

OLIVEHURST PUBLIC UTILITY DISTRICT

NOTICE OF REQUEST FOR SEALED BID'S

(DATE) MAY 21, 2026

OWNER: **Olivehurst Public Utility District**
PROJECT: **OPUD WATER MAIN & SERVICE LINE MATERIAL RFB**

TO: Contractor / Bidder

BID DUE DATE: **June 12, 2026 2:00 P.M.**

BID OPENING DATE/TIME: June 12, 2026 Shortly after Bid Due Date.

SUBMIT BID

TO: **Olivehurst Public Utility District**
1970 9th Avenue
Olivehurst, CA 95961
(530) 682-0736

Notice is hereby given to all prospective Contractors /Suppliers to **submit a sealed BID** on or before the above date. Contractor / Supplier agree to supply all equipment described in the available CONTRACT DOCUMENTS consisting of Plans, proposal document and Specifications. OPUD is looking for BIDS for the purchase of various water service material and pipe material. Copies of the CONTRACT DOCUMENTS may be obtained from Olivehurst Public Utility District, upon the non-refundable payment of \$ 50 per set, or you may request a free electronic copy from the District Public Works Manager via email at sboyal@opud.org.

Any question should be submitted to the Public Works manager via email at sboyal@opud.org or via phone at 530-682-0736. All **questions are due by Wednesday, June 3rd at 2 PM** for Clarification or addendum items.

Sincerely,



Swarnjit Boyal, MS
Public Works Manager

OLIVEHURST PUBLIC UTILITY DISTRICT

1970 9TH Avenue
Olivehurst, CA 95961
Phone: (530) 682-0736

OLIVEHURST PUBLIC UTILITY DISTRICT

Our mission is to provide high quality services to enhance our community's quality of life.



BOARD OF DIRECTORS

Dennise Burbank Lacey Nelson John Floe Mary Jane Griego Marc Perrault

GENERAL MANAGER

John Tillotson

May 21st, 2026

To: Prospective Bidders

RE: Purchase of aforementioned Water Service Materials for Service Line Replacements throughout Historic Olivehurst

Bids shall include any and all taxes, freight, federal/state fees, hazardous waste disposal fee, weight certificate of completed unit, etc. and be an 'Out-The-Door' cost. **Please make sure to include a specification page/build sheet of materials in order to verify compliance with the requested specifications above.** Any questions shall be directed to the OPUD Public Works Department at 530-682-0736 or via email at sboyal@opud.org. Attached please find an example of what OPUD is looking for (or similar). Item # & MFG# was used as sample from local vendor as reference only. Olivehurst Public Utility District will be accepting as specified below:

Bid FORM for following water service materials:

RFB - BID SHEET FOR WATER SERVICES MATERIAL SUBMITAL - BID FORM

	Title	Brand	Item #	MFG #	Unit of Measure	Quantity	Price	TOTAL
1	B-25028N Ball Corporation Stop, 1 in, MNPT x 110 CTS, Brass	Mueller Co or similar	MUEB25028N1	025028330N	Each	160		
2	Angle Meter Valve, 1 in, 110 CTS x Meter Nut, Brass	Mueller Co or similar	MUEB24258N1	024258330N	Each	160		
3	Bushing, 5/8 x 3/4 to 1 in, MNPT x Meter Nut, Brass	Mueller Co or similar	MUEH10879N58341	H-10879N 5/8X3/4X1	Per Pair	80		
4	Potable Water Polyethylene Pipe, SDR 9, 4710, 1 in, 100 ft L, CTS	VARIES	WPP1100BLK	WPP1100BLK	Per Roll	35		
5	Double Strap Pipe Saddle, 10 in, 1 in FNPT	A.Y. McDonald or similar	MCD3826101	4148-035	Each	30		
6	Hinged Pipe Saddle, 8 in, 1 in FNPT	FORD or similar	FORS91804	S91-804	Each	10		
7	Double Strap Pipe Saddle, 8 in, 1 in FNPT	A.Y. McDonald or similar	MCD382681	4148-015	Each	95		
8	2-Piece Pipe Saddle, 12 in, 1 in FNPT	FORD or similar	FORS911204	S91-1204	Each	30		
9	Tracer Wire, 10 AWG, 45 mil, Blue, (500 ft rolls or spool)	VARIES	TRW10BLU45	TRW10BLU45	Each	8		
10	Copper Split Bolt Connector (Needs to be compatible with 10 AWG Tracer wire mentioned above)	VARIES	TRWCSBCS8	TRWCSBCS8	Each	160		
11	DR 18 PVC Pipe, 6 in, Bell x plain, 20ft L sticks, Blue	VARIES	PVPDR186	PVPDR186	LF	20		
12	DR 18 PVC Pipe, 8 in, Bell x plain, 20ft L sticks, Blue	VARIES	PVPDR188	PVPDR188	LF	300		
13	DR 18 PVC Pipe, 12 in, Bell x plain, 20ft L sticks, Blue	VARIES	PVPDR1812	PVPDR1812	LF	20		
14	Cross, 12 x 8 in, Flange, Cement Lined	Various Vendors	DCFCROSSFLG128	DCFCROSSFLG128	Each	1		
15	Reducer Coupling, 8 x 6 in, Flange, Cement Lined	Various Vendors	DCFREDFLG86	DCFREDFLG86	Each	1		
16	Reducer Coupling, 12 x 8 in, Flange, Cement Lined	Various Vendors	DCFREDFLG128	DCFREDFLG128	Each	1		
17	22.5 deg Elbow, 8 in, Mechanical Joint, Fusion Bond Epoxy Coated	Various Vendors	DCFE2212MJ8	DCFE2212MJ8	Each	2		
18	22.5 deg Elbow, 8 in, Mechanical Joint x Flange, Cement Lined	Various Vendors	DCF2212MJFLG8	DCF2212MJFLG8	Each	1		
19	Non-Rising Stem Gate Valve, 8 in, Flange, Ductile Iron	Various Vendors	WGVFF8	WGVFF8	Each	2		
20	Non-Rising Stem Gate Valve, 12 in, Mechanical Joint x Flange, Ductile Iron	Various Vendors	WGVMF12	WGVMF12	Each	1		
21	Non-Rising Stem Gate Valve, 6 in, Flange, Ductile Iron	Various Vendors	WGVFF6	WGVFF6	Each	1		
22	Gland, 6 in, Mechanical Joint, PVC, Steel Hardware, Domestic	Star® Pipe Products	STTDSRET PVC AIS6	PVCPKS4006G2DD	Each	2		
23	Gland, 8 in, Mechanical Joint, PVC, Steel Hardware, Domestic	Star® Pipe Products	STTDSRET PVC AIS8	PVCPKS4008G2DD	Each	3		
24	Gland, 12 in, Mechanical Joint, PVC, Steel Hardware, Domestic	Star® Pipe Products	STTDSRET PVC AIS12	PVCPKS4012G2DD	Each	1		
25	Bolt Set, 10 to 12 in 150#, Zinc CR+3, Grade 2	Various Vendors	WBLBS1012	WBLBS1012	Each	2		
26	Bolt Set, 8 in 150#, Zinc CR+3, Grade 2	Various Vendors	WBLBS8	WBLBS8	Each	8		
27	Ring Gasket, 8 in, Star Tite	Star® Pipe Products	STTRG8	FAH08RG	Each	4		
28	Ring Gasket, 6 in, Star Tite	Star® Pipe Products	STTRG6	FAH06RG	Each	4		
29	Full Face Gasket, 12 in, Star Tite	Star® Pipe Products	STTFFG12	FAH12FFG	Each	2		
30	Full Face Gasket, 8 in, Star Tite	Star® Pipe Products	STTFFG8	FAH08FFG	Each	2		
31	860 Transition Coupling, 12 in, Various, Carbon Steel	HYMAX®	HYM2CPLG12	860-540-0315-16	Each	1		
32	874 Transition Coupling, 8 in, Flange x Various, Carbon Steel	HYMAX®	HYMFA8	874-54-08021712	Each	1		
33	22.5 deg Elbow, 6 in, Mechanical Joint x Flange, Cement Lined	Various Vendors	DCF2212MJFLG6	DCF2212MJFLG6	Each	1		
34							TAX (8.25%)	
								SUM

Machine inserted corporation stops were developed by Hieronymus Mueller in conjunction with his development of the drilling and tapping machine used to make pressure taps in water mains. During the development of the machine inserted corporation stop, Mr. Mueller designed an inlet thread which became known as the Mueller or "CC" thread. This thread form was eventually adopted by the American Water Works Association and is listed in ANSI/AWWA Standard C800 as the AWWA Taper thread.

Mueller Co. pioneered other design concepts in the waterworks industry such as the copper flare connection, Mueller 110® Compression Connection and the Mueller ORISEAL® Valves, which use O-ring seals to assure leak-tight performance. Mueller Co. offers corporation stops in three designs: machined key (commonly referred to as ground key), ORISEAL type (1-1/2" and 2" sizes only) and ball type.

All three designs are available with a wide range of inlet/outlet combinations including the Mueller 110 Compression Connection, Mueller Grip Compression Connection and Pack Joint Connection. These three designs are all compatible with the Mueller line of drilling and tapping machines, and small drilling machines.

All service brass will comply with AWWA C-800. Components in contact with potable water will also comply with latest requirements of the Federal Safe Drinking Water Act.

Mueller 300™ Ball Type Corporation Valves



- Blow-Out Proof Stem Design** -prevents separation and assures dependable, safe operation.
- Straight Design** - allows maximum flow with minimum pressure loss.
- Manufactured and Tested** - to ANSI/AWWA C800 standard.
- Double O-ring Stem Seals** - are supported in precision machined grooves and provide secure, leak tight sealing.
- Inlet Threads** - are either AWWA taper (Mueller "CC") or AWWA iron pipe.
- Stainless Steel Reinforced Seat Seal** - assures reliable seal under full flow and pressure.
- End Piece O-ring** - provides secondary seal to prevent leakage.
- 300psig** -maximum working pressure.
- Extra Strong** - key to ball connection provides strong, reliable performance and resists breakage.
- Outlets** - include copper flare connection, Mueller 110 Compression Connection, Mueller Grip Compression Connection, Mueller INSTA-TITE, Pack Joint Connection and iron pipe thread connection.
- Stem Rotation** - full 360 degree.
- Fluorocarbon Coated Ball** - ensures smooth , easy turning operation.

Rev. 3-17 Shaded area indicates changes



B-25008N

Mueller® 300™ Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER® 110® Conductive Compression Connection for CTS O.D.* tubing



B-25028N

Mueller 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER® 110® Conductive Compression Connection for CTS O.D. tubing

3/4"	3/4"x1"	1"	1"x1-1/4"	1-1/2"	1-1/2"x2"	2"
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3/4"	3/4"x1"	1"	1"x1-1/4"	1-1/2"	1-1/2"x2"	2"
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B-25009N

Mueller 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER® 110® Compression Connection for IPS PE* pipe



B-25029N

Mueller 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER 110® Compression Connection for IPS PE* pipe

3/4"	3/4" x 1"	1"
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3/4"	3/4" x 1"	1"
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E-25009N

Mueller 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER Pack Joint for IPS PE* pipe
***Note: 3/4" size only may also be used on PVC*



E-25029N

Mueller 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER Pack Joint for IPS PE* pipe
***Note: 3/4" size only may also be used on PVC*

3/4"***	1"	1-1/2"	2"
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3/4"***	1"	1-1/2"	2"
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V-25056N

Mueller 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER Pack Joint for IPS PVC* pipe



V-25058N

Mueller 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER Pack Joint for IPS PVC* pipe

1"	1-1/2"	2"
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1"	1-1/2"	2"
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P-25008N

Mueller 300 Ball Corporation Valve
Inlet: AWWA taper (MUELLER "CC") thread
Outlet: MUELLER Pack Joint Connection for CTS O.D. * tubing



P-25028N

Mueller 300 Ball Corporation Valve
Inlet: AWWA I.P. thread
Outlet: MUELLER Pack Joint Connection for CTS O.D.* tubing

3/4"	3/4"x1"	1"	1-1/2"	1-1/2"x2"	2"
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3/4"	3/4" x 1"	1"	1-1/2"	1-1/2" x 2"‡	2"
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*See charts on pages 5.12-5.16 for tubing and pipe that may be used with these connections.

NOTE: Sizes shown above represent nominal size of inlet and outlet connections. When two sizes are given, the first is size of inlet and the second is size of outlet.

‡ Requires minimum ordering quantity. Contact MUELLER Customer Service Center for minimum order requirements and availability.



MUELLER® 300™ Ball Angle Meter Valve
 MUELLER 110® Conductive Compression Connection for CTS O.D.* tubing x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: B-24258-3

B-24258N

Catalog size	5/8"x3/4" R †	5/8"x3/4"	5/8"x3/4"x3/4" R †
Meter size	5/8"	5/8"	5/8"x3/4", 3/4"
Tubing size	3/4"	3/4"	3/4"

Catalog size	5/8"x3/4"x3/4"	5/8"x3/4"x1"	1" R †	1"
Meter size	5/8"x3/4", 3/4"	5/8"x3/4", 3/4"	1"	1"
Tubing size	3/4"	1"	1"	1"



MUELLER 300 Ball Angle Meter Valve
 MUELLER Pack Joint Connection for CTS O.D.* tubing x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: P-24258-3

P-24258N

Catalog size	5/8"x3/4" R †	5/8"x3/4"	5/8"x3/4"x3/4" R †
Meter size	5/8"	5/8"	5/8"x3/4", 3/4"
Tubing size	3/4"	3/4"	3/4"

Catalog size	5/8"x3/4"x3/4"	5/8"x3/4"x1"	1" R †	1"
Meter size	5/8"x3/4", 3/4"	5/8"x3/4", 3/4"	1"	1"
Tubing size	3/4"	1"	1"	1"



MUELLER 300 Ball Angle Meter Valve
 MUELLER 110 Conductive Compression Connection for IPS PE* pipe x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: B-24259-3

B-24259N

Catalog size	5/8"x3/4"x3/4"	5/8"x3/4"x1"	1"
Meter size	5/8"x3/4", 3/4"	5/8"x3/4", 3/4"	1"
Tubing size	3/4"	1"	1"



MUELLER 300 Ball Angle Meter Valve
 MUELLER Pack Joint Connection for IPS PE* pipe x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: B-24259-3

E-24259N

Catalog size	5/8"x3/4"x3/4"	1"
Meter size	5/8"x3/4", 3/4"	1"
Tubing size	3/4"	1"



MUELLER 300 Ball Angle Meter Valve
 MUELLER INSTA-TITE Connection for IPS PE* pipe x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: B-24266-3

B-24266N

Catalog size	5/8x3/4x3/4	1
Meter size	5/8x3/4, 3/4	1
Tubing size	3/4	1



MUELLER 300 Ball Angle Meter Valve
 MUELLER INSTA-TITE Connection for CTS O.D.* tubing x meter swivel nut** Quarter turn check - lock wing. 360° turn option available by adding -3 suffix to catalog number.
 Example: B-24267-3

B-24267N

Note: Two-piece factory assembly

Catalog size	5/8x3/4x3/4	1
Meter size	5/8x3/4, 3/4	1
Tubing size	3/4	1

* See charts on pages 8D.17 and 8D.18 for tubing and pipe that can be used with this connection.

** Meter swivel nuts are regularly furnished with a saddle feature to aid in meter installation and removal. A plain swivel nut is available as an option by adding a suffix of -1 to the catalog number.

† The "R" indicates this valve has a reduced port. Port size is one nominal size smaller than the valve inlet/outlet

8E.6



MISCELLANEOUS METER SETTING EQUIPMENT

Rev. 4-20 Shaded area indicates changes



H-10887

Brass meter idler
Has same end-to-end and thread dimensions as meter. Used to continue service during meter repairs

Catalog size	5/8"	5/8" x 3/4"	3/4"	1"
Cover size	5/8"	5/8" x 3/4"	3/4"	1"
Length	7-1/2"	7-1/2"	9"	10-3/4"
Meter thread size	3/4"	1"	1"	1-1/4"



H-14338

Brass locking device (padlock and valve not included)
For use on Mueller® MARK II ORISEAL® Meter Valves - cannot be used on valves having angle lever handles.

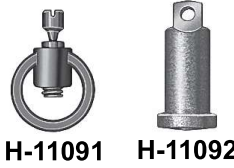
Catalog size	3/4"	1"
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Water meter increaser
Used on threaded ends of 5/8" meter to increase threads to 5/8 x 3/4 or 3/4 meter size (1" thread)
H-10888: for plain nuts
H-10888-99002: for saddle nuts

H-10888N H-10888N-02

Catalog size	5/8" x 3/4"	5/8" x 3/4"
Meter size	5/8"	5/8"
Length	11/16"	1"



H-11091 H-11092

Lock wing sealing device
This device is used to detect unauthorized use of valve or stop. Used with lock wings drilled 3/8" or 1/2". The H-11090 is made up of a collar and set screw (H-11091) and a pin (H-11092). The pin is available in 3/8" or 1/2" sizes and the collar with set screw is used on both sizes.



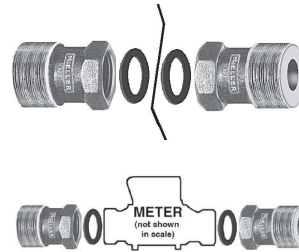
H-11090



Meter bushing with rubber washer
Used on threaded ends of 5/8 x 3/4 or 3/4 meters to adapt to 1" meter thread size (1-1/4")
H-10889: for saddle nuts
H-10889-99000: for plain nuts

H-10889N H-10889N-00

Catalog size	3/4" x 1"	3/4" x 1"
Meter size	5/8" x 3/4", 3/4"	5/8" x 3/4", 3/4"
Length	1-1/4"	15-16"



H-10879N

Meter bushing with rubber washer (complete for both ends)
Used on threaded ends of 5/8x3/4 meter to adapt to 1" meter thread size (1-1/4") and standard length.

Catalog size	5/8" x 3/4"	5/8" x 1"	5/8" x 3/4" x 1"	3/4" x 1"	5/8" x 3/4" x 3/4"	1" x 1 1/2"	1" x 2"	1 1/2" x 2"
Meter size	5/8"	5/8"	5/8" x 3/4"	3/4"	5/8" x 3/4"	1"	1"	1 1/2"
Length	1.019"	2.062"	2.062"	1.13"	1.019"	1"	3"	1.875"



H-10893

Meter coupling washer
H-10893: Fiber washer

Catalog size	5/8"	3/4"	1"	1-1/4"	1-1/2" **	2" **
Meter size	5/8"	5/8" x 3/4", 3/4"	1"	1-1/4"	1-1/2"	2"



H-10895

Meter coupling washer
H-10895: Rubber washer

Catalog size	5/8"	3/4"	1"	1-1/4"	1-1/2" **	2" **
Meter size	5/8"	5/8" x 3/4", 3/4"	1"	1-1/4"	1-1/2"	2"

** Flange gasket for 1-1/2" and 2" sizes.

** Flange gasket for 1-1/2" and 2" sizes.

8E-COUPPLINGS/MISC.

Potable Water Polyethylene Pipe, SDR 9, 4710, 1 in, 100 ft L, CTS, Black



Approved Vendors

Potable Water Polyethylene Pipe, SDR 9, 4710, 1 in, 100 ft L, CTS, Black

Part: WPP1100BLK MFG: WPP1100BLK

Description

Potable Water Polyethylene Pipe, SDR 9, 4710, 1 in, 100 ft L, CTS, Black

Potable Water Polyethylene Pipe, SDR 9, 4710, 1 in, 100 ft L, CTS, Black

Specifications


Type	Potable Water
Nominal Size	1 in
Length	100 ft
Color	Black
Pressure Rating	250 psi
End Style	CTS

Schedule Rating	SDR 9
Resin Type	4710
Brand	Approved Vendors

Manufacturer	Approved Vendors
Manufacturer Part Number	WPP1100BLK



FORD
Insert, 1 in, Insert, 304/304L
Stainless Steel
 Part: FOR52
 MFG:
 INSERT-52

FORD
Adapter, 1 in, MNPT x CTS Quick
Joint, Lead Free Brass
 Part: FORC8444QNL
 MFG:
 C84-44-Q-NL




FORD
FB1100 Ball Corporation
MNPT x CTS Quick Joint, I
Lead Free Brass
 Part: FORFB11004QNL
 MFG:
 FB1100-4-Q-NL

Actual Product Not Shown

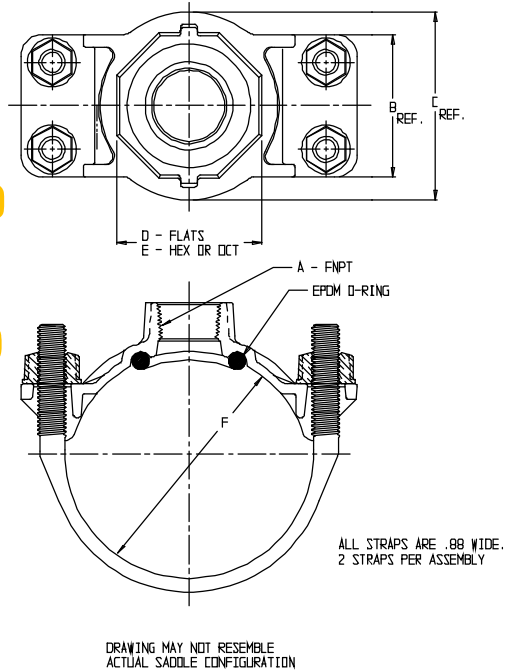
SUBMITTAL DATA SHEET

Silicon Bronze Strap Saddle - 3826

Ductile Iron/Cement-Asbestos/Cast Iron x FNPT



MODEL	SIZE	A	B	C	D	E	F
3826	4 X 3/4	3/4	3.19	3.19	1.69	HEX	4.74 - 5.40
3826	4 X 1	1	3.19	3.19	1.69	HEX	4.74 - 5.40
3826	4 X 1 1/2	1 1/2	3.19	4.19	3.10	DCT	4.74 - 5.40
3826	4 X 2	2	3.19	4.19	3.10	DCT	4.74 - 5.40
3826	6 X 3/4	3/4	3.19	3.19	1.69	HEX	6.84 - 7.50
3826	6 X 1	1	3.19	3.19	1.69	HEX	6.84 - 7.50
3826	6 X 1 1/4	1 1/4	3.19	4.19	3.10	DCT	6.84 - 7.50
3826	6 X 1 1/2	1 1/2	3.19	4.19	3.10	DCT	6.84 - 7.50
3826	6 X 2	2	3.19	4.19	3.10	DCT	6.84 - 7.50
3826	8 X 3/4	3/4	3.19	3.19	1.69	HEX	8.99 - 9.67
X 3826	8 X 1	1	3.19	3.19	1.69	HEX	8.99 - 9.67
3826	8 X 1 1/4	1 1/4	3.19	4.19	3.10	DCT	8.99 - 9.67
3826	8 X 1 1/2	1 1/2	3.19	4.19	3.10	DCT	8.99 - 9.67
3826	8 X 2	2	3.19	4.19	3.10	DCT	8.99 - 9.67
3826	10 X 3/4	3/4	3.19	3.19	1.69	HEX	11.04 - 12.12
X 3826	10 X 1	1	3.19	3.19	1.69	HEX	11.04 - 12.12
3826	10 X 1 1/2	1 1/2	3.19	4.19	3.10	DCT	11.04 - 12.12
3826	10 X 2	2	3.19	4.19	3.10	DCT	11.04 - 12.12
3826	12 X 3/4	3/4	3.19	3.19	1.69	HEX	13.20 - 14.38
3826	12 X 1	1	3.19	3.19	1.69	HEX	13.20 - 14.38
3826	12 X 1 1/2	1 1/2	3.19	4.19	3.10	DCT	13.20 - 14.38
3826	12 X 2	2	3.19	4.19	3.10	DCT	13.20 - 14.38
3826	18 X 3/4	3/4	4.93	5.00	3.46	DCT	19.50 - 20.50
3826	18 X 1	1	4.93	5.00	3.46	DCT	19.50 - 20.50
3826	18 X 1 1/2	1 1/2	4.93	5.00	3.46	DCT	19.50 - 20.50
3826	18 X 2	2	4.93	5.00	3.46	DCT	19.50 - 20.50
3826	30 X 3/4	3/4	4.93	5.00	3.46	DCT	31.74 - 32.74
3826	30 X 1	1	4.93	5.00	3.46	DCT	31.74 - 32.74
3826	30 X 1 1/2	1 1/2	4.93	5.00	3.46	DCT	31.74 - 32.74
3826	30 X 2	2	4.93	5.00	3.46	DCT	31.74 - 32.74



SUBMITTAL INFORMATION

- Manufactured in compliance with ANSI/AWWA C800 (latest revision)
- Brass components conform to ASTM B62 and ASTM B584, UNS C83600 -85-5-5-5 (latest revision)
- Certified to NSF/ANSI 61
- Silicon Bronze strap(s) and cast brass nuts with enlarged washer bearing surface
- EPDM o-ring
- Pipe and tap size, and thread type identified on saddle
- Outlet boss with large wrench flats



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

Toll Free: 1-800-292-2737
Fax: 1-800-832-9296
Hours: 7:00 a.m. - 5:00 p.m., CST

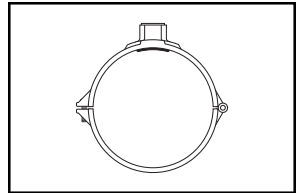
sales@aymcdonald.com
www.aymcdonald.com

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

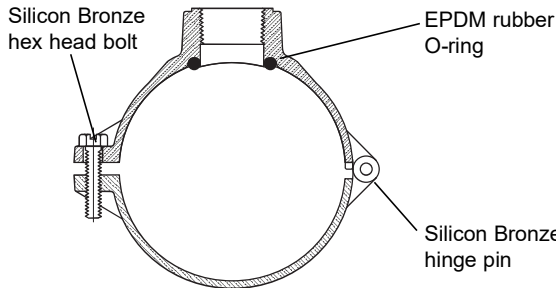
Submitted by:

SUBMITTAL INFORMATION

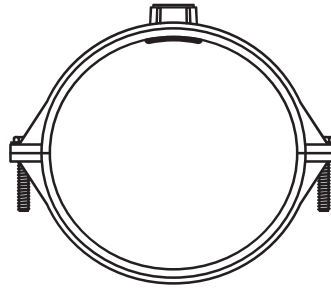
Brass Saddles For C900 PVC - (S91-xxx style)



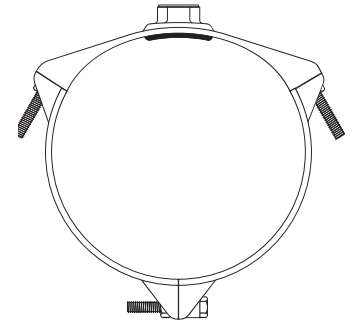
S91 BRASS SADDLES WITH IRON PIPE TAPS FOR C900 PVC PIPE



Style A (Hinged Design)



Style B 2-Piece (Bolted Design)



Style C 3-Piece (Bolted Design)

PVC PIPE SIZE	ACTUAL O.D.	TAP SIZE	APPROX. WT. LBS.	CATALOG NUMBER	STYLE	✓ SUBMITTED ITEM(S)
2"	2.50	1/2"	.9	S91-201	A	
		3/4"	1.1	S91-203	A	
4"	4.80	1/2"	1.8	S91-401	A	
		3/4"	1.8	S91-403	A	
		1"	2.0	S91-404	A	
		1-1/2"	6.5	S91-406	A	
		2"	6.4	S91-407	A	
		3/4"	2.6	S91-603	A	
6"	6.90	1"	2.6	S91-604	A	
		1-1/2"	8.9	S91-606	A	
		2"	7.3	S91-607	A	
		1/2"	2.8	S91-801	A	
8"	9.05	3/4"	2.8	S91-803	A	
		1"	3.2	S91-804	A	
		1-1/2"	8.0	S91-806	A	
		2"	8.5	S91-807	A	
10"	11.10	3/4"	9.3	S91-1003	B	
		1"	9.1	S91-1004	B	
		1-1/2"	10.5	*S71-S91-1006	C	
		2"	10.5	*S71-S91-1007	C	
		3/4"	11.1	S91-1203	B	
12"	13.20	1"	11.0	S91-1204	B	
		1-1/2"	11.5	*S71-S91-1206	C	
		2"	11.0	*S71-S91-1207	C	

* These saddles will cover Steel size PVC and C900 PVC O.D. range.

FEATURES

- All brass conforms to AWWA Standard C800 (ASTM B62 and ASTM B584, UNS NO C83600 - 85-5-5-5)
- Style A Saddle body and strap permanently held together with silicon bronze pin for saddles sized 2" thru 8"
- Bolt is 5/16" slotted hex head silicon bronze for saddles sized 2" thru 8"
- A three-piece bolted design is used for S91 Saddles sized 10" and 12" with 1-1/2" and 2" taps, two-piece for 3/4" and 1" taps
- All 10" and 12" saddles are held together with 1/2" silicon bronze bolts (3/4" hex head)
- 150 psi working pressure rating

The Ford Meter Box Company considers the information in this submittal form to be correct at the time of publication. Item and option availability, including specifications, are subject to change without notice. Please verify that your product information is current.



The Ford Meter Box Company, Inc.

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Overseas Fax: 260-563-0167

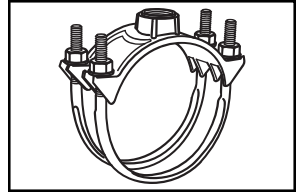
www.fordmeterbox.com

01/12/16

Submitted By:

SUBMITTAL INFORMATION

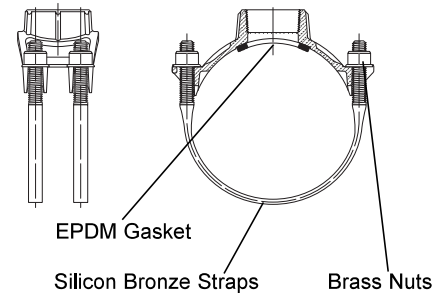
Brass Saddles - (202B-xxx-xxx style)



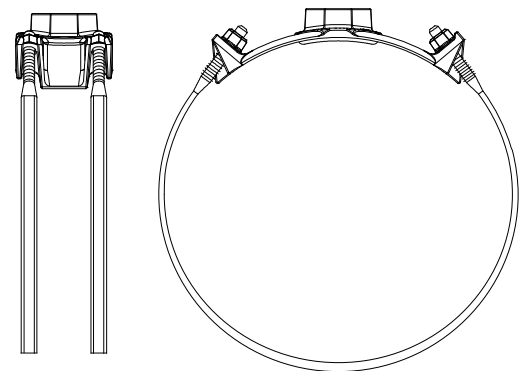
202B DOUBLE STRAP BRASS SADDLES FOR AC AND DUCTILE IRON PIPE

NOM. PIPE SIZE	O.D. RANGE	APPROX. WT. LBS.	CATALOG NUMBER	✓ SUBMITTED ITEM(S)
*4"	4.80 - 5.40	6.6	202B-540-Tap	
	4.80 - 5.10	7.3	202B-510-Tap	
	5.10 - 5.40	7.3	202B-540-Tap	
**6"	6.90 - 7.50	7.7	202B-750-Tap	
8"	9.05 - 9.62	8.8	202B-962-Tap	
10"	11.10 - 12.12	10.7	202B-1212-Tap	
12"	13.20 - 14.38	11.8	202B-1438-Tap	
**14"	15.30 - 16.25	18.0	202B-1625-Tap	
	16.30 - 17.25	19.1	202B-1725-Tap	
**16"	17.40 - 18.40	23.0	202B-1840-Tap	
	18.50 - 19.25	24.0	202B-1925-Tap	
	19.50 - 20.50	25.0	202B-2050-Tap	
**20"	21.20 - 22.20	25.5	202B-2220-Tap	
	22.50 - 23.50	25.7	202B-2350-Tap	
**24"	23.80 - 24.80	26.0	202B-2480-Tap	
	25.60 - 26.50	26.5	202B-2650-Tap	
**30"	31.74 - 32.74	27.0	202B-3274-Tap	

4" - 12"



14" - 30"



OUTLET TAP CODE

CC (AWWA) THREAD		IP THREAD		✓ SUBMITTED ITEM(S)
THREAD	CODE NUMBER	THREAD	CODE NUMBER	
3/4" CC	CC3	3/4" IP	IP3	
1" CC	CC4	1" IP	IP4	
1-1/4" CC	Δ CC5	1-1/4" IP	Δ IP5	
1-1/2" CC	CC6	1-1/2" IP	IP6	
2" CC	CC7	2" IP	IP7	

Δ Contact factory for availability

* **Please Note:** 4" Saddles with 2" taps have a limited range. Specifically, 4.80 - 5.10 or 5.10 - 5.40. All other tap sizes have the standard 4.80 - 5.40 range.

** Only the 6" (6.90-7.50 range) saddle and 14" saddles and larger are available with a 1-1/4" tap.

To Order: Select the catalog number for the desired pipe range and complete the catalog number by adding the outlet thread tap code. Example: A double strap saddle for 6.90 D.I. pipe with a 3/4" CC thread would be 202B-750-CC3.

FEATURES

- All brass conforms to AWWA Standard C800 (ASTM B62 and ASTM B584, UNS C83600, 85-5-5-5)
- Straps are 5/8" high quality silicon bronze flattened to provide a wider bearing surface against pipe
- Gasket is EPDM rubber ASTM D2000

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.



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02/22/18

Submitted By:



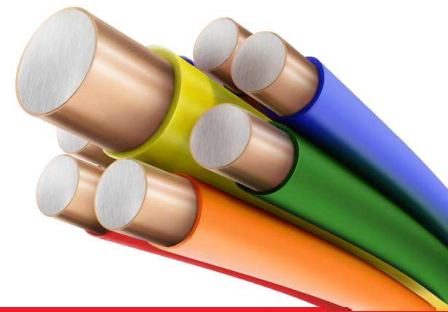
SOLOSHOT™ EXTRA-HIGH STRENGTH – 1045 CCS TRACER WIRE

APPLICATION

Copper-clad steel (CCS) tracer wire. Install with underground plastic utility pipes, wires, and cables to ensure future location. Best choice for horizontal directional drilling/boring applications when ground above the utilities cannot be disturbed because buildings, roadways, or other obstructions may be in the way.



- 1045*-EHS-500** – 500' spool
 - 1045*-EHS-1000** – 1000' spool
 - 1045*-EHS-2500** – 2500' spool
- (* denotes color, pg. 2)



FEATURES AND BENEFITS

- 45 mil HDPE insulation
- 2,032 lb break load
- 6 times the breaking strength of solid copper
- Lighter than solid copper means reduced freight expenses
- Copper-clad steel (CCS) wire combines the strength of hard drawn high-carbon steel with the conductivity and corrosion resistance of solid copper
- Bonded metals mean no separating, no corrosion, and no theft appeal
- More stable pricing than solid copper
- Provided exclusively by Copperhead Industries
- Rated for direct bury
- Color-coded to meet American Public Works (APWA) standards for utility identification

Product Description

#10 AWG (0.1019" diameter) hard drawn, high carbon 1055 grade steel, extra-high strength solid copper-clad steel conductor (EHS-CCS) rated at 30 volts, insulated with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation rated for direct burial use at 600 volts.

APWA UNIFORM COLOR CODE

	ELECTRIC
	GAS
	COMMUNICATION
	POTABLE WATER
	SEWER
	RECLAIMED WATER

blue color



SPECIFICATIONS

PART #: 1045*-EHS-**

10 (AWG), 45 (insulation mil), * (indicates insulation color: Y=Yellow, B=Blue, G=Green, N=Orange, P=Purple, R=Red, BN=Brown, K=Black, W=White), EHS (Extra-High Strength), ** (indicates spool size: 500, 1000 or 2500 foot lengths)

MADE IN USA

Copperhead® copper-clad steel tracer wire is 100% made in the USA.

PRODUCT DESCRIPTION

Tracer wire for directional drilling/boring shall be Copperhead® SoloShot™ #10 AWG (0.1019" diameter) hard drawn, high carbon 1055 grade steel, solid extra-high-strength copper-clad steel conductor (EHS-CCS) rated at 30 volts, insulated with 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation rated for direct burial use at 600 volts. EHS-CCS conductor must be at 21% conductivity for locate purposes. Break load of 2032 lbs. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Manufacturers supplying copper-clad steel tracer wire must have available detailed performance data including 5 years of underground testing in terms of durability related to damage of protective insulation and effects of potential corrosion of the specific copper-clad steel used. Origin of copper-clad steel manufacturer is required and steel core must be manufactured in the United States. If manufacturer has not completed 5-year corrosion testing, a 5-year warranty must be provided. Tracer wire shall be Copperhead® SoloShot™ EHS-CCS HDPE 45 mil and made in the USA.

PRINT LINE

Physical, permanent markings: surface legend print on insulation to repeat at minimum interval of every two linear feet. Ink colors will include Black ink for Yellow, Blue, Red, Orange, Purple, Brown, White, and Green insulation, and White ink for Black insulation. **COPPERHEAD * 10 AWG-SOLID EHS-CCS HORIZONTAL DIRECTIONAL DRILL TRACER WIRE * 45 MIL HDPE 600 VOLT * DIRECT BURIAL ONLY**

SPOOL LABEL

Wound wire on a compact spool made of plastic or wood.

COPPERHEAD INDUSTRIES

1045*-EHS-**

10 AWG-Solid CCS Directional Drill Tracer Wire

45 Mil HDPE 600 Volt

Direct Burial Only

copperheadwire.com

CONDUCTOR

This specification describes the properties of the conductor to be used in the fabrication of Extra-High Strength tracer wire.

Material Description: Copperhead® copper-clad steel wire as manufactured by Copperweld® is composed of a steel core with a uniform and continuous copper cladding thoroughly bonded to the steel throughout. Wire must conform to ASTM B1010 and ASTM B227.

- **Cladding:** The steel and copper interface must have a metallurgical bond achieved through a high heat and pressure bonding process. Established process for porosity-free material.
- **Steel:** Extra-high strength with 0.54 carbon or greater. Verified to meet required mechanical properties.
- **Copper:** UNS-C10200; OF Copper according to ASTM B-170 (latest revision). High conductivity, oxygen free copper to achieve optimal signal performance.

Surface Condition: Wire surface shall be free of any defects, including flakes, grooves, pits, and voids. Wire surface shall be smooth, bright and shiny, and free of excessive copper dust and residual drawing lubricants.

Physical, Mechanical, and Electrical Properties: The wire shall conform to the properties listed in Table 1.



#12 CCS High Carbon 1055 Grade Steel 21% Conductivity	CCS Conductor
Conductor Size	10 AWG
Conductor Type	Copper-Clad Steel (CCS)
Temper	Hard Drawn (HD)
Average Break Load	2,032 lbs.
Minimum Tensile Strength	247,000 psi
Minimum Elongation	1%
Nominal Copper Thickness (% of Diameter)	3%
Nominal Copper Weight	13%
Nominal DC Resistance (ohms/1000 ft.)	4.756

Table 1: Physical, Mechanical, and Electrical Properties

*Diameter tolerances: $\pm 1\%$

INSULATION

This specification describes the properties of the material to be used in the insulating of Extra-High Strength tracer wire.

Material Description: Insulation is comprised of a co-polymer high molecular weight natural high density polyethylene (HDPE) designed specifically for high-speed copper wire insulating. It contains the required levels and types of primary antioxidant and metal deactivator additives to satisfy most Wire and Cable industry requirements. HDPE material will be produced with an excellent balance of surface smoothness, processing ease, tensile and elongation properties, abrasion toughness, environmental stress crack, thermal stress crack resistance, and electrical consistency. Insulation must conform to ASTM D1248.

Physical, Mechanical, and Electrical Properties: The wire shall conform to the properties listed in Table 2.

High Density Polyethylene Insulator	Value
Density (ASTM D 792)	0.943 g/cc
Bulk Density (ASTM D 1895)	0.58 g/cc
Melt Index (ASTM D 1238/E)	0.70 dg/min
Tensile-Yield (ASTM D 638)	4300 psi
Tensile-Ultimate (ASTM D 638)	2900 psi
Tensile-Elongation (ASTM D 638)	850%
Flexural Modulus (ASTM D 790/1)	120,000 psi
Hardness (ASTM D 2240)	63 Shore D
Environmental Stress-Crack (ASTM D 1693/B)	F20 > 48 h
Thermal Stress-Crack (ASTM D 2951)	F0 > 1000 h
Brittleness Temperature (ASTM D 746)	< -95° F
Melting Point (DSC) (ASTM D 3417)	262° F
Softening Point (Vicat) (ASTM D 1525)	250° F
Oxidative Induction Time (ASTM D 3895)	> 50 min. @ 200° C
Dielectric Constant (ASTM D 1531)	2.34 @ 1MHz
Dissipation Factor (ASTM D 1531)	0.00007 @ 1 MHz
Volume Resistivity (ASTM D 257)	5 x 10 ¹⁷ ohm-cm
Dielectric Strength (ASTM D 3755)	1000 volts @ 20 mils

Table 2: Physical, Mechanical, and Electrical Properties

QUALITY ASSURANCE

- Copperhead products are manufactured under a quality control system that ensures products are free of defects and meet performance requirements.
- Copperhead provides best-in-class customer service. We promise to put forth our best efforts for our customers and to treat everyone we encounter with courtesy and respect.



Subject To
Brand On Hand



Approved Vendors

Copper Split Bolt Connector

Part: TRWCSBCS8 MFG: TRWCSBCS8



Description

Copper Split Bolt Connector

Specifications



Type	Splice Kit
Number of Pieces	1
Brand	Approved Vendors

Manufacturer	Approved Vendors
Manufacturer Part Number	TRWCSBCS8



AWWA C900/IB PVC Pressure Pipe | Gasketed Integral Bell

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

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



Short Form Specification											
Pipe Standard:	AWWA C900-16										
Diameter Std.:	Cast Iron Outside Diameter (CIOD)										
Nominal Sizes:	4", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36"										
Dimension Ratios & Pressure Ratings"	<table border="0"> <tr> <td>DR 51 – 80 psi</td> <td>DR 18 – 235 psi</td> </tr> <tr> <td>DR 41 – 100 psi</td> <td>(185 psi)**</td> </tr> <tr> <td>DR 32.5 – 125 psi</td> <td>DR 14 – 305 psi</td> </tr> <tr> <td>DR 25 – 165 psi</td> <td>(250 psi)**</td> </tr> <tr> <td>DR 21 – 200 psi</td> <td></td> </tr> </table>	DR 51 – 80 psi	DR 18 – 235 psi	DR 41 – 100 psi	(185 psi)**	DR 32.5 – 125 psi	DR 14 – 305 psi	DR 25 – 165 psi	(250 psi)**	DR 21 – 200 psi	
DR 51 – 80 psi	DR 18 – 235 psi										
DR 41 – 100 psi	(185 psi)**										
DR 32.5 – 125 psi	DR 14 – 305 psi										
DR 25 – 165 psi	(250 psi)**										
DR 21 – 200 psi											
Lay Length:	20' [6.1m]										
Pipe Compound:	ASTM D1784 Cell Class 12454										
Pipe Joint Std.:	ASTM D3139										
Max. Angular Joint Deflection:‡	1°										
Gasket Standard:	ASTM F477, UL 157										
Gasket Material Offerings:	Standard – SBR Optional – NBR or EPDM										
Installation Std.:	AWWA C605										

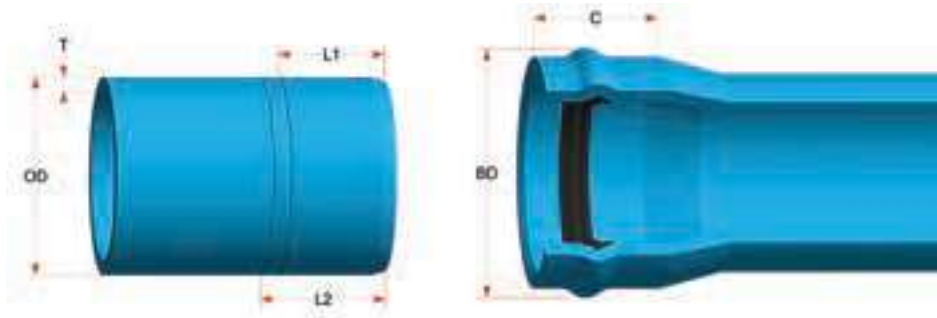
Applications	Potable Water	Waste-water	Reclaimed Water
Color:	Blue	Green	Purple
Certifications:*	NSF 14, NSF 61 CSA B137.3* UL 1285 FM 1612** BNQ 3624-250 (24in)*, BNQ 3660-950 (24in)	CSA B137.3*	CSA B137.3*

*See Certification Letter for full explanation and list of exceptions.
 **FM 1612 calculates pressure ratings differently than AWWA for 4"-12" only with DR 18 as 185 psi and DR 14 as 250 psi.
 ‡See Installation Guide for more information.





AWWA C900/IB PVC Pressure Pipe | Gasketed Integral Bell



C900/IB PIPE DIMENSIONS & PERFORMANCE

Nom. Size	Outside Diameter (OD)	DR	Pressure Class psi [kPa]	Min. Wall Thickness (T)	Internal Diameter (ID)	Approx. Bell Diameter (BD)	Bell Depth (C)	1 st Insertion Mark (L1)	2 nd Insertion Mark (L2)
4" [100mm]	4.800 [121.9]	25	165 [1150]	0.192 [4.88]	4.416 [112.1]	6.250 [158.8]	5.000 [127]	3.375 [85.7]	4.375 [111.1]
		18	235 [1620]	0.267 [6.78]	4.266 [108.3]				
		14	305 [2130]	0.343 [8.70]	4.114 [104.5]				
6" [150mm]	6.900 [175.3]	25	165 [1150]	0.276 [7.00]	6.348 [161.3]	8.625 [219.1]	5.750 [146.1]	4.625 [117.5]	5.625 [135.3]
		18	235 [1620]	0.383 [9.72]	6.134 [155.9]				
		14	305 [2130]	0.493 [12.50]	5.914 [150.3]				
8" [200mm]	9.050 [229.9]	25	165 [1150]	0.362 [9.20]	8.326 [211.5]	11.500 [292.1]	7.000 [177.8]	5.625 [135.3]	6.625 [168.3]
		18	235 [1620]	0.503 [12.80]	8.044 [204.3]				
		14	305 [2130]	0.646 [16.40]	7.758 [197.1]				
10" [250mm]	11.100 [281.9]	25	165 [1150]	0.444 [11.30]	10.212 [259.3]	14.000 [355.6]	7.250 [184.2]	6.125 [155.6]	7.125 [181.0]
		18	235 [1620]	0.617 [15.70]	9.866 [250.3]				
		14	305 [2130]	0.793 [20.10]	9.514 [241.7]				
12" [300mm]	13.200 [335.3]	25	165 [1150]	0.528 [13.40]	12.144 [308.5]	16.563 [420.7]	8.000 [203.2]	6.875 [174.6]	7.875 [200]
		18	235 [1620]	0.733 [18.60]	11.734 [298.1]				
		14	305 [2130]	0.943 [23.90]	11.314 [287.5]				
14" [350mm]	15.300 [388.6]	32.5	125 [860]	0.471 [12.0]	14.358 [364.7]	19.063 [484.2]	9.000 [228.6]	7.500 [190.5]	8.500 [215.9]
		25	165 [1150]	0.612 [15.6]	14.076 [357.5]				
		21	200	0.729	13.842				
		18	235 [1620]	0.850 [21.6]	13.600 [345.4]				
		14	305	1.093	13.114				
16" [400mm]	17.400 [442.0]	41	100	0.424	16.552	21.750 [552.5]	10.000 [254.0]	8.500 [215.9]	9.500 [241.3]
		32.5	125 [860]	0.535 [13.6]	16.330 [414.8]				
		25	165 [1150]	0.696 [17.7]	16.008 [406.6]				
		21	200	0.829	15.742				
		18	235 [1620]	0.967 [24.6]	15.466 [392.8]				
		14	305	1.243	14.914				

VINYLTECH AWWA C900-07

TECHNICAL DATA SUBMITTAL



CONFORMANCE

These specifications designate the requirements for manufacturing and installing Vinyltech AWWA C900-07 water pipe.

AWWA C900-07 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100mm Through 300mm), for Water Transmission and Distribution

AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading

PIPE COMPOUND

The pipe shall be extruded from compounds meeting (PVC1120) the requirements of Cell Classification 12454, as defined in ASTM D1784, Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds. The PVC shall also be listed by the National Sanitation Foundation (NSF) for use in potable water.

PIPE

Vinyltech pipe shall be manufactured in accordance with AWWA C900-07.

GASKET JOINT

The gasket shall be reinforced with a steel band and meet the requirements of ASTM F477. Vinyltech pipe shall have an integral bell end with a locked-in factory installed gasket and shall meet the joint requirements of ASTM D3139.

MARKING

The pipe shall be marked in accordance with AWWA C900 as in the following example.

- Manufacturer's name and production codes
- Nominal size, dimension ratio number, and O.D. base (for example, 8" DR 18 CIS)
- Materials cell classification (PVC1120)
- AWWA pressure class (235 psi or 305 psi) and hydrostatic test pressure (T600, or T800)
- AWWA designation number (AWWA C900-07)
- National Sanitation Foundation (NSF-61)
- Underwriters Laboratories (UL) logo, third party certification.
- Production date and time code (VABB15B 48.34)
- FM Approvals (FM) logo, required FM pressure rating (150 or 200 psi), third party certification

QUALITY CONTROL

Each length of the pipe including the bell shall be hydrostatically tested. The pipe shall meet all additional test requirements as described in AWWA C900-07. Our full time quality assurance staff continually administers a rigid program of tests to maintain the production of the best pipe products available.

INSTALLATION

Recommended installation procedures of Vinyltech Corporation are outlined in AWWA C605, Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water. The AWWA Manual M23, PVC Pipe-Design and Installation, is also an invaluable resource guide for design and installation.

TAPPING

The consistent success of tapping PVC pressure pipe is contingent upon the use of proper procedures and equipment. Vinyltech recommends strict compliance with the requirements as specified in AWWA C605.

ASSEMBLING THE PIPE

Assembly of Vinyltech PVC water pipe is easily accomplished. A depth of entry mark is on each spigot end to serve as a visual check for rapid, accurate joint inspection. **Do not over insert.**

- Remove any mud, sand, or other foreign matter from the belled and spigot ends of the pipe. Carefully clean the gasket area.
- With a clean applicator (a brush or hand) lubricate the entire surface of the pipe from the spigot end to the depth of entry mark and the contact surface of the gasket with **Vinyltech Brand Lubricant**.
- Brace the bell to avoid disturbing the already installed joints. Align the pipe, insert the spigot into the bell and push.
- Do not insert past the entry mark line.**



201 S. 61st Avenue • Phoenix, AZ 85043
602 233-0071 • 602 272-4847 Fax • www.vtpipe.com



AWWA C900-07

VINYLTECH AWWA C900-07

TECHNICAL DATA SUBMITTAL

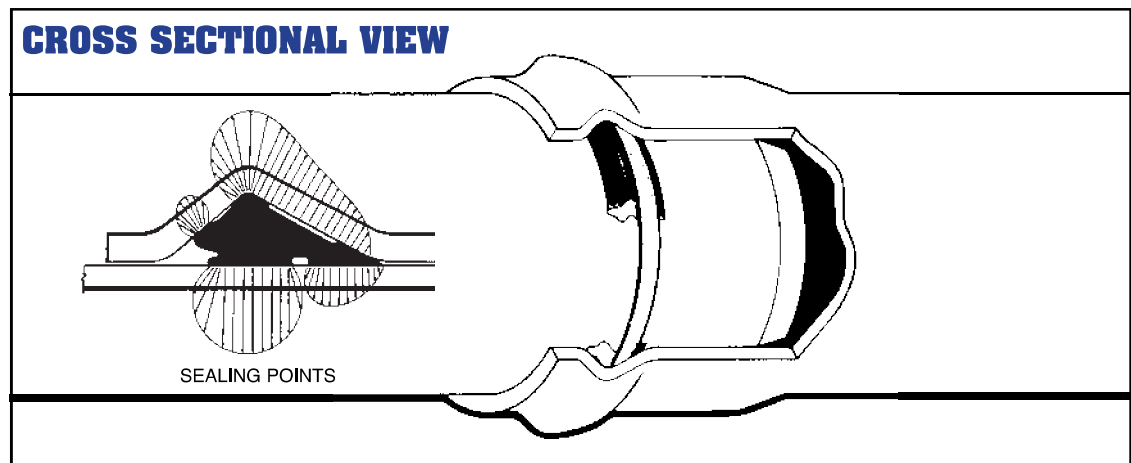
C900 DR 18 PRESSURE CLASS 235

NOMINAL SIZE (IN) (mm)	OUTER DIAMETER (IN)	MINIMUM WALL (IN)	LIFTS PER TRUCK	FEET PER LIFT	APPROXIMATE WEIGHT (LB/100')
4 (100)	4.800	0.267	16	1020	251.6
6 (150)	6.900	0.383	16	440	521.2
8 (200)	9.050	0.503	20	200	903.0
10 (250)	11.100	0.617	12	240	1364.4
12 (300)	13.200	0.733	28	60-80	1935.8

C900 DR 14 PRESSURE CLASS 305

NOMINAL SIZE (IN) (mm)	OUTER DIAMETER (IN)	MINIMUM WALL (IN)	LIFTS PER TRUCK	FEET PER LIFT	APPROXIMATE WEIGHT (LB/100')
4 (100)	4.800	0.343	16	1020	317.5
6 (150)	6.900	0.493	16	440	658.7
8 (200)	9.050	0.646	20	200	1139.7
10 (250)	11.100	0.793	12	240	1722.3
12 (300)	13.200	0.943	28	60-80	2445.5

CROSS SECTIONAL VIEW



THE RIEBER SEALING SYSTEM

The Rieber system provides a proven pipe joint with an excellent track record in the field. It is the fastest growing system in the world because of its many advantages.

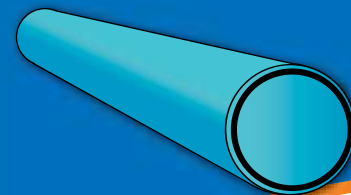
- Factory installed, locked-in gasket
- The pipe bell forms over the gasket, making a perfect fit
- Avoids the possibility of installing the wrong gasket
- Reduces installation problems
- The locked-in gasket eliminates gasket roll-out during joining
- The gasket is molded vs. extruded and spliced
- Works equally well under pressure or vacuum
- Three sealing points achieved vs. two
- **LEAK-PROOF JOINTS**
- **“THE WORLDS BEST JOINT”**

AWWA C900-07



C900 : PVC Pressure Pipe

SPECIFICATION DATA



Diamond (C900) PVC Pipe (4" through 12") is made of 12454 compound per ASTM D1784, in accordance with the dimensional, chemical, and physical requirements of AWWA C900.

Diamond (C900) PVC Pipe bears the mark of NSF, International (NSF), the listing of Underwriters Laboratory, Inc. (UL), and (DR14 & DR18) bears the listing of Factory Mutual(FM). Some factory locations produce C900 bearing the mark of the Canadian Standards Association (CSA).



Diamond (C900) PVC Pipe utilizes a gasket, per ASTM F477, to seal the integral bell socket to the spigot of the next joint (which conforms to the requirements of ASTM D3139.) Each male end is beveled to facilitate joint assembly, and the spigot is referenced marked to ensure proper insertion depth. Diamond furnished lubricant is to be used in the joining process. Specialty gaskets may be available upon request.

Diamond furnished lubricant is to be used in the joining process. Specialty gaskets may be available upon request.

Diamond C900 is supplied in 20 foot laying lengths.

Physical Properties of PVC 12454:

Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength	D256	.65ft., lb./in.



Underwriters Laboratories Inc.®



SHORT FORM Specification for Diamond C900 PVC Water Pipe

Diamond C900 PVC Water Pipe shall be made of compounds conforming to ASTM D1784 with a cell classification of 12454. Diamond C900 shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C900 and will be supplied in 20 foot laying lengths. Joints shall meet the requirements of ASTM D3139 and shall be formed using Rieber Technology. Gaskets shall meet the requirements of ASTM F477.

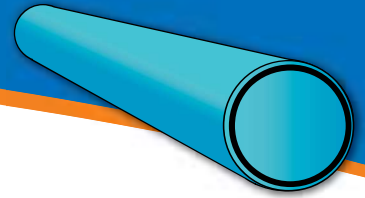
Potable water pipe shall be manufactured from National Sanitation Foundation (NSF) approved compounds.



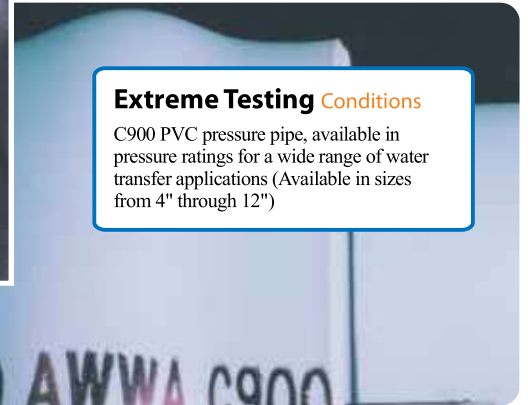
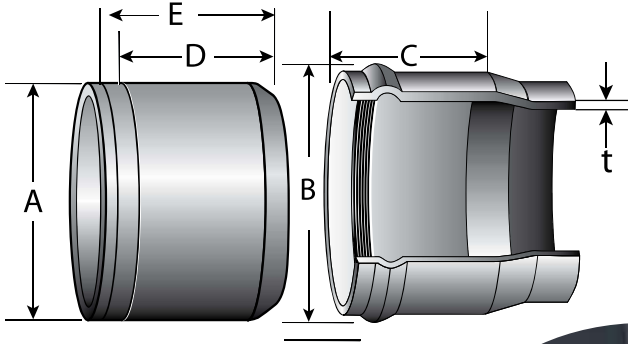
DIAMOND PLASTICS®
CORPORATION



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Rieber Joint Illustration



Extreme Testing Conditions

C900 PVC pressure pipe, available in pressure ratings for a wide range of water transfer applications (Available in sizes from 4" through 12")



C900™

AWWA C900 SPECIFICATION DATA

Nominal Pipe Size in. (mm)	Outside Dia. A Inches	Bell Dia. B Inches	Approximate Bell Depth C Inches	Assembly Mark 1 (D) Inches #	Assembly Mark 2 (E) Inches #	C900 DR-14 305 psi Min Wall (t) Inches	C900 DR-18 235 psi Min Wall (t) Inches	C900 DR-25 165 psi Min Wall (t) Inches
4" (100)	4.800	6-1/2"	6	4-1/4"	5-1/4"	0.343	0.267	0.192
6" (150)	6.900	9-1/4"	6.5	4-5/8"	5-5/8"	0.493	0.383	0.276
8" (200)	9.050	11-3/4"	7	5-1/8"	6-1/8"	0.646	0.503	0.362
10" (250)	11.100	14-1/4"	7.5	5-3/4"	6-3/4"	0.793	0.617	0.444
12" (300)	13.200	16-3/4"	8	6-1/8"	7-1/8"	0.943	0.733	0.528

"Possession of this page does not constitute an offer of sale"

#Tolerance of +/- 1/4" allowed



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NOTICE: 1). Weights published in this catalog are approximate and provided for shipping purpose only. Actual weights may vary as products are manufactured in multiple locations. All products meet the applicable ANSI/AWWA specification.
 2). Laying length: In accordance with ANSI/AWWA C110/A21.10, ANSI B16.1, ANSI/AWWA C153/A21.53. Fittings not listed in ANSI/AWWA have dimensions as per Tyler Union design. Standard tolerance applies to laying length dimensions.
 3). For projects where fitting weights, specifications, or dimensions are critical, advise upon order placement.



MECHANICAL JOINT C153 DUCTILE IRON COMPACT FITTINGS

Sizes 3"-12" UL & 3"-10" FM Listed
For Fire Main Equipment

SAMPLE SPECIFICATIONS (Current ANSI/AWWA revisions apply)

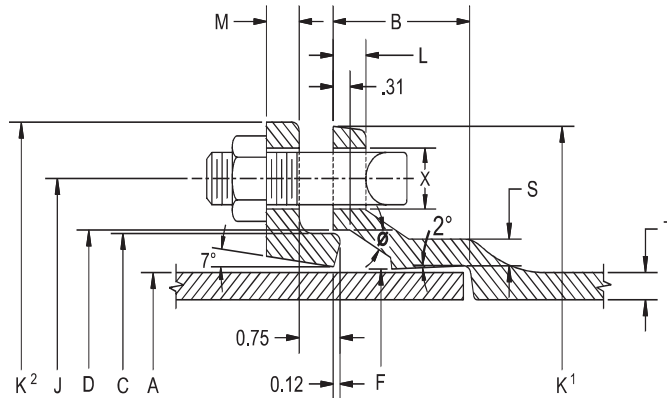
Mechanical joint watermain fittings with accessories, 2" through *64" shall be manufactured from ductile iron in accordance with and meet all applicable terms and provisions of standards ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11. Ductile iron mechanical joint fittings 2" through 24" shall be rated for 350 PSI working pressure. Ductile iron 30" through 48" shall be rated for 250 psi working pressure. Flanged ductile iron fittings in 24" (610 mm) and smaller sizes may be rated for 350 psi (2,413 kPa) with the use of special (annular ring or comparable) gaskets. All coated and lined fittings meet requirements of NSF-61, NSF-372, and Annex G.

NOTE - EXCEPTIONS: Mechanical joint fittings with flanged branches are rated for water pressure of 250 PSI.

NOTE - Wyes over 12" are not pressure rated. Contact manufacturer for rating in your application.

NOTE - Fittings are cement lined and seal coated in accordance with ANSI/AWWA C104/A21.4. Fittings are available double cement-lined, bare, or epoxy coated upon request. Epoxy coating per ANSI/AWWA C116

NOTE - Installation per AWWA C600 and AWWA C651, current revision



NOMINAL JOINT DIMENSIONS IN INCHES

BOLTS

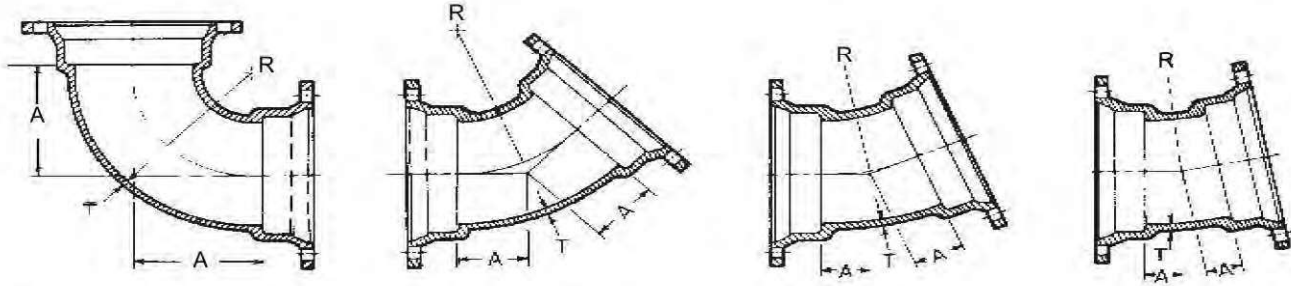
Size	A Dia.	B	C Dia.	D Dia.	F Dia.	J Dia.	K ¹ Dia.	K ² Dia.	L	M	S	T	X	Size	No.
2	2.51	2.50	3.50	3.60	2.61	4.75	6.19	6.89	.58	.62	.36	.30	3/4	5/8x3	2
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	.58	.62	.39	.33	3/4	5/8x3	4
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	.60	.75	.39	.34	7/8	3/4x3 1/2	4
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	.63	.88	.43	.36	7/8	3/4x3 1/2	6
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	.66	1.00	.45	.38	7/8	3/4x4	6
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	.70	1.00	.47	.40	7/8	3/4x4	8
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	.73	1.00	.49	.42	7/8	3/4x4	8
14	15.30	3.50	16.40	16.54	15.44	18.75	20.31	20.25	.79	1.25	.55	.47	7/8	3/4x4 1/2	10
16	17.40	3.50	18.50	18.64	17.54	21.00	22.56	22.50	.85	1.31	.58	.50	7/8	3/4x4 1/2	12
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	.68	.54	7/8	3/4x4 1/2	12
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	.69	.57	7/8	3/4x4 1/2	14
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	.75	.61	7/8	3/4x5	16
30	32.00	4.00	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	.82	.66	1 1/8	1x6	20
36	38.30	4.00	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	.74	1 1/8	1x6	24
42	44.50	4.00	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.35	.82	1 3/8	1 1/4x6 1/2	28
48	50.80	4.00	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.35	.90	1 3/8	1 1/4x6 1/2	32

NOTE: 2 Inch MJ ASTM A536 ductile iron Compact fittings (2"-22.5 bend, 2"-45 bend, 2"-90 bend, 2"x12" solid sleeve, 2"x2" tee, 4"x2" tee, and 4"x2" reducer) are available. Contact Tyler Union for availability or additional product dimensions.

*NOTE: Contact Tyler Union for 54"-64" product information.

*NOTE: For projects where product weights, specifications, or dimensions are critical, advise upon order placement.

BENDS

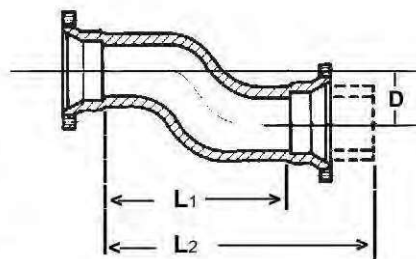


Size	90° Bends (1/4)				45° Bends (1/8)			22½° Bends (1/16)			11¼° Bends (1/32)		
	T	A	R	Weight	A	R	Weight	A	R	Weight	A	R	Weight
3	.34	3.5	2.5	19	2.00	2.41	17	1.50	2.51	15	1.25	2.53	16
4	.35	4.0	3.0	22	2.50	3.56	20	1.75	3.81	18	1.50	5.12	18
6	.37	6.5	6.0	49	3.50	7.25	39	2.25	6.35	31	1.50	5.12	29
8	.39	7.5	7.0	64	4.00	8.44	56	2.85	11.80	50	2.06	15.80	45
10	.41	9.5	9.0	102	5.01	10.88	78	3.35	14.35	66	2.32	18.36	59
12	.43	10.5	10.0	129	5.98	13.25	102	3.86	16.90	87	2.56	20.90	82
14	.51	12.0	11.5	214	5.50	12.06	155	3.93	17.25	142	2.59	21.25	136
16	.52	13.0	12.5	273	5.98	13.25	204	3.98	17.50	178	2.62	21.50	157
18	.59	15.5	14.0	411	6.50	12.36	292	7.50	30.19	286	3.00	60.84	283
20	.60	17.0	15.5	519	7.00	13.59	372	8.50	35.19	376	3.50	71.07	374
24	.62	17.0	15.5	721	7.50	14.89	490	9.00	37.69	512	3.50	76.12	487
30	.66	21.50	19.0	930	10.50	9.31	716	6.75	21.36	665	4.75	22.84	600
36	.74	24.50	22.0	1450	11.50	21.73	1110	7.75	26.39	960	5.00	25.38	820
42	.82	29.25	26.7	2205	14.00	27.76	1610	9.00	32.68	1350	6.00	35.54	1180
48	.90	33.25	30.75	2990	15.00	30.17	2090	10.00	27.70	1760	6.50	40.61	1475

**Note: 2 inch compact ductile iron fittings are available, contact Tyler Union for information

***OFFSETS (MJ x MJ) or (MJ x PE)**

Size	D	Dimensions		Weights	
		L1	L2	MJxMJ	MJxPE
3	6	9	14.5	23	29
3	12	15	20.5	34	39
3	18	21	26.5	40	48
3	24	27	32.5	47	53
4	6	10	15.5	32	44
4	12	16	21.5	42	54
4	18	22	27.5	56	65
4	24	28	33.5	65	72
6	6	12	17.5	55	54
6	12	18	23.5	72	68
6	18	24	29.5	88	96
6	24	30	35.5	111	117
8	6	13	18.5	79	78
8	12	19	24.5	103	110
8	18	25	30.5	128	124
10	6	15	20.5	112	130
10	12	21	26.5	148	172
10	18	27	32.5	176	189
12	6	17	22.5	157	.....
12	12	23	28.5	174	198
12	18	29	34.5	210	270



Size	Dimensions			Weight	
	D	L1	L2	MJxMJ	MJxPE
12	24	35	40.5	298	334
12	30	41	46.5	283	205

BENDS

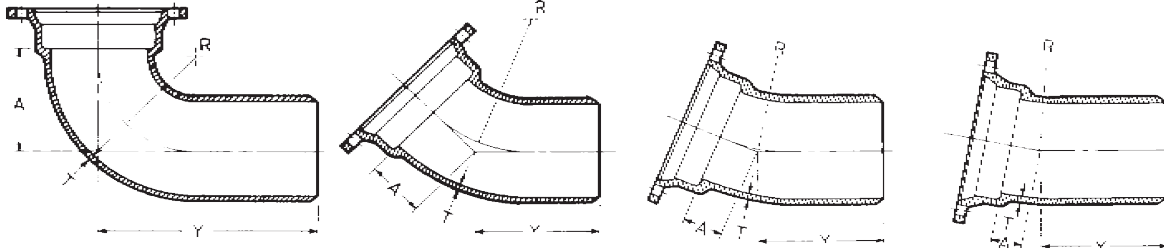
5-5/8 Bends (1/64) MJ x MJ

Size	Dimensions		Weight
	*A	R	
3	1.25	5.08	16
4	1.50	7.61	18
6	1.50	10.15	29
8	1.75	12.69	45
10	2.00	15.23	59
12	2.30	17.77	82
14	2.50	20.31	136
16	2.50	20.31	157
18	3.00	25.38	283
20	3.00	25.38	374
24	3.00	25.38	487
30	3.75	32.97	600
36	4.00	34.55	820
42	5.00	42.71	1180
48	5.50	47.35	1475

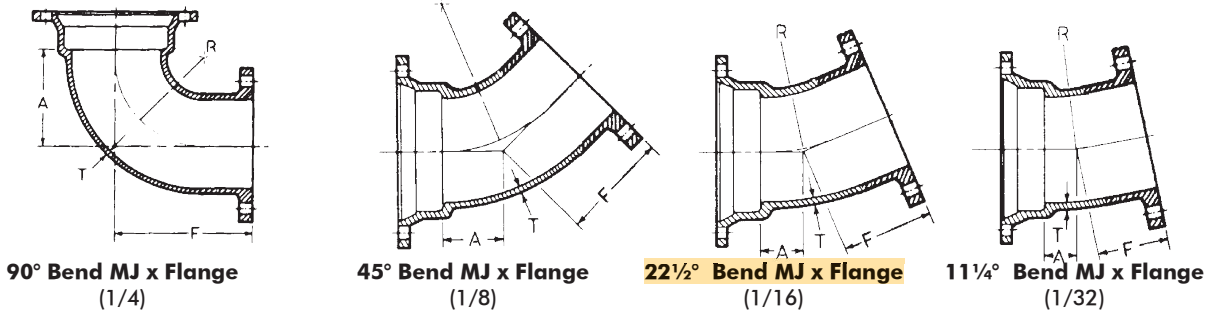


**MECHANICAL JOINT C153 DUCTILE IRON
COMPACT FITTINGS**
 Sizes 3"-12" UL & 3"-10" FM Listed
 For Fire Main Equipment

BENDS



Size	90° Bend MJ x PE (1/4)					45° Bend MJ x PE (1/8)					22 1/2° Bend MJ x PE (1/16)					11 1/4° Bend MJ x PE (1/32)				
	T	Dimensions		R	Weight	A	Y	R	Weight	A	Y	R	Weight	A	Y	R	Weight			
3	.34	3.5	9.0	2.5	18	2.0	7.5	2.41	17	1.50	7.00	2.51	19	1.25	6.75	7.62	15			
4	.35	4.0	9.5	3.0	26	2.5	8.0	3.56	22	1.75	7.25	3.81	20	1.50	7.00	5.12	20			
6	.37	6.0	11.5	5.0	45	3.2	8.7	5.49	38	2.25	7.75	6.35	33	1.50	7.00	5.12	32			
8	.39	7.5	13.0	7.0	64	4.0	9.5	8.44	55	2.84	8.34	11.80	51	2.05	7.55	15.80	44			
10	.41	9.5	15.0	9.0	108	5.0	10.5	10.88	78	3.35	8.85	14.35	66	2.31	7.81	18.36	60			
12	.43	9.0	14.4	6.0	114	6.0	11.5	13.25	104	3.50	9.00	12.70	89	2.56	8.06	20.90	79			
14	.51	12.0	20.0	11.5	219	5.5	13.4	10.85	165	3.93	11.93	17.25	152	2.59	10.59	21.25	137			
16	.52	13.0	21.0	12.5	254	6.0	14.0	13.25	206	3.98	11.98	17.50	181	2.62	10.62	21.50	161			
20	.57	15.0	23.0	13.5	400	7.0	15.3	13.97	290	7.00	14.00	35.19	290	7.00	14.00	21.07	290			
24	.62	17.0	25.0	15.5	710	7.5	16.6	14.69	460	9.00	17.66	37.69	455	9.00	26.12	12.00	475			
30	.68	21.5	30.5	19.0	865	10.5	19.5	19.31	715	6.75	15.75	21.36	600	4.75	13.75	22.84	535			

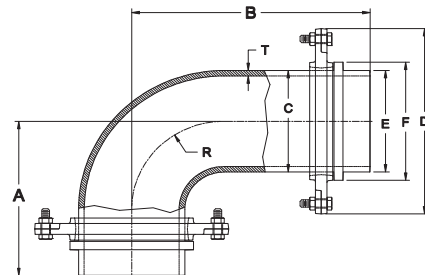


Size	T	90° Bend MJ x Flange (1/4)				45° Bend MJ x Flange (1/8)				22 1/2° Bend MJ x Flange (1/16)				11 1/4° Bend MJ x Flange (1/32)				
		A	R	F	Weight	A	R	F	Weight	A	R	F	Weight	A	R	F	Weight	
3	.34	3.5	2.5	5.5	21
4	.35	4.0	3.0	6.5	28	2.50	3.56	4.0	34	1.75	3.81	4.0	34	1.50	5.12	4.0	19	
6	.37	6.0	5.0	8.0	45	3.25	5.49	5.0	57	2.25	5.35	5.0	57	1.50	5.12	5.0	30	
8	.39	7.5	7.0	9.0	73	4.25	7.93	5.5	83	2.50	7.62	5.5	83	1.75	7.70	5.5	50	
10	.41	9.5	9.0	11.0	113	5.00	9.76	6.5	122	3.00	10.16	6.5	122	2.00	10.25	6.5	75	
12	.43	10.5	10.0	12.0	141	6.00	12.19	7.5	159	3.50	12.70	7.5	159	2.25	12.82	7.5	88	
14	.51	12.0	11.5	14.0	217	5.50	10.85	8.5	207									
16	.52	13.0	12.5	15.0	280	6.00	12.02	9.5	290									

90° Swivel x Swivel Hydrant Ell

Size	T	Dimensions							*R
		*A	*B	C	D	E	F		
**Weight									
6	.37	10.5	15.5	6.90	11.2	6.81	7.98	6.0	74

** Weight includes two swivel glands.

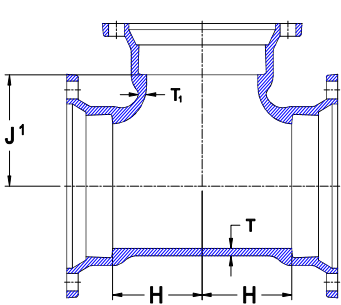




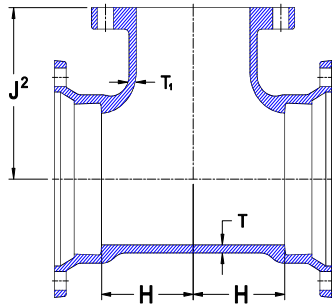
MECHANICAL JOINT C153 DUCTILE IRON COMPACT FITTINGS

Sizes 3"-12" UL & 3"-10" FM Listed
For Fire Main Equipment

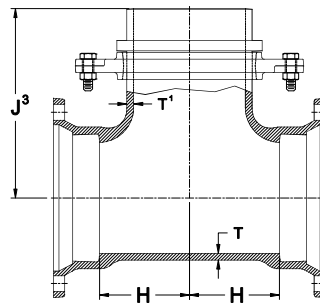
TEES



MJ Tee

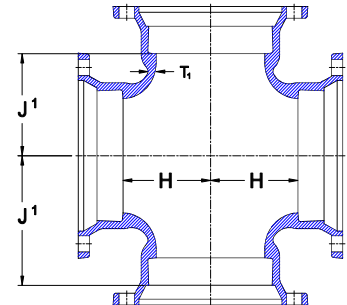


MJ x FE Tee



MJ x Swivel Tee

CROSS



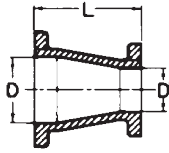
Cross

Size	T	T ¹	Dimensions				*J ³	MJ	Weights		
			*H	*J ¹	*J ²	MJxFE			†MJxS	Cross	
3	.34	.34	3.5	3.50	5.5	...	26	29	...	31	
4x3	.35	.34	3.5	4.00	6.5	...	35	34	...	39	
4	.35	.35	4.0	4.00	6.5	...	36	39	...	45	
6x3	.37	.34	4.0	4.00	6.5	...	51	54	...	...
6x4	.37	.35	4.0	5.00	8.0	...	52	57	...	62	
6	.37	.37	5.0	5.00	8.0	10.50	66	68	77	79	
8x3	.39	.34	4.0	6.50	9.0	...	56	...	...	...
8x4	.39	.35	4.5	6.50	9.0	...	72	82	...	84	
8x6	.39	.37	5.5	6.50	9.0	11.50	79	81	105	98	
8	.39	.39	6.5	6.50	9.0	11.50	90	101	116	112	
10x3	.41	.34	4.0	7.50	11.0	...	80	...	...	...
10x4	.41	.35	4.5	7.50	11.0	...	82	92	...	98	
10x6	.41	.37	5.5	7.50	11.0	13.00	99	116	114	121	
10x8	.41	.39	6.5	7.50	11.0	13.00	116	128	138	135	
10	.41	.41	7.5	7.50	11.0	...	132	144	...	156	
12x3	.43	.34	4.0	8.75	12.0	...	99	...	...	...
12x4	.43	.35	4.5	8.75	12.0	...	108	118	...	119	
12x6	.43	.37	5.5	8.75	12.0	14.25	119	133	132	138	
12x8	.43	.39	6.5	8.75	12.0	14.25	126	146	149	149	
12x10	.43	.41	7.5	8.75	12.0	...	159	174	...	187	
12	.43	.43	8.75	8.75	12.0	...	171	198	...	202	
14x6	.51	.44	6.5	10.50	14.0	16.00	183	205	211	210	
14x8	.51	.45	7.5	10.50	14.0	...	211	...	...	231
14x10	.51	.46	8.5	10.50	14.0	...	229	244	...	255	
14x12	.51	.47	9.5	10.50	14.0	...	245	284	...	269	
14	.51	.51	10.5	10.50	14.0	...	281	291	...	299	
16x6	.52	.45	6.5	11.50	15.0	17.00	222	230	243	250	
16x8	.52	.46	7.5	11.50	15.0	...	245	248	...	264	
16x10	.52	.47	8.5	11.50	15.0	...	265	287	...	286	
16x12	.52	.48	9.5	11.50	15.0	...	277	312	...	312	
16x14	.52	.51	10.5	11.50	15.0	...	317	348	...	...
16	.52	.52	11.5	11.50	15.0	...	337	324	...	451	
18x6	.59	.44	6.5	14.50	15.5	18.00	275	261	279	...	
18x8	.59	.45	7.5	14.50	14.5	...	280	351	...	...
18x10	.59	.47	8.5	12.50	...	...	286	...	...	...
18x12	.59	.49	9.5	12.50	...	...	372	...	...	...
18x14	.59	.56	10.5	12.50	...	...	415	...	...	...
18x16	.59	.57	11.5	12.50	...	...	445	...	...	...
18x18	.59	.59	13.0	12.50	...	...	490	...	...	...

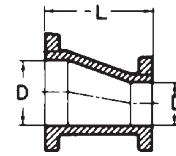
NOTE: Contact TU Inside Sales representative for MJ Crosses larger than 16 inch. †MJxSwl Weights include swivel gland.

**NOTE: 2"x2" and 4"x2" Compact C153 tees area available, contact Tyler Union for information.

REDUCERS



Concentric Reducer



***Eccentric Reducer**

Concentric Reducer				Concentric Reducer			
Size	Dimensions	Wts		Size	Dimensions	Wts	
D	D'	L		D	D'	L	
3	2	6	17	18	8	19	265
4	2	7	23	18	10	19	290
4	3	7	29	18	12	19	320
6	2	9	30	18	14	19	350
6	3	9	44	18	16	19	405
6	4	9	46	20	10	20	418
6	5	9	56	20	12	20	465
8	3	11	61	20	14	20	430
8	4	11	63	20	16	20	445
8	5	11	70	20	18	20	470
8	6	11	75	24	12	24	608
10	4	12	98	24	14	24	565
10	6	12	107	24	16	24	610
10	8	12	116	24	18	24	645
12	4	14	119	24	20	24	695
12	6	14	130	30	16	30	945
12	8	14	152	30	18	30	970
12	10	14	178	30	20	30	1144
14	6	16	165	30	24	30	1155
14	8	16	185	42	24	42	1810
14	10	16	205	42	30	42	2060
14	12	16	235	42	36	42	2345
16	6	18	210	48	30	48	2615
16	8	18	230	48	36	48	2940
16	10	18	255	48	42	48	3320
16	12	18	285				
16	14	18	315				

*Eccentric Reducer				*Eccentric Reducer			
Size	Dimensions	Wts		Size	Dimensions	Wts	
D	D'	L		D	D'	L	
4	3	7	30	18	14	19	350
6	3	9	45	18	16	19	385
6	4	9	52	20	10	20	350
8	4	11	70	20	12	20	370
8	6	11	80	20	14	20	402
10	4	12	95	20	16	20	449
10	6	12	98	20	18	20	455
10	8	12	123	24	12	24	535
12	4	14	120	24	14	24	570
12	6	14	135	24	16	24	614
12	8	14	149	24	18	24	645
12	10	14	177	24	20	24	695
14	6	16	165	30	16	30	778
14	8	16	185	30	18	30	810
14	10	16	205	30	20	30	870
14	12	16	294	30	24	30	970
16	6	18	210	36	24	36	1425
16	8	18	230	36	30	36	2120
16	10	18	255	42	24	42	2340
16	12	18	285	42	30	42	2060
16	14	18	315	42	36	42	2345
18	8	19	265	48	30	48	2625
18	10	19	290	48	36	48	2950
18	12	19	306	48	42	48	3320

NOTE: Eccentric Reducers not included in AWWA C110

NOTE: Eccentric Reducers Offset
 $1/2 D \text{ minus } 1/2 D' = \text{Offset}$
Example:
 6x3 Ecc.Reducer
 $3 - 1\frac{1}{2} = 1\frac{1}{2}" \text{ Offset}$



DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

Series 1500 DUAL WEDGE® - For PVC, Ductile, and HDPE Pipe
"A Proven Third Generation Mechanical Joint Restraint"

MJ TUF Grip™ TDW



Torque Nut



Tyler Union's TUF Grip restraint represents 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, Ductile, and HDPE Pipe.

"BETTER BY DESIGN"

SPECIFICATIONS:

- Proven to restrain plain end PVC, Ductile iron, and HDPE pipe in diameters 4" thru 24". **Note: IPS diameter pipe requires the use of an MJ Transition gasket
- Restraint design conforms with 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
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe is 4"-12" - 3°, 14"-16" - 2°, and 18"-24" - 1.5°
- Standard coating for Domestic restraint is 4-6 mil of TUF-Bond™ (thermoset polyester for impact, corrosion and UV protection)
- Gripping wedges are heat treated to a minimum 420 Brinell Hardness
- 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 4" thru 24" applications
- Not recommended for use on plain end fittings
- Color coded orange for use on multiple classes of pipe and to distinguish from traditional restraints.

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
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Approved for use on multiple classes of pipe – Pressure ratings and associated pipe classes provided on page 2 and 3
- Suitable for Potable and Wastewater applications
- Controlled wedge contour to accommodate contact circumference when assembled on different types of pipe.

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.

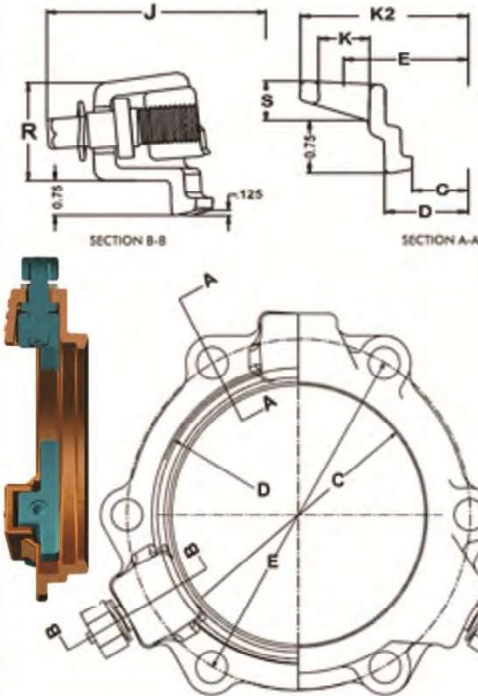
Tyler Union Waterworks Contact Information

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

Series 1500 DUAL WEDGE® - PVC, Ductile, and HDPE Restraint



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
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1500 TDW - 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		
	Domestic	Non-Domestic						DI Pipe	C-900 C-905	Pipe O.D.
4	603000	/ 602000	2	4	3/4" x 3.5"	7.1	11.8	350	*305/DR14	4.80
6	603005	/ 602005	3	6	3/4" x 4"	11.2	18.8	350	*305/DR14	6.90
8	603015	/ 602010	3	6	3/4" x 4"	13.1	20.3	350	*305/DR14	9.05
10	603020	/ 602015	6	8	3/4" x 4"	26.0	32.5	350	*305/DR14	11.10
12	603025	/ 602020	8	8	3/4" x 4"	31.5	40.4	350	*305/DR14	13.20
14	603030	/ 602025	10	10	3/4" x 4.5"	43.3	53.6	350	*235/DR18	15.30
16	603035	/ 602030	12	12	3/4" x 4.5"	54.1	66.3	350	*235/DR18	17.40
18	603040	/ 602035	12	12	3/4" x 4.5"	59.8	72.2	250	*235/DR25	19.50
20	603045	/ 602040	14	14	3/4" x 4.5"	69.8	83.8	250	*235/DR25	21.60
24	603050	/ 602045	16	16	3/4" x 5"	90.4	106.9	250	*235/DR25	25.80

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

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

STOP-LOOK :

- For Approvals, 3-12 inch were tested at 3° of deflection, 14-16 inch were tested at 2° of deflection, and 18-24 inch were tested at 1.5° of deflection; 4-16 inch test were to 700 psi and 18-24 tests were to 500 psi.
- The Series 1500 TUF Grip is specified for use on PVC, Ductile, and HDPE Pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.

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TUFGRIP™ DUAL WEDGE®
PATENT PENDING

****SERIES 1500 TDW-TUF GRIP™ RESTRAINT RATINGS**

SIZE (Inches)	Ductile Pipe	AWWA C900			AWWA C905			AWWA	ASTM D2241			HDPE* AWWA C906				
	C151/A21.51	DR14	DR18	DR25	DR18	DR25	DR32.5	C909	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
4	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
6	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
8	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
10	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
12	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
14	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
16	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
18	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
20	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
24	250	-	-	-	165	165	125	-	-	-	-	-	-	-	-	-

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

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

***Note: HDPE application require a separate stiffener ring, 4-16 for DI OD Pipe & 4-12 for IPS OD Pipe**

Steps: 1 and 2



Step: 3



Steps: 4 and 5



Steps: 6 and 7



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Orange 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 4"-12", 2° max for 14"-16", 1.5° max for 18"-24". **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 4"- 24"-75-90 ft.-lbs. **NOTE:** The C909 PVC T-Head bolt and nut torque is 55-65 ft.-lbs. for 4"-8" and 65-75 ft.-lbs. for 10"-12" restraints. **DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVC PIPE!**
6. ****Hand-tighten** the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut 1/2 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 1/2 turn without turning the remaining torque nuts an equal amount! ****NOTE:** For IPS and PVC applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

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TUFGRIP™ DUAL WEDGE®
PATENT PENDING

Series 1500 DUAL WEDGE® - For PVC, Ductile, and HDPE Pipe
“A Proven Third Generation Mechanical Joint Restraint”

MJ TUF Grip™ TDW



Torque Nut



Tyler Union's TUF Grip restraint represents 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, Ductile, and HDPE Pipe.

“BETTER BY DESIGN”

SPECIFICATIONS:

- Proven to restrain plain end PVC, Ductile iron, and HDPE pipe in diameters 4” thru 24”. **Note: IPS diameter pipe requires the use of an MJ Transition gasket
- Restraint design conforms with 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
- Cast of ASTM A536 compliant 65-45-12 ductile iron complete with a cast on date code and country of origin for traceability
- Restraints and all components are designed and proven for a 2:1 safety factor based on the pipe pressure rating
- Restraint deflection rating when installed on nominal diameter pipe is 4”-12” - 3°, 14”-16” - 2°, and 18”-24” - 1.5°
- Standard coating for Non-Domestic restraint is 4-6 mil of enamel paint
- Gripping wedges are heat treated to a minimum 420 Brinell Hardness
- 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 4” thru 24” applications
- Not recommended for use on plain end fittings
- Color coded orange for use on multiple classes of pipe and to distinguish from traditional restraints.

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
- Restraint's heavy duty construction and design eliminates the need for costly thrust blocks and tie rods
- Approved for use on multiple classes of pipe – Pressure ratings and associated pipe classes provided on page 2 and 3
- Suitable for Potable and Wastewater applications
- Controlled wedge contour to accommodate contact circumference when assembled on different types of pipe.

ISO 9001-2008 Registered

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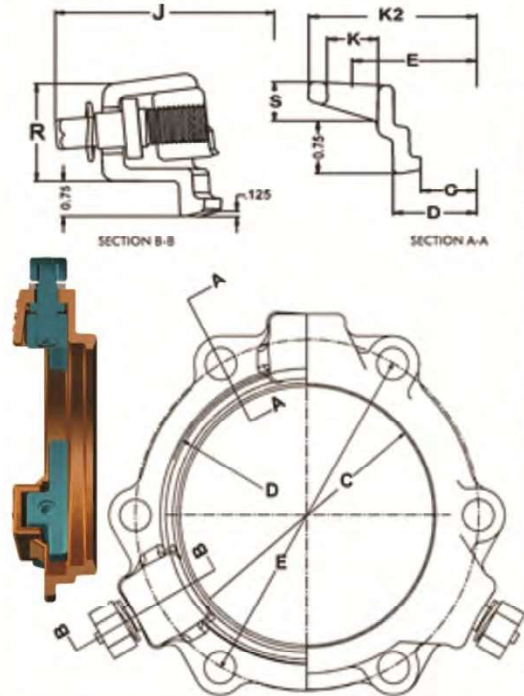
Factory Mutual Approved

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

Series 1500 DUAL WEDGE® - PVC, Ductile, and HDPE Restraint



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
42	44.68	45.80	50.62	53.62	53.08	1-3/8	4.56	2.05
48	50.98	52.10	57.50	60.50	59.28	1-3/8	4.56	2.05

SERIES 1500 TDW - TUF Grip™ - APPLICATION CHART								Pressure Rating		
Size (Inches)	Part No. - Gland Only		Wedge Qty.	T-Head Bolt Qty.	Bolt Size	Gland weight(lbs.)	Weight (w/Acc.)	DI Pipe	C-900 C-905	Pipe O.D.
4	603000	/ 602000	2	4	3/4" x 3.5"	7.1	11.8	350	*305/DR14	4.80
6	603005	/ 602005	3	6	3/4" x 4"	11.2	18.8	350	*305/DR14	6.90
8	603015	/ 602010	3	6	3/4" x 4"	13.1	20.3	350	*305/DR14	9.05
10	603020	/ 602015	6	8	3/4" x 4"	26.0	32.5	350	*305/DR14	11.10
12	603025	/ 602020	8	8	3/4" x 4"	31.5	40.4	350	*305/DR14	13.20
14	603030	/ 602025	10	10	3/4" x 4.5"	43.3	53.6	350	*235/DR18	15.30
16	603035	/ 602030	12	12	3/4" x 4.5"	54.1	66.3	350	*235/DR18	17.40
18	603040	/ 602035	12	12	3/4" x 4.5"	59.8	72.2	250	*235/DR25	19.50
20	603045	/ 602040	14	14	3/4" x 4.5"	69.8	83.8	250	*235/DR25	21.60
24	603050	/ 602045	16	16	3/4" x 5"	90.4	106.9	250	*235/DR25	25.80

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

ISO 9001-2008 Registered	Listed with Underwriters Laboratory	Factory Mutual Approved
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STOP-LOOK :

- For Approvals, 3-12 inch were tested at 3° of deflection, 14-16 inch were tested at 2° of deflection, and 18-24 inch were tested at 1.5° of deflection; 4-16 inch test were to 700 psi and 18-24 tests were to 500 psi.
- The Series 1500 TUF Grip is specified for use on PVC, Ductile, and HDPE Pipe but can be used on some sizes of cast grey iron or pit cast pipe if the pipe is not severely corroded, is in sound condition, and has an outside diameter compatible with the as provided dimensions.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.

Tyler Union Waterworks Contact Information

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

NON-DOMESTIC PRODUCT SUBMITTAL

TUFGRIP™ DUAL WEDGE®
PATENT PENDING

****SERIES 1500 TDW-TUF GRIP™ RESTRAINT RATINGS**

SIZE (Inches)	Ductile Pipe	AWWA C900			AWWA C905			AWWA	ASTM D2241			HDPE* AWWA C906				
	C151/A21.51	DR14	DR18	DR25	DR18	DR25	DR32.5	C909	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
4	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
6	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
8	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
10	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
12	350	305	235	165	-	-	-	235/150*	250	200	160	254	200	160	128	100
14	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
16	350	-	-	-	235	165	125	-	-	-	-	254	200	160	128	100
18	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
20	250	-	-	-	200	165	125	-	-	-	-	-	-	-	-	-
24	250	-	-	-	165	165	125	-	-	-	-	-	-	-	-	-

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

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

***Note: HDPE application require a separate stiffener ring. 4-16 for DI OD Pipe & 4-12 for IPS OD Pipe**

Steps: 1 and 2



Step: 3



Steps: 4 and 5



Steps: 6 and 7



1. Insure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the Orange 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 4"-12", 2° max for 14"-16", 1.5° max for 18"-24". **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 4"- 24"-75-90 ft.-lbs. **NOTE:** The C909 PVC T-Head bolt and nut torque is 55-65 ft.-lbs. for 4"-8" and 65-75 ft.-lbs. for 10"-12" restraints. **DO NOT OVER-TORQUE T-HEAD BOLTS and NUTS WHEN ASSEMBLING PVC and PVC PIPE!**
6. ****Hand-tighten** the torque limiting nuts attached to the TUF Grip wedge assemblies in a clockwise direction with an alternating or star pattern until all gripping wedges are in contact with the pipe wall. Rotational direction of torque nut is indicated by recessed arrow on the face of the nut. With a wrench (box, socket, or pneumatic), continue to tighten each torque nut 1/2 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 1/2 turn without turning the remaining torque nuts an equal amount! ****NOTE:** For IPS and PVC applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.

Tyler Union Waterworks Contact Information

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TUFGRIP™

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

MJ TUFGrip™ 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.



"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

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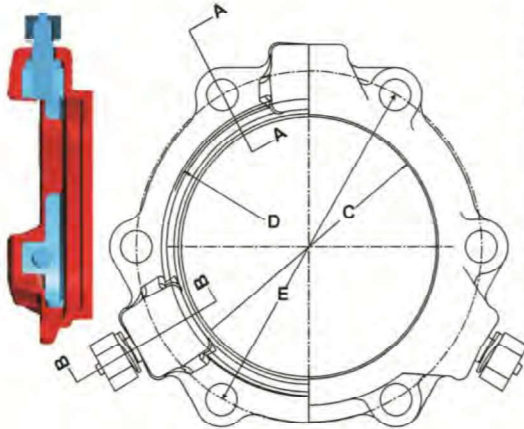
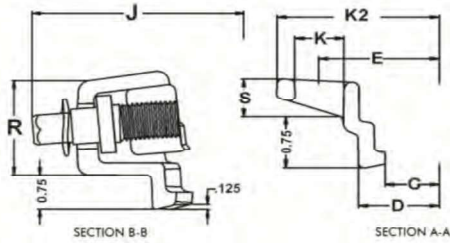
Listed with Underwriters Laboratory

Factory Mutual Approved

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

Tyler Union Waterworks Contact Information

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



TUFGrip™ MJ Restraint Dimensions

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

SERIES 2000 TLP-PVC TUF Grip™ - APPLICATION CHART

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

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

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

STOP-LOOK :

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

Tyler Union Waterworks Contact Information

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www.tylerunion.com

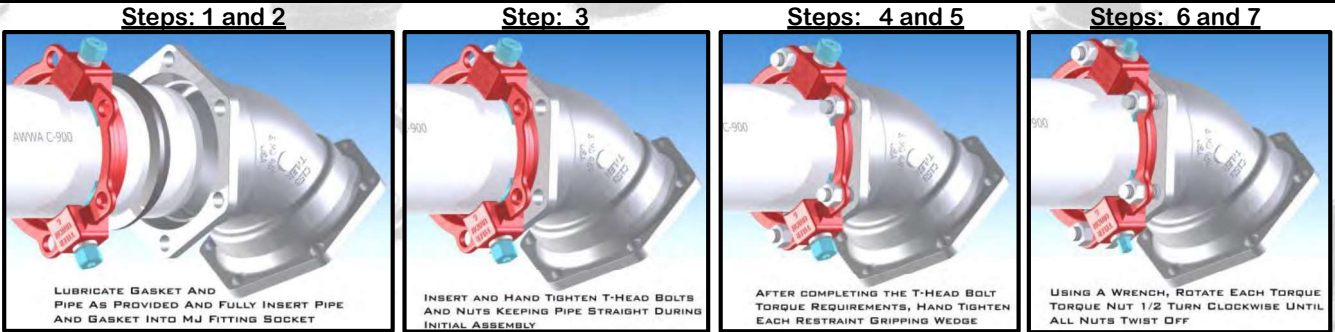
TUFGRIP™

**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 PVC0 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 PVC0), 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 PVC0 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 PVC0 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 PVC0 applications, ensure step 5 is completed before engaging wedges. Failure to comply will result in excessive pipe wall deflection and torque nuts will not twist off as designed.
7. When all torque limiting nuts twist off, the mechanical joint and restraint assembly are complete.


Tyler Union Waterworks Contact Information

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TUFGRIP[™]

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


MJ TUFGrip[™] TLP



Torque Nut



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



Designed by Harold Kennedy & Associates, Inc.

“BETTER BY DESIGN”

SPECIFICATIONS:

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

FEATURES & ADVANTAGES:

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

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

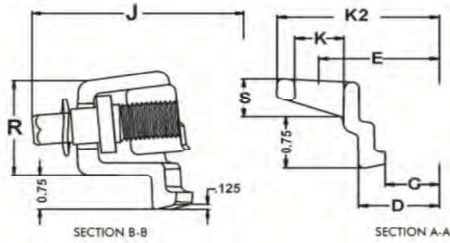
Product Source/Type	Name of Project	Name of Contractor	Project Engineer	Spec. Section and/or Project No.

Tyler Union Waterworks Contact Information

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

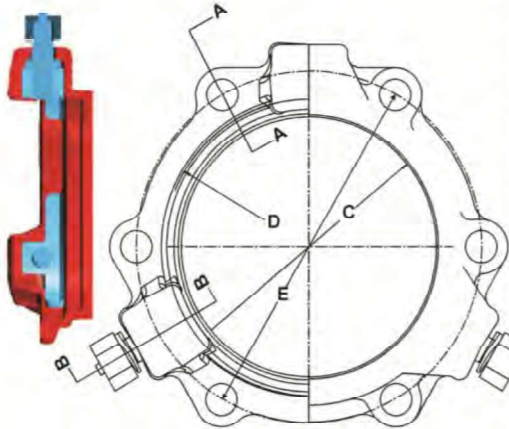
Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601

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



TUFGrip™ MJ Restraint Dimensions

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



SERIES 2000 TLP-PVC TUF Grip™ - APPLICATION CHART

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

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

ISO 9001-2008 Registered

Listed with Underwriters Laboratory

Factory Mutual Approved

STOP-LOOK :

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

Tyler Union Waterworks Contact Information

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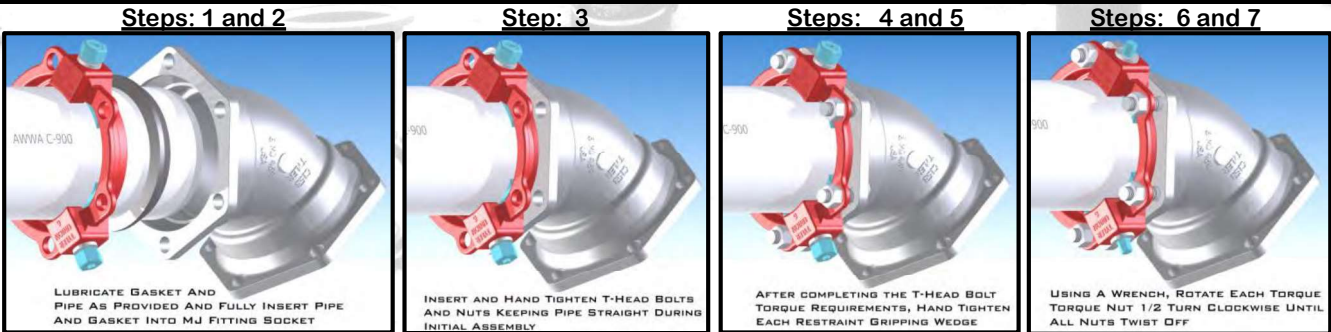
Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471

www.tylerunion.com

**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 PVC Restraint Pressure Rating is per the Pressure Rating Listed on the Pipe**

Assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 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 1/2 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 1/2 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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Anniston: 1501 W 17th St. • Anniston, AL 36201 • (800) 226-7601
Corona: 1001 El Camino Ave. • Corona, CA 92879 • (866) 527-8471
www.tylerunion.com

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

Figure No.

FLG End (NRS)	2"-12"	F-6102
M.J.	2"-12" (except 2 1/2")	F-6100
FLG & M.J.	3"-12"	F-6106
Push-on for PVC (SDR)	2"-12"	F-6110
FLG End (OS & Y)	2"-12"	F-6136
M.J. for Tapping	3"-12"	F-6114
Tyton for D.I. & C900 PVC	4"-12"	F-6112
M.J. Cutting-in	4"-12"	F-6111
Tyton for D.I. X FLG	4"-12"	F-6113
Threaded	2"-3"	F-6103

Accessories (Illustrated in the Gate Valve Section)

Indicator Posts	2" Sq. Operating Nuts
"T" Handles	Handwheels
Stem Guides	Extension Stems
Electric Motor Actuators	Floor Boxes
	Chain Wheels
	Floorstands (non-rising stem)

MODEL 2639	AWWA C509	FULL BODY DUCTILE IRON
MODEL 2640	AWWA C509	FULL BODY GRAY IRON

2640-100
A 6/23/14

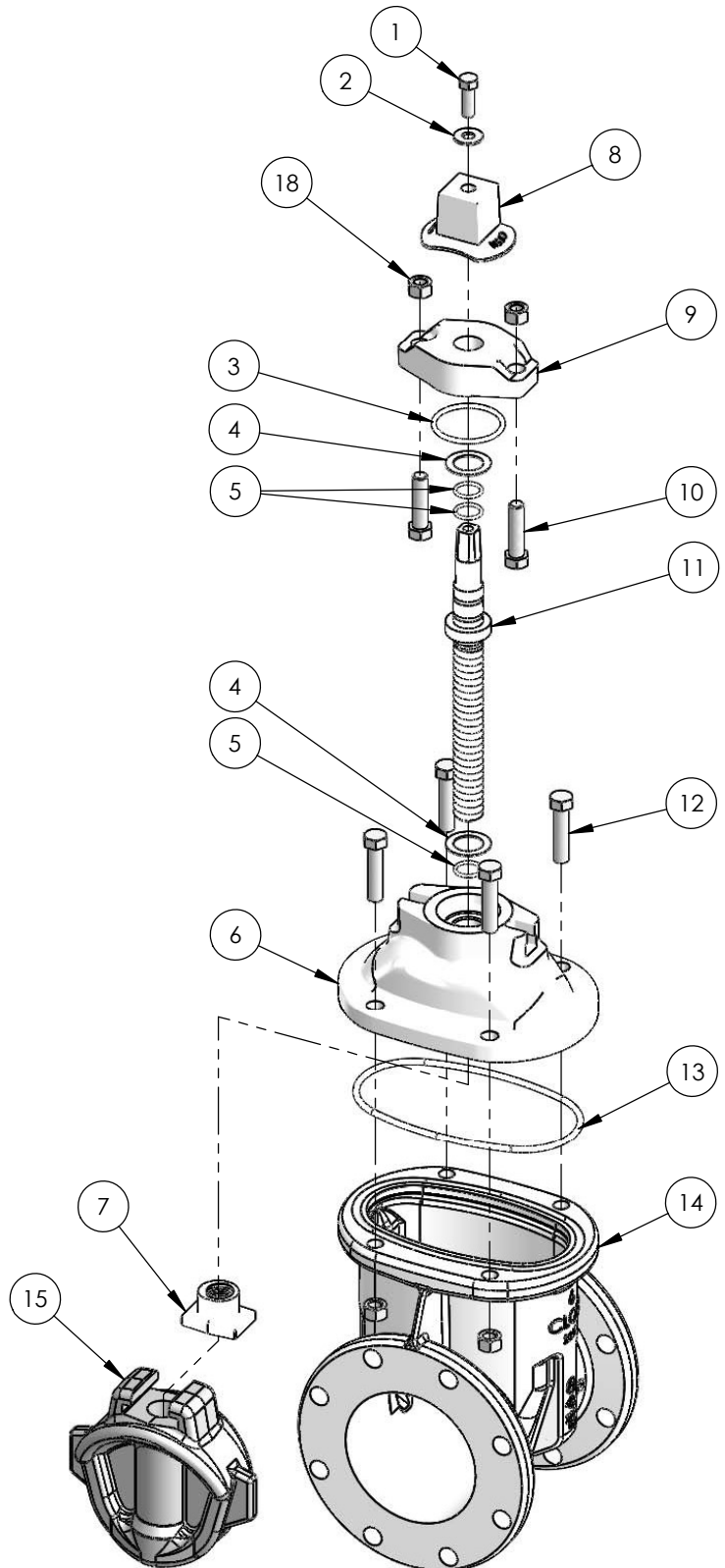
Complies with applicable requirements of AWWA C509

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



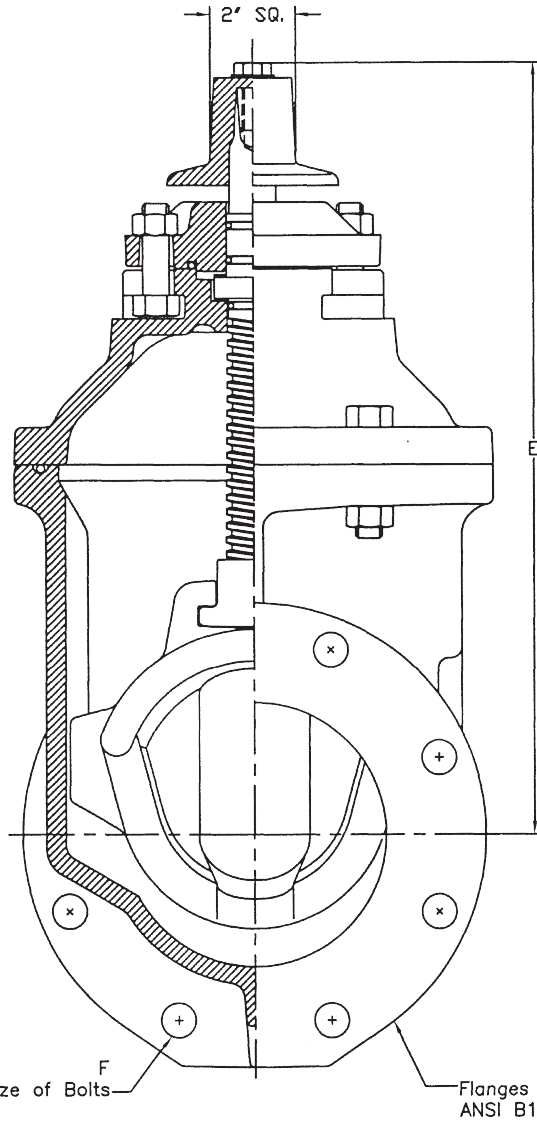
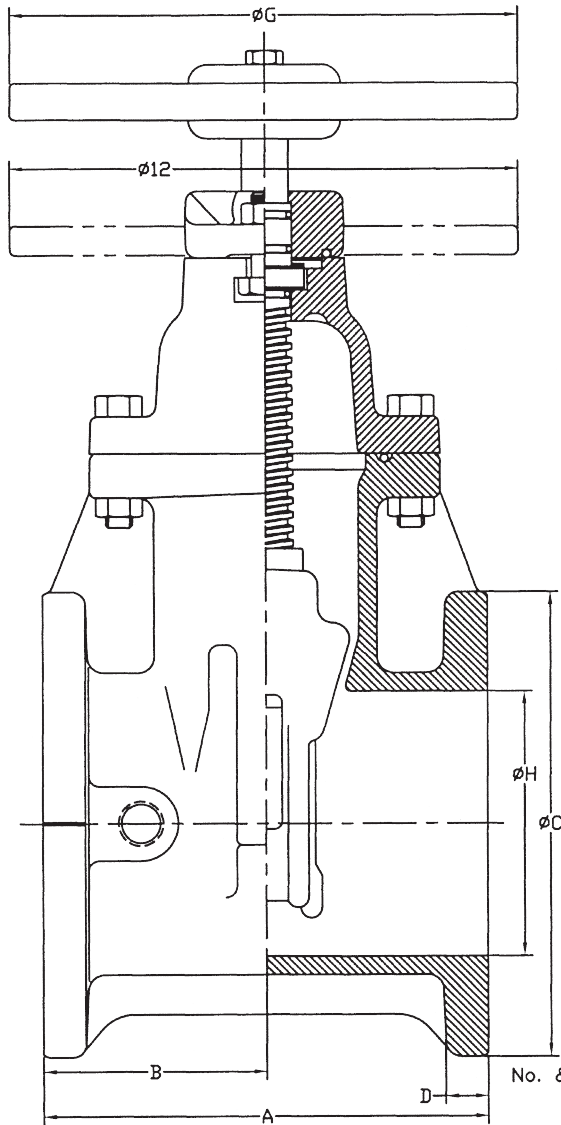
Complies with applicable requirements of AWWA C509

2"-12" R/W VALVE FLANGED ENDS
GENERAL DIMENSION

CLOW VALVE COMPANY

MODEL 2639 & 2640

F-6102



VALVE SIZE	A	B	C	D	E	F	G	H
2	7	3½	6	5/8	10⅞	4-5/8	7¼	2
2½	7½	3¾	7	11/16	11¾	4-5/8	7¼	2½
3	8	4	7½	¾	12¾	4-5/8	10	3
4	9	4½	9	15/16	14¾	8-5/8	10	4¼
X 6	10½	5¼	11	1	19	8-¾	12	6¼
X 8	11½	5¾	13½	1¼	22½	8-¾	14	8¼
X 10	13	6½	16	1¾	26½	12-7/8	18	10¼
X 12	14	7	19	1¼	30	12-7/8	18	12¼

Carbon Steel Flange Nut & Bolt Set

ASTM A307 GRADE A / SAE J995 GRADE 2

FEATURES

- For 150# & 300# ANSI Flanges
- Lengths for Joining Two Flanges*
- Material: Carbon Steel
- Finish: Zinc Plated
- Sizes: 1/2" to 24" (150#), 1/2" to 12" (300#)

STANDARDS

Bolts:

- Material - ASTM A307A Grade A
- Dimensions - ASME B18.2.1
- Thread - Class 2A

Nuts:

- Material - SAE J995 Grade 2
- Dimensions - ASME B18.2.2
- Thread - Class 2B

BOLT PROPERTIES

- Tensile: 60 KSI Minimum
- Elongation: 18% Minimum
- Hardness: 69 - 100 Rb



*Based on 1/16" raised face and 1/8" gasket

300# Pack Quantities & Bolt Sizes (inches)				
Size	Bolt	Nut Qty	Diameter	Bolt Length
1/2	4	4	1/2-13	2-1/4
3/4	4	4	5/8-11	2-1/2
1	4	4	5/8-11	2-1/2
1-1/4	4	4	5/8-11	2-3/4
1-1/2	4	4	3/4-10	3
2	8	8	5/8-11	3
2-1/2	8	8	3/4-10	3-1/4
3	8	8	3/4-10	3-1/2
4	8	8	3/4-10	3-3/4
5	8	8	3/4-10	4-1/4
6	12	12	3/4-10	4-1/4
8	12	12	7/8-9	4-3/4
10	16	16	1-8	5-1/2
12	16	16	1-1/8-7	5-3/4

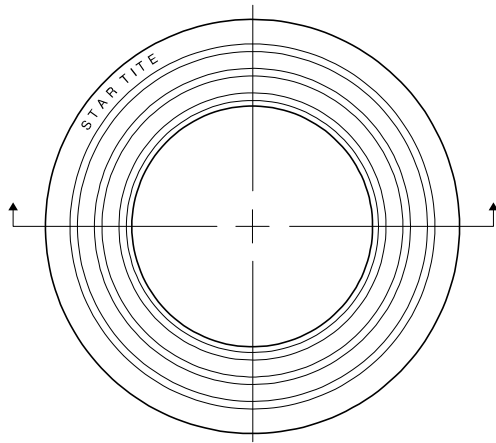
150# Pack Quantities & Bolt Sizes (inches)				
Size	Bolt	Nut Qty	Diameter	Bolt Length
1/2	4	4	1/2-13	2
3/4	4	4	1/2-13	2
1	4	4	1/2-13	2-1/4
1-1/4	4	4	1/2-13	2-1/4
1-1/2	4	4	1/2-13	2-1/2
2	4	4	5/8-11	2-3/4
2-1/2	4	4	5/8-11	3
3	4	4	5/8-11	3
4	8	8	5/8-11	3
5	8	8	3/4-10	3-1/4
6	8	8	3/4-10	3-1/4
8	8	8	3/4-10	3-1/2
10	12	12	7/8-9	4
12	12	12	7/8-9	4
14	12	12	1-8	4-1/2
16	16	16	1-8	4-1/2
18	16	16	1-1/8-7	5
20	20	20	1-1/8-7	5-1/2
24	20	20	1-1/8-7	6

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Star-Tite™ Flanged Gasket

3" to 36", Ring Style



TOP VIEW



SECTION VIEW

INTRODUCTION

Historically, flat red rubber gaskets have been used for sealing flanged joints. These gaskets may not have NSF/ANSI 61 or NSF/ANSI 372 certification and do not qualify for higher ratings in standards such as ANSI/AWWA C110/A21.10. The Star-Tite™ flanged gasket is a specially designed gasket that qualifies for the higher rating. It also is listed by UL as satisfying both NSF/ANSI 61 and NSF/ANSI 372 requirements for potability.



LOWER TORQUE

The Star-Tite™ Ring Gasket has about one half the area to compress when compared to a full face gasket, which results in a reduction of the torque required to achieve a proper seal. In addition, the Star-Tite™ Ring Gasket incorporates three bulbs that are molded into the gasket, a geometry that improves the performance when compared to a typical flat full face red rubber gasket.

HIGHER PERFORMANCE

AWWA standard ANSI/AWWA C110/A21.10 describes specially designed gaskets as follows:

Also available for most sizes are specially designed gaskets, either ring or full-face, using one or more annular rings molded into the gasket to improve the gasket performance.

Appendix A, Section A.2, Gaskets

Footnotes below the pressure rating tables in ANSI/AWWA C110/A21.10 for flanged fittings allow the rating of flanged fittings that use these special gaskets to be 350 psi in sizes 24-inch and less. The Star-Tite™ gasket qualifies as one of these special gasket designs. When normal flat full face red rubber gaskets are used, the rating is 250 psi.

The bulb type rings on the Star-Tite™ ring gasket allow the gasket material to compress in three localized areas of the flange. The inner bulb is located inside the tapered pipe thread that is typical with fabricated pipe. This creates a pressure boundary that prevents leakage through the threaded connection, which is shown in Figure 1 on the next page. The outer two bulbs better accommodate minor misalignment that occasionally occurs when flat surfaces are mated together.

STAR® PIPE PRODUCTS





Star-Tite™ Flanged Gasket

3" to 36", Ring Style

TECHNICAL INFORMATION

Figure 1.

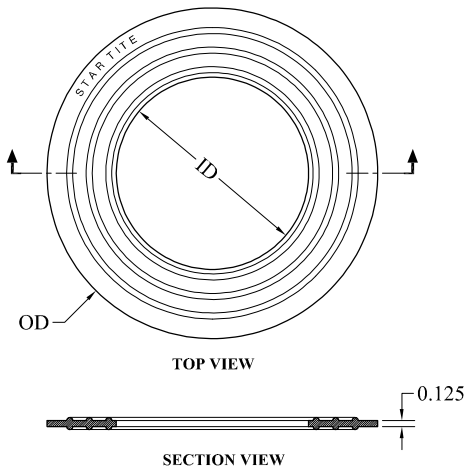
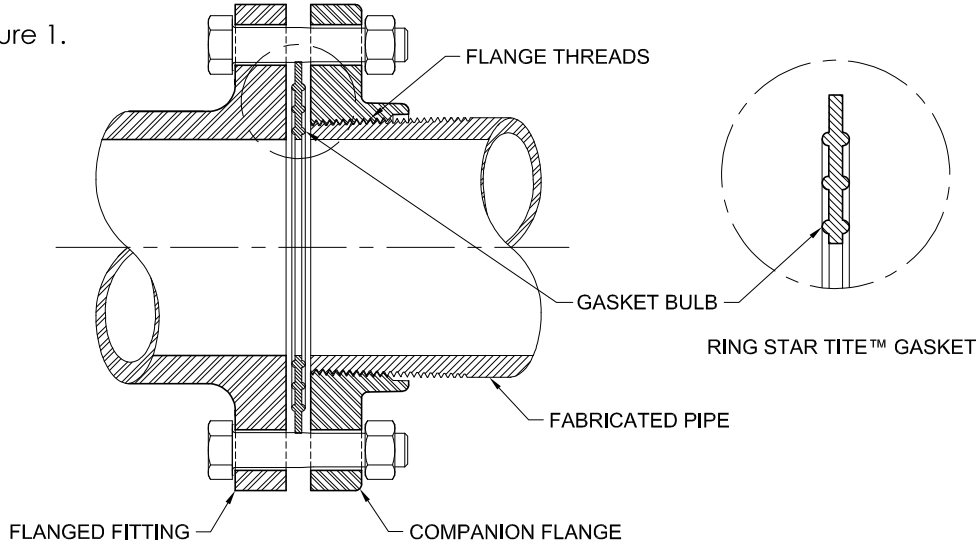


Table 1 - FLANGE ACCESSORY PACKS C111/A.21.11*							
NOM. SIZE	ID	OD	BOLTS	BOLTS (QTY)	MAX PRESSURE RATING (PSI)	BOLT TORQUE (FT-LB)	APPROX. WT. (LBS)
3	3.000	5.375	5/8 x 2 1/2	4	350	110	2
4	4.000	6.875	5/8 x 3	8	350	110	4
6	6.000	8.750	3/4 x 3 1/2	8	350	110	5
8	8.000	11.000	3/4 x 3 1/2	8	350	110	5
10	10.000	13.375	7/8 x 4	12	350	130	12
12	12.000	16.125	7/8 x 4	12	350	130	13
14	14.000	17.750	1 x 4 1/2	12	350	150	19
16	16.000	20.250	1 x 4 1/2	16	350	160	25
18	18.000	21.625	1 1/8 x 5	16	350	180	36
20	20.000	23.875	1 1/8 x 5	20	350	200	45
24	24.000	28.250	1 1/4 x 5 1/2	20	350	220	61
30	30.000	34.750	1 1/4 x 6 1/2	28	250	140	94
36	36.000	41.250	1 1/2 x 7	32	250	160	172

*All dimensions in inches except where indicated.

GENERAL SPECIFICATIONS

- HEX BOLTS:** Per ANSI/ASME B18.2.1- Material per ASTM A307 Grade B, Zinc Plated
- HEX NUTS:** Per ANSI/ASME B18.2.2 - Material per ASTM A563 Grade A or B, Zinc Plated
- GASKET MATERIAL:** Vulcanized Styrene Butadiene Rubber (SBR)
- DIMENSIONS:** Refer to Table 1 above or FAH03-36RG submittal drawing number A6531.
- CERTIFICATIONS:** UL listed to NSF/ANSI 61 and NSF/ANSI 372 for potability.
- PRESSURE RATING:** 350 psi for sizes 3" to 24"; 250 psi for sizes 30" to 36".

STAR® PIPE PRODUCTS



Star® Pipe Products

Full Face Gasket, 8 in, Star Tite

Part: STTFFG8 MFG: FAH08FFG

Description

Star® Pipe Products, FAH08FFG, Gasket, Full Face, 8 in Nominal, Star Tite

Specifications

Type	Full Face
Nominal Size	8 in
Material	Star Tite

Brand	Star® Pipe Products
-------	---------------------

Manufacturer	Star Pipe Products
Manufacturer Part Number	FAH08FFG



Star® Pipe Products

Full Face Gasket, 12 in, Star Tite

Part: STTFFG12 MFG: FAH12FFG

Description

Star® Pipe Products, FAH12FFG, Gasket, Full Face, 12 in Nominal, Star Tite

Specifications

Type	Full Face
Nominal Size	12 in
Material	Star Tite

Brand	Star® Pipe Products
-------	---------------------

Manufacturer	Star Pipe Products
Manufacturer Part Number	FAH12FFG

HYMAX 2

HYMAX[®] 2 COUPLING (4" - 12")



FEATURES

- ADVANCED WIDE-RANGE COUPLING WITH A PATENTED FLIP GASKET
- ELIMINATES GASKET REMOVAL MISTAKES AND MAXIMIZES INSTALLER WORK EFFICIENCY
- ONLY 2-4 TOP FACING BOLTS, FOR FASTER AND SAFER INSTALLATION
- READY-TO-USE DESIGN TO ELIMINATE EXTENSIVE PREPARATORY UNDER-PIPE DIGGING
- ALLOWS 4° DYNAMIC DEFLECTION ON EACH END, REDUCING FUTURE PIPE DAMAGE
- PATENTED HYDRAULICALLY-ASSISTED GASKET WITH 2-STAGE SEALING
- SUITABLE FOR ALL TYPES OF PIPES - DUCTILE IRON, CAST IRON, STEEL, COPPER, PE, PVC, AC, GRP
- ONE PRODUCT CAN CONNECT PIPES OF TWO DIFFERENT MATERIALS
- BASED ON THE GAME-CHANGING HYMAX THAT HAS BEEN FIELD-PROVEN IN MILLIONS OF INSTALLATIONS IN THE US
- PRODUCT PERFORMANCE, OD RANGE AND PRESSURES ARE IDENTICAL TO THOSE OF THE ORIGINAL HYMAX

SPECIFICATIONS

STANDARDS

HYMAX2 MEETS OR EXCEEDS STANDARDS AWWA C-219, NSF 61, NSF 372.

SIZE

AVAILABLE IN NOMINAL DIAMETER FROM 4" - 12" STANDARD. CALL KRAUSZ FOR DETAILS.

MATERIALS

END RINGS 4" - 12" ASTM A283 / A283M GRADE C STEEL.

CENTER RING 4" - 12" ASTM A53 GRADE A STEEL.

GASKETS EPDM COMPOUNDED FOR WATER AND SEWAGE, MEETS INTERNATIONAL STANDARDS FOR CONTACT WITH DRINKING WATER.

BRIDGE AISI 304 STAINLESS STEEL.

SPHERICAL SPACERS AISI 304L STAINLESS STEEL.

COATING 100% FUSION BONDED EPOXY FOR ENHANCED CORROSION PROTECTION. NOMINAL THICKNESS 14 MIL.

NUTS & BOLTS AISI 304 STAINLESS STEEL. ROLLED THREAD AND ANTI-GALLING COATING.

HYMAX[®]

Repair the past. Connect the future.

KRAUSZ is the creator of HYMAX

PRODUCT SPECIFICATIONS

HYMAX 2



PRODUCT PERFORMANCE (*)

WORKING TEMPERATURE	-20°F UP TO +125°F
DYNAMIC DEFLECTION	UP TO 4° PER SIDE
MIN. PIPE INSERTION	2.25"
MAXIMUM OFFSET FOR MISALIGNED PIPES	0.51"
MAXIMUM OUT OF ROUNDES	0.31"
WORKING PRESSURE	260
RATED PRESSURE	390
VACUUM TEST	12 PSI

* See Submittal Drawings For Details.

PRODUCT TABLES

HYMAX[®]2 NOMINAL SIZES (4" - 12")

Krausz Part Number	Nominal Diameter (inch)	Overall Range (inch)	Range in closed gasket position (inch)	Range in open gasket position (inch)	Bolt Qty. and Size (mm)	Torque (Ft-Lbs)	Approx. Weight (Lbs)
860-54-0108-16	4	4.25-5.63	4.25-5.00	4.92-5.63	2 -M14	75	15
860-54-0130-16	5	5.12-6.38	5.12-5.75	5.71-6.38	2 -M14	75	19
860-54-0163-16	6	6.42-7.68	6.42-7.05	7.01-7.68	2 -M14	75	23
860-54-0190-16	7	7.48-8.74	7.48-8.11	8.07-8.74	2 -M14	75	24
X 860-54-0217-16	8	8.54-9.84	8.54-9.17	9.13-9.84	2 -M14	75	28
860-54-0272-16	10	10.70-12.00	10.70-11.37	11.33-12.00	2 -M14	75	32
860-54-0278-16	10	10.96-12.26	10.96-11.63	11.59-12.26	2 -M14	75	33
X 860-54-0315-16	12	12.40-13.66	12.40-13.03	12.99-13.66	2 -M14	80	39
860-54-0334-16	12	13.15-14.41	13.15-13.78	13.74-14.41	2 -M14	80	39

For specific sizes of products in stock, call Krausz for details.