

Durcor® Flanged **FLEXIJOINT**®

ZERO CORROSION RATE



ETHYLENE™
an ANDRONACO INDUSTRIES company

FLEXIJOINT®

The Standard

Flexijoint® PTFE Bellows

The Severe Service Expansion Joint



The unmatched performance of Flexijoint® is due to its exclusive Fluoroforming™ process, a development of Ethylene™. The proprietary forming process guarantees convolution walls of uniform thickness, maximum strength and minimum permeability commensurate with greatest flexibility.

Ethylene invented T-Bands™ & LimitLinks™. T-Bands on the outside of the convolution contribute to the pressure rating of the Flexijoint and also prevent the joint from over compressing. T-Bands also offer a degree of protection from falling tools or debris that could puncture the PTFE.

Unlike Limitbolt designed expansion joints, LimitLinks allow free swivel as the flanges change position relative to each other during their adjustment to angular misalignment, parallel misalignment, purely axial motion or combinations of all three.

Applications

- Lined Steel Pipe
- Fiberglass Pipe
- Glass Pipe
- Pump Suction & Discharge
- Load Cells
- HVAC Noise Reduction
- Expansion / Contraction
- Misalignment
- Reduce Vibration

Features

- Flanges are Strong as Steel
- Flanges are 1/2 The Weight of Steel
- ASME B16.5 Class 150 Drilling
- Lower Cost vs. S.S. Flg & PTFE Bellows
- Lower installed Cost
- Maximum Travel - 2 to 12 Convolutions
- Size Range 1/2" - 42"
- (-)40 °F to (+)300 °F
- Zero Corrosion Rate Inside & Out
- 5 Year Flange Warranty
- Lower Life Cycle Cost - Guaranteed!!!



Durcor® PTFE Bellows

Advanced Composite Technology

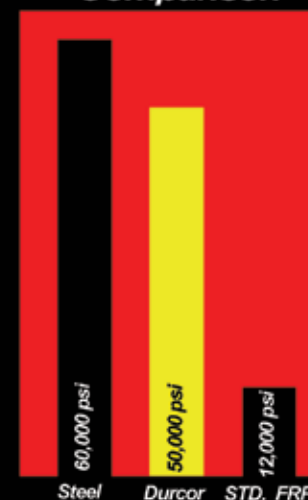
Durcor® Flanges are manufactured by PureFlex® Inc. from a proprietary advanced fiber reinforced composite. Durcor has tensile and compressive strengths that rival steel as well as outstanding impact resistance that is unmatched in the industry. Its reinforcing fibers are long and interlocked. This interlocked reinforcement system transfers loads throughout the fiber matrix, making Durcor Flanges virtually indestructible. The strength of Durcor enables the flange to be installed in any type of piping system without the need for special considerations. Durcor Flanges excel in temperatures from (-)40 °F to (+)300 °F and has only .001" of thermal expansion across its full temperature range.

- Tensile strength of 50,000 psi per ASTM D-638 or 358 MPa
- Notched Izod impact strength of 35 ft-lb/in per ASTM D-256 or 1760 J/M are achieved

Superior Performance

Durcor's vinyl ester resin backbone provides excellent protection when exposed to aggressive chemicals and hostile atmospheres such as acid sprays, bleach, salt water and high chlorides. Durcor Flanges outperform stainless steel and ductile iron flanges not only in corrosive environments but non-corrosive as well. Its lightweight advantage reduces the need for heavier support structures for hanging, eliminates the need for extra equipment and personnel for pipe and fitting installation and reduces pipe strain once installed. Durcor Flanges are so dependable and maintenance free that we offer a 5 Year warranty.

Tensile Strength
Comparison



Contact Ethylene or your local distributor for details.



FLEXIJOINT®

Distinctive Features

Pure 100% Virgin PTFE Resin

The unmatched performance of Flexijoint is due to its exclusive Fluoroforming™ process, a development of Ethylene. The Fluoroforming™ process employs only high molecular weight resin to utilize pure PTFE with no pigments or additives which might contaminate contacting fluids by leaching out and/or becoming vulnerable to blistering. In addition, high molecular weight with tightly controlled crystallinity, inherent in the Ethylene Fluoroforming™ process, results in lower permeation rates, outstanding flex-life and maximum tensile strength.

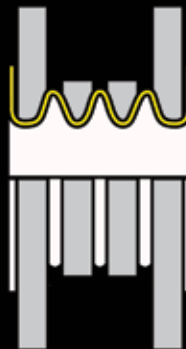
Competitors which use paste extruded resin are NOT using Pure PTFE.

They must mix a hydrocarbon such as Isopar™ to facilitate PTFE paste extrusion.

Uniform Wall Thickness

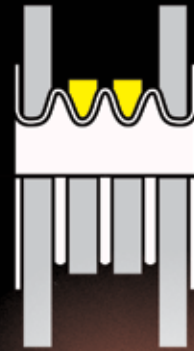
Ethylene's exclusive Fluoroforming™ process guarantees multiple convolution walls of constant uniform thickness for any size. This relationship of heavy wall and geometry is one of the basic reasons for the outstanding performance of Flexijoints. Deep convolutions allow increased axial travel and also reduce the force necessary to produce movement or lateral misalignment. As a result, Flexijoints have a longer service life when compared to conventional blow molded or stretch molded expansion joints which introduce stress points and exhibit alarming thinning of the convolution wall and root.

Note: Blow-Molding is sometimes referred to as "Contour" molding by some manufacturers.



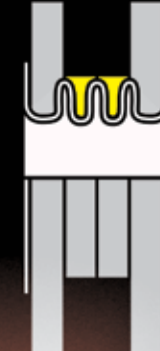
T-Band™ Root & Sidewall Support

Flexijoint T-Band™ reinforcement on the outside of the convolutions supports the convolution root and sidewall for improved service life and increased safety in high pressure applications. As pressure and temperature increase, the sidewall of the PTFE convolutions conform to the contour of the T-Band™, improving stability under pressure.



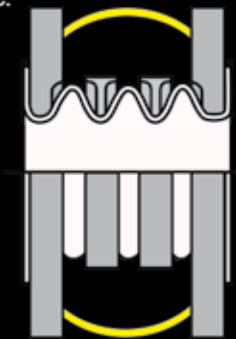
T-Band™ Protection From Over Compression

Flexijoint T-Band™ metal reinforcement on the outside of the convolutions not only contributes to the pressure rating of the Flexijoint but also limits the total axial movement in compression. The shoulders of the T-Band™ are designed to butt when maximum compression limit has been reached to provide protection from excessive compression for improved safety and increased service life.



LimitLinks™ Protection From Over Expansion

LimitLinks™ consist of stainless steel cables conforming to MIL-83420, Government specification for Aircraft Cable, at the ends of which are stainless steel ball-shaped terminals that are swaged. The opposite ends of the LimitLink™ are firmly anchored in the Flexijoint flanges in a manner which limits over expansion of the Flexijoint but also leaves the terminals free to swivel as the flanges change position relative to each other during their adjustment to angular misalignment, parallel misalignment, purely axial motion or a combination of all three.

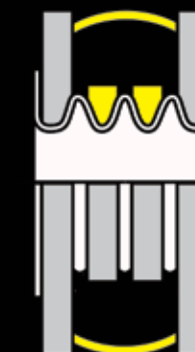


Actual Flexijoint Cross-Section

LimitLinks™ & T-Band™ Additional Benefits

LimitLinks™ provide easy installation even when the mating flange bolts don't align. They also won't get in the way and they never need to be removed for installation unlike competitors LimitBolt designed expansion joints which may void warranties.

T-Bands™ cover approximately 75% of the outside of the convolution when not compressed to provide protection from external damage such as falling tools or weld splatter.

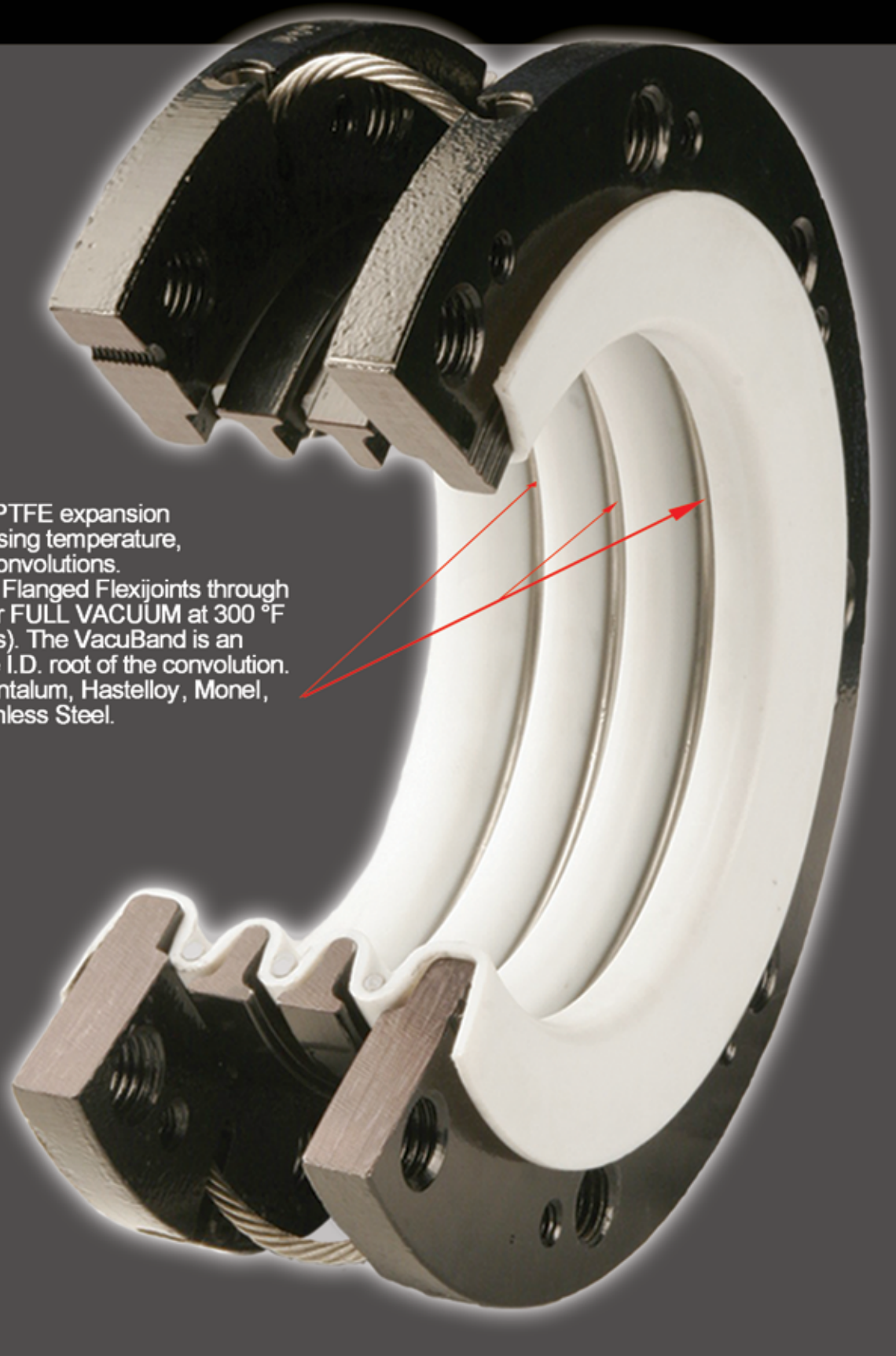


FLEXIJOINT[®]

Options

VacuBands[™]

The vacuum rating of any PTFE expansion joint decreases with increasing temperature, diameter, and number of convolutions. VacuBands enable Durcor Flanged Flexijoints through 42" diameter to be rated for FULL VACUUM at 300 °F (+450 °F with Alloy Flanges). The VacuBand is an alloy hoop inserted into the I.D. root of the convolution. Alloy selections include Tantalum, Hastelloy, Monel, Zirconium, Nickel and Stainless Steel.



LinerSleeves[™]

It is recommended that LinerSleeves be inserted through Flexijoints when any of the following conditions exist:

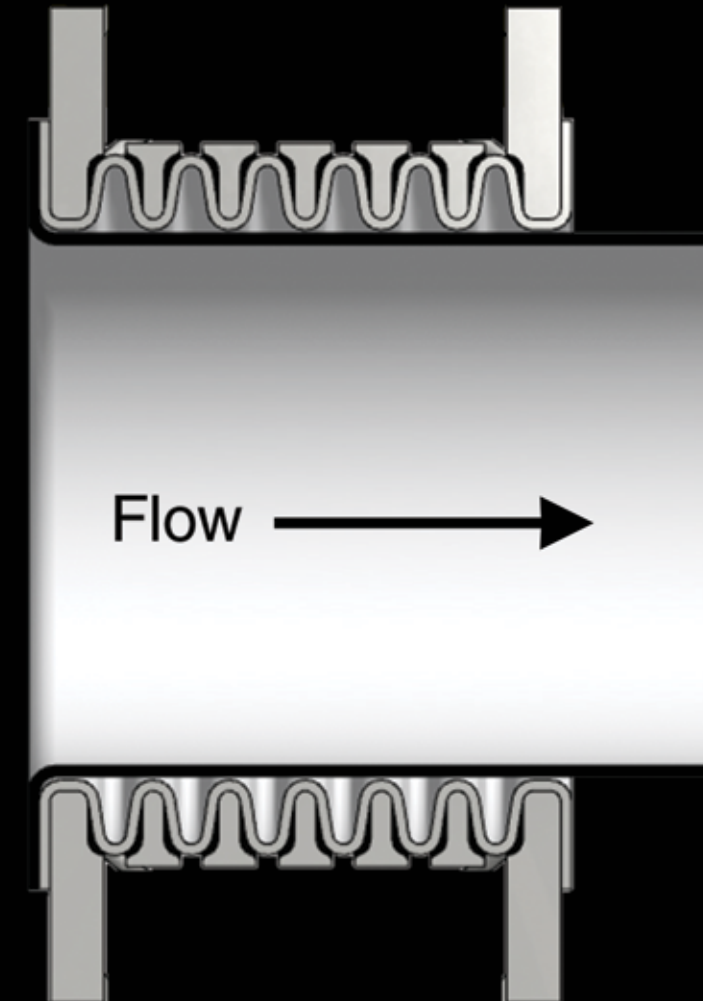
- The fluid contains abrasive solids
- The fluid holds material that may settle out in the convolutions
- The fluid velocity is high
- The line contains steam

LinerSleeves may be ordered in PTFE or metal. They are flared on one end and clamped between the upstream Flexijoint flange and its mating flange in the piping system. The ability of the Flexijoint to adjust to misalignment is usually not seriously affected with a PTFE LinerSleeve, however a metal joint does offer some interference and is not generally recommended where severe angular or parallel misalignment may be present.

Other Options Include:

- Grounding Straps
- Spray Shields
- Special Lengths
- Carbon Steel Flanges
- 304 & 316 Stainless Steel Flanges
- Composite T-Bands

Zero Corrosion Rate



Ethylene Safety Shield

Warning:
Safety shields must always be used in hazardous service to protect against serious personal injury in the unlikely event of a Flexijoint failure.

FLEXIJOINT® - vs - Competition

1 THE RESIN

Isostatic Molded Tubing

Ethylene employs only 100% virgin, high molecular weight PTFE resin in its isostatic tube molding process.

No pigments, additives or lubricants whatsoever, just Pure PTFE resin.



Paste Extruded Tubing

In the "Paste Extruding" process, solvent based hydrocarbon additives must be added to PTFE as a lubricant in order to facilitate the extrusion process. These solvents are not only hazardous but could also contaminate contacting fluids by leaching out or could be vulnerable to blistering.

Paste extruded expansion joints are NOT Pure PTFE.



2 THE PROCESS

FluoroForming™

All Flexijoints are made by the exclusive Fluoroforming process, a development of Ethylene. The proprietary technique utilizes hydraulics to influence the isostatically molded tube to "form" convolutions of uniform thickness and precise geometry. Deep convolutions allow increased axial travel while reducing the force necessary to produce axial movement and lateral misalignment.

Combine all the distinctive features:

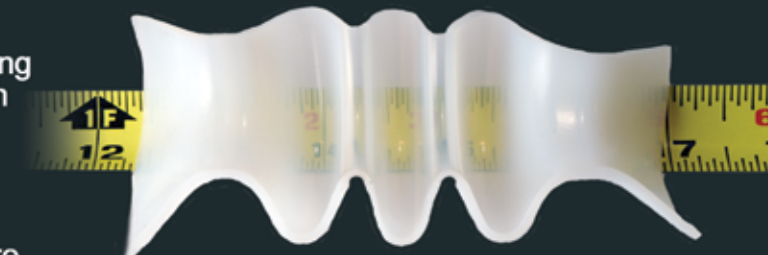
- 100% Pure PTFE
- T-Band root and sidewall support
- T-Band protection from over-compression
- LimitLink protection from over-expansion with the Fluoroforming process and the relationship of these features provide the basis for the outstanding performance of Flexijoints.



Blow Molding (Contour Molding)

"Blow Molding", sometimes referred to as "Contour" molding by some manufacturers is a very economical means of manufacturing expansion joints. The process, during which a plastic parison (hollow tube) is heated above the transition temperature and is placed between two halves of a mold (cavity) and forced to assume the shape of that mold cavity by the use of air pressure. Wall thickness distribution is severely affected as shown in the expansion joint cross-section on the right and below.

Contour Molding (Blow Molding) is an excellent, low cost technique for products such as plastic milk jugs or soda bottles where yielding of the plastic is not a potential liability....



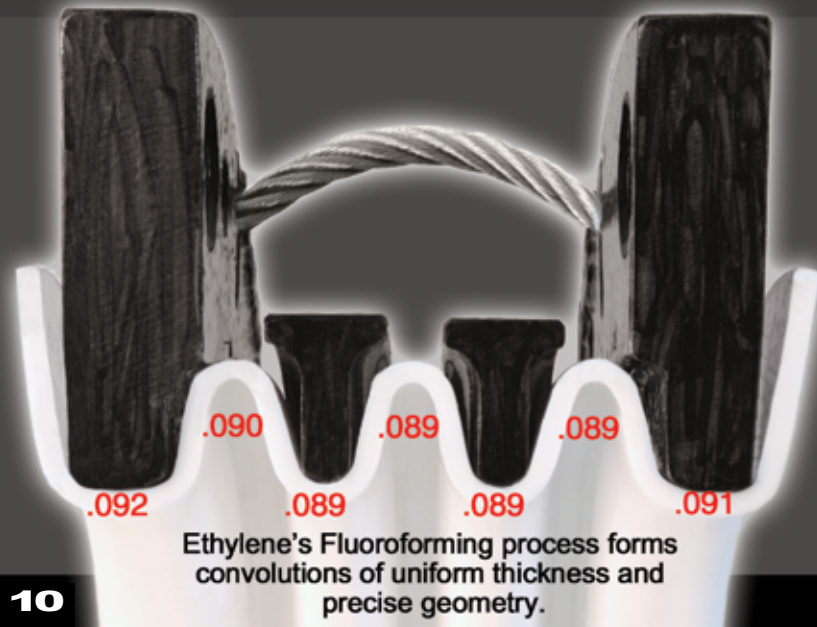
Severe thinning is evident by the translucency of the convolutions above. Permanently yielding (stretching) PTFE beyond its elastic limit will compromise the materials mechanical integrity and can cause sudden premature failure.

3 THE END RESULT

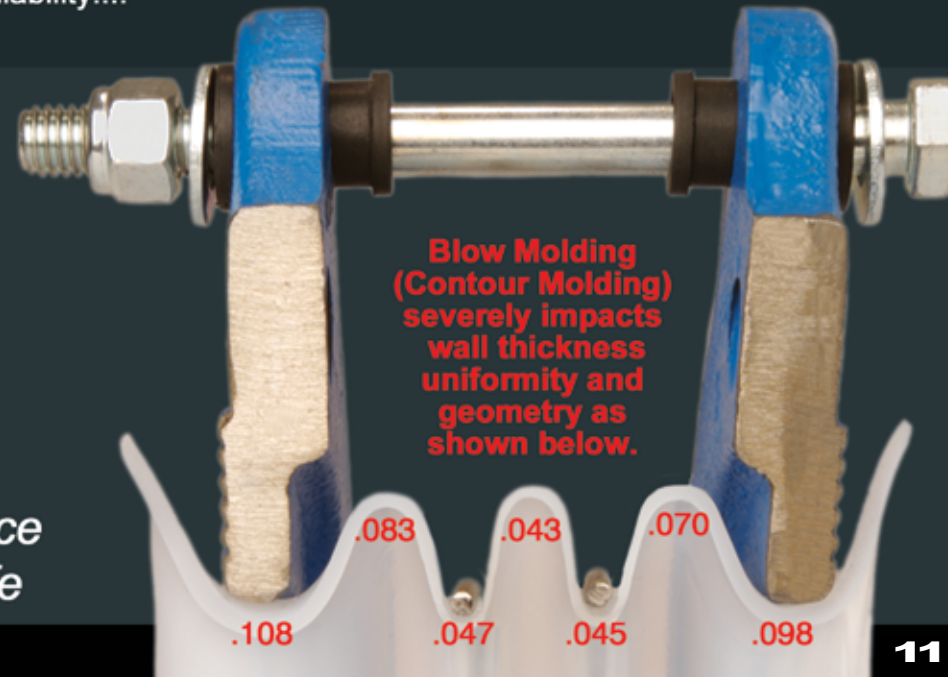
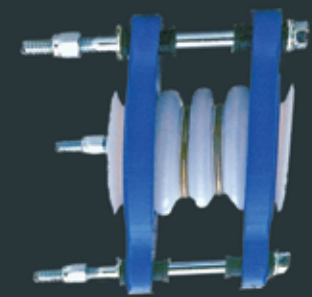
**High Performing
Severe Service
Longest Flex-Life**

**Economical
Light-Duty Service
Limited Flex-Life**

**Blow Molding
(Contour Molding)
severely impacts
wall thickness
uniformity and
geometry as
shown below.**



Ethylene's Fluoroforming process forms convolutions of uniform thickness and precise geometry.



Durcor Flanged Flexijoint Weights

Size (inches)	Flexijoint [®] with 2 Convolutions	for Each Convolution Add.	Size (inches)	Flexijoint [®] with 2 Convolutions	for Each Convolution Add.
1/2	.85	0.15	10	23.3	4.1
3/4	1.0	0.18	12	37.9	5.54
1	1.3	0.23	14	49.7	6.76
1-1/4	1.5	0.29	16	65.2	9.3
1-1/2	1.3	0.33	18	68.0	11.85
2	2.8	0.42	20	93.0	14.61
2-1/2	5.0	0.64	24	134	22.01
3	5.5	0.8	28	184	31.45
4	7.6	1.09	30	213	42.49
5	8.8	1.47	32	213	42.49
6	10.3	1.88	36	361	63.1
8	16.3	2.88	42	438	88.7

All above table weights are in LBS

Thread Strength

Durcor Provides Greater Than 210 ft-lbs Of Thread Strength. No Need for Alloy Thread Inserts.

Materials

- **Bellows:** Virgin PTFE
- **Flanges:** Durcor Advanced Composite
- **T-Bands:** Powder Coated Epoxy DCI
Option: Composite
- **LimitLinks:** Stainless Steel Conforming to MIL- 83420 (DOD Aircraft control wire)
Option: Monel[®]



Flexijoint[®] PTFE Expansion Joints



FLO-VU[®] Sight Indicators With Safety Impact Shield



EthylArmor[®] & pHampler[™] Dip Tubes, Spargers & Sampling



MonoDerm[™] Large Diameter Lined Pipe and Special Shapes

FlexArmor[®] PTFE Lined Metal Bellows Double Contained



T-Line[™] Strainers



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