



MJ TUFGRIP® TLD

SERIES 1000

FOR DUCTILE IRON 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 provide 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.
- Restraint's heavy-duty construction and design eliminates the need for costly thrust blocks and tie rods.
- Suitable for potable and wastewater applications.

SPECIFICATIONS

- Designed and proven to restrain plain end ductile iron pipe conforming to ANSI/AWWA C151/A21.51 in diameters 3"–48" with a maximum surface hardness value of 250 Brinell at the engagement point of the wedges. (ISO 2531 for Ductile Iron Pipe specifies a maximum hardness value of 230 Brinell).
- Proven for use on heavy wall **Schedule 40 or greater steel pipe in sizes 3"–12" and on all sizes 3"–16" when pipe O.D. and wall thickness conforms to C151 ****Note:** IPS diameter steel 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.
- Restraints rated for working water pressure of 350 psi and transitory surges of 100 psi for 3"–16" and 250 psi for 18"–48".
- 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: 3° max for 3", 5° max for 4"–12", 2° max for 14"–16" and 1.5° max for 18"–48".
- 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"–12" applications and UL listed and approved for 3"–36" applications.
- Not recommended for use on plain end fittings.
- Color coded black for pipe type (ductile/*cast iron/*steel) ***Note:** Refer to the following pages for cast iron and steel pipe applications.

ISO 9001-2015 Registered

Listed with Underwriters Laboratory

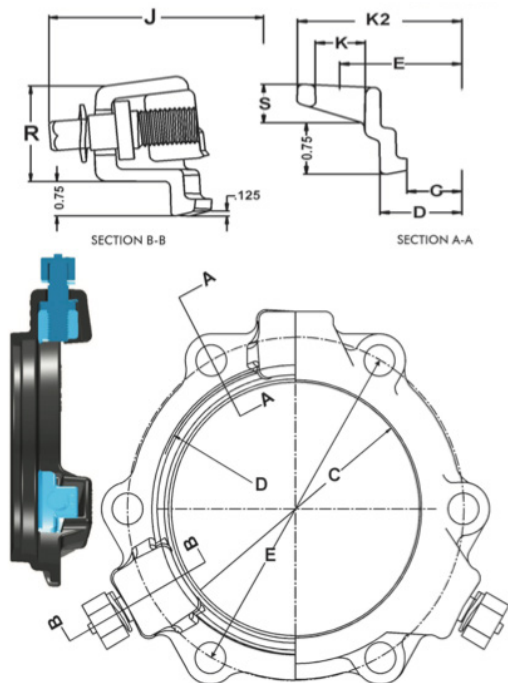
Factory Mutual Approved

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



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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
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 1000 TLD-DUCTILE TUFGRIP® — APPLICATION CHART

Size (In.)	Part # – Gland Only	Part # – Gland Only	Wedge Qty.	T-head Bolt Qty.	Bolt Size	Gland weight (lbs.)	Weight (w/Acc.)	Pressure Rating	Pipe O.D.
	Hybrid	100% Domestic							
3	540823	600900	2	4	5/8" x 3"	6.5	10.5	350	3.96
4	515944	600905	2	4	3/4" x 3-1/2"	7.1	11.8	350	4.80
6	515968	600910	3	6	3/4" x 4"	11.2	18.8	350	6.90
8	515975	600915	3	6	3/4" x 4"	13.1	20.3	350	9.05
10	515982	600920	6	8	3/4" x 4"	26.0	32.5	350	11.10
12	515999	600925	8	8	3/4" x 4"	31.5	40.4	350	13.20
14	516231	600930	10	10	3/4" x 4-1/2"	43.3	53.6	350	15.30
16	516255	600935	12	12	3/4" x 4-1/2"	54.1	66.3	350	17.40
18	516279	600940	12	12	3/4" x 4-1/2"	59.8	72.2	250	19.50
20	516293	600945	14	14	3/4" x 4-1/2"	69.8	83.8	250	21.60
24	516316	600950	16	16	3/4" x 5"	90.4	106.9	250	25.80
30	539759	600955	20	20	1" x 7-1/2"	248	290	250	32.00
36	539764	600960	24	24	1" x 7-1/2"	277	327	250	38.30
42	539695	600961	28	28	1-1/4" x 8-1/2"	448	512	250	44.50
48	539699	600962	32	32	1-1/4" x 8-1/2"	519	597	250	50.80

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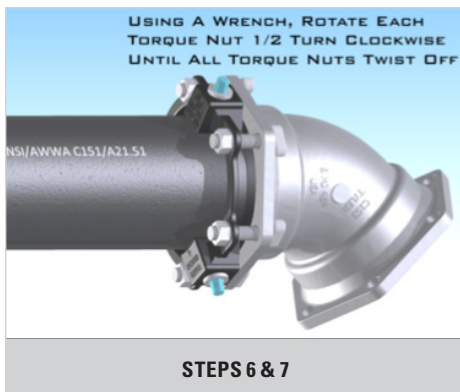
STOP-LOOK:

- Extra length T-head bolts are provided with 30"-48" restraints to facilitate mechanical joint assembly.
- For UL/FM Approvals, 3"-12" were tested at 5° of deflection and 14"-24" were tested at 3° of deflection; all tests were to 700 psi.
- The Series 1000 TUF Grip is specified for use on ductile iron 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.
- TUFGRIP 30"–48" provided with TRU-Lock™ mechanical joint gasket to ensure pressure ratings and safety factors are met.
- Installation and hydrostatic testing shall be in accordance with AWWA C600 and AWWA C651.
- Some vertical applications where the piping is partially buried may require additional restraint — contact Tyler Union.
- Caution:** Pressure testing of piping systems restrained or un-restrained with insufficient backfill or bracing is not recommended.



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ASSEMBLY STEPS

SERIES 1000 FOR DUCTILE IRON PIPE

1. Ensure the beveled pipe end to be joined and mechanical joint socket is clean and free of debris. Slide the black TUFGRIP onto the pipe to be restrained. The TUFGRIP compression lip extension must be toward the beveled end of the pipe to be restrained.
2. Evenly lubricate the beveled pipe end, pipe wall exterior and inside surface of the MJ 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 beveled end of the pipe to be restrained. ****NOTE:** For steel pipe with IPS diameter in sizes 3"–12", use of a MJ Transition gasket is required.
3. Fully insert the pipe end into the MJ socket pipe landing. Keeping the pipe straight, slide/push the MJ gasket firmly and evenly into the socket recess. Joint must be kept straight during assembly.
4. Push the TUFGRIP compression lip extension evenly against the thick side of the gasket and insert T-head bolts with the T-head against the back side of the MJ fitting bolt flange. Use only T-head bolts and nuts that meet AWWA C111 requirements. Evenly hand-tighten the nuts on the T-head bolts making sure the gland is centered around the pipe and within the MJ socket. If joint deflection is needed, only deflect the pipe in the joint 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" and 1.5° max for 18"–48". ***NOTE:** Maximum deflection values provided apply with nominal pipe, fitting and restraint diameters.
5. Using a wrench, tighten the nuts on the T-head bolts a few turns at a time in an alternating or star pattern, maintaining equal spacing or distance between the TUFGRIP bolt flange and face of the MJ socket bolt flange as the MJ gasket is compressed. The T-head bolt and nut torque requirement is 45–60 ft-lb for 3", 75–90 ft-lb for 4"–24", 100–120 ft-lb for 30"–36", and 120–150 ft-lb for 42"–48". **DO NOT OVER TORQUE!**
6. Hand-tighten the torque limiting nut attached to each TUFGRIP wedge assembly 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 limiting 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!
7. When all torque limiting nuts twist off, the assembly of the mechanical joint is complete.