



Town of Stowe
Bridge Street Utilities

Shop Drawing No.: 2
Contractor's Ref No.: N/A
Date Received: 10/30/2014
Drawing No/s:
Spec Section/s: N/A

A+E Project No. 14012

Shop Drawing Description: Valves and Fittings

Reviewed By: ENV JaB STR ME EE

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. The contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

- Furnish As Submitted
- Furnish As Corrected
- Furnish As Corrected/Resubmit Additional Data
- Revise/Resubmit
- Rejected/Resubmit
- Reviewed

Aldrich + Elliott, PC

Date Reviewed: 10/30/2014

By: Jason R. Booth, PE

Review Notes:



Visit our website at www.kennedyvalve.com

KENNEDY VALVE

A DIVISION OF MCWANE, INC. | ASSOCIATED WITH AWWA, NSF AND ULFM

C-515 REDUCED WALL DUCTILE IRON RESILIENT WEDGE VALVE



4" THROUGH 12"

MODEL KS-RW



429 Troy Avenue • Colchester, Vermont 05446
Phone (802) 655-3505 • Fax (802) 655-7943
www.ferguson.com

Nobody expects more from us than we do™

**AWWA C-515
AWWA C-550**



Approved

PROUDLY



**MADE IN ANNISTON, ALABAMA
USA**

C-515 DUCTILE IRON RESILIENT WEDGE VALVE

During the decade of the 1980's, the waterworks industry was introduced to the Resilient Seated Gate Valve, a design principal that is dominate in preference for use in distribution systems. Kennedy Valve Company was at the forefront in this industry-wide movement by introducing the Style 4067, our AWWA C509 Resilient Seated Gate Valve.

After the official adoption of the AWWA C515 specification, Kennedy once again is on the forefront of modern valve design and construction.

The Kennedy Model KS-RW Resilient Seated Gate Valve embodies all of the latest valve technology for simplicity, durability and superior performance. With the end user in mind, Kennedy engineering designed the Kennedy Model KS-RW to be fully interchangeable with the Kennedy C509 Style 4067. Kennedy Model KS-RW meets or exceeds AWWA C515 and C550 in all sizes. Kennedy C515 valves are listed by Underwriters Laboratories and are approved by Factory Mutual Research. With no compromise in materials or workmanship, Kennedy Model KS-RW valves carry a 10 year limited warranty. . . it's the clear choice of those who demand the best.

RECOMMENDED SPECIFICATIONS FOR C-515 DUCTILE IRON RESILIENT WEDGE GATE VALVES

KENNEDY VALVE COMPANY

Valves shall conform to the latest revision of AWWA Standard C-515 covering resilient seated gate valves for all water supply service.

The Valves shall have a ductile iron body, bonnet, and o-ring plate. The wedge shall be totally encapsulated with rubber. Blind bolts shall not be allowed.

The sealing rubber shall be permanently bonded to the wedge per ASTM D429.

Valves shall be supplied with o-ring seals at all pressure retaining joints. No flat gaskets shall be allowed. . Blind bolts shall not be allowed.

The valves shall be either non-rising stem or rising stem, opening by turning left or right, and provided with 2" square operating nut or a handwheel with the word "Open" and an arrow to indicate the direction to open.

Stems for NRS assemblies shall be cast bronze with integral collars in full compliance with AWWA. OS&Y (rising stems) shall be bronze. All stems shall operate with bronze stem nuts independent of wedge and of stem (in NRS valves). Stainless steel stems or stem nuts are not allowed. NRS stems shall have two o-rings located above thrust collar and one o-ring below. Stem o-rings shall be replaceable with valve fully opened and subjected to full pressure. The NRS stems on 4"-12" shall also have two low torque thrust bearings located above and below the stem collar to reduce friction during operation.

Waterway shall be smooth, unobstructed and free of all pockets, cavities and depressions in the seat area. Tapping valves 4" and larger shall accept a full size tapping cutter.

The body, bonnet, and o-ring plate shall be fusion-bond epoxy coated, both interior and exterior on body and bonnet. Epoxy coating shall be NSF 61 approved and applied in accordance with AWWA C550.

Each valve shall have manufacturers name, pressure rating, and year in which it was manufactured cast in the body. Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to the requirements of AWWA C-515 (and UL/FM where applicable).

Valves shall have all component parts cast and assembled in the USA and shall be manufactured by the Kennedy Valve Company.

Kennedy ULFM - AWWA R/W VALVE

Features and Benefits

DELRIN THRUST BEARINGS ABOVE AND BELOW THE THRUST COLLAR REDUCE FRICTION AND MINIMIZE OPERATING TORQUES

ELECTRO-PLATED NUTS AND BOLTS PROVIDE LONG-LIFE CORROSION PROTECTION. STAINLESS STEEL BOLTS AND NUTS ARE AVAILABLE WHEN REQUESTED.

LONG, TROUBLE FREE LIFE WITH HIGH STRENGTH, NON-CORROSIVE BRONZE STEM AND STEM NUT.

100% COATED WEDGE ENSURES BUBBLE-TIGHT SEAL EVERY TIME UP TO 250 PSI. WITH TWIN SEAL DESIGN.

ELLIPTICAL BOLT HOLE DESIGN ELIMINATES THE NEED FOR ANTI-ROTATION BOLTS

SMOOTH, UNOBSTRUCTED FULL SIZE WATERWAY IS FREE OF POCKETS, CAVITIES, AND DEPRESSIONS ALLOWING FOR MINIMAL FLOW LOSS AND LOWER PUMPING COSTS.

ALL TAPPING VALVES ACCEPT FULL SIZE TAPPING CUTTER.

THE OPERATING MECHANISM IS TRIPLE O-RING SEALED TO COMPLETELY SEAL AGAINST LEAKAGE PAST THE STEM. TWO O-RINGS ARE PROVIDED ABOVE THE THRUST COLLAR AND ONE BELOW. UPPER O-RINGS CAN BE REPLACED UNDER PRESSURE WITHOUT REMOVING THE STEM WHEN THE VALVE IS FULLY OPENED.

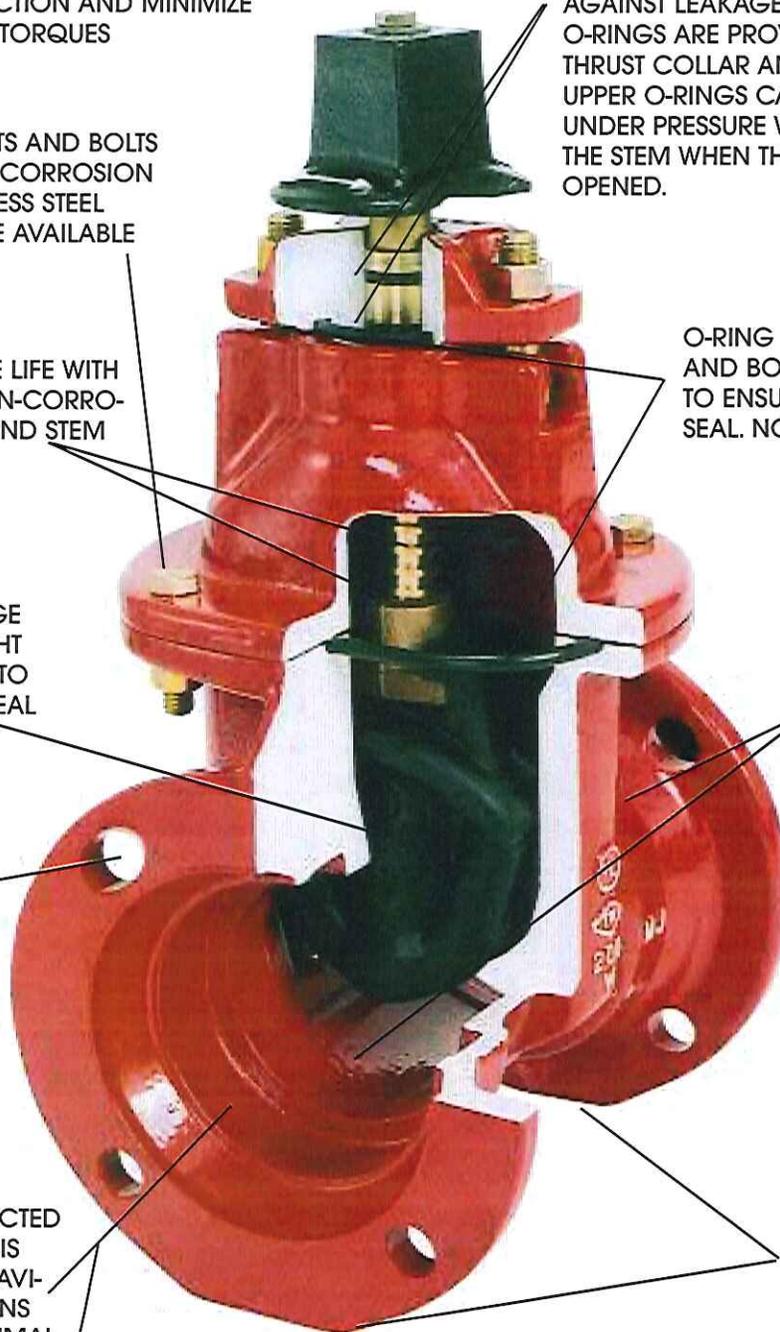
O-RING SEALS AT STUFFING BOX AND BONNET TO BODY FLANGES TO ENSURE THE BEST POSSIBLE SEAL. NO FLAT GASKETS.

KENNEDY CORROSION RESISTANT FUSION-BONDED EPOXY COATING, CONFORMING TO AWWA C-550 AND NSF61 APPROVED, PROTECTS BOTH INSIDE AND OUTSIDE OF VALVE.

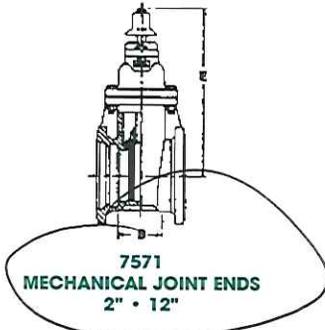
PADS ON THE BOTTOM OF ALL VALVES KEEP VALVE IN UPRIGHT POSITION FOR EASIER STORAGE AND PROTECTION FROM THE ELEMENTS.

ALL VALVES ARE RATED AT 250 PSI FOR AWWA SERVICE AND 200 PSI FOR ULFM SERVICE. ALL VALVES ARE HYDROSTATICALLY TESTED TO 500 PSI.

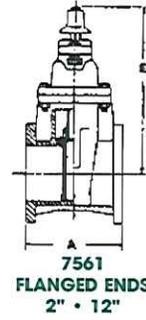
10 YEAR LIMITED WARRANTY



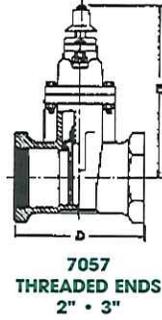
AVAILABLE END CONNECTIONS & DIMENSIONS FOR KENNEDY 4" - 12" C-515 DUCTILE IRON RESILIENT WEDGE VALVE



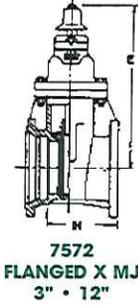
**7571
MECHANICAL JOINT ENDS
2" • 12"**



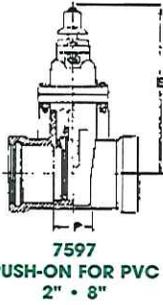
**7561
FLANGED ENDS
2" • 12"**



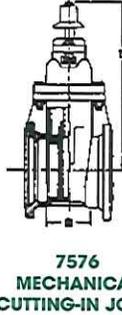
**7057
THREADED ENDS
2" • 3"**



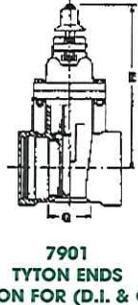
**7572
FLANGED X MJ
3" • 12"**



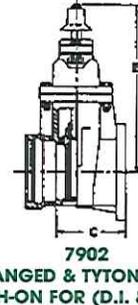
**7597
PUSH-ON FOR PVC
2" • 8"**



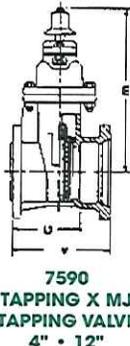
**7576
MECHANICAL
CUTTING-IN JOINT
4" • 12"**



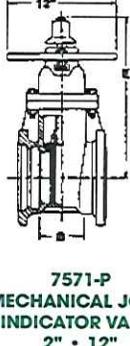
**7901
TYTON ENDS
PUSH-ON FOR (D.I. & C900)
4" • 12"**



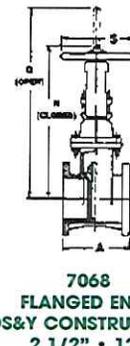
**7902
FLANGED & TYTON JOINT
PUSH-ON FOR (D.I. & C900)
4" • 12"**



**7590
TAPPING X MJ
TAPPING VALVE
4" • 12"**



**7571-P
MECHANICAL JOINT
POST INDICATOR VALVE (PIV)
2" • 12"**



**7068
FLANGED ENDS
OS&Y CONSTRUCTION
2 1/2" • 12"**

Model KS-RW

***NOTE 2" TO 3" VALVES ARE FULL WALL DUCTILE IRON

	A	B	C	D	E	G	H	P	Q	R	S	U	V	No. of Turns to Full Open
2"	7	3 1/4	—	5 1/4	10 7/8	—	—	3	—	—	7 1/4	—	—	4 3/4
2 1/2"	7 1/2	—	—	7	11 3/8	—	—	3 1/4	16 3/8	13 7/8	7 1/4	—	—	5 1/2
3"	8	3 1/2	—	7 7/8	12 3/8	—	5 3/4	3 1/2	18 7/8	15 5/8	10	—	—	10
4"	9	4 1/2	6 3/4	—	14 3/4	4 1/2	6 3/4	4 1/2	22 3/4	18 1/4	10	6 3/4	9 1/4	13 1/2
6"	10 1/2	5 1/2	7 7/8	—	19	5 1/4	7 3/4	5	30 1/8	23 3/4	12	8	10 1/2	19 1/2
8"	11 1/2	8 1/2	8 1/2	—	22 1/2	5 5/8	9 3/4	5 1/2	37 3/4	29 1/4	14	10 3/4	13 1/4	25 1/2
10"	13	10 1/2	10	—	26 1/2	7	11 3/4	—	45 3/4	35 3/8	18	11 3/4	14 1/4	31 1/2
12"	14	10 3/4	11 1/4	—	30	8 1/2	12 3/8	—	53 1/8	40 5/8	18	12 3/8	15	37 3/4

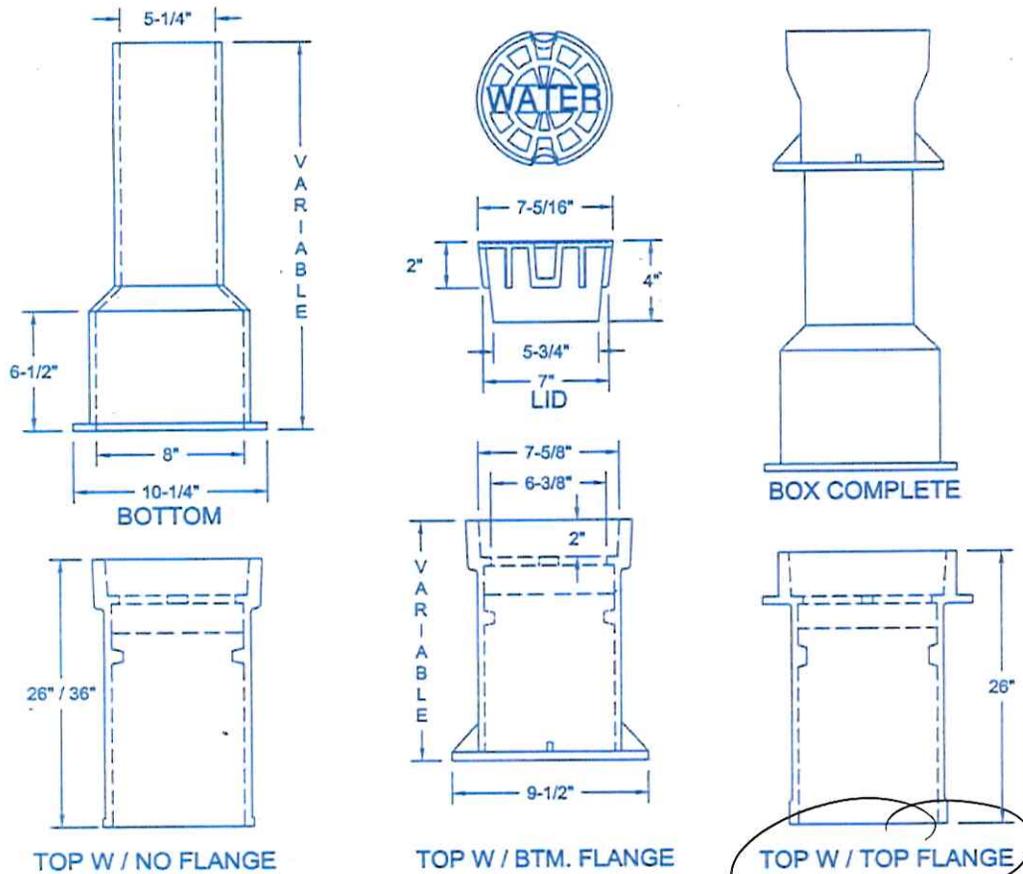


KENNEDY VALVE

A DIVISION OF MCWANE, INC.
www.kennedyvalve.com

1021 E. Water Street
Elmira, New York 14901
P.O. Box 981
Phone (607) 734-2211
Fax 1-607-734-3288

GENERAL FOUNDRIES INC.



ITEM NUMBER	DIMENSIONS IN INCHES		
	TOP	BOTTOM	RANGE
30461	10	15	20 - 24
30462	10	24	28 - 33
30562	16	24	28 - 38
30564	16	36	40 - 51
30664	26	36	40 - 61
30666	26	48	52 - 82
30668	26	60	63 - 83
30669	36	36	50 - 80

NOTE: 1.) LIDS ARE AVAILABLE MARKED: WATER, SEWER, FIRE, GAS, DRAIN, WATER & SEWER WITH LEFT / RIGHT ARROWS & WITH NO MARKING. UNLESS SPECIFIED, LIDS MARKED "WATER" WILL BE SHIPPED.
 2.) LIDS MARKED "WATER" ARE ALSO AVAILABLE WITH A LOCKING DEVICE.
 3.) ITEM 30669 IS AVAILABLE ONLY IN "NO FLANGE" DESIGN.

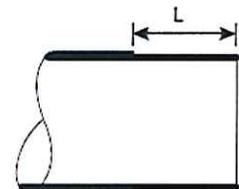
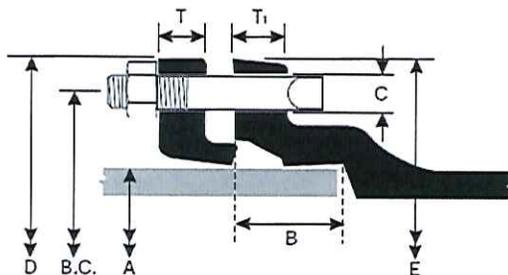
VALVE BOXES, TWO PIECE

SLIP TYPE

Tyler/Union

NON-DOMESTIC C153 MECHANICAL JOINT COMPACT FITTINGS SUBMITTAL

- SIZES:** 3" through 42"
- STANDARDS:** ANSI / AWWA C153 / A21.53
- PRESSURE RATING:** 3" - 24" @350° PSI; 30" - 36" and fittings with flanged branches @ 250 PSI
- NSF 61:** Meets all requirements, UL Certified
- COATING:** ANSI / AWWA C104 / A21.4 and Tnemac 140-1211
- CEMENT LINING:** ANSI / AWWA C104 / A21.4
- BOLTS:** ANSI / AWWA C111 / A21.11
- INSTALLATION:** AWWA C600



MECHANICAL JOINT DETAILS

PLAIN END DETAILS

Size	A	B	B.C.	C	D	E	T	T1	Bolts			Size	O.D.	L
									No.	Size	L			
3	3.96	2.50	6.19	3/4	7.69	7.62	0.62	0.58	4	5/8	3	3	3.96	5.5
4	4.80	2.50	7.50	7/8	9.12	9.06	0.75	0.60	4	3/4	3.5	4	4.80	5.5
6	6.90	2.50	9.50	7/8	11.12	11.06	0.88	0.63	6	3/4	3.5	6	6.90	5.5
8	9.05	2.50	11.75	7/8	13.37	13.31	1.00	0.66	6	3/4	4	8	9.05	5.5
10	11.10	2.50	14.00	7/8	15.62	15.62	1.00	0.70	8	3/4	4	10	11.10	5.5
12	13.20	2.50	16.25	7/8	17.88	17.88	1.00	0.73	8	3/4	4	12	13.20	5.5
14	15.30	3.50	18.75	7/8	20.25	20.25	1.25	0.79	10	3/4	4	14	15.30	8.0
16	17.40	3.50	21.00	7/8	22.50	22.50	1.31	0.85	12	3/4	4	16	17.40	8.0
18	19.50	3.50	23.25	7/8	24.83	24.75	1.38	1.00	12	3/4	4	18	19.50	8.0
20	21.60	3.50	25.50	7/8	27.00	27.00	1.44	1.02	14	3/4	4	20	21.60	8.0
24	25.80	3.50	30.00	7/8	31.50	31.50	1.56	1.02	16	3/4	4.5	24	25.80	8.0
30	32.00	4.00	36.88	1 1/8	39.12	39.12	2.00	1.54	20	1	6	30	32.00	8.0
36	38.30	4.00	43.75	1 1/8	46.00	46.00	2.00	1.70	24	1	6	36	38.30	8.0
42	44.50	4.00	50.62	1 3/8	53.12	53.12	2.00	1.45	28	1 1/4	6	42	44.50	8.0
48	50.80	4.00	57.50	1 3/8	60.00	60.00	2.00	1.45	32	1 1/4	6	48	50.80	8.0

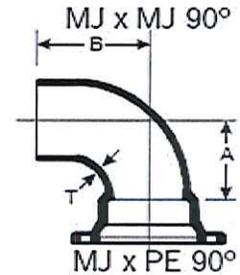
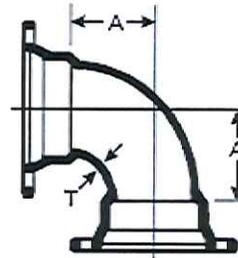
MECHANICAL JOINT COMPACT FITTINGS

Ductile Iron Class 350 as per AWWA / ANSI C153 / A21.53



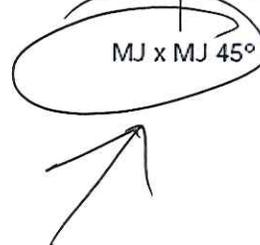
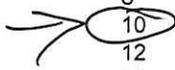
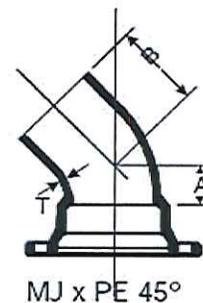
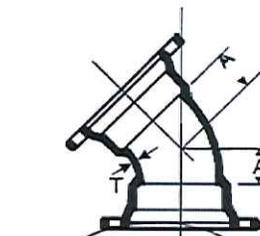
90° BENDS

MJxMJ			MJxPE		
Size	Wt.	A	B	T	Wt.
2	17	3.0		0.30	
3	19	3.5	9.5	0.34	16
4	25	4.0	10.2	0.35	22
6	39	5.0	11.7	0.37	41
8	57	6.5	12.7	0.39	58
10	89	7.5	14.7	0.41	83
12	108	9.0	15.7	0.43	114
14	210	11.5	19.5	0.51	197
16	264	12.5	20.5	0.52	24
18	335	14.0	22.0	0.54	311
20	400	15.0	23.5	0.57	370
24	565	16.75	26.5	0.61	518
30	930	25.5		0.66	
36	1450	24.5		0.76	
42	2205	29.25		0.82	
48	2990	33.25		0.90	



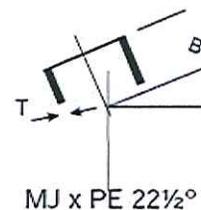
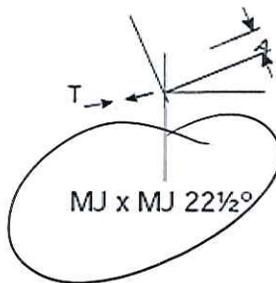
45° BENDS

MJxMJ			MJxPE		
Size	Wt.	A	B	T	Wt.
2	10	1.5		0.30	
3	16	1.5	7.0	0.34	13
4	22	2.0	7.7	0.35	19
6	32	3.0	8.7	0.37	34
8	46	3.5	9.2	0.39	49
10	73	4.5	10.2	0.41	69
12	95	5.5	11.2	0.43	93
14	170	5.0	13.0	0.51	146
16	214	5.5	13.5	0.52	184
18	253	6.0	14.0	0.54	246
20	310	7.0	15.0	0.57	293
24	410	7.5	15.5	0.61	390
30	716	10.5		0.66	
36	1110	11.5		0.76	
42	1610	14.0		0.82	
48	2090	15.0		0.90	



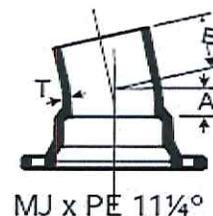
22½° BENDS

MJxMJ					MJxPE	
Size	Wt.	A	B	T	Wt.	
3	15	1.00	6.5	0.34	12	
4	18	1.50	7.0	0.35	18	
6	31	2.00	7.5	0.37	29	
8	46	2.50	8.0	0.39	43	
10	64	3.00	8.5	0.41	61	
12	80	3.50	9.0	0.43	79	
14	136	3.75	13.0	0.51	133	
16	172	3.75	13.5	0.52	160	
18	255	4.50	14.0	0.54	248	
20	315	4.50	15.0	0.57	290	
24	412	4.50	15.5	0.61	395	
30	665	6.75		0.66		
36	960	7.75		0.76		
42	1350	9.00		0.82		
48	1760	10.00		0.90		



11¼° BENDS

MJxMJ					MJxPE	
Size	Wt.	A	B	T	Wt.	
3	14	1.00	6.50	0.34	12	
4	16	1.25	6.75	0.35	17	
6	30	1.50	7.00	0.37	27	
8	42	1.75	7.25	0.39	39	
10	58	2.00	7.50	0.41	52	
12	67	2.25	7.75	0.43	69	
14	93	2.50	13.00	0.51	118	
16	148	2.50	13.50	0.52	136	
18	205	3.00	14.00	0.54	248	
20	245	3.00	15.00	0.57	291	
24	315	3.00	15.50	0.61	400	
30	600	4.75		0.66		
36	820	5.00		0.76		
42	1180	6.00		0.82		
48	1475	6.50		0.90		



Uni-Flange® Series 1500 Circle Lock

Patent No. 6322273

MJ Retainer Gland Joint Restraint for PVC Pipe

Actuating Screws -

Ductile iron per ASTM A-536, Grade 65-45-12, with the Auto-Tork break-away head design, ensures proper torque during installation.

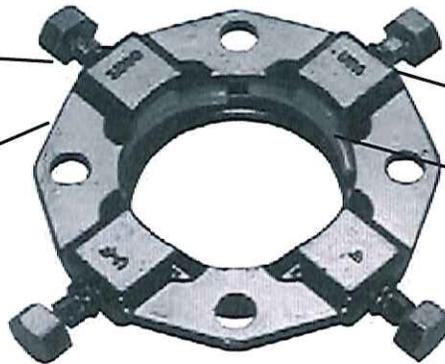
Gland -

High Strength Ductile Iron per ASTM A536, Grade 65-45-12. Compatible with all mechanical joints conforming to ANSI / AWWA C111 / A21.11.

Color Code: Red

Finish -

Shop coat that is suitable for most field applied coatings.



A stop ring will be furnished if used on 4" - 12" C909 or DR25 pipe. Add "-TW" to the end of the catalog number.

Safety stop ensures ring segments can never be over-tightened.

Ring Segments -

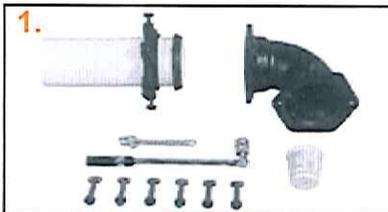
Ductile iron per ASTM A536 and heat treated to a hardness of 370 BHN minimum.

The Uni-Flange® Series 1500 offers a minimum 2:1 safety factor at the full rated pressure of the PVC pipe on which it is installed, in all sizes, when tested in dead-end situations.

Sample Specification - Series 1500

Restraint for PVC pipe joined with standardized mechanical joint fittings shall be incorporated in the design of the follower gland and shall provide full circle contact and support of the pipe wall. Restraint shall be accomplished by a series of ring segments mechanically retained inside the gland housing and designed to grip the pipe wall in an even and uniform manner. Restraining ring segments shall be actuated by bolts featuring "Auto-Tork" twist off heads to ensure proper installation torque is applied. A safety stop on the Auto-Tork bolt shall limit the force applied to the ring segment against the pipe. All components of the restrainer, including the gland, bolts, and restraint segments shall be of high strength ductile iron, ASTM A536, Grade 65-45-12. Restraining devices shall be UL Listed / FM Approved on AWWA C-900 PVC pipe and shall be certified by a third party testing laboratory as meeting or exceeding ASTM F1674-96 Standard Test Method for Joint Restraint Devices for PVC Pipe. Restraining devices shall be manufactured by a facility independently certified to ISO 9001 quality standard and shall be Ford / Uni-Flange® Series 1500 or approved equal.

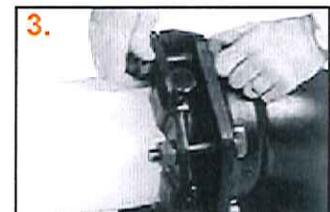
Installation Instructions - 3" with Transition Gasket and 14" through 24" MJ Gasket



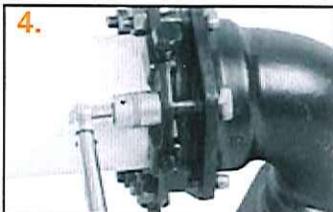
1. Clean the socket and plain end. Lubricate gasket and plain end with approved pipe lubricant meeting AWWA C111. Place the gland on the plain end with the lip extension toward the plain end, followed by the lubricated gasket with the tapered edge of the gasket toward the plain end.



2. Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.



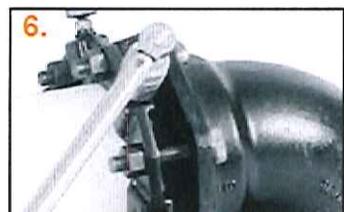
3. Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert T-bolts and hand tighten nuts. Make deflection after joint assembly but before tightening bolts. (max. deflection is 5°)



4. Tighten the T-bolt nuts to the torque recommended in AWWA C111 (75-90 ft-lb in 4"-24" sizes). Tighten in an alternating manner (12 o'clock, 6 o'clock, 9 o'clock, 3 o'clock), maintaining the same gap between the gland and the face of the MJ bell at all points around the socket. Repeat the process until all bolts are within the recommended torque range. Use of a torque wrench is recommended.



5. After correct assembly of the mechanical joint, bring all restraint segments in contact with the pipe surface by turning the "Auto-Tork" actuating screws in a clockwise direction until contact is made with the pipe surface.



6. Tighten each "Auto-Tork" screw approximately 180 degrees (1/2 turn), alternating among screws until the heads twist off. Never turn a single screw more than 180 degrees without alternating to another screw.

U-36 **FORD**

FERGUSON
Waterworks

429 Troy Avenue • Colchester, Vermont 05446
Phone (802) 655-3505 • Fax (802) 655-7943
www.ferguson.com

Nobody expects more from us than we do™

Information - Uni-Flange® Series 1500 Circle Lock

Patent No. 6322273

Features of Uni-Flange® Series 1500

Ford Meter Box / Uni-Flange® has the most technically advanced, high performance joint restraint device for PVC pipe available in the water works industry... the Series 1500 "Circle-Lock."

ADVANTAGES OF THE SERIES 1500

- **Full support of the pipe wall.** The Series 1500 can be used on any thickness class of AWWA C-900 PVC pipe without point loading.
- **UL / FM / ASTM / ISO 9001.** The Series 1500 is Underwriters Laboratories Listed and Factory Mutual Research Corporation approved for PVC pipe. It has also been tested to and exceeds the requirements of ASTM F 1674 "Standard Test Method for Joint Restraint Products for Use with PVC Pipe." It is manufactured by Ford Meter Box, certified by Underwriters Laboratories to ISO 9001 quality standard.
- **Versatility.** 4" - 12" sizes can be used on both C900 PVC and IPS PVC per ASTM A2241 without modification or removal of stop rings.
- **Correct Installation... every time.** The Series 1500 features "Auto-Tork" actuating screws with heads specially designed to twist off at the correct installation torque, leaving a hex head in case future system maintenance or removal is required. This feature offers a visual indicator of correct installation. A special "insurance stop" is built into the bolt. After the Auto-Tork feature has been engaged, the bolt cannot be tightened further...there is never any danger of pipe damage.
- **Restraining segments are mechanically retained in pockets,** they cannot fall out. All parts show up on the job-site.
- **Eliminates the need for concrete thrust blocks.** When you use the Series 1500, there is no need to pour expensive and time consuming concrete thrust blocks. The Series 1500 offers guaranteed joint restraint, in any soil condition, in a matter of minutes.



HOW IT WORKS

The Series 1500 is a mechanical joint restraining gland. It performs two functions during installation; gasket sealing and thrust restraint.

GASKETED SEAL

As with a standard mechanical joint, the gasket seal is made first. This is accomplished by tightening the T-head bolts / nuts that connect the Series 1500 to the mechanical joint fitting. The Series 1500 can be used with any mechanical joint bell conforming to ANSI / AWWA C110 / A21.10, ANSI / AWWA C111/ A21.11, or ANSI / AWWA C153 / A21.53.

THRUST RESTRAINT

The Series 1500 incorporates a series of ductile iron restraint segments that fit in pockets around the inner surface of the specially designed gland housing. These segments are contoured to fit each pipe size exactly and have integrally cast restraint edges along their bottom surface. After the seal is made, the "Auto-Tork" segment actuating screws are tightened. This locks the restraint segments onto the pipe surface, providing complete and total thrust restraint for the joint.

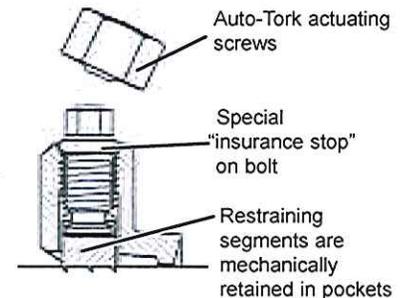
The restraint segments of the 1500 are the key to the design. They spread the restraining force, offering even distribution and support of the pipe. This is important with PVC pipe, especially for thinner wall classes. The restraint segments are designed with a "slot" at the top, which accepts the channeled foot of the activating bolt, so they cannot fall out of their pockets. The Series 1500 meets or exceeds the capabilities of "Factory Restrained Joint Pipe" at a fraction of the cost.

TESTING

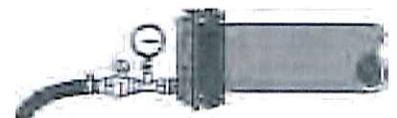
The Series 1500 has successfully passed the rigorous quality assurance and pressure tests required by Underwriters Laboratories, Factory Mutual Research Corporation, and ASTM F-1674. These include the following tests conducted on AWWA C-900 PVC pipe, DR-18:

- all sizes tested to a minimum of 755 psi.
- 1,000 hours at 500 psi.
- Over 1,000,000 cycles oscillating between 94 psi to 188 psi.

All of these tests were against exposed end caps, the most severe test of a restraining device. Contact The Ford Meter Box Company, Inc. for copies of these tests.



The unique design of the Series 1500 offers even distribution and support of the pipe wall. This design utilizes **Ring Segments** and is an exclusive feature of the Series 1500.



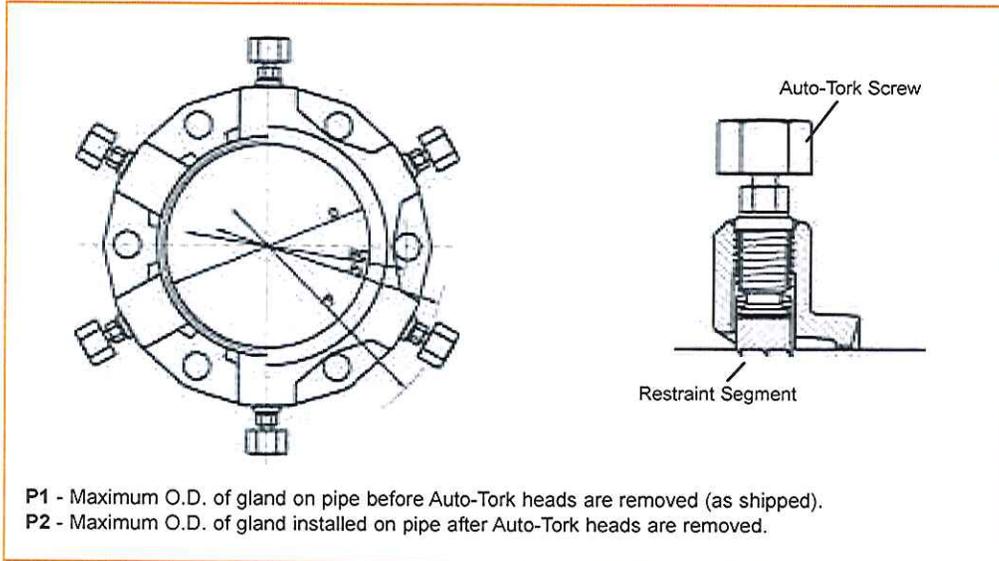
Uni-Flange® Series 1500 Circle Lock

Patent No. 6322273

MJ Retainer Gland Joint Restraint for PVC Pipe

MATERIAL SPECIFICATIONS:

- Gland Body:** High Strength Ductile Iron, ASTM A536, Grade 65-45-12. May be used with all mechanical joint bells conforming to ANSI / AWWA C111 standard.
- Auto-Tork Screws:** High Strength Ductile Iron, ASTM A536, Grade 65-45-12. Designed to twist off at approximately 70 ft-lb.
- Restraint Segments:** Ductile Iron, ASTM A536.



Series 1500 "Circle-Lock" for C900 and IPS PVC Pipe 3" - 12"

NOM. PIPE SIZE	PIPE O.D. (INCHES)	CATALOG NUMBER	NO. OF RESTRAINT SEGMENTS	APPROX. WEIGHT (LBS.)	P1	P2**		BC	D	PRESSURE RATING			
						C-900	IPS			C-900		ASTM D2241	
										DR-18	DR-14	SDR-26	SDR-21
3"	3.50	UFR1500-3-(I or U)	4	8.3	11.50		9.11	6.19	4.06	-	-	-	-
4"	4.80	UFR1500-4-(I or U)	4	10.0	13.00	10.25	9.95	7.50	4.90	150 PSI	200 PSI	160 PSI	200 PSI
6"	6.90	UFR1500-6-(I or U)	6	14.0	15.13	12.17	11.90	9.50	7.00	150 PSI	200 PSI	160 PSI	200 PSI
8"	9.05	UFR1500-8-(I or U)	6	18.0	17.25	14.15	13.73	11.75	9.15	150 PSI	200 PSI	160 PSI	200 PSI
10"	11.10	UFR1500-10-(I or U)	8	26.0	19.38	16.40	16.08	14.00	11.20	150 PSI	200 PSI	160 PSI	200 PSI
12"	13.20	UFR1500-12-(I or U)	8	29.0	21.50	18.28	17.83	16.25	13.30	150 PSI	200 PSI	160 PSI	200 PSI

I = Import Casting U = Domestic Casting

Series 1500-C "Circle-Lock" for C905 PVC Pipe 14" - 24"

NOM. PIPE SIZE	PIPE O.D. (INCHES)	CATALOG NUMBER AWWA C-905 PVC PIPE	NO. OF RESTRAINT SEGMENTS	APPROX. WEIGHT (LBS.)	P1	P2	BC	D	PRESSURE RATING AWWA C-905	
									DR-18	DR-25
									14"	15.30
16"	17.40	UFR1500-C-16-(I or U)	12	62.0	26.2	25.3	21.00	17.54	235 PSI	165 PSI
18"	19.50	UFR1500-C-18-(I or U)	12	78.0	28.3	27.4	23.25	19.64	235 PSI	165 PSI
20"	21.60	UFR1500-C-20-(I or U)	14	95.0	30.4	29.5	25.50	21.74	235 PSI	165 PSI
24"	25.80	UFR1500-C-24-(I or U)	16	125.0	34.6	33.7	30.00	25.94	235 PSI	165 PSI

I = Import Casting U = Domestic Casting

Uni-Flange® Series 1500 Circle Lock

Patent No. 6322273

MJ Retainer Gland Joint Restraint for PVC Pipe

Series 1500 Packaged with Accessories

The Uni-Flange® Series 1500 packaged with accessories is a convenient way to deliver all the components required to install a Series 1500 restraint. Sizes 3" through 12" are shipped shrink wrapped in a weather resistant carton.



PACKAGE CONTAINS

- 1 - Series 1500 retainer gland.
- 1 - Set of high strength, low alloy T-bolts & nuts (AWWA C111).
- 1 - Gasket

Series 1500 "Circle-Lock" Packaged with Accessories 3" - 12"

NOM. PIPE SIZE	PIPE O.D. (INCHES)	CATALOG NUMBER CI SIZE PVC OR IPS PVC PIPE	NO. OF RESTRAINT SEGMENTS	APPROX. WEIGHT (LBS.)	PRESSURE RATING			
					C-900		ASTM D2241	
					DR-18	DR-14	SDR-26	SDR-21
◆ 3"	3.50	UFR1500-3A-(IorU)	4	13.0			160 PSI	200 PSI
4"	4.80	UFR1500-4A-(IorU)	4	13.7	150 PSI	200 PSI	160 PSI	200 PSI
6"	6.90	UFR1500-6A-(IorU)	6	19.6	150 PSI	200 PSI	160 PSI	200 PSI
8"	9.05	UFR1500-8A-(IorU)	6	25.2	150 PSI	200 PSI	160 PSI	200 PSI
10"	11.10	UFR1500-10A-(IorU)	8	35.9	150 PSI	200 PSI	160 PSI	200 PSI
12"	13.20	UFR1500-12A-(IorU)	8	37.9	150 PSI	200 PSI	160 PSI	200 PSI

◆ 3" size includes a transition gasket.

4" - 12" sizes include a SO-EZ gasket for Mechanical Joint connections (see page U-42)

I = Import Casting U = Domestic Casting

Series 1500-CA "Circle-Lock" Packaged with Accessories 14" - 24"

NOM. PIPE SIZE	PIPE O.D. (INCHES)	CATALOG NUMBER AWWA C-905 PVC PIPE	NO. OF RESTRAINT SEGMENTS	APPROX. WEIGHT (LBS.)	PRESSURE RATING AWWA C-905	
					DR-18	DR-25
					14"	15.30
16"	17.40	UFR1500-CA-16-(IorU)	12	74.0	235 PSI	165 PSI
18"	19.50	UFR1500-CA-18-(IorU)	12	90.0	235 PSI	165 PSI
20"	21.60	UFR1500-CA-20-(IorU)	14	108.0	235 PSI	165 PSI
24"	25.80	UFR1500-CA-24-(IorU)	16	141.0	235 PSI	165 PSI

14" - 24" sizes include a Mechanical Joint gasket

I = Import Casting U = Domestic Casting