

Submittal No.	DESCRIPTION	DATE SUBMITTED	Date <span>Approved</span> / <span>Disapproved</span>	Comments
1	ADS Potable Grade Pressure Pipe (PE4710): SIDR 7 PE 4710 IPS 1"	25-Nov-2019		
2	DFW Plastics, Inc. 20x30 Meter Can	25-Nov-2019		
3	McDonald Mfg. Co., Adapter 1"x¾" Compression x MNPT - 74753T	25-Nov-2019		
4	McDonald Mfg. Co., Adapter 1"xPE Compression x MNPT - 74753-3Q	25-Nov-2019		
5	McDonald Mfg. Co., NL Ball Style Corporation Stop MNPTxFNPT - 73149B	25-Nov-2019		
6	McDonald Mfg. Co., NL Ball Style Curb Stop - 76101 FNPTxFNPT	25-Nov-2019		
7	McDonald Mfg. Co., NL Meter Setter- 720-212WXFF 44	25-Nov-2019		
8	McDonald Mfg. Co., Service Fitting - 6133T CTS Insert Stiffener - SS	25-Nov-2019		
9	EBAA Iron, Inc., Series 2000PV Mech. Joint Restraint for PVC Pipe; 6"	25-Nov-2019		
10	Charlotte PVC Sch40 DWV Fittings; 3" FPTxHub Adapter (page 29)	25-Nov-2019		
11	Charlotte PVC Sch40 DWV Fittings; C/O Adapter w/ C/O Plug (page 31)	25-Nov-2019		
12	Charlotte CPVC-CW Sch40 Pipe and Fittings	25-Nov-2019		
13	Charlotte PVC Sch40 DWV Fittings; 3" FPTxHub Adapter	25-Nov-2019		
14	Quikrete, Concrete Mix, 1101, 80# bags	25-Nov-2019		
15	Ford Meter Box Co., Ball Valve Curb Stop (BL-xxx-NL Style)	25-Nov-2019		
16	Ford Meter Box Co., Quick Joint Coupling (C84-xx-Q-NL Style)	25-Nov-2019		
17	Ford Meter Box Co., Curb Boxes w/ 1-¼" Upper Sxn EA2-35-50 3-½'	25-Nov-2019		
18	Harco PVC IPS Gasketed Fittings GxFNPT Adapter 2" 132-020	25-Nov-2019		
19	Harco PVC IPS Gasketed Fittings SpigxG Adapter 2" 132-020 M	25-Nov-2019		
20	Harco PVC IPS Gasketed Fittings: Service Tee (GxGxFIPT) 2x1 151-204	25-Nov-2019		
21	Harco Pvc IPS Gasketed Fittings: Bend 45° (GxG) 2" 122-020 M	25-Nov-2019		
22	Harco PVC IPS Gasketed Fittings: Repair Coupling (GxG) 6" 109-060 (page 6)	25-Nov-2019		
23	Tyler/Union MJ Compact Fittings	25-Nov-2019		
24	CRM High Performance Marker 08-Blue AAJ9350	25-Nov-2019		
25	Star Pipe Products, PVC Stargrip Series 4000 MJ Wedge Action Restraint, 8" & 12"	25-Nov-2019		
26	Romac Service Saddles 101S & 202S	25-Nov-2019		
27	Tyler/Union 6850 Screw Type Valve Box Cast Iron	25-Nov-2019		
28	Tyler/Union Water Lid	25-Nov-2019		
29	Clow Resilient Wedge Valves MJ 2" - 12"	25-Nov-2019		
30	Krylon OSHA Red Spray	25-Nov-2019		
31	LASCO Fittings, Inc. Sch40 PVC	25-Nov-2019		
32	Legend Valve, Statinless Steel insert Stiffener T-4500	25-Nov-2019		
33	Castings, Inc. Meter Pit Cover (Top lid, Frost Lid, Body)	25-Nov-2019		
34	Multi Fittings, Wye 45° (HxHxH)	25-Nov-2019		
35	NAPCO Pipe & Fittings: ASTM D2241/IB PVC Pressure Pipe 2" SDR21 200PSI	25-Nov-2019		
36	NAPCO Pipe & Fittings: ASTM D3034/SW PVC Gravity Sewer Pipe SDR35 8"	25-Nov-2019		
37	Nicor, Inner Frost Lid	25-Nov-2019		
38	Nicor, Lid	25-Nov-2019		
39	Pasco, Pipe Protection Tape System	25-Nov-2019		
40	Smith-Cooper, Int'l., Elbow 45°, 2" GI	25-Nov-2019		
41	Weld-On, 705 Cement for PVC Plastic Pipe	25-Nov-2019		
42	Weld-on, Plumbing Primer	25-Nov-2019		
43		25-Nov-2019		
44		25-Nov-2019		

## ADS POTABLE GRADE PRESSURE PIPE (PE4710)

ADS Potable Grade Pressure Pipe is a leader in today's water service and landscape irrigation markets. Its flexibility and durability distinguish it from the competition and make it ideal for a variety of applications.

ADS Potable Grade Pressure Pipe is strong and resistant to many common causes of damage such as vibrations, surface loads and pressure surges.

### APPLICATIONS:

Landscape & Agricultural Irrigation Systems  
Residential & Commercial Water Service Pipe  
Well/Pump Water Systems  
Slurry Pipelines

### FEATURES:

- Certified to meet NSF 14/61 standard
- Durable plastic material stands the test of time
- Flexibility makes it ideal for a variety of projects
- Strength withstands weather and the human element
- Incremental footage markers printed every 2 feet throughout each coil length
- Light weight
- Chemically resistant

### BENEFITS:

- Resistant to rot or corrosion
- Fast and easy to install
- Easy installation provides cost-efficiency
- Flexible lengths can be installed in uneven terrain
- Available in many lengths

**ADS Service:** ADS representatives are committed to providing you with the answers to all your questions, including specifications, and installation and more.

 **ADS PolyFlex™**



## ADS POTABLE WATER SERVICE PIPE (IPS) PIPE SPECIFICATIONS

### SCOPE

This specification describes ADS Potable Water Service Pipe (IPS) pipe SDR 19, SDR 15, SDR 11.5, SDR 9, and SDR 7 for use in potable water service applications.

### PIPE REQUIREMENTS

ADS potable water service pipe shall meet the requirements of **ASTM D2239, AWWA C901 and NSF Standards 14 and 61**. Pipe dimensions shall meet Iron Pipe Size (IPS) standards.

### MATERIAL PROPERTIES

Pipe material shall be high-density polyethylene conforming to the minimum requirements of cell classification 445474C as defined and described in **ASTM D3350**, except that carbon black content should not exceed 3.0%. The resin shall have a material designation code of PE4710 by the Plastic Pipe Institute.

### DISINFECTION/MAINTENANCE

The active chlorine content of disinfecting solutions shall not exceed 12%. All disinfecting solution must be flushed from all lines within the system. Industry accepted procedures, like ANSI/AWWA C651 Disinfecting Water Mains, should be followed for both new and repaired potable water lines.

### INSTALLATION

Installation is similar to other flexible pipe products. Methods including direct bury, plowing or pulling are applicable per local, state or federal guidelines for the application.

### PIPE PROPERTIES

SDR 19 PE 4710 IPS						
	½"	¾"	1"	1 ¼"	1 ½"	2
Inside Diameter (mm)	0.622 ±0.01 (15.8 ±0.25)	0.824 ±0.015 (20.9 ±0.38)	1.049 ±0.02 (26.6 ±0.51)	1.380 ±0.02 (35.1 ±0.51)	1.610 ±0.02 (40.9 ±0.51)	2.067 ±0.02 (52.5 ±0.51)
Wall Thickness (mm)	0.060 +0.02 (1.5 +0.51)	0.060 +0.02 (1.5 +0.51)	0.060 +0.02 (1.5 +0.51)	0.073 +0.02 (1.9 +0.51)	0.085 +0.02 (2.2 +0.51)	0.109 +0.020 (2.8 +0.51)
Pressure Rating @ 73° F, psi (kPa)	100 (689)	100 (689)	100 (689)	100 (689)	100 (689)	100 (689)
Weight gm/ft (gm/m)	28 ±2 (92 ±7)	38 ±2 (125 ±7)	47 ±2 (154 ±7)	80 ±3 (262 ±10)	96 ±3 (315 ±10)	190 ±5 (623 ±16)

SDR 15 PE 4710 IPS						
	½"	¾"	1"	1 ¼"	1 ½"	2
Inside Diameter (mm)	0.622 ±0.01 (15.8 ±0.25)	0.824 ±0.015 (20.9 ±0.38)	1.049 ±0.02 (26.6 ±0.51)	1.380 ±0.02 (35.1 ±0.51)	1.610 ±0.02 (40.9 ±0.51)	2.067 ±0.02 (52.5 ±0.51)
Wall Thickness (mm)	0.060 +0.02 (1.5 +0.51)	0.060 +0.02 (1.5 +0.51)	0.070 +0.02 (1.8 +0.51)	0.092 +0.02 (2.3 +0.51)	0.107 +0.02 (2.7 +0.51)	0.138 +0.02 (3.5 +0.51)
Pressure Rating @ 73° F, psi (kPa)	125 (862)	125 (862)	125 (862)	125 (862)	125 (862)	125 (862)
Weight gm/ft (gm/m)	30 ±2 (98 ±7)	39 ±2 (128 ±7)	56 ±2 (184 ±7)	97 ±3 (318 ±10)	129 ±3 (423 ±10)	200 ±5 (656 ±16)

SDR 11.5 PE 4710 IPS						
	½"	¾"	1"	1 ¼"	1 ½"	2
Inside Diameter (mm)	0.622 ±0.01 (15.8 ±0.25)	0.824 ±0.015 (20.9 ±0.381)	1.049 ±0.02 (26.6 ±0.51)	1.380 ±0.02 (35.1 ±0.51)	1.610 ±0.02 (40.9 ±0.51)	2.067 ±0.02 (52.5 ±0.51)
Wall Thickness (mm)	0.060 +0.02 (1.5 +0.51)	0.072 +0.02 (1.8 +0.51)	0.091 +0.02 (2.3 +0.51)	0.120 +0.02 (3.0 +0.51)	0.140 +0.02 (3.6 +0.51)	0.180 +0.02 (4.6 +0.51)
Pressure Rating @ 73° F, psi (kPa)	160 (1103)	160 (1103)	160 (1103)	160 (1103)	160 (1103)	160 (1103)
Weight gm/ft (gm/m)	30 ±2 (98 ±7)	50 ±2 (164 ±7)	72 ±2 (236 ±7)	125 ±3 (410 ±10)	146 ±3 (479 ±10)	248 ±5 (814 ±16)

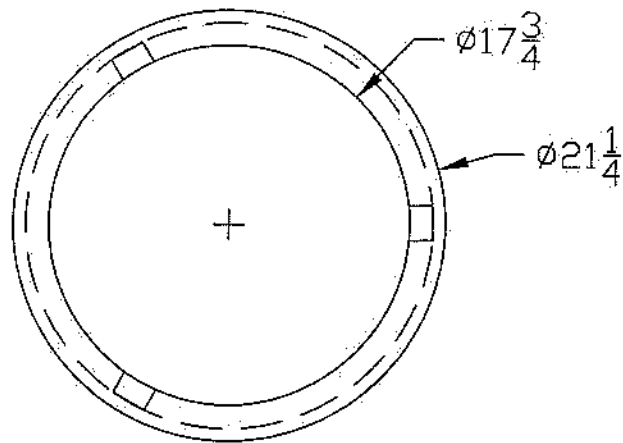
SDR 9 PE 4710 IPS						
	½"	¾"	1"	1 ¼"	1 ½"	2
Inside Diameter (mm)	0.622 ±0.01 (15.8 ±0.25)	0.824 ±0.015 (20.9 ±0.38)	1.049 ±0.02 (26.6 ±0.51)	1.380 ±0.02 (35.1 ±0.51)	1.610 ±0.02 (40.9 ±0.51)	2.067 ±0.02 (52.5 ±0.51)
Wall Thickness (mm)	0.069 +0.02 (1.8 +0.51)	0.092 +0.02 (2.3 +0.51)	0.117 +0.02 (3.0 +0.51)	0.153 +0.02 (3.9 +0.51)	0.179 +0.02 (4.5 +0.51)	0.230 +0.028 (5.8 +0.71)
Pressure Rating @ 73° F, psi (kPa)	200 (1379)	200 (1379)	200 (1379)	200 (1379)	200 (1379)	200 (1379)
Weight gm/ft (gm/m)	32 ±2 (105 ±7)	53 ±2 (174 ±7)	88 ±3 (289 ±10)	155 ±3 (509 ±10)	185 ±5 (607 ±16)	330 ±5 (1083 ±16)

SDR 7 PE 4710 IPS						
	½"	¾"	1"	1 ¼"	1 ½"	2
Inside Diameter (mm)	0.622 ±0.01 (15.8 ±0.25)	0.824 ±0.015 (20.9 ±0.38)	1.049 ±0.02 (26.6 ±0.51)	1.380 ±0.02 (35.1 ±0.51)	1.610 ±0.02 (40.9 ±0.51)	2.067 ±0.02 (52.5 ±0.51)
Wall Thickness (mm)	0.089 +0.02 (2.3 +0.51)	0.118 +0.02 (3.0 +0.51)	0.150 +0.02 (3.8 +0.51)	0.197 +0.02 (5.0 +0.51)	0.230 +0.03 (5.8 +0.71)	0.295 +0.035 (7.5 +0.89)
Pressure Rating @ 73° F, psi (kPa)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
Weight gm/ft (gm/m)	38 ±2 (125 ±7)	71 ±2 (233 ±7)	116 ±3 (381 ±10)	210 ±5 (689 ±16)	227 ±5 (745 ±16)	448 ±8 (1470 ±26)

\*Additional SDRs may be available. Contact an ADS Representative for regional availability.

For more information on Potable Grade Pressure Pipe and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

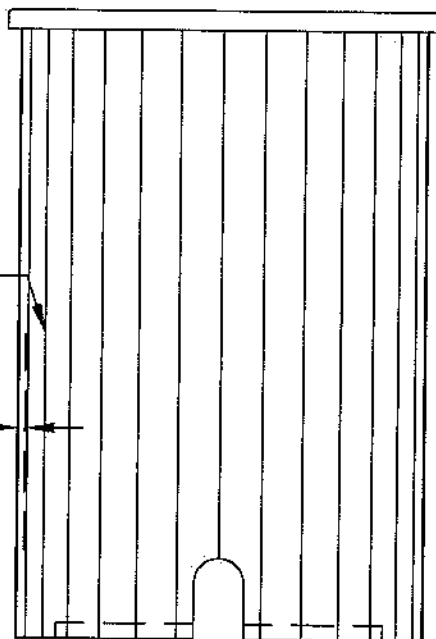




CRUSH  
RESISTANT  
RIBBING

3

WALL



31

20.024

**NOTES**

- 1) DIM'S  $\pm 1/8"$  U.N.O.
- 2) BODY MATERIAL: LLDPE
- 3) WALL THICKNESS: MINIMUM  $3/8"$

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.



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DFW2030

CREATED: 08/15/2010

UPDATED: 03/28/2014

ACCEPTED: JMc

DRAWN BY: RMc

PLOT SCALE: 1:8

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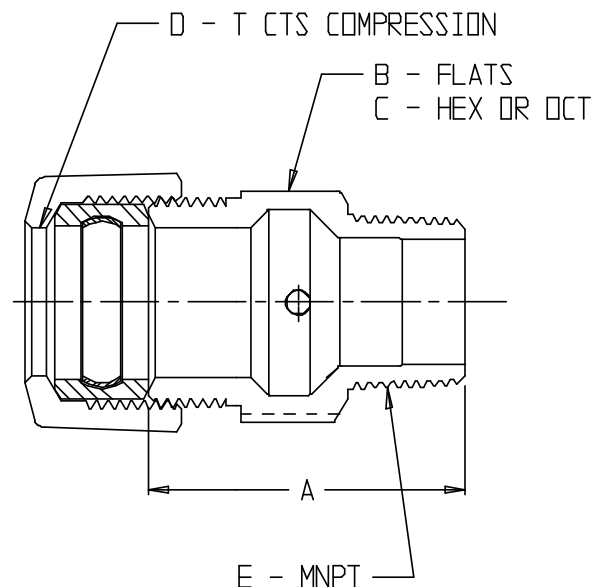
# SUBMITTAL DATA SHEET

## NL Service Fitting – 74753T

T CTS Compression x MNPT



MODEL	SIZE	A	B	C	D	E
74753T	3/4	1.91	1.34	ØCT	3/4	3/4
74753T	3/4 X 1/2	2.00	1.38	HEX	3/4	1/2
74753T	3/4 X 1	1.95	1.32	ØCT	3/4	1
74753T	1	2.44	1.38	ØCT	1	1
74753T	1 X 3/4	2.18	1.38	ØCT	1	3/4
74753T	1 1/4	2.69	1.70	ØCT	1 1/4	1 1/4
74753T	1 1/4 X 3/4	2.50	1.85	ØCT	1 1/4	3/4
74753T	1 1/4 X 1	2.76	1.85	ØCT	1 1/4	1
74753T	1 1/4 X 1 1/2	2.69	1.69	HEX	1 1/4	1 1/2
74753T	1 1/2	2.72	2.00	ØCT	1 1/2	1 1/2
74753T	1 1/2 X 1	2.75	1.85	ØCT	1 1/2	1
74753T	1 1/2 X 1 1/4	2.65	1.85	ØCT	1 1/2	1 1/4
74753T	2 X 1 1/2	2.70	2.44	ØCT	1 1/2	2
74753T	2	3.02	2.44	ØCT	2	2



### 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)
- Large wrench flats provided for proper installation
- Insert stiffeners required on all flexible plastic connections



**A.Y. McDonald Mfg. Co.**  
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Dubuque, IA 52004-508

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**Hours:** 7:00 a.m. – 5:00 p.m., CST

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[www.aymcdonald.com](http://www.aymcdonald.com)

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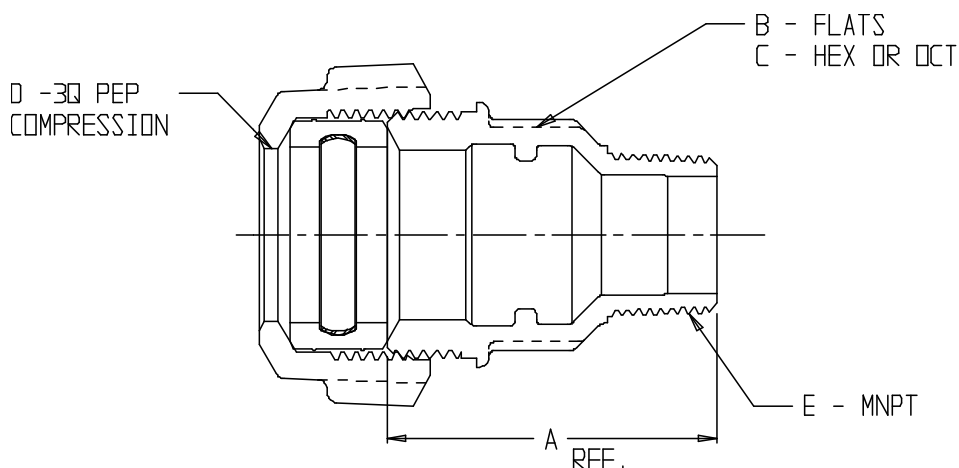
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09-14

# SUBMITTAL DATA SHEET

NL Service Fitting – 74753-3Q

-3Q PEP Compression x MNPT



MODEL	SIZE	A	B	C	D	E
74753-3Q	3/4	2.13	1.38	OCT	3/4	3/4
74753-3Q	3/4 X 1	2.44	1.38	OCT	3/4	1
74753-3Q	1	2.76	1.85	OCT	1	1
74753-3Q	1 X 3/4	2.66	1.85	OCT	1	3/4
74753-3Q	1 X 1 1/2	2.69	1.69	HEX	1	1 1/2

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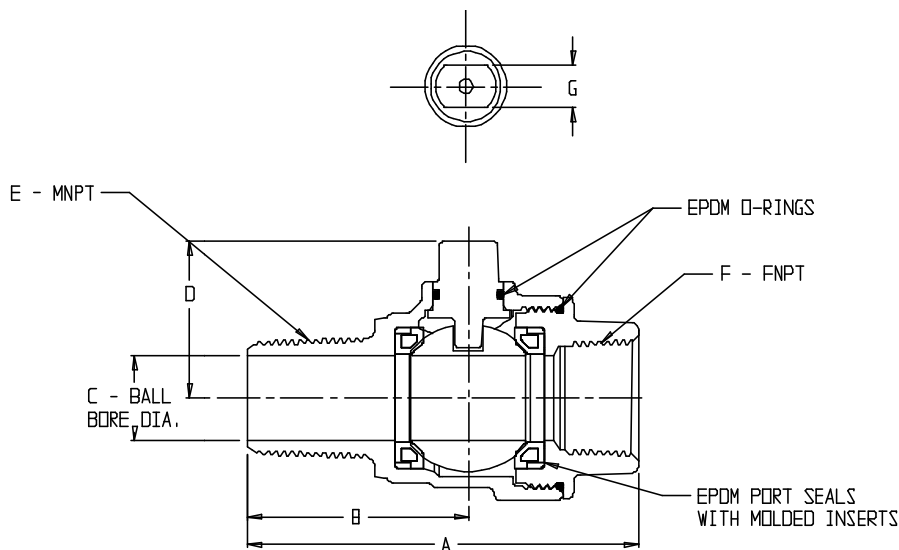
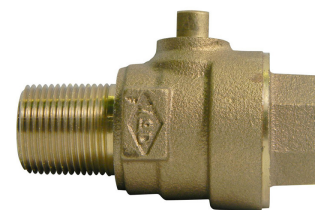
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# SUBMITTAL DATA SHEET

NL Ball Style Corporation Stop – 73149B

MNPT x FNPT



MODEL	SIZE	A	B	C	D	E	F	G
73149B	3/4	3.46	1.96	.75	1.39	3/4	3/4	.38
73149B	1	3.87	2.11	1.00	1.50	1	1	.28
73149B	1 1/4	4.97	3.02	1.25	1.88	1 1/4	1 1/4	.42
73149B	1 1/2	5.24	3.05	1.50	2.15	1 1/2	1 1/2	.42
73149B	1 1/2 X 2	7.15	3.05	1.50	2.15	1 1/2	2	.42
73149B	2	5.70	3.21	2.00	2.46	2	2	.42

## 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 rotates 360°
- Rated for 300 PSIG water pressure
- Blow out proof EPDM port seals
- End piece joint sealed with an EPDM o-ring and thread locker



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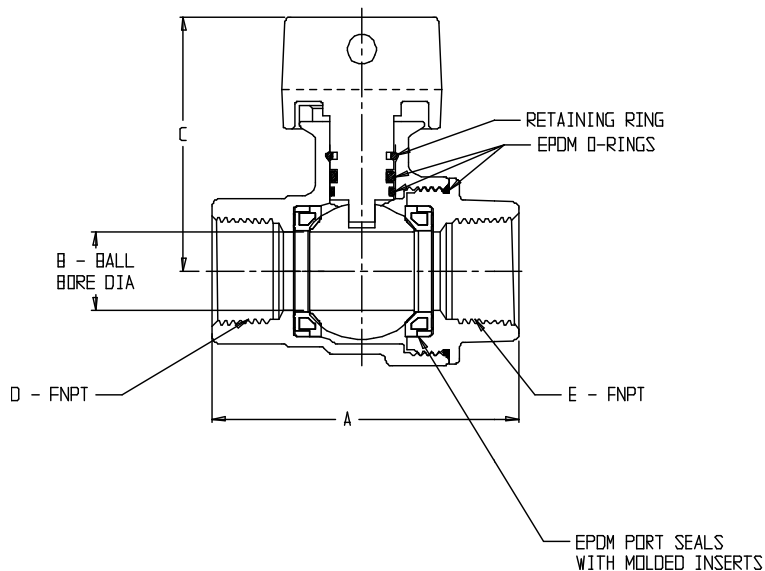
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# SUBMITTAL DATA SHEET

## NL Ball Style Curb Stop – 76101

FNPT x FNPT



MODEL	SIZE	A	B	C	D	E
76101	1/2 X 5/8 X 1/2	2.88	.625	2.31	1/2	1/2
76101	3/4 X 5/8 X 3/4 X 3.50	3.50	.625	2.31	3/4	3/4
76101	3/4 X 5/8 X 3/4 X 3.75	3.66	.625	2.31	3/4	3/4
76101	3/4	2.94	.750	2.39	3/4	3/4
76101	3/4 X 5/8 X 3/4	2.81	.625	2.29	3/4	3/4
76101	1 X 3/4 X 3/4	3.09	.750	2.39	1	3/4
76101	1 X 3/4 X 1	3.32	.750	2.39	1	1
76101	1 X 3/4 X 1 x 3.50	3.52	.750	2.39	1	1
76101	1	3.47	1.00	2.65	1	1
76101	1 1/4 X 1 X 1	3.61	1.00	2.65	1 1/4	1
76101	1 1/4 X 1 X 1 1/4	4.31	1.00	2.65	1 1/4	1 1/4
76101	1 1/4	3.83	1.25	2.94	1 1/4	1 1/4
76101	1 1/2	4.29	1.50	3.39	1 1/2	1 1/2
76101	2	5.07	2.00	3.67	2	2
76101	2 1/2 X 2 X 2 1/2	8.85	2.00	3.67	2 1/2	2 1/2

### 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 300 PSIG water pressure
- Blow out proof EPDM port seals
- End piece joint sealed with an EPDM o-ring and thread locker



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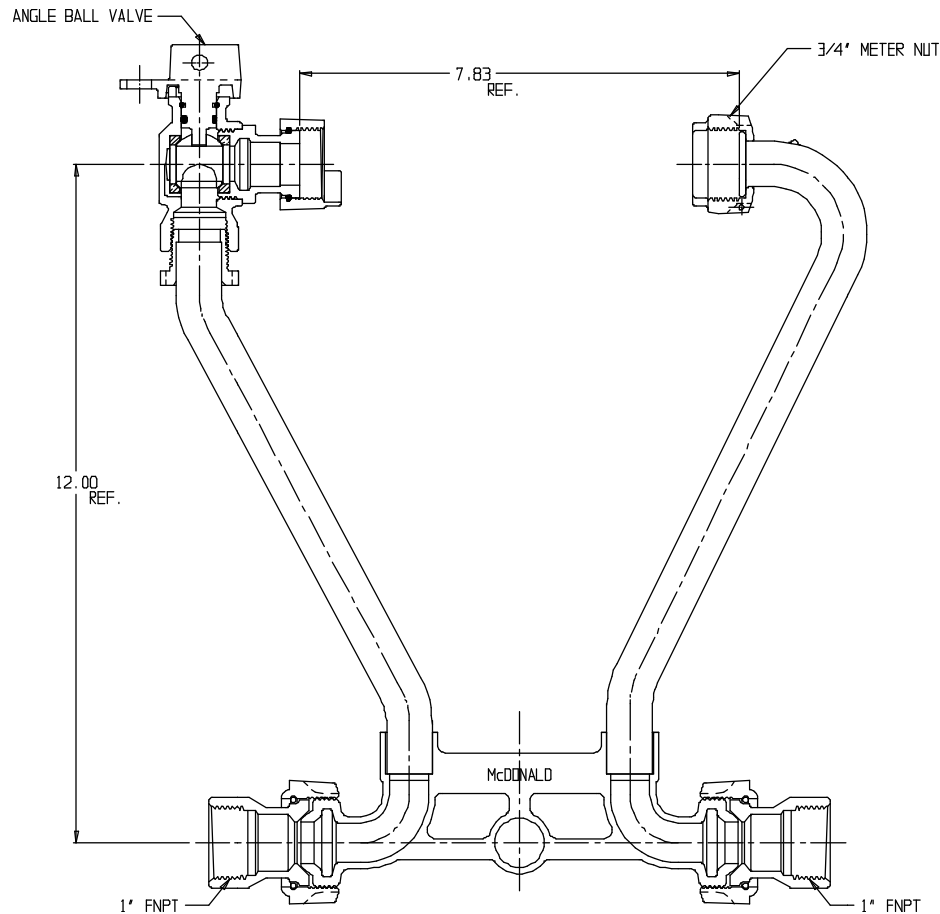
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# SUBMITTAL DATA SHEET

NL Meter Setter – 720-212WXFF 44

Double Purpose X Double Purpose



## 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 (reference height restrictions) 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)
- Copper tubing made in compliance with ASTM B75 or B88, UNS C12200 (latest revision)
- Lead free solder joints
- Designed to provide proper meter spacing for ease of installation
- Padlock wings standard on all valves



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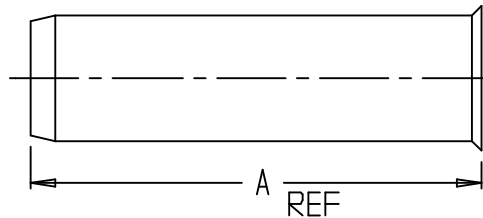
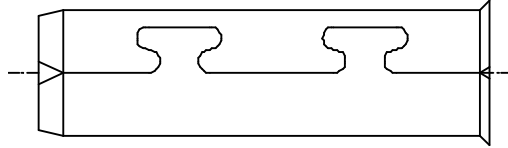
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04-14

# SUBMITTAL DATA SHEET

## Service Fitting – 6133T

CTS Insert Stiffener - Stainless Steel



MODEL	SIZE	A
6133T	3/4	2 3/8
6133T	1	2 3/8
6133T	1 1/4	2 3/8
6133T	1 1/2	2 3/8
6133T	2	2 3/8

### SUBMITTAL INFORMATION

- 300 Series Stainless Steel



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

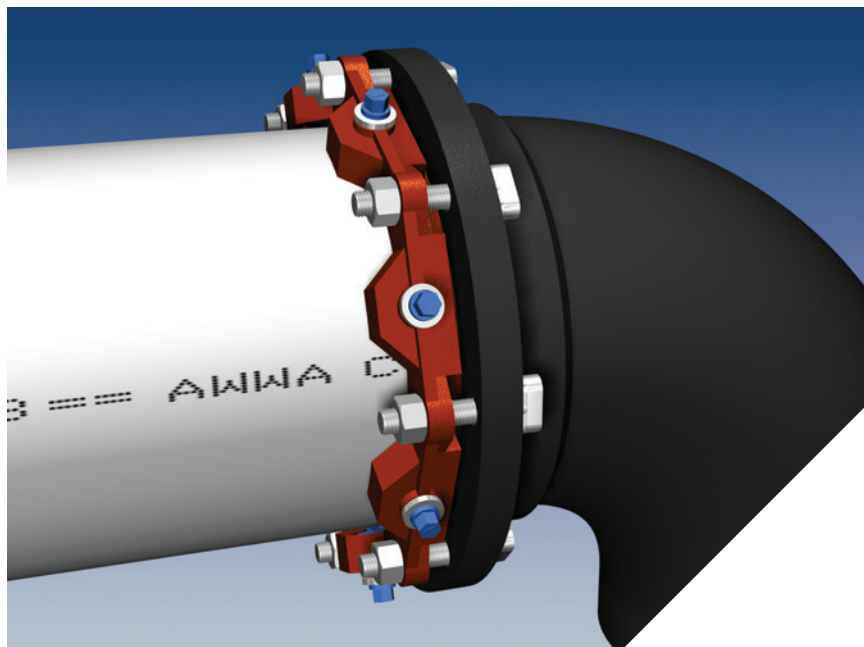
**Toll Free:** 1-800-292-2737  
**Fax:** 1-800-832-9296  
**Hours:** 7:00 a.m. – 5:00 p.m., CST

[sales@aymcdonald.com](mailto:sales@aymcdonald.com)  
[www.aymcdonald.com](http://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:**





Series 2012PV on 12inch C900 PVC pipe at a ductile iron fitting.

### Features and Applications:

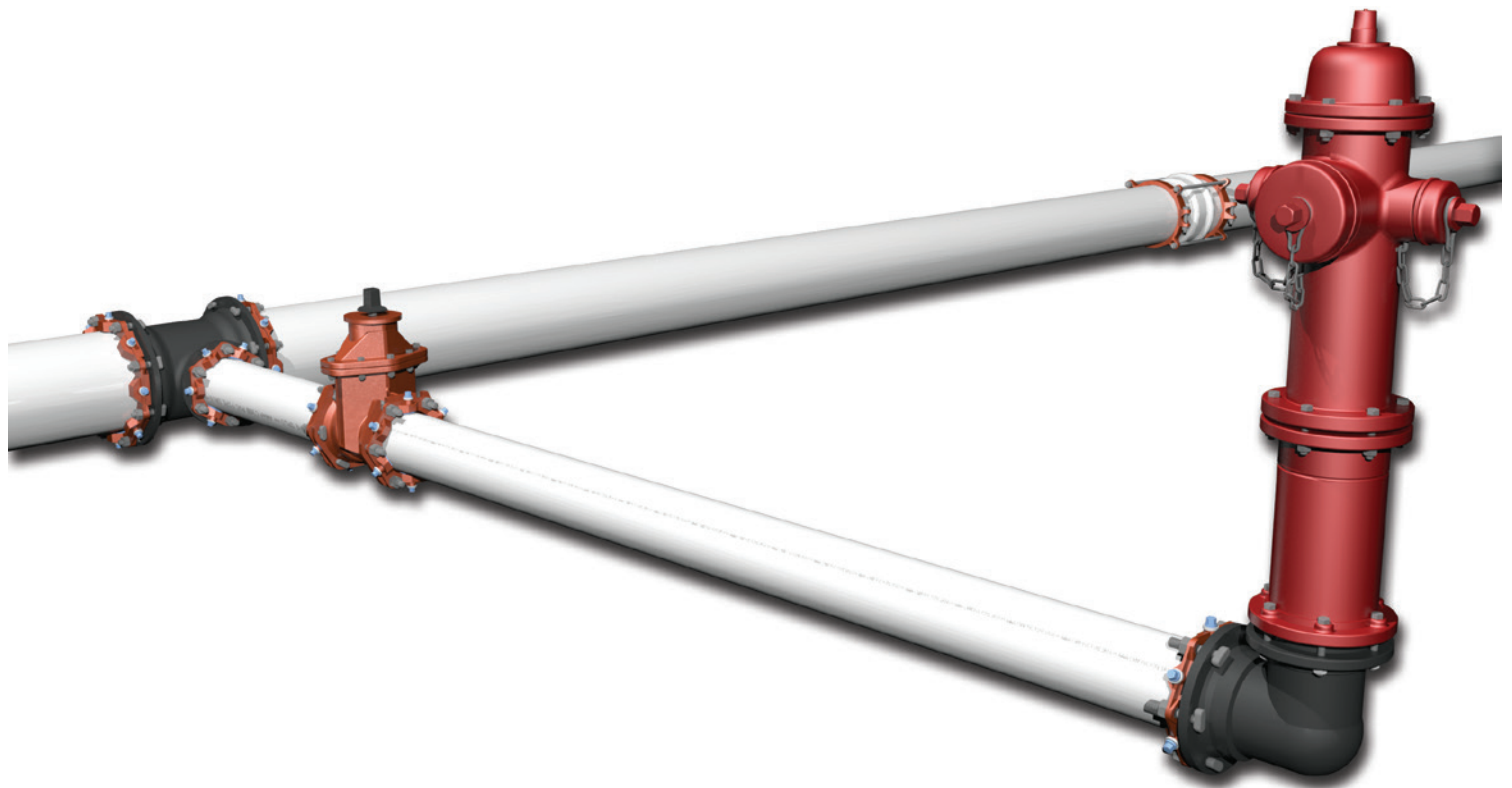
- For restraining plain end PVC pipe at mechanical joint fittings and appurtenances
- Sizes 3 inch through 36 inch  
Sizes 42 inch through 54 inch accommodated by Series 2200
- MEGA-BOND® Restraint Coating System  
For more information on MEGA-BOND, refer to [www.ebaa.com](http://www.ebaa.com)
- Constructed of ASTM A536 Ductile Iron
- The mechanical joint follower gland is incorporated into the restraint
- Accommodates full deflection of the mechanical joint on which it is used
- Heavy duty thick wall design
- Support Products Available:
  - Split mechanical Joint style available for 3 inch through 12 inch EBAA Series 2000SV
  - Solid restraint ring harness available for C900-16 PVC pipe bells EBAA Series 2800
  - Split restraint ring harness available for C900-16 PVC pipe bells and PVC fittings EBAA Series 1500, 1600 and 2500
- All 2000PV and related restraint products can be furnished as packaged accessories complete with appropriate restraint, gasket, lubrication and bolting hardware

Nominal Pipe Size	Series Number	Shipping Weight
3	2003PV	7.0
4	2004PV	8.8
6	2006PV	12.1
8	2008PV	16.3
10	2010PV	26.0
12	2012PV	31.4
14	2014PV	47.6
16	2016PV	52.8
18	2018PV	61.8
20	2020PV	70.9
24	2024PV	92.9
30	2030PV	128.5
36	2036PV	161.3
42	2242*	652.0
48	2248*	711.1
54	2254*	1,085.6

\*Restraint for pipe size 42 inch and greater, please refer to Series 2200 Brochure found at [www.ebaa.com](http://www.ebaa.com).

For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with either AWWA C600 or ASTM D2774.

U.S. Patent No.  
4627775 4896903 5071175



### Series 2000PV:

#### **Mechanical Joint Restraint Gland for use With AWWA C900 or IPS Outside Diameter PVC Pipe**

The 2000PV MEGALUG Mechanical Joint Restraint is the fastest and most economical method of restraining PVC pipe to mechanical joints. Now the need for costly concrete thrust blocks and corrodible steel tie rods is eliminated. It can be used in straight alignment or at the preset deflection recommended for mechanical joints.

The 2000PV was the first PVC joint restraint to be tested to UNI-B-13, Underwriters Laboratories, and Factory Mutual.

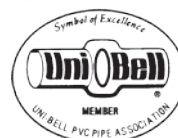
Tested to and meets the requirements of ASTM F 1674-96 'Standard' Test Method for joint restraint products use with PVC pipe through 24 inch size.

UL Listed in the four through twelve inch sizes for joining UL Listed ductile iron fittings to UL Listed, Class 150 PVC pressure pipe. The maximum allowable joint deflection is five degrees.

Factory Mutual approved for use on DR18 PVC pipe in four through twelve inch sizes.



**ASTM  
F1674**



### **The 2000PV MEGALUG Concept**

EBAA Iron started manufacturing joint restraint products for PVC pipe in the early 1980s. The testing of early prototypes of various configurations of restraints on large diameter PVC pipe indicated that a restraint device must be capable of consistently and reliably gripping the pipe. If not, the restraint can slip under pressure, resulting in a sudden impact, and cause the pipe to burst. Armed with this background knowledge and an appreciation for the capabilities of PVC pipe, EBAA purposefully deviated from what many in the industry once considered to be the 'only' way to grip PVC pipe. This led to development of the Series

2000PV MEGALUG Mechanical Joint Restraint for PVC pipe.

The design of the 2000PV incorporates the gripping mechanism into the design of the mechanical joint gland and utilizes a simple two part assembly process. The first step involves assembling the joint the same as any standard mechanical joint. The assembly procedure we recommend is that established in AWWA C600. The second is the actuation of the restraint.

## Three Testing Methods

The design philosophy behind the 2000PV joint restraint is that the pipe with the restraint should be capable of being tested to the same minimum requirements of the pipe alone. In doing so, the restraint is shown to have no detrimental effect on the pipe and will have the same pressure rating and safety factor as the pipe on which it is used. To that end the 2000PV has been subjected to hundreds of static and cyclic pressure tests to demonstrate the performance and reliability of the restraint.

One of the primary tests of PVC is its quick burst strength. For pipe meeting the requirements of AWWA C900-16 and ASTM 2241, the minimum quick burst requirement for the hoop stress is 6,400 PSI. For DR18, pipe pressure is 755 PSI.

The second test is sustained pressure test at a hoop stress of 4,200 PSI. For DR18 pipe, that pressure is 500 PSI.

Third, a conservative cyclic pressure surge design for the pipe exists in the form of Vinson Equation.

The 2000PV restraint has been tested to over one million cycles to the peak pressures predicted by the Vinson Equation for that number of cycles.



## Series 2000PV Takes the Load

On April 11, 1997 EBAA Iron performed a remarkable force demonstration of their Series 2000PV joint restraint. With the use of EBAA's Series 2000PV using standard mechanical joint installation on 12 inch PVC pipe, and a 80 Ton Motor Crane, EBAA Iron lifted a D7 Caterpillar Track Type Tractor weighing in at 50,350 lbs. Along with this, the Series 2000PV has been tested to over 700 PSI. Concluding that EBAA's Series 2000PV MEGALUG can take the load.



# Mechanical Joint Restraint for AWWA PVC Pipe Sample Specification

(The text of the specification below can be downloaded as a Microsoft® Word Doc from our website [www.ebaa.com](http://www.ebaa.com))

Restraint devices for mechanical joint fittings and appurtenances conforming to either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A2153, shall conform to the follow:

## Design

Restraint devices for nominal pipe sizes 3 inch through 36 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10.

The devices shall have a working pressure rating equal to that found in the most current product brochure. Ratings are for water pressure and must include a minimum safety factor of 2:1 in all sizes.

## Material

Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536. Gland body in sizes 30 inch and larger shall be cast from grade 70-50-05.

Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) Specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.

## Traceability

An identification number consisting of year, day, plant and shift (YYDDD) (plant designation) (Shift number), shall be cast into each gland body. All physical and chemical test results shall be recorded such that they can

be accessed via the identification number on the casting. These Material Traceability Records (MTR's) are to be made available, in hard copy, to the purchaser that requests such documentation and submits his gland body identification number.

Production pieces that are too small to accommodate individual numbering, such as fasteners and wedges, shall be controlled in segregate inventory until such time as all quality control tests are passed. These component parts may then be released to a general inventory for final assembly and packaging. All components shall be manufactured and assembled in the United States. The purchaser shall, with reasonable notice, have the right to plant visitation at his/her expense.

## Installation

Mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly. Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.

## Approvals

Mechanical Joint Restraints shall be Listed by Underwriters Laboratories in the 4 inch through 12 inch sizes. Mechanical Joint Restraints shall be Factory Mutual Approved in the 4 inch through 12 inch sizes. Mechanical Joint Restraints, 4 inch

through 24 inch, shall meet or exceed the requirements of ASTM F1674 of the latest revision.

Mechanical joint restraint shall be Series 2000PV produced by EBAA Iron Inc. or approved equal.

## MEGA-BOND® Restraint Coating System

All wedge assemblies and related parts shall be processed through a phosphate wash, rinse and drying operation prior to coating application. The coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.

All casting bodies shall be surface pretreated with a phosphate wash, rinse and sealer before drying. The coating shall be electrostatically applied and heat cured. The coating shall be a polyester based powder to provide corrosion, impact and UV resistance.

The coating system shall be MEGA-BOND by EBAA Iron, Inc. or approved equal. Requests for approved equal must submit coating material and process details for review prior to bid.

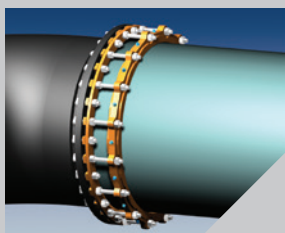
For more information regarding MEGA-BOND, refer to the MEGA-BOND brochure or visit [www.ebaa.com](http://www.ebaa.com).

## Support Products

for more information concerning these products, please consult the catalog or [www.ebaa.com](http://www.ebaa.com)

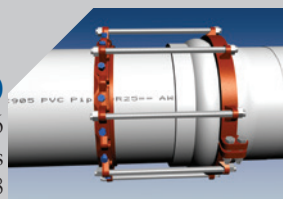
### Series 2200

MEGALUG® Restraint for C900-16 PVC Pipe at Mechanical Joint Fittings  
Sizes 30 and 48 inch



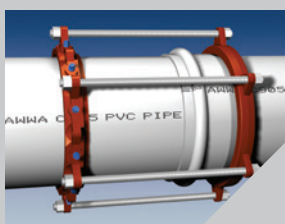
### Series 2500

MEGALUG® Restraint for C900-16 PVC Pipe at PVC Fittings  
Sizes 4 inch through 48



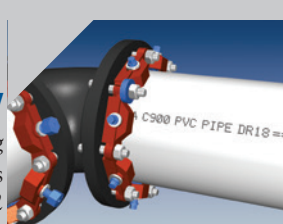
### Series 2800

MEGALUG® Restraint Harness for C900-16 PVC Pipe  
Sizes 14 inch through 48  
Sizes 4 through 12 accommodated by either Series 1500 or 1600



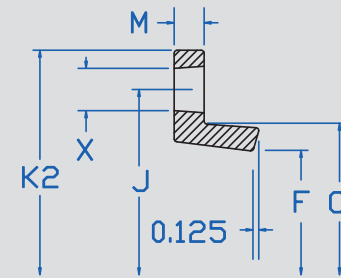
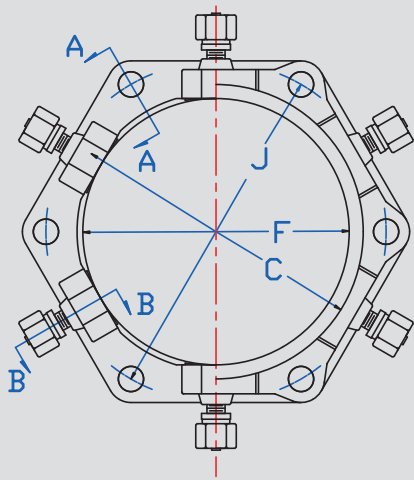
### Series 2000SV

Split MEGALUG® Restraint for existing C900 PVC Pipe at Ductile Iron Fittings  
Sizes 4 inch through 12

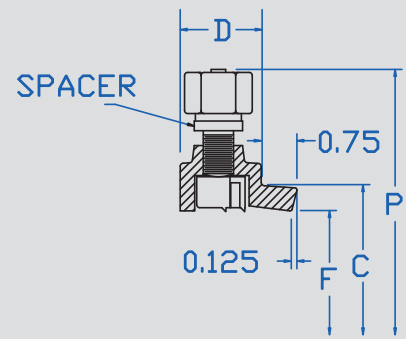


## Series 2000PV Submittal Reference Drawing

EBAA IRON



SECTION A-A



SECTION B-B

MADE IN USA

### Submittal Reference Drawing Dimensions (in.)

Nominal Pipe Size	Series Number	C	D	F	M	P	P <sup>†</sup>	X	J	K2	Wedge Qty	Bolt Qty	Weight (lbs.)
3	2003PV	4.84	1.55	3.60	0.50	9.8	8.6	3/4	6.19	7.69	4	4	7.0
4	2004PV	5.92	1.68	4.90	0.50	10.5	9.5	7/8	7.50	9.13	4	4	8.8
6	2006PV	8.02	1.68	7.00	0.50	13.0	12.1	7/8	9.50	11.13	6	6	12.1
8	2008PV	10.17	1.68	9.15	0.62	14.5	13.6	7/8	11.75	13.38	6	6	16.3
10	2010PV	12.22	2.10	11.20	0.62	17.0	16.0	7/8	14.00	15.63	8	8	26.0
12	2012PV	14.32	2.10	13.30	0.75	19.0	18.1	7/8	16.25	17.88	8	8	31.4
14	2014PV	16.40	2.25	15.49	0.88	21.7	20.9	7/8	18.75	20.38	10	10	47.6
16	2016PV	18.50	2.25	17.58	0.88	23.8	23.0	7/8	21.00	22.63	12	12	52.8
18	2018PV	20.60	2.25	19.68	1.13	25.9	25.1	7/8	23.25	24.88	12	12	61.8
20	2020PV	22.70	2.25	21.79	1.25	28.0	27.2	7/8	25.50	27.13	14	14	70.9
24	2024PV	26.90	2.75	25.99	1.42	32.3	31.5	7/8	30.00	31.63	16	16	92.9
30	2030PV	33.29	2.70	32.22	1.50	38.5	37.7	1 1/8	36.88	39.12	20	20	128.5
36	2036PV	39.59	2.70	38.52	1.50	44.8	44.0	1 1/8	43.75	46.00	24	24	161.3
42	2242	Submittal information for pipe sizes 42 inch and greater can be found in the Series 2200 Brochure.											
48	2248	Submittal information for pipe sizes 42 inch and greater can be found in the Series 2200 Brochure.											
54	2254	Submittal information for pipe sizes 42 inch and greater can be found in the Series 2200 Brochure.											

### Pressure Ratings (PSI)

NOTE: Dimensions are in inches (±1%) and are subject to change without notice.

P<sup>†</sup>: Outside Diameter with "Twist-Off" nuts twisted off.

Nominal Pipe Size	Series Number	Ratings for Ordinary Water Works w/Transient surges only										Ratings for Peak Pressures used in Sewage Force Mains and other installations designed for Cyclic Surges of 1-Mill. Cycles					
		DR14	DR18	DR21	DR25	DR32.5	DR41	DR51	SDR17	SDR21	SDR26	DR14	DR18	DR25	SDR17	SDR21	SDR26
3	2003PV	305	235	-	165	-	-		250	200	160	244	188	132	200	160	120
4	2004PV	305	235	-	165	-	-	-	250	200	160	244	188	132	200	160	120
6	2006PV	305	235	-	165	-	-	-	250	200	160	244	188	132	200	160	120
8	2008PV	305	235	-	165	-	-	-	250	200	160	244	188	132	200	160	120
10	2010PV	305	235	-	165	-	-	-	250	200	160	244	188	132	200	160	120
12	2012PV	305	235	-	165	-	-	-	250	200	160	244	188	132	200	160	120
14	2014PV	305	235	-	165	125	100	-	-	-	-	-	-	-	-	-	-
16	2016PV	235	235	-	165	125	100	-	-	-	-	-	-	-	-	-	-
18	2018PV	-	200	165	165	125	100	-	-	-	-	-	-	-	-	-	-
20	2020PV	-	200	-	165	125	100	-	-	-	-	-	-	-	-	-	-
24	2024PV	-	235	-	165	125	100		-	-	-	-	-	-	-	-	-
30	2030PV	*	200	165	165	125	*	*	-	-	-	-	-	-	-	-	-
36	2036PV	-	-	125	125	125	*	*	-	-	-	-	-	-	-	-	-

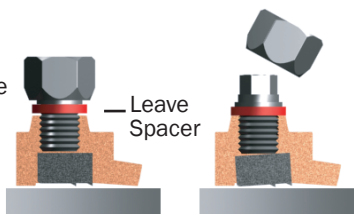
\* Refer to Series 2200 Product Brochure found either in our Catalog or at [www.ebaa.com](http://www.ebaa.com)

For applications or pressures other than those shown, please contact EBAA for assistance.

# Spacer Instructions

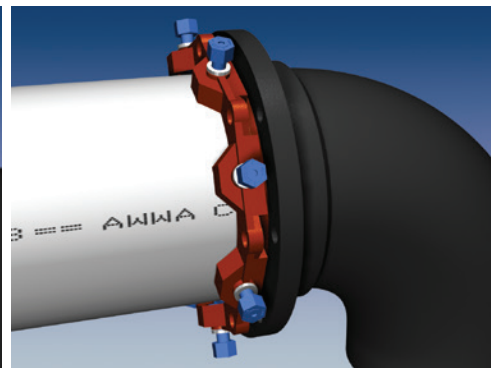
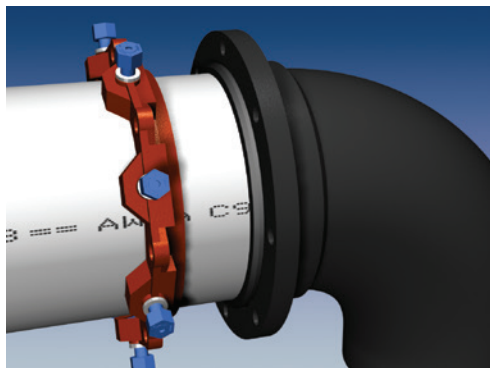
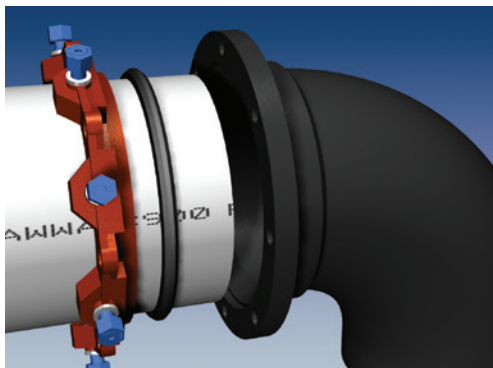
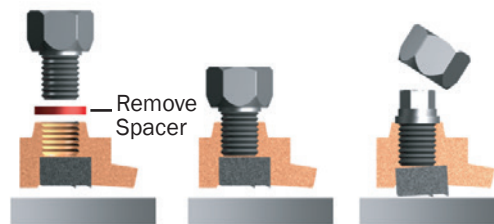
## Ductile Iron or C900 PVC Pipe Sizes

For installation on **C900 PVC** pipe, use as received and install per instructions.



## ASTM 2241 PVC Pipe Sizes (IPS O.D.)

For installation on **ASTM 2241** sized pipe, remove spacers and replace screws. Install per instructions.

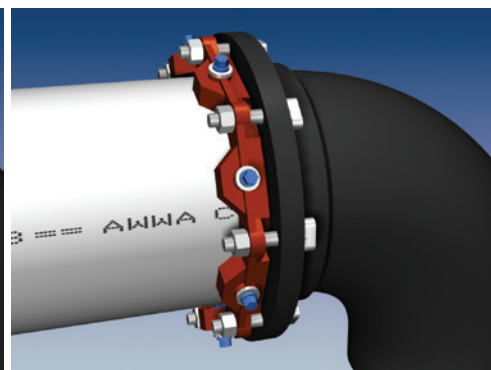
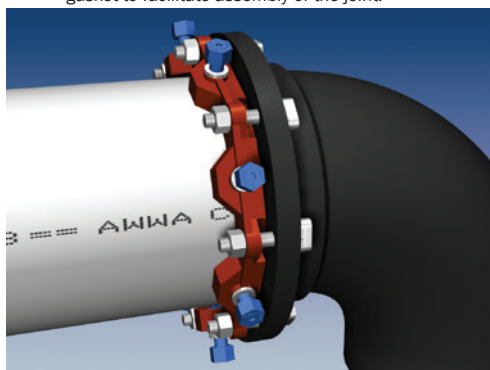
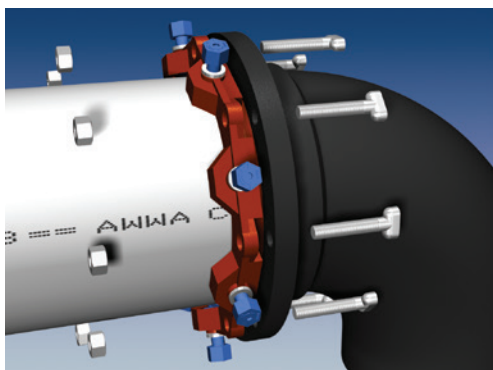


1. Identify the pipe. The 2000PV is for use with PVC and HDPE pipe. The 4 inch through 12 inch size may be used on C900, and IPS PVC pipe as well as C906 HDPE pipe. Check to see if the spacers under the screws are in place. If the pipe is C900 or is ductile iron O.D., proceed with spacers in place. If the pipe is IPS O.D., remove the spacers. Since 3 inch and 14 inch through 24 inch restraints are only used with one pipe diameter, no spacers are used.

2. Clean the socket and the plain end. Lubrication and additional cleaning should be provided by brushing both the gasket and plain end with soapy water or an approved pipe lubricate meeting the requirements of ANSI/AWWA C111/A21.11 just prior to slipping the gasket onto the plain end for joint assembly. Place the gland on the plain end with the lip extension toward the plain end; follow by the gasket with the narrow edge of the gasket toward the plain end [The gasket provided may be the EBAA-Seal™ Improved Mechanical Joint Gasket for C900 PVC Pipe. This gasket is bi-directional having no front or back. For ASTM 2241 PVC Pipe Sizes (IPS O.D.) a Transition Gasket must be used. The use of a pipe wall stiffening insert is required on High Density Polyethylene pipe.].

3. Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.
4. Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert bolts and hand-tighten nuts. Make deflection after joint assembly but before tightening bolts.

NOTE: In cold weather it is preferable to warm the gasket to facilitate assembly of the joint.

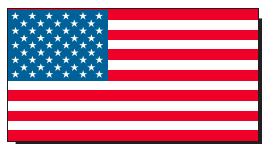


5. Tighten the bolts to the normal range of bolt torque [45-60 ft-lbs for 3 inch, 75-90 ft-lbs for 4 inch through 24 inch, 100-120 ft-lbs for 30 inch and 36 inch, and 120-150 ft-lbs for 42 inch and 48 inch.] while at all times maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This can be accomplished by partially tightening the bottom bolt first, then the top bolt, next the bolts at either side, finally the remaining bolts. Repeat the process until all bolts are within the appropriate range of torque. In large sizes (30-48 inch), five or more repetitions may be required. The use of a torque-indicating wrench will facilitate the procedure.

6. Tighten the torque limiting twist-off nuts in a clockwise direction (direction indicated by arrow on top of nut) until all wedges are in firm contact with the pipe surface. Continue tightening in an alternating manner until all of the nuts have been twisted off.

\*These steps are requirements of AWWA C600.

7. If removal is necessary, utilize the  $\frac{5}{8}$  inch hex heads provided. If reassembly is required, assemble the joint in the same manner as above; tighten the screws to 60 to 80 ft-lbs. If the Series 2000PV restraint is removed from the pipe, be sure that all of the screws, spacers (if required), and wedges are in place before the restraint is reassembled.



**EBAA IRON Sales, Inc.**

P.O. Box 857, Eastland, TX 76448

Tel: (254) 629-1731

Fax: (254) 629-8931

(800) 433-1716 within US and Canada

contact@ebaa.com

www.ebaa.com

Members of...





You can't beat the system.®

# Submittal Package

# PVC Schedule 40

# DWV System

(Updated May 16, 2019)

SUBMITTAL PACKAGE

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# Table of Contents for PVC Schedule 40 DWV Submittal Package

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# SUBMITTAL FOR CHARLOTTE PIPE®

## PVC SCHEDULE 40 SOLID WALL PIPE AND PVC DWV FITTING SYSTEM

Date: \_\_\_\_\_

Job Name: \_\_\_\_\_

Location: \_\_\_\_\_

Engineer: \_\_\_\_\_

Contractor: \_\_\_\_\_

### ► Scope:

This specification covers PVC Schedule 40 solid wall pipe and PVC DWV fittings used in sanitary drain, waste and vent (DWV), sewer and storm drainage applications. This system is intended for use in non-pressure applications where the operating temperature will not exceed 140° F.

### ► Specification:

Pipe shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784. PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785 and ASTM D 2665. Injection molded PVC DWV fittings shall conform to ASTM D 2665. Fabricated PVC DWV fittings shall conform to ASTM F 1866. All pipe and fittings shall be manufactured in the United States. All systems shall utilize a separate waste and vent system. Pipe and fittings shall conform to NSF International Standard 14.

### ► Installation:

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds. The system shall be hydrostatically tested after installation.

**WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

### ► Referenced Standards:

- ASTM D 1784: Rigid Vinyl Compounds
- ASTM D 1785: PVC Plastic Pipe, Schedule 40
- ASTM D 2665: PVC Drain, Waste and Vent Pipe and Fittings
- ASTM D 2564: Solvent Cements for PVC Pipe and Fittings
- ASTM D 2321: Underground Installation of Thermoplastic Pipe (non-pressure applications)
- ASTM F 656: Primers for PVC Pipe and Fittings
- ASTM F 1668: Procedures for Buried Plastic Pipe
- ASTM F 1866: Fabricated PVC DWV Fittings
- NSF Standard 14: Plastic Piping Components and Related Materials



### PVC Schedule 40 DWV Pipe

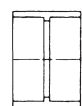
#### PVC Schedule 40 DWV Pipe

NSF

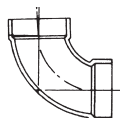
PVC SCHEDULE 40 (WHITE)		PLAIN END		PVC 1120		ASTM D 2665
PART NO.	NOM. SIZE	UPC # 611942-	QTY. PER SKID	AVG. OD (IN.)	MIN. WALL (IN.)	WT. PER 100 FT. (LBS.)
PVC 7100*	1 1/4"x10'	03945	2120'	1.660	.140	42.4
PVC 7100*	1 1/4"x20'	03946	4240'	1.660	.140	42.4
PVC 7112*	1 1/2"x10'	03947	1650'	1.900	.145	51.8
PVC 7112*	1 1/2"x20'	03948	3300'	1.900	.145	51.8
PVC 7200*	2"x10'	03949	1110'	2.375	.154	69.5
PVC 7200*	2"x20'	03950	2220'	2.375	.154	69.5
PVC 7300*	3"x10'	03951	1040'	3.500	.216	144.2
PVC 7300*	3"x20'	03952	920'	3.500	.216	144.2
PVC 7400†	4"x10'	03953	600'	4.500	.237	205.5
PVC 7400†	4"x20'	03954	1340'	4.500	.237	205.5
PVC 7500†	5"x20'	04837	760'	5.563	.258	272.5
PVC 7600†	6"x10'	03955	330'	6.625	.280	361.2
PVC 7600†	6"x20'	03956	660'	6.625	.280	361.2
PVC 7800†	8"x10'	13087	180'	8.625	.322	543.6
PVC 7800†	8"x20'	03958	360'	8.625	.322	543.6
PVC 7910†	10"x20'	03959	220'	10.750	.365	770.7
PVC 7912†	12"x20'	03961	120'	12.750	.406	1019.0
PVC 7914†	14"x20'	04862	60'	14.000	.437	1205.0
PVC 7916†	16"x20'	04918	60'	16.000	.500	1575.7

\* Dual Marked ASTM D 1785 &amp; ASTM D 2665.

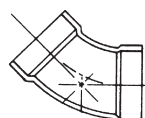
† Triple Marked ASTM D 1785 &amp; ASTM D 2665 &amp; ASTM F 480.



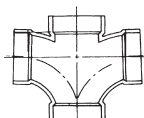
Coupling



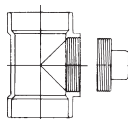
Quarter Bend



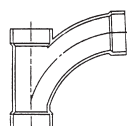
Eighth Bend



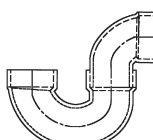
Double Sanitary Tee



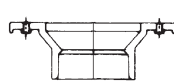
Cleanout Tee w/Plug



Combination Wye &amp; Eighth Bend



P-Trap



Closet Flange

Not all fitting patterns shown

Charlotte Pipe and Foundry Company • P.O. Box 35430 Charlotte, NC 28235 • (800) 438-6091 • www.charlottepipe.com

Charlotte Pipe and Charlotte Pipe and Foundry Company are registered trademarks of Charlotte Pipe and Foundry Company.

# Product Certification



This is to certify that all Plastic Pipe and Fittings manufactured by Charlotte Pipe and Foundry Company are manufactured in the United States and conform to the following standards:

## **PVC SCH. 40 SOLID WALL PIPE**

ASTM D 1784, ASTM D 1785, ASTM D 2665  
FHA UM 79a  
FEDERAL SPECIFICATION L-P-320a  
NSF STANDARD 14 AND 61

## **PVC SCH. 40 DWV CELLULAR CORE PIPE**

ASTM D 4396, ASTM F 891  
NSF STANDARD NO. 14

## **PVC SCH. 40 DWV FITTINGS**

ASTM D 1784, ASTM D 2665, ASTM D 3311,  
ASTM F1866  
FHA UM 79a  
FEDERAL SPECIFICATION L-P-320a  
NSF STANDARD NO. 14

## **ConnecTite® PUSH-FIT DWV FITTINGS**

ASME A112.4.4, IAPMO IGC 334  
NSF STANDARD NO. 14

## **PVC SDR-21 AND SDR-26 PRESSURE PIPE**

ASTM D 1784, ASTM D 2241  
NSF STANDARD NO. 14 AND 61

## **PVC SCH. 40 PRESSURE FITTINGS**

ASTM D 1784, ASTM D 2466  
NSF STANDARD 14 AND 61

## **PVC SCH. 40 WELL CASING PIPE**

ASTM D 1784, ASTM F 480  
NSF STANDARD NO. 14 AND 61

## **PVC SCH. 80 PIPE**

ASTM D 1784, ASTM D 1785  
NSF STANDARD NO. 14 AND 61

## **PVC SCH. 80 FITTINGS**

ASTM D 1784, ASTM D 2467  
ASTM D 2464 ASTM F 1970  
NSF STANDARD NO. 14 AND 61

## **PVC SDR 35 SEWER MAIN PIPE**

ASTM D 1784, ASTM D 3034, SDR 35  
ASTM D 3212, ASTM F 477

## **PVC SEWER AND DRAIN PIPE**

ASTM D 1784, ASTM D 2729

## **PVC THIN WALL PIPE & FITTINGS**

ASTM D 1784, ASTM D 2949  
NSF STANDARD NO. 14

## **CPVC FLOWGUARD GOLD® CTS PIPE & FITTINGS**

ASTM D 1784, ASTM D 2846  
FHA UM-61a  
NSF STANDARD NO. 14 AND 61  
CSA LISTED ON SPECIFIED ITEMS

## **CPVC CHEMDRAIN® SCH. 40 PIPE & FITTINGS**

ASTM D 1784, ASTM F 2618  
NSF STANDARD 14

## **ABS SCH. 40 DWV CELLULAR CORE PIPE**

ASTM D 3965, ASTM F 628  
NSF STANDARD NO. 14

## **ABS PLUS® SCH. 40 DWV CELLULAR CORE PIPE**

ASTM D 3965, ASTM D 4396, ASTM F 1488

## **ABS SCH. 40 DWV FITTINGS**

ASTM D 3965, ASTM D 2661, ASTM D 3311  
FHA UM 79a  
FEDERAL SPECIFICATION L-P-322b  
NSF STANDARD NO. 14

CHARLOTTE PIPE AND FOUNDRY COMPANY

## Physical Properties of Charlotte Pipe® ABS and PVC Materials\*

PROPERTY	UNITS	ABS	ASTM NO.	PVC	ASTM NO.
Specific Gravity	g/cc	1.05	D 792	1.40	D 792
Tensile Strength (73°F) Minimum	Psi	4,500	D 638	7,000	D 638
Modulus of Elasticity in Tension (73°F) Minimum	Psi	240,000	D 638	400,000	D 638
Flexural Strength (73°F)	Psi	10,585	D 790	14,000	D 790
Izod Impact (notched at 73°F) Minimum	ft lb/ in. of notch	6.00	D 256	0.65	D 256
Hardness (Durometer D)		70	D 2240	80 ± 3	D 2240
Hardness (Rockwell R)		100	D 785	110 - 120	D 785
Compressive Strength (73°F)	Psi	7,000	D 695	9,600	D 695
Hydrostatic Design Stress	Psi	N/A		2,000	D 1598
Coefficient of Linear Expansion	in./ in./ °F	$5.5 \times 10^{-5}$	D 696	$3.0 \times 10^{-5}$	D 696
Heat Distortion Temperature at 264 psi Minimum	degrees F	180	D 648	158	D 648
Coefficient of Thermal Conductivity	BTU/ hr/sq ft/ °F/ in.	1.1	C 177	1.2	C 177
Specific Heat	BTU/ °F/lb	0.35	D 2766	0.25	D 2766
Water Absorption (24 hrs at 73°F)	% weight gain	0.40	D 570	.05	D 570
Cell Classification - Pipe		42222	D 3965	12454	D 1784
Cell Classification - Fittings		32222	D 3965	12454	D 1784
Burning Rate				Self Ext.	D 635

\*Above data is based upon information provided by the raw material manufacturers. It should be used only as a recommendation and not as a guarantee of performance.



## Solvent Cements

Pipe and Fitting System	Diameter (in.)	Solvent Cement Standard	Cement Color (common usage, check local code)	Description	Primer (common usage, check local code)
ABS DWV	1½ - 6	ASTM D 2235	Black	Regular or Medium-Bodied	Not Recommended
ABS Plus® Foam Core Pipe	1½ - 4	ASTM D 2235	Black	Regular or Medium-Bodied	Not Recommended
FlowGuard Gold® CTS CPVC	½ - 2	ASTM F 493	Yellow	Regular-Bodied	Optional
CPVC Sch. 80	½ - 2	ASTM F 493	IPS 714 or Oatey CPVC Heavy Duty Orange	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade
CPVC Sch. 80	2½ - 8	ASTM F 493	IPS 714 or Oatey CPVC Heavy Duty Orange	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade
CPVC Sch. 40 ChemDrain	1¼ - 8	ASTM F 493	ChemDrain Mustard Yellow (Required)	Heavy-Bodied	6" and larger: IPS P-70 or Oatey Industrial Grade required
PVC DWV or Sch. 40 Pressure	½ - 4	ASTM D 2564	Clear	Regular or Medium-Bodied	Required ASTM F 656
PVC DWV or Sch. 40 Pressure	6 - 16	ASTM D 2564	Clear or Grey	Medium or Heavy-Bodied	Required ASTM F 656
PVC Sch. 80	¼ - 2	ASTM D 2564	Grey	Medium or Heavy-Bodied	Required ASTM F 656
PVC Sch. 80	2½ - 16	ASTM D 2564	Grey	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade

**NOTICE:** Aerosol or spray-on type primers/solvent cements are not recommended. The practice of aggressively scouring the pipe and fittings with both primer and solvent cement is an integral part of the joining process. Not working the primer or solvent cement into the pipe or fitting could cause potential system failure or property damage.



## WARNING

Primers and cements are extremely flammable and may be explosive. Do not store or use near open flame or elevated temperatures, which may result in injury or death.

- Solvent fumes created during the joining process are heavier than air and may be trapped in newly installed piping systems.
- Ignition of the solvent vapors caused by spark or flame may result in injury or death from explosion or fire.
- Read and obey all manufacturers' warnings and any instructions pertaining to primers and cements.
- Provide adequate ventilation to reduce fire hazard and to minimize inhalation of solvent vapors when working with cements, primers and new piping systems.

## Applicator Types

Nominal Pipe Size (in.)	Applicator Type		
	Dauber	Brush Width (in.)	Swab Length (in.)
¼	A	½	NR
⅜	A	½	NR
½	A	½	NR
¾	A	1	NR
1	A	1	NR
1¼	A	1	NR
1½	A	1 - 1½	NR
2	A	1 - 1½	NR
2½	NR	1½ - 2	NR
3	NR	1½ - 2½	NR
4	NR	2 - 3	3
6	NR	3 - 5	3
8	NR	4 - 6	7
10	NR	6 - 8	7
12	NR	6 - 8	7
14	NR	7 - 8	7
16	NR	8+	8

A = Acceptable

NR = Not Recommended

**NOTICE:** Rollers are not recommended.

# Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals.

**NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: [www.charlottepipe.com](http://www.charlottepipe.com)

## CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

Number = Maximum Recommended Temp. (°F)\*\*      CF = Consult Factory      NR = Not Recommended      • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Acetaldehyde .....	NR	NR	NR	NR	200	NR
Acetamide .....	120	• •	• •	NR	200	NR
Acetate Solvent, Crude .....	NR	NR	NR	NR	200	NR
Acetate Solvent, Pure .....	NR	NR	NR	NR	200	NR
Acetic Acid, 10% .....	120	140‡	180‡	73	200	NR
Acetic Acid, 20% .....	NR	140‡	180‡	NR	200	NR
Acetic Acid, 50% .....	NR	NR	NR	NR	140	NR
Acetic Acid, 80% .....	NR	NR	NR	NR	140	NR
Acetic Acid, Glacial .....	NR	NR	NR	NR	73	NR
Acetic Anhydride .....	NR	NR	NR	NR	NR	73
Acetone .....	NR	NR	NR	NR	200	NR
Acetonitrile .....	NR	NR	NR	NR	NR	73
Acetophenone .....	NR	NR	NR	NR	140	NR
Acetyl Chloride .....	NR	NR	NR	185	NR	NR
Acetylene .....	140§	140§	180§	200	200	73
Acetyl Nitrile.....	NR	NR	NR	NR	NR	NR
Acrylic Acid .....	NR	NR	NR	NR	NR	NR
Acrylonitrile.....	NR	73	NR	NR	100	NR
Adipic Acid (Sat'd) .....	• •	140	180	160	140	140
Alcohol, Allyl .....	NR	NR	NR	73	73	73
Alcohol, Amyl.....	NR	NR	NR	160	200	140
Alcohol, Benzyl .....	NR	NR	NR	140	NR	NR
Alcohol, Butyl .....	NR	100	NR	200	140	140
Alcohol, Diacetone .....	NR	NR	NR	NR	70	NR
Alcohol, Ethyl (Ethanol) Up to 5% .....	73	140	180	200	200	160
Alcohol, Ethyl (Ethanol) Over 5%.....	NR	140	180	NR	200	140
Alcohol, Hexyl (Hexanol) .....	NR	100	NR	200	NR	NR
Alcohol, Isopropyl (Isopropanol).....	NR	140	NR	160	160	73
Alcohol, Methyl (Methanol).....	NR	140	140	NR	160	160
Alcohol, Octyl (1-n-Octanol) .....	NR	100	73	73	NR	NR
Alcohol, Propyl (Propanol).....	NR	140	NR	200	200	140
Allyl Alcohol .....	NR	NR	NR	100	70	73
Allyl Chloride .....	NR	NR	NR	NR	NR	NR
Alums .....	140	140	180	200	100	100
Aluminum Acetate.....	140	• •	180	NR	200	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

\*\* Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Aluminum Ammonium .....	• •	140	180	200	200	160
Aluminum Chloride.....	140	140	180	200	200	160
Aluminum Chrome .....	• •	140	180	200	200	160
Aluminum Fluoride .....	NR	73	180	200	200	160
Aluminum Hydroxide .....	140	140‡	180‡	200	200	100
Aluminum Nitrate .....	140	140	180	100	200	100
Aluminum Oxychloride .....	140	140	180	NR	• •	• •
Aluminum Potassium Sulfate .....	140	140	180	200	200	160
Aluminum Sulfate .....	140	140	180	185	200	140
Amines, General .....	NR	NR	NR	NR	NR	NR
Ammonia, Aqueous.....	NR	140	NR	NR	175	150
Ammonia, Gas .....	140§	140§	NR	NR	140	140
Ammonia, Aqua, 10% .....	• •	73	NR	NR	140	• •
Ammonia, (25% Aqueous Solution) .....	140	NR	NR	NR	140	• •
Ammonia Hydroxide .....	73	100‡	NR	NR	175	150
Ammonia Liquid (Concentrated) .....	NR	NR	NR	NR	140	73
Ammonium Acetate .....	• •	140	180	73	140	140
Ammonium Benzoate.....	• •	• •	180	• •	• •	• •
Ammonium Bifluoride .....	• •	140	180	200	200	• •
Ammonium Bisulfide.....	140	140	180	• •	• •	• •
Ammonium Carbonate .....	140	140	180	200	200	140
Ammonium Chloride .....	120	140	180	200	200	160
Ammonium Citrate .....	120	• •	180	NR	73	73
Ammonium Dichromate .....	120	73	• •	NR	73	100
Ammonium Fluoride, 10% .....	120	140	180	140	200	100
Ammonium Fluoride, 25% .....	120	73	180	140	200	73
Ammonium Hydroxide, <10% .....	73	140‡	NR	70	200	160
Ammonium Hydroxide, >10% .....	73	73‡	NR	NR	200	150
Ammonium Metaphosphate.....	120	140	180	200	200	• •
Ammonium Nitrate .....	120	140	180	100	200	160
Ammonium Persulphate .....	120	140	73	• •	200	73
Ammonium Phosphate .....	120	140	73	185	200	140
Ammonium Sulfamate .....	120	• •	180	• •	• •	• •
Ammonium Sulfate .....	120	140	180	200	200	160
Ammonium Sulfide .....	120	73	180	200	200	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Ammonium Thiocyanate .....	120	140	180	185	• •	73
Ammonium Tartrate.....	120	140	180	• •	• •	• •
Amyl Acetate .....	NR	NR	NR	NR	73	NR
Alcohol, Amyl.....	NR	NR	NR	185	200	140
Amyl Chloride .....	NR	NR	NR	200	NR	NR
Aniline .....	NR	NR	NR	NR	140	NR
Aniline Chlorohydrate.....	NR	NR	• •	• •	• •	• •
Aniline Hydrochloride.....	NR	NR	NR	185	• •	NR
Anthraquinone Sulfonic Acid.....	• •	140	• •	200	• •	• •
Anti-Freeze (See Alcohols, Glycols & Glycerin)						
Antimony Trichloride .....	• •	140	180	185	140	140
Aqua Regia.....	NR	NR	73	100	NR	NR
Aromatic Hydrocarbons .....	NR	NR	NR	73	NR	NR
Argon.....	• •	• •	• •	200	200	100
Arsenic Acid .....	• •	140	73	200	185	NR
Aryl Sulfonic Acid .....	• •	140	• •	185	140	• •
Asphalt .....	NR	NR	NR	180	NR	NR
Barium Carbonate .....	120	140	180	200	200	160
Barium Chloride .....	120	140	180	200	200	160
Barium Hydroxide .....	120	140	180	200	180	150
Barium Nitrate.....	120	73	180	200	200	160
Barium Sulfate.....	120	140	180	200	200	160
Barium Sulfide .....	120	140	180	200	140	160
Beer .....	120	140	180	200	200	140
Beet Sugar Liquids .....	120	140	180	185	200	160
Benzaldehyde .....	NR	NR	NR	NR	200	NR
Benzalkonium Chloride.....	NR	NR	NR	• •	• •	• •
Benzene .....	NR	NR	NR	150	NR	NR
Benzene, Benzol .....	NR	NR	NR	200	200	• •
Benzene Sulfonic Acid .....	NR	NR	NR	185	NR	100
Benzoic Acid, (Sat'd) .....	140	140	73	• •	NR	160
Benzyl Chloride .....	NR	NR	NR	200	NR	NR
Benzyl Alcohol .....	NR	NR	NR	140	NR	NR
Biodiesel Fuel.....	NR	73	NR	200	NR	NR
Bismuth Carbonate .....	140	140	180	• •	• •	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1  
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Number = Maximum Recommended Temp. (°F)\*\*

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Black Liquor .....	73	140	180	200	180	73
Bleach (12.5% Sodium Hypochlorite) .....	NR	73‡	180‡	200	140	140
Bleach (5.5% Sodium Hypochlorite) .....	73	140‡	140‡	200	140	140
Borax .....	140	140	180	185	140	140
Boric Acid .....	140	140	180	185	140	140
Breeders Pellets, Deriv. Fish.....	140	140	180	• •	• •	• •
Brine, Acid .....	73	73	180	200	200	160
Bromic Acid .....	73	140	180	73	73	• •
Bromine .....	NR	NR	NR	73	NR	NR
Bromine, Liquid .....	NR	NR	NR	73	NR	NR
Bromine, Vapor 25% .....	NR	140	• •	• •	NR	• •
Bromine, Water.....	NR	73	73	185	NR	NR
Bromine, Water, (Sat'd).....	NR	73	73	• •	• •	• •
Bromobenzene .....	NR	NR	NR	150	NR	NR
Bromotoluene.....	NR	NR	NR	NR	NR	NR
Butadiene.....	NR	140	73	185	NR	140
Butane .....	NR	140	• •	185	NR	73
Butanol, Primary.....	NR	NR	NR	• •	• •	• •
Butanol, Secondary .....	NR	NR	NR	• •	• •	• •
Butyl Acetate .....	NR	NR	NR	NR	140	NR
Butyl Alcohol .....	73	100	NR	75	200	140
Butyl Carbitol.....	• •	• •	NR	• •	• •	• •
Butyl Cellosolve (2-butoxyethanol) .....	NR	73	NR	NR	140	• •
Butynediol.....	NR	73	• •	• •	• •	• •
Butylene .....	NR	73	• •	100	NR	NR
Butyl Phenol .....	NR	73	• •	• •	• •	NR
Butyl Pthalate .....	NR	NR	NR	73	• •	• •
Butyl Stearate.....	NR	73	73	200	NR	NR
Butyric Acid .....	NR	NR	NR	73	140	NR
Cadmium Acetate .....	• •	• •	180	• •	• •	• •
Cadmium Chloride.....	• •	• •	180	• •	• •	• •
Cadmium Cyanide.....	• •	140	180	• •	• •	73
Cadmium Sulfate.....	• •	• •	180	• •	• •	• •
Caffeine Citrate .....	• •	73	• •	• •	• •	• •
Calcium Acetate .....	NR	73	180	• •	R	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

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# Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: [www.charlottepipe.com](http://www.charlottepipe.com)

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Calcium Bisulfide .....	NR	NR	180	185	• •	• •
Calcium Bisulfite .....	NR	140	180	185	NR	73
Calcium Carbonate .....	140	140	180	200	200	73
Calcium Chlorate .....	140	140	180	185	140	73
Calcium Chloride .....	140	140	180	200	200	160
Calcium Hydroxide .....	140	140‡	180‡	200	200	70
Calcium Hypochlorite .....	140	140‡	180‡	185	73	• •
Calcium Nitrate .....	140	140	180	200	200	100
Calcium Oxide .....	140	140	180	• •	200	160
Calcium Sulfate .....	140	140	180	200	200	160
Camphor Crystals .....	NR	73	• •	200	200	NR
Cane Sugar Liquors .....	120	140	180	200	200	160
Caprolactam.....	NR	• •	NR	• •	• •	• •
Caprolactone .....	NR	• •	NR	• •	• •	• •
Caprylic Acid .....	NR	• •	NR	• •	• •	• •
Carbitol™ .....	NR	NR	NR	73	140	73
Carbon Bisulfide .....	NR	NR	NR	• •	• •	• •
Carbon Dioxide, Wet .....	140	140	180	200	200	160
Carbon Dioxide, Dry .....	140	140	180	200	200	160
Carbon Disulfide.....	NR	NR	NR	200	NR	NR
Carbonic Acid .....	• •	140	180	200	200	73
Carbon Monoxide .....	140	140	180	200	200	73
Carbon Tetrachloride .....	NR	NR	NR	185	NR	NR
♢Castor Oil.....	NR	140	NR	200	NR	200
Caustic Potash .....	140	140	CF	NR	140	160
Caustic Soda .....	NR	73‡	CF	NR	70	100
Cellosolve .....	NR	73	NR	NR	140	• •
Cellosolve Acetate .....	NR	• •	NR	NR	140	NR
Chloracetic Acid .....	73	73	180	NR	73	• •
Chloracetyl Chloride .....	NR	73	• •	• •	• •	• •
Chloral Hydrate .....	• •	140	180	NR	NR	73
Chloramine.....	NR	73	• •	NR	NR	NR
Chloric Acid, 20% .....	• •	140	180	140	• •	140
Chlorinated Solvents, Wet or Dry .....	NR	NR	NR	200	NR	NR
Chlorinated Water, by Cl <sub>2</sub> Gas, Up to 3500 ppm ..	140	140	CF	185	100	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

\*\* Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

♢Castor oil may cause environmental stress cracking in high-stress areas such as plastic threaded connections.

‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

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	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Chlorinated Water, by Cl <sub>2</sub> Gas, Above 3500 ppm	R NR	NR	185	NR	NR	
Chlorinated Water, by Sodium Hypochlorite .....	140	140	200	200	200	200
Chlorine Gas, Dry .....	NR	NR	NR	185	NR	NR
Chlorine Gas, Wet .....	NR	NR	NR	185	NR	NR
Chlorine, Liquid (See Sodium Hypochlorite) .....						
Chlorine, trace in air.....	••	••	180§	••	••	••
Chlorine Dioxide (sat'd aqueous sol.).....	••	••	180	••	••	••
Chlorine Water, (Sat'd).....	••	140	180	200	73	••
Chlorobenzene .....	NR	NR	NR	73	NR	NR
Chlorobenzene Chloride.....	NR	NR	NR	200	••	••
Chloroform.....	NR	NR	NR	73	NR	NR
Chloropicrin .....	NR	NR	NR	••	••	••
Chlorosulfonic Acid.....	••	73	73	NR	NR	NR
Chromic Acid, 10% .....	73	140‡	180‡	140	70	NR
Chromic Acid, 30% .....	NR	73‡	180‡	140	NR	NR
Chromic Acid, 40% .....	NR	73‡	180‡	140	NR	NR
Chromic Acid, 50% .....	NR	73‡	140‡	140	NR	NR
Chromium Nitrate .....	••	••	180	••	••	••
Chromium Potassium Nitrate .....	73	73	73	200	140	160
Citric Acid (Sat'd) .....	140	140	180	200	200	140
Citrus Oils .....	••	••	NR	••	••	••
Coconut Oil .....	NR	140	NR	185	NR	100
Coke Oven Gas .....	NR	NR	NR	185	70	••
Copper Acetate, (Sat'd) .....	73	73	73	140	100	160
Copper Carbonate.....	120	140	180	185	200	••
Copper Chloride .....	73	140	180	200	200	160
Copper Cyanide .....	73	140	180	185	200	160
Copper Fluoride .....	73	140	180	185	200	140
Copper Nitrate .....	120	140	180	200	200	160
Copper Salts.....	140	140	180	••	••	••
Copper Sulfate .....	140	140	180	200	200	160
Corn Oil .....	73	140	NR	200	NR	NR
Corn Syrup.....	120	140	180	185	••	100
Cottonseed Oil .....	120	140	NR	185	NR	••
Creosote.....	NR	NR	NR	73	NR	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Cresol .....	NR	NR	NR	100	NR	NR
Cresylic Acid, 50% .....	NR	140	NR	185	NR	NR
Crotonaldehyde.....	NR	NR	NR	NR	NR	73
Crude Oil .....	NR	73	180	200	NR	NR
Cumene .....	• •	• •	• •	200	NR	NR
Cupric Fluoride.....	73	140	180	• •	200	• •
Cupric Sulfate .....	140	140	180	200	200	160
Cuprous Chloride.....	73	140	180	200	200	70
Cyclohexane .....	NR	NR	NR	185	NR	NR
Cyclohexanol .....	NR	NR	NR	185	NR	NR
Cyclohexanone .....	NR	NR	NR	NR	73	NR
Decalin.....	NR	NR	NR	• •	• •	• •
D-Limonene.....	• •	• •	NR	• •	• •	• •
Desocyphephrine .....	• •	73	• •	• •	• •	• •
Detergents w/non-ionic surfactants .....	73	140	NR	200	200	160
Dextrine .....	• •	140	180	200	NR	• •
Dextrose .....	120	140	180	200	140	160
Diacetone Alcohol .....	NR	NR	NR	NR	73	NR
Diazo Salts.....	• •	140	180	• •	• •	• •
Dibutoxy Ethyl Phthalate.....	NR	NR	NR	200	73	NR
Dibutyl Ethyl Phthalate.....	NR	NR	NR	200	73	NR
Dibutyl Phthalate .....	NR	NR	NR	NR	73	NR
Dibutyl Sebacate .....	NR	NR	NR	NR	73	NR
Dichlorobenzene .....	NR	NR	NR	200	NR	NR
Dichloroethylene.....	NR	NR	NR	200	NR	NR
Diesel Fuels .....	NR	73	NR	200	NR	NR
Diethylamine .....	NR	NR	NR	NR	73	• •
Diethyl Cellosolve .....	NR	• •	NR	200	NR	100
Diethyl Ether.....	NR	NR	NR	NR	NR	• •
Diglycolic Acid .....	NR	140	• •	73	73	• •
Dill Oil .....	• •	• •	NR	• •	• •	• •
Dimethylamine .....	NR	140	NR	NR	140	NR
Dimethylformamide .....	NR	NR	NR	NR	NR	NR
Dimethyl Hydrazine .....	NR	NR	NR	NR	• •	• •
Diethyl Phthalate (DEHP).....	NR	NR	NR	73	73	NR

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Dioxane .....	NR	NR	NR	NR	73	NR
Dioxane, 1.4 .....	NR	NR	NR	NR	73	• •
Disodium Phosphate .....	120	140	180	• •	200	• •
Distilled Water .....	140	140	180	200	200	160
Divinylbenzene.....	NR	NR	NR	200	NR	• •
Dry Cleaning Fluid.....	NR	NR	NR	200	NR	NR
Dursban TC .....	NR	• •	NR	• •	• •	• •
EDTA, Tetrasodium, Aqueous Solution.....	140	140	180	200	200	160
Epsom Salt .....	120	140	180	• •	200	• •
Epichlorohydrin.....	NR	NR	NR	• •	• •	• •
Esters .....	NR	NR	NR	• •	• •	• •
Ethanol, Up to 5% .....	NR	140	180	• •	200	160
Ethanol, Over 5% .....	NR	140	NR	• •	200	160
Ethers .....	NR	NR	NR	NR	• •	NR
Ethyl Acetate .....	NR	NR	NR	NR	73	NR
Ethyl Acetoacetate .....	NR	NR	NR	NR	100	• •
Ethyl Acrylate.....	NR	NR	NR	NR	73	NR
Ethyl Benzene .....	NR	NR	NR	73	NR	NR
Ethyl Chloride .....	NR	NR	NR	140	73	73
Ethyl Chloroacetate.....	NR	NR	NR	• •	• •	• •
Ethylene Bromide .....	NR	NR	NR	73	NR	NR
Ethylene Chloride .....	NR	NR	NR	70	• •	• •
Ethylene Chlorohydrin .....	NR	NR	NR	NR	73	73
Ethylene Diamine .....	NR	NR	NR	• •	73	100
Ethylene Dichloride .....	NR	NR	NR	120	NR	NR
Ethyl Ether .....	NR	NR	NR	NR	NR	NR
Ethylene Glycol, Up to 50% .....	73	140	180	200	200	160
Ethylene Glycol, Over 50% .....	73	140	NR	200	200	160
Ethylene Oxide .....	NR	NR	NR	NR	NR	NR
Fatty Acids.....	140	140	73	185	NR	140
Ferric Acetate .....	NR	73	180	• •	• •	• •
Ferric Chloride .....	120	140	180	200	200	160
Ferric Hydroxide .....	140	140	180	180	180	100
Ferric Nitrate.....	140	140	180	200	200	160
Ferric Sulfate.....	140	140	180	185	200	140

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Ferrous Chloride.....	140	140	180	200	200	• •
Ferrous Hydroxide.....	140	73	180	180	180	• •
Ferrous Nitrate.....	140	73	140	200	180	160
Ferrous Sulfate.....	140	140	180	200	200	160
Fish Solubles .....	140	140	180	73	NR	• •
Fluorine Gas.....	NR	NR	NR	NR	NR	NR
Fluoboric Acid.....	• •	140	73	140	140	160
Fluorosilicic Acid, 30%.....	73	140	73	200	140	100
Formaldehyde, 35% .....	NR	140	NR	NR	140	140
Formalin (37% to 50% Formaldehyde).....	NR	140	NR	NR	140	140
Formic Acid, Up to 25% .....	• •	73	180	NR	200	140
Formic Acid, Anhydrous .....	• •	73	NR	NR	• •	100
Freon F- 11 .....	• •	140§	73§	73	NR	NR
Freon F-12 .....	• •	140§	73§	NR	NR	130
Freon F-21 .....	• •	NR	NR	NR	NR	NR
Freon F-22 .....	• •	NR	NR	NR	NR	130
Freon F-113.....	• •	140§	• •	130	NR	130
Freon F-114.....	• •	140§	• •	NR	NR	73
Fructose.....	120	140	180	200	175	160
Fruit Juices.....	73	140	180	200	200	200
Furfural .....	NR	NR	NR	NR	140	73
Gallic Acid .....	• •	140	73	185	73	73
Gas, Manufactured .....	NR	73§	NR	• •	• •	• •
Gas, Natural.....	NR	140§	• •	185	NR	140
Gasoline, Unleaded .....	NR	NR	NR	200	NR	NR
Gasoline, Sour.....	NR	NR	NR	73	NR	NR
Gelatin .....	120	140	150	200	200	160
Gin.....	NR	140	NR	• •	• •	• •
Glucose .....	120	140	180	200	200	160
Glycerine.....	120	140	180	200	200	160
Glycerine, Glycerol .....	120	140	180	200	200	• •
Glycol, Ethylene, Up to 50% .....	73	140	180	200	200	200
Glycol, Ethylene, Over 50% .....	73	140	NR	200	200	200
Glycol, Polyethylene (Carbowax) .....	• •	140	140	200	180	73
Glycol, Polypropylene.....	73	NR	NR	200	200	200

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Glycol, Propylene, Up to 25% .....	73	140	180	200	200	73
Glycol, Propylene, Up to 50% .....	73	140	NR	200	200	73
Glycolic Acid .....	• •	140	NR	NR	• •	73
Glycol Ethers.....	NR	140	NR	• •	• •	• •
Grape Sugar, Juice .....	73	140	180	185	200	160
Green Liquor .....	140	140	180	• •	150	70
Halocarbons Oils .....	NR	NR	NR	200	NR	NR
Heptane .....	73	140	NR	185	NR	73
Hexane.....	NR	73	73	73	NR	73
Hexanol .....	NR	100	NR	160	NR	73
Hydraulic Oil .....	NR	73	• •	200	NR	73
Hydrazine.....	NR	NR	NR	NR	70	• •
Hydrobromic Acid, Dilute.....	73	140	180	185	200	73
Hydrobromic Acid, 20% .....	73	140	73	185	140	73
Hydrobromic Acid, 50% .....	NR	140	73	185	140	73
Hydrochloric Acid, Dilute.....	73	140	180	200	140	73
Hydrochloric Acid, 20%.....	NR	140‡	180‡	200	140	73
Hydrochloric Acid Conc., 37% .....	NR	140‡	180‡	160	100	73
Hydrocyanic Acid, 10% .....	140	140	• •	185	200	• •
Hydrofluoric Acid, <10% .....	NR	140	140	150	73	100
Hydrofluoric Acid, 30% .....	NR	73	140	200	NR	NR
Hydrofluoric Acid, 40% .....	NR	73	NR	100	NR	NR
Hydrofluoric Acid, 50% .....	NR	NR	NR	73	NR	NR
Hydrofluoric Acid, 100% .....	NR	NR	NR	NR	NR	NR
Hydrofluosilicic Acid, 50% .....	NR	140	140	200	140	• •
Hydrogen .....	140§	140§	73§	200	200	160
Hydrogen Cyanide.....	• •	140	• •	• •	• •	73
Hydrogen Fluoride.....	NR	NR	NR	NR	73	NR
Hydrogen Peroxide, Dilute .....	73	140	73	200	73	NR
Hydrogen Peroxide, 36% .....	NR	140	73	200	NR	NR
Hydrogen Peroxide, 50% .....	NR	140	73	200	NR	NR
Hydrogen Peroxide, 90% .....	NR	NR	NR	200	NR	NR
Hydrogen Phosphide .....	• •	140	• •	• •	73	• •
Hydrogen Sulfide, Dry .....	• •	140	180	140	100	NR
Hydrogen Sulfide, Aqueous Sol. ....	• •	140	180	140	100	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1  
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	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Hydroquinone .....	• •	140	• •	185	NR	NR
Hydroxylamine Sulfate .....	• •	140	• •	• •	73	73
Hypochlorous Acid .....	73	140	CF	73	73	• •
Iodine .....	NR	NR	NR	73	73	NR
Iodine Solution, 10%.....	NR	NR	NR	200	150	• •
Iodine in Alcohol .....	NR	NR	NR	• •	• •	• •
Iron Salts.....	• •	• •	180	• •	• •	• •
Isopropanol .....	NR	140	NR	• •	• •	• •
Isopropyl Alcohol.....	NR	140	140	160	160	73
Isopropyl Ether .....	NR	NR	NR	NR	NR	NR
Isooctane .....	NR	NR	NR	185	NR	73
Jet Fuel.....	NR	NR	NR	200	NR	NR
Kerosene .....	NR	NR	NR	200	NR	73
Ketones .....	NR	NR	NR	NR	NR	NR
Kraft Liquor.....	73	140	180	100	• •	73
Lactic Acid, 25%.....	NR	140	100	200	140	73
Lactic Acid, 80%.....	NR	100	73	200	140	73
Lard Oil .....	73	140	NR	185	NR	73
Lauric Acid .....	• •	140	• •	100	• •	• •
Lauryl Chloride .....	• •	140	• •	200	140	• •
Lead Acetate .....	• •	140	180	NR	200	160
Lead Chloride.....	• •	140	180	140	NR	73
Lead Nitrate.....	• •	140	180	200	175	140
Lead Sulfate.....	• •	140	180	200	200	140
Lemon Oil .....	• •	140	NR	200	NR	73
Ligroine .....	NR	NR	NR	100	• •	73
Lime Sulfur.....	• •	140	180	185	200	100
Limonene .....	• •	• •	NR	• •	• •	• •
Linoleic Acid .....	• •	140	180	140	73	• •
Linoleic Oil.....	• •	140	180	73	• •	• •
Linseed Oil .....	73	140	NR	200	73	73
Linseed Oil, Blue .....	73	73	NR	200	• •	• •
Liqueurs.....	NR	140	NR	• •	200	160
Lithium Bromide (Brine).....	• •	140	180	200	• •	• •
Lithium Chloride .....	• •	140	180	140	100	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

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	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Lithium Sulfate .....	• •	140	180	• •	• •	• •
Lubricating Oil,Petroleum Based .....	NR	140	180	160	NR	NR
Lux Liquid.....	• •	NR	• •	• •	• •	• •
Lye Solutions.....	• •	140	180	• •	• •	• •
Machine Oil.....	NR	140	180	140	NR	NR
Magnesium Carbonate .....	120	140	180	200	170	140
Magnesium Chloride .....	120	140	180	170	170	160
Magnesium Citrate .....	120	140	180	200	175	• •
Magnesium Fluoride .....	120	• •	180	200	140	• •
Magnesium Hydroxide .....	120	140	180	200	200	• •
Magnesium Nitrate .....	120	140	180	• •	200	• •
Magnesium Oxide .....	120	• •	180	• •	140	160
Magnesium Salts, Inorganic.....	120	• •	180	200	160	160
Magnesium Sulfate.....	120	140	180	200	180	180
Maleic Acid.....	140	140	180	200	NR	73
Maleic Acid (Sat'd) .....	140	140	180	200	73	NR
Malic Acid .....	140	140	180	• •	• •	• •
Manganese Sulfate .....	120	140	180	200	175	160
Mercuric Acid .....	• •	• •	180	• •	• •	• •
Mercuric Chloride.....	• •	140	140	185	200	140
Mercuric Cyanide .....	• •	140	180	73	73	73
Mercuric Sulfate .....	• •	140	180	73	73	• •
Mercurous Nitrate.....	• •	140	180	73	73	NR
Mercury .....	• •	140	180	185	200	140
Methane.....	140§	140§	180§	185	NR	73
Methanol.....	NR	140	140	NR	160	160
Methoxyethyl Oleate .....	NR	73	• •	• •	• •	• •
Methyl Amine.....	NR	NR	NR	100	73	73
Methyl Bromide.....	NR	NR	NR	185	NR	NR
Methyl Cellosolve .....	NR	NR	NR	NR	NR	NR
Methyl Chloride.....	NR	NR	NR	73	NR	NR
Methyl Chloroform .....	NR	NR	NR	73	NR	NR
Methyl Ethyl Ketone .....	NR	NR	NR	NR	NR	NR
Methyl Formate.....	NR	• •	NR	NR	100	73
Methyl Isobutyl Ketone .....	NR	NR	NR	NR	NR	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

\*\* Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

# Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: [www.charlottepipe.com](http://www.charlottepipe.com)

Number = Maximum Recommended Temp. (°F)\*\* CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Methyl Methacrylate .....	NR	NR	NR	NR	NR	NR
Methyl Sulfate.....	NR	73	73	• •	• •	• •
Methyl Sulfuric Acid .....	• •	140	73	NR	73	73
Methylene Bromide.....	NR	NR	NR	73	NR	NR
Methylene Chloride.....	NR	NR	NR	73	NR	NR
Methylene Chlorobromide .....	NR	NR	NR	NR	NR	NR
Methylene Iodine.....	NR	NR	NR	• •	200	• •
Methylisobutyl Carbinol .....	NR	NR	NR	73	73	73
Milk.....	140	140	73	200	200	200
Mineral Oil.....	73	140	180	200	NR	73
Molasses .....	120	140	180	185	100	150
Monochloroacetic Acid, 50% .....	73	140	73	70	NR	NR
Monoethanolamine .....	NR	NR	NR	185	70	NR
Motor Oil .....	73	140	180	200	NR	NR
Muriatic Acid, Up to 37% HCl.....	NR	140	180	160	100	73
Naphtha.....	NR	NR	NR	150	NR	NR
Naphthalene.....	NR	NR	NR	180	NR	NR
n-Heptane .....	NR	NR	NR	200	NR	73
Natural Gas.....	NR	140§	• •	185	NR	140
Nickel Acetate.....	73	73	180	NR	73	• •
Nickel Chloride.....	73	140	180	200	200	160
Nickel Nitrate .....	73	140	180	200	180	• •
Nickel Sulfate .....	73	140	180	200	200	160
Nicotine .....	NR	140	• •	• •	• •	NR
Nicotinic Acid .....	NR	140	180	• •	73	140
Nitric Acid, 10% .....	NR	140‡	140‡	NR	73	73
Nitric Acid, 30% .....	NR	140‡	140‡	NR	NR	NR
Nitric Acid, 40% .....	NR	140‡	140‡	NR	NR	NR
Nitric Acid, 50% .....	NR	73‡	100‡	NR	NR	NR
Nitric Acid, 70% .....	NR	NR	73‡	NR	NR	NR
Nitric Acid, 100% .....	NR	NR	NR	NR	NR	NR
Nitric Acid, Fuming.....	NR	NR	NR	NR	NR	NR
Nitrobenzene .....	NR	NR	NR	73	NR	• •
Nitroglycerine .....	NR	NR	NR	• •	• •	• •
Nitrous Acid, 10%.....	NR	73	• •	100	• •	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

# Chemical Resistance

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Nitrous Oxide .....	73§	73§	• •	73	• •	NR
Nitroglycol .....	NR	NR	• •	• •	• •	73
Nonionic Surfactants .....	140	140	NR	200	200	160
1-Octanol .....	NR	• •	NR	• •	• •	• •
Ocenol .....	NR	• •	• •	• •	• •	• •
Oils, Vegetable.....	NR	140	NR	200	NR	• •
Oleic Acid.....	140	140	180	185	73	73
Oleum .....	NR	NR	NR	NR	NR	NR
Olive Oil .....	73	140	NR	150	NR	NR
Oxalic Acid (Sat'd) .....	• •	140	140	100	150	100
Oxalic Acid, 20%.....	73	140	180	100	150	100
Oxalic Acid, 50%.....	• •	140	73	100	150	100
Oxygen .....	140§	140§	180§	185	200	140
Ozonated Water.....	• •	73	73	NR	73	73
Ozone.....	140§	140§	180§	185	200	NR
Palm Oil.....	• •	• •	• •	73	NR	• •
Palmitic Acid, 10% .....	73	140	73	185	73	NR
Palmitic Acid, 70% .....	NR	NR	73	185	• •	NR
Paraffin.....	73	140	• •	200	NR	140
Peanut Oil .....	• •	• •	• •	150	NR	• •
Pentachlorophenol .....	NR	NR	NR	200	NR	NR
Peppermint Oil .....	NR	73	73	73	73	73
Peracetic Acid, 40% .....	NR	NR	NR	• •	• •	• •
Perchloric Acid, 10%.....	NR	73	180	200	73	140
Perchloric Acid, 70%.....	NR	NR	180	200	73	73
Perchloroethylene .....	NR	NR	NR	200	NR	NR
Perphosphate.....	• •	140	170	73	73	• •
Petrolatum .....	• •	140	180	• •	• •	• •
Petroleum Oils, Sour.....	• •	73	180	200	NR	• •
Petroleum Oils, Refined.....	73	140	180	200	NR	• •
Phenol.....	NR	NR	NR	200	73	NR
Phenylhydrazine .....	NR	NR	NR	NR	NR	• •
Phenylhydrazine Hydrochloride .....	NR	NR	NR	• •	• •	• •
Phosgene, Liquid .....	NR	NR	NR	NR	73	• •
Phosgene, Gas .....	NR	NR	NR	NR	73	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1  
Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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# Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: [www.charlottepipe.com](http://www.charlottepipe.com)

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Phosphoric Acid, 10% .....	73	140‡	180‡	200	140	140
Phosphoric Acid, 50% .....	NR	140‡	180‡	160	160	160
Phosphoric Acid, 85% .....	NR	140‡	180‡	160	160	160
Phosphoric Anhydride .....	• •	73	73	• •	• •	• •
Phosphorous Pentoxide .....	• •	73	180	200	200	• •
Phosphorous, Red .....	NR	70	• •	• •	• •	• •
Phosphorus Trichloride .....	NR	NR	NR	• •	• •	NR
Phosphorous, Yellow .....	NR	73	• •	• •	• •	• •
Photographic Solutions .....	• •	140	180	185	• •	100
Phthalic Acid, 10% .....	73	73	• •	140	• •	NR
Picric Acid .....	NR	NR	NR	140	140	70
Pine Oil .....	NR	NR	NR	73	NR	NR
Plating Solutions, Brass.....	• •	140	180	140	73	140
Plating Solutions, Cadmium.....	• •	140	180	180	180	140
Plating Solutions, Chrome .....	• •	140	180	180	180	NR
Plating Solutions, Copper .....	• •	140	180	180	180	140
Plating Solutions, Gold .....	• •	140	180	180	73	73
Plating Solutions, Indium .....	• •	• •	• •	140	73	140
Plating Solutions, Lead.....	• •	140	180	180	180	140
Plating Solutions, Nickel .....	• •	140	180	180	180	140
Plating Solutions, Rhodium.....	• •	140	180	73	120	73
Plating Solutions, Silver .....	• •	140	180	140	120	140
Plating Solutions, Tin .....	• •	140	180	140	180	140
Plating Solutions, Zinc .....	• •	140	180	140	73	180
POE Oils (Polyolester).....	NR	NR	NR	NR	NR	NR
Polyethylene Glycol (Carbowax) .....	• •	140	140	200	180	73
Polypropylene Glycol.....	73	NR	NR	200	200	200
Potash.....	140	140	180	200	170	160
Potassium Acetate .....	• •	• •	180	• •	• •	• •
Potassium Alum .....	• •	140	180	200	200	160
Potassium Aluminum Sulfate .....	• •	140	180	200	200	160
Potassium Amyl Xanthate .....	• •	73	• •	• •	• •	• •
Potassium Bicarbonate .....	140	140	180	200	170	160
Potassium Bichromate .....	140	140	180	200	170	• •
Potassium Bisulfate, Sat'd .....	• •	140	180	200	180	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type I Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Potassium Borate .....	140	140	180	200	200	• •
Potassium Bromate.....	140	140	180	200	• •	140
Potassium Bromide.....	140	140	180	200	170	160
Potassium Carbonate .....	140	140	180	200	170	160
Potassium Chlorate.....	140	140	180	140	140	100
Potassium Chloride.....	140	140	180	200	200	160
Potassium Chromate.....	140	140	180	200	170	70
Potassium Cyanide.....	140	140	180	185	140	160
Potassium Dichromate .....	140	140	180	200	170	• •
Potassium Ethyl Xanthate.....	• •	73	• •	• •	• •	• •
Potassium Ferricyanide.....	140	140	180	140	140	150
Potassium Ferrocyanide .....	140	140	180	140	140	150
Potassium Fluoride .....	140	140	180	200	140	• •
Potassium Hydroxide, 25% .....	73	140‡	180‡	NR	180	140
Potassium Hydroxide, 50% .....	73	140‡	180‡	NR	180	NR
Potassium Hypochlorite .....	• •	73‡	180‡	73	NR	• •
Potassium Iodide .....	• •	73	180	180	140	160
Potassium Nitrate.....	140	140	180	200	200	140
Potassium Perborate.....	140	140	180	73	73	73
Potassium Perchlorate, (Sat'd).....	140	140	180	150	140	• •
Potassium Permanganate, 10%.....	140	140	180	140	200	100
Potassium Permanganate, 25%.....	140	140	180	140	140	100
Potassium Persulphate, (Sat'd).....	73	140	180	200	200	140
Potassium Phosphate .....	73	• •	180	180	180	180
Potassium Sulfate.....	73	140	180	200	200	140
Potassium Sulfite.....	73	140	180	200	200	140
Potassium Tripolyphosphate .....	• •	• •	180	100	• •	73
Propane .....	140§	140§	73§	73	NR	73
Propanol .....	NR	140	NR	200	200	140
Propargyl Alcohol.....	NR	140	NR	140	140	NR
Propionic Acid, Up to 2% .....	NR	• •	180	• •	• •	NR
Propionic Acid, Over 2%.....	NR	• •	NR	• •	• •	NR
Propyl Alcohol.....	NR	140	NR	200	200	140
Propylene Dichloride.....	NR	NR	NR	73	NR	NR
Propylene Glycol, Up to 25% .....	73	140	180	200	200	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type I Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Propylene Glycol, Up to 50% .....	73	140	NR	200	200	73
Propylene Oxide.....	NR	NR	NR	NR	73	NR
Pyridine .....	NR	NR	NR	NR	73	NR
Pyrogallia Acid.....	• •	73	• •	• •	• •	73
Quaternary Ammonium Salts .....	NR	140	NR	73	• •	73
Radon Gas.....	140§	140§	140§	200	200	200
Rayon Coagulating Bath .....	• •	140	NR	• •	• •	• •
Reverse Osmosis Water .....	140	140	180	200	200	200
Salicylic Acid.....	• •	140	180	185	200	NR
Sea Water.....	140	140	180	200	200	200
Selenic Acid .....	• •	140	• •	NR	73	73
Silicic Acid.....	• •	140	• •	200	140	140
Silicone Oil.....	• •	100	180	200	140	200
Silver Chloride .....	140	• •	180	73	73	73
Silver Cyanide .....	140	140	180	140	140	73
Silver Nitrate .....	140	140	180	200	200	160
Silver Sulfate .....	140	140	180	200	170	73
Soaps.....	140	140	180	200	200	140
Sodium Acetate .....	120	140	180	NR	170	NR
Sodium Aluminate.....	120	• •	180	200	200	140
Sodium Alum .....	120	140	180	200	170	140
Sodium Arsenate .....	120	140	180	200	140	73
Sodium Benzoate.....	120	140	180	200	200	NR
Sodium Bicarbonate .....	120	140	180	200	200	160
Sodium Bichromate .....	120	140	180	200	140	73
Sodium Bisulfate.....	120	140	180	200	200	140
Sodium Bisulfite.....	120	140	180	200	200	140
Sodium Borate .....	120	73	180	140	140	100
Sodium Bromide.....	120	140	180	200	200	73
Sodium Carbonate.....	120	140	180	200	140	140
Sodium Chlorate.....	120	73	180	100	140	140
Sodium Chloride.....	120	140	180	200	140	160
Sodium Chlorite .....	120	NR	180	NR	NR	• •
Sodium Chromate.....	120	140	180	140	140	73
Sodium Cyanide.....	120	73	180	140	140	140

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Sodium Dichromate .....	120	140	180	200	140	NR
Sodium Ferricyanide.....	120	140	180	140	140	• •
Sodium Ferrocyanide .....	120	140	180	140	140	• •
Sodium Fluoride.....	120	73	140	140	140	73
Sodium Formate.....	• •	• •	180	• •	• •	• •
Sodium Hydroxide, 15% .....	120	140‡	CF	NR	180	160
Sodium Hydroxide, 30% .....	73	73‡	CF	NR	140	160
Sodium Hydroxide, 50% .....	73	73‡	CF	NR	140	160
Sodium Hydroxide, 70% .....	NR	73‡	CF	NR	140	160
Sodium Hypobromite .....	• •	• •	180	• •	• •	• •
Sodium Hypochlorite, Sat'd, 12.5% .....	NR	73‡	180‡	140	NR	NR
Sodium Iodide .....	• •	• •	180	140	140	140
Sodium Metaphosphate.....	120	73	180	73	73	• •
Sodium Nitrate.....	120	140	180	200	200	140
Sodium Nitrite .....	120	140	180	200	170	140
Sodium Palmitate.....	• •	140	180	• •	• •	• •
Sodium Perborate.....	120	140	180	73	73	73
Sodium Perchlorate .....	120	140	180	• •	• •	• •
Sodium Peroxide .....	NR	140	180	185	140	73
Sodium Phosphate, Alkaline.....	73	140	180	200	170	140
Sodium Phosphate, Acid .....	73	140	180	200	170	140
Sodium Phosphate, Neutral.....	73	140	180	200	170	140
Sodium Silicate .....	• •	• •	180	200	200	140
Sodium Sulfate.....	73	140	180	200	140	140
Sodium Sulfide.....	73	140	180	200	140	140
Sodium Sulfite.....	73	140	180	200	140	140
Sodium Thiosulfate .....	73	140	180	200	200	160
Sodium Tripolyphosphate .....	• •	• •	180	• •	• •	• •
Solicaldehyde.....	NR	NR	• •	• •	• •	• •
Sour Crude Oil .....	NR	73	180	200	NR	NR
Soybean Oil .....	NR	140	180	200	NR	73
Soybean Oil, Epoxidized .....	NR	NR	NR	200	NR	NR
Stannic Chloride.....	120	140	180	200	100	NR
Stannous Chloride .....	120	140	180	200	73	160
Stannous Sulfate .....	• •	• •	180	• •	• •	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type I Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

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Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Starch.....	140	140	180	200	170	160
Stearic Acid.....	• •	140	73	100	NR	73
Stoddard's Solvent.....	NR	NR	NR	185	NR	NR
Strontium Chloride.....	• •	• •	180	• •	• •	• •
Styrene Monomer.....	NR	NR	NR	NR	NR	NR
Succinic Acid.....	• •	140	• •	73	73	• •
Sugar Syrup.....	73	140	180	180	180	• •
Sulfamic Acid.....	NR	NR	180	NR	NR	73
Sulfate Liquors.....	• •	• •	• •	73	73	• •
Sulfite Liquor.....	• •	• •	180	140	140	73
Sulfur.....	• •	140	73	200	• •	73
Sulfur Chloride.....	NR	NR	180	140	NR	NR
Sulfur Dioxide, Dry.....	73§	140§	NR	100	73	NR
Sulfur Dioxide, Wet.....	73§	73§	NR	140	140	• •
Sulfur Trioxide.....	• •	140	180	140	73	NR
Sulfur Trioxide, Gas.....	140§	140§	• •	140	73	NR
Sulfuric Acid, 10%.....	120	140‡	180‡	200	140	160
Sulfuric Acid, 20%.....	120	140‡	180‡	200	140	160
Sulfuric Acid, 30%.....	NR	140‡	180‡	200	200	160
Sulfuric Acid, 50%.....	NR	140‡	180‡	200	200	160
Sulfuric Acid, 60%.....	NR	140‡	180‡	200	200	73
Sulfuric Acid, 70%.....	NR	140‡	180‡	200	NR	NR
Sulfuric Acid, 80%.....	NR	73‡	180‡	180	NR	NR
Sulfuric Acid, 90%.....	NR	NR	140‡	160	NR	NR
Sulfuric Acid, 93%.....	NR	NR	73‡	160	NR	NR
Sulfuric Acid, 98%.....	NR	NR	73‡	160	NR	NR
Sulfuric Acid, 100%.....	NR	NR	NR	160	NR	NR
Sulfurous Acid.....	NR	140	180	NR	NR	NR
Surfactants, Nonionic.....	140	140	NR	200	200	160
Tall Oil.....	• •	140	180	73	NR	73
Tannic Acid, 10%.....	NR	140	180	100	73	100
Tannic Acid, 30%.....	NR	• •	73	• •	• •	• •
Tanning Liquors.....	140	140	180	200	• •	73
Tar.....	NR	NR	NR	185	NR	73
Tartaric Acid.....	140	140	73	73	NR	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1

Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

\*\* Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

# Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals.

**NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: [www.charlottepipe.com](http://www.charlottepipe.com)

Number = Maximum Recommended Temp. (°F)\*\*

CF = Consult Factory

NR = Not Recommended

• • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Terpenes.....	NR	• •	NR	• •	• •	• •
Tetrachloroethylene.....	NR	NR	NR	200	NR	NR
Tetraethyl Lead.....	NR	73	• •	73	NR	• •
Tetrahydrodurane.....	NR	NR	NR	• •	• •	• •
Tetrahydrofuran.....	NR	NR	NR	NR	NR	NR
Tetralin.....	NR	NR	NR	NR	NR	NR
Tetra Sodium Pyrophosphate.....	• •	140	180	• •	• •	• •
Texanol.....	• •	• •	NR	• •	• •	• •
Thionyl Chloride.....	NR	NR	NR	• •	• •	NR
Thread Cutting Oils.....	73	73	• •	73	NR	• •
Titanium Tetrachloride.....	NR	NR	NR	185	NR	NR
Toluene, Toluol.....	NR	NR	NR	73	NR	NR
Toluene-Kerosene, 25%-75%.....	NR	NR	NR	73	NR	NR
Tomato Juice.....	73	73	73	200	200	140
Toxaphene-Xylene, 90%-100%.....	NR	NR	NR	73	NR	NR
Transformer Oil.....	NR	140	180	200	NR	73
Transmission Fluid, Type A.....	NR	NR	180	200	NR	73
Tributyl Phosphate.....	NR	NR	NR	NR	73	NR
Tributyl Citrate.....	NR	NR	NR	NR	73	73
Trichloroacetic Acid, ≤ 20%.....	NR	140	NR	NR	NR	NR
Trichloroethane.....	NR	NR	NR	185	NR	NR
Trichloroethylene.....	NR	NR	NR	185	NR	NR
Triethanolamine.....	73	73	73	NR	160	NR
Triethylamine.....	NR	73	NR	200	160	73
Trimethylpropane.....	NR	73	• •	• •	180	160
Trisodium Phosphate.....	73	140	180	185	73	73
Turpentine.....	NR	140	NR	150	NR	NR
Urea.....	73	140	180	185	200	140
Urine.....	140	140	180	73	200	140
Vaseline.....	NR	NR	NR	73	NR	140
Vegetable Oil.....	73	140	NR	200	NR	73
Vinegar.....	73	140	180	200	140	NR
Vinyl Acetate.....	NR	NR	NR	NR	73	NR
Water.....	140	140	180	200	200	160
Water, Acid Mine.....	140	140	180	• •	200	200

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1  
Fluorocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer

\*\* Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.





# PVC Schedule 40 DWV Pipe

## PVC Schedule 40 DWV Pipe



PVC SCHEDULE 40 (WHITE)		PLAIN END		PVC 1120		ASTM D 2665
PART NO.	NOM. SIZE	UPC # 611942-	QTY. PER SKID	AVG. OD (IN.)	MIN. WALL (IN.)	WT. PER 100 FT. (LBS.)
PVC 7100*	1 1/4" x 10'	03945	2120'	1.660	.140	42.4
PVC 7100*	1 1/4" x 20'	03946	4240'	1.660	.140	42.4
PVC 7112*	1 1/2" x 10'	03947	1650'	1.900	.145	51.8
PVC 7112*	1 1/2" x 20'	03948	3300'	1.900	.145	51.8
PVC 7200*	2" x 10'	03949	1110'	2.375	.154	69.5
PVC 7200*	2" x 20'	03950	2220'	2.375	.154	69.5
PVC 7300*	3" x 10'	03951	1040'	3.500	.216	144.2
PVC 7300*	3" x 20'	03952	920'	3.500	.216	144.2
PVC 7400†	4" x 10'	03953	600'	4.500	.237	205.5
PVC 7400†	4" x 20'	03954	1340'	4.500	.237	205.5
PVC 7500†	5" x 20'	04837	760'	5.563	.258	272.5
PVC 7600†	6" x 10'	03955	330'	6.625	.280	361.2
PVC 7600†	6" x 20'	03956	660'	6.625	.280	361.2
PVC 7800†	8" x 10'	13087	180'	8.625	.322	543.6
PVC 7800†	8" x 20'	03958	360'	8.625	.322	543.6
PVC 7910†	10" x 20'	03959	220'	10.750	.365	770.7
PVC 7912†	12" x 20'	03961	120'	12.750	.406	1019.0
PVC 7914†	14" x 20'	04862	60'	14.000	.437	1205.0
PVC 7916†	16" x 20'	04918	60'	16.000	.500	1575.7

\* Dual Marked ASTM D 1785 & ASTM D 2665. † Triple Marked ASTM D 1785 & ASTM D 2665 & ASTM F 480.  
NSF Listed. Meets All Requirements of ASTM D 1784, ASTM D 1785, and ASTM D 2665.



## ⚠ WARNING

Testing with or use of compressed air or gas in PVC / ABS / CPVC pipe or fittings can result in explosive failures and cause severe injury or death.

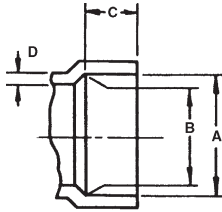
AIR/GAS



- NEVER test with or transport/store compressed air or gas in PVC / ABS / CPVC pipe or fittings.
- NEVER test PVC / ABS / CPVC pipe or fittings with compressed air or gas, or air over water boosters.
- ONLY use PVC / ABS / CPVC pipe or fittings for water or approved chemicals.
- Refer to warnings on PPFA's website and ASTM D 1785.

# PVC and ABS DWV Fittings

HUB DIMENSIONS



ABS

SIZE	A	B	C	D
1 1/2	1.910	1.895	.687	.156
2	2.385	2.370	.750	.156
3	3.515	3.495	1.500	.218
4	4.515	4.495	1.750	.250
6	6.647	6.614	3.000	.281

PVC

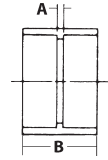
SIZE	A	B	C	D
1 1/4	1.675	1.650	.687	.156
1 1/2	1.915	1.895	.687	.156
2	2.390	2.370	.750	.156
3	3.520	3.495	1.500	.218
4	4.520	4.495	1.750	.250
6	6.647	6.614	3.000	.281
8	8.655	8.610	4.000	.322
10	10.776	10.737	5.000	.365
12	12.778	12.736	6.000	.406
14	14.035	13.985	7.000	.437
16	16.045	15.980	8.000	.500

## PART NO. 100

## Coupling

HUB X HUB

SIZE	A	B
1 1/4	1/8	1 5/8
1 1/2 (PVC)	1/8	1 9/16
1 1/2 (ABS)	1/8	1 5/8
2 (PVC)	15/64	1 3/4
2 (ABS)	1/8	1 13/16
3	3/16	3 3/16
4	1/4	3 3/4
6	1/4	6 1/4
8 (PVC)	1/4	8 1/4
10 (PVC)	5/16	10 3/8
12 (PVC)	3/8	13 7/16
14 <sup>(F)</sup> (PVC)	3	17
16 <sup>(F)</sup> (PVC)	3 3/8	19 3/8

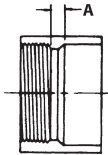


## PART NO. 101

## Female Adapter

FPT X HUB

SIZE	A
1 1/2 (PVC)	1/4
1 1/2 (ABS)	3/16
2 (PVC)	1/4
2 (ABS)	5/32
3 (PVC)	5/16
3 (ABS)	7/32
4	1 1/32
6 (PVC)	1/4
6 (ABS)	3/32
8 (PVC)	9/16
10 <sup>(F)</sup> (PVC)	2 7/8
12 <sup>(F)</sup> (PVC)	3 3/16



## PART NO. PVC 101X

## Female Adapter with Cleanout Plug

FPT X HUB

SIZE	
8 (PVC)	See Part No. 101 and 106
10 <sup>(F)</sup> (PVC)	
12 <sup>(F)</sup> (PVC)	

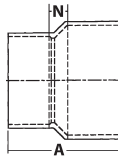
<sup>(F)</sup> Fabricated

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. 102

## Pipe Increaser–Reducer

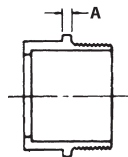
HUB X HUB		
SIZE	A	N
1½ x 2 (PVC)	2 <sup>5</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>
1½ x 2 (ABS)	2 <sup>3</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>8</sub>
1½ x 3	3 <sup>11</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>
2 x 3 (PVC)	3 <sup>5</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>8</sub>
2 x 3 (ABS)	3 <sup>17</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>
2 x 4 (PVC)	4	1 <sup>3</sup> / <sub>8</sub>
2 x 4 (ABS)	4 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>
3 x 4	4 <sup>3</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>
3 x 6 (PVC)	6 <sup>1</sup> / <sub>2</sub>	2
4 x 6 (PVC)	6 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>
4 x 8 (PVC)	7 <sup>1</sup> / <sub>2</sub>	1 <sup>23</sup> / <sub>32</sub>
6 x 8 (PVC)	8 <sup>13</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>32</sub>
4 x 10** (PVC)	11 <sup>25</sup> / <sub>64</sub>	4 <sup>15</sup> / <sub>32</sub>
4 x 12** (PVC)	13 <sup>3</sup> / <sub>8</sub>	5 <sup>19</sup> / <sub>32</sub>
4 x 14 <sup>(F)</sup> (PVC)	19	9 <sup>3</sup> / <sub>4</sub>
4 x 16 <sup>(F)</sup> (PVC)	20 <sup>5</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>4</sub>
6 x 10 (PVC)	9 <sup>27</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>
6 x 12** (PVC)	13 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>
6 x 14 <sup>(F)</sup> (PVC)	20 <sup>3</sup> / <sub>4</sub>	10 <sup>15</sup> / <sub>32</sub>
6 x 16 <sup>(F)</sup> (PVC)	22 <sup>1</sup> / <sub>8</sub>	10 <sup>23</sup> / <sub>32</sub>
8 x 10 (PVC)	10 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>16</sub>
8 x 12 (PVC)	12 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>16</sub>
8 x 14 <sup>(F)</sup> (PVC)	22 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>8</sub>
8 x 16 <sup>(F)</sup> (PVC)	24 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>8</sub>
10 x 12 (PVC)	12 <sup>3</sup> / <sub>4</sub>	1 <sup>11</sup> / <sub>16</sub>
10 x 14 <sup>(F)</sup> (PVC)	17 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>4</sub>
10 x 16 <sup>(F)</sup> (PVC)	25	12
12 x 14 <sup>(F)</sup> (PVC)	16 <sup>11</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>16</sub>
12 x 16 <sup>(F)</sup> (PVC)	20 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>16</sub>
14 x 16 <sup>(F)</sup> (PVC)	19 <sup>7</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>



## PART NO. 103

## Trap Adapter–Male, Less Washer &amp; Metal Nut

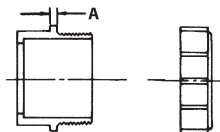
DWV SPIGOT X TUBULAR SLIP	
SIZE	A
1½ x 1¼ (PVC)	1 <sup>3</sup> / <sub>64</sub>
1½	1 <sup>3</sup> / <sub>64</sub>
2	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 103P

## Trap Adapter–Male, with Washer &amp; Polyethylene Nut

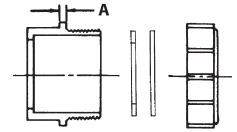
DWV SPIGOT X TUBULAR SLIP	
SIZE	A
1½ x 1¼	1 <sup>3</sup> / <sub>64</sub>
1½	1 <sup>3</sup> / <sub>64</sub>
2 (PVC)	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 103R

## Trap Adapter–Male, with 1½" PVC Nut &amp; Washer &amp; 1½" x 1¼" Washer

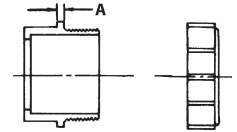
DWV SPIGOT X TUBULAR SLIP WITH PVC NUT	
SIZE	A
1½	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 103W

## Trap Adapter–Male, with Washer &amp; PVC Nut

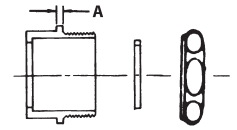
DWV SPIGOT X TUBULAR SLIP WITH PVC NUT	
SIZE	A
1½ x 1¼	1 <sup>3</sup> / <sub>64</sub>
1½	1 <sup>3</sup> / <sub>64</sub>
2	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 103X

## Trap Adapter–Male, with Washer &amp; Chrome Nut

DWV SPIGOT X TUBULAR SLIP	
SIZE	A
1½ x 1¼	1 <sup>3</sup> / <sub>64</sub>
1½	1 <sup>3</sup> / <sub>64</sub>
2 (PVC)	3 <sup>1</sup> / <sub>16</sub>

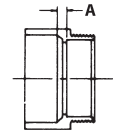


## PART NO. 104

## Trap Adapter–Female

NOTE: NOT A MALE ADAPTER.  
DWV HUB X TUBULAR SLIP

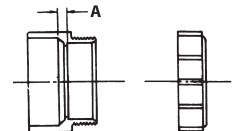
SIZE	A
1½ x 1¼	5 <sup>1</sup> / <sub>16</sub>
1½	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 104P

## Trap Adapter–Female, with Washer &amp; Polyethylene Nut

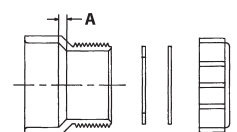
DWV HUB X TUBULAR SLIP	
SIZE	A
1½ x 1¼	5 <sup>1</sup> / <sub>16</sub>
1½	3 <sup>1</sup> / <sub>16</sub>



## PART NO. 104R

## Trap Adapter–Female, with 1½" PVC Nut &amp; Washer &amp; 1½" x 1¼" Washer

DWV HUB X TUBULAR SLIP WITH PVC NUT	
SIZE	A
1½	3 <sup>1</sup> / <sub>16</sub>



<sup>(F)</sup> Fabricated

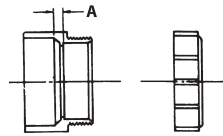
\*\* Assembled from two molded components

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. 104W****Trap Adapter—Female, with Washer & PVC Nut**

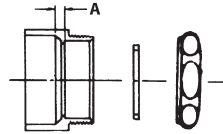
DWV HUB X TUBULAR SLIP WITH PVC NUT

SIZE	A
1¼ (ABS)	3/16
1½ x 1¼	5/16
1½	3/16
2 (PVC)	9/64

**PART NO. 104X****Trap Adapter—Female, with Washer & Chrome Nut**

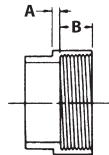
DWV HUB X TUBULAR SLIP

SIZE	A
1¼ (PVC)	3/16
1½ x 1¼ (PVC)	5/16
1½	3/16
2	9/64

**PART NO. 105****Fitting Cleanout Adapter**

SPIGOT X FPT

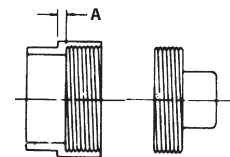
SIZE	A	B
1¼ (PVC)	3/16	3/4
1½ (PVC)	5/32	5/8
1½ (ABS)	3/16	23/32
2 (PVC)	5/32	5/8
2 (ABS)	1/16	27/32
3 (PVC)	7/32	3/4
3 (ABS)	7/32	13/32
4 (PVC)	1/4	7/8
4 (ABS)	7/32	19/32
6 (PVC)	5/16	17/16
8 (PVC)	3/8	1½
10 <sup>(F)</sup> (PVC)	15/16	2¼
12 <sup>(F)</sup> (PVC)	1½	27/16

**PART NO. 105X****Fitting Cleanout Adapter with Cleanout Plug**

SPIGOT X FPT

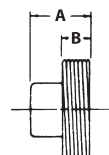
SIZE	A
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For dimensions see part numbers 105 and 106.

**PART NO. 106****Cleanout Plug**

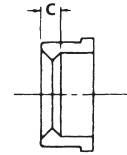
MPT

SIZE	A	B
1½	13/8	5/8
2 (PVC)	13/8	5/8
2½ (ABS)	1½	3/4
3	1¾	¾
4	17/8	7/8
6 (PVC)	2	1
6 (ABS)	17/8	31/32
8 (PVC)	23/8	13/8
10 (PVC)	27/16	17/16
12 (PVC)	27/32	17/32

**PART NO. 107****Flush Bushing**

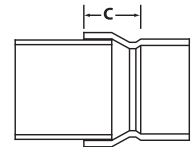
SPIGOT X HUB

SIZE	C
1½ x 1¼	3/16
2 x 1¼	5/16
2 x 1½ (PVC)	5/16
2 x 1½ (ABS)	1/8
3 x 1½ (PVC)	1
3 x 1½ (ABS)	25/32
3 x 2 (PVC)	7/8
3 x 2 (ABS)	23/32
4 x 2 (PVC)	1½
4 x 2 (ABS)	13/16
4 x 3 (PVC)	1½
4 x 3 (ABS)	1¼
6 x 4 (PVC)	1¾
6 x 4 (ABS)	121/32
8 x 4 (PVC)	27/8
8 x 6 (PVC)	15/8
10 x 4** (PVC)	47/16
10 x 6** (PVC)	35/32
10 x 8 (PVC)	1½
12 x 4** (PVC)	55/32
12 x 6** (PVC)	45/32
12 x 8 (PVC)	2½
12 x 10 (PVC)	1½

**PART NO. PVC 107****Concentric Reducer Bushing**

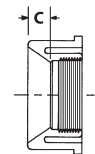
SPIGOT X HUB

SIZE	C
14 x 4 <sup>(F)</sup> (PVC)	8
14 x 6 <sup>(F)</sup> (PVC)	863/64
14 x 8 <sup>(F)</sup> (PVC)	97/16
14 x 10 <sup>(F)</sup> (PVC)	95/8
14 x 12 <sup>(F)</sup> (PVC)	73/8
16 x 4 <sup>(F)</sup> (PVC)	8¾
16 x 6 <sup>(F)</sup> (PVC)	9¼
16 x 8 <sup>(F)</sup> (PVC)	10¼
16 x 10 <sup>(F)</sup> (PVC)	107/8
16 x 12 <sup>(F)</sup> (PVC)	105/8
16 x 14 <sup>(F)</sup> (PVC)	9¼

**PART NO. 108****Flush Bushing (Cleanout Adapter)**

SPIGOT X FPT

SIZE	C
2 x 1½	5/16
8 x 6 <sup>(CP)</sup> (PVC)	15/8
10 x 8 (PVC)	1½
12 x 8 (PVC)	113/16

<sup>(F)</sup> Fabricated

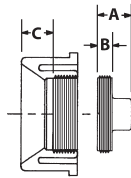
\*\* Assembled from two molded components

<sup>(CP)</sup> PVC 108, 8"x6" is available only as a component part of PVC 444X.

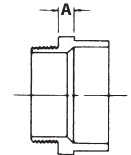
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. PVC 108X****Flush Bushing (Cleanout Adapter)  
with Plug**

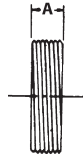
SPIGOT			
SIZE	A	B	C
10 x 8 (PVC)	For dimensions see part numbers 106 & 108		
12 x 8 (PVC)			

**PART NO. 109****Male Adapter**  
MPT X HUBNOTE: NOT A TRAP ADAPTER. WILL NOT ACCEPT A TAIL PIECE.  
SEE PART NUMBER 104

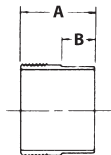
SIZE	A
1 1/4 (PVC)	3/16
1 1/4 x 1 1/2 (PVC)	3/16
1 1/2	3/16
2	3/16
3	3/8
4	3/8

(Octagon shoulders for  
tightening purposes.)**PART NO. 110****Flush Cleanout Plug**

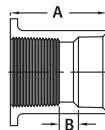
SIZE	A
2 (PVC)	5/8
2 (ABS)	1 1/16
3 (PVC)	3/4
3 (ABS)	27/32
4 (PVC)	3/4
4 (ABS)	7/8

**PART NO. 111****Male Fitting Adapter**

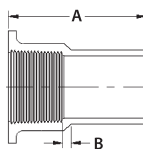
MPT X SPIGOT		
SIZE	A	B
1 1/2	1 13/16	3/4
1 1/2 x 1 1/4 (PVC)	1 11/16	11/16
2 (PVC)	1 9/16	7/8
2 (ABS)	1 7/8	7/8
3 (PVC)	3 1/16	1 1/2

**PART NO. PVC 113****Tray Plug Adapter**  
HUB

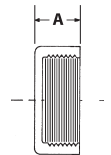
SIZE	A	B
1 1/2 (PVC)	2 9/16	1 7/32

**PART NO. ABS 113S****Tray Plug Adapter**  
SPIGOT

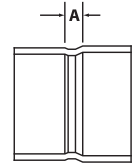
SIZE	A	B
1 1/2 (ABS)	3 5/16	1/4

**PART NO. ABS 114****Threaded Cap**

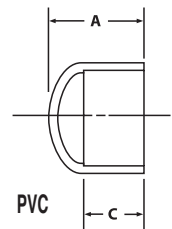
FPT	
SIZE	A
1 1/2 (ABS)	7/8

**PART NO. PVC 115****Adapter Coupling**  
SDR 35 HUB X DWV HUB

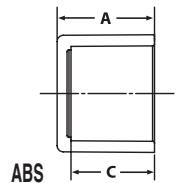
SIZE	A
8 <sup>(F)</sup> (PVC)	1 3/4
10 <sup>(F)</sup> (PVC)	3 1/2
10 x 8 <sup>(F)</sup> (PVC)	3 1/2
12 <sup>(F)</sup> (PVC)	1

**PART NO. 116****Cap  
Socket**

SIZE	A	C
1 1/2 (PVC)	1 15/16	1 5/16
1 1/2 (ABS)	1 1/4	1 1/16
2 (PVC)	2 5/32	1 3/8
2 (ABS)	1 9/16	31/32
3 (PVC)	2 15/16	1 29/32
3 (ABS)	2 3/32	1 27/32
4 (PVC)	3 1/8	2 1/32
4 (ABS)	2 11/32	1 3/4
6 (PVC)	4 3/4	3 5/8
6 (ABS)	3 15/32	3 1/32
8 (PVC)	6 13/32	4
10 (PVC)	7 3/4	5
12 (PVC)	9 7/16	6
14 <sup>(F)</sup> (PVC)	5 1/2	5 1/16
16 <sup>(F)</sup> (PVC)	5 3/4	5 1/4



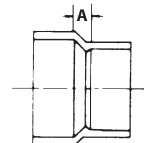
PVC



ABS

**PART NO. 117****Adapter Coupling**(Adapts Sewer and Drain Spigot to DWV Spigot)  
HUB X HUB

SIZE	A
3 x 3 (PVC)	1/8
4 x 3	3/4
4 x 4 (PVC)	1/2
4 x 4 (ABS)	3/8

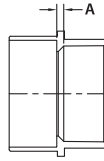
<sup>(F)</sup> Fabricated

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

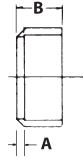


**PART NO. PVC 117X****Adapter Coupling**
 (Adapts Sewer and Drain Spigot to DWV Hub)  
 HUB X SPG

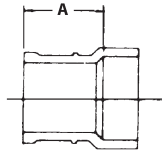
SIZE	A
4 x 3 (PVC)	1/4

**PART NO. 118****Adapter Bushing**
 (Adapts DWV Hub to Sewer and Drain Spigot)  
 DWV SPIGOT X HUB

SIZE	A	B
3 (PVC)	1/4	1 3/4
4	1/4	2

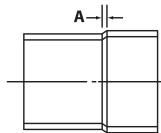
**PART NO. 119****No-Hub Adapter**
 (Adapts Cast Iron No-Hub Spigot to DWV Spigot)  
 SPIGOT X HUB

SIZE	A
1 1/2 (PVC)	1 27/32
2 (PVC)	1 29/32
2 (ABS)	1 5/8
2 x 1 1/2 (PVC)	1 11/16
3	1 13/16
4	1 27/32
4 x 3 (PVC)	2 5/32

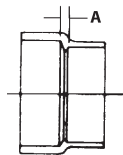
**PART NO. PVC 120****Adapter Bushing**

DWV SPIGOT X SDR 35 HUB

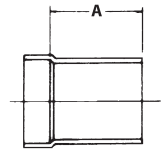
SIZE	A
8 <sup>(F)</sup> (PVC)	5/8
10 <sup>(F)</sup> (PVC)	5/8
12 <sup>(F)</sup> (PVC)	5/8

**PART NO. 122****Spigot Adapter, Cast Iron**
 (Adapts Cast Iron Spigot to DWV Spigot)  
 HUB X HUB

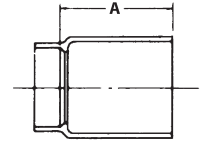
SIZE	A
2 x 2	3/8
3 x 3 (PVC)	7/16
4 x 4 (PVC)	1/2
4 x 4 (ABS)	7/16

**PART NO. 123****Hub Adapter, Cast Iron**
 (Adapts DWV Spigot to Cast Iron Hub)  
 HUB X SPIGOT

SIZE	A
2 x 2 <sup>(P)</sup>	3 23/32
3 x 3 <sup>(P)</sup> (PVC)	4 5/64
4 x 4 <sup>(P)</sup>	4 25/64

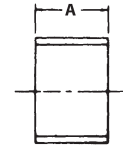
**PART NO. PVC 123R****Hub Adapter, Cast Iron, Increaser**
 (Adapts DWV Spigot to Cast Iron Hub)  
 HUB X SPIGOT

SIZE	A
1 1/2 x 2 <sup>(P)</sup> (PVC)	3 1/2
3 x 4 <sup>(P)</sup> (PVC)	4

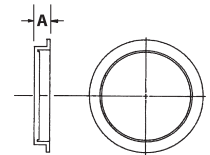
**PART NO. 130****Repair Coupling**

HUB X HUB

SIZE	A
1 1/2 (PVC)	1 5/8
1 1/2 (ABS)	1 1/2
2 (PVC)	1 7/8
2 (ABS)	1 9/16
3	3 3/16
4 (PVC)	3 3/4
4 (ABS)	3 17/32
6 (PVC)	6 1/4
8 <sup>(F)</sup> (PVC)	8 3/16
10 <sup>(F)</sup> (PVC)	10 3/16
12 <sup>(F)</sup> (PVC)	12 3/16

**PART NO. PVC 131****Test Cap<sup>(C1)</sup>**

SIZE	A
1 1/2 (PVC)	9/32
2 (PVC)	9/32
3 (PVC)	5/16
4 (PVC)	3/8

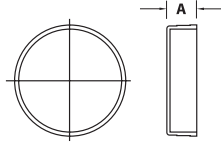
<sup>(C1)</sup> Inserts into pipe<sup>(P)</sup> Plain End: Joint can be made with compression gasket only.<sup>(F)</sup> Fabricated

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. PVC 132

Outside Diameter Test Cap<sup>(C2)</sup>

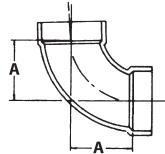
SIZE	A
1½ (PVC)	9/16
2 (PVC)	9/16
3 (PVC)	9/16
4 (PVC)	9/16



## PART NO. 300

1/4 Bend  
(Sanitary 90° Ell)  
ALL HUB

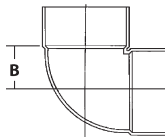
SIZE	A
1¼ (PVC)	19/16
1½	1¾
2 (PVC)	25/16
2 (ABS)	2¼
3	31/16
4	37/8
6	5
8 (PVC)	6
10 (PVC)	99/32
12 (PVC)	11
14 <sup>(F)</sup> (PVC)	163/4
16 <sup>(F)</sup> (PVC)	209/16



## PART NO. PVC 300A

Short 1/4 Bend<sup>(N)</sup>  
(90° Ell)  
ALL HUB

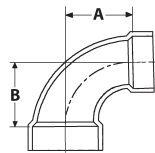
SIZE	B
8 <sup>(N)</sup> (PVC)	4½
10 <sup>(N)</sup> (PVC)	6¼
12 <sup>(N)</sup> (PVC)	75/16



## PART NO. 300R

## 1/4 Bend, Reducing

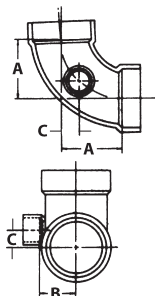
ALL HUB		
SIZE	A	B
2 x 1½	27/16	25/16



## PART NO. 300S

## 1/4 Bend with Side Inlet

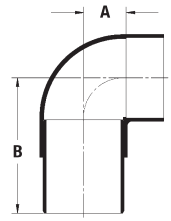
HUB X HUB			
SIZE	A	B	C
3 x 3 x 1½ (PVC)	35/64	17/8	15/16
3 x 3 x 2	35/64	17/8	15/16



## PART NO. PVC 301

## Vent 1/4 Bend, Street

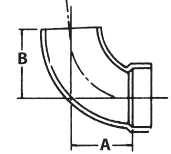
HUB X SPIGOT		
SIZE	A	B
8 <sup>(F)</sup> (PVC)	4½	13½
10 <sup>(F)</sup> (PVC)	6¼	183/4
12 <sup>(F)</sup> (PVC)	79/16	1813/16



## PART NO. 302

1/4 Bend, Street  
(Sanitary 90° Street Ell)  
SPIGOT X HUB

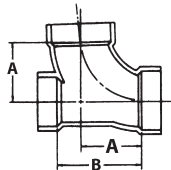
SIZE	A	B
1¼ (PVC)	15/8	25/16
1½	1¾	2½
2	25/16	33/16
3	31/16	49/16
4	37/8	55/8
6 (PVC)	53/16	81/8
8 (PVC)	61/8	10
10 <sup>(F)</sup> (PVC)	147/16	193/4
12 <sup>(F)</sup> (PVC)	163/8	19
14 <sup>(F)</sup> (PVC)	16¼	239/16
16 <sup>(F)</sup> (PVC)	197/8	237/16



## PART NO. 303

## 1/4 Bend, with Low Heel Inlet

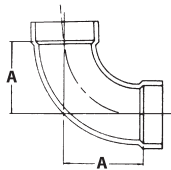
ALL HUB		
SIZE	A	B
3 x 3 x 1½ (PVC)	31/16	49/16
3 x 3 x 1½ (ABS)	31/16	41/8
3 x 3 x 2	31/16	47/16
4 x 4 x 2	37/8	57/16



## PART NO. 304

## Long Sweep 1/4 Bend

HUB X HUB	
SIZE	A
1½	2¾
2	3¼
3 (PVC)	41/16
3 (ABS)	4
4	415/16
6 (PVC)	9

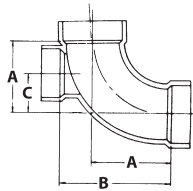
<sup>(C2)</sup> Inserts over pipe<sup>(F)</sup> Fabricated<sup>(N)</sup> Not a sanitary pattern

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. PVC 305

**Long Sweep 1/4 Bend  
with High Heel Inlet**

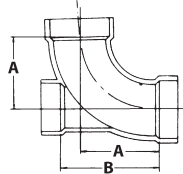
ALL HUB			
SIZE	A	B	C
3 x 3 x 2 (PVC)	4 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>



## PART NO. 307

**Long Sweep 1/4 Bend  
with Low Heel Inlet**

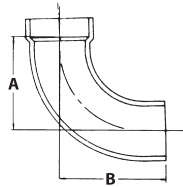
ALL HUB		
SIZE	A	B
3 x 3 x 1 1/2 (ABS)	4	4 <sup>19</sup> / <sub>32</sub>
3 x 3 x 2 (PVC)	4 <sup>1</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>
3 x 3 x 2 (ABS)	3 <sup>15</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>16</sub>



## PART NO. 309

**Long Sweep 1/4 Bend, Street**

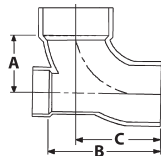
HUB X SPIGOT		
SIZE	A	B
1 1/2 (PVC)	2 <sup>3</sup> / <sub>4</sub>	3 <sup>19</sup> / <sub>32</sub>
1 1/2 (ABS)	2 <sup>25</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>
2	3 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>
3	4 <sup>5</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>16</sub>
4 (PVC)	4 <sup>15</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>



## PART NO. 310

**1/4 Bend, Street  
with Low Heel Inlet**

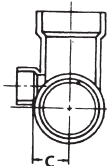
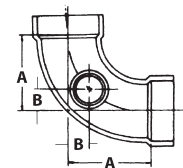
HUB X SPIGOT X HUB			
SIZE	A	B	C
3 x 3 x 2	3 <sup>1</sup> / <sub>16</sub>	5 <sup>15</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>



## PART NO. PVC 311

**Long Sweep 1/4 Bend,  
with Side Inlet**

ALL HUB			
SIZE	A	B	C
3 x 3 x 2 (PVC)	4 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>

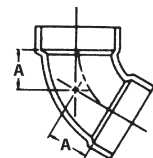


## PART NO. 319

**1/6 Bend**

 (60° Ell)  
 HUB X HUB

SIZE	A
1 1/2	1
2 (PVC)	1 <sup>5</sup> / <sub>16</sub>
2 (ABS)	1 <sup>1</sup> / <sub>4</sub>
3	1 <sup>11</sup> / <sub>16</sub>
4 (PVC)	2 <sup>1</sup> / <sub>16</sub>
4 (ABS)	2

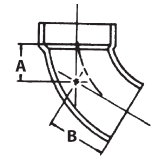


## PART NO. 320

**1/6 Bend, Street**

 (60° Street Ell)  
 HUB X SPIGOT

SIZE	A	B
1 1/2	1	1 <sup>3</sup> / <sub>4</sub>
2	1 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>
3	1 <sup>11</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>16</sub>
4 (PVC)	2 <sup>1</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>16</sub>

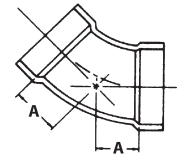


## PART NO. 321

**1/8 Bend**

 (45° Ell)  
 HUB X HUB

SIZE	A
1 1/4 (PVC)	1
1 1/2	1 <sup>1</sup> / <sub>8</sub>
2	1 <sup>1</sup> / <sub>2</sub>
3	1 <sup>3</sup> / <sub>4</sub>
4	2 <sup>3</sup> / <sub>16</sub>
6	2 <sup>1</sup> / <sub>16</sub>
8 (PVC)	2 <sup>1</sup> / <sub>16</sub>
10 (PVC)	3 <sup>1</sup> / <sub>8</sub>
12 (PVC)	3 <sup>31</sup> / <sub>64</sub>
14 <sup>(F)</sup> (PVC)	8 <sup>1</sup> / <sub>4</sub>
16 <sup>(F)</sup> (PVC)	10 <sup>5</sup> / <sub>16</sub>

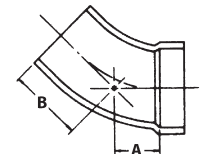


## PART NO. 323

**1/8 Bend, Street**

 (45° Street Ell)  
 SPIGOT X HUB

SIZE	A	B
1 1/4 (PVC)	1	1 <sup>3</sup> / <sub>4</sub>
1 1/2 (PVC)	1 <sup>1</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>
1 1/2 (ABS)	1 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>
2 (PVC)	1 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>8</sub>
2 (ABS)	1 <sup>15</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>
3	1 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>
4	2 <sup>3</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>
6 (PVC)	2 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>64</sub>
6 (ABS)	2 <sup>1</sup> / <sub>16</sub>	5
8 (PVC)	2	6 <sup>3</sup> / <sub>32</sub>
10 (PVC)	3 <sup>1</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>32</sub>
12 (PVC)	3 <sup>31</sup> / <sub>64</sub>	9 <sup>1</sup> / <sub>2</sub>
14 <sup>(F)</sup> (PVC)	9 <sup>3</sup> / <sub>8</sub>	15 <sup>9</sup> / <sub>16</sub>
16 <sup>(F)</sup> (PVC)	10 <sup>5</sup> / <sub>16</sub>	18 <sup>1</sup> / <sub>2</sub>



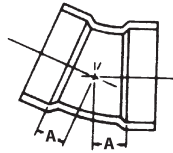
(F) Fabricated

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. 324

**1/16 Bend**  
(22½° Ell)  
HUB X HUB

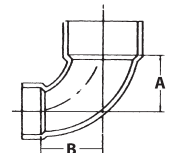
SIZE	A
1½	½
2 (PVC)	11/16
2 (ABS)	½
3	13/16
4	1
6	1½
8 (PVC)	1½
10 (PVC)	2
12 (PVC)	2
14 <sup>(F)</sup> (PVC)	5¼
16 <sup>(F)</sup> (PVC)	513/16



## PART NO. 329

**Closet Bend, Reducing**

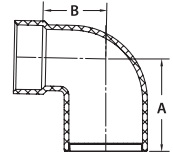
SIZE	HUB X HUB	
	A	B
3 x 4 (PVC)	3	33/8
3 x 4 (ABS)	33/32	37/16



## PART NO. 330

**Closet Bend, Reducing**

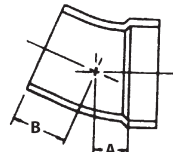
SIZE	HUB X SPIGOT	
	A	B
3 x 4	51/16	311/32



## PART NO. 326

**1/16 Bend, Street**  
(22½° Street Ell)  
SPIGOT X HUB

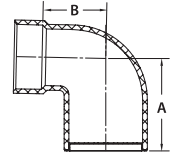
SIZE	A	B
1½	½	1¼
2	11/16	1½
3	13/16	25/16
4	1	2¾
6 (PVC)	1½	53/64
8 <sup>(F)</sup> (PVC)	61/8	1015/16
10 <sup>(F)</sup> (PVC)	511/16	11¾
12 <sup>(F)</sup> (PVC)	5½	141/16
14 <sup>(F)</sup> (PVC)	69/16	137/8
16 <sup>(F)</sup> (PVC)	85/16	16¾



## PART NO. 330X

**Closet Bend, Reducing with Test Cap**

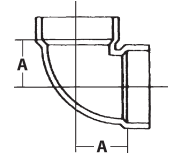
SIZE	HUB X SPIGOT	
	A	B
3 x 4	51/16	311/32



## PART NO. 331

**Vent Ell**  
(90° Short Turn Ell)  
HUB X HUB

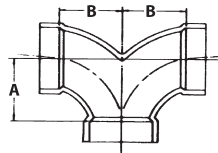
SIZE	A
1½	13/16
2	1½
3	17/8



## PART NO. 327

**Double 1/4 Bend**

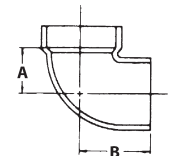
SIZE	ALL HUB	
	A	B
1½	1¾	1¾
2 (PVC)	25/16	25/16
2 (ABS)	2¼	25/16
3 (PVC)	31/16	31/16
3 (ABS)	3	3
2 x 1½ x 1½ (PVC)	115/16	23/16
2 x 1½ x 1½ (ABS)	129/32	2



## PART NO. 333

**Vent Ell, Street**  
(90° Short Turn Street Ell)  
HUB X SPIGOT

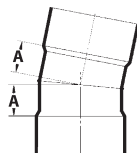
SIZE	A	B
1½ (PVC)	17/32	115/16
1½ (ABS)	13/16	115/16
2	1½	23/8
3 (PVC)	17/8	31/2



## PART NO. PVC 328

**1/32 Bend**  
HUB X HUB

SIZE	A
8 <sup>(F)</sup> (PVC)	51/8
10 <sup>(F)</sup> (PVC)	57/8
12 <sup>(F)</sup> (PVC)	511/16



(F) Fabricated

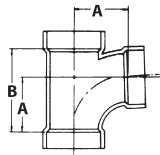
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. 400

## Sanitary Tee

ALL HUB

SIZE	A	B
1¼ (PVC)	1⅞	2⅝
1½ (PVC)	1¾	2¾
1½ (ABS)	1 <sup>23</sup> / <sub>32</sub>	2 <sup>21</sup> / <sub>32</sub>
2 (PVC)	2⅝	3 <sup>11</sup> / <sub>16</sub>
2 (ABS)	2⅝	3 <sup>19</sup> / <sub>32</sub>
3 (PVC)	3⅞	4⅞
3 (ABS)	3 <sup>1</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>16</sub>
4	3⅞	6⅞
6	5	8½
8 (PVC)	6	10½
10 <sup>(F)</sup> (PVC)	16 <sup>13</sup> / <sub>32</sub>	16½
12 <sup>(F)</sup> (PVC)	19⅞	19½

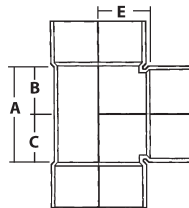


## PART NO. PVC 400A

Straight Tee <sup>(N)</sup>

ALL HUB

SIZE	A	B	C	E
8 <sup>(N)</sup> (PVC)	9	4½	4½	4½
10 <sup>(N)</sup> (PVC)	12½	6¼	6¼	6⅝
12 <sup>(N)</sup> (PVC)	14 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	7¼
14 <sup>(N)(F)</sup> (PVC)	21	10½	10½	11⅝
16 <sup>(N)(F)</sup> (PVC)	23⅞	11 <sup>15</sup> / <sub>16</sub>	11 <sup>15</sup> / <sub>16</sub>	14 <sup>3</sup> / <sub>16</sub>

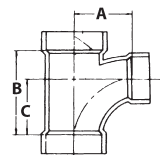


## PART NO. 401

## Sanitary Tee, Reducing

ALL HUB

SIZE	A	B	C
2 x 1½ x 1½ (PVC)	2⅝	3⅞	1 <sup>15</sup> / <sub>16</sub>
2 x 1½ x 1½ (ABS)	2 <sup>5</sup> / <sub>32</sub>	3⅞	1 <sup>29</sup> / <sub>32</sub>
2 x 1½ x 2 (PVC)	2⅝	3 <sup>11</sup> / <sub>16</sub>	2⅝
2 x 1½ x 2 (ABS)	2 <sup>9</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	2¼
2 x 2 x 1½	2⅝	3⅞	1 <sup>15</sup> / <sub>16</sub>
3 x 3 x 1½ (PVC)	2 <sup>9</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	1¾
3 x 3 x 1½ (ABS)	2½	2⅝	1 <sup>23</sup> / <sub>32</sub>
3 x 3 x 2 (PVC)	2⅞	3 <sup>5</sup> / <sub>16</sub>	2⅞
3 x 3 x 2 (ABS)	2⅞	3¼	2 <sup>1</sup> / <sub>32</sub>
4 x 4 x 1½ (PVC)	3¼	3⅞	2
4 x 4 x 2	3⅝	3⅞	2⅞
4 x 4 x 3 (PVC)	3⅝	4¾	3
4 x 4 x 3 (ABS)	3 <sup>17</sup> / <sub>32</sub>	4 <sup>21</sup> / <sub>32</sub>	2 <sup>31</sup> / <sub>32</sub>
6 x 6 x 4 (PVC)	4 <sup>27</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>64</sub>	3 <sup>25</sup> / <sub>32</sub>
6 x 6 x 4 (ABS)	4 <sup>9</sup> / <sub>32</sub>	5 <sup>25</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>
8 x 8 x 4** (PVC)	9⅞	10⅞	6
8 x 8 x 6** (PVC)	7¾	10 <sup>31</sup> / <sub>64</sub>	6 <sup>3</sup> / <sub>64</sub>

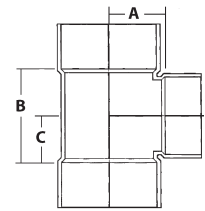


## PART NO. PVC 401A

Straight Tee, Reducing <sup>(N)</sup>

ALL HUB

SIZE	A	B	C
8 x 8 x 4 <sup>(N)**</sup> (PVC)	7⅞	10½	5¼
8 x 8 x 6 <sup>(N)**</sup> (PVC)	6⅞	10½	5¼
10 x 10 x 4 <sup>(N)**</sup> (PVC)	9¼	10⅞	5⅞
10 x 10 x 6 <sup>(N)**</sup> (PVC)	8	10⅞	5⅞
10 x 10 x 8 <sup>(N)</sup> (PVC)	6 <sup>1</sup> / <sub>32</sub>	10⅞	5⅞
12 x 12 x 4 <sup>(N)***</sup> (PVC)	9 <sup>27</sup> / <sub>32</sub>	10¼	5⅞
12 x 12 x 6 <sup>(N)**</sup> (PVC)	8 <sup>29</sup> / <sub>32</sub>	10¼	5⅞
12 x 12 x 8 <sup>(N)</sup> (PVC)	7 <sup>9</sup> / <sub>32</sub>	10¼	5⅞
12 x 12 x 10 <sup>(N)</sup> (PVC)	7 <sup>9</sup> / <sub>16</sub>	12 <sup>7</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>
14 x 14 x 4 <sup>(N)(F)</sup> (PVC)	10 <sup>11</sup> / <sub>16</sub>	10	5
14 x 14 x 6 <sup>(N)(F)</sup> (PVC)	11¼	12	6
14 x 14 x 8 <sup>(N)(F)</sup> (PVC)	11⅝	15	7½
14 x 14 x 10 <sup>(N)(F)</sup> (PVC)	12	17	8½
14 x 14 x 12 <sup>(N)(F)</sup> (PVC)	12 <sup>3</sup> / <sub>8</sub>	19	9½
16 x 16 x 4 <sup>(N)(F)</sup> (PVC)	12 <sup>15</sup> / <sub>16</sub>	10⅞	5⅞
16 x 16 x 6 <sup>(N)(F)</sup> (PVC)	12¼	14	7
16 x 16 x 8 <sup>(N)(F)</sup> (PVC)	12 <sup>5</sup> / <sub>8</sub>	16	8
16 x 16 x 10 <sup>(N)(F)</sup> (PVC)	13	18	9
16 x 16 x 12 <sup>(N)(F)</sup> (PVC)	13 <sup>7</sup> / <sub>16</sub>	19¾	9⅞
16 x 16 x 14 <sup>(N)(F)</sup> (PVC)	13 <sup>15</sup> / <sub>16</sub>	23	11½

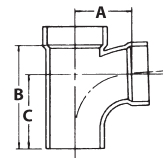


## PART NO. 403

## Sanitary Tee, Street

SPIGOT X HUB X HUB

SIZE	A	B	C
1½ (PVC)	1¾	3½	2½
1½ (ABS)	1 <sup>23</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>32</sub>
2 (PVC)	2⅝	4 <sup>9</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>
2 (ABS)	2⅝	4 <sup>15</sup> / <sub>32</sub>	3⅞
3	3	6⅞	4 <sup>9</sup> / <sub>16</sub>
4	3⅞	7⅞	5⅞

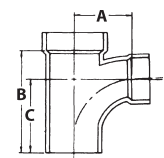


## PART NO. 404

## Sanitary Tee, Street Reducing

SPIGOT X HUB X HUB

SIZE	A	B	C
2 x 1½ x 1½ (PVC)	2 <sup>5</sup> / <sub>32</sub>	4	2 <sup>27</sup> / <sub>32</sub>
2 x 1½ x 1½ (ABS)	2 <sup>3</sup> / <sub>16</sub>	4	2¾
2 x 1½ x 2 (ABS)	2⅝	4 <sup>17</sup> / <sub>32</sub>	3⅞
2 x 2 x 1½ (PVC)	2⅞	4	2⅞
2 x 2 x 1½ (ABS)	2 <sup>5</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	2⅞
3 x 3 x 1½	2 <sup>9</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	3¼
3 x 3 x 2	2⅞	4¾	3⅞
4 x 4 x 2 (PVC)	3⅝	4 <sup>15</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>16</sub>

<sup>(F)</sup> Fabricated<sup>(N)</sup> Not a sanitary pattern

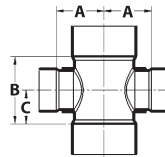
\*\* Assembled from two molded components

\*\*\* Assembled from three molded components

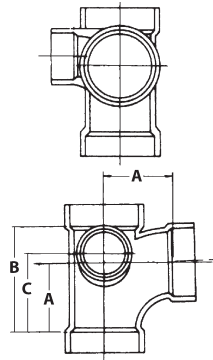
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. PVC 410****Tee Cross**

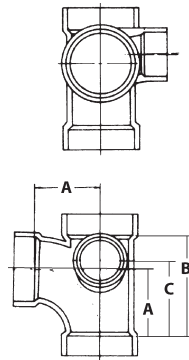
ALL HUB			
SIZE	A	B	C
6 x 6 x 4 x 4 <sup>(F)</sup> (PVC)	5 <sup>11</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>8</sub>
6 x 6 x 6 x 6 <sup>(F)</sup> (PVC)	6 <sup>1</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>8</sub>
8 x 8 x 4 x 4 <sup>(F)</sup> (PVC)	6 <sup>5</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>
8 x 8 x 6 x 6 <sup>(F)</sup> (PVC)	7 <sup>7</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>16</sub>
8 x 8 x 8 x 8 <sup>(F)</sup> (PVC)	8 <sup>5</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>8</sub>	6 <sup>9</sup> / <sub>16</sub>
10 x 10 x 4 x 4 <sup>(F)</sup> (PVC)	7 <sup>3</sup> / <sub>4</sub>	12	6
10 x 10 x 6 x 6 <sup>(F)</sup> (PVC)	8 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>
10 x 10 x 8 x 8 <sup>(F)</sup> (PVC)	8 <sup>7</sup> / <sub>8</sub>	13 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>4</sub>
10 x 10 x 10 x 10 <sup>(F)</sup> (PVC)	8	18 <sup>3</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>16</sub>
12 x 12 x 4 x 4 <sup>(F)</sup> (PVC)	8 <sup>7</sup> / <sub>8</sub>	10	5
12 x 12 x 6 x 6 <sup>(F)</sup> (PVC)	9 <sup>3</sup> / <sub>4</sub>	12	6
12 x 12 x 8 x 8 <sup>(F)</sup> (PVC)	9 <sup>7</sup> / <sub>8</sub>	15 <sup>3</sup> / <sub>4</sub>	7 <sup>7</sup> / <sub>8</sub>
12 x 12 x 10 x 10 <sup>(F)</sup> (PVC)	10 <sup>1</sup> / <sub>4</sub>	16	8
12 x 12 x 12 x 12 <sup>(F)</sup> (PVC)	9 <sup>1</sup> / <sub>8</sub>	21	10 <sup>1</sup> / <sub>2</sub>

**PART NO. 416****Sanitary Tee with Left Side Inlet**

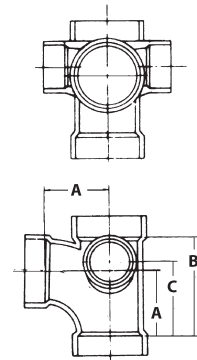
ALL HUB			
SIZE	A	B	C
3 x 3 x 3 x 1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
3 x 3 x 3 x 2 (PVC)	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
3 x 3 x 3 x 2 (ABS)	3 <sup>1</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>16</sub>	3 <sup>23</sup> / <sub>32</sub>
4 x 4 x 4 x 2 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	5

**PART NO. 417****Sanitary Tee with Right Side Inlet**

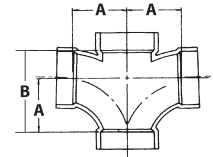
ALL HUB			
SIZE	A	B	C
3 x 3 x 3 x 1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
3 x 3 x 3 x 2 (PVC)	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
3 x 3 x 3 x 2 (ABS)	3 <sup>1</sup> / <sub>32</sub>	4 <sup>27</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>
4 x 4 x 4 x 2 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	5

**PART NO. 418****Sanitary Tee with Left & Right Side Inlets**

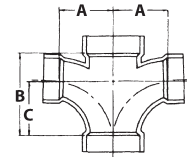
ALL HUB			
SIZE	A	B	C
3 x 3 x 3 x 2 x 2	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
4 x 4 x 4 x 2 x 2 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	5

**PART NO. 428****Double Sanitary Tee**

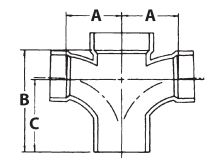
(Sanitary Cross) ALL HUB			
SIZE	A	B	
1 <sup>1</sup> / <sub>2</sub> (PVC)	1 <sup>9</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	
1 <sup>1</sup> / <sub>2</sub> (ABS)	1 <sup>29</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	
2 (PVC)	2 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	
2 (ABS)	2 <sup>5</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>16</sub>	
3	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	
4 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	
4 (ABS)	3 <sup>27</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	

**PART NO. 429****Double Sanitary Tee, Reducing**

(Sanitary Cross) ALL HUB			
SIZE	A	B	C
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	2 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	1 <sup>15</sup> / <sub>16</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	2 <sup>5</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>32</sub>	2
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	2 <sup>9</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	2 <sup>1</sup> / <sub>2</sub>	2 <sup>19</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>
3 x 3 x 2 x 2 (PVC)	2 <sup>7</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>8</sub>
3 x 3 x 2 x 2 (ABS)	2 <sup>29</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>
4 x 4 x 2 x 2 (PVC)	3 <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>
4 x 4 x 2 x 2 (ABS)	3 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	2
4 x 4 x 3 x 3 (PVC)	3 <sup>9</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>4</sub>	3
4 x 4 x 3 x 3 (ABS)	3 <sup>5</sup> / <sub>8</sub>	4 <sup>21</sup> / <sub>32</sub>	2 <sup>31</sup> / <sub>32</sub>

**PART NO. PVC 431****Double Sanitary Tee  
Street, Reducing**

(Sanitary Cross) SPIGOT X HUB X HUB X HUB			
SIZE	A	B	C
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	2 <sup>9</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>4</sub>



(F) Fabricated

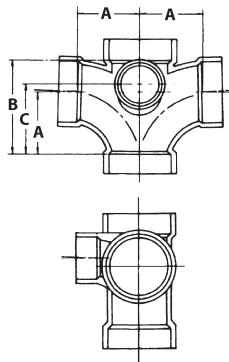
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.



## PART NO. PVC 438

**Double Sanitary Tee with Side Inlet**  
 (Sanitary Cross)  
 ALL HUB

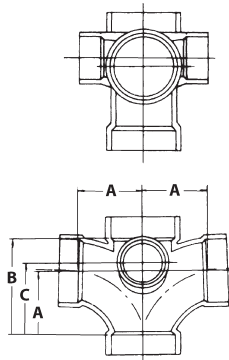
SIZE	A	B	C
3 x 3 x 3 x 3 x 2 (PVC)	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
4 x 4 x 4 x 4 x 2 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	5



## PART NO. PVC 439

**Double Sanitary Tee**  
**with Left & Right Side Inlets**  
 (Sanitary Cross)  
 ALL HUB

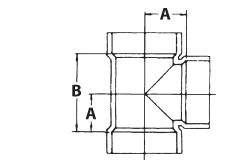
SIZE	A	B	C
3x3x3x3x2x2 (PVC)	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>
4x4x4x4x2x2 (PVC)	3 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	5



## PART NO. 441

**Vent Tee**  
 ALL HUB

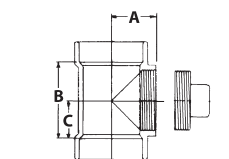
SIZE	A	B
1 <sup>1</sup> / <sub>2</sub> (PVC)	1 <sup>9</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>
1 <sup>1</sup> / <sub>2</sub> (ABS)	1 <sup>7</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>
2	1 <sup>1</sup> / <sub>2</sub>	3
3 (PVC)	1 <sup>7</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>
3 (ABS)	1 <sup>15</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>
4 (PVC)	2 <sup>1</sup> / <sub>2</sub>	5



## PART NO. 444X

**Cleanout Tee with Cleanout Plug**  
 HUB X HUB X FPT

SIZE	A	B	C
1 <sup>1</sup> / <sub>2</sub>	1 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>
2	2 <sup>1</sup> / <sub>4</sub>	3	1 <sup>1</sup> / <sub>2</sub>
3	2 <sup>11</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>15</sup> / <sub>16</sub>
4	3 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
6 (PVC)	4	8	4
6 x 6 x 4** (PVC)	8	8	4
8 (PVC)	5 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>32</sub>
8 x 8 x 4 <sup>(F)</sup> (PVC)	7 <sup>3</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>8</sub>
8 x 8 x 6*** (PVC)	8 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>
10 (PVC)	12 <sup>3</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>
10 x 10 x 4 <sup>(F)</sup> (PVC)	8 <sup>7</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>
10 x 10 x 6 <sup>(F)</sup> (PVC)	10 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>8</sub>
10 x 10 x 8 (PVC)	10 <sup>3</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>
12 (PVC)	13 <sup>3</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>4</sub>
12 x 12 x 4 <sup>(F)</sup> (PVC)	9 <sup>11</sup> / <sub>16</sub>	10	5
12 x 12 x 6** (PVC)	9 <sup>5</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>16</sub>
12 x 12 x 8 (PVC)	11 <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>32</sub>
12 x 12 x 10 <sup>(F)</sup> (PVC)	13 <sup>5</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>

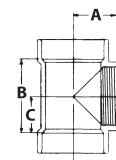


See Part No. 106  
for plug dimensions.

## PART NO. 445

**Cleanout Tee**  
 HUB X HUB X FPT

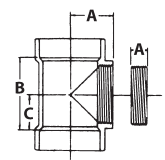
SIZE	A	B	C
1 <sup>1</sup> / <sub>2</sub> (PVC)	1 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>
1 <sup>1</sup> / <sub>2</sub> (ABS)	1 <sup>31</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>
2	2 <sup>1</sup> / <sub>4</sub>	3	1 <sup>1</sup> / <sub>2</sub>
3 (PVC)	2 <sup>11</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>15</sup> / <sub>16</sub>
3 (ABS)	2 <sup>11</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>
4 (PVC)	3 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>
4 (ABS)	3 <sup>3</sup> / <sub>8</sub>	5	2 <sup>1</sup> / <sub>2</sub>
6 (PVC)	4	8	4
8 (PVC)	5 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>32</sub>
8 x 8 x 4 <sup>(F)</sup> (PVC)	7 <sup>3</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>8</sub>
8 x 8 x 6 <sup>(F)</sup> (PVC)	8 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>
10 (PVC)	8 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>
10 x 10 x 4 <sup>(F)</sup> (PVC)	8 <sup>11</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>8</sub>
10 x 10 x 6 <sup>(F)</sup> (PVC)	10 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>8</sub>
10 x 10 x 8 (PVC)	10 <sup>3</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>
12 (PVC)	9 <sup>1</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>16</sub>
12 x 12 x 4 <sup>(F)</sup> (PVC)	9 <sup>11</sup> / <sub>16</sub>	10	5
12 x 12 x 6 <sup>(F)</sup> (PVC)	9 <sup>5</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>16</sub>
12 x 12 x 8 (PVC)	11 <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>32</sub>
12 x 12 x 10 <sup>(F)</sup> (PVC)	13 <sup>5</sup> / <sub>16</sub>	12 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>



## PART NO. PVC 445X

**Flush Cleanout Tee with Cleanout Plug**

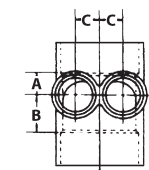
For dimensions see Part Numbers 445 and 110.



## PART NO. PVC 447

**Horizontal Twin Tee**  
 ALL HUB

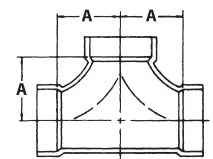
SIZE	A	B	C	D
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	7 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>



## PART NO. 448

**Two-Way Cleanout**  
 ALL HUB

SIZE	A
3	4 <sup>1</sup> / <sub>16</sub>
4	4 <sup>15</sup> / <sub>16</sub>



<sup>(F)</sup> Fabricated

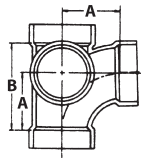
\*\* Assembled from two molded components

\*\*\* Assembled from three molded components

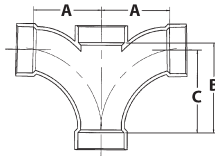
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. PVC 449****Sanitary Tee with 2" Left Hand  
Sanitary Inlet on Center**

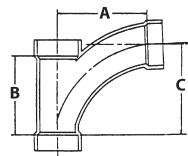
ALL HUB			
SIZE	A	B	C
2 (PVC)	2 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	

**PART NO. 500****Double Fixture Fitting**

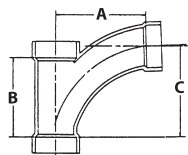
ALL HUB			
SIZE	A	B	C
2 (PVC)	3 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>
2 (ABS)	3 <sup>15</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	2 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	2 <sup>27</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 2 x 2 (ABS)	3 <sup>15</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	2 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	2 <sup>27</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>
3 (PVC)	4 <sup>15</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>4</sub>
3 (ABS)	4 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>
3 x 2 x 3 x 3 (ABS)	4 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>4</sub>

**PART NO. 501****Combination Wye & 1/8 Bend**

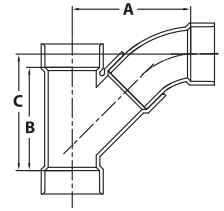
(One Piece) ALL HUB			
SIZE	A	B	C
1 <sup>1</sup> / <sub>2</sub> (PVC)	3 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>16</sub>
1 <sup>1</sup> / <sub>2</sub> (ABS)	3 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>13</sup> / <sub>16</sub>
2 (PVC)	5 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>
2 (ABS)	5 <sup>3</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	5
3 (PVC)	7 <sup>9</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	7 <sup>9</sup> / <sub>16</sub>
3 (ABS)	7 <sup>17</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>16</sub>
4 (PVC)	10	8 <sup>1</sup> / <sub>2</sub>	10
4 (ABS)	9 <sup>31</sup> / <sub>32</sub>	8 <sup>15</sup> / <sub>32</sub>	9 <sup>27</sup> / <sub>32</sub>

**PART NO. 502****Combination Wye & 1/8 Bend,  
Reducing**

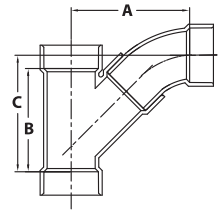
(One Piece) ALL HUB			
SIZE	A	B	C
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>16</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>1</sup> / <sub>8</sub>	3 <sup>17</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>16</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>1</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>
3 x 3 x 1 <sup>1</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>16</sub>
3 x 3 x 2	5 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>
4 x 4 x 2	6 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>8</sub>
4 x 4 x 3 (PVC)	8 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	7 <sup>9</sup> / <sub>16</sub>
4 x 4 x 3 (ABS)	7 <sup>29</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>16</sub>

**PART NO. PVC 503****Combination Wye & 1/8 Bend**

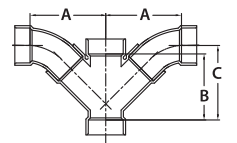
(Two Pieces) ALL HUB			
SIZE	A	B	C
6 <sup>00</sup> (PVC)	11 <sup>15</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>8</sub>	11 <sup>9</sup> / <sub>64</sub>
8 <sup>00</sup> (PVC)	14 <sup>19</sup> / <sub>32</sub>	14 <sup>1</sup> / <sub>8</sub>	14 <sup>23</sup> / <sub>32</sub>
10 <sup>00</sup> (PVC)	18 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>4</sub>
12 <sup>00</sup> (PVC)	21 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>2</sub>
14 <sup>(F)00</sup> (PVC)	36 <sup>7</sup> / <sub>8</sub>	32 <sup>1</sup> / <sub>2</sub>	37 <sup>3</sup> / <sub>16</sub>
16 <sup>(F)00</sup> (PVC)	39 <sup>1</sup> / <sub>2</sub>	35 <sup>1</sup> / <sub>2</sub>	39 <sup>13</sup> / <sub>16</sub>

**PART NO. PVC 504****Combination Wye & 1/8 Bend,  
Reducing**

(Two Pieces) ALL HUB			
SIZE	A	B	C
6 x 6 x 3 <sup>00</sup> (PVC)	8 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	8
6 x 6 x 4 <sup>(1)</sup> (PVC)	8 <sup>15</sup> / <sub>16</sub>	7 <sup>9</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>16</sub>
8 x 8 x 4 <sup>00</sup> (PVC)	11 <sup>17</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>
8 x 8 x 6 <sup>00</sup> (PVC)	12 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>16</sub>
10 x 10 x 4 <sup>5</sup> (PVC)	16 <sup>3</sup> / <sub>16</sub>	14 <sup>1</sup> / <sub>4</sub>	15 <sup>27</sup> / <sub>64</sub>
10 x 10 x 6 <sup>5</sup> (PVC)	15 <sup>31</sup> / <sub>32</sub>	14 <sup>1</sup> / <sub>4</sub>	15 <sup>9</sup> / <sub>64</sub>
10 x 10 x 8 <sup>00</sup> (PVC)	15 <sup>7</sup> / <sub>16</sub>	14 <sup>1</sup> / <sub>4</sub>	14 <sup>25</sup> / <sub>32</sub>
12 x 12 x 4 <sup>5</sup> (PVC)	16 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>2</sub>	15 <sup>11</sup> / <sub>32</sub>
12 x 12 x 6 <sup>5</sup> (PVC)	16 <sup>7</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>2</sub>	15 <sup>5</sup> / <sub>64</sub>
12 x 12 x 8 <sup>00</sup> (PVC)	16 <sup>3</sup> / <sub>32</sub>	13 <sup>17</sup> / <sub>32</sub>	14 <sup>5</sup> / <sub>8</sub>
12 x 12 x 10 <sup>00</sup> (PVC)	19 <sup>15</sup> / <sub>32</sub>	17 <sup>1</sup> / <sub>16</sub>	18 <sup>3</sup> / <sub>16</sub>
14 x 14 x 4 <sup>(F)00</sup> (PVC)	15 <sup>47</sup> / <sub>64</sub>	12 <sup>31</sup> / <sub>32</sub>	11 <sup>31</sup> / <sub>32</sub>
14 x 14 x 6 <sup>(F)00</sup> (PVC)	17 <sup>7</sup> / <sub>32</sub>	15 <sup>21</sup> / <sub>32</sub>	15 <sup>19</sup> / <sub>64</sub>
14 x 14 x 8 <sup>(F)00</sup> (PVC)	18 <sup>21</sup> / <sub>32</sub>	18 <sup>1</sup> / <sub>8</sub>	18 <sup>1</sup> / <sub>2</sub>
14 x 14 x 10 <sup>(F)00</sup> (PVC)	22 <sup>1</sup> / <sub>2</sub>	20 <sup>3</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>4</sub>
14 x 14 x 12 <sup>(F)00</sup> (PVC)	21 <sup>3</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>2</sub>	26 <sup>3</sup> / <sub>8</sub>
16 x 16 x 4 <sup>(F)00</sup> (PVC)	16 <sup>1</sup> / <sub>2</sub>	12 <sup>9</sup> / <sub>16</sub>	12 <sup>7</sup> / <sub>8</sub>
16 x 16 x 6 <sup>(F)00</sup> (PVC)	18 <sup>5</sup> / <sub>8</sub>	15 <sup>41</sup> / <sub>64</sub>	15 <sup>3</sup> / <sub>16</sub>
16 x 16 x 8 <sup>(F)00</sup> (PVC)	19 <sup>11</sup> / <sub>16</sub>	18 <sup>5</sup> / <sub>8</sub>	19 <sup>3</sup> / <sub>16</sub>
16 x 16 x 10 <sup>(F)00</sup> (PVC)	23 <sup>1</sup> / <sub>4</sub>	23	22 <sup>15</sup> / <sub>16</sub>
16 x 16 x 12 <sup>(F)00</sup> (PVC)	26 <sup>3</sup> / <sub>16</sub>	27 <sup>3</sup> / <sub>16</sub>	27 <sup>13</sup> / <sub>16</sub>
16 x 16 x 14 <sup>(F)00</sup> (PVC)	37 <sup>1</sup> / <sub>8</sub>	27 <sup>13</sup> / <sub>16</sub>	33 <sup>1</sup> / <sub>4</sub>

**PART NO. PVC 507****Double Combination Wye & 1/8 Bend**

(Three Pieces or Five Pieces) ALL HUB			
SIZE	A	B	C
4 (PVC)	9 <sup>13</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>32</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>7</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>16</sub>
3 x 3 x 2 x 2 (PVC)	6 <sup>5</sup> / <sub>64</sub>	4 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>64</sub>
4 x 4 x 2 x 2 (PVC)	7 <sup>5</sup> / <sub>16</sub>	5	6
4 x 4 x 3 x 3 (PVC)	8 <sup>19</sup> / <sub>64</sub>	6 <sup>5</sup> / <sub>8</sub>	7 <sup>19</sup> / <sub>32</sub>
6 x 6 x 4 x 4 <sup>5</sup> (PVC)	11 <sup>21</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>8</sub>	10 <sup>9</sup> / <sub>16</sub>



(1) One piece short pattern

(F) Fabricated

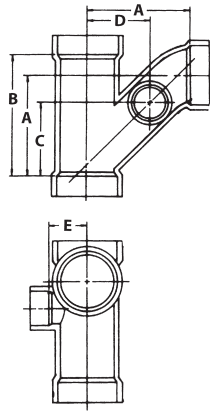
§ Fitting shipped with any required bushing(s) installed, street bend strapped to fitting; assembled from molded components.

∞ Fitting shipped with street bend strapped to fitting.

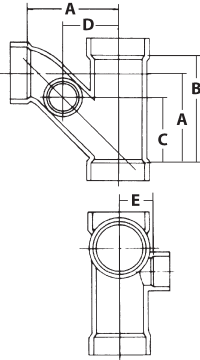
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. PVC 515**
**Combination Wye & 1/8 Bend  
with Left Side Inlet**

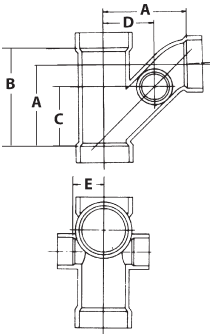
ALL HUB					
SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6 <sup>5</sup> / <sub>16</sub>	7 <sup>31</sup> / <sub>64</sub>	5 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>

**PART NO. PVC 516**
**Combination Wye & 1/8 Bend  
with Right Side Inlet**

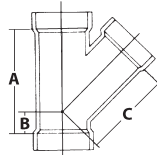
ALL HUB					
SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6 <sup>5</sup> / <sub>16</sub>	7 <sup>31</sup> / <sub>64</sub>	5 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>

**PART NO. PVC 517**
**Combination Wye & 1/8 Bend  
with Left & Right Side Inlets**

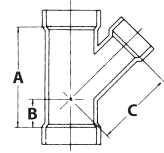
ALL HUB					
SIZE	A	B	C	D	E
3x3x3x2x2 (PVC)	6 <sup>5</sup> / <sub>16</sub>	7 <sup>31</sup> / <sub>64</sub>	5 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>

**PART NO. 600**
**Wye  
(45° Wye)  
ALL HUB**

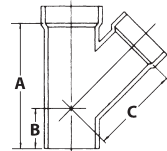
SIZE	A	B	C
1 <sup>1</sup> / <sub>4</sub> (PVC)	3 <sup>5</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>
1 <sup>1</sup> / <sub>2</sub> (PVC)	4	1 <sup>1</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>
1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	2 <sup>15</sup> / <sub>16</sub>
2	5	1 <sup>3</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>8</sub>
3	6 <sup>5</sup> / <sub>8</sub>	1 <sup>5</sup> / <sub>8</sub>	5
4 (PVC)	8 <sup>1</sup> / <sub>4</sub>	1 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>
4 (ABS)	8 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	6 <sup>5</sup> / <sub>16</sub>
6 (PVC)	10 <sup>1</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>	8 <sup>7</sup> / <sub>16</sub>
6 (ABS)	9 <sup>15</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>16</sub>
8 (PVC)	14 <sup>1</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>4</sub>
10 (PVC)	16 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>	13 <sup>5</sup> / <sub>8</sub>
12 (PVC)	19 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	16
14 <sup>(F)</sup> (PVC)	31 <sup>3</sup> / <sub>8</sub>	8	22 <sup>1</sup> / <sub>4</sub>
16 <sup>(F)</sup> (PVC)	36 <sup>5</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>4</sub>	25 <sup>3</sup> / <sub>16</sub>

**PART NO. 601**
**Wye, Reducing  
(45° Wye)  
ALL HUB**

SIZE	A	B	C
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (PVC)	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>7</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>
2 x 1 <sup>1</sup> / <sub>2</sub> x 2	4 <sup>1</sup> / <sub>2</sub>	1	3 <sup>7</sup> / <sub>16</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>
2 x 2 x 1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>16</sub>
3 x 3 x 1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>9</sup> / <sub>32</sub>
3 x 3 x 2 (PVC)	5	7 <sup>7</sup> / <sub>8</sub>	4 <sup>5</sup> / <sub>8</sub>
3 x 3 x 2 (ABS)	5	13 <sup>1</sup> / <sub>16</sub>	4 <sup>21</sup> / <sub>32</sub>
4 x 4 x 1 <sup>1</sup> / <sub>2</sub>	5	0	6
4 x 4 x 2 (PVC)	5 <sup>1</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>
4 x 4 x 2 (ABS)	5	1 <sup>1</sup> / <sub>4</sub>	5 <sup>9</sup> / <sub>16</sub>
4 x 4 x 3 (PVC)	6 <sup>5</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	6
4 x 4 x 3 (ABS)	6 <sup>19</sup> / <sub>32</sub>	1	6
6 x 6 x 3 (PVC)	7 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>
6 x 6 x 4 (PVC)	6 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>2</sub>
6 x 6 x 4 (ABS)	6 <sup>25</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>16</sub>
8 x 8 x 4 (PVC)	10 <sup>1</sup> / <sub>2</sub>	1	9 <sup>1</sup> / <sub>2</sub>
8 x 8 x 6 (PVC)	10 <sup>1</sup> / <sub>2</sub>	1	9 <sup>13</sup> / <sub>16</sub>
10 x 10 x 4** (PVC)	14 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	15 <sup>15</sup> / <sub>16</sub>
10 x 10 x 6** (PVC)	14 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	15
10 x 10 x 8 (PVC)	14 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	13 <sup>1</sup> / <sub>16</sub>
12 x 12 x 4** (PVC)	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	16 <sup>23</sup> / <sub>32</sub>
12 x 12 x 6** (PVC)	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	15 <sup>29</sup> / <sub>64</sub>
12 x 12 x 8 (PVC)	13 <sup>19</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	13 <sup>7</sup> / <sub>8</sub>
12 x 12 x 10 (PVC)	17 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	15 <sup>3</sup> / <sub>32</sub>
14 x 14 x 4 <sup>(F)</sup> (PVC)	12 <sup>3</sup> / <sub>8</sub>	1 <sup>37</sup> / <sub>64</sub>	15 <sup>23</sup> / <sub>64</sub>
14 x 14 x 6 <sup>(F)</sup> (PVC)	15 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>64</sub>	18 <sup>37</sup> / <sub>64</sub>
14 x 14 x 8 <sup>(F)</sup> (PVC)	15 <sup>49</sup> / <sub>64</sub>	3 <sup>1</sup> / <sub>64</sub>	16 <sup>5</sup> / <sub>16</sub>
14 x 14 x 10 <sup>(F)</sup> (PVC)	18 <sup>57</sup> / <sub>64</sub>	3 <sup>43</sup> / <sub>64</sub>	18 <sup>29</sup> / <sub>32</sub>
14 x 14 x 12 <sup>(F)</sup> (PVC)	25 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>	20
16 x 16 x 4 <sup>(F)</sup> (PVC)	12 <sup>11</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>4</sub>
16 x 16 x 6 <sup>(F)</sup> (PVC)	15 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>16</sub>	17 <sup>3</sup> / <sub>16</sub>
16 x 16 x 8 <sup>(F)</sup> (PVC)	18 <sup>7</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	18 <sup>3</sup> / <sub>8</sub>
16 x 16 x 10 <sup>(F)</sup> (PVC)	23	3 <sup>1</sup> / <sub>2</sub>	19 <sup>5</sup> / <sub>8</sub>
16 x 16 x 12 <sup>(F)</sup> (PVC)	26 <sup>3</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	21 <sup>3</sup> / <sub>4</sub>
16 x 16 x 14 <sup>(F)</sup> (PVC)	27 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>4</sub>	23 <sup>9</sup> / <sub>16</sub>

**PART NO. 602**
**Wye, Street  
(45° Wye)  
SPIGOT X HUB X HUB**

SIZE	A	B	C
1 <sup>1</sup> / <sub>2</sub> (PVC)	4 <sup>3</sup> / <sub>4</sub>	1 <sup>7</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>
1 <sup>1</sup> / <sub>2</sub> (ABS)	4 <sup>5</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>	2 <sup>27</sup> / <sub>32</sub>
2	5 <sup>7</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	3 <sup>5</sup> / <sub>8</sub>
3	8 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>8</sub>	5
4 (PVC)	9 <sup>15</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>4</sub>
4 (ABS)	9 <sup>29</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>4</sub>



(F) Fabricated

\*\* Assembled from two molded components.

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

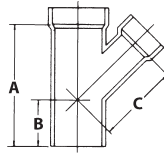
## PART NO. 603

## Wye, Street, Reducing

(45° Wye)

SPIGOT X HUB X HUB

SIZE	A	B	C
3 x 3 x 1½ (PVC)	5¾	2	4⅞
3 x 3 x 2	6½	2⅝	4⅝
4 x 4 x 2 (PVC)	6⅝	2⅝	5⅝
4 x 4 x 3	8⅝	2⅝	6



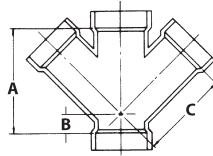
## PART NO. 611

## Double Wye

(Double 45° Wye)

ALL HUB

SIZE	A	B	C
1½ (PVC)	4	1⅝	2⅞
1½ (ABS)	3⅝	1⅝	2⅞
2 (PVC)	5	1⅝	3⅝
2 (ABS)	5	1½	3⅝
3 (PVC)	6⅝	1⅝	5
3 (ABS)	6⅞	1⅝	5
4 (PVC)	8¼	1⅝	6⅝
4 (ABS)	8⅝	1⅝	6⅝
6 (PVC)	10⅝	1¾	8⅞
8 <sup>(F)</sup> (PVC)	19⅞	4⅞	13⅝
10 <sup>(F)</sup> (PVC)	22⅞	5⅞	16¼
12 <sup>(F)</sup> (PVC)	19⅝	6⅞	25⅞
14 <sup>(F)</sup> (PVC)	28⅞	7⅞	20⅝



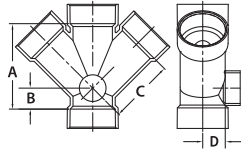
## PART NO. PVC 611S

## Double Wye with 2" Side Inlet

(Double 45° Wye)

ALL HUB

SIZE	A	B	C	D
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	1¾



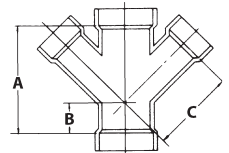
## PART NO. 612

## Double Wye, Reducing

(Double 45° Wye)

ALL HUB

SIZE	A	B	C
2 x 2 x 1½ x 1½ (PVC)	4⅝	1⅞	3⅞
2 x 2 x 1½ x 1½ (ABS)	4⅝	3⅞	3⅞
3 x 3 x 1½ x 1½ (PVC)	4⅞	1½	4⅞
3 x 3 x 2 x 2	4⅞	7⅞	4⅞
4 x 4 x 2 x 2 (PVC)	5	3⅞	5⅞
4 x 4 x 3 x 3 (PVC)	6⅝	1⅞	6
4 x 4 x 3 x 3 (ABS)	6⅞	1	6⅞
6 x 6 x 4 x 4** (PVC)	10⅞	1¾	10⅞
8 x 8 x 4 x 4 <sup>(F)</sup> (PVC)	10⅞	13⅞	10⅞
8 x 8 x 6 x 6 <sup>(F)</sup> (PVC)	13	1½	12⅝
10 x 10 x 4 x 4 <sup>(F)</sup> (PVC)	11⅞	2⅞	14
10 x 10 x 6 x 6 <sup>(F)</sup> (PVC)	14⅞	¾	14⅞
10 x 10 x 8 x 8 <sup>(F)</sup> (PVC)	18	3⅞	15⅞
12 x 12 x 4 x 4 <sup>(F)</sup> (PVC)	11⅞	1	14
12 x 12 x 6 x 6 <sup>(F)</sup> (PVC)	15⅞	7⅞	17⅞
12 x 12 x 8 x 8 <sup>(F)</sup> (PVC)	18⅞	3⅞	16⅞
12 x 12 x 10 x 10 <sup>(F)</sup> (PVC)	21⅞	3⅞	18⅞
14 x 14 x 4 x 4 <sup>(F)</sup> (PVC)	12¾	1⅞	15⅞
14 x 14 x 6 x 6 <sup>(F)</sup> (PVC)	15	1	16⅞
14 x 14 x 8 x 8 <sup>(F)</sup> (PVC)	19	2⅞	17⅞
14 x 14 x 10 x 10 <sup>(F)</sup> (PVC)	21⅞	4	18¾
14 x 14 x 12 x 12 <sup>(F)</sup> (PVC)	25⅞	5	19⅞
16 x 16 x 4 x 4 <sup>(F)</sup> (PVC)	12⅞	2¼	17⅞
16 x 16 x 6 x 6 <sup>(F)</sup> (PVC)	15⅞	1⅞	17⅞
16 x 16 x 8 x 8 <sup>(F)</sup> (PVC)	18¾	1½	18⅞
16 x 16 x 10 x 10 <sup>(F)</sup> (PVC)	21⅞	1⅞	20⅞
16 x 16 x 12 x 12 <sup>(F)</sup> (PVC)	26⅞	4⅞	21¾
16 x 16 x 14 x 14 <sup>(F)</sup> (PVC)			

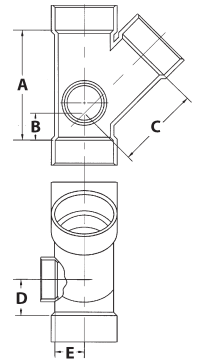


## PART NO. PVC 625

## Wye with Left Side Inlet

ALL HUB

SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	2¼	1¾
4 x 4 x 4 x 2 (PVC)	8¼	1⅝	6⅝	2½	3⅞

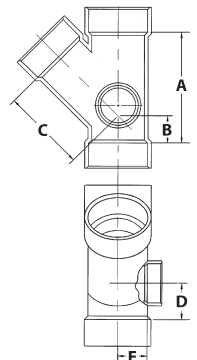


## PART NO. PVC 626

## Wye with Right Side Inlet

ALL HUB

SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	2¼	1¾
4 x 4 x 4 x 2 (PVC)	8¼	1⅝	6⅝	2½	3⅞

<sup>(F)</sup> Fabricated

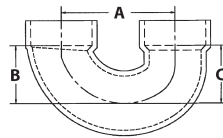
\*\* Assembled from two molded components.

Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

## PART NO. 700

## Return Bend

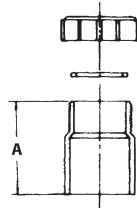
SIZE	HUB X HUB		
	A	B	C
1½ (PVC)	3½	1¾	1¾
1½ (ABS)	3 <sup>15</sup> / <sub>32</sub>	1 <sup>17</sup> / <sub>32</sub>	1 <sup>17</sup> / <sub>32</sub>
2	5 <sup>7</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>
3 (PVC)	6¾	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>
3 (ABS)	6 <sup>25</sup> / <sub>32</sub>	2 <sup>31</sup> / <sub>32</sub>	2 <sup>31</sup> / <sub>32</sub>
4 (PVC)	8½	3 <sup>11</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>16</sub>
4 (ABS)	8 <sup>7</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>16</sub>



## PART NO. ABS 704P

 Tail Piece Adapter with Plastic Nut &  
 Packing Ring  
 SPIGOT X SLIP

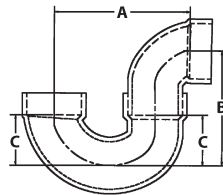
SIZE	A
1½ (ABS)	2 <sup>3</sup> / <sub>16</sub>



## PART NO. 706X

## P-Trap with Solvent Weld Joint

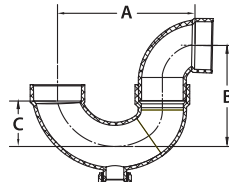
SIZE	HUB X HUB		
	A	B	C
1½	4 <sup>5</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1¾
2	6 <sup>13</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>
3	8 <sup>15</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>
4	11 <sup>1</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>16</sub>



## PART NO. 707X

 P-Trap with Cleanout & Solvent  
 Weld Joint

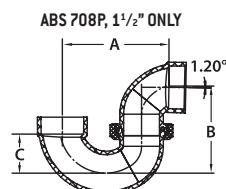
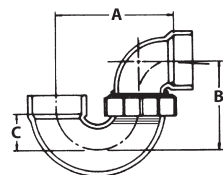
SIZE	HUB X HUB		
	A	B	C
1½ (PVC)	4 <sup>5</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1¾
1½ (ABS)	4 <sup>29</sup> / <sub>32</sub>	3½	1 <sup>9</sup> / <sub>16</sub>
2 (PVC)	6¾	4 <sup>1</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>16</sub>
2 (ABS)	6 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	2¼



## PART NO. 708P

## P-Trap with Union &amp; Plastic Nut

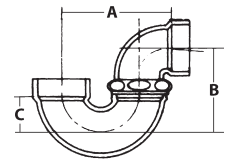
SIZE	HUB X HUB		
	A	B	C
1¼ (PVC)	4 <sup>9</sup> / <sub>16</sub>	3½	1 <sup>3</sup> / <sub>8</sub>
1½ (PVC)	4 <sup>5</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1¾
1½ (ABS)	4 <sup>29</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>16</sub>
2 (PVC)	6 <sup>13</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>
2 (ABS)	6 <sup>25</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	2¼



## PART NO. 708X

## P-Trap with Union &amp; Chrome Nut

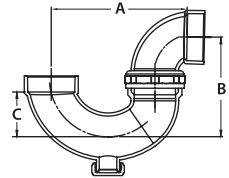
SIZE	HUB X HUB		
	A	B	C
1½ (PVC)	4 <sup>5</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1¾
1½ (ABS)	4 <sup>29</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>16</sub>



## PART NO. PVC 709X

 P-Trap with Cleanout, Union &  
 Chrome Nut

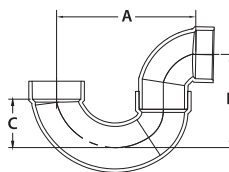
SIZE	HUB X HUB		
	A	B	C
1½ (PVC)	4 <sup>5</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1½



## PART NO. PVC 710

## Low Profile P-Trap with Solvent Weld

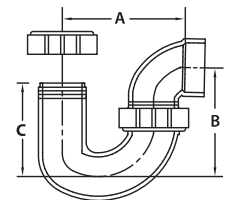
SIZE	HUB X HUB		
	A	B	C
2 (PVC)	6 <sup>13</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>



## PART NO. 711P

 L.A. Pattern P-Trap with Union &  
 Polyethylene Nut

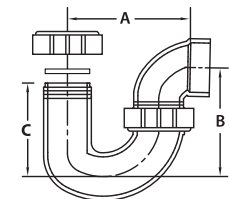
SIZE	SLIP Union X HUB		
	A	B	C
1½ (PVC)	4¾	4 <sup>15</sup> / <sub>64</sub>	3 <sup>7</sup> / <sub>16</sub>
1½ (ABS)	4 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>17</sup> / <sub>32</sub>



## PART NO. 711W

 L.A. Pattern P-Trap with Union &  
 Plastic Nut & Polyethylene Washer

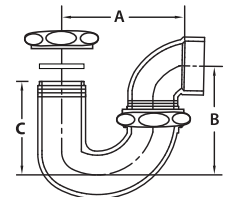
SIZE	SLIP Union X HUB		
	A	B	C
1½ (PVC)	4¾	4 <sup>15</sup> / <sub>64</sub>	3 <sup>7</sup> / <sub>16</sub>
1½ (ABS)	5 <sup>5</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>64</sub>	3 <sup>45</sup> / <sub>64</sub>



## PART NO. PVC 711X

 L.A. Pattern P-Trap with Union &  
 Chrome Nut & Polyethylene Washer

SIZE	SLIP Union X HUB		
	A	B	C
1½ (PVC)	4¾	4 <sup>15</sup> / <sub>64</sub>	3 <sup>7</sup> / <sub>16</sub>

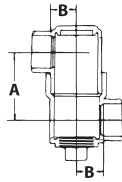


Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

**PART NO. 720X****Drum Trap**

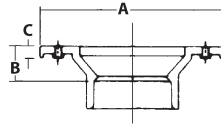
HUB X HUB

SIZE	A	B
3 x 6 x 1½ (PVC)	4 <sup>13</sup> / <sub>16</sub>	1 <sup>11</sup> / <sub>16</sub>
3 x 6 x 1½ (ABS)	4 <sup>21</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>

**PART NO. 800 & 800K****Closet Flange**

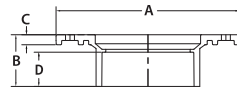
HUB END

SIZE	A	B	C
4 x 3	7	1¼	7/16
4 x 4*	7	1¼	7/16

**PART NO. 800S****Closet Flange with Stop**

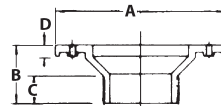
HUB END

SIZE	A	B	C	D
4 x 3	7	2¼	7/16	1½

**PART NO. 801****Closet Flange, Reducing**

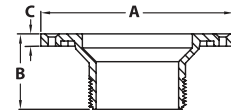
SPIGOT

SIZE	A	B	C	D
4 x 3 (PVC)	7	2¾	1 <sup>21</sup> / <sub>32</sub>	7/16
4 x 3 (ABS)	7 <sup>1</sup> / <sub>32</sub>	2¾	1 <sup>9</sup> / <sub>16</sub>	7/16

**PART NO. ABS 808****Male Closet Flange**

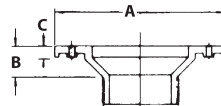
MPT

SIZE	A	B	C
4 x 3 (ABS)	7	2 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>

**PART NO. PVC 810K****Closet Flange, Adjustable with Plastic Ring**

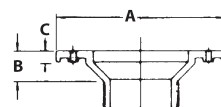
HUB END

SIZE	A	B	C
4 x 3 (PVC)	7	1⅝	7/16

**PART NO. ABS 811P****Closet Flange, Adjustable with Plastic Ring**

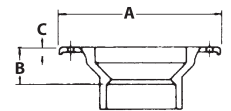
HUB END

SIZE	A	B	C
4 x 3 (ABS)	7	1⅝	7/16
4 x 4 (ABS)	7	1⅝	7/16

**PART NO. 811****Closet Flange, Adjustable with Metal Ring**

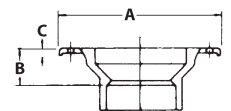
HUB END

SIZE	A	B	C
4 x 3	7	1¼	¼
4 x 4	7	1⅝	¼

**PART NO. PVC 811K****Closet Flange, Adjustable with Metal Ring**

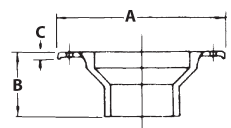
HUB END

SIZE	A	B	C
4 x 3 (PVC)	7	1¼	¼

**PART NO. 812****Closet Flange, Adjustable with Metal Ring**

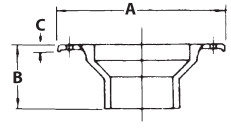
SPIGOT

SIZE	A	B	C
4 x 3 (PVC)	7	2 <sup>5</sup> / <sub>8</sub>	¼
4 x 3 (ABS)	7	2 <sup>3</sup> / <sub>4</sub>	¼
4 x 4 (PVC)	7	2 <sup>5</sup> / <sub>8</sub>	¼
4 x 4 (ABS)	7	2 <sup>13</sup> / <sub>32</sub>	¼

**PART NO. 812P****Closet Flange, Adjustable with Plastic Ring**

SPIGOT

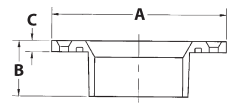
SIZE	A	B	C
4 x 3 (PVC)	7	2 <sup>5</sup> / <sub>8</sub>	¼
4 x 3 (ABS)	7	2 <sup>3</sup> / <sub>4</sub>	¼
4 x 4 (PVC)	7	2 <sup>5</sup> / <sub>8</sub>	7/16

**PART NO. 815****Flush Closet Flange**

(Fits Over 3" Pipe or Inside 4" Pipe)

HUB

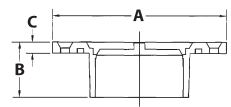
SIZE	A	B	C
4 x 4 / 4 x 3	7	2 <sup>7</sup> / <sub>8</sub>	7/16

**PART NO. 815K****Flush Closet Flange with Knockout**

(Fits Over 3" Pipe or Inside 4" Pipe)

HUB

SIZE	A	B	C
4 x 4 / 4 x 3	7	2 <sup>7</sup> / <sub>32</sub>	7/16



\* Part No. 800K, 4x4" is not available in ABS.

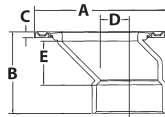
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.



**PART NO. 820**

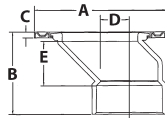
**Offset Closet Flange, Adjustable with  
Metal Ring**  
 (1 1/2" Offset)  
 HUB

SIZE	A	B	C	D	E
4 X 3	7	4 <sup>5</sup> / <sub>16</sub>	1/4	1 1/2	2 <sup>5</sup> / <sub>16</sub>

**PART NO. 820P**

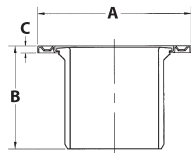
**Offset Closet Flange, Adjustable with  
Plastic Ring**  
 (1 1/2" Offset)  
 HUB

SIZE	A	B	C	D	E
4 X 3	7	4 <sup>5</sup> / <sub>16</sub>	7/16	1 1/2	2 <sup>5</sup> / <sub>16</sub>

**PART NO. ABS 824**

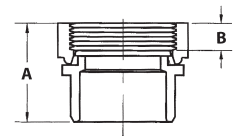
**Closet Flange, Adjustable with Metal Ring  
& 4" Extended Spigot**

SIZE	SPIGOT		
	A	B	C
4 (ABS)	7	4 1 1/4	1/4

**PART NO. 900**

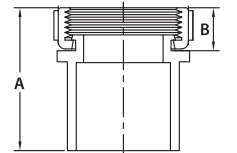
**Swivel Tray Plug Adapter  
with Washer**

SPG X FPT		
SIZE	A	B
1 1/2	1 23/32	15/32

**PART NO. ABS 900X**

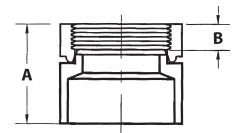
**Swivel Tray Plug Adapter  
with Washer, Extended**

SPG X FPT		
SIZE	A	B
1 1/2 (ABS)	2 7/16	15/32

**PART NO. ABS 910**

**Swivel Tray Plug Adapter  
with Washer**

H X FPT		
SIZE	A	B
1 1/2 (ABS)	1 13/16	9/16



Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

[illegible]

# LIMITED WARRANTY

Charlotte Pipe and Foundry Company® (Charlotte Pipe®) Products are warranted to be free from manufacturing defects and to conform to currently applicable ASTM standards for a period of five (5) years from date of delivery. Buyer's remedy for breach of this warranty is limited to replacement of, or credit for, the defective product. This warranty excludes any expense for removal or reinstallation of any defective product and any other incidental, consequential, or punitive damages. **This limited warranty is the only warranty made by seller and is expressly in lieu of all other warranties, express and implied, including any warranties of merchantability and fitness for a particular purpose.** No statement, conduct or description by Charlotte Pipe or its representative, in addition to or beyond this Limited Warranty, shall constitute a warranty. This Limited Warranty may only be modified in writing signed by an officer of Charlotte Pipe.

This Limited Warranty will not apply if:

- 1) The Products are used for purposes other than their intended purpose as defined by local plumbing and building codes, and the applicable ASTM standard.
- 2) The Products are not installed in good and workmanlike manner consistent with normal industry standards; installed in compliance with the latest instructions published by Charlotte Pipe and good plumbing practices; and installed in conformance with all applicable plumbing, fire and building code requirements.
- 3) This limited warranty does not apply when the products of Charlotte Pipe are used with the products of other manufacturers that do not meet the applicable ASTM or CISPI standards or that are not marked in a manner to indicate the entity that manufactured them.
- 4) In hubless cast iron installations, this warranty will not apply if products are joined with unshielded hubless couplings. Charlotte Pipe requires that its hubless cast iron pipe and fittings be joined only with shielded hubless couplings manufactured in accordance with CISPI 310, ASTM C 1277 and certified by NSF® International or with Heavy Duty Couplings meeting ASTM C 1540.
- 5) The Products fail due to defects or deficiencies in design, engineering, or installation of the piping system of which they are a part.
- 6) The Products have been the subject of modification; misuse; misapplication; improper maintenance or repair; damage caused by the fault or negligence of anyone other than Charlotte Pipe; or any other act or event beyond the control of Charlotte Pipe.
- 7) The Products fail due to the freezing of water in the Products.
- 8) The Products fail due to contact with chemical agents, fire stopping materials, thread sealant, plasticized vinyl products, or other aggressive chemical agents that are not compatible.
- 9) Pipe outlets, sound attenuation systems or other devices are permanently attached to the surface of Charlotte® PVC, ABS or CPVC products with solvent cement or adhesive glue.

Charlotte Pipe products are manufactured to the applicable ASTM or CISPI standard. Charlotte Pipe and Foundry **cannot** accept responsibility for the performance, dimensional accuracy, or compatibility of pipe, fittings, gaskets, or couplings not manufactured or sold by Charlotte Pipe and Foundry.


Any Charlotte Pipe products alleged to be defective **must** be made available to Charlotte Pipe at the following address for verification, inspection and determination of cause:

Charlotte Pipe and Foundry Company  
 Attention: Technical Services  
 2109 Randolph Road  
 Charlotte, North Carolina 28207

**Purchaser must obtain a return materials authorization** and instructions for return shipment to Charlotte Pipe of any product claimed defective or shipped in error.


Any Charlotte Pipe product **proved** to be defective in manufacture will be replaced F.O.B. point of original delivery, or credit will be issued, at the discretion of Charlotte Pipe.

4/24/15


WARNING

**Testing with or use of compressed air or gas in PVC / ABS / CPVC / Cast Iron pipe or fittings can result in explosive failures and cause severe injury or death.**

**AIR/GAS**



- NEVER test with or transport/store compressed air or gas in PVC / ABS / CPVC / Cast Iron pipe or fittings.
- NEVER test PVC / ABS / CPVC / Cast Iron pipe or fittings with compressed air or gas, or air over water boosters.
- ONLY use PVC / ABS / CPVC / Cast Iron pipe or fittings for water or approved chemicals.
- Refer to warnings on PPFA's website and ASTM D 1785.

Charlotte and Charlotte Pipe are registered trademarks of Charlotte Pipe and Foundry Company.

# CHARLOTTE

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All products manufactured by  
Charlotte Pipe and Foundry Company  
are proudly made in the U.S.A.



## Product Specification

**System:** ChemDrain® CPVC-CW Schedule 40 Pipe and Fittings

**Scope:** This specification covers CPVC Schedule 40 pipe and fittings for chemical waste drain applications. ChemDrain is intended for use in non-pressure drain applications where the temperature will not exceed 220° F.

**Specification:** Pipe and fittings shall be manufactured as a system, be the product of one manufacturer and be manufactured in the United States. All pipe, fittings and solvent cement shall be supplied together as a system, as Charlotte Pipe ChemDrain chemical waste system manufactured by Charlotte Pipe and Foundry. Pipe and fittings shall conform to National Sanitation Foundation Standard (NSF) 14.

Special drainage systems for corrosive chemical or acid waste shall be manufactured from CPVC Type IV, Grade I, ASTM Cell Class 23447. All system components shall be certified by NSF International for use in chemical waste drain systems and bear the mark NSF-cw. All system piping shall be Schedule 40 CPVC produced to the dimensional requirements of ASTM F 2618 and the manufacturer's specifications. All pipe fittings shall be CPVC drainage patterns meeting the requirements of ASTM F 2618 and the manufacturer's specifications, as applicable.

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all local plumbing, fire and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent welded joints shall be made with ChemDrain One-Step solvent cement conforming to ASTM F 493. The system shall be protected from fire stopping materials, thread sealant, plasticized vinyl products or other aggressive chemical agents not compatible with CPVC compounds. Systems shall be hydrostatically tested after installation. **WARNING!** Use of compressed air or gas in CPVC pipe or fittings can result in explosive failures and cause severe injury or death.

### Significance and Use:

The requirements of this specification are intended to provide pipe, fittings and drains suitable for use in chemical waste disposal.

### Referenced Standards\*:

ASTM D 1784	Rigid CPVC Vinyl Compounds
ASTM D 2321	Underground Installation of Thermoplastic Pipe (non-pressure applications)
ASTM F 493	Solvent Cements for CPVC Pipe and Fitting
ASTM F 1668	Procedures for Buried Plastic Pipe
ASTM F 2618	Standard for Chlorinated Poly (Vinyl Chloride) Chemical Waste Drainage Systems
NSF Standard 14	Plastic Piping Components and Related Materials

\* Note: Latest revision of each standard applies.

ChemDrain is a registered trademark of Charlotte Pipe and Foundry Company.

(509)



CEMENT & CONCRETE PRODUCTS™

# CONCRETE MIX

PRODUCT NO. 1101

## PRODUCT DESCRIPTION

QUIKRETE® Concrete Mix is a pre-blended mixture of cement and aggregates for general structural uses, requiring only the addition of water.

## PRODUCT USE

QUIKRETE® Concrete Mix is designed for pouring concrete 2" (51 mm) thick or more and building or repairing anything out of concrete, including:

- Foundation walls and footings
- Sidewalks, curbs, steps, ramps and walkways
- Appliance and equipment platforms
- Pipe and post footings
- Floor slabs and patios
- Pools, fish pools, stepping stones
- Splashblocks and bird baths
- Riprap & slope protection
- Driveway repairs

## SIZES

QUIKRETE® Concrete Mix is available in:

40 lb (18.1 kg) bags

60 lb (27.2 kg) bags

80 lb (36.3 kg) bags

## YIELD

- An 80 lb (36.3 kg) bag yields approximately 0.60 cu ft (17 L)
- A 60 lb (27.2 kg) bag yields approximately 0.45 cu ft (12.7 L)
- A 40 lb (18.1 kg) bag yields approximately 0.30 cu ft (8.5 L)

## TECHNICAL DATA

### APPLICABLE STANDARDS

ASTM International - ASTM C387 Standard Specifications for Packaged, Dry, Combined Materials for Mortar and Concrete

### PHYSICAL/CHEMICAL PROPERTIES

QUIKRETE® Concrete Mix exceeds the compressive strength requirements of ASTM C387, as shown in Table 1.

TABLE 1 TYPICAL COMPRESSIVE STRENGTH<sup>1</sup>

### Compressive strength, ASTM C39

Age	Typical Values
7 days	2500 psi (17.2 MPa)
28 days	4000 psi (27.6 MPa)
Slump Range	2" - 3" (51-76 mm)

<sup>1</sup>Tested under laboratory conditions in accordance with ASTM C387

## DIVISION 3

Structural Concrete  
03 31 00



## INSTALLATION

### PREPARATORY WORK

Stake out the planned area and remove sod or soil to the desired depth. Nail and stake forms securely in place. Tamp and compact the sub-base until firm.

### MACHINE MIXING INSTRUCTIONS

QUIKRETE® Concrete Mix can be mixed in a barrel type concrete mixer or a mortar mixer.

- Choose the mixer size most appropriate for the size of the job to be done
- Allow at least 1 cu ft (28 L) of mixer capacity for each 80 lb (36.3 kg) bag of QUIKRETE® Concrete Mix to be mixed at one time
- For each 80 lb (36.3 kg) bag of QUIKRETE® Concrete Mix to be mixed, add approximately 6 pt (2.8 L) of fresh water to the mixer
- Turn on the mixer and begin adding the concrete to the mixer
- If the material becomes too difficult to mix, add additional water until a workable mix is obtained
- If a slump cone is available, adjust water to achieve a 2" - 3" (51 - 76 mm) slump

Note - Final water content should be approximately 6 - 9 pt (2.8 - 4.3 L) of water per 80 lb (36.3 kg) bag of concrete. For other bag sizes, use Table 2 to determine water content.

### HAND MIXING INSTRUCTIONS

- Empty concrete bags into a suitable mixing container
- For each 80 lb (36.3 kg) bag of mix, add approximately 6 pt (2.8 L) of clean water
- Work the mix with a shovel, rake or hoe and add water as needed until a stiff, moldable consistency is achieved
- Be sure all material is wet
- Do not leave standing puddles

Note - For other bag sizes, use Table 2 to determine water content.



**TABLE 2 MIXING WATER FOR QUIKRETE® CONCRETE MIX**

Package size, lb (kg)	Starting Water Content, pt (L)	Final Water, Content, pt (L)
80 (36.3)	6 (2.8)	6-9 (2.8-4.3)
60 (27.2)	4 (1.9)	4-7 (1.9-3.3)
40 (18.1)	3 (1.4)	3-4.5 (1.4-2.1)

## APPLICATION

### Method for Pouring a Slab

- Dampen the sub-grade before concrete is placed
- Do not leave standing puddles
- Shovel or place concrete into the form; fill to the full depth of the form
- After concrete has been compacted and spread to completely fill the forms without air pockets, strike off and float immediately
- To strike off, use a straight board (screed), moving the edge back and forth with a saw-like motion to smooth the surface
- Use a darby or bull float to float the surface; this levels any ridges and fills voids left by the straight edge
- Cut the concrete away from the forms by running an edging tool or trowel along the forms to compact the slab edges
- Cut 1" (25.4 mm) deep control joints into the slab every 6' - 8' (1.8 - 2.4 m) using a grooving tool
- Allow concrete to stiffen slightly, waiting until all water has evaporated from the surface before troweling or applying a broom finish

Note - For best results, do not overwork the material.

### Method for Setting Fence Posts

- Dig post hole about 3 times the diameter of the post. Hole depth should be 1/3 the overall post height
- Place 6" (152 mm) of dry concrete mix in the bottom of the hole. Position the post, checking that it is level and plumb. Combine concrete mix with water and place into the hole
- When standing water has evaporated from the concrete, smooth the surface. Taper it away from the post so rain will flow in that direction. Wait 24 hours before post is subjected to any strain
- For load-bearing applications, follow local building codes for proper footing specifications

## FINISHING

Any standard concrete finishing technique is acceptable for use with QUIKRETE® Concrete Mix. Concrete can be hand troweled, power-troweled, broom finished or finished with other specialty finishes.

## CURING

### General

Curing is one of the most important steps in concrete construction. Proper curing increases the strength and durability of concrete,

and a poor curing job can ruin an otherwise well-done project. Proper water content and temperature are essential for good curing. In near freezing temperatures the hydration process slows considerably. When weather is too hot, dry or windy, water is lost by evaporation from the concrete, and hydration stops, resulting in finishing difficulties and cracks. The ideal circumstances for curing are ample moisture and moderate temperature and wind conditions. Curing should be started as soon as possible and should continue for a period of 5 days in warm weather at 70°F (21°C) or higher or 7 days in colder weather at 50 - 70°F (10 - 21°C).

### Specific Curing Methods

- QUIKRETE® Acrylic Cure & Seal – Satin Finish provides the easiest and most convenient method of curing. Apply by spray, brush or roller soon after the final finishing operation when the surface is hard. The surface may be damp, but not wet, when applying curing compound. Complete coverage is essential
- Other methods of providing proper curing include covering the surface with wet burlap; keeping the surface wet with a lawn sprinkler and sealing the concrete surface with plastic sheeting or waterproof paper to prevent moisture loss
- If burlap is used, it should be free of chemicals that could weaken or discolor the concrete. New burlap should be washed before use. Place it when the concrete is hard enough to withstand surface damage and sprinkle it periodically to keep the concrete surface continuously moist
- Water curing with lawn sprinklers, nozzles or soaking hoses must be continuous to prevent interruption of the curing process
- Curing with plastic sheets is convenient. They must be laid flat, thoroughly sealed at joints and anchored carefully along edges

## PRECAUTIONS

- Curing compounds should not be applied if rain or temperatures below 50°F (10°C) are expected within 24 hours
- Curing with plastic or burlap can cause patchy discoloration in colored concrete. For colored concrete, wet curing or the use of QUIKRETE® Acrylic Cure & Seal – Satin Finish is recommended
- Do not use curing compounds during late fall on surfaces where de-icers will be used to melt ice and snow. Using curing compounds at that time may prevent proper air drying of the concrete, which is necessary to enhance its resistance to damage caused by de-icers
- Protect concrete from freezing during the first 48 hours. Plastic sheeting and insulation blankets should be used if temperatures are expected to fall below 32°F (0°C)

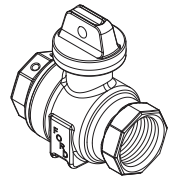
## WARRANTY

NOTICE: Obtain the applicable LIMITED WARRANTY: at [www.quikrete.com/product-warranty](http://www.quikrete.com/product-warranty) or send a written request to The Quikrete Companies, LLC, Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of The Quikrete Companies, LLC. © 2018 Quikrete International, Inc.

\* Refer to [www.quikrete.com](http://www.quikrete.com) for the most current technical data, MSDS, and guide specifications

# SUBMITTAL INFORMATION

## Ball Valve Curb Stop - (B11-xxx-NL style)



### FEMALE IRON PIPE THREAD INLET BY FEMALE IRON PIPE THREAD OUTLET

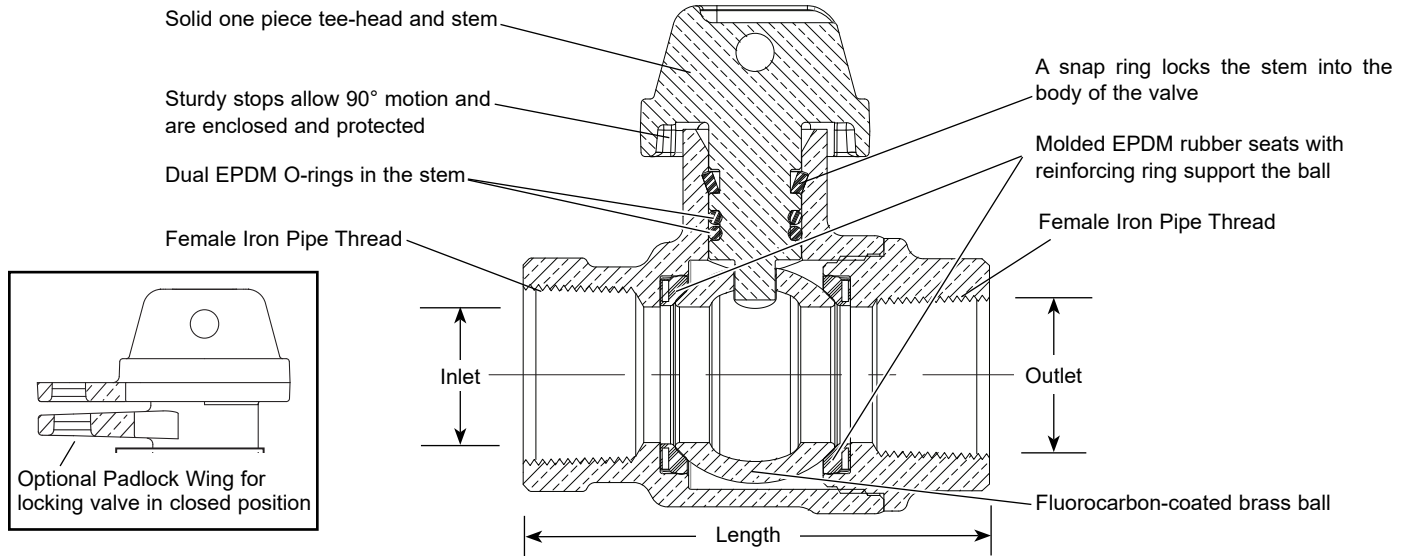


Image shown above is a B11-444-NL

VALVE SIZE	INLET SIZE	OUTLET SIZE	LENGTH	APPROX. WT. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
3/4"	3/4"	3/4"	3-1/64"	1.5	B11-333-NL	
3/4"	3/4"	3/4"	3-21/64"	1.7	B11-333W-3-33-NL	
3/4"	1"	3/4"	3-17/64"	1.6	B11-343-NL	
3/4"	1"	1"	3-25/64"	1.6	B11-344-NL	
1"	1"	1"	3-7/16"	2.0	B11-444-NL	
1"	1-1/4"	1"	3-9/16"	1.9	B11-454-NL	
1"	1-1/4"	1-1/4"	3-25/32"	2.0	B11-455-NL	
1-1/4"	1-1/4"	1-1/4"	4-1/32"	4.2	B11-555-NL	
1-1/4"	1-1/2"	1-1/2"	4-11/32"	4.4	B11-566-NL	
1-1/2"	1-1/2"	1-1/2"	4-15/32"	4.8	B11-666-NL	
1-1/2"	2"	1-1/2"	4-23/32"	5.0	B11-676-NL	
1-1/2"	2"	2"	5"	8.0	B11-677-NL	
2"	2"	2"	5-1/4"	7.2	B11-777-NL	
2"	2"	2-1/2"	5-45/64"	7.6	B11-778-NL	
2"	2-1/2"	2-1/2"	6-1/4"	11.1	B11-788-NL	

### FEATURES

- All brass that comes in contact with potable water conforms to AWWA Standard C800 (ASTM B584, UNS C89833)
- The product has the letters "NL" cast into the main body for lead-free identification
- Certified to NSF/ANSI Standard 61 and NSF/ANSI Standard 372 where applicable
- Brass components that do not come in contact with potable water conform to AWWA Standard C800 (ASTM B62 and ASTM B584, UNS C83600, 85-5-5-5)
- Valve is non-directional and is watertight with flow in either direction
- Ends are integral or secured with adhesive to prevent unintentional disassembly
- Hole for attaching curb box rod or handle is provided in tee-head
- 300 PSI working pressure

**Optional Padlock Wing** for locking valve in closed position. Add "W" to part number. Example: B11-444W-NL  
**Optional full 360° tee-head rotation.** Add "R" to part number. Example: B11-444R-NL

The Ford Meter Box Company considers the information in this submittal form to be correct at the time of publication. Item and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.



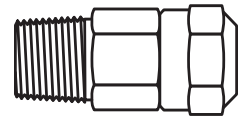
**The Ford Meter Box Company, Inc.**  
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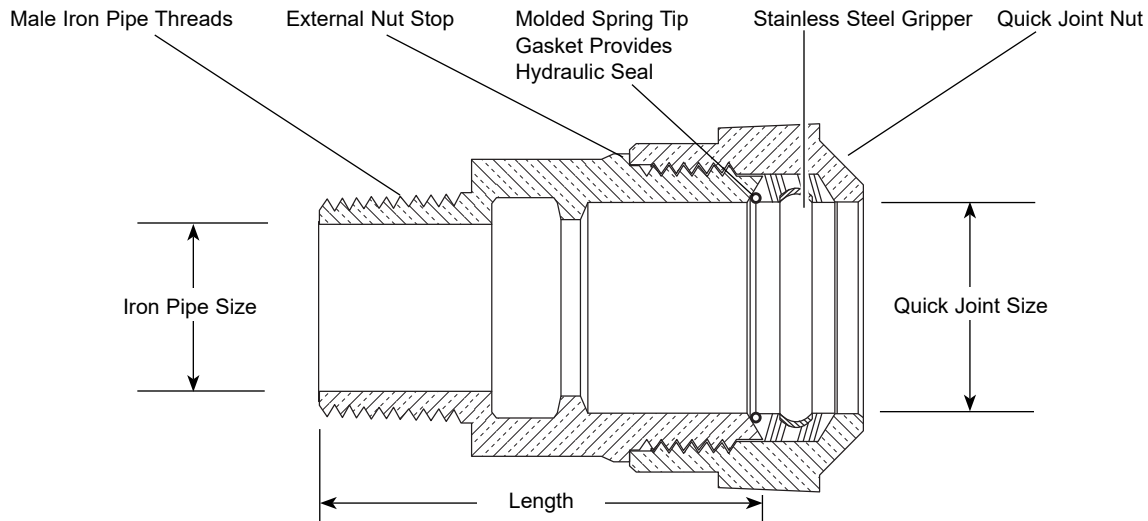
Submitted By:

# SUBMITTAL INFORMATION

## Quick Joint Coupling - (C84-xx-Q-NL style)



### MALE IRON PIPE THREAD BY QUICK JOINT FOR COPPER OR PLASTIC TUBING (CTS)



DESCRIPTION		LENGTH	APPROX. Wt. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
MALE IRON PIPE	Q.J. FOR CTS				
1/2"	1/2"	2"	0.5	C84-11-Q-NL	
3/4"	1/2"	2-7/32"	0.5	C84-31-Q-NL	
3/4"	5/8"	2-1/4"	0.6	C84-32-Q-NL	
3/4"	3/4"	2-1/4"	0.6	C84-33-Q-NL	
3/4"	1"	2-3/8"	0.7	C84-34-Q-NL	
1"	3/4"	2-19/32"	0.7	C84-43-Q-NL	
1"	1"	2-9/16"	0.8	C84-44-Q-NL	
1"	1-1/4"	2-15/32"	1.3	C84-45-Q-NL	
1"	1-1/2"	2-9/16"	1.5	C84-46-Q-NL	
1-1/4"	1-1/4"	2-5/8"	1.4	C84-55-Q-NL	
1-1/2"	1-1/2"	3"	1.8	C84-66-Q-NL	
2"	2"	3-1/4"	2.3	C84-77-Q-NL	

**Note:** Ford recommends insert stiffeners when using plastic pipe or tubing.

## FEATURES

- All brass that comes in contact with potable water conforms to AWWA Standard C800 (ASTM B584, UNS C89833)
- The product has the letters "NL" cast into the main body for lead-free identification
- Certified to NSF/ANSI Standard 61 and NSF/ANSI Standard 372 where applicable
- Brass components that do not come in contact with potable water conform to AWWA Standard C800 (ASTM B62 and ASTM B584, UNS C83600, 85-5-5-5)
- Body design provides octagonal wrench flats for proper installation

The Ford Meter Box Company considers the information in this submittal form to be correct at the time of publication. Item and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.



**The Ford Meter Box Company, Inc.**  
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06/26/19

Submitted By:



THE FORD METER BOX COMPANY, INC.  
CERTIFIED TO ISO 9001:2015  
10002505

# Section GA

06/2017

Web Revision 01/08/2019

# Ford Curb Boxes



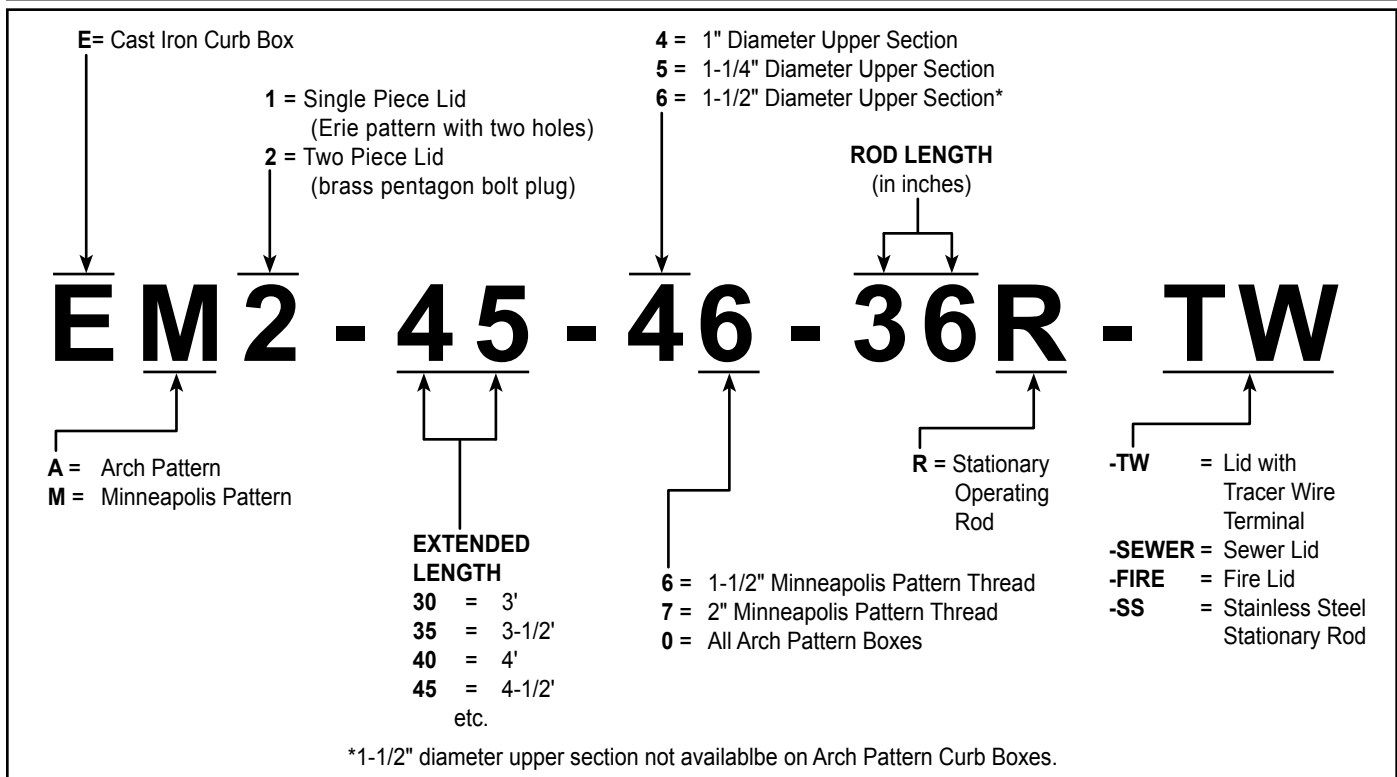
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## Standard Packaging:

Ford Curb Boxes are banded on pallets — well protected and easy to handle.

## Ford Curb Box Numbering System





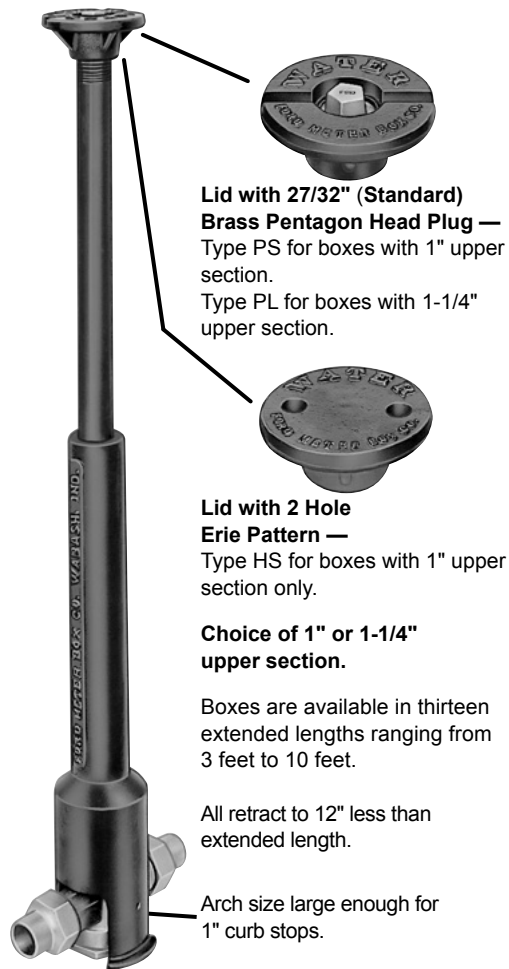
# Information

## Ford Arch Pattern and Minneapolis Pattern Curb Boxes

### Arch Base

#### Extension Type Curb Box with Lid for Arch Pattern Base

For use with curb stops in sizes 1" and smaller. These curb boxes are also adaptable to 1-1/4", 1-1/2" and 2" curb stops by using the CB-7 Curb Box Base (shown below). All boxes are coated with e-coat epoxy. Lids and bases are cast iron – upper sections are steel pipe.



### Curb Box Base

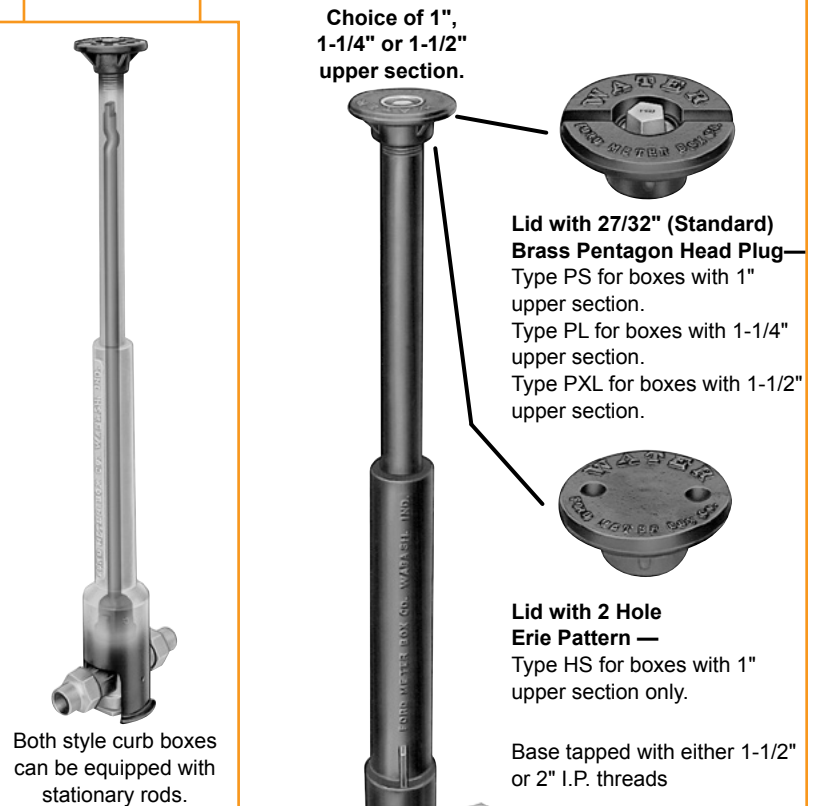
Fits over 1-1/4", 1-1/2" and 2" Ball Valve Curb Stops. Inserts into any curb box having a 2-7/8" or larger I.D. at bottom. Increases overall height of curb box by 5". Please consider the additional height when ordering rods. Cast Iron. Catalog Number: CB-7



### Minneapolis Base

#### Extension Type Curb Box with Lid for Minneapolis Pattern Curb Stops

For use with curb stops in sizes 3/4" through 2". All boxes are coated with e-coat epoxy. Lids and bases are cast iron – upper sections are steel pipe.



### Bushing—

Cast iron bushing adapts base tapped for 2" Minneapolis threads to curb stops with 1-1/2" Minneapolis threads.

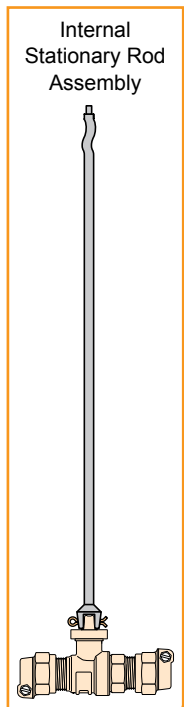
Catalog Number: CBB



Curb Stops shown are listed in Catalog Section G.

# Ford Arch Pattern Curb Boxes

## Arch Pattern Curb Boxes with 1" Upper Section Stationary Rod Included



TYPE HS-LID - TWO HOLE STYLE			
CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EA1-30-40-18R	3'	18"	13.0
EA1-35-40-24R	3-1/2'	24"	14.0
EA1-40-40-30R	4'	30"	16.0
EA1-45-40-36R	4-1/2'	36"	17.0
EA1-50-40-42R	5'	42"	19.0
EA1-55-40-48R	5-1/2'	48"	19.0
EA1-60-40-54R	6'	54"	21.0
EA1-65-40-60R	6-1/2'	60"	22.0
EA1-70-40-66R	7'	66"	23.0
EA1-75-40-72R	7-1/2'	72"	24.0
EA1-80-40-78R	8'	78"	26.0
EA1-90-40-90R	9'	90"	28.0

TYPE PS-LID - PLUG STYLE			
CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EA2-30-40-18R	3'	18"	14.0
EA2-35-40-24R	3-1/2'	24"	17.0
EA2-40-40-30R	4'	30"	16.0
EA2-45-40-36R	4-1/2'	36"	17.0
EA2-50-40-42R	5'	42"	19.0
EA2-55-40-48R	5-1/2'	48"	20.0
EA2-60-40-54R	6'	54"	21.0
EA2-65-40-60R	6-1/2'	60"	22.0
EA2-70-40-66R	7'	66"	24.0
EA2-75-40-72R	7-1/2'	72"	25.0
EA2-80-40-78R	8'	78"	26.0
EA2-90-40-90R	9'	90"	28.0

To order less stationary rod, remove the "-xxR" from the catalog number. Example: EA2-30-40

## Arch Pattern Curb Boxes with 1-1/4" Upper Section Stationary Rod not Included



TYPE PL-LID - PLUG STYLE		
CATALOG NUMBER	EXTENDED LENGTH	APPROX. WT. LBS.
EA2-30-50	3'	14.0
<b>EA2-35-50</b>	<b>3-1/2'</b>	<b>16.0</b>
EA2-40-50	4'	17.0
EA2-45-50	4-1/2'	18.0
EA2-50-50	5'	19.0
EA2-55-50	5-1/2'	20.0
EA2-60-50	6'	21.0
EA2-65-50	6-1/2'	22.0
EA2-70-50	7'	24.0
EA2-75-50	7-1/2'	25.0
EA2-80-50	8'	26.0

To add stationary rod, add rod length to the end of catalog number. Example: EA2-30-50-18R. Rods listed on page 7.

**Note:** For Curb Boxes 1-1/4" and larger, Ford recommends shut-off rods over stationary rods for valve operation.



# Ford Minneapolis Pattern Curb Boxes

Minneapolis Pattern Curb Boxes with 1" Upper Section  
Stationary Rod Included



Type HS-LID - 2 hole style  
"Erie Pattern"



Type PS-LID - Plug style  
with standard pentagon bolt

## HOW TO CHOOSE THE PROPER MINNEAPOLIS PATTERN CURB BOX FOR FORD CURB STOPS

DESCRIPTION OF CURB STOP	BASE THREAD SIZE
"BH", 3/4" and 1" Ball Curb Stops	1-1/2"
1-1/4", 1-1/2" and 2" Ball Curb Stops	2"
3/4" "Z" Type Inverted Key Curb Stops	1-1/2"
1" "Z" Type Inverted Key Curb Stops	2"

### TYPE HS-LID - TWO HOLE STYLE BASE TAPPED 1-1/2"

CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EM1-30-46-18R	3'	18"	12.0
EM1-35-46-24R	3-1/2'	24"	13.0
EM1-40-46-30R	4'	30"	14.0
EM1-45-46-36R	4-1/2'	36"	15.0
EM1-50-46-42R	5'	42"	17.0
EM1-55-46-48R	5-1/2'	48"	18.0
EM1-60-46-54R	6'	54"	19.0
EM1-65-46-60R	6-1/2'	60"	20.0
EM1-70-46-66R	7'	66"	22.0
EM1-75-46-72R	7-1/2'	72"	23.0
EM1-80-46-78R	8'	78"	24.0

### TYPE HS-LID - TWO HOLE STYLE BASE TAPPED 2"

CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EM1-30-47-18R	3'	18"	11.0
EM1-35-47-24R	3-1/2'	24"	13.0
EM1-40-47-30R	4'	30"	14.0
EM1-45-47-36R	4-1/2'	36"	15.0
EM1-50-47-42R	5'	42"	16.0
EM1-55-47-48R	5-1/2'	48"	18.0
EM1-60-47-54R	6'	54"	19.0
EM1-65-47-60R	6-1/2'	60"	20.0
EM1-70-47-66R	7'	66"	22.0
EM1-75-47-72R	7-1/2'	72"	23.0
EM1-80-47-78R	8'	78"	25.0

### TYPE PS-LID - PLUG STYLE BASE TAPPED 1-1/2"

CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EM2-30-46-18R	3'	18"	12.0
EM2-35-46-24R	3-1/2'	24"	13.0
EM2-40-46-30R	4'	30"	14.0
EM2-45-46-36R	4-1/2'	36"	16.0
EM2-50-46-42R	5'	42"	17.0
EM2-55-46-48R	5-1/2'	48"	18.0
EM2-60-46-54R	6'	54"	20.0
EM2-65-46-60R	6-1/2'	60"	21.0
EM2-70-46-66R	7'	66"	22.0
EM2-75-46-72R	7-1/2'	72"	23.0
EM2-80-46-78R	8'	78"	25.0

### TYPE PS-LID - PLUG STYLE BASE TAPPED 2"

CATALOG NUMBER	EXTENDED LENGTH	ROD LENGTH	APPROX. WT. LBS.
EM2-30-47-18R	3'	18"	12.0
EM2-35-47-24R	3-1/2'	24"	13.0
EM2-40-47-30R	4'	30"	14.0
EM2-45-47-36R	4-1/2'	36"	16.0
EM2-50-47-42R	5'	42"	17.0
EM2-55-47-48R	5-1/2'	48"	18.0
EM2-60-47-54R	6'	54"	19.0
EM2-65-47-60R	6-1/2'	60"	21.0
EM2-70-47-66R	7'	66"	22.0
EM2-75-47-72R	7-1/2'	72"	23.0
EM2-80-47-78R	8'	78"	24.0

To order less stationary rod, remove the "-xxR" from the catalog number. Example: EM2-30-47

# Ford Minneapolis Pattern Curb Boxes

## Minneapolis Pattern Curb Boxes with 1-1/4" Upper Section

Stationary Rod not Included



Type PL-LID - Plug style  
with standard pentagon bolt

### TYPE PL-LID - PLUG STYLE BASE TAPPED 1-1/2"

CATALOG NUMBER	EXTENDED LENGTH	APPROX. Wt. LBS.
EM2-30-56	3'	13.0
EM2-35-56	3-1/2'	14.0
EM2-40-56	4'	15.0
EM2-45-56	4-1/2'	17.0
EM2-50-56	5'	18.0
EM2-55-56	5-1/2'	19.0
EM2-60-56	6'	20.0
EM2-65-56	6-1/2'	21.0
EM2-70-56	7'	22.0
EM2-75-56	7-1/2'	23.0
EM2-80-56	8'	25.0

### TYPE PL-LID - PLUG STYLE BASE TAPPED 2"

CATALOG NUMBER	EXTENDED LENGTH	APPROX. Wt. LBS.
EM2-30-57	3'	13.0
EM2-35-57	3-1/2'	14.0
EM2-40-57	4'	15.0
EM2-45-57	4-1/2'	17.0
EM2-50-57	5'	18.0
EM2-55-57	5-1/2'	19.0
EM2-60-57	6'	20.0
EM2-65-57	6-1/2'	21.0
EM2-70-57	7'	22.0
EM2-75-57	7-1/2'	23.0
EM2-80-57	8'	25.0

To add stationary rod, add rod length to the end of catalog number. Example: EM2-30-56-18R. Rods listed on page 7.

**Note:** For Curb Boxes 1-1/4" and larger, Ford recommends shut-off rods over stationary rods for valve operation.

## Minneapolis Pattern Curb Boxes with 1-1/2" Upper Section

Stationary Rod not Included



Type PXL-LID - Plug style  
with standard pentagon bolt

### TYPE PXL-LID - PLUG STYLE BASE TAPPED 2"

CATALOG NUMBER	EXTENDED LENGTH	APPROX. Wt. LBS.
EM2-35-67	3-1/2'	16.0
EM2-40-67	4'	17.0
EM2-45-67	4-1/2'	19.0
EM2-50-67	5'	20.0
EM2-55-67	5-1/2'	21.0
EM2-60-67	6'	22.0
EM2-65-67	6-1/2'	24.0
EM2-70-67	7'	25.0
EM2-75-67	7-1/2'	27.0
EM2-80-67	8'	28.0

Curb boxes with 1-1/4" or 1-1/2" upper sections are available with a tracer wire terminal on the curb box lid. Add "-TW" to the end of the catalog number. Example: EM2-50-57-TW.

To add a stationary rod, add rod length to the end of catalog number. Example: EM2-35-67-24R. Rods listed on page 7.

**Note:** For Curb Boxes 1-1/4" and larger, Ford recommends shut-off rods over stationary rods for valve operation.

## Stationary Rods

(Attach to Curb Stop with brass cotter pin)

CATALOG NUMBER	ROD LENGTH	APPROX. Wt. LBS.
ROD-18	18"	2.0
ROD-24	24"	2.0
ROD-30	30"	2.5
ROD-36	36"	3.0
ROD-42	42"	3.5
ROD-48	48"	4.0
ROD-54	54"	4.0
ROD-60	60"	4.5
ROD-66	66"	5.0
ROD-72	72"	5.5
ROD-78	78"	6.0
ROD-90	90"	6.0

Stainless steel stationary rods and cotter pins are available. Add "-SS" to end of catalog number.

# Ford Curb Box Accessories

## Shut-off Rods

(For Curb Boxes with 1-1/4" and 1-1/2" upper section)

CATALOG NUMBER	ROD LENGTH	APPROX. Wt. LBS.
SROD-2	2'	2.5
SROD-3	3'	3.5
SROD-4	4'	4.5
SROD-5	5'	5.5
SROD-6	6'	6.5
SROD-8	8'	7.5
SROD-9	9'	8.5
SROD-10	10'	9.5



## Parts and Accessories for Arch Pattern Boxes

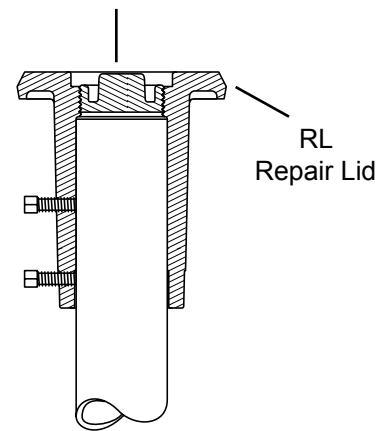
CATALOG NUMBER	DESCRIPTION	APPROX. Wt. LBS.
<b>ITEMS FOR 1" UPPER SECTION STYLE</b>		
PS-LID	Plug Type PS-LID	1.5
PS-LID-LP	Type PS-LID less plug	1.5
PS-LID-SEWER	Plug Type PS-LID with "Sewer" lettering	1.5
PS-LID-FIRE	Plug Type PS-LID with "Fire" lettering	1.5
P-PSL	1" IPS Plug only for Type PS-LID	0.3
HS-LID	Erie Type 2-hole HS-LID	1.5
HS-LID-SEWER	Erie Type 2-hole HS-LID with "Sewer" lettering	1.5
AB-4	Arch Base Only (with spring)	8.5
CB-7	Curb Box Base	9.0
SRK	22" Key for Stationary Rod	2.0
KEY-CB	Key for Pentagon Bolt for Plug Style lid	0.7
<b>ITEMS FOR 1-1/4" UPPER SECTION STYLE</b>		
PL-LID	Plug Type PL-LID	1.9
PL-LID-LP	Type PL-LID less plug	1.9
PL-LID-SEWER	Plug Type PL-LID with "Sewer" lettering	1.9
AB-5	Arch Base Only (with spring)	8.5
CB-7	Curb Box Base	9.0
P-PLL	1-1/4" IPS Plug only for Type PL-LID	0.3
RL	1-1/4" Repair Lid for PL Type	3.0
KEY-CB	Key for Pentagon Bolt for Plug Style lid	0.7

## Parts for Minneapolis Pattern Boxes

CATALOG NUMBER	DESCRIPTION	APPROX. Wt. LBS.
<b>ITEMS FOR 1" UPPER SECTION STYLE</b>		
PS-LID	Plug Type PS-LID	1.5
PS-LID-LP	Type PS-LID less plug	1.5
PS-LID-SEWER	Plug Type PS-LID with "Sewer" lettering	1.5
PS-LID-FIRE	Plug Type PS-LID with "Fire" lettering	1.5
P-PSL	1" IPS Plug only Type PS-LID	0.3
HS-LID	Erie Type 2 hole HS-LID	1.5
HS-LID-SEWER	Erie Type 2 hole HS-LID with "Sewer" lettering	1.5
MB-64	Minneapolis Base Only (with spring) tapped 1-1/2"	6.8
MB-74	Minneapolis Base Only (with spring) tapped 2"	6.8
CBB	2"x1-1/2" Cast Iron Bushing	0.6
SRK	22" Key for Stationary Rod	2.0
KEY-CB	Key for Pentagon Bolt for Plug Style lid	0.7
<b>ITEMS FOR 1-1/4" UPPER SECTION STYLE</b>		
PL-LID	Plug Type PL-LID	1.9
PL-LID-LP	Type PL Lid less plug	1.9
PL-LID-TW	Type PL Lid with Tracer wire terminal	2.1
PL-LID-SEWER	Plug Type PL-LID with "Sewer" lettering	2.0
PL-LID-SEWER-TW	Type PL Lid, with "Sewer" lettering and Tracer Wire Terminal	2.1
P-PLL	1-1/4" IPS Plug only for Type PL-LID	0.3
RL	1-1/4" Repair Lid for PL Type	3.0
MB-65	Minneapolis Base Only (with spring) tapped 1-1/2"	7.0
MB-75	Minneapolis Base Only (with spring) tapped 2"	7.0
CBB	2"x1-1/2" Cast Iron Bushing	0.6
KEY-CB	Key for Pentagon Bolt for Plug Style lid	0.7
<b>ITEMS FOR 1-1/2" UPPER SECTION</b>		
MB-76	Minneapolis Base Only (with spring) tapped 2"	7.0
PXL-LID	Plug Type PXL-LID	2.5
PXL-LID-TW	Type PXL Lid with Tracer Wire Terminal	2.6
P-PXL	1-1/2" IPS Plug only for Type PXL-LID	0.3
CBB	2"x1-1/2" Cast Iron Bushing	0.6
KEY-CB	Key for Pentagon Bolt for Plug Style lid	0.7



Brass Lid Plug with standard pentagon bolt



CB-7 Curb Box Base



# Section GA

# Ford Curb Boxes

## Warranty

All merchandise is warranted to be free from defects in material and factory workmanship for one year from date of shipment from our factory. We will provide, free of charge, new products in equal quantities for any that prove defective within one year from date of shipment from our factory. Manufacturer shall not be liable for any loss, damage, or injury, direct or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for user's intended use and user assumes all risk and liability whatever in connection therewith. No claims for labor or consequential damage will be allowed. The foregoing may not be changed except by agreement signed by an officer of the manufacturer.

No other warranties are applicable or may be implied, including the implied warranty of merchantability and the implied warranty of fitness for particular purpose and any warranty relating to infringement or the like, all of which are disclaimed.

**Parties responsible for monitoring and maintaining proper water system design must exercise full responsibility in understanding the full intent and scope of applicable lead laws.**

### **Please Note:**

Consult The Ford Meter Box Company, Inc. website ([www.fordmeterbox.com](http://www.fordmeterbox.com)) for the most recent catalog information. The Ford Meter Box Company considers the information in this catalog to be correct at the time of publication. Items and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.



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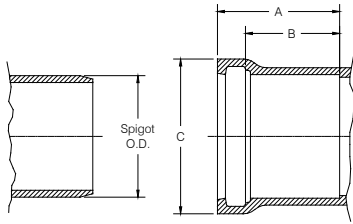
# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials: ASTM D-1784, NSF 61  
 Joints: ASTM D-3139  
 Gaskets: ASTM F-477  
 Wall Thickness: SDR-21  
 NSF 14 Certification  
 Vacuum Qualification: 22"-Hg for 4 hours with no loss per method of ASTM D-3139

### BELL SPECIFICATIONS



SIZE	STYLE	A	B	C	Spigot O.D.
1½	M	3.17	2.42	2.8	1.90
2	M	3.27	2.52	3.3	2.38
2½	M	3.38	2.63	3.8	2.88
3	M	3.52	2.77	4.5	3.50
4	M	4.10	2.99	5.9	4.50
6	M	4.57	3.46	8.3	6.63
8	M	5.16	3.90	10.4	8.63
10	Fab	5.75	4.70	11.5	10.75
12	Fab	6.15	4.90	12.0	12.75

### Notes:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### Style Legend:

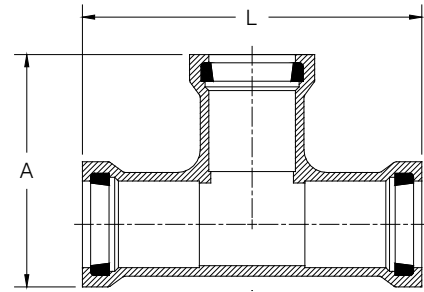
M - One piece molded  
 A - Assembled using one piece molded fitting with MIPT x Gasketed adapter or Spigot adapter for branch or Bell  
 Fab - Fabricated using SCH-40 PVC fittings with HARCO Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

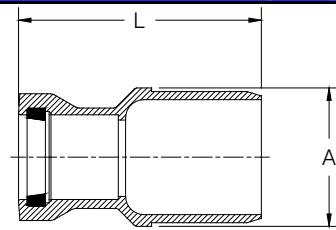
**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

### TEE (GxGxG)



SIZE	PART #	STYLE	A	L	WT
1½ x 1½	112-150	M	6.0	9.1	1.0
2 x 1½	112-215	M	6.1	9.1	1.3
2 x 2	112-220	M	6.1	9.1	1.4
2½ x 1½	112-251	A	8.4	9.9	1.4
2½ x 2	112-252	M	6.8	9.9	2.0
2½ x 2½	112-255	M	6.8	9.9	1.7
3 x 1½	112-315	A	9.4	10.9	2.5
3 x 2	112-320	M	7.7	11.4	2.8
3 x 2½	112-325	M	8.0	11.9	3.1
3 x 3	112-330	M	7.7	10.9	2.8
4 x 2	112-420	M	8.6	13.1	4.3
4 x 2½	112-425	M	8.5	13.1	4.9
4 x 3	112-430	M	8.8	13.1	4.9
4 x 4	112-440	M	9.3	13.1	5.6
5 x 5	112-550	M	11.0	14.8	10.0
6 x 2	112-620	A	12.2	11.6	2.8
6 x 3	112-630	M	11.5	12.5	3.0
6 x 4	112-640	M	11.8	16.3	11.0
6 x 6	112-660	M	11.5	16.4	12.3
8 x 4	112-840	M	13.9	19.5	18.7
8 x 6	112-860	M	14.4	19.5	19.3
8 x 8	112-880	M	14.9	19.5	21.3

### REDUCER S.E.B. (SxG)



SIZE	PART #	STYLE	A	L	WT
2 x 1½	116-215	M	2.8	7.0	0.5
2½ x 2	116-252	M	3.4	7.0	0.8
3 x 2	116-320	M	3.7	7.9	0.9
3 x 2½	116-325	M	4.2	7.4	1.3
4 x 2	116-420	M	4.7	10.0	1.5
4 x 2½	116-425	M	5.0	8.3	1.8
4 x 3	116-430	M	4.7	10.1	1.9
5 x 4	116-540	Fab	5.8	7.8	3.0
6 x 3	116-630	M	7.0	9.0	3.5
6 x 4	116-640	M	6.9	8.0	2.7
6 x 5	116-650	M	7.0	10.0	4.9
8 x 6	116-860	M	9.0	9.3	5.8

Call For Other Sizes, Configurations & Gasket Materials



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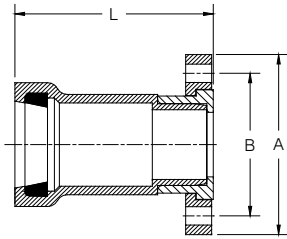
# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials:	ASTM D-1784, NSF 14
Joints:	ASTM D-3139
Gaskets:	ASTM F-477
Wall Thickness:	SDR-21
NSF 14 Certification	
Vacuum Qualification:	22"-Hg for 4 hours with no loss per method of ASTM D-3139

### GASKET x FLANGE ADAPTER



SIZE	PART #	STYLE	A	B	L	WT (approx.)
1½	154-015	Fab	5.0	3.9	4.8	0.8
2	154-020	Fab	6.0	4.8	5.1	1.2
2½	154-025	Fab	7.0	5.5	5.8	1.7
3	154-030	Fab	7.5	6.0	6.0	2.4
4	154-040	Fab	9.0	7.5	7.0	6.0
6	154-060	Fab	11.0	9.5	8.3	12.0
8	154-080	Fab	13.5	11.8	17.7	20.0

### NOTES:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### STYLE LEGEND:

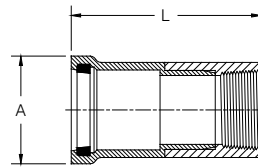
- M - One piece molded
- Fab - Fabricated using SCH-40 PVC fittings with Harco Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

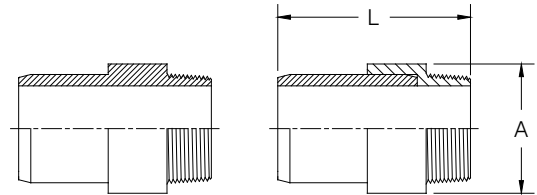
**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

### GASKET x FEMALE NPT ADAPTER



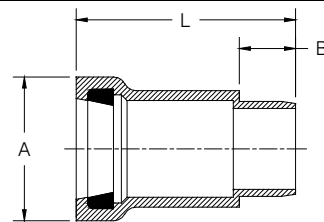
SIZE	PART #	STYLE	A	L	WT (approx.)
1½	132-015	Fab	2.7	5.7	0.5
2	132-020	Fab	3.3	6.1	0.7
2½	132-025	Fab	3.8	7.3	1.2
3	132-030	Fab	4.5	7.5	1.5
4	132-040	Fab	5.8	9.4	2.6
5	132-050	Fab	7.0	10.5	5.0
6	132-060	Fab	8.1	12.1	6.0

### PE (Plain End) x MALE NPT ADAPTER



SIZE	PART #	STYLE	A	L	WT (approx.)
1½	133-015	Fab	2.2	5.2	0.3
2	133-020	M	2.6	4.1	0.3
2½	133-025	Fab	3.3	6.3	0.8
3	133-030	Fab	4.0	6.9	1.3
4	133-040	Fab	5.0	7.5	2.0
6	133-060	Fab	7.3	9.8	5.3

### SPIGOT x GASKET ADAPTER



SIZE	PART #	STYLE	A	B	L	WT (approx.)
1½	130-015	M	2.7	1.1	4.5	0.3
2	130-020	M	3.3	1.4	4.9	0.5
2½	130-025	M	3.8	2.0	5.3	0.7
3	130-030	M	4.5	2.0	5.8	0.9
4	130-040	M	5.9	2.3	6.4	1.7
5	130-050	M	7.0	3.0	9.1	3.0
6	130-060	M	8.3	3.0	8.0	3.8



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20180618



# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials:	ASTM D-1784, NSF 14
Joints:	ASTM D-3139
Gaskets:	ASTM F-477
Wall Thickness:	SDR-21
NSF 14 Certification	
Vacuum Qualification:	22"-Hg for 4 hours with no loss per method of ASTM D-3139

### NOTES:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### STYLE LEGEND:

- M - One piece molded  
 HB - Harco style one piece molded, reduced by use of flush style thread x thread bushing  
 FB - Flo style one piece molded, reduced by use of flush style thread x thread bushing  
 Fab - Fabricated using SCH-40 PVC fittings with Harco Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

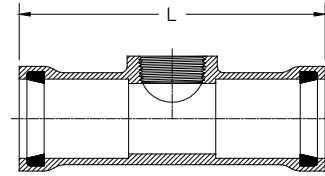
**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

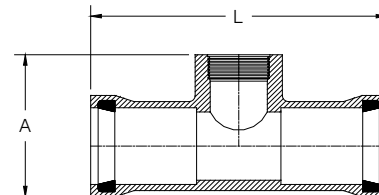
Call For Other Sizes, Configurations & Gasket Materials

### SERVICE TEE (GxGxFIPT) (Tapered NPT Thread)



SIZE	PART #	STYLE	L	WT (approx.)
1½ x ¾	151-153	FB	8.5	0.8
1½ x 1	151-154	M	8.5	0.8
1½ x 1¼	151-155	Fab	10.9	0.8
2 x ½	151-202	HB	9.2	1.2
2 x ¾	151-203	M	9.2	1.2
2 x 1	151-204	M	9.2	1.2
2 x 1¼	151-205	M	9.2	1.2
2 x 1½	151-206	M	9.2	1.2
2½ x ½	151-252	HB	9.9	1.5
2½ x ¾	151-253	HB	9.9	1.5
2½ x 1	151-254	M	9.9	1.5
2½ x 1¼	151-255	M	9.9	1.5
2½ x 1½	151-256	M	9.9	1.5
2½ x 2	151-258	M	9.9	1.5
3 x ½	151-302	HB	11.0	2.5
3 x ¾	151-303	HB	11.0	2.5
3 x 1	151-304	M	11.0	2.5
3 x 1¼	151-305	M	11.0	2.5
3 x 1½	151-306	M	11.0	2.5
3 x 2	151-308	M	11.0	2.5
4 x ½	151-402	HB	10.7	3.1
4 x ¾	151-403	HB	10.7	3.1
4 x 1	151-404	M	10.7	3.1
4 x 1¼	151-405	M	10.7	3.1
4 x 1½	151-406	M	10.7	3.1
4 x 2	151-408	M	10.7	3.1
6 x ½	151-602	HB	9.3	5.8
6 x ¾	151-603	HB	9.3	5.8
6 x 1	151-604	HB	9.3	5.8
6 x 1¼	151-605	HB	9.3	5.8
6 x 1½	151-606	M	9.3	5.8
6 x 2	151-608	M	11.5	5.8

### ACME SERVICE TEE (GxGxACME) (315psi rated)



SIZE	PART #	STYLE	A	L	WT (approx.)
2 x 1	153-204	M	4.5	9.2	1.4
2 x 1¼	153-205	M	4.5	9.2	1.4
2 x 1½	153-206	M	4.5	9.2	1.5
2½ x 1	153-254	M	4.4	9.6	1.9
2½ x 1¼	153-255	M	4.4	9.6	1.9
2½ x 1½	153-256	M	4.4	9.6	1.9
3 x 1	153-304	M	3.9	10.2	2.8
3 x 1¼	153-305	M	3.9	10.2	2.7
3 x 1½	153-306	M	3.8	10.2	2.6



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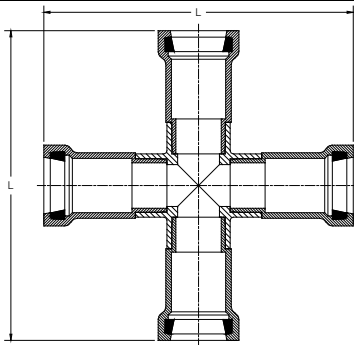
# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials:	ASTM D-1784, NSF 14
Joints:	ASTM D-3139
Gaskets:	ASTM F-477
Wall Thickness:	SDR-21
NSF 14 Certification	
Vacuum Qualification:	22"-Hg for 4 hours with no loss per method of ASTM D-3139

### CROSS (GxGxGxG)



SIZE	PART #	STYLE	L	WT (approx.)
1½	172-015	Fab	11.6	1.7
2	172-020	Fab	12.1	3.4
2½	172-025	Fab	14.3	4.4
3	172-030	Fab	15.1	5.3
4	172-040	Fab	17.9	9.0

### NOTES:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### STYLE LEGEND:

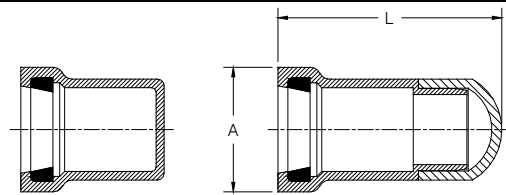
M - One piece molded  
 Fab - Fabricated using SCH-40 PVC fittings with Harco Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

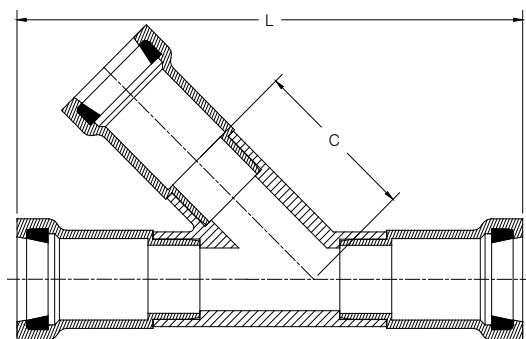
### CAP (Gasket)



Poured concrete thrust blocks only.

SIZE	PART #	STYLE	A	L	WT (approx.)
1½	149-015	Fab	2.8	5.3	0.5
2	149-020	M	3.3	3.7	0.5
2½	149-025	Fab	3.8	6.4	1.0
3	149-030	Fab	4.5	6.7	1.4
4	149-040	Fab	5.9	7.6	2.7
5	149-050	Fab	7.0	10.0	4.4
6	149-060	Fab	8.5	9.8	6.9

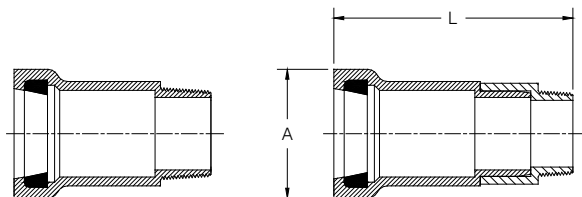
### NON-PRESSURE WYE (GxGxG)



SIZE	PART #	STYLE	C	L	WT (approx.)
3 x 3	101-0303	Fab	6.8	10.1	5.0
4 x 4	101-0404	Fab	8.4	12.3	10.0

### GASKET x MALE NPT ADAPTER

Do not use joint restraint.



Size on size and reducing sizes of these adapters also available in HARCO Ductile Iron.

SIZE	PART #	STYLE	A	L	WT (approx.)
1½	131-015	M	2.8	4.3	0.5
2	131-020	M	3.3	4.6	0.5
2½	131-025	M	3.8	4.8	1.2
3	131-030	M	4.5	5.0	1.5
4	131-040	Fab	5.9	8.5	2.8
5	131-050	M			3.0
6	131-060	Fab	8.3	10.9	10.3

Call For Other Sizes, Configurations & Gasket Materials



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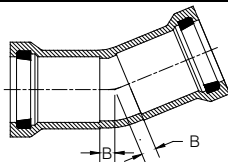
# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials:	ASTM D-1784, NSF 14
Joints:	ASTM D-3139
Gaskets:	ASTM F-477
Wall Thickness:	SDR-21
NSF 14 Certification	
Vacuum Qualification:	22"-Hg for 4 hours with no loss per method of ASTM D-3139

### 11¼° BEND (GxG)



SIZE	PART #	STYLE	B	WT (approx.)
2	126-020	Fab		2.0
3	126-030	Fab		3.0
4	126-040	Fab		5.0
6	126-060	Fab		11.0

### NOTES:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### STYLE LEGEND:

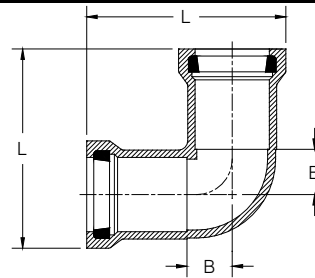
M - One piece molded  
 Fab - Fabricated using SCH-40 PVC fittings with Harco Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

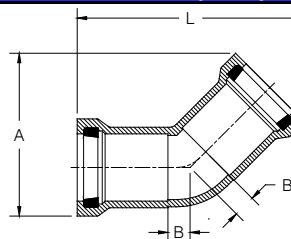
**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

### 90° BEND (GxG)



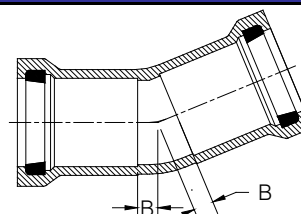
SIZE	PART #	STYLE	B	L	WT (approx.)
1½	118-015	M	1.0	4.8	0.6
2	118-020	M	1.3	6.2	0.8
2½	118-025	M	1.6	6.8	1.3
3	118-030	M	2.0	7.7	1.8
4	118-040	M	2.5	9.5	3.8
5	118-050	Fab			3.8
6	118-060	M	3.6	12.3	9.0
8	118-080	M	4.5	14.9	16.3

### 45° BEND (GxG)



SIZE	PART #	STYLE	A	B	L	WT (approx.)
1½	122-015	Fab	5.8	0.9	9.1	0.9
2	122-020	M	5.3	0.6	7.8	0.8
2½	122-025	M	6.1	0.7	8.3	1.1
3	122-030	M	6.6	0.9	9.1	1.6
4	122-040	M	8.4	1.1	11.0	3.4
6	122-060	M	11.3	1.6	13.6	7.8
8	122-080	M	13.8	2.0	15.8	13.3

### 22½° BEND



SIZE	PART #	STYLE	B	WT (approx.)
2	124-020	Fab	2.0	2.0
2½	124-025	Fab	2.0	3.0
3	124-030	Fab	2.3	3.0
4	124-040	Fab	2.6	5.0
6	124-060	Fab	4.3	11.0

Call For Other Sizes, Configurations & Gasket Materials



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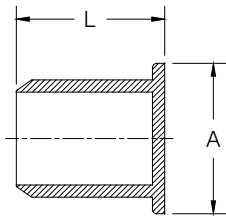
# HARCO PVC IPS GASKETED FITTINGS

## DESIGN DATA

### Applicable Standards:

Materials:	ASTM D-1784, NSF 14
Joints:	ASTM D-3139
Gaskets:	ASTM F-477
Wall Thickness:	SDR-21
NSF 14 Certification	
Vacuum Qualification:	22"-Hg for 4 hours with no loss per method of ASTM D-3139

### PLUG (Spigot)



Poured concrete thrust blocks only.

SIZE	PART #	STYLE	A	L	WT (approx.)
1½	144-015	Fab	2.7	5.2	0.2
2	144-020	M	3.0	2.7	0.2
2½	144-025	Fab	3.4	5.3	0.8
3	144-030	M	3.8	3.5	0.4
4	144-040	M	5.0	3.5	0.4
6	144-060	M	6.8	5.4	2.3
8	144-080	M	8.9	6.4	3.8

### NOTES:

- All lay lengths & weights are approximate and are subject to change without notice
- Fabricated fitting configurations may vary

### STYLE LEGEND:

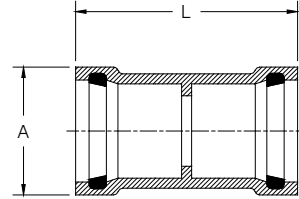
M - One piece molded  
 C - Manufactured by Certain-Teed Corporation  
 Fab - Fabricated using SCH-40 PVC fittings with Harco Spigot adapters (or pipe) solvent welded together (See pressure rating warning on this page)

**Fab Style:** These fittings use SCH-40 PVC fittings. SCH-40 PVC fittings do not have a long term pressure rating. See section 6.3.2 of ASTM D2466-97. Use of these fittings in pressure systems is at user's risk.

The use of anything but properly designed and installed thrust blocks will reduce the life of plastic fittings. Thrust blocks must be poured concrete only and sized for the soil conditions. Joint restraint products are available.

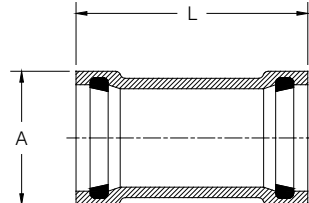
**WARNING:** Cyclical pressure surges (WATER HAMMER) can reduce the life of PVC fittings. Where such conditions may exist, HARCO DEEP BELL DUCTILE IRON FITTINGS for IPS size PVC pipe should be considered. HARCO DEEP BELL DUCTILE IRON FITTINGS are available in sizes 1½" through 12".

### LINE COUPLING (GxG) (w/ Stop)



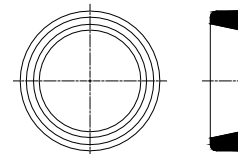
SIZE	PART #	STYLE	A	L	WT (approx.)
1½	108-015	M	2.8	6.5	0.5
2	108-020	M	3.3	6.7	0.7
2½	108-025	M	3.8	7.0	0.9
3	108-030	M	4.5	7.2	1.3
4	108-040	M	5.9	10.6	2.7
6	108-060	M	8.3	9.3	5.6
8	108-080	M	10.4	11.1	10.3
10	108-100	C	11.5	11.5	14.0
12	108-120	C	12.0	12.0	22.0

### REPAIR COUPLING (GxG) KNOCK-ON STYLE (No Stop)



SIZE	PART #	STYLE	A	L	WT (approx.)
1½	109-015	M	2.8	6.5	0.5
2	109-020	M	3.3	7.8	0.7
2½	109-025	M	3.8	8.4	0.9
3	109-030	M	4.5	9.0	1.3
4	109-040	M	5.9	10.6	2.7
5	109-050	M	7.0	11.2	4.1
6	109-060	M	8.3	11.6	5.6
8	109-080	M	10.4	11.1	10.3
10	109-100	C	11.5	11.5	14.0
12	109-120	C	12.0	12.0	22.0

### REPLACEMENT HARCO PRESSURE GASKET



SIZE	PART #	STYLE	WT (approx.)
1½	195-015	M	0.1
2	195-020	M	0.1
2½	195-025	M	0.1
3	195-030	M	0.1
4	195-040	M	0.2
6	195-060	M	0.3
8	195-080	M	0.3

Call For Other Sizes, Configurations & Gasket Materials



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# Tyler/Union

## Mechanical Joint Compact Fittings SUBMITTAL

<b>SIZES:</b>	3" through 48"
<b>STANDARDS:</b>	ANSI/AWWA C153/A21.53
<b>PRESSURE RATING:</b>	3"-24" @350 PSI; 30"-48" & fittings with Flanged branches at 250 PSI
<b>NSF-61:</b>	Meets all requirements, UL Certified
<b>COATING:</b>	ANSI/AWWA C104/A21.4
<b>CEMENT LINING:</b>	ANSI/AWWA C104.A21.4, Double available
<b>EPOXY COATING:</b>	ANSI/AWWA C116/A21.16
<b>BARE:</b>	Available
<b>BOLTS:</b>	ANSI/AWWA C111/A21.11
<b>INSTALLATION:</b>	AWWA C600

JOINT DIMENSIONS IN INCHES

BOLTS

Size	A Dia.	B	C Dia.	D Dia.	F Dia.	J Dia.	K <sup>1</sup> Dia.	K <sup>2</sup> Dia.	L	M	S	T	X	Size	No.
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	.58	.62	.39	.33	3/4	5/8 x3	4
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	.60	.75	.39	.34	7/8	3/4x3 1/2	4
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	.63	.88	.43	.36	7/8	3/4x3 1/2	6
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	.66	1.00	.45	.38	7/8	3/4x3 1/2	6
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	.70	1.00	.47	.40	7/8	3/4x3 1/2	8
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	.73	1.00	.49	.42	7/8	3/4x3 1/2	8
14	15.30	3.50	16.40	16.54	15.44	18.75	20.31	20.25	.79	1.25	.56	.47	7/8	3/4x4	10
16	17.40	3.50	18.50	18.64	17.54	21.00	22.56	22.50	.85	1.31	.57	.50	7/8	3/4x4	12
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	.68	.54	7/8	3/4x4	12
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	.69	.57	7/8	3/4x4	14
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	.75	.61	7/8	3/4x4 1/2	16
30	32.00	4.00	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	.82	.66	1 1/8	1x5 1/2	20
36	38.30	4.00	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	.74	1 1/8	1x5 1/2	24
42	44.50	4.00	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.25	.82	1 3/8	1 1/4x6 1/2	28
48	50.80	4.00	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.35	.90	1 3/8	1 1/4x6 1/2	32



Date: September 10, 2010

From: Roger Dunning  
Technical Support Manager  
Tyler Union Waterworks  
Tel.: (903) 882-2313  
roger.dunning@tylerunion.com



# BUY AMERICAN COMPLIANCE CERTIFICATION

Tyler Union Waterworks offers a full product line including accessories made in the USA. Tyler Union Waterworks fittings wholly manufactured in the USA using U.S. materials are provided with the Country of Origin cast onto each fitting in accordance with ANSI/AWWA C153/A21.53 and ANSI/AWWA C110/A21.10, current revisions. Tyler Union Waterworks Domestic Ductile iron fittings are cast with tested and traceable ASTM A536 ductile iron and Tyler Union Waterworks Domestic Valve Boxes are cast with tested and traceable ASTM A48 cast iron.

Tyler Union Waterworks (Manufacturer) hereby certifies that our domestic manufactured products provided from the locations listed at the bottom of the page comply with the Buy American provisions of the ARRA Act of 2009 and meet the requirements of Section 1605 of the American Recovery and Reinvestment Act (ARRA) that requires all iron, steel, and manufactured goods purchased for and incorporated into projects wholly or partially funded by ARRA to have been made in the United States.

Tyler Union domestic made product can be utilized for qualified USDA Rural Development and ARRA funded projects. Using USEPA guidance regarding substantial transformation in conjunction with the Section 1605 of the ARRA Act of 2009; we provide the following responses to questions regarding our domestic made products.

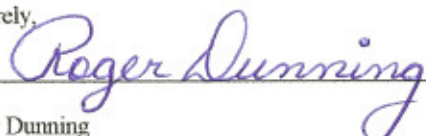
## Qualification and Determination of Substantial Transformation

STE Question	YES	NO
Were all of the components of the manufactured good manufactured in the United States, and were all of the components assembled into the final product in the US? (if the answer is yes, then this is clearly manufactured in the US, and the inquiry is complete)	√	-
Was there a change in character or use of the good or the components in America? (These questions apply to the product as a whole, not to individual components)	-	-
<ul style="list-style-type: none"> <li>- Was there a change in the physical and/or chemical properties or characteristics designed to alter the functionality of the good?</li> <li>- Did the manufacturing or processing operation result in a change of a product(s) with one use into a product with a different use?</li> <li>- Did the manufacturing or processing operation result in the narrowing of the range of possible uses of multi-use product?</li> </ul>		
<b>*Any one bullet answered "yes" passes STE</b>		
Was/(were) the process(es) performed in the US (including but not limited to assembly) complex and meaningful?	-	-
<ul style="list-style-type: none"> <li>- Did the process(es) take a substantial amount of time?</li> <li>- Was/(were) the process(es) costly?</li> <li>- Did the process(es) take require particular high level skills?</li> <li>- Did the process(es) require a number of different operations?</li> <li>- Was substantial value added in the process(es)?</li> </ul>		
<b>**Any two bullets answered "yes" passes STE</b>		

*\*Note: The response to the questionnaire and this certification is valid for Tyler Union Domestic products. You must specify Domestic only products upon order placement to ensure you receive Tyler Union products for your project(s) that comply with the requirements of the ARRA Act of 2009.*

File name: ARRASTETylerUnion.pdf

Sincerely,

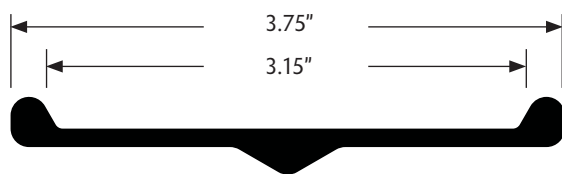
  
Roger Dunning

## Domestic Manufacturing Locations

11910 CR 492 • Tyler, Texas 75706  
1501 W 17<sup>th</sup> St. • Anniston, Alabama 36201  
2266 South 6<sup>th</sup> St. • Coshocton, Ohio 43812  
2121 Brooks St. • Neenah, Wisconsin 54956

**This document is void if modified in any manner**





### How to Order:

CRM 3

Product number

072

Length (in.)  
See chart for availability by color.

01

Color (See chart below)

Other lengths and colors are available. Contact your representative.

Post color	Standard Lengths (in.)
01-White	60, 62, 66, 72, 84
02-Yellow	60, 62, 66, 72
03-Brown	72
04-Orange	60, 62, 66, 72
05-Red	60, 62, 66
07-Green	72
08-Blue	66

Material: Fiberglass Composite, high-performance construction

Options and Accessories: Reflective sheeting  
Stock or custom decals  
Direct Graphics  
Visibility Enhancer  
Anchor Barb

Installation tools: Post Driver (PDR, PDRL)  
Post Puller  
Pilot Hole Driver

Carsonite High Performance RoadMarkers are designed to stand up to nature as well as vehicular impacts, controlled ditch burns, and even small arms gunfire.



### Impact resistant, three-rail marker

The Utility Marker, with its three-rail design, was the first fiberglass composite utility marker in the industry and remains the most widely used fiberglass marker on the market. Two ribs on the side protect decals from vehicle impacts while the back rib adds strength for driving into hard soil conditions.





## PVC Stargrip® series 4000

Mechanical Joint Wedge Action Restraint  
for Plastic Pressure Pipe

6" PVC Stargrip® / 16" PVC Stargrip®

## SUBMITTAL INFORMATION

PROJECT NAME:

ENGINEER:

CONTRACTOR:

SPEC. SECTION:



## FEATURES &amp; ADVANTAGES

**Consists of 3" to 12" G2 design and 14" and larger original Series 4000HD design:**

- Can be used on 4" through 12" AWWA C900 and AWWA C909 PVCO pipe, HDPE pipe or 3"-12" IPS PVC pipe\*. (\*A transition gasket is required on IPS Plastic Pipe).
- Listed with Underwriters Laboratories in sizes 4" to 12" and Approved by Factory Mutual Research in sizes 4" to 12".
- Tested to and meets the requirements of ASTM F1674.
- Safety factor is twice (2:1) the standardized pressure rating listed in Tables A and B.
- Offers five degrees of deflection on 3" to 12" AWWA C900, three degrees on 14" to 24" and two degrees on 30" to 36".
- Gland is made from high strength Ductile Iron per ASTM A536 Grade 65-45-12 and is compatible with all Mechanical Joints that conform to ANSI/AWWA C111/A21.11. Standard gland color is Coral Red.

**Features & Advantages for Sizes 3" - 12" only (US Patent# 9,822,910):**

- Fewer wedges and lower wedge-bolt torque (45 to 60 ft-lbs) results in quicker and easier installation.
- Design uses a spacer that is easily removed when restraint is used on IPS Plastic pipe. Wedge bolts do not need to be removed and reinstalled to remove spacer.
- Curved wedges reduce the amount of localized pipe deformation.
- Offers five degrees of deflection on all sizes of AWWA C900 pipe.
- The gland's larger inside diameter allows restraint to be installed on pipe with more ovality.
- Improved design of the wedge bolts prevents over torquing which can damage PVC pipe.
- Wedges are mechanically attached to wedge bolts, which eliminates the possibility of falling out during shipping and handling.

## MATERIAL SPECIFICATIONS:

- Wedges: Ductile Iron per ASTM A536, Grade 65-45-12. Wedge coating is a thermally cured fluoropolymer epoxy.

**GLAND FINISH OPTIONS (Please check one):**

Standard: alkyd enamel coating

Optional: Starbond™ TGIC polyester powder coating  
applied by an electrostatic spray process

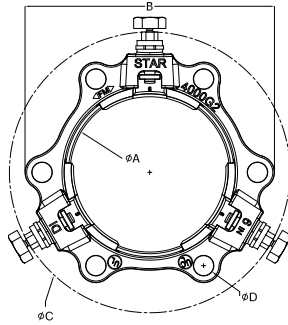
Optional: Other (specify) \_\_\_\_\_

**COUNTRY OF ORIGIN OPTION (Please check one):**

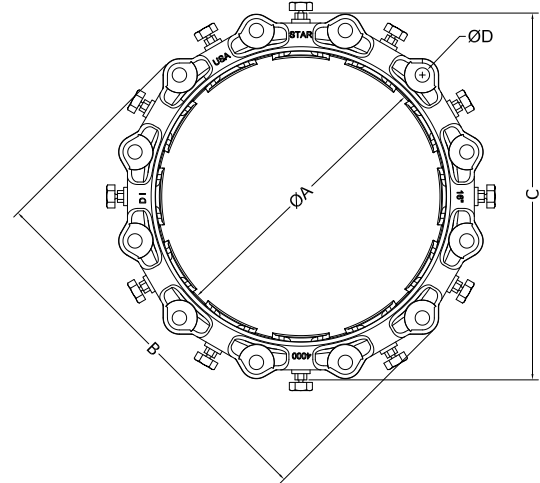
Import

100% Domestic<sup>1</sup>Domestic gland with import components<sup>1</sup>(\*Please see [Domestic Restraint Options Available](#) on our website.)**HARDWARE OPTIONS (Please check):**Standard: T-bolts and nuts are high strength low  
alloy steel manufactured in accordance with ANSI/  
AWWA C111/A21.11Optional: T-bolts alloy SS 304 per ASTM F593;  
Nuts alloy SS 304 per ASTM F594 CWOptional: T-bolts SS 316 per ASTM F593;  
Nuts SS 316 per ASTM A194 Grade 8MOptional: T-bolts and nuts Fluoropolymer Star-Blue  
coated high strength low alloy steel manufactured  
in accordance with ANSI/AWWA C111/A21.11



**PVC Stargrip® series 4000**Mechanical Joint Wedge Action Restraint  
for Plastic Pressure Pipe**TECHNICAL INFORMATION**

6" PVC Stargrip® Series 4000 for PVC Pipe

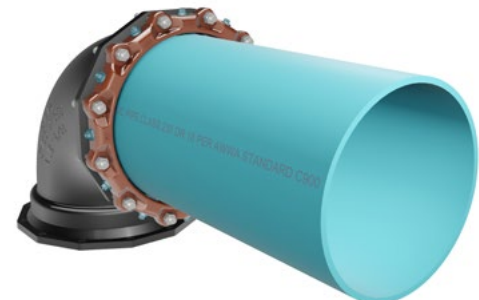


16" PVC Stargrip® Series 4000 for PVC Pipe

*Please  
check sizes:*

PVC STARGRIP® 4000 SPECIFICATIONS*									
NOM. SIZE	C900/C909 PIPE CI OD	IPS PIPE OD (TRANSITION GASKET REQUIRED)	ØA	B	ØC <sup>1</sup>	ØD	T-BOLT SIZE (QTY)	WEDGE (QTY)	APPROX WT. (LBS)
3	N/A	3.50	4.09	7.57	9.01	3/4	5/8 x 3 (4)	2	6
4	4.80	4.50	4.93	9.00	10.29	7/8	3/4 x 3 1/2 (4)	2	7
6	6.90	6.63	7.03	11.00	12.39	7/8	3/4 x 3 1/2 (6)	3	10
8	9.05	8.63	9.18	13.25	14.44	7/8	3/4 x 4 (6)	4	15
10	11.10	10.75	11.23	15.62	16.59	7/8	3/4 x 4 (8)	6	21
12	13.20	12.75	13.33	17.87	18.54	7/8	3/4 x 4 (8)	6	25
14	15.30	N/A	15.45	20.75	20.36	7/8	3/4 x 4 1/2 (10)	10	50
16	17.40	N/A	17.55	23.00	22.46	7/8	3/4 x 4 1/2 (12)	12	60
18	19.50	N/A	19.65	25.25	24.56	7/8	3/4 x 4 1/2 (12)	12	65
20	21.60	N/A	21.75	27.50	26.66	7/8	3/4 x 4 1/2 (14)	14	76
24	25.80	N/A	25.95	32.00	30.86	7/8	3/4 x 5 (16)	16	98
30	32.00	N/A	32.18	39.38	36.82	1-1/8	1 x 6 (20)	20	173
36	38.30	N/A	38.48	46.25	43.12	1-1/8	1 x 6 (24)	24	219

\*All dimensions in inches except where indicated.

<sup>1</sup> - dimension after assembly on pipe



## PVC Stargrip® series 4000

Mechanical Joint Wedge Action Restraint  
for Plastic Pressure Pipe

## TECHNICAL INFORMATION (cont'd)

Table A. Maximum Working Pressure Rating with Occasional or Recurring Surges in PSI for Plastic Pipes Made to a CIOD Diameter Regimen

NOM. SIZE (IN)	Actual Plastic Pipe OD	AWWA C900 PVC									AWWA C909 PVCO			AWWA C906 HDPE*						
											IPEX PVCO		JM EAGLE PVCO							
		DR14	DR17	DR18	DR21	DR25	DR27.5	DR32.5	DR41	DR51	PC235	PC235	PC165	DR 7.3	DR 9	DR 9.3	DR11	DR13.5	DR17	
4	4.80	305	250	235	200	165	-	-	-	-	235	-	-	254	200	193	160	130	100	
6	6.90	305	250	235	200	165	-	-	-	-	235	235	-	254	200	193	160	130	100	
8	9.05	305	250	235	200	165	-	-	-	-	235	235	-	254	200	193	160	130	100	
10	11.10	305	250	235	200	165	-	-	-	-	235	235	-	254	200	193	160	130	100	
12	13.20	305	250	235	200	165	-	-	-	-	235	235	-	254	200	193	160	130	100	
14	15.30	305	250	235	200	165	150	125	-	-	235	-	-	-	200	193	160	-	-	
16	17.40	305	250	235	200	165	150	125	-	-	235	-	165	-	-	-	160	-	-	
18	19.50	-	250	235	200	165	150	125	-	-	200	-	-	-	-	-	160	-	-	
20	21.60	-	250	235	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-	
24	25.80	-	250	235	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-	
30	32.00	-	-	200	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-	
36	38.30	-	-	-	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-	

\* A stainless steel pipe stiffener (provided by others) is required for the Series 4000 to be installed on HDPE pressure pipe. The stiffener must be installed in the HDPE pipe before installing the Series 4000. The stainless steel pipe stiffener must be of sufficient length to support the full bearing length of the restrainer.

Table B. Maximum Working Pressure Rating with Occasional or Recurring Surges in PSI for Plastic Pipes Made to an IPS Diameter Regimen

NOM. SIZE (IN)	Actual Plastic Pipe OD	ASTM D2241 PVC			AWWA C901 and AWWA C906 HDPE**					
		SDR17	SDR21	SDR26	DR 7.3	DR 9	DR 9.3	DR11	DR13.5	DR17
3	3.50	250	200	160	254	200	-	160	130	100
4	4.50	250	200	160	254	200	193	160	130	100
6	6.63	250	200	160	254	200	193	160	130	100
8	8.63	250	200	160	254	200	193	160	130	100
10	10.75	250	200	160	254	200	193	160	130	100
12	12.75	250	200	160	254	200	193	160	130	100

NOTE: A transition gasket is required for use with pipes made to an IPS diameter regimen.

\*\* A stainless steel pipe stiffener (provided by others) is required for the Series 4000 to be installed on HDPE pressure pipe. The stiffener must be installed in the HDPE pipe before installing the Series 4000. The stainless steel pipe stiffener must be of sufficient length to support the full bearing length of the restrainer.

# 101S & 202S SERVICE SADDLES

## SUBMITTAL INFORMATION



101S

202S

## MATERIALS

### CASTING

The saddle body is cast from ductile (nodular) iron, meeting or exceeding ASTM A 536, Grade 65-45-12.

### GASKET

Gasket is made from Nitrile Butadiene Rubber (NBR) compounded for water and sewer service and a tolerance of petroleum products in accordance with ASTM D 2000 MBC 610 and NSF 61 Certified. Other compounds available for special applications.

### STRAPS

Type 304 (18-8) heavy gauge Stainless Steel per ASTM A 240. Straps are two inches wide to spread out clamping forces on the pipe. GMAW and GTAW welds. Passivated for corrosion resistance.

### BOLTS, NUTS

For sizes 1-1/2" through 3", 1/2" UNC roll thread Type 304 (18-8) Stainless Steel bolts with heavy hex nuts. 4" and above use 5/8" UNC roll thread Type 304 (18-8) Stainless Steel bolts with heavy hex nuts. Rod for bolts are per ASTM A 240 and nuts are per ASTM A 194. All welds fully passivated for enhanced corrosion resistance. Nuts coated to prevent galling.

### WASHERS

Flat, type 304 (18-8) heavy gauge Stainless Steel.

### COATINGS

Shop coat applied to cast parts for corrosion protection in transit.

## PRESSURE

Ductile iron, cast iron and steel pipe: rating of pipe up to 350 psi maximum, on pipe sizes up through 24 inch, larger than 24 inch up to 30 inch pressure rating is 150 psi. PVC, asbestos cement and other pipe: up to the maximum rating of the pipe. For other applications please consult your representative.

## STANDARD

Contact Romac Engineering for ANSI/AWWA C800 Spec and Approval Chart.

## SIZES & RANGES

See catalog, sizes up through 32.10.

11/29/2018

Document # 25-8-0002

*This information is based on the best data available at the date printed above. Please check with Romac for any updates or changes.*



www.romac.com  
21919 20th Avenue SE • Suite 100 • Bothell, WA 98021  
Phone (425) 951-6200 • 1-800-426-9341 • Fax (425) 951-6201



## DOMESTIC



(Current revisions for the noted Standards apply)

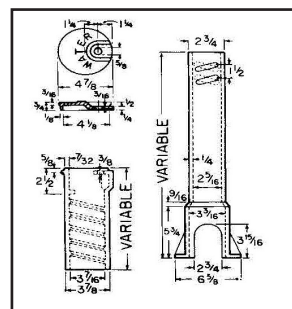
Adjustable Slip and Screw type with standard assembly lengths ranging from 19" to 72" (Lengths noted do not include the addition of risers, extensions, and/or bases). See the catalog or List Price guide for accessories, lids, bases, risers, meter covers, etc.

Produced with Class 35 cast iron in accordance with and meeting all applicable terms and provisions of ASTM A48. All Tyler Union valve boxes when properly installed are suitable for use in conjunction with projects utilizing American Association of State Highway and Transportation Officials (AASHTO) standards and provisions.

Per AWWA M44, Manual of Water Supply Practices

The asphaltic bituminous coating is applied to a minimum thickness of 1.5 mil and the coating once dry is neither brittle when cold or sticky when exposed to the sun

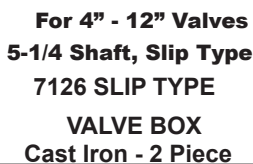
**For 1/2" to 2"  
Curbstops**



**6500 SCREW TYPE  
CURB/SERVICE BOX**

Components	Extension Height
12T + 12B	15-21
12T + 15B	18-24
15T + 15B	21-27
15T + 21B	24-33
15T + 27B	30-39
18T + 27B	30-42
18T + 33B	36-48
24T + 33B	36-54
24T + 39B	45-60
30T + 39B	41-64

**NOTE:** Enlarged Base  
Available



Components	Extension Height
26T + 30B	36-52
26T + 36B	39-60

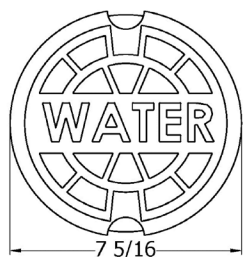
**T = Top    B = Bottom    Ext = Extension**

**Elmer:** 701 Kenyon Ave. Elmer, New Jersey 03318  
**New Lenox:** 2200 West Haven • New Lenox, IL 60451  
**Portland:** 15670 N. Lombard St. • Portland, OR 97203  
**Oxford:** 1800 Greenbrier Dear Road • Anniston, AL 36207

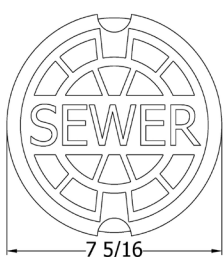


# CAST IRON, SPECIAL DROP, AND LOCK LIDS

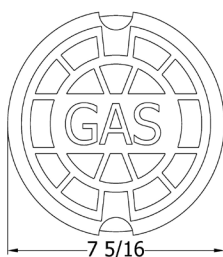
**Water Lid**



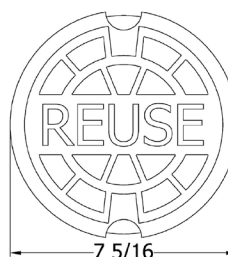
**Sewer Lid**



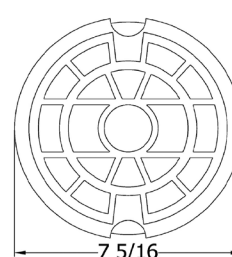
**Gas Lid**



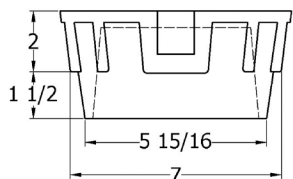
**Reuse Lid**



**Plain Lid**



**\*5 1/4 Drop Lid**



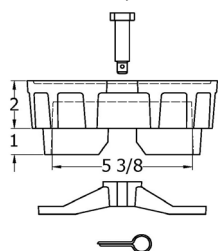
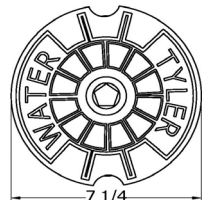
Item/Description	**(D-HD) UPC		**(ND-Std) UPC		Special Mark
	670610	Weight	670610	Weight	
5 1/4 Drop Lid	145325	12	136910	9	WATER
5 1/4 Drop Lid	145349	12	136903	9	SEWER
5 1/4 Drop Lid	145332	12	136873	9	GAS
5 1/4 Drop Lid	458975	12	...	...	REUSE
5 1/4 Drop Lid	145356	12	136897	9	PLAIN

\*\* D=Domestic ND=Non-Domestic HD=Heavy Duty Weight  
Std.=Standard Weight

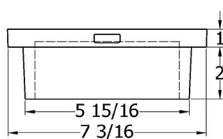
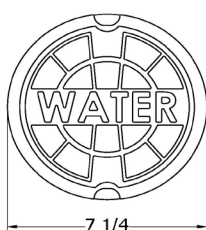
\*Lids marked WATER will be shipped unless otherwise specified.

## Specialty Lids

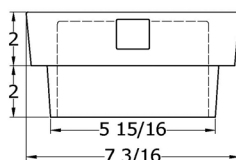
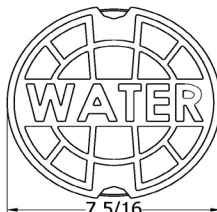
**Lock Lid**



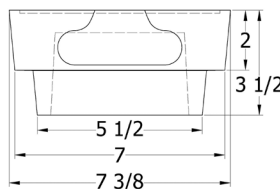
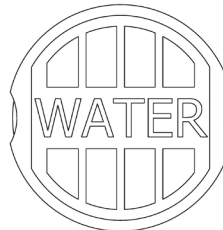
**1 1/8" Lid**



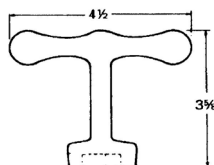
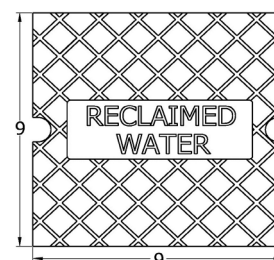
**OMA Lid**



**MWW Lid**



**\*\*\*Square  
Reclaimed Lid**



**Wrench**

Fits Standard Waterworks  
Pentagon Head 27/32" Brass  
Screws

Item/Description	**(D-HD) UPC		**(ND-Std) UPC		Special Mark
	670610	Weight	670610	Weight	
5 1/4 Lock Lid	145462	11	136866	11	WATER
*1 1/8 Drop Lid	145509	11	112532	9	WATER
5 1/4 OMA Drop Lid	145301	12	136927	12	WATER
5 1/4 MWW Drop Lid	145370	12	136880	12	WATER
***Square Drop Lid	458982	14	...	...	RECLAIMED WATER

\*Note: Use with 1 1/8 Riser only

\*\* D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

\*\*\*Note: Use with 9T Top #144622

UPCode	Weight	Description
670610		
144908	0.5	Wrench

**RESILIENT  
WEDGE VALVES**

**CLOW VALVE COMPANY**

**CLOW AWWA Resilient Wedge Gate Valves  
Meet or Exceed the Requirements of  
AWWA Standard C509**

Size Range	Water Working Pressure psi	Bubble Tight Test psi	Hydrostatic Shell Test psi
AWWA 2"-12"	250	250	500
ULFM 2 1/2"-12"	200	200	400

**Available in either non-rising stem, outside screw & yoke.**

**Available End Connections & Size Range**

**Figure No.**

FLG End (NRS)	2"-12"	F-6102
M.J.	2"-12" (except 2 1/2")	F-6100
FLG & M.J.	3"-12"	F-6106
Push-on for PVC (SDR)	2"-12"	F-6110
FLG End (OS & Y)	2"-12"	F-6136
M.J. for Tapping	3"-12"	F-6114
Tyton for D.I. & C900 PVC	4"-12"	F-6112
M.J. Cutting-in	4"-12"	F-6111
Tyton for D.I. X FLG	4"-12"	F-6113
Threaded	2"-3"	F-6103

**Accessories (Illustrated in the Gate Valve Section)**

Indicator Posts	2" Sq. Operating Nuts
"T" Handles	Handwheels
Stem Guides	Extension Stems
Electric Motor Actuators	Floor Boxes
	Chain Wheels
Floorstands (non-rising stem)	

MODEL	2639	AWWA	C509	FULL BODY DUCTILE IRON
MODEL	2640	AWWA	C509	FULL BODY GRAY IRON



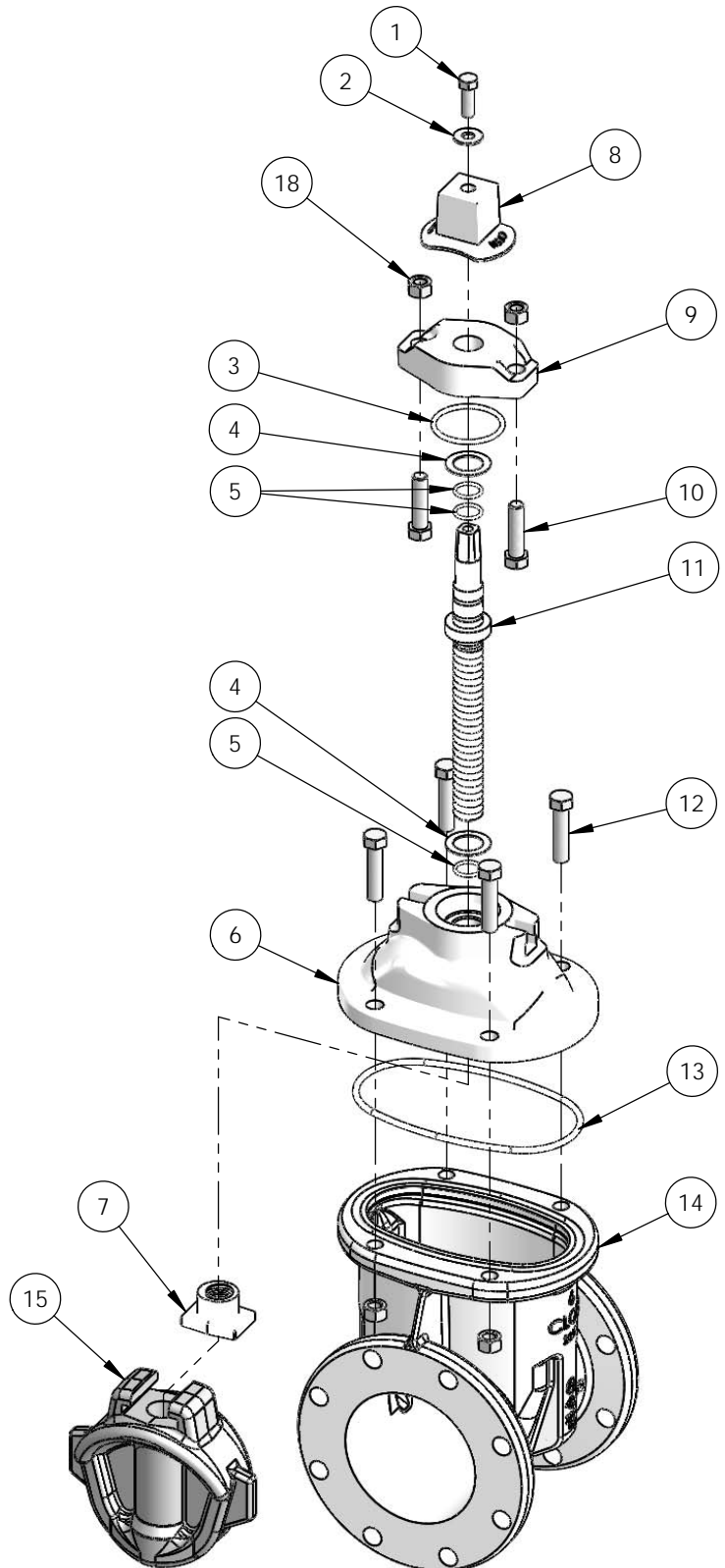
Complies with applicable  
requirements of AWWA C509

## 2"-12" R/S VALVE NRS EXPLODED VIEW MATERIAL LIST

### CLOW VALVE COMPANY

MODELS 2639 & 2640

ITEM NO.	DESCRIPTION	Material - 2639	Material - 2640	QTY.
1	Hex Head Bolt	Stainless Steel	Stainless Steel	1
2	Flat Washer	Stainless Steel	Stainless Steel	1
3	O-Ring	Rubber	Rubber	1
4	Thrust Washer	Delrin	Delrin	2
5	O-Ring	Rubber	Rubber	3
6	Cover	Ductile Iron	Gray Iron	1
7	Stem Nut	Copper Alloy	Copper Alloy	1
8	Operating Nut	Gray Iron	Gray Iron	1
9	Follower Plate	Ductile Iron	Ductile Iron	1
10	Hex Head Bolt	Stainless Steel	Stainless Steel	2
11	Stem	Copper Alloy	Copper Alloy	1
12	Cover Bolt	Stainless Steel	Stainless Steel	--
13	Cover O-Ring	Rubber	Rubber	1
14	Body	Ductile Iron	Gray Iron	1
15	Wedge	Ductile Iron / Rubber	Ductile Iron / Rubber	1
18	Hex Nut	Stainless Steel	Stainless Steel	6



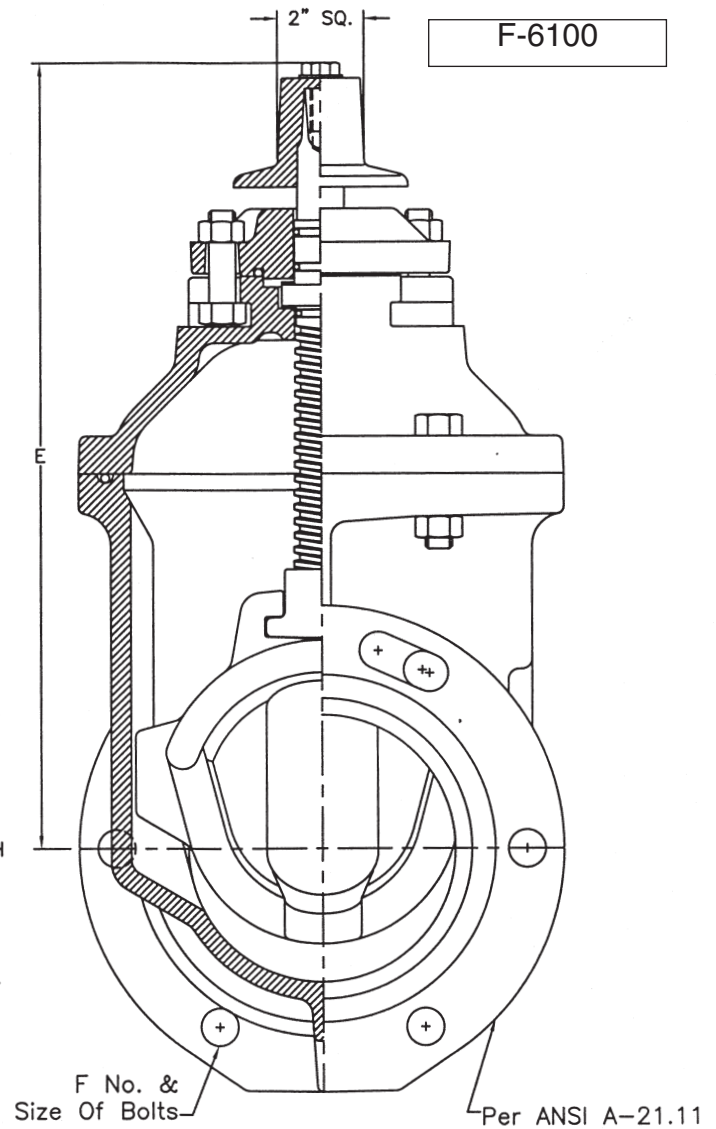
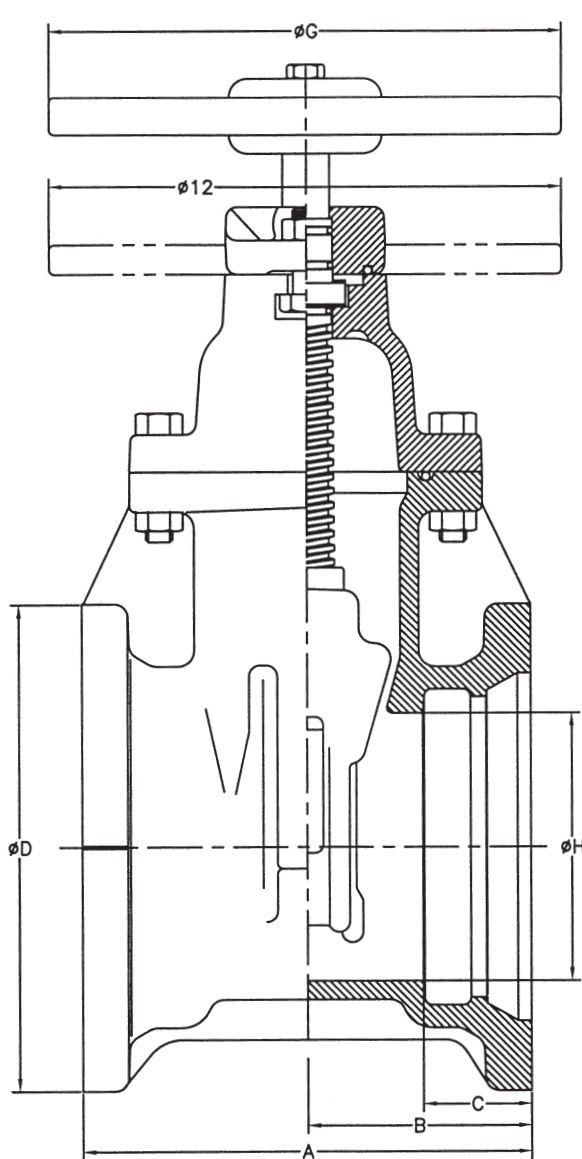


Complies with applicable  
requirements of AWWA C509

2"-12" R/W VALVE MECHANICAL JOINT  
ENDS GENERAL DIMENSIONS

**CLOW VALVE COMPANY**

MODEL 2639 & 2640



VALVE SIZE	A	B	C	D	E	F	G	H
2	8 1/4	4 1/8	2 1/2	4 1/2	10 7/8	4-5/8	7 1/4	2
2 1/2	—	—	—	—	—	—	—	—
3	8 1/2	4 1/4	2 1/2	7 3/4	12 3/8	4-5/8	10	3
4	9 1/2	4 3/4	2 1/2	9 1/8	14 3/4	4-3/4	10	4 1/4
6	10 1/2	5 1/4	2 1/2	11 3/8	19	6-3/4	12	6 1/4
8	13 1/8	6 9/16	2 1/2	13 3/4	22 1/2	6-3/4	14	8 1/4
10	15 1/2	7 3/4	2 1/2	15 3/4	26 1/2	8-3/4	18	10 1/4
12	16	8	2 5/8	18	30	8-3/4	18	12 1/4



# TOUGH COAT®

Tough Coat® provides the ultimate in durability and protective finishes. This high- solids formula ensures maximum coverage and performance.

- ✓ Tough, protective coating
- ✓ Resists chipping and peeling
- ✓ Specially formulated for a variety of industrial applications
- ✓ Ideal for light to heavy-duty painting projects

## INDUSTRIAL USE ONLY!

krylonindustrial.com  
1-800-247-3266

### RECOMMENDED USES

- Metal
- Color Coding
- Motors
- Conduit
- Machinery
- Ducts
- Tools
- Tool Boxes
- Electrical Equipment
- Pipelines
- Steel Bars
- Safety Equipment

### SURFACE PREPARATION

WARNING! If you scrape, sand or remove old paint, you may release lead dust. LEAD IS TOXIC. Remove dirt, grease, wax, moisture, rust and loose paint from surface. Scuff-sand rusted, glossy or hard surfaces. Prime bare or rusted metal. For maximum resistance to rust on bare metal, use Krylon Industrial Tough Coat 339 Red Oxide or 340 Gray Rust Control Primers. For sandable primed metal surfaces, use Krylon Industrial Tough Coat 341 Light Gray or 342 Red Oxide Sandable Primers. For more information, contact your local health authority.

### CLEAN-UP

Clean spray valve immediately after use by turning can upside-down and spraying until only clear gas comes out. Dispose of in accordance with local, state or federal regulations.

### TECHNICAL DATA

<b>Vehicle</b>	Acrylic Alkyd Enamel
<b>Finish</b>	Flat, Semi-Gloss, Gloss
<b>Flash Point</b>	-20°
<b>Weight/Gallon</b>	6.36 lb/gal
<b>VOC/MIR</b>	65/1.40
<b>Spread Rate</b>	20-25 sq. feet
<b>Shelf Life</b>	24 months
<b>Drying Time</b>	To Touch: 15 minutes To Recoat: Before 1 hour or after 2 hours To Handle: 1-2 hours
<b>Gas Resistance</b>	Film degradation, loss of gloss & staining
<b>Oil Resistance</b>	Pass
<b>Clean Up</b>	Mineral Spirits, please follow suppliers instructions
<b>Net Weight/Can Size</b>	12 oz. / 16 oz.

### APPLICATION

#### APPLICATION CONDITIONS

Use at 70°F for best operation. Shake can for 2 minutes after ball within begins to rattle. Repeat for 10 seconds after each minute of use. Test spray on inconspicuous area or scrap piece to check compatibility. For a smooth, professional finish, spray 6" to 8" from surface in a sweeping motion. Avoid runs and drips by applying several thin coats, rather than one heavy coat. Dries to touch in 15 minutes. Can be handled in 1 to 2 hours. Can be recoated before 1 hour or after 2 hours. EZ TOUCH® FANSPRAY® NOZZLE: You get professional-looking results with the EZ TOUCH FANSPRAY. It takes half as much finger pressure. The FANSPRAY covers better with less overspray. Change spray direction just by turning the square insert.

### CAUTIONS

**FOR INDUSTRIAL USE ONLY.** Thoroughly review product label and SDS for safety and cautions prior to using this product. Please direct any questions or comments to your local Krylon Industrial Representative.

**Note:** The information, rating, and opinions stated here pertain to the material currently offered and represent the results of tests believed to be reliable. However, due to variations in customer handling and methods of application which are not known or under our control, Krylon Products Group cannot make any warranties as to the end result. Please direct any questions or comments to 1-800-247-3266.

The information and recommendations set forth in the Product Data Sheet are based upon tests conducted by or on behalf of Krylon® Industrial. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Krylon® Industrial dealer or representative to obtain the most recent Product Data Sheet.

# SUBMITTAL SHEET

## SCHEDULE 40 PVC



LASCO Fittings, Inc., an Aalberts Industries company, specializes in the production and sale of injection molded fittings for Irrigation, Plumbing, Industrial, Pool/Spa and Retail markets. LASCO Fittings, Inc. operates a 26-acre manufacturing facility in Brownsville, TN. With eight Regional Distribution Facilities strategically located within the United States, LASCO provides worldwide distribution and overnight service.

### Injection Molded PVC Pipe Fittings in sizes 3/8" through 12"

LASCO Fittings, Inc.'s comprehensive line of PVC fittings offers a variety of injection molded configurations in Schedule 40 sizes 3/8" through 12" conforming to ASTM D 2466.

#### STANDARDS AND SPECIFICATIONS – Schedule 40

ASTM D-1784 – Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly Vinyl Chloride) (CPVC) Compounds.

ASTM D-2466 – Socket Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

ASTM F-1970 – Standard Specification for Special Engineered Fittings, Appurtenances or Valves for use in Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Systems.

MATERIAL – LASCO Schedule 40 Fittings are produced from PVC Type 1, Cell Classification 12454-B.  
– O-rings are produced from a Buna-N (Nitrile) material.

LISTINGS – NSF/ANSI Standard 61, Annex G: Drinking Water System Components Weighted average lead content of  $\leq 0.25\%$  and is in compliance with California's Health & Safety Code Section 116875 (commonly known as AB1953) NSF/ANSI Standard 14: Plastics Piping system Components and Related Materials. Includes /ANSI Standard 61, Annex G

DO NOT USE LASCO FITTINGS FOR COMPRESSED AIR OR GASES.

DO NOT TEST PVC PIPING SYSTEMS WITH COMPRESSED AIR OR GASES.

DO NOT USE FITTINGS WITH LIQUIDS NOT RECOMMENDED BY LASCO.

MODIFICATIONS OF FITTINGS VOIDS THE WARRANTY.



#### Limited Warranty

LASCO Fittings, Inc. products are warranted to be free from manufacturing defects in materials and workmanship. They are warranted against rot, rust, and electrolytic corrosion for a period of three years from date of installation. If LASCO products prove defective due to manufacturing defects in material or workmanship during that period, the manufacturer will provide new replacement units of the same type and size. No remedy will be granted under this warranty if LASCO products are not used strictly in accordance with LASCO's directions with respect to use and storage or if the products have been modified in any way. THE MANUFACTURER'S LIABILITY UNDER EXPRESSED OR IMPLIED WARRANTY OR FOR ANY REASON IS LIMITED TO FURNISHING REPLACEMENT UNITS OR GRANTING A CREDIT FOR DEFECTIVE UNITS. NO LABOR EXPENSE OR CONSEQUENTIAL DAMAGES WILL BE PAID BY LASCO. THIS WARRANTY IS IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE, EXCEPT FOR ANY WARRANTIES IMPLIED BY LAW FOR NONCOMMERCIAL CONSUMERS. ANY SUCH WARRANTIES ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY.

414 Morgan Street • Brownsville, TN 38012  
(731) 772-3180 | [www.lascofittings.com](http://www.lascofittings.com)

*This specification is provided for reference only. LASCO Fittings, Inc reserves the right to change any portion of this specification without notice and without incurring obligation to make such changes to LASCO products previously or subsequently sold. Please visit our website [www.lascofittings.com](http://www.lascofittings.com) for the most current information.*

## SUBMITTAL SHEET

JOB NAME		ITEM TAG
JOB LOCATION		PART NUMBER
CONTRACTOR	DATE	
ENGINEER APPROVAL	DATE	

## STAINLESS STEEL INSERT STIFFENER

### T-4500

304 Stainless steel construction  
Interlocking tab design resists crushing  
Extended length permits an even sealing surface for the fitting's gasket  
Tapered and fluted ends minimize insertion resistance and movement  
Designed for use in potable water installations

Designed for insertion into the inside diameter of CTS polyethylene plastic tubing

The 1-1/4" stiffener will also fit into the inside diameter of 1" IPS polyethylene plastic pipe

Recommended on all pack-joint and ring compression water service fitting installations onto polyethylene tubing or pipe

Prevents the collapse of the tubing or pipe end.

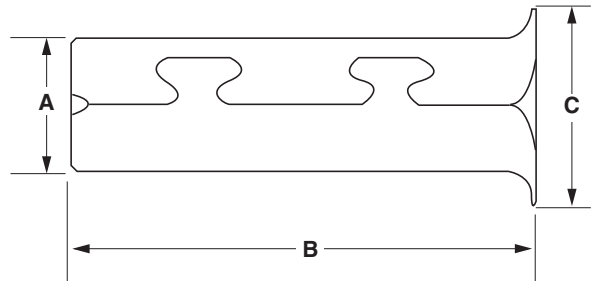


### MATERIAL SPECIFICATION

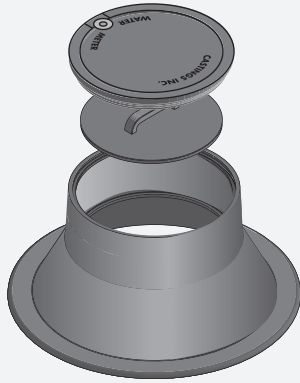
PART	MATERIAL	SPECIFICATIONS
Stiffener body	Stainless steel	AISI 304

### DIMENSIONS – WEIGHTS

Size	A	B	C
3/4"	0.65	2.42	0.82
1"	0.85	2.42	0.97
1-1/4"	1.03	2.35	1.26
1-1/2"	1.21	2.35	1.5
2"	1.58	2.35	1.98

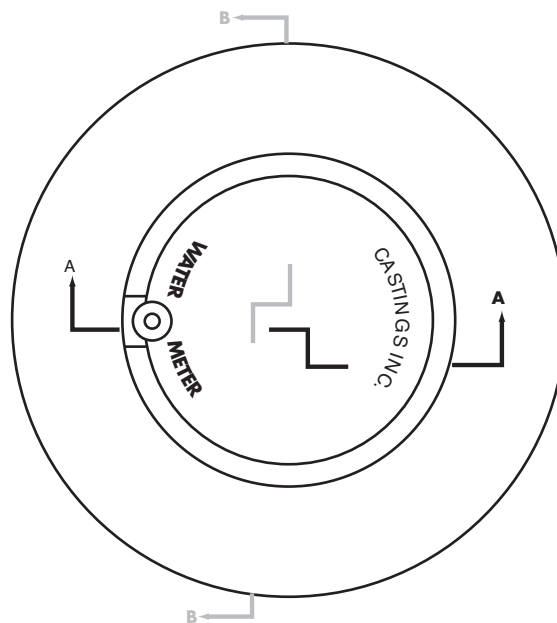
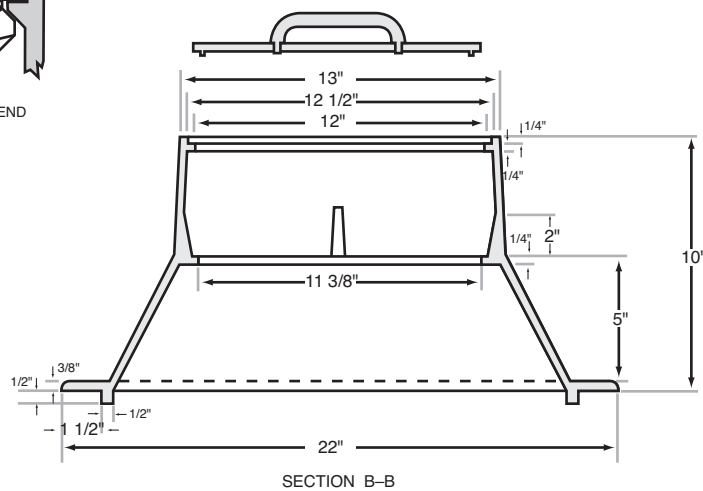
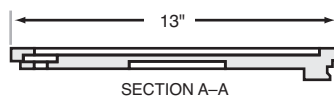
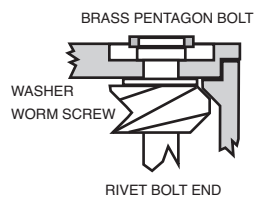


T-4500

**CAST IRON****METER PIT COVER****CI-70 FROST PROOF C.I.****CI7020****APPROXIMATE WEIGHT**

<b>TOP LID</b>	<b>11 lb</b>	<b>CI70TLCI</b>
<b>FROST LID</b>	<b>7 lb</b>	<b>ILCI</b>
<b>BODY</b>	<b>48 lb</b>	<b>CI70D20CI</b>

**NOTE:**  
**FINISH—BLACK BITUMINOUS PAINT**  
**OPTIONAL 2" HOLE IN TOP LID**  
**PLASTIC INNER 2" OR 3" INLP 2**  
**INLP 3**

**LOCK ASSEMBLY DETAIL****CASTINGS INC.**

860 4TH AVE. • P.O. BOX 669 • GRAND JCT, CO 81502 • 970.243.2032 • FAX 970.242.4962

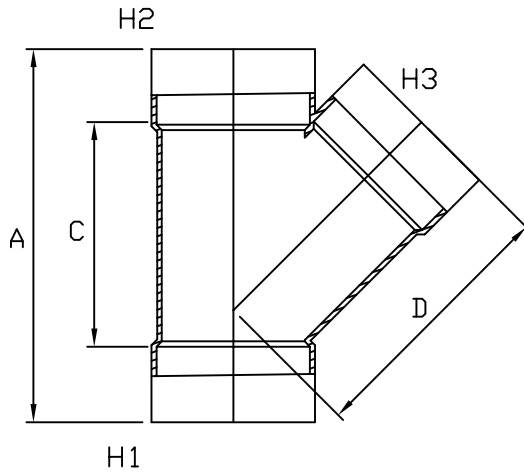


MULTI FITTINGS

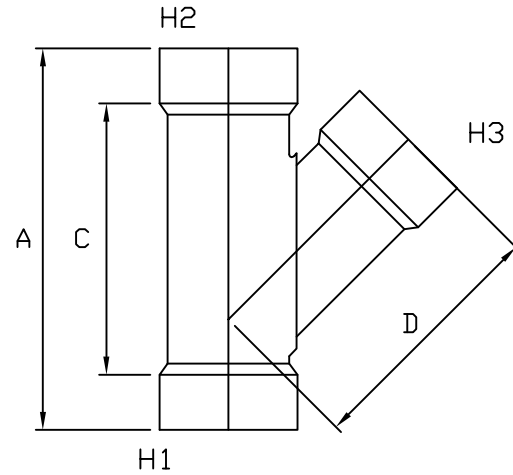
# LAYING LENGTH

ISSUE DATE: MAY 10/05  
SUPERCEDES: JAN 19/01

## 45° WYE (HxHxH)



INJECTION MOLDED FITTING (M)



FABRICATED FITTING (F)

	SIZE H1xH2xH3	PART NUMBER	REFERENCE NUMBER	A REF	C REF	D REF	
M	3x3x3	040302	281535	7.875	4.875	5.500	084
M	3x3x2	040303	-	7.875	4.875	4.125	056
M	4x4x4	040304	281543	9.625	6.125	7.000	084
M	4x4x2	040308	-	9.625	6.250	4.875	056
M	4x4x3	040309	-	9.625	6.250	6.125	056
M	6x6x6	040306	281568	15.000	9.125	10.875	056
M	6x6x4	040307	281550	12.125	6.250	8.500	056
M	8x8x8	040311	281584	20.125	12.125	14.375	084
M	8x8x4	040310	281576	14.375	6.375	9.750	084
M	8x8x6	040312	281592	17.250	9.250	12.000	084
++F	10x10x10	040313	281510	36.000	26.000	24.000	082
-	10x10x4	040315	281514	-	-	-	P
F	10x10x6	040316	281516	26.750	16.750	17.500	082
F	10x10x8	040317	281518	29.750	19.750	20.500	082
++F	12x12x12	040314	281512	41.000	29.000	27.000	082
-	12x12x4	040305	-	-	-	-	P
F	12x12x6	040319	281526	29.750	17.750	19.000	082
-	12x12x8	040320	281528	-	-	-	P
-	12x12x10	040321	281521	-	-	-	P
-	15x15x15	040325	271515	-	-	-	P
-	15x15x4	040040	-	-	-	-	P
-	15x15x6	040323	-	-	-	-	P
-	15x15x8	040326	271558	-	-	-	P
-	15x15x10	040327	271551	-	-	-	P
-	15x15x12	040324	271552	-	-	-	P

++ Fiberglass Reinforced





## ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell

NAPCO's ASTM D2241 Gasketed Integral Bell PVC Pipe product line is manufactured to meet the needs of water distribution and irrigation systems. With top quality raw materials and modern processing technology, our D2241 pipe meets all industry standards in addition to our own rigorous quality control requirements.

Our D2241 pipe utilizes Rieber style gaskets throughout the entire product offering to create a leak-free joint.

Short Form Specification		
Pipe Standard:	ASTM D2241	
Diameter Std.:	Iron Pipe Size (IPS)	
Nominal Sizes:	1½", 2", 2½", 3", 4", 6", 8", 10", 12"	
Dimension Ratios & Pressure Ratings:	SDR 41 – 100 psi SDR 32.5 – 125 psi SDR 26 – 160 psi	SDR 21 – 200 psi SDR 17 – 250 psi SDR 13.5 – 315 psi
Lay Length:	14' – Made-to-order 20' – All Sizes 40' and 42' – 2" to 6" Sizes	
Pipe Compound:	ASTM D1784 Cell Class 12454	
Pipe Joint Std.:	ASTM D3139	
Max. Angular Joint Deflection:‡	1°	
Gasket Standard:	ASTM F477	
Gasket Material Offerings:	Standard – SBR Optional – NBR or EPDM	
Installation Std.:	ASTM D2774	

Applications	Potable Water	Wastewater	Reclaimed Water
Color:	White	Green	Purple
Certifications:*	NSF 14 NSF 61	None	None

‡See Installation Guide for more information.

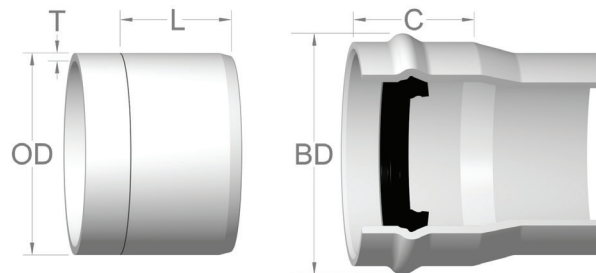






# MUNICIPAL PRODUCT SPECIFICATION

## ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell



D2241/IB PIPE DIMENSIONS & PERFORMANCE

Nom. Size	Outside Diameter (OD)	SDR	Pressure Rating (psi)	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	Insertion Mark (L)
1 1/2"	1.900	21	200	0.090	1.720	2.625	3.250	2.625
		17	250	0.112	1.676			
		13.5	315	0.141	1.618			
2"	2.375	26	160	0.091	2.193	3.250	3.500	2.750
		21	200	0.113	2.149			
		17	250	0.140	2.095			
2 1/2"	2.875	13.5	315	0.176	2.023	4.000	4.125	3.125
		26	160	0.110	2.655			
		21	200	0.137	2.601			
		17	250	0.169	2.537			
3"	3.500	13.5	315	0.213	2.449	4.750	4.125	3.625
		41	100	0.085	3.330			
		32.5	125	0.108	3.284			
		26	160	0.135	3.230			
		21	200	0.167	3.166			
		17	250	0.206	3.088			
4"	4.500	13.5	315	0.259	2.982	5.875	4.625	4.000
		41	100	0.110	4.280			
		32.5	125	0.138	4.224			
		26	160	0.173	4.154			
		21	200	0.214	4.072			
		17	250	0.265	3.970			
		13.5	315	0.333	3.834			

### Notes:

1. These dimensions are for estimating purposes only. All dimensions are in inches unless otherwise specified.
2. SDR = Standard Dimension Ratio
3. ASTM Pressure Rating @ 73°F and includes 2:1 safety factor.
4. Internal diameter calculated using nominal outside diameter and minimum wall thickness.
5. Dimension given for Approx. Bell Diameter (BD) is for highest pressure rating.



# MUNICIPAL PRODUCT SPECIFICATION

## ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell

D2241/IB PIPE DIMENSIONS & PERFORMANCE								
Nom. Size	Outside Diameter (OD)	SDR	Pressure Rating (psi)	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	Insertion Mark (L)
6"	6.625	41	100	0.162	6.301	8.500	6.250	5.375
		32.5	125	0.204	6.217			
		26	160	0.255	6.115			
		21	200	0.316	5.993			
		17	250	0.390	5.845			
		13.5	315	0.491	5.643			
8"	8.625	41	100	0.210	8.205	10.625	7.250	6.375
		32.5	125	0.265	8.095			
		26	160	0.332	7.961			
		21	200	0.410	7.805			
		17	250	0.508	7.609			
10"	10.750	41	100	0.262	10.226	13.125	7.500	6.625
		32.5	125	0.331	10.088			
		26	160	0.413	9.924			
		21	200	0.511	9.728			
		17	250	0.632	9.486			
12"	12.750	41	100	0.311	12.128	15.550	8.250	7.375
		32.5	125	0.392	11.966			
		26	160	0.490	11.770			
		21	200	0.606	11.538			
		17	250	0.750	11.250			

### Notes:

1. These dimensions are for estimating purposes only. All dimensions are in inches unless otherwise specified.
2. SDR = Standard Dimension Ratio
3. ASTM Pressure Rating @ 73°F and includes 2:1 safety factor.
4. Internal diameter calculated using nominal outside diameter and minimum wall thickness.
5. Dimension given for Approx. Bell Diameter (BD) is for highest pressure rating.



NAPCO, a Westlake company  
2801 Post Oak Blvd., Suite 600 ■ Houston, Texas 77056  
Tel 713.840.7473 ■ Fax 713.552.0087

## ASTM D3034/SW Solvent Weld PVC Gravity Sewer Pipe Certification

To Whom It May Concern:

ASTM D3034/SW Solvent Weld PVC Gravity Sewer Pipe (sizes 4" through 15"; **SDR 35**, SDR 26, and SDR 23.5), provided by NAPCO, is manufactured in accordance with **ASTM D3034**. The PVC material conforms to a minimum cell classification of 12454 or 12364 as defined by **ASTM D1784**. The standard pipe laying length is 10 or 20 feet. Pipe supplied for gravity sewer applications is green in color.

ASTM D3034 solvent weld pipe products are offered in solid wall plain end, solid wall bell end, 2 row perforated bell end, and 3 row perforated bell end designs. All perforation holes are ½" in diameter, on 5" centers, and parallel to the axis of the pipe. The rows of the 2 row perforated design are spaced 120° apart. The rows of the 3 row perforated design are spaced 60° apart.

These products provide a minimum pipe stiffness of 46 psi (SDR 35), 115 psi (SDR 26), or 153 psi (SDR 23.5) as defined by **ASTM D2412**.

The following pipe products made at our Lodi, CA; Wichita Falls, TX; and Yucca, AZ plants are listed by **IAPMO** to be in compliance with the **Uniform Plumbing Code (UPC®)**, **International Plumbing Code (IPC®)**, and **ASTM D3034**:

- **SDR 35** – 4", 6", **8"**, 10", 12", 15"
- SDR 26 – 4", 6", 8", 10", 12", 15"
- SDR 23.5 – 4", 6"

Certifications are based on the applicable edition of the referenced standard in effect on the date of manufacture. If we may be of further assistance, please contact Technical Services at [technical@napcopipe.com](mailto:technical@napcopipe.com).

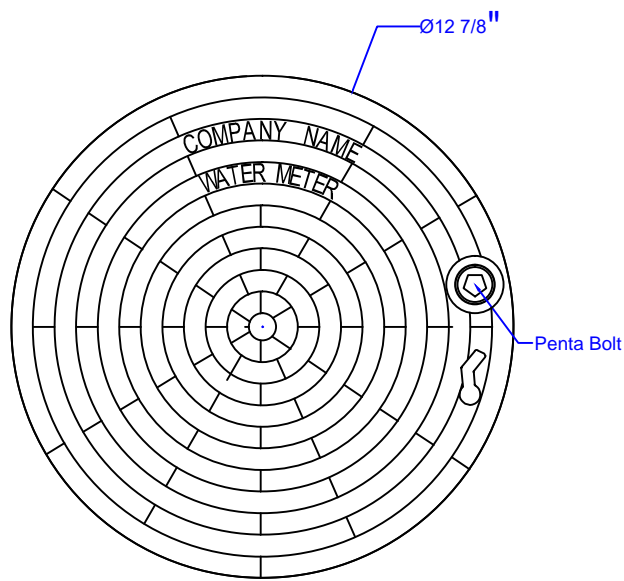
Sincerely,

**NAPCO**

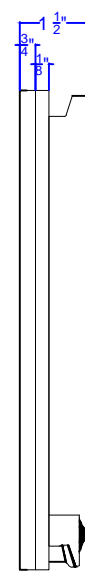
### Reference Standards:

- **ASTM D1784** *Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds*
- **ASTM D2412** *Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading*
- **ASTM D3034** *Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.*

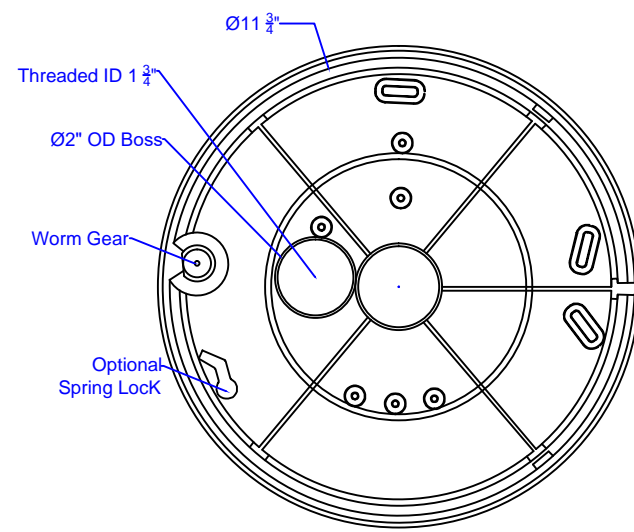




TOP VIEW



SIDE VIEW



BOTTOM VIEW

General Notes

Notes: H20 Load Rating

TOP MOUNTING

1	DLM	5/25/16
Revision	Drawn By	Date

MATERIAL: MAIN LID POLYMER  
FINISH PROCESS  
SURFACE FINISH 125

**FINISH OR TREATMENT**  
(UNLESS OTHERWISE SPECIFIED)  
BEFORE FINISH PROCESS:  
DIMENSIONS IN INCHES  
(DIMENSIONS) IN MILLIMETERS  
TOLERANCES UNLESS SPECIFIED: XXX+-.0010 (.0254)  
XXX+-.005 (.127)  
XX+-.010 (.254)  
ANGLES +-.010 1/2"  
REMOVE BURRS AND BREAK CORNERS  
.005 (.127) MAX. UNLESS SPECIFIED  
INSIDE CORNERS .010 R. MAX.  
CONCENTRICITY .005 F.I.M.

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NICOR  
100 COMMONS RD#7-355  
DRIPPING SPRINGS, TX  
78620

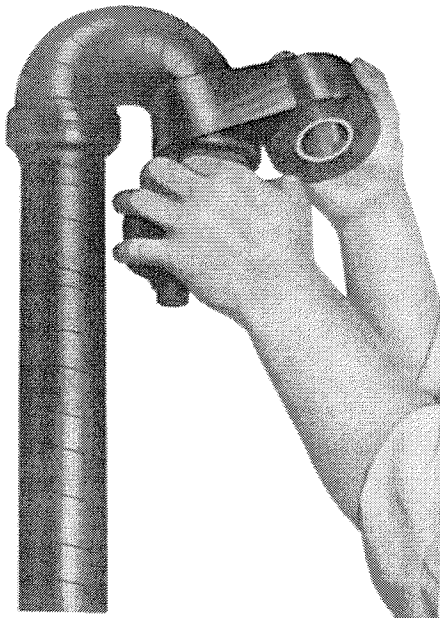
Project Name  
**Castings/ Denver  
13"  
with Worm Gear**

Drawing Number <b>CUSTOMER DRAWING</b>	Sheet <b>01</b>
Date <b>5/25/16</b>	



## Pipe Protection Tape System

**PASCO** "All Weather" Pipe Protection Tape is a pure physical barrier that is moisture proof, inert and non-conducting. Whether the need is to protect overhead piping in industrial applications, exposed pipe anywhere, or direct burial piping, this tape gives a completely uniform coating all around.



**PASCO's** "All Weather" Pipe Protection Tape is a tough PVC plastic tape with special high tack adhesives formulated to resist corrosion. It is easy to apply by hand with no special tools or equipment. It provides positive protection against abrasion and corrosive action for steel pipe, fittings & electrical conduit systems.

### Uses:

- Corrosion protection for metal piping systems above and below ground.
- Corrosion protection for fittings and joints on mill coated pipe.
- Corrosion protection of electrical conduit & fittings.

### Features:

- Resists corrosive action by salt water, soil acids, alkalies and salts.
- Prevents dielectric corrosion between buried steel pipe and soil minerals.
- Resists the effects of outdoor weathering and sunlight exposure.
- High abrasion resistance.
- Highly conformable over a wide temperature range.
- Excellent insulating properties.
- Resists commonly encountered chemicals and chemical vapors.
- Protects against fungus and bacteria.
- Standard widths.

### IMPORTANT:

**Always use PASCO Pipe Primer  
on ALL Pipe-wrapping Jobs!**

**\*Custom Sizes Available**

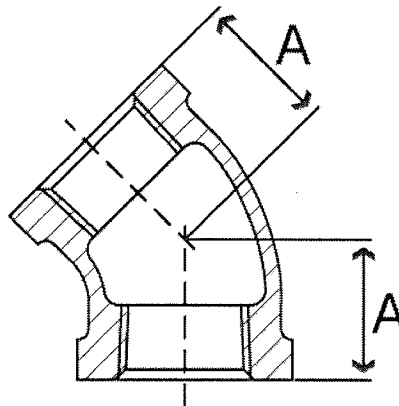
### BLACK PIPE WRAP TAPE PRINTED

PART NUMBER	WIDTH	MIL	LENGTH	ROLLS PER CASE
9051-R	1"	10	100'	48
9052-R	2"	10	100'	24
9054-R	4"	10	100'	12
9056-R	6"	10	100'	8
9061-R	1"	20	100'	48
9062-R	2"	20	100'	24
9064-R	4"	20	100'	12
9066-R	6"	20	100'	8
9068-R	8"	20	100'	6

Meets IAPMO® IS 13-2000

**PASCO** can cut tape in any width.  
Contact us with your requirements.

**Name** 45° Elbow  
**Product Code** 34F 1020C  
**Product Name** 2" Malleable Iron 150# Galvanized Threaded 45° Elbow, UL/FM  
**Family Code** 34F 1  
**Materials** 150# Malleable Iron  
**Size** 2"  
**Surface Finish** Galvanized  
**Weight** 1.6382  
**Packing** 12 \ 24  
**Standards** ASTM A197 (Casting), ASME B16.3 (Dimensions), ASME B1.20.1 (Threads), ASTM A153 (Hot-Dipped Galvanizing)  
**ISO** Manufacturing Facility is ISO 9001:2008 and ISO 14001  
**Verifications** 100% air tested & Independent lab verification of applicable chemical & physical properties  
**Certifications** UL Listed and FM Approved at 300 psi, NSF/ANSI 61-4 and CA AB1953 (Lead Free)



**Name** Cap  
**Product Code** 34C 1020C  
**Product Name** 2" Malleable Iron 150# Galvanized Threaded Cap, UL/FM  
**Family Code** 34C 1  
**Materials** 150# Malleable Iron  
**Size** 2"  
**Surface Finish** Galvanized  
**Weight** 0.8763  
**Packing** 15 \ 60  
**Standards** ASTM A197 (Casting), ASME B16.3 (Dimensions), ASME B1.20.1 (Threads), ASTM A153 (Hot-Dipped Galvanizing)  
**ISO** Manufacturing Facility is ISO 9001:2008 and ISO 14001  
**Verifications** 100% air tested & Independent lab verification of applicable chemical & physical properties  
**Certifications** UL Listed and FM Approved at 300 psi, NSF/ANSI 61-4 and CA AB1953 (Lead Free)







## GHS SAFETY DATA SHEET

WELD-ON® 705™ Low VOC Cements for PVC Plastic Pipe

Date Revised: JUN 2018

Supersedes: NOV 2017

### SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** WELD-ON® 705™ Low VOC Cements for PVC Plastic Pipe

**PRODUCT USE:** Low VOC Solvent Cement for PVC Plastic Pipe

**SUPPLIER:**

**MANUFACTURER:** IPS Corporation  
17109 South Main Street, Gardena, CA 90248-3127  
P.O. Box 379, Gardena, CA 90247-0379  
Tel. 1-310-898-3300

**EMERGENCY:** Transportation: CHEMTEL Tel. 800.255-3924, +1 813-248-0585 (International) **Medical:** CHEMTEL Tel. 800.255-3924, +1 813-248-0585 (International)

### SECTION 2 - HAZARDS IDENTIFICATION

**GHS CLASSIFICATION:**

Health	Environmental	Physical
Acute Toxicity: Category 4 Skin Irritation: Category 3 Skin Sensitization: NO Eye: Category 2	Acute Toxicity: None Known Chronic Toxicity: None Known	Flammable Liquid Category 2

**GHS LABEL:**



**Signal Word:**  
Danger

**WHMIS CLASSIFICATION:** CLASS B, DIVISION 2  
CLASS D, DIVISION 1B

Hazard Statements	Precautionary Statements
H225: Highly flammable liquid and vapor H319: Causes serious eye irritation H332: Harmful if inhaled H335: May cause respiratory irritation H336: May cause drowsiness or dizziness H351: Suspected of causing cancer EUH019: May form explosive peroxides	P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking P261: Avoid breathing dust/fume/gas/mist/vapors/spray P280: Wear protective gloves/protective clothing/eye protection/face protection P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing P403+P233: Store in a well ventilated place. Keep container tightly closed P501: Dispose of contents/container in accordance with local regulation

### SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

	CAS#	EINECS #	REACH Pre-registration Number	CONCENTRATION % by Weight
Tetrahydrofuran (THF)	109-99-9	203-726-8	05-2116297729-22-0000	25 - 50
Methyl Ethyl Ketone (MEK)	78-93-3	201-159-0	05-2116297728-24-0000	5 - 36
Cyclohexanone	108-94-1	203-631-1	05-2116297718-25-0000	15 - 30

All of the constituents of this adhesive product are listed on the TSCA inventory of chemical substances maintained by the US EPA, or are exempt from that listing.

\* Indicates this chemical is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40CFR372).

# indicates that this chemical is found on Proposition 65's List of chemicals known to the State of California to cause cancer or reproductive toxicity.

### SECTION 4 - FIRST AID MEASURES

**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.

**Likely Routes of Exposure:** Inhalation, Eye and Skin Contact

**Acute symptoms and effects:**  
**Inhalation:** Severe overexposure may result in nausea, dizziness, headache. Can cause drowsiness, irritation of eyes and nasal passages.  
**Eye Contact:** Vapors slightly uncomfortable. Overexposure may result in severe eye injury with corneal or conjunctival inflammation on contact with the liquid.  
**Skin Contact:** Liquid contact may remove natural skin oils resulting in skin irritation. Dermatitis may occur with prolonged contact.  
**Ingestion:** May cause nausea, vomiting, diarrhea and mental sluggishness.

**Chronic (long-term) effects:** Category 2 Carcinogen

### SECTION 5 - FIREFIGHTING MEASURES

**Suitable Extinguishing Media:** Dry chemical powder, carbon dioxide gas, foam, Halon, water fog.  
**Unsuitable Extinguishing Media:** Water spray or stream.  
**Exposure Hazards:** Inhalation and dermal contact  
**Combustion Products:** Oxides of carbon, hydrogen chloride and smoke

Health	2	NFPA	0-Minimal
Flammability	3		1-Slight
Reactivity	0		2-Moderate
PPE	B		3-Serious
			4-Severe

**Protection for Firefighters:** Self-contained breathing apparatus or full-face positive pressure airline masks.

### SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Keep away from heat, sparks and open flame.  
Provide sufficient ventilation, use explosion-proof exhaust ventilation equipment or wear suitable respiratory protective equipment.  
Prevent contact with skin or eyes (see section 8).

**Environmental Precautions:** Prevent product or liquids contaminated with product from entering sewers, drains, soil or open water course.

**Methods for Cleaning up:** Clean up with sand or other inert absorbent material. Transfer to a closable steel vessel.

**Materials not to be used for clean up:** Aluminum or plastic containers

### SECTION 7 - HANDLING AND STORAGE

**Handling:** Avoid breathing of vapor, avoid contact with eyes, skin and clothing.  
Keep away from ignition sources, use only electrically grounded handling equipment and ensure adequate ventilation/fume exhaust hoods.  
Do not eat, drink or smoke while handling.

**Storage:** Store in ventilated room or shade below 44°C (110°F) and away from direct sunlight.  
Keep away from ignition sources and incompatible materials: caustics, ammonia, inorganic acids, chlorinated compounds, strong oxidizers and isocyanates.  
Follow all precautionary information on container label, product bulletins and solvent cementing literature.

### SECTION 8 - PRECAUTIONS TO CONTROL EXPOSURE / PERSONAL PROTECTION

EXPOSURE LIMITS:	Component	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL	OSHA PEL-Ceiling	CAL/OSHA PEL	CAL/OSHA Ceiling	CAL/OSHA STEL
	Tetrahydrofuran (THF)	50 ppm	100 ppm	200 ppm	N/E	N/E	200 ppm	N/E	250 ppm
	Methyl Ethyl Ketone (MEK)	200 ppm	300 ppm	200 ppm	N/E	N/E	200 ppm	N/E	300 ppm
	Cyclohexanone	20 ppm	50 ppm	50 ppm	N/E	N/E	25 ppm	N/E	N/E

**Engineering Controls:** Use local exhaust as needed.

**Monitoring:** Maintain breathing zone airborne concentrations below exposure limits.

**Personal Protective Equipment (PPE):**

**Eye Protection:** Avoid contact with eyes, wear splash-proof chemical goggles, face shield, safety glasses (spectacles) with brow guards and side shields, etc. as may be appropriate for the exposure.

**Skin Protection:** Prevent contact with the skin as much as possible. Butyl rubber gloves should be used for frequent immersion.  
Use of solvent-resistant gloves or solvent-resistant barrier cream should provide adequate protection when normal adhesive application practices and procedures are used for making structural bonds.

**Respiratory Protection:** Prevent inhalation of the solvents. Use in a well-ventilated room. Open doors and/or windows to ensure airflow and air changes. Use local exhaust ventilation to remove airborne contaminants from employee breathing zone and to keep contaminants below levels listed above.  
With normal use, the Exposure Limit Value will not usually be reached. When limits approached, use respiratory protection equipment.



## GHS SAFETY DATA SHEET

WELD-ON® 705™ Low VOC Cements for PVC Plastic Pipe

Date Revised: JUN 2018

Supersedes: NOV 2017

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Clear or gray, medium syrupy liquid	<b>Odor Threshold:</b>	0.88 ppm (Cyclohexanone)
<b>Odor:</b>	Ketone	<b>Boiling Range:</b>	66°C (151°F) to 156°C (313°F)
<b>pH:</b>	Not Applicable	<b>Evaporation Rate:</b>	> 1.0 (BUAC = 1)
<b>Melting/Freezing Point:</b>	-108.5°C (-163.3°F) Based on first melting component: THF	<b>Flammability:</b>	Category 2
<b>Boiling Point:</b>	66°C (151°F) Based on first boiling component: THF	<b>Flammability Limits:</b>	LEL: 1.1% based on Cyclohexanone UEL: 11.8% based on THF
<b>Flash Point:</b>	-20°C (-4°F) TCC based on THF	<b>Vapor Pressure:</b>	129 mm Hg @ 20°C (68°F) based on THF
<b>Specific Gravity:</b>	0.9611 @ 23°C (73°F)	<b>Vapor Density:</b>	>2 (Air = 1)
<b>Solubility:</b>	Solvent portion soluble in water. Resin portion separates out.	<b>Other Data: Viscosity:</b>	Medium bodied
<b>Partition Coefficient n-octanol/water:</b>	Not Available		
<b>Auto-ignition Temperature:</b>	321°C (610°F) based on THF		
<b>Decomposition Temperature:</b>	Not Applicable		
<b>VOC Content:</b>	When applied as directed, per SCAQMD Rule 1168, Test Method 316A, VOC content is: ≤ 500 g/l.		

### SECTION 10 - STABILITY AND REACTIVITY

<b>Stability:</b>	Stable
<b>Hazardous decomposition products:</b>	None in normal use. When forced to burn, this product gives off oxides of carbon, hydrogen chloride and smoke.
<b>Conditions to avoid:</b>	Keep away from heat, sparks, open flame and other ignition sources.
<b>Incompatible Materials:</b>	Oxidizers, strong acids and bases, amines, ammonia

### SECTION 11 - TOXICOLOGICAL INFORMATION

<b>Toxicity:</b>	LD <sub>50</sub>	LC <sub>50</sub>	<b>Target Organs</b>
Tetrahydrofuran (THF)	Oral: 2842 mg/kg (rat)	Inhalation 3 hrs. 21,000 mg/m <sup>3</sup> (rat)	STOT SE3
Methyl Ethyl Ketone (MEK)	Oral: 2737 mg/kg (rat), Dermal: 6480 mg/kg (rabbit)	Inhalation 8 hrs. 23,500 mg/m <sup>3</sup> (rat)	STOT SE3
Cyclohexanone	Oral: 1535 mg/kg (rat), Dermal: 948 mg/kg (rabbit)	Inhalation 4 hrs. 8,000 PPM (rat)	

<b>Reproductive Effects</b>	<b>Teratogenicity</b>	<b>Mutagenicity</b>	<b>Embryotoxicity</b>	<b>Sensitization to Product</b>	<b>Synergistic Products</b>
Not Established	Not Established	Not Established	Not Established	Not Established	Not Established

### SECTION 12 - ECOLOGICAL INFORMATION

<b>Ecotoxicity:</b>	None Known
<b>Mobility:</b>	In normal use, emission of volatile organic compounds (VOC's) to the air takes place, typically at a rate of ≤ 500 g/l.
<b>Degradability:</b>	Not readily biodegradable
<b>Bioaccumulation:</b>	Minimal to none.

### SECTION 13 - WASTE DISPOSAL CONSIDERATIONS

Follow local and national regulations. Consult disposal expert.

### SECTION 14 - TRANSPORT INFORMATION

<b>Proper Shipping Name:</b>	Adhesives	<b>EXCEPTION for Ground Shipping</b>
<b>Hazard Class:</b>	3	<b>DOT Limited Quantity:</b> Up to 5L per inner packaging, 30 kg gross weight per package.
<b>Secondary Risk:</b>	None	<b>Consumer Commodity:</b> Depending on packaging, these quantities may qualify under DOT as "ORM-D".
<b>Identification Number:</b>	UN 1133	
<b>Packing Group:</b>	PG II	
<b>Label Required:</b>	Class 3 Flammable Liquid	
<b>Marine Pollutant:</b>	NO	

<b>TDG INFORMATION</b>	
<b>TDG CLASS:</b>	FLAMMABLE LIQUID 3
<b>SHIPPING NAME:</b>	ADHESIVES
<b>UN NUMBER/PACKING GROUP:</b>	UN 1133, PG II

### SECTION 15 - REGULATORY INFORMATION

<b>Precautionary Label Information:</b>	Highly Flammable, Irritant, Carc. Cat. 2	<b>Ingredient Listings:</b>	USA TSCA, Europe EINECS, Canada DSL, Australia
<b>Symbols:</b>	F, Xi		AICS, Korea ECL/TCCL, Japan MITI (ENCS)
<b>Risk Phrases:</b>	R11: Highly flammable. R20: Harmful by inhalation. R36/37: Irritating to eyes and respiratory system.		R66: Repeated exposure may cause skin dryness or cracking R67: Vapors may cause drowsiness and dizziness
<b>Safety Phrases:</b>	S9: Keep container in a well-ventilated place. S16: Keep away from sources of ignition - No smoking. S25: Avoid contact with eyes.	S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S33: Take precautionary measures against static discharges. S46: If swallowed, seek medical advice immediately and show this container or label.	

### SECTION 16 - OTHER INFORMATION

<b>Specification Information:</b>		
<b>Department issuing data sheet:</b>	IPS, Safety Health & Environmental Affairs	All ingredients are compliant with the requirements of the European
<b>E-mail address:</b>	<EHSinfo@ipscorp.com>	Directive on RoHS (Restriction of Hazardous Substances).
<b>Training necessary:</b>	Yes, training in practices and procedures contained in product literature.	
<b>Reissue date / reason for reissue:</b>	6/21/2018 / Updated GHS Standard Format	
<b>Intended Use of Product:</b>	Solvent Cement for PVC Plastic Pipe	

This product is intended for use by skilled individuals at their own risk. The information contained herein is based on data considered accurate based on current state of knowledge and experience. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.



PRODUCT DATA SHEET  
**PLUMBING PRIMER**  
LOW VOC PRIMER FOR PLUMBING APPLICATIONS

**GENERAL DESCRIPTION:**

Weld-On® Plumbing Primer is a low VOC emission, non-bodied, fast acting, primer. The strong action of Plumbing Primer rapidly softens and dissolves the joining surfaces of PVC and CPVC pipe and fittings. Available in clear and purple; check local code for color requirement.

**APPLICATION:**

Weld-On Plumbing Primer, when used in conjunction with appropriate Weld-On's plumbing solvent cement line of products, will make consistently strong, well-fused joints. It is essential that the joining surfaces of pipe and fittings be softened and remains softened prior to assembly. The main function of the primer is to expedite the penetration and softening of the surfaces. Its rate of penetration into the joining surfaces is more rapid than that of solvent cement alone. Plumbing primer is suitable for use with all types, classes and schedules of PVC and CPVC pipe and fittings.

**AVAILABILITY:**

Both Weld-On Plumbing Primer, clear and purple colors, are available in ¼ pint (118 ml), ½ pint (237 ml), pint (473 ml), quart (946 ml) and gallon (3.785 l) metal cans. For detailed information on containers and applicators, see our current Price List.

**STANDARDS AND CERTIFICATION LISTINGS:**



- Meets ASTM F 656 Standard
- Meets SCAQMD Rule 1168/316A
- Compliant with LEED® (Leadership in Energy and Environmental Design). When using this Weld-On low VOC product, credit can be claimed for LEED Green Building Rating System - Indoor Environmental Quality.
- Listed by NSF International for compliance with ASTM F 656, NSF/ANSI Standard 14, and NSF/ANSI Standard 61 for use on potable water, drain, waste, vent and sewer applications.
- Weld-On Plumbing Primer, purple color only, is listed by IAPMO for compliance with ASTM F 656 and applicable sections of the latest edition of the Uniform Plumbing Code®.

**SPECIFICATIONS:**

COLOR: Clear or Purple  
SPECIFIC GRAVITY: 0.846 ± 0.04  
BROOKFIELD VISCOSITY: Water Thin

**SHELF LIFE:**

3 years in tightly sealed containers. The date code of manufacture is stamped on the bottom of the container. Stability of the product is limited by the evaporation of the solvent when the container is opened. Evaporation of solvent will also cause the primer's effectiveness to be reduced. Do not mix new primer or cleaner with partially used or expired primer or cleaner.

**QUALITY ASSURANCE:**

Weld-On Plumbing Primer is carefully evaluated to assure that consistent high quality is maintained. Fourier transform infrared spectroscopy, gas chromatography, and additional in depth testing ensures each batch is manufactured to exacting standards. A batch identification code is stamped on each can and assures traceability of all materials and processes used in manufacturing this product.

**SPECIAL PRECAUTION:**

Weld-On solvent cements must never be used in PVC piping system using or being tested by compressed air or gases; including air-over-water booster. If using in conjunction with flue gas ventilation systems, review the recommendations of the HVAC manufacturer's equipment related to installation and venting. Note that such recommendations may only refer to ASTM standards addressing installation of PVC pipe and fittings, and not to the use of PVC pipe and fittings in flue gas ventilation systems. Also review the technical information available from manufacturers of PVC pipe and fittings concerning the use of their products in flue gas ventilation systems.

Do not use a dry granular calcium hypochlorite as a disinfecting material for water purification in potable water piping systems. The introduction of granules or pellets of calcium hypochlorite with PVC solvent cements and primers (including their vapors) may result in a violent chemical reaction if a water solution is not used. It is advisable to purify lines by pumping chlorinated water into the piping system – this solution will be nonvolatile. Furthermore, dry granular calcium hypochlorite should not be stored or used near solvent cements and primers.





PRODUCT DATA SHEET  
**PLUMBING PRIMER**  
LOW VOC PRIMER FOR PLUMBING APPLICATIONS

This product is intended for use by skilled individuals at their own risk. Installers should verify for themselves that they can make satisfactory joints under varying conditions. Detailed directions on making solvent cemented joints are printed on the container label. It is highly recommended that the installer review the instructions supplied by the pipe and fitting manufacturer.

*Refer to the current Weld-On Plumbing Primer Safety Data Sheet for additional safety precautions, first-aid, storage, handling, transportation and disposal information.*

**WARRANTY:**

Weld-On Adhesives, Inc., warrants to all original purchasers of Weld-On products that all new Weld-On products shall be of good quality and free from defects in material and workmanship for the product's shelf life. If any Weld-On product becomes defective, or fails to conform to this written limited warranty under normal use and storage conditions, and if the original purchaser complies with the terms of this limited warranty, then Weld-On will, without charge, replace the nonconforming product.

This limited warranty shall extend to all products manufactured and sold by Weld-On. However, this limited warranty shall not extend to, nor shall Weld-On be responsible for, damages or loss resulting from accident, misuse, negligent use, improper application, or incorporation of Weld-On products into other products. In addition, any repackaging of Weld-On products also shall void the limited warranty provided herein.

Any defective Weld-On products shall be replaced pursuant to the terms of this limited warranty by returning the defective product, with transportation charges prepaid, to Weld-On at the following address:

Weld-On Adhesives, Inc.  
Attn: Customer Service  
455 West Victoria Street  
Compton, CA 90220

Any implied warranty in connection with any Weld-On product hereby is limited in duration to the period of this limited warranty. Weld-On shall not be responsible for, nor does this limited warranty extend to, consequential damage, or incidental damage or expense, including without limitation, injury to persons or property or loss of use. This limited warranty is in lieu of all other express warranties of Weld-On, and Weld-On does not assume, nor does it authorize any person to assume on its behalf, any other obligation or liability.

