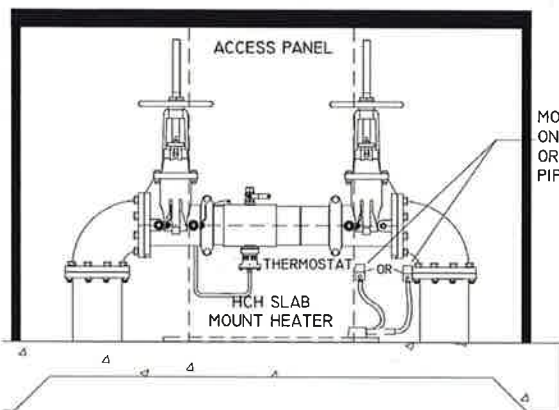




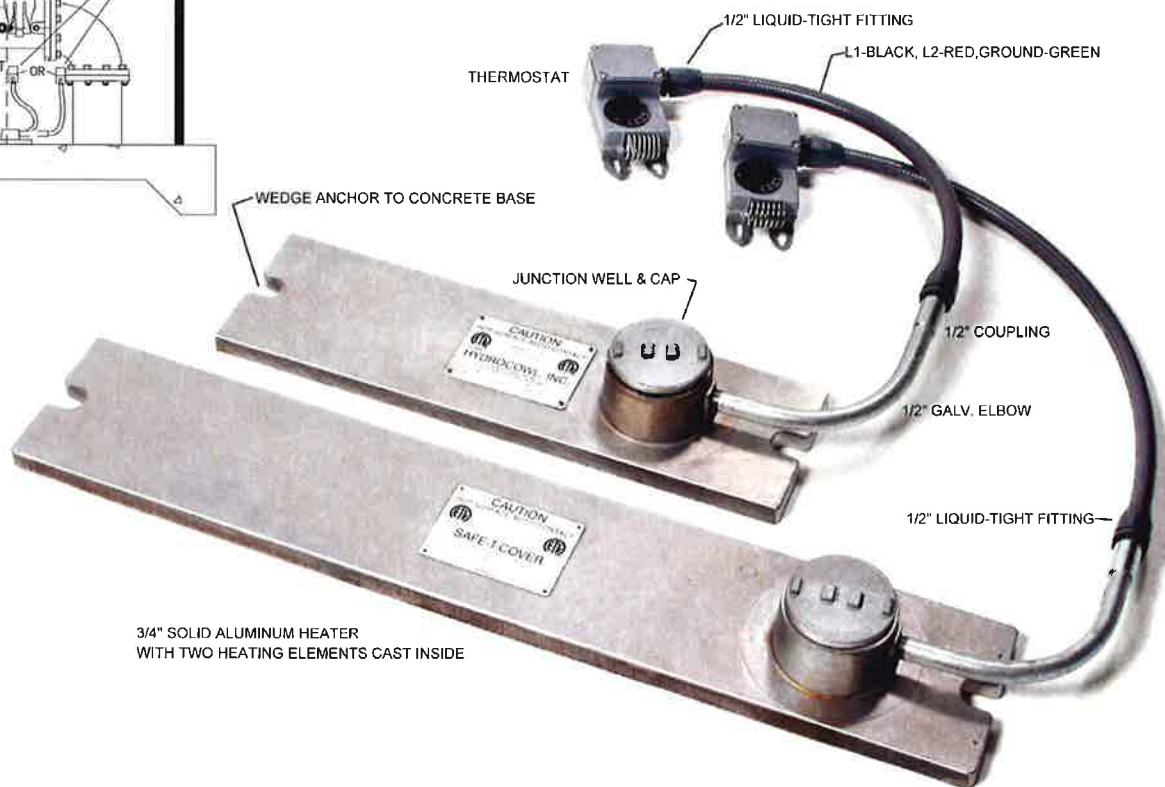
ENCLOSURES DESIGNED FOR THE WORLD'S WATER SYSTEMS™

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.



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.
2. 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.

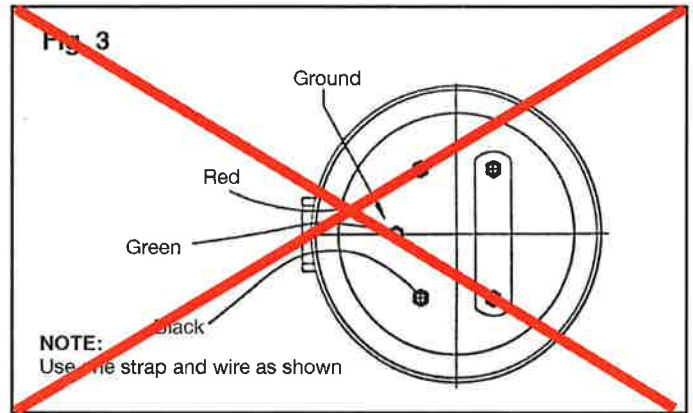
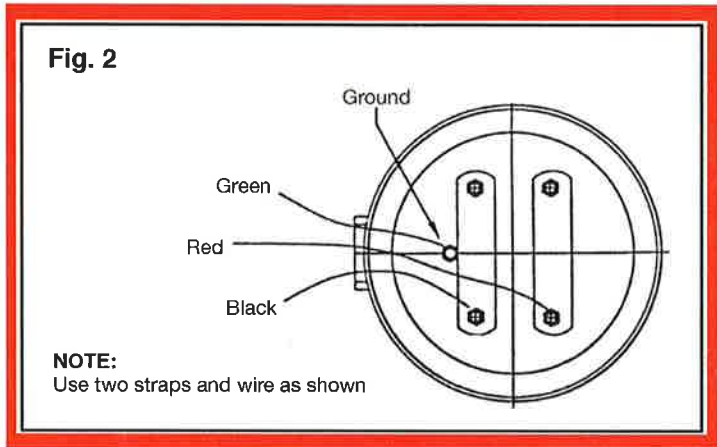
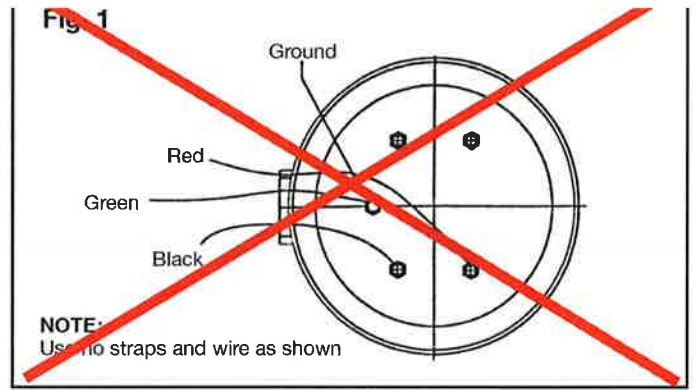
Danger: PERSONAL INJURY OR DEATH could result from electric shock. Disconnect all power to heater at main panel before attempting to install, service or repair this device.

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.



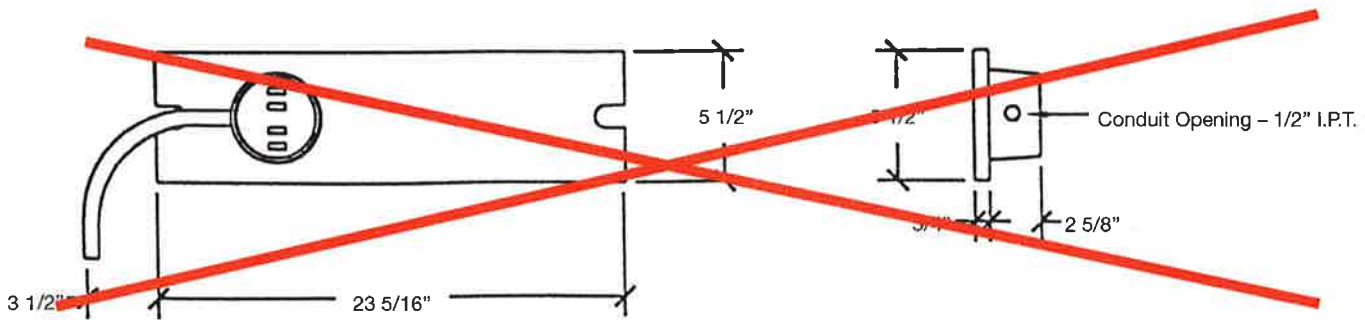
As per following diagrams
Model No. Drawing No.

HCHS500-120	Fig. 1
HCHS1000-120	Fig. 2
HCHS1000-240	Fig. 3
HCH2000-120	Fig. 2
HCH2000-240	Fig. 3

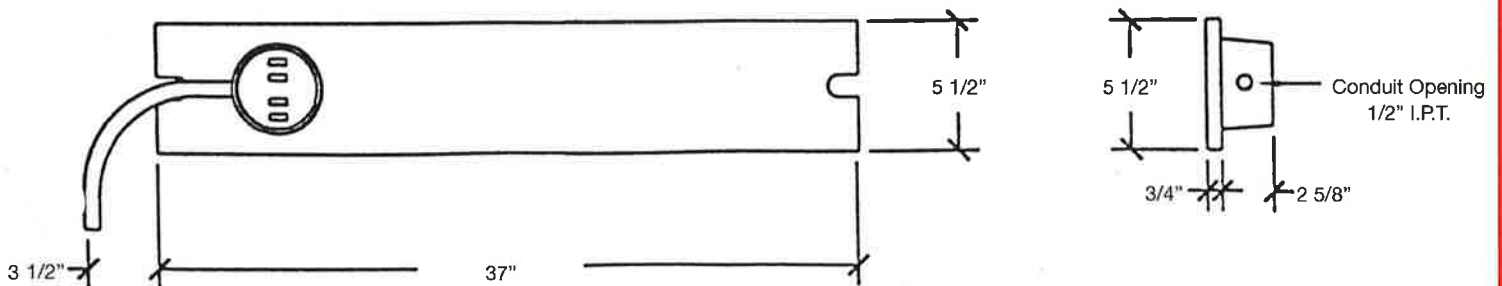


HEATER DIMENSIONS

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.
1	Fasteners	1	HCHS004
2	1/2" x 10" nipple	1	HCHS005
3	1/2" coupling	1	HCHS006
4	1/2" "liquidtight" fitting	2	HCHS007
5	1/2" "liquidtight" conduit	28"	HCHS008

Item	Part Name	Qty	Catalog No.
6	Ground screw	1	HCHS009
7	12 ga. high temp wire L-1 (black)	48"	HCHS010
8	12 ga. high temp wire L-2 (white)	48"	HCHS011
9	12 ga. high temp wire ground (green)	48"	HCHS012
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 Hydrowall

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**

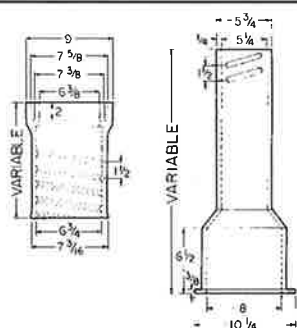
Employer ID Number: **62-1610488**

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.

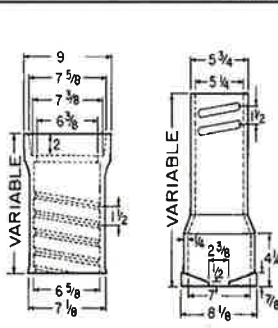
**For 4" to 12" Valves
5 1/4" Shaft, Screw Type**



**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**

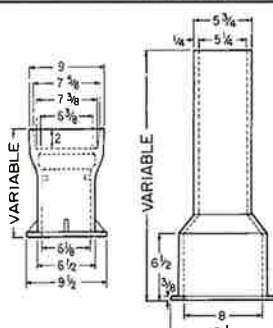


**6860 SCREW TYPE
VALVE BOX
Cast Iron - 3 piece**

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

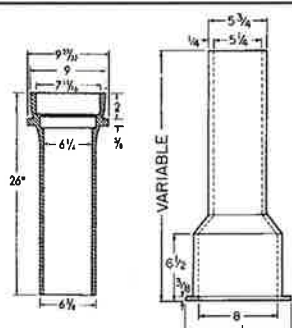
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**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

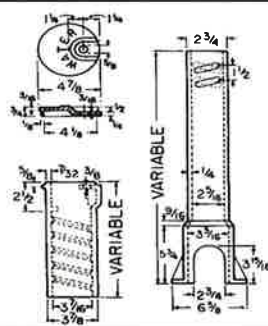
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**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



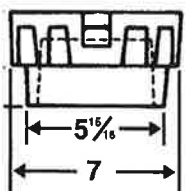
For 1/2" to 2" Curbstops

**6500 SCREW TYPE
CURB / SERVICE BOX**

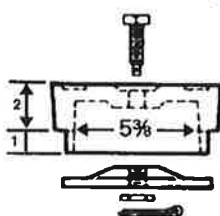
Components	Extension In Inches
18T & 27B	30-42
18T & 33B	36-48
24T & 33B	36-54
24T & 39B	42-60
30T & 39B	41-64

*Enlarged Base Available

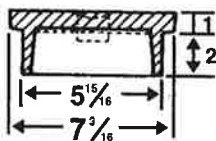
**T = Top
B = Bottom
EXT = Extension**



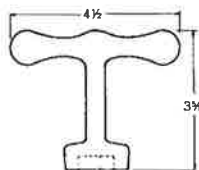
Drop Lid



Lock Lid

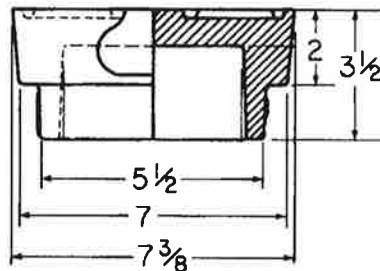


1 1/8" Lid



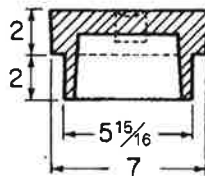
WRENCH
Fits Standard Waterworks
Pentagon Head 27/32" Brass
Screws

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



5 1/4" MWW DROP LID

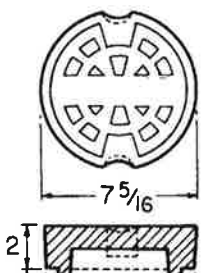
UPC No.	Weight
670610	
145370	12



5 1/4" OMA DROP LID

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

*OMA marking is inside lid.



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

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

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

LIDS ("WATER")

Item/Description	UPC No.	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.



Buy America(n)™ & Product Certificate of Compliance

Address: 1501 W. 17th. Street – Anniston, AL 36201
Telephone No.: (800) 226-7601
Fax Number: (800) 226-0806

Date: January 6, 2014

To: Whom It May Concern

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

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

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

Buy American:

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

Buy America:

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

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

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

Best Regards,

Roger Dunning
Roger Dunning

Technical Support Manager

Tyler Union Waterworks

Email: roger.dunning@tylerunion.com

Tel.: (800)527-8478

Project Name: _____

Project Location: _____

Project Material: _____

Location of Mfg.: _____

Project Contractor: _____

Tyler Union Distributor: _____

Project No.: _____

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

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

Sandra C. Smith

Sandra Smith – Notary Public – Smith County, Texas



Tyler Union Waterworks Contact Information

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

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

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

Elmira: 1021 East Water • Elmira, NY 14902

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

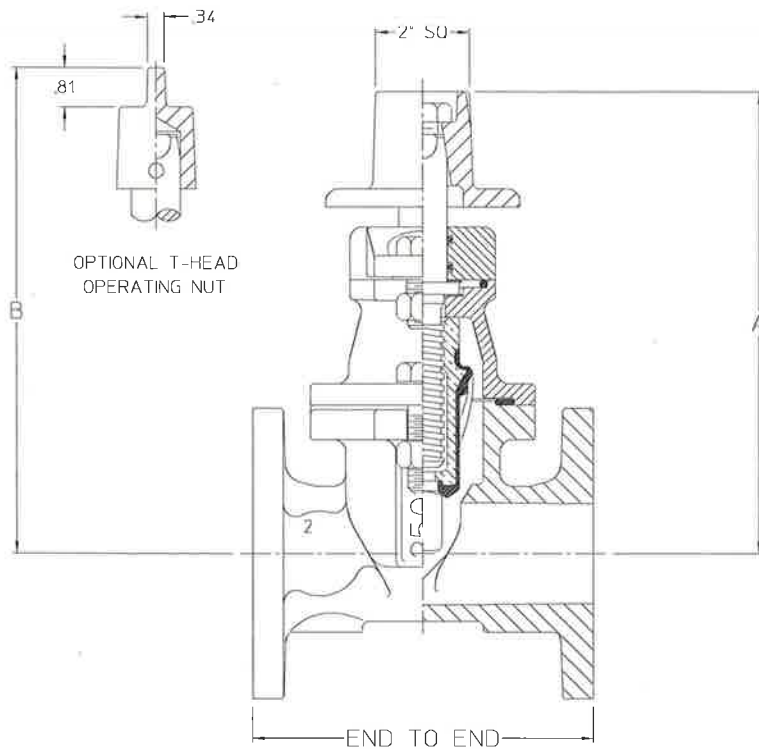
Portland: 6204 N. Marine Dr. • Portland, OR 97203

www.tylerunion.com

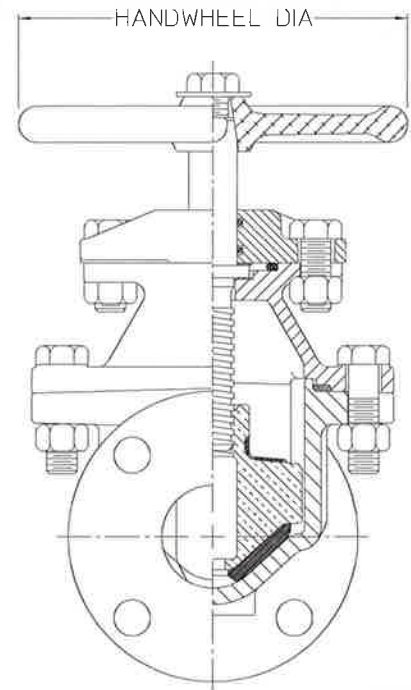
This document is void if modified in any manner other than the addition of project information, name of contractor and/or product distributor

AMERICAN Flow Control Submittal Information

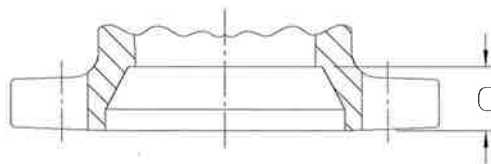
2" SERIES 2500 RESILIENT WEDGE GATE VALVE, NRS



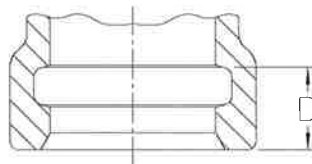
SHOWN WITH 2" OPERATING NUT



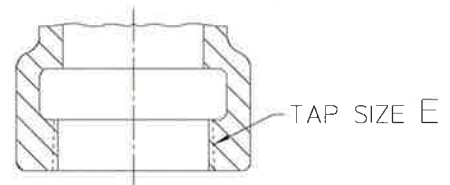
SHOWN WITH OPTIONAL HANDWHEEL



MECHANICAL JOINT (MJ)



PVC



THREADED (SCREW)

OPTIONAL END CONNECTIONS

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).

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



AMERICAN

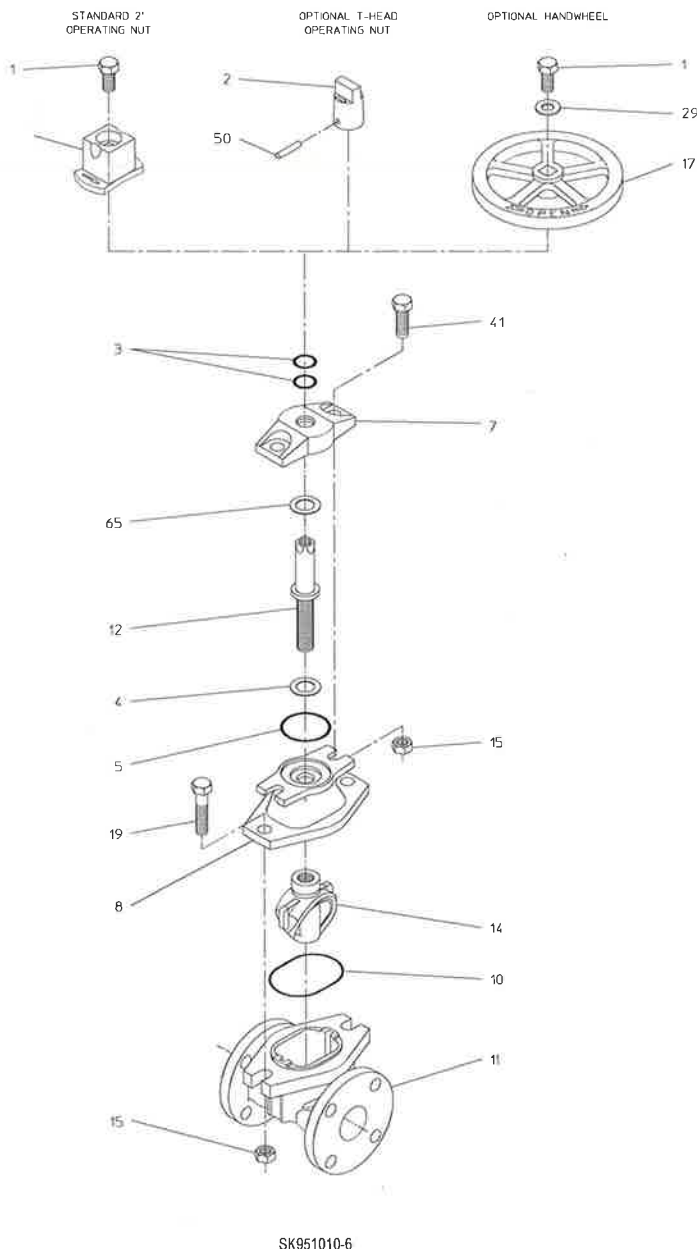
FLOW CONTROL

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



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	Spirol 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.

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.



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



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.

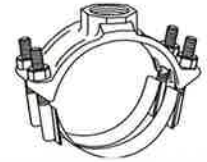
Sincerely,

Allan Nelson
Senior Product Engineer

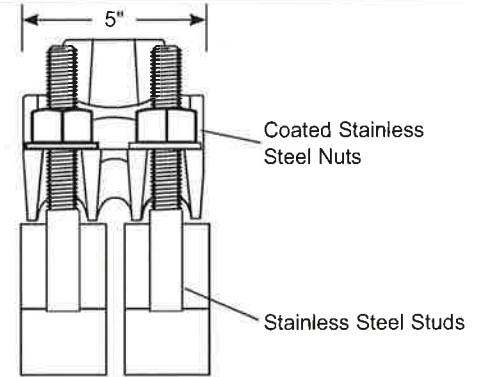
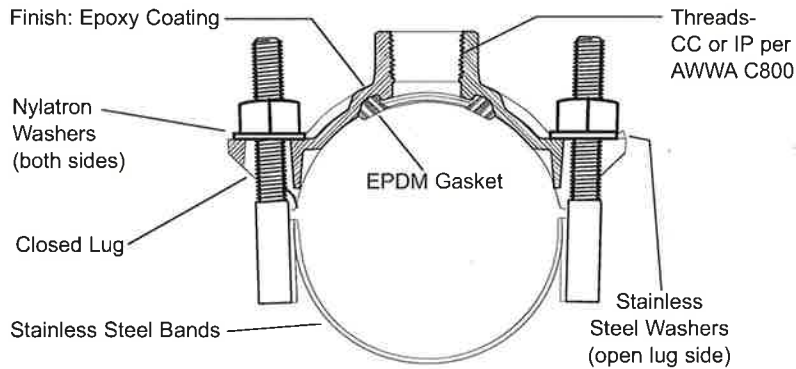
abnelson@waterousco.com
P: 651.450.5275
Waterous Company
125 Hardman Avenue South
South Saint Paul, MN 55075-2456

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	
	**4.26 - 4.80	5.4	FCD202-480-TAP-I	
4"	*4.74 - 5.26	5.4	FCD202-526-TAP-I	
	*4.50 - 5.40	5.4	FCD202-540-TAP-I	
	5.94 - 6.69	5.7	FCD202-669-TAP-I	
6"	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	
	7.93 - 8.71	6.8	FCD202-871-TAP-I	
8"	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	
	10.00 - 10.75	9.4	FCD202-1075-TAP-I	
10"	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

RESILIENT WEDGE VALVES
CLOW VALVE COMPANY

**CLOW AWWA Resilient Wedge Gate Valves
Meet or Exceed the Requirements of
AWWA Standard C509**

Size Range	Water Working Pressure psi	Bubble Tight Test psi	Hydrostatic Shell Test psi
AWWA 2"-12"	250	250	500
ULFM 2 1/2"-12"	200	200	400

Available in either non-rising stem, outside screw & yoke.

Available End Connections & Size Range

FLG End (NRS)	2"-12"	Figure No.
M.J.	2"-12" (except 2 1/2")	F-6102
FLG & M.J.	3"-12"	F-6100
Push-on for PVC (SDR)	2"-12"	F-6106
FLG End (OS & Y)	2"-12"	F-6110
M.J. for Tapping	2"-12"	F-6136
Tyton for D.I. & C900 PVC	3"-12"	F-6114
M.J. Cutting-in	4"-12"	F-6112
Tyton for D.I. X FLG	4"-12"	F-6111
Threaded	4"-12"	F-6113
	2"-3"	F-6103

Accessories (Illustrated in the Gate Valve Section)

Indicator Posts	2" Sq. Operating Nuts
"T" Handles	Handwheels



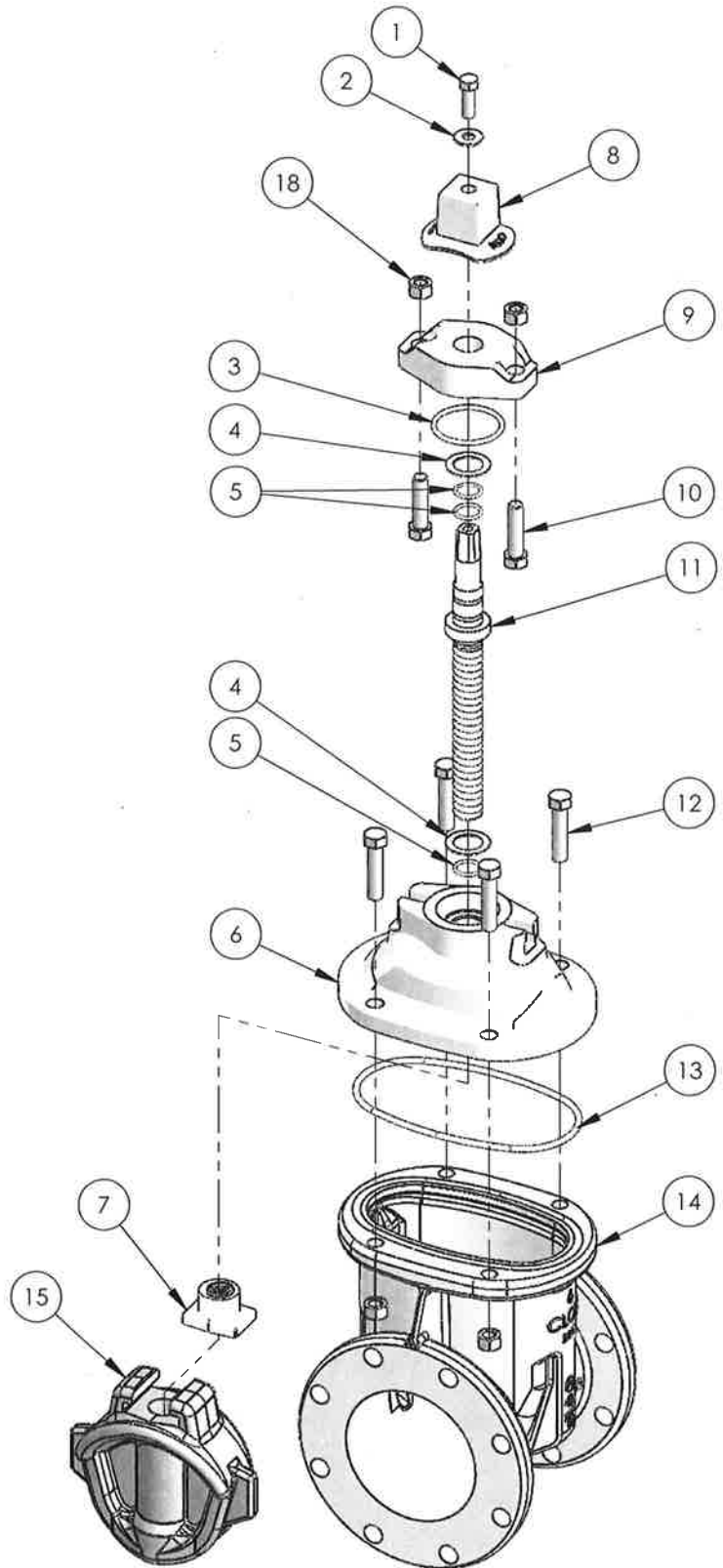
Complies with applicable
requirements of AWWA C509

2"-12" R/S VALVE NRS
EXPLODED VIEW MATERIAL LIST

CLOW VALVE COMPANY

MODELS 2639 & 2640

ITEM NO.	DESCRIPTION	Material - 2639	Material - 2640	QTY.
1	Hex Head Bolt	Stainless Steel	Stainless Steel	1
2	Flat Washer	Stainless Steel	Stainless Steel	1
3	O-Ring	Rubber	Rubber	1
4	Thrust Washer	Delrin	Delrin	2
5	O-Ring	Rubber	Rubber	3
6	Cover	Ductile Iron	Gray Iron	1
7	Stem Nut	Copper Alloy	Copper Alloy	1
8	Operating Nut	Gray Iron	Gray Iron	1
9	Follower Plate	Ductile Iron	Ductile Iron	1
10	Hex Head Bolt	Stainless Steel	Stainless Steel	2
11	Stem	Copper Alloy	Copper Alloy	1
12	Cover Bolt	Stainless Steel	Stainless Steel	--
13	Cover O-Ring	Rubber	Rubber	1
14	Body	Ductile Iron	Gray Iron	1
15	Wedge	Ductile Iron / Rubber	Ductile Iron / Rubber	1
18	Hex Nut	Stainless Steel	Stainless Steel	6

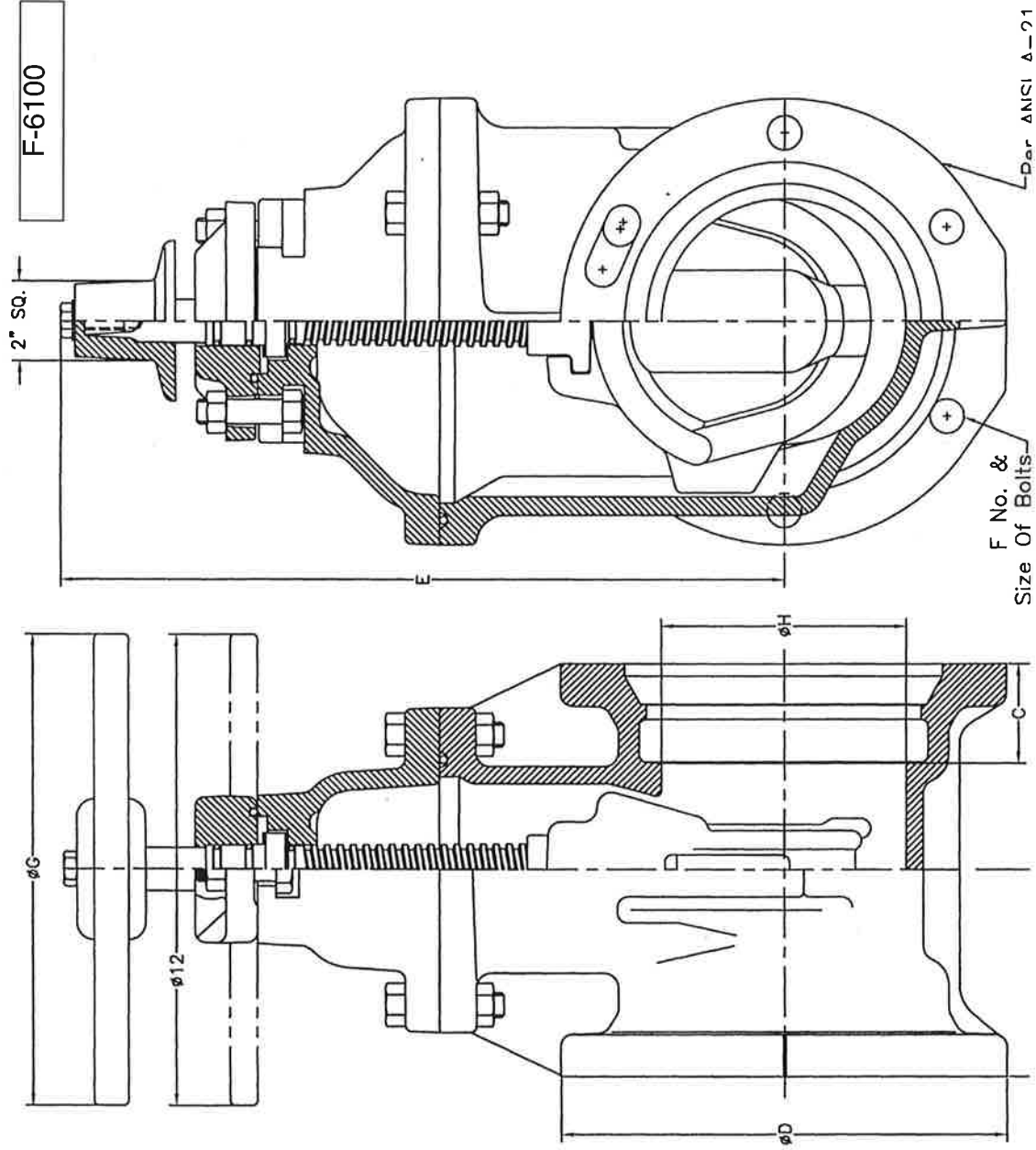


Complies with applicable
requirements of AWWA C509

2"-12" R/W VALVE MECHANICAL JOINT
ENDS GENERAL DIMENSIONS

CLOW VALVE COMPANY

MODEL 2639 & 2640





CEMENT & CONCRETE PRODUCTS™

CONCRETE MIX

PRODUCT NO. 1101

PRODUCT DESCRIPTION

QUIKRETE® Concrete Mix is a pre-blended mixture of cement and aggregates for general structural uses, requiring only the addition of water.

PRODUCT USE

QUIKRETE® Concrete Mix is designed for pouring concrete 2" (51 mm) thick or more and building or repairing anything out of concrete, including:

- Foundation walls and footings
- Sidewalks, curbs, steps, ramps and walkways
- Appliance and equipment platforms
- Pipe and post footings
- Floor slabs and patios
- Pools, fish pools, stepping stones
- Splashblocks and bird baths
- Riprap & slope protection
- Driveway repairs

SIZES

QUIKRETE® Concrete Mix is available in:

40 lb (18.1 kg) bags

60 lb (27.2 kg) bags

80 lb (36.3 kg) bags

YIELD

- An 80 lb (36.3 kg) bag yields approximately 0.60 cu ft (17 L)
- A 60 lb (27.2 kg) bag yields approximately 0.45 cu ft (12.7 L)
- A 40 lb (18.1 kg) bag yields approximately 0.30 cu ft (8.5 L)

TECHNICAL DATA

APPLICABLE STANDARDS

ASTM International - ASTM C387 Standard Specifications for Packaged, Dry, Combined Materials for Mortar and Concrete

PHYSICAL/CHEMICAL PROPERTIES

QUIKRETE® Concrete Mix exceeds the compressive strength requirements of ASTM C387, as shown in Table 1.

TABLE 1 TYPICAL COMPRESSIVE STRENGTH¹

Compressive strength, ASTM C39

Age	Typical Values
7 days	2500 psi (17.2 MPa)
28 days	4000 psi (27.6 MPa)
Slump Range	2" - 3" (51-76 mm)

¹Tested under laboratory conditions in accordance with ASTM C387

DIVISION 3

Structural Concrete
03 31 00



INSTALLATION

PREPARATORY WORK

Stake out the planned area and remove sod or soil to the desired depth. Nail and stake forms securely in place. Tamp and compact the sub-base until firm.

MACHINE MIXING INSTRUCTIONS

QUIKRETE® Concrete Mix can be mixed in a barrel type concrete mixer or a mortar mixer.

- Choose the mixer size most appropriate for the size of the job to be done
- Allow at least 1 cu ft (28 L) of mixer capacity for each 80 lb (36.3 kg) bag of QUIKRETE® Concrete Mix to be mixed at one time
- For each 80 lb (36.3 kg) bag of QUIKRETE® Concrete Mix to be mixed, add approximately 6 pt (2.8 L) of fresh water to the mixer
- Turn on the mixer and begin adding the concrete to the mixer
- If the material becomes too difficult to mix, add additional water until a workable mix is obtained
- If a slump cone is available, adjust water to achieve a 2" - 3" (51 - 76 mm) slump

Note - Final water content should be approximately 6 - 9 pt (2.8 - 4.3 L) of water per 80 lb (36.3 kg) bag of concrete. For other bag sizes, use Table 2 to determine water content.

HAND MIXING INSTRUCTIONS

- Empty concrete bags into a suitable mixing container
- For each 80 lb (36.3 kg) bag of mix, add approximately 6 pt (2.8 L) of clean water
- Work the mix with a shovel, rake or hoe and add water as needed until a stiff, moldable consistency is achieved
- Be sure all material is wet
- Do not leave standing puddles

Note - For other bag sizes, use Table 2 to determine water content.

TABLE 2 MIXING WATER FOR QUIKRETE® CONCRETE MIX

Package size, lb (kg)	Starting Water Content, pt (L)	Final Water Content, pt (L)
80 (36.3)	6 (2.8)	6-9 (2.8-4.3)
60 (27.2)	4 (1.9)	4-7 (1.9-3.3)
40 (18.1)	3 (1.4)	3-4.5 (1.4-2.1)

APPLICATION

Method for Pouring a Slab

- Dampen the sub-grade before concrete is placed
- Do not leave standing puddles
- Shovel or place concrete into the form; fill to the full depth of the form
- After concrete has been compacted and spread to completely fill the forms without air pockets, strike off and float immediately
- To strike off, use a straight board (screed), moving the edge back and forth with a saw-like motion to smooth the surface
- Use a darby or bull float to float the surface; this levels any ridges and fills voids left by the straight edge
- Cut the concrete away from the forms by running an edging tool or trowel along the forms to compact the slab edges
- Cut 1" (25.4 mm) deep control joints into the slab every 6' - 8' (1.8 - 2.4 m) using a grooving tool
- Allow concrete to stiffen slightly, waiting until all water has evaporated from the surface before troweling or applying a broom finish

Note - For best results, do not overwork the material.

Method for Setting Fence Posts

- Dig post hole about 3 times the diameter of the post. Hole depth should be 1/3 the overall post height
- Place 6" (152 mm) of dry concrete mix in the bottom of the hole. Position the post, checking that it is level and plumb. Combine concrete mix with water and place into the hole
- When standing water has evaporated from the concrete, smooth the surface. Taper it away from the post so rain will flow in that direction. Wait 24 hours before post is subjected to any strain
- For load-bearing applications, follow local building codes for proper footing specifications

FINISHING

Any standard concrete finishing technique is acceptable for use with QUIKRETE® Concrete Mix. Concrete can be hand troweled, power-troweled, broom finished or finished with other specialty finishes.

CURING

General

Curing is one of the most important steps in concrete construction. Proper curing increases the strength and durability of concrete,

and a poor curing job can ruin an otherwise well-done project. Proper water content and temperature are essential for good curing. In near freezing temperatures the hydration process slows considerably. When weather is too hot, dry or windy, water is lost by evaporation from the concrete, and hydration stops, resulting in finishing difficulties and cracks. The ideal circumstances for curing are ample moisture and moderate temperature and wind conditions. Curing should be started as soon as possible and should continue for a period of 5 days in warm weather at 70°F (21°C) or higher or 7 days in colder weather at 50 - 70°F (10 - 21°C).

Specific Curing Methods

- QUIKRETE® Acrylic Cure & Seal – Satin Finish provides the easiest and most convenient method of curing. Apply by spray, brush or roller soon after the final finishing operation when the surface is hard. The surface may be damp, but not wet, when applying curing compound. Complete coverage is essential
- Other methods of providing proper curing include covering the surface with wet burlap; keeping the surface wet with a lawn sprinkler and sealing the concrete surface with plastic sheeting or waterproof paper to prevent moisture loss
- If burlap is used, it should be free of chemicals that could weaken or discolor the concrete. New burlap should be washed before use. Place it when the concrete is hard enough to withstand surface damage and sprinkle it periodically to keep the concrete surface continuously moist
- Water curing with lawn sprinklers, nozzles or soaking hoses must be continuous to prevent interruption of the curing process
- Curing with plastic sheets is convenient. They must be laid flat, thoroughly sealed at joints and anchored carefully along edges

PRECAUTIONS

- Curing compounds should not be applied if rain or temperatures below 50°F (10°C) are expected within 24 hours
- Curing with plastic or burlap can cause patchy discoloration in colored concrete. For colored concrete, wet curing or the use of QUIKRETE® Acrylic Cure & Seal – Satin Finish is recommended
- Do not use curing compounds during late fall on surfaces where de-icers will be used to melt ice and snow. Using curing compounds at that time may prevent proper air drying of the concrete, which is necessary to enhance its resistance to damage caused by de-icers
- Protect concrete from freezing during the first 48 hours. Plastic sheeting and insulation blankets should be used if temperatures are expected to fall below 32°F (0°C)

WARRANTY

NOTICE: Obtain the applicable LIMITED WARRANTY: at www.quikrete.com/product-warranty or send a written request to The Quikrete Companies, LLC, Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of The Quikrete Companies, LLC. © 2018 Quikrete International, Inc.

NON-SHRINK PRECISION GROUT

PRODUCT NO. 1585-00

DIVISION 3

Non-Shrink Grouting
03 62 00

PRODUCT DESCRIPTION

QUIKRETE® Non-Shrink Precision Grout is a high strength, non-metallic, Portland cement based material with expansive additives designed for grouting all types of machinery, steel columns, bearing plates, pre-cast concrete, and anchoring applications.

PRODUCT USE

Typical applications for QUIKRETE® Non-Shrink Precision Grout include grouting of:

- All types of machinery
- Steel columns
- Bearing plates
- Precast concrete
- Other anchoring conditions that require high in-service strength

The non-shrink characteristics of Non-Shrink Precision Grout make it stable and capable of handling high load transfers.

SIZES

QUIKRETE® Non-Shrink Precision Grout – 50 LB (22.7 kg) bags

YIELD

• Each 50 lb (22.7 kg) bag of QUIKRETE® Non-Shrink Precision Grout will yield 0.45 cu ft (12.7 L) at flowable consistency.

TECHNICAL DATA

APPLICABLE STANDARDS

ASTM International

- ASTM C109/C109M Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
- ASTM C827 Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
- ASTM C939 Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
- ASTM C1090 Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout
- ASTM C1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- ASTM C1107 Standard Test Method for Flow of Hydraulic Cement Mortar
- ASTM E488 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements

U.S. Army Corps of Engineers (USACE) - CRD 621



PHYSICAL/CHEMICAL PROPERTIES

QUIKRETE® Non-Shrink Precision Grout complies with all properties of ASTM C1107 and CRD 621 producing the results shown in Table 1.

TABLE 1 TYPICAL PHYSICAL PROPERTIES AT 73°F (23°C)

Compressive strength, ASTM C109 modified per ASTM C1107

Plastic consistency

1 day	3000 psi (20.7 MPa)
3 days	9500 psi (65.5 MPa)
7 days	10,000 psi (68.9 MPa)
28 days	14,000 psi (96.5 MPa)

Height change, ASTM C1090

1, 3, 7 and 28 days 0 - 0.2%

Height change, ASTM C827

+ 0.6%

Flowable consistency

1 day	3000 psi (20.7 MPa)
3 days	9000 psi (62.1 MPa)
7 days	9500 psi (65.5 MPa)
28 days	12,500 psi (86.2 MPa)

Height change, ASTM C1090

1, 3, 7 and 28 days 0 - 0.2%

Height change, ASTM C827

+ 0.4%

Fluid consistency

1 day	2500 psi (17.2 MPa)
3 days	5000 psi (34.5 MPa)
7 days	6000 psi (41.4 MPa)
28 days	8000 psi (55.2 MPa)

Height change, ASTM C1090

1, 3, 7 and 28 days 0 - 0.2%

Height change, ASTM C827

+ 0.3%

Pull-out strength, ASTM E488¹

35,000 lbf

¹ 1 1/4" (31 mm) bolts embedded 9" (225 mm) deep in 3" (75 mm) hole in 2000 psi (13.8 MPa) concrete.

INSTALLATION

SURFACE PREPARATION

Surfaces to receive the grout must be clean and free of any type of foreign matter, grease, paint, oil, dust or efflorescence. In some cases it may be necessary to roughen smooth surfaces or etch old ones with acid. The area should be flushed and soaked with clean water prior to grouting leaving no standing water. Place the grout quickly and continuously using light rodding to eliminate air bubbles.

MIXING

Add the minimum amount of water necessary to produce the desired flow characteristics as indicated in Table 2. Do not add more water than the amount needed to produce a 20-second flow per ASTM Test Method C 939. QUIKRETE® Non-Shrink Precision Grout should be mechanically mixed for a minimum of 5 minutes.

TABLE 2

APPROXIMATE WATER REQUIRED FOR 50 LB (22.7 KG) OF GROUT	
Plastic	1 gal (3.8 L)
Flowable	1 gal + 1 pt (4.3 L)
Fluid	1 gal + 3 pt (5.2 L)

WORKING TIME

When properly mixed to a fluid consistency QUIKRETE® Non-Shrink Precision Grout will comply with all portions of ASTM C1107 and CRD 1 and retain a fluid consistency for the maximum usable working times stated in Table 3.

TABLE 3

WORKING TIME	
Temperature	Working time
50°F (10°C)	25 min
73°F (23°C)	25 min
90°F (32°C)	15 min

CURING

A damp cure of at least 3 days is necessary to control the non-shrink characteristics and maintain strength levels.

PRECAUTIONS

- Additions of cement or other materials will eliminate the designed product qualities
- Water quantities may be affected by temperature, mixing method and batch size
- QUIKRETE® Non-Shrink Precision Grout should not be re-tempered
- Grout temperature should be maintained from 50 - 90 degrees F (10 - 32 degrees C) to achieve specified results. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature.
- Do not pour grout if temperature is expected to go below 32 degrees F (0 degrees C) within a 12 hour period.
- Mix no more than can be used in 30 minutes

WARRANTY

NOTICE: Obtain the applicable LIMITED WARRANTY: at www.quikrete.com/product-warranty or send a written request to The Quikrete Companies, LLC, Five Concourse Parkway, Atlanta, GA 30328, USA. Manufactured under the authority of The Quikrete Companies, LLC. © 2018 Quikrete International, Inc.

* Refer to www.quikrete.com for the most current technical data, SDS, and guide specifications

Revised 16 August 2018

evoQ₄ Electromagnetic meter

Sizes: 2" - 8"



Size:	2"	3"	4"	6"	8"
<u>Performance:</u>					
Starting flow GPM	0.2	0.4	0.6	2.4	4
Low flow GPM > 95%	0.25	0.6	0.88	3.3	5.2
Low flow GPM $\pm 0.75\%$	1	1	2	4	6
Max. continuous flow GPM $\pm 0.75\%$	220	550	880	1400	3500
Max. flow GPM $\pm 0.75\%$	220	550	880	1400	3500
Max. operating pressure psi	230	230	230	230	230

Materials

Body	Stainless steel grade 304
Flow tube	Stainless steel grade 316
Electrodes	Stainless steel grade 316
Flanges	Epoxy coated cast iron
Register	Stainless steel with glass cover
Register housing/lid	UV resistant plastic
Environmental class	IP68 hermetically sealed unit Waterproof to 30 ft depth

Features

10 year continuous life
No moving parts
0.5 second sampling rate
Wide measuring range
Simple installation
Pulse connectivity

AWWA lay lengths
IP68 sealed

Benefits

No need for costly, time consuming battery replacements
Maintenance free
Highest accuracy
Suitable for all commercial applications
No additional training required, no programming
Pre-equipped or retro-fitted for your AMR and telemetry needs
Simple changeout
Provides long, trouble-free life

Operation. The evoQ₄ is a battery powered electromagnetic water meter that is suitable for a wide range of metering applications. Using Faraday's law of Electromagnetic Induction, two magnets provide a magnetic field within the pipe that measures the flow of the conductive water. The evoQ₄ does not contain any moving parts so regular maintenance is not required. It is designed for 10 years of continuous operation with no battery changes necessary, and with a sampling rate of 0.5 sec, the evoQ₄ has excellent accuracy over a wide flow range, allowing the utility to use a single meter for turbine, compound, single jet and mag meter applications.

Application. The evoQ₄ is designed to work in both potable cold water and wastewater applications up to 120°F (50°C). The meter will register at $\pm 0.75\%$ accuracy at normal and high flows and better than 95% accuracy at low flows. Wastewater applications include primary, secondary and tertiary applications. Accuracy tests are made before shipment, so no adjustments need to be made before installation.

Pulse output. The evoQ₄ can be fitted with a pulse output device that can be attached to an AMR device, data logger or SCADA system. The pulse output unit can be programmed in the factory to meet the needs of the utility.

The evoQ₄ is a single meter that meets the needs of traditional turbine, compound, single jet and mag meters.

Additionally, the pulse output device can be easily retro-fitted in the field if the evoQ₄ is not initially ordered with the pulse output feature.

Remote display. The evoQ₄ can be attached to a remote display. A two channelled output can provide both forward and reverse totals and be configured to display all 6 digits or only the billable units.

Connections. The evoQ₄ comes standard with AWWA C701 Class II Turbine meter lay lengths. The flanges are epoxy coated cast iron to reduce weight and prevent corrosion. The 2" evoQ₄ uses an oval flange and the 3"- 8" use a round flange. All flanges conform to ANSI B16.1 Class 125 standards. Allow for 5 pipe diameters of straight pipe upstream and 3 pipe diameters of straight pipe downstream for maximum performance.

LCD display. Bright, large and easy-to-read LCD display incorporating integrating volume and flow-rate for real-time network control and water management. Alarm functions provide real-time status ensuring no loss in measuring continuity. An IP68 seal ensures the meter electronics are safely protected thus ensuring long-term reliability.

Display functions. A low-battery indicator will appear when the battery voltage requirement is closing towards the end of its useful life. A no-water indicator will blink indicating an empty pipe, or when there is no water within the meter. The flow rate will be displayed in forward and reverse; if water is flowing in the reverse direction a minus sign will be displayed. The net volume of water measured will be displayed at all times.

2" - 4"
USG

2" - 4"
CuFt

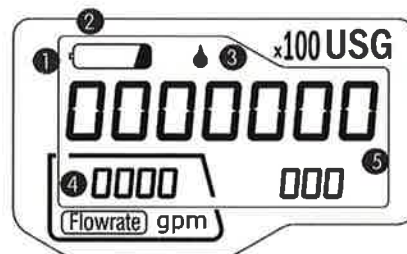


6" - 8"
USG

6" - 8"
CuFt

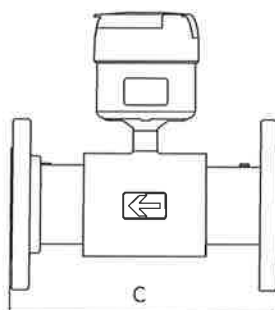
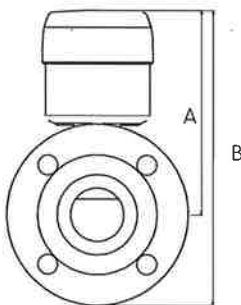


- ❶ Low-battery. The indicator will blink when the meter has approximately 3 months working life remaining.
- ❷ End-of-life-battery. Measurement stopped. The indicator will appear permanently when the meter life has expired. Data is stored for up to 9 months.
- ❸ No-water. The indicator will blink when there is an empty pipe or no water in the meter.
- ❹ Flow rate. If water is flowing in reverse direction a minus sign is displayed to the left of the values.
- ❺ Net volume. Any reverse flow will be subtracted from the volume display. The decimal places are shown below the main billable units.



Dimensions & Net Weights

Meter Size	Dimensions (Inches)			Weight (lbs.)
	A	B	C	
2"	8.12	11.24	10	11
3"	8.52	12.27	12	22.5
4"	8.72	13.22	14	35.5
6"	9.82	15.32	18	55.5
8"	10.41	17.16	20	81.5



Elster AMCO Water, Inc.
PO Box 1852
Ocala, FL 34478-1852
United States

T +1 800 874 0890 (US)
T +1 866 703 7582 (Canada)
T +1 787 872 2006 (Caribbean)
F +1 352 368 1950

watermeters@us.elster.com
www.elster-evolution.com

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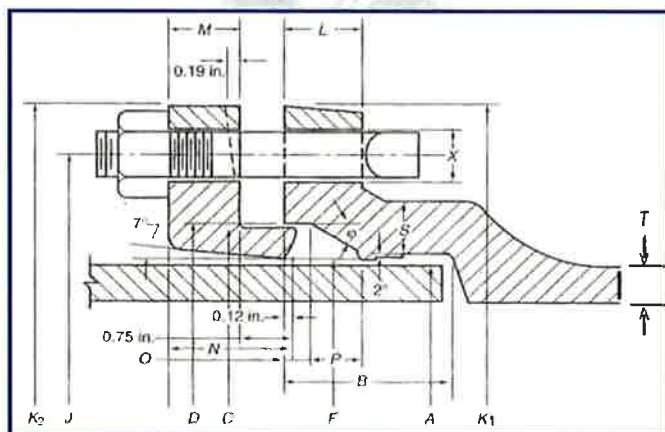
The company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice. These products have been manufactured with current technology and in accordance with applicable AWWA Standards.

evoQ₄/08-08


DOMESTIC PRODUCT SUBMITTAL

Current Revisions Apply for all Listed Standards

- SIZES:**..... 2" through *64" (2" not included in ANSI/AWWA C153)(*Contact Tyler Union for 54"-64" information)
- STANDARDS:**..... ANSI/AWWA C153/A21.53, NFPA 13/24, 3"-12" UL and 3-10"FM listed & approved (File - Tyler Union)
Cast of ASTM A536 qualified ductile iron. Date code is cast on and required for traceability.
- PRESSURE RATING:**.... *Flanged fittings rated at 250 psi. Mechanical joints 2" – 24" rated at 350 psi and 30" – 48" at 250 psi.
*Note: With the use of rubber annular ring flange gasket, 2" – 24" fittings can be rated at 350 psi.
Note: Wyes over 16" are not pressure rated. Contact Tyler Union for rating in your application.
- DEFLECTION:**..... Max joint deflection 2" – 12", 5° and 14" – 48", 3°. Reduces by 50% at nominal pipe & fitting diameters
- NSF-61 & NSF-372:**..... Meets all requirements including Annex G, Tyler Union's Underwriters Laboratory listing MH16439.
- ASPHALTIC COATING:** Per ANSI/AWWA C104/A21.4 and ANSI/AWWA C153/A21.53.
- CEMENT LINING:**..... Per ANSI/AWWA C104/A21.4, with double cement lining available upon request.
- EPOXY COATING:**..... Fusion bonded epoxy per ANSI/AWWA C116/A21.16. Additional coatings available upon request.
- BARE:**..... Available upon request
- FASTENERS:**..... Per ANSI/AWWA C111/A21.11 and/or ASTM A242 high strength low alloy weathering steel
- INSTALLATION:**..... Per AWWA C600 and C651 using pipe conforming to ANSI/AWWA C151/A21.51 or AWWA C900/905.



ANSI/AWWA C153/A21.53 – Compact Flange					
Nominal Thickness Dimensions in Inches (T = +/- .060")					
Size	T	Size	T	Size	T
3	.60	10	.75	18	.93
4	.63	12	.81	20	.96
6	.63	14	.87	24	1.00
8	.70	16	.90	36	1.10

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

Tyler Union Waterworks Contact Information

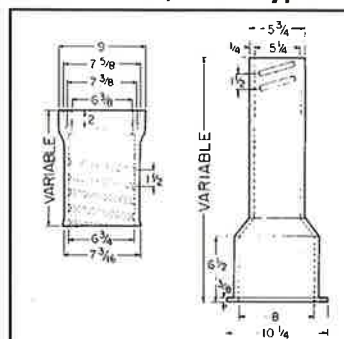
Tyler: 11910 CR 492 • Tyler, Texas 75706 • (800) 527-8478
Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601
Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471

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.

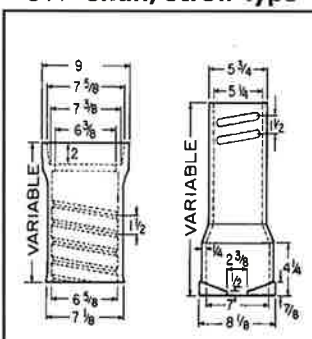
**For 4" to 12" Valves
5 1/4" Shaft, Screw Type**



**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**

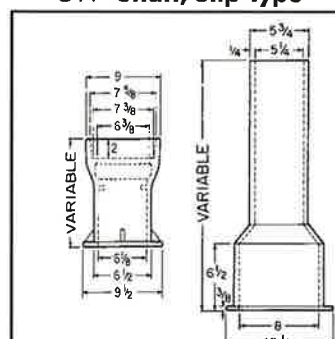


**6860 SCREW TYPE
VALVE BOX
Cast Iron - 3 piece**

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

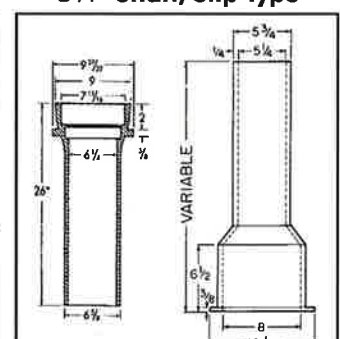
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**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

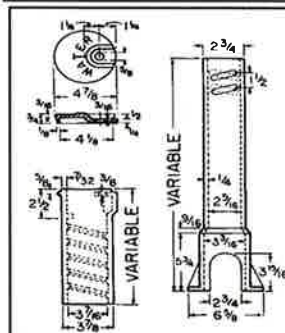
**For 4" to 12" Valves
5 1/4" Shaft, Slip Type**



**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**

Water Lid



Sewer Lid



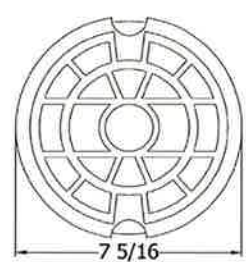
Gas Lid



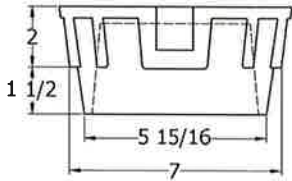
Reuse Lid



Plain Lid



***5 1/4 Drop Lid**



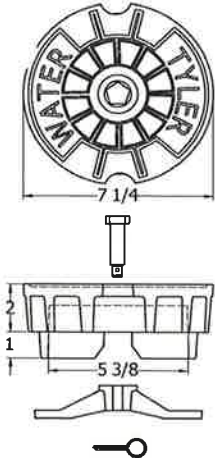
Item/Description	**(D-HD) UPC		Weight	**(ND-Std) UPC		Special Mark
	670610	Weight		670610	Weight	
5 1/4 Drop Lid	145325	12		136910	9	WATER
5 1/4 Drop Lid	145349	12		136903	9	SEWER
5 1/4 Drop Lid	145332	12		136873	9	GAS
5 1/4 Drop Lid	458975	12		REUSE
5 1/4 Drop Lid	145356	12		136897	9	PLAIN

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight
Std.=Standard Weight

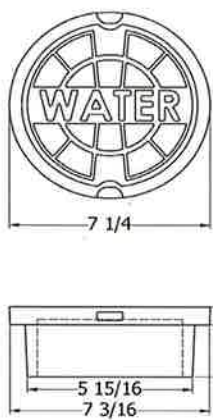
*Lids marked WATER will be shipped unless otherwise specified.

Specialty Lids

Lock Lid



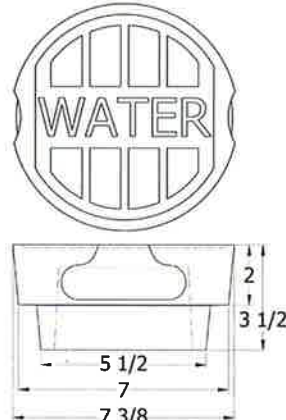
1 1/8" Lid



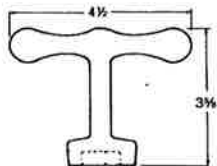
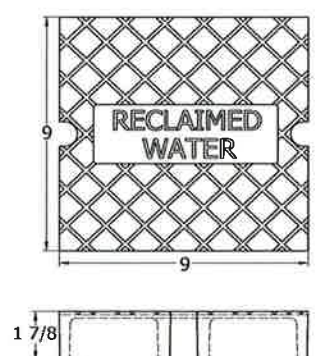
OMA Lid



MWW Lid



*****Square
Reclaimed Lid**



Wrench

Fits Standard Waterworks
Pentagon Head 27/32" Brass
Screws

Item/Description	**(D-HD) UPC		Weight	**(ND-Std) UPC		Special Mark
	670610	Weight		670610	Weight	
5 1/4 Lock Lid	145462	11		136866	11	WATER
*1 1/8 Drop Lid	145509	11		112532	9	WATER
5 1/4 OMA Drop Lid	145301	12		136927	12	WATER
5 1/4 MWW Drop Lid	145370	12		136880	12	WATER
***Square Drop Lid	458982	14		RECLAIMED WATER

*Note: Use with 1 1/8 Riser only

** D=Domestic ND=Non-Domestic HD=Heavy Duty Weight Std.=Standard Weight

***Note: Use with 9T Top #144622

UPC Code	Weight	Description
0610		
4908	0.5	Wrench

CRM

High Performance Utility Marker™



Impact resistant, three-rail marker

The Utility Marker, with its three-rail design, was the first fiberglass composite utility marker in the industry and remains the most widely used fiberglass marker on the market. Two ribs on the side protect decals from vehicle impacts while the back rib adds strength for driving into hard soil conditions.

How to Order:

CRM 3

Product number

072

Length (in.)
See chart for availability by color.

01

Color (See chart below)

Post color	Standard Lengths (in.)
01-White	60, 62, 66, 72, 84
02-Yellow	60, 62, 66, 72
03-Brown	72
04-Orange	60, 62, 66, 72
05-Red	60, 62, 66
07-Green	72
08-Blue	66, 72

Other lengths and colors are available. Contact your representative.

Material: Fiberglass Composite, high-performance construction

Options and Accessories: Reflective sheeting
Stock or custom decals
Direct Graphics
Visibility Enhancer
Anchor Barb

Installation tools: Post Driver (PDR, PDRL)
Post Puller
Pilot Hole Driver

Carsonite High Performance RoadMarkers are designed to stand up to nature as well as vehicular impacts, controlled ditch burns, and even small arms gunfire.





"THE STANDARD OF EXCELLENCE IN THE INDUSTRY"

CASING SPACERS (Stainless Steel) - STYLE – CCS08-CTD

Casing Spacers shall be two-piece shells per carrier pipe and made of T304 stainless steel, 8 inches wide, and a minimum of 14 gauge thickness. Each shell section shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. PVC Liner shall have a hardness of 85-90 durometer. Bearing surfaces (runners) shall be ultra-high molecular weight polyethylene (UHMW) to provide abrasion resistance and a low coefficient of friction (0.12) with variable heights to meet desired position and a width of one and one half inches. The runners shall be 7 inches long and mechanically bolted to the spacer. Risers shall be MIG welded to the shell, where applicable, and shall be made of T304 stainless steel of a maximum 10 gauge with bolt heads welded to the inside of the risers for strength. Bottom risers 6" and over in height shall be reinforced. All reinforcing plates shall be 10 gauge T304 stainless steel and shall be MIG welded to mating parts. ***CENTERED (CTD) & restrained positioning within the casing pipe*** shall be sized such that the height of the risers and runners are to center the carrier pipe in the casing pipe with a top clearance of three-fourths inch minimum. Special reinforcing plates may be required to stabilize and support structure. **All weldments shall be fully chemically passivated in accordance with ASTM A380.** Due to the numerous application possibilities, consult factory for spacing requirements. Casing spacers shall be Model **CCS08** as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL.

These specifications are accurate at time of publication and are subject to change without prior notice.



08.16.2017

CASCADE WATERWORKS MANUFACTURING COMPANY

1213 Badger Street • Yorkville, IL 60560 • (630) 553-0840 • (800) 426-4301 • FAX (630) 553-0181

www.cascademfg.com



"THE STANDARD OF EXCELLENCE IN THE INDUSTRY"

CASING SPACERS END SEALS - STYLE – CCES

Casing spacer end seals shall be a pull-over type construction and made from 0.090" (3/32") thick Neoprene with T304 stainless steel bands for securing the ends of the end seal to the casing pipe and carrier pipe. Casing spacer end seals shall be Model CCES as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal.

These specifications are accurate at time of publication and are subject to change without prior notice.



08.16.2017

CASCADE WATERWORKS MANUFACTURING COMPANY

1213 Badger Street • Yorkville, IL 60560 • (630) 553-0840 • (800) 426-4301 • FAX (630) 553-0181

www.cascademfg.com



Stargrip® series 3000

Mechanical Joint Wedge Action Restraint
for Ductile Iron Pipe
Patent #5,772,252

Stargrip® series 3000 for Ductile Iron Pipe

SUBMITTAL INFORMATION

PROJECT NAME:

ENGINEER:

CONTRACTOR:

SPEC. SECTION:



FEATURES & ADVANTAGES

- The Wedge Assembly is designed with a Break-Off Torque Control Nut that will only break off in one direction, ensuring proper installation.
- The Stargrip® offers a full 5° deflection through 12" size, 3° on 14"-24", 2° on 30"-36" and 1° on 42"-48".
- Minimum safety factor of 2:1
- Stargrip® sizes 3"-36" are listed with Underwriters Laboratories Inc. and sizes 3"-12" are approved by Factory Mutual Research.
- The Wedge Assembly is designed to fit specific pipe sizes and is field repairable.
- No special tools are required for installation of the Stargrip®.
- Stargrip® eliminates tie rods and thrust blocks.
- Stargrip® may also be used on steel pipe* up to 12" (*transition gasket required on 12" and under). For 14" and larger steel applications, contact Star Pipe.

MATERIAL SPECIFICATIONS:

- Gland: Ductile Iron per ASTM A536, Grade 65-45-12
- Wedges: Ductile Iron per ASTM A536, Grade 65-45-12 heat treated to a minimum of 370 BHN
 - ♦ Wedge Finish: Thermally cured fluoropolymer epoxy coating

GLAND FINISH OPTIONS (Please check one):

- ☐ Standard: alkyd enamel coating
- ☐ Optional: Starbond™ TGIC polyester powder coating applied by an electrostatic spray process
- ☐ Optional: Other (specify) _____

COUNTRY OF ORIGIN OPTION (Please check one):

- ☐ Import
- ☒ 100% Domestic¹
- ☐ Domestic gland with import components¹

(¹Please see [Domestic Restraint Options Available](#) on our website.)

HARDWARE OPTIONS (Please check one):

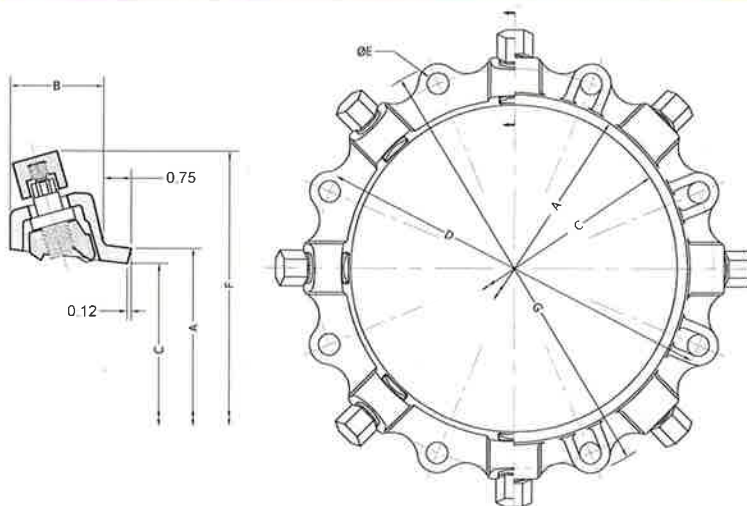
- ☐ Standard: T-bolts are high strength low alloy steel manufactured in accordance with ANSI/AWWA C111/A21.11-00
- ☐ Optional: T-bolts and nuts alloy SS 304 per ASTM F593
- ☐ Optional: T-bolts and nuts alloy SS 316 per ASTM F593
- ☐ Optional: T-bolts and nuts Fluoropolymer Star-Blue coated high strength low alloy steel manufactured in accordance with ANSI/AWWA C111/A21.11-00



Stargrip[®] series 3000

Mechanical Joint Wedge Action Restraint
for Ductile Iron Pipe
Patent #5,772,252

TECHNICAL INFORMATION



Please
check sizes:

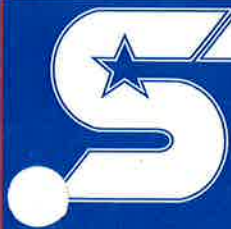
<input type="checkbox"/>	3	350	4.84	2.40	4.06	6.19	3/4	9.85	8.78	8.13	2	4	6
<input checked="" type="checkbox"/>	4	350	5.92	2.40	4.90	7.50	7/8	11.06	9.62	9.12	2	4	8
<input type="checkbox"/>	6	350	8.02	2.40	7.00	9.50	7/8	13.06	11.72	11.12	3	6	12
<input type="checkbox"/>	8	350	10.17	2.51	9.15	11.75	7/8	15.25	13.84	13.37	4	6	17
<input type="checkbox"/>	10	350	12.22	2.51	11.20	14.00	7/8	17.25	15.88	15.62	6	8	24
<input type="checkbox"/>	12	350	14.32	2.51	13.30	16.25	7/8	19.50	17.98	17.88	8	8	34
<input type="checkbox"/>	14	350	16.40	2.91	15.44	18.75	7/8	21.25	20.12	20.90	10	10	49
<input type="checkbox"/>	16	350	18.50	2.91	17.54	21.00	7/8	23.34	22.22	23.00	12	12	56
<input type="checkbox"/>	18	250	20.60	2.91	19.64	23.25	7/8	26.40	24.90	25.25	12	12	59
<input type="checkbox"/>	20	250	22.70	2.67	21.74	25.50	7/8	28.56	27.00	27.50	14	14	75
<input type="checkbox"/>	24	250	26.90	3.50	25.94	30.00	7/8	33.86	32.34	31.54	16	16	139
<input type="checkbox"/>	30	250	33.29	3.49	32.17	36.88	1-1/8	40.12	38.62	39.12	20	20	199
<input type="checkbox"/>	36	250	39.59	3.49	38.47	43.75	1-1/8	46.42	44.92	46.00	24	24	232
<input type="checkbox"/>	42	250	45.79	5.15	44.75	50.62	1-3/8	54.86	53.32	53.12	28	28	400
<input type="checkbox"/>	48	250	52.09	5.15	51.05	57.50	1-3/8	61.16	59.62	60.00	32	32	488

*All dimensions in inches except where indicated.

Notes:

- Stargrips[®] must be adequately wrapped or protected if they are covered by concrete to ensure that concrete does not enter the wedge pocket.
- For applications exceeding the maximum pressure ratings listed, please contact Star Pipe Products for recommendations (see Tandem Stargrip[®]).
- For applications on existing pipe, the pipe needs to be structurally sound and the surface needs to be relatively free of any corrosive by-products in order for the wedges to function properly. Please contact Star Pipe Products for technical assistance.
- Sizes 42" & 48" require extra long 1 1/4" x 8 1/2" T-bolts.





PVC Stargrip® series 4000

Mechanical Joint Wedge Action Restraint
for AWWA C900/C905 and IPS PVC Pipe

SUBMITTAL INFORMATION

PROJECT NAME: ENGINEER: CONTRACTOR: SPEC. SECTION: 

FEATURES & ADVANTAGES

- The design eliminates tie rods and thrust blocks and has been proven in the market since 1992.
- Can be used on 4"-12" AWWA C900, 14"-36" AWWA C905 PVC pipe or 3"-12" IPS PVC pipe* (***transition gasket required on IPS PVC Pipe 12" and under**).
- Listed with Underwriters Laboratories in sizes 4"-12" for use on DR18 class 235 C900 PVC pipe at 150 PSI. Approved by Factory Mutual Research in sizes 4"-12" for use on DR18 class 235 at 150 PSI and for sizes 4"-10" DR14 class 305 C900 PVC pipe at 200 PSI.
- Tested to and meets the requirements of ASTM F1674 through 14" size for DR18 PVC pipe.
- The safety factor is twice (2:1) the standardized pressure rating listed on Page 18 of the catalog.
- Will fit any Mechanical Joint configuration, meaning compatibility with different types of installations.
- PVC Stargrip® offers 5° deflection through 12", 3° on 14"-24" and 2° on 30"-36".
- Larger ID allows easier installation on out-of-round pipe.
- All sizes have curved wedges that will not flatten pipe.
- For use on HDPE or C909 pipe, please contact Star Engineering.

MATERIAL SPECIFICATIONS:

- Gland: Ductile Iron per ASTM A536, Grade 65-45-12
- Wedges: Ductile Iron per ASTM A536, Grade 65-45-12 heat treated to a minimum of 370 BHN
 - Wedge Finish: Thermally cured fluoropolymer epoxy coating

GLAND FINISH OPTIONS (Please check one):

- ☐ Standard: alkyd enamel coating
- ☐ Optional: Starbond™ TGIC polyester powder coating applied by an electrostatic spray process
- ☐ Optional: Other (specify) _____

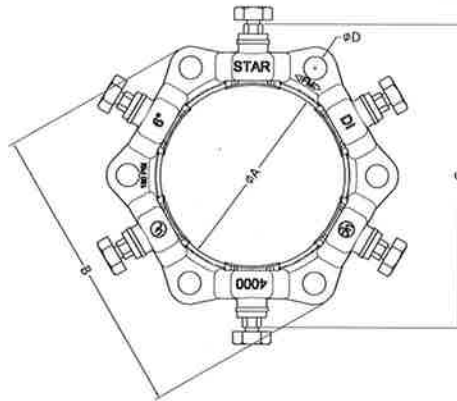
COUNTRY OF ORIGIN OPTION (Please check one):

- ☒ ~~Import~~
- ☐ 100% Domestic¹
- ☐ Domestic gland with import components¹
- (¹Please see [Domestic Restraint Options Available](#) on our website.)

HARDWARE OPTIONS (Please check):

- ☐ Standard: T-bolts are high strength low alloy steel manufactured in accordance with ANSI/AWWA C111/A21.11-00
- ☐ Optional: T-bolts and nuts alloy SS 304 per ASTM F593
- ☐ Optional: T-bolts and nuts alloy SS 316 per ASTM F593
- ☐ Optional: T-bolts and nuts Fluoropolymer Star-Blue coated high strength low alloy steel manufactured in accordance with ANSI/AWWA C111/A21.11-00



**PVC Stargrip[®] series 4000**Mechanical Joint Wedge Action Restraint
for AWWA C900/C905 and IPS PVC Pipe**TECHNICAL INFORMATION**6" PVC Stargrip[®] Series 4000 for PVC PipePlease
check sizes:☐
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☐**PVC STARGRIP[®] 4000 SPECIFICATIONS***

NOM. SIZE	C900/C905 PIPE CI OD	IPS PIPE OD (TRANSITION GASKET REQUIRED)	ØA	B	C'	ØD	T-BOLTS SIZE (QTY)	WEDGES (QTY)	APPROX WT. (LBS)
3	N/A	3.50	4.09	7.69	8.50	3/4	5/8 (4)	4	7
4	4.80	4.50	4.93	9.12	9.53	7/8	3/4 (4)	4	9
6	6.90	6.63	7.03	11.12	11.63	7/8	3/4 (6)	6	13
8	9.05	8.63	9.18	13.37	13.97	7/8	3/4 (6)	6	17
10	11.10	10.75	11.23	15.62	16.18	7/8	3/4 (8)	8	23
12	13.20	12.75	13.33	17.87	18.18	7/8	3/4 (8)	8	28
14	15.30	N/A	15.45	20.75	20.36	7/8	3/4 (10)	10	50
16	17.40	N/A	17.55	23.00	22.46	7/8	3/4 (12)	12	60
18	19.50	N/A	19.65	25.25	24.56	7/8	3/4 (12)	12	65
20	21.60	N/A	21.75	27.50	26.66	7/8	3/4 (14)	14	76
24	25.80	N/A	25.95	32.00	30.86	7/8	3/4 (16)	16	98
30	32.00	N/A	32.18	39.38	36.82	1-1/8	1 (20)	20	173
36	38.30	N/A	38.48	46.25	43.12	1-1/8	1 (24)	24	219

*All dimensions in inches except where indicated.

1 - dimension after assembly on pipe

MAXIMUM WORKING PRESSURE RATING WITH OCCASSIONAL & RECURRING SURGES

NOM. SIZE (IN)	C900			C905				ASTM D2241		
	DR14	DR18	DR25	DR18	DR21	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	160
14				235	200	165	125			
16				235	200	165	125			
18				200	200	165	125			
20				200	200	165	125			
24				165	165	165	125			
30						165	125			
36						165	125			



**100%
DOMESTIC**

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.

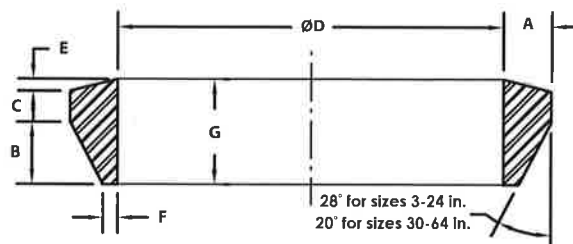
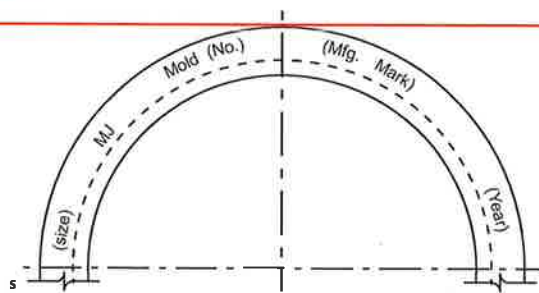
Viton[®] is a registered trademark of E.I. Du Pont De Nemours & Company.



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DOMESTIC

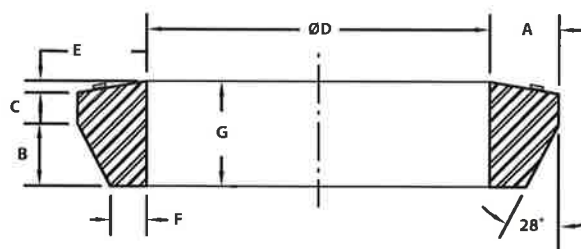
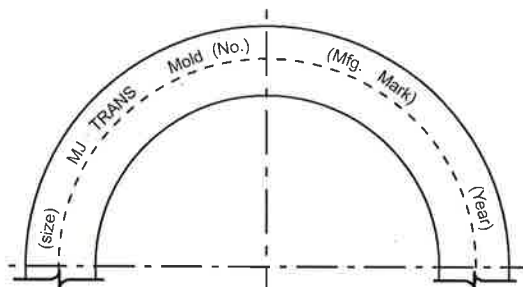
MJ Accessories

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
54	57.56	0.73	1.00	0.38	56.65	0.16	0.37	1.54
60	61.61	0.73	1.00	0.38	60.67	0.16	0.37	1.54
64	65.67	0.73	1.00	0.38	64.70	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