



SUBMITTAL ID:

Project Owner:

Project Title:

Project Number:

Subject:

Manufacturer/Supplier:

Specification Section:

Submitted By:

SUBMITTAL DATA ☐ FOR APPROVAL ☐ REVIEWED ☐ REVIEWED AS NOTED ☐ REVISE AND RESUBMIT FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. DATE _____ BY _____ WILDCAT CONSTRUCTION CO., INC.
--



620 S. Washington
Wichita, KS 67211

Submittal For: St. Paul and Newell Water Line
Wichita, KS

Contractor: Wildcat Construction



MOUNTAIN CONTRACTORS
SUPPLY GROUP

Prepared By: *Chris Jessup*

(316) 265-4440

St. Paul and Newell Water Main Replacement submittal

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PRODUCT SPECIFICATION

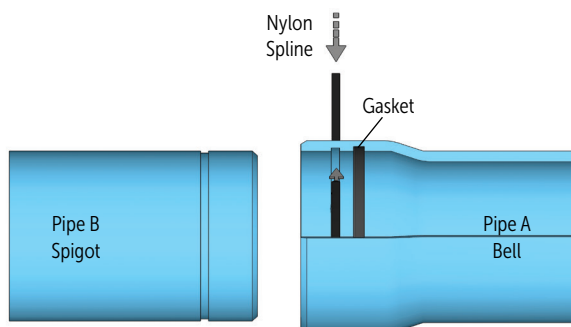
AQUASPRING™ C900 CERTA-LOK® RJIB WITH FLUID-TITE® GASKET PVC PRESSURE PIPE | Restrained Joint Integral Bell

Our AquaSpring™ C900 Certa-Lok® RJIB PVC Pipe is manufactured to meet the demands of today's municipal needs for water and wastewater pressure applications. This unique integral bell restrained joint pipe system is designed for trenchless applications with robust tensile strength for pulling multiple segments underground. The integral bell design reduces friction and allows for quick and easy assembly, without interrupting pullback.

A segmented PVC pipe solution, this product reduces the jobsite footprint and minimizes community disruption with a reduced need for jobsite staging area and traffic control. The Fluid-Tite gasket offered in sizes 6" through 24" has a superior sealing surface for a leak-free joint and greater deflection capability.

INSTALLATION METHODS

- Horizontal directional drilling (HDD)
- Static pipe-bursting
- Open-cut
- Carrier pipe inside casings



SHORT FORM SPECIFICATION

Pipe Standard:	C900
Diameter Std.:	Cast Iron Outside Diameter (CIOD)
Nominal Sizes:	6", 8", 10", 12", 16", 18", 20", 24"
Dimension Ratios & Pressure Ratings:	DR 25 – 165 psi DR 18 – 235 psi† DR 14 – 305 psi†
Lay Length:	10', 20'
Pipe Compound:	ASTM D1784 Cell Class 12454
Pipe Joint Std.:	ASTM D3139
Max. Angular Joint Deflection:‡	0.5°
Gasket Standard:	ASTM F477, UL 157
Gasket Material Offering:	EPDM** Optional - Nitrile (NBR)
Installation Std.:	AWWA C605

†FM 1612 calculates pressure ratings differently than AWWA with DR 18 as 185 psi and DR 14 as 250 psi.

‡See Installation Guide for more information.

*Excludes 16" and 18" nominal size.

**As of January 2022, EPDM gaskets will start replacing the previous default gasket material option – IR/SBR

Applications	Potable Water	Waste-water	Reclaimed Water
Pipe Color:	Blue	Green	Purple
Certifications:	NSF 14 NSF 61 FM 1612* UL 1285*	None	None

*See Certification Letter for full explanation and list of exceptions.



Only products bearing the NSF Mark are Certified





PRODUCT SPECIFICATION

AQUASPRING™ C900 CERTA-LOK® RJIB WITH FLUID-TITE®
GASKET PVC PRESSURE PIPE | Restrained Joint Integral Bell

AQUASPRING™ C900 CERTA-LOK® RJIB PVC PIPE											
Nom. Size	Outside Diameter (OD)	DR	Pipe								
			Min. Wall Thickness (T1)	Spigot End Wall Thickness (T2)	Internal Diameter (ID)	X	W	D	P	BOD	Weight (lb/ft)
6"	6.900	18	0.383	0.513	6.134	3.000	0.500	0.145	0.271	7.816	5.3
		14	0.493	0.661	5.914					8.030	6.6
8"	9.050	18	0.503	0.674	8.044	3.163	0.500	0.145	0.634	10.262	9.1
		14	0.646	0.866	7.758					10.542	11.5
10"	11.100	18	0.617	0.890	9.866	3.625	0.750	0.215	0.634	12.781	13.7
		14	0.793	1.105	9.514					13.177	17.3
12"	13.200	18	0.733	1.085	11.734	3.625	0.750	0.215	0.634	15.247	19.4
		14	0.943	1.325	11.314					15.681	24.5
16"	17.400	25	0.696	0.956	16.008	3.673	0.875	0.265	0.634	19.221	24.6
		18	0.967	1.349	15.466					19.841	33.7
18"	19.500	25	0.780	1.028	17.940	4.035	1.100	0.300	0.750	21.445	31.0
		18	1.083	1.435	17.334					22.175	42.4
20"	21.600	25	0.864	1.211	19.872	4.035	1.100	0.300	0.750	24.000	38.3
		18	1.200	1.623	19.200					24.700	52.3
24"	25.800	25	1.032	1.208	23.736	4.035	1.100	0.300	0.750	28.100	54.4
		18	1.433	1.771	22.934					29.100	74.8

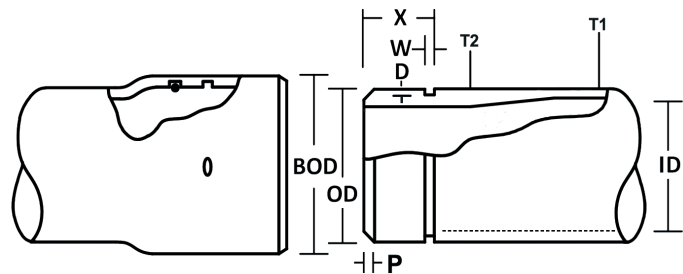


PRODUCT SPECIFICATION

AQUASPRING™ C900 CERTA-LOK® RJIB WITH FLUID-TITE®
GASKET PVC PRESSURE PIPE | Restrained Joint Integral Bell

PERFORMANCE DATA					
Nom. Size	DR	Pressure Class (psi)	Min. Bend Radius (ft)	Max. Pull Force (lbf)	*Max % Change per 20' Stick
6"	18	235	144	20,100	7
	14	305		22,300	
8"	18	235	188	27,500	5.25
	14	305		31,000	
10"	18	235	232	49,500	4.37
	14	305		52,600	
12"	18	235	275	60,000	3.68
	14	305		60,000	
16"	25	165	363	68,500	2.8
	18	235		72,000	
18"	25	165	406	81,500	2.45
	18	235		101,000	
20"	25	165	450	102,400	2.28
	18	235		117,500	
24"	25	165	538	125,000	1.93
	18	235		126,000	

- Notes:
- 1. These dimensions are for estimating purposes only. All dimensions are in inches unless otherwise specified.
 - 2. DR = Dimension Ratio
 - 3. AWWA Pressure Class @ 73°F and includes 2:1 safety factor.
 - 4. Maximum Pull Force based on actual testing and includes 2:1 safety factor.
 - 5. Internal diameter calculated using nominal outside diameter and minimum wall thickness.
 - 6. Additional wall thickness provides additional joint strength in machined areas. This has been calculated to have a negligible effect on flow performance.
 - 7. Contact Technical Services for assistance with mandrel sizing.
 - 8. 16" nominal size is not listed to UL 1285 or FM 1612.



*Refer to "Changing Direction of PVC Pipelines" Technical Bulletin for more information.



PRODUCT SPECIFICATION

AQUASPRING™ C900 CERTA-LOK® RJIB WITH FLUID-TITE®
GASKET PVC PRESSURE PIPE | Restrained Joint Integral Bell

AQUASPRING™ C900 CERTA-LOK® ACCESSORIES								
Application	Nom. Size	Splines				Gaskets		
		Material	Size	Length	Part Number	Material	Shape	Part Number
Standard	6"	Nylon	0.250x0.375	24	S0624TN0	EPDM	Profile	GSPR030600
						NBR (Nitrile)	Profile	GSPR550600
	8"	Nylon	0.250x0.375	32	S0832TN0	EPDM	Profile	GSPR030800
						NBR (Nitrile)	Profile	GSPR550800
	10"	Nylon	0.375x0.625	39	S1039TN0	EPDM	Profile	GSPR031000
						NBR (Nitrile)	Profile	GSPR551000
	12"	Nylon	0.375x0.625	46	S1246TN0	EPDM	Profile	GSPR031200
						NBR (Nitrile)	Profile	GSPR551200
	16"	Nylon	0.500x0.750	60	S1660TN0	EPDM	Profile	GSPR041600
						IR/SBR	Profile	GSPR001600
						NBR (Nitrile)	Profile	GSPR561600
	18"	Nylon	0.563x0.975	68	S1868TN0	EPDM	Profile	GSPR041800
						IR/SBR	Profile	GSPR001800
						NBR (Nitrile)	Profile	GSPR561800
	20"	Nylon	0.563x0.975	75	S2075TN0	EPDM	Profile	GSPR042000
						Nitrile	Profile	GSPR562000
						SBR	Profile	GSPR002000
	24"	Nylon	0.563x0.975	88	S2488TN0	EPDM	Profile	GSPR042400
						IR/SBR	Profile	GSPR002400
						NBR (Nitrile)	Profile	GSPR562400

Some or all of these products are protected by patents. Visit www.westlakepipe.com/patents for more information.

PRO-TRACE® HDD-CCS PE45/PE50 TRACER-WIRE

Tracer Wire • Horizontal Directional Drilling Copper Clad Steel (HDD-CCS) • 21% IACS Conductivity • Corrosion Resistant High-Density, High Molecular Weight Polyethylene (HMWPE-HDPE) Insulation • Moisture, Chemical, and Oil Resistant Impact, Crush, and Abrasion Resistant • RoHS Compliant • Direct Burial Rated • 30 Volts • Buy American / AIS Compliant

“PRO-TRACE® HDD-CCS -- OneSHOT, OnePULL, OneWIRE -- EVERYTIME!”



Applications and Information

- **PRO-TRACE® HDD-CCS PE45** is also referred to as Extra High-Strength (EHS-CCS).
- **PRO-TRACE® HDD-CCS PE45** conductor is equal to copper in signal tracing performance for tracer wire applications not exceeding 600 Volts. Tracer wire is used to conductively locate buried utility lines for the gas, water, sewer, telecommunication, and electrical markets.
- **PRO-TRACE® HDD-CCS PE45** has almost **700%** the break load of copper, which allows 1 wire to be installed in critical installations like directional boring and pipe bursting.
- **PRO-TRACE® HDD-CCS PE50** is our 4 AWG stranded wire with the most extreme break load available and designed for pipe bursting and the most challenging of bore shots.
- Considerably lower in cost and great price stability compared to copper.
- RoHS Compliant and works with connectors you already use.

Standards and References

PRO-TRACE® HDD-CCS PE45 meets or exceeds all applicable UL Standards, ASTM specifications, and requirements of the National Electrical Code. Buy American / AIS Compliant.

- ASTM B1010/B1010M: Specification EHS Copper Clad Steel in Tracer Wire Applications
- ASTM B170: Specification for Oxygen-Free Electrolytic Copper
- ASTM D1248: Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

Construction

PRO-TRACE® HDD-CCS PE45 is an extra high-strength, copper clad steel tracer wire. A high carbon steel core, metallurgically bonded with a copper cladding, that is uniform and continuous, creating a bi-metal conductor that acts as one and is corrosion resistant. The high break load allows only 1 conductor to be used in any tracer wire application while providing the perfect balance between break load, ductility, and decreasing brittleness. It is the best performing tracer wire on the market.

PRO-TRACE® HDD-CCS PE45 is protected with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation. HDPE provides an excellent balance of surface smoothness, processing ease and electrical consistency. HDPE insulation provides superior strength against underground elements that help prevent accidental breaks caused by rocks in shifting soil conditions.

Specification Example

Tracer wire for directional boring installation shall be a 12 AWG solid, PRO-TRACE HDD-CCS PE45. Conductor shall be hard-drawn, 21% IACS, copper-clad steel, utilizing a AISI 1055 high carbon steel core with minimum break load of 1,330 lbs (required to meet break load). Conductor shall be extruded with a 45 mil, high density, high molecular weight polyethylene (HMW-HDPE) pursuant to ASTM D1248. Tracer wire shall be rated for direct burial use at 600 volts and RoHS compliant. Tracer wire shall be PRO-TRACE HDD-CCS PE45 as manufactured by **Pro-Line Safety Products**.

Specification Updated: 4.14.2020 (HDD-CCS Tracer Spec)

PRO-TRACE® is a registered trademark of Pro-Line Safety Products Co.

www.prolinesafety.com

TABLE 1: CONDUCTOR (Physical, Mechanical and Electrical Properties)

PROPERTY	14 AWG	12 AWG	10 AWG	9 AWG	8 AWG	4 AWG 7x7
Conductor Type	EHS-CCS	EHS-CCS	EHS-CCS	EHS-CCS	EHS-CCS	EHS-CCS
Conductor Temper	Hard-Drawn	Hard-Drawn	Hard-Drawn	Hard-Drawn	Hard-Drawn	Hard-Drawn
Steel Grade	AISI 1055	AISI 1055	AISI 1055	AISI 1045	AISI 1055	AISI 1055
Copper Grade	UNS C10200	UNS C10200	UNS C10200	UNS C10200	UNS C10200	UNS C10200
Break Strength	725 lbs	1,330 lbs	2,032 lbs	1495 lbs	2,785 lbs	4,705 lbs
Elongation (ASTM B869)	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.5%
Copper Thickness (% of Diameter)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Copper Weight (Per 1,000')	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%
Nominal DC Resistance	12.024 ohms	7.562 ohms	4.756 ohms	3.772 ohms	2.991 ohms	1.277 ohms

TABLE 2: INSULATION & PRINTING (Physical, Mechanical and Electrical Properties)

PRO-TRACE® -- 12 AWG SOLID HDD-CCS -- 45 MIL HDPE -- 600V -- DIRECT BURIAL TRACER WIRE -- DIRECTIONAL DRILLING -- CAUTION GAS LINE BELOW *DATE & TRACE* SEQ FT		
Density @ 23°C	ASTM D1505	0.945 g/cm ³
Melt Flow Rate	ASTM D1238	0.70 g/10 min
Tensile Strength	ASTM D638	3,400 psi
Tensile Strength Retention	ASTM D638	90% after 48 hours @ 100°C
Tensile Elongation	ASTM D638	500%
Tensile Elongation Retention	ASTM D638	90% after 48 hours @ 100°C
Environmental Stress Cracking	ASTM D1693	0 failures @ 48 hours
Thermal Stress Cracking	ASTM D2951	0 failures @ 96 hours
Brittleness Temperature	ASTM D746	-76°C
Melting Temperature	ASTM D3418	260°C
Oxidative Induction Time	ASTM D3895	170 min @ 200°C
Dielectric Constant	ASTM D1531	2.32 @ 1 MHz
Dissipation Factor	ASTM D1531	0.00006 @ 1 MHz
DC Volume Resistivity @ 23°C	ASTM D257	> 1 x 10 ¹⁵ ohm-cm

TABLE 3: ORDERING INFORMATION (Weights, Measurements, and Packaging)

PRODUCT PART NO.	AWG SIZE / PRODUCT DESCRIPTION	BREAK STRENGTH (lbs)	CONDUCTOR O.D. (Nominal)	FINISHED O.D. (Nominal)	INSULATION THICKNESS (Nominal)	PRODUCT WEIGHT LBS/1000'	STANDARD LENGTHS
PRO-TRACE® HDD-CCS PE45 TRACER WIRE (45 mil/600V) -- DIRECTIONAL DRILLING / BORING							
74641.XXXX	14 AWG HDD-CCS PE45	725 lbs	0.0641"	0.154"	0.045"	17.5	500', 1000', 2500', 5000'
74642.XXXX	12 AWG HDD-CCS PE45	1,330 lbs	0.0808"	0.171"	0.045"	26.0	500', 1000', 2500', 5000'
74643.XXXX	10 AWG HDD-CCS PE45	1,940 lbs	0.1019"	0.192"	0.045"	37.0	500', 1000', 2500', 5000'
74649.XXXX	9 AWG HDD-CCS PE45	1,495 lbs	0.1143"	0.205"	0.045"	45.0	500', 1000', 2500', 5000'
74644.XXXX	8 AWG HDD-CCS PE45	2,785 lbs	0.1285"	0.219"	0.045"	55.0	500', 1000', 2500', 5000'
(STRANDED) PRO-TRACE® HDD-CCS PE50 TRACER WIRE (50 mil/600V) -- PIPE BURSTING / CRITICAL BORES							
74646.XXXX	4 AWG 7x7 HDD-CCS PE50	4,700 lbs	0.213"	0.313"	0.050"	110.0	500', 1000', 2500', 5000'

(.XXXX) INSULATION COLOR AND REEL SIZE									
PART# (.XXXX)	BLACK	BLUE	BROWN	GREEN	ORANGE	PURPLE	RED	WHITE	YELLOW
500' REEL	0132	0232	0332	0532	0632	0832	0932	1132	1232
1000' REEL	0141	0241	0341	0541	0641	0841	0941	1141	1241
2500' REEL	0147	0247	0347	0547	0647	0847	0947	1147	1247
5000' REEL	0153	0253	0353	0553	0653	0853	0953	1153	1453

*Custom lengths are available upon request **Some sizes, colors, and lengths may be subject to mins

(APWA) UNIFORM COLOR CODE
POTABLE WATER
SEWER & DRAINAGE
RECLAIMED WATER
GAS & PETROLEUM
COMMUNICATION
ELECTRIC & POWER



Specification Updated: 4.14.2020 (HDD-CCS Tracer Spec)

PRO-LINE
SAFETY PRODUCTS

a PRESCO company

PRO-LINE SAFETY PRODUCTS

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TOLL FREE: 800.554.3424 WWW.PROLINESAFETY.COM

TRACER-LOCK® CONNECTOR

Locking Tracer Wire
Connection System

Silicone Filled • Locking Tracer Wire Connection System • Made from Polycarbonate • Impact and Crush Resistant
Water and Corrosion Proof • Moisture, Chemical, and Oil Resistant • 1,000 volts max • RoHS Compliant
Direct Burial Rated • Connector for use in Damp, Wet and Submersible Locations

"TRACER-LOCK® CONNECTOR -- MECHANICAL SUPERIORITY & RELIABILITY -- IT'S REVOLUTIONARY"



Applications and Information

- **TRACER-LOCK® Connector** is a direct bury, self-stripping, locking connector system used for making connections to underground tracer wire systems. Our innovative and unique design allows the connector to be installed as an "in-line" or "lateral" connector without stripping the tracer wire.
- **Works with sizes 18 thru 8 AWG.** Sizes can be mixed or matched. The wide range of sizes is useful as different sizes are commonly used in open-cut versus boring installs.
- Pre-filled with a proprietary anti-oxide compound with excellent water and corrosion proofing technology that provides superior electrical continuity.
- Self-stripping design that utilizes a stationary toothed blade for insulation displacement. Eliminates installer error and issues caused by stripping wire manually.
- A one-piece connector that utilizes mechanical compression for extreme holding power that no other tracer wire connector can match. Eliminates the need to tie knots into wire before entering connector for extra holding power. Housing is virtually indestructible.
- Each connector is bagged with installation instructions for quick reference anytime.
- Designed to work with all forms of copper, copper-clad steel (CCS), and stainless steel tracer wire (See Table 1). **Can also be used as an access point for locators.**

Standards and References

TRACER-LOCK® Connector meets or exceeds all applicable UL standards and requirements of the National Electrical Code.

- Sealed Wire Connection System for use in Damp, Wet, Raintight, Watertight, Submersible, and Direct Bury Locations.

Construction

TRACER-LOCK® Connector is a one-piece mechanical connector that is injection molded from polycarbonate and features a threaded screw with a breakaway shear nut system. This closes the connector, strips the wire, and locks the installation with mechanical superiority. Connector has outstanding temperature and high impact resistance, along with extreme holding power to withstand backfill pressure. Pre-filled with a proprietary anti-oxide compound for corrosion, longevity, and superior electrical continuity.

Specification Example

Tracer Wire Splicing: Contractor shall use a Tracer-Lock® Connector (#TL-LUG-SS), manufactured by Pro-Line Safety Products, on all mainline and lateral connections. Tracer-Lock® features a side-tap that eliminates cutting of the tracer wire main when a lateral is required. Accepts sizes of 18 AWG thru 8 AWG not exceeding an insulated outside diameter of 0.225".

Access Points: Tracer-Lock® can also be installed as an access point for locating crews. For an access point, use *Side-B* for holding the tracer main or lateral end as normal; then use *Side A* with a 4" piece of tracer wire to act as a locate nub for hook-ups. For securing the connector in place to a structure, such as a gas meter or fire hydrant, use a plastic zip tie.

Spec Revision TL-LUG-SS, v4, updated 9.5.2018 5:18:00 CST

TRACER-LOCK® is a registered trademark of Pro-Line Safety Products Co.

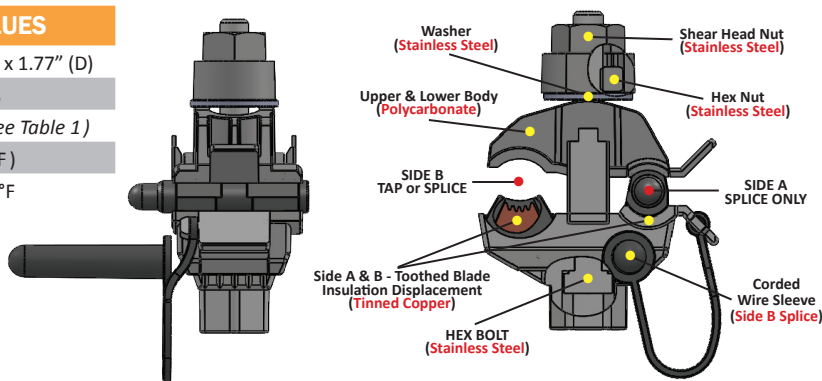
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TABLE 1: WIRE COMBINATIONS (Conductor and Insulation Type Compatibility)

TRACER WIRE CONDUCTOR TYPE (COMPATIBILITY)						INSULATION TYPE (COMPATIBILITY)		
SIZE	COPPER SD/MHD/HD	HF-CCS PRO-TRACE®	HS-CCS PRO-TRACE®	HDD-CCS PRO-TRACE®	STAINLESS STEEL	PVC/NYLON	PVC	LDPE, LLDPE, HDPE, XLPE, HMWPE
18 AWG 16 AWG 14 AWG 12 AWG 10 AWG 8 AWG	YES Solid (or) Stranded	YES Solid (or) Stranded	YES Solid (or) Stranded	YES Solid (or) Stranded	YES Solid (or) Stranded	YES (MIN O.D. = 0.100") (MAX O.D. = 0.225")	YES (MIN O.D. = 0.100") (MAX O.D. = 0.225")	YES (MIN O.D. = 0.100") (MAX O.D. = 0.225")

TABLE 2: CONNECTOR (Physical and Electrical Properties)

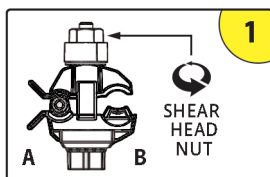
MEASUREMENTS	TYPICAL VALUES
Connector Size	2.56" (H) x 1.88" (W) x 1.77" (D)
Maximum Voltage	1,000 volts
Wire Range	Min #18 / Max #8 (See Table 1)
Temperature Rating	105°C (221°F)
Silicone Sealant Temperature	-40°F to 400°F



PRODUCT PART NO.	PRODUCT DESCRIPTION	PACKAGING		APPROX WEIGHT PER BOX	STOCK ITEM
		BAG QTY	BOX QTY		
WEIGHTS, MEASUREMENTS AND PACKAGING					
TL-LUG-SS	TRACER-LOCK WIRE CONNECTOR - 50 BAGS/BOX	1 / Bag	50 / Box	7 lbs	YES

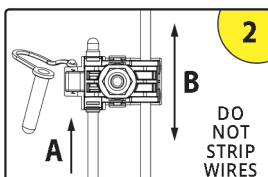
Installation Instructions

STEP #1



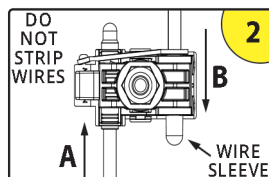
STEP 1: Loosen the Shear Head Nut to open up the Connector.

STEP #2: SIDE-TAP (OR)



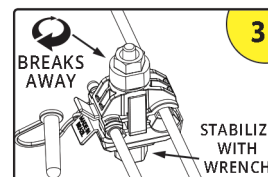
STEP 2: Position **Side B** of the connector at the desired location of the tracer main. Insert **un-stripped** end of lateral wire completely into **Side A**. Hand tighten to hold wires in place.

STEP #2: SPLICE



STEP 2: Insert **un-stripped** end of tracer wire completely into **Side A**. Insert **un-stripped** end of new tracer wire into **Wire Sleeve**, then position into **Side B**. Hand tighten to hold wires in place.

STEP #3



STEP 3: After wires are in place, use a 1/2" (13mm) socket wrench or drill. At 70lbs/in torque, the Shear Head Nut will break away.

Your connection is now TRACER-LOCKED™



Spec Revision TL-LUG-SS, v4, updated 9.5.2018 5:18:00 CST

PRO-LINE
SAFETY PRODUCTS
A DIVISION OF PRO-PAK IND., INC.

PRO-LINE SAFETY PRODUCTS COMPANY
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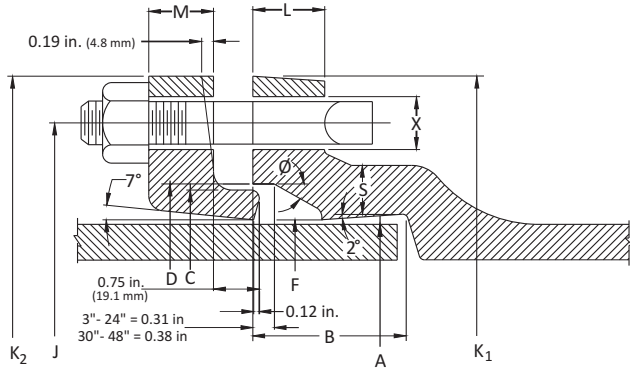
SIP Industries

Quality Manufacturers Since 1960

2" - 64" DUCTILE IRON MECHANICAL JOINT COMPACT FITTINGS

Submittal Information

Project Name / Location:	
Engineer:	
Referenced Specs:	
Distributor / Contractor:	



Optional Specifications

Coating:	Asphaltic Seal Coat <i>In Accordance With ANSI/AWWA C104/A21.4</i>
	Fusion-Bonded Epoxy (FBE) Powder (Red Oxide Color) <i>In Accordance With ANSI/AWWA C116/A21.16</i>
	Arc Zinc <i>In Accordance with ISO 8179-1</i>
	Bare
	Other - Specify:
Lining:	Cement-Mortar <i>In Accordance With ANSI/AWWA C104/A21.4</i>
	Asphalt Coating No Asphalt Coating
	Fusion-Bonded Epoxy (FBE) Powder (Red Oxide Color) <i>In Accordance With ANSI/AWWA C116/A21.16</i>
	Ceramic Epoxy
	Bare
Bolts / Nuts:	Standard High Strength Low Alloy Steel (HSLA) <i>In Accordance With ANSI/AWWA C111/A21.11</i>
	Stainless Steel: Type 304 Type 316
	Other - Specify:
Gaskets:	Standard SBR (Buna-S) <i>In Accordance With ANSI/AWWA C111/A21.11</i>
	Other - Specify:

General Specifications

Material	: Ductile Iron per ASTM A536
Pressure	: 350 PSI rating for 2" - 24" sizes, 250 PSI rating for 30" - 48" sizes and 150 PSI rating for 54" - 64" sizes
Testing	: In accordance with ANSI/AWWA C153/A21.53 and UL, FM requirements
Laying Length	: In accordance with ANSI/AWWA C153/A21.53 (fittings not listed in ANSI/AWWA have dimensions per SIP design as noted in the catalog)
Deflection	: 2" - 4" = 8° 6" = 7° 8" - 12" = 5° 14" - 16" = 3 ½° 18" - 24" = 3° 30" - 64" = 2°
Flanges	: Flanged ends on fittings match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges
Weight	: Are in pounds, unless noted otherwise and do not include accessories, cement lining and coating
Dimensions	: All dimensions are in inches unless noted otherwise.
Installations	: Per ANSI/AWWA C600 and C111
Approvals	: 3" - 24" UL Listed 3" - 24" FM Approved 3" and higher UL/NSF 61 2" and higher NSF/ANSI 61 & 372 Please consult SIP for detail listing and approvals.



Certified to NSF/ANSI 61 & 372



Technical Specifications

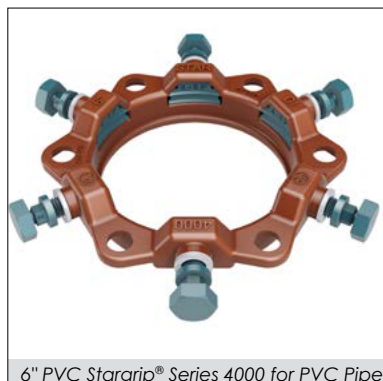
Select Size	Size	A	B	C	D	F	J	K ₁	K ₂	M	S	L	Ø	X	Bolt		
															No.	Size	Length
	*2	2.50	2.50	3.39	3.50	2.61	4.75	6.19	6.25	0.62	0.36	0.58	28°	¾	2	⅝	3
	3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	0.62	0.39	0.58	28°	¾	4	⅝	3
	4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	0.75	0.39	0.60	28°	¾	4	¾	3 ½
	6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	0.88	0.43	0.63	28°	¾	6	¾	3 ½
	8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	1.00	0.45	0.66	28°	¾	6	¾	3 ½
	10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	1.00	0.47	0.70	28°	¾	8	¾	3 ½
	12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	1.00	0.49	0.73	28°	¾	8	¾	3 ½
	14	15.30	3.50	16.40	16.54	15.44	18.75	20.25	20.25	1.25	0.55	0.79	28°	¾	10	¾	4
	16	17.40	3.50	18.50	18.64	17.54	21.00	22.50	22.50	1.31	0.58	0.85	28°	¾	12	¾	4
	18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.38	0.68	1.00	28°	¾	12	¾	4
	20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.44	0.69	1.02	28°	¾	14	¾	4
	24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.56	0.75	1.02	28°	¾	16	¾	4 ½
	30	32.00	4.00	33.29	33.46	32.17	36.88	39.12	39.12	2.00	0.82	1.31	20°	1 ⅜	20	1	5 ½
	36	38.30	4.00	39.59	39.76	38.47	43.75	46.00	46.00	2.00	1.00	1.45	20°	1 ⅜	24	1	5 ½
	42	44.50	4.00	45.79	45.96	44.67	50.62	53.12	53.12	2.00	1.25	1.45	20°	1 ⅜	28	1 ¼	6
	48	50.80	4.00	52.09	52.26	50.97	57.50	60.00	60.00	2.00	1.35	1.45	20°	1 ⅜	32	1 ¼	6
	54	57.56	4.00	58.82	59.02	57.73	63.20	65.70	65.70	2.00	1.45	1.55	20°	1 ⅜	36	1 ¼	6 ½
	60	61.61	4.00	62.87	63.07	61.78	67.72	70.22	70.22	2.00	1.50	1.75	20°	1 ⅜	36	1 ¼	6 ½
	64	65.67	4.00	66.96	67.13	65.84	71.86	74.36	74.36	2.00	1.50	1.75	20°	1 ⅜	38	1 ¼	6 ½

* Not Included In AWWA C1

Please refer to our web page www.sipindustries.com for up to date product data and technical advisories



PVC Stargrip® series 4000

Mechanical Joint Wedge Action Restraint
for Plastic Pressure Pipe

SUBMITTAL INFORMATION

PROJECT NAME: ENGINEER: CONTRACTOR: SPEC. SECTION: 

FEATURES & ADVANTAGES

- The design has been proven in the market since 1992.
- Can be used on AWWA C900 PVC pipe, IPS PVC pipe, AWWA C909 PVCO pipe, and HDPE pipe. See pressure rating table for approved DRs and sizes. Plastic pressure pipes manufactured to an IPS diameter regimen will require a transition gasket. HDPE pipe requires use of stainless steel pipe stiffener.
- Gland is made from high strength Ductile Iron per ASTM A536 Grade 65-45-12 and is compatible with all Mechanical Joints conforming to ANSI/AWWA C111/A21.11.
- Eliminates the need for tie rods and thrust blocks
- Listed with Underwriters Laboratories and approved by Factory Mutual research in sizes 4"-12".
- Tested to and meets the requirements of ASTM F1674 through 14".
- The safety factor is twice (2:1) the standardized pressure rating listed on Page 19.
- Will fit any Mechanical Joint configuration, meaning compatibility with different types of installations.
- PVC Stargrip® offers 5° deflection through 12", 3° on 14"-24" and 2° on 30"-36".
- Larger ID allows easier installation on out-of-round pipe.
- Torque limiting bolts are designed to prevent over torquing.
- All sizes have curved wedges that do not flatten pipe.
- Standard gland color is Coral Red (RAL 3016).

MATERIAL SPECIFICATIONS:

- Gland: Ductile Iron per ASTM A536, Grade 65-45-12
- Wedges: Ductile Iron per ASTM A536, Grade 65-45-12
 - ♦ Wedge Finish: Thermally cured fluoropolymer epoxy coating

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% Domestic¹Domestic gland with import components¹¹(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/A21.11

Optional: 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 8M

Optional: 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

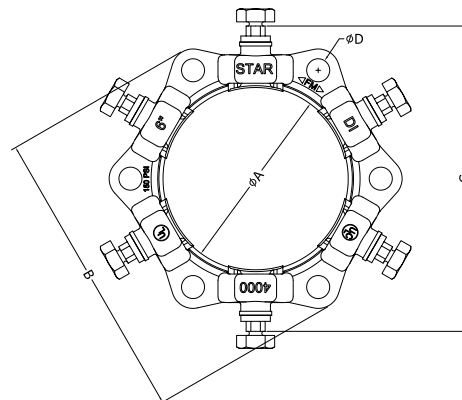
PVC STARGRIP® 4000 SPECIFICATIONS*

Please
check sizes:

NOM. SIZE	ØA	B	C¹	ØD	T-BOLTS SIZE (QTY)	WEDGES (QTY)	APPROX WT. (LBS)
3	4.09	7.69	8.50	3/4	5/8 (4)	4	7
4	4.93	9.12	9.53	7/8	3/4 (4)	4	9
6	7.03	11.12	11.63	7/8	3/4 (6)	6	13
8	9.18	13.37	13.97	7/8	3/4 (6)	6	17
10	11.23	15.62	16.18	7/8	3/4 (8)	8	23
12	13.33	17.87	18.18	7/8	3/4 (8)	8	28
14	15.45	20.75	20.36	7/8	3/4 (10)	10	50
16	17.55	23.00	22.46	7/8	3/4 (12)	12	60
18	19.65	25.25	24.56	7/8	3/4 (12)	12	65
20	21.75	27.50	26.66	7/8	3/4 (14)	14	76
24	25.95	32.00	30.86	7/8	3/4 (16)	16	98
30	32.18	39.38	36.82	1-1/8	1 (20)	20	173
36	38.48	46.25	43.12	1-1/8	1 (24)	24	219

*All dimensions in inches except where indicated.

1 - dimension after assembly on pipe



6" PVC Stargrip® Series 4000

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*					
		DR14	DR17	DR18	DR21	DR25	DR27.5	DR32.5	DR41	DR51	IPEX PVCO PC235	JM EAGLE PVCO 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	-	-	235	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-
36	38.30	-	-	235	200	165	150	125	-	-	-	-	-	-	-	-	-	-	-

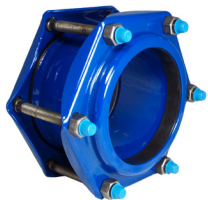
* A stainless steel pipe stiffener (provided by others) is required for the Series 4000 to be installed on HDPE pressure pipe. The stiffener must be installed in the HDPE pipe before installing the Series 4000. The stainless steel pipe stiffener must be of sufficient length to support the full bearing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



Steel Fabricated Coupling

Straight Connection

411

IMPORTANT LINKS

Click appropriate words to go to:

[Standard Limited Warranty](#)

[Sales Terms & Conditions](#)

[Freight Policy](#)

[Returns Policy](#)

[Corrosion & Product Selection Notice](#)



THIS PRODUCT DOES NOT RESTRAIN PIPE MOVEMENT. Proper anchoring is required to prevent pipe pullout. Failure to anchor or improper anchoring can result in dangerous pipe content escape, property damage, serious injury, or death. Read the product installation instructions prior to installing this product.

Description: A bolted sleeve type coupling for joining plain end pipe of the same diameters.

Application: Joining plain end pipe without the need for welding or special pipe fittings.

Key Features:

- Meets applicable AWWA C219 Standards
- Allows for limited expansion and contraction
- Will dampen vibration to reduce pipe fatigue
- Easy to install, no special pipe end preparation required
- Available in a wide variety of pipe O.D. sizes and sleeve lengths
- Most sizes will accommodate anchor studs to restrain the joints
- Can be custom made to fit odd O.D.s or other unusual applications
- Provided with or without pipe stops to accommodate customer needs
- Has good deflection capabilities, allows change in piping direction without the need of elbows, bends
- Steel sizes built to specific O.D. and Ductile Iron sizes are built with range to accommodate the variances in Ductile Iron pipe O.D.s

Materials Specifications (subject to change):

SLEEVE: ASTM A53, ASTM A512 or Carbon Steel having minimum yield of 30,000 PSI

FOLLOWERS: Ductile Iron ASTM A536, Steel AISI C 1020, or A715 Grade 80 HSLA Steel. Designed for a high strength-to-weight ratio. Follower thickness determined by coupling size

BOLTS & NUTS: High strength, low alloy Steel with heavy semi-finished hexagon nuts *Optional: Stainless Steel and Carbon Steel ASTM A307 electro-galvanized with di-chromate seal*

GASKET: Nitrile (Buna N) NSF 61 compounded to produce superior storage and performance characteristics while resisting water, acids, alkalies, most (aliphatic) hydrocarbon fluids, and other chemicals

Temperature Range: -20°F to 180°F

FINISH: Flexi-Coat® Fusion Bonded Epoxy Finish

Working Pressure: Up to 150 PSI

Pipe Applications: All Types. HDPE requires use of stiffeners. Contact Smith-Blair Engineering for any questions.

Sizes (in inches): ½, ¾, 1, 1¼, 1½, 2, 2½, 3, 3-4, 4, 4-5, 6, 8, 10, 12, 12-14, 14, 16, 18, 20, 24, 30, 36, 42, 48, 54. NOTE: Larger sizes available upon request.



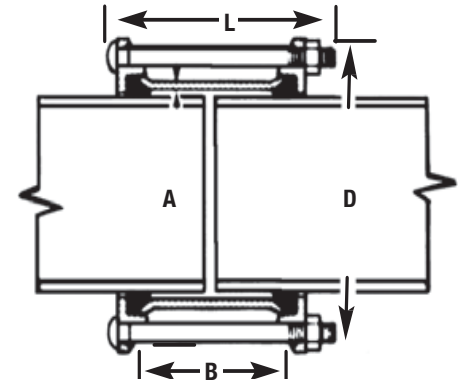
Steel Fabricated Coupling

Straight Connection

411

Total Angular Deflection Per Joint

FOR PIPE O.D. RANGES		SLEEVE LENGTH		
INCHES	MM	5" 127MM	7" 178MM	10" 250MM
0.84 thru 2.38	21 thru 60.5	7°	7°	7°
2.50 thru 13.50	63.5 thru 342.9	4°	4½°	4½°
13.60 thru 24.00	345.4 thru 610	2½°	4°	4½°
24.10 thru 36.00	612 thru 914	2°	3½°	4°
36.10 thru 42.00	917 thru 1067	-	3°	3½°
42.10 thru 60.00	1323 thru 1524	-	2½°	3°
60.10 thru 80.00	1527 thru 2032	-	-	2½°
80.10 thru 100.00	2035 thru 2540	-	-	2°



Standard Lengths for Steel Sizes

NOM. PIPE SIZE IN.	PIPE O.D. INCHES	CATALOG NO. BUNA-N GASKET	SLEEVE THK. X LGTH. IN.		FLANGE O.D. INCHES (D)	BOLTS			APPROX. SHIP WT. LBS.
			(A)	(B)		NO.	DIA. IN.	LGTH. IN. (L)	
1/2	0.84	411-00008401-003	.120	4 1/2	3 5/8	2	1/2	7	2 1/4
3/4	1.05	411-00010501-003	.120	4 1/2	3 7/8	2	1/2	7	2 1/2
1	1.32	411-00013201-003	.120	5	4 1/4	2	1/2	7	3 1/4
1 1/4	1.66	411-00016601-003	.120	5	4 9/16	2	1/2	7	4
1 1/2	1.90	411-00019001-003	.120	5	4 13/16	2	1/2	7	4 1/4
2	2.00	411-00020001-003	.120	5	4 13/16	2	1/2	7	4 1/4
2	2.38	411-00023801-003	.120	5	5 5/16	2	1/2	7	4 3/4
		411-00023851-003	.120	5	5 11/16	2	5/8	8	5 1/2
		411-00023861-003	.120	5	5 11/16	3	5/8	8	6 1/2
		411-00023802-003	.120	7	5 11/16	3	5/8	10 1/2	9 1/2
2 1/2	2.88	411-00028801-003	.203	5	6 1/2	3	5/8	8	12 3/4
3	3.00	411-00030001-003	.203	5	6 9/16	3	5/8	8	12 3/4
	3.50	411-90035001-003	.180	5	8 3/100	3	5/8	6	11 1/2
		411-00035051-003	.180	5	7 9/100	4	5/8	8	12 1/4
		411-90035002-003	.180	7	8 3/100	3	5/8	10 1/2	14 1/2
3 1/2-4	4.00	411-00040001-003	.188	5	7 9/16	4	5/8	8 1/2	17 1/2
+4	4.50	411-90045001-003	.188	5	9 1/20	4	5/8	6	13
		411-90045002-003	.188	7	9 1/20	4	5/8	8	15 1/2
4 1/2-5	5.00	411-00050001-003	.250	5	8 5/8	4	5/8	8	20 1/2
5	5.56	411-00055601-003	.250	5	9 3/16	4	5/8	8	20 1/2
		411-00055602-003	.250	7	9 3/16	4	5/8	10 1/2	23 1/2
		411-00055603-003	.250	10	9 3/16	4	5/8	13 1/2	31 1/2

Standard Length Sleeves 1/2" thru 12" Steel Pipe Sizes. + Indicates couplings furnished with Steel "Z" section, High Strength Follower Flanges.

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling. NOTE: Couplings working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair® regarding your specific coupling pressure requirements.

Standard Lengths for Steel Sizes, Continued

NOM. PIPE SIZE IN.	PIPE O.D. INCHES	CATALOG NO. BUNA-N GASKET	SLEEVE THK. X LGTH. IN.		FLANGE O.D. INCHES (D)	BOLTS			APPROX. SHIP WT. LBS.
			(A)	(B)		NO.	DIA. IN.	LGTH. IN. (L)	
+6	6.63	411-90066301-003	.250	5	11 1/2	6	5/8	6	22 3/4
		411-90066302-003	.250	7	11 1/2	6	5/8	8	26
		411-90066303-003	.250	10	11 1/2	6	5/8	10 1/2	34 1/4
+8	8.63	411-90086301-003	.250	5	13 1/2	6	5/8	6	28
		411-90086302-003	.250	7	13 1/2	6	5/8	8	32
		411-90086303-003	.250	10	13 1/2	6	5/8	10 1/2	42
10	10.00	411-00100001-003	.250	5	14 5/16	8	5/8	8	33
		411-00100002-003	.250	7	14 5/16	8	5/8	10 1/2	38
		411-00100003-003	.250	10	14 5/16	8	5/8	13 1/2	50
+10	10.75	411-90107501-003	.250	5	15 3/8	8	5/8	6	34
		411-90107502-003	.250	7	15 3/8	8	5/8	8	40
		411-90107507-003	.375	7	15 3/8	8	5/8	8	49
		411-90107503-003	.250	10	15 3/8	8	5/8	10 1/2	52
12	12.00	411-00120001-003	.250	5	16 5/16	8	5/8	8	37
		411-00120002-003	.250	7	16 5/16	8	5/8	10 1/2	44
		411-00120003-003	.250	10	16 5/16	8	5/8	13 1/2	56
+12	12.75	411-90127501-003	.250	5	17 3/8	8	5/8	6	39
		411-90127502-003	.250	7	17 3/8	8	5/8	8	46
		411-90127507-003	.375	7	17 25/41	8	5/8	8	56
		411-90127503-003	.250	10	17 3/8	8	5/8	10 1/2	59
14	14.00	411-00140001-003	.250	5	18 5/16	6	5/8	8	41
		411-00140002-003	.250	7	18 5/16	6	5/8	10 1/2	48
		411-00140007-003	.375	7	18 7/16	6	5/8	10 1/2	75
		411-00140008-003	.375	10	18 7/16	6	5/8	13 1/2	94
16	16.00	411-00160002-003	.250	7	20 5/16	8	5/8	10 1/2	56
		411-00160007-003	.375	7	20 7/16	8	5/8	10 1/2	87
		411-00160003-003	.250	10	20 5/16	8	5/8	10 1/2	72
		411-00160008-003	.375	10	20 7/16	8	5/8	10 1/2	108
18	18.00	411-00180002-003	.250	7	22 7/16	8	5/8	10 1/2	81
		411-00180007-003	.375	7	22 7/16	8	5/8	10 1/2	96
		411-00180003-003	.250	10	22 7/16	8	5/8	10 1/2	109
		411-00180008-003	.375	10	22 7/16	8	5/8	13 1/2	119
20	20.00	411-00200002-003	.250	7	24 7/16	10	5/8	10 1/2	91
		411-00200007-003	.375	7	24 7/16	10	5/8	10 1/2	107
		411-00200003-003	.250	10	24 7/16	10	5/8	13 1/2	122
		411-00200008-003	.375	10	24 7/16	10	5/8	13 1/2	134

Standard Length Sleeves 1/2" thru 12" Steel Pipe Sizes

+ Indicates couplings furnished with Steel "Z" section, High Strength Follower Flanges.

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling. NOTE: Couplings working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair® regarding your specific coupling pressure requirements.

Standard Length Sleeves 14" thru 24" Steel Pipe Sizes

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling. NOTE: Couplings working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair® regarding your specific coupling pressure requirements.

Standard Lengths for Steel Sizes, Continued

NOM. PIPE SIZE IN.	PIPE O.D. INCHES	CATALOG NO. BUNA-N GASKET	SLEEVE THK. X LGTH. IN.		FLANGE O.D. INCHES (D)	BOLTS			APPROX. SHIP WT. LBS.
			(A)	(B)		NO.	DIA. IN.	LGTH. IN. (L)	
22	22.00	411-00220002-003	.250	7	26 7/16	10	5/8	10 1/2	98
		411-00220007-003	.375	7	26 7/16	10	5/8	10 1/2	116
		411-00220003-003	.250	10	26 7/16	10	5/8	13 1/2	132
		411-00220008-003	.375	10	26 7/16	10	5/8	13 1/2	145
24	24.00	411-00240002-003	.250	7	28 7/16	10	5/8	10 1/2	106
		411-00240007-003	.375	7	28 7/16	10	5/8	10 1/2	125
		411-00240003-003	.250	10	28 7/16	10	5/8	13 1/2	142
		411-00240008-003	.375	10	28 7/16	10	5/8	13 1/2	156

Standard Length Sleeves 14" thru 24" Steel Pipe Sizes

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling. NOTE: Couplings working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair® regarding your specific coupling pressure requirements.

Standard Lengths for Ductile Iron and Cast Iron Sizes

NOM. PIPE SIZE IN.	PIPE O.D. INCHES	CATALOG NO.	SLEEVE THK. X LGTH. IN.		OVERALL DIA. (D)	BOLTS			APPROX. SHIP WT. LBS.
			(A)	(B)		NO.	DIA. IN.	LGTH. IN. (L)	
2	2.34-2.56	411-00025002-003	.216	7	6.3/16	2	5/8	10 1/2	13.5
		411-00025003-003	.216	10	6.3/16	2	5/8	13 1/2	16.3
2 1/2	2.75-2.88	411-00027502-003	.203	7	6.3/16	3	5/8	11	14.8
		411-00027503-003	.203	10	6.3/16	3	5/8	14	17.8
3	3.75-3.86	411-00038002-003	.237	7	7 13/16	3	5/8	10 1/2	20.3
		411-00038003-003	.237	10	7 13/16	3	5/8	13 1/2	24.6
3-4	3.87-4.04	411-00039602-003	.188	7	7 11/32	4	5/8	11	21.4
		411-00039603-003	.188	10	7 11/32	4	5/8	14	25.7
4	4.07-4.19	411-00041302-003	.188	7	8 3/32	4	5/8	11	22.3
		411-00041303-003	.188	10	8 3/32	4	5/8	14	26.8
4	4.74-5.06	411-00050002-003	.250	7	8 19/32	4	5/8	11	27
		411-00050003-003	.250	10	8 19/32	4	5/8	14	32.5
4-5	5.00-5.16	411-00051002-003	.250	7	9 5/32	4	5/8	11	27.5
		411-00051003-003	.250	10	9 5/32	4	5/8	14	33.1
6	6.84-6.96	411-00069002-003	.250	7	10 9/16	5	5/8	11	37.2
		411-00069003-003	.250	10	10 9/16	5	5/8	14	44.8
6	7.04-7.16	411-00071002-003	.250	7	10 9/16	5	5/8	11	38.3
		411-00071003-003	.250	10	10 9/16	5	5/8	14	46.1
6	7.14-7.26	411-00072002-003	.250	7	11 5/16	5	5/8	11	38.8
		411-00072003-003	.250	10	11 5/16	5	5/8	14	46.8
8	8.91-9.30	411-00090502-003	.250	7	12 13/16	6	5/8	11	48.8
		411-00090503-003	.250	10	12 13/16	6	5/8	14	58.8
8	9.30-9.50	411-00094202-003	.250	7	13 23/32	6	5/8	11	50.8
		411-00094203-003	.250	10	13 23/32	6	5/8	14	61.2
10	11.04-11.16	411-00111002-003	.250	7	15 1/8	7	5/8	11	59.9
		411-00111003-003	.250	10	15 1/8	7	5/8	14	72.1
10	11.34-11.46	411-00114002-003	.250	7	15 1/8	7	5/8	11	61.5
		411-00114003-003	.250	10	15 1/8	7	5/8	14	74.1
10	11.84-12.00	411-00119502-003	.250	7	16	8	5/8	11	64.5
		411-00119503-003	.250	10	16	8	5/8	14	77.7

Standard and Long Length Sleeves 14" thru 24" CAST IRON

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling.

NOTE: Coupling working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair regarding your specific coupling pressure requirements.

***The last three numbers of the catalog number indicate the type of gasket. (Buna N) gaskets are furnished as standard.

BUNA-N-003, BUNA-N Protected -015 (with brass spring molded into leading edge)



CCI PIPING SYSTEMS

Specifications & Certificates of Compliance:
CCI Polyethylene Casing Spacer
Model CSPB

The CCI Model CSPB Polyethylene Casing Spacer is injection molded from linear low density polyethylene. These spacers provide an economical solution to metallic casing spacers.

The CCI Model CSPB Polyethylene Casing Spacers exhibit low friction, high abrasion resistance allows the carrier pipe to slide easily and free of damage into the casing pipe. The low moisture absorption and high insulating value of polyethylene electrically insulates the carrier pipe and protects it from electrical current induced corrosion.



The pipe sizes range from 2 in. to 48 in. in diameter. The 2 in. through 12 in. is comprised of 2 halves, while 14 in. and above are comprised of multiple segments.

For applications where the casing pipe is more than 2 to 3 pipe sizes larger than the carrier pipe, runner extensions can be added to the polyethylene spacers by means of a vulcanizing process.

Recommended positioning of the spacers is one placed 1-2 feet on either side of the bell joint and one every 6-8 feet apart thereafter for a total of three casing spacers per joint. CCI engineering reserves the right to recommend spacing according to application.

<u>Properties</u>	<u>Value</u>	<u>Method</u>
▪ Tensile Strength @ Yield	2,575 psi	ASTM D638
▪ Elongation @ Yield	17.7%	ASTM D638
▪ Flexural Modulus	112 ksi	ASTM D790
▪ Water Absorption	<0.01%	ASTM D570
▪ Max Continuous Operating Temp	225° F	Long Term

CCI Pipeline Systems certifies that the standard Model CSPB Polyethylene Casing Spacers are of the highest quality and meet or exceed industry standards.

Standard Lengths for Ductile Iron and Cast Iron Sizes, Continued

NOM. PIPE SIZE IN.	PIPE O.D. INCHES	CATALOG NO.	SLEEVE THK. X LGTH. IN.		OVERALL DIA. (D)	BOLTS			APPROX. SHIP WT. LBS.
			(A)	(B)		NO.	DIA. IN.	LGTH. IN. (L)	
12	13.14-13.26	411-00132007-003	.375	7	17 5/8	8	5/8	11	71.3
		411-00132008-003	.375	10	17 5/8	8	5/8	14	85.8
12	13.44-13.56	411-00135007-003	.375	7	17 7/8	8	5/8	11	72.9
		411-00135008-003	.375	10	17 7/8	8	5/8	14	87.8
12-14	13.88-14.06	411-00139207-003	.375	7	18 15/16	6	5/8	11	75.2
		411-00139208-003	.375	10	18 15/16	6	5/8	14	90.5
14	15.30	411-00153007-003	3/8	7	19 7/8	8	5/8	11	86
		411-00153008-003	3/8	10	19 7/8	8	5/8	14	107
		411-00153015-003	3/8	16	19 7/8	8	5/8	20	144
		411-00153016-003	3/8	24	19 7/8	8	5/8	28	196
14	15.65	411-00156507-003	3/8	7	20 3/16	8	5/8	11	88
		411-00156508-003	3/8	10	20 3/16	8	5/8	14	109
		411-00156515-003	3/8	16	20 3/16	8	5/8	20	146
		411-00156516-003	3/8	24	20 3/16	8	5/8	28	200
16	17.40	411-00174007-003	3/8	7	21 15/16	8	5/8	11	92
		411-00174008-003	3/8	10	21 15/16	8	5/8	14	119
		411-00174015-003	3/8	16	21 15/16	8	5/8	20	160
		411-00174016-003	3/8	24	21 15/16	8	5/8	28	218
16	17.80	411-00178007-003	3/8	7	22 3/8	8	5/8	11	93
		411-00178008-003	3/8	10	22 3/8	8	5/8	14	120
		411-00178015-003	3/8	16	22 3/8	8	5/8	20	162
		411-00178016-003	3/8	24	22 3/8	8	5/8	28	221
18	19.50	411-00195007-003	3/8	7	24 1/16	10	5/8	11	107
		411-00195008-003	3/8	10	24 1/16	10	5/8	14	133
		411-00195015-003	3/8	16	24 1/16	10	5/8	20	179
		411-00195016-003	3/8	24	24 1/16	10	5/8	28	245
18	19.92	411-00199207-003	3/8	7	24 1/2	10	5/8	11	109
		411-00199208-003	3/8	10	24 1/2	10	5/8	14	135
		411-00199215-003	3/8	16	24 1/2	10	5/8	20	182
		411-00199216-003	3/8	24	24 1/2	10	5/8	28	249
20	21.60	411-00216007-003	3/8	7	26 1/8	10	5/8	11	117
		411-00216008-003	3/8	10	26 1/8	10	5/8	14	145
		411-00216015-003	3/8	16	26 1/8	10	5/8	20	195
		411-00216016-003	3/8	24	26 1/8	10	5/8	28	266
20	22.06	411-00220607-003	3/8	7	26 5/8	10	5/8	11	119
		411-00220608-003	3/8	10	26 5/8	10	5/8	14	148
		411-00220615-003	3/8	16	26 5/8	10	5/8	20	200
		411-00220616-003	3/8	24	26 5/8	10	5/8	28	271
24	25.80	411-00258007-003	3/8	7	30 3/8	12	5/8	11	138
		411-00258008-003	3/8	10	30 3/8	12	5/8	14	171
		411-00258015-003	3/8	16	30 3/8	12	5/8	20	231
		411-00258016-003	3/8	24	30 3/8	12	5/8	28	315
24	26.32	411-00263207-003	3/8	7	30 7/8	12	5/8	11	140
		411-00263208-003	3/8	10	30 7/8	12	5/8	14	174
		411-00263215-003	3/8	16	30 7/8	12	5/8	20	235
		411-00263216-003	3/8	24	30 7/8	12	5/8	28	321

Standard and Long Length Sleeves 14" thru 24" CAST IRON

The basic design of bolted compression couplings does not provide for anchoring the pipes against pull-out. Suitable anchorage must be provided when excessive pipe movement could cause the pipe to move out of the coupling.

NOTE: Coupling working pressures depend on many variables such as pipe type, pipe diameter, sleeve thickness, sleeve material, gasket cross section, follower type and number of bolts. Consult Smith-Blair regarding your specific coupling pressure requirements.

***The last three numbers of the catalog number indicate the type of gasket. (Buna N) gaskets are furnished as standard.

BUNA-N-003, BUNA-N Protected -015 (with brass spring molded into leading edge)

COPPER TUBE FOR PLUMBING AND MECHANICAL APPLICATIONS

Job Name St. Paul and Newell

Contractor Wildcat Construction

Job Location Wichita, KS

Wholesaler Mountainland Supply

Engineer

Streamline[®] Rep

Product Description:

Streamline[®] CopperTube for use in plumbing and mechanical applications. Available sizes (Type K, L, M, & DWV) ranging from ¼" to 8" in diameter. All tube shall be manufactured in the United States.

Material:

Streamline[®] CopperTube is manufactured from UNS C12200 grade of copper.

Key Specifications:

Streamline[®] CopperTube (Type K, L, M) shall conform to the NSF/ANSI 61 Annex G requirements and is manufactured to meet ASTM B88. Copper drainage tube (DWV) is made to meet ASTM B306. Copper refrigeration coils, ACR/Nitrogenized straight lengths and line sets are made to meet the chemical, mechanical, cleanliness and eddy current testing requirements of the applicable specifications of ASTM B280.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

ASTM B75	Seamless Copper Tube
C12200	99.9% Pure Copper (can be used for potable water)
NSF/ANSI 61 Annex G	Safe Drinking Water Act (third party certification)
ASTM B88	Seamless Copper Water and Gas Tube (Type K, L, M)
ASTM B280	Seamless Copper Tube for Air Conditioning and Refrigerants
ASTM B306	Seamless Drainage Tube Code (DWV)

Copper [tube or fitting] UNS C122000 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.



MADE IN USA

A BRAND OF MUELLER INDUSTRIES 

COPPER TUBE DATA

Streamline[®] Copper Tube sets the standard for quality, consistency and service in the plumbing industries. With a full line of copper tube products to support most all plumbing supply and DWV applications, Streamline[®] Copper Tube is available in all common types including Type K, Type L, Type M and DWV. Each piece of tube is incised marked and color coded for easy, long lasting identity. Manufactured in accordance with applicable standards, our ongoing commitment to quality continues to make Streamline[®] Copper Tube the preferred and specified brand of industry professionals.

TYPE K RATED WORKING PRESSURE (PSIG)

NOM. DIA.	WT/FT	FT/BNDL	150°F	200°F	300°F	400°F
1/4	0.145	500	913	860	842	537
3/8	0.269	500	960	904	885	565
1/2	0.344	500	758	713	698	446
5/8	0.418	200	626	589	577	368
3/4	0.641	200	724	682	668	426
1	0.839	100	557	524	513	327
1 1/4	1.04	100	452	425	416	266
1 1/2	1.36	100	420	396	387	247
2	2.06	—	370	348	341	217
2 1/2	2.93	—	338	319	312	199
3	4.00	—	328	308	302	193
3 1/2	5.12	—	311	293	286	183
4	6.51	—	306	288	282	180
5	9.67	—	293	276	270	172
6	13.90	—	295	277	271	173
8	25.90	—	314	295	289	184

TYPE L

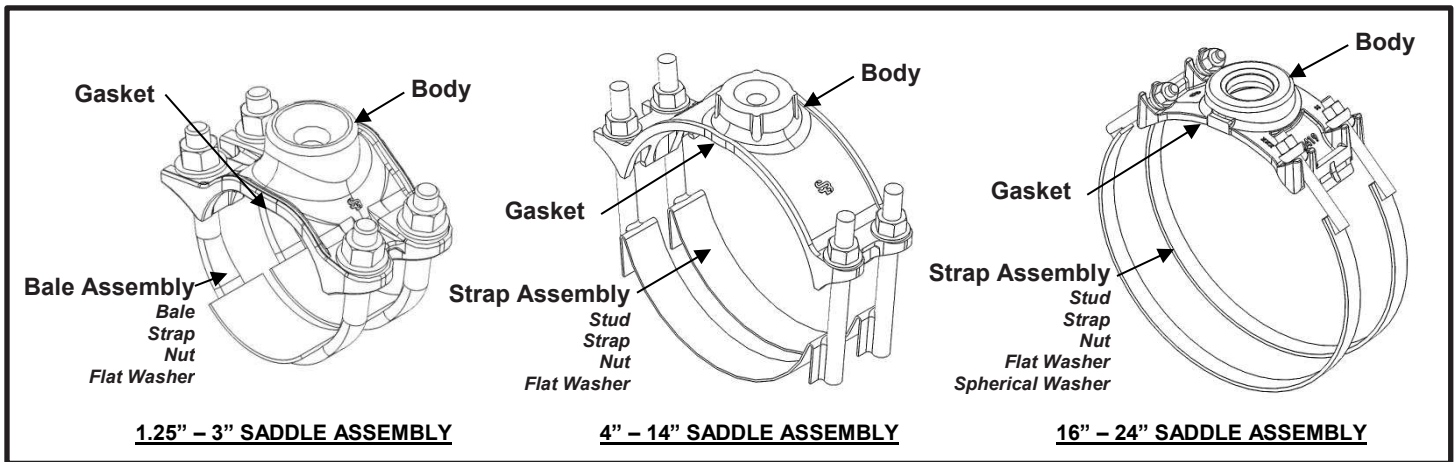
1/4	0.126	500	775	729	714	456
3/8	0.198	500	662	623	610	389
1/2	0.285	500	613	577	565	361
5/8	0.362	200	537	505	495	316
3/4	0.455	200	495	466	456	291
1	0.655	100	420	395	387	247
1 1/4	0.884	100	373	351	344	219
1 1/2	1.14	100	347	327	320	204
2	1.75	—	309	291	285	182
2 1/2	2.48	—	285	269	263	168
3	3.33	—	270	254	248	159
3 1/2	4.29	—	258	243	238	152
4	5.38	—	249	235	230	147
5	7.61	—	229	215	211	135
6	10.2	—	213	201	196	125
8	19.3	—	230	216	212	135

Tables give computed allowable stress for annealed copper tube at indicated temperature.

SPECIFICATION

SERVICE SADDLE DOUBLE STRAP

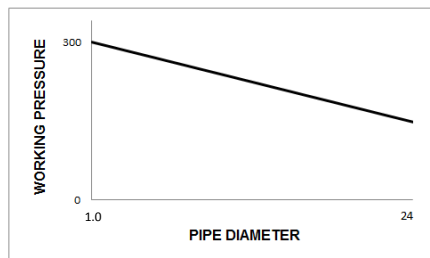
MODEL 317



APPLICATIONS

- **Typical Uses**
 - Tapping branch connections on new or existing pipe
 - Installing air/vacuum valves, pitot tubes, drain valves, or other miscellaneous service equipment
 - Installing pipe supports, hangers, or sign mounting brackets
- **Standard Pipe Sizes**
 - 1.25" to 24" nominal
- **Standard Taps**
 - NPT: 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3" and 4"
 - CC/AWWA: 1/2", 5/8", 3/4", 1", 1-1/4", 1-1/2" and 2"
 - BSP: 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", and 3"

See Smith-Blair catalog for available pipe diameter and tap size combinations as some combinations are not available
- **Type of Pipe**
 - PVC, Carbon Steel, Stainless Steel, Ductile Iron, HDPE DR17 or thicker (with use of spring washers), Asbestos Cement, Aluminum
- **Working Pressure**
 - Up to 300 psi depending on type of pipe, type of repair, pipe diameter, service conditions, and installation workmanship



SPECIFICATION

SERVICE SADDLE DOUBLE STRAP

MODEL 317

MATERIALS

- **Body** *(used only on 1" - 14" nominal pipe size saddles)*
 - Cast using Ductile Iron 65-45-12 per ASTM A536
 - Flexi-Coat® fusion bonded epoxy finish
 - Closed ears holds nut and bale/strap in place allowing the assembly to hinge for ease of installation around pipe
 - Open ears provide easy slip on installation and removal of nuts are not required preventing lost hardware
 - Canted ears for maximum tangential tightening of bale or strap
 - Wraparound design provides maximum pipe support, reinforcement, and sealing pressure
 - Wide skirt and heavy tapping boss provides excellent stability on the pipe
- **Body** *(used only on 16" - 24" nominal pipe size saddles)*
 - Cast using Ductile Iron 65-45-12 per ASTM A536
 - Flexi-Coat® fusion bonded epoxy finish
 - Open ears provide easy slip on installation and removal of nuts are not required preventing lost hardware
 - Canted ears for maximum tangential tightening of bale or strap
 - Wraparound design provides maximum pipe support, reinforcement, and sealing pressure
 - Wide skirt and heavy tapping boss provides excellent stability on the pipe
- **Bale Assembly** *(used only on 1" - 3" nominal pipe size saddles)*
 - **Bale**
 - Type 304 Stainless Steel per ASTM A276
 - 1/2"-13UNC
 - Pipe contact surface flattened to provide a wider bearing surface against pipe
 - Rolled threads for improved physical characteristics, greater thread accuracy, and smooth surface finish
 - **Strap**
 - Type 304 Stainless Steel per ASTM A240
 - Formed using 14GA x 1.50" strip and welded to Bale
 - Strap distributes load across a larger surface area preventing damage to non-rigid pipe types
 - Relevant product information placed on strap i.e. O.D. range, part number, etc.
 - **Welding**
 - Welds accomplished using qualified welders
 - GMAW weld process utilized
 - Welds passivated to preserve corrosion resistance
 - **Nut**
 - Type 304 Stainless Steel GR. 8 per ASTM A194
 - Fluoropolymer coated to prevent galling
 - 1/2"-13UNC, Heavy Hex Semi-Finished
 - **Flat Washer**
 - Type 304 Stainless Steel per ASTM A240
 - 1/2" Type A Plain
 - Utilized to preserve corrosion resistance of epoxy coated surfaces and increase bearing surface

SPECIFICATION

SERVICE SADDLE DOUBLE STRAP

MODEL 317

- **Strap Assembly** *(used only on 4" – 24" nominal pipe size saddles)*
 - **Strap**
 - Material: 4" – 16" nominal pipe size(s) = Type 304 Stainless Steel per ASTM A240
18" – 24" nominal pipe size(s) = Type 304 Stainless Steel per ASTM A276
 - Sizes: 4" – 16" nominal pipe size(s) = Formed using 14GA x 1.50" strip
18" – 24" nominal pipe size(s) = Formed using 0.25" x 1.25" flat bar
 - Strap distributes load across a larger surface area preventing damage to non-rigid pipe types
 - Relevant product information placed on strap i.e. O.D. range, part number, etc.
 - **Stud**
 - Type 304 Stainless Steel per ASTM A276
 - Sizes: 4" – 6" nominal pipe size(s) = 5/8"-11UNC x 6.00" long, Stud welded to Strap
8" – 14" nominal pipe size(s) = 5/8"-11UNC x 7.00" long, Stud welded to Strap
 - Rolled threads for improved physical characteristics, greater thread accuracy, and smooth surface finish
 - **Welding**
 - Welds accomplished using qualified welders
 - GMAW weld process utilized
 - Welds passivated to preserve corrosion resistance
 - **Nut**
 - Type 304 Stainless Steel GR. 8 per ASTM A194
 - Fluoropolymer coated to prevent galling
 - 5/8"-11UNC, Heavy Hex Semi-Finished
 - **Flat Washer**
 - Type 304 Stainless Steel per ASTM A240
 - 5/8" Type A Plain
 - Utilized to preserve corrosion resistance of epoxy coated surfaces and increase bearing surface
 - **Spherical Washer** *(used only on 16" – 24" nominal pipe size saddles)*
 - Cast using Ductile Iron 65-45-12 per ASTM A536
 - Flexi-Coat® fusion bonded epoxy finish
 - Provide full bearing for the strap nuts and align the straps with the saddle body
 - Distributes load for better performance
- **Gasket**
 - Nitrile (Buna-N) per ASTM D2000
 - Compounded to resist water, oil, natural gas, acids, alkalies, most (aliphatic) hydrocarbon fluids, and many other chemicals
 - Temperature range: -20°F to +180°F
 - TaperSeal™ hydro-mechanical lip enables the saddle to hold higher pressures with minimal nut torque
 - Gasket is fully cemented in a cavity to hold it in place



SPECIFICATION

SERVICE SADDLE DOUBLE STRAP

MODEL 317

LISTINGS

- Certified to NSF/ANSI 61 and NSF/ANSI 372
- Meets applicable AWWA C800 standards
- Certain sizes meet Uni-Bell PVC Pipe Associations “Handbook of PVC Pipe” and AWWA M23 Manual “PVC Pipe Design and Installation, when the fitting is ordered with the body properly sized to fit the PVC pipe.
- Fusion-Bonded Epoxy Coating meets requirements of AWWA C213

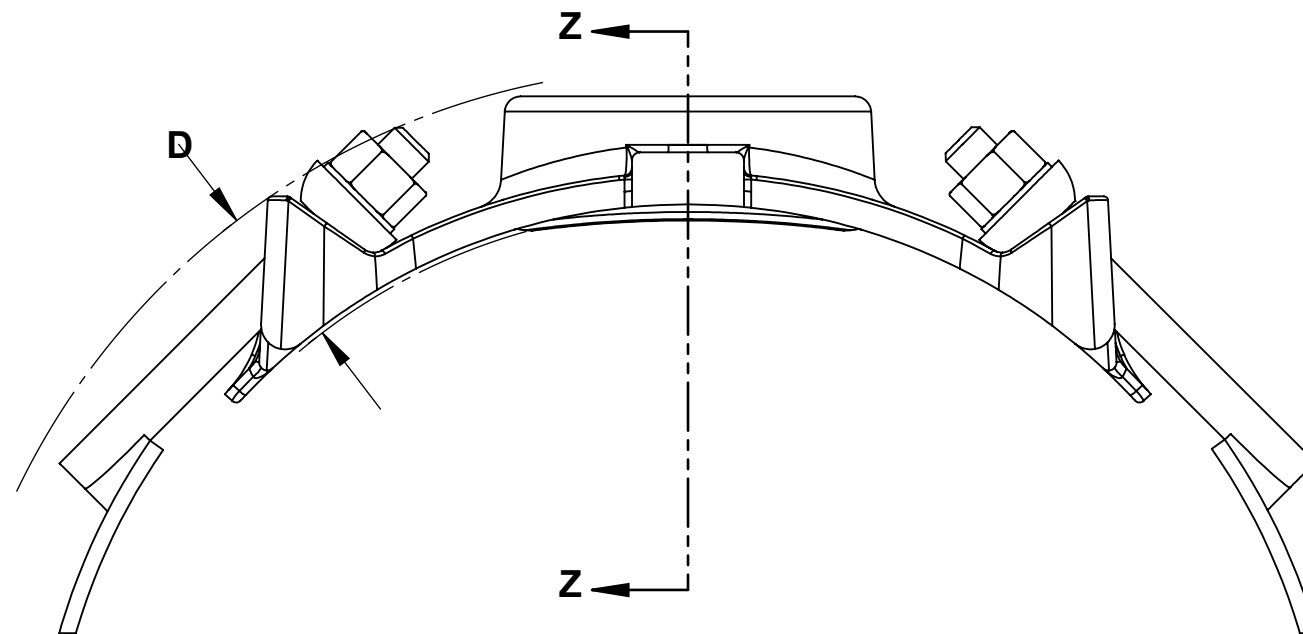
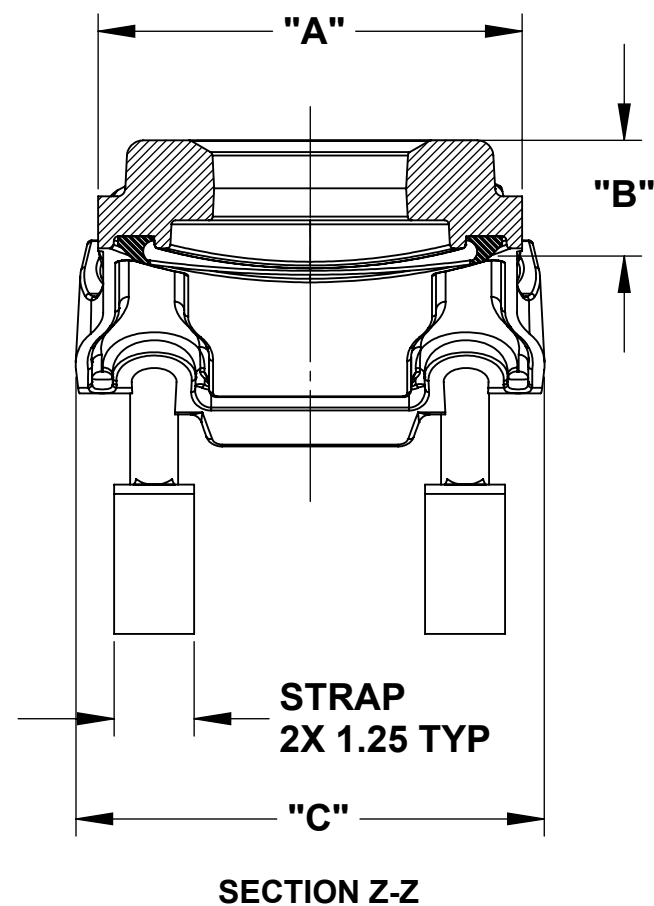
OPTIONS

- Type 316 Stainless Steel bale assembly with fluoropolymer coated nuts to prevent galling
- Type 316 Stainless Steel strap assembly with fluoropolymer coated nuts to prevent galling (*spherical washers remain D.I*)
- Alternative gasket material (e.g. Viton, EPDM, etc.)
- Anode connector
- Spring washers for use of clamp on HDPE pipe

NOTES

- Spring washers **are required** when this product is used on DR17 or thicker HDPE pipe
- These product specifications were correct at the time of publication and are subject to change without notice
- Flexi-Coat® is a registered trademark of Smith-Blair, Inc.
- Taperseal™ is a trademark of Smith-Blair, Inc.
- See the Smith-Blair web site for part numbers and ordering information
- See the Smith-Blair web site for warranty information
- See the Smith-Blair web site for corrosion notice

30 Globe Ave, Texarkana, AR 71854
Ph: 870-773-5127 • Fax: 870-773-5212
Toll-Free Numbers: Ph: 800-643-9705 • Fax: 800-648-6792



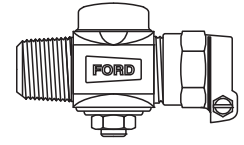
NOMINAL SIZE	APPROX. WT. (LB)	TAP CODE	A	B	C	D	SOCKET SIZE
18	20	ST	4.45	1.85	4.95	2.15	1-1/16"
	20	LT	6.90	1.85	7.25	2.15	
	30	XLT	3.90	1.85	7.25	2.15	
20	20	ST	4.45	1.85	5.00	2.30	
	20	LT	4.46	1.90	5.00	2.10	
	-	XLT	-	-	-	-	
24	20	ST	4.45	1.85	5.00	2.30	
	20	LT	4.45	1.85	5.00	2.30	
	-	XLT	-	-	-	-	

- NOTES:**
- SEE SMITH-BLAIR CATALOG FOR AVAILABLE PIPE DIAMETER AND TAP SIZE COMBINATIONS AS SOME COMBINATIONS ARE NOT AVAILABLE
 - 19.50" XLT SADDLE SHOWN OTHER SIZES SIMILAR
 - ABBREVIATIONS:
ST = SMALL TAP SIZES 1/2" THRU 1-1/2"
LT = LARGE TAP SIZES 1-1/2" THRU 2-1/2"
XLT = EXTRA-LARGE TAP SIZES 3" AND 4"

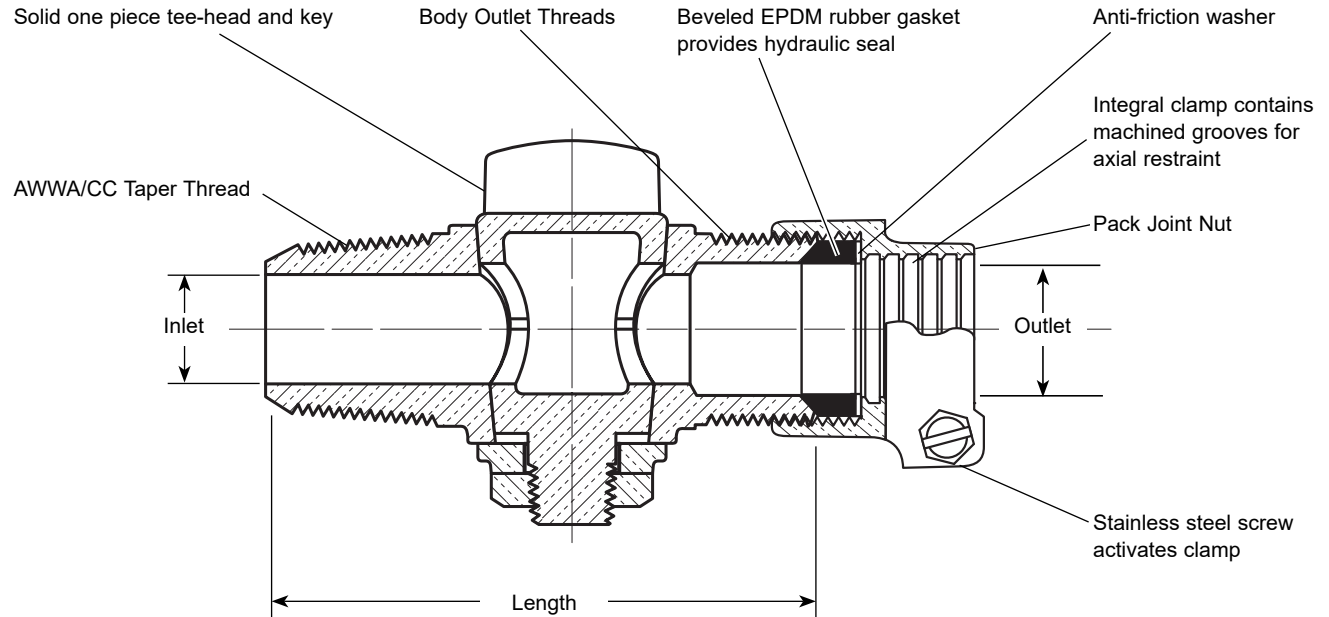
TOLERANCES U.N.O. .XX= ±.03 .XXX= ±.015 FRACTIONS= ANGLES=±1° MACH. FIN= ALL DIMENSIONS ARE IN INCHES.	NOTES: REMOVE BURRS AND SHARP EDGES DO NOT SCALE DWG.	APP'D		DATE	
	SCALE: N/A	CK'D		DATE	
		DRN	CHD	DATE	6/18/15
TITLE SPECIFICATION SERVICE SADDLE DOUBLE STRAP MODEL 317					
SMITH-BLAIR, Inc. TEXARKANA, ARKANSAS		P/N N/A			
		SPEC_317.DRW		3 OF 3 SHEET	8/17/16 REV.
		DWG. NO.			

SUBMITTAL INFORMATION

Corporation Stops - (F1000-x-NL style)



AWWA/CC TAPER THREAD INLET BY PACK JOINT FOR COPPER OR PLASTIC TUBING (CTS) OUTLET



VALVE SIZE	INLET SIZE	OUTLET SIZE	VALVE LENGTH	BODY OUTLET THREADS	APPROX. WT. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
1/2"	1/2"	1/2"	2-15/16"	1/2" Flare Copper	.5	F1000-1-NL	
5/8"	5/8"	5/8"	3-7/16"	5/8" Flare Copper	1.0	F1000-2-NL	
5/8"	5/8"	3/4"	3-1/2"	3/4" Flare Copper	1.4	F1000-23-NL	
3/4"	3/4"	3/4"	3-3/4"	3/4" Flare Copper	1.7	F1000-3-NL	
3/4"	3/4"	1"	3-7/8"	1" Flare Copper	1.9	F1000-34-NL	
1"	1"	1"	4-9/16"	1" Flare Copper	2.7	F1000-4-NL	X
1"	1"	1-1/4"	4-5/8"	1-1/4" Flare Copper	3.2	F1000-45-NL	

Note: Ford recommends using insert stiffeners with 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 larger, more rugged wrench flats for proper installation.
- Meets 100 PSI working pressure requirement of AWWA Standard C800.

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.

P.O. Box 443, Wabash, Indiana U.S.A. 46992-0443

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Overseas Fax: 260-563-0167

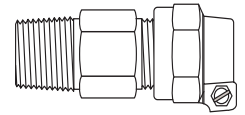
www.fordmeterbox.com

05/15/17

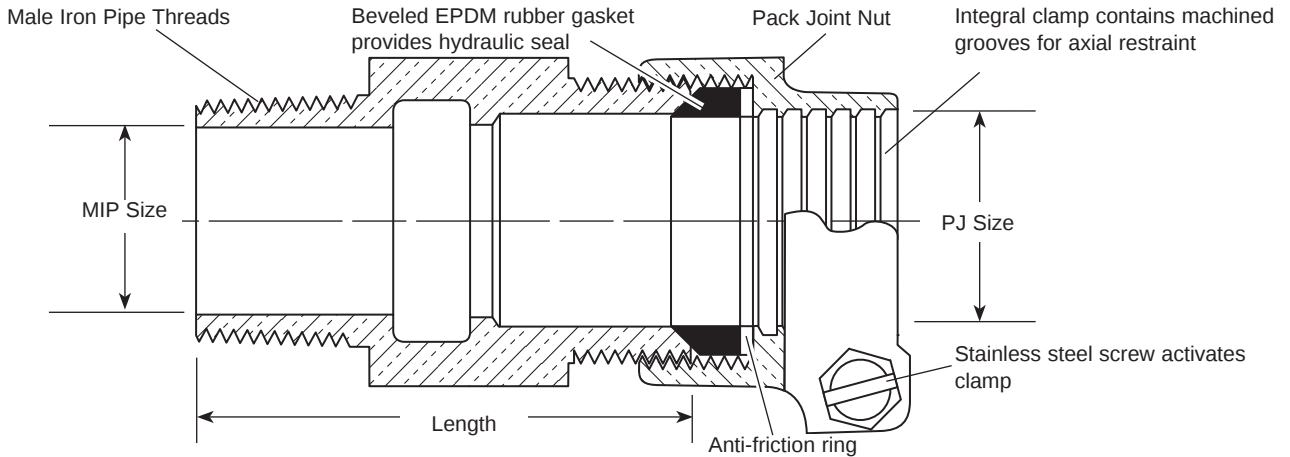
Submitted By:

SUBMITTAL INFORMATION

Pack Joint Coupling - (C84-xx-NL style)



MALE IRON PIPE BY PACK JOINT FOR COPPER OR PLASTIC TUBING (CTS)



DESCRIPTION		LENGTH	APPROX. WT. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
MALE IRON PIPE	P.J. FOR CTS				
1/2"	1/2"	2"	0.5	C84-11-NL	
1/2"	5/8"	2-1/16"	0.8	C84-12-NL	
1/2"	3/4"	2-1/16"	0.8	C84-13-NL	
3/4"	1/2"	2"	0.8	C84-31-NL	
3/4"	5/8"	-	0.7	C84-32-NL	
3/4"	3/4"	2-1/4"	0.6	C84-33-NL	
3/4"	1"	2-3/8"	0.7	C84-34-NL	
1"	5/8"	-	0.7	C84-42-NL	
1"	3/4"	2-3/8"	0.7	C84-43-NL	
1"	1"	2-9/16"	0.8	C84-44-NL	X
1"	1-1/4"	2-1/2"	1.2	C84-45-NL	
1"	1-1/2"	2-9/16"	1.8	C84-46-NL	
1-1/4"	1"	2-9/16"	1.4	C84-54-NL	
1-1/4"	1-1/4"	2-9/16"	1.4	C84-55-NL	
1-1/4"	1-1/2"	3-1/4"	1.8	C84-56-NL	
1-1/2"	1-1/2"	3-1/4"	2.0	C84-66-NL	
1-1/2"	2"	2-15/16"	2.6	C84-67-NL	
2"	2"	3-1/4"	3.1	C84-77-NL	

Note: Ford recommends using insert stiffeners with 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)
- Sleeve design provides hexagonal wrench flats for proper installation

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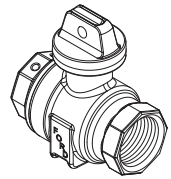
The Ford Meter Box Company, Inc.
P.O. Box 443, Wabash, Indiana U.S.A. 46992-0443
Phone: 260-563-3171 / Fax: 800-826-3487
Overseas Fax: 260-563-0167
www.fordmeterbox.com

02/09/15

Submitted By:

SUBMITTAL INFORMATION

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



FEMALE IRON PIPE THREAD INLET BY FEMALE IRON PIPE THREAD OUTLET

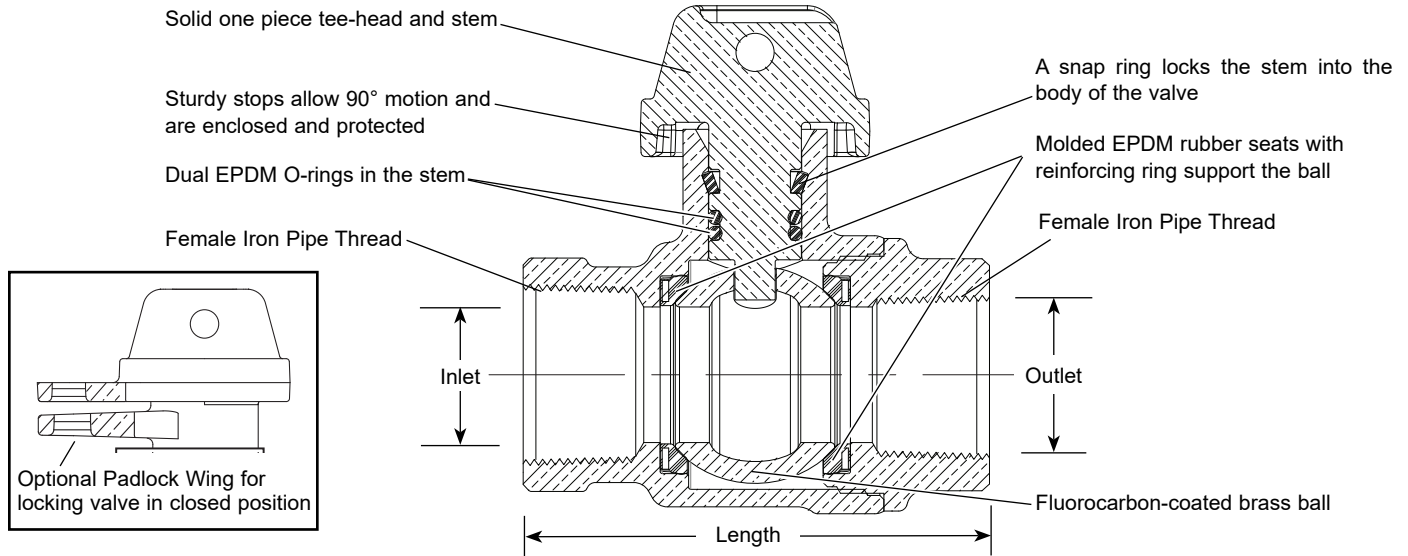


Image shown above is a B11-444-NL

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	X
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

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www.fordmeterbox.com

07/12/17

Submitted By:

AIR RELEASE VALVE
Val-Matic Valve Specification

1 Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 1/2 in. (13 mm) through 6 in. (150 mm) Air Release Valves suitable for clean or raw water service with pressures up to 740 psig (5100 kPa).

1.2 Air Release Valves shall be automatic float operated valves designed to release accumulated air from a piping system while the system is in operation and under pressure. The capacity and pressure rating of the valve is dependent on the diameter of the precision orifice in the cover. A large inlet connection is required for proper air and water exchange. *[NOTE: See Air/Vacuum Valves for exhausting and admitting large volumes of air and Combination Air Valves for both air release and air/vacuum functions.]*

2 Standards, Approvals and Verification

2.1 Valves shall be manufactured and tested in accordance with American Water Works Association (AWWA) Standard C512.

2.2 Valves used in potable water service shall be certified to NSF/ANSI 61 Drinking Water System Components - Health Effects.

2.3 Manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.

2.4 Models 15A and 22 shall be Factory Mutual Approved and Underwriters Laboratories Listed for fire protection.

3 Connections

3.1 Valves 3 in. (76mm) and smaller shall be threaded with NPT inlets and outlets. The body inlet connection shall be hexagonal for a wrench connection. Larger valves shall have ANSI Class 125 flanged inlets.

3.2 The valve shall have two additional NPT connections for the addition of gauges, testing, and draining.

4 Design

4.1 The cover shall be bolted to the valve body and sealed with a flat gasket. Resilient seats shall be replaceable and provide drop tight shut off to the full valve pressure rating.

4.2 Floats shall be unconditionally guaranteed against failure including pressure surges. Mechanical linkage shall provide sufficient mechanical advantage so that the valve will open under full operating pressure. Simple lever designs shall consist of a single pivot arm and a resilient orifice button. Compound lever designs shall consist of two levers and an adjustable threaded resilient orifice button.

5 Materials

5.1 The valve body and cover shall be constructed of ASTM A126 Class B cast iron for working pressures up to 300 psig. Higher pressure rated valves shall be constructed of ASTM A536 Grade 65-45-12 ductile iron.

5.2 The orifice, float and linkage mechanism shall be constructed of Type 316 stainless steel. Non-metallic floats or linkage mechanisms are not acceptable. The orifice button shall be Viton for simple lever valves and Buna-N for compound lever designs.

6 Options

6.1 An optional vacuum check on the outlet shall be provided when specified to prevent air from re-entering the system during negative pressure conditions.

6.2 Optional body materials include ASTM A216 Grade WCB cast steel, ASTM A351 Grade CF8M stainless steel, and ASTM B584 Alloy C83600 cast bronze.

6.3 An optional screened hood on the outlet shall be provided when specified.

6.4 An optional fully-ported brass ball valve shall be provided when specified to isolate the air release valve from the piping system.

6.5 Valve interiors and exteriors shall be coated with an NSF/ANSI 61 certified fusion bonded epoxy in accordance with AWWA C550 when specified.

6.6. Low Durometer orifice buttons shall be furnished for low pressure applications.

7 Cross Contamination and Security Protection

7.1 All Air (Release, Vacuum, etc) Valves installed in vaults or flood prone locations shall include an inflow preventer to prevent the introduction of contaminated water through the air valve outlet. The inflow preventer shall allow the admittance and exhausting of air while preventing contaminated water from entering during normal operating conditions. The inflow preventer shall be flow tested by an independent third party to certify performance. The third party shall be an approved testing lab of the American Society of Sanitary Engineers.

8 Manufacture

8.1 The manufacturer shall demonstrate a minimum of five (5) years experience in the manufacture of air valves. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.

8.2 The exterior of the valve shall be coated with a universal alkyd primer.

8.3 Air Release Valves shall be Series 15A to 61 as manufactured by Val-Matic Valve and Manufacturing Corporation, Elmhurst, IL, USA or approved equal.

Revised 3-29-16

AIR RELEASE VALVE SPECIFICATION

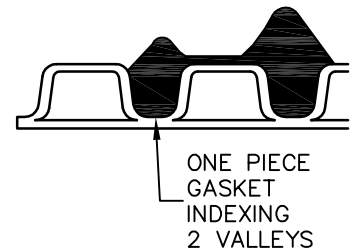
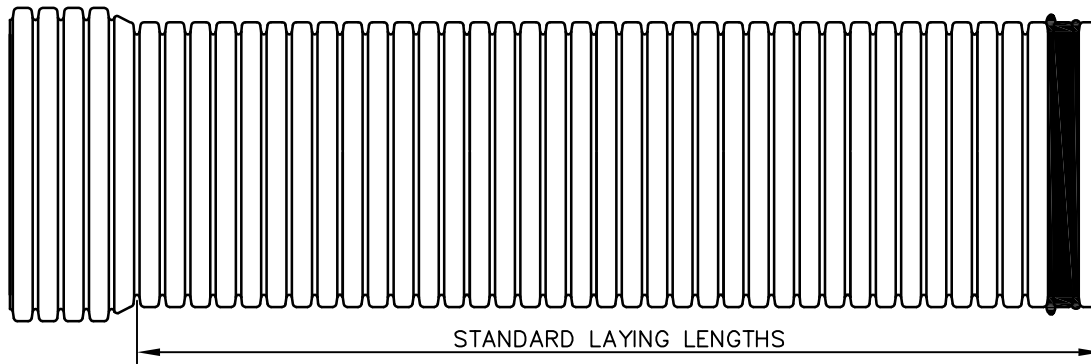
DATE 6-6-06



VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-15/38-S



4" THRU 10" DIAMETERS = 12'-6"
12" THRU 36" DIAMETERS = 22'-0 OR 14'-0"

30" x 24"
Meter Pit

NOMINAL DIAMETERS (IN.)	AVERAGE O.D. (SPIGOT) (IN.)	AVERAGE O.D. (BELL) (IN.)	AVERAGE I.D. (IN.)	PIPE STIFFNESS (PSI)	MINIMUM FLATTENING (%)
4	4.3	4.9	3.9	46	40
6	6.4	6.9	5.9	46	40
8	8.6	9.3	7.9	46	40
10	10.8	11.7	9.8	46	40
12	12.8	13.9	11.7	46	40
15	15.7	16.9	14.3	46	40
18	19.2	20.6	17.6	46	40
21	22.6	24.6	20.7	46	40
24	25.6	27.9	23.5	46	40
30	32.2	35.1	29.5	46	40
36	38.7	42.3	35.5	46	40

SCOPE

THIS SPECIFICATION INCLUDES MATERIALS, TEST METHODS AND INSTALLATION REQUIREMENTS FOR 4 TO 36-INCH DIAMETER POLYVINYL CHLORIDE (PVC) CORRUGATED PIPE WITH A SMOOTH INTERIOR. THE REQUIREMENTS OF THIS SPECIFICATION ARE INTENDED TO PROVIDE PIPE AND FITTINGS SUITABLE FOR UNDERGROUND USE IN NON-PRESSURE APPLICATIONS SUCH AS SANITARY SEWERS, STORM SEWERS, DRAINAGE AND UNDERDRAINS.

PIPE

PVC CORRUGATED PIPE WITH A SMOOTH INTERIOR SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION F949. PIPE AND FITTINGS SHALL BE HOMOGENEOUS THROUGHOUT AND FREE FROM VISIBLE CRACKS, HOLES, FOREIGN INCLUSIONS OR OTHER INJURIOUS DEFECTS. PIPE SHALL BE MANUFACTURED TO 46 PSI STIFFNESS WHEN TESTED IN ACCORDANCE WITH ASTM TEST METHOD D2412. THERE SHALL BE NO EVIDENCE OF SPLITTING, CRACKING OR BREAKING WHEN THE PIPE IS TESTED PER ASTM TEST METHOD D2412 IN ACCORDANCE WITH ASTM F949 SECTION 7.5 AND ASTM F794 SECTION 8.5. THE PIPE SHALL BE MADE OF PVC COMPOUND HAVING A MINIMUM CELL CLASSIFICATION OF 12454 AS DEFINED IN ASTM SPECIFICATION D1784.

FITTINGS:

ALL FITTINGS FOR PVC CORRUGATED SEWER PIPE WITH A SMOOTH INTERIOR SHALL CONFORM TO ASTM F949, SECTION 5.2.3 OR F794, SECTION 7.2.4. TO INSURE COMPATIBILITY, THE PIPE MANUFACTURER SHALL PROVIDE ALL FITTINGS.

JOINTS:

ALL JOINTS SHALL BE MADE WITH INTEGRALLY-FORMED BELL AND SPIGOT GASKETED CONNECTIONS. THE MANUFACTURER SHALL PROVIDE DOCUMENTATION SHOWING NO LEAKAGE WHEN GASKETED PIPE JOINTS ARE TESTED IN ACCORDANCE WITH ASTM TEST METHOD D3212. ELASTOMERIC SEALS (GASKETS) SHALL MEET THE REQUIREMENTS OF ASTM DESIGNATION F477.

CONTECH ID# 0000



9025 CENTRE POINTE DRIVE, SUITE 400
WEST CHESTER, OHIO 45069
PH: 1.800.338.1122 FAX: 513.645.7399

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A-2000 PVC SEWER PIPE

PRODUCT SPECIFICATION

FOR (F949) PVC PIPE
(ENGLISH)

SCALE: N/A

DRAWN BY: FAM
DATE 10/10/08

REV. BY: —

DATE: —

SHEET:

1 of 1

Ford Monitor Covers

For Large Settings

Monitor covers are designed for use on large tiles where a large lid opening is desired. They are satisfactory for 1-1/2" and 2" meters, or for two or more smaller meters. Each monitor cover consists of a flange casting to fit on the tile, a ring which is centered in place on the flange by a circular bead, and a top lid with a lifter worm lock. An optional inner lid provides added protection against frost damage in cold climates. The monitor cover is not designed to withstand traffic, but heavier lids are available for driveway installations where only lightweight traffic is likely.



Iron Monitor Covers for Large Settings with Iron or Plastic Lids

CATALOG NUMBER				LID SIZE* (DEPTH)	TILE SIZE I.D.	APPROX. WT. LBS.
◇ COVER WITH LOCKING LID	COVER WITH LOCKLESS LID	COVER WITH LOCKING ELECTRONIC METER READING LID (2" HOLE)				
		SINGLE HOLE LID	DOUBLE HOLE LID			
MC-24	MC-24-LL	MC-24-T	MC-24-TT	20" (7-1/2")	24"	103.0
MC-30	MC-30-LL	MC-30-T	MC-30-TT	20" (7-1/2")	30"	131.0
MC-36	MC-36-LL	MC-36-T	MC-36-TT	20" (8")	36"	185.0
WITH PLASTIC INNER LIDS						
MC-24-MB	MC-24-MB-LL	MC-24-MB-T	MC-24-MB-TT	20" (7-1/2")	24"	103.4
MC-30-MB	MC-30-MB-LL	MC-30-MB-T	MC-30-MB-TT	20" (7-1/2")	30"	141.4
MC-36-MB	MC-36-MB-LL	MC-36-MB-T	MC-36-MB-TT	20" (8")	36"	205.4

◇ Add "-P" for optional plastic lid. Example: MC-36-P

Lids Only for Monitor, Pit and Rectangular Covers

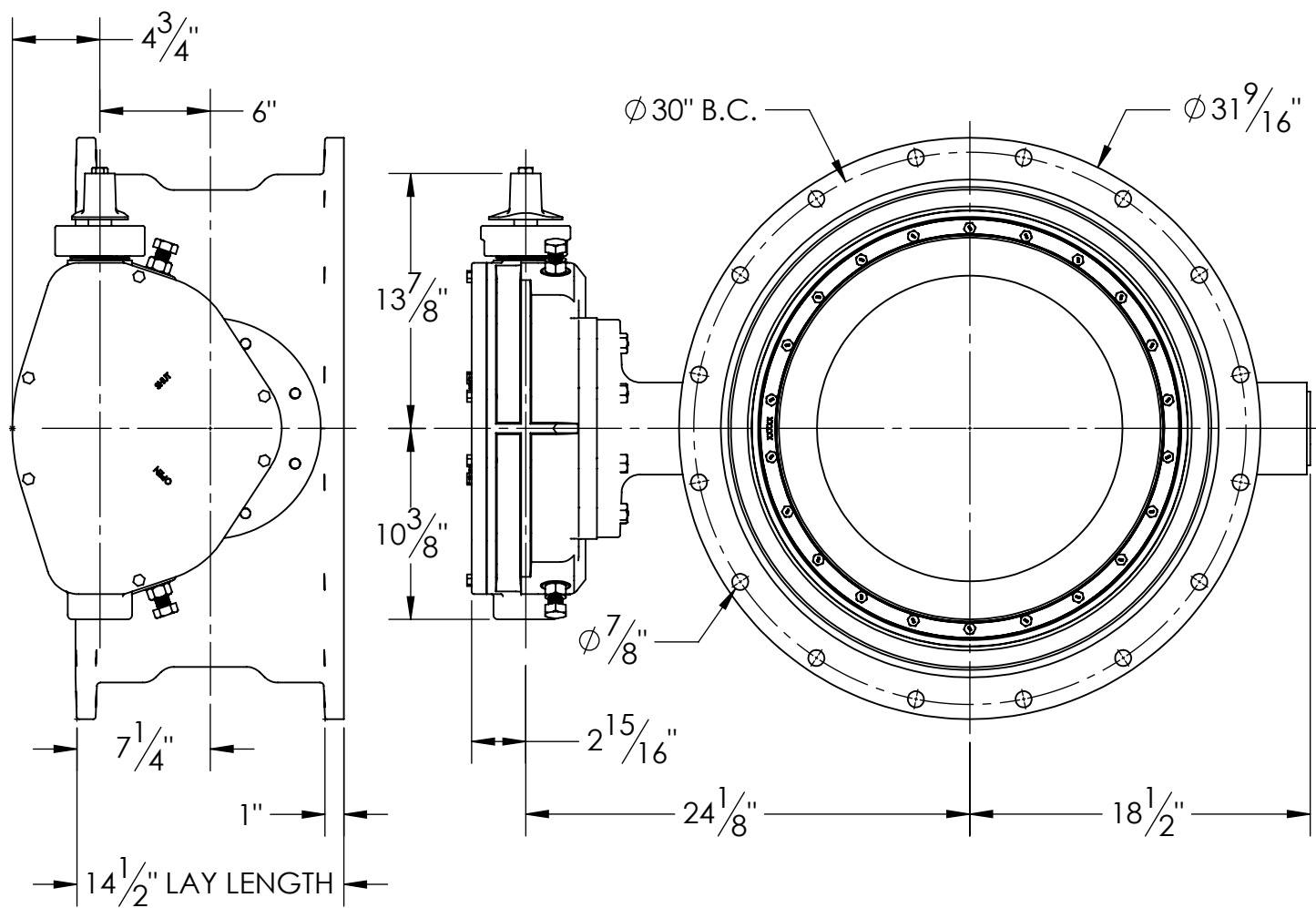
LID SIZE*	CATALOG NUMBER				APPROX. WT. LBS.
	LOCKING LID	LOCKLESS LID	LOCKING ELECTRONIC METER READING LID (2" HOLE)		
			SINGLE HOLE LID	DOUBLE HOLE LID	
20"	RML-1	RML-1-LL	RML-1-T	RML-1-TT	32.0
20" Extra Heavy	RML-11	—	RML-11-T	RML-11-TT	56.0
20" Double Extra Heavy	RML-12	—	RML-12-T	—	65.0
PLASTIC LIDS					
20"	RMLP-1	—	—	—	23.0

Parts for Monitor Covers

CATALOG NUMBER	DESCRIPTION	APPROX. WT. LBS.
MB	Plastic Inner Lid (optional)	2.1
PR	Ring (with lid recess) 6" Height	50.0
FL-24	Flange for 24" I.D. tile	22.0
FL-30	Flange for 30" I.D. tile	49.0
FL-36	Flange for 36" I.D. tile	105.0
PRR-2	2" Riser Ring for Monitor Cover Includes Hook and Nut Hardware	20.0

NOTE: Locking lids are supplied with a standard pentagon bolt. For an optional large bolt, add "-LB" to the catalog number. For example, a MC-30-LB is a MC-30 cover with a large bolt on the locking lid.

* Lid size indicates approximate pit access opening; actual lid diameter is approximately 1" larger.



1. FLOW MAY BE IN EITHER DIRECTION
2. VALVE SHAFT WILL MEET OR EXCEED AWWA C504 REQUIREMENTS
3. REFERENCE AWWA C504 FOR FLANGES AND DRILLING (ANSI 125)
4. 72 TURNS TO CLOSE
5. (16) 3/4" BOLTS ON MECH. JOINT
6. OPERATED BY 2" AWWA OPERATING / WRENCH NUT
7. RATED FOR 150PSI WORKING PRESSURE
8. GASKETS, GLANDS AND BOLTS FOR MECHANICAL JOINT FURNISHED WITH VALVE WHEN SPECIFIED ON ORDER

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M&H VALVE COMPANY

A DIVISION OF McWANE INC.
P.O. BOX 2088
ANNISTON, ALABAMA 36202

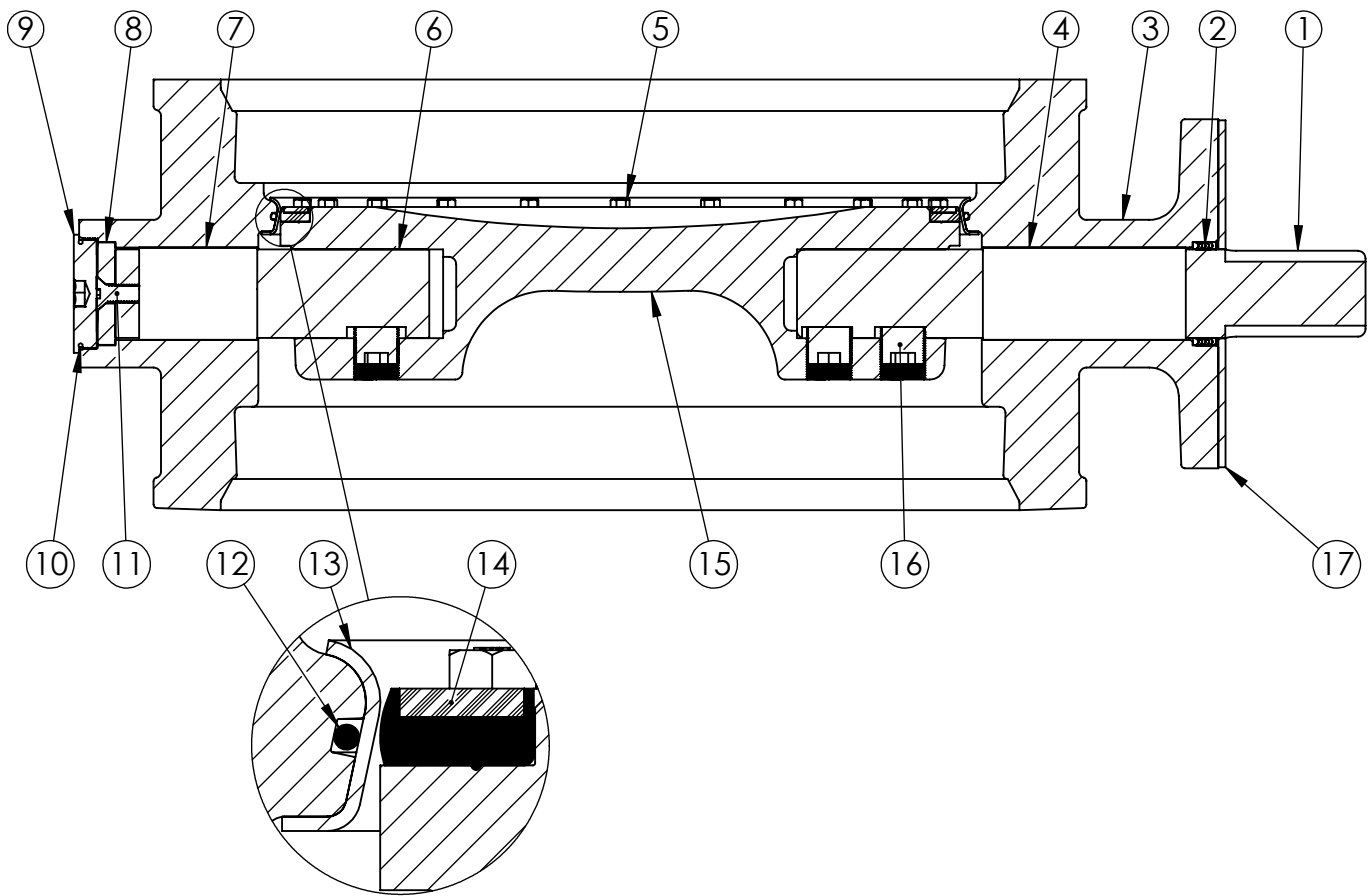
DRAWN: CTJ

DATE: 2/19/2021

DWG. NO.

BD24-M11-M1110-11110

**24" AWWA C504 BUTTERFLY VALVE
MECHANICAL JOINT - CL150
BURIED OPERATOR - OPEN LEFT
FA25 OPERATOR FLANGE**



NOTES:

1. (*) SEAL PLATE PROVIDED WITH ALL BARESTEM VALVES,
AND USED WITH ALL PURCHASED OPERATORS

ITEM	DESCRIPTION	MATERIAL
1	OPERATOR SHAFT	304 STAINLESS STEEL, ASTM A-276
2	V-RING PACKING	EPDM & BUNA-N
3	BUTTERFLY VALVE BODY	DUCTILE IRON, ASTM A-536
4	UPPER JOURNAL BEARING	NYLATRON
5	VANE RING HEXHEAD CAP SCREWS	18-8 STAINLESS STEEL
6	THRUST SHAFT	304 STAINLESS STEEL, ASTM A-276
7	LOWER JOURNAL BEARING	NYLATRON
8	THRUST BEARING	BRONZE ALLOY
9	BODY END PLUG	STEEL
10	BODY END PLUG O-RING	EPDM
11	THRUST BEARING CAP SCREW	18-8 STAINLESS STEEL
12	BODY O-RING	EPDM
13	BODY SEAT RING	316 STAINLESS STEEL
14	VANE SEAT RING	EPDM W/ STAINLESS STEEL INSERT
15	VANE	DUCTILE IRON, ASTM A-536
16	VANE SHAFT TORGE PLUG	18-8 STAINLESS STEEL
17	SEAL PLATE *	STEEL

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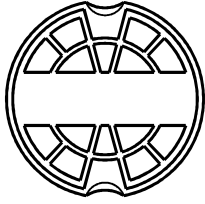


M&H VALVE COMPANY

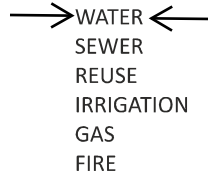
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P.O. BOX 2088
ANNISTON, ALABAMA 36202

DRAWN: CTJ
DATE: 2/19/2021
DWG. NO.
BB24-M11-B0000-11110

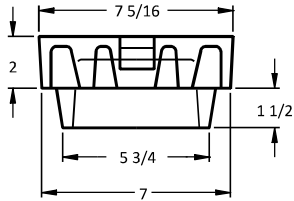
24" AWWA C504 BUTTERFLY VALVE
MECHANICAL JOINTS - CL150
BODY SUB-ASM MATERIAL LIST
FA16 OPERATOR FLANGE



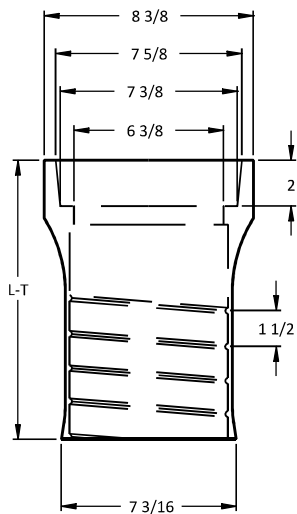
LID LETTER OPTIONS*



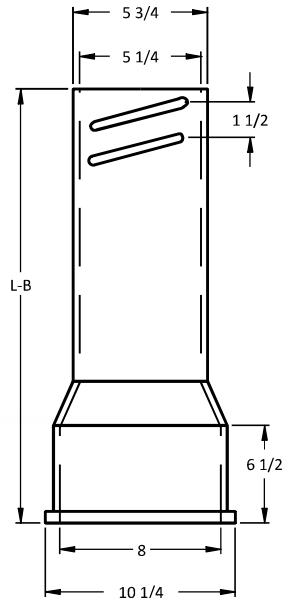
* Default Lid Letter is 'WATER'



LID



TOP



BOTTOM

ITEM #	REFERENCE #	HEIGHT	LENGTH	
			TOP	BOTTOM
6000	461S	19-21	10	15
6003	462S	27-32	10	24
→ 6005	562S	27-37	16	24
6018	563S	33-43	16	30
6009	564S	39-50	16	36
6019	662S	36-52	26	30
6013	664S	39-60	26	36
6017	666S	51-71	26	48*
6022	668S	62-82	26	60

* Optional bottom (48" one piece or 24" bottom w/24" extension)
 – Please indicate your preference when order.



Material : Cast Iron, ASTM A48, Class 30B

Dimensions : All are in Inch