

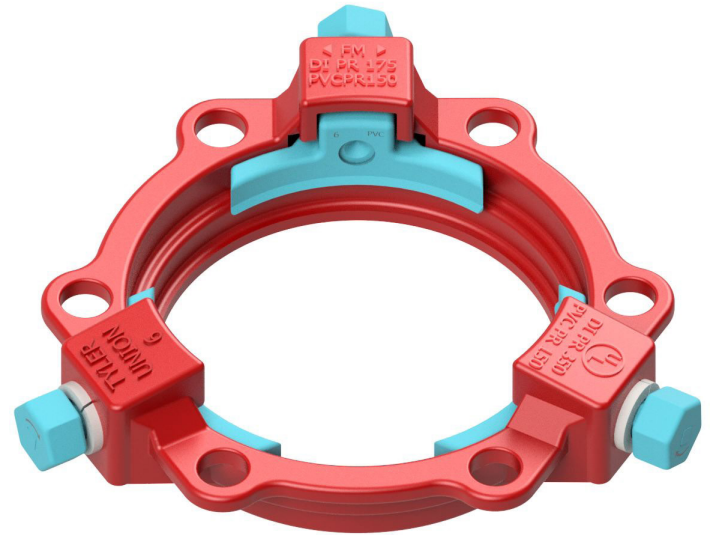
# MJ TUFGRIP® TLP

## SERIES 2000

### FOR PVC & PVCU PIPE

### A Proven Third-Generation Mechanical Joint Restraint

Tyler Union's TUFGrip® restraint represents the culmination of 20 years of engineering and testing. As a third-generation restraint, TUFGrip is the best available technology in the waterworks market for use in restraining PVC, ductile and HDPE pipe.



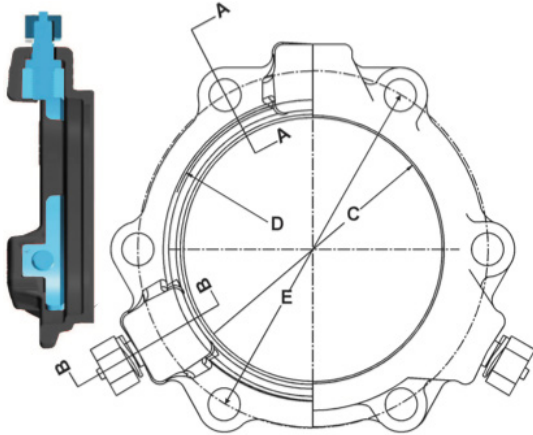
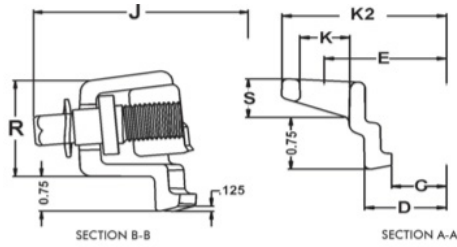
### FEATURES & ADVANTAGES

- 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-lb).
- 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"–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 the following pages.**

### SPECIFICATIONS

- Proven to restrain plain end PVC pipe in diameters 3"–36", PVCU pipe in diameters 4"–12" and HDPE Pipe 4"–16".
- 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 next page**).
- 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, PVCU and HDPE pipe pressure rating. **Note:** Refer to the following pages for pressure rating.
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 3"–12", 2° max for 14"–16", and 1.5° max for 18"–36".
- Standard coating for Non-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"–12" applications and UL listed and approved for 3"–12" applications.
- Color coded red for pipe type (C900 PVC/C905 PVC/ \*C909 PVCU/D2241 PVC). **\*Note:** Refer to next page for C909 pipe applications.

ISO 9001-2015 Registered		Listed with Underwriters Laboratory		Factory Mutual Approved
<b>Product Source/Type</b>	<b>Name of Project</b>	<b>Name of Contractor</b>	<b>Project Engineer</b>	<b>Spec. Section and/or Project No.</b>



TUFGRIP® MJ Restraint Dimensions								
Size (In.)	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	2.7	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 TUFGRIP® — APPLICATION CHART**

Size (In.)	Part # – Gland Only	Wedge Qty.	T-head Bolt Qty.	Bolt Size	Gland weight (lbs.)	Weight (w/Acc.)	*Pressure Rating	Pipe O.D.
	Non-Domestic							
3	113928	2	4	5/8" x 3"	7.0	11.0	*305 / DR14	3.50
4	113935	2	4	3/4" x 3-1/2"	8.3	12.2	*305 / DR14	4.50-4.80
6	113942	3	6	3/4" x 4"	12.4	18.3	*305 / DR14	6.63-6.90
8	113959	3	6	3/4" x 4"	14.9	20.8	*305 / DR14	8.63-9.12
10	113973	6	8	3/4" x 4"	25.7	33.4	*305 / DR14	10.75-11.10
12	113980	8	8	3/4" x 4"	34.1	42.0	*305 / DR14	12.75-13.20
14	113997	10	10	3/4" x 4-1/2"	45.1	55.4	*235 / DR18	15.30
16	114000	12	12	3/4" x 4-1/2"	56.2	68.4	*235 / DR18	17.40
18	114017	12	12	3/4" x 4-1/2"	62.4	74.8	*235 / DR25	19.50
20	114024	14	14	3/4" x 4-1/2"	72.9	86.9	*235 / DR25	21.60
24	114031	16	16	3/4" x 5"	93.2	109.8	*235 / DR25	25.80
30	461302	20	20	1" x 7-1/2"	251	293	*150 / DR25	32.00
36	461357	24	24	1" x 7-1/2"	281	331	*125 / DR25	38.30

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

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**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" were tested to 535 psi.
- TUFGRIP 30"-36" provided with TRU-Lock™ mechanical joint gasket to ensure pressure rating and safety factors are met.
- Mechanical joint T-head bolt torques for C909 applications are as provided; \*55-65 ft-lb for 4"-8" and \*65-75 ft-lb for 10"-12" assembly. You must specify restraints are for C909 PVCO pipe upon order placement. Call for availability.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.
- TUFGRIP 4"-24" restraints shall meet the requirements of ASTM F1674, current revision.
- **Caution:** Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended.

**\*\*ADDITIONAL SERIES 2000 TLP-TUF GRIP® RESTRAINT RATINGS**

Size (In.)	AWWA C900			AWWA C905			ASTM D2241			HDPE* AWWA C906				
	DR14	DR18	DR25	DR18	DR25	DR32.5	SDR17	SDR21	SDR26	DR7.3	DR9	DR11	DR13.5	DR17
3	-	-	-	-	-	-	250	200	160	254	200	160	128	100
4	305	235	165	-	-	-	250	200	160	254	200	160	128	100
6	305	235	165	-	-	-	250	200	160	254	200	160	128	100
8	305	235	165	-	-	-	250	200	160	254	200	160	128	100
10	305	235	165	-	-	-	250	200	160	254	200	160	128	100
12	305	235	165	-	-	-	250	200	-	254	200	160	128	100
14	-	-	-	235	165	125	-	-	-	254	200	160	128	100
16	-	-	-	235	165	125	-	-	-	254	200	160	128	100
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; **\*NOTE:** HDPE applications require a separate stiffener ring. 3"-16" for DI OD Pipe and 3"-12" for IPS Pipe; assembly steps for (3"-12" ASTM D2241 IPS PVC), (4"-12" AWWA C909 PVC0), and (4"-36" AWWAC900/C905 PVC).



**INSTALLATION**

1. Ensure the beveled pipe end to be joined and mechanical joint socket are clean and free of debris. Slide the red TUFGrip onto the beveled end of the pipe to be restrained. The TUFGrip 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 TUFGrip 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 TUFGrip 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 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 TUFGrip 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 is 45-60 ft-lb for 3", 75-90 ft-lb for 4"-24", and 100-120 ft-lb for 30"-36". **NOTE:** The C909 PVC0 T-head bolt and nut torque is 55-65 ft-lb for 4"-8" and 65-75 ft-lb 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 TUFGrip 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 a recessed arrow on the face of the nut. With a wrench (box, socket or pneumatic), continue to tighten each torque nut half 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 half 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.