

42HPXX - Extra High Pressure Rubber Expansion Joint

Thorburn's 42HPXX is a heavy duty extra high pressure rubber expansion joint. The design incorporates high tensile calendered fabrics and special design metallic reinforcement embedded in the carcass. The 42HPXX is specifically designed for applications that require extra high pressures up to 300 psi (20 bar). The 42HPXX is available in a variety of elastomers to suit various medias and extreme ozone charged environments.

Pressure up to 300 psi full vacuum all sizes



Advantages:

- 50% higher pressure rating than found in typical high pressure expansion joints
- Wide Variety of Elastomers
- Available in open or Low Turbulance filled arches
- Available in various flange bolting patterns.

Available in sizes up to 144 inches

Thorburn's 42HPXX Size 48 inch (1200mm) being hydrotested to 1.25 design pressure (313 psi). This expansion joint was delivered to the middle east.

Nominal Pipe Size Exp. Jt. I.D.	"Face to Face" Minimum Recommended Length			Working Pressure @ 180°F (psi)	Single Filled Arch Non-Concurrent Movement Capability					Spring Rates Zero Pressure Conditions				
	Single Arch	Two Arch	Three Arch		Axial compression (in)	Axial extension (in)	Lateral deflection (in)	Angular movement (deg)	Torsional Rotation (deg)	Compression (lb/in)	Extension (lb/in)	Lateral deflection (lb/in)	Angular (ft*lb/deg)	Torsional (ft*lb/deg)
1	8	14	18	300	0.5	0.25	0.25	25.1	1.0	352	456	526	0.06	0.06
1 1/4	8	14	18	300	0.5	0.25	0.25	21.9	1.0	440	574	658	0.15	0.15
1 1/2	8	14	18	300	0.5	0.25	0.25	19.3	1.0	528	688	786	0.226	0.226
2	8	14	18	300	0.5	0.25	0.25	17.1	1.0	636	828	1050	0.46	0.46
2 1/2	8	14	18	300	0.5	0.25	0.25	14.25	1.0	796	1034	1144	0.76	0.76
3	8	14	18	300	0.5	0.25	0.25	12.2	1.0	952	1242	1236	1.2	1.2
4	8	14	18	300	0.5	0.25	0.25	9.1	1.0	1272	1656	1428	2.8	2.8
5	8	14	18	300	0.5	0.25	0.25	7.6	1.0	1588	2064	1638	5.6	5.6
6	8	14	18	300	0.5	0.25	0.25	6.4	1.0	1906	2478	1852	9.6	9.6
8	10	16	20	300	0.625	0.25	0.25	4.85	1.0	2118	2756	2260	19.0	19.0
10	10	16	20	300	0.625	0.375	0.375	4.55	1.0	2648	3444	2428	36.4	36.4
12	10	16	20	300	0.625	0.375	0.375	3.8	1.0	3178	4132	2844	63.2	63.2
14	10	16	20	300	0.625	0.375	0.375	3.25	1.0	2780	3616	3352	88.8	88.8
16	10	16	20	300	0.625	0.375	0.375	2.85	1.0	3178	4132	3858	114	114
18	10	16	20	300	0.625	0.375	0.375	2.55	1.0	3574	4652	4260	160	160
20	10	16	20	300	0.625	0.375	0.375	2.8	1.0	3974	5160	4764	228	228
22	12	18	22	300	0.875	0.375	0.5	2.6	1.0	4370	5676	4944	308	308
24	12	18	22	300	0.875	0.375	0.5	2.4	1.0	4764	5970	5118	412	412
26	12	18	22	250	0.875	0.375	0.5	2.2	1.0	4590	6196	5486	438	438
28	12	18	22	250	0.875	0.375	0.5	2.05	1.0	4944	6430	5856	574	574
30	12	18	22	250	0.875	0.375	0.5	1.9	1.0	5298	6892	6226	656	656
32	12	18	22	250	0.875	0.375	0.5	1.8	1.0	5654	7348	7314	834	834
34	12	18	22	250	0.875	0.375	0.5	1.7	1.0	6004	8404	8404	968	968
36	12	18	22	250	0.875	0.375	0.5	1.6	1.0	6358	8268	9492	1266	1266
40	12	18	22	250	0.875	0.375	0.5	1.5	1.0	7062	9186	10014	1564	1564
42	12	18	22	250	0.875	0.375	0.5	1.45	1.0	6678	8674	10270	1744	1744
48	12	18	22	250	0.875	0.375	0.5	1.4	1.0	7630	9912	11598	2738	2738
50	12	18	22	200	0.875	0.375	0.5	1.35	1.0	7950	10326	12036	2952	2952
54	12	18	22	200	0.875	0.375	0.5	1.3	1.0	8586	11152	12910	3208	3208
56	12	18	22	200	0.875	0.375	0.5	1.25	1.0	8904	11576	13344	3462	3462
60	12	18	22	200	0.875	0.375	0.5	1.15	1.0	9540	12402	14208	5306	5306
66	12	18	22	200	0.875	0.375	0.5	1.05	1.0	10494	13642	15324	6004	6004
72	12	18	22	200	0.875	0.375	0.5	0.95	1.0	11448	14884	16430	8522	8522

Special notes on movement capability: 1) Filled arch construction reduces above movements by 50%. 2) To calculate movement of multiple arch type for compression extension and lateral movements, take movement shown in the above table and multiply by the number of arches. 3) The degree of angular movement is based on the maximum extension shown. 4) Movement capability shown is non-concurrent percentage used in one movement position must be deducted from the other movement position so that sum of movements don't exceed 100%. 5) Movements shown are based on proper installation practices. See Thorburn installation maintenance guide for details.

Special notes on force Pounds / Spring Rates: 1) Forces required to move Thorburn Mighty-Spool Model 42HPXX are based on zero pressure conditions and room temperature in the pipeline. 2) These forces should be considered only as approximates, compensation must be made for more accurate forces based on materials of construction and actual service conditions. 3) Filled arch spring rates are approximately 4 times that of a single open arch. 4) Multi-arch spring rates are equal to single arch divided by number of arches.

Movement Interaction Formula:

$$\left(\frac{C_{DES}}{C_{MAX}} \text{ OR } \frac{E_{DES}}{E_{MAX}} \right) + \frac{L_{DES}}{L_{MAX}} + \frac{S_{DES}}{S_{MAX}} + \frac{S_{TDES}}{S_{TMAX}} \# 1 \quad \text{If } > 1, \text{ Increase number of arches}$$