

EXHIBIT A
City of Boerne
Shop Drawing Transmittal No. 02660 - 01A
(Spec Section) (Series)

Project Name: George's Ranch Unit 1		Date Received:	
Project Owner: The Lookout Group		Checked By:	
Contractor: VK Knowlton	Engineer: Cude Engineering	Log Page:	
Address: 18225 FM 2252 San Antonio, Tx 78266	Address: 4122 Pond Hill Rd #101 San Antonio, Tx 78231	City of Boerne No.:	
		Spec Section: 02660	
		Drawing/Detail No.:	
Attn: Derek Moczygemba	Attn: Patrick Murphy	1st. Sub	ReSub.
Date Transmitted:	Previous Transmittal Date:		

Item No.	No. Copies	Description	Manufacturer	Mfr/Vendor Dwg or Data No.	Action Taken*
1		C900 Water Pipe - Class 305 (DR 14)	JM Eagle		
2		C900 Water Pipe - Class 295 (DR 18)	JM Eagle		
3		Bell Joint Restraint for C900	SIP Industries		
4		Joint Restraint for C900 MJ Pipe	SIP Industries		
5		Compact Mechanical Joint Fittings	SIP Industries		

Remarks:

* The Action Designated Above is in Accordance with the Following Legend:

A - Furnish as Submitted

D - Rejected

B - Furnish as Noted

E - Engineer's review not required

C - Revise and Submit

1. Not enough information for review.
2. No reproducible submitted.
3. Copies illegible.
4. Not enough copies submitted.
5. Wrong sequence number.
6. Wrong resubmittal number.
7. Wrong spec. section.
8. Wrong form used.
9. See comments.

1. Submittal not required.
2. Supplemental Information. Submittal retained for informational purposes only.
3. Information reviewed and approved on prior submittal.
4. See comments.

Comments:

Distribution:

Contractor

File ☐

City of Boerne ☐

Owner ☐

By

Date

Other ☐

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Item No.	No. Copies	Description	Manufacturer	Mfr/Vendor Dwg or Data No.	Action Taken*
6		Ball Corporation Valve - B-25008	Mueller Co.		
7		Ball Angle Meter Valve - B24258	Mueller Co.		
8		Service Tees - H-15381	Mueller Co.		
9		Model 350XL - Double Check Valve Assembly	Zurn Wilkins		

Remarks:

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Comments:

Distribution:

Contractor



File ☐

City of Boerne ☐

Owner ☐

Other ☐

By

Date



DELIVERING GOOD WATER TO YOU

BLUE BRUTE™

MEETS AWWA C900 AND ASTM D1784 CELL CLASS 12454;
GASKETS MEET ASTM F477; JOINTS MEET ASTM D3139.



APPLICATIONS

JM Eagle's Blue Brute C900 pipe is suitable for use in distribution pipelines of potable water, as well as gravity sewer, force main and water reclamation projects.

DESCRIPTION

JM Eagle Blue Brute C900 is available in 4-through 48-inch diameters, in blue, white, purple and green. It comes in standard laying lengths of 20 feet.

The pipe conforms to AWWA C900 pressure class 165 psi (DR 25), 235 psi (DR 18), 305 psi (DR 14), 200 psi (DR 21), 125 psi (DR 32.5), 100 psi (DR 41), and 80 psi (DR 51). It carries approval of ANSI/NSF Standard 61, UL 1285 and FM 1612 (DR 18 and DR 14 only).

BENEFITS

JM Eagle Blue Brute C900 pipe is the safe, long-lasting and stable solution for a modern infrastructure. Blue Brute:

- Maintains performance against tuberculation, corrosion and external galvanic soil conditions without lining wrapping, coating or cathodic protection.
- Keeps its smooth interior over long years of service with virtually no loss in carrying capacity, allowing for savings in pumping costs, as well as savings on the size of the pipe required.
- Can be field-cut with a power saw or ordinary handsaw and beveled without the use of expensive or complicated machinery.

Revised 1/27/2017. This information may have been updated. Please download the latest version at www.jmeagle.com/onesheets.

PLEASE CONTACT YOUR JM EAGLE REPRESENTATIVE OR VISIT WWW.JMEAGLE.COM FOR MORE INFORMATION.



BLUE BRUTE™

SUBMITTAL AND DATA SHEET

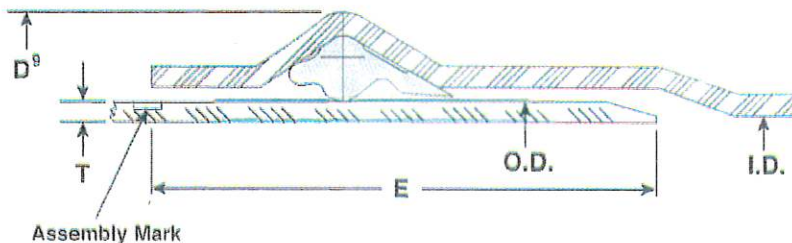


PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D ⁹ (IN)	APPROX. WEIGHT (LBS/FT)
PRESSURE CLASS 165 psi (DR 25)						
4	4.80	4.39	0.192	5.25	5.57	1.9
6	6.90	6.31	0.276	6.40	8.00	3.9
8	9.05	8.28	0.362	7.05	10.50	6.7
10	11.10	10.16	0.444	8.20	12.88	10.1
12	13.20	12.08	0.528	8.80	15.31	14.4
PRESSURE CLASS 235 psi (DR 18)*						
4	4.80	4.23	0.267	5.25	5.87	2.6
6	6.90	6.09	0.383	6.40	8.43	5.3
8	9.05	7.98	0.503	7.05	11.06	9.2
10	11.10	9.79	0.617	8.20	13.57	13.9
12	13.20	11.65	0.733	8.80	16.13	19.7
PRESSURE CLASS 305 psi (DR 14)*						
4	4.80	4.07	0.343	5.25	6.17	3.2
6	6.90	5.86	0.493	6.40	8.87	6.7
8	9.05	7.68	0.646	7.05	11.63	11.6
10	11.10	9.42	0.793	8.20	14.27	17.6
12	13.20	11.20	0.943	8.80	16.97	25.1

Consult JM Eagle™ for CSA and other listing availability prior to shipment.

Note: *FM Approvals Pressure Class 150 psi for DR 18 and 200 psi for DR 14.

* Contact your JM eagle™ sales representative for location availability.



I.D. : Inside Diameter
O.D. : Outside Diameter
T : Wall Thickness
D⁹ : Bell Outside Diameter
E : Distance between Assembly Mark to the end of spigot.

Product Standard: ANSI/AWWA C900
Pipe Compound: ASTM D1784 Cells Class 12454
Gasket: ASTM F477
Integral Bell Joint: ASTM D3139
Certifications: ANSI/NSF Standard 61
UL Standard 1285
Pipe Length: 20 feet laying length
Installation: AWWA C605
JM Eagle™ Installation Guide

JM Eagle™ also manufactures this pipe in green for sewer force main applications and purple, specifically for reclaimed water systems. This pipe is made to the same requirements as our standard products. The only difference is that the pigment used is green or purple. These products will not be marked with UL or NSF listing marks. Additionally, the green pipe will be marked "Forced Sewer" and the purple pipe will be marked: "Reclaimed Water... Do Not Drink."



BIG BLUE™

SUBMITTAL AND DATA SHEET



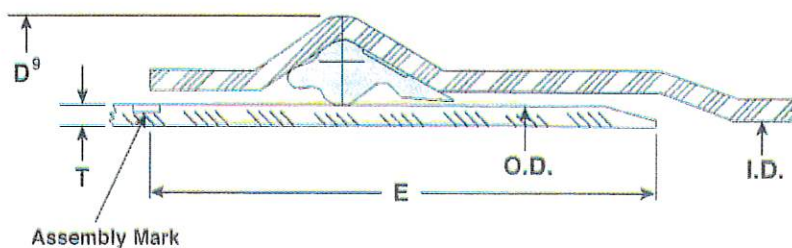
PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D° (IN)	APPROX. WEIGHT (LBS/FT)
Rated 235 psi (DR 18)						
14	15.30	13.50	0.850	8.00	19.00	26.75
16	17.40	15.35	0.967	9.25	21.62	34.86
18	19.50	17.20	1.083	13.00	24.22	48.95
20	21.60	19.06	1.200	14.50	26.85	54.22
24	25.80	22.76	1.433	12.00	32.06	77.97
30	32.00	28.23	1.778	16.75	37.81	117.82
Rated 200 psi (DR 21)*						
14	15.30	13.75	0.729	8.00	18.22	23.07
16	17.40	15.64	0.829	9.25	20.72	30.04
18	19.50	17.53	0.929	13.00	23.22	37.27
20	21.60	19.42	1.029	14.50	25.72	46.71
24	25.80	23.19	1.229	12.00	30.72	67.53
30	32.00	28.77	1.524	16.75	38.10	103.71
36	38.30	34.43	1.824	19.02	45.60	152.16
Rated 165 psi (DR 25)						
14	15.30	14.00	0.612	8.00	17.94	19.48
16	17.40	15.92	0.696	9.25	20.41	25.38
18	19.50	17.85	0.780	13.00	22.87	31.99
20	21.60	19.77	0.864	14.50	25.34	39.46
24	25.80	23.61	1.032	12.00	30.27	56.98
30	32.00	29.29	1.280	16.75	37.12	88.49
36	38.30	35.05	1.532	19.02	44.43	128.41
42	44.50	40.73	1.780	22.43	51.62	176.02
48*	50.80	46.49	2.032	24.78	58.93	231.22
Rated 125 psi (DR 32.5)*						
14	15.30	14.30	0.471	8.00	17.48	15.14
16	17.40	16.27	0.535	9.25	19.88	19.63
18	19.50	18.23	0.600	13.00	23.30	24.75
20	21.60	20.19	0.665	14.50	24.38	30.54
24	25.80	24.12	0.794	12.00	29.47	44.11
30	32.00	29.91	0.985			



PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D ⁹ (IN)	APPROX. WEIGHT (LBS/FT)
Rated 100 psi (DR 41)						
14	15.30	14.52	0.37	8.00	16.07	12.01
16	17.40	16.51	0.42	9.25	18.28	15.63
18	19.50	18.50	0.47	13.00	20.49	19.72
20	21.60	20.49	0.52	14.50	22.70	24.31
24	25.80	24.48	0.62	12.00	27.11	35.10
30	32.00	30.35	0.78	16.75	35.12	54.65
36	38.30	36.30	0.93	19.02	42.04	78.97
42	44.50	42.18	1.08	22.43	48.84	108.19
48	50.80	48.14	1.23	24.78	55.76	142.10
Rated 80 psi (DR 51)**						
18	19.50	18.69	0.382	11.09	20.80	15.92
24	25.80	24.72	0.506	14.90	26.86	28.39
30	32.00	30.67	0.627	16.75	34.50	44.08
36	38.30	36.71	0.751	19.02	41.30	64.32
42	44.50	42.65	0.872	22.43	47.99	88.10
48	50.80	48.69	0.996	24.78	54.78	115.79

* Prior to ordering or specifying, consult JM Eagle™ for product and/or listing availability.

** UL 1285 up to 24"



I.D. : Inside Diameter
O.D. : Outside Diameter
T : Wall Thickness
D⁹ : Bell Outside Diameter
E : Distance between Assembly Mark to the end of spigot.

Product Standard: ANSI/AWWA C905
Pipe Compound: ASTM D1784 Cells Class 12454
Gasket: ASTM F477
Integral Bell Joint: ASTM D3139
Certifications: ANSI/NSF Standard 61
UL Standard 1285 (up to 24")
Pipe Length: 20 feet laying length
Installation: AWWA C605
JM Eagle™ Installation Guide



SIP Industries
Quality Manufacturers Since 1960

EZ GRIP™
PTP SERIES

BELL JOINT RESTRAINT FOR PVC PIPE

The EZ GRIP®

Pipe-To-Pipe Joint Restraint is a proven design, offering an efficient, reliable, and inexpensive method of restraining PVC Bell and Spigot (Push-On) Joints by utilizing a series of rigid machined gripping serrations that grab, hold, and secure the PVC Bell and Spigot ends.



ADVANTAGES, BENEFITS, FEATURES

- The PTP Joint Restraint eliminates the need of timely thrust blocks.
- The PTP Joint Restraint performs optimally with AWWA C900 (PVC), C905 (PVC), C906 (HDPE), C909 (PVC), or ASTM D2241 IPS PVC Pipe.
- Composed of high strength Ductile Iron in compliance with the ASTM A536 Standard, Grade 65-45-12
- T-Bolts, Rods, and Hex nut are manufactured from high-strength low-alloy (HSLA) steel as per ANSI/AWWA C111/A21.11
- Machined to exact tolerances with a minimum safety factor of 2:1.
- Easily maintains a water working pressure equal to that of the PVC pipe on which it is installed
- The PTP Joint Restraint is designed and manufactured to be disassembled, reinstalled, and reusable.
- The PTP Joint Restraint can be installed on new or existing water systems.
- The PTP Joint Restraint allows full joint deflection and maintains the seal while under pressure, and while subjected to ground movements.
- The internal serrations offer 360° circumferential contact with the pipe wall and increase the grip as the hydrostatic pressure increases whilst concurrently offering support of the pipe wall.
- With the split castings, the PTP Joint Restraint can conveniently be installed in or outside the trench.
- The PTP Joint Restraint for PVC Pipe is provided with a coating that is compatible with most field applied coatings. The standard color of the PTP Joint Restraint is red.
- Offered in sizes from 4" up to 36".
- Approved by Factory Mutual (FM) for sizes 4"-12" at 200psi for AWWA C900 Class 305 DR-14 pipe and at 150psi for AWWA C900 Class 235 DR-18 pipe.



Available: Import

Toll Free 877-921-6111

www.sipindustries.com

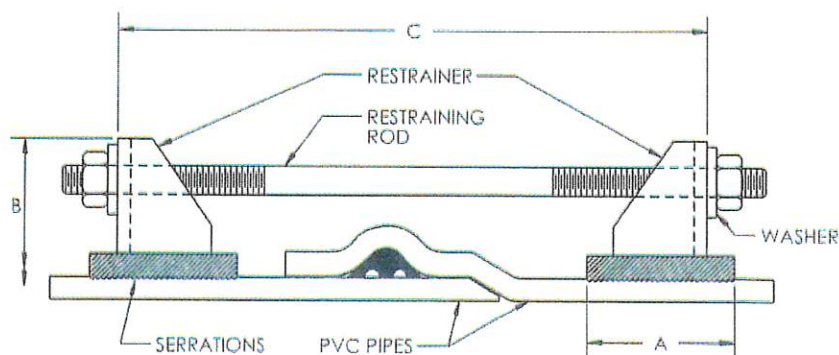


SIP Industries

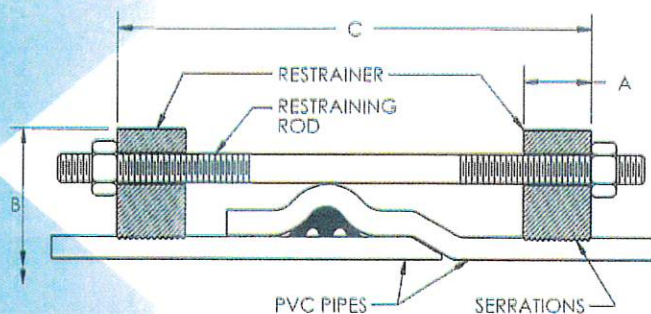
EZ GRIP™ PTP SERIES

BELL JOINT RESTRAINT FOR PVC PIPE

Technical Data



SIZES: 14" - 36"



SIZES: 4" - 12"

PTPVC PIPE RESTRAINTS SPECIFICATIONS

NOMINAL PIPE SIZE	C900/C909 PVC PIPES PTPVC SERIES		IPS PVC PIPES PTPVS SERIES		A	B (APPROX.)	C (MAX.)	RESTRAINT BOLTS/RODS		CLAMPING BOLTS		WEIGHT (APPROX.) LBS
	O.D.	ITEM CODE	O.D.	ITEM CODE				QTY	SIZE	QTY	SIZE	
4	4.80	PTPVC04	4.50	PTPV504	1.12	9.15	12.00	2	3/4 X 17	4	5/8 X 3 1/2	16
6	6.90	PTPVC06	6.63	PTPV506	1.15	11.12	13.00	2	3/4 X 17	4	5/8 X 3 1/2	20
8	9.05	PTPVC08	8.63	PTPV508	1.47	14.75	15.00	2	3/4 X 17	4	7/8 X 4	37
10	11.10	PTPVC10	10.75	PTPV510	1.38	16.82	16.00	4	3/4 X 24	4	7/8 X 5	52
12	13.20	PTPVC12	12.75	PTPV512	1.42	19.45	18.00	4	3/4 X 24	4	7/8 X 5	56
14	15.30	PTPVC14	N/A	N/A	4.00	22.56	24.00	6	3/4 X 30	8	7/8 X 7	160
16	17.40	PTPVC16	N/A	N/A	4.00	24.64	28.00	6	3/4 X 30	8	7/8 X 7	154
18	19.50	PTPVC18	N/A	N/A	5.00	26.64	28.00	8	3/4 X 30	8	7/8 X 7	222
20	21.60	PTPVC20	N/A	N/A	5.00	28.75	28.00	8	3/4 X 36	8	1 1/8 X 9	195
24	25.80	PTPVC24	N/A	N/A	5.00	33.90	34.00	12	3/4 X 36	8	1 1/8 X 9	237
30	32.00	PTPVC30	N/A	N/A	5.50	40.75	38.00	10	1 X 40	8	1 1/4 X 9	475
36	38.30	PTPVC36	N/A	N/A	9.00	49.10	38.00	14	1 X 40	12	1 1/8 X 10	722

Toll Free 877-921-6111

www.sipindustries.com



SIP Industries
Quality Manufacturer Since 1960

Date: 10/05/2022

Daryl Haby
Sales Manager
Core&Main
San Antonio, TX 78251
daryl.haby@coreandmain.com

RE: 04" to 12" PTP Restraints

SIP Industries Pipe to Pipe (PTP) restraints for PVC joints are manufactured from high-strength Ductile Iron in accordance with ASTM A536, Grade 65-45-12. The PTP restraint is compatible with AWWA C900 PVC, C906 HDPE, C909 PVCO and ASTM D2241 IPS PVC pipes. SIP Industries' Pipe to Pipe restraints are Factory Mutual (FM) approved in sizes 4" - 12", and were tested for 4 times the rated pressure.

Further, 04" to 12" PTP Restraints when used on C900 DR14 pipes, will have a pressure rating of 305 psi which is equal to the pressure rating of the pipe.

There are no special conditions, requirements, and/or limitations that apply to our products in normal applications or for optimal performance.

If you have any questions, please do not hesitate to contact me.

Thank you,

Amit Kumar
Director - Engineering Services
akumar@sipindustries.com



SIP CORPORATE 8876 Gulf Freeway, Suite 500, Houston, TX 77017

SIP CENTRAL 2900 Patio Drive, Houston, TX 77017

SIP EAST 600 Rayloc Drive, Atlanta, GA 30336

SIP WEST 8333 Almeria Avenue, Fontana, CA 92335

Phone: 877-921-6111 or 713-923-6111 | Fax: 713-923-6114 | www.sipindustries.com | sales@sipindustries.com



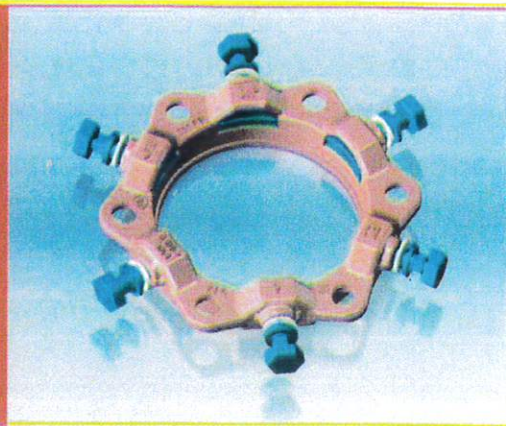
SIP Industries
Quality Manufacturers Since 1960

EZ GRIP™

JOINT RESTRAINT FOR PVC PIPE

The EZ GRIP®

Joint Restraint is a proven design, offering an efficient, reliable, and inexpensive method of restraining PVC Pipe with Mechanical Joint Pipe or appurtenances, by integrating a series of gripping wedges into a Mechanical Joint follower gland.



ADVANTAGES, BENEFITS, FEATURES

- The EZ GRIP® Joint Restraint eliminates clamps, tie rods, cables, and thrust blocks.
- The EZ GRIP® Joint Restraint performs optimally with all mechanical joint sockets of the ANSI/AWWA C111/A21.11, C110/A21.10, and C153/121.53 Standards and may be used with 4" - 12" AWWA C900 (PVC), C905 (PVC), C906 (HDPE)*, C909 (PVC) or 3"-12" ASTM D2241 IPS PVC Pipe.
- The EZ GRIP® Joint Restraint will allow joint deflection, and maintain the seal and restraint while under pressure, and while subjected to ground movements
- The EZ GRIP® Joint Restraint shall have a pressure rating equal to that of the PVC pipe and shall have a minimum safety factor of at least 2 to 1.
- The contoured wedges provide greater circumferential contact with the pipe wall and increase the grip as the hydrostatic pressure increases.
- The hex head of the actuating screw is the same size as a standard T-bolt nut (1 1/4"), and requires no tool other than the tool required to install a standard Mechanical Joint T-Bolt and Nut.
- The hex head of the torque control screw is designed to shear at a preset limit, assuring proper installation and to prevent damage to the PVC pipe.
- When the actuating screw is rotated in the correct direction (clockwise) the torque control head breaks off, exposing a 5/8" hex head, indicating proper deployment of the wedge.
- After removing the 1-1/4" torque control hex head, a 5/8" hex head remains for multiple disassembly and re-installation, if necessary.
- EZ Grip Joint Restraints offers 5° deflection up to sizes 12", 3° on 14"-24", 2° on 30"-36"
- The gland, wedges, and screws are manufactured from high strength Ductile Iron in compliance with the ASTM A536 Standard, Grade 65-45-12.
- The EZ GRIP® Joint Restraint is designed to perform optimally for potable and recycled water, and for wastewater applications.
- The EZ GRIP® Joint Restraint for PVC Pipe is provided with a coating that is compatible with most field applied coatings.
- The standard color for the EZ Grip for PVC Pipe is red.
- Approved by Factory Mutual (FM) for sizes 4"-12" at 200psi for AWWA C900 Class 305 DR-14 pipe and at 150psi on AWWA C900 Class 235 DR-18 pipe. Listed with Underwriters Laboratories (UL) for sizes 4"-12" at 235psi on AWWA C900 Class 235 DR-18 pipe.



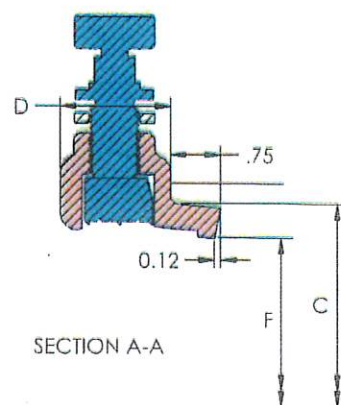
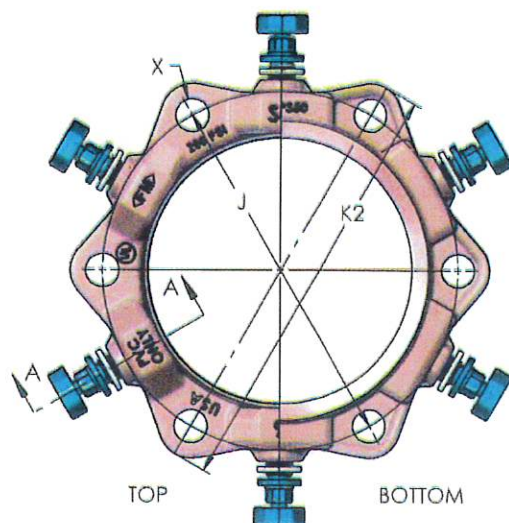
Available: Made in USA (4"-12") Import

* AWWA C906 HDPE Pressure Pipes up to 12" by using internal pipe stiffeners. Contact SIP for further assistance.

Toll Free 877- 921-6111

www.sipindustries.com

Technical Data



EZ-GRIP PVC RESTRAINTS SPECIFICATIONS

NOMINAL PIPE SIZE	SERIES NUMBER	C	D	F	X	J	K2	BOLT QTY	WEDGE QTY	APPROX. WEIGHT (LBS)
3	EZPVC03	4.84	1.60	4.06	3/4	6.19	7.96	4	4	7.50
4	EZPVC04 (D or I)	5.92	1.76	4.90	7/8	7.50	9.16	4	4	7.75
6	EZPVC06 (D or I)	8.02	1.75	7.00	7/8	9.50	11.12	6	6	11.40
8	EZPVC08 (D or I)	10.17	2.26	9.15	7/8	11.75	13.75	6	6	16.49
10	EZPVC10 (D or I)	12.22	2.32	11.20	7/8	14.00	15.91	8	8	22.10
12	EZPVC12 (D or I)	14.32	2.39	13.30	7/8	16.25	18.23	8	8	29.63
14	EZPVC14	16.40	2.29	15.44	7/8	18.75	20.75	10	10	48.70
16	EZPVC16	18.50	2.38	17.54	7/8	21.00	23.13	12	12	57.25
18	EZPVC18	20.60	2.39	19.64	7/8	23.25	25.25	12	12	61.45
20	EZPVC20	22.70	2.41	21.74	7/8	25.50	27.50	14	14	75.68
24	EZPVC24	26.90	2.50	25.94	7/8	30.00	32.13	16	16	92.92
30	EZPVC30	33.29	3.45	32.17	1 1/8	36.88	39.57	20	20	172.40
36	EZPVC36	39.59	3.70	38.47	1 1/8	43.75	46.34	24	24	218.88

All dimensions are in inches, unless otherwise noted

(D) Made in USA

(I) Import

STANDARDIZED PRESSURE RATINGS

ANSI/AWWA C900 C100		ANSI/AWWA C905 C100		ASTM D2241 PS OD	
DR 14	305 PSI	DR 18	235 PSI	SDR 17	250 PSI
DR 18	235 PSI	DR 21	200 PSI	SDR 21	200 PSI
DR 25	165 PSI	DR 25	165 PSI	SDR 26	160 PSI
		DR 32.5	125 PSI		



SIP Industries
Quality Manufacturer Since 1960

To Whom it may concern,

SIP Industries has been providing quality products for over 60 years and we take great pride in meeting or exceeding industry standards. This letter is to address comments for the above name project submittal transmittal No. 2660-03.

Comment #1 – The EZ Grip PTP Series 4" – 12" is considered bi-directional. The harness halves can be oriented in either direction. The EZ Grip PTP is a harness type with full 360 deg engagement and does not point load the PVC pipe. We have not encountered any point loading issues with this restraint type. Point loading is typically associated with the set screw type of restraints which should never be used with PVC pipe.

Comment #5 – The EZ Grip EZPVC wedge joint restraint has a Brinnell hardness of 179-255 BHN suitable for all types of PVC pipes. The EZ Grip EZPVC wedge restraints is a proven design and like others in the marketplace with a proven record. All SIP MJ SBR gaskets meet AWWA C111 requirements.

Should you have additional questions or if I can be of service in any other way, do not hesitate to contact me at SIP Industries headquarters in Houston, TX.

Sincerely,

Roger Johnson
Director of Technical Services
Mobil; 281 254-4047
Email: rjohnson@sipindustries.com

Cc: Dev Saha



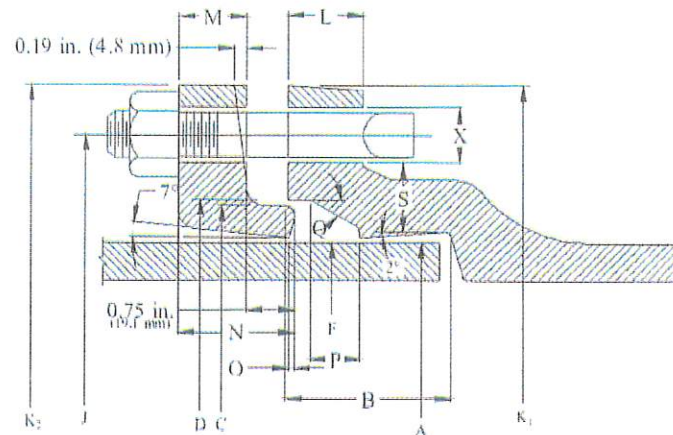
SIP CORPORATE 8876 Gulf Freeway, Suite 500, Houston, TX 77017
SIP CENTRAL 2900 Patio Drive, Houston, TX 77017
SIP EAST 600 Rayloc Drive, Atlanta, GA 30336
SIP WEST 8333 Almeria Avenue, Fontana, CA 92335

Phone: 877-921-6111 or 713-923-6111 | Fax: 713-923-6114 | www.sipindustries.com | sales@sipindustries.com

3" - 48" DUCTILE IRON MECHANICAL JOINT COMPACT FITTINGS

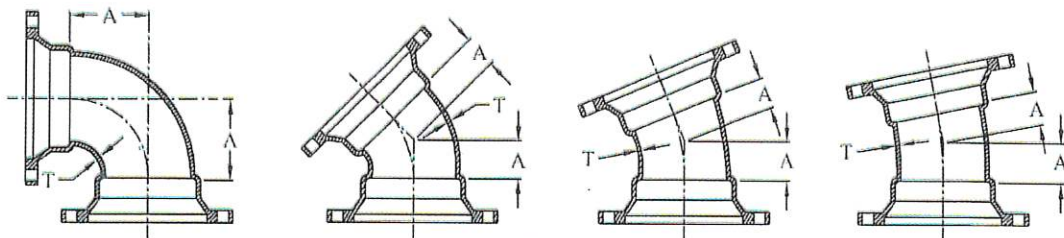
GENERAL SPECIFICATIONS

- MATERIAL :** Ductile Iron per ASTM A536.
- PRESSURE :** 350 psi Rating for 3"-24" sizes and 250 psi Rating for 30"- 48".
- TESTING :** In accordance with ANSI/AWWA C153/A21.53 and UL Requirement.
- LAYING LENGTH :** In accordance with ANSI/AWWA C153/A21.53. Fittings not listed in ANSI/AWWA have dimensions per SIP design as noted in Catalog.
- WEIGHTS :** Do not include Accessories, Cement Lining and Coatings.
- FLANGES :** Flanged ends on Fittings match ANSI/AWWA C115/A21.15 and ANSI B16.1 CLASS 125 Flanges.
- CEMENT LINING :** In accordance with ANSI/AWWA C104/A21.4.
- COATING :** Asphaltic Seal Coat inside and out in accordance with ANSI/AWWA C104/A21.4
- GASKETS :** SBR in accordance with ANSI/AWWA C111/A21.11.
- T-BOLTS/NUTS :** Low Alloy Steel in accordance with ANSI/AWWA C111/A21.11.
- APPROVALS :** 3"-24" Underwriters Laboratories Listed and UL/NSF 61.



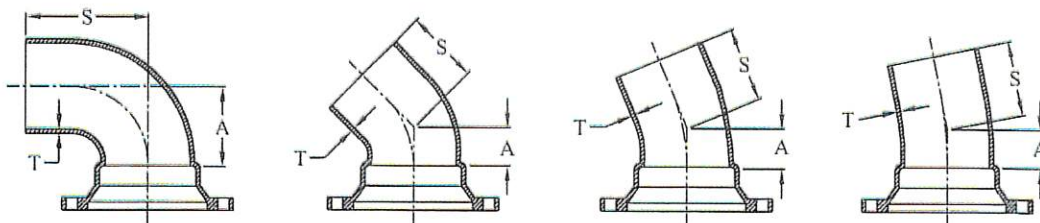
MECHANICAL JOINT DIMENSIONS

SIZE	A	B	C	D	F	J	K ₂	K ₁	L	X	BOLTS		
											No	Size	Length
3	3.96	2.50	4.84	4.94	4.06	6.19	7.69	7.62	0.58	3/4	4	5/8	3
4	4.80	2.50	5.92	6.02	4.90	7.50	9.12	9.06	0.60	7/8	4	3/4	3 1/2
6	6.90	2.50	8.02	8.12	7.00	9.50	11.12	11.06	0.63	7/8	6	3/4	3 1/2
8	9.05	2.50	10.17	10.27	9.15	11.75	13.37	13.31	0.66	7/8	6	3/4	3 1/2
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	0.70	7/8	8	3/4	4
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	0.73	7/8	8	3/4	4
14	15.30	3.50	16.40	16.54	15.44	18.75	20.25	20.25	0.79	7/8	10	3/4	4 1/2
16	17.40	3.50	18.50	18.64	17.54	21.00	22.50	22.50	0.85	7/8	12	3/4	4 1/2
18	19.50	3.50	20.60	20.74	19.64	23.25	24.8						



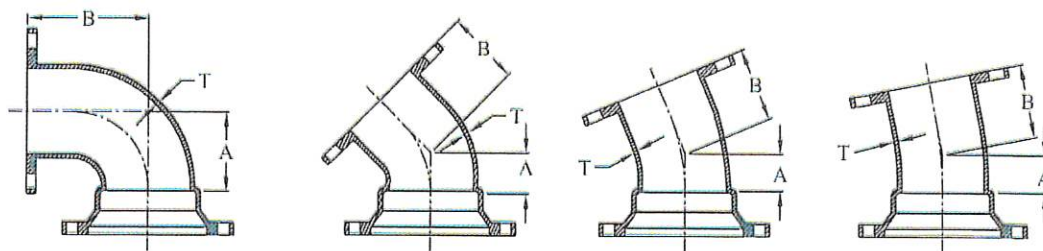
MJ X MJ BENDS

SIZE	T	MJ 90° BEND		MJ 45° BEND		MJ 22.5° BEND		MJ 11.25° BEND	
		A	WT	A	WT	A	WT	A	WT
3	0.33	3.50	19	1.50	16	1.00	15	1.00	14
4	0.34	4.00	25	2.00	22	1.50	18	1.25	16
6	0.36	5.00	39	3.00	32	2.00	31	1.50	30
8	0.38	6.50	57	3.50	46	2.50	46	1.75	42
10	0.40	7.50	89	4.50	70	3.00	64	2.00	58
12	0.42	9.00	108	5.50	86	3.50	80	2.25	67
14	0.47	11.50	210	5.00	160	3.75	136	2.50	93
16	0.50	12.50	264	5.50	202	3.75	172	2.50	148
18	0.54	14.00	335	6.00	250	4.50	255	3.00	205
20	0.57	15.00	400	7.00	305	4.50	310	3.00	245
24	0.61	16.75	565	7.50	405	4.50	412	3.00	315
30	0.66	21.50	930	10.50	780	6.75	665	4.75	600
36	0.74	24.50	1450	11.50	1135	7.75	960	5.00	820
42	0.82	29.25	2205	14.00	1610	9.00	1350	6.00	1180
48	0.90	33.25	2990	15.00	2090	10.00	1760	6.50	1475



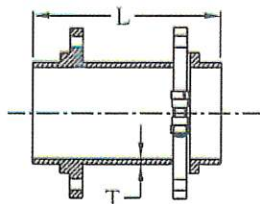
MJ X PE BENDS

SIZE	T	90° PLAIN END BEND			45° PLAIN END BEND			22.5° PLAIN END BEND			11.25° PLAIN END BEND		
		A	S	Wt	A	S	Wt	A	S	Wt	A	S	Wt
3	0.33	3.25	8.50	16	1.50	7.00	13	1.00	6.50	12	1.00	6.50	12
4	0.34	4.00	9.50	22	2.00	7.50	19	1.50	7.00	18	1.25	6.25	17
6	0.36	5.00	11.50	41	3.00	8.50	34	2.00	7.50</				



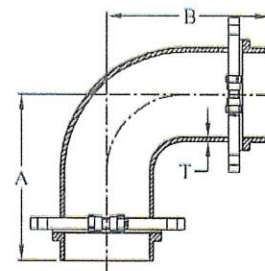
MJ X FLANGE BENDS*

SIZE	T	90° MJ-FLANGE BEND			45° MJ-FLANGE BEND			22.5° MJ-FLANGE BEND			22.5° MJ-FLANGE BEND		
		A	B	WT	A	B	WT	A	B	WT	A	B	WT
3	0.33	3.50	5.50	20	1.50	3.00	17	1.00	3.00	18	1.00	3.00	16
4	0.34	4.00	6.50	26	2.00	4.00	24	1.50	4.00	27	1.25	4.00	20
6	0.36	5.00	8.00	47	3.50	5.00	39	2.00	5.00	36	1.50	5.00	30
8	0.38	6.50	9.00	68	3.50	5.50	57	2.50	5.50	53	1.75	5.50	50
10	0.40	7.50	11.00	102	4.50	6.50	83	3.00	6.50	100	2.00	6.50	75
12	0.42	9.00	12.00	134	5.50	7.50	111	3.50	7.50	145	2.25	7.50	88
14	0.47	11.50	14.00	227	5.00	7.50	208	---	---	---	---	---	---
16	0.50	12.50	15.00	306	5.50	8.00	240	---	---	---	---	---	---



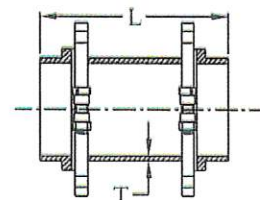
**SWIVEL X SOLID HYDRANT ADAPTERS
WITH SWIVEL GLAND***

SIZE	T	L	WEIGHT
6 X 13	0.36	13	47
6 X 18	0.36	18	56
6 X 24	0.36	24	60
6 X 30	0.36	30	64
6 X 36	0.36	36	75
6 X 48	0.36	48	94
8 X 13	0.38	13	54
8 X 18	0.38	18	67
8 X 24	0.38	24	82
8 X 48	0.38	48	143
12 X 13	0.42	13	87



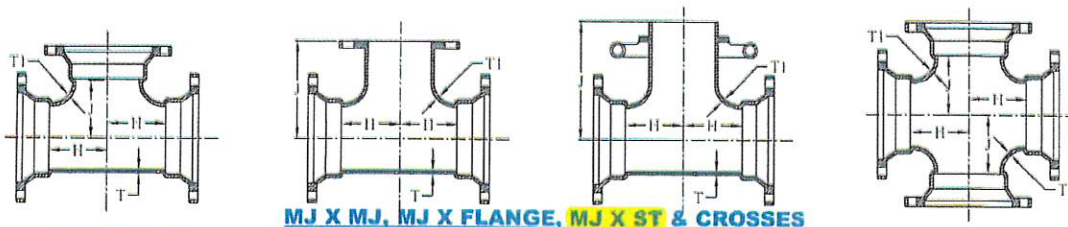
**SWIVEL X SWIVEL HYDRANT ELL
WITH TWO-SWIVEL GLANDS***

SIZE	T	A	B	WEIGHT
6	0.36	10.50	16.00	50



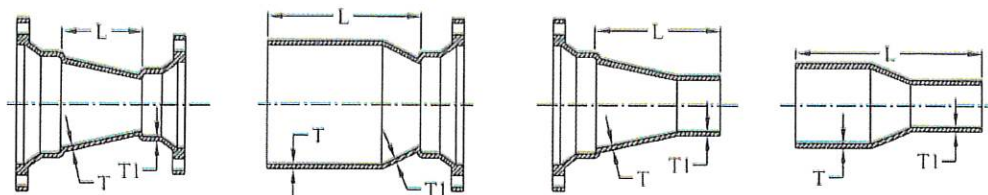
**SWIVEL X SWIVEL HYDRANT ADAPTERS
WITH TWO-SWIVEL GLANDS***

SIZE	T	L	WEIGHT



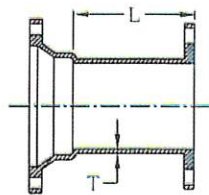
MJ X MJ, MJ X FLANGE, MJ X ST & CROSSES

Size	T	T1	MJ X MJ			MJ X FE*			MJ X ST*			CROSS		
			H	J	Wt.	H	J	Wt.	H	J	Wt.	H	J	Wt.
*2 X 2	0.30	0.30	3.00	3.00	16	---	---	---	---	---	---	---	---	---
3 X 3	0.33	0.33	3.00	3.00	28	3.00	5.50	30	---	---	---	3.00	3.00	35
*4 X 2	0.34	0.30	3.00	4.00	29	---	---	---	---	---	---	---	---	---
4 X 3	0.34	0.33	3.50	4.00	30	3.50	6.50	34	---	---	---	*3.50	4.00	49
4 X 4	0.34	0.34	4.00	4.00	32	4.00	6.50	40	---	---	---	4.00	4.00	40
6 X 3	0.36	0.33	3.50	5.00	42	3.50	8.00	51	---	---	---	3.50	5.00	60
6 X 4	0.36	0.34	4.00	5.00	46	4.00	8.00	65	---	---	---	*4.00	5.00	68
*6 X 4 X 6	0.36	0.36	*5.00	5.00	60	---	---	---	---	---	---	---	---	---
6 X 6	0.36	0.36	5.00	5.00	56	5.00	8.00	62	5.00	10.25	66	5.00	5.00	75
*6 X 6 X 8	0.36	0.38	*6.50	6.50	75	---	---	---	---	---	---	---	---	---
*8 X 3	0.38	0.33	*4.00	6.50	52	---	---	---	---	---	---	---	---	---
8 X 4	0.38	0.34	4.00	6.50	60	4.50	9.00	79	---	---	---	*4.00	6.00	100
8 X 6	0.38	0.36	5.00	6.50	72	5.50	9.00	80	5.00	11.25	86	*5.00	6.00	105
*8 X 6 X 6	0.38	0.38	*6.00	6.50	85	---	---	---	---	---	---	---	---	---
*8 X 6 X 8	0.38	0.38	*6.00	6.50	85	---	---	---	---	---	---	---	---	---
8 X 8	0.38	0.38	6.50	6.50	86	6.50	9.00	90	6.50	11.50	105	6.00	6.00	105
*10 X 3														



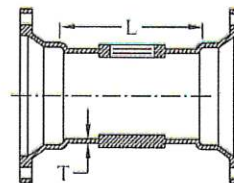
REDUCERS

SIZE	T	T ₁	MJ REDUCERS		MJ X LARGE END BELL		MJ X SMALL END BELL		PLAIN END X PLAIN END	
			L	Wt.	L	Wt.	L	Wt.	L	Wt.
4 X 3	0.34	0.33	3.00	18	8.50	18	8.50	17	14.00	14
6 X 3	0.36	0.33	5.00	22	10.50	19	10.50	24	16.00	19
6 X 4	0.36	0.34	4.00	24	9.50	25	9.50	25	15.00	22
8 X 4	0.38	0.34	5.00	32	10.50	34	10.50	30	16.00	30
8 X 6	0.38	0.36	4.00	36	9.50	32	9.50	35	15.00	30
10X 4	0.40	0.34	7.00	46	12.50	43	12.50	43	18.00	46
10X 6	0.40	0.36	5.00	47	10.50	42	10.50	46	16.00	46
10X 8	0.40	0.38	4.00	50	9.50	50	9.50	42	15.00	47
12X 4	0.42	0.34	9.00	58	14.50	60	14.50	60	20.00	58
12X 6	0.42	0.36	7.00	58	12.50	58	12.50	58	18.00	57
12X 8	0.42	0.38	5.00	57	10.50	55	10.50	54	16.00	54
12X10	0.42	0.40	4.00	61	9.50	59	9.50	59	15.00	54
14X 6	0.47	0.36	9.00	100	14.50	104	16.90	100	22.30	93
14X 8	0.47	0.38	7.00	100	12.40	98	14.90	98	20.30	94
14X10	0.47	0.40	5.00	100	10.40	92	12.90	94	18.30	90
14X12	0.47	0.42	4.00	100	9.40	92	11.90	90	17.30	88
16X 6	0.50	0.36	11.00	124	16.50	136	18.90	125	24.30	93
16X 8	0.50	0.38	9.00	124	14.40	128	16.90	121	22.30	119
16X10	0.50	0.40	7.00	124	12.50	123	15.00	105	20.50	119
16X12	0.50	0.42	5.00	1						



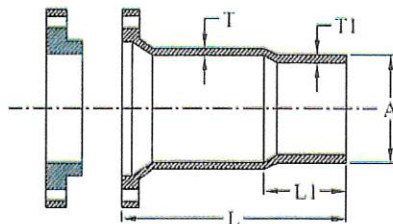
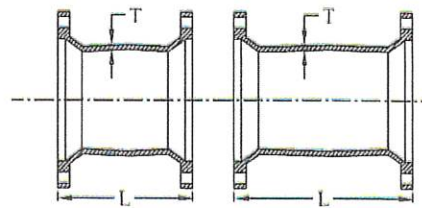
MJ X FLANGE ADAPTERS*

SIZE	L	T	WEIGHT
3	3.50	0.33	14
4	3.50	0.34	23
6	3.50	0.36	32
8	3.50	0.38	46
10	3.50	0.40	63
12	3.50	0.42	100
14	5.00	0.47	143
16	5.00	0.50	170
18	5.00	0.54	221
20	5.00	0.57	252
24	5.00	0.61	324
30	7.00	0.66	557
36	8.50	0.74	798
42	12.00	0.82	1214



MJ X MJ TAPPED TEES (2" TAP)*

SIZE	T	L	TAP SIZE	Wt
3	0.33	6.00	2	18
4	0.34	6.00	2	25
6	0.36	6.00	2	36
8	0.38	6.00	2	56
10	0.40	6.00	2	70
12	0.42	6.00	2	86
16	0.50	6.00	2	164



**MJ X PE CUTTING IN SLEEVE
WITH OVER SIZE GLAND***

SIZE	T	T1	A	L	L1	Wt.
4	0.36	0.34	4.80	20.00	9.00	50
6	0.38	0.36	6.90	20.00	9.00	62
8	0.40	0.38	9.05	20.00	9.00	90
10	0.42	0.40	11.10	20.00	9.00	105
12	0.47	0.42	13.20	20.00	9.00	128
16	0.54	0.50	17.40	20.00	9.00	275

SLEEVES

SIZE	T	LONG		SHORT	
		L	Wt.	L	Wt.
3	0.33	12.00	18	7.50	13
4	0.34	12.00	20	7.50	17
6	0.36	12.00	33	7.50	28

5.4

Mueller Co.

Rev. 4-01

3/4" - 2" MUELLER® 300™
BALL CORPORATION VALVES**B-25008**

MUELLER® 300™ Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER® 110® Conductive Compression Connection for CTS O.D.* tubing

3/4"	3/4" x 1"	1"	1-1/2"	1-1/2" x 2"	2"
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**B-25028**

MUELLER® 300™ Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER® 110® Conductive Compression Connection for CTS O.D. tubing

3/4"	3/4" x 1"	1"	1-1/2"	1-1/2" x 2"	2"
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**B-25009**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER® 110® Compression Connection for IPS PE* pipe

3/4"	3/4" x 1"	1"
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**B-25029**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER 110® Compression Connection for IPS PE* pipe

3/4"	3/4" x 1"	1"
------	-----------	----

**E-25009**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER Pack Joint for IPS PE** pipe
 **Note: 3/4" size only may also be used on PVC

3/4" **	1"	1-1/2"	2"
---------	----	--------	----

**E-25029**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER Pack Joint for IPS PE** pipe
 **Note: 3/4" size only may also be used on PVC

3/4" **	1"	1-1/2"	2"
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**V-25056**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER Pack Joint for IPS PVC pipe

1"	1-1/2"	2"
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**V-25058**

MUELLER 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER Pack Joint for IPS PVC pipe

1"	1-1/2"	2"
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**P-25008**

BALL ANGLE METER VALVES - 3/4" & 1"

Mueller Co.
8D.1

Rev. 4-01



MUELLER® 300™
Ball Angle Meter Valve
MUELLER 110® Conductive
Compression Connection for CTS
O.D.* tubing x meter swivel nut**
Quarter turn check - lock wing.
360° turn option available by adding
-3 suffix to catalog number.

B-24258

Example: B-24258-3

Catalog size	5/8x3/4R†	5/8x3/4	5/8x3/4x3/4R†
Meter size	5/8	5/8	5/8x3/4, 3/4
Tubing size	3/4	3/4	3/4

Catalog size	5/8x3/4x3/4	5/8x3/4x1	1R†	1
Meter size	5/8x3/4, 3/4	5/8x3/4, 3/4	1	1
Tubing size	3/4	1	1	1



MUELLER 300
Ball Angle Meter Valve
MUELLER Pack Joint Connection
for CTS O.D.* tubing x meter
swivel nut** Quarter turn check -
lock wing. 360° turn option available
by adding -3 suffix to catalog number.
Example: P-24258-3

P-24258

Catalog size	5/8x3/4R†	5/8x3/4	5/8x3/4x3/4R†
Meter size	5/8	5/8	5/8x3/4, 3/4
Tubing size	3/4	3/4	3/4

Catalog size	5/8x3/4x3/4	5/8x3/4x1	1R†	1
Meter size	5/8x3/4, 3/4	5/8x3/4, 3/4	1	1
Tubing size	3/4	1	1	1



MUELLER 300
Ball Angle Meter Valve
MUELLER 110 Conductive
Compression Connection for IPS PE*
pipe x meter swivel nut**
Quarter turn check - lock wing.
360° turn option available by adding
-3 suffix to catalog number.

B-24259

Example: B-24259-3

Catalog size	5/8x3/4x3/4	1
Meter size	5/8x3/4, 3/4	1
Tubing size	3/4	1



MUELLER 300 Ball Angle
Meter Valve
MUELLER INSTA-TITE Connection
for IPS O.D.* tubing x meter swivel
nut**
Quarter turn check - lock wing.
360° turn option available by
adding -3 suffix to catalog number.
Example: B-24266-3

B-24266

Catalog size	5/8x3/4x3/4	1
Meter size	5/8x3/4, 3/4	1
Tubing size	3/4	1

Note: Two-piece factory assembly



MUELLER 300 Ball Angle
Meter Valve
MUELLER INSTA-TITE Connection
for CTS O.D.* tubing x meter swivel
nut**
Quarter turn check - lock wing.
360° turn option available by adding
-3 suffix to catalog number.
Example: B-24267-3

B-24267

Catalog size</

6.22

Mueller Co.

SERVICE TEES

Rev. 9-09 Shaded area indicates changes

**H-15381**

Service tee
MUELLER 110 Conductive
Compression Connection for
CTS O.D.* tubing-all ends

3/4"	1/4"x3/4"x1"	1"	1"x1"x3/4"	1-1/2"x1-1/2"x3/4"
1-1/2"x1-1/2"x1"	1-1/2"x1-1/2"x1-1/2"	2"x2"x3/4"		
2"x2"x1"	2"x2"x2"			

**P-15381**

Service tee
MUELLER Pack Joint
Connection for CTS O.D.*
tubing-all ends

3/4"	3/4"x3/4"x1"	1"	1"x1"x3/4"	1-1/2"	2"
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**H-15444**

Service tee
MUELLER 110 Conductive
Compression Connection for
IPS* PE tubing-all ends

**E-15444**

Service tee
MUELLER Pack Joint
Connection for IPS PE*
tubing-all ends

3/4"				
------	--	--	--	--

3/4"				
------	--	--	--	--

**H-15385**

Service tee
M.I.P. thread x M.I.P. thread x
MUELLER 110 Conductive
Compression Connection for
CTS O.D.* tubing

**P-15385**

Service tee
M.I.P. thread x M.I.P. thread x
MUELLER Pack Joint
Connection for CTS O.D.* tubing

3/4"	1"	1"x1"x3/4"
------	----	------------

3/4"	3/4"x3/4"x1"	1"
------	--------------	----

**H-15392**

Service tee
F.I.P. thread x F.I.P. thread x
MUELLER 110 Conductive
Compression Connection for
CTS O.D.* tubing

**P-15393**

Service tee
F.I.P. thread x F.I.P. thread x
MUELLER Pack Joint
Connection for CTS O.D.*
tubing

3/4"	1"
------	----

3/4"	1" ±
------	------



Service tee sizing - sizes of ends are listed in the order shown
above - when all three end sizes are the same, only one size is listed.

‡Requires minimum ordering quantity. Contact MUELLER Customer Service Center for minimum ordering requirements and availability.

* See page 6.29 for tubing that can be used with this connection.



Model 350XL

Double Check Valve Assembly

Application

Ideal for use where Lead-Free* valves are required. Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the water supply. Assembly shall provide protection where a potential health hazard does not exist.

Standards Compliance (Horizontal & Vertical)

- ASSE® Listed 1015
- IAPMO® Listed
- CSA® Certified B64.5
- AWWA Compliant C510
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California

- UL® Classified (less shut-off valves only)
- C-UL® Classified (less shut-off valves only)
- Certified to NSF/ANSI 372* by IAPMO R&T
- NSF® Listed-Standard 61, Annex G*

*0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT

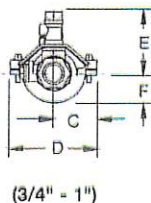
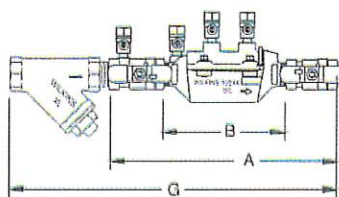
Materials

Main valve body	Cast Bronze, ASTM B 584 (3/4-1")
Housing	Reinforced Nylon
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA Approved)
	Buna Nitrile (FDA Approved)
Internals	Delrin, NSF Listed
Springs	Stainless Steel, 300 series
Ball Valves	Cast Bronze, ASTM B 584
Struts	Stainless Steel, 300 Series

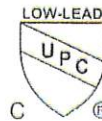
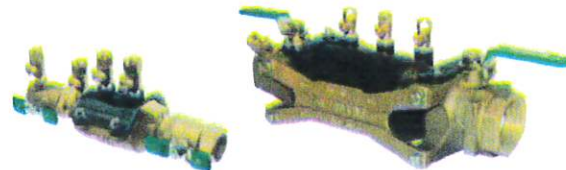
Features

Sizes: 3/4", 1", 1-1/4", 1-1/2", 2"
 Maximum working water pressure
 Maximum working water temperature
 Hydrostatic test pressure
 End connections Threaded

175 PSI
 180°F
 350 PSI
 ANSI B1.20.1



(3/4" - 1")



Options

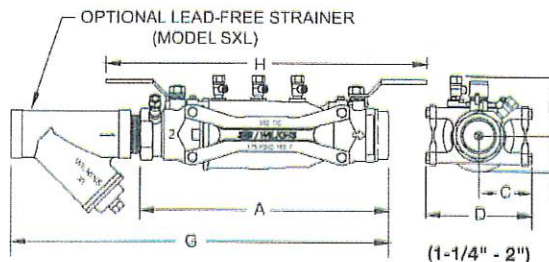
(Suffixes can be combined)

- ☒ - with full port QT ball valves (standard)
- ☐ L - less ball valves, male pipe thread
- ☐ S - with Model SXL lead-free bronze "Y" type strainer
- ☐ SH - with stainless steel handles
- ☐ FT - with integral male 45° flare SAE test fitting
- ☐ BOF - with blow out / flush fitting
- ☐ PF - with Z-Bite™ push fit connections* (1/2"-1" only)
- ☐ PR - with Z-Press™ press fit connections*

*Fittings ship in box with valve and must be threaded into valve by hand on site.

Accessories

- ☐ Repair kit
- ☐ Thermal expansion tank (Model XT)
- ☐ QT-SET Quick Test Fitting Set
- ☐ Winterizing Blow out/Flush fitting (RK34-350BOF, RK1-350BOF or RK114-350-375BOF)

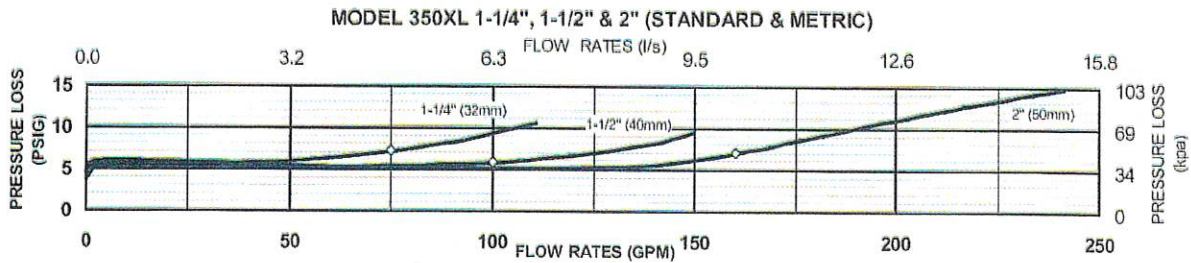
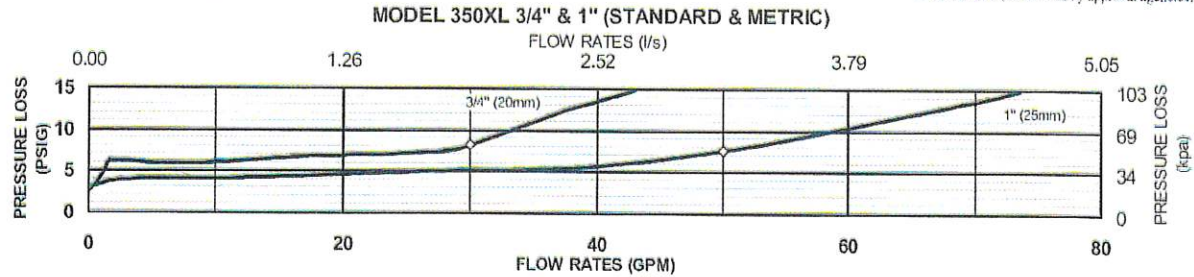


(1-1/4" - 2")

Dimensions & Weights (do not include pkg.)

Flow Characteristics

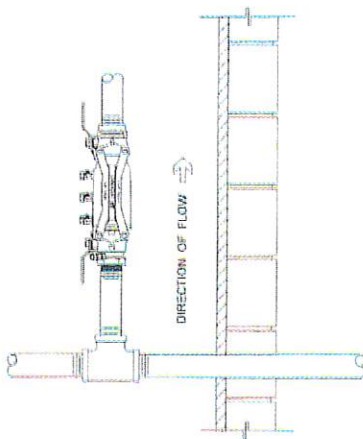
Rated Flow (established by approval agencies)



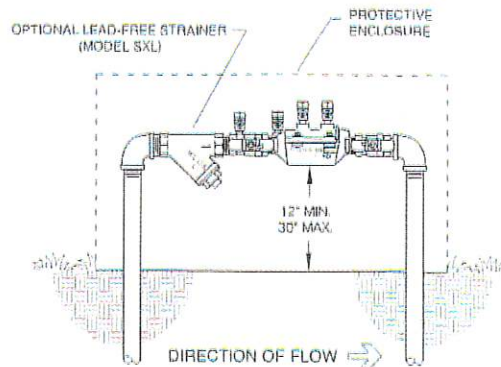
Typical Installation

Local codes shall govern installation requirements. To be installed in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

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



INDOOR INSTALLATION



OUTDOOR INSTALLATION

Specifications

The Double Check Valve Backflow Preventer shall be certified to NSF/ANSI 372, shall be ASSE® Listed 1015, rated to 180°F, and supplied with full port ball valves. The main body shall be low lead Bronze for sizes 3/4" & 1", and Nylon for sizes 1-1/4" to 2

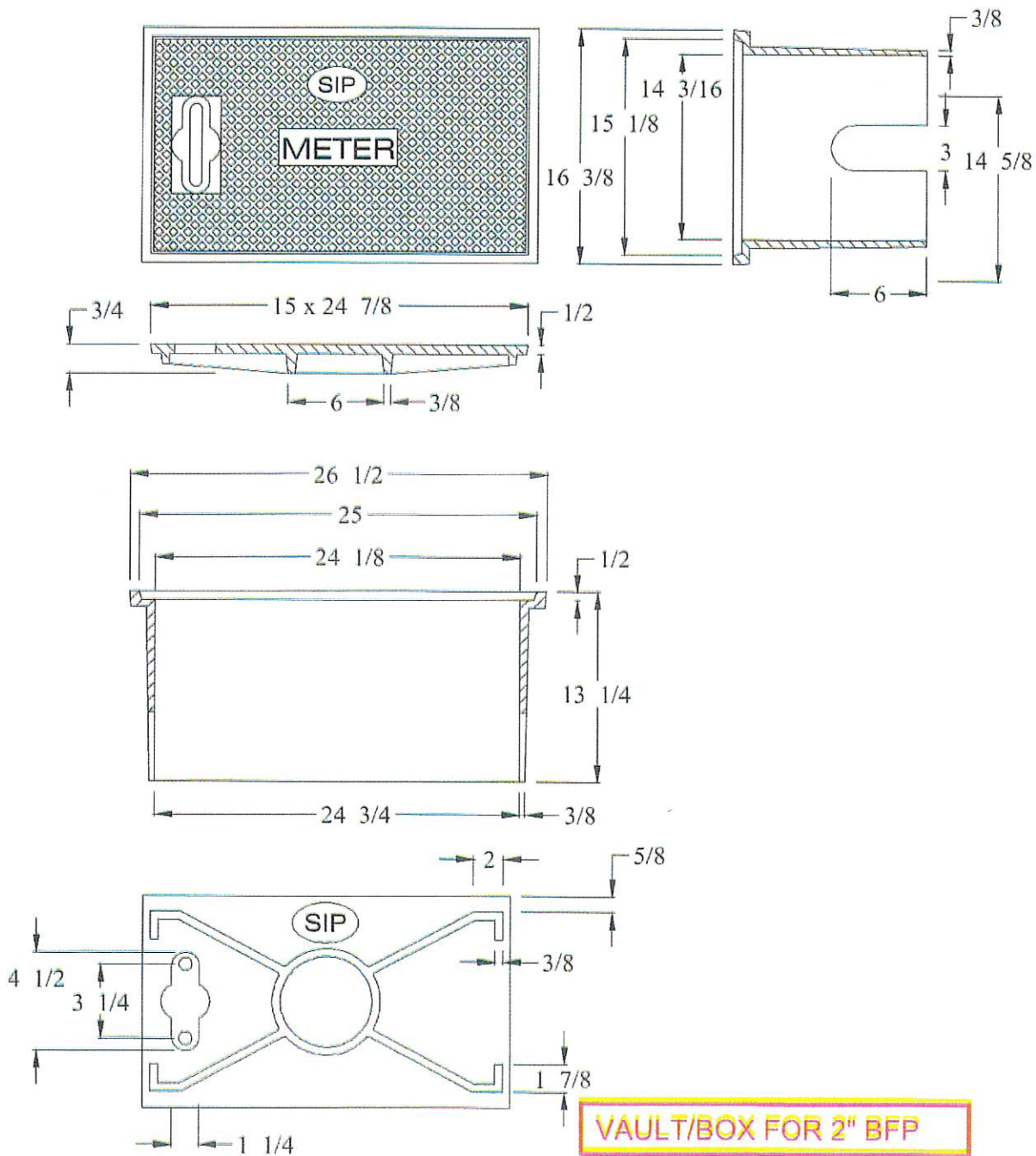
SERAMPORE INDUSTRIES (P) LTD.INC.

SIP

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VAULT/BOX FOR 2" BFP

DESCRIPTION : SA MB #2 15" x 25"

ITEM NO. EQ-1782

MATERIAL : CAST IRON,ASTM A-48 CLASS 30B

PATTERN NO. 4240