

NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY

**P.O. BOX 969
SHIPROCK, NEW MEXICO 87420
PHONE: (505) 210-7070**

LETTER OF TRANSMITTAL	
DATE	2-Aug-2019
JOB NO.	
ATTENTION:	Ronald Begay
RE:	NTUA Beehooghaan NHA Housing Inter-tie Submittal No. 2 Backflow Preventer

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	2-Aug-2019	2	Wilkins 975 Backflow Preventer Specification

THESE ARE TRANSMITTED As checked below:

- ☒ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ RESUBMIT _____ COPIES FOR APPROVAL
☐ FOR YOUR USE ☐ APPROVED AS NOTED ☐ SUBMIT _____ COPIES FOR DISTRIBUTION
☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RESUBMIT _____ CORRECTED PRINTS
☒ FOR REVIEW AND COMMENT ☐ FOR YOUR SIGNATURE _____

Remarks: Wilkins 975 Backflow Specification

PLEASE SIGN, DATE, AND RETURN THE YELLOW COPY.

RECEIVED BY: EMAIL DAY

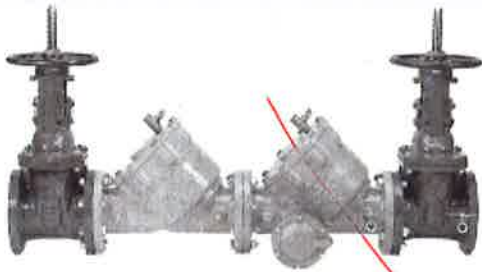
DATE: 2/27/2020

COPY TO: RB, AT, PM, QM

SIGNED: MSTRM 2-Aug-19
Ammerson T. Barber, Estimator/Coordinator

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

SPECIFICATION SUBMITTAL SHEET



FEATURES

Sizes: ☐ 2 1/2" ☐ 3" ☒ 4" ☐ 6" ☐ 8" ☐ 10"

Maximum working water pressure 175 psi
Maximum working water temperature 140° F
End connections flanged ANSI B16.1 Class 125

OPTIONS

(Suffixes can be combined)

- ☐ - with NRS gate valves (standard)
- ☐ G - with grooved by flanged NRS gate valves
- ☐ L - less shut-off valves
- ☐ OSY - with OS & Y gate valves
- ☐ OSYG - with grooved by flanged OS & Y gate valves
- ☐ FS - with cast iron "Y" type flanged strainer
- ☐ FSC - with cast iron "Y" type flanged strainer, fusion epoxy coated, inside and out
- ☐ BMS - with integral battery-operated relief valve monitor switch
- ☐ MS - with integral relief valve monitor switch

ACCESSORIES

- ☐ Repair kit (rubber only)
- ☐ Air gap (Model AG)
- ☐ Water thermal expansion tank (Model WXTP)

APPLICATION

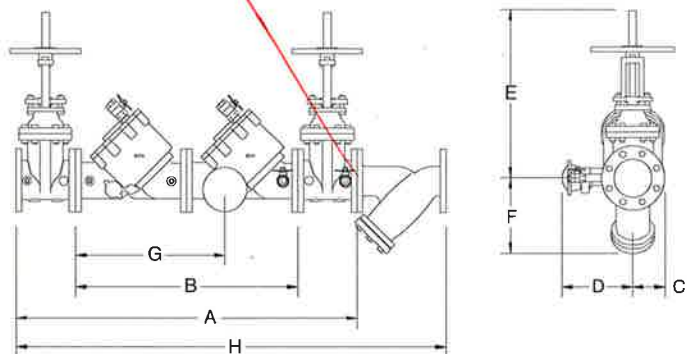
Designed for installation on potable water lines to protect against both backsiphonage and backpressure of contaminated water into the potable water supply. The Model 975 provides protection where a potential health hazard exists.

STANDARDS COMPLIANCE

- ASSE® Listed 1013
- IAPMO® Listed
- CSA® Certified
- UL® Classified
- C-UL® Classified
- FM® Approved
- AWWA Compliant C511
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California

MATERIALS

Main valve body Cast iron, ASTM A 126 Class B
Access covers Cast iron, ASTM A 126 Class B
Coatings Fusion epoxy finish (FDA approved)
Internals Stainless steel, 300 Series
Cast bronze, ASTM B 584
Elastomers EPDM (FDA approved)
Buna nitrile (FDA approved)
Polymers Acetal (Delrin™), NSF® Listed
Springs Stainless steel, 300 Series

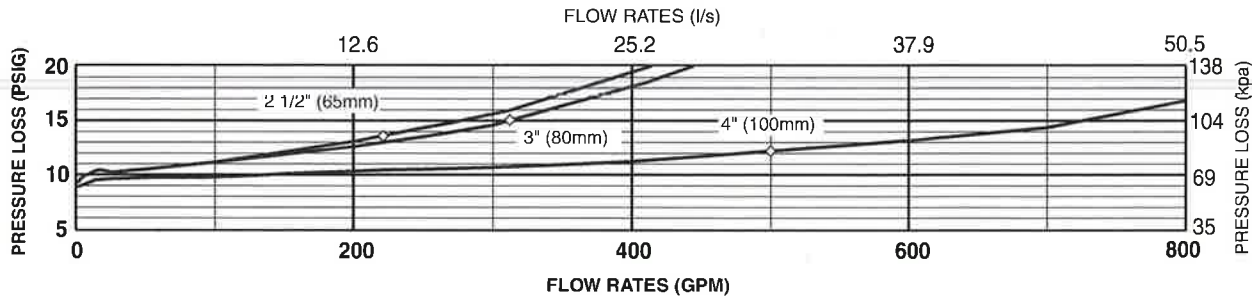


DIMENSIONS & WEIGHTS (do not include pkg.)

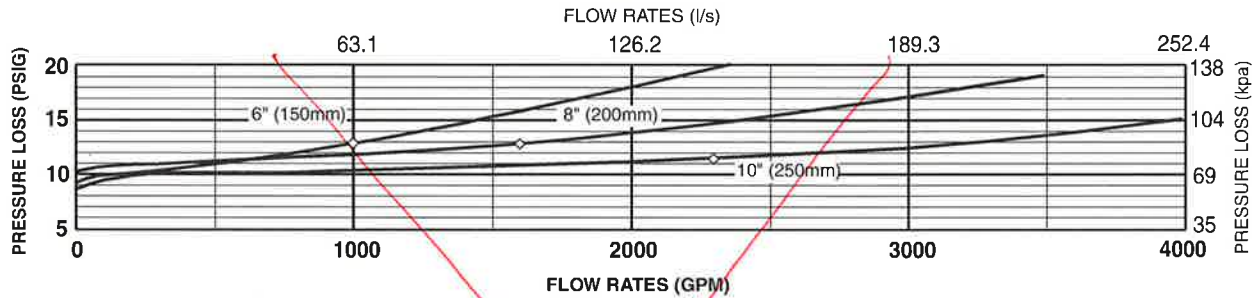
MODEL SIZE		DIMENSIONS (approximate)																WEIGHT							
		A		B WITHOUT GATE VALVES		C		D		E OS&Y GATE VALVE OPEN		E OS&Y GATE VALVE CLOSED		E NRS GATE VALVE		F		G		WITHOUT GATE VALVES		WITH NRS GATE VALVES		WITH OS&Y GATE VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg	lbs.	kg
2 1/2	65	37 1/8	943	22	559	4	102	10	254	16 3/8	416	13 7/8	352	11 3/8	289	8 3/8	213	16	406	91	41.3	193	87.6	201	91.3
3	80	38 1/8	968	22	559	4	102	10	254	18 7/8	479	15 5/8	397	12 3/8	314	9 1/4	235	16	406	91	41.3	215	97.6	221	100.3
4	100	50 1/4	1276	32 1/8	816	5	127	10	254	22 3/4	578	18 1/4	464	14 3/4	375	12 1/2	318	22	559	232	105.3	412	187	422	191.6
6	150	62 1/8	1578	41	1041	6	152	11	279	30 1/8	765	23 3/4	603	19	483	14	356	30	762	526	238.8	810	367.7	826	375
8	200	71 1/8	1807	48	1219	7 1/2	191	12	305	37 3/4	959	29 1/4	743	22 1/2	572	17 3/4	451	31	787	837	380	1289	585.2	1313	596
10	250	84 1/8	2137	58	1473	9	229	14	356	45 3/4	1162	35 3/8	899	26 1/2	673	21 1/4	540	41	104	1400	635.6	2160	980.6	2218	1007

FLOW CHARACTERISTICS

MODEL 975 2 1/2", 3" & 4" (STANDARD & METRIC)



MODEL 975 6", 8" & 10" (STANDARD & METRIC)

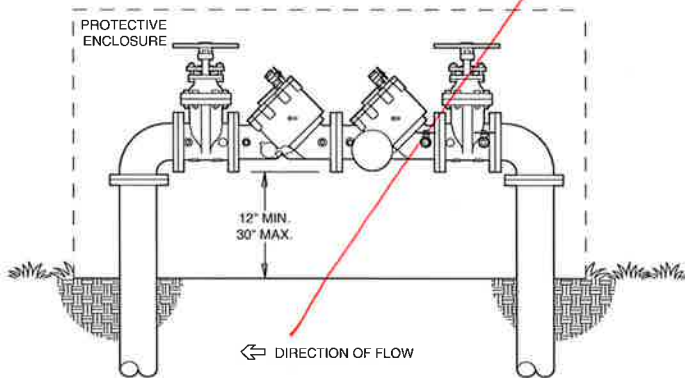


◇ Rated Flow (Established by approval agencies)

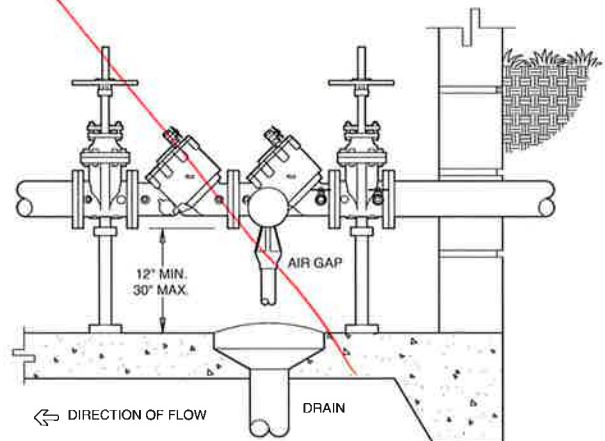
TYPICAL INSTALLATION

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. Assembly shall be installed with adequate drain and sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged or where relief valve discharge could cause damage.

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



TYPICAL OUTDOOR INSTALLATION



TYPICAL INDOOR INSTALLATION

SPECIFICATIONS

The Reduced Pressure Principle Backflow Prevention Assembly shall be ASSE® 1013 Listed and supplied with full port gate valves. The main body and access covers shall be epoxy coated cast iron (ASTM A 126 Class B), the seat and check valve shall be cast bronze (ASTM B 584), the stem shall be stainless steel (ASTM A 276) and the seat disc elastomers shall be EPDM (FDA approved). The first and second checks shall be accessible for maintenance without removing the relief valve or the entire device from the line. If installed indoors, the installation shall be supplied with an air gap adapter and integral relief valve monitor switch. The Reduced Pressure Principle Backflow Prevention Assembly shall be a WILKINS Model 975.

NAVAJO ENGINEERING & CONSTRUCTION AUTHORITY



P.O. BOX 969
SHIPROCK, NEW MEXICO 87420
PHONE: (505) 368-5151

LETTER OF TRANSMITTAL

DATE	06 AUG 2019	JOB NO.
ATTENTION:	Ron Begay	
RE:		
	Kaibeto Intertie	

TO: Navajo Tribal Utility Authority

POST OFFICE 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 ☐

COPIES	DATE	NO.	DESCRIPTION
1	08-08-2019	03	Product Data Sheets

THESE ARE TRANSMITTED As checked below:

- ☒ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☒ RESUBMIT _____ COPIES FOR APPROVAL
☐ FOR YOUR USE ☐ APPROVED AS NOTED ☐ SUBMIT _____ COPIES FOR DISTRIBUTION
☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RESUBMIT _____ CORRECTED PRINTS
☒ FOR REVIEW AND COMMENT ☐ FOR YOUR SIGNATURE _____

Remarks:

Please review and approve the attached material data sheets for ordering.

PLEASE SIGN, DATE, AND RETURN THE YELLOW COPY.

RECEIVED BY: _____

DATE: 02/27/2020

COPY TO: rb, at, jd, pm, qm

SIGNED: _____

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) <u>Not Recommended for Hydrocarbon Service</u>	20°F to 180°F	Suitable for Water, Wastewater, most moderate chemicals, wet or dry organic acids, alcohols, ketones, and aldehydes
EPDM (Ethylene Propylene) <u>Not Recommended for Hydrocarbon Service</u>	-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) <u>*Check with Customer Service for availability</u>	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.

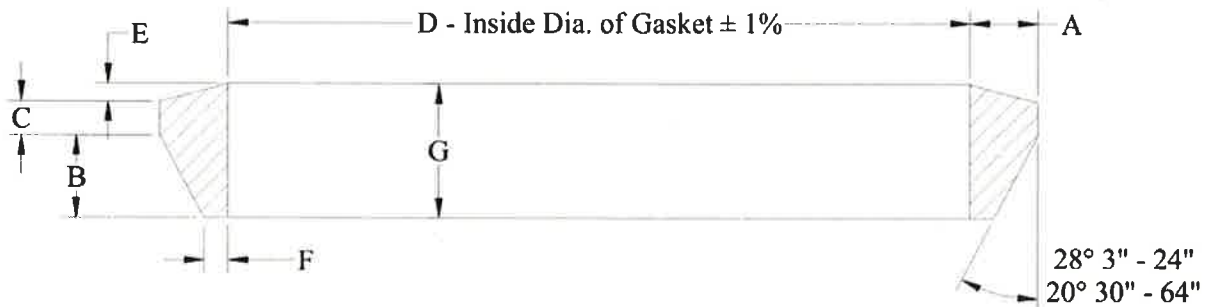
Mechanical Joint Gaskets

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

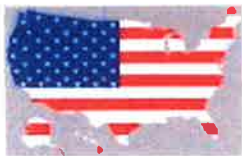
** Not included in AWWA C111. Manufacture's Standard does not meet AWWA C111



** Mechanical Joint Transition Gasket Dimensions in Inches

Pipe Size	A ±0.01"	B	C	D ±1%	E	F ±0.01"	G ±0.02"
2	0.57	0.52	0.31	2.28	0.16	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	0.79	0.75	0.31	10.59	0.16	0.52	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) project and/or product specific certificate for accessories, and 3) coating certificate.** Our purchase order system maintains purchase and 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: _____

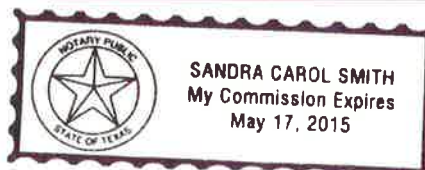
Project No.: _____

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

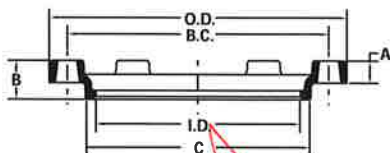
This document is void if modified in any manner other than the addition of project information, name of contractor and/or product distributor



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

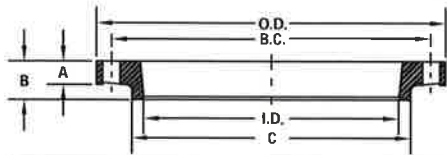
NOM. SIZE	O.D.	A	B	C	I.D.	B.C.	BOLT HOLE	BOLT QTY	WT (LBS.)
2	6.12	0.62	1.18	3.40	2.61	4.75	Ø0.75	2	1
3	7.69	0.62	1.37	4.84	4.06	6.19	Ø0.75	4	2
4	9.12	0.75	1.50	5.92	4.90	7.50	Ø0.88	4	3
6	11.12	0.88	1.63	8.02	7.00	9.50	Ø0.88	6	4
8	13.37	1.00	1.75	10.17	9.15	11.75	Ø0.88	6	5
10	15.62	1.00	1.75	12.22	11.20	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





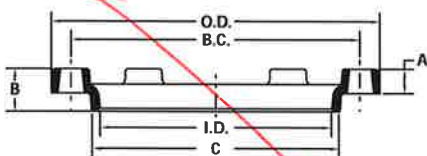
MJ Accessories

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

STAR[®] PIPE PRODUCTS



**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.

UCAT.14.02

* REGISTERED TRADEMARK OF STAR PIPE PRODUCTS

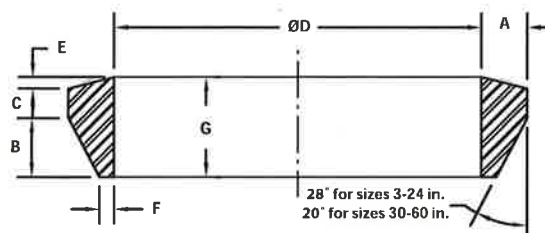
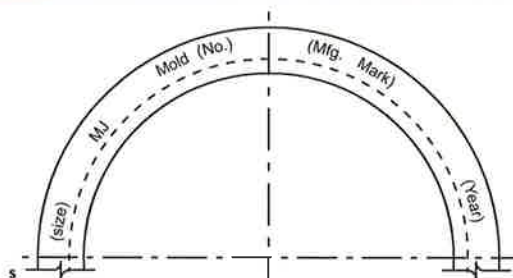
STAR PIPE PRODUCTS
HOUSTON CORPORATE | TOLL FREE 1-800-999-3009 | FAX 281-558-9000
www.starpipeproducts.com





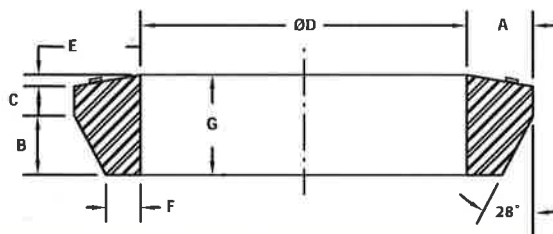
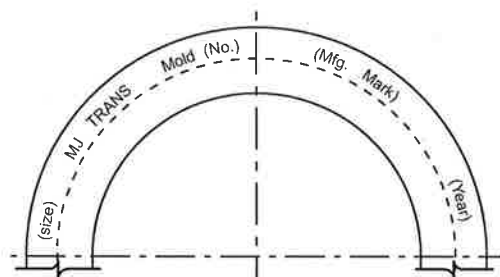
MJ Accessories

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



STAR[®] PIPE PRODUCTS



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.

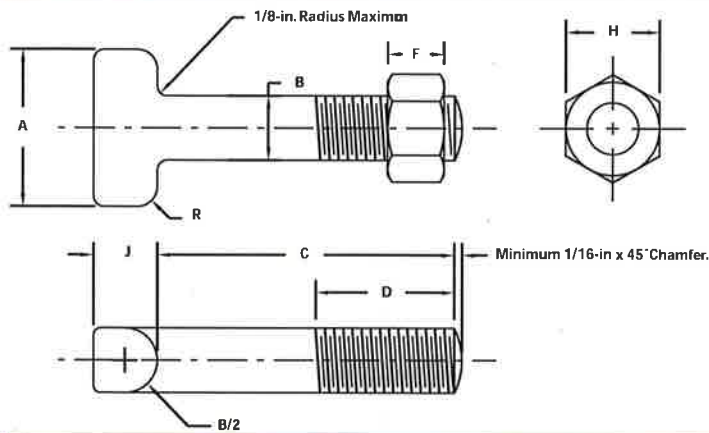
COATING PHYSICAL PROPERTIES

- | | |
|---|---|
| • 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

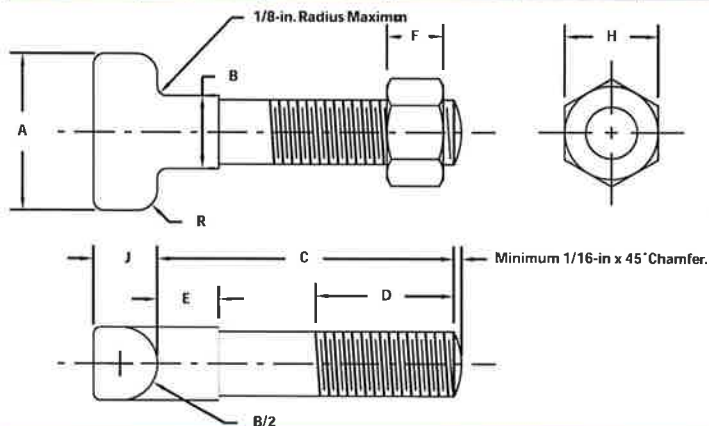


MECHANICAL JOINT BOLT TORQUE		
PIPE SIZE (IN)	BOLT SIZE (IN)	RANGE ¹ OF TORQUE (FT-LBS)
2-3	5/8	45-60
4-24	3/4	75-90
30-36	1	100-120
42-48	1 1/4	120-150

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: 800.999.3009
F: 281.556.9000





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

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

CERTIFIED MATERIAL TEST REPORT

Type 3.1/3.1.B in accordance with EN 10204/ISO 10204/EN 10474/ISO 10474/DIN50049

Heat Analysis

Heat/Run	Value	Date	Item Description	C	Mn	P	S	CU	NI	Cr	Mo	V	Si	Al	T/S	Y/S	El
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/ISO 15156-2, 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 5CT 9th Edition.

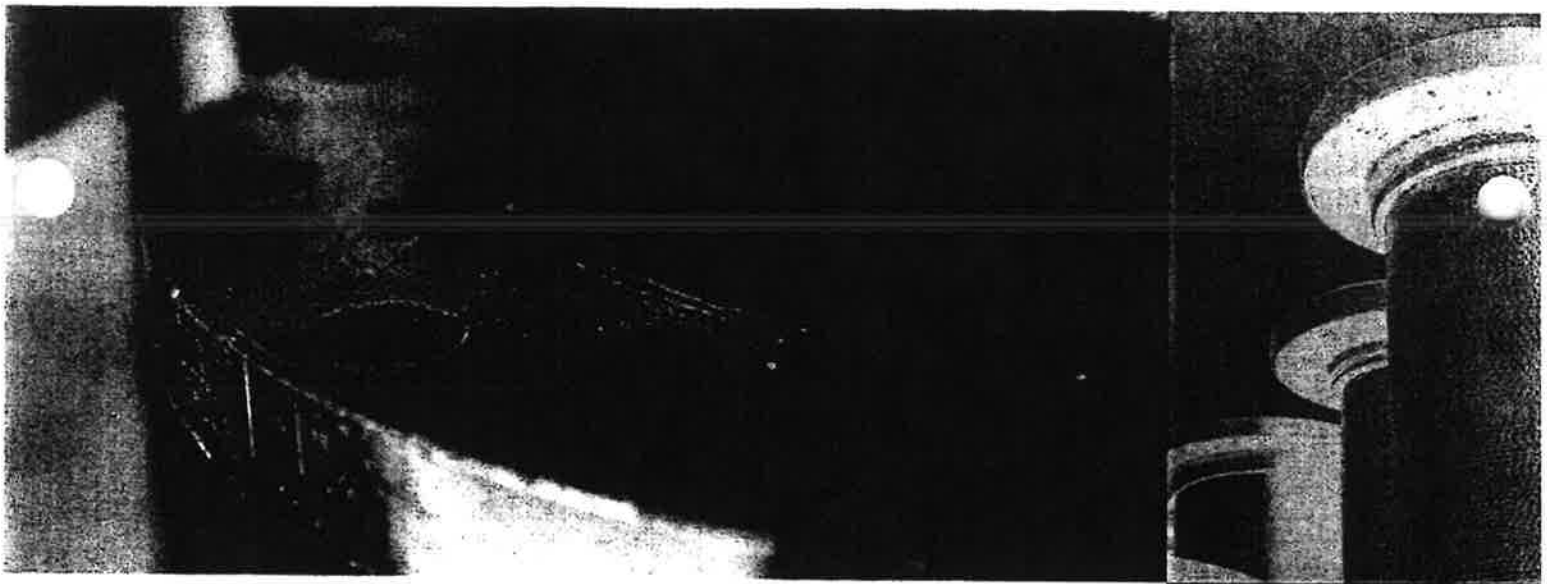
Michael S. Ryan

Michael S Ryan
Manager Technical Services

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".





Model FSC

Ductile Iron "Y" Type Strainer

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

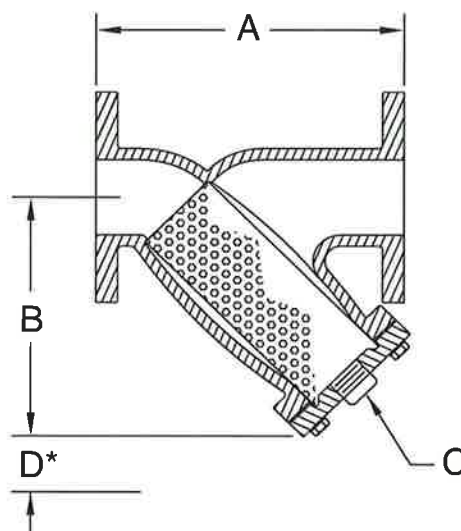
End connections: Flanged Class 125 lb

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

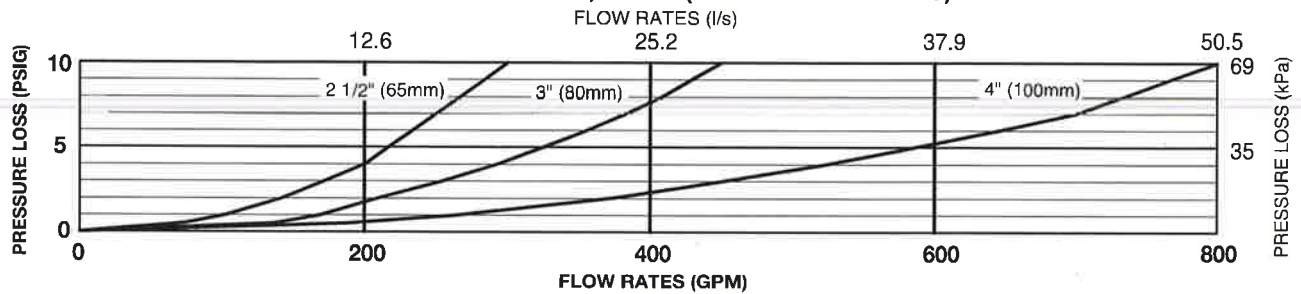
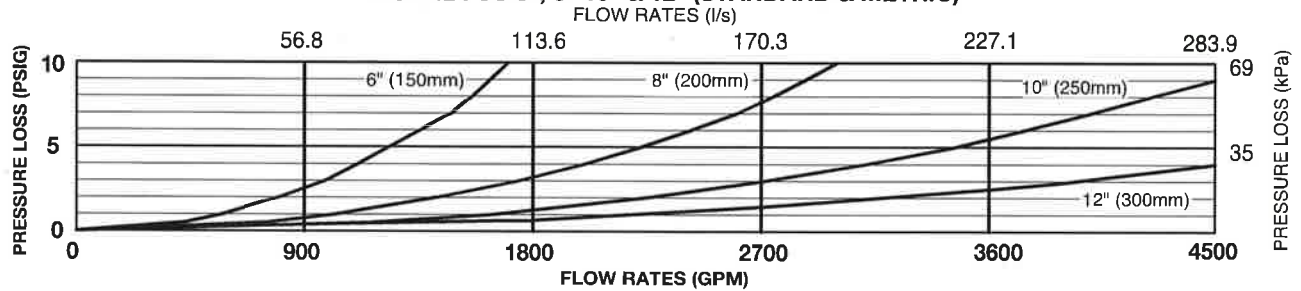


LEAD FREE



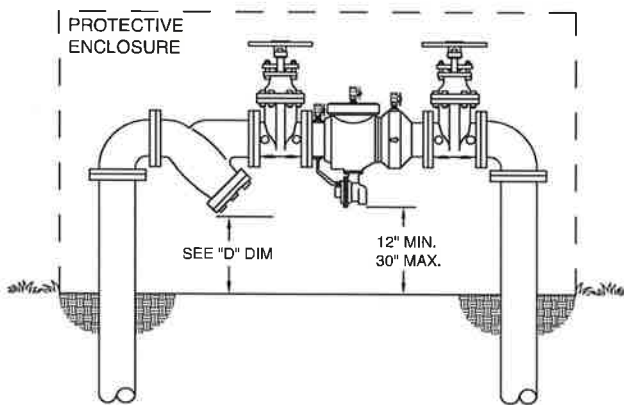
SIZE		DIMENSIONS (approximate)							WEIGHT	
		A		B		C	D*			
in	mm	in	mm	in	mm		in	mm	lbs.	kg.
2 1/2	65	10	254	8 1/4	210	1 1/4 NPT	6	152	35	16
3	80	10 1/2	267	9 1/4	235	1 1/4 NPT	6	152	45	20.5
4	100	15	381	12 1/2	318	2 NPT	9	229	61	27.5
6	150	18	457	14	356	2 NPT	10	254	165	75
8	200	24 1/4	616	17 3/4	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**

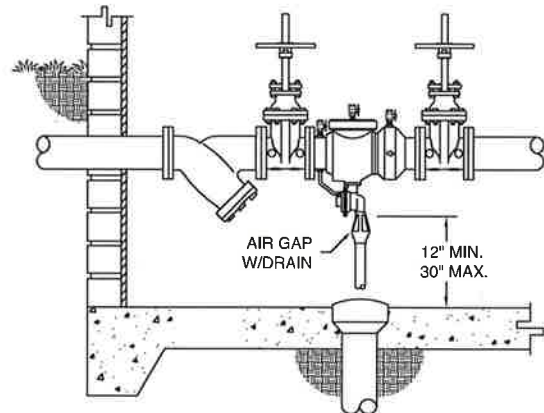
Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted with sufficient clearance for maintenance in accordance with the manufacturers' instructions and the latest edition of the Uniform Plumbing Code. The installation shall be made so that no part 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



DIRECTION OF FLOW ➡

Outdoor Installation



DIRECTION OF FLOW ➡

Indoor Installation

Specifications

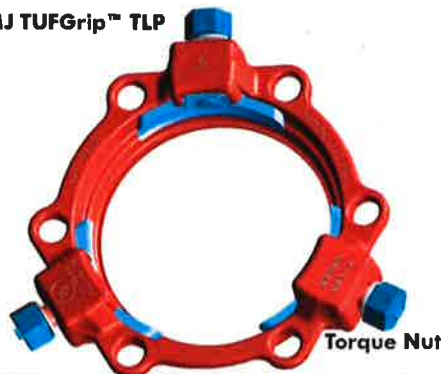
The Ductile Iron "Y" type strainer meet the requirements of NSF/ANSI 372, and in compliance with MIL-S-16293F Type 2. The main body and access cover shall be ductile iron ASTM A536 with an FDA Approved Fusion Epoxy Finish coating inside and out. The integral strainer screen shall be accessible for cleaning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



TUFGRIP™

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

MJ TUF Grip™ TLP



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

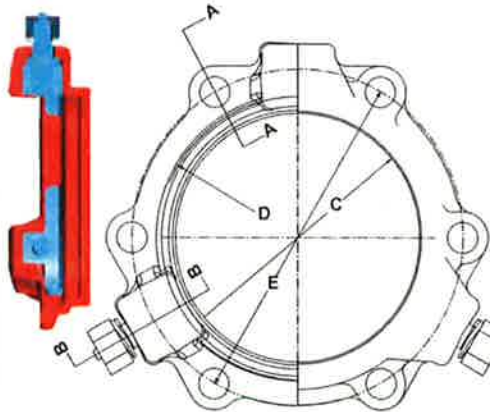
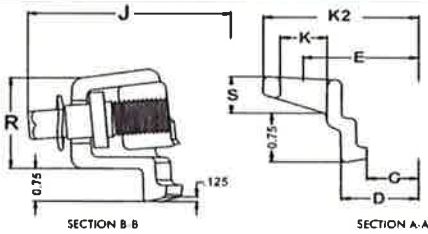
Listed with Underwriters Laboratory

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	Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland Weight(lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D. (Inches)
	Domestic / Non-Domestic							
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 PVCO 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

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**ADDITIONAL SERIES 2000 TLP-TUF GRIP™ RESTRAINT RATINGS									
SIZE (Inches)	AWWA C900			AWWA C905			ASTM D2241		
	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 PVCO 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 PVCO), and (4"-36" AWWAC900/C905 PVC)



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 PVCO 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 PVCO 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 PVCO 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.

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www.tylerunion.com

Model 375

Reduced Pressure Principle Assembly

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)

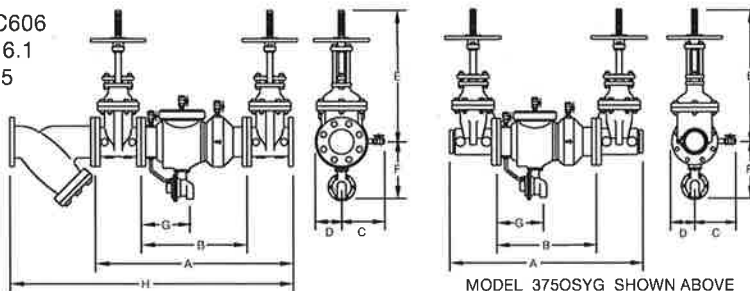
- ☐ - with NRS shut-off valves (standard)
- ☐ FSC - with epoxy coated wye type strainer (flanged only)
- ☐ G - with grooved end NRS gate valves
- ☐ GF - with grooved inlet connection and flanged outlet connection
- ☐ FG - with flanged inlet connection and grooved outlet connection
- ☐ L - less shut-off 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

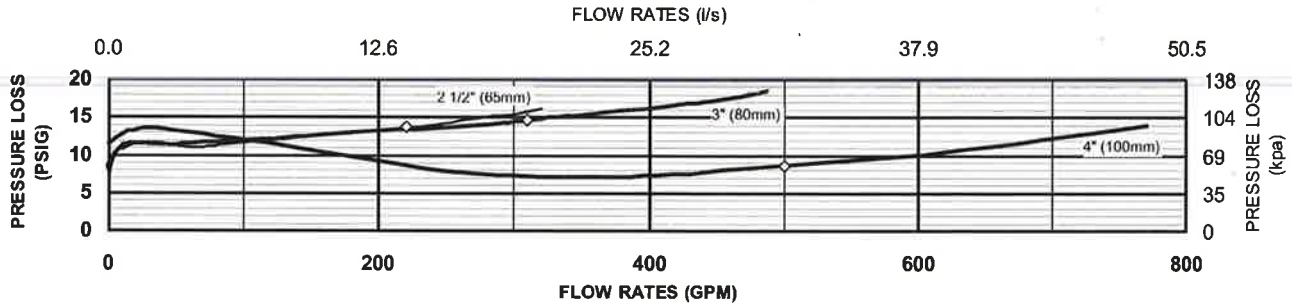
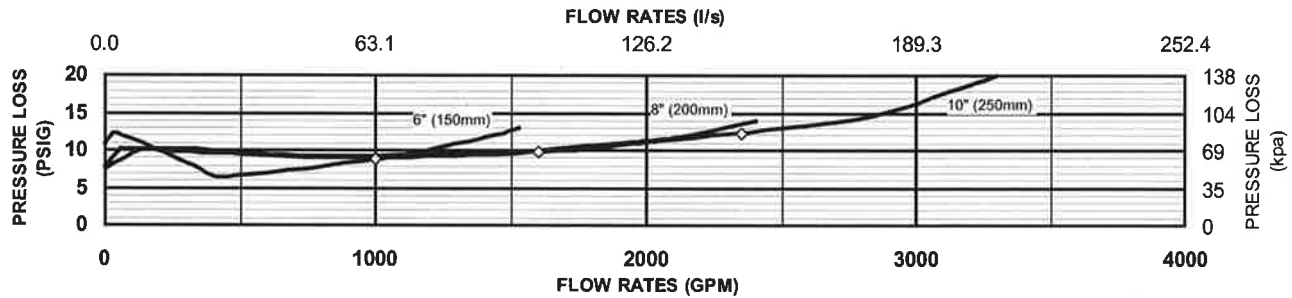
Relief Valve discharge port:

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



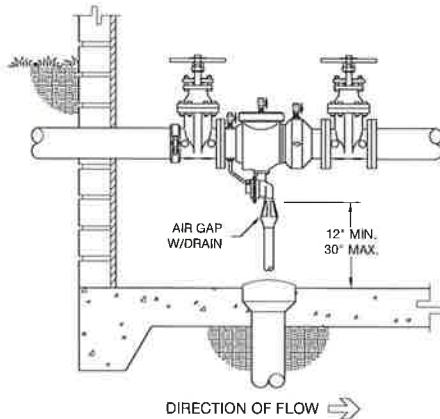
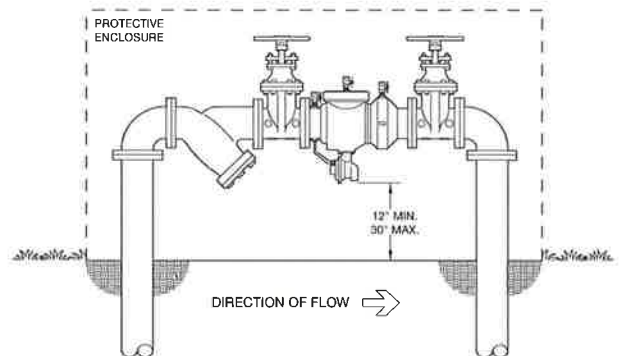
Dimensions & Weights (do not include pkg.)

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	in. mm	lbs. kg	lbs. kg	lbs. kg	lbs. kg	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 1046	60 27	162 73	144 65	170 77	152 69	132 60				
3 80	62 157	58 147	28 7/8 724	10 1/2 254	4 1/2 114	22 1/2 572	18 1/4 464	14 1/2 368	9 228	11 279	9 1/4 235	52 3/4 1340	98 44	276 126	260 118	288 131	274 124	182 83				
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	9 228	11 279	9 1/4 235	52 3/4 1340	98 44	276 126	260 118	288 131	274 124	182 83				
6 150	44 3/4 1137	37 5/8 956	23 1/2 597	10 264	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	37 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	83 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.



Specification Submittal Sheet

Series 600 – Panel Design

Insulated Enclosures

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

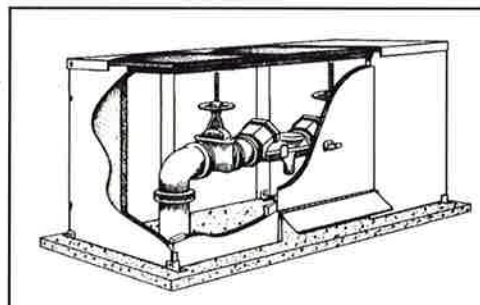
*Standard compact design models include hinged lift-up roof

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

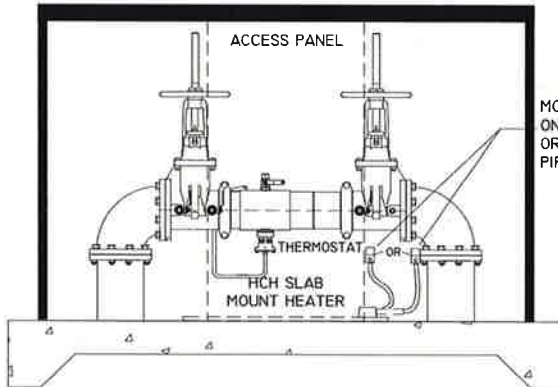
The enclosure is designed to provide freeze and vandal protection of above ground backflow prevention assemblies, meters, PRV, etc. The enclosure provides for safe and easy testing and maintenance. The enclosure disassembles easily if full equipment replacement is needed.



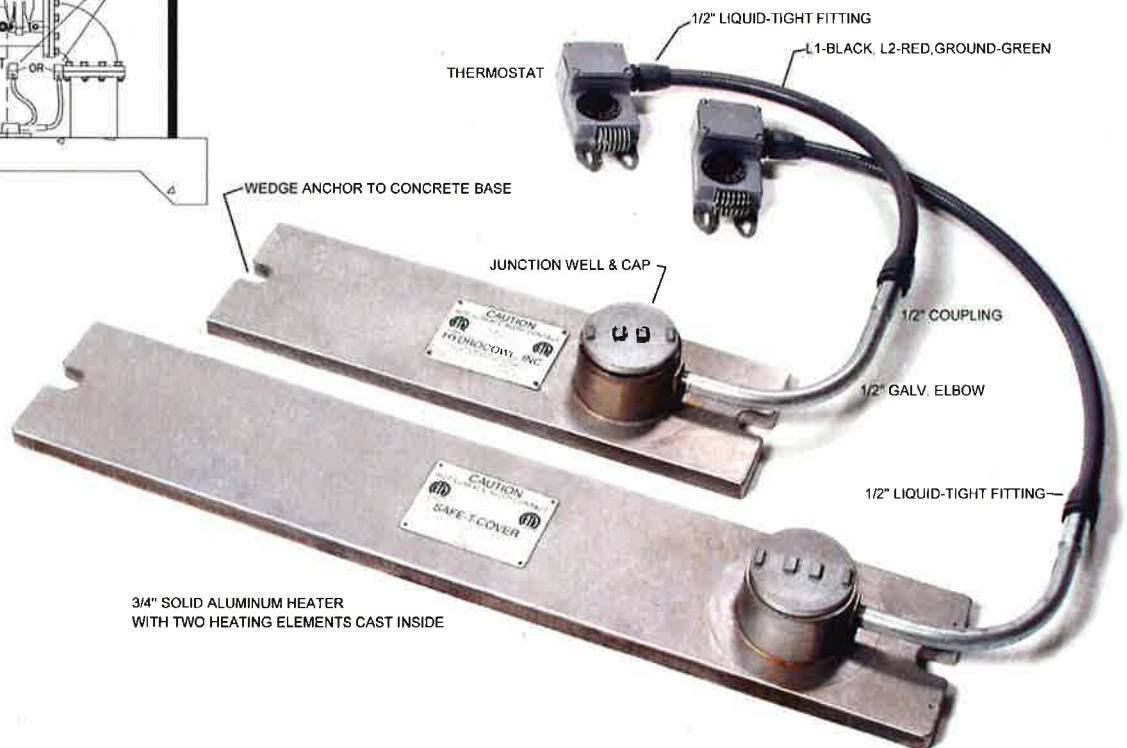
ENCLOSURES DESIGNED FOR THE WORLD'S WATER SYSTEMS™

600T-AL HEATED ENCLOSURE

Electric HCHS/HCH Heating Systems



Note: Remove heater from carton and check for shipping damage. Damage Claims should be entered immediately with carrier.



3/4" SOLID ALUMINUM HEATER
WITH TWO HEATING ELEMENTS CAST INSIDE



READ CAREFULLY BEFORE ATTEMPTING TO ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THE PRODUCT DESCRIBED. PROTECT YOURSELF AND OTHERS BY OBSERVING ALL SAFETY INFORMATION. FAILURE TO COMPLY WITH INSTRUCTIONS AND SAFETY INFORMATION COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE! RETAIN INSTRUCTIONS FOR FUTURE REFERENCE.

Maintenance & Servicing

1. DANGER — Hazard of electric shock! Disconnect all power before attempting to service this heater.

After long periods of idleness, accumulated combustible particles should be removed.

Specifications

20 AMP BREAKER REQUIRED

Catalog No.	Voltage	Wattage	BTUH	Phase	Amps
HCHS500-120	120	500	1707	Single	4.16
HCHS1000-120	120	1000	3413	Single	8.33
HCHS1000-240	240	1000	3413	Single	4.16
HCH2000-120	120	2000	6824	Single	16.66
HCH2000-240	240	2000	6824	Single	8.33

DANGER!

DO NOT DEPEND UPON THE THERMOSTAT AS THE SOLE MEANS OF DISCONNECTING THE POWER WHEN INSTALLING OR SERVICING THE PRODUCT IT IS CONTROLLING. ALWAYS DISCONNECT POWER AT THE MAIN CIRCUIT BREAKER. FAILURE TO DO SO CAN RESULT IN FATAL ELECTRIC SHOCK.

DANGER!

NE DÉPENDEZ PAS DU THERMOSTAT COMME LES SEULS MOYENS DE DÉBRANCHER LE POUVOIR EN INSTALLANT OU EN ASSURANT L'ENTRETIEN DU PRODUIT QU'IL CONTRÔLE. DÉBRANCHEZ TOUJOURS LE POUVOIR AU DISJONCTEUR PRINCIPAL. L'ÉCHEC DE FAIRE PEUT AVOIR POUR RÉSULTAT AINSI LE DÉCHARGE ÉLECTRIQUE FATAL.

INSTALLATION INSTRUCTIONS



Note: Read entire instructions before installation. Installation must be made by trained, experienced service person.



PROVIDE GROUND-FAULT INTERRUPTER DEVICE IN ELECTRICAL CIRCUIT. ALL WIRING SHOULD BE AS PER THE GOVERNING LOCAL AND NATIONAL CODES AND ORDINANCES.

Do not use connection methods which are non-watertight or that are not approved for NEMA 4X installation. Failure to prevent water entry may result in electrical failure with risk of fire, property damage or fatal injury.

1. Install 1/2" Galvanized elbow into threaded hole of junction well on the heater. **NOTE:** Because of the heat, ONLY the 1/2" Galvanized elbow should be installed in the junction well.
2. Install 1/2" coupling on the end of the Galvanized elbow.
3. Install 1/2" male "liquid tight" fitting into coupling. **NOTE:** These joints should be "liquid tight".
4. Remove desired knock-out from thermostat and install "liquid tight" fitting.
5. Install desired length of flexible conduit.
6. Remove threaded cap from junction well of heater and feed wires thru conduit. **NOTE:** Wire and terminal ends must be rated for high temperature use. Wire as per wiring schedule for required wattage. (See Wiring, TABLE 1)
7. Wire thermostat as per thermostat manufacturer's installation instructions. Ground wire must be used.
8. Replace cap and tighten to seal. The torque for the cover is 13 Nm.

MOUNTING INSTRUCTIONS

1. Do **not** attempt to cut, saw or alter in any way the size of the heater.
2. Place and **center** the heater directly on concrete **underneath** the installed device.
3. **Center heater** on concrete **between side walls** of the enclosure.
4. Mount heater to concrete using two (2) fasteners w/large washers. **NOTE:** Leave heater **loosely mounted** to allow for expansion and contraction.
5. Mount thermostat on vertical support adjacent to the access opening of the enclosure or wire-tie to the nearest riser pipe
6. For heater to be most effective, thermostat should be 8"-12" above the slab.

OPERATION INSTRUCTIONS

Caution: HAZARD OF FIRE. Keep combustible materials at least 6" away from heater.

Prudence: HASARD DE FEU. Gardez des matières combustibles au moins 6" loin du réchauffeur.

Danger: HAZARD OF FIRE. This heater is not intended for use in hazardous atmospheres where flammable vapors, gases, liquids, or other combustible atmospheres are present as defined in the National Electric Code. Failure to comply can result in explosion or fire.

Danger: HASARD DE FEU. Ce réchauffeur n'est pas destiné pour l'utilisation dans les atmosphères dangereuses où les vapeurs inflammables, les gaz, les liquides, ou d'autres atmosphères combustibles sont présents comme défini dans le Code Électrique national. L'échec de se conformer peut avoir pour résultat l'explosion ou le feu.

Danger: PERSONAL INJURY OR DEATH could result from electric shock. Disconnect all power to heater at main panel before attempting to install, service or repair this device.

Danger: la BLESSURE PERSONNELLE OU LA MORT pourraient provenir du décharge électrique. Débranchez tout le pouvoir du réchauffeur au comité principal avant d'essayer d'installer, assurer l'entretien ou réparer cet appareil.



WIRING (Table 1)

As per following diagrams
Model No. Drawing No.

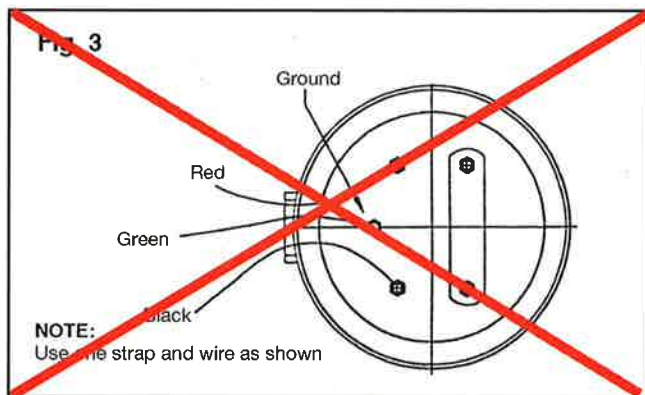
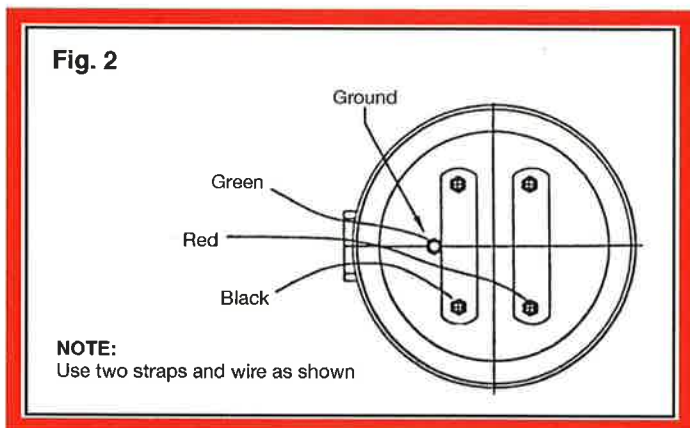
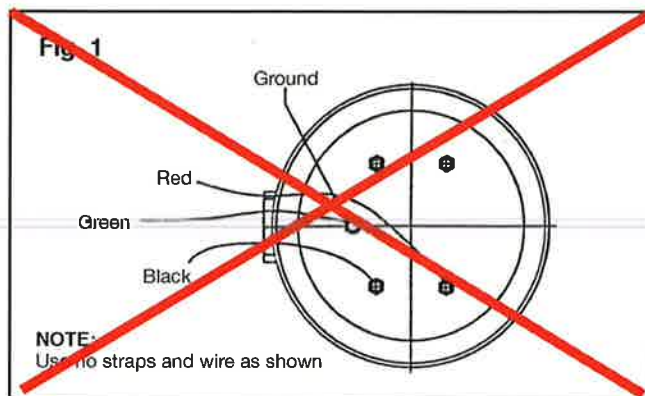
~~HCHS500-120 Fig. 1~~

~~HCHS1000-120 Fig. 2~~

~~HCHS1000-210 Fig. 3~~

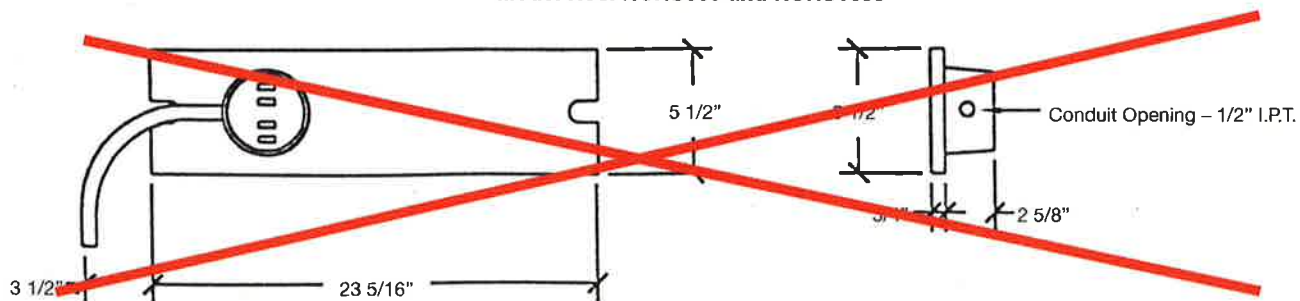
HCH2000-120 Fig. 2

~~HCH2000-210 Fig. 2~~

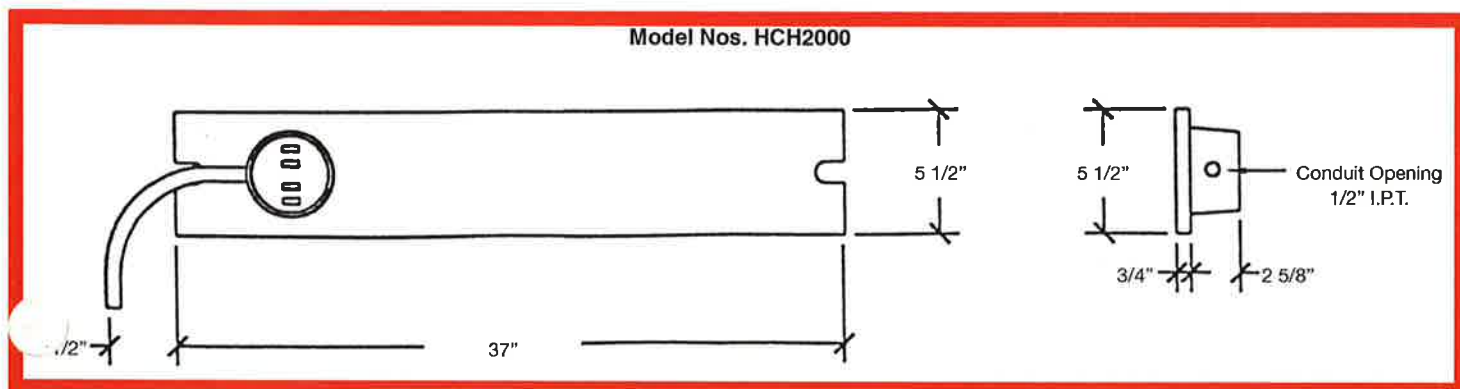


HEATER DIMENSIONS

Model Nos. HCHS500 and HCHS1000



Model Nos. HCH2000



Replacement Parts Identification

Item	Part Name	Qty	Catalog No.
1	Heater	1	HCHS001
2	Thermostat w/mounting screws	1	HCHS002
3	Wiring kit	1	HCHS003

Replacement Parts Identification

Item	Part Name	Qty	Catalog No.	Item	Part Name	Qty	Catalog No.
1	Fasteners	1	HCHS004	6	Ground screw	1	HCHS009
2	1/2" x 10" nipple	1	HCHS005	7	12 ga. high temp wire L-1 (black)	48"	HCHS010
3	1/2" coupling	1	HCHS006	8	12 ga. high temp wire L-2 (white)	48"	HCHS011
4	1/2" "liquidtight" fitting	2	HCHS007	9	12 ga. high temp wire ground (green)	48"	HCHS012
5	1/2" "liquidtight" conduit	28"	HCHS008	10	High temperature terminal ends	3	HCHS013

LIMITED WARRANTY

THREE YEAR LIMITED WARRANTY: Safe-T-Cover by HydroCowl warrants to the original purchaser for a period of three (3) years from the date of original shipment that the HCH Heater is free from defects in materials and workmanship. For limited warranty claim procedures, see CLAIM DISPOSITION below.

LIMITATION OF LIABILITY: In no event shall Safe-T-Cover by HydroCowl be liable for incidental or consequential damages. Safe-T-Cover by Safe-T-Cover by HydroCowl's liability in all events is limited to, and shall not exceed, the purchase price paid.

WARRANTY DISCLAIMER: Safe-T-Cover by HydroCowl makes no other representation or warranty of any kind, expressed or implied, in fact or in law, including without limitation, the warranty of merchantability or the warranty of fitness for a particular purpose. There are no warranties which extend beyond the description on the face hereof.

PRODUCT SUITABILITY: Many states and localities have codes and regulations which may vary from those in neighboring areas. Safe-T-Cover by HydroCowl attempts to assure that its products comply with such codes, however, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Review the product application, all national and local codes and regulations, and be sure that the product, installation and use will comply with them.

CLAIM DISPOSITION: The limit of Safe-T-Cover by HydroCowl's liability for failure of this product to meet the foregoing warranty shall be, at Safe-T-Cover by HydroCowl's sole option, for repair or replacement of the defective product and shall exclude any damage caused by accident, misuse or abuse of the product. For any product believed to be defective within the limited warranty time, write or call the supplier from whom the product was purchased. If unable to obtain satisfactory results, call Safe-T-Cover by HydroCowl at telephone number listed below. Furnish name of the supplier, address, date and number of supplier's invoice. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.



ENCLOSURES DESIGNED FOR THE WORLD'S WATER SYSTEMS™

800-245-6333



SAFE-T-COVER®

by Hydrocowl

Superior Freeze and Vandal Protective Enclosures Since 1988

**MATERIAL SUPPLIER'S CERTIFICATE CERTIFYING COMPLIANCE WITH
ARRA BUY AMERICAN PROVISIONS**
(To be attached to each specification / drawing)

PROJECT OWNER: _____

CONTRACT NO: _____

CONTRACT NAME: _____

PROJECT NAME: _____

SPECIFICATION / DRAWING DESCRIPTION: **Aluminum Enclosures**

CERTIFICATION:

I, the undersigned, hereby certify that the above noted item(s) is in full and complete conformance with the **ARRA BUY AMERICAN** provisions contained in the American Recovery and Reinvestment Act of 2009.

MATERIAL SUPPLIER: **SAFE-T-COVER** DATE: _____

Name: **LORI PATTON**

Signed: *Lori Patton*

Title: **OPERATIONS MANAGER**

Address: **2710 LANDERS AVENUE**

NASHVILLE, TN 37211

Telephone: **(615) 259-4495**

Fax: **(615) 259-4481**

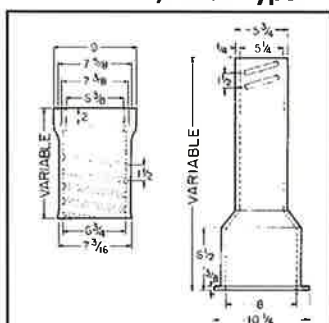
Employer ID Number: **62-1610488**

SUBMITTAL

(Current Revisions for All Standards Apply)

- SIZES:** Adjustable Slip and Screw type with standard assembled lengths ranging from 19" to 72" (Lengths noted do not include the addition of risers, extensions, and/or bases). See the Catalog or List Price guide for access., lids, rings, bases, risers, meter covers, etc.
- STANDARDS:** Produced with Class 35 cast iron in accordance with and meeting all applicable terms and provisions of ASTM A-48. All Tyler Union valve boxes when properly installed are suitable for use in conjunction with projects utilizing American Association of State Highway and Transportation Officials (AASHTO) standards and provisions.
- INSTALLATION:** Per AWWA M44, Manual of Water Supply Practices
- COATING:** The asphaltic bituminous coating is applied to a minimum thickness of 1.5 mil and the coating once dry is neither brittle when exposed to cold or sticky when exposed to the sun.

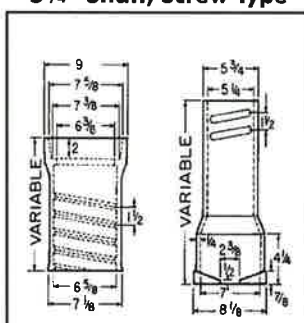
**For 4" to 12" Valves
5 1/4" Shaft, Screw Type**



**6850 SCREW TYPE
VALVE BOX
Cast Iron - 2 piece**

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

**For 3" to 20" Valves
5 1/4" Shaft, Screw Type**

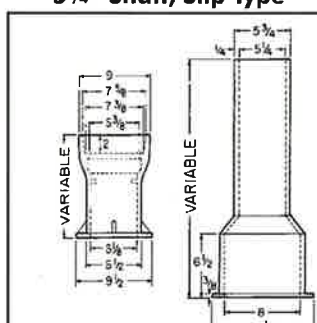


**6860 SCREW TYPE
VALVE BOX
Cast Iron - 3 piece**

Components	Extension Height
10T + 12B	27-37
10T + 18B	33-42
16T + 24B	39-49
16T + 30B	45-54
16T + 36B	51-60
26T + 30B	45-66
26T + 36B	51-72

NOTE: Base Required,
Order Separately

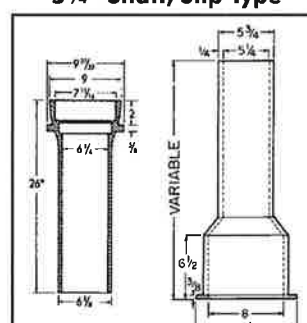
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**6855 SLIP TYPE
VALVE BOX
Cast Iron - 2 piece**

Components	Extension Height
10T + 15B	19-22
10T + 24B	27-32
16T + 24B	27-37
16T + 30B	33-43
16T + 36B	39-50
26T + 30B	36-52
26T + 36B	39-60
26T + 24B + #60 Ext	53-71
26T + 36B + #60 Ext	64-82

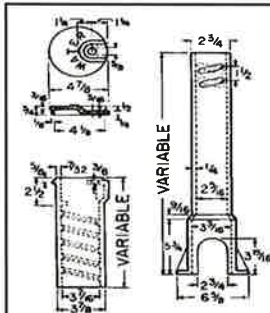
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**7126 SLIP TYPE
VALVE BOX**

Components	Extension Height
26T + 24B	28-48
26T + 30B	34-54
26T + 36B	40-60
26T + 24B + #60 Ext	52-72
26T + 36B + #60 Ext	60-80

NOTE: Use the 6855 Bottoms
with these Tops



For 1/2" to 2" Curbstops

**6500 SCREW TYPE
CURB / SERVICE BOX**

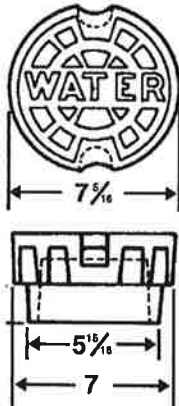
Components	Extension In Inches
18T & 27B	30-42
18T & 33B	36-48
24T & 33B	36-54
24T & 39B	42-60
30T & 39B	41-64

*Enlarged Base Available

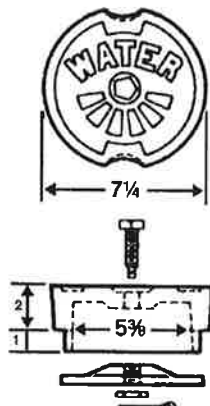
**T = Top
B = Bottom
EXT = Extension**

Tyler/Union

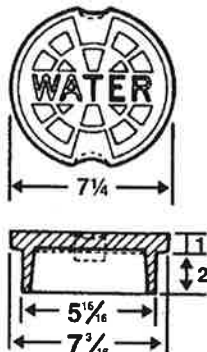
STANDARD & SPECIAL DROP & LOCK LIDS



Drop Lid



Lock Lid

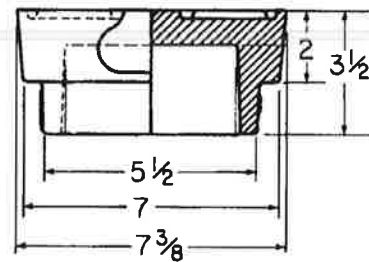


1 1/8" Lid

LIDS ("WATER")

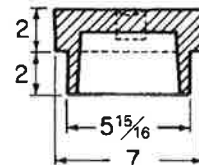
Item/Description	UPC No. 670610	Weight
5 1/4 Drop Lid	145325	12
5 1/4 Lock Lid	145462	11
1 1/8 Lid*	145509	11

*Use with 1 1/8" Riser Only.



5 1/4" MWW DROP LID

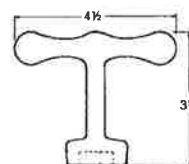
UPC No	Weight
670610	12
145370	12



5 1/4" OMA DROP LID

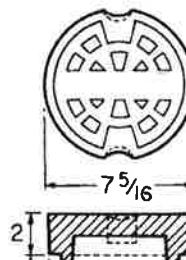
UPC No.	Special Markings	Weight
670610	WATER OMA*	12
145301	WATER OMA*	12

*OMA marking is inside lid.



WRENCH Fits Standard Waterworks Pentagon Head 27/32" Brass Screws

UPC No	Ship Code	Description	Weight
670610	S	Wrench	0.5
144908	S	Wrench	0.5



5 1/4" DROP LID W/SPECIAL MARKINGS*

UPC No.	Special Mark	Weight
670610	GAS	12
145332	SEWER	12
145349	PLAIN	12
145356		12

*Lids marked with "WATER" will be shipped unless otherwise specified.



"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) project and/or product specific certificate for accessories, and 3) coating certificate.** Our purchase order system maintains purchase and 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

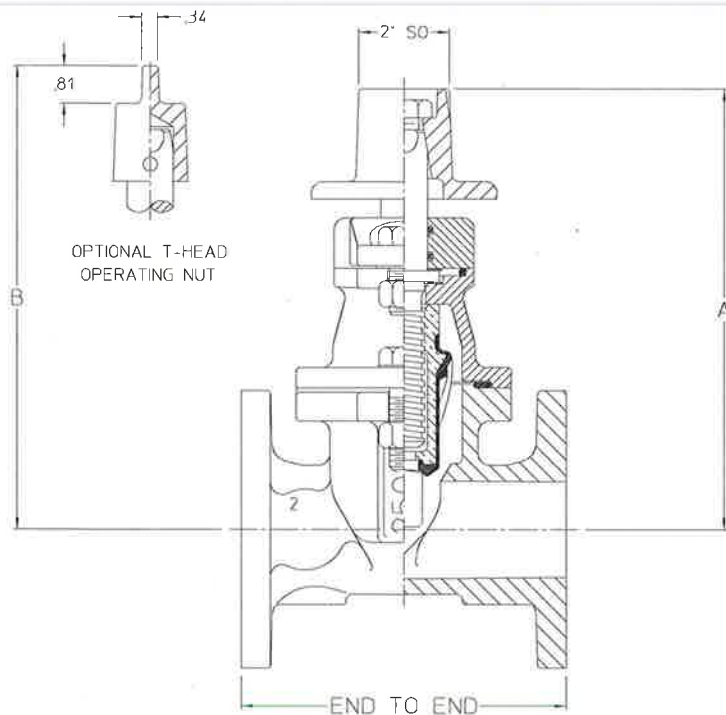
Portland: 6204 N. Marine Dr. • Portland, OR 97203

www.tylerunion.com

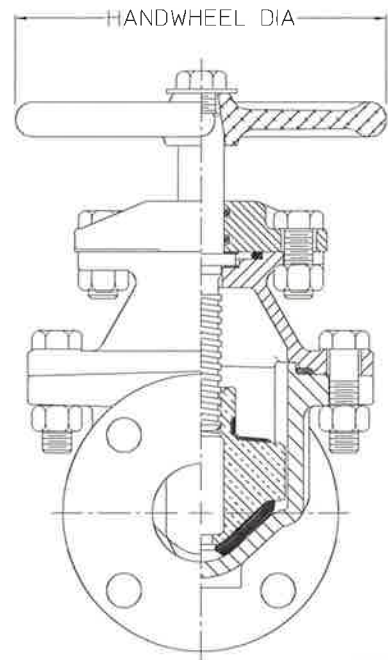
This document is void if modified in any manner other than the addition of project information, name of contractor and/or product distributor

AMERICAN Flow Control Submittal Information

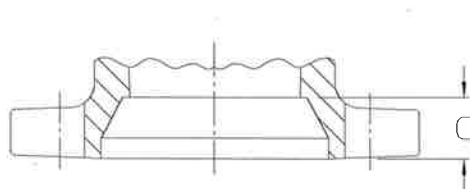
2" SERIES 2500 RESILIENT WEDGE GATE VALVE, NRS



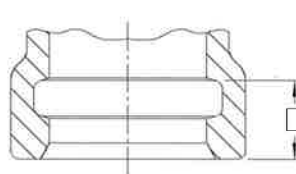
SHOWN WITH 2" OPERATING NUT



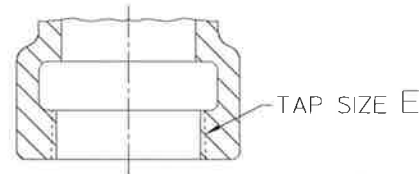
SHOWN WITH OPTIONAL HANDWHEEL



MECHANICAL JOINT (MJ)



PVC



THREADED (SCREW)

OPTIONAL END CONNECTIONS

DIMENSION	2" VALVE SIZE
End to End - MJ/MJ	8.25
End to End - FL/FL	7.00
End to End - PVC/PVC	10.75
End to End - Threaded	6.25
A	9.25
B	10.22
C	2.50
D	3.75
E	2 NPT
Handwheel Diameter	8.00
No. of Turns to open	9

NOTES:

1. Bolt pattern of flanged ends are in accordance with ASME B16.1, Class 125.
2. Mechanical joint ends are in accordance with ANSI/AWWA C153/A21.53.
3. PVC ends are for steel (IPS) sizes of PVC or steel pipe.
4. Threaded ends are in accordance with ASME B16.4, Class 125 (see dimension E).



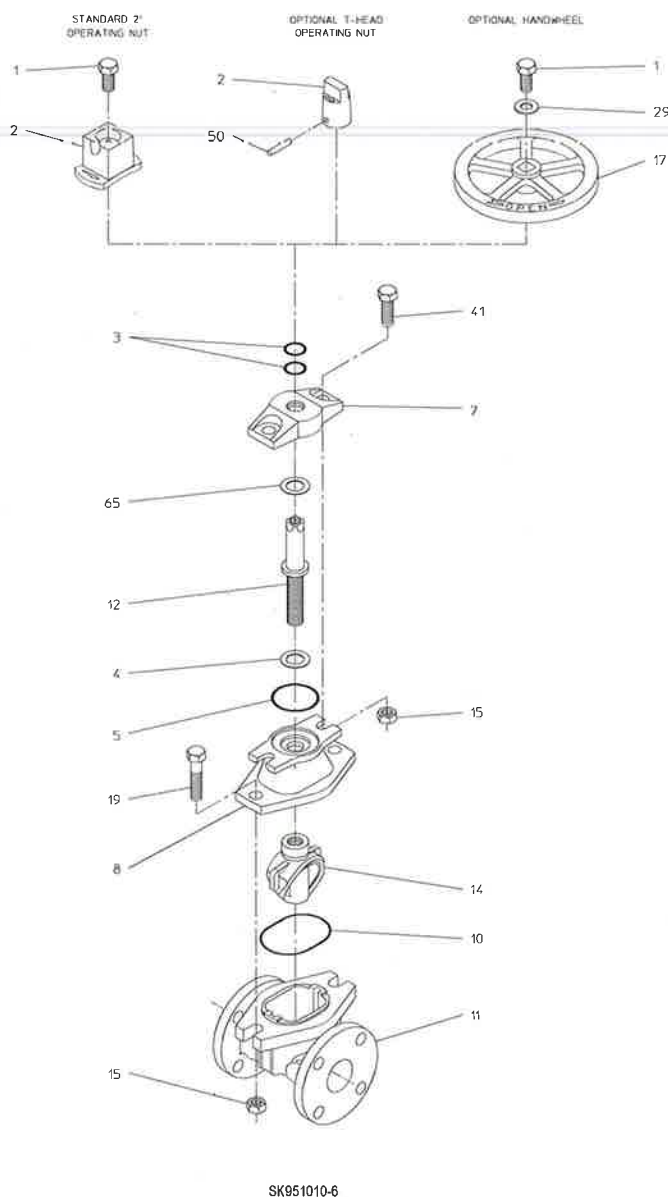
AMERICAN
FLOW CONTROL

THE RIGHT WAY

AMERICAN Flow Control
P.O. Box 2727
Birmingham, AL 35202-2727
Phone: 1-800-326-8051
Fax: 1-800-610-3569
E-mail: afcsales@american-usa.com

Waterous Company
125 Hardman Avenue South
South St. Paul, Mn. 55075-1191
Phone: 1-888-266-3686
Fax: 1-800-601-2809
E-mail: afcsales@american-usa.com

WWW.AMERICAN-USA.COM



SK951010-6

Construction shown is typical of the 2-inch size with flanged end connections and is illustrative only. Construction of other end connection types vary slightly. See elsewhere on this submittal for specific details.

REF NO.	DESCRIPTION	MATERIAL
1	Hex Head Bolt, 5/8-11 x 1"	304 Stainless Steel
2	Operating Nut	2" Square & T-Head: Ductile Iron, ASTM A536
3	O-Ring	Rubber
4	Lower Thrust Washer	Nylon 101, Federal Spec No. L-P-401A
5	Stuffing Box Gasket	Rubber O-ring
7	Stuffing Box	Ductile Iron, ASTM A536
8	Bonnet	Ductile Iron, ASTM A536
10	Bonnet Gasket	Rubber O-ring
11	Body	Ductile Iron, ASTM A536
12	Stem	Manganese Bronze, ASTM B763, UNS C86700
14	Resilient Wedge	EPDM Rubber Coated Cast NDZ-S Bronze, ASTM B763, UNS C99500
15	Hex Nut, 5/8-11	304 Stainless Steel
17	Handwheel	Cast Aluminum, ASTM B26, Alloy 535
19	Hex Head Bolt, 5/8-11 x 2-1/4"	304 Stainless Steel
29	Flat Washer, 5/8	304 Stainless Steel
41	Hex Head Bolt, 5/8-11 x 1-1/2"	304 Stainless Steel
50	Spiral Pin, 5/16 x 1-1/2"	302 Stainless Steel
65	Upper Thrust Washer	304 Stainless Steel

OPTIONAL MATERIALS ARE AS FOLLOWS

BOLTS and NUTS: 316 Stainless Steel

STEM: Stainless Steel

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

NOTES:

1. Meets applicable requirements of ANSI/AWWA C515 with 250 psig rated working pressure although the standard does not cover valves smaller than 3-inch.
2. Fusion-bonded epoxy-coated in accordance with ANSI/AWWA C550.
3. Certified to NSF/ANSI 61 and 372.



AMERICAN
FLOW CONTROL

THE RIGHT WAY

AMERICAN Flow Control
P.O. Box 2727
Birmingham, AL 35202-2727
Phone: 1-800-326-8051
Fax: 1-800-610-3569
E-mail: afc-sales@american-usa.com

Waterous Company
125 Hardman Avenue South
South St. Paul, Mn. 55075-1191
Phone: 1-888-266-3686
Fax: 1-800-601-2809
E-mail: afc-sales@american-usa.com

WWW.AMERICAN-USA.COM



AMERICAN

**FLOW CONTROL
WATEROUS**

THE RIGHT WAY

Shana Quick
Baker Utility Supply
2351 Aztec Road NE
Albuquerque, NM 87107

February 5, 2014

Subject: Certificate of Origin – Buy American
Product: AMERICAN Flow Control Series 2500/2500-1
Resilient Wedge Gate Valve
AMERICAN Waterous Pacer Fire Hydrant

Dear Ms. Quick:

This is to certify that the product listed above is manufactured by the Waterous Company in South Saint Paul, Minnesota, in the United States of America, and these products comply with requirements of the federal American Recovery and Reinvestment Act of 2009 (ARRA) including the Buy American provision in Section 1605.

Waterous Company is a subsidiary of AMERICAN and manufactures products marketed and sold by the AMERICAN Flow Control division of AMERICAN.

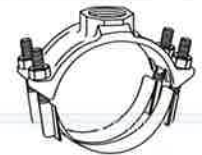
Sincerely,

Allan Nelson
Senior Product Engineer

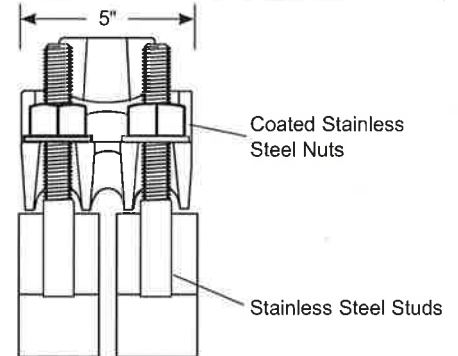
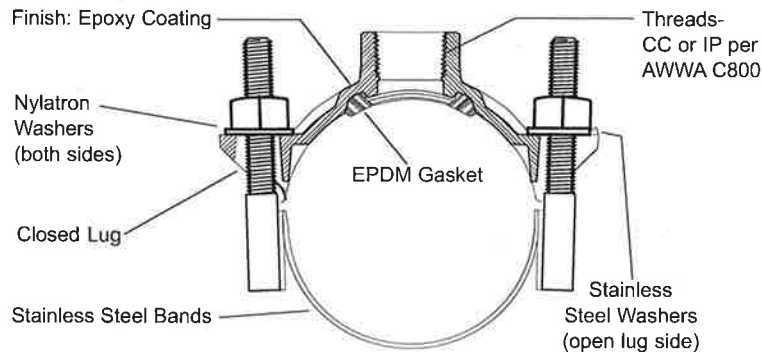
abnelson@waterousco.com
P: 651.450.5275
Waterous Company
125 Hardman Avenue South
South Saint Paul, MN 55075-2456

SUBMITTAL INFORMATION

Iron Service Saddles - (FCD202-xxx-TAP-I style)



DUAL BAND EPOXY COATING IRON SERVICE SADDLES FOR USE ON DUCTILE IRON AND A/C PIPE



NOM. PIPE SIZE	O.D. RANGE	APPROX. WT. LBS.	CATALOG NUMBER	✓ SUBMITTED ITEM(S)
2"	2.35 - 2.50	2.8	FCD202-250-TAP-I	
2-1/2"	2.75 - 2.90	2.8	FCD202-290-TAP-I	
3"	*3.46 - 3.80	4.8	FCD202-380-TAP-I	
	*3.80 - 4.25	5.5	FCD202-425-TAP-I	
4"	**4.26 - 4.80	5.4	FCD202-480-TAP-I	
	*4.74 - 5.26	5.4	FCD202-526-TAP-I	
	*4.50 - 5.40	5.4	FCD202-540-TAP-I	
6"	5.94 - 6.69	5.7	FCD202-669-TAP-I	
	6.63 - 6.90	5.7	FCD202-690-TAP-I	
	6.84 - 7.60	6.7	FCD202-760-TAP-I	
	6.63 - 7.61	6.7	FCD202-761-TAP-I	
8"	7.93 - 8.71	6.8	FCD202-871-TAP-I	
	8.63 - 9.05	8.2	FCD202-905-TAP-I	
	8.99 - 9.79	8.4	FCD202-979-TAP-I	
	8.63 - 9.80	8.4	FCD202-980-TAP-I	
10"	10.00 - 10.75	9.4	FCD202-1075-TAP-I	
	10.75 - 11.10	9.0	FCD202-1110-TAP-I	
	11.10 - 12.12	10.8	FCD202-1212-TAP-I	
	10.64 - 12.13	10.8	FCD202-1213-TAP-I	
	12.00 - 12.75	11.0	FCD202-1275-TAP-I	
12"	12.75 - 13.20	9.0	FCD202-1320-TAP-I	
	13.20 - 14.38	12.8	FCD202-1438-TAP-I	
	12.62 - 14.39	12.8	FCD202-1439-TAP-I	

I = Imported casting

* Saddles with this pipe range are not available with 2" CC (CC7) or 2-1/2" IP (IP8) threads.

** These saddles with 1-1/4" through 2-1/2" taps fit the top of the listed range only.
Example: FCD202-480-CC7-I fits 4.80" pipe O.D. only.

OUTLET TAP CODE CC (AWWA) THREAD

THREAD	CODE NUMBER	✓ SUBMITTED ITEM(S)
3/4" CC	CC3	
1" CC	CC4	
1-1/4" CC	Δ CC5	
1-1/2" CC	CC6	
2" CC	CC7	

IP THREAD

THREAD	CODE NUMBER	✓ SUBMITTED ITEM(S)
3/4" IP	IP3	
1" IP	IP4	
1-1/4" IP	Δ IP5	
1-1/2" IP	IP6	
2" IP	IP7	
2-1/2" IP	IP8	

Δ Contact factory for availability

FEATURES

- Body made of high strength ductile iron per ASTM A536
- Each dual band and 5/8" UNC threaded studs are 18-8 type 304 stainless steel. For saddles 3" or smaller, studs are 1/2"
- Gasket is EPDM rubber, ASTM D2000
- Finish on saddle body is fusion-bonded epoxy coating
- UL Classified to ANSI/NSF Standard 61

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

12/20/17

Submitted By:



The Ford Meter Box Company, Inc.

775 Manchester Avenue • P.O. Box 443, Wabash, Indiana U.S.A. 46992-0433
Phone: 260-563-3171 • Fax: 800-826-3487 • Overseas Fax: 260-563-0167 • www.fordmeterbox.com

April 20, 2010

Compliance to the Buy American Clause of the American Recovery and Reinvestment Act (ARRA) of 2009

CERTIFICATION of ORIGIN For F202, FS202, FSD202, FC202 & FCD202 SERVICE SADDLES

This is to certify that Ford Iron Service Saddles, sizes 2" through 30", shall be manufactured in the United States of America, of ductile iron per ASTM A536. Gaskets shall be EPDM rubber per ASTM D2000. The ductile iron saddles shall have an E-coat (style F202, FS202 or FSD202) or fusion bonded epoxy finish (style FC202 or FCD202), taps are provided with either Iron Pipe or CC (AWWA) threads.

This certification applies to styles F202, FC202, and FS202 service saddles (example: F202-690-CC4). Any saddle having an "I" at the end of the part number, does not comply with this certification (example: F202-690-CC4-I).

THE FORD METER BOX COMPANY, INC.

Melanie Boyll
Marketing Manager