



## **Transmittal Form**

**To:** JSG Corporation  
5701 Centerville Road  
Williamsburg, Va. 23188

**Date:** 11/12/18  
**From:** Ferguson Waterworks  
Chad A. Townsend  
Sales Representative

**Attention:** Matt Stauch  
**Project:** Riverbend Apartments  
**Specification:** Sewer / Water Line Materials

**As requested we are forwarding the following information:**

### **Sewer:**

1. SDR26 HW PVC Gasketed Joint Pipe
2. SDR26 HW PVC Gasketed Joint Fittings
3. CW-18 CI Cleanout Frame & Covers
4. Detectable Marking Tape
5. Underground Tracer Wire

### **Water:**

#### **Main Line Materials:**

1. C-900 DR18 PVC Gasketed Joint Pipe
2. C153 DI Mechanical Joint Fittings
3. C-515 DI Mechanical Joint Gate Valves
4. CL52 DI Fastite Pipe
5. AFC B-62-B Fire Hydrant
6. Wedge Restraints w/ Acc. f/ C-900 & DI Pipe
7. PVC Truss Pipe – Valve Box Riser Pipe
8. NPN-15 CI Valve Box Frame & Covers
9. Detectable Marking Tape
10. Underground Tracer Wire

#### **Fire Department Connection Materials:**

\*Misc. Pipe and Fittings are captured in the Main Line materials section\*

1. Nibco Flanged Check Valve
2. Bronze Siamese Head & Plugs

#### **Air Release Assembly Materials:**

1. Epoxy Coated Tapping Saddle
2. LF CC x FIP Ball Corporation Stop
3. Brass Pipe Nipples

## SEWER

NORTH AMERICAN PIPE     SDR26 HW PVC GSKT JNT SEWER PIPE  
MULTI-FITTINGS     SDR26 HW PVC GSKT JTN FITTINGS  
CAPITOL FOUNDRY     CW-18 CI CLEANOUT F&C  
PRO-LINE SAFETY     6X1000 UNDERGROUND DETECTABLE TAPE  
PRO-LINE SAFETY     10 GAUGE UNDERGROUND TRACER WIRE



## ASTM D3034/IB PVC Gravity Sewer Pipe GASKETED INTEGRAL BELL

North American Pipe Corporation's ASTM D3034 Gasketed Integral Bell PVC Pipe product line is manufactured to meet the needs of modern municipal waste water systems, storm water drainage systems, and other non-pressure applications. With top quality raw materials and modern processing technology, our ASTM D3034 pipe meets all industry standards in addition to our own rigorous quality control requirements.

Our D3034 pipe utilizes Rieber style gaskets throughout the entire product offering to create a leak-free joint.



Short Form Specification	
Pipe Standard:	ASTM D3034
Diameter Std.:	PSM
Nominal Sizes:	4", 6", 8", 10", 12", 15"
Dimension Ratios & Pipe Stiffness:	SDR 35 – 46 psi SDR 26 – 115 psi SDR 23.5 – 153 psi
Pressure Ratings:	Not rated for pressure applications
Lay Length:	14' or 20'
Color:	Green
Pipe Compound:	ASTM D1784 Cell Class 12454
Pipe Options:	Solid Wall 2 Hole Perforated 3 Hole Perforated
Pipe Joint Std.:	ASTM D3212
Max. Angular Joint Deflection:†	1°
Gasket Standard:	ASTM F477
Gasket Material Offerings:	Standard – SBR Optional – NBR or EPDM
Certifications:	IAPMO Uniform Plumbing Code*
Installation Std.:	ASTM D2321

\*IAPMO Uniform Plumbing Code listed products must be requested at time of order.

†See Installation Guide for more information.



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MU-PS-004 0816

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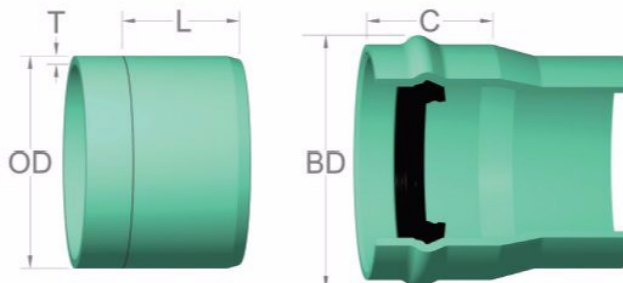
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**make the connection™**



## ASTM D3034/IB PVC Gravity Sewer Pipe

### GASKETED INTEGRAL BELL



D3034/IB PIPE DIMENSIONS &amp; PERFORMANCE

Nom. Size	Outside Diameter (OD)	SDR	Pipe Stiffness (psi)	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	Insertion Mark (L)
4"	4.215	35	46	0.120	3.975	5.000	3.750	3.125
		26	115	0.162	3.891			
		23.5	153	0.178	3.859			
6"	6.275	35	46	0.180	5.915	7.375	4.625	4.000
		26	115	0.241	5.793			
		23.5	153	0.265	5.745			
8"	8.400	35	46	0.240	7.920	9.625	5.250	4.125
		26	115	0.323	7.754			
10"	10.500	35	46	0.300	9.900	12.250	5.875	5.125
		26	115	0.404	9.692			
12"	12.500	35	46	0.360	11.780	14.375	6.500	5.375
		26	115	0.481	11.538			
15"	15.300	35	46	0.437	14.426	17.500	7.750	7.375
		26	115	0.588	14.124			

**Notes:**

1. These dimensions are for estimating purposes only. All dimensions are in inches unless otherwise specified.
2. SDR = Standard Dimension Ratio
3. Pipe Stiffness determined using ASTM D2412 at 5% deflection. This is a property that defines the pipe's ability to resist external loading.
4. Internal diameter calculated using nominal outside diameter and minimum wall thickness.
5. Dimension given for Approx. Bell Diameter (BD) is for highest pipe stiffness.

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# TRENCH TOUGH PLUS™

## HEAVY WALL SDR26 GASKETED SEWER FITTINGS

### LETTER OF COMPLIANCE

#### Scope:

This letter of compliance covers the requirements for **PVC Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings**. These products meet or exceed performance standards set by the American Society of Testing and Materials (ASTM).

**Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** are compatible with pipe manufactured to ASTM D 3034, CSA B182.1 and CSA B182.2 and is suitable for the non-pressure drainage of sewage and surface water. They can also be used in applications involving subsurface drainage.

#### Material:

Rigid PVC Poly(Vinyl Chloride) used in the manufacturing of **Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** complies with ASTM D 1784, *Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds*, having a cell classification 12454 or 13343.

Gasket materials used in the manufacturing of **Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** complies with the following requirements;

ASTM F 477 "*Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe*" for low-head applications for rubber gaskets

or,

ASTM F 913 "*Standard Specification for Thermoplastic Elastomeric Seals (Gaskets) for Joining Plastic Pipe*" for TPE gaskets

#### Molded Fittings:

Molded **Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** conform to the following standards;

ASTM D 3034 "*Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings*"

ASTM D 3212 "*Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals*"

ASTM F 1336 "*Standard Specification for Poly(Vinyl Chloride) (PVC) Gasketed Sewer Fittings*"

#### Markings:

**Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** are marked as prescribed in the above applicable standards to indicate size of the fittings, material designation, compliance to standard, and manufacturer's name or trademark.

#### Color Coding:

Gaskets for **Trench Tough Plus Heavy Wall SDR26 Gasketed Sewer Fittings** are grey.

Yours truly,

*AB Battistin, Eng.*

André Battistin, Eng.

Vice President, Manufacturing & Sourcing

Issue Date: 2015-02-20





# DETECTABLE TAPE (5.0 MIL)

Solid Aluminum Foil Core • Virgin Clear Polypropylene Film Laminated Top Structure  
Virgin Clear Polyethylene Film Laminated Base Structure • Reverse Printed Polypropylene Structure  
Acid, Alkali, Chemical, and Oil Resistant • Direct Burial Rated • Made in the USA



## Applications and Information

- **Pro-Line's Detectable Marking Tape** is used for detecting, locating, identifying, and protecting buried utility lines for gas, water, sewer, telecommunication, and electrical markets. The width of tape used, is determined by the size of, and depth at which the underground utility line is buried. The depth at which detectable tape is buried, is determined by the width of the tape used.
- **DETECT:** Aluminum core is detected through means of inductive locating.
- **LOCATE:** Line is located and marked after inductive locating is performed.
- **IDENTIFY:** Utility type is identified by both the APWA color-code and utility legend printed on the marking tape.
- **PROTECT:** Detectable tape works 24 hours a day and year round, even if tape is not inductively located during excavation, the tape provides a "stop-sign" effect that is highly visible.

## Standards and References

Pro-Line's Detectable Marking Tape meets or exceeds all applicable ASTM specifications.

- ASTM D2103-08: Standard Specification for Polyethylene Films and Sheeting.
- ASTM D882-09: Standard Test Method for Tensile Properties and Elongation of Thin Plastic Sheeting.
- ASTM D2578-08: Standard Test Method for Wetting Tension of Polyethylene and Polypropylene Films.
- ASTM D792-08: Standard Test Methods for Density of Plastics by Displacement.
- ASTM D671-93: Standard Test Method for Flexural Fatigue of Plastics.

## Construction

Pro-Line's Detectable Marking Tape consists of a minimum 5.0 mil overall thickness. Construction is 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 solid aluminum foil core and then laminated to a 3.75 mil clear virgin polyethylene film. Tape is printed with our APWA Color-Coded, patented "Diagonally Striped" design with big, bold, black lettering to identify a specific buried utility line.

## Specifications

### DETECTABLE UNDERGROUND MARKING TAPE

Underground marking tape shall be a (2", 3", 4", **6"** or 12" width), detectable marking tape, with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a **0.35 mil solid aluminum foil core**, and then laminated to a 3.75 mil clear virgin polyethylene film. Tape shall be printed using a diagonally striped design for maximum visibility, and meet the APWA Color-Code standard for identification of buried utilities. Detectable marking tape shall be **Pro-Line Safety Products** or approved equal and made in the USA.



**TABLE 1: DETECTABLE TAPE CONSTRUCTION** (Polypropylene, Aluminum Foil, and Polyethylene)

PROPERTY	2" WIDTH	3" WIDTH	4" WIDTH	6" WIDTH	12" WIDTH
Nominal Overall Thickness	5.0 mil	5.0 mil	5.0 mil	5.0 mil	5.0 mil
Aluminum Foil Core Thickness	0.35 mil	0.35 mil	0.35 mil	0.35 mil	0.35 mil
Polyethylene Film Thickness	3.75 mil	3.75 mil	3.75 mil	3.75 mil	3.75 mil
Polypropylene Film Thickness	0.80 mil	0.80 mil	0.80 mil	0.80 mil	0.80 mil
Polypropylene Print Method	Reverse Printed	Reverse Printed	Reverse Printed	Reverse Printed	Reverse Printed
Print Design #1 (Patented)	Diagonal Striped	Diagonal Striped	Diagonal Striped	Diagonal Striped	Diagonal Striped
Print Design #2 (Custom)	Solid Block	Solid Block	Solid Block	Solid Block	Solid Block
Print Design #3 (Custom)	Solid Flood	Solid Flood	Solid Flood	Solid Flood	Solid Flood
Print Design Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code

*\*Diagonal striped design is a PATENTED design of Pro-Line Safety Products that enhances tape visibility for superior protection.*

*\*Please note that there may be a nominal + or - 10% difference throughout the overall thickness.*

**TABLE 2: TESTING SPECIFICATIONS** (Physical and Mechanical Properties)

TEST DESCRIPTION	STANDARD	2" WIDTH	3" WIDTH	4" WIDTH	6" WIDTH	12" WIDTH
Aluminum Foil Core	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Polyethylene Film	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Polypropylene Film	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Adhesive Type	MFG. SPECS	AV1257/CA100	AV1257/CA100	AV1257/CA100	AV1257/CA100	AV1257/CA100
Adhesive Bond Strength	BOILING WATER	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel
Printed Inks	MFG. SPECS	Chromabond	Chromabond	Chromabond	Chromabond	Chromabond
Print Repeat	MFG. SPECS	Varies by Legend	Varies by Legend	Varies by Legend	Varies by Legend	Varies by Legend
Coefficient Friction	ASTM D4521-96	0.247 Static	0.247 Static	0.247 Static	0.247 Static	0.247 Static
Density	ASTM D792-66	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>
Elongation (MD)	ASTM D882-80A	139%	139%	139%	139%	139%
Elongation (TD)	ASTM D882-80A	80%	80%	80%	80%	80%
Flexural Fatigue	ASTM D671-93	Pliable Hand	Pliable Hand	Pliable Hand	Pliable Hand	Pliable Hand
Printability	ASTM D2578-08	45 Dynes	45 Dynes	45 Dynes	45 Dynes	45 Dynes
Tensile Strength	ASTM D882-09	15,000 psi	15,000 psi	15,000 psi	15,000 psi	15,000 psi

**WEIGHTS, MEASUREMENTS AND PACKAGING**

PRODUCT PART NO.	SIZE (WIDTH)	NOMINAL OVERALL THICKNESS	NOMINAL THICKNESS OF STRUCTURAL MATERIALS			RECOMMENDED BURIAL DEPTHS FOR DETECTION	PRODUCT WEIGHT PER ROLL	STANDARD PACKAGING
			ALUMINUM FOIL THICKNESS	POLYETHYLENE THICKNESS	POLYPROPYLENE THICKNESS			
10311XXX3	2" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	6-9 inches	4.75 lbs	9 / CARTON
10312XXX3	3" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	9-12 inches	7.13 lbs	6 / CARTON
10313XXX3	4" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	12-15 inches	9.50 lbs	4 / CARTON
10314XXX3	6" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	15-18 inches	14.25 lbs	3 / CARTON
10316XXX3	12" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	18-24 inches	28.50 lbs	1 / CARTON

**\*\*FOR CUSTOM LEGENDS OR SIZES CALL 800.554.3424\*\***

PRINT LEGEND	PART #
CAUTION BURIED CHILLED WATER LINE BELOW	103
CAUTION BURIED GEOTHERMAL LINE BELOW	128
CAUTION BURIED POTABLE WATER LINE BELOW	115
CAUTION BURIED WATER LINE BELOW	125
CAUTION BURIED FORCE MAIN BELOW	208
CAUTION BURIED FORCE MAIN BELOW	308
CAUTION BURIED SANITARY SEWER LINE BELOW	318
CAUTION BURIED SEWER LINE BELOW	319
CAUTION BURIED STORM DRAIN LINE BELOW	321
CAUTION BURIED STORM SEWER LINE BELOW	322

PRINT LEGEND	PART #
CAUTION BURIED CATV LINE BELOW	402
CAUTION BURIED COMMUNICATION LINE BELOW	404
CAUTION BURIED FIBER OPTIC CABLE BELOW	406
CAUTION BURIED TELEPHONE LINE BELOW	423
CAUTION BURIED NON-POTABLE WATER LINE	512
CAUTION BURIED RECLAIMED WATER LINE BELOW	517
CAUTION BURIED ELECTRIC LINE BELOW	605
CAUTION BURIED HIGH VOLTAGE LINE BELOW	610
CAUTION BURIED GAS LINE BELOW	809
CAUTION BURIED PIPELINE BELOW	814



PRO-LINE SAFETY PRODUCTS COMPANY  
1099 ATLANTIC DRIVE, UNIT 1 • WEST CHICAGO, IL 60185  
TOLL FREE: 800.554.3424





## CU HDPE 30 MIL

## TRACER WIRE

Copper Tracer Wire • 30 Volts • Oxygen Free Copper Conductor • Dead Soft Annealed High Molecular Weight Polyethylene (HMWPE) Insulation • Direct Burial Rated Moisture, Chemical, Oil, and Sunlight Resistant • Impact, Crush, and Abrasion Resistant RoHS Compliant • Made in the USA



### Applications and Information

- Pro-Line **Type CU HDPE 30 MIL** conductors are used for tracer wire applications not exceeding 30 Volts. Tracer wire is used to conductively locate buried utility lines for the gas, water, sewer, telecommunication, and electrical markets.
- When used as **Type CU HDPE 30 MIL**, conductor is suitable for use direct burial applications not locations at temperatures not to exceed 75°C.
- Tracer wire is RoHS Compliant and manufactured in the USA.

### Standards and References

Pro-Line **Type CU HDPE 30 MIL** conductors meets or exceeds all applicable ASTM specifications, requirements of the National Electrical Code.

- ASTM B-3: Standard Specification for Soft or Annealed Copper Wire
- ASTM B170: Standard Specification for Oxygen-Free Electrolytic Copper
- ASTM D1248: Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- ASTM D1238: Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer

### Construction

- Pro-Line **Type CU HDPE 30 MIL** copper conductors are annealed copper (soft drawn), insulated with a high-density, high molecular weight polyethylene (HDPE) insulation. HDPE provides an excellent balance of surface smoothness, processing ease and electrical consistency. HDPE provides superior strength against underground elements that help prevent accidental breaks caused by rocks in shifting soil conditions.
- Available in black, blue, green, orange, purple, red, white, and yellow. Some colors standard, some subject to economic order quantity.

### Specifications

#### TYPE: CU HDPE 30 MIL TRACER WIRE

Tracer wire shall be a (14, 12 or 10 AWG SOLID HDPE 30 MIL) copper conductor with a 30 mil thick, high-density, high molecular weight polyethylene (HDPE) insulation and rated for 30 volts. Insulation and jacket shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be **Pro-Line Safety Products** or approved equal and made in the USA.

**PRO-TRACE™** is a registered trademark of Pro-Pak Industries, Inc.



## CU HDPE 30 MIL Tracer Wire (Weights, Measurements, and Packaging)

## WEIGHTS, MEASUREMENTS AND PACKAGING

PRODUCT PART NO.	CONDUCTOR		INSULATION THICKNESS (HDPE)	NOMINAL O.D. (inches)	APPROX. WEIGHT PER 1,000 FT (lbs)		STANDARD PACKAGES
	SIZE (AWG)	STRANDING			COPPER WEIGHT/MFT	PRODUCT WEIGHT/MFT	
CU HDPE 30 MIL (SOLID) TRACER WIRE							
74003XXXX	14 AWG	SOLID	0.030" (30 MIL)	0.127"	12.400 lbs	16.125 lbs	32, 47
74004XXXX	12 AWG	SOLID	0.030" (30 MIL)	0.144"	19.500 lbs	23.800 lbs	32, 47
74005XXXX	10 AWG	SOLID	0.030" (30 MIL)	0.165"	30.996 lbs	37.900 lbs	32, 47
74006XXXX	8 AWG	SOLID	0.030" (30 MIL)	0.189"	49.975 lbs	59.000 lbs	32, 47
CU HDPE 30 MIL (STRANDED) TRACER WIRE							
74008XXXX	14 AWG	7-STRAND	0.030" (30 MIL)	0.133"	12.600 lbs	16.700 lbs	32, 47
74010XXXX	12 AWG	7-STRAND	0.030" (30 MIL)	0.152"	19.600 lbs	24.760 lbs	32, 47
74012XXXX	10 AWG	7-STRAND	0.030" (30 MIL)	0.176"	31.136 lbs	37.500 lbs	32, 47
74014XXXX	8 AWG	7-STRAND	0.030" (30 MIL)	0.206"	49.824 lbs	61.060 lbs	32, 47

PART # DESIGNATION (AWG & COLOR)				
COLOR	14 AWG SOLID	12 AWG SOLID	10 AWG SOLID	8 AWG SOLID
BLACK	7400301xx	7400401xx	7400501xx	7400601xx
BLUE	7400302xx	7400402xx	7400502xx	7400602xx
GREEN	7400305xx	7400405xx	7400505xx	7400605xx
ORANGE	7400306xx	7400406xx	7400506xx	7400606xx
PURPLE	7400308xx	7400408xx	7400508xx	7400608xx
RED	7400309xx	7400409xx	7400509xx	7400609xx
WHITE	7400311xx	7400411xx	7400511xx	7400611xx
YELLOW	7400312xx	7400412xx	7400512xx	7400612xx
COLOR	14 AWG STRND	12 AWG STRND	10 AWG STRND	8 AWG STRND
BLACK	7400801xx	7401001xx	7401201xx	7401401xx
BLUE	7400802xx	7401002xx	7401202xx	7401402xx
GREEN	7400805xx	7401005xx	7401205xx	7401405xx
ORANGE	7400806xx	7401006xx	7401206xx	7401406xx
PURPLE	7400808xx	7401008xx	7401208xx	7401408xx
RED	7400809xx	7401009xx	7401209xx	7401409xx
WHITE	7400811xx	7401011xx	7401211xx	7401411xx
YELLOW	7400812xx	7401012xx	7401212xx	7401412xx

PART # DESIGNATION (PACKAGE SIZE)			
SIZE	PACKAGING	TYPE	PART NO.
14 AWG SOLID	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
12 AWG SOLID	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
10 AWG SOLID	2 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
8 AWG SOLID	1 x 500 FT REEL	BULK REEL	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
14 AWG STRANDED	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
12 AWG STRANDED	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
10 AWG STRANDED	2 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
8 AWG STRANDED	1 x 500 FT REEL	BULK REEL	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47

TRACER WIRE

CU HDPE 30 MIL



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TOLL FREE: 800.554.3424



## **WATER**

NORTH AMERICAN PIPE    C-900 DR18 PVC GSKT JNT WATER PIPE  
TYLER UNION    C153 DI DCL MECHANICAL JNT FITTINGS  
MUELLER CO.    C-515 DI RW GATE VALVES  
ACIPCO    CL52 DI DCL FASTITE JOINT PIPE  
AMERICAN FLOW CONTROL    B-62-B 5-1/4" VO FIRE HYDRANT  
SIGMA    WEDGE RESTRAINTS F/ C-900/IPS PIPE  
SIGMA CORP.    WEDGE RESTRAINTS W/ DI PIPE  
CONTECH    PVC TRUSS PIPE - VALVE BOX RSR PIPE  
CAPITOL FOUNDRY    NPN-15 CI WATER VALVE BOX F&C  
PRO-LINE SAFETY    6X1000 UNDERGROUND DETECTABLE TAPE  
PRO-LINE SAFETY    10 GAUGE UNDERGROUND TRACER WIRE





## AWWA C900/IB PVC Pressure Pipe GASKETED INTEGRAL BELL

North American Pipe Corporation's AWWA C900 Gasketed Integral Bell PVC Pipe product line is manufactured to meet the needs of modern municipal water, wastewater, and reclaimed water systems. With top quality raw materials and modern processing technology, our C900 pipe meets all industry standards in addition to our own rigorous quality control requirements.

Our C900 pipe utilizes Rieber style gaskets throughout the entire product offering to create a leak-free joint.

### Short Form Specification

Pipe Standard:	AWWA C900
Diameter Std.:	Cast Iron Outside Diameter (CIOD)
Nominal Sizes:	4", 6", 8", 10", 12"
Dimension Ratios & Pressure Ratings:	DR 25 – 165 psi DR 18 – 235 psi (150 psi)** DR 14 – 305 psi (200 psi)**
Lay Length:	20'
Pipe Compound:	ASTM D1784 Cell Class 12454
Pipe Joint Std.:	ASTM D3139
Max. Angular Joint Deflection:†	1°
Gasket Standard:	ASTM F477, UL 157
Gasket Material Offerings:	Standard – SBR Optional – NBR or EPDM
Installation Std.:	AWWA C605



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

\*NSF 14 certified products must be requested at time of order.

\*\*FM 1612 does not include DR 25 and reclassifies DR 18 as 150 psi and DR 14 as 200 psi.

†See Installation Guide for more information.



Only products  
bearing the NSF  
Mark are Certified



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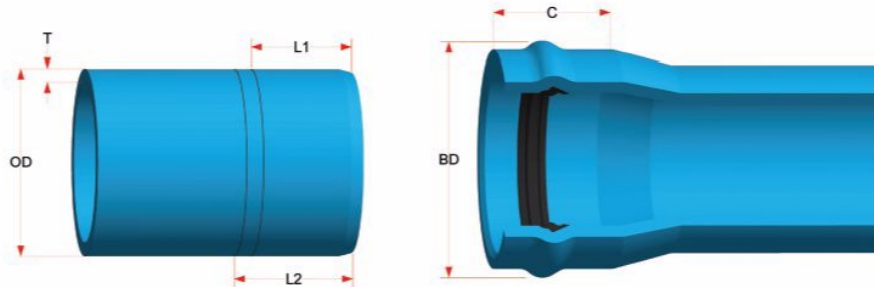
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## AWWA C900/IB PVC Pressure Pipe GASKETED INTEGRAL BELL



C900/IB PIPE DIMENSIONS &amp; PERFORMANCE

Nom. Size	Outside Diameter (OD)	DR	Pressure Class (psi)	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	1 <sup>st</sup> Insertion Mark (L1)	2 <sup>nd</sup> Insertion Mark (L2)
4"	4.800	25	165	0.192	4.416	6.250	5.000	3.375	4.375
		18	235	0.267	4.266				
		14	305	0.343	4.114				
6"	6.900	25	165	0.276	6.348	8.625	5.750	4.625	5.625
		18	235	0.383	6.134				
		14	305	0.493	5.914				
8"	9.050	25	165	0.362	8.326	11.500	7.000	5.625	6.625
		18	235	0.503	8.044				
		14	305	0.646	7.758				
10"	11.100	25	165	0.444	10.212	14.000	7.250	6.125	7.125
		18	235	0.617	9.866				
		14	305	0.793	9.514				
12"	13.200	25	165	0.528	12.144	16.563	8.000	6.875	7.875
		18	235	0.733	11.734				
		14	305	0.943	11.314				

## 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. Internal diameter calculated using nominal outside diameter and minimum wall thickness.
5. Dimension given for Approx. Bell Diameter (BD) is for highest pressure class.

make the connection™

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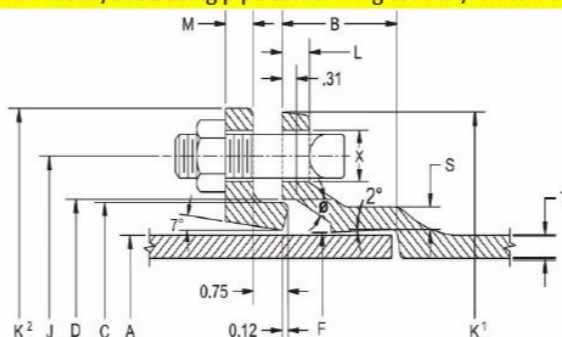
☐ DOMESTIC

☒ **NON-DOMESTIC**

## SUBMITTAL: C153 MECHANICAL JOINT PRODUCT

(Current revisions for the noted Standards apply)

<b>SIZES:</b>	2" through 64" (2" not included in ANSI/AWWA C153 standard)
<b>STANDARDS:</b>	ANSI/AWWA C153/A21.53, NFPA13/24, 3"-16" UL and 3"-10" FM listed & approved (File - Tyler Union)
<b>MATERIAL:</b>	Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.
<b>PRESSURE RATING:</b>	*Flanged fittings rated at 250 psi. Mechanical joints 2" – 24" rated at 350 psi and 30" – 48" at 250 psi. *Note: With rubber annular ring flange gasket, 2" – 24" Flanged fittings can be rated at 350 psi. Note: Wyes over 12" are not pressure rated. Contact Tyler Union for rating in your application.
<b>DEFLECTION:</b>	Max joint deflection 2"– 12", 5° and 14"– 48", 3°. Reduces by 50% at nominal pipe & fitting diameters
<b>NSF-61 &amp; NSF372:</b>	Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.
<b>ASPHALT COATING:</b>	Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.
<b>CEMENT LINING:</b>	Per ANSI/AWWA C104/A21.4, with double cement lining.
<b>EPOXY COATING:</b>	<del>Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.</del>
<b>BARE FITTINGS:</b>	<del>Available upon request.</del>
<b>FASTENERS:</b>	<del>High strength low alloy weathering steel per ANSI/AWWA C111/A21.11 and ASTM A242</del>
<b>INSTALLATION:</b>	Install per AWWA C600/C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.



NOMINAL JOINT DIMENSIONS IN INCHES

BOLTS

Size Inches	A Dia. DI Pipe	B Hub Depth	C Dia. GLAND	D Dia.	F Dia.	J Dia. GLAND	K¹ Dia.	K² Dia. GLAND	L	M GLAND	S	T	X	Size	Qty.
2	2.51	2.50	3.50	3.60	2.61	4.75	6.19	6.89	0.58	0.62	0.36	0.30	3/4	5/8x3.0	2
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	0.58	0.62	0.39	0.33	3/4	5/8x3.0	4
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	0.60	0.75	0.39	0.34	7/8	3/4x3.5	4
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	0.63	0.88	0.43	0.36	7/8	3/4x3.5	6
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	0.66	1.00	0.45	0.38	7/8	3/4x4.0	6
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	0.70	1.00	0.47	0.40	7/8	3/4x4.0	8
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	0.73	1.00	0.49	0.42	7/8	3/4x4.0	8
14	15.30	3.50	16.40	16.54	15.44	18.75	20.31	20.25	0.79	1.25	0.55	0.47	7/8	3/4x4.5	10
16	17.40	3.50	18.50	18.64	17.54	21.00	22.56	22.50	0.85	1.31	0.58	0.50	7/8	3/4x4.5	12
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	0.68	0.54	7/8	3/4x4.5	12
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	0.69	0.57	7/8	3/4x4.5	14
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	0.75	0.61	7/8	3/4x5.0	16
30	32.00	4.50	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	0.82	0.66	1-1/8	1x6.0	20
36	38.30	4.50	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	0.74	1-1/8	1x6.0	24
42	44.50	4.50	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.25	0.82	1-3/8	1-1/4x6.5	28
48	50.80	4.50	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.35	0.90	1-3/8	1-1/4x6.5	32
54	Available on Request														
60	Available on Request														
64	Available on Request														

**Anniston:** 1501 W 17<sup>th</sup> St. • Anniston, AL 36201 • (800) 226-7601  
**Corona:** 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471  
**Tyler:** 11910 CR 492 • Tyler, Texas 75706 • (800) 527-8478  
**Dallas:** 1201 Ave. S. Suite100 • Grande Prairie, TX 75050

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



Rev. 7-17 Shaded area indicates changes

- ☐ Catalog number  
**A-2361-20** Mechanical joint ends (with accessories unassembled)  
**A-2361-23** Mechanical joint ends (less accessories)  
**A-2361-25** Mechanical joint ends (with transition gaskets accessories unassembled)
- ☐ Sizes - 3", 4", 6", 8", 10", 12"
- ☐ Non-rising stem (NRS)
- ☐ Meets or exceeds all applicable requirements of ANSI/AWWA C515\*\*\* Standard, UL 262 Listed, FM 1120/1130 Approved, and certified to ANSI/NSF 61 & 372
- ☐ Standard mechanical joint ends comply with ANSI/AWWA C111
- ☐ Nominal 10 mils Mueller Pro-Gard® Fusion Bonded Epoxy coated interior and exterior surfaces Epoxy coating meets or exceeds all applicable requirements of ANSI/AWWA C550 Standard
- ☐ Iron wedge, symmetrical and fully encapsulated with molded rubber; no exposed iron
- ☐ Triple O-ring seal (2 above the thrust collar and 1 below)
- ☐ 2" square wrench nut - open left or open right
- ☐ 350 psig (2400 kPa/24 barg) maximum working pressure; 700 psig (4800 kPa/48 barg) static test pressure
- ☐ UL Listed, FM Approved: 350 psig (2400 kPa/24 barg)
- ☐ Designed for potable water applications



A-2361-20 shown

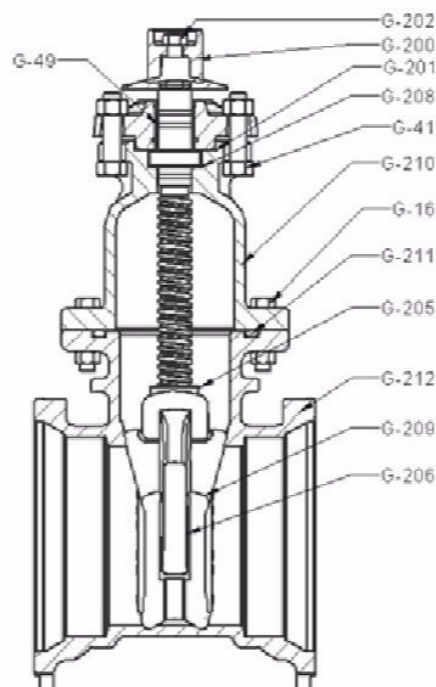
## Options

See page 10.54 for more information on Resilient Wedge Gate Valve options

- ☐ Position indicators
- ☐ Stainless steel stem: Type 304, Type 316
- ☐ EPDM Disc and o-rings
- ☐ Low zinc, silicon bronze ASTM B98-C66100/H02 stem
- ☐ Handwheel

## Resilient wedge gate valve parts

Catalog Part Number	Description	Material	Material Standard
G-16	Bonnet Bolts & Nuts	316 Stainless Steel	ASTM F593 (bolt) ASTM F594 (nut)
G-41	Stuffing Box Bolts & Nuts	316 Stainless Steel	ASTM F593 (bolt) ASTM F594 (nut)
G-49	Stem O-rings (3)	Nitrile	ASTM D2000
G-200	Wrench Nut Cap Screw	316 Stainless Steel	ASTM F593
G-201	Stuffing Box O-ring	Nitrile	ASTM D2000
G-202	Wrench Nut	Ductile Iron	ASTMA536 ▼
G-203	Stem	Bronze	ASTM B138
G-204	Hand Wheel (not shown)	Cast Iron +	ASTMA126 CL.B
G-205	Stem Nut	Bronze	ASTM B584
G-206	Guide Cap Bearings	Acetal	-
G-207	Stuffing Box with dirt seal ++	Ductile Iron** Nitrile	ASTMA536 ▼ ASTM D2000
G-208	Anti-friction Washers (2)	Acetal	-
G-209	Wedge, Rubber Encapsulation	Ductile Iron* SBR	ASTMA536 ▼ ASTM D2000
G-210	Bonnet	Ductile Iron	ASTMA536 ▼
G-211	Bonnet O-ring +++	Nitrile	ASTM D2000
G-212	Body	Ductile Iron	ASTMA536 ▼



++ Dirt seal on 4"-12" valves

+++ 3" valves use a bonnet gasket

\*Fully encapsulated in molded rubber with no iron exposed; 3" discs are cast iron ASTM A126 Class B

▼ Material strength ASTM A536 65-45 minimum

+ Manufacturer's option to change material to ductile iron ASTM A536

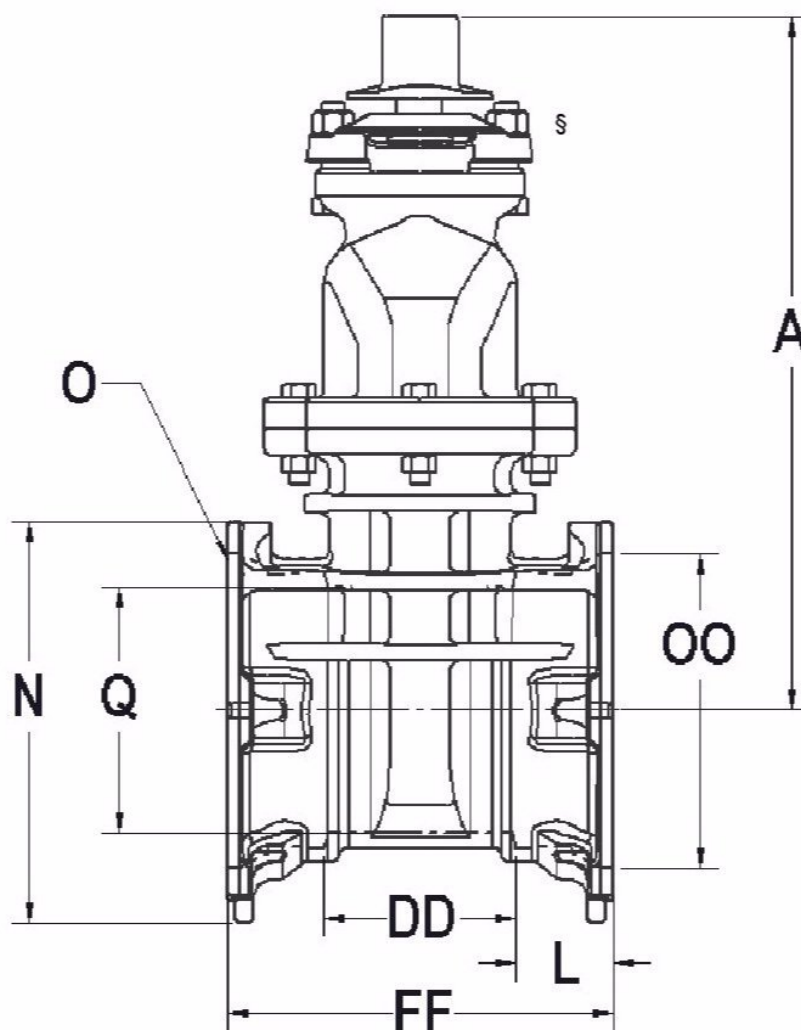
\*\* 3" stuffing boxes are cast iron ASTM A126 class B+

\*\*\* 3" valves meet or exceed all applicable requirements of ANSI/AWWA C509 Standard

SEE PAGE 10.57 FOR ORDERING INSTRUCTIONS

# 3"- 12" A-2361 RESILIENT WEDGE GATE VALVES - M.J. x M.J.

Shaded area indicates change Rev. 2-17



## Dimensions

Dimension	Nominal Size					
	3"	4"	6"	8"	10"	12"
A	12.38	14.19	18.00	21.50	25.50	28.62
FF	9.62	9.50	10.00	10.50	11.50	12.00
L	2.50	2.50	2.50	2.50	2.50	2.50
N	7.50	8.40	10.41	12.68	15.24	18.024
O (number and size of holes)	4-.88	4-.88	6-.88	6-.88	8-.88	8-.88
DD	4.62	4.50	5.00	5.50	6.50	7.00
Q	3.30	4.30	6.30	8.30	10.30	12.30
OO (bolt circle diameter)	6.19	7.50	9.50	11.75	14.00	16.25
Turns to open	11	14	20.5	26.5	33.0	38.5
Weight*	83	70	112	162	238	303

\*All dimensions are in inches. All weights include accessories are in pounds and are approximate.



**AMERICAN**

DUCTILE IRON PIPE

THE RIGHT WAY

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[WWW.AMERICAN-USA.COM](http://WWW.AMERICAN-USA.COM)

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### AMERICAN Ductile Iron Pipe Product Submittal Package

#### No cover information entered.

*This is to certify materials furnished on this project by AMERICAN will comply with the ANSI/AWWA Standards listed below. Some components and other materials, including but not limited to various fittings, flanges, gaskets, fasteners, and bolts/nuts may be globally sourced and not of domestic manufacture. ANSI/AWWA Standards are the latest revisions as of this date.*

#### Products Submitted in this Package Include:

- |                                       |                       |
|---------------------------------------|-----------------------|
| 1. Fastite Joint Pipe (pg.1)          | ANSI/AWWA C150/A21.5  |
| 2. Standard Cement Lining (pg.10)     | ANSI/AWWA C104/A21.4  |
| 3. Standard Asphaltic Coating (pg.13) | ANSI/AWWA C151/A21.51 |
| 4. Special Thickness Class (pg.15)    | ANSI/AWWA C150/A21.5  |

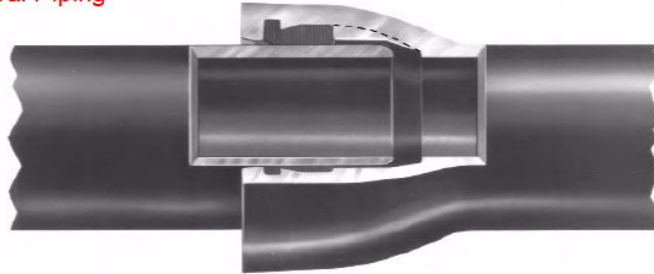




## AMERICAN DUCTILE IRON PIPE

### AMERICAN Fastite® Joint Pipe For Water, Sewage or Other Liquids

#### Fire Hydrant Lateral Piping



AMERICAN Fastite Joint Pipe in sizes 4"-64" for water, sewage or other liquids has the proven long-life and high-strength qualities inherent in pipe produced centrifugally in accordance with AWWA C151. In addition, this significant AMERICAN development, a dependable, single gasket, push-on type joint meeting the requirements of AWWA C111, affords the customer lower joint cost and time-saving advantages in installation. It provides exceptional strength and flexibility and has been widely accepted by engineers, contractors and utility officials since the 1950s. For added flexibility during construction, and for possible elimination of bends, a liberal 5° allowable deflection is standard in all sizes through 30", offering 21" offset in a 20' length of pipe. Liberal deflection can also be provided in larger diameter pipe with standard and Special Fastite Deflection Bells.

The patented AMERICAN Fastite Joint embodies many advanced design features and is rated for a water working pressure of 350 psi. For specific conditions, ductile iron piping with this joint has been approved for much higher pressure conditions. The socket, which is scientifically designed with two gasket recesses and a dividing buttress, is manufactured to close tolerances so that the gasket is self-centered, securely confined, and firmly compressed for a permanent, tight, trouble-free joint. The Fastite joint seal, bubble-tight under vacuum and external pressure, becomes even tighter with the application of internal pressure due to a specially designed wedging surface in the socket.

#### Fastite Joint Assembly

The bell opening is slightly tapered to provide easy entry of the pipe end; the flared socket design permits liberal joint deflection.

The plain end of the pipe is tapered or rounded to facilitate entry into the bell and self-centering in the gasket. On pipe cut in the field, the plain end can be easily beveled and smoothed by the use of a portable grinding wheel or other suitable apparatus. Methods of cutting ductile iron pipe are described in Section 3.

A stripe is painted on the plain end of AMERICAN Fastite Joint Pipe to provide a visual means of checking the joint alignment and to assure proper insertion. See page 2-10 for detailed assembly instructions.

#### Fastite Gasket

The Fastite Joint sealing component—a molded synthetic rubber ring gasket of two hardnesses, shaped to fit the configuration of the gasket socket—is manufactured per all requirements of ANSI/AWWA C111/A21.11 and under AMERICAN's own rigid specifications, assuring closely controlled dimensional and hardness properties. The smaller end of the gasket is of harder rubber, approximately 85 durometer hardness, which provides a strong shoulder for self-centering on the gasket buttress, a permanent seal against cold flow, and protection from deterioration. The larger end of the gasket is of softer rubber, approximately 65 durometer hardness, providing ease of assembly and positive sealing. The design assures effective sealing at low or high pressures and in straight or deflected joint alignment. It also eliminates any concerns of infiltration or root intrusion, and assures positive sealing against negative pressure, thus preventing gasket "pullout" should a vacuum be created in the line.

A taper on the inside of the gasket allows the entering pipe to locate and center on the hard section and reduces friction loads during

## AMERICAN DUCTILE IRON PIPE



subsequent assembly. The snug fit and the hard section of the gasket, in conjunction with the design of the buttress, act to restrain the gasket against dislodgment during assembly. Additional internal pressure results in increased tightness of the seal when pipe is either in straight alignment or deflected.

Gaskets made of SBR (Styrene Butadiene Rubber) are standard. For information on gaskets made of special types of rubber, for applications involving air or liquid temperatures in excess of 150°F, or for chemical, hydrocarbon or other special service applications, and for installations in contaminated soils where permeation through gaskets might be a concern, consult AMERICAN for recommendations. See Table 2-1.

**Fastite Lubricant**

AMERICAN Fastite Joint Lubricant is a non-toxic water soluble material imparting neither taste nor odor to the conveyed water and is ANSI/NSF 61 approved. The lubricant is suitable for use in hot or cold weather and will adhere to wet or dry pipe. AMERICAN Fastite Joint Pipe

can be assembled when submerged, though for such installation, special AMERICAN underwater joint lubricant is recommended. See Table No. 2-5 for appropriate lubricant quantities.

**Fastite Joint Materials**

Standard joint materials include Fastite plain rubber gaskets and a sufficient supply of Fastite joint lubricant. Fastite pipes are most often readily joined with available excavating equipment; however, assembly tools can be supplied by AMERICAN on a loan basis with a nominal deposit which is refundable upon return of tools in good condition.

**Fittings**

AMERICAN Fastite or Flex-Ring fittings and AMERICAN Mechanical Joint Fittings are used with Fastite Joint pipe. See Sections 4 and 5.

**Coating and Lining**

AMERICAN Fastite Joint Pipe can be furnished asphaltic coated, cement lined, or with special coating or lining where required. See Section 11.

**Fastite Gaskets**

Table No. 2-1

Common Name or Trade Name*	Chemical Name	Maximum Service Temperature**		Common Uses
		Water & Sewer	Air	
Plain Rubber	Styrene Butadiene Copolymer(SBR)	150°F	150°F	Fresh Water, Salt Water, Sanitary Sewage
Plain Rubber (conductive)	Styrene Butadiene Copolymer(SBR)	150°F	150°F	Electrical continuity for thawing of Service Water and Sewage
EPDM	Ethylene Propylene Diene Monomer	212°F	200°F	Water, Sewage, Ketones, Dilute Acids and Alkalies, Vegetable Oil, Alcohols, Air
Neoprene	Polychloroprene(CR)	200°F	180°F	Fresh Water, Sewage
Nitrile Buna-N	Acrylonitrile Butadiene(NBR)	150°F	150°F	Non-Aromatic Hydrocarbons, Petroleum Oil, Hydraulic Fluids, Fuel Oil, Fats, Oil, Grease†
Fluoroelastomer Fluorel Viton®***	FKM	212°F	300°F	Aromatic Hydrocarbons, Gasoline, Refined Petroleum Products, most Chemicals and Solvents, High Temp., Air (Least permeable of all available Fastite gasket rubbers)

\*AMERICAN reserves the right to furnish any Trade or Brand rubber for the chemical formulation specified.

\*\*Temperature is in reference to conveyed fluid. Lubricating oil in air can adversely affect SBR and EPDM performance.

SBR, Nitrile and Neoprene are not recommended for hot air exposure in wastewater treatment systems.

\*\*\*Viton® is a registered trademark of DuPont Dow Elastomers.

Refer to Section 11 for temperature and service capabilities of pipe linings.

Refer higher temperatures or other special requirements to AMERICAN for recommendations regarding suitable gasket material.

†This gasket rubber is chemically resistant in the non-potable water uses shown but is not as resistant to permeation in potable water applications as FKM.

All Fastite gaskets made from the materials in the above table are suitable for use with water containing normal concentrations of chloramine. Where increased resistance to chloramine is desired, neoprene or fluoroelastomer materials should be considered.



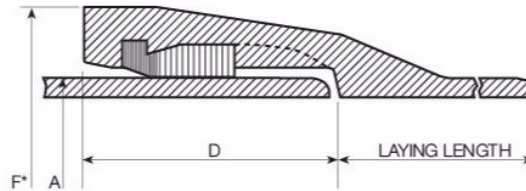

**AMERICAN DUCTILE IRON PIPE**
**AMERICAN Fastite® Joint  
for Ductile Iron Pipe  
ANSI/AWWA C111/A21.11  
Standard Dimensions**


Table No. 2-2

Size in.	Nominal Laying Length ft.	Dimensions in Inches		
		A Outside Diameter	D Depth of Socket	F* Bell O.D.
4	18	4.80	3.31	6.40
6	20	6.90	3.38	8.60
8	20	9.05	3.75	11.16
10	20	11.10	3.75	13.25
12	20	13.20	3.75	15.22
14	20	15.30	5.23	17.73
16	20	17.40	5.23	19.86
18	20	19.50	5.50	22.16
20	20	21.60	5.50	24.28
24	20	25.80	5.50	28.50
30	20	32.00	6.50	34.95
36	20	38.30	6.50	41.37
42	20	44.50	7.50	48.27
48	20	50.80	8.00	54.71
54	20	57.56	8.50	61.65
60	20	61.61	8.75	65.80
64	20	65.67	9.00	70.04

\*Dimensions subject to change at our option. Check AMERICAN if exact dimensions required.  
See Section 3 for additional information on ductile iron pipe.  
See Sections 4 and 7 for information on Fastite fittings.

## AMERICAN DUCTILE IRON PIPE


**AMERICAN Fastite® Joint Pipe**  
**Allowable Joint Deflection**


Table No. 2-3

Size in.	Nominal Laying Length ft.	Maximum Recommended Deflection†					
		Standard Bell			Special Deflection Bell		
		X Offset per Nominal Length in.	Y Deflection Angle	Radius of Curve* ft.	X Offset per Nominal Length in.	Y Deflection Angle	Radius of Curve* ft.
4	18	19	5°	206	-	-	-
6	20	21	5°	230	-	-	-
8	20	21	5°	230	-	-	-
10	20	21	5°	230	-	-	-
12	20	21	5°	230	-	-	-
14	20	21	5°	230	-	-	-
16	20	21	5°	230	-	-	-
18	20	21	5°	230	-	-	-
20	20	21	5°	230	-	-	-
24	20	21	5°	230	-	-	-
30	20	21	5°	230	-	-	-
36	20	17	4°	285	21	5°	230
42	20	12	3°	380	21	5°	230
48	20	12	3°	380	17	4°	285
54	20	12	3°	380	17	4°	285
60	20	12	3°	380	17	4°	285
64	20	12	3°	380	17	4°	285

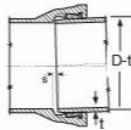
\*Approximate radius of curve produced by a succession of nominal lengths of pipe fully deflected.

†Special Deflection Bells must be specifically ordered and will be marked with white bell face for easy identification. For easiest assembly, the joints should be assembled with the pipe in reasonably straight alignment. After joint assembly, the pipe may be deflected up to the maximum shown above. Offset distances are based on 20' lengths.

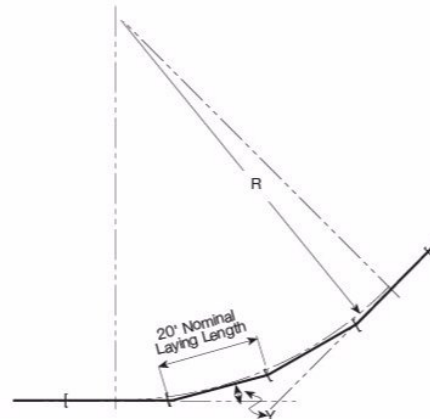
**Maximum Allowable Separation**

Table No. 2-4

Size in.	S Separation in.
4	3/8
6	1/2
8	5/8
10	3/4
12	1 1/8
14	1 1/4
16	1 1/2
18	1 3/4
20	1 7/8
24	2 1/4
30	2 3/4
36	2 3/4
42	2 3/4
48	2 3/4
54	2 3/4
60	3 1/8
64	3 1/8



Maximum Allowable Separation, "S", in Standard Bell pipe is approximately equal to the median pipe diameter in inches times the sine of the deflection angle. This is provided for information only and should not be used to determine precise joint deflection.



R = Radius of Curve (ft.)

Y = Deflection Angle (degrees)

$$\text{Radius of Curve} = \frac{\text{Nominal Laying Length}}{2 \times \tan(Y \div 2)}$$

## AMERICAN DUCTILE IRON PIPE



## AMERICAN Linings for Pipe and Fittings

The principal standard covering cement lining is ANSI/AWWA C104/A21.4. This and other standards are referenced throughout this Section either by the full ANSI/AWWA designation or by only the AWWA numbering, such as AWWA C104.

Along with technical and metallurgical advancement in piping materials, research on lining requirements for pipe and fittings has resulted in the development of linings to meet many different service requirements. AMERICAN offers several types of linings, the most common being cement lining.

Pipe and fittings furnished by AMERICAN are offered unlined or with linings as follows:

1. Cement Lined per AWWA C104.
2. Asphaltic Lined per AWWA C110, C115 or C151.

3. Fusion-Bonded Epoxy (for 4"-16" Fastite fittings) per AWWA C116.

4. PROTECTO 401 Lined - Ceramic Epoxy Lined.

5. Special Lining - for unusual service conditions.

### Cement Lining

Cement-mortar lining for ductile iron pipe and ductile and gray iron fittings for water service is in accordance with ANSI/AWWA C104/A21.4.

Cement-lined pipe is also furnished for some sewage service and a number of other applications. In fact, most pipe furnished is cement lined, providing improved flow characteristics and the required protection against internal corrosion. The cement lining is satisfactory for temperatures up to 212°F. If asphaltic seal coat is furnished, the lining is only adequate for temperatures up to 150°F. For other services contact AMERICAN regarding temperature limitations of cement lining.

The first recorded installation of cement-lined gray iron pipe was in 1922 at Charleston, S.C. This lining was developed by the Charleston Commission of Public Works in cooperation with American Cast Iron Pipe Company. Since this beginning, AMERICAN has furnished most of its pipe with cement lining. The lining is applied centrifugally with the speed of rotation designed to produce a smooth waterway surface, minimal voids, yet retaining enough moisture for proper curing. AMERICAN cement-lined

pipe and fittings are listed by ANSI/NSF Standard 61 for potable water contact.

Flow tests on cement-lined pipe under varying service conditions have established that the Hazen-Williams flow coefficient remains as expected at about 140, and flow tests on cement-lined, large-diameter AMERICAN Ductile Iron pipe have confirmed flow coefficients much higher than 140.

### Handling Cement-Lined Pipe and Fittings

Pipe and fittings with cement lining should be handled with rubber-covered hooks or other type equipment to prevent damage to the cement lining. Bare fork lift arms or bare hooks should not be inserted into open ends.

### Characteristics of Cement Lining

AWWA C104 allows for surface crazing and cracks of a specified nature and magnitude. Occasionally cracks and looseness in linings may occur prior to installation, particularly where pipe is stored for a considerable time. Many years' experience with cement-lined pipe and fittings has verified that this condition is not detrimental to the perfor-





## AMERICAN DUCTILE IRON PIPE

mance and effectiveness of the lining.

When a cement-lined pipe is placed in service and filled with water, two reactions begin immediately. The first is a gradual elimination of the temperature differential between pipe and lining, thus eliminating any stresses in the lining due to this condition.

Secondly, the lining begins to absorb water. Water is absorbed into the pores of the cement and into the capillary channels of the calcium silicate gel. The water absorption causes the lining to swell, restoring it to intimate contact with the pipe wall and virtually closing any cracks present in the lining. This swelling process is relatively slow, taking up to several weeks for the lining to be restored to its maximum volume. This process has been demonstrated on a number of occasions to the satisfaction of customers, contractors and engineers by immersing a pipe or fitting in water for one or two weeks.

After a period of exposure to water, not only does the lining tighten against the pipe wall and the cracks close, but finally the surfaces of the cracks actually re-bond. This occurs by a process called autogenous healing. This phenomenon, long recognized by the cement industry, has been documented by laboratory tests to occur in cement-lined ductile pipe. In one test, a 48" ductile iron pipe with severely cracked cement lining was held half full of water for several months. At the end of that period, the lining both above and below the water surface was found to be tight, with all cracks either healed completely or sealed by the formation of calcium carbonate.

Field inspections of lines that have been in service for many years have verified the laboratory results; cement linings do tighten and heal in service and provide the corrosion protection to the pipe and the high flow coefficients for which they were designed.

### Field Repair of Damaged Cement Linings

Cement lining will withstand normal handling; nevertheless, pipe or fittings may be found at times to have damaged linings which need to be repaired before placing in service.

AWWA C104 provides that damaged lining may be repaired, and the following repair procedure is recommended:

1. Cut out the damaged lining to the metal. Square the edges.
2. Thoroughly wet the cut-out area and adjoining lining.
3. With the damaged area cleaned and the adjoining lining wet, spread the mortar (see recommended mix below) evenly over the area to be patched. (See Table No. 11-1, next page, for lining thicknesses.) After the lining has become firm and adheres well to the surface, finish it with a wet 3" or 4" paint brush or similar soft bristle brush.
4. The repaired lining should be kept moist by tying canvas, wet burlap, or other wrap over the ends of the pipe or fitting for at least 24 hours. As an alternative the repaired lining may be seal coated with a cut back type of asphaltic seal coating. This must be sprayed or brushed on within five to 30 minutes after lining. To maintain NSF certification, patch must be made using a NSF certified cement for 4" pipe and larger, or the patch must be topcoated with NSF certified asphalt paint.

### Recommended Cement Mix

Cement mix by volume: 3 Parts Portland Cement; 2 Parts Clean Sand; necessary water for slump of 5" to 8". The sand should be free of clay and screened through a No. 20 Screen.

### Precautions

1. Mortar for lining should not be used after it has been mixed for more than one hour.
2. Too rapid a loss of moisture from fresh linings due to hot weather or high wind will prevent proper cure, resulting in the lining being soft and powdery. To prevent this loss of moisture, (a) do not line hot castings and (b) close the ends of the castings with wet burlap.
3. Fresh linings that become frozen will not be serviceable. Avoid lining in freezing weather.

## AMERICAN DUCTILE IRON PIPE



### Cement Lining ANSI/AWWA C104/A21.4 Thicknesses and Weights

Table No. 11-1

Size in.	Nominal Pipe Length ft.	Standard Thickness			Double Thickness		
		Minimum Thickness in.	Weight Per Foot lb	Weight Per Length lb	Minimum Thickness in.	Weight Per Foot lb	Weight Per Nominal Length lb
4	18	$\frac{1}{16}$	.87	17	$\frac{1}{8}$	1.71	31
6	20	$\frac{1}{16}$	1.30	26	$\frac{1}{8}$	2.57	51
8	20	$\frac{1}{16}$	1.74	35	$\frac{1}{8}$	3.45	69
10	20	$\frac{1}{16}$	2.15	43	$\frac{1}{8}$	4.28	86
12	20	$\frac{1}{16}$	2.57	51	$\frac{1}{8}$	5.12	102
14	20	$\frac{3}{32}$	4.49	90	$\frac{3}{16}$	8.93	179
16	20	$\frac{3}{32}$	5.13	103	$\frac{3}{16}$	10.19	204
18	20	$\frac{3}{32}$	5.76	115	$\frac{3}{16}$	11.47	229
20	20	$\frac{3}{32}$	6.40	128	$\frac{3}{16}$	12.73	255
24	20	$\frac{3}{32}$	7.68	154	$\frac{3}{16}$	15.31	306
30	20	$\frac{1}{4}$	12.76	255	$\frac{1}{4}$	25.42	508
36	20	$\frac{1}{4}$	15.31	306	$\frac{1}{4}$	30.51	610
42	20	$\frac{1}{4}$	17.82	356	$\frac{1}{4}$	35.53	711
48	20	$\frac{1}{4}$	20.35	407	$\frac{1}{4}$	40.60	812
54	20	$\frac{1}{4}$	22.89	458	$\frac{1}{4}$	45.68	914
60	20	$\frac{1}{4}$	24.71	494	$\frac{1}{4}$	49.32	986
64	20	$\frac{1}{4}$	26.35	527	$\frac{1}{4}$	52.61	1052

Weights are based on the minimum lining thicknesses for minimum pressure classes of Fastite ductile iron pipe.  
Actual lengths and weights may differ from above.

Linings may taper at the ends.

AMERICAN recommends the use of standard thickness cement lining per AWWA C104 for all normal installations.



This 64" Ductile Iron Fastite Joint water transmission main was furnished with standard cement lining for continuing high flow performance.



## AMERICAN DUCTILE IRON PIPE



## AMERICAN Coatings and Primers for Pipe and Fittings

Several different types of exterior primers for pipe and fittings are available from AMERICAN. Because of variables and complexities involved in the selection and application of a proper coating for a given service, AMERICAN invites inquiries for technical assistance.

AMERICAN furnishes most pipe and fittings coated outside with an asphaltic coating approximately one mil thick per AWWA C151 for ductile iron pipe, AWWA C115 for flanged pipe and AWWA C110 and C153 for fittings.

All across the United States ductile iron and gray iron pipe and fittings with this standard coating have provided trouble-free service for decades. Unless otherwise specified, an asphaltic coating is applied to the outside of all pipe and fittings manufactured by AMERICAN.

The asphaltic coating works in conjunction with manufacturing annealing scale to provide a barrier to corrosion. If soils are deemed to be corrosive to ductile iron pipe when evaluated in accordance with the Design Decision Model™ (DDM™\*) or Appendix A of AWWA C105, zinc coating with or without V-Bio polyethylene wrap should be used.

Asphaltic coating is not compatible with most top coats. See the following alternative coating and primer recommendations.

### MCU UNIVERSAL PRIMER (Moisture-Cured Urethane)

This is a quality, fast-curing, surface tolerant, immersion-grade, moisture-cured urethane (MCU) specially developed and tested for iron substrates. This coating is essentially a universal primer compatible with all major generic topcoats, including acrylics, epoxies, polyurethanes and moisture-cured urethane topcoats. It can also be topcoated with solvent or water-based asphaltic coatings. For the above reasons, it is well suited for most applications, including where the generic topcoats or end uses may not be known.

\*DDM™ (Design Decision Model™) developed jointly by Corpro Companies, Inc., and the Ductile Iron Pipe Research Association.  
See [american-usa.com](http://american-usa.com), [dipra.org](http://dipra.org) or [corpro.com](http://corpro.com) for details.

Other advantages include a very tough, damage-resistant film resulting in less handling and shipping damage and less touch-up and repair in the field than traditional epoxy primers used in the past. This primer does not have a maximum recoat window and does not require field blast cleaning, as long as the surface is clean and free of dust. This primer is considered a high-performance, chemical resistant coating suitable for immersion and non-immersion services. Refer to AMERICAN Recommended and Preferred Primer System - Universal Primer (Moisture-cured urethane) for more information and advantages.

### PHENOLIC ALKYD PRIMER

This is a fast-drying, lead- and chromate-free, corrosion-resistant primer formulated to accept a wide variety of topcoats. It is well suited for applications where the generic topcoats are unknown but its service is limited to atmospheric exposure. Refer to AMERICAN Alkyd-Phenolic Primer. **NOTE: NOT RECOMMENDED FOR IMMERSION. MUST ALLOW UP TO 30 DAYS OF CURING BEFORE TOPCOATING WITH CERTAIN COATINGS.**

### EPOXY PRIMER

This is a high-solids, chemical- and corrosion-resistant coating for protection against abrasion, moisture, corrosive fumes, chemical attack and immersion.



**This 30" AMERICAN Ductile Iron Fastite joint treated-water transmission main was furnished and installed—as is most ductile iron pipe—with standard asphaltic coating approximately one mil thick on the outside.**

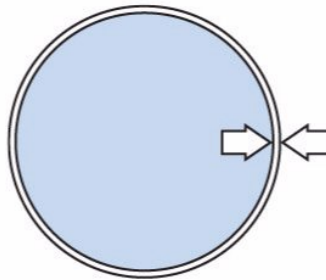

**AMERICAN DUCTILE IRON PIPE**
**AMERICAN Ductile Iron Pipe**
**ANSI/AWWA C150/A21.50**
**and**
**ANSI/AWWA C151/A21.51**
**Nominal Wall Thicknesses for Special Thickness Classes**


Table No. 3-12

Size in.	Outside Diameter in.	SPECIAL THICKNESS CLASSES—Wall Thickness in Inches*						
		50	51	52	53	54	55	56
4	4.80	-	.26	.29	.32	.35	.38	.41
6	6.90	.25	.28	.31	.34	.37	.40	.43
8	9.05	.27	.30	.33	.36	.39	.42	.45
10	11.10	.29	.32	.35	.38	.41	.44	.47
12	13.20	.31	.34	.37	.40	.43	.46	.49
14	15.30	.33	.36	.39	.42	.45	.48	.51
16	17.40	.34	.37	.40	.43	.46	.49	.52
18	19.50	.35	.38	.41	.44	.47	.50	.53
20	21.60	.36	.39	.42	.45	.48	.51	.54
24	25.80	.38	.41	.44	.47	.50	.53	.56
30	32.00	.39	.43	.47	.51	.55	.59	.63
36	38.30	.43	.48	.53	.58	.63	.68	.73
42	44.50	.47	.53	.59	.65	.71	.77	.83
48	50.80	.51	.58	.65	.72	.79	.86	.93
54	57.56	.57	.65	.73	.81	.89	.97	1.05

\*These are Special Thickness Classes as shown in AWWA C150 and C151. They were previously designated standard thickness classes. AMERICAN can furnish any thickness in between these Special Thicknesses if deemed economical for major projects.

Special classes are most appropriately used for some threaded, grooved, or ball and socket pipes or for extraordinary design conditions, and they are generally less available than standard pressure class pipe.

For pressure rating and maximum depth of cover capabilities of Special Thickness Classes, check AMERICAN. These capabilities can be estimated by comparing metal thickness and capabilities of those of Pressure Classes in Table No. 3-11, or may be calculated by using the design formulas shown in AWWA C150.



# AMERICAN

## FLOW CONTROL

**THE RIGHT WAY**

**AMERICAN Flow Control**

**P.O. Box 2727**

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### **AMERICAN Flow Control Product Submittal Package**

**No cover information entered.**

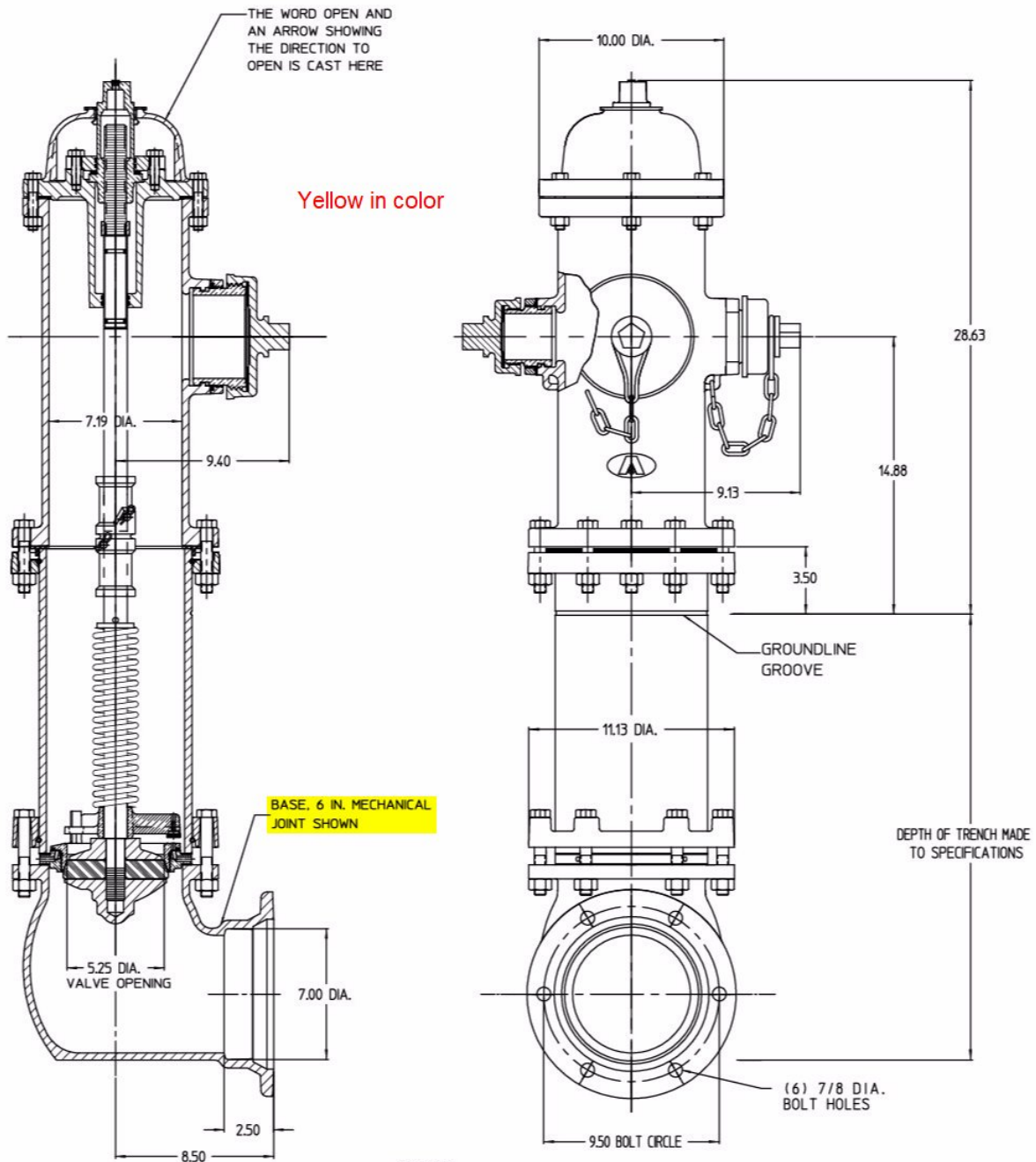
#### **Products Submitted in this Package Include:**

1. 5-1/4" B62B-5 Traffic Model Fire Hydrant (pg.1)



# AMERICAN Flow Control Submittal Information

## 5-1/4 AMERICAN-DARLING® B-62-B-5 TRAFFIC MODEL FIRE HYDRANT



91-21442

### NOTES

1. Size and shape of operating nut and nut on caps, threading on nozzles and caps and the direction of opening made to specifications.
2. Cap chains are not furnished unless specified.
3. Bolts and nuts are rustproof steel ASTM A307 or equivalent, in accordance with AWWA C502.
4. Working pressure 200 psig, test pressure 400 psig.
5. Hydrant conforms to AWWA standard C502.
6. UL Listed and Approved by FM Approvals at 200 psig in allowable configurations.
7. Valve top, valve bottom and base coated with fusion bonded epoxy coating.
8. Certified to NSF/ANSI Standard 61 and NSF/ANSI 372.
9. Nominal turns to open is 22.



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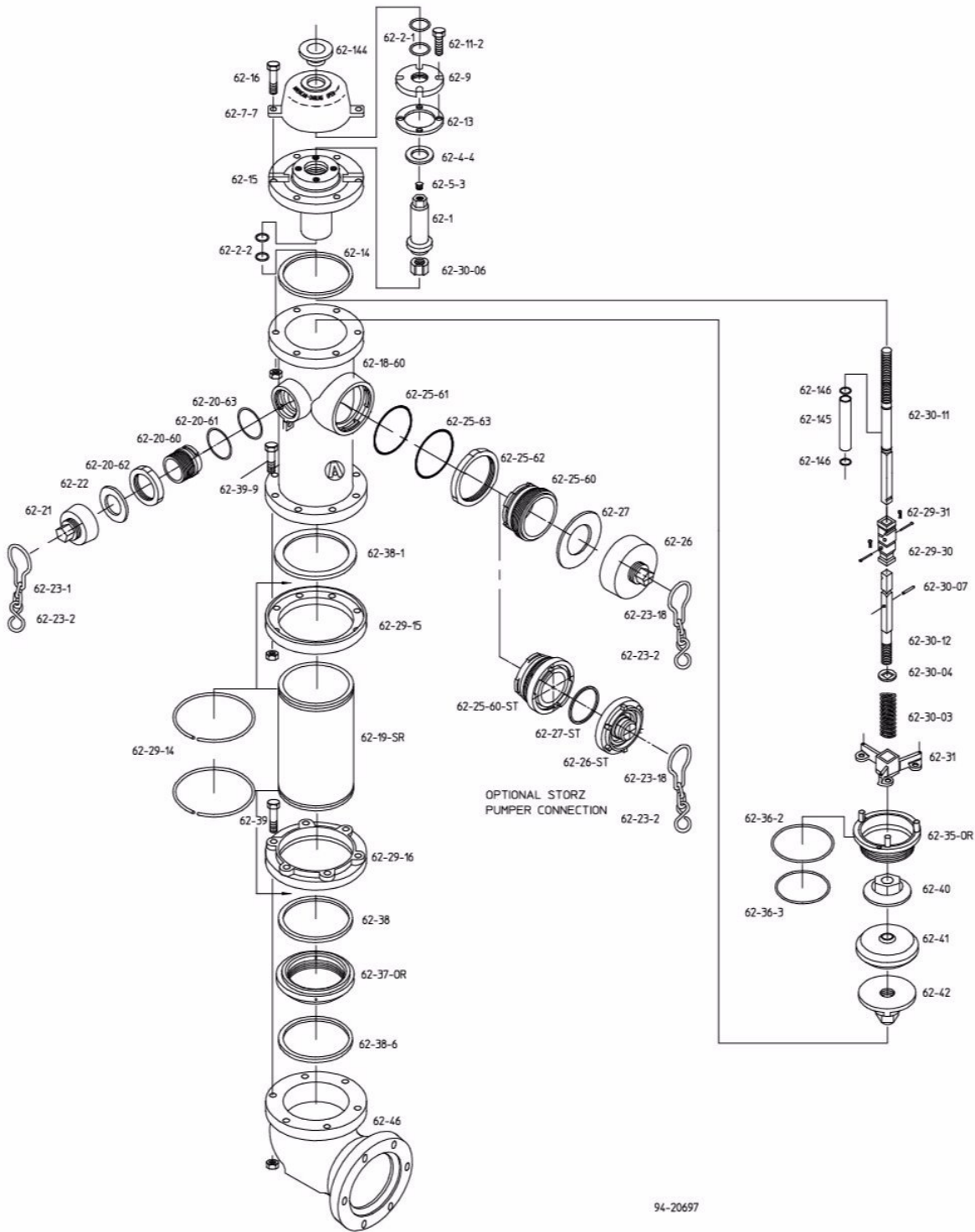
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# WATER



94-20697



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# WATER

Ref. No.	Qty.	Description	Material
61-1	1	Operating Nut	Bronze ASTM B763 UNS C84400
62-2-1	2	Cover O-Ring	Buna N
62-2-2	2	Housing O-Ring	Buna N
62-4-4	1	Thrust Washer	Nylatron
62-5-3	1	Pipe Plug	Stainless Steel
62-7-7	1	Weather Cover	Gray Iron ASTM A126 Class B
62-9	1	Housing Cover	Gray Iron ASTM A126 Class B
62-11-2	4	Cover Cap Screws	See Note 3
63-13	1	Cover Gasket	Fiber
62-14	1	Housing Gasket	EPDM Rubber
62-15	1	Housing	Ductile Iron ASTM A536 Grade 65-45-12
62-16	6	Housing Bolts & Nuts	See Note 3
62-18-60	1	Upper Barrel	Ductile Iron ASTM A536 Grade 65-45-12
62-19-SR	1	Lower Barrel	Ductile Iron AWWA C151 Grade 60-42-10
62-20-60	2	Hose Nozzle	Bronze ASTM B763 UNS C87600
62-20-61	2	Hose Nozzle Seal	Buna N
62-20-62	2	Hose Nozzle Retainer	Ductile Iron ASTM A536 Grade 65-45-12
62-20-63	2	Hose Nozzle Retainer Washer	Teflon
62-21	2	Hose Cap	*See Below
62-22	2	Hose Cap Gasket	Rubber
62-23-1	2	Hose Cap Chain with S-Hook	Steel
62-23-2	3	S-Hook	Steel
62-23-18	1	Pumper Cap Chain with S-Hook	Steel
62-25-60	1	Pumper Nozzle	Bronze ASTM B763 UNS C86700
62-25-60-ST	1	Storz Nozzle	Bronze/Aluminum
62-25-61	1	Pumper Nozzle Seal	Buna N
62-25-62	1	Pumper Nozzle Retainer	Ductile Iron ASTM A536 Grade 65-45-12
62-25-63	1	Pumper Nozzle Retainer Washer	Teflon
62-26	1	Pumper Cap	*See Below
62-26-ST		Storz Nozzle Cat	Aluminum
62-27	1	Pumper Cap Gasket	Rubber
62-27ST	1	Storz Cap Gasket	Rubber
62-29-14	2	Snap Ring	Stainless Steel
62-29-15	1	Breakable Flange	Ductile Iron ASTM A536 Grade 65-45-12
62-29-16	1	Base Flange	Ductile Iron ASTM A536 Grade 65-45-12

\*National Standard and other common cap configurations are constructed of ASTM A536 Grade 65-45-12 ductile iron. Other offerings may be constructed of ASTM A126 Class B gray cast iron.

Ref. No.	Qty.	Description	Material
62-29-30	1	Rod Coupling	Gray Iron ASTM A126 Class B
62-29-31	2	Rod Coupling Pin & Clip Pin	Stainless Steel
62-30-03	1	Hydrant Spring	Stainless Steel
62-30-04	1	Spring Plate	Stainless Steel
62-30-06	1	Travel Stop Nut	Bronze ASTM B283 UNS C37700
62-30-07	1	Spring Plate Pin	Stainless Steel
62-30-11	1	Upper Rod	Steel
62-30-12	1	Lower Rod	Steel
62-31	1	Drain Lever	Bronze ASTM B584 UNS C92200
62-35-OR	1	Hydrant Seat	Bronze ASTM B584 UNS C92200
62-36-2	1	Seat O-Ring-Outside	Buna N
62-36-3	1	Seat O-Ring-Inside	Buna N
62-37-OR	1	Drain Ring	Bronze ASTM B763 UNS C87600
62-38	1	Drain Ring Gasket	Composition Rubber
62-38-1	1	Barrel Gasket	EPDM Rubber
62-38-6	1	Base Gasket	Composition Rubber
62-39	6	Base Bolts & Nuts	0304 Stainless Steel
62-39-9	8	Barrel Bolts & Nuts	See Note 3
62-40	1	Valve Top	Gray Iron ASTM A126 Class B
62-41	1	Hydrant Valve	EPDM Rubber
62-42	1	Valve Bottom	Gray Iron ASTM A126 Class B
62-46-2	1	Flanged Base	Ductile Iron ASTM A536 Grade 65-45-12
62-46-2A	1	Flanged Vertical Entry Base	Ductile Iron ASTM A536 Grade 65-45-12
62-46-5	1	Mechanical Joint Base	Ductile Iron ASTM A536 Grade 65-45-12
62-46-PE	1	Mechanical Joint Plain End Base	Ductile Iron ASTM A536 Grade 65-45-12
62-46-TY	1	TYTON® Base	Ductile Iron ASTM A536 Grade 65-45-12
62-144	1	Weather Shield	Rubber
62-145	1	Rod Sleeve	Bronze
62-146	2	Rod Sleeve O-Ring	Buna N

Hydrants are furnished as "Draining" unless optional "Non-Draining" Configuration is otherwise noted below.

☐ Optional "Non-Draining" Configuration required

Open Direction ☒ Left(C.C.W.) ☐ Right(C.W.)



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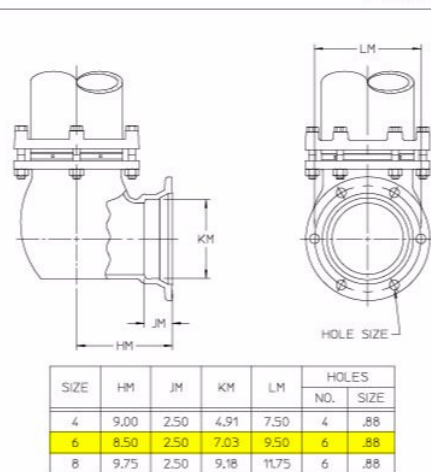
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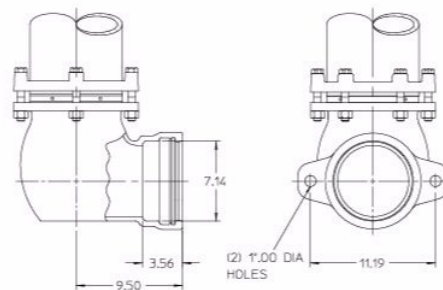
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## Available Bases

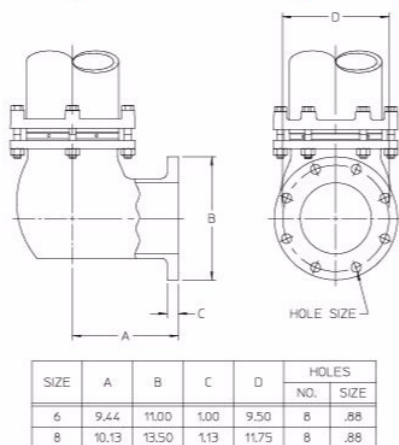


MECHANICAL JOINT BASE



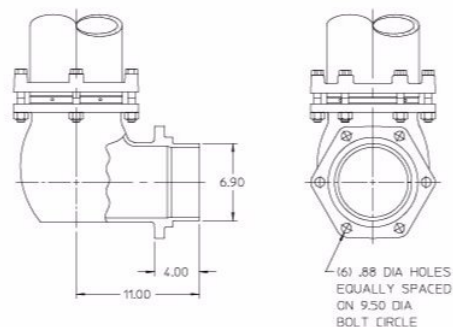
6" TYTON® BASE WITH LUGS

TYTON® is a registered trademark of United States Pipe and Foundry Co., LLC.

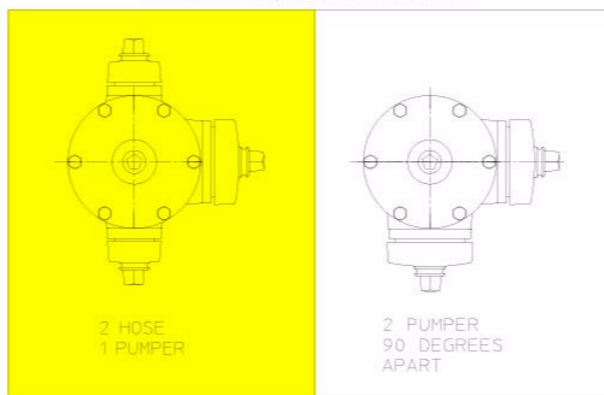


FLANGED BASE

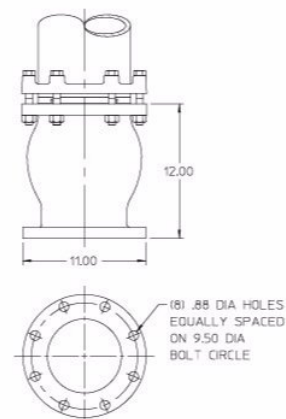
IL1474-2

6" PLAIN END W/INTEGRAL  
MJ GLAND BASE

## AVAILABLE NOZZLE ARRANGEMENTS



91-21352



6" FLANGED VERTICAL ENTRY BASE


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FLOW CONTROL

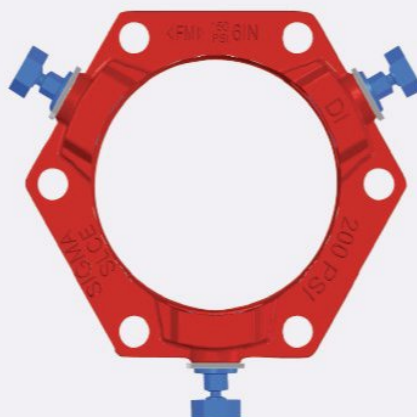
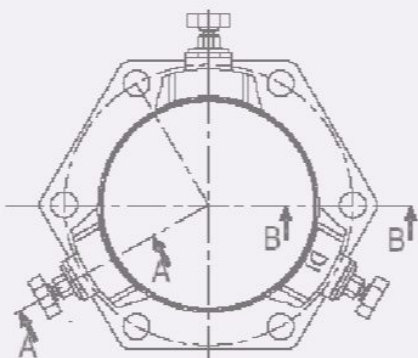
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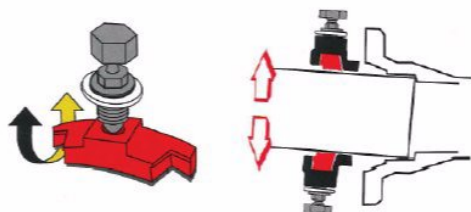
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## ONE-LOK™ Series SLCE for PVC Pipe



### Features & Advantages:



ONE-LOK's unique **CAM ACTION** allows the restraining lugs to "rock" and grip the PVC pipe wall more securely as thrust force increases, and allows for subsidence, seismic or other forces after installation, up to the maximum allowed deflection.



1) The SIGMA ONE-LOK Series SLCE is a mechanical joint restraining gland that implements a series of individually activated wedges into the mechanical joint follower gland. When the wedge segment is engaged by the actuating bolt, the primary contact edges of each wedge segment lock onto the pipe wall. This action causes the primary contact edges to grip the pipe and effectively restrain all classifications of both AWWA C900/C905 and ASTM D2241 IPS size PVC pipe.

2) ONE-LOK SLCE's precision contoured wedges provide proper contact and support of the PVC pipe wall. Each wedge is manufactured with an elongated contour that evenly matches the outside circumference of each nominal diameter of PVC pipe.

3) ONE-LOK SLCE's wedge actuating bolt provides the installer with two visual torque indicators. The breakaway top and secondary shoulder stop ensure proper engagement of the wedge segment at the time of installation. Unlike other actuating bolts, the ONE-LOK SLCE is manufactured with a proprietary quality control system that ensures the breakaway tops will activate at the correct torque. The breakaway top is sized to match the same dimensions of the bolts and nuts used to assemble the mechanical joint fitting and follower gland, eliminating the need for special installation tools. Once engaged, the actuating bolt leaves a residual hex-head shank, allowing post-installation disassembly of the restrained joint, if necessary.

4) ONE-LOK SLCE also features a non-corrosive, two-piece ABS plastic spacer that is removed when using the product to restrain IPS sized pipes meeting ASTM D2241. The two-piece design of this spacer allows it to be removed without requiring disassembly of the product. When the ONE-LOK SLCE is used to restrain pipes meeting AWWA C900, the spacer is left intact on the actuating bolt.

5) ONE-LOK SLCE's unique wedge segment and actuating bolt design allows the two components to interface using a cam action principle, allowing the wedge segments to rock and increase their grip on the pipe wall as thrust on the assembled joint increases. This also allows improved resistance to subsidence, seismic forces, and other movement within the maximum deflection limitations of the mechanical joint under applicable AWWA standards.

SIGMA ONE-LOK SLCE's can be used on all pressure classes and thicknesses of PVC pipe.

SIGMA Corporation

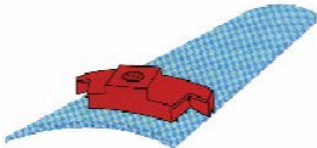
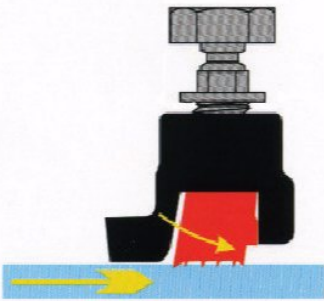
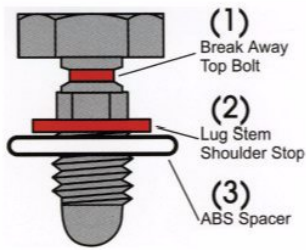
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Cream Ridge, NJ 08514

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crm-sales@sigmaco.com

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# ONE-LOK™ Series SLCE for PVC Pipe

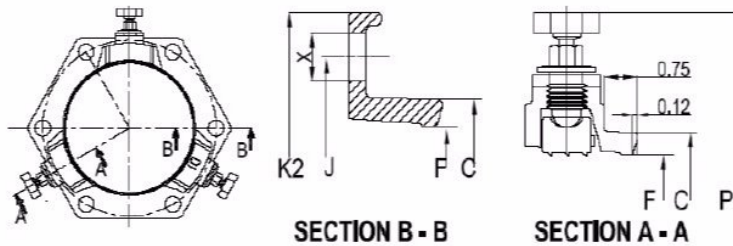


## Sample Specification:

Restraint for standard mechanical joint fittings shall be incorporated in the design of the follower gland and shall utilize multiple wedge segments that act against the pipe, increasing their resistance as the line pressure increases. The assembled joint shall maintain the maximum flexibility and deflection of all nominal pipe sizes after burial. Restraining gland, wedge segments, and actuating bolts shall be manufactured of high strength ductile iron conforming to the requirements of ASTM A536, Grade 65-45-12. Dimensions shall be compatible with standardized mechanical joints conforming to the requirements AWWA C111/ANSI A21.11 and AWWA C153/ANSI 21.53 through 24" (latest revision). Breakaway tops shall be incorporated in the design of the actuating bolts to visually ensure proper torque. The manufacturing of the actuating bolt must incorporate a quality control procedure that is deemed acceptable by the specifier and positively assures precise and consistent operating torque of the breakaway top. The mechanical joint restraining devices shall have a working pressure rating of 200psi (235psi for sizes 14-36") minimum and provide no less than a safety factor of 2:1. Restraint shall be FM approved in applicable sizes. Restraining device shall be SIGMA ONE-LOK™ or approved equal.

## Material:

- Gland body, brackets, wedge segments & actuating bolts ASTM A536 65-45-12 ductile iron.
- Restraining Rods & Nuts: High strength, low alloy steel meeting AWWA/ANSI C111/A21.11 with minimum 65,000 psi tensile strength and 45,000 psi yield strength.
- Side Clamping Bolts & Hex Nuts: ASTM A449 high strength steel.



## Dimensions in Inches, Weights in Pounds

Size	Item #	Weight	PVC Pipe DI OD	IPS Pipe OD	Dimensions								Bolts and Inserts		
					C	F	K2	T	P	P*	X	J	No	Size	Torque
3	SLCE3	6.21		3.50	4.76	3.60	7.18	0.60	9.42	8.50	0.750	6.14	2	7/8	45-55
4	SLCE4	6.78	4.80	4.50	5.92	4.90	7.92	0.60	10.22	9.30	0.875	7.50	2	7/8	50-60
6	SLCE6	10.28	6.90	6.63	8.01	7.00	10.00	0.60	12.87	11.95	0.875	9.50	3	7/8	50-60
8	SLCE8	14.48	9.05	8.63	10.17	9.15	12.18	0.75	14.37	13.45	0.875	11.75	4	7/8	50-60
10	SLCE10	21.40	11.10	10.75	12.22	11.20	14.60	0.85	16.68	15.76	0.875	14.00	6	7/8	50-60
12	SLCE12	26.96	13.20	12.75	14.32	13.30	16.64	0.85	18.58	17.66	0.875	16.25	8	7/8	50-60
14	SLCE14	33.67	15.30		16.40	15.44	20.25	1.20	21.68	19.98	0.875	18.75	10	7/8	55-65
16	SLCE16	41.67	17.40		18.50	17.54	22.45	1.21	23.65	21.95	0.875	21.00	12	7/8	55-65
18	SLCE18	49.50	19.50		20.60	19.64	24.75	1.25	25.79	24.09	0.875	23.25	12	7/8	55-65
20	SLCE20	61.17	21.60		22.70	21.74	27.00	1.34	28.16	26.46	0.875	25.50	14	7/8	55-65
24	SLCE24	79.33	25.80		26.90	25.94	31.50	1.46	32.70	31.00	0.875	30.00	16	7/8	55-65
30	SLCE30	198.00	32.00		33.29	32.17	38.42	2.00	41.92	39.92	1.125	36.88	20	1.00	65-75
36	SLCE36	248.00	38.30		39.59	38.47	46.00	2.00	48.78	46.78	1.125	43.75	24	1.00	65-75

ONE-LOK SLCE was previously referred to as model SLC

P\* Dim shows OD after head is broken/removed.



Sizes 4" - 12" are UL approved  
 Sizes 4" - 12" are FM approved for 150 psi on AWWA C900 pipe and have been tested in accordance with ASTM F1674.





Quality – Service – Commitment – Delivered.

Nominal Pipe Size	Item #	Pressure Rating											
		C900			ASTM D2241			C905					
		DR14	DR18	DR25	SDR17	SDR21	SDR26	DR18	DR21	DR25	DR32.5	DR41	DR51
3	SLCE3	-	-	-	250	200	160	-	-	-	-	-	-
4	SLCE4	305	235	165	250	200	160	-	-	-	-	-	-
6	SLCE6	305	235	165	250	200	160	-	-	-	-	-	-
8	SLCE8	305	235	165	250	200	160	-	-	-	-	-	-
10	SLCE10	305	235	165	250	200	160	-	-	-	-	-	-
12	SLCE12	305	235	165	250	200	160	-	-	-	-	-	-
14	SLCE14	-	-	-	-	-	-	235	200	165	125	100	-
16	SLCE16	-	-	-	-	-	-	235	200	165	125	100	-
18	SLCE18	-	-	-	-	-	-	235	200	165	125	100	80
20	SLCE20	-	-	-	-	-	-	235	200	165	125	100	80
24	SLCE24	-	-	-	-	-	-	235	200	165	125	100	80
30	SLCE30	-	-	-	-	-	-	-	-	165	125	100	80
36	SLCE36	-	-	-	-	-	-	-	-	165	125	100	80

NOTE: All packs come with ONE-LOK SLCE Gland, MJ or SIGMA Seal Gaskets & required # of T-Bolts

### **Installation Instructions:**

*Note: This product is not designed to be used on plain end fittings.*

1. Clean fitting socket and pipe end. Lubricate gasket and pipe end with soapy water (or approved pipe lubricant meeting AWWA C111). Install ONE-LOK™ restrainer on the pipe with the lip extension facing the pipe end, followed by the gasket, tapered side toward end of pipe. Insert pipe into fitting outlet and seat the gasket firmly and evenly into the gasket cavity. Maintain a straight joint during assembly.

NOTE: SIGMASEAL Gasket is recommended for ONE-LOK 30-36". When installing SIGMASEAL gasket, the tapered edges of the gasket must face away from the pipe wall.

2. Push the ONE-LOK gland toward the fitting and center it around the pipe with the lip evenly against the gasket. Insert the T-bolts and hand-tighten the nuts. If deflection is required, make up after joint assembly but before tightening T-bolts.

3. Tighten T-bolts in an alternating manner maintaining an even gap between the gland and the fitting face at all points around the socket. Repeat until all the T-bolts are within the recommended torque value of AWWA C111/C600.

4. For installation on IPS O.D. PVC Pipe, twist, break, and remove the ABS spacers from the actuating bolts. DO NOT REMOVE SPACERS when installing product on C900 PVC. Hand tighten all actuating bolt until complete contact of all wedge segments is made with the pipe.

5. Tighten each actuating in a clockwise direction, alternating between the bolts in a star pattern until the break-off tops have been removed. Never tighten an actuating bolt more than 180 degrees before moving to the next bolt.

## ONE-LOK™ Series SLDE for Ductile Iron Pipe



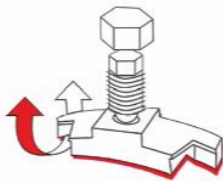
### Features & Advantages:

1) The SIGMA ONE-LOK Series SLDE is a mechanical joint restraining gland that implements a series of individually activated wedges into the mechanical joint follower gland. When the wedge segment is engaged by the actuating bolt, the primary contact edges of each wedge segment lock onto the pipe wall. This action causes the primary contact edges to grip the pipe and effectively restrain all classifications of ductile iron pipe.

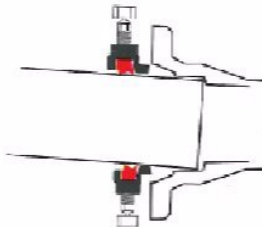
2) ONE-LOK SLDE's precision contoured wedges provide proper contact and support of the ductile iron pipe wall. Each wedge is manufactured with an elongated contour that evenly matches the outside circumference of each nominal diameter of ductile iron pipe. This elongated contour also eliminates the concern of damage to both the pipe wall and the interior cement mortar lining caused by point loading, even on the thinner pressure classes of ductile iron pipe.

3) ONE-LOK SLDE's wedge actuating bolt provides the installer with a visual torque indicator. The breakaway top ensures proper engagement of the wedge segment at the time of installation. Unlike other actuating bolts, the ONE-LOK SLDE is manufactured with a proprietary quality control system that ensures the breakaway tops will activate at the correct torque. The breakaway top is sized to match the same dimensions of the bolts and nuts used to assemble the mechanical joint fitting and follower gland, eliminating the need for special installation tools. Once engaged, the actuating bolt leaves a residual hex-head shank, allowing post-installation disassembly of the restrained joint, if necessary.

4) ONE-LOK SLDE's unique wedge segment and actuating bolt design allows the two components to interface using a cam action principle, allowing the wedge segments to rock and increase their grip on the pipe wall as thrust on the assembled joint increases. This also allows improved resistance to subsidence, seismic forces, and other movement within the maximum deflection limitations of the mechanical joint under applicable AWWA standards.



ONE-LOK's unique cam action allows the restraining wedges to "rock," gripping the pipe wall more securely as thrust force increases.



ONE-LOK's cam action also accommodates deflection of the joint during installation, and also allows for subsidence, seismic or other forces after installation, up to the maximum allowed deflection.

### Deflection Chart

Nominal Size	Item #	Deflection
3-12"	SLDE3-SLDE12	5 deg
14-16"	SLDE14-SLDE16	2 deg
18-24"	SLDE18-SLDE24	1.5 deg
30-48"	SLDE30-SLDE48	1 deg

SIGMA Corporation

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Cream Ridge, NJ 08514800 999 2550 p  
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crm-sales@sigmaco.com

www.sigmaco.com



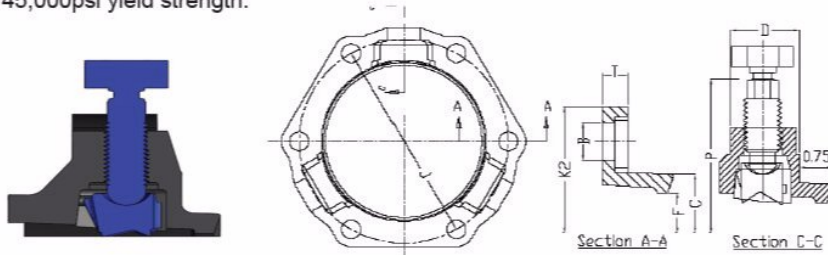
# ONE-LOK™ Series SLDE for Ductile Iron Pipe

## Sample Specification:

Restraint for standard mechanical joint fittings shall be incorporated in the design of the follower gland and shall utilize multiple wedge segments that act against the pipe, increasing their resistance as the line pressure increases. The assembled joint shall maintain the maximum flexibility and deflection of all nominal pipe sizes after burial. Restraining gland, wedge segments, and actuating bolts shall be manufactured of high strength ductile iron conforming to the requirements of ASTM A536, Grade 65-45-12. Wedge segments shall be heat treated to a hardness of 370 BHN minimum. Dimensions shall be compatible with standardized mechanical joints conforming to the requirements AWWA C111/ANSI A21.11 and AWWA C153/ANSI 21.53 through 24" (latest revision). Breakaway tops shall be incorporated in the design of the actuating bolts to visually ensure proper torque. The manufacturing of the actuating bolt must incorporate a quality control procedure that is deemed acceptable by the specifier and positively assures precise and consistent operating torque of the breakaway top. The mechanical joint restraining devices shall have a working pressure rating of 350psi (for sizes 3-16") and 250 psi (for sizes 18-48") minimum and provide no less than a safety factor of 2:1. Restraint shall be UL Listed and FM approved in applicable sizes. Restraining device shall be SIGMA ONE-LOK™ or approved equal.

## Materials:

- Gland body, brackets, wedge segments & actuating bolts: ASTM A536 65-45-12 ductile iron.
- Wedge segments are heat treated to a minimum hardness of 370BHN
- T-head bolts & nuts: High strength, low alloy steel meeting AWWA/ANSI C111/A21.11 with minimum 65,000psi tensile strength and 45,000psi yield strength.



## Dimensions in Inches, Weights in Pounds

Nominal Pipe Size	Item #	Weight	Pipe OD	Allowable Deflection	Dimensions								Bolts and Inserts			Pressure Rating
					C	F	D	T	P*	B	J	K2	No	Size	Torque	
3	SLDE3	5.50	3.96	5°	4.84	4.16	1.58	0.55	9.40	0.750	6.19	7.69	2	7/8	80-90	350
4	SLDE4	6.50	4.80	5°	5.92	5.00	1.58	0.55	10.24	0.875	7.50	9.12	2	7/8	80-90	350
6	SLDE6	10.00	6.90	5°	8.02	7.10	1.58	0.60	12.34	0.875	9.50	11.12	3	7/8	80-90	350
8	SLDE8	14.50	9.05	5°	10.17	9.25	1.63	0.75	14.32	0.875	11.75	13.37	4	7/8	80-90	350
10	SLDE10	23.00	11.10	5°	12.22	11.30	1.58	0.85	16.54	0.875	14.00	15.62	6	7/8	80-90	350
12	SLDE12	29.00	13.20	5°	14.32	13.40	1.58	0.85	18.80	0.875	16.25	17.88	8	7/8	80-90	350
14	SLDE14	39.60	15.30	2°	16.40	15.55	1.58	1.125	21.20	0.875	18.75	20.25	10	7/8	80-90	350
16	SLDE16	49.67	17.40	2°	18.50	17.54	1.77	1.21	23.74	0.875	21.00	22.50	12	7/8	80-90	350
18	SLDE18	60.33	19.50	1.5°	20.60	19.64	1.77	1.25	25.84	0.875	23.25	24.75	12	7/8	80-90	250
20	SLDE20	69.00	21.60	1.5°	22.70	21.74	1.87	1.25	27.94	0.875	25.50	27.00	14	7/8	80-90	250
24	SLDE24	103.67	25.80	1.5°	26.88	25.95	1.92	1.47	32.14	0.875	30.00	31.50	16	7/8	80-90	250
30*	SLDE30	158.67	32.00	1.5°	33.29	32.17	2.13	1.65	39.30	1.125	36.88	39.12	20	1.00	115-125	250
36*	SLDE36	234.50	38.30	1°	39.59	38.47	3.15	1.75	46.07	1.125	43.75	46	24	1.00	115-125	250
42*	SLDE42	344.00	44.50	1°	45.79	44.67	3.56	2.25	53.25	1.38	50.62	53.38	28	1 1/4	115-125	250
48*	SLDE48	456.00	50.80	1°	52.09	50.97	3.81	2.25	59.55	1.38	57.5	60.26	32	1 1/4	115-125	250

ONE-LOK SLDE was previously referred to as model SLD

P\* Dim shows OD after head is broken/removed.

Sizes 3"-12" is approved for thinnest class of DI pipe.

\* Product is provided with SIGMA SEAL™ improved mechanical joint gasket.

Sizes 3" - 14" are UL listed for 350 psi on DI Pipe

Sizes 16" are UL listed for 300 psi on DI Pipe

Sizes 18" - 30" are UL listed for 250 psi on DI Pipe

Sizes 36" are UL listed for 200 psi on DI Pipe

Sizes 42" and 48" are pressure rated at 250 psi on DI Pipe

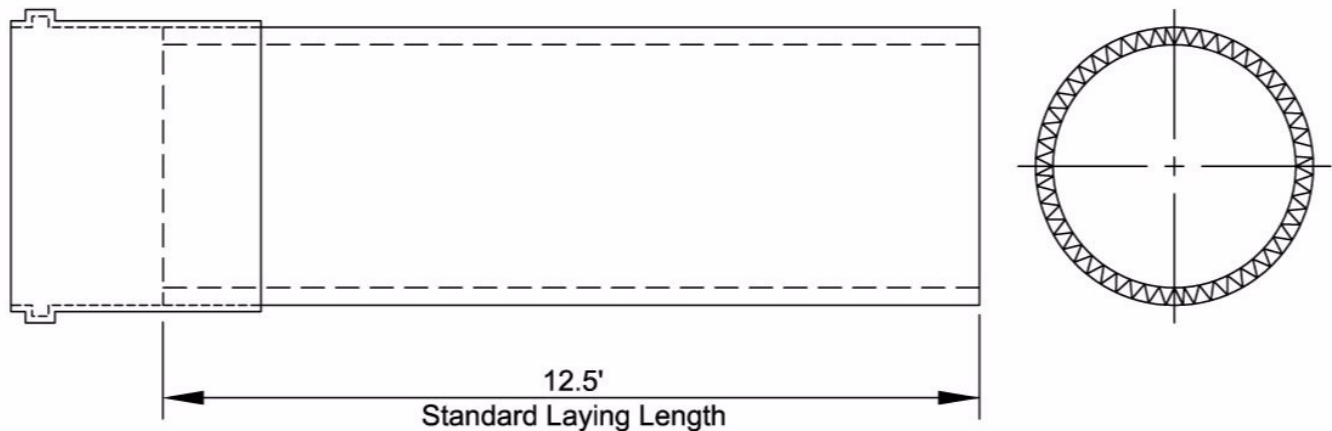
Sizes 4" - 12" are FM approved for 175 psi on DI pipe.





## PVC TRUSS PIPE GASKETED JOINT

Valve Box Riser Pipe



NOMINAL DIAMETERS (IN.)	AVERAGE O.D. (SPIGOT) (IN.)	AVERAGE I.D. (IN.)	MINIMUM STIFFNESS LBS./IN./IN.
8"	9.4	7.8	200
10"	11.8	9.8	200
12"	14.1	11.8	200
15"	17.7	14.8	200

### SPECIFICATION

#### Scope:

This specification includes materials, test methods and installation requirements for 8" to 15" diameter semi-rigid polyvinyl chloride (PVC) composite pipe. 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 composite pipe shall conform to the requirements of ASTM Designation D2680-90 (or latest revision). Pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. Minimum pipe stiffness when measured in accordance with ASTM Test Method D2412 shall be 200 psi. The thermoplastic material shall be a rigid PCV plastic and shall meet or exceed the requirements of ASTM Specification D1784 for a minimum cell classification of 12454B or 12454C. The other component for semi-rigid pipe shall be Portland cement, Mearlcrete concrete or other inert filler material that essentially fills the truss annulus to form a composite pipe.

#### Fittings:

All fittings for PVC composite pipe shall conform to ASTM D2680-90 Section 7.1 and Tables 5 and 6. To insure compatibility, the pipe manufacturer shall furnish all fittings.

#### Joints:

All joints shall be made with gasketed bell coupling connections. The manufacturer shall provide documentation showing no leakage when gasketed pipe joints are tested in accordance with ASTM D2680 Section 10.4.2 and ASTM Test Method D3212. Elastomeric seals (gaskets) shall meet the requirements of ASTM Designation F477.

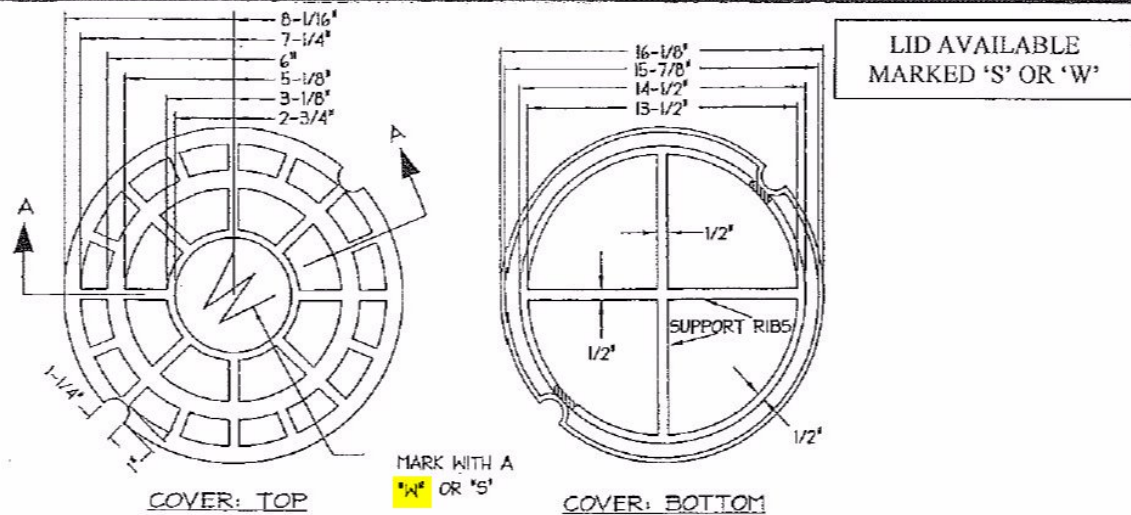
# CAPITOL FOUNDRY OF VA, INC.

2856 CRUSADER CIRCLE  
VIRGINIA BEACH, VA 23453

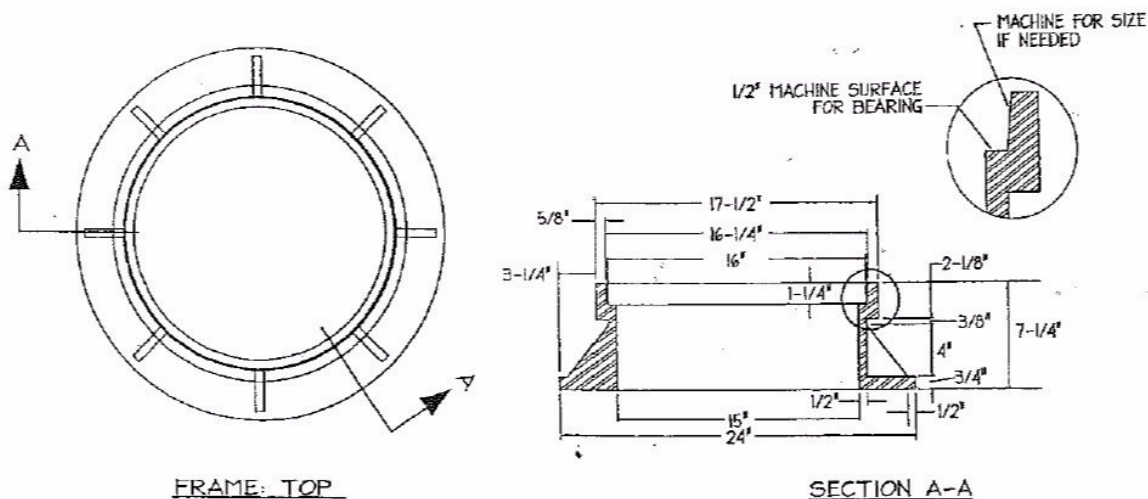
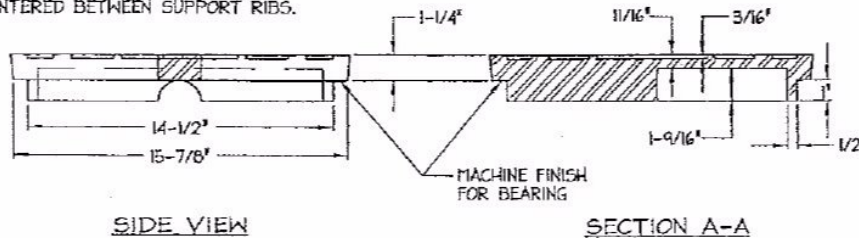
PHONE: (757) 427-9431

FAX: (757) 427-9308

EMAIL: [capitolfoundry@hotmail.com](mailto:capitolfoundry@hotmail.com)



BOTTOM SUPPORT RING TO BE NOTCHED DIRECTLY UNDER PICK HOLE ON BOTH SIDES, NOTCHES TO BE CENTERED BETWEEN SUPPORT RIBS.



## HAMPTON ROADS STANDARD VALVE BOX & LID

MATERIAL SPEC: GRAY IRON ASTM-A48 CLASS 35B

ITEM #NPN-15\*HR



# DETECTABLE TAPE (5.0 MIL)

Solid Aluminum Foil Core • Virgin Clear Polypropylene Film Laminated Top Structure  
Virgin Clear Polyethylene Film Laminated Base Structure • Reverse Printed Polypropylene Structure  
Acid, Alkali, Chemical, and Oil Resistant • Direct Burial Rated • Made in the USA



## Applications and Information

- **Pro-Line's Detectable Marking Tape** is used for detecting, locating, identifying, and protecting buried utility lines for gas, water, sewer, telecommunication, and electrical markets. The width of tape used, is determined by the size of, and depth at which the underground utility line is buried. The depth at which detectable tape is buried, is determined by the width of the tape used.
- **DETECT:** Aluminum core is detected through means of inductive locating.
- **LOCATE:** Line is located and marked after inductive locating is performed.
- **IDENTIFY:** Utility type is identified by both the APWA color-code and utility legend printed on the marking tape.
- **PROTECT:** Detectable tape works 24 hours a day and year round, even if tape is not inductively located during excavation, the tape provides a "stop-sign" effect that is highly visible.

## Standards and References

Pro-Line's Detectable Marking Tape meets or exceeds all applicable ASTM specifications.

- ASTM D2103-08: Standard Specification for Polyethylene Films and Sheeting.
- ASTM D882-09: Standard Test Method for Tensile Properties and Elongation of Thin Plastic Sheeting.
- ASTM D2578-08: Standard Test Method for Wetting Tension of Polyethylene and Polypropylene Films.
- ASTM D792-08: Standard Test Methods for Density of Plastics by Displacement.
- ASTM D671-93: Standard Test Method for Flexural Fatigue of Plastics.

## Construction

Pro-Line's Detectable Marking Tape consists of a minimum 5.0 mil overall thickness. Construction is 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 solid aluminum foil core and then laminated to a 3.75 mil clear virgin polyethylene film. Tape is printed with our APWA Color-Coded, patented "Diagonally Striped" design with big, bold, black lettering to identify a specific buried utility line.

## Specifications

### DETECTABLE UNDERGROUND MARKING TAPE

Underground marking tape shall be a (2", 3", 4", 6" or 12" width), detectable marking tape, with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a **0.35 mil solid aluminum foil core**, and then laminated to a 3.75 mil clear virgin polyethylene film. Tape shall be printed using a diagonally striped design for maximum visibility, and meet the APWA Color-Code standard for identification of buried utilities. Detectable marking tape shall be **Pro-Line Safety Products** or approved equal and made in the USA.



TABLE 1: DETECTABLE TAPE CONSTRUCTION (Polypropylene, Aluminum Foil, and Polyethylene)

PROPERTY	2" WIDTH	3" WIDTH	4" WIDTH	6" WIDTH	12" WIDTH
Nominal Overall Thickness	5.0 mil	5.0 mil	5.0 mil	5.0 mil	5.0 mil
Aluminum Foil Core Thickness	0.35 mil	0.35 mil	0.35 mil	0.35 mil	0.35 mil
Polyethylene Film Thickness	3.75 mil	3.75 mil	3.75 mil	3.75 mil	3.75 mil
Polypropylene Film Thickness	0.80 mil	0.80 mil	0.80 mil	0.80 mil	0.80 mil
Polypropylene Print Method	Reverse Printed	Reverse Printed	Reverse Printed	Reverse Printed	Reverse Printed
Print Design #1 (Patented)	Diagonal Striped	Diagonal Striped	Diagonal Striped	Diagonal Striped	Diagonal Striped
Print Design #2 (Custom)	Solid Block	Solid Block	Solid Block	Solid Block	Solid Block
Print Design #3 (Custom)	Solid Flood	Solid Flood	Solid Flood	Solid Flood	Solid Flood
Print Design Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code	APWA Color-Code

*\*Diagonal striped design is a PATENTED design of Pro-Line Safety Products that enhances tape visibility for superior protection.*

*\*Please note that there may be a nominal + or - 10% difference throughout the overall thickness.*

TABLE 2: TESTING SPECIFICATIONS (Physical and Mechanical Properties)

TEST DESCRIPTION	STANDARD	2" WIDTH	3" WIDTH	4" WIDTH	6" WIDTH	12" WIDTH
Aluminum Foil Core	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Polyethylene Film	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Polypropylene Film	MFG. SPECS	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade	Virgin Grade
Adhesive Type	MFG. SPECS	AV1257/CA100	AV1257/CA100	AV1257/CA100	AV1257/CA100	AV1257/CA100
Adhesive Bond Strength	BOILING WATER	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel	5 hrs W/O Peel
Printed Inks	MFG. SPECS	Chromabond	Chromabond	Chromabond	Chromabond	Chromabond
Print Repeat	MFG. SPECS	Varies by Legend	Varies by Legend	Varies by Legend	Varies by Legend	Varies by Legend
Coefficient Friction	ASTM D4521-96	0.247 Static	0.247 Static	0.247 Static	0.247 Static	0.247 Static
Density	ASTM D792-66	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>
Elongation (MD)	ASTM D882-80A	139%	139%	139%	139%	139%
Elongation (TD)	ASTM D882-80A	80%	80%	80%	80%	80%
Flexural Fatigue	ASTM D671-93	Pliable Hand	Pliable Hand	Pliable Hand	Pliable Hand	Pliable Hand
Printability	ASTM D2578-08	45 Dynes	45 Dynes	45 Dynes	45 Dynes	45 Dynes
Tensile Strength	ASTM D882-09	15,000 psi	15,000 psi	15,000 psi	15,000 psi	15,000 psi

## WEIGHTS, MEASUREMENTS AND PACKAGING

PRODUCT PART NO.	SIZE (WIDTH)	NOMINAL OVERALL THICKNESS	NOMINAL THICKNESS OF STRUCTURAL MATERIALS			RECOMMENDED BURIAL DEPTHS FOR DETECTION	PRODUCT WEIGHT PER ROLL	STANDARD PACKAGING
			ALUMINUM FOIL THICKNESS	POLYETHYLENE THICKNESS	POLYPROPYLENE THICKNESS			
10311XXX3	2" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	6-9 inches	4.75 lbs	9 / CARTON
10312XXX3	3" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	9-12 inches	7.13 lbs	6 / CARTON
10313XXX3	4" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	12-15 inches	9.50 lbs	4 / CARTON
10314XXX3	6" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	15-18 inches	14.25 lbs	3 / CARTON
10316XXX3	12" x 1000'	5.0 MIL	0.35 MIL	3.75 MIL	0.80 MIL	18-24 inches	28.50 lbs	1 / CARTON

**\*\*FOR CUSTOM LEGENDS OR SIZES CALL 800.554.3424\*\***

PRINT LEGEND	PART #
CAUTION BURIED CHILLED WATER LINE BELOW	103
CAUTION BURIED GEOTHERMAL LINE BELOW	128
CAUTION BURIED POTABLE WATER LINE BELOW	115
CAUTION BURIED WATER LINE BELOW	125
CAUTION BURIED FORCE MAIN BELOW	208
CAUTION BURIED FORCE MAIN BELOW	308
CAUTION BURIED SANITARY SEWER LINE BELOW	318
CAUTION BURIED SEWER LINE BELOW	319
CAUTION BURIED STORM DRAIN LINE BELOW	321
CAUTION BURIED STORM SEWER LINE BELOW	322

PRINT LEGEND	PART #
CAUTION BURIED CATV LINE BELOW	402
CAUTION BURIED COMMUNICATION LINE BELOW	404
CAUTION BURIED FIBER OPTIC CABLE BELOW	406
CAUTION BURIED TELEPHONE LINE BELOW	423
CAUTION BURIED NON-POTABLE WATER LINE	512
CAUTION BURIED RECLAIMED WATER LINE BELOW	517
CAUTION BURIED ELECTRIC LINE BELOW	605
CAUTION BURIED HIGH VOLTAGE LINE BELOW	610
CAUTION BURIED GAS LINE BELOW	809
CAUTION BURIED PIPELINE BELOW	814



PRO-LINE SAFETY PRODUCTS COMPANY  
1099 ATLANTIC DRIVE, UNIT 1 • WEST CHICAGO, IL 60185  
TOLL FREE: 800.554.3424





# CU HDPE 30 MIL

## TRACER WIRE

Copper Tracer Wire • 30 Volts • Oxygen Free Copper Conductor • Dead Soft Annealed High Molecular Weight Polyethylene (HMWPE) Insulation • Direct Burial Rated Moisture, Chemical, Oil, and Sunlight Resistant • Impact, Crush, and Abrasion Resistant RoHS Compliant • Made in the USA



### Applications and Information

- Pro-Line **Type CU HDPE 30 MIL** conductors are used for tracer wire applications not exceeding 30 Volts. Tracer wire is used to conductively locate buried utility lines for the gas, water, sewer, telecommunication, and electrical markets.
- When used as **Type CU HDPE 30 MIL**, conductor is suitable for use direct burial applications not locations at temperatures not to exceed 75°C.
- Tracer wire is RoHS Compliant and manufactured in the USA.

### Standards and References

Pro-Line **Type CU HDPE 30 MIL** conductors meets or exceeds all applicable ASTM specifications, requirements of the National Electrical Code.

- ASTM B-3: Standard Specification for Soft or Annealed Copper Wire
- ASTM B170: Standard Specification for Oxygen-Free Electrolytic Copper
- ASTM D1248: Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- ASTM D1238: Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer

### Construction

- Pro-Line **Type CU HDPE 30 MIL** copper conductors are annealed copper (soft drawn), insulated with a high-density, high molecular weight polyethylene (HDPE) insulation. HDPE provides an excellent balance of surface smoothness, processing ease and electrical consistency. HDPE provides superior strength against underground elements that help prevent accidental breaks caused by rocks in shifting soil conditions.
- Available in black, blue, green, orange, purple, red, white, and yellow. Some colors standard, some subject to economic order quantity.

### Specifications

#### TYPE: CU HDPE 30 MIL TRACER WIRE

Tracer wire shall be a (14, 12 or 10 AWG SOLID HDPE 30 MIL) copper conductor with a 30 mil thick, high-density, high molecular weight polyethylene (HDPE) insulation and rated for 30 volts. Insulation and jacket shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be **Pro-Line Safety Products** or approved equal and made in the USA.

**PRO-TRACE™** is a registered trademark of Pro-Pak Industries, Inc.

## CU HDPE 30 MIL Tracer Wire (Weights, Measurements, and Packaging)

## WEIGHTS, MEASUREMENTS AND PACKAGING

PRODUCT PART NO.	CONDUCTOR		INSULATION THICKNESS (HDPE)	NOMINAL O.D. (inches)	APPROX. WEIGHT PER 1,000 FT (lbs)		STANDARD PACKAGES
	SIZE (AWG)	STRANDING			COPPER WEIGHT/MFT	PRODUCT WEIGHT/MFT	
CU HDPE 30 MIL (SOLID) TRACER WIRE							
74003XXXX	14 AWG	SOLID	0.030" (30 MIL)	0.127"	12.400 lbs	16.125 lbs	32, 47
74004XXXX	12 AWG	SOLID	0.030" (30 MIL)	0.144"	19.500 lbs	23.800 lbs	32, 47
74005XXXX	10 AWG	SOLID	0.030" (30 MIL)	0.165"	30.996 lbs	37.900 lbs	32, 47
74006XXXX	8 AWG	SOLID	0.030" (30 MIL)	0.189"	49.975 lbs	59.000 lbs	32, 47
CU HDPE 30 MIL (STRANDED) TRACER WIRE							
74008XXXX	14 AWG	7-STRAND	0.030" (30 MIL)	0.133"	12.600 lbs	16.700 lbs	32, 47
74010XXXX	12 AWG	7-STRAND	0.030" (30 MIL)	0.152"	19.600 lbs	24.760 lbs	32, 47
74012XXXX	10 AWG	7-STRAND	0.030" (30 MIL)	0.176"	31.136 lbs	37.500 lbs	32, 47
74014XXXX	8 AWG	7-STRAND	0.030" (30 MIL)	0.206"	49.824 lbs	61.060 lbs	32, 47

## PART # DESIGNATION (AWG &amp; COLOR)

COLOR	14 AWG SOLID	12 AWG SOLID	10 AWG SOLID	8 AWG SOLID
BLACK	7400301xx	7400401xx	7400501xx	7400601xx
BLUE	7400302xx	7400402xx	7400502xx	7400602xx
GREEN	7400305xx	7400405xx	7400505xx	7400605xx
ORANGE	7400306xx	7400406xx	7400506xx	7400606xx
PURPLE	7400308xx	7400408xx	7400508xx	7400608xx
RED	7400309xx	7400409xx	7400509xx	7400609xx
WHITE	7400311xx	7400411xx	7400511xx	7400611xx
YELLOW	7400312xx	7400412xx	7400512xx	7400612xx
COLOR	14 AWG STRND	12 AWG STRND	10 AWG STRND	8 AWG STRND
BLACK	7400801xx	7401001xx	7401201xx	7401401xx
BLUE	7400802xx	7401002xx	7401202xx	7401402xx
GREEN	7400805xx	7401005xx	7401205xx	7401405xx
ORANGE	7400806xx	7401006xx	7401206xx	7401406xx
PURPLE	7400808xx	7401008xx	7401208xx	7401408xx
RED	7400809xx	7401009xx	7401209xx	7401409xx
WHITE	7400811xx	7401011xx	7401211xx	7401411xx
YELLOW	7400812xx	7401012xx	7401212xx	7401412xx

## PART # DESIGNATION (PACKAGE SIZE)

SIZE	PACKAGING	TYPE	PART NO.
14 AWG SOLID	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
12 AWG SOLID	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
10 AWG SOLID	2 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
8 AWG SOLID	1 x 500 FT REEL	BULK REEL	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
14 AWG STRANDED	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
12 AWG STRANDED	4 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
10 AWG STRANDED	2 x 500 FT REEL	CARTON	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47
8 AWG STRANDED	1 x 500 FT REEL	BULK REEL	xxxxxxx32
	1 x 2500 FT REEL	BULK REEL	xxxxxxx47

TRACER WIRE

CU HDPE 30 MIL



PRO-LINE SAFETY PRODUCTS COMPANY  
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## **FIRE DEPT. CONNECTION**

NIBCO CI 175# UL/FM FLANGED CHECK VALVE

FIRE END CROKER BRONZE SIAMESE HEAD W/ PLUGS

# 175 PSI WWP Iron Body Check Valves

Fire Protection Valve • Bolted Bonnet • Horizontal Swing • Renewable Seat and Disc •  
Drilled and Tapped for Ball Drip Outlet

**175 PSI/12.1 Bar Non-Shock Cold Water**

CONFORMS TO MSS SP-71 •  
UL/ULC LISTED\* • FM APPROVED •  
APPROVED BY THE NEW YORK CITY B.S.A. 143-69-SA

## MATERIAL LIST

PART	SPECIFICATION
1. Pipe Plug	Cast Iron or Steel
2. Bonnet	Cast Iron ASTM A126 Class B
3. Bonnet Gasket	Non Asbestos
4. Bonnet Bolt and Nut	Steel ASTM A307
5. Hinge Plug	Cast Bronze B584 Alloy C84400 (not shown)
6. Hinge Pin	Brass ASTM B16
7. Disc Hanger Nut	Cast Bronze B584 Alloy C84400
8. Disc Stud Bolt	Brass ASTM B16 Alloy C36000
9. Disc Cage	Cast Iron ASTM A126 Class B or Malleable Iron ASTM A 47 (not shown)
10. Disc Plate	Cast Bronze B584 Alloy C84400
11. Disc Hanger	Cast Bronze B584 Alloy C84400
12. Disc Nut	Brass ASTM B16 Alloy C36000
13. Seat Ring	Cast Bronze B584 Alloy C84400
14. Disc	Rubber (W)
15. Body	Cast Iron ASTM A126 Class B

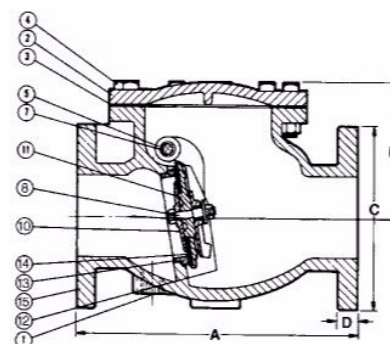
NOTE: Sizes 2½, 3, 5, & 10 are manufactured, listed and approved by Kennedy Valve and distributed by NIBCO.

Material list applies to sizes 4", 6", 8", 12" only.

All sizes are drilled and tapped ¾" at Boss "C" for ball drip.



**F-908-W**  
Flanged



**F-908-W**  
Fig x Fig

## DIMENSIONS—WEIGHTS—QUANTITIES

Dimensions Versus Weight											
Size		Dimensions								Weight	
		A		B		C		D			
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Lbs.	Kg.
2½	65	10.00	254	6.44	164	7.00	178	.69	17	53	24
3	80	10.25	260	6.63	168	7.50	191	.75	19	62	28
4	100	13.00	330	8.00	203	9.00	229	.94	24	103	47
5	125	15.00	381	9.19	233	10.00	254	1.00	25	145	66
6	150	16.25	413	10.31	262	11.00	279	1.00	25	174	79
8	200	19.50	495	11.50	292	13.50	343	1.13	29	290	132
10	250	22.00	559	13.31	338	16.00	406	1.19	30	490	223
12	300	27.50	699	15.56	395	19.00	483	1.25	32	683	310

NIBCO Iron Body check valves may be installed in both horizontal and vertical lines with upward flow.

\* Compliance with the Canadian Requirements per ULC Subject 312 and the Standard for Check Valves, UL 312.



**Ball Drip**

An automatic ball drip is available for NIBCO Underwriter's check valves. The ball drip is installed at boss location "C" on the check valve of the fire department connection. It will close against pressure, but will open when pressure is off allowing water to drain from the fire department connection.

¾" Ball Drip # RG 22100  
90° Street Elbow #T046227 PP



**CROKER****FIRE DEPT. INLET CONN. EXPOSED TYPE****6405-6425 SERIES**

Figure No. 6405



Figure No. 6407

### SINGLE CLAPPER TWO-WAY INLETS

#### 4 x 2 1/2 x 2 1/2

An exposed auxiliary inlet connection with 500 G.P.M. inlet capacity to supplement fire protection water supply. Exposed design provides an economical method of satisfying Fire Dept. inlet requirements.

**STANDARD EQUIPMENT:** Cast brass two-way inlet body only with single swing clapper and pin lug swivel back or angle outlet connection as selected by figure number.

**SPECIFY THREAD.**

**BRANDING:** "Auto Spkr."

**FINISH:** Cast Brass

\*U/L LISTED

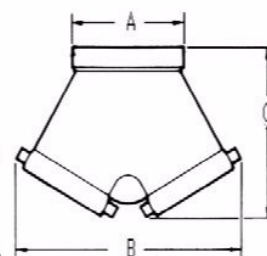
**OPTIONAL FINISHES:**

PB - Polished Brass

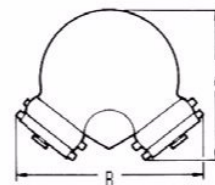
RC - Rough Chrome Plated

PC - Polished Chrome Plated

Model	Outlet Style	Dimensions		
		A	B	C
6405	Back	5 1/4	8 5/64	6 1/2
6407	Angle	6 5/16	7 11/16	4 3/4



6405 Back Outlet



6407 Angle Outlet

### DOUBLE CLAPPER TWO-WAY INLETS



Figure No. 6410-6415



Figure No. 6420-6425

An exposed auxiliary inlet connection with 500 G.P.M. Inlet capacity to supplement fire protection water supply. Exposed design provides an economical method of satisfying Fire Department Inlet requirements.

**STANDARD EQUIPMENT:** Cast brass two-way inlet body only with double drop clappers and pin lug swivels; back or angle outlet connection as selected by figure number. Branding as selected. **SPECIFY THREAD AND BRANDING.**

**BRANDING:** "Standpipe", "Auto Spkr."

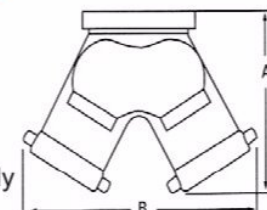
**FINISH:** Cast Brass

**OPTIONAL FINISHES:**

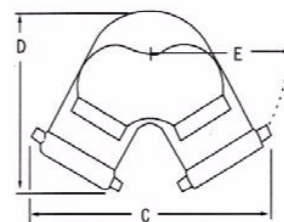
PB - Polished Brass

RC - Rough Chrome Plated

PC - Polished Chrome Plated



6410 Back Outlet



6420 Angle Outlet

\*U/L LISTED

NY BSA-MEA APPROVED

Outlet Style		Size	Dimensions				
Back	Angle		A	B	C	D	E
*6410		4 X 2 1/2 X 2 1/2	9 5/8	12 1/4			
	6420	4 X 2 1/2 X 2 1/2			11 3/4	9 5/8	7 1/4
	6412	6 X 2 1/2 X 2 1/2	10 1/4	11 3/4			
	6422	6 X 2 1/2 X 2 1/2			12 1/2	10 1/8	7 1/2
	6413	4 X 3 X 3	10	12 1/2			
	6423	4 X 3 X 3			12 1/2	10 1/8	7 1/2
	6414	5 X 3 X 3	10 1/8	12 1/2			
	6424	5 X 3 X 3			12 1/4	10 1/2	7 1/2
	6415	6 X 3 X 3	10 3/8	12 1/2			
	6425	6 X 3 X 3			12 1/4	10 7/8	7 1/4

## OPEN ADAPTERS



Fig No. 6702-6706

Used to connect fire hose to Standpipe or Sprinkler Systems.

**STANDARD EQUIPMENT:** Cast Brass with size and type of inlet and outlet as selected by figure number. All exposed parts are polished brass. **SPECIFY THREAD.**

**OPTIONAL FINISH:** PC - Polished Chrome Plated



Fig No. 6710-6712

Figure No.	Size and Type
6702	2 1/2" Female (Swivel) Hose inlet X 2 1/2" Female NPT Outlet
6704	2 1/2" Female (Swivel) Hose inlet X 3" Female NPT Outlet
6706	3" Female (Swivel) Hose inlet X 3" Female NPT Outlet
6710	2 1/2" Male Hose Outlet X 2 1/2" Female NPT inlet
6712	2 1/2" Male Hose Outlet X 3" Female NPT inlet
6720	1 1/2" Female (Swivel) Hose Inlet X 1 1/2" Male NPT Outlet
6721	2 1/2" Female (Swivel) Hose Inlet X 2" Male NPT Outlet
6722	2 1/2" Female (Swivel) Hose Inlet X 2 1/2" Male NPT Outlet
6724	2 1/2" Female (Swivel) Hose Inlet X 3" Male Outlet
6726	3" Female (Swivel) Hose inlet X 3" Male NPT Outlet.



Fig No. 6720-6726

Used to connect fire hose on multiple Inlet Fire Dept. connections. Checks excess back flow of water.

**STANDARD EQUIPMENT:** Cast brass with size and type of inlet and outlet, and checking device as selected by figure number.

**SPECIFY THREAD. OPTIONAL FINISH:** PB - Polished Brass  
PC - Polished Chrome Plated



Fig No. 6730-6736

Spring Check Snoots	
Figure No.	Size and Type
6730	2 1/2" Female (Swivel) Hose Inlet X 3" Female NPT Outlet
6732	3" Female (Swivel) Hose Inlet X 3" Female NPT Outlet
6734	2 1/2" Female (Swivel) Hose Inlet X 3" Male NPT Outlet
6736	3" Female (Swivel) Hose Inlet X 3" Male NPT Outlet



Fig No. 6738-6740

Clapper Snoots	
Figure No.	Size and Type
6738	2 1/2" Female (Swivel) Hose Inlet X 3" Female NPT Outlet <b>U/L LISTED</b>
6740	2 1/2" Female (Swivel) Hose Inlet X 3" Male NPT Outlet <b>U/L LISTED</b>

## PLUGS AND CHAINS



Fig No. 6745-6746

Used on Fire Dept. inlet connections. Prevents entry of foreign matter and protects female threads.

**STANDARD EQUIPMENT:** Cast pin lug with male hose thread and attached chain. Cast Iron and Cast Brass as selected by figure number. **SPECIFY THREAD AND COLOR OR FINISH.**

Cast Iron	
Figure No.	Size
6745	2 1/2" (NYT or NST)
6746	3" (NYT)

**FINISH: PAINTED**  
Red  
Green  
Yellow



Fig No. 6747

Cast Brass	
Figure No.	Size
6744	1 1/2"
6747	2 1/2"
6748	3"

**OPTIONAL FINISHES:**

PB- Polished Brass  
RC- Rough Chrome Plated  
PC- Polished Chrome Plated



## AIR RELEASE ASSEMBLIES

SMITH-BLAIR, INC. EPOXY CTD TAPPING SADDLE  
FORD METER BOX CO. LF CC X FIP BALL CORP. STOP  
MERTI BRASS RED BRASS PIPE NIPPLE  
VAL-MATIC COMB. AIR & VACUUM RELEASE VALVE  
CAPITOL FOUNDRY MH-3000 CI M/HOLE F&C - WATER



# Service Saddle

## Double Stainless Steel Strap

# 317



**Description:** Double strap Ductile Iron service saddle with TaperSeal™ gasket and wraparound 304 Stainless Steel strap for added corrosion resistance

**Application:** For outlets of 5/8" through 4".

### Key Features:

- Meets applicable AWWA C800 Standards
- The wide saddle body provides stability on the pipe
- Designed with PVC and other soft or brittle pipe in mind
- The gasket fully bonds to the cavity to hold it in place
- NPT, CC and other threaded outlets available in sizes 5/8" thru 4"
- Wide bands spread the load over larger area to prevent damage to the pipe when tightening the straps
- A closed lug on one side, combined with the strap, acts as a hinge for easier installation

### Materials Specifications (subject to change):

**BODIES:** Ductile Iron per ASTM A536

**STRAPS:** Type 304 Stainless Steel. Double Strap 1.50" wide 2" Wide are not made

**NUTS:** Type 304 Stainless Steel fluoropolymer coated

**WASHERS:** Type 304 Stainless Steel

**STUDS:** Type 304 Stainless Steel

**GASKET:** Nitrile (Buna N) NSF 61® compounded to resist oil, acids, alkalies, most (aliphatic) hydrocarbon fluids, water and other chemicals

**Temperature Range:** -20°F to 180°F

**FINISH:** Flexi-Coat® Fusion-Bonded Epoxy Finish per AWWA C213

**Working Pressure:** Up to 300 PSI, depending on size and application

**Pipe Applications:** Steel, Ductile Iron, Cast Iron, Asbestos Cement, PVC and HDPE (with spring washers)

**Taps:** 5/8", 3/4", 1", 1 1/4", 1 1/2" and 2" CC Taps; 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3" and 4" NPT Taps

**Sizes (in inches):** Varies by tap type; see tables for size details



# AIR RELEASE ASSEMBLIES

Service Saddles || 317

5/8", 3/4" and 1" CC Taps

\*Sized for use on C900 PVC Pipe

STANDARD			CATALOG NUMBER			CTN. QTY	METRIC		
NOM. SIZES INCHES	O.D. RANGE INCHES	WT. EACH LBS.	5/8" CC/16 MM	3/4" CC/20 MM	1" CC/25 MM		NOM. SIZE MM	O.D. RANGE MM	WT. EACH KG.
1-1/4-1-1/2 2	1.61-1.92 2.35-2.56	3 3	317-00019205-000 317-00025605-000	317-00019207-000 317-00025607-000	317-00019209-000 317-00025609-000	6 6	32-40 50	41-48 60-65	1 1
2-1/4-2-1/2 3 3-4	2.44-2.91 2.97-3.54 3.74-4.13	3 4 6	317-00029105-000 317-00035405-000 317-00041305-000	317-00029107-000 317-00035407-000 317-00041307-000	317-00029109-000 317-00035409-000 317-00041309-000	6 6 6	57-65 80 80-100	62-73 76-89 95-105	2 2 3
4 4* 4-5 6 6* 6	4.40-4.50 4.40-4.80 5.00-5.63 5.94-6.70 5.94-6.90 6.84-7.60	6 6 6 6 6 7	317-00045005-000 317-00048005-000 317-00056305-000 317-00066305-000 317-00069005-000 317-00076005-000	317-00045007-000 317-00048007-000 317-00056307-000 317-00066307-000 317-00069007-000 317-00076007-000	317-00045009-000 317-00048009-000 317-00056309-000 317-00066309-000 317-00069009-000 317-00076009-000	6 6 6 4 4 4	100 100 100-125 150 150 150	112-114 112-122 121-143 151-170 151-175 174-193	3 3 3 3 3 3
6-8 6-8* 8-10 10*	7.69-8.72 7.69-9.05 8.54-10.10 10.75-11.10	8 8 8 9	317-00087205-000 317-00090505-000 317-00101005-000 317-00111005-000	317-00087207-000 317-00090507-000 317-00101007-000 317-00111007-000	317-00087209-000 317-00090509-000 317-00101009-000 317-00111009-000	4 4 4 4	150-200 150-200 200-250 250	195-221 195-230 217-256 273-282	4 4 4 4
10-12* 12* 12-14 12-14 14-16	10.64-12.12 12.75-13.20 12.62-14.32 14.73-15.65 15.95-17.25	10 10 15 18 19	317-00121205-000 317-00132005-000 317-00143205-000 317-00156505-000 317-00172505-000	317-00121207-000 317-00132007-000 317-00143207-000 317-00156507-000 317-00172507-000	317-00121209-000 317-00132009-000 317-00143209-000 317-00156509-000 317-00172509-000	4 4 4 1 1	250-300 300 300-350 300-350 350-400	271-307 324-335 321-363 375-397 406-438	4 7 7 8 9
16 16-18 18* 20* 24	17.25-17.80 17.40-18.88 19.38-19.68 21.55-21.65 25.75-25.85	19 19 19 19 30	317-00178005-000 317-00188805-000 317-00195005-000 317-00216005-000 317-00258005-000	317-00178007-000 317-00188807-000 317-00195007-000 317-00216007-000 317-00258007-000	317-00178009-000 317-00188809-000 317-00195009-000 317-00216009-000 317-00258009-000	1 1 1 1 1	410 400-450 450 500 600	438-452 442-479 492-500 547-550 654-657	9 9 9 9 9

When properly sized from the factory, this product (denoted by \*) meets the requirements listed in the Uni-Bell PVC Pipe Association's "Handbook of PVC Pipe" and in the AWWA's "Manual M23: PVC Pipe Design and Installation."

1 1/4", 1 1/2" and 2" CC Taps

\*Sized for use on C900 PVC Pipe

STANDARD			CATALOG NUMBER			CTN. QTY	METRIC		
NOM. SIZES INCHES	O.D. RANGE INCHES	WT. EACH LBS.	1-1/4" CC/32 MM	1-1/2" CC/40 MM	2" CC/50 MM		NOM. SIZE MM	O.D. RANGE MM	WT. EACH KG.
2 3	2.35-2.56 2.97-3.54	3 5	317-00025611-000 317-00035411-000	- 317-00035413-000	- -	6 6	50 80	60-65 76-89	1 2
3-4 4 4* 4-5 4-5 6	3.74-4.13 4.40-4.50 4.40-4.80 5.00-5.14 5.00-5.63 5.94-6.70	8 9 9 9 9 9	317-00041311-000 317-00045011-000 317-00048011-000 317-00051411-000 317-00056311-000 317-00066311-000	317-00041313-000 317-00045013-000 317-00048013-000 317-00051413-000 317-00056313-000 317-00066313-000	317-00041315-000 317-00045015-000 317-00048015-000 317-00051415-000 317-00056315-000 317-00066315-000	6 6 6 6 6 4	80-100 100 100 100-125 100-125 150	95-105 112-114 112-122 120-130 121-143 151-170	3 3 3 3 4 4
6* 6 6-8 6-8* 8-10 10*	5.94-6.90 6.84-7.60 7.69-8.72 7.64-9.05 8.54-10.10 10.75-11.10	9 8 11 11 9 11	317-00069011-000 317-00076011-000 317-00087211-000 317-00090511-000 317-00101011-000 317-00111011-000	317-00069013-000 317-00076013-000 317-00087213-000 317-00090513-000 317-00101013-000 317-00111013-000	317-00069015-000 317-00076015-000 317-00087215-000 317-00090515-000 317-00101015-000 317-00111015-000	4 4 4 4 4 4	150 150 150-200 150-200 200-250 250	151-175 174-193 195-221 195-230 217-256 273-282	4 4 5 5 4 4
10-12 12* 12-14	10.64-12.12 12.75-13.20 12.62-14.32	11 14 14	317-00121211-000 317-00132011-000 317-00143211-000	317-00121213-000 317-00132013-000 317-00143213-000	317-00121215-000 317-00132015-000 317-00143215-000	4 4 4	250-300 300 300-350	271-307 324-335 321-363	5 6 6
12-14 14-16 16 16-18 18* 20* 24*	14.73-15.65 15.95-17.25 17.25-17.80 17.40-18.88 19.38-19.68 21.55-21.65 25.75-25.85	18 19 19 19 19 19 30	317-00156511-000 317-00172511-000 317-00178011-000 317-00188811-000 317-00195011-000 317-00216011-000 317-00258011-000	317-00156513-000 317-00172513-000 317-00178013-000 317-00188813-000 317-00195013-000 317-00216013-000 317-00258013-000	317-00156515-000 317-00172515-000 317-00178015-000 317-00188815-000 317-00195015-000 317-00216015-000 317-00258015-000	1 1 1 1 1 1 1	300-350 350-400 410 400-450 450 500 600	375-397 406-438 438-452 442-479 492-500 547-500 654-657	8 9 9 9 9 9 9

When properly sized from the factory, this product (denoted by \*) meets the requirements listed in the Uni-Bell PVC Pipe Association's "Handbook of PVC Pipe" and in the AWWA's "Manual M23: PVC Pipe Design and Installation."

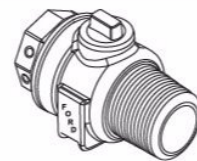
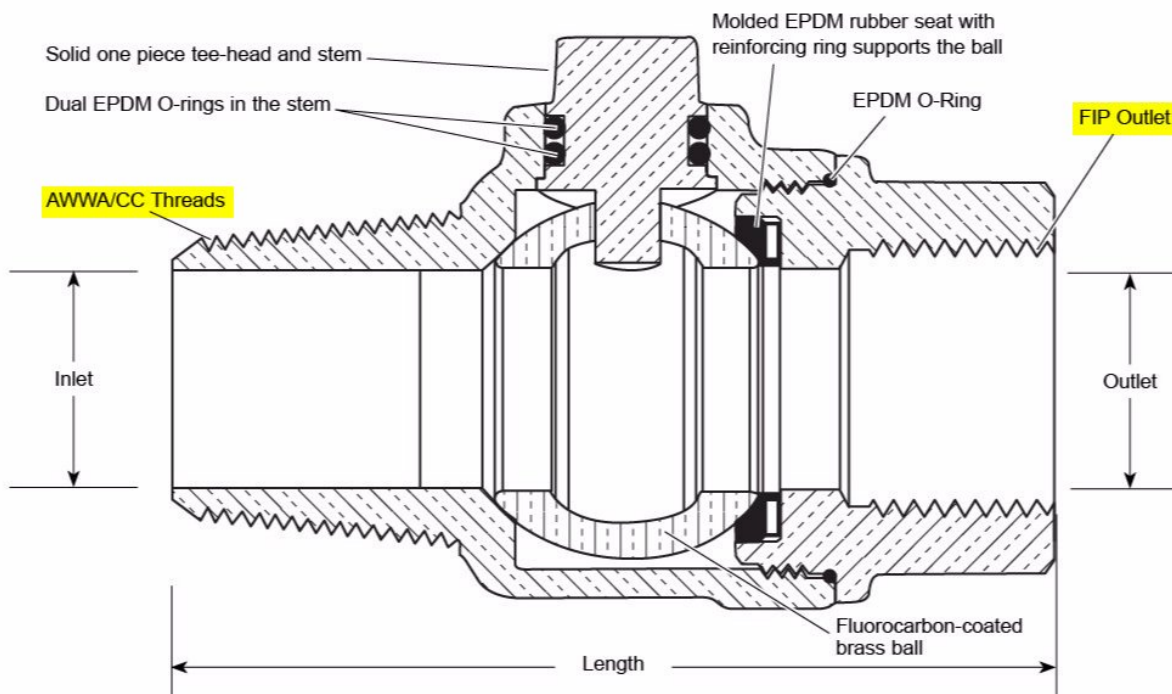
**SUBMITTAL INFORMATION****Ballcorp Corporation Stops - (FB1600-x-NL style)****AWWA/CC TAPER THREAD INLET BY FEMALE IRON PIPE OUTLET**

Image shown above is an FB1600-4-NL.

VALVE SIZE	INLET SIZE	OUTLET SIZE	VALVE LENGTH	BODY OUTLET THREADS	APPROX. WT. LBS.	PART NUMBER	✓ SUBMITTED ITEM(S)
3/4"	3/4"	3/4"	3-17/32"	3/4" FIP	1.5	FB1600-3-NL	
3/4"	3/4"	1"	3-51/64"	1" FIP	1.7	FB1600-34-NL	
1"	1"	1"	3-49/64"	1" FIP	2.3	FB1600-4-NL	
1-1/4"	1-1/4"	1-1/4"	4-1/2"	1-1/4" FIP	3.2	FB1600-5-NL	
1-1/2"	1-1/2"	1-1/2"	5-3/32"	1-1/2" FIP	4.3	FB1600-6-NL	
2"	2"	2"	5-7/8"	2" FIP	6.8	FB1600-7-NL	
2"	2"	2-1/2"	6-3/8"	2-1/2" FIP	7.5	FB1600-78-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)
- Ends are integral or secured with adhesive to prevent unintentional disassembly
- 300 PSI working pressure

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

Phone: 260-563-3171 / Fax: 800-826-3487

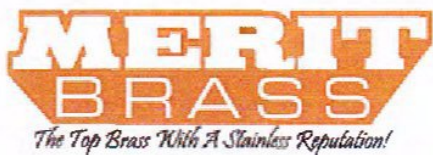
Overseas Fax: 260-563-0167

www.fordmeterbox.com

02/08/17

Submitted By:





To our valued customer:

We hereby certify that to the best of our knowledge and belief all brass nipples manufactured by Merit Brass Company in Cleveland, Ohio conform to specification ASTM B687-88.

Nipples are threaded with American Standard taper pipe threads (NPT) in accordance with screw-threaded standard for Federal Services Handbook H-28.

Brass nipples have a weighted average lead content of  $\leq .25\%$  and are in compliance with lead content requirements for lead free plumbing as defined by the U.S. Safe Drinking Water Act.

Sincerely,

A handwritten signature in blue ink, appearing to read "Alan Lipp", is written over the printed name.

Alan Lipp,

Chief Operating Officer

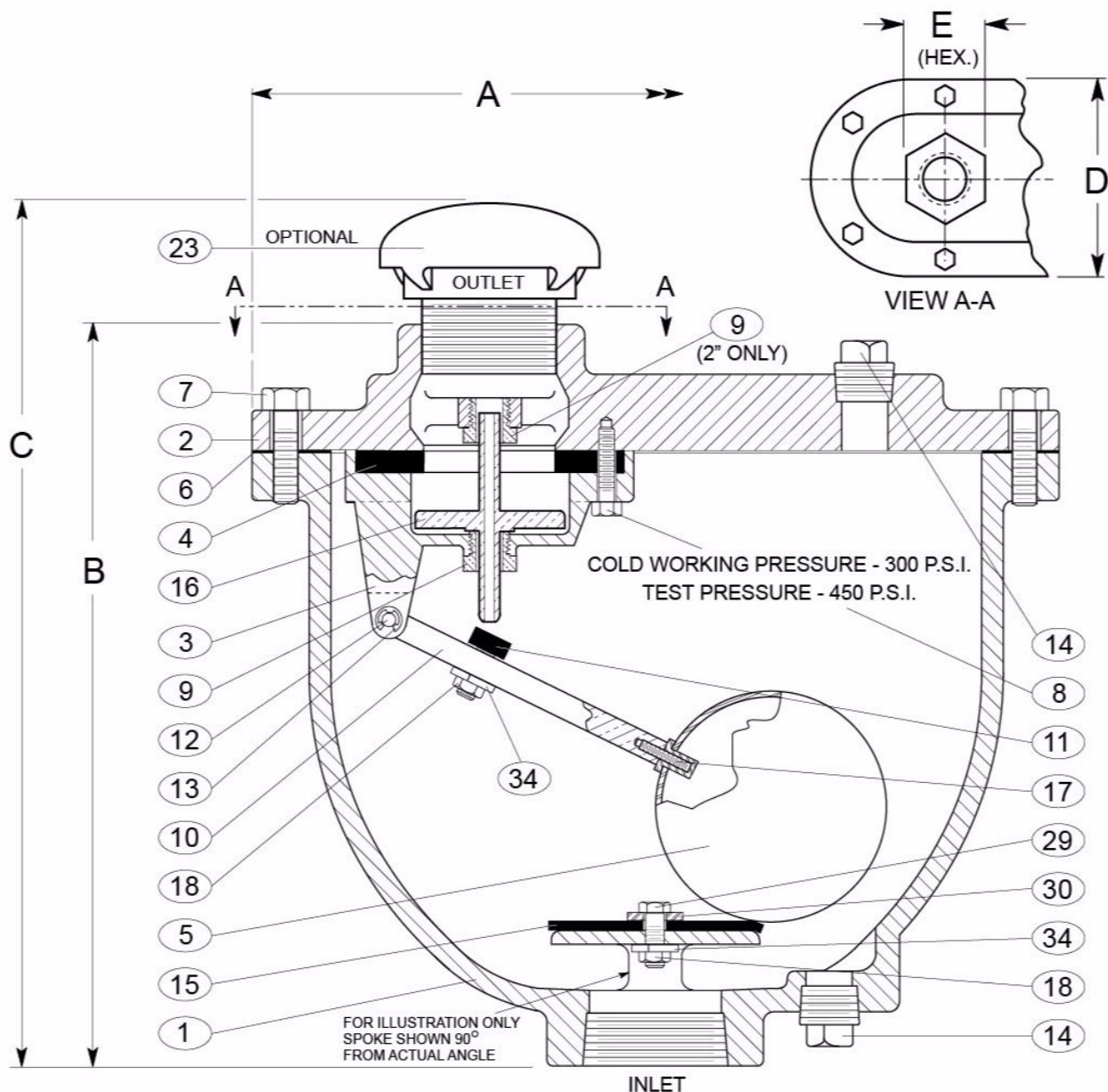


P.O. Box 43127 • One Merit Drive • Cleveland, OH 44143

Phone: 216.261.9800 • Toll Free: 800.726.9800 • Fax: 800.726.9880 • [www.meritbrass.com](http://www.meritbrass.com) • [www.mbwebXpress.com](http://www.mbwebXpress.com)



2013  
BRONZE  
PARTNER



- |          |                    |                   |                   |                     |
|----------|--------------------|-------------------|-------------------|---------------------|
| 1 BODY   | 5 FLOAT            | 9 BUSHING         | 13 RETAINING RING | 18 LOCK NUT         |
| 2 COVER  | 6 GASKET           | 10 FLOAT ARM      | 14 PIPE PLUG      | 23 SCREENED HOOD    |
| 3 BAFFLE | 7 COVER BOLTS      | 11 ORIFICE BUTTON | 15 CUSHION        | 29 CUSHION RETAINER |
| 4 SEAT   | 8 RETAINING SCREWS | 12 PIVOT PIN      | 16 PLUG           | 30 WASHER           |
|          |                    |                   | 17 FLOAT RETAINER | 34 LOCK WASHER      |

SEE DRAWING NO. VM-201C-M FOR STANDARD MATERIALS OF CONSTRUCTION.

VALVE SIZE	MODEL NO.*	A	B	C	D	E	INLET SIZE	OUTLET SIZE	ORIFICE SIZE
1"	201C.2	11 3/8"	10 1/2"	12 5/8"	6 3/8"	2"	1" N.P.T.	1" N.P.T.	5/64"
2"	202C.2	14"	13"	15 7/8"	8 1/4"	3 1/4"	2" N.P.T.	2" N.P.T.	3/32"

\*Add "H" to Model No. for optional screened hood SPK-1H.

Revised 1-9-06

COMBINATION AIR VALVE (SINGLE BODY TYPE)

DATE 2-2-69

**VAL-MATIC®**

VALVE AND MANUFACTURING CORP.

DRWG. NO.

**VM-201C**



## COMBINATION AIR VALVE WITH OPTIONAL COMPONENTS

### Val-Matic Specification

#### 1 Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 1 in. (25.4 mm) through 20 in. (500 mm) Combination Air Valves suitable for pressures up to 740 psig (5100 kPa) clean water or raw water service.

1.2 Combination Air Valves shall be automatic float operated valves designed to exhaust large quantities of air during the filling of a piping system and close upon liquid entry. The valve shall open during draining or if a negative pressure occurs. The valve shall also release accumulated air from a piping system while the system is in operation and under pressure. The valve shall perform the functions of both Air Release and Air/Vacuum Valves and furnished as a single body or dual body type as indicated on the plans.

#### 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 ANSI/NSF 61 Drinking Water System Components - Health Effects.

2.3 Manufacturer shall have a quality management system that is certified to ISO 9001:2000 by an accredited, certifying body.

#### 3 Connections

3.1 Dual body valve sizes 3 in. (75 mm) and smaller and single body valve sizes 4 in. (100 mm) and smaller shall have full size NPT inlets and outlets equal to the nominal valve size. The body inlet connection shall be hexagonal for a wrench connection.

3.2 ~~Larger sizes shall have bolted flanged inlets and plain outlets and protective hoods to prevent debris from entering the valve. Flanges shall be in accordance with ANSI B16.1 for Class 125 or Class 250 iron flanges and ANSI B16.5 for Class 300 steel flanges.~~

3.3 The valve shall have two additional NPT connections for the connection to gauges, testing, and draining.

#### 4 Design

4.1 Both single and dual body valves shall provide a through flow area equal to the nominal size. Floats shall be unconditionally guaranteed against failure including pressure surges. The cover shall be bolted to the body and sealed with a flat gasket. A resilient bumper shall be provided on 4 in. (100 mm) and larger sizes to cushion the float during sudden opening conditions. The resilient seat shall be replaceable and provide drop tight shut off to the full valve pressure rating.

4.2 Dual body combination valves shall consist of an Air Release Valve piped to an Air/Vacuum Valve with a quarter-turn, full-ported bronze ball valve.

4.2.1 The Air Release Valve shall have a leverage mechanism with 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.

4.2.2 ~~The Air/Vacuum Valve sizes 4 in. (100 mm) and larger shall have a cover fitted to the valve body by means of a machined register to maintain concentricity between the top and bottom guide bushings at all times. The float shall be double guided with a guide shaft extending through the float to prevent any contact with the body. The float shall be protected against direct water impact by an internal baffle bolted to the cover or integrally cast in the body. The seat shall be a minimum of .5 in. (12 mm) thick on 2 in. (50 mm) and larger valves and secured in such a manner as to prevent distortion. Valves with working pressures above 400 psig (2760 kPa) shall have metal seats with synthetic seals.~~

4.3 Single body combination valves shall have an expanded outlet to provide full flow area around the guide mechanism. The valve shall have a double guided plug on 2 in. (50 mm) and larger sizes, and an adjustable threaded orifice button. The plug shall be protected against direct water impact by an internal baffle. On valve sizes 4 in. (100 mm) and smaller, the plug shall have a precision orifice drilled through the center stem. On valve sizes 6 in. (150 mm) and larger, air release and air/vacuum mechanisms shall be provided as separate units contained within the same body and meet the same design specifications for the Dual Body Combination Valve in section 3.2 above.

#### 5 Materials

5.1 The valve body and cover shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves. Class 300 ductile iron valves shall be constructed of ASTM A536 Grade 65-45-12 ductile iron. Dual Body Class 300 steel valves shall be constructed of ASTM A216 Grade WCB cast steel.

5.2 The float, guide shafts, and bushings shall be constructed of Type 316 stainless steel. Non-metallic floats, linkage, or bushings are not acceptable. Resilient seats shall be Buna-N. Class 300 steel dual body valves shall have a 316 stainless steel seat with Buna-N seal to provide an initial contact to Buna-N with a final metal-to-metal contact to prevent over compression of the resilient seal.

Revised 7-3-08

COMBINATION AIR VALVE WITH OPTIONAL COMPONENTS

DATE 6-6-06

**VAL-MATIC®**

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-200C-S  
Sheet 1 of 2

## 6 Options

6.1 An optional Regulated Exhaust Device shall be provided when specified to reduce pressure surges due to column separation or rapid changes in velocity and pressure in the pipeline.

6.1.1 The Regulated Exhaust Device shall be mounted on the inlet of the Combination Air Valve, allow free air flow in and out of the valve, close upon rapid air exhaust, and control the air exhaust rate to reduce pressure surges.

6.1.2 The device shall have a flanged globe-style body with a center guided disc and seat assembly. The disc shall have threaded holes to provide adjustment of the air exhaust rate through the valve. The holes shall provide for a flow area of 5% of the nominal valve size.

6.1.3 The material of the body shall be consistent with the Combination Air Valve. The seat and disc shall be ASTM A351 Grade CF8M stainless steel.

6.2 A flanged or screwed outlet connection shall be provided when specified for vault piping.

6.3 A stainless steel screened outlet shall be provided when specified for outdoor installations.

6.4 Optional body materials include ASTM A536 Grade 65-45-12 ductile iron, ASTM A351 Grade CF8M stainless steel, and ASTM B584 Alloy C83600 cast bronze.

6.5 Optional threaded hoods with screens shall be provided on the outlet when specified.

6.6 An optional isolation valve shall be furnished under the combination air valve when specified. For sizes with threaded inlets, the isolation valve shall be a fully-ported brass ball valve. For sizes with flanged inlets, the isolation valve shall be an AWWA Class 150B or 250B Butterfly Valve with quarter-turn gear actuator and handwheel.

## 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 Combination Air Release Valves shall be Series 201C.2 (single body) or Series 100/22 (Dual Body) as manufactured by Val-Matic and Manufacturing Corporation, Elmhurst, IL, USA or approved equal.

Revised 7-3-08

COMBINATION AIR VALVE WITH OPTIONAL COMPONENTS

DATE 6-6-06

**VAL-MATIC®**

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-200C-S  
Sheet 2 of 2



## COMBINATION AIR VALVES (SINGLE BODY TYPE)

MODEL NOS. 201C.2 - 202C.2 - 203C.2 - 204C.2

STANDARD MATERIALS OF CONSTRUCTION

<u>PART NO.</u>	<u>PART NAME</u>	<u>MATERIAL</u>
1	BODY	CAST IRON ASTM A126, CLASS B
2	COVER	CAST IRON ASTM A126, CLASS B
3	BAFFLE	CAST IRON ASTM A126, CLASS B
4	SEAT	BUNA-N
5	FLOAT	STAINLESS STEEL T316, ASTM A240
6	GASKET	COMPRESSED NON-ASBESTOS FIBER
7	COVER BOLT	ALLOY STEEL SAE, GRADE 5
8	RETAINING SCREWS	STAINLESS STEEL T316, ASTM F593
9	GUIDE BUSHING	STAINLESS STEEL T316, ASTM A240
10	FLOAT ARM	STAINLESS STEEL T316, ASTM A240
11	ORIFICE BUTTON	STAINLESS STEEL & BUNA-N
12	PIVOT PIN	STAINLESS STEEL T316, ASTM A276
13	RETAINING RING	STAINLESS STEEL PH 15-7 MO
14	PIPE PLUG	STEEL
15	CUSHION	BUNA-N
16	PLUG	STAINLESS STEEL T316, ASTM A276
17	FLOAT RETAINER	STAINLESS STEEL T316, ASTM F880
18	LOCK NUT	STAINLESS STEEL T316, ASTM F594
29	CUSHION RETAINER	STAINLESS STEEL T316, ASTM F593
30	WASHER	STAINLESS STEEL T316, ASTM A240
34	LOCK WASHER	STAINLESS STEEL T316, ASTM A240

NOTE: ALL SPECIFICATIONS AS  
LAST REVISED.

Revised 1-29-03

## MATERIALS OF CONSTRUCTION

DATE 2/2/69

**VAL-MATIC®**

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-201C-M

# CAPITOL FOUNDRY OF VA, INC.

2856 CRUSADER CIRCLE  
VIRGINIA BEACH, VA 23453

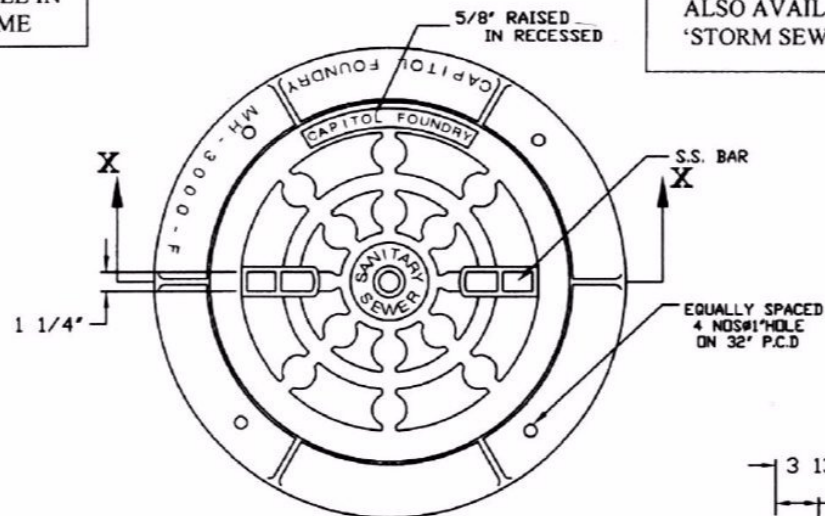
PHONE: (757) 427-9431

FAX: (757) 427-9308

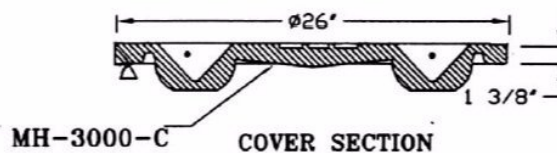
www.capitolfoundry.net

ALSO AVAILABLE IN  
4" TALL FRAME

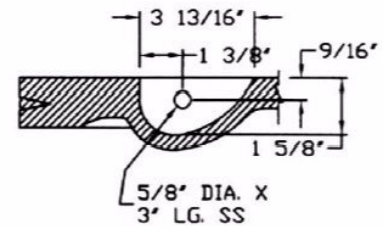
ALSO AVAILABLE MARKED  
'STORM SEWER' & 'WATER'



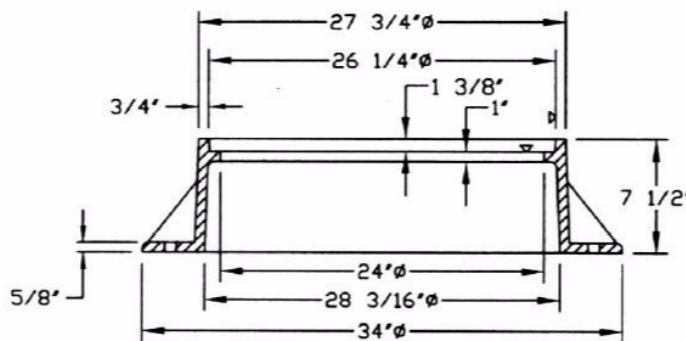
PLAN



COVER SECTION



PICKBAR DETAIL



FRAME SECTION - XX

AVAILABLE  
MADE IN USA

## STANDARD 24" MANHOLE FRAME & COVER

MATERIAL SPEC: ASTM A-48 CLASS 35B

ITEM #MH-3000\*



## WATER SERVICES

FLYING W PLASTICS     SDR11 "IPS" HDPE PRESSURE PIPE  
SMITH-BLAIR, INC.     EPOXY COATED TAPPING SADDLE  
FORD METER BOX CO.     LF CC X CTS COMP. BALL CORP STOP  
FORD METER BOX CO.     LF CC X CTS COMP. CORPORATION STOP  
ADS PIPE CO.     CTS SDR9 POLYETHELENE TUBING  
FORD METER BOX CO.     LF BRASS COMP X ANGLE METER VALVE  
AY MCDONALD     CTS SS PIPE STIFFENER  
CAPITOL FOUNDRY     MBX-2HD CI METER BOX W/ TP HOLE

FLYING W PLASTICS



**Municipal & Industrial  
High-Density  
Polyethylene Pipe**  
PRODUCT SPECIFICATIONS



**PLASTICS, INC.**

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

Flying W Plastics, Inc. | 487 Vanhorn Dr. • PO Box 759 | Glenville, WV 26351  
304.462.5779 ph • 800.327.4735 sales • 304.462.7657 fx

FWP-IWP 2.0



## FLYING W PLASTICS



## OVERVIEW

Submitting "IPS" since 3" is not made in "CTS" size.

Flying W Plastics' high-density polyethylene municipal and industrial pipe is NSF and/or AWWA-approved for potable water, and is available in various sizes and specifications to meet the standards detailed in the following data sheets. Applications include water transport, municipal sewage, domestic sewage, landfills, industrial process liquids, effluent, and slurries. Available color combinations include:

- Solid black
- Black with blue stripes for potable water
- Black with green stripes for sewer
- Black with purple stripes for reclaimed water
- Black with other stripes for use in coding

Unless otherwise requested at the time of quote, all municipal and industrial pipe is manufactured from select PE4710 resins. These resins meet or exceed the pressure ratings and physical properties of PE3608 and PE3408 resins (see below).

I.P.S. and D.I.P.S. pipe can be easily connected by fusion processes. Flying W Plastics recommends either butt fusion, socket fusion, or electrofusion, and can provide the recommended guidelines and procedures for connecting municipal and industrial pipe utilizing these methods.

## PE 4710 and PE3408/3608 Pressure Chart

PE 3408/3608 - ASTM F714/D3035 and AWWA - (All Sizes)

DR 32.5	DR 26	DR 21	DR 17	DR 13.5	DR 11	DR 9	DR 7.3	DR 7
50 PSI	64 PSI	80 PSI	100 PSI	125 PSI	160 PSI	200 PSI	254 PSI	266 PSI

PE 4710 - ASTM F714/D3035 - (All Sizes)

DR 32.5	DR 26	DR 21	DR 17	DR 13.5	DR 11	DR 9	DR 7.3	DR 7
63 PSI	80 PSI	100 PSI	125 PSI	160 PSI	200 PSI	250 PSI	317 PSI	333 PSI

PE 4710 - AWWA (1/2" Through 3")

DR 32.5	DR 26	DR 21	DR 17	DR 13.5	DR 11	DR 9	DR 7.3	DR 7
63 PSI	80 PSI	100 PSI	125 PSI	160 PSI	200 PSI	250 PSI	317 PSI	333 PSI

PE 4710 - AWWA (4" and above)

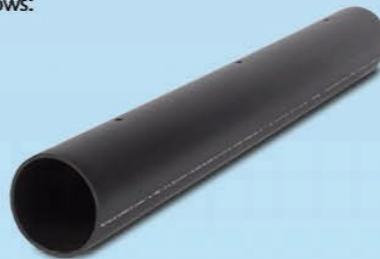
DR 32.5	DR 26	DR 21	DR 17	DR 13.5	DR 11	DR 9	DR 7.3	DR 7
50 PSI	64 PSI	80 PSI	100 PSI	130 PSI	160 PSI	200 PSI	254 PSI	266 PSI

Under ASTM, the PE4710 has higher pressure ratings than PE3408 (200 psi for DR 11 and 250 psi for DR 9). AWWA has two standards for HDPE piping which do not currently match ASTM. AWWA C901 is for piping up through 3" and AWWA C906 is for 4" and larger. AWWA C901 has been revised to accept the higher ratings of PE4710 material, but AWWA C906 has not yet been revised. The result is that when AWWA C906 compliance is needed, the lower pressure ratings need to be observed.

## Custom Perforation

Flying W Plastic also offers its 4"-18" Spec II piping custom perforated. We can do a wide variety of patterns and hole sizes done in line as a cost and labor saving alternative to shipping pipe to a perforation facility, making the perforations, re-bundling the pipe, and shipping onto a job site. Our inline perforation capabilities are wide ranging, but there are some limits, as follows:

- Perforations must be round holes 1/4" to 1" in diameter.
- A limit of 6 perforated rows to complete pattern.
- Spacing can be 3" to 24"
- Holes can be lined up or staggered (off-set).
- The angles between rows of holes are infinitely adjustable so long as no two rows are closer than 20 degrees apart.
- Any staggering profiles must repeat in 24" or less.



## FLYING W PLASTICS



## MATERIAL PROPERTIES

## Material Properties PE4710

The PE4710 materials offer higher working pressures in most applications than PE3608. Flying W certifies that its PE4710 Industrial Pipes are manufactured from high-quality HDPE copolymers having the typical properties listed. These copolymers have NSF 14, AWWA C901 and AWWA C906 certification for potable water applications, comply with ANSI/NSF Standard 61 health effects requirement, and are recognized by the Plastics Pipe Institute as having a pipe material designation code of PE4710 & PE100.

Typical Properties <sup>(1)</sup>	English	SI Units	ASTM Method
Density Black	-	.959 g/cc	D 4883
Melt Index <sup>2</sup>	-	8.0 g/10 min	D 1238
Tensile Strength			
@ Yield (2 in/min)	3625 psi	25.0 MPa	D 638
@ Break (2 in/min)	5500 psi	38.0 MPa	D 638
Elongation @ Break (2 in/min)	>600%	>600%	D 638
Flexural Modulus <sup>3</sup>	150,000 psi	1.035 MPa	D 790
Notched Izod Impact Strength	9 ft-lbf/in	0.49 kJ/m	D 256
Hardness (Shore D)	66	66	D 2240
Vicat Softening Point	259 °F	126 °C	D1525
Brittleness Temperature	<-180 °F	<-118 °C	D 746
Hydrostatic Design Basis			
@ 23 °C	1600 psi	11.0 MPa	D 2837
@ 60 °C	1000 psi	6.9 MPa	D 2837
Minimum Required Strength	-	100 MPa	ISO 9080
Environmental Stress Crack Resistance <sup>4</sup>	>5000 hrs	>5000 hrs	D 1693
Notch Tensile (PENT)	75,000 hrs	75,000hrs	F 1473
Carbon Black Concentration	2.3%	2.3%	D 1603
Cell Classification	445574C	445574C	D 3350

(1) Typical properties will vary within specification limits;

(2) 190 °C / 21,100g;

(3) 2% Secant-Method 1

(4) Condition C





## FLYING W PLASTICS

IRON PIPE  
SIZESIRON PIPE SIZES - OUTSIDE DIAMETER / **DR 11** 13.5, 15.5

Pipe weights are calculated in accordance with PPI TR-7. Average ID is calculated using nominal OD and minimum wall plus 6% for use in estimating fluid flows. Actual inside diameter will vary. Pipe dimensions are in accordance with applicable ASTM standards.

I.P.S. Data

"Spec I" Controlled Outside Diameter (1/2" - 3")

- ASTM D3035
- NSF 14
- AWWA C901

"Spec II" Controlled Outside Diameter (4"-18")

- ASTM F-714
- NSF 14
- AWWA C906

All pipe is manufactured from select PE4710 resins unless requested otherwise at the time of quote. While PE4710 resins are used, these resins meet or exceed the pressure ratings and physical properties of PE3608/3408 resins.

Pipe Size	IPS DR - 11				IPS DR - 13.5			IPS DR - 15.5		
	Nom. OD	Min. Wall	Ave. ID	Weight (lbs./ft.)	Min. Wall	Ave. ID	Weight (lbs./ft.)	Min. Wall	Ave. ID	Weight (lbs./ft.)
1/2"	0.840	0.076	0.67	0.08	0.062	0.70	0.071			
3/4"	1.050	0.095	0.84	0.125	0.078	0.88	0.104			
1"	1.315	0.120	1.06	0.197	0.097	1.10	0.163	0.085	1.13	0.144
1-1/4"	1.660	0.151	1.34	0.313	0.123	1.39	0.26	0.107	1.43	0.229
1-1/2"	1.900	0.173	1.53	0.411	0.141	1.60	0.341	0.123	1.64	0.30
2"	2.375	0.216	1.91	0.642	0.176	2.00	0.533	0.153	2.05	0.469
2-1/2"	2.875	0.261	2.32	0.94	0.213	2.42	0.781	0.185	2.48	0.69
3"	3.500	0.318	2.82	1.39	0.259	2.95	1.16	0.226	3.02	1.02
4"	4.500	0.409	3.63	2.30	0.333	3.79	1.91	0.290	3.88	1.69
5"	5.563	0.506	4.49	3.52	0.412	4.68	2.93	0.359	4.80	2.58
6"	6.625	0.602	5.34	4.99	0.491	5.58	4.15	0.427	5.71	3.65
8"	8.625	0.784	6.96	8.46	0.639	7.27	7.03	0.556	7.44	6.19
10"	10.750	0.977	8.67	13.14	0.796	9.06	10.92	0.694	9.27	9.62
12"	12.750	1.159	10.29	18.49	0.944	10.74	15.36	0.823	11.00	13.53
14"	14.000	1.273	11.30	22.29	1.037	11.80	18.52	0.903	12.08	16.31
16"	16.000	1.455	12.91	29.12	1.185	13.48	24.19	1.032	13.81	21.30
18"	18.000	1.636	14.53	36.85	1.333	15.17	30.62	1.161	15.53	26.96

O.D. controlled water/fluids pipe

Recommended for municipal, industrial, and government applications  
Easily connects by fusing, eliminating the need for common connections



# Service Saddle

## Double Stainless Steel Strap

# 317



**Description:** Double strap Ductile Iron service saddle with TaperSeal™ gasket and wraparound 304 Stainless Steel strap for added corrosion resistance

**Application:** For outlets of 5/8" through 4".

### Key Features:

- Meets applicable AWWA C800 Standards
- The wide saddle body provides stability on the pipe
- Designed with PVC and other soft or brittle pipe in mind
- The gasket fully bonds to the cavity to hold it in place
- NPT, CC and other threaded outlets available in sizes 5/8" thru 4"
- Wide bands spread the load over larger area to prevent damage to the pipe when tightening the straps
- A closed lug on one side, combined with the strap, acts as a hinge for easier installation

### Materials Specifications (subject to change):

**BODIES:** Ductile Iron per ASTM A536

**STRAPS:** Type 304 Stainless Steel. Double Strap 1.50" wide 2" Wide straps not made

**NUTS:** Type 304 Stainless Steel fluoropolymer coated

**WASHERS:** Type 304 Stainless Steel

**STUDS:** Type 304 Stainless Steel

**GASKET:** Nitrile (Buna N) NSF 61® compounded to resist oil, acids, alkalies, most (aliphatic) hydrocarbon fluids, water and other chemicals

**Temperature Range:** -20°F to 180°F

**FINISH:** Flexi-Coat® Fusion-Bonded Epoxy Finish per AWWA C213

**Working Pressure:** Up to 300 PSI, depending on size and application

**Pipe Applications:** Steel, Ductile Iron, Cast Iron, Asbestos Cement, PVC and HDPE (with spring washers)

**Taps:** 5/8", 3/4", 1", 1 1/4", 1 1/2" and 2" CC Taps; 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3" and 4" NPT Taps

**Sizes (in inches):** Varies by tap type; see tables for size details



**5/8", 3/4" and 1" CC Taps**

\*Sized for use on C900 PVC Pipe

STANDARD			CATALOG NUMBER			CTN. QTY	METRIC		
NOM. SIZES INCHES	O.D. RANGE INCHES	WT. EACH LBS.	5/8" CC/16 MM	3/4" CC/20 MM	1" CC/25 MM		NOM. SIZE MM	O.D. RANGE MM	WT. EACH KG.
1-1/4-1-1/2 2	1.61-1.92 2.35-2.56	3 3	317-00019205-000 317-00025605-000	317-00019207-000 317-00025607-000	317-00019209-000 317-00025609-000	6 6	32-40 50	41-48 60-65	1 1
2-1/4-2-1/2 3 3-4	2.44-2.91 2.97-3.54 3.74-4.13	3 4 6	317-00029105-000 317-00035405-000 317-00041305-000	317-00029107-000 317-00035407-000 317-00041307-000	317-00029109-000 317-00035409-000 317-00041309-000	6 6 6	57-65 80 80-100	62-73 76-89 95-105	2 2 3
4 4* 4-5 6 6* 6	4.40-4.50 4.40-4.80 5.00-5.63 5.94-6.70 5.94-6.90 6.84-7.60	6 6 6 6 6 7	317-00045005-000 317-00048005-000 317-00056305-000 317-00066305-000 317-00069005-000 317-00076005-000	317-00045007-000 317-00048007-000 317-00056307-000 317-00066307-000 317-00069007-000 317-00076007-000	317-00045009-000 317-00048009-000 317-00056309-000 317-00066309-000 317-00069009-000 317-00076009-000	6 6 6 4 4 4	100 100 100-125 150 150 150	112-114 112-122 121-143 151-170 151-175 174-193	3 3 3 3 3 3
6-8 6-8* 8-10 10*	7.69-8.72 7.69-9.05 8.54-10.10 10.75-11.10	8 8 8 9	317-00087205-000 317-00090505-000 317-00101005-000 317-00111005-000	317-00087207-000 317-00090507-000 317-00101007-000 317-00111007-000	317-00087209-000 317-00090509-000 317-00101009-000 317-00111009-000	4 4 4 4	150-200 150-200 200-250 250	195-221 195-230 217-256 273-282	4 4 4 4
10-12* 12* 12-14 12-14 14-16	10.64-12.12 12.75-13.20 12.62-14.32 14.73-15.65 15.95-17.25	10 10 15 18 19	317-00121205-000 317-00132005-000 317-00143205-000 317-00156505-000 317-00172505-000	317-00121207-000 317-00132007-000 317-00143207-000 317-00156507-000 317-00172507-000	317-00121209-000 317-00132009-000 317-00143209-000 317-00156509-000 317-00172509-000	4 4 4 1 1	250-300 300 300-350 300-350 350-400	271-307 324-335 321-363 375-397 406-438	4 7 7 8 9
16 16-18 18* 20* 24	17.25-17.80 17.40-18.88 19.38-19.68 21.55-21.65 25.75-25.85	19 19 19 19 30	317-00178005-000 317-00188805-000 317-00195005-000 317-00216005-000 317-00258005-000	317-00178007-000 317-00188807-000 317-00195007-000 317-00216007-000 317-00258007-000	317-00178009-000 317-00188809-000 317-00195009-000 317-00216009-000 317-00258009-000	1 1 1 1 1	410 400-450 450 500 600	438-452 442-479 492-500 547-550 654-657	9 9 9 9 9

When properly sized from the factory, this product (denoted by \*) meets the requirements listed in the Uni-Bell PVC Pipe Association's "Handbook of PVC Pipe" and in the AWWA's "Manual M23: PVC Pipe Design and Installation."

**1 1/4", 1 1/2" and 2" CC Taps**

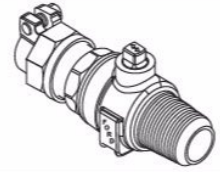
\*Sized for use on C900 PVC Pipe

STANDARD			CATALOG NUMBER			CTN. QTY	METRIC		
NOM. SIZES INCHES	O.D. RANGE INCHES	WT. EACH LBS.	1-1/4" CC/32 MM	1-1/2" CC/40 MM	2" CC/50 MM		NOM. SIZE MM	O.D. RANGE MM	WT. EACH KG.
2 3	2.35-2.56 2.97-3.54	3 5	317-00025611-000 317-00035411-000	- 317-00035413-000	- -	6 6	50 80	60-65 76-89	1 2
3-4 4 4* 4-5 4-5 6	3.74-4.13 4.40-4.50 4.40-4.80 5.00-5.14 5.00-5.63 5.94-6.70	8 9 9 9 9 9	317-00041311-000 317-00045011-000 317-00048011-000 317-00051411-000 317-00056311-000 317-00066311-000	317-00041313-000 317-00045013-000 317-00048013-000 317-00051413-000 317-00056313-000 317-00066313-000	317-00041315-000 317-00045015-000 317-00048015-000 317-00051415-000 317-00056315-000 317-00066315-000	6 6 6 6 6 4	80-100 100 100 100-125 100-125 150	95-105 112-114 112-122 120-130 121-143 151-170	3 3 3 3 4 4
6* 6 6-8 6-8* 8-10 10*	5.94-6.90 6.84-7.60 7.69-8.72 7.64-9.05 8.54-10.10 10.75-11.10	9 8 11 11 9 11	317-00069011-000 317-00076011-000 317-00087211-000 317-00090511-000 317-00101011-000 317-00111011-000	317-00069013-000 317-00076013-000 317-00087213-000 317-00090513-000 317-00101013-000 317-00111013-000	317-00069015-000 317-00076015-000 317-00087215-000 317-00090515-000 317-00101015-000 317-00111015-000	4 4 4 4 4 4	150 150 150-200 150-200 200-250 250	151-175 174-193 195-221 195-230 217-256 273-282	4 4 5 5 4 4
10-12 12* 12-14	10.64-12.12 12.75-13.20 12.62-14.32	11 14 14	317-00121211-000 317-00132011-000 317-00143211-000	317-00121213-000 317-00132013-000 317-00143213-000	317-00121215-000 317-00132015-000 317-00143215-000	4 4 4	250-300 300 300-350	271-307 324-335 321-363	5 6 6
12-14 14-16 16 16-18 18* 20* 24*	14.73-15.65 15.95-17.25 17.25-17.80 17.40-18.88 19.38-19.68 21.55-21.65 25.75-25.85	18 19 19 19 19 19 30	317-00156511-000 317-00172511-000 317-00178011-000 317-00188811-000 317-00195011-000 317-00216011-000 317-00258011-000	317-00156513-000 317-00172513-000 317-00178013-000 317-00188813-000 317-00195013-000 317-00216013-000 317-00258013-000	317-00156515-000 317-00172515-000 317-00178015-000 317-00188815-000 317-00195015-000 317-00216015-000 317-00258015-000	1 1 1 1 1 1 1	300-350 350-400 410 400-450 450 500 600	375-397 406-438 438-452 442-479 492-500 547-500 654-657	8 9 9 9 9 9 9

When properly sized from the factory, this product (denoted by \*) meets the requirements listed in the Uni-Bell PVC Pipe Association's "Handbook of PVC Pipe" and in the AWWA's "Manual M23: PVC Pipe Design and Installation."



Ball Corp. Stops only style f/ 2" size.

**SUBMITTAL INFORMATION****Ballcorp Corporation Stops - (FB1000-xx-NL style)****AWWA/CC TAPER THREAD INLET BY PACK JOINT FOR COPPER OR PLASTIC TUBING (CTS) OUTLET**

Molded EPDM rubber seat with reinforcing ring supports the ball

Solid one piece tee-head and stem

Dual EPDM O-rings in the stem

AWWA/CC Taper Thread

EPDM O-ring

Flare Copper Outlet Threads

Beveled EPDM rubber gasket provides hydraulic seal

Integral clamp contains machined grooves for axial restraint

Pack Joint Nut for CTS

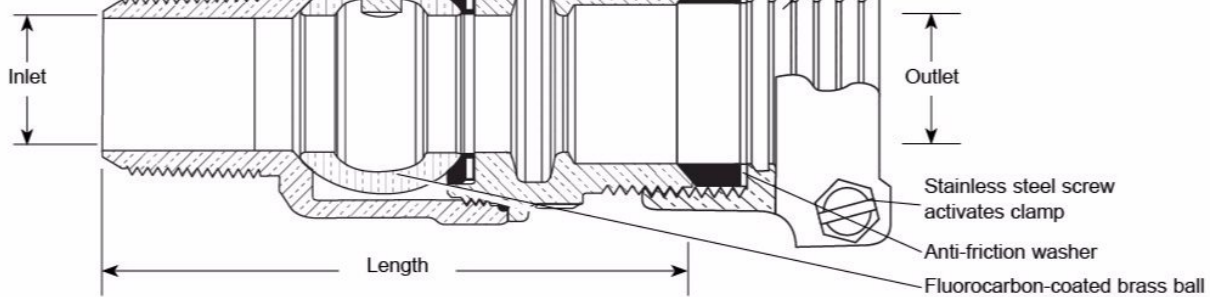


Image shown above is an FB1000-4-NL

VALVE SIZE	INLET SIZE	OUTLET SIZE	VALVE LENGTH	BODY OUTLET THREADS	APPROX. WT. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
3/4"	3/4"	3/4"	4-19/64"	3/4" Flare Copper	2.1	FB1000-3-NL	
3/4"	3/4"	1"	4-7/16"	1" Flare Copper	2.1	FB1000-34-NL	
1"	1"	1"	4-1/2"	1" Flare Copper	2.6	FB1000-4-NL	
1"	1"	1-1/4"	4-5/16"	1-1/4" Flare Copper	2.8	FB1000-45-NL	
1-1/4"	1-1/4"	1-1/4"	5-25/32"	1-1/4" Flare Copper	4.6	FB1000-5-NL	
1-1/4"	1-1/4"	1-1/2"	5-39/64"	1-1/2" Flare Copper	5.2	FB1000-56-NL	
1-1/2"	1-1/2"	1-1/2"	6-13/32"	1-1/2" Flare Copper	6.3	FB1000-6-NL	
1-1/2"	1-1/2"	2"	6-29/64"	2" Flare Copper	7.4	FB1000-67-NL	
2"	2"	2"	7-1/2"	2" Flare Copper	11.5	FB1000-7-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)
- Ends are integral or secured with adhesive to prevent unintentional disassembly
- 300 PSI working pressure

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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www.fordmeterbox.com

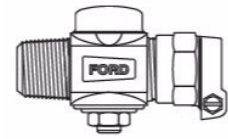
06/02/17

Submitted By:

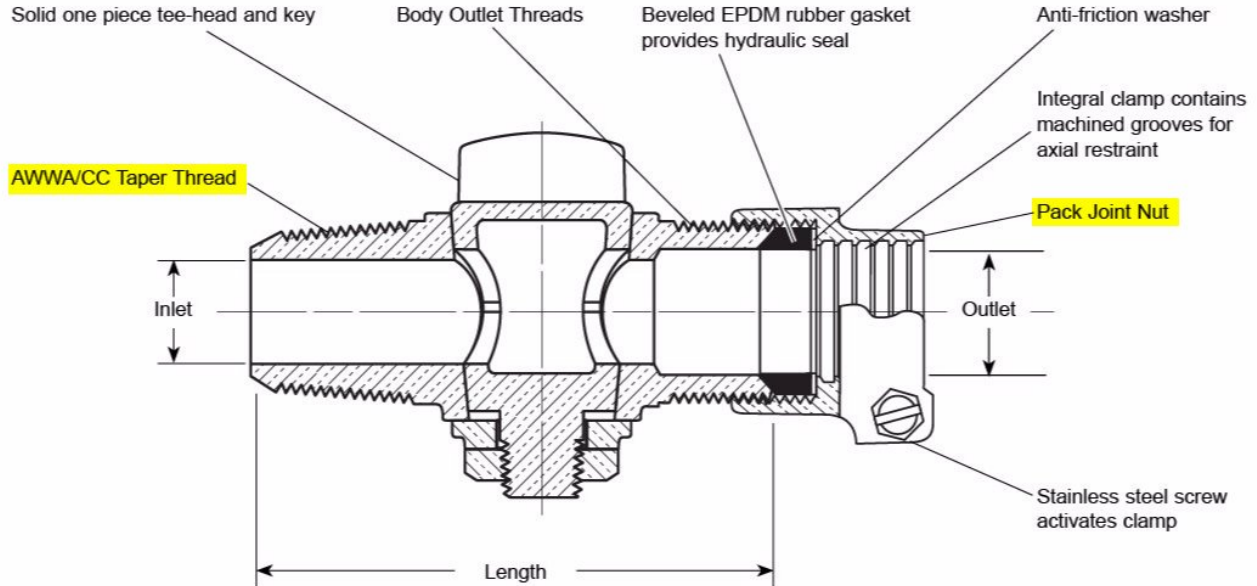


# SUBMITTAL INFORMATION

## 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	
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.

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 Overseas Fax: 260-563-0167  
 www.fordmeterbox.com

05/15/17

Submitted By:



## ADS POTABLE WATER SERVICE TUBING (CTS PE4710)

ADS Potable water service tubing (CTS) is a leader in today's potable water service market. Its flexibility and durability distinguish it from the competition and make it ideal for a variety of applications.

ADS CTS tubing is strong and resistant to many common causes of damage such as vibrations, surface loads and pressure surges.

### APPLICATIONS:

Residential & Commercial Water Service  
Well/Pump Water Systems  
Municipal Service Lines  
Farm & Ranch Water Systems

### FEATURES:

- Material conforms to ASTM D3350 requirements
- Certified to meet NSF 14/61 standard
- Durable plastic material stands the test of time
- Flexibility makes it ideal for a variety of projects
- Strength withstands weather and the human element
- Incremental footage markers printed every 2 feet throughout each coil length
- Light weight
- Chemically resistant
- Consistent outside diameter regardless of wall thickness or pressure rating

### BENEFITS:

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

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

**ADS PolyFlex™**



THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™



## ADS POTABLE WATER SERVICE TUBING (CTS) PIPE SPECIFICATIONS

### SCOPE

This specification describes ADS Potable Water Service Tubing (CTS) pipe SDR 9 for use in potable water service applications.

### PIPE REQUIREMENTS

ADS potable water service tubing shall meet the requirements of ASTM D2737, AWWA C901 and NSF Standards 14 and 61. Pipe dimensions shall meet Copper Tubing Size (CTS) standards.

### MATERIAL PROPERTIES

Tubing material shall be high-density polyethylene conforming to the minimum requirements of cell classification 445574E as defined and described in ASTM D3350. The resin shall have a material designation code of PE4710 by the Plastic Pipe Institute.

### DISINFECTION/MAINTENANCE

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

### INSTALLATION

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

	SDR 9 4710 CTS				
	¾"	1"	1¼"	1½"	2"
Outside Diameter in (mm)	0.875 ±0.004 (22.2 ±0.10)	1.125 ±0.005 (28.6 ±0.13)	1.375 ±0.005 (34.9 ±0.13)	1.625 ±0.006 (41.3 ±0.15)	2.125 ±0.006 (54.0 ±0.51)
Wall Thickness in (mm)	0.097 +0.010 (2.5 +0.25)	0.125 +0.012 (3.2 +0.30)	0.153 +0.015 (3.9 +0.38)	0.181 +0.018 (4.6 +0.46)	0.236 +0.024 (6.0 +0.61)
Pressure Rating @ 73° F, psi (kPa)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
Weight gm/ft (gm/m)	46 ±2 (151 ±7)	78 ±3 (256 ±10)	125 ±4 (410 ±13)	162 ±4 (531 ±13)	275 ±5 (902 ±16)

For more information on ADS CTS pipe and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

ADS "Terms and Conditions of Sale" are available on the ADS website, [www.ads-pipe.com](http://www.ads-pipe.com)  
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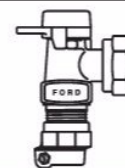
THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

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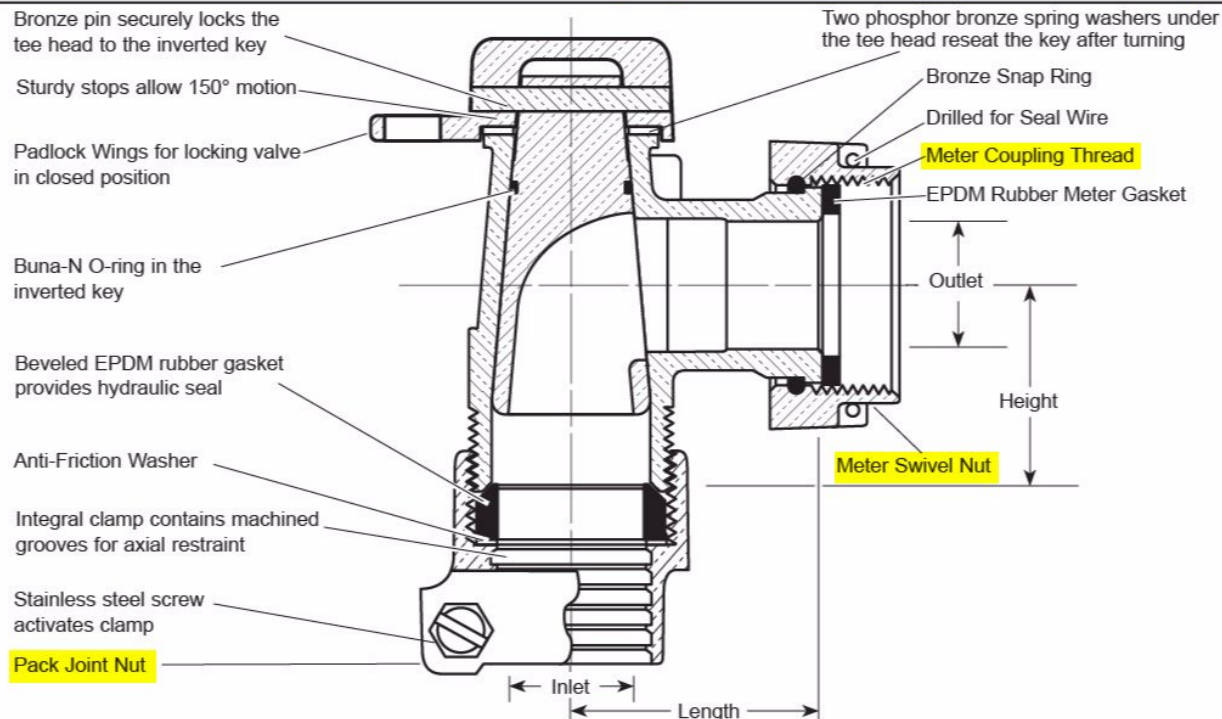


## SUBMITTAL INFORMATION

### Angle Key Meter Valves - (KV43-xxxW-NL style)



#### PACK JOINT FOR COPPER OR PLASTIC TUBING (CTS) INLET BY METER SWIVEL NUT OUTLET



VALVE SIZE	SERVICE LINE SIZE INLET	METER SIZE OUTLET	LENGTH	HEIGHT	APPROX. WT. LBS	PART NUMBER	✓ SUBMITTED ITEM(S)
3/4"	3/4"	5/8"	1-11/16"	1-5/8"	1.4	KV43-331W-NL	
3/4"	3/4"	5/8"x3/4" & 3/4"	1-11/16"	1-5/8"	1.6	KV43-332W-NL	
3/4"	1"	5/8"	1-11/16"	2"	1.4	KV43-341W-NL	
3/4"	1"	5/8"x3/4" & 3/4"	1-11/16"	2"	1.7	KV43-342W-NL	
1"	1"	1"	1-15/16"	1-9/16"	2.1	KV43-444W-NL	
1" Dbl. Locking	1"	1"	1-15/16"	1-9/16"	2.2	KV43-444WW-NL	
1"	1-1/4"	1"	1-15/16"	1-7/8"	2.7	KV43-454W-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 (UNS NO C89833)
- The product has the letters "NL" cast into the main body for proper identification
- UL Classified to ANSI/NSF Standard 61 and Standard 61 Annex G (NSF/ANSI 372)
- Brass components that do not come in contact with potable water conform to AWWA Standard C800 (ASTM B-62 and ASTM B-584, UNS NO C83600 - 85-5-5-5)
- Padlock wing for locking the valve in a closed position. "WW" indicates Double Padlock wings for locking valve in open or closed position
- Meets 100 PSI 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.

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 Overseas Fax: 260-563-0167  
<http://www.fordmeterbox.com>

05/09/13

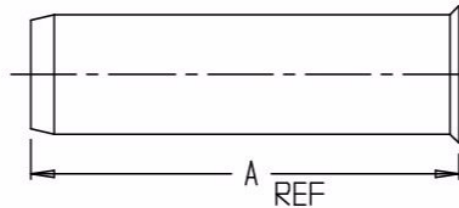
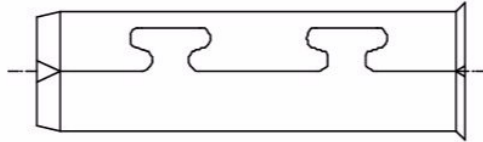
Submitted By:



**SUBMITTAL DATA SHEET**

Service Fitting - 6133T

CTS Insert Stiffener - Stainless Steel



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

**SUBMITTAL INFORMATION**

- 300 Series Stainless Steel



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

**Toll Free:** 1-800-292-2737

**Fax:** 1-800-832-9296

**Hours:** 7:00 a.m. – 5:00 p.m., CST

[sales@aymcdonald.com](mailto:sales@aymcdonald.com)

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

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

**Submitted by:**

10-14

# CAPITOL FOUNDRY OF VA, INC.

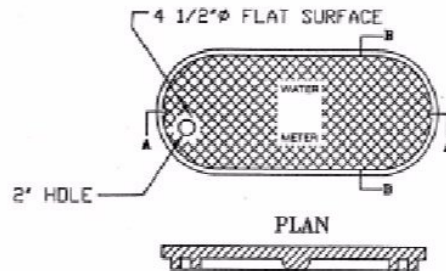
2856 CRUSADER CIRCLE  
VIRGINIA BEACH, VA 23453

PHONE: (757) 427-9431

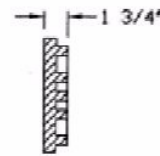
FAX: (757) 427-9308

www.capitolfoundry.net

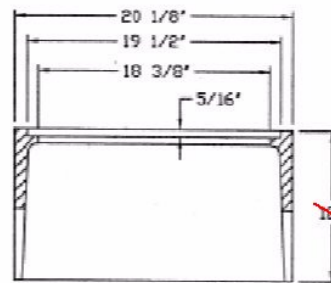
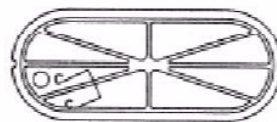
BOX & LID RATED TO  
WITHSTAND 20,000# WHEEL  
LOAD (H-20 RATED)



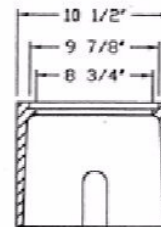
SECTION A-A



SECTION B-B



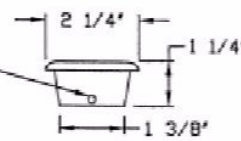
BODY SECTION A-A



BODY SECTION B-B



5/32" DRILLED THROUGH HOLE  
TO ACCEPT 1/8" COTTER PIN



TOUCH READ HOLE PLUG

HEAVY DUTY OVAL METER BOX & LID

2

MATERIAL SPEC: ASTM A-48 CLASS 35B

ITEM #MBX-1\*HD