

# 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.

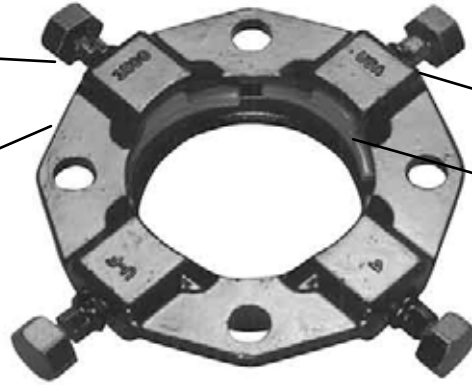
### Gland -

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 -

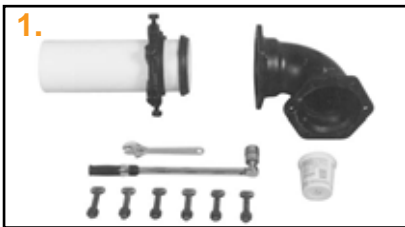
Ductile iron per ASTM A536 and heat treated to a hardness of 370 BHN minimum.

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



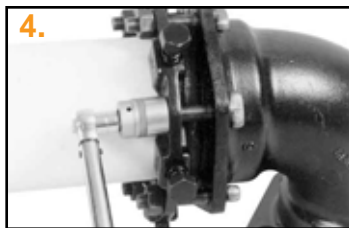
1. Clean the socket and plain end. Lubricate gasket and plain end with approved pipe lubricant meeting AWWA C111. Place the gland on the plain end with the lip extension toward the plain end, followed by the lubricated gasket with the tapered edge of the gasket toward the plain end.



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



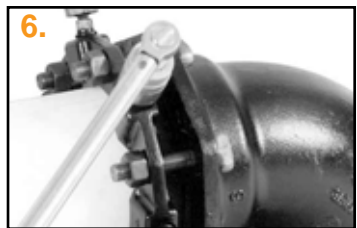
3. Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert T-bolts and hand tighten nuts. Make deflection after joint assembly but before tightening bolts. (max. deflection is 5°)



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.

**Note:** To reinstall gland after twist-off heads are removed, tighten remaining hex head to 60 ft-lb.

# Information - Uni-Flange® Series 1500 Circle Lock

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## 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.

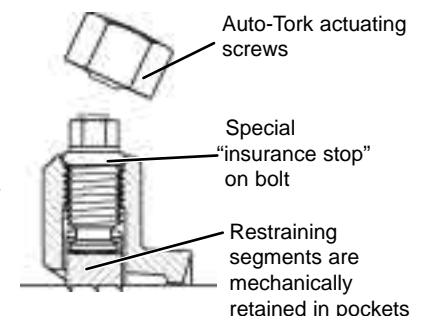
The restraint segments of the 1500 are the key to the design. They spread the restraining force, offering even distribution and support of the pipe. This is important with PVC pipe, especially for thinner wall classes. The restraint segments are designed with a "slot" at the top, which accepts the channeled 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.



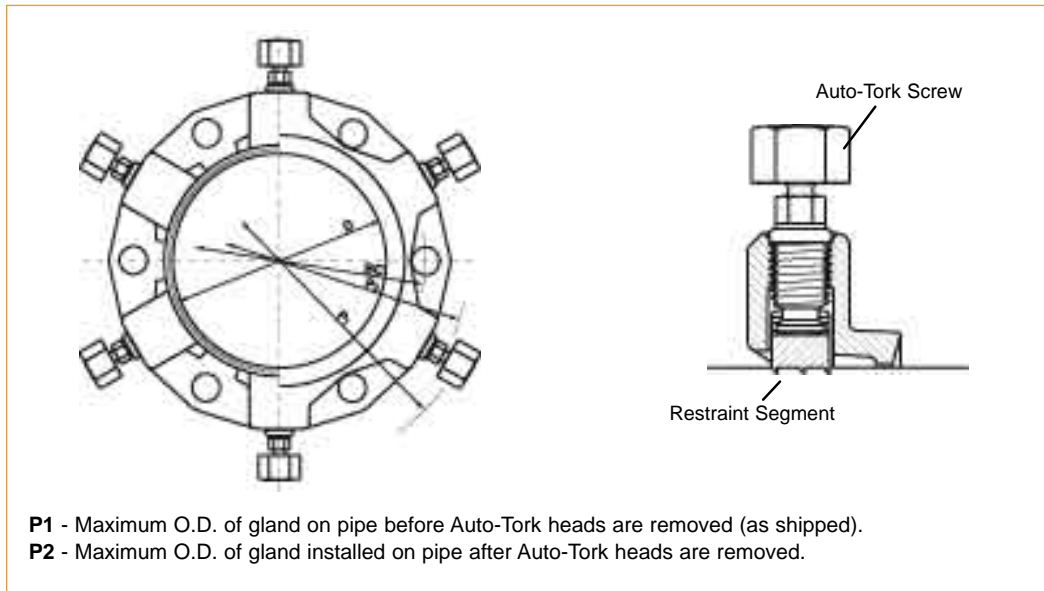
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## MJ Retainer Gland Joint Restraint for PVC Pipe

### 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

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## 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-(I or U)	4	13.0			160 PSI	200 PSI
4"	4.80	UFR1500-4A-(I or U)	4	13.7	150 PSI	200 PSI	160 PSI	200 PSI
6"	6.90	UFR1500-6A-(I or U)	6	19.6	150 PSI	200 PSI	160 PSI	200 PSI
8"	9.05	UFR1500-8A-(I or U)	6	25.2	150 PSI	200 PSI	160 PSI	200 PSI
10"	11.10	UFR1500-10A-(I or U)	8	35.9	150 PSI	200 PSI	160 PSI	200 PSI
12"	13.20	UFR1500-12A-(I or U)	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-(I or U)	12	74.0	235 PSI	165 PSI
18"	19.50	UFR1500-CA-18-(I or U)	12	90.0	235 PSI	165 PSI
20"	21.60	UFR1500-CA-20-(I or U)	14	108.0	235 PSI	165 PSI
24"	25.80	UFR1500-CA-24-(I or U)	16	141.0	235 PSI	165 PSI

14" - 24" sizes include a Mechanical Joint gasket

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