

SUBMITTAL



Submittal number	61.0A	Date	12/09/2019
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: Park		

Submitter	
Reviewer	
Cc	

Date submitted	12/09/2019	Submission due date	12/09/2019
Released for review	12/09/2019	Review due date	12/16/2019
Date returned		Required on site date	
Date closed			

Notes
Please see attached Environmental Landworks Company Irrigation Submittal 2: Trails at Crowfoot Park Irrigation System.



Letter of Transmittal

To: Con Cockrum
Kelley Trucking Inc
6201 McIntyre St
Golden, CO 80403

Transmittal #: 1

Date: 12/6/2019

Job: 01-10-19013 Trails at Crowfoot Park

Subject: TCF Park Irrigation Submittal

WE ARE SENDING YOU

☒ Attached

☐ Under separate cover via the following items:

☐ Shop drawings

☐ Prints

☐ Plans

☐ Samples

☐ Copy of letter

☐ Change order

☐ Specifications

☒ Submittal

Document Type	Copies	Date	No.	Description
Submittal	1		Irrigation-2 Rev 0	Irrigation System

THESE ARE TRANSMITTED as checked below:

☒ For approval

☐ Approved as submitted

☐ Resubmit ____ copies for approval

☐ For your use

☐ Approved as noted

☐ Submit ____ copies for distribution

☐ As requested

☐ Returned for corrections

☐ For review and comment

☐ Other

Remarks:

Copy To: Tim LaPointe (Environmental Landworks Co), Kate LaPointe (Environmental Landworks Co)

From: Jordan Salisbury (Environmental Landworks Co)

Signature: _____



ENVIRONMENTAL
LANDWORKS COMPANY, INC.

17173 Mt. Vernon Rd
Golden, CO 80401
Ph : 303.862.9480

Submittal

Job: 01-10-19013

Trails at Crowfoot Park

6594 N Crowfoot Valley Rd

Parker, CO 80134

Spec Section No: Irrigation

Submittal No: 2

Revision No: 0

Sent Date: 12/6/2019

Spec Section Title:

Submittal Title: Trails at Crowfoot Park Irrigation System

Contractor:

Environmental Landworks Company

Contractor's Stamp

Other:

Kelley Trucking Inc

Con Cockrum

Architect's Stamp

Engineer's Stamp



Irrigation Product Submittals

Project: Trails at Crowfoot Park

Contract Job #: 19-013

Submission #: 2

Date: 12/6/2019

DESCRIPTION	MANUFACTURER	SUPPLIER
IRRIGATION SECTION		
MP Rotator Nozzles	Hunter	TBD
I-20-06-SS Pop-Up Turf Rotor	Hunter	TBD
LVCZS8010075-HF Drip Valve Assembly Control Kit	Netafim	TBD
ICV Electric Remote Control Valves	Hunter	TBD
514TX Brass Gate Valve	Matco-Norca	TBD
Copper Wire and Grounding Rods	Paige	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
P7354D Hunter Jacketed Cable	Paige	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
DBR/DBY Wire Splice	3M	TBD
1730-18 Valve Boxes	Carson	TBD
1324-15 Valve Boxes	Carson	TBD
910-10 Valve Boxes	Carson	TBD
Schedule 80 Nipples	Spears	TBD
Schedule 80 Fittings	Spears	TBD
Techline Fittings	Netafim	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



ENVIRONMENTAL
LANDWORKS COMPANY, INC.

17173 Mt. Vernon Rd.
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Phone (303) 862-9480
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PVC-11 Gray Glue
P-70 Primer

Spears
Weld-On

TBD
TBD

NOTE: WORK WILL NOT BE PERFORMED WITHOUT APPROVAL

Submittal Approval:

Date:

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
MP1000-210 = 8' to 15' radius, adjustable from 210° to 270°	HT = Male threaded version (Not available in 3500)
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	Adjustable arc, plastic, check valve, 8 standard nozzles, and 4 low-angle nozzles	(blank) = no option	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-20-04 = 10 cm Pop-up		NCV = Without check valve (only available on 10 cm model)	
I-20-06 = 15 cm Pop-up		R = Reclaimed water ID	
I-20-12 = 30 cm Pop-up			

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	Adjustable arc, stainless steel, check valve, 8 standard nozzles, and 4 low-angle nozzles	(blank) = no option	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-20-06-SS = 15 cm Pop-up		NCV = Without check valve (only available on 10 cm model) R = Reclaimed water ID	

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

¾" and 1" Low Flow Kits:

Flow range: 0.25 - 4.4 GPM

Regulated pressure: 42 psi

¾" and 1" High Flow Kits:

Flow range: 4.5 - 17.6 GPM

1 ½" Kits:

Flow range: 11 - 35 GPM

- Filter mesh: 140
- ¾" High Flow and 1 ½" Kits maximum pressure: 140 psi

FEATURES & BENEFITS

PRE-ASSEMBLED VALVE, FILTER AND PRESSURE REGULATOR

Saves installation and labor costs.

COMPACT DESIGN

¾", 1" and 1 ½" 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	 KIT WITH 1 ½" CONTROL VALVE (1 ½" FPT Inlet x 1 ½" MPT Outlet) LVCZ-150	 KIT WITH NO CONTROL VALVE (1 ½" MPT Inlet x 1 ½" MPT Outlet) LVCZ-150-NV
RESIDENTIAL & COMMERCIAL High Flow: 4.5 to 17.6 GPM	 HIGH FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x ¾" MPT Outlet) LVCZS8010075-HF	 HIGH FLOW KIT WITH NO CONTROL VALVE (¾" MPT Inlet x ¾" MPT Outlet) LVCZNV10075-HF
RESIDENTIAL & COMMERCIAL Low Flow: 0.25 to 4.4 GPM	 LOW FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x ¾" FPT Outlet) LVCZS8010075-LF	 LOW FLOW KIT WITH NO CONTROL VALVE (¾" MPT Inlet x ¾" FPT Outlet) LVCZNV10075-LF

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

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

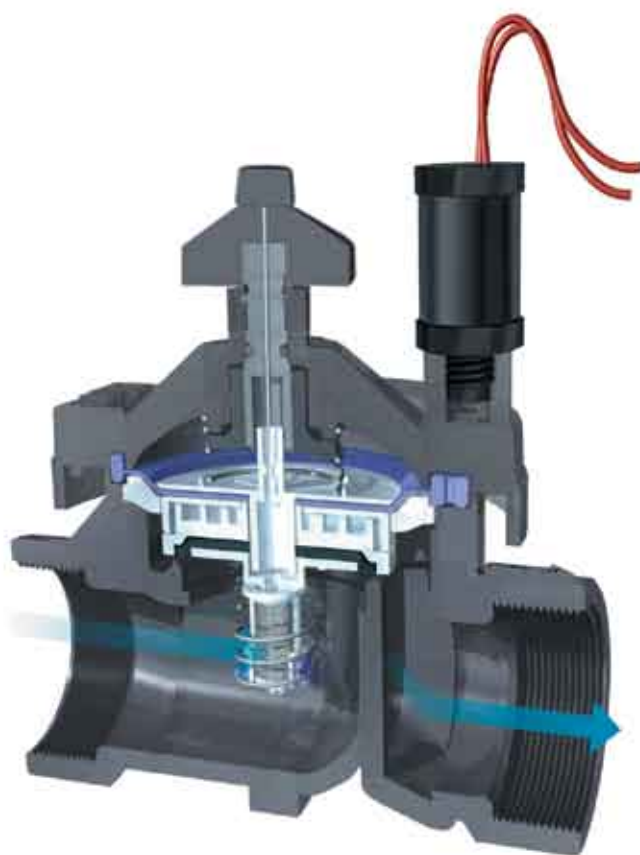


3" Globe/Angle

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	1.9
175.0			13.3	3.0	2.4
200.0			17.7	4.1	3.3
225.0				5.3	4.3
250.0				6.7	5.5
275.0				8.3	6.9
300.0				10.1	8.5

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

Hunter Industries Incorporated • The Irrigation Innovators

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www.HunterIndustries.com

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P/N 700683

LIT-233

4/07

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"

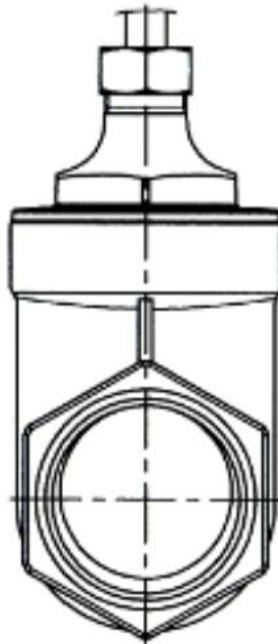
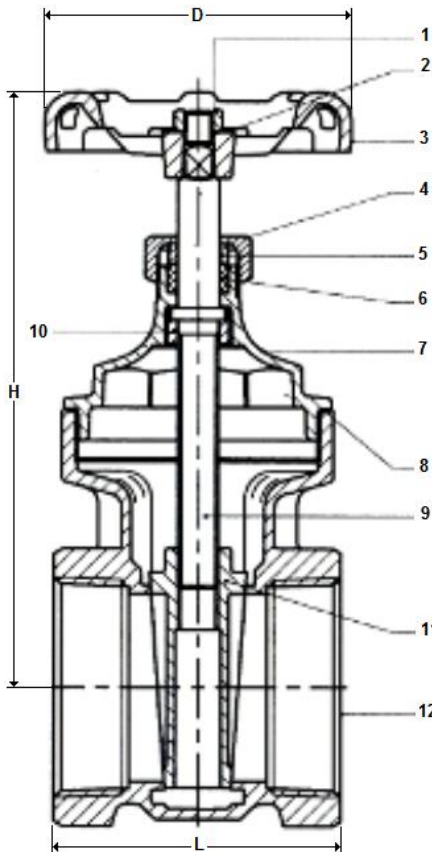
*Available with **Brass Cross Handle** or 5 Point Crown Wheel Handle

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



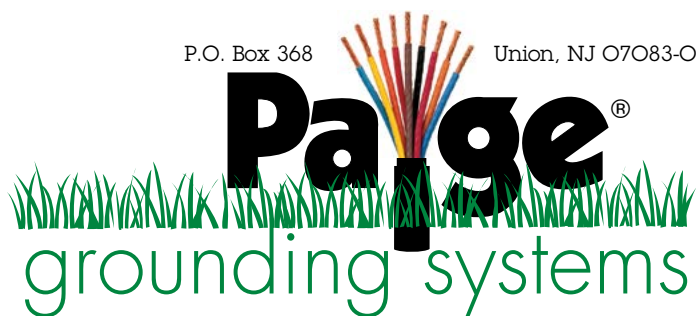
MATERIAL SPECIFICATIONS

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.



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

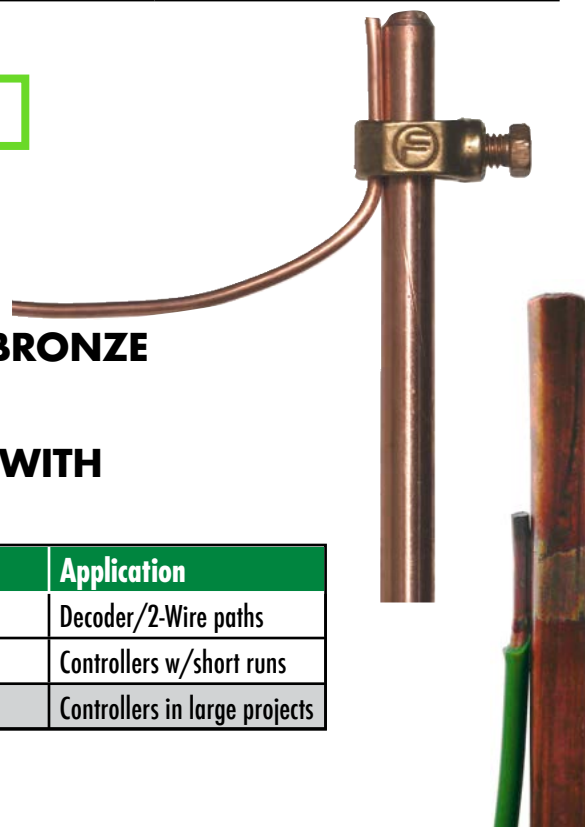
Part #	Description
182000	5/8" x 8'
182007	5/8" x 10'

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



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



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

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

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
pw x 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
pw x 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
pw x 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 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

HUNTER JACKETED DECODER CABLES DIRECT BURIAL

SIZES: 14 & 12 AWG, SOLID COPPER, 2-CONDUCTOR



1.0 SCOPE:

1.1

This specification covers jacketed cables containing two UL listed Sprinkler Systems Wires, single conductor, suitable for direct burial, for operation up to 600 volts, and temperatures up to 60°C.

2.0 CONSTRUCTION:

2.1

Inner Conductors:

Soft drawn bare copper meeting the requirements of ASTM specification B-3 or B-8. Insulation shall be low density high molecular weight polyethylene and a thickness of 0.045", per Paige Electric specification P7079D. The two conductors (blue and red) shall be twisted with a minimum lay of 4".

2.2

Overall jacket:

High density polyethylene with a thickness of 0.035". Available with different color jackets as listed in the table below. The jacket shall be sufficiently round, and loose, to facilitate its removal when being stripped.

2.3

Surface Print:

- 2.31 Inner Conductors – "Paige Electric P7079D 14 AWG PE UL Number 600V Sprinkler System Direct Burial"
- 2.32 Outer Jacket – "Paige Electric, P7354D, 14 600V Sprinkler System Wire Direct Burial Only for Hunter Decoder Systems RoHS"

3.0

TEMPERATURE RATING

3.1

Color Code:
-55°C to +60°C

4.0

SPLICING RECOMMENDATIONS

4.1

Underground splices shall be made in accordance with National Electrical Code® Articles 300.5 (Underground Installations) and 110.14 (Electrical Connections) using 3M DBY-6 or DBR-6 connectors, which are UL listed under "UL 486D-Direct Burial", for wet or damp locations, 600 volts. Connectors that are not listed at all, or listed under UL Standard UL 486C as "Compression Connectors", shall not be allowed.

5.0

PUT-UPS

5.1

2500' (762m) and some odd lengths.

PAIGE PART NO.	SIZE		JACKET COLOR	OUTSIDE DIAMETER		PUT-UPS		SHIPPING WEIGHT	
	AWG	mm ²		Inches	mm	Feet	meters	Lbs./2500'	Kg./762m
170801BU	14	2,08	Blue	.378 ± .020	9,6 ± 0,5	2500	762	163	74
170801GY			Gray						
170801PR			Purple						
170801YL			Yellow						
170801OG			Orange						
170801TN			Tan						
170802BU	12	3,32	Blue	0.62 ± .020	15,8 ± 0,5			200	91
170802GY			Gray						
170802PR			Purple						
170802YL			Yellow						
170802OG			Orange						
170802TN			Tan						

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

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

Note: SAM feature included with P45 models



PRS



SAM

How To Specify

1804 - SAM-P45 - R13-18Q

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

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

Note: Specify sprinkler bodies and nozzles separately.



SAM-P45



SAM-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

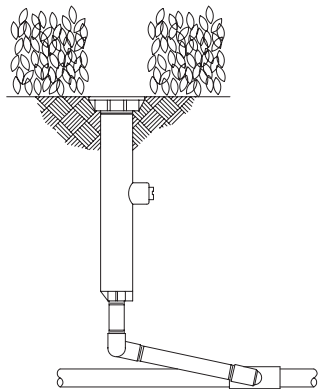
Dimensions

- 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)

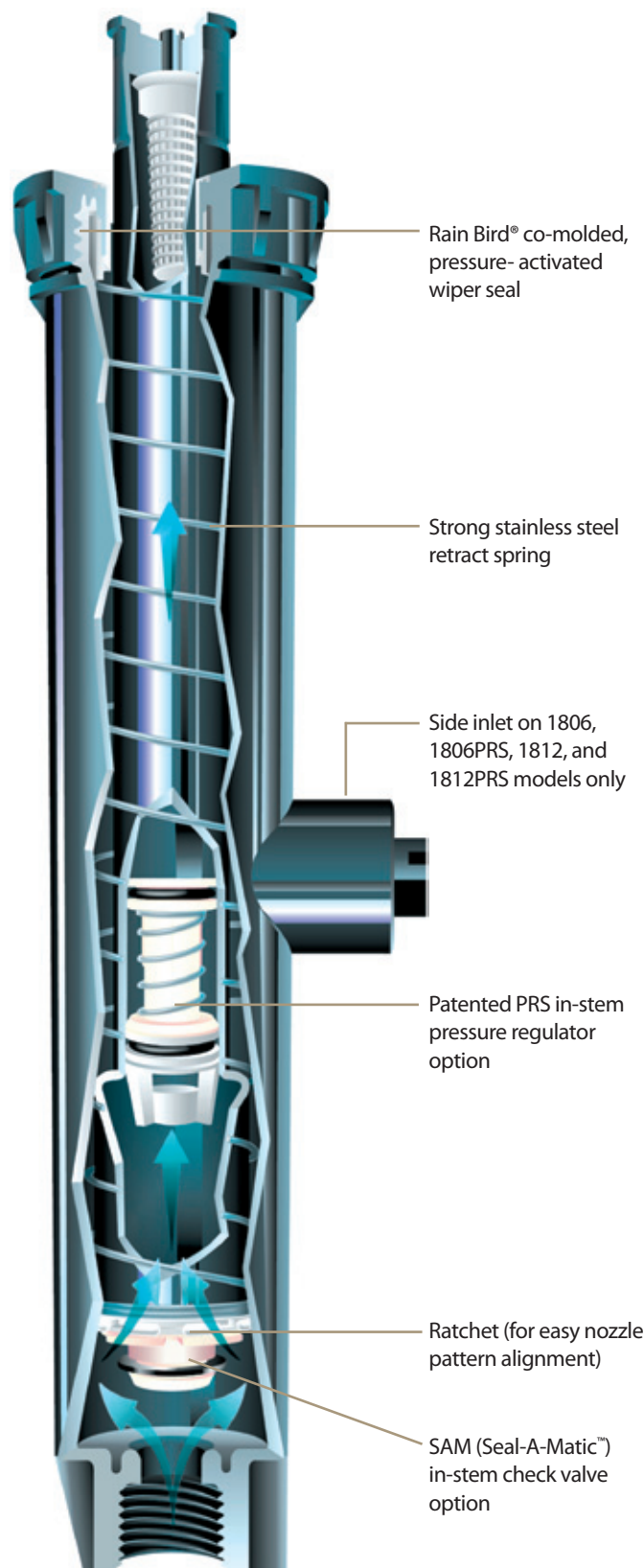
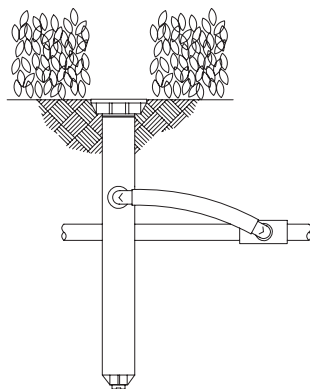
Models

- 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 stain-less 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

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
	80	57'	15.5	0.46	0.53
18 Red	50	58'	13.7	0.39	0.45
	60	59'	15.2	0.42	0.49
	70	60'	16.6	0.44	0.51
	80	62'	17.8	0.45	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
	90	66'	23.9	0.53	0.61
23 Dk. Green	60	65'	20.4	0.46	0.54
	70	66'	22.3	0.49	0.57
	80	67'	24.0	0.51	0.59
	90	68'	25.6	0.53	0.62
25 Dk. Blue*	60	66'	22.0	0.49	0.56
	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-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

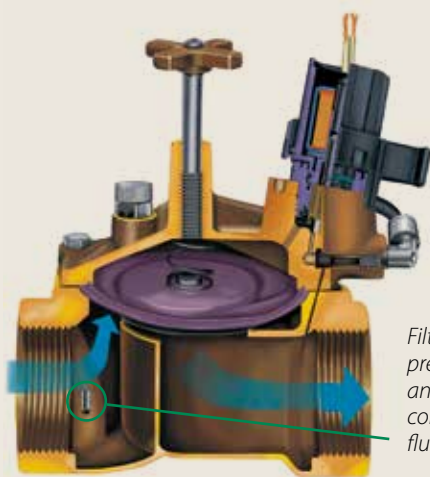
Electric remote control valves don't come any better than the Rain Bird EFB-CP Series red brass valves. Featuring a contamination-proof, self-flushing screen that cleans itself and resists debris build-up in dirty water, Rain Bird's EFB-CP Series is your best choice.

Self-Flushing System

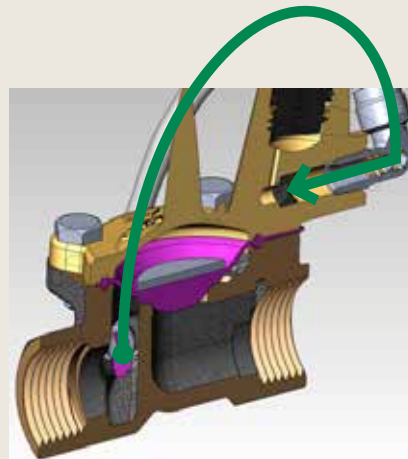
With a unique self-flushing system, debris doesn't stand a chance with the EFB-CP Series valves.

- 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

¾" and 1" Low Flow Kits:

Flow range: 0.25 - 4.4 GPM

Regulated pressure: 42 psi

¾" and 1" High Flow Kits:

Flow range: 4.5 - 17.6 GPM

1 ½" Kits:

Flow range: 11 - 35 GPM

- Filter mesh: 140
- ¾" High Flow and 1 ½" Kits maximum pressure: 140 psi

FEATURES & BENEFITS

PRE-ASSEMBLED VALVE, FILTER AND PRESSURE REGULATOR

Saves installation and labor costs.

COMPACT DESIGN

¾", 1" and 1 ½" 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	 KIT WITH 1 ½" CONTROL VALVE (1 ½" FPT Inlet x 1 ½" MPT Outlet) LVCZ-150	 KIT WITH NO CONTROL VALVE (1 ½" MPT Inlet x 1 ½" MPT Outlet) LVCZ-150-NV
RESIDENTIAL & COMMERCIAL High Flow: 4.5 to 17.6 GPM	 HIGH FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x ¾" MPT Outlet) LVCZS8010075-HF	 HIGH FLOW KIT WITH NO CONTROL VALVE (¾" MPT Inlet x ¾" MPT Outlet) LVCZNV10075-HF
RESIDENTIAL & COMMERCIAL Low Flow: 0.25 to 4.4 GPM	 LOW FLOW KIT WITH 1" CONTROL VALVE (1" FPT Inlet x ¾" FPT Outlet) LVCZS8010075-LF	 LOW FLOW KIT WITH NO CONTROL VALVE (¾" MPT Inlet x ¾" FPT Outlet) LVCZNV10075-LF

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
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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

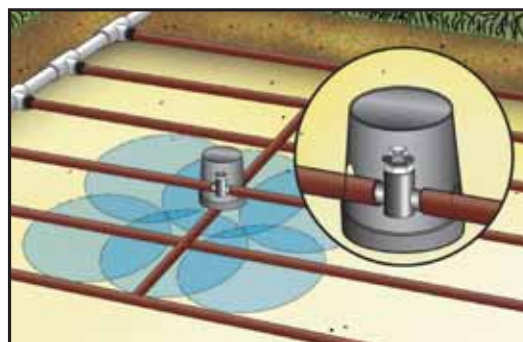
SPECIFICATIONS

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



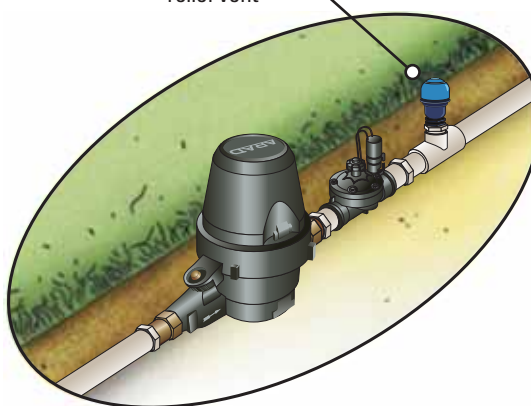
GUARDIAN
3/4" MPT **1" MPT**
Model 65ARIA075 Model 65ARIA100



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)

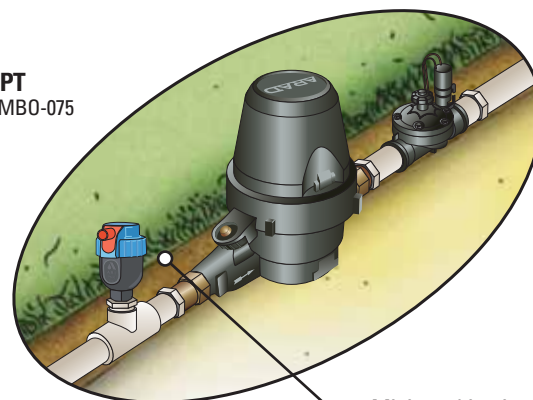


MINI

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

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

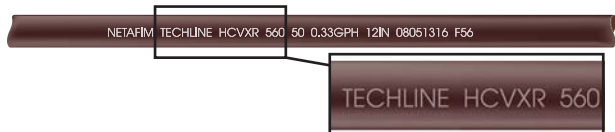


Bottom with large filtration area

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.



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



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.



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

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

1 **2**
TLHCVXR3-1210
A **3**

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**



TECHLINE HCVXR
MADE WITH
POST CONSUMER
RECYCLED MATERIAL



RECYCLED CONTENT

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

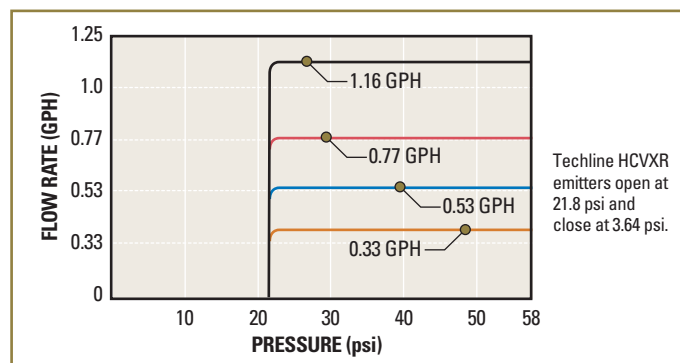
FLOW PER 100 FEET

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
		1,000'	TLHCVXR3-1810
0.53 GPH	24"	1,000'	TLHCVXR3-2410
	12"	100'	TLHCVXR5-1201
		250'	TLHCVXR5-12025
		500'	TLHCVXR5-1205
		1,000'	TLHCVXR5-1210
	18"	100'	TLHCVXR5-1801
		250'	TLHCVXR5-18025
		500'	TLHCVXR5-1805
		1,000'	TLHCVXR5-1810
0.77 GPH	24"	1,000'	TLHCVXR5-2410
	12"	100'	TLHCVXR7-1201
		250'	TLHCVXR7-12025
		500'	TLHCVXR7-1205
		1,000'	TLHCVXR7-1210
	18"	100'	TLHCVXR7-1801
		250'	TLHCVXR7-18025
		500'	TLHCVXR7-1805
		1,000'	TLHCVXR7-1810
1.16 GPH	24"	1,000'	TLHCVXR7-2410
	12"	100'	TLHCVXR11-1201
		250'	TLHCVXR11-12025
		1,000'	TLHCVXR11-1210
	18"	100'	TLHCVXR11-1801
		250'	TLHCVXR11-18025
		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.netafimus.com



TECH SPECS

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: 1 1/4" (33/42)
- 150GB: 1 1/2" (40/49)
- 200GB: 2" (50/60)
- 100EFB-CP: 1" (26/34)*
- 125EFB-CP: 1 1/4" (33/42)
- 150EFB-CP: 1 1/2" (40/49)*
- 200EFB-CP: 2" (50/60)*
- 100EFB-CP-R: 1" (26/34)
- 150EFB-CP-R: 1 1/2" (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)

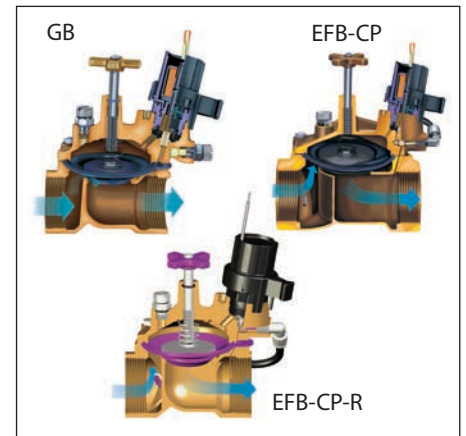
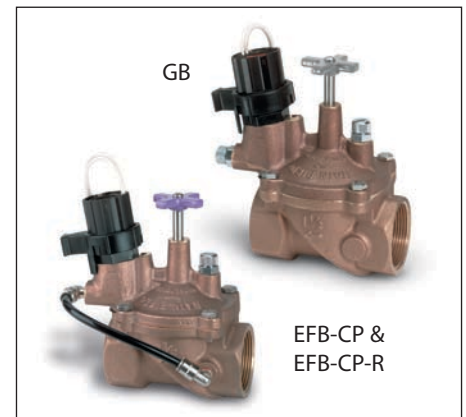
Flow m ³ /h	Flow l/m	GB				EFB-CP				EFB-CP-R			
		100	125	150	200	100	125	150	200	100	150	200	
1	19	0,03				0,01				0,15			
3	50	0,07				0,07				0,99			
6	100	0,27	0,14	0,19	0,05	0,27	0,14	0,19	0,04	3,93	1,05	0,46	
9	150	0,56	0,28	0,14	0,06	0,56	0,28	0,14	0,05	8,46	2,17	0,69	
12	200	-	0,53	0,25	0,09	-	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)	4 1/2" (11,4 cm)	2 1/4" (5,7 cm)
125GB	5 1/4" (14,6 cm)	5" (12,7 cm)	3" (7,6 cm)
150GB	6 1/2" (16,5 cm)	5 1/2" (14 cm)	4" (10,2 cm)
200GB	7" (17,8 cm)	6 1/4" (17,1 cm)	5 1/4" (13,3 cm)
100EFB-CP	6" (15,2 cm)	4 1/2" (11,4 cm)	3 1/4" (8,3 cm)
125EFB-CP	5 1/4" (14,6 cm)	5" (12,7 cm)	3 1/4" (8,3 cm)
150EFB-CP	6 1/2" (16,5 cm)	5 1/2" (14 cm)	4 1/2" (11,4 cm)
200EFB-CP	7" (17,8 cm)	6 1/4" (17,1 cm)	5 1/4" (14,6 cm)
100EFB-CP-R	6" (15,2 cm)	4 1/2" (11,4 cm)	3 1/4" (8,3 cm)
150EFB-CP-R	6 1/2" (16,5 cm)	5 1/2" (14 cm)	4 1/2" (11,4 cm)
200EFB-CP-R	7" (17,8 cm)	6 1/4" (17,1 cm)	5 1/4" (14,6 cm)

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

How to Specify/Order

100 - EFB-CP-R - PRS-D

Size	Model	Optional Feature
100: 1"	GB	PRS-D: pressure regulating module
125: 1 1/4"	EFB-CP	
150: 1 1/2"	EFB-CP-R	
200: 2"		

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

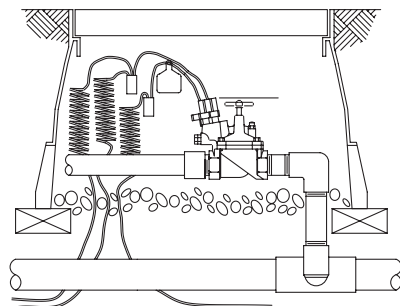
When so indicated on the design, the 1", 1½", 1¾", and 2" electric remote control valves shall have a pressure regulating module (PRS-D) capable of regulating outlet pressure between 15 and 100 psi (±3 psi) (1,04 and 6,90 bar (±0,21 bar)).

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.

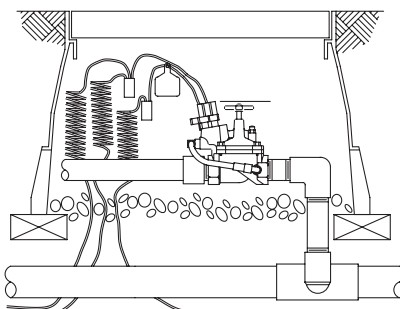
Non-Potable Flow Control Handle EFB-GB-NP-HAN

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.

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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

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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



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



7



3-RC, 5-RC,
5-LRC



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



Quick-Coupling
Valve Cutaway

- 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-LRC 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.

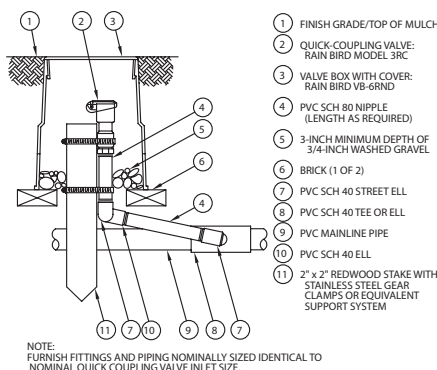
33-DRC, 33-DLRC, 44-RC, 44-LRC- Two Piece Quick Coupling Valve

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	¾"	19 mm	½"	13 mm
33-DRC	33DK	¾"	19 mm	½"	13 mm
33-NP	33DK	¾"	19 mm	½"	13 mm
44-NP	44K	1"	25 mm	¾"	19 mm
44-NP ACME	44KA	1"	25 mm	¾"	19 mm
44-RC	44K	1"	25 mm	¾"	19 mm
5-RC	55K1	1"	25 mm	—	—
5-NP	55K1	1"	25 mm	—	—
7	7K	1 ½"	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	¾"	¾"	1"	1"	1 ½"	
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	
m³/h	l/m	1.9 cm	1.9 cm	2.5 cm	2.5 cm	3.8 cm
2.3	38	0.12	0.12	-	-	-
4	67	0.41	0.42	0.23	-	-
5	83	0.57	0.62	0.40	-	-
6	100	-	-	0.62	-	-
7	117	-	-	0.83	0.30	-
8	133	-	-	-	0.40	-
9	150	-	-	-	0.50	-
10	167	-	-	-	0.61	-
12	200	-	-	-	0.85	0.13
14	233	-	-	-	1.15	0.18
16	267	-	-	-	1.50	0.25
22	367	-	-	-	-	0.54
28	473	-	-	-	-	0.97

*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.

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www.rainbird.com

A close-up photograph of a Toro Sentinel Central Control unit. The unit is a silver-colored rectangular device with a digital display and several buttons, mounted inside a green plastic enclosure. A black cable is connected to the unit. The background is a blurred green lawn.**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

TORO®**SENTINEL® CENTRAL CONTROL**

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

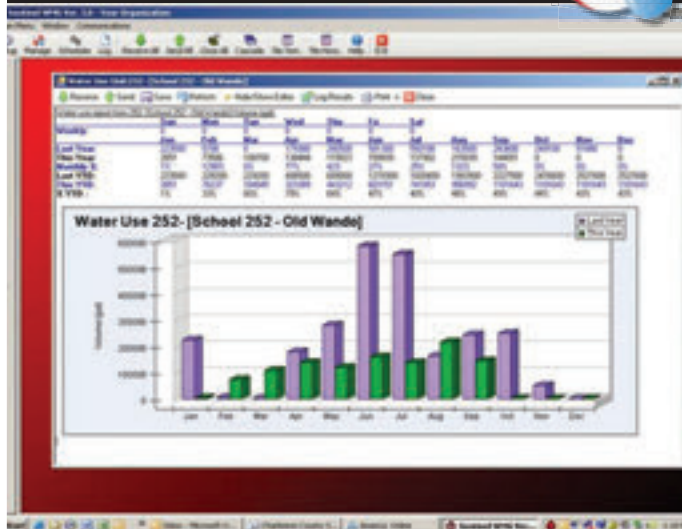


Soil
Sensing
Option



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**

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.



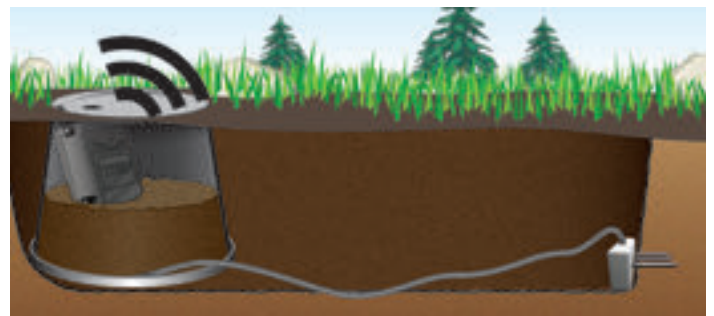
The newly-redesigned satellite controller offers a number of new features and enhancements, including a completely-redesigned interface for easier standalone programming that incorporates a large backlit graphical display, new shortcut buttons for frequently-used functions, as well as a number of other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



Flow
Sensor
Compatible



Soil
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

Configuration	Station Count	Enclosure	Communication
SB-X	XX	XXX	U
SB—Conventional Wired	12—12-station	WS1—Powder-coated Wall Mount (Small)	U—UHF radio
SBW—Short-Range Wireless	24—24-station	WS5—Stainless Steel Wall Mount (Large)	
SBN—No Keypad (WS1 Conventional)	36—36-station	PP1—Plastic Pedestal Mount (Large)	
	48—48-station	PS1—Stainless Steel Pedestal Mount (Large)	

Example: A 24-station Sentinel conventional controller in a small powder-coated wall-mount enclosure with UHF communication would be specified as: **SB24WS1U**



REFERENCE INFORMATION*

COPPER TUBE

Size		Type K	Type L/ACR	Type M	DWV				
NOM	O.D.	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	O.D.	WALL	WGT/FT
1/4	.025	.0685	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

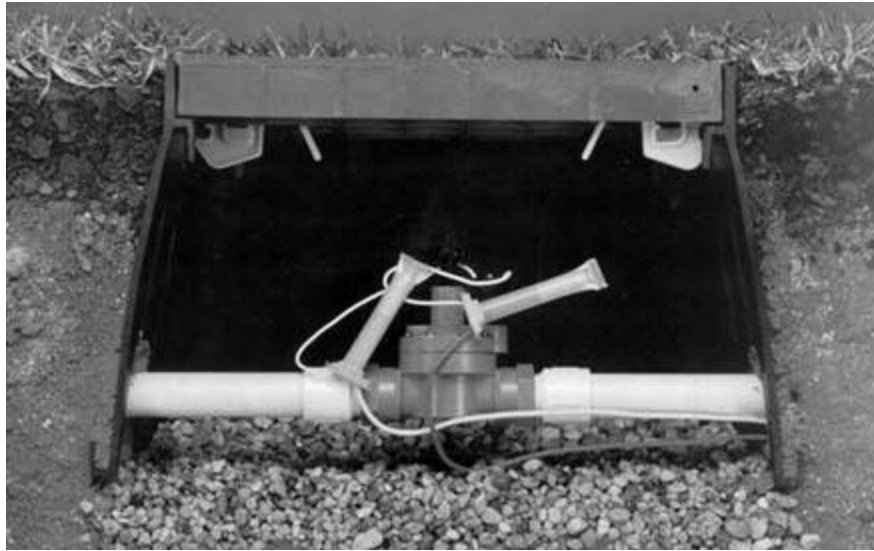
P. O. BOX 309 ♦ WYNNE, AR 72396 ♦ (870) 238-3201 ♦ FAX (870) 238-8724

Data Sheet



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.

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

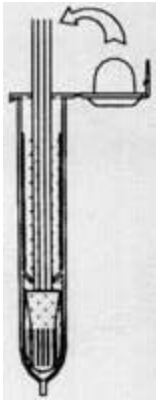
For Use In:

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

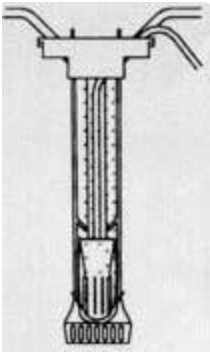
Easy as 1, 2, 3



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.

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3M Electrical Products Division

6801 River Place Blvd.
Austin, Texas 78726 - 9000

3M

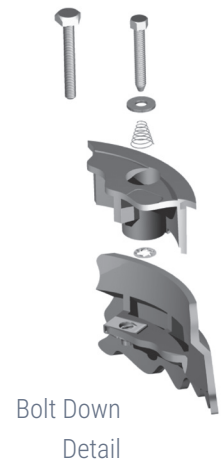
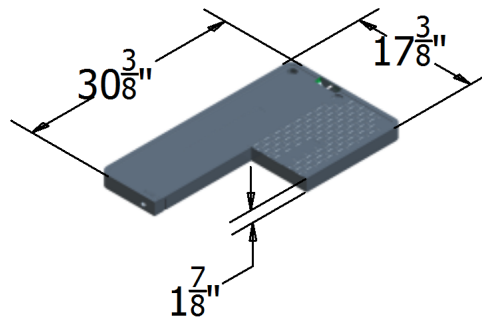
1730

CARSON® Spec Grade

COVER

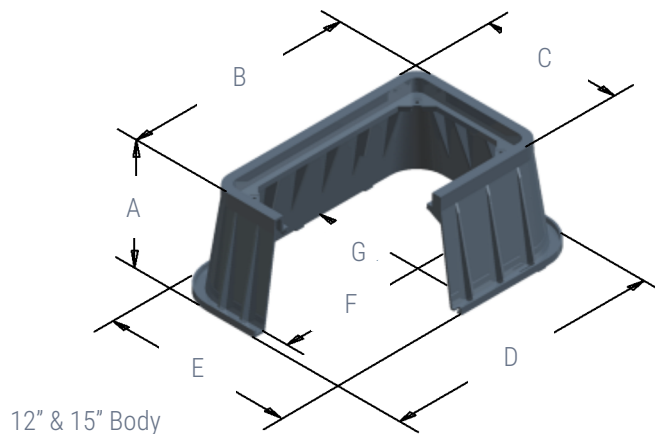
Style:	Flush
Material:	HDPE
Model:	17" x 30"
Weight:	10 lbs
Std. Fasteners:	3/8" Hex Bolt
Options:	Logos and Special Markings
Surface:	Skid Resistant & Marked
Performance:	Pedestrian, ASTM C857, WUC 3.6

Cover comes standard with permanent markings for manufacturer and model size.



BODY

Material:	HDPE
Model:	17" x 30"
Weight:	12" Depth: 19 lbs 15" Depth: 24 lbs 18" Depth: 26 lbs
Wall Type:	Flared
Mouseholes:	0
Performance:	Pedestrian, ASTM C857, WUC 3.6



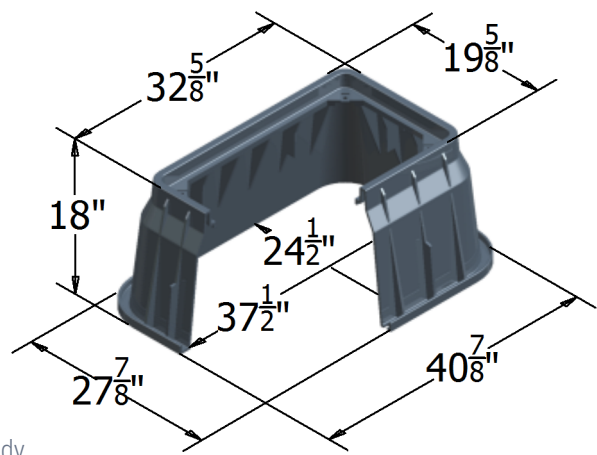
A	B	C	D	E	F	G
12"	33-1/2"	20-5/8"	39-3/8"	26-1/2"	35-7/8"	23"
15"	33-1/2"	20-5/8"	40-1/4"	27-3/8"	36-5/8"	23-3/4"

LOAD RATING / NOTES



LIGHT DUTY
PEDESTRIAN / GREENBELT

For use in non-vehicular traffic situations only.
Weights and dimensions may vary slightly.
Actual load rating is determined by the box
and cover combination.



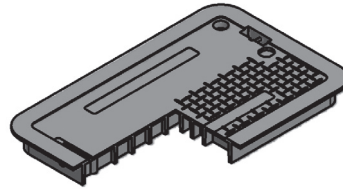
18" Body

1730

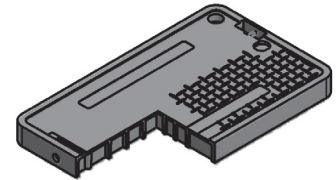
CARSON[®] Spec Grade

COVER OPTIONS

HDPE, T-Cover Solid
HDPE, Flush Solid
HDPE, Flush with Plastic Reader Door
HDPE, Flush with Cast Iron Reader Door



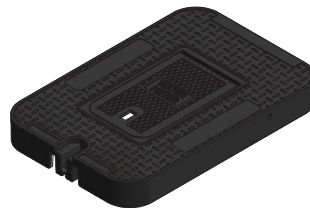
T-Cover Solid



Flush Solid

COLOR OPTIONS

Cover: Black, Green, Gray, Tan, Purple
Body: Black, Green, Gray, Tan, Purple



Reader Door Detail

FASTENER OPTIONS

Hex Head Bolt (A)
Penta Head Bolt (B)
Penta Head Coil Thread Bolt (B)
Oldcastle Vandal Resistant Bolt (C)
Captive Bolt Retainer
Drop-N-Lock™



Standard Thread



A



B



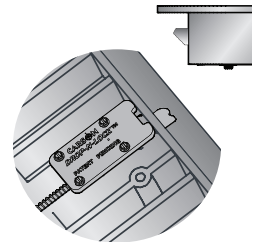
C



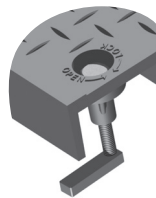
Coil Thread



Bolt Retainer
(for standard thread)



Drop-N-Lock
(T-Cover only)



L Bolt Detail



EMS Marker

ADD ON OPTIONS

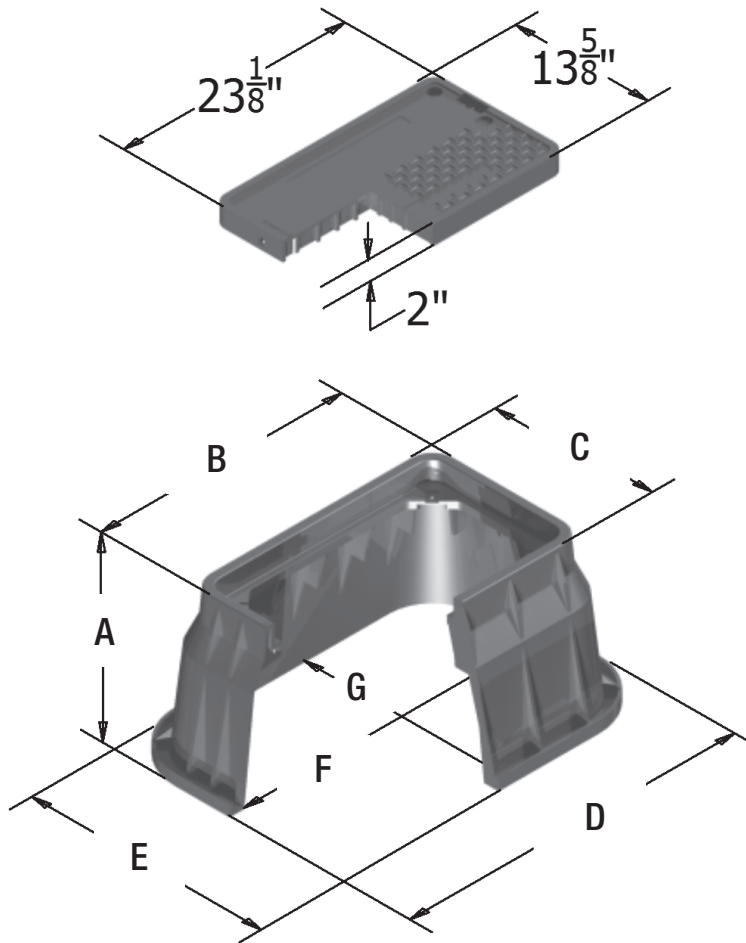
AMR Friendly Solutions
Touch Read Hole
EMS Marker
Racking Provision

WARNING: Cancer - www.P65Warnings.ca.gov

All information contained on this sheet is current at the time of publication.
Oldcastle reserves the right to discontinue or update product information without notice.

Revision 11/30/18
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Specification Grade
1324



COVER:

Style: Flush
Material: HDPE
Model: 13" x 24"
Weight: 6 lbs
Std. Fasteners: 3/8" Hex Bolt
Options: Logos and Special Markings
Surface: Skid Resistant & Marked*
Performance: Pedestrian, ASTM C857, WUC 3.6,

BODY:

Material: HDPE
Model: 13" x 24"
Weight: 12" Depth: 15 lbs
15" Depth: 17 lbs
Wall Type: Flared
Performance: Pedestrian, ASTM C857, WUC 3.6,

GRADE RING



**Light Duty:
Pedestrian Only**

For use in non-vehicular traffic situations only.

We do not recommend installation in concrete or asphalt.
Coefficient of Friction <0.5

Actual load rating is determined by the box and cover combination.
Weights and dimensions may vary slightly

*Cover comes standard with permanent markings for manufacturer, load rating, model size and manufacturing location.

Contact your Oldcastle Enclosure Solutions Distribution Center for specific information and additional options.

Specification Grade
1324

Options:
Available Plastic Covers:

Flush Solid (Standard)
T Cover Solid

Available Plastic Cover Colors:

Black (Standard), Green, Grey, Tan, Purple, Blue

Locking Options for Plastic Covers:

Bolt Down Feature
L Bolt Feature
Drop-N-Lock™

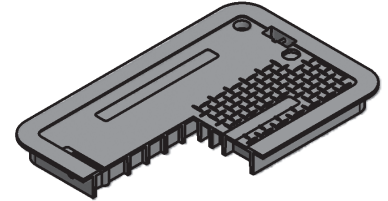
Available Body Colors:

Black (Standard), Green, Grey, Tan, Purple, Blue

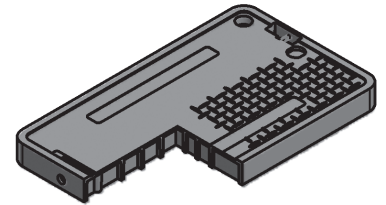
Add On Options:

EMS Marker
Racking Provision
Lid Gaskets*

*Lid Gaskets inhibit water flow into the box,
they do not make Enclosure fully waterproof.



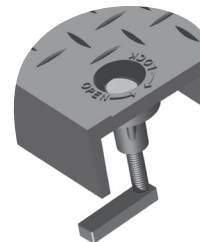
T Solid Cover



Flush Solid Cover



Bolt Down Detail



L Bolt Detail

**Raw Material
Specifications:**

Material Property	ASTM Test Method	Typical Value ¹
Type, Class, Category	D 1248	III, A, 3
Density, g/cm ³	D 1505	0.950 min., not to exceed 0.965
Tensile Strength, at break, psi	D 638	3,000 to 4,400
Elongation, at break, %	D 638	400
Tensile Impact, ft-lb/in ²	D 1822	27
Flexural Modulus, psi	D 790	120,000 min., not to exceed 240,000
Low Temperature Brittleness, F50, at °C	D 746	<-76
Hardness, Shore D	D 2240	66
Deflection Temperature, at 66 psi, °F	D 648	150° min., not to exceed 200°
Electrical Dielectric Strength, V/mil	D 149	400 min., not to exceed 600
Molded Product		
Chemical Resistance	D 543	Very Resistant
Water Absorption	D 570	Less than 1% weight change

¹The values listed for physical property measurements are nominal values only.
Certain physical property measurements are subject to variations consistent with the test methods and are within a generally accepted range for such values.

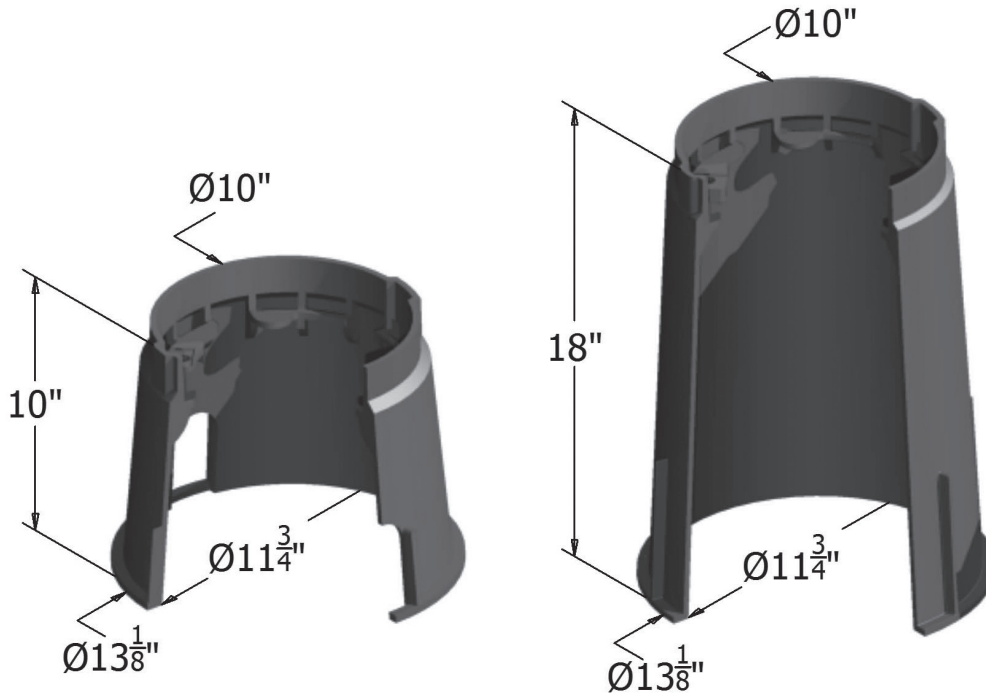
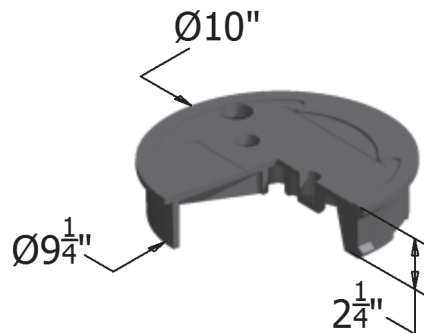
**Product Load
Rating:**


Light Duty : Pedestrian Only

Note:

Actual load rating is determined by the box and cover combination. Weights and dimensions may vary slightly.
All information contained on this sheet is current at the time of printing.
Oldcastle Precast, Inc. reserves the right to discontinue or update product information without notice.





COVER:

Style:	T Cover
Material:	HDPE
Model:	10" Dia.
Weight:	2 lbs
Std. Fasteners:	3/8" Hex Bolt
Options:	Logos and Special Markings
Surface:	Skid Resistant & Marked*
Performance:	Pedestrian, ASTM C857, WUC 3.6,

BODY:

Material:	HDPE
Model:	10" Dia.
Weight:	10" Depth: 3 lbs 18" Depth: 5 lbs
Wall Type:	Flared
Mouseholes:	0 - 2
Performance:	Pedestrian, ASTM C857, WUC 3.6,



Light Duty:
Pedestrian Only

For use in non-vehicular traffic situations only.

We do not recommend installation in concrete or asphalt.
Coefficient of Friction <0.5

Actual load rating is determined by the box and cover combination.
Weights and dimensions may vary slightly

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*Cover comes standard with permanent markings for manufacturer, load rating, model size and manufacturing location.

Contact your Oldcastle Enclosure Solutions Distribution Center for specific information and additional options.

877-250-5139

oldcastleprecast.com/enclosuresolutions

Specification Grade
910

Options:

Available Plastic Covers:

T Cover Solid (Standard)
Flush Solid

Available Plastic Cover Colors:

Black (Standard), Green, Grey, Tan, Purple

Add On Options for Plastic Covers:

Metal Locating Plate

Locking Options for Plastic Covers:

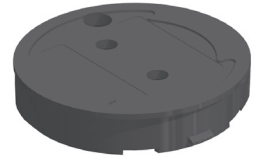
Bolt Down Feature

Available Body Colors:

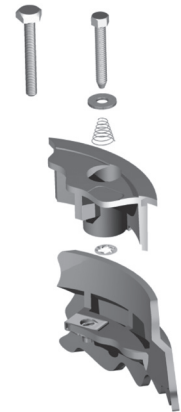
Black (Standard), Green, Grey, Tan, Purple



T Cover Solid



Flush Solid



Bolt Down Detail

Raw Material
Specifications:

Material Property	ASTM Test Method	Typical Value ¹
Type, Class, Category	D 1248	III, A, 3
Density, g/cm ³	D 1505	0.950 min., not to exceed 0.965
Tensile Strength, at break, psi	D 638	3,000 to 4,400
Elongation, at break, %	D 638	400
Tensile Impact, ft-lb/in ²	D 1822	27
Flexural Modulus, psi	D 790	120,000 min., not to exceed 240,000
Low Temperature Brittleness, F50, at °C	D 746	<-76
Hardness, Shore D	D 2240	66
Deflection Temperature, at 66 psi, °F	D 648	150° min., not to exceed 200°
Electrical Dielectric Strength, V/mil	D 149	400 min., not to exceed 600
Molded Product		
Chemical Resistance	D 543	Very Resistant
Water Absorption	D 570	Less than 1% weight change

¹The values listed for physical property measurements are nominal values only.

Certain physical property measurements are subject to variations consistent with the test methods and are within a generally accepted range for such values.

Product Load
Rating:


Light Duty : Pedestrian Only

Note:

Actual load rating is determined by the box and cover combination. Weights and dimensions may vary slightly

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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
3/4" Diameter						
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
1" Diameter						
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



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/cm³	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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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

4205 Newpoint Pl., Suite 100
Lawrenceville (Atlanta), GA 30043
(678) 985-1263 • (800) 662-6326
Fax (678) 985-5642

MIDWEST

1 Gateway Ct., Suite A
Bolingbrook (Chicago), IL 60440
(630) 759-7529 • (800) 662-6330
Fax (630) 759-7515

NORTHWEST

4103 C St. NE Suite 200
Auburn (Seattle), WA 98002
(253) 939-4433 • (800) 347-7327
Fax (253) 939-7557

SOUTH CENTRAL

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Grapevine (Dallas), TX 76051-2317
(972) 691-4003 • (800) 441-1437
Fax (972) 691-4404

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590 Industrial Dr., Suite 100
Lewisberry (Harrisburg), PA 17339-9532
(717) 938-8844 • (800) 233-0275
Fax (717) 938-6547

FLORIDA

9563 Parksouth Court
Orlando, FL 32837
(407) 843-1960 • (800) 327-6390
Fax (407) 425-3563

INTERNATIONAL SALES

15853 Olden St.
Sylmar (Los Angeles), CA 91342
(818) 364-1611 • Fax (818) 898-3774

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 TLIA PVC-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 'V'
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 T12W075MA



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
(888) 638 2346
www.netafimusa.com

SPECIFICATION SHEET



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.

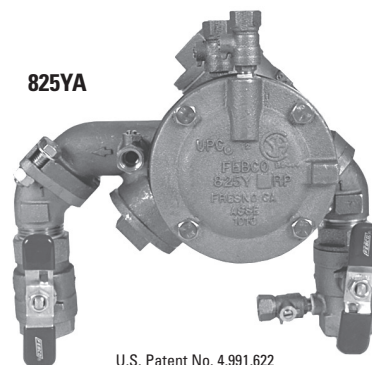
When normal flow resumes, the zone's differential pressure will return and the relief valve will close.

Approvals – Standards

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- ANSI/AWWA C511 Conformance



825YA



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 _____

Job Location _____

Engineer _____

Approval _____

Contractor _____

Approval _____

Contractor's P.O. No. _____

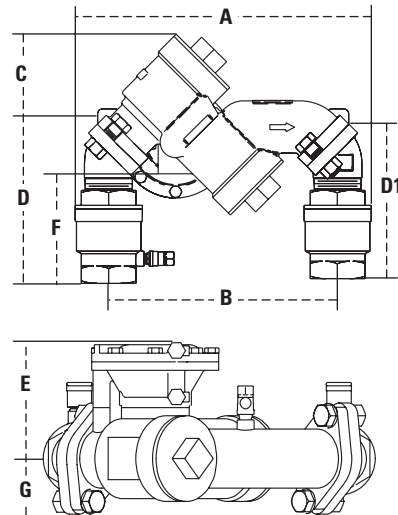
Representative _____

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

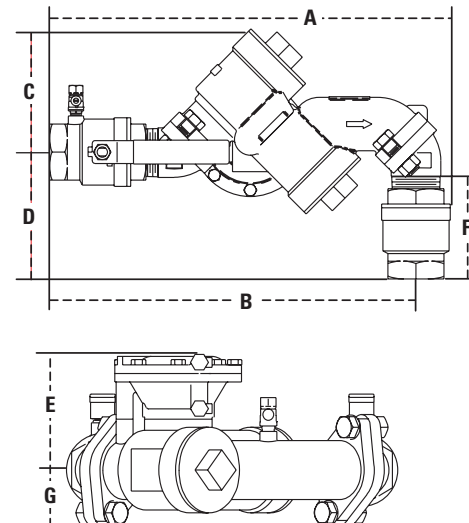
*G Dimension are based on standard vertical flow in / vertical flow out configuration.

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.

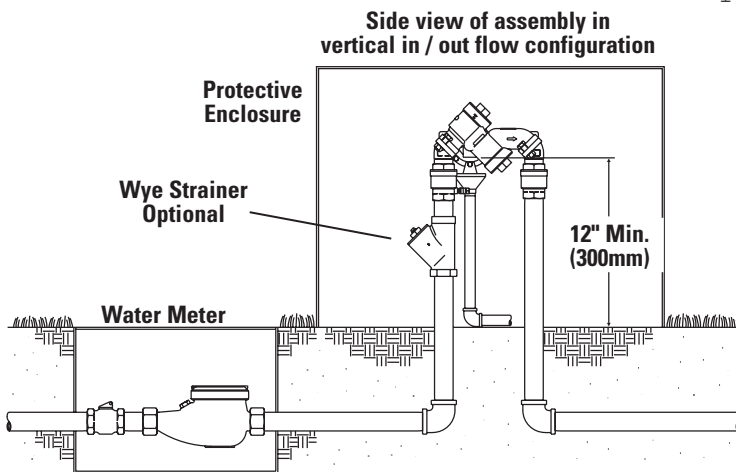
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Typical Installation

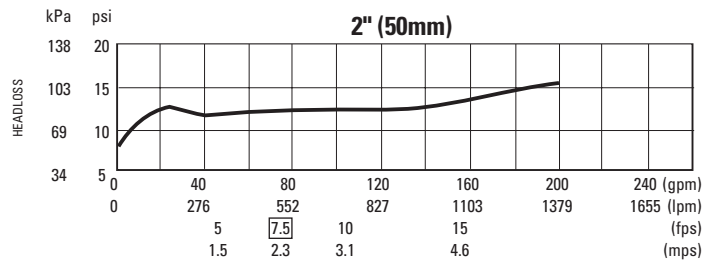
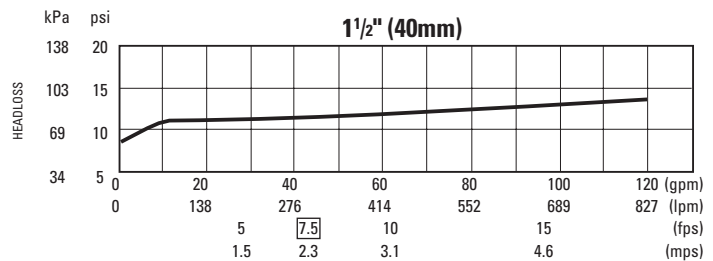
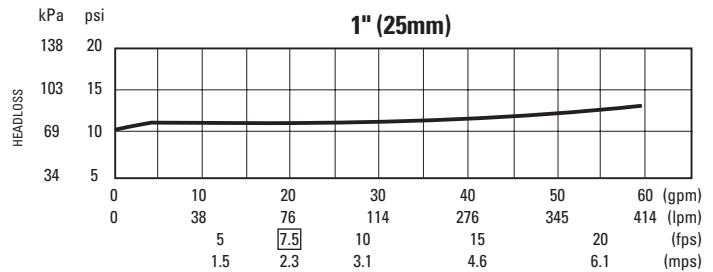
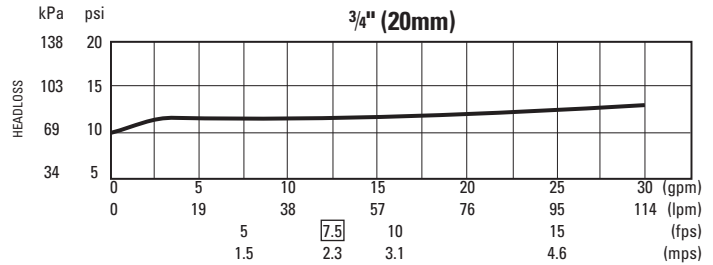
The FEBCO Series 825YA provides versatility in installation because it can be installed in any of four configurations. The most typical configuration is shown in the vertical up flow in/vertical down flow out diagram. This provides for an extremely short lay length which is advantageous in areas of limited 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

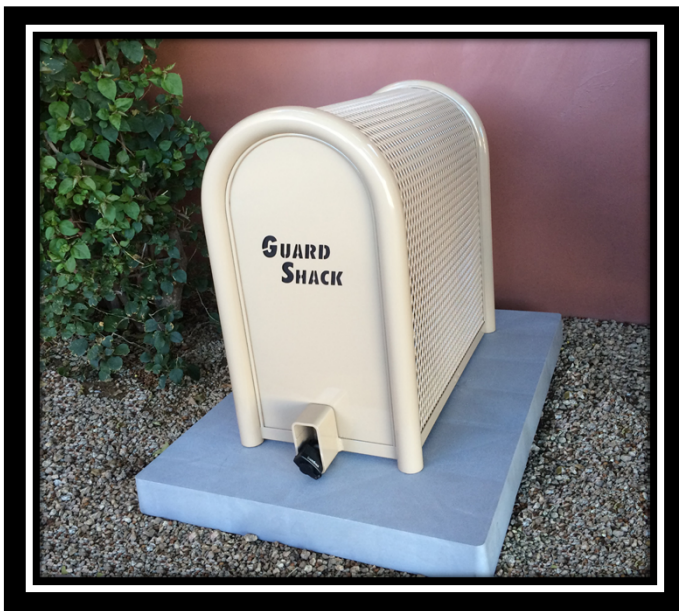


A Watts Water Technologies Company

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

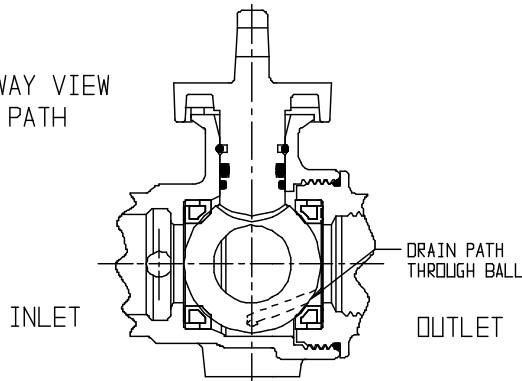
SUBMITTAL DATA SHEET

NL Stop and Waste Ball Curb Stop – 76001

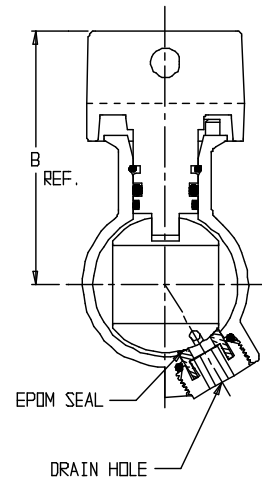
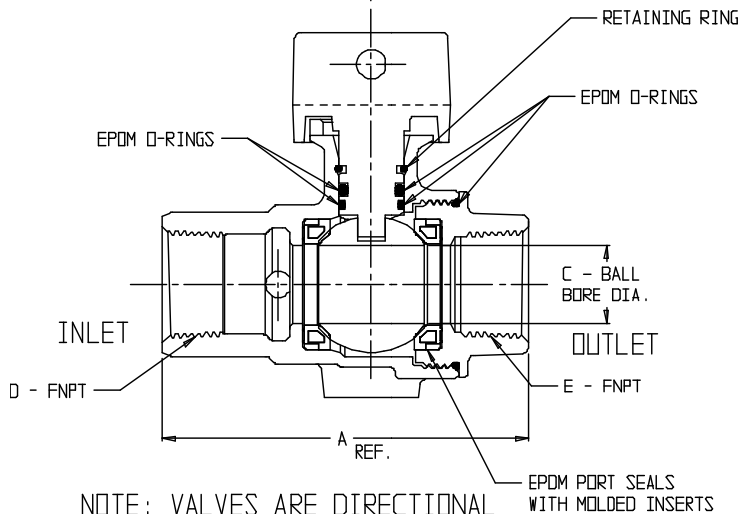
FNPT x FNPT



CUT AWAY VIEW
DRAIN PATH



MODEL	SIZE	A	B	C	D	E
76001	3/4	3.51	2.42	.75	3/4	3/4
76001	3/4 X 3.31	3.31	2.42	.75	3/4	3/4
76001	1	3.65	2.65	1.00	1	1
76001	1 X 4.88	4.88	2.65	1.00	1	1
76001	1 1/4	4.94	2.94	1.25	1 1/4	1 1/4
76001	1 1/2	4.88	3.40	1.50	1 1/2	1 1/2
76001	2	5.29	3.71	2.00	2	2



NOTE: VALVES ARE DIRECTIONAL

SUBMITTAL INFORMATION

- Manufactured in compliance with ANSI/AWWA C800 (latest revision)
- Brass components in contact with potable water conform to ASTM B584, UNS C89833 (latest revision) and identified with "NL"
- Certified to NSF/ANSI 61 and NSF/ANSI 372
- Brass components not in contact with potable water conform to ASTM B62 and ASTM B584, UNS C83600 -85-5-5-5 (latest revision)
- PTFE coated brass ball
- Rated for 150 PSIG water pressure with cast directional arrow
- Blow out proof EPDM port seals
- Joints sealed with EPDM o-rings and thread locker



A.Y. McDonald Mfg. CO.
P.O. Box 508
Dubuque, IA 52004-508

Toll Free: 1-800-292-2737
Fax: 1-800-832-9296
Hours: 7:00 a.m. – 5:00 p.m., CST

sales@aymcdonald.com
www.aymcdonald.com

A.Y. McDonald considers the information on this assembly drawing correct when published. Item and option availability, including specifications, are subject to change without notice.

Submitted by:

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)

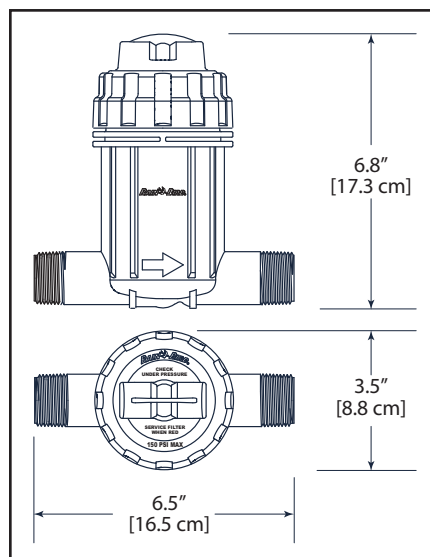
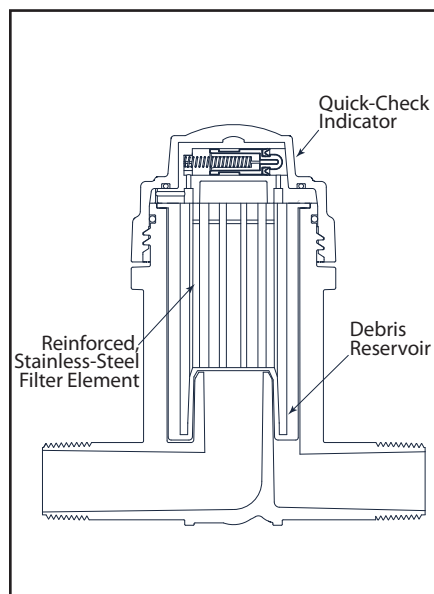
Temperature

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

QK CHK-075

Model
Quick-Check
QK CHK

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]

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

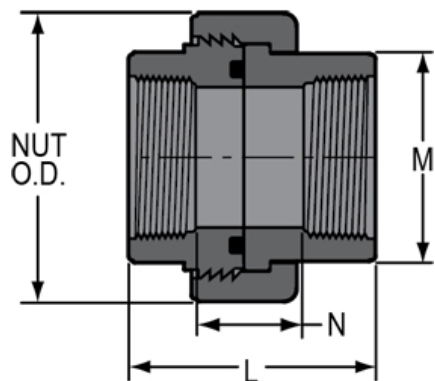
Size: 2"

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

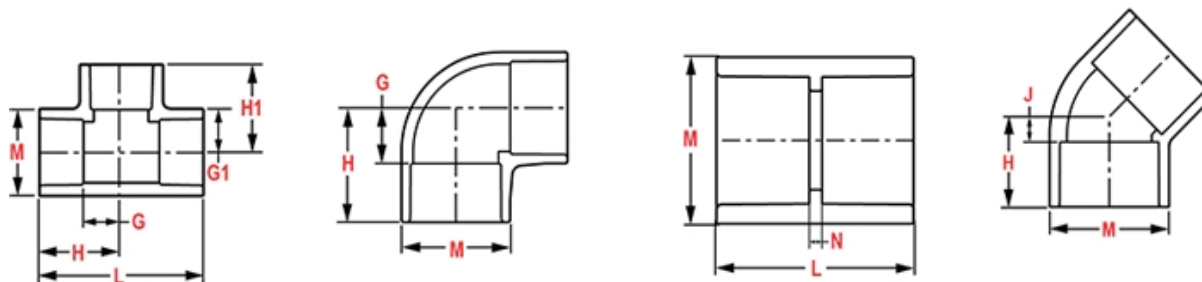
L = Overall length of fittings; ± 1/16 inch.

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



The information printed here is based on current information & product design at the time of publication and is subject to change without notification. Spears® ongoing commitment to product improvement may result in some variation. No representation, guarantees or warranties of any kind are as to its accuracy, suitability for particular application or results to be obtained therefrom. For verification of technical data or additional information, please contact Spears® Technical Service Department :: WEST COAST : (818) 364-1611 - EAST COAST : (717) 938-9006

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

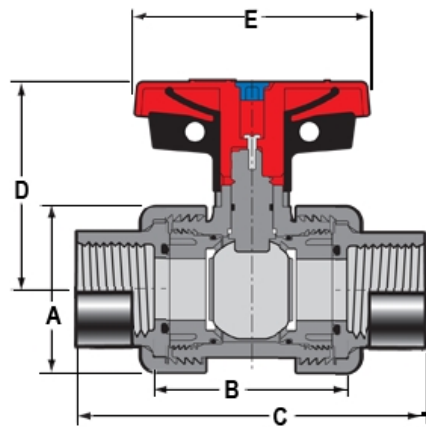
Weight(kg): 1.267

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

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

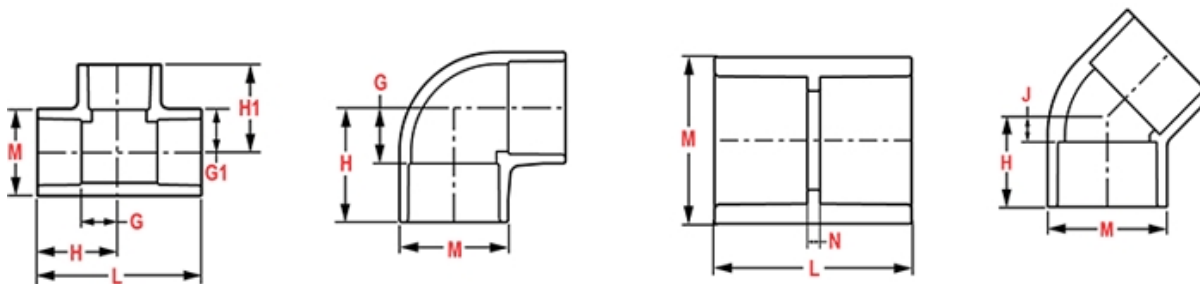
L = Overall length of fittings; ± 1/16 inch.

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



The information printed here is based on current information & product design at the time of publication and is subject to change without notification. Spears® ongoing commitment to product improvement may result in some variation. No representation, guarantees or warranties of any kind are as to its accuracy, suitability for particular application or results to be obtained therefrom. For verification of technical data or additional information, please contact Spears® Technical Service Department :: WEST COAST : (818) 364-1611 - EAST COAST : (717) 938-9006



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



SPX-100



Up to 30% More Flexible than Competitors

How to Specify/Order

SPX - 100

Model

SPX: Swing Pipe
SPX-FLEX: Extra Flexible Swing Pipe

Length

100 feet

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).

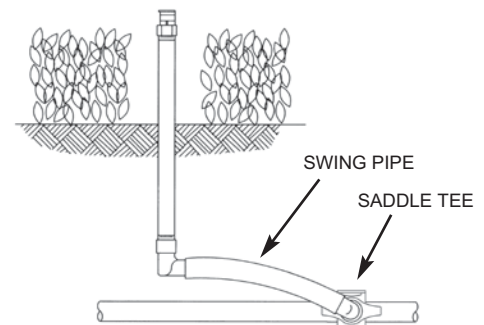
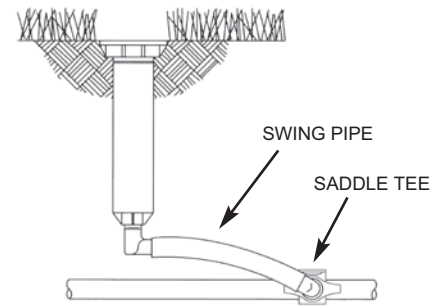
The swing pipe tubing shall be as manufactured by Rain Bird Corporation, Glendora California.

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.



Rain Bird Corporation

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

Rain Bird Technical Services

(800) RAINBIRD (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.

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

www.rainbird.com

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

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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



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.

- 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.

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

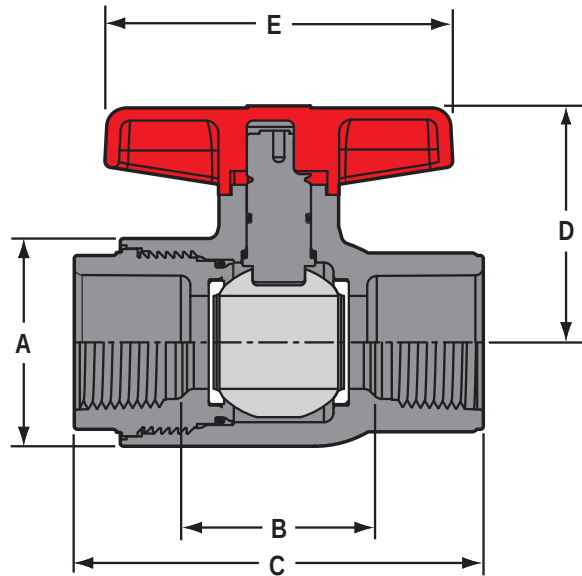
All thermoplastic ball valves shall be Compact 2000 sealed unit type manufactured to ASTM F 1970 and constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, Cell Classification 23447. All Valve bodies shall have actuation mounting lugs. All O-rings shall be EPDM or FKM. All 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.



PROGRESSIVE PRODUCTS FROM SPEARS® INNOVATION & TECHNOLOGY

Visit our web site: www.spearsmfg.com

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				
		Socket	Threaded				PVC	CPVC		
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-)	-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-)

NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GASES



SPEARS® MANUFACTURING COMPANY • CORPORATE OFFICE

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PACIFIC SOUTHWEST

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Sylmar (Los Angeles), CA 91342
(818) 364-1611 • (800) 862-1499
Fax (818) 367-3014

ROCKY MOUNTAIN

4880 Florence St.
Denver, CO 80238
(303) 371-9430 • (800) 777-4154
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

4205 Newpoint Pl., Suite 100
Lawrenceville (Atlanta), GA 30043
(678) 985-1263 • (800) 662-6326
Fax (678) 985-5642

MIDWEST

1 Gateway Ct., Suite A
Bolingbrook (Chicago), IL 60440
(630) 759-7529 • (800) 662-6330
Fax (630) 759-7515

NORTHWEST

4103 C St. NE Suite 200
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

590 Industrial Dr., Suite 100
Lewisberry (Harrisburg), PA 17339-9532
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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



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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