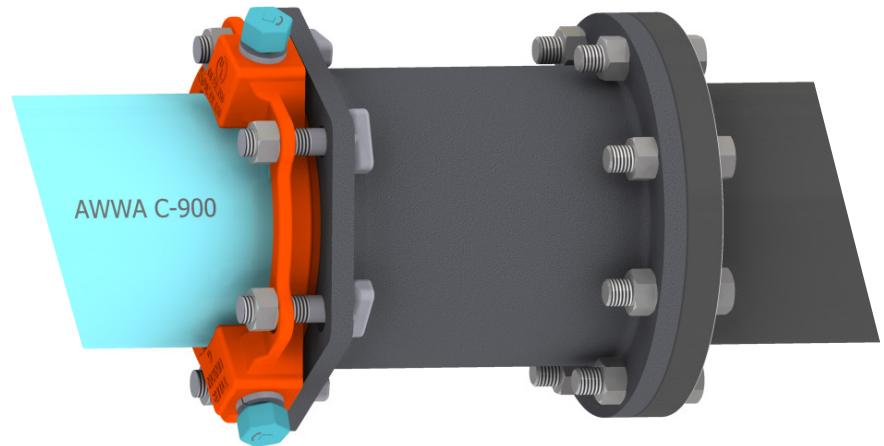


TUF FLANGE KIT

SERIES 4000

FOR PVC, DUCTILE AND HDPE PIPE



FEATURES & ADVANTAGES

- No special tools required for assembly.
- Plain end pipe doesn't need to be square cut.
- Accommodates pipe misalignment.
- Assembly uses industry standard MJ and Flange gaskets made of SBR (styrene butadiene rubber) per ANSI/AWWA C111.
- Suitable for potable and wastewater applications.

SPECIFICATIONS

- TUF FLANGE Kit restrains plain end PVC, ductile iron and HDPE pipe to flanged fittings, where the flange conforms to ANSI/AWWA C111, ANSI/AWWA C110.
- Design conforms with applicable requirements of ANSI/AWWA C111, ANSI/AWWA C110, ANSI/AWWA C153, ANSI B16.1 class 125.
- Material compliant with ASTM A536 ductile iron grade 65-45-12/70-50-05/60-42-10.
- Cast on date code with country of origin for traceability.
- Safety factor of 2:1. PVC and HDPE based on pipe pressure rating. PSI rating of 350 for sizes 4"–12".
- Restraint deflection rating when installed on nominal diameter pipe: 3° max for 4"–12".
- Standard coating for restraint gland is 4–6 mil of TUF Bond™ (thermoset polyester for impact, corrosion and UV protection). Adapter 2–3 mil of Black Asphaltic coating.
- UL and FM approved for 4"–12".
- Pipe can be field cut. Minimum insertion depth required for deflection.
- Not recommended for use on plain end fittings.
- T-bolts/nut are produced from high-strength, low-alloy steel per ANSI/AWWA C111/A21.11.
- Gripping wedges are heat treated to a minimum 420 Brinell hardness.

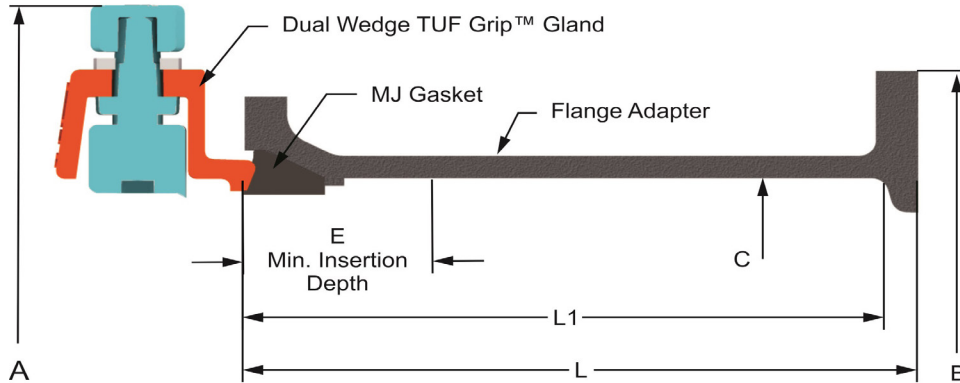
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SERIES 4000 Dimensions and Application Chart

Size (Inches)	Pipe O.D.	A	B	C	E	L	L1	T-head Bolt Qty.	Bolt Size	Weight (w/Acc.)
4	4.50–4.80	10.67	9.0	5.35	2.5	10.0	9.5	4	3/4" x 3-1/2"	45
6	6.63–6.90	12.77	11.0	7.45	2.5	10.0	9.5	6	3/4" x 4"	60
8	8.63–9.12	14.92	13.5	9.65	2.5	10.0	9.5	6	3/4" x 4"	75
10	10.75–11.10	16.97	16.0	11.81	2.5	10.0	9.5	8	3/4" x 4"	103
12	12.75–13.20	19.07	19.0	13.89	2.5	10.0	9.5	8	3/4" x 4"	130

***SERIES 4000 TUF FLANGE™ Pressure Ratings**

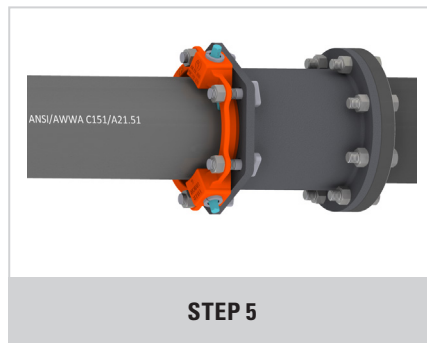
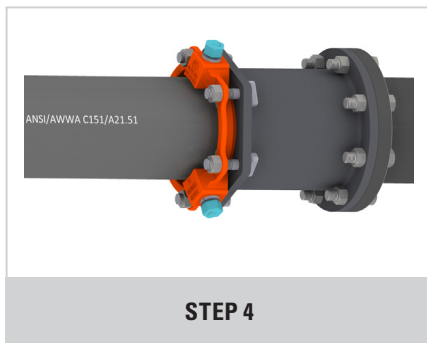
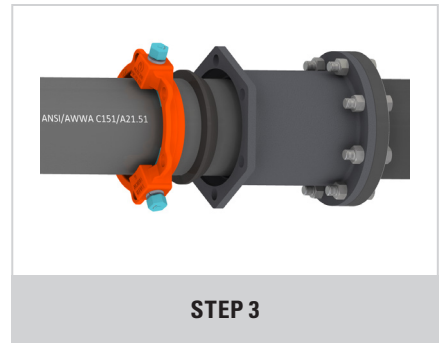
Size (In.)	Ductile Pipe	AWWA C900				AWWA C909	HDPE** AWWA C906				
	C151/A21.51	DR14	DR18	DR25		DR7.3	DR9	DR11	DR13.5	DR17	
4	350	305	235	165	235/150*	254	200	160	128	100	
6	350	305	235	165	235/150*	254	200	160	128	100	
8	350	305	235	165	235/150*	254	200	160	128	100	
10	350	305	235	165	235/150*	254	200	160	128	100	
12	350	305	235	165	235/150*	254	200	160	128	100	

*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, 4"–12" for DI OD Pipe.





ASSEMBLY STEPS — SERIES 4000 TUF FLANGE™

1. Check the kit to ensure no parts are damaged or missing. Cut pipe to the length required. Remove debris and excess paint from pipe end and flange face using a wire brush or rag.
 2. Slide orange TUF Grip onto plain end of pipe. The TUF Grip compression lip extension must be toward the cut end of the pipe. Evenly lubricate the 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 end of the pipe with the narrow edge of the tapered gasket toward the pipe end. Slide the Flange Adapter over the plain end of the pipe. Minimum insertion depth required is 2.5" for 4"–12" in order to accommodate the maximum deflection of the joint.
 3. Connect the flange end with the adjacent flange making sure bolt holes line up. **NOTE:** Flange kit is not equipped with the TUF FLANGE™. Complete flange assembly before moving to step 4.
 4. Slide/push MJ gasket firmly and evenly into MJ socket recess. 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 the MJ socket. 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 75–90 ft-lb for 4"–12".
5. **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 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 a half turn without turning the remaining torque nuts an equal amount! ****NOTE:** For 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.
 6. When all torque limiting nuts twist off, the mechanical joint and restraint assemblies are complete.

