



MUNICIPAL PRODUCT SPECIFICATION

ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell

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

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

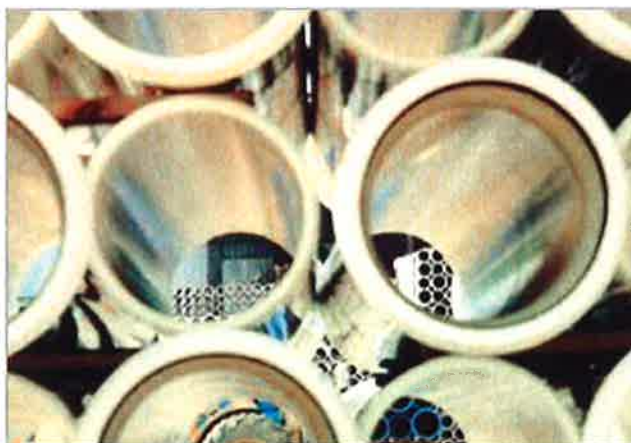
Short Form Specification		
Pipe Standard:	ASTM D2241	
Diameter Std.:	Iron Pipe Size (IPS)	
Nominal Sizes:	1½", 2", 2½", 3", 4", 6", 8", 10", 12"	
Dimension Ratios & Pressure Ratings:	SDR 41 – 100 psi	SDR 21 – 200 psi
	SDR 32.5 – 125 psi	SDR 17 – 250 psi
	SDR 26 – 160 psi	SDR 13.5 – 315 psi
Lay Length: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

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

‡See Installation Guide for more information.



Only products bearing the NSF Mark are Certified



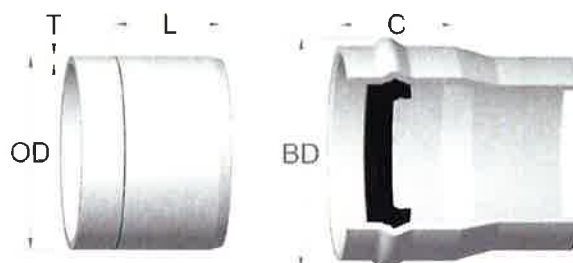
napcopipe.com | 1.855.624.7473

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MUNICIPAL PRODUCT SPECIFICATION

ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell



D2241/IB PIPE DIMENSIONS & PERFORMANCE								
Nom. Size	Outside Diameter (OD)	SDR	Pressure Rating (psi)	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	Insertion Mark (L)
1 1/2"	1.900	21	200	0.090	1.720	2.625	3.250	2.625
		17	250	0.112	1.676			
		13.5	315	0.141	1.618			
2"	2.375	26	160	0.091	2.193	3.250	3.500	2.750
		21	200	0.113	2.149			
		17	250	0.140	2.095			
2 1/2"	2.875	13.5	315	0.176	2.023	4.000	4.125	3.125
		26	160	0.110	2.655			
		21	200	0.137	2.601			
3"	3.500	17	250	0.169	2.537	4.750	4.125	3.625
		13.5	315	0.213	2.449			
		41	100	0.085	3.330			
4"	4.500	32.5	125	0.108	3.284	5.875	4.625	4.000
		26	160	0.135	3.230			
		21	200	0.167	3.166			
4"	4.500	17	250	0.206	3.088	5.875	4.625	4.000
		13.5	315	0.259	2.982			
		41	100	0.110	4.280			
4"	4.500	32.5	125	0.138	4.224	5.875	4.625	4.000
		26	160	0.173	4.154			
		21	200	0.214	4.072			
4"	4.500	17	250	0.265	3.970	5.875	4.625	4.000
		13.5	315	0.333	3.834			

Notes:

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



MUNICIPAL PRODUCT SPECIFICATION

ASTM D2241/IB PVC Pressure Pipe | Gasketed Integral Bell

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

Notes:

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

NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
P.O. BOX 969
SHIPROCK, NEW MEXICO 87420
PHONE: (505) 210-7070

LETTER OF TRANSMITTAL	
DATE	9-Sep-2019
JOB NO.	
ATTENTION:	Ronald Begay
RE:	NTUA Kiabeto Inter-tie
	Kaibeto, Arizona
	NECA Proj. No. 819141 - Kaibeto Inter-tie

TO: Navajo Tribal Utility Authority
PO Box 170
Fort Defiance, Arizona 86504-0170

GENTLEMEN:

WE ARE SENDING YOU

☒ ATTACHED ☐ UNDER

Separate cover via _____ THE FOLLOWING ITEMS:

- ☐ SHOP DRAWINGS ☐ PRINTS ☐ PLANS ☐ SAMPLES ☒ SPECIFICATIONS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ As-Built

COPIES	DATE	NO.	DESCRIPTION
1	9-Sep-2019	4	NECA Material Take-Off List (13 pages)

THESE ARE TRANSMITTED As checked below:

- ☒ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ RESUBMIT ____ COPIES FOR APPROVAL
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☒ FOR REVIEW AND COMMENT ☐ FOR YOUR SIGNATURE _____

Remarks:

PLEASE SIGN, DATE, AND RETURN THE YELLOW COPY.

RECEIVED BY: _____

DATE: _____

COPY TO: NTUA (RB, AT, DS, DS, JD, AM, CH, DY) NHA (KD, VM, LL,
NN) NECA (WB, PM, GL, HP, BG)

SIGNED: _____
Ammerson T. Barber, Estimator/Coordinator

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE

2019-07-24

Kaibeto Inter-tie Item #1

8-19-141

NTUA - Waterline 4in C900 Pipe

Part#	Material Description	U/M	Summary
A4000042	Pipe, Pvc SDR21 4" 200PSI	LGTH	2

2019-07-24

Kaibeto-Item #2

8-19-141

NTUA - Waterline 6in Pipe

Part#	Material Description	U/M	Summary
A4000062	Pipe, PVC SDR21 6" 200PSI	LGTH	5

2019-07-24

Kaibeto-Item #3

8-19-141

NTUA - 4in Gate Valve

Part#	Material Description	U/M	Summary
D4010434	Valve, Gate DI 4" MJ	ea	3
S4000298	Rebar #4 (½"x20')	Lgth	2
S4000428	Tape, 10mil Poly Pipe Wrap 2"	RO	8
S4000263	Cement, Premix Concrete 80#	ea	16
	Valve Collar 24" x 24" x 4"	cuft	4
	Valve Thrust Block 4" Gate	cuft	6.94
<i>Special Order</i>	MJ Kit, DI 4" Trans Gasket w/bolts, <i>Ferguson</i>	ea	4
<i>Special Order</i>	MJ Kit, DI 4" Standard DI Gasket w/bolts, <i>Ferguson</i>	ea	2
<i>Special Order</i>	Megalug, 4" PVC Restraint, <i>Ferguson</i>	ea	4
<i>Special Order</i>	Megalug, 4" DI Restraint, <i>Ferguson</i>	ea	2
<i>Special Order</i>	Valve Box, 2-Piece Screw Type, 5-¼" Shaft w/Cast Iron Drop Lid, <i>Ferguson</i>	ea	3
<i>Special Order</i>	Blue, Carsonite Marker Post, <i>Ferguson</i>	ea	6

2019-07-24

Kaibeto-Item #4

8-19-141

NTUA - 6in Gate Valve

Part#	Material Description	U/M	Summary
D4010436	Valve, Gate DI 6" MJ	ea	1
S4000298	Rebar #4 (½"x20")	Lgth	1
S4000263	Cement, Premix Concrete 80#	ea	8
	Valve Collar 24" x 24" x 4"	cuft	1.33
	Valve Thrust Block 6"Gate	cuft	3.24
<i>Special Order</i>	MJ Kit, DI 6" Transition Gasket w/bolts, <i>Ferguson</i>	ea	2
<i>Special Order</i>	Megalug, 6" PVC Restraint, <i>Ferguson</i>	ea	2
<i>Special Order</i>	Valve Box, 2-Piece Screw Type, 5-¼" Shaft w/Cast Iron Drop Lid, <i>Ferguson</i>	ea	1
<i>Special Order</i>	Blue, Carsonite Marker Post, <i>Ferguson</i> ✕	ea	2

2019-07-24
8-19-141

Kaibeto-Item #5
NTUA - 6in MJ Elbow 22½°

Part#	Material Description	U/M	Summary
<i>Special Order</i>	Bend 22½°, 6" MJ DI, <i>Ferguson</i>	ea	1
<i>Special Order</i>	MJ Kit, DI 6" Transition Gasket w/bolts, <i>Ferguson</i>	ea	2
<i>Special Order</i>	Megalug, 6" PVC Restraint, <i>Ferguson</i>	ea	2
S4000263	Cement, Premix Concrete 80#	ea	3
	Thrust block 6" Elbow 22½°	cuft	1.96

2019-07-24
8-19-141

Kaibeto-Item #6
NTUA - Reducer 4x6 MJ

Part#	Material Description	U/M	Summary
Special Order	Reducer, DI 4" x 6" MJ, <i>Ferguson</i>	ea	1
Special Order	MJ Kit, DI 4" Trans w/bolts, Domestic, <i>Ferguson</i>	ea	1
Special Order	Megalug, 4" PVC Restraint, <i>Ferguson</i>	ea	1
Special Order	MJ Kit, DI 6" Trans w/bolts, Domestic, <i>Ferguson</i>	ea	1
Special Order	Megalug, 6" PVC Restraint, <i>Ferguson</i>	ea	1
S4000263	Cement, Premix Concrete 80#	ea	7
	Thrust block	cuft	4.63

2019-07-24
8-19-141

Kaibeto-Item #7
NTUA - Tee 4x4x4 MJ

Part#	Material Description	U/M	Summary
<i>Special Order</i>	Solid Sleeve, DI 4" MJ	ea	1
<i>Special Order</i>	MJ Kit, DI 4" Trans Gasket w/bolts	ea	5
<i>Special Order</i>	Megalug, 4" PVC Restraint	ea	5
<i>Special Order</i>	Tee, DI 4" MJ	ea	1
S4000263	Cement, Premix Concrete 80#	ea	3
	Thrust block 4" Tee	cuft	2.27

2019-07-24
8-19-141

Kaibeto-Item #08
NTUA - PRV 4"x2"

Part#	Material Description	U/M	Summary
<i>Special Order</i>	4" Flange x 8ft Plain End, DI Pipe, Baker Supply	Lgth	2
<i>Special Order</i>	Pipe Supporter 18"min. - 36"max. <i>Core & Main</i>	ea	5
	<u>Concrete Vault 6ft Wide x 8ft Length</u>		
<i>Special Order</i>	Plastic Coated Steel or Aluminum Step @ 16" O.C., Install to 12" above vault floor. 6' Depth x 6' Width x 8' Length (Int. Dim.) Precast Concrete Vault (4,000 psi Min.), 6" Thick Walls w/6" Thick Reinforced concrete top(non-traffic rated) and 6" reinforced concrete base. Vault Joints to be sealed w/bitumastic gasket. 2" Floor Drain center of vault. Vault Bore Donut, 6" w/4" Hole 5' x 5' SQ., Insulated, double door cover and safety grate, aluminum channel frame s/t-handle slam lock and covered padlock clip	As Req'd	1
S4000270	Portland Cement, Non-Shrink Grout 50#	ea	1
	<u>6" DIA. Bollards at 12" Min.</u>		
<i>Special Order</i>	6"DIA. X 5ft, Bollards painted blue cut @ 5ft, <i>HD Supply/Firebird, Baker Supply</i>	ea	4
S4000263	Cement, Premix Concrete 80#	ea	7
	Valve Collar V=3.14 x 3.3 ² x 60	cuft	4.75

2019-07-24
8-19-141

Kaibeto-Item #09
NTUA - Backflow Enclosure Assembly

Part#	Material Description	U/M	Summary
D4010091	Thread Stud, 5/8" x 4" w/Hex Nut	ea	40
H4060054	Flange, Gasket, 4" FF CL150	ea	5
S4000263	Cement, Premix Concrete 80#	ea	45
	Thrust Block for 2-bend 90's 4"	cuft	5.93
	Concrete base enclosure 50"x 114"x 6"	cuft	19.79
	Thrust Block for Reducer 6" x 4"	cuft	4.63
<i>Special Order</i>	MJ Kit, DI 4" Standard Gasket, w/bolts, Baker Supply	ea	2
<i>Special Order</i>	MJ Kit, PVC 4" Trans Gasket, w/bolts, Baker Supply	ea	2
<i>Special Order</i>	4"Flange x 7ft Plain End, DI Pipe, Baker Supply	Lgth	2
<i>Special Order</i>	Wye, Strainer(Flange), Cast Iron, <i>Wilkins</i> 4" Model 'FS' Series, Baker Supply	ea	1
<i>Special Order</i>	4" Tyler, Tuff Grip megalug for DI pipe, 1000S Series, Baker Supply	ea	2
<i>Special Order</i>	Backflow Preventer Assembly, 4" Wilkins Model 975 ,Baker Supply	ea	1
<i>Special Order</i>	Enclosure, Safe-T-Cover , Model #600 T AL, Baker Supply	ea	1
<i>Special Order</i>	Pipe Supporters, range from 24"min. - 48"max. Core & Main	ea	2
<i>Special Order</i>	Bend-90, DI 4" Flanged Ends, Baker Supply	ea	2
<i>Special Order</i>	Bend-90, DI 4" MJ, Baker Supply	ea	2

2019-07-24
8-19-141

Kaibeto-Item #10
NTUA - WS-11 Flush Valve

Part#	Material Description	U/M	Summary
A4000022	Pipe, PVC SDR21 2" 200psi	Lgth	1
A4010003	Adapt,PVC 2"P/OxMIPT 200PSI	EA	4
D4010402	Valve, Gate DI 2"FIPT	EA	2
E4030022	PIPE, Galv 2"x21' T&C LF	Lgth	2
E4030230	Cap, Galv 2"FIPT	EA	2
E4030352	Elbow-45°, Galv 2"	EA	2
G4010702	Valve, Ball CORP Stop 2" MxF	EA	2
S4000263	Cement, Premix Concrete 80#	ea	10
S4000428	Tape, 10mil Poly Pipe Wrap 2"	roll	4
<i>Special Order</i>	Valve Box, 2-Piece Screw Type, 5-¼" Shaft w/Cast Iron Drop Lid, <i>Ferguson</i>	ea	2

2019-07-24

8-19-141

Kaibeto-Item #11

NTUA - EVOQ4 Water Meter 4"

Part#	Material Description	U/M	Summary
H4060054	Flange, Gasket, 4" FF CL150	EA	2
<i>Special Order</i>	Thread Stud S.S. 5/8"x4" w/Hex Nut, <i>Ferguson</i>	EA	8
<i>Special Order</i>	4", EVOQ4, Water meter, Flanged ends, ANSI150, 14in	EA	1

2019-07-24

8-19-141

Kaibeto-Item #12

NTUA - Fencing 150FT

Part#	Material Description	U/M	Summary
I4000001	Band, Fence Tension Bar	EA	54
I4000002	Band, Fence Top-Barbed Wire	EA	72
I4000003	Brace, Fence Diag.-Cor/Gate Post	EA	16
I4000004	Fence Rail End 1-5/8"	EA	16
I4000006	Post, Fence Corner/Gate 3"x10.5'	EA	10
I4000007	C-L Ped. Gate 3'x 6' (Walk-in)	ea	1
I4000008	GATE, TRAFFIC C-LINK 6' DOUBLE	set	1
I4000010	CLIP, HOG WIRE / TENSION WIRE	lb	20
I4000011	POST, FENCE LINE 2"x 10'	ea	8
I4000012	TENSION BAR, FENCE 3/4"x 6'	ea	16
I4000014	WIRE, FENCE TENSION 9ga. 300'	roll	1
I4000030	WIRE, BARBED 1320'/ROLL	roll	1
I4000033	WIRE, FENCE TIE 8-1/2"L	ea	64
S4000263	CONCRETE, PREMIX 80# BAG	bag	30
	* CONCRETE, POST HOLE		14
	* CONCRETE, DIAG. BRACE		16

2019-07-24

8-19-141

Kaibeto-Item #13

NTUA - 14in Casing

Part#	Material Description	U/M	Summary
<i>Special Orders</i>	Pipe, Steel Road X-ing 14" x 20ft, Sch40. A53B, <i>ABQ Pipe & Supply</i>	LFT	60
<i>Special Orders</i>	End Seals w/ SS Bands., <i>Ferguson</i>	EA	2
<i>Special Orders</i>	Casing Spacers, S.S. 6.63 O.D. x 13.12 I.D., <i>Ferguson</i>	EA	10

NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY
P.O. BOX 969
SHIPROCK, NEW MEXICO 87420
PHONE: (505) 210-7070

LETTER OF TRANSMITTAL

DATE	9-Sep-2019	JOB NO.
ATTENTION:	Ronald Begay	
RE:	NTUA Kiabeto Inter-tie	
	Kaibeto, Arizona	
	NECA Proj. No. 819141 - Kaibeto Inter-tie	

TO: Navajo Tribal Utility Authority

PO Box 170

Fort Defiance, Arizona 86504-0170

GENTLEMEN:

WE ARE SENDING YOU

☒ ATTACHED ☐ UNDER

Separate cover via _____ THE FOLLOWING ITEMS:

- ☐ SHOP DRAWINGS ☐ PRINTS ☐ PLANS ☐ SAMPLES ☒ SPECIFICATIONS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ As-Built

COPIES	DATE	NO.	DESCRIPTION
1	9-Sep-2019	5	Baker Supply Submittal Packet
1	9-Sep-2019	6	CLOW AWWA Resilient Wedge Gate Valves
1	9-Sep-2019	7	Quickrete Concrete Mix Product No. 1101
1	9-Sep-2019	8	QUICKRETE Non-Shrink Precision Grout Product No. 1585-00
1	9-Sep-2019	9	Ferguson Submittal Packet

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☒ FOR REVIEW AND COMMENT ☐ FOR YOUR SIGNATURE _____

Remarks:

PLEASE SIGN, DATE, AND RETURN THE YELLOW COPY.

RECEIVED BY: _____

DATE: _____

COPY TO: NTUA (RB, AT, DS, DS, JD, AM, CH, DY) NHA (KD, VM, LL,
NN) NECA (WB, PM, GL, HP, BG)

SIGNED: _____
Ammerson T. Barber, Estimator/Coordinator

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE



Baker Utility Supply
4320 2nd ST. NW
Albuquerque, NM 87107
PH: 505-884-0990
Fax: 505-881-4615

KAIBETO INTERTIE

Contractor: NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY

ITEMS AND MANUFACTURER:

4" MJ SKIN PACK REG GSK w/T-BOLTS NO GLAND, DOM:	TYLER
4" MJ TRANS GASKET, DOMESTIC:	STAR
DI SPOOL, DOMESTIC:	WHEATLAND
4" STRAINER, DOMESTIC:	WILKINS
4" TUFF GRIP MEGALUG FOR DI PIPE, DOMESTIC:	TYLER
4" BACKFLOW PREVENTER, DOMESTIC:	WILKENS
36"x100"x56" ALUMINUM ENCLOSURE W/HEATER, DOM:	SAFE-T-COVER
MJ FITTINGS, DOMESTIC:	TYLER
VALVE BOX TOP, BOTTOM, LID, DOMESTIC:	TYLER
2" FLGxFLG GATE VALVE w/HANDWHEEL, DOMESTIC:	AFC
EXPOY SADDLE, DOMESTIC:	FORD

SUBMITTAL

(Current revisions for the noted Standards apply)

Tyler Union Waterworks provides that our *Mechanical and Push-On joint gaskets and dimensions conform to the specifications in ANSI/AWWA C111/A21.11 (current revision). Markings include size, mold number, gasket manufacturer's mark, country where molded, and product identification letters. No markings are placed on sealing surfaces per the AWWA C111 standard.

*Note: Push-On and Mechanical Joint transition gasket design standards and markings are not addressed by ANSI/AWWA C111/A21.11 (current revision). Transition gaskets provided by Tyler Union follow the material testing standards and specifications established for ANSI/AWWA C111/A21.11 gaskets.

Gasket material is vulcanized styrene butadiene rubber (SBR). Purchaser may request special application elastomers (EPDM, Nitrile, Neoprene & FKM) which will be identified on all documentation and corresponding gaskets. Gaskets are free of foreign materials, porous areas, or other defects that make them unfit for the intended use.

Tyler Union gaskets are manufactured under quality control standards and procedures that are maintained by the gasket supplier. Appropriate documentation is maintained by the manufacturer and available for review upon request. Properties and test methods for SBR, EPDM, Nitrile, Neoprene and FKM gaskets are as provided.

Property	ASTM Test Method	Required Value
Hardness, Shore "A"	D2240-86	75 (+-5)
Minimum Tensile	D412-87	1500 psi (10MPa)
Minimum Elongation	D412-87	150 %
Minimum Aging	D572-88	60 %
Maximum Compression Set	D395-89, Method B	20 %
Resistance to surface Ozone cracking	D1149-86	No cracking

Tyler Union's approved suppliers maintain a quality assurance program that is reviewed and updated on an ongoing basis to ensure product quality. Tyler Union's gasket suppliers submit gaskets for testing and provide materials for testing to Underwriters Laboratories, Inc. Tyler Union's gasket providers are recognized under the component program (UL 194/ UL 157) of Underwriters Laboratories, Inc.. Tyler Union UL approved gaskets meet NSF-61, NSF-372 and Annex G.

Tyler Union provides that our Mechanical and Push-On joint gaskets for potable or wastewater projects will perform as designed when selected per the chart provided and installed per AWWA C600-10.

SBR (Styrene Butadiene rubber)(Buna-S) Not Recommended for Hydrocarbon Service	20°F to 180°F	Suitable for Water, Wastewater, most moderate chemicals, wet or dry organic acids, alcohols, ketones, and aldehydes
EPDM (Ethylene Propylene) Not Recommended for Hydrocarbon Service	-10°F to 250°F	Ideal for water, wastewater, ozone, & strong oxidizing chemicals May be used on steam and air within its temperature range
CR (Neoprene)	-10°F to 200°F	Recommended for moderate chemicals and acids, oil fats, greases, many solvents and air with hydrocarbons. Will not support combustion
NBR (Nitrile)(Buna-N)(Hycar)	-40°F to 250°F	Ideally suited for gasoline, petroleum products, hydrocarbons, water, mineral and vegetable oils
*FKM(Fluoroelastomer) *Check with Customer Service for availability	10°F to 425°F	Ideally suited for hydrocarbons, acids, vegetable oils & petroleum

Gasket Types Offered:

- (1)Mechanical Joint std.(2) Push-On Joint std.(3)Mechanical Joint DUO
(4)Mechanical & Push-on Joint Transition(5)Push-on Restraining
(6)Mechanical Joint Armor Tip Conductivity(7)Compact tapping Sleeve

Unless other wise requested by the purchaser upon order placement, all gaskets provided will be of our standard SBR material.

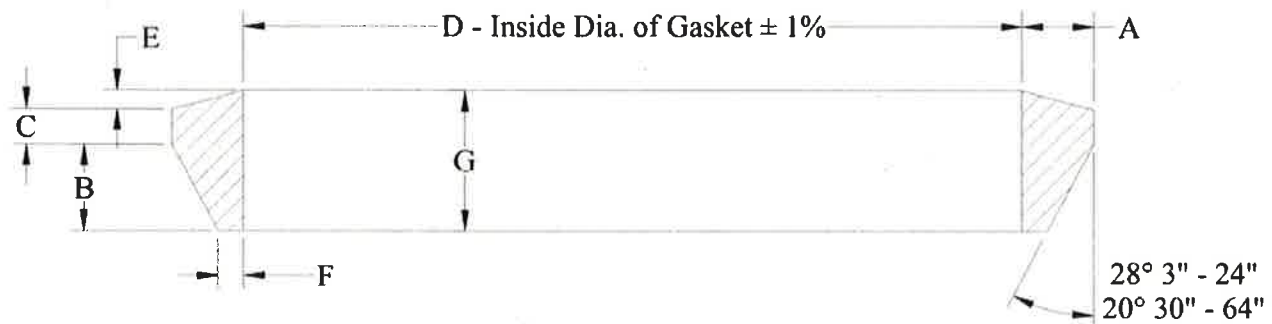
Mechanical Joint Gaskets

ANSI/AWWA C111/A21.11-12

*MJ Tru-Lock Gaskets 30-48 inch

Pipe Size	Pipe OD	A ±0.01"	B	C	D ±1%	E ±0.01%	F ±0.01"	G ±0.02"
**2	2.50	0.48	0.62	0.31	2.48	0.12	0.15	1.05
3	3.96	0.48	0.62	0.31	3.86	0.12	0.15	1.05
4	4.80	0.62	0.75	0.31	4.68	0.16	0.22	1.22
6	6.90	0.62	0.75	0.31	6.73	0.16	0.22	1.22
8	9.05	0.62	0.75	0.31	8.85	0.16	0.22	1.22
10	11.10	0.62	0.75	0.31	10.87	0.16	0.22	1.22
12	13.20	0.62	0.75	0.31	12.95	0.16	0.22	1.22
14	15.30	0.62	0.75	0.31	14.99	0.16	0.22	1.22
16	17.40	0.62	0.75	0.31	17.07	0.16	0.22	1.22
18	19.50	0.62	0.75	0.31	19.13	0.16	0.22	1.22
20	21.60	0.62	0.75	0.31	21.20	0.16	0.22	1.22
24	25.80	0.62	0.75	0.31	25.34	0.16	0.22	1.22
30	32.00	0.73	1.00/*50	.38/*50	31.47	0.16	.37/*55	1.54/*1.16
36	38.30	0.73	1.00/*50	.38/*50	37.67	0.16	.37/*55	1.54/*1.16
42	44.50	0.73	1.00/*50	.38/*50	43.78	0.16	.37/*55	1.54/*1.16
48	50.80	0.73	1.00/*50	.38/*50	49.98	0.16	.37/*55	1.54/*1.16

** Not included in AWWA C111. Manufacture's Standard does not meet AWWA C111



** Mechanical Joint Transition Gasket Dimensions in Inches

Pipe Size	A ±0.01"	B	C	D ±1%	E ±0.01%	F ±0.01"	G ±0.02"
2	0.57	0.62	0.31	2.28	0.12	0.24	1.08
3	0.70	0.62	0.31	3.45	0.16	0.37	1.11
4	0.77	0.75	0.31	4.43	0.16	0.37	1.26
6	0.76	0.75	0.31	6.53	0.16	0.36	1.25
8	0.82	0.75	0.31	8.50	0.16	0.42	1.27
10	0.75	0.75	0.31	10.59	0.16	0.39	1.26
12	0.84	0.75	0.31	12.56	0.16	0.44	1.28

** Not included in AWWA C111. Manufacture's Standard does not meet AWWA C111



Buy America(n)" & Product Certificate of Compliance

Address: 1501 W. 17th. Street – Anniston, AL 36201

Telephone No.: (800) 226-7601

Fax Number: (800) 226-0806

Date: January 6, 2014

To: Whom It May Concern

Re: Buy America /Buy American Certification for Tyler Union Waterworks Made in the U.S.A Products

We appreciate the opportunity to supply our products for your projects requiring to some or full extent product that is substantially or wholly manufactured in the U.S.A. Tyler Union Waterworks certifies that its Domestic manufactured fittings and cast iron municipal castings are wholly manufactured in the U.S.A. using only raw materials that wholly originate in the U.S.A..

After a thorough review of "Buy America/Buy American" acts; Tyler Union certifies that our Domestic ANSI/AWWA fittings and ASTM cast iron municipal castings meet all applicable requirements and provisions as provided for by the U.S. Department of Transportation and the Federal standards noted for domestic iron and steel construction materials incorporated into your project. These standards/laws/acts and revisions date from 1933 through current year 2014.

Buy American:

- American Recovery and Reinvestment Act of 2009 (ARRA), Section 1605
- Federal Aviation Administration (FAA), 49 U.S.C. § 50101

Buy America:

- Federal Highway Administration (FHWA), 23 U.S.C. § 50101§ 313 – Buy America; 23 C.F.R. § 635.410
- Federal Railroad Administration (FRA), 49 U.S.C. Chapters 244, 246: § 24405 – Buy America
- National Railroad Passenger Corporation (AMTRAK), 49 U.S.C. § 24305
- Federal Transit Administration (FTA), 49 U.S.C. § 5323(j); 49 C.F.R. Part 661 (Buy America Requirements)

If your domestic project material requires additional certifications as provided; you must advise the Tyler Union Waterworks product Distributor or Customer Service Agent upon order placement. Additional certifications available include 1) mill certification, 2) product and/or product specific certificate for accessories, and 3) coating certificate. Our purchase order system maintains purchase shipping order information for a minimum of 12 months. For tracking purposes these orders indicate if the product processed and shipped was domestic in origin.

Tyler Union certifies its 2" through 48" Domestic ANSI/AWWA fittings are cast with tested and traceable ASTM A536 compliant ductile iron that is designed for use with and conforms to all the applicable terms and requirements of ANSI/AWWA C153/A21.53, ANSI/AWWA C151/A21.51, ANSI/AWWA C115/A21.15, ANSI/AWWA C111/A21.11, ANSI/AWWA C116/A21.16, ANSI/AWWA C110/A21.10, and ANSI/AWWA C104/A21.4. Additionally Tyler Union certifies its Domestic made in the U.S.A. cast iron municipal products (Valve box, Service box, and Accessories) are produced in accordance with and meet all applicable terms and provisions of ASTM-A48. Current revisions apply for each noted standard.

Best Regards,

Roger Dunning
Roger Dunning

Technical Support Manager

Tyler Union Waterworks

Email: roger.dunning@tylerunion.com

Tel.: (800)527-8478

Project Name:

Project Location:

Project Material:

Location of Mfg.:

Project Contractor:

Tyler Union Distributor:

Project No.:

Union Foundry - Anniston, AL 36201 – U.S.A.

Subscribed and sworn to before me this 6th. Day of January 2014

Sandra C Smith

Sandra Smith – Notary Public – Smith County, Texas



Tyler Union Waterworks Contact Information

Tyler: 11910 CR 492 • Tyler, Texas 75706 • (800) 527-8478

Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601

Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471

Elmira: 1021 East Water • Elmira, NY 14902

New Lenox: 2200 West Haven • New Lenox, IL 60451

Portland: 6204 N. Marine Dr. • Portland, OR 97203

www.tylerunion.com

This document is void if modified in any manner other than the addition of project information, name of contractor and/or product distributor



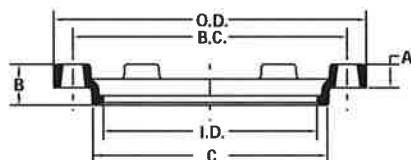
MJ Accessories

ANSI/AWWA C111/A21.11

GLANDS, GASKETS, BOLTS & NUTS

GENERAL SPECIFICATION

MATERIAL:	Ductile Iron per ASTM A536
PRESSURE:	350 PSI rating for 2" - 24" sizes, 250 PSI rating for 30" - 48" sizes and 150 PSI rating for 54" - 64" sizes
TESTING:	In accordance with ANSI/AWWA C111/A21.11 and UL requirements
DIMENSIONS:	Are in accordance with ANSI/AWWA C111/A21.11, UL and FM requirements and are in inches unless noted otherwise
WEIGHTS:	Are in pounds, unless noted otherwise and do not include accessories
COATING:	Asphaltic seal coat is in accordance with ANSI/AWWA C104/A21.4 unless otherwise specified.
APPROVALS:	Compact Glands 3" - 12" Underwrites Laboratories & ULC Listed. Factory Mutual approved 3"-16".



MJ COMPACT GLANDS

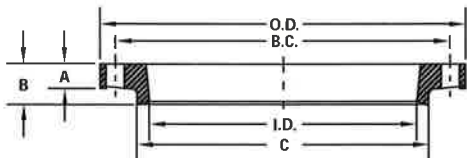
NOM. SIZE	O.D.	A	B	C	I.D.	B.C.	BOLT HOLE	BOLT QTY	WT (LBS.)
2	6.12	0.62	1.18	3.40	2.61	4.75	Ø0.75	2	1
3	7.69	0.62	1.37	4.84	4.06	6.19	Ø0.75	4	2
4	9.12	0.75	1.50	5.92	4.90	7.50	Ø0.88	4	3
6	11.12	0.88	1.63	8.02	7.00	9.50	Ø0.88	6	4
8	13.37	1.00	1.75	10.17	9.15	11.75	Ø0.88	6	5
10	15.62	1.00	1.75	12.22	11.20	14.00	Ø0.88	8	7
12	17.88	1.00	1.75	14.32	13.30	16.25	Ø0.88	8	8
14	20.25	1.25	2.00	16.40	15.44	18.75	Ø0.88	10	11
16	22.50	1.31	2.06	18.50	17.54	21.00	Ø0.88	12	14
18	24.75	1.38	2.13	20.60	19.64	23.25	Ø0.88	12	19
20	27.00	1.44	2.19	22.70	21.74	25.50	Ø0.88	14	27
24	31.50	1.56	2.31	26.90	25.94	30.00	Ø0.88	16	36
30	39.12	2.00	2.75	33.29	32.17	36.88	Ø1.13	20	90
36	46.00	2.00	2.75	39.59	38.47	43.75	Ø1.13	24	118
42	53.12	2.00	2.75	45.79	44.67	50.62	Ø1.38	28	151
48	60.00	2.00	2.75	52.09	50.97	57.50	Ø1.38	32	187





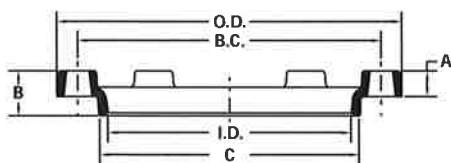
MJ Accessories

ANSI/AWWA C111/A21.11



MJ FULLBODY GLANDS

NOM. SIZE	O.D.	A	B	C	I.D.	B.C.	BOLT HOLE	BOLT QTY	WT (LBS.)
2	6.12	0.62	1.18	3.40	2.61	4.75	Ø0.75	2	1
3	7.69	0.62	1.37	4.84	4.06	6.19	Ø0.75	4	5
4	9.12	0.75	1.50	5.92	4.90	7.50	Ø0.88	4	6
6	11.12	0.88	1.63	8.02	7.00	9.50	Ø0.88	6	10
8	13.37	1.00	1.75	10.17	9.15	11.75	Ø0.88	6	14
10	15.62	1.00	1.75	12.22	11.20	14.00	Ø0.88	8	20
12	17.88	1.00	1.75	14.32	13.30	16.25	Ø0.88	8	24
14	20.25	1.25	2.00	16.40	15.44	18.75	Ø0.88	10	45
16	22.50	1.31	2.06	18.50	17.54	21.00	Ø0.88	12	55
18	24.75	1.38	2.13	20.60	19.64	23.25	Ø0.88	12	55
20	27.00	1.44	2.19	22.70	21.74	25.50	Ø0.88	14	66
24	31.50	1.56	2.31	26.90	25.94	30.00	Ø0.88	16	90
30	39.12	2.00	2.75	33.29	32.17	36.88	Ø1.13	20	220
36	46.00	2.00	2.75	39.59	38.47	43.75	Ø1.13	24	286
42	53.12	2.00	2.75	45.79	44.67	50.62	Ø1.38	28	288
48	60.00	2.00	2.75	52.09	50.97	57.50	Ø1.38	32	400



MJ OVERSIZE GLANDS

NOM. SIZE	O.D.	A	B	C	I.D.	B.C.	BOLT HOLE	BOLT QTY	WT (LBS.)
4	9.12	0.75	1.50	5.92	5.10	7.50	Ø0.88	4	3
6	11.12	0.88	1.63	8.02	7.20	9.50	Ø0.88	6	5
8	13.37	1.00	1.75	10.17	9.40	11.75	Ø0.88	6	6
10	15.62	1.00	1.75	12.22	11.50	14.00	Ø0.88	8	8
12	17.88	1.00	1.75	14.32	13.60	16.25	Ø0.88	8	9
16	22.50	1.31	2.06	18.50	17.94	21.00	Ø0.88	12	14





Standard Mechanical Joint Gaskets

(SBR, NBR, EPDM, Neoprene, FKM)

ANSI/AWWA C111/A21.11

GASKET GENERAL SPECIFICATIONS

Star Pipe Products Mechanical Joint (MJ) Gasket dimensions conform to the drawings set forth in ANSI/AWWA C111/A21.11. Gasket markings include size, Manufacturer's mark, Country of origin and product identification. No markings are positioned on sealing surfaces per the ANSI/AWWA C111/A21.11 standard. MJ transition gaskets follow the requirements of ANSI/AWWA C111/A21.11 where applicable.

Standard gasket material is vulcanized styrene butadiene rubber (SBR). Special application elastomers (EPDM, Nitrile, Neoprene & FKM) are available and shall be identified on all documentation and corresponding gaskets.

Star Pipe gaskets are manufactured under quality control standards and procedures that are maintained by the gasket supplier. Appropriate documentation is maintained by the manufacturer and available for review upon request.

Star Pipe gasket suppliers maintain a quality assurance program and manual that is reviewed and updated on an ongoing basis to ensure product quality. Star Pipe gasket suppliers perform in house testing and submit to random testing by Underwriters Laboratories, Inc. Star Pipe gasket providers are recognized under the component program (UL 194/ UL 157) of Underwriters Laboratories, Inc.

Star Pipe provides that our Mechanical Joint gaskets for potable or wastewater projects will perform as designed, based on the published chemical and environmental resistance data for "generic" rubber compounds. Star Pipe should be consulted for specific recommendations or for unusual applications.

GASKET PROPERTIES

PROPERTY	ASTM TEST METHOD	REQUIRED VALUE
Hardness, Shore "A"	D2240	75 ± 5
Minimum Tensile	D412	1500 psi
Minimum Elongation	D412	150%
Minimum Aging	D573	60%
Maximum Compression Set	D395, Method B	20%
Resistance to Surface Ozone Cracking	D1149	No Cracking

GASKET TYPE	MAXIMUM CONTINUOUS TEMP	MAXIMUM EXPOSURE TEMP	STANDARD USAGE
SBR (Styrene Butadiene Rubber/ Buna-S)	160 F	180 F	Drinking water, Salt Water, Sanitary Sewage, Reclaimed Water, Raw Water, Storm Water. Not Recommended for Hydrocarbon Service
EPDM (Ethylene Propylene)	250 F	300 F	Alcohols, Dilute Acids, Dilute Alkalis, Ketones (MEK/Acetone), Strong Oxidizing Chemicals; Drinking Water, Salt Water, Sanitary Sewage, Reclaimed Water, Raw Water, Storm Water. Not Recommended for Hydrocarbon Service
Neoprene (Polychloroprene / CR)	225 F	300 F	Hydrocarbons, Unrefined Petroleum Products, Greasy Waste; Salt Water, Sanitary Sewage, Reclaimed Water, Raw Water, Storm Water.
Nitrile (NBR / Buna-N)	160 F	180 F	Refined Oils and Fluids, Fats, Greases and Waste; Drinking Water, Sanitary Sewage, Reclaimed Water, Raw Water, Storm Water.
FKM (Fluoroelastomer / Viton [®])	400 F	500 F	Aromatic Hydrocarbons, Chlorinated Hydrocarbons, Vegetable Oils, Most Chemicals; Drinking Water, Reclaimed Water, Raw Water, Storm Water.

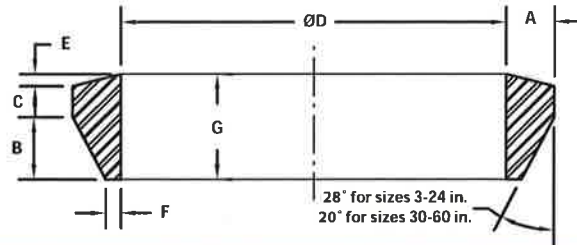
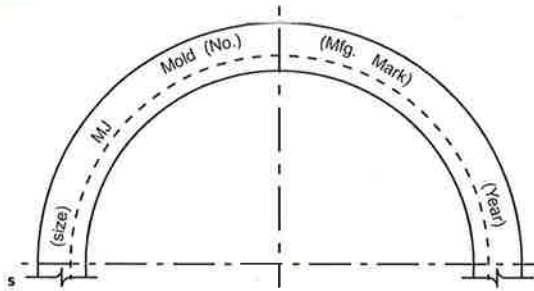
Viton[®] is a registered trademark of E.I. Du Pont De Nemours & Company.





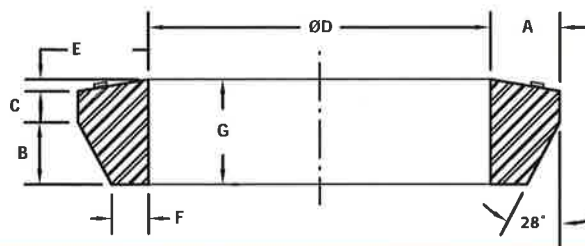
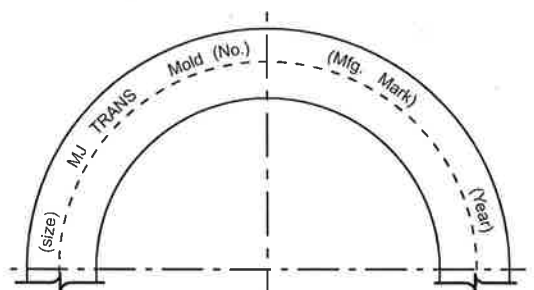
MJ Accessories

ANSI/AWWA C111/A21.11



MECHANICAL-JOINT GASKET

NOM. SIZE	PIPE O.D.	A	B	C	ØD ±1 %	E	F	G
2	2.50	0.48	0.62	0.31	2.48	0.12	0.15	1.05
3	3.96	0.48	0.62	0.31	3.86	0.12	0.15	1.05
4	4.80	0.62	0.75	0.31	4.68	0.16	0.22	1.22
6	6.90	0.62	0.75	0.31	6.73	0.16	0.22	1.22
8	9.05	0.62	0.75	0.31	8.85	0.16	0.22	1.22
10	11.10	0.62	0.75	0.31	10.87	0.16	0.22	1.22
12	13.20	0.62	0.75	0.31	12.95	0.16	0.22	1.22
14	15.30	0.62	0.75	0.31	14.99	0.16	0.22	1.22
16	17.40	0.62	0.75	0.31	17.07	0.16	0.22	1.22
18	19.50	0.62	0.75	0.31	19.13	0.16	0.22	1.22
20	21.60	0.62	0.75	0.31	21.20	0.16	0.22	1.22
24	25.80	0.62	0.75	0.31	25.34	0.16	0.22	1.22
30	32.00	0.73	1.00	0.38	31.47	0.16	0.37	1.54
36	38.30	0.73	1.00	0.38	37.67	0.16	0.37	1.54
42	44.50	0.73	1.00	0.38	43.78	0.16	0.37	1.54
48	50.80	0.73	1.00	0.38	49.98	0.16	0.37	1.54



TRANSITION MECHANICAL-JOINT GASKET

NOM. SIZE	PIPE O.D.	A	B	C (REF.)	ØD ±1 %	E	F	G
2	2.375	0.56	0.66	0.31	2.32	0.12	0.21	1.10
3	3.500	0.72	0.64	0.34	3.43	0.12	0.38	1.10
4	4.500	0.76	0.73	0.33	4.43	0.20	0.37	1.26
6	6.625	0.75	0.73	0.32	6.53	0.20	0.36	1.25
8	8.625	0.82	0.73	0.34	8.50	0.20	0.43	1.27
10	10.750	0.79	0.75	0.31	10.59	0.20	0.39	1.26
12	12.750	0.84	0.75	0.33	12.56	0.20	0.44	1.28





MJ Accessories

ANSI/AWWA C111/A21.11

T-Bolts, Double Ended Rods & Nuts

HSLA STEEL

SPECIFICATIONS:

- Bolts & Nuts are manufactured in accordance with ANSI / AWWA C111 / A21.11.
- Material is High Strength Low Alloy Steel per ANSI/AWWA C111/A21.11.
- Threads per ASME B1.1 unified standard coarse (Class 2A & 2B)

MECHANICAL PROPERTIES

- Yield Strength 45000 PSI (min)
- Elongation in 2in. 20% (min)

CHEMICAL PROPERTIES

Carbon	0.20% Max
Manganese	1.25% Max
Sulfur	0.05% Max
Nickel	0.25% Min
Copper	0.20% Min
Combined	1.25% Min (Ni, Cu, Cr)

BLUE BOLT/NUT/ROD

T-Bolts, Rods & Nuts have fluoropolymer coating material which is VOC-compliant, resin-bonded, thermally cured and dry lubricant.

COATING PHYSICAL PROPERTIES

Film Thickness:	0.3 to 0.4 mil per coat
Number of Coats:	3 to 4 coats
Adhesion:	1 mm cross hatch test + 5 Pulls. Good knife resistance
Cure Test:	50+Rubs with MEK. No substrate exposure
Pencil Hardness:	Pencil Hardness: 4-6H
Volatile Organic Compounds	2.74lbs/gal

Stainless Steel T-Bolts & Nuts

ALLOYS SS 304 & SS 316 PER ASTM F593

SPECIFICATIONS:

- T-bolt dimensions are manufactured in accordance with ANSI / AWWA C111 / A21.11.
- T-bolt alloys SS 304 and SS 316 per ASTM F593
- Heavy Hex Nut Alloys SS 304 & SS 316 per ASTM F594.

MECHANICAL PROPERTIES

- Tensile Strength: 85,000 PSI to 140,000 PSI
- Yield Strength: 45,000 PSI (min)

COATING SPECIFICATION

Nuts have fluoropolymer coating material which is VOC-Compliant, resin-bonded, thermally cured and dry lubricant.

COATING PHYSICAL PROPERTIES

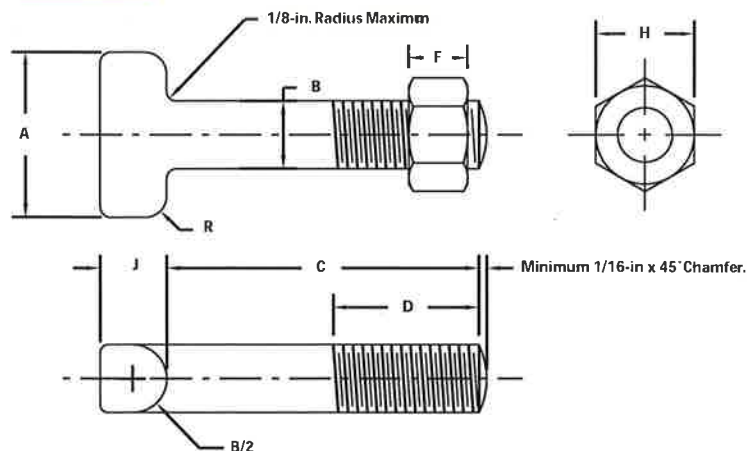
- | | |
|---|---|
| • Film Thickness: 0.3 to 0.4 mil per coat | • Pencil Hardness: 4-6H |
| • Number of Coats: 3 to 4 coats | • Volatile Organic Compounds 2.74 lbs/gal |
| • Adhesion: 1mm cross hatch test + 5 Tape Pulls. | • Continuous use temperature - 356°F |
| • Cure Test: 50+ Rubs with MEK, no substrate exposure | • Color: SS 304 is green, SS 316 is red |





Accessories

ANSI/AWWA C111/A21.11

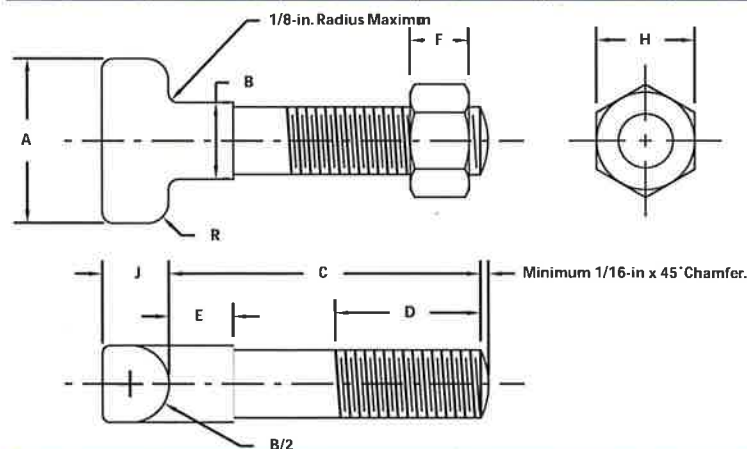


MECHANICAL JOINT BOLT TORQUE		
PIPE SIZE (IN)	BOLT SIZE (IN)	RANGE ¹ OF TORQUE (FT-LBS)
2-3	5/8	45-60
4-24	3/4	75-90
30-36	1	100-120
42-48	1 1/4	120-150

¹These torque ranges are requirements of AWWA C600

T-HEAD (LOW ALLOY STEEL) BOLT & NUT

NOM. SIZE	A	B	C	D	THREADS PER IN.	F	H	J	R
5/8 x 3	1.50	0.625	3.00	2.00	11	0.625	1.062	0.625	0.312
5/8 x 3 1/2	1.50	0.625	3.50	2.70	11	0.625	1.062	0.625	0.312
3/4 x 3 1/2	1.75	0.750	3.50	2.50	10	0.750	1.250	0.750	0.375
3/4 x 4	1.75	0.750	4.00	3.00	10	0.750	1.250	0.750	0.375
3/4 x 4 1/2	1.75	0.750	4.50	3.00	10	0.750	1.250	0.750	0.375
3/4 x 5	1.75	0.750	5.00	3.00	10	0.750	1.250	0.750	0.375
3/4 x 5 1/2	1.75	0.750	5.50	3.70	10	0.750	1.250	0.750	0.375
1 x 5 1/2	2.25	1.000	5.50	3.00	8	1.000	1.625	1.000	0.500
1 x 6	2.25	1.000	6.00	3.00	8	1.000	1.625	1.000	0.500
1 1/4 x 6	2.50	1.250	6.00	3.00	7	1.250	2.000	1.250	0.625
1 1/4 x 6 1/2	2.50	1.250	6.50	3.50	7	1.250	2.000	1.250	0.625
1 1/4 x 8 1/2	2.50	1.250	8.50	3.50	7	1.250	2.000	1.250	0.625



ANTI-ROTATION T-HEAD (LOW ALLOY STEEL) BOLT & NUT

NOM. SIZE	A	B	C	D	E	THREADS PER IN.	F	H	J	R
5/8 x 3	1.50	0.625	3.00	2.00	0.63	11	0.625	1.062	0.625	0.312
5/8 x 3 1/2	1.50	0.625	3.50	2.50	0.63	11	0.625	1.062	0.625	0.312
3/4 x 3 1/2	1.75	0.750	3.50	2.50	0.63	10	0.750	1.250	0.750	0.375
3/4 x 4	1.75	0.750	4.00	3.00	0.63	10	0.750	1.250	0.750	0.375
3/4 x 4 1/2	1.75	0.750	4.50	3.00	0.63	10	0.750	1.250	0.750	0.375
3/4 x 5	1.75	0.750	5.00	3.00	0.63	10	0.750	1.250	0.750	0.375



STAR[®] PIPE PRODUCTS



Date: _____

Domestic Fitting Product Certificate of Compliance

Star Distributor: _____

Contractor: _____

Project Name: _____

Project Location: _____

Re: Buy America / Buy American Certification for Star Pipe Products Made in the USA fittings

We certify country of origin compliance per below:

100% Domestic Fittings: This option consists of 100% domestic fittings that are melted, poured, machined, and coated 100% in the United States. SPP performs the machining, packaging and Quality Control checks in its Houston, Texas facility. This product is compliant with the Consolidated Appropriations Act of 2014 (AIS), with the American Recovery and Reinvestment Act of 2009 (ARRA) and The Buy America Act of 1983 and 1933. Domestic Fittings can be identified by item codes ending with the suffix "D".

Star Pipe Products certifies that all fitting products are made of ductile iron per ASTM A536, Grade 65-45-12 and conform to the following standards:

- *AWWA C104(ANSI A21.4) for cement-mortar lining of ductile iron pipe and fittings for water*
- *AWWA C110(ANSI A21.10) for cast iron/ductile iron mechanical joint and flanged fittings*
- *AWWA C111(ANSI A21.11) for ductile iron mechanical joint glands and gaskets*
- *AWWA C153(ANSI A21.53) for compact mechanical joint and push-on ductile iron fittings*

Star Pipe Products offers a variety of coatings and linings for the fittings it supplies. When a cement-lined and asphaltic-coated fitting is ordered, the asphaltic coating is applied inside and out in accordance with AWWA C104 (ANSI A21.4). The cement lining is applied in accordance with AWWA C104 (ANSI 21.4). These standards are met with both domestic and imported fittings, and they are met regardless of outlet style: standard mechanical joint, flange, or push-on.

Vivek Sharma
Director (Product Management Group)
Star Pipe Products

This document is void if modified in any manner other than the addition of distributor, contractor, or project details.

STAR PIPE PRODUCTS

4018 WESTHOLLOW PARKWAY HOUSTON, TEXAS 77082-4604
www.starpipeproducts.com

T: 800.999.3000
F: 281.558.9000



Wheatland Tube Division Material Test Report



JMC Steel Group
Wheatland Tube Division, USA
700 Dock St. Sharon, PA 16146 USA

Customer Name:
Customer PO #:
Sales Order #: 4900051498
Delivery #: 80994892
Date of Creation: 3/21/2014
Plant: EnergeX - Warren, OH

CERTIFIED MATERIAL TEST REPORT
Type 3.1/3.1.B in accordance with EN 10204/ISO 10204/JEN 10474/ISO 10474/DIN50049

Heat Analysis

Heat/Run	Value	Date	Item Description	C	Mn	P	S	CU	NI	Cr	Mo	V	Si	AI	T/S	Y/S	EI
Heat#	A70209	2/12/2014	4.500 OD STD BLK A53-B ERW PE	.210	.840	.010	.003	.080	.030	.040	.010	.001	.030	.030	76130	62368	31
Heat#	C68976	2/12/2014	4.500 OD STD BLK A53-B ERW PE	.220	.840	.010	.003	.090	.040	.040	.020	.001	.020	.025	79162	64326	30

COMMENTS

This is to certify that the product described herein was manufactured or supplied by the Wheatland Tube Division, USA and sampled, tested and/or inspected in accordance with the latest revision, at the time of manufacture, of the specification listed above and fulfills the requirements in such respects. All the required mechanical, physical, hydrostatic, non-destructive, flattening, and bend tests have been successfully completed. The products described above meet one of the following specifications: Continuous Butt Weld Steel Pipe meeting the requirements of ASTM A53 2012 /ASME SA53 2001 Type F, Grade A. Steel Coupling Stock meeting the requirements of ASTM A865. Electric Resistance Welded Steel Pipe meeting the requirements of ASTM A53 2009, Type E, Grade A. 2012/ASME SA53 2001, Type E, Grade B. Electric Resistance Welded Steel Pipe meeting the requirements of ASTM A795 2012, Type E, Grade A. Seamless Pipe meeting the requirements of ASTM Electric Resistance Welded Steel Pipe meeting the requirements of ASTM A106 2011/ASME SA106 2011 Seamless Carbon Steel Pressure Pipe Grades B&C and is acceptable to NACE standard MR0103-2012 Edition and MR0175/ISO15156-2, 2009 Edition. Seamless Pipe is Nondestructive Electric Tested (full body eddy current). API pipe meeting the requirements of ANSI/API Specification 5L 45th Edition or ANSI/API Specification SCT 9th Edition.

Michael S. Ryan

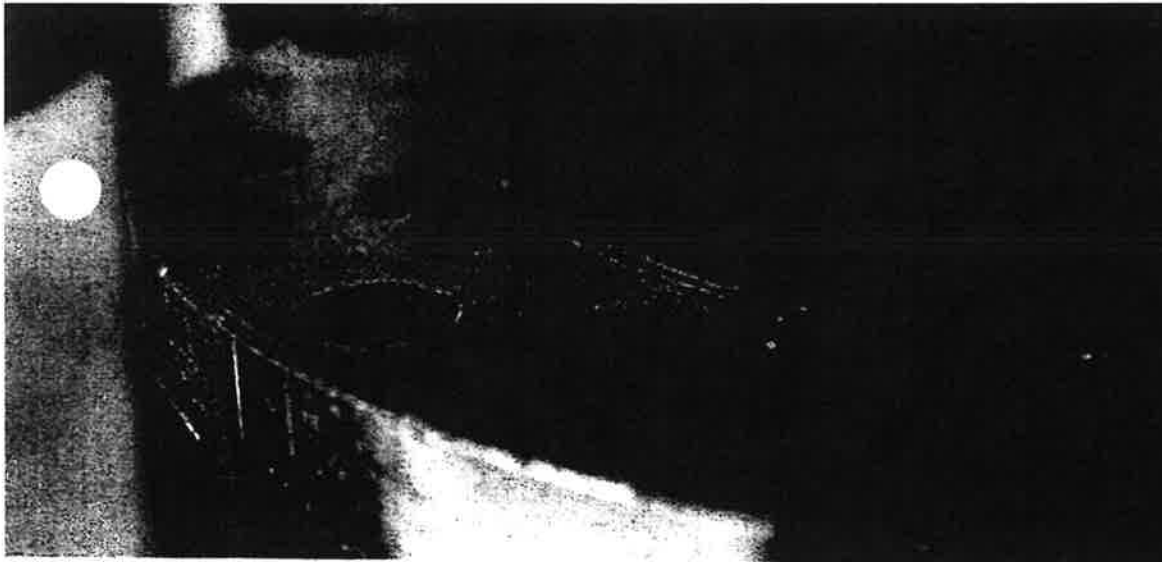
Michael S Ryan
Manager Technical Services

3/21/2014

CERTIFICATE OF COMPLIANCE TO STANDARDS

101 Vertical Fabrication's Ductile Iron pipe is fabricated to the following standards.

1. Ductile Iron pipe is manufactured in accordance with all applicable requirements of ANSI A12.51 and AWWA C151 Standards.
2. Ductile Iron flanges are drilled and faced to meet ANSI B16.1 Standard. Upon request Class 250# flange, meeting ANSI B16.6 are available
3. Flange Ductile Iron pipe spools are fabricated in accordance with all applicable requirements of ANSI 21.15 and AWWA C115.
4. Grooved Ductile Iron pipe spools are fabricated in accordance with all applicable requirements of ANSI/AWWA C606. Rigid groove is standard. Flex groove is available.
5. Ductile Iron pipe cement lining is manufactured in accordance with the requirements of ANSI A21.4/AWWA C104. Standard or double thickness as required. Other linings available upon request.
6. Ductile Iron pipe exterior will be coated with asphalt tar in accordance with ANSI A21.51/AWWA C151. Other coatings available upon request.
7. All coating and lining for exterior piping and all lining for interior piping, is certified to be in compliance with NSF 61 for potable water. Conforms to ANSI A.4/AWWA C104.



DUCTILE IRON

101 Pipe & Casing's reputation for quality materials, prompt service and meticulous workmanship are our highest priority for the threaded and grooved ductile iron pipe spools. All threaded pipe ends are separately machined to match the threads of each individual ductile iron flange. This creates a near-perfect fit with face-to-face measurements conforming to the specified length dimensions.

All threaded surfaces are coated with a threading compound/sealant, then machine power-tightened and aligned. Unless otherwise specified, all of our ductile iron pipe has cement lining on the interior wall. Other linings such as glass, epoxy, polyethylene or bare can be supplied as requested. All ductile iron pipe used has a class 53 minimum thickness.

Tight industry tolerances restrict us from offering threaded pipe with loose flanges unless the customer waives our responsibility for meeting specifications.

The following specifications are met or exceeded in the manufacturing of our flanged or grooved spools:

MATERIAL SPECIFICATIONS

AWWA C 151 or ANSI A 21.5	Ductile iron centrifugally cast in metal mold
AWWA C 104 or ANSI A 21.4	Cement mortar lining for ductile iron pipe
ASTM 536	Ductile iron flanges
ANSI B2.1 (NPT)	Threaded for flanges class 125 & 250
ANSI B 16.1	Facing and drilling for class 125 flanges
ANSI B 16.6	Facing and drilling for class 250 flanges

FABRICATION SPECIFICATIONS

AWWA C 115 or ANSI 21.15	Ductile iron spool fabrication
ANSI B2.1 (NPT)	Threaded for ductile iron pipe
ANSI A 21.15 Section 15-8.4	Flange two-hole
AWWA C 115 or ANSI A 21.15	Flange face-to-face parallelism
AWWA C 606	Pipe grooving

We maintain
an inventory of
Ductile Iron Pipe
in diameters from
3" - 36".



Application

Designed for installation on potable water lines to protect downstream equipment from malfunction or premature failure due to build-up of sediment or debris.

Standards Compliance

- MIL-S 16293F Type 2
 - Certified to NSF/ANSI 372* by IAPMO R&T
- *(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

Materials

Main valve body Ductile Iron ASTM A536
 Access cover Ductile Iron ASTM A536
 Coatings FDA Approved Fusion Epoxy Finish
 (Meets requirements of NSF/ANSI 61)
 Screens Perforated Stainless Steel, 300 Series

Features

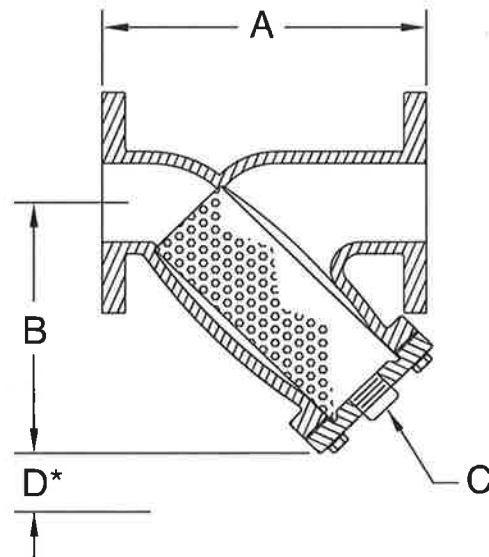
Sizes: 2 1/2", 3", 4", 6", 8", 10", 12"

Pressure/temperature: 200 psi @ 150°F WOG
 125 psi @ 450°F Steam

End connections: Flanged Class 125 lb

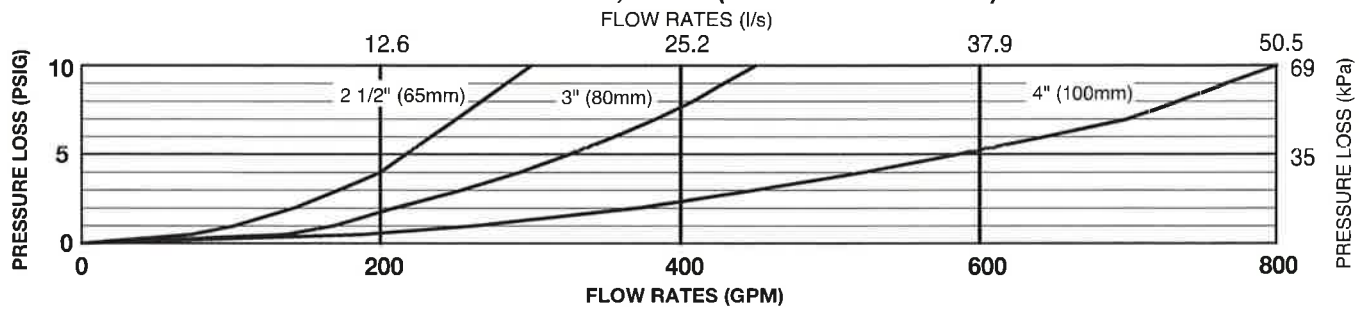
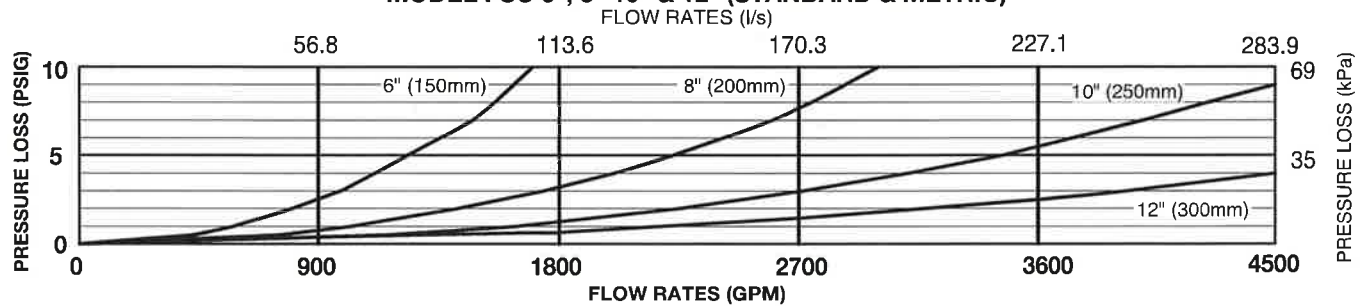
Screen

SIZE inch	OPENINGS (dia.)	MATERIAL THICKNESS	HOLES PER sq(in)
2 1/2	0.045	0.020	225
3	0.045	0.020	225
4	0.062	0.020	98
6	0.062	0.020	98
8	0.125	0.020	29
10	0.125	0.032	29
12	0.125	0.025	35



SIZE		DIMENSIONS (approximate)							WEIGHT	
		A		B		C	D*			
in	mm	in	mm	in	mm		in	mm	lbs.	kg.
2 1/2	65	10	254	8 1/4	210	1 1/4 NPT	6	152	35	16
3	80	10 1/2	267	9 1/4	235	1 1/4 NPT	6	152	45	20.5
4	100	15	381	12 1/2	318	2 NPT	9	229	61	27.5
6	150	18	457	14	356	2 NPT	10	254	165	75
8	200	24 1/4	616	17 3/4	451	2 NPT	11	279	239	108.5
10	250	29 1/2	749	21 1/4	540	2 NPT	14	356	394	178.5
12	300	33 3/4	857	24	610	2 NPT	17	432	500	227

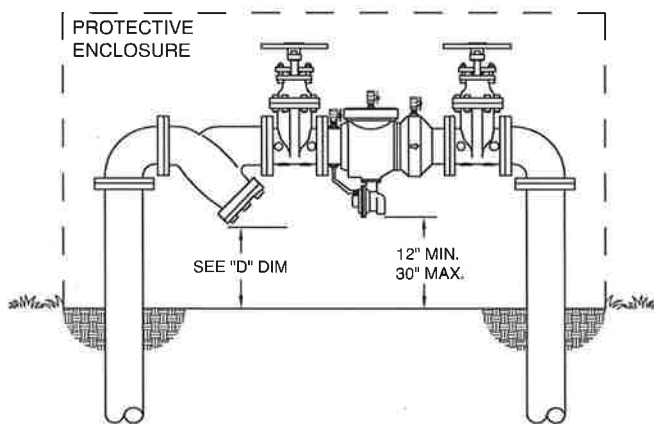
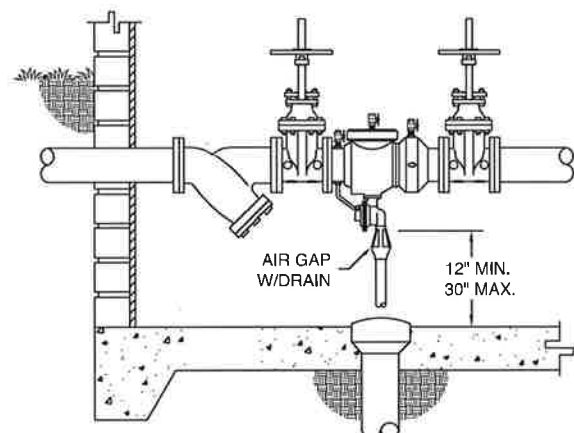
*Vertical clearance for screen removal

MODEL FSC 2 1/2", 3" & 4" (STANDARD & METRIC)**MODEL FSC 6", 8" 10" & 12" (STANDARD & METRIC)****Typical Installation**

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted with sufficient clearance for maintenance in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. The installation shall be made so that no part of the unit can be submerged. Horizontal installation with the strainer cap facing downward is the preferred installation orientation; however the strainer will provide protection in any orientation

Capacity thru Schedule 40 Pipe (GPM)

Pipe Size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
2 1/2"	75	112	149	224
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687
12"	1744	2617	3489	5233

**Outdoor Installation****Indoor Installation****Specifications**

The Ductile Iron "Y" type strainer meet the requirements of NSF/ANSI 372, and in compliance with MIL-S-16293F Type 2. The main body and access cover shall be ductile iron ASTM A536 with an FDA Approved Fusion Epoxy Finish coating inside and out. The integral strainer screen shall be accessible for cleaning without removing the device from the line. The Ductile Iron "Y" type strainer shall be a ZURN WILKINS Model FSC.



DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™

Series 2000 for PVC & PVCO Pipe
"A Proven Third Generation Mechanical Joint Restraint"

MJ TUF Grip™ TLP



Torque Nut



Tyler Union's TUF Grip restraints represent the culmination of 20 years of engineering and testing. As a 3rd generation restraint, TUF Grip is the best available technology in the Waterworks market for use in restraining PVC pipe.



Designed by Harold Kennedy & Associates, Inc.

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC pipe in diameters 3" thru 36" and PVCO pipe in diameters 4" thru 12"
- Restraint design conforms to applicable requirements of ANSI/AWWA C111, ANSI/AWWA C153, and ANSI/AWWA C110
- Restraint engineered for securing plain end pipe to mechanical joint fittings conforming to ANSI/AWWA C110, C111, and C153
- Rated for working water pressure of 305 psi for 3"-12", 235 psi for 14"-24", 150 psi for 30", and 125 psi for 36" (details on page 2)
- Cast of ASTM compliant 65-45-12 ductile iron complete with cast on date code and country of origin for traceability
- Restraint and all components are designed and proven for a 2:1 safety factor based on the PVC and PVCO pipe pressure rating
- Deflection rating when installed on pipe with nominal diameter shall be 3° for 3" thru 12", 2° for 14" thru 16", and 1.5° for 18" thru 36"
- Standard coating for Domestic restraint is 4-6 mil of TUF-Bond™ (thermoset polyester for impact, corrosion, and UV protection)
- Gripping wedge, wedge collar bolt and twist off torque limiting nut shall be e-coated
- FM approved for 4" thru 12" applications and UL listed and approved for 3" thru 12" applications
- Color coded red for pipe type (C900 PVC/C905 PVC/ *C909 PVCO/D2241 PVC) - *Note: Refer to page 2 for C909 pipe applications

FEATURES & ADVANTAGES:

- Torque limiting nut on gripping wedge assembly twists off within a designed torque range eliminating the need for specialized tools
- Gripping wedge assembly pivots providing stronger engagement of pipe wall at lower torque requirement (45-60 ft.-lbs.)
- Proven restraint technology utilizing fewer gripping wedges in frequently applied diameters, reducing trench time and project cost
- There is no washer or spacer to remove when installing restraints on 3" to 12" ASTM D2241 PVC pipe with IPS outside diameter
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Suitable for Potable and Wastewater applications
- Approved for use on multiple classes of pipe - Additional pressure ratings and associated pipe classes provided on pages 2 and 3

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

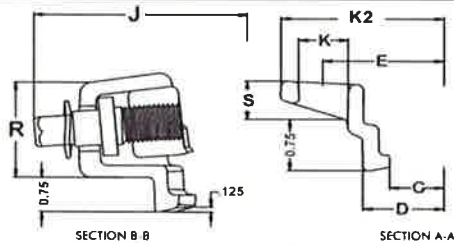
Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

Tyler Union Waterworks Contact Information

Tyler: 11910 CR 492 • Tyler, Texas 75706 • (800) 527-8478

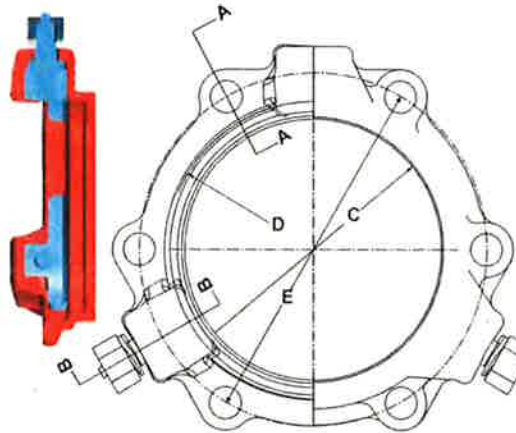
Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601

Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471



TUFGrip™ MJ Restraint Dimensions

Size (Inches)	C	D	E	K2	J	K	R	S
3	4.08	4.88	6.19	7.67	9.82	3/4	2.20	0.86
4	4.93	5.92	7.50	8.98	10.67	7/8	2.20	0.73
6	7.03	8.02	9.50	10.98	12.77	7/8	2.24	0.82
8	9.18	10.17	11.75	13.23	14.92	7/8	2.28	0.82
10	11.23	12.22	14.00	15.70	16.97	7/8	2.37	0.93
12	13.33	14.32	16.25	17.95	19.07	7/8	2.40	0.93
14	15.44	16.40	18.75	20.43	21.18	7/8	2.57	0.91
16	17.54	18.50	21.00	22.88	23.28	7/8	2.57	1.05
18	19.64	20.60	23.25	25.43	25.38	7/8	2.57	1.05
20	21.74	22.70	25.50	27.50	27.48	7/8	2.66	1.15
24	25.94	26.90	30.00	32.00	31.68	7/8	2.72	1.35
30	32.18	33.30	36.88	39.42	39.78	1-1/8	3.86	1.53
36	38.48	39.60	43.75	46.29	46.08	1-1/8	3.86	1.53



SERIES 2000 TLP-PVC TUF Grip™ - APPLICATION CHART

Size (Inches)	Part No. - Gland Only Domestic / Non-Domestic	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight (lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D. (Inches)
3	CALL / 113928	2	4	5/8" x 3"	7.0	11.0	*305 / DR14	3.50
4	516002 / 113935	2	4	3/4" x 3.5"	8.3	12.2	*305 / DR14	4.50-4.80
6	516019 / 113942	3	6	3/4" x 4"	12.4	18.3	*305 / DR14	6.63-6.90
8	516026 / 113959	3	6	3/4" x 4"	14.9	20.8	*305 / DR14	8.63-9.12
10	516033 / 113973	6	8	3/4" x 4"	25.7	33.4	*305 / DR14	10.75-11.10
12	516040 / 113980	8	8	3/4" x 4"	34.1	42.0	*305 / DR14	12.75-13.20
14	516248 / 113997	10	10	3/4" x 4.5"	45.1	55.4	*235 / DR18	15.30
16	516262 / 114000	12	12	3/4" x 4.5"	56.2	68.4	*235 / DR18	17.40
18	516286 / 114017	12	12	3/4" x 4.5"	62.4	74.8	*235 / DR25	19.50
20	516309 / 114024	14	14	3/4" x 4.5"	72.9	86.9	*235 / DR25	21.60
24	516323 / 114031	16	16	3/4" x 5"	93.2	109.8	*235 / DR25	25.80
30	CALL / 461302	20	20	1" x 7.5"	251	293	*150 / DR25	32.00
36	CALL / 461357	24	24	1" x 7.5"	281	331	*125 / DR25	38.30

*Note: The pressure ratings are rated working water pressures for the restraint. See page 3 for additional ratings.

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

STOP-LOOK :

- Extra length T-Head bolts are provided with 30" - 36" restraints to facilitate mechanical joint assembly per AWWA C600
- For UL/FM Approvals, 3" - 12" were tested to 755 psi, 14" - 16" were tested to 755 psi and 18" - 24" inch were tested to 535 psi
- TUF Grip 30-36 inch provided with TRU-Lock™ mechanical joint gasket to ensure pressure rating & safety factors are met
- Mechanical joint T-head bolt torques for C909 applications are as provided; *55-65 ft.-lbs for 4" to 8" and *65 to 75 ft.-lbs. for 10" to 12" assembly. You must specify restraints are for C909 PVC pipe upon order placement. Call for availability
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651
- TUF Grip 4" to 24" restraints shall meet the requirements of ASTM F1674, current revision

Caution: Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended

Tyler Union Waterworks Contact Information

Tyler: 11910 CR 492 • Tyler, Texas 75706 • (800) 527-8478
Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601
Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471

TUFGRIP™

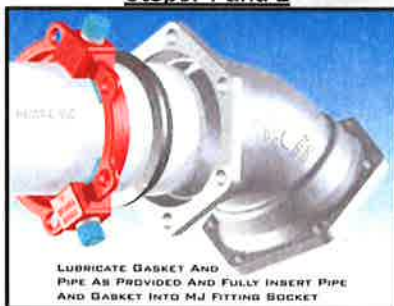
**ADDITIONAL SERIES 2000 TLP-TUF GRIP™ RESTRAINT RATINGS									
	AWWA C900			AWWA C905			ASTM D2241		
SIZE (Inches)	DR14	DR18	DR25	DR18	DR25	DR32.5	SDR17	SDR21	SDR26
3	-	-	-	-	-	-	250	200	160
4	305	235	165	-	-	-	250	200	160
6	305	235	165	-	-	-	250	200	160
8	305	235	165	-	-	-	250	200	160
10	305	235	165	-	-	-	250	200	160
12	305	235	165	-	-	-	250	200	-
14	-	-	-	235	165	125	-	-	-
16	-	-	-	235	165	125	-	-	-
18	-	-	-	200	165	-	-	-	-
20	-	-	-	200	165	-	-	-	-
24	-	-	-	165	165	125	-	-	-
30	-	-	-	-	165	125	-	-	-
36	-	-	-	-	125	125	-	-	-

****Note: Pressure Ratings for Ordinary Water Works Restraint Application with Transitory Surges Only**

****Note: AWWA C909 PVC Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe**

Assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVC), and (4"-36" AWWAC900/C905 PVC)

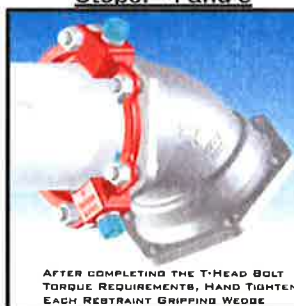
Steps: 1 and 2



Step: 3



Steps: 4 and 5



Steps: 6 and 7



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the RED TUF Grip onto the beveled end of the pipe to be restrained. The TUF Grip compression lip extension must be toward the beveled end of the pipe being restrained.
2. Evenly lubricate the beveled pipe end, exterior pipe wall, and inside surface of the gasket with a lubricant that meets the requirements of AWWA C111. Now place the ****MJ gasket** over the plain beveled end of the pipe with the narrow edge of the tapered gasket toward the pipe end. ****NOTE:** Use MJ transition gasket with IPS diameter pipe.
3. Fully insert the beveled pipe end into the MJ socket pipe landing. Keeping the pipe straight in the MJ socket, slide/push the MJ gasket firmly and evenly into the MJ socket recess. Joint must be kept straight during assembly.
4. Push the TUF Grip compression lip extension evenly against the thick side of the MJ gasket and insert all T-Head bolts with nuts. Use only T-Head bolts and nuts that meet AWWA C111 requirements. With the TUF Grip restraint lip extension against the MJ gasket, evenly hand-tighten the nuts on the T-Head bolts making sure the restraint body is centered on the pipe and within in the MJ socket. If joint deflection is needed, deflect the pipe only after hand tightening of all nuts is completed. Joint deflection is 3° max for 3", 5° max for 4"-12", 2° max for 14"-16", 1.5° max for 18"-36". **NOTE:** Maximum deflection values provided apply with nominal pipe, fitting, and restraint diameters.
5. Using a wrench, tighten the T-Head bolts and nuts a few turns at a time in an alternating or star pattern. Maintain equal spacing or distance between the TUF Grip bolt flange and the MJ socket bolt flange as the MJ gasket is compressed. Repeat the process in an alternating pattern for all T-Head bolts and nuts. The T-Head bolt and nut torque requirement for restraints is 3"- 45-60 ft.-lbs., 4"- 24"-75-90 ft.-lbs., and 30"- 36"- 100-120 ft.-lbs.
NOTE: The C909 PVC T-Head bolt and nut torque is 55-65 ft.-lbs. for 4"-8" and 65-75 ft.-lbs. for 10"-12" restraints.
DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVC PIPE!
6. ****Hand-tighten** the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut ½ turn in an alternating or star pattern around the restraint until all torque limiting nuts twist off. **NEVER** turn a torque limiting nut more than ½ turn without turning the remaining torque nuts an equal amount!
****NOTE:** For IPS and PVC applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

Tyler Union Waterworks Contact Information

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Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601

Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471

www.tylerunion.com

Application

Designed for installation on potable water lines to protect against both backsiphonage and backpressure of contaminated water into the potable water supply. The Model 375 provides protection where a potential health hazard exists. Ideal for use where lead-free* valves are required.

Standards Compliance

(Unless Otherwise Noted, Sizes 2 1/2" Thru 10")

- ASSE® Listed 1013
- IAPMO® Listed
- CSA® Certified B64.4 (2 1/2" thru 8")
- AWWA Compliant C511, and C550
- FM® Approved
- UL® Classified
- C-UL® Classified
- NYC MEA 49-01-M Vol 2
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California.

• Meets the requirements of NSF/ANSI 61*

*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

Materials

Main valve body	Ductile Iron ASTM A 536
Access covers	Ductile Iron ASTM A 536
Coatings	NSF Approved fusion epoxy finish
Internals	Stainless steel, 300 Series NORYL™
Fasteners	Stainless Steel, 300 Series
Seal rings	EPDM (FDA approved)
O-rings	Buna Nitrile (FDA approved)
Springs	Stainless Steel, 300 Series
Sensing line	Stainless Steel, braided hose

Features

Sizes:	2 1/2", 3", 4", 6", 8", 10"
Maximum working water pressure	175 PSI
Maximum working water temperature	140°F
Hydrostatic test pressure	350 PSI
End connections (Grooved for steel pipe)	AWWA C606
(Flanged)	ANSI B16.1 Class 125

Attention:

Model 375 (flange body) and Model 375A (grooved body) have different lay lengths.



Options

(Suffixes can be combined)

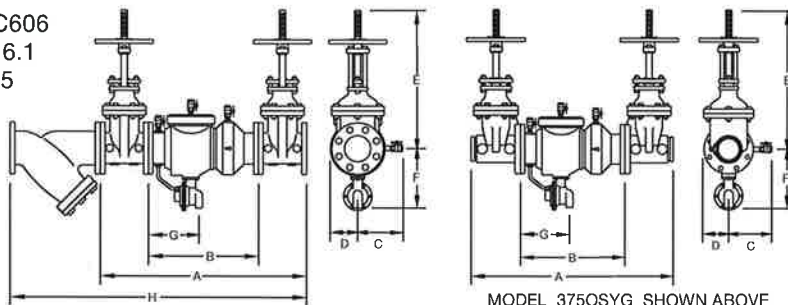
- ☐ - with NRS shut-off valves (standard)
- ☐ FSC - with epoxy coated wye type strainer (flanged only)
- ☐ G - with grooved end NRS gate valves
- ☐ GF - with grooved inlet connection and flanged outlet connection
- ☐ FG - with flanged inlet connection and grooved outlet connection
- ☐ L - less shut-off valves (flanged body connections)
- ☐ MS - with Integral Relief Valve Monitor Switch
- ☐ OSY - with OS&Y gate valves
- ☐ PI - with Post Indicator gate valve
- ☐ BG - with grooved end butterfly valves with integral supervisory switches
- ☐ -509 - with AWWA C509 gate valves

Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ OS & Y Gate valve tamper switch (OSY-40)
- ☐ Air gap (Model AG)
- ☐ Electronic Solenoid Timer (Model EST)
- ☐ QT-SET Quick Test Fitting Set

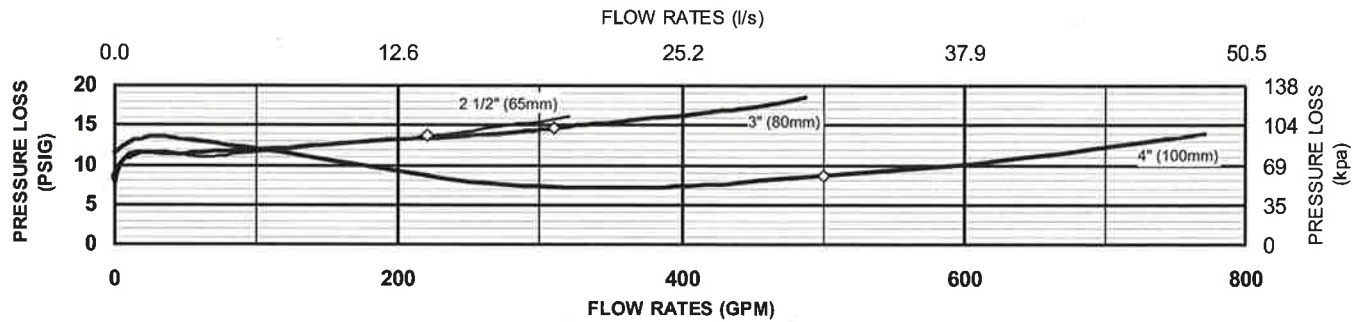
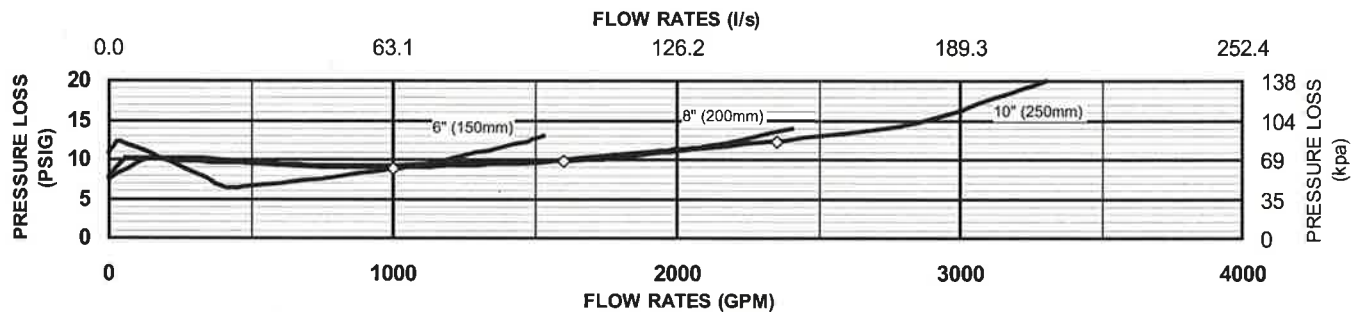
Relief Valve discharge port:

2 1/2" - 6"	-	2.75 sq. in.
8" - 10"	-	3.69 sq. in.



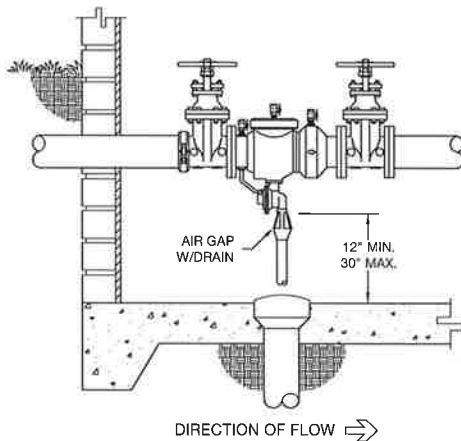
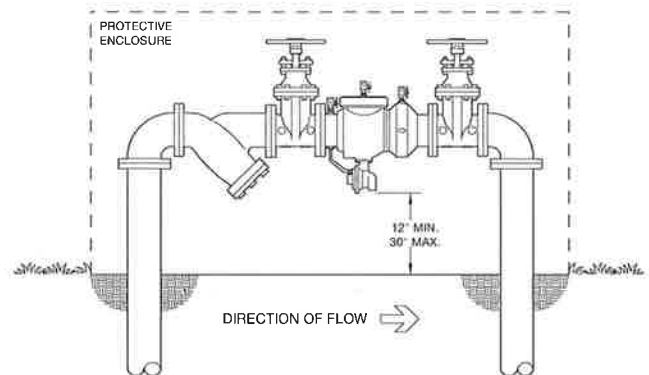
Dimensions & Weights (do not include pkg.)

MODEL 375 SIZE	DIMENSION (approximate)																				WEIGHT																
	A		A WITH BUTTERFLY VALVES		B LESS GATE VALVES		C		D		E OS&Y OPEN		E OS&Y CLOSED		E NRS GATE		E WITH BUTTERFLY VALVES		F		G		H		LESS SHUT-OFF VALVES		NRS GATE VALVES FLANGED		NRS GATE VALVES GROOVED		OS&Y GATE VALVES FLANGED		OS&Y GATE VALVES GROOVED		BUTTERFLY VALVES GROOVED		
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	
2 1/2	65	31	787	28	711	15 7/8	403	7 1/4	184	3 3/4	95	17 3/4	451	15 3/8	391	11 1/2	292	8 1/4	210	9 1/2	241	8 3/8	213	41 1/4	1048	60	27	162	73	144	65	170	77	152	69	132	60
3	80	32	910	30 1/2	772	16 7/8	430	7 1/2	190	3 1/2	91	18 1/2	464	15 3/4	406	12 1/4	314	9 1/2	241	10 1/2	267	9 1/4	235	45 1/4	1200	70	32	178	80	160	73	158	71	144	65		
4	100	37 5/8	956	32 8/9	835	19 1/2	495	8	203	4 1/2	114	22 1/2	572	18 1/4	464	14 1/2	368	9	229	11	279	9 1/4	235	52 3/4	1340	98	44	278	126	260	118	288	131	274	124	182	83
6	150	44 3/4	1137	37 5/8	956	23 1/2	597	10	254	6	152	30 1/2	775	24 1/4	616	18	457	10 1/4	260	12 3/8	314	10 3/4	273	62 3/4	1594	175	79	459	208	431	196	475	215	449	204	293	133
8	200	60 3/4	1543	53 7/8	1369	27 3/4	959	11	279	10	254	37	940	28 1/2	724	21 1/8	537	12	305	15 3/8	391	16 3/4	425	85	2159	377	171	829	376	795	361	853	387	805	365	551	250
10	250	63 3/4	1619	57 7/8	1470	37 3/4	959	11	279	10	254	45 5/8	1159	34 3/4	883	24 3/4	629	13	330	15 3/8	391	16 3/4	425	93 1/4	2369	407	185	1167	529	1101	499	1225	556	1159	526	795	361

MODEL 375 2 1/2", 3" & 4" (STANDARD & METRIC)**MODEL 375 6", 8" & 10" (STANDARD & METRIC)****Typical Installation**

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe (GPM)				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
2 1/2"	75	112	149	224
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687
12"	1763	2644	3525	5288

**INDOOR INSTALLATION (375GF)****OUTDOOR INSTALLATION****Specifications**

The Reduced Pressure Principle Backflow Prevention Assembly shall be certified to NSF/ANSI 61, ASSE® Listed 1013, and supplied with full port gate valves. The main body and access cover shall be epoxy coated ductile iron (ASTM A 536), the seat ring and check valve shall be NORYL™, the stem shall be stainless steel (ASTM A 276) and the seat disc elastomers shall be EPDM. The checks and the relief valve shall be accessible for maintenance without removing the device from the line. The Reduced Pressure Principle Backflow Prevention Assembly shall be a ZURN WILKINS Model 375.

Materials

- Roof, walls, and drain panel – 5052-H32 marine grade aluminum (.050/18 gauge), mill finish, ASTM B209 outside
- Drain panel hinge and spring – stainless steel
- Insulation 1 ½" (9 "R" value) minimum thickness polyisocyanurate foam laminated to a glass fiber reinforced facer (each side), non-wicking
- Mounting hardware – 300 series stainless steel or T-6 aluminum
- Wedge anchors – Powers SDI – ½" x 3 ¾"

Standards

- ASSE 1060
- ASTM B209



Heating Required

- ☐ Yes – see separate specification submittal sheet
- ☐ No

Dimensions

Model	Inside Diameter			Concrete Pad			Ship Wt	Access Panels	Access Panel Size		Drain Opening	
	W	L	H	W	L	H			W	H	W	H
600-AL	36	100	56	50	114	6	364	2	38 ¼	56	38 ¼	6 ½
600D-AL	70	108	56	84	122	6	515	2	38 ¼	56	38 ¼	6 ½
600DS-AL	70	128	56	84	142	6	575	4	38 ¼	56	38 ¼	6 ½
600LU880-AL*	36	38	48	50	52	6	245	2	28	48	28	6 ½
600T-AL	36	100	64	50	114	6	500	2	38 ¼	64	38 ¼	6 ½
600TM-AL	36	100	70	50	114	6	534	2	38 ¼	70	38 ¼	6 ½
600TD-AL	70	108	64	84	122	6	560	2	38 ¼	64	38 ¼	6 ½
600TDS-AL	70	128	64	84	142	6	590	4	38 ¼	64	38 ¼	6 ½
600TLU880-AL*	44	38	48	58	52	6	212	2	36	48	36	6 ½
600TS-AL	38	120	64	52	134	6	524	2	38 ¼	64	38 ¼	6 ½

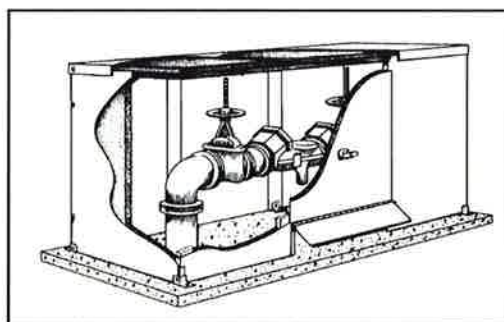
*Standard compact design models include hinged lift-up roof

All dimensions in inches.

Specifications

A freeze and vandal protective enclosure shall be installed over above ground plumbing systems. The enclosure shall be constructed of 5052-H32 marine grade aluminum with a minimum R9 in the walls and R18 in the roof. Molded fiberglass enclosures will be rejected. Cut board insulation shall be used for uniform insulation thickness. Sprayed insulation shall be reason for rejection. Redwood post and beams shall be utilized for structural support. The use of "Particle board" shall be reason for rejection. The roof of the enclosure shall be removable for maintenance. Enclosures requiring tape to seal the roof seams are prohibited. The enclosures shall have a fully insulated drain panel designed to remain closed, except when discharging water. The drain panel shall be sized to accommodate the maximum discharge for backflow installations. The enclosure shall be mounted securely to a concrete pad and remain locked even if outside screws are removed. All mounting hardware shall be furnished. The enclosure shall withstand straight line winds up to 110 mph with standard anchoring hardware. Sturdier anchoring hardware shall be made available to withstand straight line winds up to 130 mph.

When heat is required, a slab mounted UL or ETL listed heater shall be provided that has been independently certified to meet the UL-2021 "Rain Test" for damp or wet conditions. Wall-mounted air heaters and self-regulating cables shall not be used as the heat source. The enclosure shall be certified to the most recent ASSE Standard 1060 (Class I or Class II). The insulated enclosure shall be a Safe-T-Cover Series 600.



Description

The enclosure is designed to provide freeze and vandal protection of above ground backflow prevention assemblies, meters, PRV, etc. The enclosure provides for safe and easy testing and maintenance.

The enclosure disassembles easily if full equipment replacement is needed.