.81	16	0	120
2-1/2X12	888-120 30.03	1888-120 30.03	888-120P 30.03	16	0	120
2-1/2X13	888-130 32.40	1888-130 32.40	888-130P 32.40	25	0	120
2-1/2X14	888-140 33.72	1888-140 33.72	888-140P 33.72	25	0	120
2-1/2X15	888-150 36.26	1888-150 38.82	888-150P 36.26	25	0	120
2-1/2X16	888-160 38.82	1888-160 38.82	888-160P 38.82	20	0	120
2-1/2X17	888-170 39.54	1888-170 39.54	888-170P 39.54	20	0	120
2-1/2X18	888-180 40.21	1888-180 40.21	888-180P 40.21	20	0	120
2-1/2X19	888-190 42.79	1888-190 42.79	888-190P 42.79	25	0	120
2-1/2X20	888-200 44.53	1888-200 44.53	888-200P 44.53	12	0	120
2-1/2X22	888-220 49.48	1888-220 49.48	888-220P 49.48	25	0	120
2-1/2X24	888-240 50.47	1888-240 50.47	888-240P 50.47	10	0	120
2-1/2X30	888-300 61.48	1888-300 61.48	888-300P 61.48	3	0	120
2-1/2X36	888-360 75.14	1888-360 75.14	888-360P 75.14	3	0	120
2-1/2X42	888-420 86.80	1888-420 86.80	888-420P 86.80	3	0	120
2-1/2X48	888-480 93.87	1888-480 93.87	888-480P 93.87	3	0	120

3" Diameter

3XCLOSE	889-005 13.34	1889-005 13.34	889-005P 13.34	25	0	120
3X3	889-030 14.55	1889-030 14.55	889-030P 14.55	20	0	120
3X3-1/2	889-035 17.00	1889-035 17.00	889-035P 17.00	30	0	120
3X4	889-040 19.44	1889-040 19.44	889-040P 19.44	30	0	120
3X4-1/2	889-045 19.44	1889-045 19.44	889-045P 19.44	20	0	120
3X5	889-050 21.79	1889-050 21.79	889-050P 21.79	20	0	120
3X5-1/2	889-055 21.79	1889-055 21.79	889-055P 21.79	20	0	120
3X6	889-060 27.23	1889-060 27.23	889-060P 27.23	20	0	120
3X7	889-070 28.74	1889-070 28.74	889-070P 28.74	10	0	120
3X8	889-080 29.58	1889-080 29.58	889-080P 29.58	10	0	120
3X9	889-090 31.11	1889-090 31.11	889-090P 31.11	10	0	120
3X10	889-100 33.86	1889-100 33.86	889-100P 34.18	10	0	120
3X11	889-110 36.26	1889-110 36.26	889-110P 36.26	10	0	120
3X12	889-120 36.88	1889-120 36.88	889-120P 36.88	10	0	120
3X13	889-130 38.23	1889-130 38.23	889-130P 38.23	20	0	120
3X14	889-140 41.47	1889-140 41.47	889-140P 41.47	20	0	120
3X15	889-150 44.03	1889-150 44.03	889-150P 44.03	20	0	120
3X16	889-160 46.60	1889-160 46.60	889-160P 46.60	20	0	120
3X17	889-170 47.93	1889-170 47.93	889-170P 47.93	10	0	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3" Diameter						
3X18	889-180 50.47	1889-180 50.47	889-180P 50.47	10	0	120
3X19	889-190 58.26	1889-190 58.26	889-190P 58.26	10	0	120
3X20	889-200 61.48	1889-200 61.48	889-200P 61.48	10	0	120
3X22	889-220 62.85	1889-220 62.85	889-220P 62.85	10	0	120
3X24	889-240 69.26	1889-240 69.26	889-240P 69.26	10	0	120
3X30	889-300 88.21	1889-300 88.21	889-300P 88.21	3	0	120
3X36	889-360 91.24	1889-360 91.24	889-360P 91.24	3	0	120
3X42	889-420 106.82	1889-420 106.82	889-420P 106.82	3	0	120
3X48	889-480 119.14	1889-480 119.14	889-480P 119.14	3	0	120

4" Diameter

4XCLOSE	890-005 21.79	1890-005 21.79	890-005P 21.79	25	0	120
4X2-1/2	890-025 22.85	1890-025 22.85	890-025P 22.85	18	0	120
4X3	890-030 22.85	1890-030 22.85	890-030P 22.85	25	0	120
4X3-1/2	890-035 27.33	1890-035 27.33	890-035P 27.33	25	0	120
4X4	890-040 30.25	1890-040 30.25	890-040P 30.25	18	0	120
4X4-1/2	890-045 30.25	1890-045 30.25	890-045P 30.25	12	0	120
4X5	890-050 30.25	1890-050 30.25	890-050P 30.25	12	0	120
4X5-1/2	890-055 30.25	1890-055 30.25	890-055P 30.25	12	0	120
4X6	890-060 32.40	1890-060 32.40	890-060P 32.40	12	0	120
4X7	890-070 35.56	1890-070 35.56	890-070P 35.56	16	0	120
4X8	890-080 37.61	1890-080 37.61	890-080P 37.61	16	0	120
4X9	890-090 37.85	1890-090 37.85	890-090P 37.85	16	0	120
4X10	890-100 40.21	1890-100 40.21	890-100P 40.21	16	0	120
4X11	890-110 45.38	1890-110 45.38	890-110P 45.38	16	0	120
4X12	890-120 52.39	1890-120 52.39	890-120P 52.39	16	0	120
4X13	890-130 54.36	1890-130 54.36	890-130P 54.36	16	0	120
4X14	890-140 55.69	1890-140 55.69	890-140P 55.69	15	0	120
4X15	890-150 58.26	1890-150 58.26	890-150P 58.26	12	0	120
4X16	890-160 60.89	1890-160 60.89	890-160P 60.89	12	0	120
4X17	890-170 64.77	1890-170 64.77	890-170P 64.77	12	0	120
4X18	890-180 73.05	1890-180 73.05	890-180P 73.05	4	0	120
4X19	890-190 73.78	1890-190 73.78	890-190P 73.78	12	0	120
4X20	890-200 78.99	1890-200 78.99	890-200P 78.99	4	0	120
4X22	890-220 81.56	1890-220 81.56	890-220P 81.56	8	0	120
4X24	890-240 86.95	1890-240 86.95	890-240P 86.95	4	0	120
4X30	890-300 103.59	1890-300 103.59	890-300P 103.59	3	0	120
4X36	890-360 123.04	1890-360 123.04	890-360P 123.04	3	0	120



Nipples PVC, CPVC & PE Nipples

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
4" Diameter						
4X42	890-420 150.20	1890-420 150.20	890-420P 150.20	3	0	120
4X48	890-480 184.38	1890-480 184.38	890-480P 184.38	3	0	120

6" Diameter

6XCLOSE	892-005 23.91	1892-005 23.91	892-005P 23.91	8	0	120
6X4	892-040 30.57	1892-040 30.57	892-040P 30.57	4	0	120
6X4-1/2	892-045 33.88	1892-045 33.88	892-045P 33.88	4	0	120
6X5	892-050 37.19	1892-050 37.19	892-050P 37.19	1	2	120
6X5-1/2	892-055 40.54	1892-055 40.54	892-055P 40.54	1	2	120
6X6	892-060 44.23	1892-060 44.23	892-060P 44.23	1	2	120
6X7	892-070 50.82	1892-070 50.82	892-070P 50.82	1	2	120
6X8	892-080 57.55	1892-080 57.55	892-080P 57.55	1	0	120
6X9	892-090 64.19	1892-090 64.19	892-090P 64.19	1	0	120
6X10	892-100 71.26	1892-100 71.26	892-100P 71.26	1	0	120
6X11	892-110 77.93	1892-110 77.93	892-110P 77.93	1	0	120
6X12	892-120 84.58	1892-120 84.58	892-120P 84.58	1	0	120
6X13	892-130 91.22	1892-130 91.22	892-130P 91.22	1	0	120
6X14	892-140 97.87	1892-140 97.87	892-140P 97.87	1	0	120
6X15	892-150 104.52	1892-150 104.52	892-150P 104.52	1	0	120
6X16	892-160 111.18	1892-160 111.18	892-160P 111.18	1	2	120
6X17	892-170 118.58	1892-170 118.58	892-170P 118.58	1	2	120
6X18	892-180 124.45	1892-180 124.45	892-180P 124.45	1	6	120
6X19	892-190 131.99	1892-190 131.99	892-190P 131.99	1	0	120
6X20	892-200 137.76	1892-200 137.76	892-200P 137.76	2	0	120
6X22	892-220 151.71	1892-220 151.71	892-220P 151.71	1	0	120
6X24	892-240 164.98	1892-240 164.98	892-240P 164.98	1	3	120
6X30	892-300 204.89	1892-300 204.89	892-300P 204.89	1	0	120
6X36	892-360 245.80	1892-360 245.80	892-360P 245.80	1	0	120
6X42	892-420 285.67	1892-420 285.67	892-420P 285.67	1	0	120
6X48	892-480 325.75	1892-480 325.75	892-480P 325.75	1	0	120

8" Diameter

8XCLOSE	893-005 66.13	1893-005 66.13	893-005P 66.13	2	0	120
8X4-1/2	893-045 75.69	1893-045 75.69	893-045P 75.69	1	0	120
8X5	893-050 78.91	1893-050 78.91	893-050P 78.91	1	0	120
8X5-1/2	893-055 82.09	1893-055 82.09	893-055P 82.09	1	0	120
8X6	893-060 85.29	1893-060 85.29	893-060P 85.29	4	0	120
8X7	893-070 91.71	1893-070 91.71	893-070P 91.71	4	0	120
8X8	893-080 98.12	1893-080 98.12	893-080P 98.12	4	0	120
8X9	893-090 104.49	1893-090 104.49	893-090P 104.49	2	0	120

PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
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8" Diameter

8X10	893-100 110.89	1893-100 110.89	893-100P 110.89	1	0	120
8X11	893-110 117.32	1893-110 117.32	893-110P 117.32	1	0	120
8X12	893-120 123.71	1893-120 123.71	893-120P 123.71	1	0	120
8X13	893-130 130.09	1893-130 130.09	893-130P 130.09	1	0	120
8X14	893-140 136.49	1893-140 136.49	893-140P 136.49	1	0	120
8X15	893-150 142.92	1893-150 142.92	893-150P 142.92	1	0	120
8X16	893-160 149.29	1893-160 149.29	893-160P 149.29	1	0	120
8X17	893-170 155.67	1893-170 155.67	893-170P 155.67	4	0	120
8X18	893-180 162.06	1893-180 162.06	893-180P 162.03	4	0	120
8X19	893-190 168.17	1893-190 168.17	893-190P 168.17	2	0	120
8X20	893-200 174.88	1893-200 174.88	893-200P 174.88	2	0	120
8X22	893-220 187.67	1893-220 187.67	893-220P 187.67	1	0	120
8X24	893-240 201.06	1893-240 201.06	893-240P 201.06	1	2	120
8X30	893-300 240.17	1893-300 240.17	893-300P 240.17	4	0	120
8X36	893-360 277.25	1893-360 277.25	893-360P 277.25	4	0	120
8X42	893-420 315.61	1893-420 315.61	893-420P 315.61	1	0	120
8X48	893-480 354.03	1893-480 354.03	893-480P 354.03	1	0	120

10" Diameter

10XCLOSE	894-005 75.89	1894-005 75.89	894-005P 75.89	1	0	120
10X2	894-020 76.74	1894-020 76.74	894-020P 76.74	1	6	120
10X4-1/2	894-045 90.39	1894-045 90.39	894-045P 90.39	1	0	120
10X5	894-050 94.81	1894-050 94.81	894-050P 94.81	1	0	120
10X5-1/2	894-055 100.04	1894-055 100.04	894-055P 100.04	1	0	120
10X6	894-060 104.87	1894-060 104.87	894-060P 104.87	2	0	120
10X7	894-070 114.53	1894-070 114.53	894-070P 114.53	1	0	120
10X8	894-080 124.18	1894-080 124.18	894-080P 124.18	1	0	120
10X9	894-090 133.66	1894-090 133.66	894-090P 133.66	1	0	120
10X10	894-100 143.52	1894-100 143.52	894-100P 143.52	1	0	120
10X11	894-110 153.17	1894-110 153.17	894-110P 153.17	1	0	120
10X12	894-120 162.83	1894-120 162.83	894-120P 162.83	1	0	120
10X13	894-130 172.47	1894-130 172.47	894-130P 172.47	1	0	120
10X14	894-140 182.15	1894-140 182.15	894-140P 182.15	1	0	120
10X15	894-150 191.80	1894-150 191.80	894-150P 191.80	1	0	120
10X16	894-160 201.45	1894-160 201.45	894-160P 201.45	1	0	120
10X17	894-170 211.12	1894-170 211.12	894-170P 211.12	1	0	120
10X18	894-180 220.78	1894-180 220.78	894-180P 220.78	1	2	120
10X19	894-190 230.42	1894-190 230.42	894-190P 230.42	1	0	120

Nipples PVC, CPVC & PE Nipples



PVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
10" Diameter						
10X20	894-200 240.09	1894-200 240.09	894-200P 240.09	1	0	120
10X22	894-220 260.21	1894-220 260.21	894-220P 260.21	1	0	120
10X24	894-240 278.74	1894-240 278.74	894-240P 278.74	1	2	120
10X30	894-300 336.68	1894-300 336.68	894-300P 336.68	1	0	120
10X36	894-360 394.63	1894-360 394.63	894-360P 394.63	1	0	120
10X42	894-420 452.59	1894-420 452.59	894-420P 452.59	1	0	120
10X48	894-480 510.56	1894-480 510.56	894-480P 510.56	1	0	120

12" Diameter

12XCLOSE	895-005 92.13	1895-005 92.13	895-005P 92.13	1	0	120
12X5	895-050 113.31	1895-050 113.31	895-050P 113.31	1	0	120
12X5-1/2	895-055 119.96	1895-055 119.60	895-055P 119.96	1	0	120
12X6	895-060 126.59	1895-060 126.61	895-060P 126.59	1	0	120
12X7	895-070 139.85	1895-070 139.85	895-070P 139.85	1	0	120
12X8	895-080 152.67	1895-080 152.67	895-080P 152.67	1	0	120
12X9	895-090 166.43	1895-090 166.43	895-090P 166.43	1	0	120
12X10	895-100 179.69	1895-100 179.69	895-100P 179.69	1	0	120
12X11	895-110 192.99	1895-110 192.99	895-110P 192.99	1	0	120
12X12	895-120 206.25	1895-120 206.25	895-120P 206.25	1	0	120
12X13	895-130 219.54	1895-130 219.54	895-130P 219.54	1	0	120
12X14	895-140 232.82	1895-140 232.82	895-140P 232.82	1	0	120
12X15	895-150 246.12	1895-150 246.12	895-150P 246.12	1	0	120
12X16	895-160 259.38	1895-160 259.38	895-160P 259.38	1	0	120
12X17	895-170 272.65	1895-170 272.65	895-170P 272.65	1	0	120
12X18	895-180 285.93	1895-180 285.93	895-180P 285.93	1	0	120
12X19	895-190 299.20	1895-190 299.20	895-190P 299.20	1	0	120
12X20	895-200 312.47	1895-200 312.47	895-200P 312.47	1	0	120
12X22	895-220 339.05	1895-220 339.05	895-220P 339.05	1	0	120
12X24	895-240 365.61	1895-240 365.61	895-240P 365.61	1	0	120
12X30	895-300 445.27	1895-300 445.27	895-300P 445.27	1	0	120
12X36	895-360 524.96	1895-360 524.96	895-360P 524.96	1	0	120
12X42	895-420 631.17	1895-420 631.17	895-420P 631.17	1	0	120
12X48	895-480 684.27	1895-480 684.27	895-480P 684.27	1	0	120



Nipples PVC, CPVC & PE Nipples

The following nipples are normally injection molded, but are optionally available as machined nipples listed below. All other nipples are normally machined.

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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PVC Schedule 80 Machined Nipples 1/4" Diameter



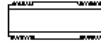
880-005M	1/4XCLOSE	25	1200	120	4.06
880-015M	1/4X1-1/2	25	1200	120	4.32
880-020M	1/4X2	25	500	120	2.96
880-030M	1/4X3	25	500	120	2.01
880-040M	1/4X4	25	250	120	5.13
880-050M	1/4X5	25	250	120	5.39

PVC Schedule 80 Machined Nipples 3/8" Diameter



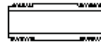
881-015M	3/8X1-1/2	25	800	120	4.63
881-020M	3/8X2	25	600	120	4.63
881-040M	3/8X4	25	300	120	5.86
881-030M	3/8X3	25	400	120	.74

PVC Schedule 80 Machined Nipples 1/2" Diameter



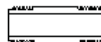
882-005M	1/2XCLOSE	25	450	120	3.42
882-015M	1/2X1-1/2	25	600	120	3.43
882-100M	1/2X10	25	0	120	5.47
882-120M	1/2X12	25	0	120	6.00
882-020M	1/2X2	25	300	120	3.43
882-025M	1/2X2-1/2	25	300	120	3.43
882-030M	1/2X3	25	300	120	3.55
882-040M	1/2X4	25	300	120	3.73
882-045M	1/2X4-1/2	25	300	120	3.99
882-050M	1/2X5	25	300	120	4.16
882-060M	1/2X6	25	300	120	4.34
882-080M	1/2X8	25	0	120	4.94
882-070M	1/2X7	25	200	120	4.59

PVC Schedule 80 Machined Nipples 3/4" Diameter



883-005M	3/4X	25	300	120	3.74
883-015M	3/4X1-1/2	25	300	120	3.74
883-100M	3/4X10	25	0	120	6.18
883-120M	3/4X12	25	0	120	6.91
883-020M	3/4X2	25	300	120	4.01
883-025M	3/4X2-1/2	25	300	120	4.06
883-030M	3/4X3	25	300	120	4.09
883-035M	3/4X3-1/2	25	300	120	4.15
883-040M	3/4X4	25	300	120	4.44
883-045M	3/4X4-1/2	25	200	120	4.52
883-050M	3/4X5	25	200	120	4.84
883-060M	3/4X6	25	200	120	5.19
883-080M	3/4X8	25	0	120	5.52

PVC Schedule 80 Machined Nipples 1" Diameter



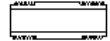
884-005M	1XCLOSE	25	300	120	4.30
884-100M	1X10	25	0	120	8.63
884-120M	1X12	25	0	120	9.80
884-020M	1X2	25	300	120	4.60
884-025M	1X2-1/2	25	200	120	4.56
884-030M	1X3	25	200	120	4.64
884-040M	1X4	25	200	120	5.18

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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PVC Schedule 80 Machined Nipples (continued) 1" Diameter

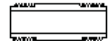
884-050M	1X5	25	0	120	5.75
884-060M	1X6	25	0	120	6.29
884-080M	1X8	25	0	120	7.40

PVC Schedule 80 Machined Nipples 1-1/4" Diameter



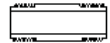
885-005M	1-1/4X	25	200	120	4.38
885-120M	1-1/4X12	25	0	120	10.93
885-020M	1-1/4X2	25	200	120	4.69
885-030M	1-1/4X3	25	0	120	5.03
885-040M	1-1/4X4	25	0	120	5.75
885-060M	1-1/4X6	25	0	120	3.89

PVC Schedule 80 Machined Nipples 1-1/2" Diameter



886-005M	1-1/2XCLOSE	25	0	120	4.97
886-100M	1-1/2X10	25	0	120	11.76
886-120M	1-1/2X12	25	0	120	13.48
886-020M	1-1/2X2	25	0	120	5.32
886-030M	1-1/2X3	25	0	120	6.63
886-040M	1-1/2X4	25	0	120	6.63
886-060M	1-1/2X6	25	0	120	8.27
886-070M	1-1/2X7	25	0	120	9.17
886-080M	1-1/2X8	25	0	120	10.02

PVC Schedule 80 Machined Nipples 2" Diameter



887-005M	2XCLOSE	25	0	120	5.93
887-030M	2X3	25	0	120	7.21
887-040M	2X4	25	0	120	8.34
887-060M	2X6	25	0	120	10.79

PVC Reducing Nipples

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
882-101	3/4X1/2	50	300	120	1.55
884-130R	1X1/2	25	300	120	2.09
884-131	1X3/4	50	200	120	2.17

CPVC Schedule 80 Nipple

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/4XCLOSE	880-005C 2.54	1880-005C 2.54	880-005CP 2.54	25	1200	121
1/4X1-1/2	880-015C 2.74	1880-015C 2.74	880-015CP 2.74	25	1200	121
1/4X2	880-020C 2.96	1880-020C 2.96	880-020CP 2.96	25	500	121
1/4X2-1/2	880-025C 3.44	1880-025C 3.44	880-025CP 3.44	25	500	121
1/4X3	880-030C 3.44	1880-030C 3.44	880-030CP 3.44	25	500	121
1/4X3-1/2	880-035C 3.89	1880-035C 3.89	880-035CP 3.89	25	500	121
1/4X4	880-040C 3.89	1880-040C 3.89	880-040CP 3.89	25	250	121
1/4X4-1/2	880-045C 4.36	1880-045C 4.36	880-045CP 4.36	25	250	121
1/4X5	880-050C 4.36	1880-050C 4.36	880-050CP 4.36	25	250	121

Nipples PVC, CPVC & PE Nipples



CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/4" Diameter						
1/4X5-1/2	880-055C 4.74	1880-055C 4.74	880-055CP 4.74	25	250	121
1/4X6	880-060C 4.74	1880-060C 4.74	880-060CP 4.74	25	250	121
1/4X7	880-070C 7.17	1880-070C 7.17	880-070CP 7.17	25	250	121
1/4X8	880-080C 7.71	1880-080C 7.71	880-080CP 7.71	25	250	121
1/4X9	880-090C 8.19	1880-090C 8.19	880-090CP 8.19	25	250	121
1/4X10	880-100C 8.62	1880-100C 8.62	880-100CP 8.62	25	250	121
1/4X11	880-110C 9.14	1880-110C 9.14	880-110CP 9.14	25	250	121
1/4X12	880-120C 9.53	1880-120C 9.53	880-120CP 9.53	25	250	121
1/4X13	880-130C 12.07	1880-130C 12.07	880-130CP 12.07	25	250	121
1/4X14	880-140C 15.51	1880-140C 15.51	880-140CP 15.51	25	250	121
1/4X15	880-150C 16.13	1880-150C 16.13	880-150CP 16.13	25	500	121
1/4X16	880-160C 16.33	1880-160C 16.33	880-160CP 16.33	25	250	121
1/4X17	880-170C 17.19	1880-170C 17.19	880-170CP 17.19	25	0	121
1/4X18	880-180C 18.59	1880-180C 18.59	880-180CP 18.59	25	300	121
1/4X19	880-190C 18.97	1880-190C 18.97	880-190CP 18.97	25	0	121
1/4X20	880-200C 19.47	1880-200C 19.47	880-200CP 19.47	25	0	121
1/4X22	880-220C 20.18	1880-220C 20.18	880-220CP 20.18	25	300	121
1/4X24	880-240C 23.33	1880-240C 23.33	880-240CP 23.33	25	0	121
1/4X30	880-300C 28.24	1880-300C 28.24	880-300CP 28.24	25	0	121
1/4X36	880-360C 33.34	1880-360C 33.34	880-360CP 33.34	25	0	121
1/4X42	880-420C 39.12	1880-420C 39.12	880-420CP 39.12	25	0	121
1/4X48	880-480C 40.85	1880-480C 40.85	880-480CP 40.85	25	0	121

3/8" Diameter

3/8XCLOSE	881-005C 2.91	1881-005C 2.91	881-005CP 2.91	25	800	121
3/8X1-1/2	881-015C 3.04	1881-015C 3.04	881-015CP 3.04	25	800	121
3/8X2	881-020C 3.44	1881-020C 3.44	881-020CP 3.44	25	600	121
3/8X2-1/2	881-025C 3.88	1881-025C 3.88	881-025CP 3.88	25	600	121
3/8X3	881-030C 4.07	1881-030C 4.07	881-030CP 4.07	25	400	121
3/8X3-1/2	881-035C 4.54	1881-035C 4.54	881-035CP 4.54	25	400	121
3/8X4	881-040C 4.92	1881-040C 4.92	881-040CP 4.92	25	300	121
3/8X4-1/2	881-045C 5.39	1881-045C 5.39	881-045CP 5.39	25	250	121
3/8X5	881-050C 5.80	1881-050C 5.80	881-050CP 5.80	25	250	121
3/8X5-1/2	881-055C 6.37	1881-055C 6.37	881-055CP 6.37	25	250	121
3/8X6	881-060C 7.05	1881-060C 7.05	881-060CP 7.05	25	250	121
3/8X7	881-070C 8.46	1881-070C 8.46	881-070CP 8.46	25	200	121
3/8X8	881-080C 8.85	1881-080C 8.85	881-080CP 8.85	25	200	121
3/8X9	881-090C 9.86	1881-090C 9.86	881-090CP 9.86	25	200	121

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3/8" Diameter						
3/8X10	881-100C 10.04	1881-100C 10.04	881-100CP 10.04	25	200	121
3/8X11	881-110C 10.67	1881-110C 10.67	881-110CP 10.67	25	200	121
3/8X12	881-120C 10.87	1881-120C 10.87	881-120CP 10.87	25	200	121
3/8X13	881-130C 13.94	1881-130C 13.94	881-130CP 13.94	25	0	121
3/8X14	881-140C 16.97	1881-140C 16.97	881-140CP 16.97	25	200	121
3/8X15	881-150C 17.35	1881-150C 17.35	881-150CP 17.35	25	200	121
3/8X16	881-160C 17.76	1881-160C 17.76	881-160CP 17.76	25	200	121
3/8X17	881-170C 18.38	1881-170C 18.38	881-170CP 18.38	25	0	121
3/8X18	881-180C 19.01	1881-180C 19.01	881-180CP 19.01	25	200	121
3/8X19	881-190C 19.60	1881-190C 19.60	881-190CP 19.60	25	0	121
3/8X20	881-200C 20.22	1881-200C 20.22	881-200CP 20.22	25	0	121
3/8X22	881-220C 20.87	1881-220C 20.87	881-220CP 20.87	25	0	121
3/8X24	881-240C 21.82	1881-240C 21.82	881-240CP 21.82	25	0	121
3/8X30	881-300C 33.37	1881-300C 33.37	881-300CP 33.37	25	0	121
3/8X36	881-360C 41.21	1881-360C 41.21	881-360CP 41.21	25	0	121
3/8X42	881-420C 42.19	1881-420C 42.19	881-420CP 42.19	25	0	121
3/8X48	881-480C 43.65	1881-480C 43.65	881-480CP 43.65	25	0	121

1/2" Diameter

1/2XCLOSE	882-005C 2.74	1882-005C 2.74	882-005CP 2.74	25	450	121
1/2X1-1/2	882-015C 2.96	1882-015C 2.96	882-015CP 2.96	25	600	121
1/2X2	882-020C 3.26	1882-020C 3.26	882-020CP 3.26	25	300	121
1/2X2-1/2	882-025C 3.47	1882-025C 3.47	882-025CP 3.47	25	300	121
1/2X3	882-030C 3.72	1882-030C 3.72	882-030CP 3.72	25	300	121
1/2X3-1/2	882-035C 4.36	1882-035C 4.36	882-035CP 4.36	25	300	121
1/2X4	882-040C 4.36	1882-040C 4.36	882-040CP 4.36	25	300	121
1/2X4-1/2	882-045C 4.89	1882-045C 4.89	882-045CP 4.89	25	300	121
1/2X5	882-050C 4.89	1882-050C 4.89	882-050CP 4.89	25	300	121
1/2X5-1/2	882-055C 5.52	1882-055C 5.52	882-055CP 5.52	25	300	121
1/2X6	882-060C 5.52	1882-060C 5.52	882-060CP 5.52	25	300	121
1/2X7	882-070C 8.06	1882-070C 8.06	882-070CP 8.06	25	200	121
1/2X8	882-080C 8.60	1882-080C 8.60	882-080CP 8.60	25	0	121
1/2X9	882-090C 9.28	1882-090C 9.28	882-090CP 9.28	25	0	121
1/2X10	882-100C 9.77	1882-100C 9.77	882-100CP 9.77	25	0	121
1/2X11	882-110C 10.41	1882-110C 10.41	882-110CP 10.41	25	0	121
1/2X12	882-120C 11.04	1882-120C 11.04	882-120CP 11.04	25	0	121
1/2X13	882-130C 13.61	1882-130C 13.61	882-130CP 13.61	25	0	121
1/2X14	882-140C 16.17	1882-140C 16.17	882-140CP 16.17	25	0	121



Nipples PVC, CPVC & PE Nipples

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1/2" Diameter						
1/2X15	882-150C 16.67	1882-150C 16.67	882-150CP 16.67	100	0	121
1/2X16	882-160C 17.22	1882-160C 17.22	882-160CP 17.22	100	0	121
1/2X17	882-170C 17.96	1882-170C 17.96	882-170CP 17.96	100	0	121
1/2X18	882-180C 18.26	1882-180C 18.26	882-180CP 18.26	25	100	121
1/2X19	882-190C 18.93	1882-190C 18.93	882-190CP 18.93	100	0	121
1/2X20	882-200C 19.57	1882-200C 19.57	882-200CP 19.57	100	0	121
1/2X22	882-220C 21.07	1882-220C 21.07	882-220CP 21.07	100	0	121
1/2X24	882-240C 22.13	1882-240C 22.13	882-240CP 22.13	100	0	121
1/2X30	882-300C 33.23	1882-300C 33.23	882-300CP 33.23	25	0	121
1/2X36	882-360C 36.56	1882-360C 36.56	882-360CP 36.56	25	0	121
1/2X42	882-420C 40.05	1882-420C 40.05	882-420CP 40.05	25	0	121
1/2X48	882-480C 44.18	1882-480C 44.18	882-480CP 44.18	25	0	121

3/4" Diameter

3/4XCLOSE	883-005C 3.36	1883-005C 3.36	883-005CP 3.36	25	300	121
3/4X1-1/2	883-015C 3.61	1883-015C 3.61	883-015CP 3.61	25	300	121
3/4X2	883-020C 3.89	1883-020C 3.89	883-020CP 3.89	25	300	121
3/4X2-1/2	883-025C 4.44	1883-025C 4.44	883-025CP 4.44	25	300	121
3/4X3	883-030C 4.44	1883-030C 4.44	883-030CP 4.44	25	300	121
3/4X3-1/2	883-035C 5.14	1883-035C 5.14	883-035CP 5.14	25	300	121
3/4X4	883-040C 5.14	1883-040C 5.14	883-040CP 5.14	25	300	121
3/4X4-1/2	883-045C 5.69	1883-045C 5.69	883-045CP 5.69	25	200	121
3/4X5	883-050C 5.69	1883-050C 5.69	883-050CP 5.69	25	200	121
3/4X5-1/2	883-055C 6.36	1883-055C 6.36	883-055CP 6.36	25	200	121
3/4X6	883-060C 6.36	1883-060C 6.36	883-060CP 6.36	25	200	121
3/4X7	883-070C 9.57	1883-070C 9.57	883-070CP 9.57	25	200	121
3/4X8	883-080C 10.11	1883-080C 10.11	883-080CP 10.11	25	0	121
3/4X9	883-090C 10.83	1883-090C 10.83	883-090CP 10.83	25	0	121
3/4X10	883-100C 11.36	1883-100C 11.36	883-100CP 11.36	25	0	121
3/4X11	883-110C 12.06	1883-110C 12.06	883-110CP 12.06	25	0	121
3/4X12	883-120C 12.78	1883-120C 12.78	883-120CP 12.78	25	0	121
3/4X13	883-130C 15.97	1883-130C 15.97	883-130CP 15.97	25	0	121
3/4X14	883-140C 19.15	1883-140C 19.15	883-140CP 19.15	100	0	121
3/4X15	883-150C 19.67	1883-150C 19.67	883-150CP 19.67	100	0	121
3/4X16	883-160C 20.25	1883-160C 20.25	883-160CP 20.25	100	0	121
3/4X17	883-170C 20.92	1883-170C 20.92	883-170CP 20.92	100	0	121
3/4X18	883-180C 21.60	1883-180C 21.60	883-180CP 21.60	25	0	121
3/4X19	883-190C 22.17	1883-190C 22.17	883-190CP 22.17	100	0	121

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3/4" Diameter						
3/4X20	883-200C 22.75	1883-200C 22.75	883-200CP 22.75	100	0	121
3/4X22	883-220C 24.14	1883-220C 24.14	883-220CP 24.14	100	0	121
3/4X24	883-240C 25.55	1883-240C 25.55	883-240CP 25.55	100	0	121
3/4X30	883-300C 38.96	1883-300C 38.96	883-300CP 38.96	25	0	121
3/4X36	883-360C 42.47	1883-360C 42.47	883-360CP 42.37	25	0	121
3/4X42	883-420C 46.63	1883-420C 46.63	883-420CP 46.63	25	0	121
3/4X48	883-480C 49.72	1883-480C 49.72	883-480CP 49.72	25	0	121

1" Diameter

1XCLOSE	884-005C 4.07	1884-005C 4.07	884-005CP 4.07	25	300	121
1X2	884-020C 4.44	1884-020C 4.44	884-020CP 4.44	25	300	121
1X2-1/2	884-025C 5.52	1884-025C 5.52	884-025CP 5.52	25	200	121
1X3	884-030C 5.52	1884-030C 5.52	884-030CP 5.52	25	200	121
1X3-1/2	884-035C 6.36	1884-035C 6.36	884-035CP 6.36	25	200	121
1X4	884-040C 6.36	1884-040C 6.36	884-040CP 6.36	25	200	121
1X4-1/2	884-045C 7.17	1884-045C 7.17	884-045CP 7.17	25	200	121
1X5	884-050C 7.17	1884-050C 7.17	884-050CP 7.17	25	0	121
1X5-1/2	884-055C 8.32	1884-055C 8.32	884-055CP 8.32	25	0	121
1X6	884-060C 8.32	1884-060C 8.32	884-060CP 8.32	25	0	121
1X7	884-070C 11.63	1884-070C 11.63	884-070CP 11.63	25	0	121
1X8	884-080C 12.74	1884-080C 12.74	884-080CP 12.74	25	0	121
1X9	884-090C 13.82	1884-090C 13.82	884-090CP 13.82	25	0	121
1X10	884-100C 14.84	1884-100C 14.84	884-100CP 14.84	25	0	121
1X11	884-110C 15.52	1884-110C 15.52	884-110CP 15.52	25	0	121
1X12	884-120C 16.68	1884-120C 16.68	884-120CP 16.68	25	0	121
1X13	884-130C 19.95	1884-130C 19.95	884-130CP 19.95	25	0	121
1X14	884-140C 23.26	1884-140C 23.26	884-140CP 23.26	50	0	121
1X15	884-150C 24.38	1884-150C 24.38	884-150CP 24.38	50	0	121
1X16	884-160C 25.52	1884-160C 25.52	884-160CP 25.52	50	0	121
1X17	884-170C 26.59	1884-170C 26.59	884-170CP 26.59	50	0	121
1X18	884-180C 27.67	1884-180C 27.67	884-180CP 27.67	50	0	121
1X19	884-190C 28.26	1884-190C 28.26	884-190CP 28.26	50	0	121
1X20	884-200C 28.94	1884-200C 28.94	884-200CP 28.94	25	0	121
1X22	884-220C 31.41	1884-220C 31.41	884-220CP 31.41	50	0	121
1X24	884-240C 33.26	1884-240C 33.26	884-240CP 33.26	50	0	121
1X30	884-300C 48.81	1884-300C 48.81	884-300CP 48.81	15	0	121
1X36	884-360C 55.32	1884-360C 55.32	884-360CP 55.32	15	0	121
1X42	884-420C 58.63	1884-420C 58.63	884-420CP 58.63	15	0	121

Nipples PVC, CPVC & PE Nipples



CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1" Diameter						
1X48	884-480C 66.57	1884-480C 66.57	884-480CP 66.57	15	0	121

1-1/4" Diameter

1-1/4XCLOSE	885-005C 5.14	1885-005C 5.14	885-005CP 5.14	25	200	121
1-1/4X2	885-020C 5.69	1885-020C 5.69	885-020CP 5.69	25	200	121
1-1/4X2-1/2	885-025C 7.17	1885-025C 7.17	885-025CP 7.17	25	200	121
1-1/4X3	885-030C 7.58	1885-030C 7.58	885-030CP 7.58	25	0	121
1-1/4X3-1/2	885-035C 8.93	1885-035C 8.93	885-035CP 8.93	25	0	121
1-1/4X4	885-040C 8.93	1885-040C 8.93	885-040CP 8.93	25	0	121
1-1/4X4-1/2	885-045C 10.49	1885-045C 10.49	885-045CP 10.49	25	0	121
1-1/4X5	885-050C 10.49	1885-050C 10.49	885-050CP 10.49	25	0	121
1-1/4X5-1/2	885-055C 12.06	1885-055C 12.06	885-055CP 12.06	25	0	121
1-1/4X6	885-060C 12.06	1885-060C 12.06	885-060CP 12.06	25	0	121
1-1/4X7	885-070C 17.71	1885-070C 17.71	885-070CP 17.71	25	0	121
1-1/4X8	885-080C 18.43	1885-080C 18.43	885-080CP 18.43	25	0	121
1-1/4X9	885-090C 19.25	1885-090C 19.25	885-090CP 19.25	25	0	121
1-1/4X10	885-100C 20.95	1885-100C 20.95	885-100CP 20.95	25	0	121
1-1/4X11	885-110C 22.54	1885-110C 22.54	885-110CP 22.54	25	0	121
1-1/4X12	885-120C 24.08	1885-120C 24.08	885-120CP 24.08	25	0	121
1-1/4X13	885-130C 28.22	1885-130C 28.22	885-130CP 28.22	25	0	121
1-1/4X14	885-140C 32.35	1885-140C 32.35	885-140CP 32.35	25	0	121
1-1/4X15	885-150C 33.88	1885-150C 33.88	885-150CP 33.88	25	0	121
1-1/4X16	885-160C 35.42	1885-160C 35.42	885-160CP 35.42	25	0	121
1-1/4X17	885-170C 37.00	1885-170C 37.00	885-170CP 37.00	25	0	121
1-1/4X18	885-180C 39.32	1885-180C 39.32	885-180CP 39.32	25	0	121
1-1/4X19	885-190C 40.25	1885-190C 40.25	885-190CP 40.25	25	0	121
1-1/4X20	885-200C 41.93	1885-200C 41.93	885-200CP 41.93	25	0	121
1-1/4X22	885-220C 45.04	1885-220C 45.04	885-220CP 45.04	25	0	121
1-1/4X24	885-240C 51.47	1885-240C 51.47	885-240CP 51.47	25	0	121
1-1/4X30	885-300C 67.77	1885-300C 67.77	885-300CP 67.77	10	0	121
1-1/4X36	885-360C 71.54	1885-360C 71.54	885-360CP 71.54	10	0	121
1-1/4X42	885-420C 86.74	1885-420C 86.74	885-420CP 86.74	10	0	121
1-1/4X48	885-480C 96.33	1885-480C 96.33	885-480CP 96.33	10	0	121

1-1/2" Diameter

1-1/2XCLOSE	886-005C 5.69	1886-005C 5.69	886-005CP 5.69	25	0	121
1-1/2X2	886-020C 6.36	1886-020C 6.36	886-020CP 6.36	25	0	121
1-1/2X2-1/2	886-025C 7.91	1886-025C 7.91	886-025CP 7.91	25	0	121
1-1/2X3	886-030C 7.91	1886-030C 7.91	886-030CP 7.91	25	0	121
1-1/2X3-1/2	886-035C 9.57	1886-035C 9.57	886-035CP 9.57	25	0	121

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
1-1/2" Diameter						
1-1/2X4	886-040C 9.57	1886-040C 9.57	886-040CP 9.57	25	0	121
1-1/2X4-1/2	886-045C 11.17	1886-045C 11.17	886-045CP 11.17	25	0	121
1-1/2X5	886-050C 12.73	1886-050C 12.73	886-050CP 12.73	25	0	121
1-1/2X5-1/2	886-055C 12.73	1886-055C 12.73	886-055CP 12.73	25	0	121
1-1/2X6	886-060C 12.73	1886-060C 12.73	886-060CP 12.73	25	0	121
1-1/2X7	886-070C 19.09	1886-070C 19.09	886-070CP 19.09	25	0	121
1-1/2X8	886-080C 20.68	1886-080C 20.68	886-080CP 20.68	25	0	121
1-1/2X9	886-090C 21.28	1886-090C 21.28	886-090CP 21.28	25	0	121
1-1/2X10	886-100C 23.20	1886-100C 23.20	886-100CP 23.20	25	0	121
1-1/2X11	886-110C 23.93	1886-110C 23.93	886-110CP 23.93	25	0	121
1-1/2X12	886-120C 25.52	1886-120C 25.52	886-120CP 25.52	25	0	121
1-1/2X13	886-130C 30.22	1886-130C 30.22	886-130CP 30.22	25	0	121
1-1/2X14	886-140C 34.91	1886-140C 34.91	886-140CP 34.91	25	0	121
1-1/2X15	886-150C 36.96	1886-150C 36.96	886-150CP 36.96	25	0	121
1-1/2X16	886-160C 39.68	1886-160C 39.68	886-160CP 39.68	25	0	121
1-1/2X17	886-170C 40.16	1886-170C 40.16	886-170CP 40.16	25	0	121
1-1/2X18	886-180C 41.34	1886-180C 41.34	886-180CP 41.34	25	0	121
1-1/2X19	886-190C 42.98	1886-190C 42.98	886-190CP 42.98	25	0	121
1-1/2X20	886-200C 44.59	1886-200C 44.59	886-200CP 44.59	25	0	121
1-1/2X22	886-220C 47.79	1886-220C 47.79	886-220CP 47.79	25	0	121
1-1/2X24	886-240C 51.00	1886-240C 51.00	886-240CP 51.00	25	0	121
1-1/2X30	886-300C 73.15	1886-300C 73.15	886-300CP 73.15	5	0	121
1-1/2X36	886-360C 82.69	1886-360C 82.69	886-360CP 82.69	5	0	121
1-1/2X42	886-420C 92.38	1886-420C 92.38	886-420CP 92.38	5	0	121
1-1/2X48	886-480C 101.98	1886-480C 101.98	886-480CP 101.98	5	0	121

2" Diameter

2XCLOSE	887-005C 8.81	1887-005C 8.81	887-005CP 8.81	25	0	121
2X2	887-020C 10.49	1887-020C 10.49	887-020CP 10.49	25	0	121
2X2-1/2	887-025C 10.49	1887-025C 10.49	887-025CP 10.49	25	0	121
2X3	887-030C 12.44	1887-030C 12.44	887-030CP 12.44	25	0	121
2X3-1/2	887-035C 12.44	1887-035C 12.44	887-035CP 12.44	25	0	121
2X4	887-040C 14.38	1887-040C 14.38	887-040CP 14.38	25	0	121
2X4-1/2	887-045C 14.38	1887-045C 14.38	887-045CP 14.38	25	0	121
2X5	887-050C 16.31	1887-050C 16.31	887-050CP 16.31	25	0	121
2X5-1/2	887-055C 16.31	1887-055C 16.31	887-055CP 16.31	25	0	121
2X6	887-060C 22.93	1887-060C 22.93	887-060CP 22.93	25	0	121
2X7	887-070C 23.63	1887-070C 23.63	887-070CP 23.63	25	0	121



Nipples PVC, CPVC & PE Nipples

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
2" Diameter						
2X8	887-080C 24.87	1887-080C 24.87	887-080CP 24.87	25	0	121
2X9	887-090C 27.04	1887-090C 27.04	887-090CP 27.04	25	0	121
2X10	887-100C 28.99	1887-100C 28.99	887-100CP 28.99	25	0	121
2X11	887-110C 30.69	1887-110C 30.69	887-110CP 30.69	25	0	121
2X12	887-120C 32.65	1887-120C 32.65	887-120CP 32.65	25	0	121
2X13	887-130C 39.20	1887-130C 39.20	887-130CP 39.20	25	0	121
2X14	887-140C 45.88	1887-140C 45.88	887-140CP 45.88	25	0	121
2X15	887-150C 47.77	1887-150C 47.77	887-150CP 47.77	25	0	121
2X16	887-160C 49.71	1887-160C 49.71	887-160CP 49.71	25	0	121
2X17	887-170C 52.92	1887-170C 52.92	887-170CP 52.92	20	0	121
2X18	887-180C 56.09	1887-180C 56.09	887-180CP 56.09	20	0	121
2X19	887-190C 59.68	1887-190C 59.68	887-190CP 59.68	25	0	121
2X20	887-200C 60.76	1887-200C 60.76	887-200CP 60.76	20	0	121
2X22	887-220C 62.21	1887-220C 62.21	887-220CP 62.21	20	0	121
2X24	887-240C 65.27	1887-240C 65.27	887-240CP 65.27	20	0	121
2X30	887-300C 95.57	1887-300C 95.57	887-300CP 95.57	5	0	121
2X36	887-360C 114.47	1887-360C 114.47	887-360CP 114.47	5	0	121
2X42	887-420C 131.79	1887-420C 131.79	887-420CP 131.79	5	0	121
2X48	887-480C 149.63	1887-480C 149.63	887-480CP 149.63	5	0	121

2-1/2" Diameter

2-1/2XCLOSE	888-005C 15.99	1888-005C 15.99	888-005CP 15.99	25	0	121
2-1/2X3	888-030C 17.55	1888-030C 17.55	888-030CP 17.55	25	0	121
2-1/2X3-1/2	888-035C 21.40	1888-035C 21.40	888-035CP 21.40	25	0	121
2-1/2X4	888-040C 21.40	1888-040C 21.40	888-040CP 21.40	25	0	121
2-1/2X4-1/2	888-045C 25.57	1888-045C 25.57	888-045CP 25.57	25	0	121
2-1/2X5	888-050C 25.57	1888-050C 25.57	888-050CP 25.57	25	0	121
2-1/2X5-1/2	888-055C 30.00	1888-055C 30.00	888-055CP 30.00	25	0	121
2-1/2X6	888-060C 30.00	1888-060C 30.00	888-060CP 30.00	25	0	121
2-1/2X7	888-070C 38.37	1888-070C 38.45	888-070CP 38.37	16	0	121
2-1/2X8	888-080C 42.76	1888-080C 42.76	888-080CP 42.76	16	0	121
2-1/2X9	888-090C 46.92	1888-090C 46.92	888-090CP 46.92	25	0	121
2-1/2X10	888-100C 51.11	1888-100C 51.11	888-100CP 51.11	16	0	121
2-1/2X11	888-110C 55.54	1888-110C 55.54	888-110CP 55.54	16	0	121
2-1/2X12	888-120C 59.97	1888-120C 59.97	888-120CP 59.97	16	0	121
2-1/2X13	888-130C 68.35	1888-130C 68.35	888-130CP 68.35	25	0	121
2-1/2X14	888-140C 76.72	1888-140C 76.72	888-140CP 76.72	25	0	121
2-1/2X15	888-150C 82.01	1888-150C 82.01	888-150CP 82.01	25	0	121

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
2-1/2" Diameter						
2-1/2X16	888-160C 87.49	1888-160C 87.49	888-160CP 87.49	20	0	121
2-1/2X17	888-170C 90.42	1888-170C 90.42	888-170CP 90.42	20	0	121
2-1/2X18	888-180C 93.85	1888-180C 93.85	888-180CP 93.85	20	0	121
2-1/2X19	888-190C 98.03	1888-190C 98.03	888-190CP 98.03	25	0	121
2-1/2X20	888-200C 102.22	1888-200C 102.22	888-200CP 102.22	12	0	121
2-1/2X22	888-220C 111.06	1888-220C 111.06	888-220CP 111.06	25	0	121
2-1/2X24	888-240C 120.17	1888-240C 120.17	888-240CP 120.17	10	0	121
2-1/2X30	888-300C 125.79	1888-300C 125.79	888-300CP 125.79	3	0	121
2-1/2X36	888-360C 151.76	1888-360C 151.76	888-360CP 151.76	3	0	121
2-1/2X42	888-420C 174.42	1888-420C 174.42	888-420CP 174.42	3	0	121
2-1/2X48	888-480C 198.63	1888-480C 198.63	888-480CP 198.63	3	0	121

3" Diameter

3XCLOSE	889-005C 20.71	1889-005C 20.71	889-005CP 20.71	25	0	121
3X3	889-030C 20.71	1889-030C 20.71	889-030CP 20.71	20	0	121
3X3-1/2	889-035C 27.08	1889-035C 27.08	889-035CP 27.08	30	0	121
3X4	889-040C 27.08	1889-040C 27.08	889-040CP 27.08	30	0	121
3X4-1/2	889-045C 31.53	1889-045C 31.53	889-045CP 31.53	20	0	121
3X5	889-050C 36.01	1889-050C 36.01	889-050CP 36.01	20	0	121
3X5-1/2	889-055C 36.01	1889-055C 36.01	889-055CP 36.01	20	0	121
3X6	889-060C 42.38	1889-060C 42.38	889-060CP 42.38	20	0	121
3X7	889-070C 45.38	1889-070C 45.38	889-070CP 45.38	10	0	121
3X8	889-080C 52.29	1889-080C 52.29	889-080CP 52.29	10	0	121
3X9	889-090C 58.46	1889-090C 58.46	889-090CP 58.46	10	0	121
3X10	889-100C 68.43	1889-100C 68.43	889-100CP 68.43	10	0	121
3X11	889-110C 74.25	1889-110C 74.25	889-110CP 74.25	10	0	121
3X12	889-120C 78.74	1889-120C 78.74	889-120CP 78.74	10	0	121
3X13	889-130C 81.40	1889-130C 81.40	889-130CP 81.40	20	0	121
3X14	889-140C 90.71	1889-140C 90.71	889-140CP 90.71	20	0	121
3X15	889-150C 101.16	1889-150C 101.16	889-150CP 101.16	20	0	121
3X16	889-160C 104.59	1889-160C 104.59	889-160CP 104.59	20	0	121
3X17	889-170C 114.91	1889-170C 114.91	889-170CP 114.91	10	0	121
3X18	889-180C 116.97	1889-180C 116.97	889-180CP 116.97	10	0	121
3X19	889-190C 126.39	1889-190C 126.39	889-190CP 126.39	10	0	121
3X20	889-200C 133.85	1889-200C 133.85	889-200CP 133.85	10	0	121
3X22	889-220C 138.63	1889-220C 138.63	889-220CP 138.63	10	0	121
3X24	889-240C 144.19	1889-240C 144.19	889-240CP 144.19	10	0	121
3X30	889-300C 191.79	1889-300C 191.79	889-300CP 191.79	3	0	121

Nipples PVC, CPVC & PE Nipples



CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
3" Diameter						
3X36	889-360C 233.88	1889-360C 233.88	889-360CP 233.88	3	0	121
3X42	889-420C 266.00	1889-420C 266.00	889-420CP 266.00	3	0	121
3X48	889-480C 288.32	1889-480C 288.32	889-480CP 288.32	3	0	121

4" Diameter

4XCLOSE	890-005C 31.93	1890-005C 31.93	890-005CP 31.93	25	0	121
4X3	890-030C 36.47	1890-030C 36.47	890-030CP 36.47	25	0	121
4X3-1/2	890-035C 36.47	1890-035C 36.47	890-035CP 36.47	25	0	121
4X4	890-040C 38.33	1890-040C 38.33	890-040CP 38.33	18	0	121
4X4-1/2	890-045C 44.64	1890-045C 44.64	890-045CP 44.64	12	0	121
4X5	890-050C 44.64	1890-050C 44.64	890-050CP 44.64	12	0	121
4X5-1/2	890-055C 51.01	1890-055C 51.01	890-055CP 51.01	12	0	121
4X6	890-060C 60.60	1890-060C 60.60	890-060CP 60.60	12	0	121
4X7	890-070C 64.03	1890-070C 64.03	890-070CP 64.03	16	0	121
4X8	890-080C 76.60	1890-080C 76.60	890-080CP 76.60	16	0	121
4X9	890-090C 82.95	1890-090C 82.95	890-090CP 82.95	16	0	121
4X10	890-100C 89.36	1890-100C 89.36	890-100CP 89.36	16	0	121
4X11	890-110C 98.60	1890-110C 98.60	890-110CP 98.60	16	0	121
4X12	890-120C 102.06	1890-120C 102.06	890-120CP 102.06	16	0	121
4X13	890-130C 113.16	1890-130C 113.16	890-130CP 113.16	16	0	121
4X14	890-140C 121.79	1890-140C 121.79	890-140CP 121.79	16	0	121
4X15	890-150C 137.20	1890-150C 137.20	890-150CP 137.20	12	0	121
4X16	890-160C 153.18	1890-160C 153.47	890-160CP 153.18	12	0	121
4X17	890-170C 159.55	1890-170C 159.55	890-170CP 159.55	12	0	121
4X18	890-180C 165.92	1890-180C 165.92	890-180CP 165.92	4	0	121
4X19	890-190C 178.66	1890-190C 178.66	890-190CP 178.66	12	0	121
4X20	890-200C 185.28	1890-200C 185.28	890-200CP 185.28	8	0	121
4X22	890-220C 189.68	1890-220C 189.68	890-220CP 189.68	8	0	121
4X24	890-240C 206.68	1890-240C 206.68	890-240CP 206.68	4	0	121
4X30	890-300C 274.42	1890-300C 274.39	890-300CP 274.42	3	0	121
4X36	890-360C 334.55	1890-360C 334.55	890-360CP 334.55	3	0	121
4X42	890-420C 370.95	1890-420C 370.95	890-420CP 370.95	3	0	120
4X48	890-480C 401.48	1890-480C 401.48	890-480CP 401.48	3	0	121

6" Diameter

6XCLOSE	892-005C 75.56	1892-005C 75.56	892-005CP 75.56	1	8	121
6X3	892-030C 85.77	1892-030C 85.77	892-030CP 85.77	1	4	121
6X4	892-040C 117.32	1892-040C 117.32	892-040CP 117.32	1	0	121
6X4-1/2	892-045C 122.74	1892-045C 122.74	892-045CP 122.74	1	4	121
6X5	892-050C 131.57	1892-050C 131.57	892-050CP 131.57	1	2	121

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
6" Diameter						
6X5-1/2	892-055C 139.36	1892-055C 139.99	892-055CP 139.36	1	2	121
6X6	892-060C 153.55	1892-060C 153.55	892-060CP 153.55	1	0	121
6X7	892-070C 162.82	1892-070C 162.82	892-070CP 162.82	1	2	121
6X8	892-080C 180.55	1892-080C 180.55	892-080CP 180.55	1	0	121
6X9	892-090C 196.09	1892-090C 196.09	892-090CP 196.09	1	0	121
6X10	892-100C 211.60	1892-100C 211.60	892-100CP 211.60	1	0	121
6X11	892-110C 227.14	1892-110C 227.14	892-110CP 227.14	1	0	121
6X12	892-120C 242.65	1892-120C 242.65	892-120CP 242.65	1	0	121
6X13	892-130C 258.19	1892-130C 258.19	892-130CP 258.19	1	0	121
6X14	892-140C 273.74	1892-140C 273.74	892-140CP 273.74	1	0	121
6X15	892-150C 289.24	1892-150C 289.24	892-150CP 289.24	1	0	121
6X16	892-160C 304.78	1892-160C 304.52	892-160CP 304.78	1	0	121
6X17	892-170C 320.32	1892-170C 320.32	892-170CP 320.32	1	0	121
6X18	892-180C 330.73	1892-180C 330.73	892-180CP 330.73	1	6	121
6X19	892-190C 351.41	1892-190C 351.41	892-190CP 351.41	1	0	121
6X20	892-200C 366.89	1892-200C 366.89	892-200CP 366.89	1	0	121
6X22	892-220C 397.96	1892-220C 397.96	892-220CP 397.96	1	0	121
6X24	892-240C 458.37	1892-240C 458.37	892-240CP 458.37	1	3	121
6X30	892-300C 522.18	1892-300C 522.18	892-300CP 522.18	1	0	121
6X36	892-360C 615.38	1892-360C 615.38	892-360CP 615.38	1	0	121
6X42	892-420C 708.56	1892-420C 708.56	892-420CP 708.56	1	0	121
6X48	892-480C 801.75	1892-480C 801.75	892-480CP 801.75	1	0	121

8" Diameter

8XCLOSE	893-005C 110.80	1893-005C 110.80	893-005CP 110.80	2	0	121
8X4-1/2	893-045C 142.73	1893-045C 142.73	893-045CP 142.73	1	0	121
8X5	893-050C 153.36	1893-050C 153.36	893-050CP 153.36	1	0	121
8X5-1/2	893-055C 164.01	1893-055C 164.01	893-055CP 164.01	1	0	121
8X6	893-060C 174.64	1893-060C 174.64	893-060CP 174.64	1	0	121
8X7	893-070C 195.94	1893-070C 195.94	893-070CP 195.94	1	0	121
8X8	893-080C 217.22	1893-080C 217.22	893-080CP 217.22	4	0	121
8X9	893-090C 240.35	1893-090C 240.35	893-090CP 240.35	1	0	121
8X10	893-100C 259.80	1893-100C 259.80	893-100CP 259.80	1	0	121
8X11	893-110C 281.07	1893-110C 281.07	893-110CP 281.07	1	0	121
8X12	893-120C 308.71	1893-120C 308.71	893-120CP 308.71	1	0	121
8X13	893-130C 323.65	1893-130C 323.65	893-130CP 323.65	1	0	121
8X14	893-140C 344.95	1893-140C 344.95	893-140CP 344.95	1	0	121
8X15	893-150C 366.22	1893-150C 366.22	893-150CP 366.22	1	0	121



Nipples PVC, CPVC & PE Nipples

CPVC Schedule 80 Nipple (continued)

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
8" Diameter						
8X16	893-160C 387.52	1893-160C 387.52	893-160CP 387.52	1	0	121
8X17	893-170C 408.80	1893-170C 408.53	893-170CP 408.80	1	0	121
8X18	893-180C 430.07	1893-180C 430.07	893-180CP 430.07	4	0	121
8X19	893-190C 451.39	1893-190C 451.39	893-190CP 451.39	1	0	121
8X20	893-200C 472.67	1893-200C 472.67	893-200CP 472.67	2	0	121
8X22	893-220C 493.96	1893-220C 493.96	893-220CP 493.96	1	0	121
8X24	893-240C 515.24	1893-240C 515.24	893-240CP 515.24	2	2	121
8X30	893-300C 742.57	1893-300C 742.57	893-300CP 742.57	4	0	121
8X36	893-360C 905.78	1893-360C 905.78	893-360CP 905.78	4	0	121
8X42	893-420C 958.58	1893-420C 958.58	893-420CP 958.58	1	0	121
8X48	893-480C 1051.26	1893-480C 1051.26	893-480CP 1051.26	1	0	121

10" Diameter

10XCLOSE	894-005C 154.63	1894-005C 154.63	894-005CP 154.63	1	0	121
10X4-1/2	894-045C 208.47	1894-045C 208.47	894-045CP 208.47	1	0	121
10X5	894-050C 226.39	1894-050C 226.39	894-050CP 226.39	1	0	121
10X5-1/2	894-055C 244.36	1894-055C 244.36	894-055CP 244.36	1	0	121
10X6	894-060C 262.31	1894-060C 262.31	894-060CP 262.31	1	0	121
10X7	894-070C 298.21	1894-070C 298.21	894-070CP 298.21	1	0	121
10X8	894-080C 334.11	1894-080C 334.11	894-080CP 334.11	1	0	121
10X9	894-090C 370.00	1894-090C 370.00	894-090CP 370.00	1	0	121
10X10	894-100C 405.91	1894-100C 405.91	894-100CP 405.91	1	0	121
10X11	894-110C 441.81	1894-110C 441.81	894-110CP 441.81	1	0	121
10X12	894-120C 477.72	1894-120C 477.72	894-120CP 477.72	1	0	121
10X13	894-130C 525.89	1894-130C 525.89	894-130CP 525.89	1	0	121
10X14	894-140C 558.64	1894-140C 558.64	894-140CP 558.64	1	0	121
10X15	894-150C 585.41	1894-150C 585.41	894-150CP 585.41	1	0	121
10X16	894-160C 657.03	1894-160C 657.03	894-160CP 657.03	1	0	121
10X17	894-170C 663.81	1894-170C 663.81	894-170CP 663.81	1	0	121
10X18	894-180C 693.09	1894-180C 693.09	894-180CP 693.09	1	0	121
10X19	894-190C 760.53	1894-190C 760.53	894-190CP 760.53	1	0	121
10X20	894-200C 801.32	1894-200C 801.32	894-200CP 801.32	1	0	121
10X22	894-220C 840.21	1894-220C 840.21	894-220CP 840.21	1	0	121
10X24	894-240C 991.55	1894-240C 991.55	894-240CP 991.55	1	2	121
10X30	894-300C 1074.47	1894-300C 1074.47	894-300CP 1074.47	1	0	121
10X36	894-360C 1309.05	1894-360C 1309.05	894-360CP 1309.05	1	0	121
10X42	894-420C 1526.43	1894-420C 1526.43	894-420CP 1526.43	1	0	121
10X48	894-480C 1726.49	1894-480C 1726.49	894-480CP 1726.49	1	0	121

CPVC Schedule 80 Nipple

Size	Threaded Both Ends	Threaded One End	Plain End	Std Pk	Mstr Pk	Disc Code
12" Diameter						
12XCLOSE	895-005C 217.04	1895-005C 217.04	895-005CP 217.04	1	0	121
12X5	895-050C 290.24	1895-050C 290.24	895-050CP 290.24	1	0	121
12X5-1/2	895-055C 314.55	1895-055C 314.55	895-055CP 314.55	1	0	121
12X6	895-060C 337.78	1895-060C 337.78	895-060CP 337.78	1	0	121
12X7	895-070C 387.57	1895-070C 387.57	895-070CP 387.57	1	0	121
12X8	895-080C 436.24	1895-080C 436.24	895-080CP 436.24	1	0	121
12X9	895-090C 433.31	1895-090C 433.31	895-090CP 433.31	1	0	121
12X10	895-100C 533.56	1895-100C 533.56	895-100CP 533.56	1	0	121
12X11	895-110C 582.23	1895-110C 582.23	895-110CP 582.23	1	0	121
12X12	895-120C 630.88	1895-120C 630.88	895-120CP 630.88	1	0	121
12X13	895-130C 679.54	1895-130C 679.54	895-130CP 679.54	1	0	121
12X14	895-140C 728.23	1895-140C 728.23	895-140CP 728.23	1	0	121
12X15	895-150C 776.86	1895-150C 776.86	895-150CP 776.86	1	0	121
12X16	895-160C 825.54	1895-160C 825.54	895-160CP 825.54	1	0	121
12X17	895-170C 874.20	1895-170C 874.20	895-170CP 874.20	1	0	121
12X18	895-180C 922.86	1895-180C 922.86	895-180CP 922.86	1	0	121
12X19	895-190C 971.52	1895-190C 971.52	895-190CP 971.52	1	0	121
12X20	895-200C 1020.20	1895-200C 1020.20	895-200CP 1020.20	1	0	121
12X22	895-220C 1068.85	1895-220C 1068.85	895-220CP 1068.85	1	0	121
12X24	895-240C 1316.74	1895-240C 1316.74	895-240CP 1316.74	1	0	121
12X30	895-300C 1527.00	1895-300C 1527.00	895-300CP 1527.00	1	0	121
12X36	895-360C 1798.81	1895-360C 1798.81	895-360CP 1798.81	1	0	121
12X42	895-420C 2010.58	1895-420C 2010.58	895-420CP 2010.58	1	0	121
12X48	895-480C 2382.77	1895-480C 2382.77	895-480CP 2382.77	1	0	121

Nipples PVC, CPVC & PE Nipples



The following nipples are normally injection molded, but are optionally available as machined nipples listed below. All other nipples are normally machined.

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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CPVC Schedule 80 Machined Nipples 1/4" Diameter



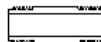
880-005CM	1/4XCLOSE	25	1200	121	4.76
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CPVC Schedule 80 Machined Nipples 1/2" Diameter



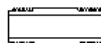
882-020CM	1/2X2	25	300	121	3.95
882-040CM	1/2X4	25	150	121	5.61
882-030CM	1/2X3	25	300	121	4.93

CPVC Schedule 80 Machined Nipples 3/4" Diameter



883-060CM	3/4X6	25	200	121	10.00
883-030CM	3/4X3	25	300	121	7.14

CPVC Schedule 80 Machined Nipples 1" Diameter



884-005CM	1X	25	300	121	7.52
884-020CM	1X2	25	300	121	7.02

Polyethylene Schedule 40 Nipple

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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1/2" Diameter

P42-005	1/2XCLOSE	25	450	120	.94
P42-015	1/2X1-1/2	25	300	120	.94
P42-020	1/2X2	25	300	120	.94
P42-025	1/2X2-1/2	25	300	120	1.11
P42-030	1/2X3	25	300	120	1.11
P42-035	1/2X3-1/2	25	300	120	1.18
P42-040	1/2X4	25	300	120	1.18
P42-045	1/2X4-1/2	25	300	120	1.34
P42-050	1/2X5	25	300	120	1.34
P42-055	1/2X5-1/2	25	300	120	1.56
P42-060	1/2X6	25	300	120	1.56
P42-070	1/2X7	25	200	120	2.34
P42-080	1/2X8	25	0	120	2.38
P42-090	1/2X9	25	0	120	2.48
P42-100	1/2X10	25	0	120	2.53
P42-110	1/2X11	25	0	120	2.65
P42-120	1/2X12	25	0	120	2.66
P42-140	1/2X14	100	0	120	3.67
P42-150	1/2X15	100	0	120	4.07
P42-160	1/2X16	100	0	120	4.44
P42-180	1/2X18	100	0	120	4.81
P42-240	1/2X24	100	0	120	7.02

Polyethylene Schedule 40 Nipple

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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3/4" Diameter

P43-005	3/4XCLOSE	25	300	120	1.11
P43-020	3/4X2	25	300	120	1.11
P43-025	3/4X2-1/2	25	300	120	1.56
P43-030	3/4X3	25	300	120	1.56
P43-035	3/4X3-1/2	25	300	120	1.74
P43-040	3/4X4	25	300	120	1.74
P43-045	3/4X4-1/2	25	200	120	1.82
P43-050	3/4X5	25	200	120	1.82
P43-055	3/4X5-1/2	25	200	120	1.98

Polyethylene Schedule 40 Nipple (continued)

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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3/4" Diameter

P43-060	3/4X6	25	200	120	1.98
P43-070	3/4X7	25	200	120	6.09
P43-080	3/4X8	25	0	120	6.37
P43-090	3/4X9	25	0	120	6.95
P43-100	3/4X10	25	0	120	7.49
P43-110	3/4X11	25	0	120	7.86
P43-120	3/4X12	25	0	120	8.06

Polyethylene Cut-Off Nipples

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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491-060	1/2"MPTx6"Cut-Off	50	400	120	.94
492-060	1/2"x3/4"MPTx6"Cut-Off	50	350	120	1.41
493-060	3/4"MPTx6"Cut-Off	50	300	120	1.41

Polyethylene Cut-Off Riser Extension

Part Number	Size	Std Pk	Mstr Ctn	Disc Code	Price Each
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FIPT x MIPT Cut-Off (1/2" = 3 - Section Cut-Off; 3/4" = 4 - Section Cut-Off)

M434-005-3	1/2X3	50	600	120	1.42
M434-007-4	3/4X4	50	0	120	1.88

PVC Schedule 80 Grooved Nipple

Size	Groove X Groove	Plain X Groove	Thread X Groove	Std Pk	Mstr Pk	Disc Code
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1-1/2" Diameter

1-1/2X3	886-030GG 4.33	886-030PG 3.72	886-030TG 4.33	25	0	120
1-1/2X4	886-040GG 5.39	886-040PG 4.89	886-040TG 5.39	25	0	120
1-1/2X6	886-060GG 7.58	886-060PG 7.17	886-060TG 7.17	25	0	120

2" Diameter

2X3	887-030GG 6.83	887-030PG 6.83	887-030TG 6.83	25	0	120
2X4	887-040GG 7.91	887-040PG 7.91	887-040TG 7.91	25	0	120
2X6	887-060GG 10.49	887-060PG 10.79	887-060TG 10.79	25	0	120

3" Diameter

3X3	889-030GG 13.75	889-030PG 12.26	889-030TG 13.75	20	0	120
3X4	889-040GG 19.44	889-040PG 19.44	889-040TG 19.44	30	0	120
3X6	889-060GG 27.23	889-060PG 27.23	889-060TG 27.23	20	0	120

4" Diameter

4X3	890-030GG 22.85	890-030PG 22.85	890-030TG 22.85	25	0	120
4X4	890-040GG 30.25	890-040PG 30.25	890-040TG 30.25	18	0	120
4X6	890-060GG 30.45	890-060PG 30.45	890-060TG 30.45	12	0	120

6" Diameter

6X3	892-030GG 25.68	892-030PG 43.51	892-030TG 25.68	1	4	121
6X4	892-040GG 56.15	892-040PG 56.15	892-040TG 56.15	4	0	120
6X6	892-060GG 44.23	892-060PG 44.23	892-060TG 44.23	2	0	120



PVC SCHEDULE 80 FITTINGS

80-2-1000

Performance Engineered & Tested



SPEARS® Schedule 80 PVC fitting designs combine years of proven experience with computer generated stress analysis to yield the optimum physical structure and performance for each fitting. Material reinforcement is uniformly placed in stress concentration areas for substantially improved pressure handling capability. Resulting products are subjected to numerous verification tests to assure obtaining the very best PVC fittings available.

Full 1/4" Through 12" Availability

Spears® comprehensive line of injection molded PVC fittings offers a variety of configurations in molded Schedule 80 sizes 1/4" through 12" conforming to ASTM D 2467 and Spears® exclusive CL150 Flanges in sizes 1/2" through 16".

Exceptional Chemical & Corrosion Resistance

Unlike metal, PVC fittings never rust, scale, or pit, and will provide many years of maintenance-free service and extended system life.

High Temperature Ratings

PVC thermoplastic can handle fluids at service temperatures up to 140°F (60°C), allowing a wide range of process applications, including corrosive fluids.

Lower Installation Costs

Substantially lower material costs than steel alloys or lined steel, combined with lighter weight and ease of installation, can reduce installation costs by as much as 60% over conventional metal systems.

Higher Flow Capacity

Smooth interior walls result in lower pressure loss and higher volume than conventional metal fittings.

Additional Fabricated Configurations through 36"

Extra large, hard-to-find, and custom configurations are fabricated from NSF Certified pipe. Fittings are engineered and tested to provide full pressure handling capabilities according to Spears® specifications.

Advanced Design Specialty Fittings

Spears® wide range of innovative, improved products include numerous metal-to-plastic transition fittings and unions with Spears® patented special reinforced (SR) plastic threads.

PVC Valves

SPEARS® PVC Valve products are available for total system compatibility and uniformity; see SPEARS® THERMOPLASTIC VALVES PRODUCT GUIDE & ENGINEERING SPECIFICATIONS (V-4).



Sample Engineering Specifications

All PVC Schedule 80 fittings shall be produced by Spears® Manufacturing Company from PVC Type I, cell classification 12454, conforming to ASTM Standard D 1784. All injection molded PVC Schedule 80 fittings shall be Certified for potable water service by NSF International and manufactured in strict compliance to ASTM D 2467. All fabricated fittings shall be produced in accordance with Spears® General Specifications for Fabricated Fittings. All PVC flanges shall be designed and manufactured to meet CL150 bolt pattern per ANSI Standard B16.5 and rated for a maximum internal pressure of 150 psi, non-shock at 73°F.

PROGRESSIVE PRODUCTS FROM SPEARS® INNOVATION & TECHNOLOGY

Visit our web site: www.spearsmfg.com

PVC Thermoplastic Pipe Temperature Pressure De-Rating

To determine the maximum internal pressure rating at an elevated temperature, simply multiply the pipe pressure rating at 73°F by the percentage specified for the desired temperature.

System Operating Temperature °F (°C)	73 (23)	80 (27)	90 (32)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)
PVC	100%	90%	75%	62%	50%	40%	30%	22%

NOTE: Valves, Unions and Specialty Products have different elevated temperature ratings than pipe.

Typical Material Properties

Properties	ASTM Test Method	PVC
Mechanical Properties, 73°F		
Specific Gravity, g/cm ³	D 792	1.41
Tensile Strength, psi	D 638	7,200
Modulus of Elasticity, psi	D 638	440,000
Compressive Strength, psi	D 695	9,000
Flexural Strength, psi	D 790	13,200
Izod Impact, notched, ft-lb / in	D 256	.65
Thermal Properties		
Heat Deflection Temperature, °F at 66 psi	D 648	165
Thermal Conductivity, BTU / hr / sq ft / °F / in	C 177	1.2
Coefficient of Linear Expansion, in / in / °F	D 696	3.1 x 10 ⁻⁵
Flammability		
Limited Oxygen Index, %	D 2863	43
UL 94 Rating	94V-0	
Other Properties		
Water Absorption, % 24 hr.	D 570	.05
Industry Standard Color	White / Dark Gray	
ASTM Cell Classification	D 1784	12454
NSF Potable Water Approved	YES	

PVC Chemical Resistance

PVC is generally inert to most mineral acids, bases, salts and paraffinic hydrocarbon solutions. For more information on PVC chemical resistance refer to the Chemical Resistance of Rigid Vinyls Based on Immersion Test, published by the GEON® company.

NOT FOR USE WITH COMPRESSED AIR OR GASES

Spears® Manufacturing Company DOES NOT RECOMMEND the use of thermoplastic piping products for systems to transport or store compressed air or gases, or the testing of thermoplastic piping systems with compressed air or gases in above and below ground locations. The use of our product in compressed air or gas systems automatically voids any warranty for such products, and its use against our recommendation is entirely the responsibility and liability of the installer.

WARNING: DO NOT USE COMPRESSED AIR OR GAS TO TEST ANY PVC OR CPVC THERMOPLASTIC PIPING PRODUCT OR SYSTEM, AND DO NOT USE DEVICES PROPELLED BY COMPRESSED AIR OR GAS TO CLEAR SYSTEMS. THESE PRACTICES MAY RESULT IN EXPLOSIVE FRAGMENTATION OF SYSTEM PIPING COMPONENTS CAUSING SERIOUS OR FATAL BODILY INJURY.



SPEARS® MANUFACTURING COMPANY • CORPORATE OFFICE

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(818) 364-1611 • www.spearsmfg.com



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(818) 364-1611 • (800) 862-1499
Fax (818) 367-3014

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4880 Florence St.
Denver, CO 80238
(303) 371-9430 • (800) 777-4154
Fax (303) 375-9546

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Salt Lake City, UT 84104
(303) 371-9430 • (800) 777-4154
Fax (303) 375-9546

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PVC & CPVC TRUE UNION BALL VALVES (Regular Style)

TU-2-0205

Multi-Featured Industrial Valve



The unique design features of this quarter-turn shut off valve make it one of the most specified ball valves for industrial and chemical processing applications. Available in IPS sizes 1/2" through 4" with choice of socket, threaded or flanged end connectors, and 6" (venturied 4" valve) with choice of either socket or flanged end connectors. Also available in metric socket sizes 20mm through 110mm, and 1/2" through 4" BSP threads.

Heavy Bodied PVC or CPVC Construction

Spears® True Union Ball Valves never rust, scale, or pit, providing exceptional chemical and corrosion resistance.

Buttress Threaded Double Union Nuts

Strong Buttress type threads on union nuts and seal carriers allow higher pressure handling capability and quick in-line installation and servicing.

Safe-T-Blocked® Carrier

Stops flow in either direction, allowing safe removal of the downstream union nut for system service or modification.

PTFE Ball Seats

Spears® PTFE floating seat design reduces seat wear for extended valve life, smooth operation, and bubble-tight shut-off. 100% factory tested.

EPDM or Viton® O-ring Options

Choice of high grade, abrasion resistant EPDM or Viton® elastomer O-rings allows application specific selection for optimum chemical resistance.

High Impact Polypropylene Handle

Features double stop engagement and exhibits excellent resistance to most chemical environments.

Safe-T-Shear® Stem

Developed to help prevent line fluids from leaking out in the event of ball valve stem damage. Engineered for high strength, the stem incorporates a special shear point to control accidental breakage. Over torquing breaks occur above the stem O-ring leaving the seal intact until repair or replacement can be made.

For additional information, please refer to Spears® THERMOPLASTIC VALVES & ACCESSORIES PRODUCT GUIDE & ENGINEERING SPECIFICATIONS V-4 and THERMOPLASTIC VALVES & ACCESSORIES Price Schedules V-1.

Full Schedule 80 Bore

In full open position, full bore virtually eliminates pressure drop, providing optimum flow.

Full 235 psi Pressure Rating

Maximum Internal Pressure at 73°F for the most demanding applications of 1/2" - 2" valves, 150 psi for 2-1/2" - 6" and all flanged valves.

Suitable For Vacuum Service

Spears® True Union Ball Valves are tested at 26 in. Hg vacuum for one hour with less than 1 in. Hg loss.

NSF Listed for Potable Water

All True Union Ball Valves are NSF Certified for potable water use.

Fully Repairable

Convenient Seat & O-ring Replacement Kits, or Full Cartridge Replacement Kits for easy ordering, servicing and extended valve life.

Easy Field Actuation, or Custom Factory Actuation Available

Easily actuated in the field using optional mounting kits listed below. Spears® in-house actuation program can quickly fit mechanical actuation to specific application needs.

Optional Accessories

- Round Safety Handle
- Stem Extension Kit
- Multi-Mount Valve Mounting Brackets
- Complete Multi-Mount Actuation Mounting Kit
- Mini-Mount Actuation Mounting Kit
- 2" Square/T-Style Operator Nut

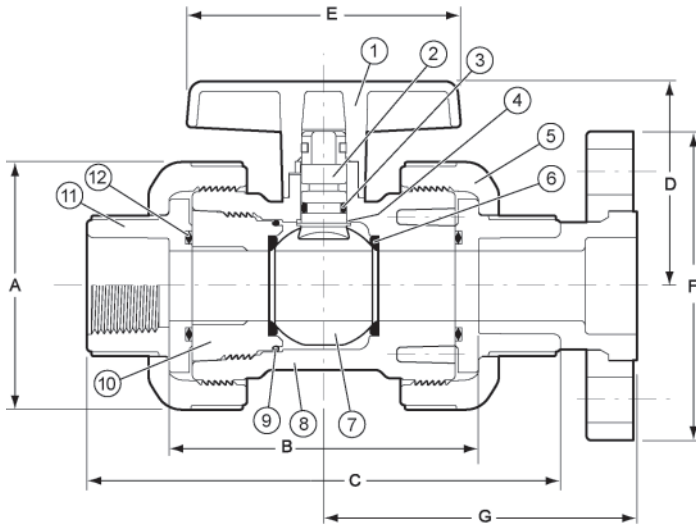
Sample Engineering Specification

All thermoplastic ball valves shall be True Union type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, ASTM D 1784 Cell Classification 23447. All O-rings shall be EPDM or Viton®. All valves shall have Safe-T-Shear® stem and double stop Polypropylene handle. All valve union nuts shall have Buttress threads. All seal carriers shall be Safe-T-Blocked®. All valve components shall be replaceable. All 1/2" - 2" valves shall be pressure rated at 235 psi and all 2-1/2" - 6" and all flanged valves shall be pressure rated at 150 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.

Viton® is a Registered Trademark of Dupont Dow Elastomers.



PROGRESSIVE PRODUCTS FROM SPEARS® INNOVATION & TECHNOLOGY
Visit our web site: www.spearsmfg.com



Replacement Parts

No.	Component	Qty.	Material
1	Handle	1	PP
2	Stem	1	PVC/CPVC
3	Stem O-ring	1	EPDM/Viton®
4	Stem Bearing*	1	PP
5	Union Nut	2	PVC/CPVC
6	Seat**	2	PTFE
7	Ball	1	PVC/CPVC
8	Body	1	PVC/CPVC
9	Carrier O-ring	1	EPDM/Viton®
10	Seal Carrier	1	PVC/CPVC
11	End Connector	2	PVC/CPVC
12	End Connector O-ring	2	EPDM/Viton®

* sizes 1-1/4" and larger.

**Seat O-ring (not shown) on sizes 2-1/2" and larger.

Nominal Size	Dimension Reference (inches, ± 1/16)							Approx. Wt. (Lbs.)				Oper. ² Torque (in.-lb.)	C _v ⁴ Values	
	A	B ¹	C	D	E	F	G	PVC		CPVC			Soc/Thd	Flanged
								Soc/Thd	Flanged	Soc/Thd	Flanged			
1/2	2-9/16	3-7/16	5-3/16	2-13/32	2-23/32	3-1/2	3-15/32	1.05	1.23	.95	1.14	20	25	18
3/4	3-1/32	4-1/16	6-3/16	2-5/8	3-3/16	3-7/8	4	1.44	1.64	1.50	1.73	30	51	36
1	3-13/32	4-5/16	6-9/16	2-13/16	3-23/32	4-1/4	4-5/16	1.91	2.22	2.08	2.43	40	97	67
1-1/4	3-11/16	4-1/2	7-1/16	2-31/32	4-1/8	4-5/8	4-19/32	2.38	2.78	2.52	2.91	60	204	142
1-1/2	4-3/8	5-5/16	8-1/32	3-9/32	4-15/32	5	5-9/32	3.63	4.00	3.82	4.26	80	285	201
2	5-3/16	5-13/16	8-13/16	4-13/32	5-1/4	6	5-23/32	5.40	6.14	5.70	6.54	90	540	381
2-1/2	7-7/16	8-3/8	11-7/8	4-29/32	9-7/8	7	7-3/16	12.87	14.26	13.44	15.85	300	712	512
3	7-7/16	8-3/16	11-15/16	4-29/32	9-7/8	7-1/2	7-11/32	13.24	15.67	13.85	16.96	300	1294	925
4	8-15/16	8-11/16	13-3/16	5-19/32	10-13/16	9-1/16	8-5/32	19.58	24.32	20.49	25.83	400	2629	1868
6 Socket ³	8-15/16	19-5/8	26-1/16	6-3/4	10-13/16	11-1/4	14-11/16	22.66	30.98	26.11	34.78	400	N/A	N/A
6 Flanged ³	11-3/16	29-3/8	N/A	6-3/4	10-13/16	11-1/4	14-11/16	N/A	N/A	N/A	N/A	400	N/A	N/A

1: Valve Lay Lengths.

2: Torque required at valve maximum internal pressure rating, 5 ft./sec. flow velocity.

3: Consists of 4" True Union Ball Valve with two 4" x 6" Adapters.

4: Gallons per minute at 1 psi pressure drop. Values calculated from valve laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C=150.

C_v: Values for 6" venturied flange and socket valves are not available.

Temperature Pressure Rating

System Operating Temperature °F (°C)			100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (Mpa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)
	2-1/2" - 6"	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.75)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0- (-0-)

Note: All flanged valves are rated at 150 psi @73°F

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- 01 **Fast:** Precisely install sprinklers at grade in mere seconds
- 02 **Leak Free:** All models are built with airtight connection points
- 03 **Simple:** With a model designed for any height, installation couldn't be easier

SJ SWING JOINT

Easily adjusts sprinklers to proper height and position, and eliminates broken risers.

Have you experienced trouble installing sprinklers to the correct finish grade because you can't find the right riser length? When existing pipes are buried in shallow trenches and you want to retrofit to taller pop-up sprinklers, what can you turn to? Are you having difficulty raising sprinklers that are buried under inches of built-up thatch? Do you want to be sure that when a sprinkler has heavy equipment rolling over the top it can be easily readjusted to the correct grade? Presenting the perfect solution — the Hunter Swing Joint. It's the way to easily install sprinklers to their proper height and position in mere seconds. This is an innovative product you won't want to pass up!

SJ SWING JOINT FEATURES & SPECIFICATIONS

Features

- Unique leak-free swivel ells on both ends can be installed in any position for maximum versatility.
- Standard 1/2" or 3/4" low-density poly threaded elbow
- Strong Acetal barbed 90
- Low-density poly tubing 0.49" ID
- 6" or 12" length
- Pressure rated to 150 PSI

Models

SJ SWING JOINT

Link: 6"

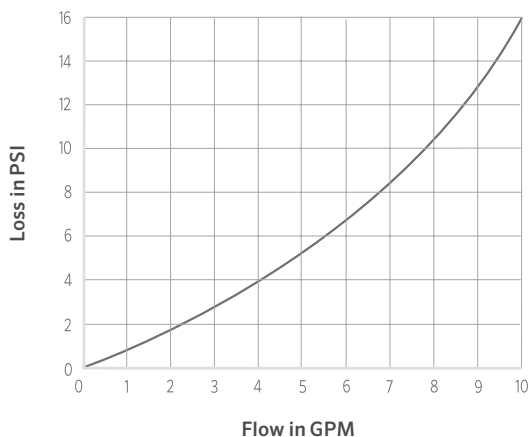


SJ SWING JOINT

Link: 12"



SWING JOINT FRICTION LOSS



SJ SWING JOINT MODELS

Model	Description
SJ-506	1/2" threaded x 6" length standard
SJ-7506	1/2" x 3/4" threaded x 6" length
SJ-706	3/4" threaded x 6" length
SJ-512	1/2" threaded x 12" length
SJ-7512	1/2" x 3/4" threaded x 12" length
SJ-712	3/4" threaded x 12" length

Website hunterindustries.com | **Customer Support** 1-800-383-4747 | **Technical Service** 1-800-733-2823

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



How does the competitor's tubing stack up against ours?

It doesn't.



"Theirs"



"Ours"
1,000' in a XQ Bucket™
(patent pending)

Introducing the new XQ 1/4" Distribution Tubing from Rain Bird®.

- Unique blend of polymers that give it the flexibility of vinyl with the hold of poly.
- New textured finish improves handling.
- Self extracting coil feature makes it easy to use, store and eliminates waste.
- Patent pending dispensing bucket makes using and storing large coils easy and efficient.



RAIN BIRD®



XQ 1/4" DISTRIBUTION TUBING



XQ-100
100 foot coil



XQ-250
250 foot coil



XQ-1000
1,000 foot coil



XQ-1000B
contains 1,000' coil

Features

- 0.25" tubing designed for use with all drip systems
- Constructed from durable, UV resistant, polyethylene materials
- 60 psi rating exceeds competitors specs
- Can be installed above or below grade
- Great textured finish for easy handling
- Compatible with all 1/4" transfer fittings and all barbed outlet ports
- Unique coiling method allows the coil to remain intact as tubing is pulled out
- 100', 250', 1000' and 1000' in a bucket sold individually, by the pallet and truckload
- Legendary Rain Bird service and support

Operating Range

- Pressure: 0 to 60 psi (0 to 4.1 bar)

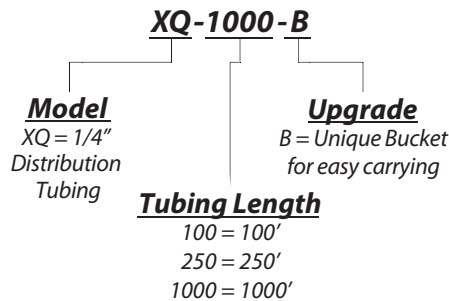
Specifications

- OD: 0.25" (mm)
- ID: 0.17" (mm)
- Wall Thickness: 0.08"
- Lengths: 100', 250', 1000' coils and 1000' in a bucket

Models

- XQ-100
- XQ-250
- XQ-1000
- XQ-1000B

How to Specify/Order



XERIGATION FRICTION LOSS CHART

1/4 inch Landscape Dripline			
Size ID	0.25	0.17	
Flow GPH	Flow GPM	Velocity FPS	PSI Loss
1	0.02	0.24	0.12
2	0.03	0.47	0.44
3	0.05	0.71	0.93
4	0.07	0.94	1.58
5	0.08	1.18	2.38
6	0.10	1.41	3.34
7	0.12	1.65	4.44
8	0.13	1.88	5.69
9	0.15	2.12	7.07
10	0.17	2.36	8.59
15	0.25	3.53	18.19
19	0.32	4.48	28.17
20	0.33	4.71	30.98
21	0.35	4.95	33.91
25	0.42	5.89	46.81
30	0.50	7.07	65.59
35	0.58	8.25	87.24
40	0.67	9.42	111.68
45	0.75	10.60	138.87
50	0.83	11.78	168.76
55	0.92	12.96	201.30
60	1.00	14.13	236.45
65	1.08	15.31	274.19

Model Number	Part Number	Description	Sell Qty	Pallet Qty	2009 List
XQ100	X33010	XQ 1/4" POLYETHYLENE DISTRIBUTION TUBING 100FT	10	160	\$ 5.90
XQ250	X33025	XQ 1/4" POLYETHYLENE DISTRIBUTION TUBING 250FT	4	96	\$ 14.50
XQ1000	X33100	XQ 1/4" POLYETHYLENE DISTRIBUTION TUBING 1000FT	1	32	\$ 55.00
XQ1000B	X33101	XQ 1/4" POLYETHYLENE DISTRIBUTION TUBING 1000FT IN BUCKET	1	32	\$ 59.00

Diffuser Bug Cap

Features

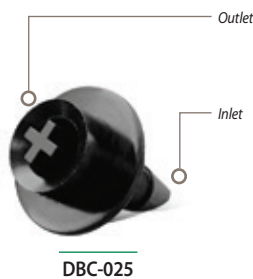
- Prevents bugs and other debris from clogging 1/4" Distribution Tubing
- Barbed inlet fits into 1/4" Distribution Tubing (XQ)
- Flanged shield diffuses water to minimize soil erosion at emission point

Operating Range

- Pressure: 0 to 50 psi (0 to 3.5 bar)

Models

- DBC-025: Black



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



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 1/4" Tubing Stake

Features

- Holds 1/4" 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' 1/4" 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



1/4" Tubing Stake with Cap

Features

- Locking cap holds tubing in place
- Used for holding 1/4" Distribution Tubing (XQ) in place at the plant root zone
- Accepts 1/4" Distribution Tubing from 0.19 O.D. to 0.256 O.D.
- Bug cap included
- Constructed of UV-resistant plastic material

Model

- TS-025WCAP





Xeri-Bug™ Emitters

Point Source Emission Devices

Ideal for watering the root zones of plants, trees, and container plants. Xeri-Bugs emit water at rates of 0.5, 1.0 and 2.0 gallons-per-hour (GPH) which allows soils to absorb water more completely into the root zones of plants. Xeri-Bugs are an ideal choice for those wishing to conserve water or eliminate excessive run-off.



Features & Benefits:

- Flow-rates from 0.5 to 2.0 GPH (1,89 to 7,57 l/h).
- Pressure-compensating design delivers uniform flow throughout a wide pressure range (15 to 50 psi; 1,0 to 3,5 bars).
- Available with self-piercing inlet barb to permit one-step emitter insertion into 1/2" or 3/4" drip tubing when installed with the XM-Tool.
- Inlet and outlet barb securely retains 1/4" distribution tubing (DT-025 or PT-025).
- Available with 10-32 threaded inlet that easily threads into a polyflex riser (see page 245).
- Use Xeri-Bugs (barb or 10-32 models) with the Xeri-Bird™ 8 multioutlet device (see page 240).
- Available with 1/2" (15/21) FPT inlet that easily threads onto a 1/2" PVC riser.
- Self-flushing action minimizes clogging.
- Made from highly inert materials that are resistant to chemicals.
- Durable plastic construction is UV-resistant.
- Color-code inlet identifies 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 bars)
- Filtration: 150 to 200 mesh (75 to 100 micron)

Models

- XB-05PC (Blue) Barb inlet; 0.5 GPH (1,89 l/h)

- XB-10PC (Black) Barb inlet; 1.0 GPH (3,79 l/h)
- XB-20PC (Red) Barb inlet; 2.0 GPH (7,57 l/h)
- XB-05PC-1032 (Blue) 10-32 Threaded inlet; 0.5 GPH (1,89 l/h)
- XB-10PC-1032 (Black) 10-32 Threaded inlet; 1.0 GPH (3,79 l/h)
- XB-20PC-1032 (Red) 10-32 Threaded inlet; 2.0 GPH (7,57 l/h)
- XBT-10PC 1/2" (15/21) FPT inlet; 1.0 GPH (3,79 l/h)
- XBT-20PC 1/2" (15/21) FPT inlet; 2.0 GPH (7,57 l/h)

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FITTINGS & INSTALLATION TOOLS

APPLICATIONS

- 17mm fits Techline HCVXR, CV, DL, RW and RWP driplines, and PE irrigation hose.
- 12mm fits Techline EZ

SPECIFICATIONS

- Acceptable hose sizes for 17mm: 0.56" - 0.60" inside diameter
- Acceptable hose sizes for 12mm: 0.426" inside diameter

FEATURES & BENEFITS

BARBED FITTINGS

For secure fit and easy installation without clamps, glue or tools.

UV RESISTANT

Withstands heat, direct sun and harsh chemicals.

ONE-PIECE CONSTRUCTION

For added strength, durability and long-term performance.

ALLOWS FOR EASY ON-SITE INSPECTION

For proper fitting and installation.

17mm FOR TECHLINE® HCVXR, CV, DL, RW and RWP



INSERT COUPLING
Model TLCOUP



INSERT ELBOW
Model TLELL



1/2" MPT ADAPTER
Model TL050MA



INSERT ADAPTER FOR 1" OR LARGER PE
(requires 11mm or 7/16" punch)
Model TLIAPE-B



INSERT ADAPTER FOR 1 1/2" OR LARGER PVC
(requires TDBIT16.5)
Model TLIAPVC-B



3/4" MPT ADAPTER
Model TL075MA



INSERT CROSS
(requires 11mm or 7/16" punch)
Model TLCROS



INSERT TEE
Model TLTEE



COMBINATION TEE
INS x INS x 3/4" FPT
Model TL075FTEE



3/4" MPT x 1/2"
Model TL2W075MA



EMITTER MICRO-TUBING ADAPTER
Model TLMTUBEADP



FIGURE 8 LINE END
Model TLFIG8



MANUAL FLUSH VALVE
Model TLSOV



WHEELBARROW TUBING DISPENSER
Model WBTD

12mm FOR TECHLINE® EZ



INSERT COUPLING
Model T12COUP



REDUCING COUPLING
12MM BARB x 17MM BARB
Model T12RCOUP



INSERT TEE
Model T12TEE



INSERT ELBOW
Model T12ELL



1/2" MPT ADAPTER
Model T12050MA



3/4" MPT ADAPTER
Model T12075MA



INSERT CROSS
Model T12CROSS



COMBINATION TEE
INS x INS x 3/4" FPT
Model T12075FTEE



INSERT ADAPTER
FOR 1" OR LARGER PE
Model T12IAPE-B



INSERT ADAPTER
FOR 1 1/2" OR LARGER PVC
Model T12IAPVC-B



3/4" MPT x 'V'
Model T122W075MA



MANUAL FLUSH VALVE
Model T12SOV

FITTING COMBO PACKS



FITTING COMBO 3 PACK
Model T12COMBOPACK3



FITTING COMBO 4 PACK
Model T12COMBOPACK4



FIGURE 8 LINE END
Model T12FIG8

FOR 17mm & 12mm DRIPLINE



6" SOIL STAPLE
Model TLS6



DRILL BIT FOR PVC
INSERT ADAPTER
Model TDBIT16.5

TOOLS FOR 17mm & 12mm DRIPLINE



PRESSURE GAUGE
(0-30 psi)
Model GAUGE30



PRESSURE GAUGE
(0-100 psi)
Model GAUGE100



SHRADER VALVE
(1/8" MPT)
Model 61APS1/8



SHRADER VALVE
ADAPTER
Model 61ACG



PRESSURE GAUGE
NEEDLE
Model 6809091



NETAFIM USA
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www.netafimusa.com

SUBMITTAL SHEET

Joint Restraint System For IPS, DPS & DIN Plastic Pipe



PIPE TO FITTING

LH-Series... 2" - 12" IPS Pipe Sizes
LHD-Series... 4" - 24" DPS Pipe Sizes
DLH-Series... 63 - 400MM DIN Pipe Sizes



PIPE TO PIPE

LB-Series... 2" - 12" IPS Pipe Sizes
LBD-Series... 4" - 24" DPS Pipe Sizes
DLB-Series... 63 - 400MM DIN Pipe Sizes



PIPE TO PIPE

LPP-Series... 2" - 12" IPS Pipe Sizes



PIPE TO FITTING - For Gate Valves

LGK-Series... 2" - 12" IPS Pipe Sizes
LGKD-Series... 4" - 12" DPS Pipe Sizes
DLGK-Series... 63 - 400MM DIN Pipe Sizes



PIPE TO PIPE - For Gate Valves

LG-Series... 2" - 12" IPS Pipe Sizes
LGD-Series... 4" - 12" DPS Pipe Sizes
DLG-Series... 63 - 400MM DIN Pipe Sizes



PIPE TO PIPE - For MJ Gate Valves

LMJ-Series... 2" - 12" IPS Pipe Sizes
LMJD-Series... 4" - 12" DPS Pipe Sizes
DLMJ-Series... 63 - 400MM DIN Pipe Sizes

SIZES: **2 - 12" IPS, 4 - 24" DPS & 63 - 400MM DIN**
MATERIAL: **Class 350 Ductile Iron per ASTM A-536, Grade 65-45-12, AWWA C153**
PRESSURE RATING: **350 PSI**
EPOXY COATING: **ANSI/AWWA C116/A21.16-09, NSF 61 & CSA Z245.20-98, 10-12 MIL**
HARDWARE: **Low Alloy Steel ANSI/AWWA C11/A21.11, Optional 304 or 316 stainless**
INSTALLATION: **Per IPS, DPS & DIN Pipe Standards**

Specification:

All changes of directions and reductions shall be mechanically restrained. Additional adjacent joints shall also be restrained as per manufactures recommendations. Joint Restraints shall be ductile iron and made in accordance with ASTM A-536, Grade 65-45-12 & AWWA C153. All Restraints shall have blunt cast serrations. Machine threaded restraints shall not be allowed. Optional Epoxy Coating shall be fusion bonded epoxy, 10-12 mil thickness. The epoxy coated restraints shall pass 90-Day immersion tests per CSA Z245.20-98. All Joint Restraints shall be manufactured by Leemco, Inc., U.S.A.



Leemco, Inc.
 360 S. Mount Vernon
 Colton, CA. 92324
 Ph: (909) 422-0088 Fx: (909) 422-0086
 Web: www.leemco.com

Leemco has a large variety of Fittings & Joint Restraints...
Please refer to our IPS, DPS and DIN Price Lists for available Models and Sizes.

Series 825YA

Angle Pattern Reduced Pressure Zone Assemblies

Size: 3/4" - 2" (20mm - 50mm)

The FEBCO Series 825YA Reduced Pressure Zone Assemblies are used to protect against toxic fluids in water services to industrial plants, hospitals, morgues, mortuaries, and chemical plants. They are also used in irrigation systems, boiler feeds, water lines and other installations requiring the highest level of mechanical protection. End connection – NPT ANSI/ASME B1.20.1

Features

- Installation versatility simplifies new and retrofit installations.
- Eliminates pipe elbows, nipples and unions from the installation.
- Reduces installation time, labor costs and materials.
- Compact design simplifies retrofit.
- Integral flanged union connections allow assembly to be removed from the line for freeze protection or maintenance without the danger of spool substitution.
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- Modular relief valve and check valve internal components for ease of maintenance.
- Smaller, less costly protective enclosures can be used to provide freeze and vandalism protection due to compact size of valve.
- Field tested design for reliability and performance.
- Replaceable seat rings for longer valve life.
- Low head loss for optimum performance.

Operation

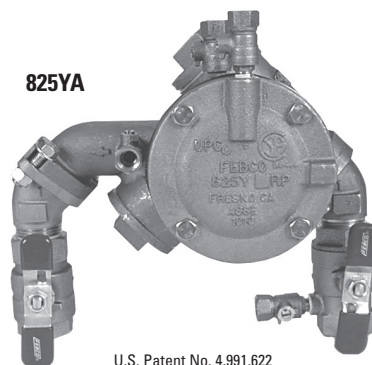
In a flow condition, the check valves are open with the pressure between the checks, called the zone, being maintained at least 5psi (34 kPa) lower than the inlet pressure. The relief valve is held closed by the pressure differential.

Should abnormal conditions arise under no flow or reversal of flow, the differential relief valve will open and discharge to maintain the zone at least 2psi (14 kPa) lower than the supply.

When normal flow resumes, the zone's differential pressure will return and the relief valve will close.

Approvals – Standards

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- ANSI/AWWA C511 Conformance



U.S. Patent No. 4,991,622

Specifications

The reduced pressure zone assemblies shall consist of two independently operating, spring loaded, "Y" pattern check valves and one hydraulically dependent differential relief valve. Should the differential between the upstream and the zone of the unit drop to 2psi (14 kPa), the differential relief valve shall open and maintain the proper differential.

Mainline valve body and caps including relief valve body and cover shall be bronze. Check valve moving members shall be center stem guided. Relief valve shall have a removable seat ring. Check valve and relief valve components shall be constructed so they may be serviced without removing the valve body from the line. All seat discs shall be reversible.

The assembly shall include flanged unions located between the mainline valve body and the ball valve shutoffs to allow for field removal for freeze protection or maintenance without danger of spool replacement.

The assembly shall be rated to 175psi (12.1 bar) water working pressure and water temperature range from 32°F to 140°F (0°C – 60°C). The assembly shall meet the requirements of the USC Foundation of Cross-connection Control and Hydraulic Research, Eighth Edition.

The assembly shall be a FEBCO Series 825YA or prior approved equal.

Materials

Main valve body:	Bronze
Relief valve body:	Bronze
Elastomers:	Nitrile Seat Discs
Diaphragms:	Nitrile, fabric reinforced
Springs:	Stainless Steel

Pressure – Temperature

Maximum working pressure:	175psi (12.1 bar)
Hydrostatic test pressure:	350psi (24.1 bar)
Temperature range:	32°F to 140°F (0°C to 60°C)

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

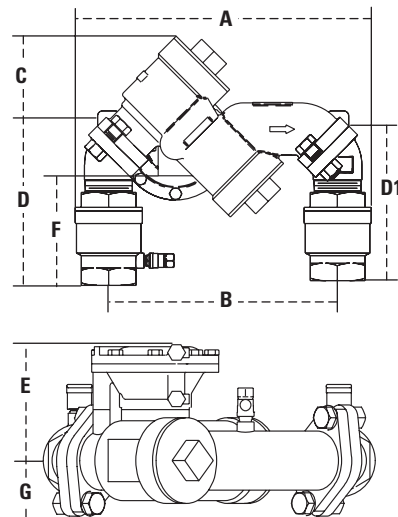
Representative _____

FEBCO product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact FEBCO. FEBCO reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on FEBCO products previously or subsequently sold.

Series 825YA / Vertical Up Flow In - Vertical Down Flow Out

Legend:

- A** Overall lay length, outside dimension
- B** Centerline of inlet shutoff to centerline of outlet shutoff
- C** Centerline of assembly to top
- D** End of inlet shutoff to centerline of assembly
- D1** Centerline of assembly to end of outlet shutoff
- E** Centerline of assembly to outside of relief valve
- F** Bottom of relief port to end of inlet shutoff
- G** Centerline of assembly to outside of flange



Dimensions – Weights

Size: 3/4" - 2" (20 - 50mm)

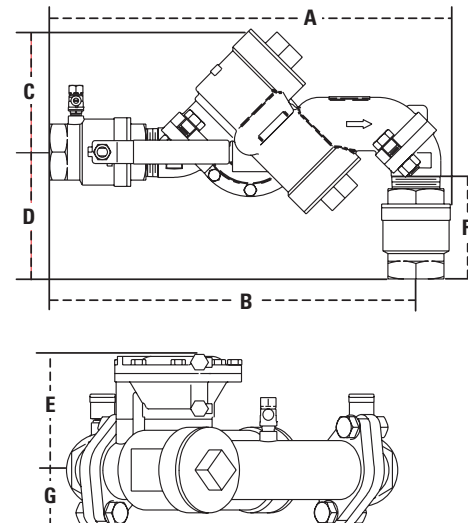
SIZE (DN)		DIMENSIONS																WEIGHT	
in.	mm	A		B		C		D		D1		E		F		G*		lbs.	kgs
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
3/4	20	10	254	8 1/2	216	3 1/4	83	4 7/8	124	4 5/8	118	4 1/8	105	3 1/2	89	1 5/8	41	15.0	6.8
1	25	10 1/4	260	8 1/2	216	3 1/4	83	5 1/4	133	5	127	4 1/8	105	3 7/8	98	1 5/8	41	16.5	7.5
1 1/2	40	14 1/4	362	11 1/2	292	4 1/2	114	6 7/8	175	6 1/2	165	5	127	4 5/8	118	2 5/8	67	38.0	17.2
2	50	14 7/8	378	11 1/2	292	4 1/2	114	7 1/2	191	7 1/2	181	5	127	5 1/4	133	2 5/8	67	41.0	18.6

*G Dimension are based on standard vertical flow in / vertical flow out configuration.
 Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Series 825YA / Vertical Up Flow In - Horizontal Flow Out

Legend:

- A** Overall lay length, outside dimension
- B** Centerline of inlet shutoff to centerline of outlet shutoff
- C** Centerline of assembly to top
- D** End of inlet shutoff to centerline of assembly
- E** Centerline of assembly to outside of relief valve
- F** Bottom of relief port to end of inlet shutoff
- G** Centerline of assembly to outside of flange



Dimensions – Weights

Size: 3/4" - 2" (20 - 50mm)

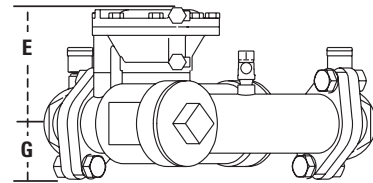
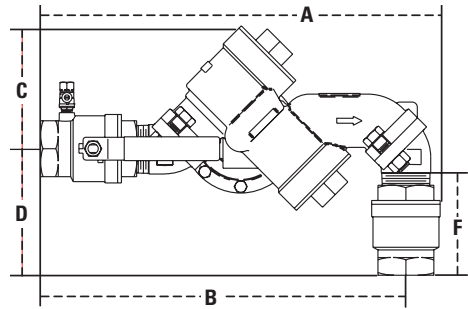
SIZE (DN)		DIMENSIONS																WEIGHT	
in.	mm	A		B		C		D		D1		E		F		G*		lbs.	kgs
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
3/4	20	12 5/8	321	11 7/8	302	4 1/2	114	3 5/8	92	n/a	n/a	4 1/8	105	3 1/2	89	1 5/8	41	15.0	6.8
1	25	13 1/2	339	12 1/4	311	4 1/2	114	4	102	n/a	n/a	4 1/8	105	3 7/8	98	1 5/8	41	16.5	7.5
1 1/2	40	18	457	16 5/8	422	6	152	5 1/4	133	n/a	n/a	5	127	4 5/8	118	2 5/8	67	38.0	17.2
2	50	19	483	17 1/4	438	6	152	5 7/8	149	n/a	n/a	5	127	5 1/4	133	2 5/8	67	41.0	18.6

*G Dimension are based on standard vertical flow in / vertical flow out configuration.
 Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Series 825YA / Horizontal Flow In - Vertical Down Flow Out

Legend:

- A** Overall lay length, outside dimension
- B** Centerline of inlet shutoff to centerline of outlet shutoff
- C** Centerline of assemble to top
- D** End of inlet shutoff to centerline of assembly
- E** Centerline of assembly to outside of relief valve
- F** Bottom of relief port to end of inlet shutoff
- G** Centerline of assembly to outside of flange



Dimensions – Weights

Size: 3/4" - 2" (20 - 50mm)

SIZE (DN)		DIMENSIONS																WEIGHT	
in.	mm	A		B		C		D		D1		E		F		G*		lbs.	kg
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
3/4	20	12 7/8	327	12 1/8	308	4 1/2	114	3 5/8	92	n/a	n/a	4 1/8	105	3 1/2	89	1 5/8	41	15.0	6.8
1	25	13 3/8	340	12 1/2	318	4 1/2	114	4	102	n/a	n/a	4 1/8	105	3 7/8	98	1 5/8	41	16.5	7.5
1 1/2	40	18 3/8	467	17	432	6	152	5 1/4	133	n/a	n/a	5	127	4 5/8	118	2 5/8	67	38.0	17.2
2	50	19 3/8	492	17 3/8	448	6	152	5 7/8	149	n/a	n/a	5	127	5 1/4	133	2 5/8	67	41.0	18.6

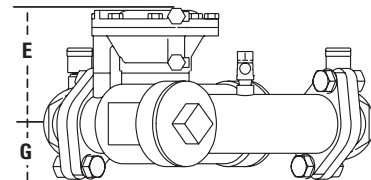
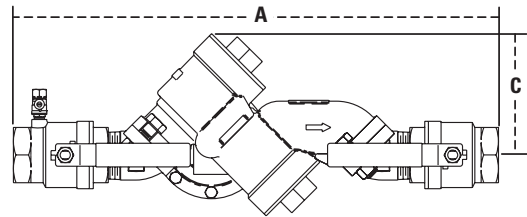
*G Dimension are based on standard vertical flow in / vertical flow out configuration.

Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Series 825YA / Horizontal

Legend:

- A** Overall lay length, outside dimension
- C** Centerline of assemble to top
- E** Centerline of assembly to outside of relief valve
- G** Centerline of assembly to outside of flange



Dimensions – Weights

Size: 3/4" - 2" (20 - 50mm)

SIZE (DN)		DIMENSIONS																WEIGHT	
in.	mm	A		B		C		D		D1		E		F		G*		lbs.	kg
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
3/4	20	15 1/2	394	n/a	n/a	4 1/2	114	n/a	n/a	n/a	n/a	4 1/8	105	n/a	n/a	1 5/8	41	15.0	6.8
1	25	16 1/4	413	n/a	n/a	4 1/2	114	n/a	n/a	n/a	n/a	4 1/8	105	n/a	n/a	1 5/8	41	16.5	7.5
1 1/2	40	22	559	n/a	n/a	6	152	n/a	n/a	n/a	n/a	5	127	n/a	n/a	2 5/8	67	38.0	17.2
2	50	23 3/8	594	n/a	n/a	6	152	n/a	n/a	n/a	n/a	5	127	n/a	n/a	2 5/8	67	41.0	18.6

*G Dimension are based on standard vertical flow in / vertical flow out configuration.

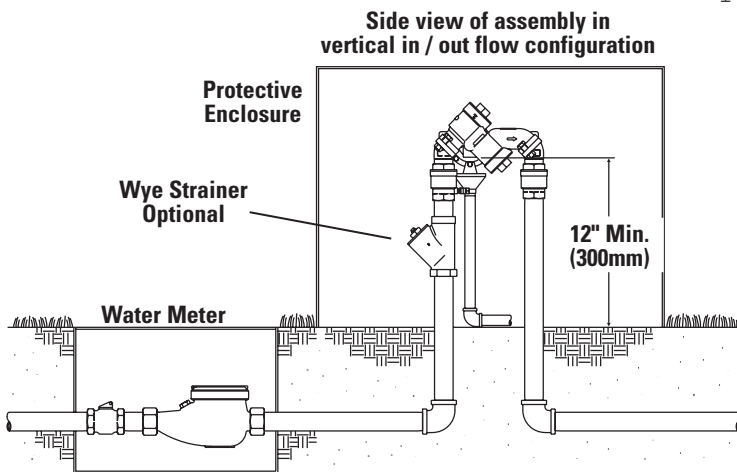
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Typical Installation

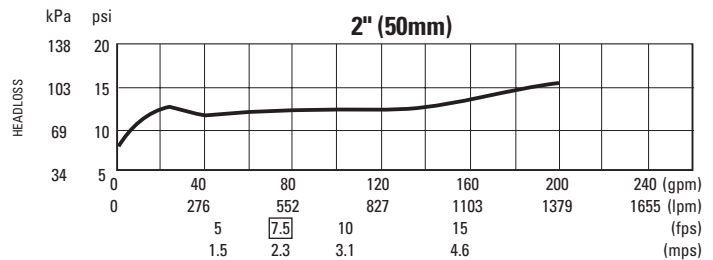
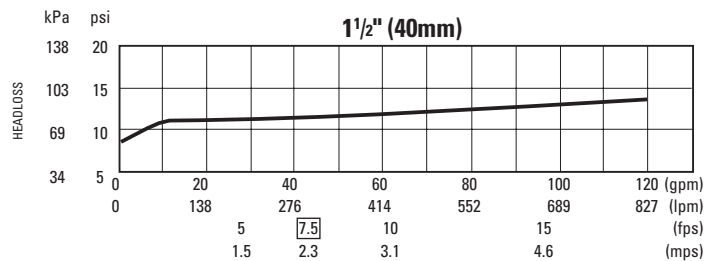
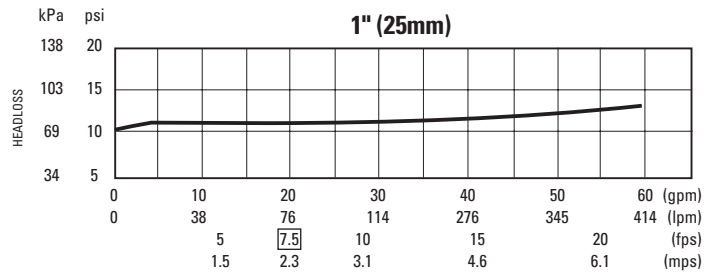
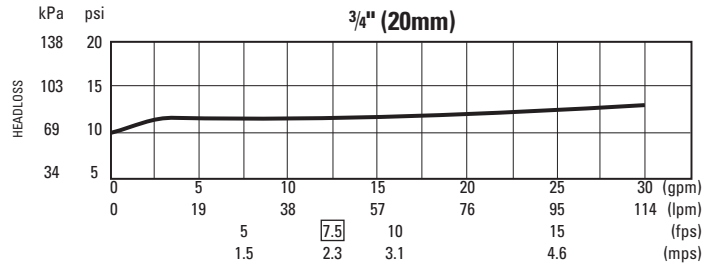
The FEBCO Series 825YA provides versatility in installation because it can be installed in any of four configurations. The most typical configuration is shown in the vertical up flow in/vertical down flow out diagram. This provides for an extremely short lay length which is advantageous in areas of limited space for installation within a protected enclosure. Cost savings can be realized due to the reduction in materials needed such as nipples, elbows, unions, and size of the enclosure. With the integral flanged union connections, the assembly can be removed from the line for freeze protection without a spool substitution. It is not recommended that any backflow prevention assembly be removed from the line for maintenance unless assurance can be made that a spool cross-connection cannot be substituted. The flanged union connection mounted at 45 degrees will provide this assurance. The FEBCO Series 825YA is shipped in the configuration shown in the vertical up flow/vertical down flow out diagram, but can easily be modified to the three other configurations (shown on inside of this specification sheet) simply by removing the bolts to rotate the end adapters.

With any configuration, material and labor savings can be achieved. The FEBCO Series 825YA is the only Reduced Pressure Zone Assembly which provides these options in a compact, integral assembly. All internal components are interchangeable with the FEBCO Series 825Y providing the same ease of maintenance and reliable operation.

Reduced Pressure Zone Assemblies should be installed with a minimum clearance of 12" (300mm) between port and floor or grade. They must be installed where discharge will not be objectionable and can be positively drained away. They should be installed where easily accessible for testing and maintenance and must be protected from freezing. Thermal water expansion and/or water hammer downstream of the backflow preventer can cause excessive pressure. Excessive pressure situations should be eliminated to avoid possible damage to the system and device.



Capacity



A Watts Water Technologies Company

USA: 4381 N. Brawley • Ste. 102 • Fresno, CA • 93722 • Tel. (559) 441-5300 • Fax: (559) 441-5301 • www.FEBCOonline.com
 Canada: 5435 North Service Rd. • Burlington, ONT. • L7L 5H7 • Tel. (905) 332-4090 • Fax: (905) 332-7068 • www.FEBCOonline.ca



**ISO 9001-2000
CERTIFIED**



GUARDSHACK™

Lift-Off Models

Never any sharp corners or edges; always powder coated to exacting standards for lasting durability. Pioneering beautiful design safe for children and pedestrians.

It's no surprise that the GS-1 & GS-2 are two of our most popular products. Over four dozen different backflows fit into these units.

Model	Type	Internal Dimension W x H x L	EncPad™ Sold Separately	FrostGuard™ Sold Separately
GS-.5	Lift-Off	10" x 18" x 12"	EP-.5	N/A
GS-1	Lift-Off	10" x 24" x 22"	EP-1	FG-1
GS-2	Lift-Off	10" x 24" x 30"	EP-2	FG-2
GS-3.3	Lift-Off	16" x 30" x 30"	EP-2	FG-3.3

Fabrication & Powder Coat Specifications:

1¼" schedule 40 A.S.T.M. A-53 grade A.E.W. steel framework with 1" x 1" x ⅛" angle iron: ½" #13 gauge diamond pattern rolled expanded metal. Expanded metal die formed for uniformity. All welded construction maximum 4" on center.

State-of-the-art aeronautics industry five step metal cleaning process and iron phosphate solution treatment. Units preheated before applying 2.0-4.0 mil thickness polyester powder to A.S.T.M. D-2794 Impact Resistant and A.S.T.M. D-3359 Adhesive Specifications

Warranty: BPDIGuardShack warranties this product for one (1) year from the date of purchase to be free of defects in material and workmanship. All claims must be made known to BPDIGuardShack in writing within 30 days of the defect becoming known to the purchaser. There are no warranties that extend beyond those described herein, either expressed or implied. BPDIGuardShack reserves the sole right, at it's own option to repair or replace any defective product, and shall exclude any damage caused by accident, misuse or abuse of the product. In no case shall BPDIGuardShack be liable for any incidental or consequential damages what-so-ever.

GUARDSHACK™

www.GuardShackEnclosures.com

800-266-5411



Quick-Check Basket Filter

QKCHK-075



3/4"

QKCHK-100



1"

PRB-QKCHK-100



1" Pressure Regulating

Rain Bird offers a family of filtration products to meet a wide variety of needs. The newest addition to the line is the Pressure Regulating, Quick-Check Basket Filter which has a 40 psi pressure regulator built-in. This filter can be used in both residential and light commercial applications.

Quick-Check Basket Filter

Reduce hours of maintenance time by installing this innovative filter that tells you when it needs to be cleaned. During regular operation, the Quick-Check indicator bubble remains a vibrant green. When debris accumulates to a level where significant pressure loss occurs, the indicator bubble switches to bright red and the filter needs to be cleaned.

Benefits

- **Reduces Ongoing Maintenance Cost** – Save labor time with the simple-to-check indicator bubble. The indicator bubble helps to ensure the filter will be cleaned when needed.
- **Easy Maintenance** – The indicator bubble and cap offer “jar top” convenience for easy access and high visibility. The filter’s recessed basket design allows for easy access to the filter element and prevents debris from entering the line during cleaning.
- **Improves System Reliability** – The Basket Filter body is made from impact resistant glass-filled polypropylene, the cap is made of glass-filled nylon with a UV tested

polyurethane indicator window and the filter elements are all stainless steel.

Features

- A clear indicator top that goes from green to red when the filter is full, telling you when to clean the filter. This reduces maintenance and takes the guess work out of cleaning the filter.
- Threaded top makes it easy to remove and clean the stainless steel element
- “No Spill” feature ensures that the dirt and debris does not fall out of the basket filter element when you remove it for cleaning.
- Rugged design incorporates four Buna N o-rings for leak-free performance and is rated up to 150 psi.

Additional Features

Pressure Regulating, Quick-Check Basket Filter

- **Efficient Design** – Combines filtration and pressure regulation in one compact unit.
- **Increases Reliability** – Fewer connection points means less chance of leaking.
- **Reduces Costs** – Combined parts mean less assembly time, and compact size means smaller valve boxes.

Models

- QKCHK-075 (3/4" Inlet/Outlet)
- QKCHK-100 (1" Inlet/Outlet)
- PRB-QKCHK-100 (1" Inlet/Outlet; Pressure Regulating)

Quick-Check Filter





Quick Check Basket Filters



QKCHK-075 (3/4")



QKCHK-100 (1")

Specifications

The ___" Quick Check Basket Filter shall provide for continuous filtration of the drip zone when the Quick Check Basket Filter is connected to a valve and any 24-VAC controller or Rain Bird battery-operated controller. The Quick Check Basket Filter shall be pressure rated to 150 psi to permit installation downstream of the control valve(s).

For optimum filtration and system performance, the Quick Check Basket Filter shall incorporate a stainless steel screen element with a basket design to capture debris and prevent the debris from falling into the downstream line during routine maintenance. The screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded for easy identification of mesh size. The body of the unit shall be constructed of impact resistant glass-filled polypropylene and the cap of glass-filled nylon with a UV resistant polyurethane indicator window. The unit shall incorporate an indicator window that shows when the filter needs to be cleaned. The Quick Check Basket Filter and Stainless Steel Screen Element shall be manufactured by Rain Bird Sprinkler Mfg Corporation, Glendora, California.

Operating Range

Flow

- 3/4" Basket Filter: 0.20 to 12.0 GPM (45,4 to 2725 l/h)
- 1" Basket Filter: 3.0 to 20.0 GPM (681 to 4542 l/h)

Pressure

15-150 psi (1,0 to 10,3 bar)

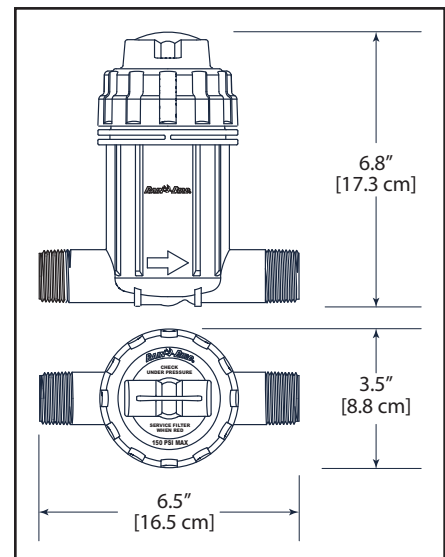
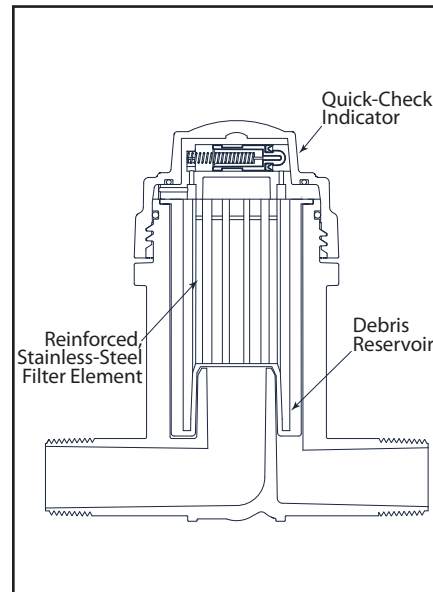
Temperature

Up to 150° F (66° C)

Pressure Loss Characteristics

QKCHK-075			
Flow Rate (gpm)	200 Mesh (psi)	Flow Rate (l/m)	75 micron bar
0.2	0.4	0.75	0,03
2.0	0.5	7.5	0,03
4.0	0.7	15.1	0,05
6.0	0.9	22.7	0,06
8.0	1.1	30.3	0,08
10.0	1.5	37.9	0,10
12.0	1.9	45.4	0,13

QKCHK-100			
Flow Rate (gpm)	200 Mesh (psi)	Flow Rate (l/m)	75 micron bar
3.0	0.2	11.4	0,01
5.0	0.3	18.9	0,02
7.0	0.6	26.5	0,04
9.0	0.9	34.1	0,06
11.0	1.2	41.6	0,08
14.0	2.1	53.0	0,14
17.0	3.1	64.4	0,21
20.0	4.4	75.7	0,23



How to Specify/Order

Quick Check Basket Filter

QKCHK-075

Model
Quick-Check
QKCHK

Size
075 = 3/4" Inlet/Outlet
100 = 1" Inlet/Outlet

Dimensions

Length: 6.5 in [16.5 cm]
Width: 3.5 in [8.8 cm]
Height: 6.8 in [17.3 cm]



Pressure Regulated Basket Filter



PRB-QKCHK-100 (1")

Specifications

The _____" Pressure Regulating, Quick-Check Basket Filter shall provide for continuous filtration and pressure regulation of the drip zone when the PR Filter is connected to a valve and any 24-VAC controller or Rain Bird battery-operated Controller. The PR Filter shall be pressure rated to 150 psi (10,3 bar) and be capable of flow rates of 3.0 gpm to 20.0 gpm (11,4 to 75,7 l/m).

For optimum filtration and system performance the Pressure Regulating, Quick-Check Basket Filter shall incorporate a stainless steel screen element and a built-in 40 psi (2,8 bar) pressure regulator. The stainless steel screen element will be a basket design to capture debris and prevent the debris from falling into the downstream line during routine maintenance. The screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded for easy identification of mesh size. The body of the unit shall be constructed of impact resistant glass-filled polypropylene and the cap of glass-filled nylon with a UV resistant polyurethane indicator window. The unit shall incorporate an indicator window that shows when the filter needs to be cleaned. The Pressure Regulating, Quick-Check Basket filter and Stainless Steel Screen Element shall be manufactured by Rain Bird Sprinkler Mfg Corporation, Glendora, California.

Operating Range

Flow

- 1" Basket Filter: 3.0 to 20.0 GPM (681 to 4542 l/h)

Pressure

15-150 psi (1,0 to 10,3 bar)

Temperature

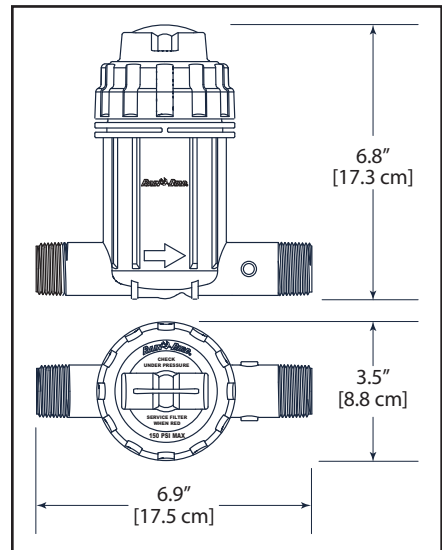
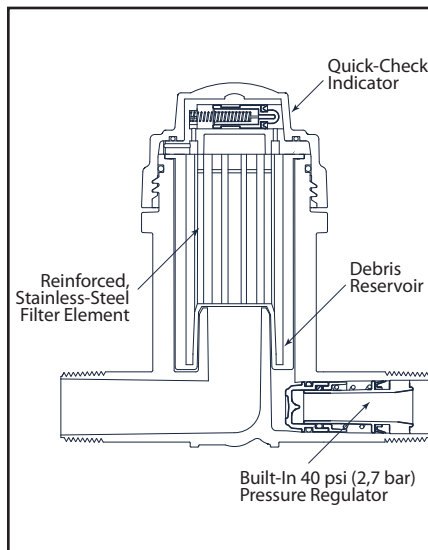
Up to 150° F (66° C)

Pressure Regulated Basket Filter

Flow (gpm)	Minimum Inlet for Regulated Outlet Pressure (psi)
3.0	40.0
5.0	40.0
10.0	42.6
15.0	48.2
20.0	56.4

PR Basket Filter Metric

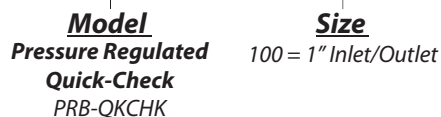
Flow (L/m)	Minimum Inlet for Regulated Outlet Pressure (bar)
11,4	2,8
18,9	2,8
37,9	2,9
56,8	3,3
75,7	3,9



How to Specify/Order

Pressure Regulated Basket Filter

PRB-QKCHK-100



Dimensions

Length: 6.9 in [17.5 cm]
 Width: 3.5 in [8.8 cm]
 Height: 6.8 in [17.3 cm]



Replacement Stainless Steel Screen Elements



QCKCHK-200M QCKCHK-100M

Stainless Steel Screen Elements

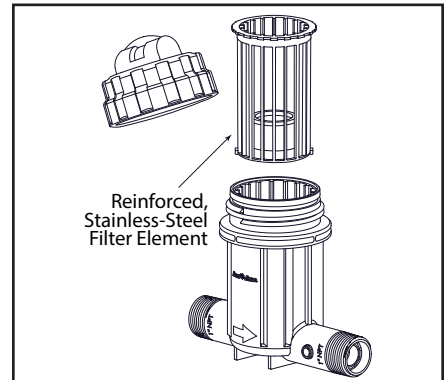
The _____ mesh stainless steel screen element shall be used inside the Pressure-Regulating, Quick-Check Basket Filter and shall be constructed of stainless steel welded to a color-coded, glass-filled polypropylene frame. The screen element shall be used in the 1" model and match the filtration requirements of the emission device or sprinkler. Screen mesh sizes shall be designated by the following color code: red – 100 and natural – 200 mesh. The stainless steel screen element shall be supplied by Rain Bird Sprinkler Mfg Corporation, Azusa, California.

How to Specify/Order

Basket Filter Elements

QKCHK-100M

Model	Size
Quick-Check Filter	100M: 100 Mesh 200M: 200 Mesh



Filter Elements

- QKCHK-100M (100 mesh / 150 micron, red housing)
- QKCHK-200M (200 mesh / 75 micron, white housing)

Stainless Steel Screen Element Dimensions (Inches)

Filter Size	Diameter	Height	Area of Filtration (in ²)
3/4"	2.5"	4"	16.26"
1"	2.5"	4"	16.26"

Stainless Steel Screen Element Dimensions (Metric)

Filter Size	Diameter	Height	Area of Filtration (in ²)
1,91 cm	3,35 cm	10,16 cm	41,30 cm
2,54 cm	3,35 cm	10,16 cm	41,30 cm

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970 West Sierra Madre Avenue, Azusa, CA 91702
Phone: (626) 963-9311 Fax: (626) 812-3411

Rain Bird Corporation

Commercial Division
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Phone: (520) 741-6100 Fax: (520) 741-6522

Rain Bird International, Inc.

970 West Sierra Madre Avenue, Azusa, CA 91702
Phone: (626) 963-9311 Fax: (626) 812-3411

Rain Bird Technical Services

(800) 247-3782 (U.S. only)

Specification Hotline

800-458-3005 (U.S. and Canada)

www.rainbird.com

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Part No: 898-020

Schedule 80 PVC & CPVC

Union

Desc: 2 PVC UNION FPTXFPT EPDM

MSRP: 110.87

Part Code: 080

Weight(lbs): 1.067

Weight(kg): 0.484

Weight(gm): 484

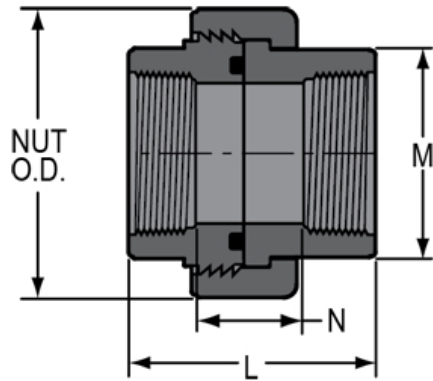
Size: 2"

Color: GRAY

Material: PVC

Connection Fipt x Fipt

O-Ring EPDM



L = 3- 5/8

M = 3- 1/32

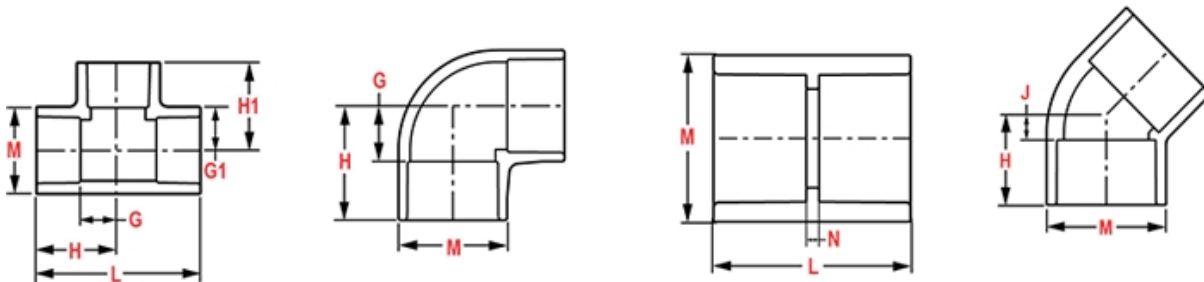
N = 1-11/16

NUT = 4- 3/16
O.D.

Injection Molded Dimension References:

- G** = (LAYING LENGTH) intersection of center lines to bottom of socket/thread; 90° elbows, tees, crosses; ± 1/32 inch.
- H** = Intersection of center lines to face of fitting; 90° elbows tees, crosses; ± 1/32 inch.
- J** = Intersection of center lines to bottom of socket/thread; 45° elbows; ± 1/32 inch
- L** = Overall length of fittings; ± 1/16 inch.
- M** = Outside diameter of socket/thread hub; ± 1/16 inch.
- N** = Socket bottom to socket bottom; couplings; ± 1/16 inch.
- W** = Height of cap; ± 1/16 inch

Typical Molded Dimension References



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Part No: 1821-020SR

Valves

True Union Ball Valve

Desc: 2 PVC TU2K IND BALL VALVE SR/THD EPDM

MSRP: 190.06

Part Code: 600

Weight(lbs): 2.793

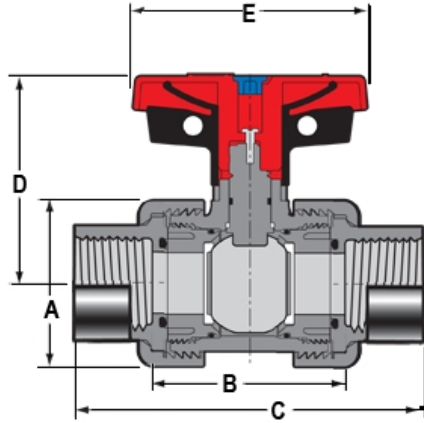
Weight(kg): 1.267

Weight(gm): 1267

Size: 2"

Color: GRAY

Material: PVC



A = 4- 1/4

B = 4- 3/4

C = 6- 3/4

D = 4- 1/2

E = 5- 1/8

Cv = 599

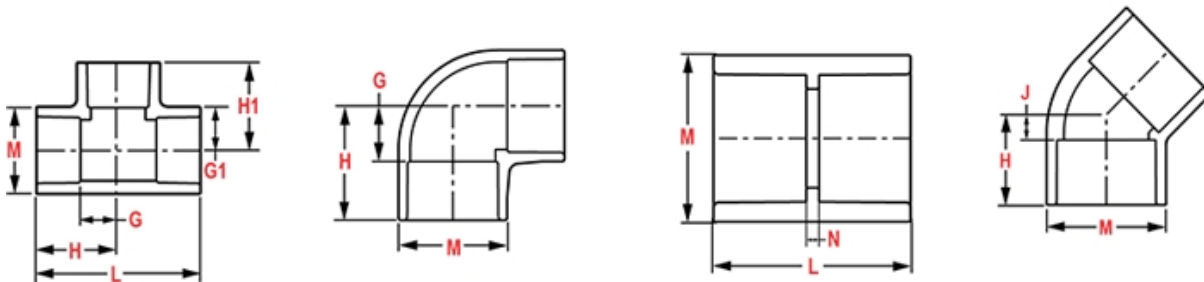
Values

Type TU 2000 - Industrial
O-Ring EPDM
Connection SR Fipt
Pressure Rating 235 psi @ 73° F

Injection Molded Dimension References:

- G** = (LAYING LENGTH) intersection of center lines to bottom of socket/thread; 90° elbows, tees, crosses; ± 1/32 inch.
- H** = Intersection of center lines to face of fitting; 90° elbows tees, crosses; ± 1/32 inch.
- J** = Intersection of center lines to bottom of socket/thread; 45° elbows; ± 1/32 inch
- L** = Overall length of fittings; ± 1/16 inch.
- M** = Outside diameter of socket/thread hub; ± 1/16 inch.
- N** = Socket bottom to socket bottom; couplings; ± 1/16 inch.
- W** = Height of cap; ± 1/16 inch

Typical Molded Dimension References



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Swing Pipe Tubing and Fittings

SPX Series – Swing Pipe

Primary Applications

Use Rain Bird Swing Pipe with Spiral Barb Fittings as a flexible swing assembly for sprays and rotors.

Features & Benefits

SPX-100

- Quick and easy installation lowers material and labor costs
- Installs quickly leaving time for additional system installations and incremental revenue opportunities

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 competitors (test proven)
- Enhanced kink resistance

Specifications

- Inside diameter: 0.49"
- Operating pressure up to 80 psi and 110° F

Models

- SPX-100: 100' (30 m) coil
- SPX-FLEX-100: 100' (30 m) coil



SPX-FLEX100

NEW!
SPX-FLEX100 with Purple Stripe – specific to reclaimed water applications.

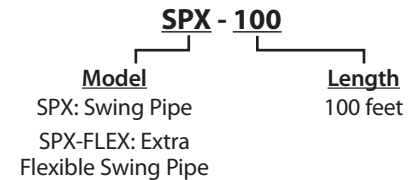


SPX-100



Up to 30% More Flexible than Competitors

How to Specify/Order



SB Series – Spiral Barb Fittings

Primary Applications

For use in conjunction with Swing Pipe as a flexible swing assembly.

Features & 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

- Up to 80 psi and 110° F

Models

- SBE-050: 1/2" M NPT x 1/2" barb elbow
- SBE-050B: 1/2" M NPT x 1/2" barb elbow - bulk package
- SBE-075: 3/4" M NPT x 1/2" barb elbow
- SBE-075B: 3/4" M NPT x 1/2" barb elbow - bulk package
- SBA-050: 1/2" M NPT x 1/2" barb adapter
- SBA-075: 3/4" M NPT x 1/2" barb adapter
- SB-TEE: 1/2" barb x 1/2" barb x 1/2" barb tee

- SB-CPLG: 1/2" barb x 1/2" barb coupling
- SBFE-050: 1/2" F NPT x 1/2" barb elbow
- SB-NPT-TEE: 1/2" M NPT x 1/2" barb x 1/2" spiral barb tee

SB-CPLG SBA-050 SBFE-050 SBE-075



SBE-050 SB-TEE SBA-075

Specifications

SPX-100 and SPX-FLEX-100

Swing Pipe Tubing

The swing pipe shall be flexible black tubing constructed of linear low density polyethylene material. The tubing shall have a wall thickness of 0.098" both for the SPX and SPX-FLEX models. It shall have a nominal inside diameter of 0.487" for SPX and SPX-FLEX for use with SB Series spiral barb fittings without the necessity of glue or clamps. The model number, manufacturer's name and date of manufacture shall be printed at intervals of between 3' and 6' along the length of the tubing. Each 18" (46 cm) length of tubing shall be capable of pressure testing at the rate of 80 pounds per square inch (psi) (5,5 bar) per second to a minimum burst pressure of 325 psi (22,4 bar) for SP and 350 psi (24,1 bar) for SPX and SPX-FLEX. The swing pipe shall be capable of 8 gallons per minute (gpm) maximum.

The tubing shall have an operating pressure rating of 80 psi at 110°F (5,5 bar at 43°C).

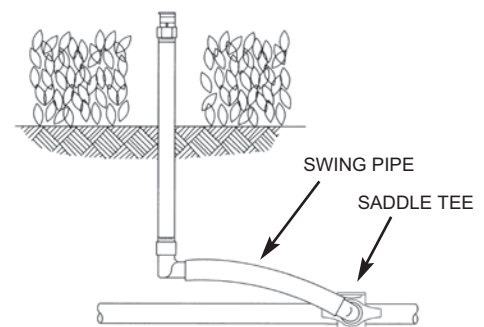
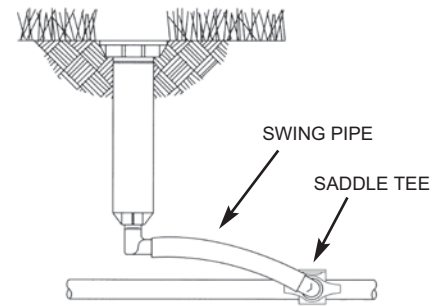
The swing pipe tubing shall be as manufactured by Rain Bird Corporation, Glendora California.

SB Series Spiral barb Fittings

The spiral barb fittings shall be used in conjunction with swing pipe as a flexible swing assembly for 1/2" (15/21) and 3/4" (20/27) inlet sprinklers. The fittings shall have a maximum operating water pressure of 80 psi and 8 gpm.

The spiral barb fittings shall come in seven models to fit various needs. The fittings shall be constructed of Acetal thermoplastic material and be designed so as to permit twist-in insertion, eliminating the need for glue or clamps.

The fittings shall be as manufactured by Rain Bird Corporation, Glendora California.



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D39610A



PVC & CPVC COMPACT 2000 BALL VALVES

CB2000-2-0212

Industrial Grade, Maintenance-Free Sealed Unit New Lower-Profile, More Compact Design Provides Even Greater Space-Savings



- Industrial Grade, Maintenance-Free Sealed Unit
- New Actuator-Ready Body – Accepts Spears® Improved Mini-Mount Actuator Mounting Kits
- New Double O-ring Stem Seal
- Spears® Safe-T-Shear Stem
- PTFE Self Adjusting Floating Seats
- EPDM or FKM O-ring Seals
- Full 235 psi Pressure Rating @ 73°F
- EPDM valves NSF® Certified for Use with Potable Water
- Suitable for Vacuum Service
- Produced in ASTM IPS sizes 1/2" - 2" with Socket or Threaded End Connectors.

Corrosion Resistant PVC or CPVC Construction, Silicone Free Assembly

Spears® Compact 2000 Ball Valves never rust, scale, or pit, providing exceptional chemical and corrosion resistance. Assembled with water soluble, silicone free lubricant.

Actuation-Ready Body Mounting Lugs

Valve body has built-in mounting lugs for direct attachment to Spears® improved Mini-Mount actuator mounting kits.

PTFE Ball Seats

Spears® PTFE floating seat design reduces seat wear for extended valve life, smooth operation, and bubble-tight shutoff. 100% factory tested.

EPDM or FKM O-ring Options

Available with high grade, abrasion resistant EPDM or FKM elastomer O-ring seals. Allows application specific selection for optimum chemical resistance.

High Impact Polypropylene Handle

Low profile, double stop design. Exhibits excellent resistance to most chemical environments.

Full Schedule 80 Bore

In open position, full-bore provides optimum flow with pressure drop equal to that of an equivalent length of Schedule 80 pipe.

Suitable for Vacuum Service

Compact 2000 Ball Valves have been tested at 26 in-Hg. vacuum for one hour with less than 1-in. Hg loss.

NSF® Certified for Potable Water

All EPDM Compact 2000 Ball Valves are NSF® Certified for use in potable water systems.

Optional Accessories

- Round Safety Handles
- Stem Extension Kits
- Square Operator Nuts
- Multi Mount Valve/Actuation Mounting Kits
- Mini-Mount Actuation Mounting Kits

Sample Engineering Specification

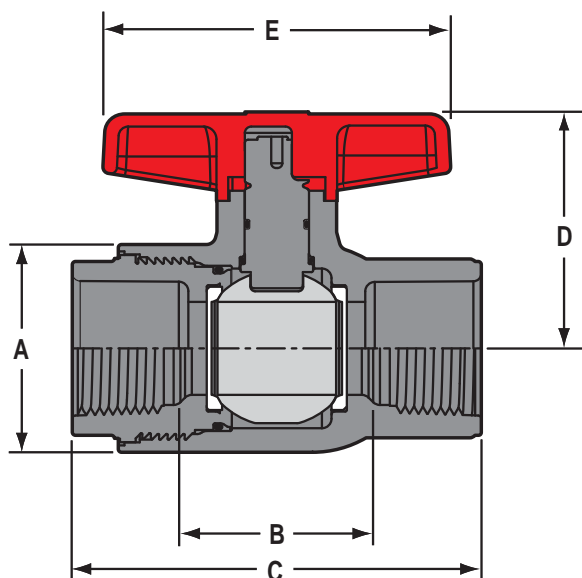
All thermoplastic ball valves shall be Compact 2000 sealed unit type manufactured to ASTM F 1970 and constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, Cell Classification 23447. All Valve bodies shall have actuation mounting lugs. All O-rings shall be EPDM or FKM. All valves shall have Safe-T-Shear® stem with O-ring stem seal and double-stop Polypropylene handle. All valves shall be listed by NSF International for use in potable water service. All 1/2" - 2" valves shall be pressure rated at 235psi, for water at 73°F, as manufactured by Spears® Manufacturing Company.



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Technical Information



Dimensions, Weights, Operating Torque & Cv Values

Nominal Size	Dimension Reference (inches, ± 1/16)						Approx. Wt. (Lbs.)		Oper. ² Torque (in.-lb.)	Cv ³ Values
	A	B ¹		C	D	E	PVC	CPVC		
		Socket	Threaded							
1/2	1-7/16	1-1/4	1-5/8	3-1/16	1-5/8	1-5/8	.18	.20	10	42
3/4	1-13/16	1-1/2	2-1/16	3-9/16	2	2	.29	.31	20	87
1	2-1/16	1-3/4	2-3/16	4	2-5/16	2-5/16	.44	.46	25	157
1-1/4	2-5/8	2-1/6	2-3/4	4-5/8	2-13/16	2-13/16	.68	.70	30	311
1-1/2	3	2-1/2	3-3/8	5-5/16	3-1/16	3-1/16	.99	1.03	50	429
2	3-5/8	3	4	6	3-3/4	3-3/4	1.64	1.70	90	768

1: Valve Lay Length

2: Torque required at valve maximum internal pressure rating, 5ft/sec. Flow velocity.

3: Gallons per minute at 1 psi pressure drop. Valves calculated from laying length, based on derivative of Hazen-Williams equation with surface roughness factor of C=150.

Temperature Pressure Rating

System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating psi (MPa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)	-0- (-0-)
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)

NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GASES



SPEARS® MANUFACTURING COMPANY • CORPORATE OFFICE

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Sylmar (Los Angeles), CA 91342
(818) 364-1611 • (800) 862-1499
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ROCKY MOUNTAIN

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Denver, CO 80238
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Fax (303) 375-9546

UTAH

5395 West 1520 South
Salt Lake City, UT 84104
(303) 371-9430 • (800) 777-4154
Fax (303) 375-9546

SOUTHEAST

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Fax (630) 759-7515

NORTHWEST

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Auburn (Seattle), WA 98002
(253) 939-4433 • (800) 347-7327
Fax (253) 939-7557

SOUTH CENTRAL

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Flower Mound, TX 75028
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Fax (469) 528-3001

NORTHEAST

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Lewisberry (Harrisburg), PA 17339-9532
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INTERNATIONAL SALES

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Sylmar (Los Angeles), CA 91342
(818) 364-1611 • Fax (818) 898-3774

Part No: 430-005

Schedule 40 White

Coupling

Desc: 1/2 PVC COUPLING FPT SCH40

MSRP: 0.94

Part Code: 040

Weight(lbs): 0.035

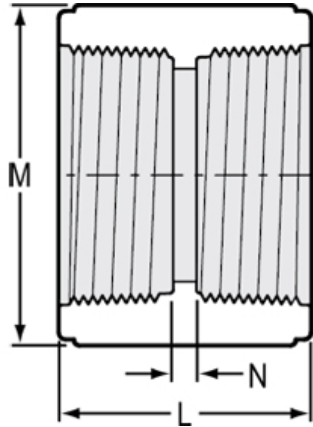
Weight(kg): 0.016

Weight(gm): 16

Size: 1/2"

Color: WHITE

Material: PVC



Connection Fipt x Fipt
Type Standard

L = 1- 9/16

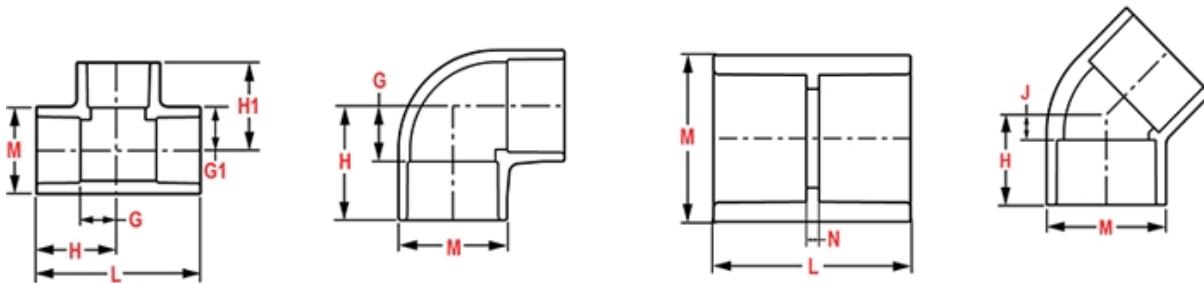
M = 1- 1/8

N = 3/32

Injection Molded Dimension References:

- G** = (LAYING LENGTH) intersection of center lines to bottom of socket/thread; 90° elbows, tees, crosses; ± 1/32 inch.
- H** = Intersection of center lines to face of fitting; 90° elbows tees, crosses; ± 1/32 inch.
- J** = Intersection of center lines to bottom of socket/thread; 45° elbows; ± 1/32 inch
- L** = Overall length of fittings; ± 1/16 inch.
- M** = Outside diameter of socket/thread hub; ± 1/16 inch.
- N** = Socket bottom to socket bottom; couplings; ± 1/16 inch.
- W** = Height of cap; ± 1/16 inch

Typical Molded Dimension References



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SPEARS® MANUFACTURING COMPANY

PVC-11 GRAY

TECHNICAL SPECIFICATIONS Low VOC PVC Solvent Cement



PRODUCT:

Spears® PVC-11GRAY is a heavy bodied, medium setting PVC cement for all classes and schedules with interference fit through 12" diameter.

INTENDED USE:

PVC-11 is high strength industrial duty cement with medium set that allows more working time in warm weather and has good gap filling properties. Excellent for industrial piping systems, plus use with potable water pressure systems, irrigation, conduit, sewer, drain, waste and vent systems.

GENERAL PRODUCT SPECIFICATIONS:

COLOR:	Gray
RESIN:	PVC
SPECIFIC GRAVITY:	0.966 ± 0.04
BROOKFIELD VISCOSITY	Heavy Body - Minimum 1600 cP@ 73 ± 2°F (23°C +1°C)
RELATIVE SET:	Medium
MAX VOC EMISSIONS:	510G/L per SCAQMD Rule 1168/316A
SHELF LIFE:	3 years from date stamped on the bottom of container.

Note: Product usability is limited by the evaporation of the solvents when the container is opened and can cause the cement to thicken and reduce its usefulness. Always seal the can tightly between uses to prevent the solvent from becoming thickened, stringy or jelled. Do not add thinners to change viscosity of thickened cement. Significant changes in cement properties can result.

CONFORMANCE STANDARDS AND APPROVALS:

- NSF®/ANSI Standard 14 Listed and Certified for compliance to ASTM D2564
- NSF®/ANSI Standards 14/61 Listed and Certified for Potable Water, Drain Waste and Vent, and Sewer service use (NSF®-PW, DWV, SW) NSF® Listed and Certified to requirements of the Uniform Plumbing Code (NSF® U.P. Code); NSF® Certified Lead-Free.
- CSA B137.3, B181.2
- Meets SCAQMD Rule 1168/316A for Compliance with LEED® (Leadership in Energy and Environmental Design). Low VOC product credit can be claimed for LEED Green Building Rating System - Indoor Environmental Quality.

PACKAGING, SHIPPING & TRANSPORTATION INFORMATION:

<u>Can Size</u>	<u>Standard Case Quantity</u>
1/2 Pint	24
Pint	12
Quart	12
Gallon	6

The following is general information for ground shipping, see SDS PVC11-6 for additional detail.

Proper Shipping Name: Adhesive
Hazard Class: 3
Identification Number: UN 1133
Packing Group: II
Label Required: Class 3 Flammable Liquid

Exceptions for Quantities < 1 liter
Classification: Limited Quantity
49CFR172.315 Marking:



Note: Purchasers who may repackage this product must also conform to all local, state and federal labeling, safety and other regulations.

SAFETY & USE PRECAUTIONS:

WARNING: CAN CAUSE SERIOUS EYE IRRITATION. HARMFUL IF INHALED. MAY CAUSE DROWSINESS OR DIZZINESS. MAY CAUSE RESPIRATORY IRRITATION. REPEATED EXPOSURE MAY CAUSE SKIN DRYNESS OR CRACKING. KEEP OUT OF REACH OF CHILDREN.

Do not take internally. Keep away from heat, spark, open flame, other sources of ignition. Vapors may ignite explosively. Use only in well ventilated area; if not well ventilated, use forced ventilation or NIOSH approved respirator. Avoid breathing vapors. Do not smoke, eat or drink while using. Avoid contact with skin and eyes. Use skin and eye protection. Eye contact may cause injury. Keep container closed when not in use. Contains Tetrahydrofuran (CAS#109-99-9); Methyl Ethyl Ketone (CAS# 78-93-3); Cyclohexanone (CAS# 108-94-1); Acetone (CAS# 67-64-1); PVC Resin (CAS# 9002-86-2).

FIRST AID

Contact with eyes: Flush eyes immediately with plenty of water for 15 minutes and seek medical advice immediately.

Skin contact: Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water. If irritation develops, seek medical advice.

Inhalation: Remove to fresh air. If breathing is stopped, give artificial respiration. If breathing is difficult, give oxygen. Seek medical advice.

Ingestion: Rinse mouth with water. Give 1 or 2 glasses of water or milk to dilute. Do not induce vomiting. Seek medical advice immediately.

INSTALLATION & INSTALLER TRAINING

Installation Instructions are printed on the can label and instructional video or pamphlets are available on Spears® website at www.spearsmfg.com. Installers should verify for themselves that they can make satisfactory joints under varying conditions. Personal instruction training from experienced instructors or installers is advised. Contact Spears® for additional instructional information or formal training.

AVOID USE AROUND DRY GRANULATED CALCIUM HYPOCHLORITE

A fire or explosion may result if dry granular calcium hypochlorite is used to disinfect plastic piping systems that are exposed to organic vapors found in solvent cements, cleaners or primers when a water solution is not used. Calcium hypochlorite is a strong oxidizer and common in Pool & Spa chemicals such as “pool-shock”. It is recommended to purify lines by pumping nonvolatile chlorinated water into the piping system. Do not store or use dry granular calcium hypochlorite near solvent cements, cleaners or primers.

Refer to Safety Data Sheet (SDS), Spears® publication PVC11-6, for more information.

LIMITED LIFETIME WARRANTY:

Spears® Manufacturing Company warrants all new Solvent Cement and Primer products shall be free from defects in material and workmanship for the specified product shelf life based on the assigned manufactured date on the original product container. If any such product becomes defective under normal use and storage conditions during this warranty period, Spears® will replace the nonconforming solvent cement or primer product without charge. Spears® liability will be limited, without exception, to product replacement. Spears® further warrants properly made solvent cement joints using this product for the life of the system. See Spears® standard Limited Lifetime Warranty for additional detailed information and exclusions.

Progressive Products From Spears® Innovation & Technology



SPEARS® MANUFACTURING COMPANY • CORPORATE OFFICE

15853 Olden St., Sylmar, CA 91342 • PO Box 9203, Sylmar, CA 91392

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P-70™ PRIMER

Product Description:

- Professional grade, industrial strength primer essential for proper softening and preparation of PVC and CPVC pipe and fitting surfaces.
- Specially recommended for use on Schedule 80 (PN 10 and higher) and large size pipe.
- Excellent, even in cold weather applications.
- 3 year shelf life.

Industry Listing:





(Purple Only) PW-G/DWV/SW



Performance Specifications:

Meets and exceeds: ASTM F 656 NSF/ANSI 14 NSF/ANSI 61

Color	Stock Number	Size	Units/Case	LBS./Case
	10220	Gal	6	49
	10222	Qt	12	26
	10224	Pt	12	13
	10226	½ Pt	24	14
	10228	¼ Pt	24	7

Color	Stock Number	Size	Units/Case	LBS./Case
	10221	Gal	6	49
	10223	Qt	12	26
	10225	Pt	12	13
	10227	½ Pt	24	14
	10229	¼ Pt	24	7