ThorburnFlex

Extra Flex™ Externally Pressurized Expansion Joints

Engineered Solutions For Pipe Motion

Canada

www.thorburnflex.com

ThorburnFlex

Engineered Solutions For Pipe Motion

Extra Flex - Series EFS and EFD Externally Pressurized Bellows

Fully assembled Thorburn Extra-Flex Model EFD

Thorburn's Extra Flex externally pressurized bellows expansion joints are used to absorb large amount of axial movement in high pressure piping systems. The unique feature of Extra Flex is the transfer of pressure outside of the bellows, which eliminate the possibility of pressure imbalance due to high pressure that can occur on internally pressurized bellows. The bellows is incased into a larger pressure retaining shell that protects the flexible element from possible damages.

- Absorbs up to 400 mm of axial movement
- Pressures up to 50 BAR
- Temperatures up to 816°C
- Sizes - 25 mm to 1500 mm
- Ideal for long steam pipe run – high pressure/steam containment with lots of axial movement
- Superior alternate to slip joints

Features

- High cycle life movement and pressure.
- Intermediate anchor base
- Drain connector to remove water
- Leak proof – no packing
- Maintenance free
- Can be direct buried
- Self guiding

Applications

- Replaces costly equalizing expansion joint system
- Replaces space confining pipe loop
- Replaces maintenance required slip joints
- Ideal for long pipe run steam lining that require high pressure / temperature containment with lots of axial movement

Advantages

Full thickness cover
Extra-Flex cover contains the full line pressure of the system, thus if bellows failure were to occur, the media could not escape radially outward and harm personnel in the area.

Self draining
Extra-Flex convolutions make it impossible for media collection in the bellows to cause any corrosive attack on the bellows element. The sediment or residue collects at the bottom of the casing for easy venting.

Purge and drain connector
Extra-Flex vent to assure fluid filled line and allow draining of any sediment.

Reduce installation costs
Extra-Flex bellows element is completly enclosed and there are no critical surfaces that require special precautions when handling the expansion joint during installation.

None of the slip joint disadvantages
Thorburn's Extra-Flex does not require maintenance or need lubrication or repacking, therefore making it ideal in areas where accessibility is limited.

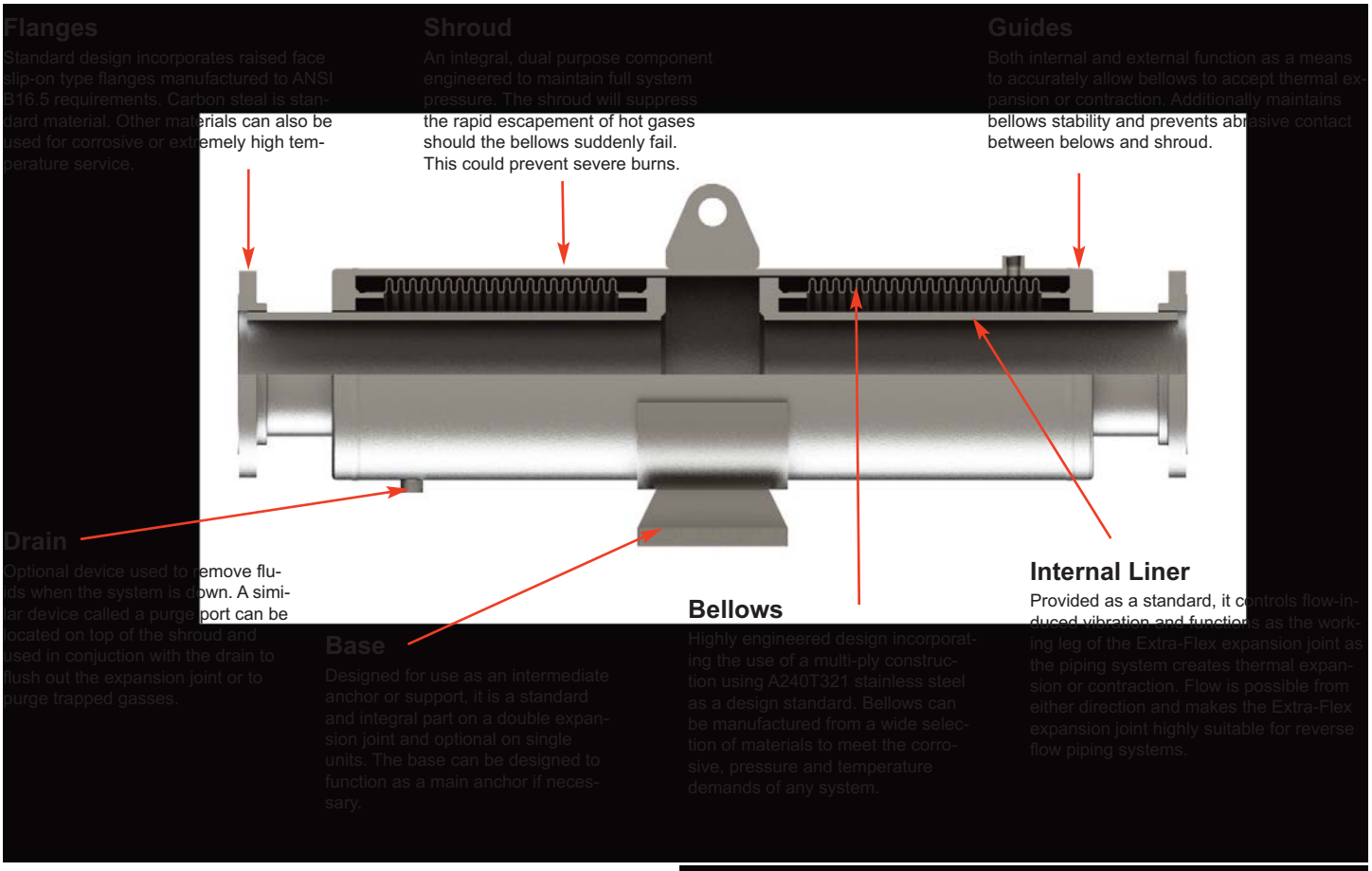
Extra Flex Single Bellows Style EFS

Extra Flex Double Bellows Style EFD

Extra Flex - Series EFS and EFD Externally Pressurized Bellows

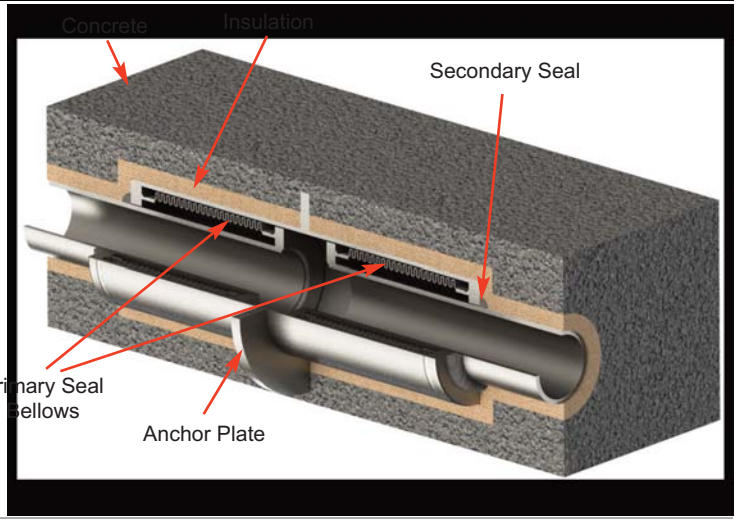
Thorburn's Extra-Flex EFS single expansion joint is normally located near an anchor at one end of a long piping run. Model EFS expansion joint should be placed with the fixed end adjacent to the anchor.

Thorburn Extra-Flex double bellows "EFD" may be considered as two single "EFS" expansion joints mounted back-to-back and connected by a common casing. Thorburn Model EFD is installed in the center of a long piping run and is supplied with a support foot which acts as an intermediate anchor.



Extra Flex - Direct Buried

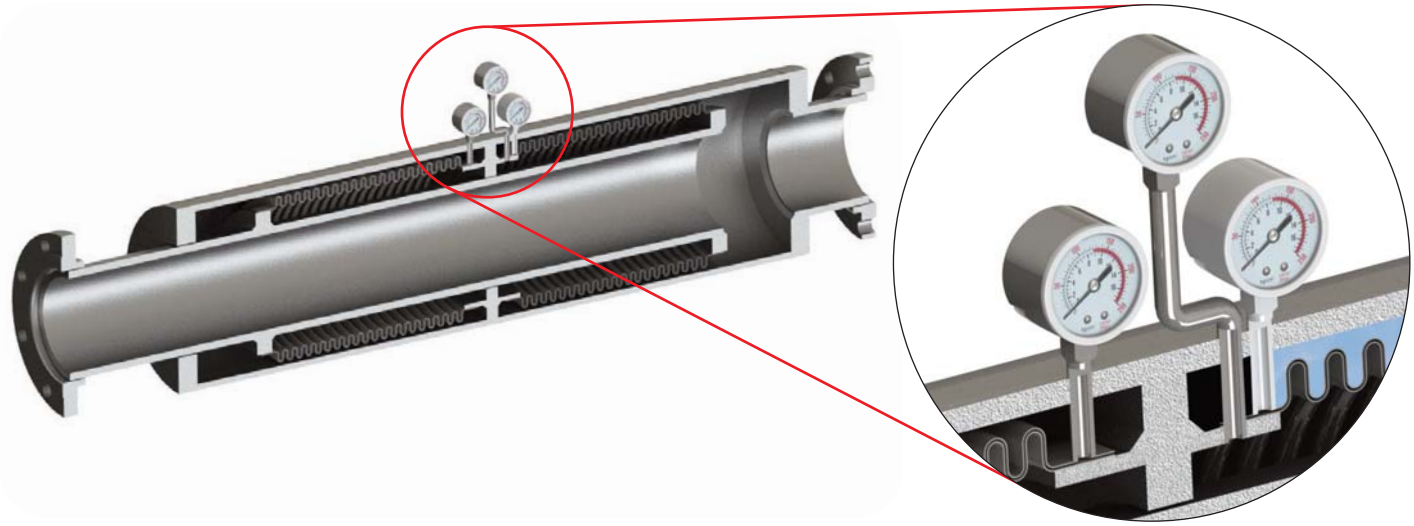
Thorburn Extra-Flex expansion joints can be directly buried in steam and condensated service. This eliminates the need for maintenance manways which are inconvenient to locate and expensive to build. Years of dependable maintenance free buried service have proven that manways are not always required nor are they cost effective. Choose Extra-Flex money saving approach when comparing the total installed cost of slip joints versus Thorburn Extra-Flex.



ThorburnFlex

A Proven Leader In Flexible Piping Technology

Extra Flex - Series EFSD and EFDD Externally Pressurized Bellows



Extra-Flex™ Model "EFSD/EFDD" Externally Pressurized Double Containment Expansion Joint System

Thorburn's Model EFSD/EFDD is designed to transfer lethal medias where failure of the expansionjoint would have serious consequences.

The main bellows is externally pressurized and acts as flexible pressure containment seal. A secondary bellows seals the opening between the inlet pipe line and the bellows outer cover shield. Each bellows seal has an additional secondary ply that can contain the full design conditions of pressure, temperature and media.

Thorburn's Model EFSD/EFDD expansion joint system incorporates an external leak detector systems so that failure of the first bellows sealing ply will be detected immediately. This failure will not result in any media exposure outside the expansion joint system. Three additional containment systems with separate monitoring devices supports the expansion joint and allows the system to continue operating without any risk of injury.

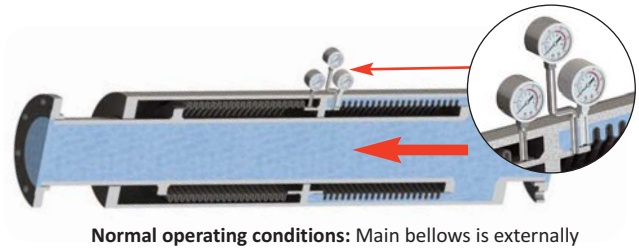
Thorburn's Model EFSD/EFDD expansion joint system can be monitored in this state and used indefinitely with upmost security or until a scheduled shutdown of the system allowing for orderly replacement.

Features

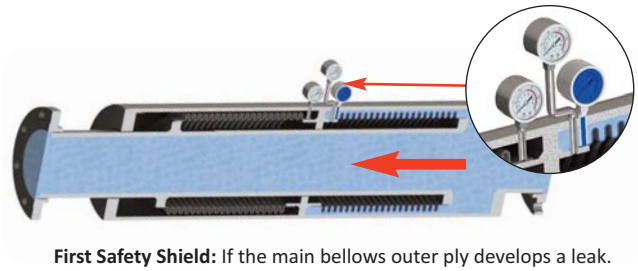
- Absorbs up to 400 mm of axial movement
- Pressures up to 50 BAR
- 4 separate pressure containment compartments
- Leak detection system
- Sizes - 25 mm to 1500 mm

How Extra Flex - Series EFSD and EFDD Works

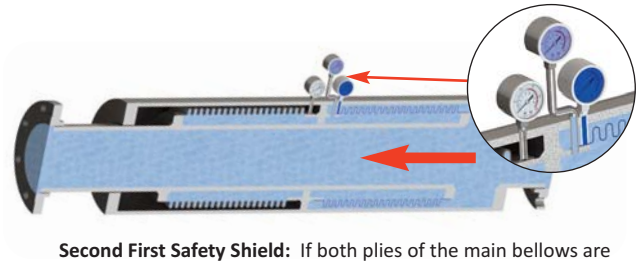
Thorburn's external pressurized bellows expansion joints are used to absorb large amount of axial movement in high pressure piping systems. The unique feature of this type of expansion joint is the transfer of pressure outside of the bellows, which eliminate the possibility of pressure imbalance due to high pressure that can occur on internal pressurized bellows. The bellows it is incased into a larger pressure retaining shell that protects the flexible element from possible damages.



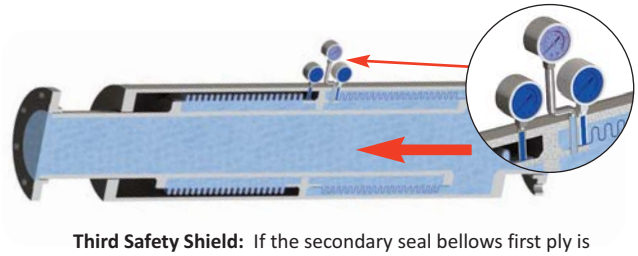
Normal operating conditions: Main bellows is externally pressurized.



First Safety Shield: If the main bellows outer ply develops a leak. Pressure is contained by bellows second ply. The first leak detector is on.



Second First Safety Shield: If both plies of the main bellows are leaking, pressure is contained by secondary 2 ply bellows. the second leak detector is on. The system continues to operate.



Third Safety Shield: If the secondary seal bellows first ply is leaking, pressure is contained by the second ply of the secondary bellows. Third leak detector on. The system continues to operate without external leakage.

Extra Flex - Technical Data

Size	Type	Pressure	Series	Axial Comp	Axial Ext	Spring Rate	Ends WW		Ends FF		Ends FW		Shell (OD In)	Base H (Dim In)
Inch		psi		Inch	Inch	lbs/inch	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OD Inch	Dim Inch
2	EFS	150	S	4	0.50	170	24.00	36	26.00	46	25.00	42	5.56	4.5
			M	6	0.75	114	32.00	49	35.00	59	34.00	54		
			L	8	1.00	85	40.00	62	42.00	72	41.00	67		
		300	S	4	0.50	340	24.00	38	26.00	52	25.00	45		
			M	6	0.75	227	32.00	52	35.00	66	34.00	59		
			L	8	1.00	170	40.00	64	42.00	78	41.00	71		
	EFD	150	S	8	1.00	170	40.00	64	43.00	74	42.00	69		
			M	12	1.50	114	58.00	92	61.00	102	60.00	97		
			L	16	2.00	85	72.00	108	75.00	118	74.00	113		
		300	S	8	1.00	340	40.00	70	44.00	84	42.00	77		
			M	12	1.50	227	58.00	96	62.00	110	60.00	103		
			L	16	2.00	170	72.00	118	76.00	132	74.00	125		
2.5	EFS	150	S	4	0.50	170	24.00	41	26.00	55	25.00	48	5.56	4.5
			M	6	0.75	114	32.00	54	35.00	68	34.00	61		
			L	8	1.00	85	40.00	62	42.00	76	41.00	69		
		300	S	4	0.50	340	24.00	42	26.00	62	25.00	62		
			M	6	0.75	228	32.00	56	35.00	76	34.00	66		
			L	8	1.00	170	40.00	65	42.00	85	41.00	75		
	EFD	150	S	8	1.00	170	40.00	71	43.00	85	42.00	78		
			M	12	1.50	114	58.00	103	61.00	117	60.00	110		
			L	16	2.00	85	72.00	126	75.00	140	74.00	133		
		300	S	8	1.00	340	40.00	73	43.00	93	42.00	83		
			M	12	1.50	227	58.00	105	61.00	125	60.00	115		
			L	16	2.00	170	72.00	128	75.00	148	74.00	138		
3	EFS	150	S	4	0.50	220	24.00	52	26.00	68	25.00	60	6.63	5.0
			M	6	0.75	148	32.00	63	35.00	81	34.00	72		
			L	8	1.00	110	40.00	84	42.00	100	41.00	92		
		300	S	4	0.50	386	24.00	53	26.00	79	25.00	66		
			M	6	0.75	257	32.00	64	32.00	90	34.00	77		
			L	8	1.00	198	40.00	85	42.00	110	41.00	98		
	EFD	150	S	8	1.00	220	40.00	86	42.00	102	41.00	94		
			M	12	1.50	148	53.00	106	55.00	122	54.00	114		
			L	16	2.00	110	70.00	140	72.00	156	71.00	148		
		300	S	8	1.00	386	40.00	87	43.00	113	42.00	100		
			M	12	1.50	257	53.00	108	56.00	134	55.00	121		
			L	16	2.00	193	70.00	148	73.00	174	72.00	161		
4	EFS	150	S	4	0.50	364	24.00	86	27.00	112	26.00	98	8.63	6.0
			M	6	0.75	243	32.00	102	35.00	128	34.00	115		
			L	8	1.00	182	40.00	120	43.00	146	42.00	133		
		300	S	4	0.50	490	24.00	88	28.00	132	26.00	110		
			M	6	0.75	327	32.00	105	36.00	149	34.00	127		
			L	8	1.00	245	40.00	128	44.00	172	42.00	150		
	EFD	150	S	8	1.00	364	40.00	129	44.00	155	42.00	142		
			M	12	1.50	243	53.00	168	56.00	194	55.00	181		
			L	16	2.00	182	70.00	218	73.00	244	72.00	231		
		300	S	8	1.00	490	40.00	132	44.00	176	43.00	154		
			M	12	1.50	327	53.00	172	51.00	216	56.00	194		
			L	16	2.00	245	70.00	223	74.00	267	72.00	245		
5	EFS	150	S	4	0.50	408	24.00	106	27.00	136	26.00	121	10.75	7.5
			M	6	0.75	272	30.00	126	33.00	156	32.00	141		
			L	8	1.00	204	36.00	150	39.00	180	38.00	165		
		300	S	4	0.50	532	24.00	110	28.00	166	26.00	138		
			M	6	0.75	355	30.00	130	34.00	186	32.00	158		
			L	8	1.00	266	36.00	154	40.00	210	38.00	182		
	EFD	150	S	8	1.00	408	38.00	186	41.00	216	39.00	201		
			M	12	1.50	272	50.00	225	53.00	255	51.00	240		
			L	16	2.00	204	62.00	263	65.00	293	63.00	278		
		300	S	8	1.00	532	38.00	190	42.00	246	40.00	218		
			M	12	1.50	355	50.00	230	54.00	286	52.00	258		
			L	16	2.00	266	62.00	278	66.00	334	54.00	306		

Extra Flex - Technical Data

Size	Type	Pressure	Series	Axial Comp	Axial Ext	Spring Rate	Ends WW		Ends FF		Ends FW		Shell (OD In)	Base H (Dim In)
Inch		psi		Inch	Inch	lbs/inch	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OD Inch	Dim Inch
6	EFS	150	S	4	0.50	460	24.00	124	27.00	162	26.00	143	10.75	7.5
			M	6	0.75	307	30.00	143	33.00	181	31.00	162		
			L	8	1.00	240	36.00	162	39.00	200	37.00	180		
		300	S	4	0.50	520	24.00	127	28.00	197	26.00	162		
			M	6	0.75	347	30.00	148	34.00	218	32.00	183		
			L	8	1.00	260	36.00	168	40.00	238	38.00	203		
	EFD	150	S	8	1.00	460	38.00	218	41.00	256	39.00	237		
			M	12	1.50	307	50.00	251	53.00	289	51.00	270		
			L	16	2.00	240	62.00	284	65.00	322	63.00	303		
		300	S	8	1.00	520	38.00	230	42.00	300	40.00	265		
			M	12	1.50	347	50.00	278	54.00	348	52.00	313		
			L	16	2.00	260	62.00	326	66.00	396	64.00	360		
8	EFS	150	S	4	0.50	756	25.00	168	28.00	228	26.00	198	12.75	8.5
			M	6	0.75	504	32.00	209	35.00	269	33.00	239		
			L	8	1.00	378	39.00	249	42.00	309	40.00	279		
		300	S	4	0.50	945	25.00	176	30.00	292	27.00	234		
			M	6	0.75	630	32.00	220	37.00	336	34.00	278		
			L	8	1.00	473	39.00	262	44.00	378	41.00	320		
	EFD	150	S	8	1.00	756	40.00	268	43.00	328	41.00	285		
			M	12	1.50	504	53.00	348	56.00	408	54.00	365		
			L	16	2.00	378	67.00	428	70.00	488	68.00	442		
		300	S	8	1.00	945	40.00	292	45.00	408	42.00	350		
			M	12	1.50	630	53.00	376	58.00	492	55.00	434		
			L	16	2.00	473	67.00	460	72.00	576	69.00	518		
10	EFS	150	S	4	1.00	1044	26.00	248	30.00	334	28.00	284	16.00	10.5
			M	6	1.50	696	33.00	296	37.00	383	35.00	330		
			L	8	2.00	522	43.00	385	47.00	470	45.00	420		
		300	S	4	1.00	1642	26.00	260	31.00	420	28.00	340		
			M	6	1.50	1097	33.00	312	38.00	472	35.00	392		
			L	8	2.00	821	43.00	402	48.00	562	45.00	482		
	EFD	150	S	8	2.00	1044	43.00	380	47.00	466	45.00	416		
			M	12	3.00	696	58.00	480	62.00	564	60.00	515		
			L	16	4.00	522	76.00	588	80.00	670	78.00	620		
		300	S	8	2.00	1642	43.00	412	48.00	572	45.00	492		
			M	12	3.00	1097	58.00	493	63.00	650	60.00	572		
			L	16	4.00	820	76.00	662	81.00	820	78.00	740		
12	EFS	150	S	4	1.00	1160	28.00	312	32.00	440	30.00	372	18.00	11.5
			M	6	1.50	773	35.00	426	39.00	554	37.00	486		
			L	8	2.00	580	45.00	560	49.00	686	47.00	618		
		300	S	4	1.00	2240	28.00	343	34.00	573	31.00	458		
			M	6	1.50	1493	35.00	432	41.00	552	38.00	492		
			L	8	2.00	1120	45.00	592	51.00	720	48.00	656		
	EFD	150	S	8	2.00	1160	44.00	520	48.00	648	46.00	580		
			M	12	3.00	773	59.00	652	63.00	780	61.00	712		
			L	16	4.00	580	79.00	828	83.00	956	81.00	886		
		300	S	8	2.00	2240	44.00	590	50.00	820	47.00	705		
			M	12	3.00	1493	59.00	727	65.00	855	62.00	790		
			L	16	4.00	1120	79.00	902	85.00	1032	82.00	967		
14	EFS	150	S	4	1.00	1128	28.00	364	32.00	540	30.00	448	20.00	12.50
			M	6	1.50	750	35.00	489	39.00	660	37.00	570		
			L	8	2.00	564	45.00	610	49.00	790	47.00	692		
		300	S	4	1.00	2362	28.00	406	34.00	736	31.00	570		
			M	6	1.50	1575	35.00	532	41.00	862	38.00	697		
			L	8	2.00	1181	45.00	648	51.00	972	48.00	810		
	EFD	150	S	8	2.00	1128	44.00	614	48.00	792	46.00	682		
			M	12	3.00	752	59.00	756	63.00	934	61.00	838		
			L	16	4.00	564	79.00	975	83.00	1143	81.00	1042		
		300	S	8	2.00	2362	46.00	682	51.00	1012	48.00	847		
			M	12	3.00	1575	60.00	850	66.00	1180	63.00	1015		
			L	16	4.00	1181	80.00	998	86.00	1347	83.00	1173		

Extra Flex - Technical Data

Size	Type	Pressure	Series	Axial Comp	Axial Ext	Spring Rate	Ends WW		Ends FF		Ends FW		Shell (OD In)	Base H (Dim In)
Inch		psi		Inch	Inch	lbs/inch	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OD Inch	Dim Inch
16	EFS	150	S	4	1.00	1328	28.00	334	33.00	530	30.00	432	22.00	13.50
			M	6	1.50	920	35.00	416	40.00	612	37.00	514		
			L	8	2.00	690	45.00	530	50.00	725	47.00	628		
		300	S	4	1.00	2216	29.00	408	35.00	788	32.00	597		
			M	6	1.50	1478	36.00	506	42.00	886	39.00	696		
			L	8	2.00	1108	46.00	658	52.00	1038	49.00	848		
	EFD	150	S	8	2.00	1328	44.00	568	49.00	764	46.00	665		
			M	12	3.00	920	59.00	726	54.00	922	61.00	824		
			L	16	4.00	690	79.00	962	84.00	1158	81.00	1060		
		300	S	8	2.00	2216	45.00	718	51.00	1098	48.00	908		
			M	12	3.00	1478	60.00	920	66.00	1300	63.00	1110		
			L	16	4.00	1108	80.00	1210	86.00	1590	83.00	1400		
18	EFS	150	S	4	1.00	1480	28.00	384	33.00	644	30.00	514	24.00	14.75
			M	6	1.50	987	35.00	452	40.00	712	37.00	582		
			L	8	2.00	740	45.00	564	50.00	824	47.00	694		
		300	S	4	1.00	2468	29.00	474	36.00	1074	32.00	759		
			M	6	1.50	1645	36.00	546	43.00	1194	39.00	879		
			L	8	2.00	1234	46.00	758	53.00	1388	49.00	1073		
	EFD	150	S	8	2.00	1480	44.00	664	49.00	924	46.00	894		
			M	12	3.00	987	59.00	822	64.00	1082	61.00	952		
			L	16	4.00	740	79.00	1025	84.00	1286	81.00	1156		
		300	S	8	2.00	2468	45.00	812	52.00	1442	48.00	1127		
			M	12	3.00	1645	60.00	1014	67.00	1644	63.00	1329		
			L	16	4.00	1234	80.00	1388	87.00	2018	83.00	1703		
20	EFS	150	S	4	1.00	1612	28.00	432	34.00	762	31.00	597	26.00	16.00
			M	6	1.50	1075	35.00	556	41.00	886	38.00	721		
			L	8	2.00	806	45.00	686	51.00	1016	48.00	850		
		300	S	4	1.00	3240	29.00	530	36.00	1160	32.00	845		
			M	6	1.50	2160	36.00	645	43.00	1284	39.00	969		
			L	8	2.00	1620	46.00	848	53.00	1478	49.00	1163		
	EFD	150	S	8	2.00	1612	44.00	732	50.00	1062	47.00	897		
			M	12	3.00	1075	59.00	910	65.00	1240	62.00	1075		
			L	16	4.00	806	79.00	1194	85.00	1524	82.00	1359		
		300	S	8	2.00	3240	45.00	934	52.00	1564	48.00	1249		
			M	12	3.00	2160	60.00	1232	67.00	1862	63.00	1547		
			L	16	4.00	1620	80.00	1610	87.00	2240	83.00	1925		
22	EFS	150	S	4	1.00	1848	28.00	496	34.00	866	31.00	680	28.00	17.25
			M	6	1.50	1232	35.00	646	41.00	1016	38.00	830		
			L	8	2.00	924	45.00	835	51.00	1205	48.00	1020		
		300	S	4	1.00	3438	29.00	632	37.00	1372	33.00	1022		
			M	6	1.50	2292	36.00	774	44.00	1514	40.00	1144		
			L	8	2.00	1719	46.00	968	54.00	1708	50.00	1338		
	EFD	150	S	8	2.00	1848	44.00	816	50.00	1186	47.00	1000		
			M	12	3.00	1232	59.00	1014	65.00	1144	62.00	1079		
			L	16	4.00	924	79.00	1316	85.00	1338	82.00	1327		
		300	S	8	2.00	3438	45.00	1051	53.00	1791	49.00	1420		
			M	12	3.00	2292	60.00	1390	68.00	2130	64.00	1760		
			L	16	4.00	1719	80.00	1730	88.00	2470	84.00	2100		
24	EFS	150	S	4	1.00	1988	28.00	612	35.00	1052	31.00	832	30.00	18.75
			M	6	1.50	1325	35.00	748	42.00	1188	38.00	968		
			L	8	2.00	994	45.00	936	52.00	1376	48.00	1156		
		300	S	4	1.00	3738	29.00	688	37.00	1638	33.00	1163		
			M	6	1.50	2492	36.00	867	42.00	1817	39.00	1342		
			L	8	2.00	1869	46.00	1042	52.00	1992	49.00	1517		
	EFD	150	S	8	2.00	1988	44.00	1004	51.00	1444	47.00	1224		
			M	12	3.00	1325	59.00	1229	66.00	1669	62.00	1449		
			L	16	4.00	994	79.00	1558	86.00	1998	82.00	1778		
		300	S	8	2.00	3738	45.00	1170	53.00	2120	49.00	1645		
			M	12	3.00	2492	60.00	1498	68.00	2448	64.00	1937		
			L	16	4.00	1869	80.00	1920	88.00	2870	84.00	2395		

Extra Flex - Technical Data

Size	Type	Pressure	Series	Axial Comp	Axial Ext	Spring Rate	Ends WW		Ends FF		Ends FW		Shell (OD In)	Base H (Dim In)
Inch		psi		Inch	Inch	lbs/inch	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OAL/Inch	Weight/lbs	OD Inch	Dim Inch
26	EFS	150	S	4	1.00	2255	24.50	507	30.50	1064	26.75	996	32.00	19.50
			M	6	1.50	1503	32.00	634	38.25	1192	34.25	884		
			L	8	2.00	1128	41.75	818	47.75	1374	44.00	1068		
		300	S	4	1.00	4510	25.00	642	34.25	1872	29.00	1212		
			M	6	1.50	3006	32.50	805	42.00	2036	36.50	1375		
			L	8	2.00	2255	42.25	1044	51.50	2274	46.25	1614		
	EFD	150	S	8	2.00	2255	42.25	915	49.75	1415	46.00	1165		
			M	12	3.00	1503	57.25	1169	65.00	1669	62.00	1419		
			L	16	4.00	1128	76.75	1537	84.25	2037	81.00	1787		
		300	S	8	2.00	4510	42.75	1156	63.50	2296	54.00	1726		
			M	12	3.00	3006	57.75	1482	68.75	2622	64.00	2062		
			L	16	4.00	2255	77.25	1960	88.00	3100	83.00	2530		
28	EFS	150	S	4	1.00	2425	24.50	543	30.50	1173	26.75	828	34.00	21.00
			M	6	1.50	1616	32.00	679	38.00	1310	34.25	961		
			L	8	2.00	1212	41.75	875	47.75	1505	44.00	1160		
		300	S	4	1.00	4850	25.00	687	34.75	2230	29.25	1407		
			M	6	1.50	3232	32.50	862	42.50	2406	36.75	1582		
			L	8	2.00	2424	42.25	1117	52.00	2660	46.50	1837		
	EFD	150	S	8	2.00	2425	42.25	980	49.75	1556	46.00	1268		
			M	12	3.00	1616	57.25	1252	65.00	1822	62.00	1537		
			L	16	4.00	1212	76.75	1644	84.25	2214	81.00	1929		
		300	S	8	2.00	4850	42.75	1239	64.00	2679	54.00	1959		
			M	12	3.00	3232	57.75	1589	69.25	3029	64.00	2309		
			L	16	4.00	2424	77.25	2099	88.50	3519	83.00	2809		
30	EFS	150	S	4	1.00	3925	24.50	583	30.75	1282	27.00	989	36.00	22.00
			M	6	1.50	2616	32.00	731	38.50	1431	34.50	1046		
			L	8	2.00	1962	41.75	945	48.00	1643	44.25	1260		
		300	S	4	1.00	7850	25.00	742	35.75	2484	29.75	1552		
			M	6	1.50	5233	32.50	932	43.50	2676	37.25	1742		
			L	8	2.00	3925	42.25	1214	53.00	2956	47.00	2024		
	EFD	150	S	8	2.00	3925	42.25	1052	50.00	1682	47.00	1367		
			M	12	3.00	2616	57.25	1348	67.25	1978	64.00	1663		
			L	16	4.00	1962	76.75	1776	84.50	2406	81.00	2184		
		300	S	8	2.00	7850	42.75	1339	55.00	2959	49.00	2149		
			M	12	3.00	5233	57.75	1719	70.25	3339	64.00	2529		
			L	16	4.00	3925	77.25	2283	89.50	3903	84.00	3093		
32	EFS	150	S	4	1.00	4182	24.50	619	31.50	1492	27.25	1093	38.00	23.00
			M	6	1.50	2788	32.00	776	39.25	1650	34.75	1252		
			L	8	2.00	2091	41.75	1003	48.75	1875	44.50	1477		
		300	S	4	1.00	8364	25.00	787	36.25	2705	30.00	1798		
			M	6	1.50	5576	32.50	990	44.00	2909	37.50	2001		
			L	8	2.00	4182	42.25	1288	53.50	3206	47.25	2299		
	EFD	150	S	8	2.00	4182	42.25	1158	50.75	1948	47.00	1553		
			M	12	3.00	2788	57.25	1472	70.00	2262	64.00	1867		
			L	16	4.00	2091	76.75	1926	87.50	2716	81.00	2321		
		300	S	8	2.00	8364	42.75	1494	55.50	3274	49.00	2384		
			M	12	3.00	5576	57.75	1900	70.75	3680	64.00	2790		
			L	16	4.00	4182	77.25	2496	90.00	4276	84.00	3386		
36	EFS	150	S	4	1.00	5398	24.50	703	31.75	1760	27.50	1276	42.00	25.25
			M	6	1.50	3600	32.00	884	39.50	1942	35.00	1459		
			L	8	2.00	2699	41.75	1148	49.00	2205	44.75	1720		
		300	S	4	1.00	10796	25.00	902	37.25	3471	30.50	2102		
			M	6	1.50	7198	32.50	1139	46.00	3710	38.00	2339		
			L	8	2.00	5398	42.25	1494	54.50	4063	47.75	2694		
	EFD	150	S	8	2.00	3600	42.25	1406	51.00	1844	47.00	1625		
			M	12	3.00	2699	57.25	1634	70.25	2594	64.00	2114		
			L	16	4.00	10796	76.75	2162	87.50	3122	81.00	2672		
		300	S	8	2.00	7198	42.75	1633	56.50	4033	49.00	2833		
			M	12	3.00	5398	57.75	2107	71.75	4507	64.00	3307		
			L	16	4.00		77.25	2817	91.00	5217	84.00	4017		

ThorburnFlex

A Proven Leader In Flexible Piping Technology

Extra Flex - Styles

EFS(D) Single (Double Containment)

Codes “EFS” “EFSD”

EFD(D) Double (Double Containment)

Code “EFD” “EFDD”

Extra Flex - Ends

Weld/Weld Ends

Code “WW”

Flange/Flange Ends

Code “FF”

Flange/Weld Ends

Code “FW”

Optional Features

D = Drain Connector, 1/2” NPT Coupling
P = Purge Connector, 1/2” NPT Coupling
A = Single Extra - Flex Anchor Foot

Extra Flex Materials

Thorburn Material Code				ASTM/ASME(S) Material Designation	Material Type
Bellows (B)	Liner (L)	End (E)	Spool (S)		
B-0	L-0	E-0	S-0	(S)A36/44W	Carbon Steel
B-1	L-1	E-1	S-1	(S)A-240	SS304
B-2	L-2	E-2	S-2	(S)A-240	SS304L
B-3	L-3	E-3	S-3	(S)A-240	SS316
B-4	L-4	E-4	S-4	(S)A-240	SS316L
B-5	L-5	E-5	S-5	(S)A-240	SS321
B-6	L-6	E-6	S-6	(S)A-240	SS309
B-7	L-7	E-7	S-7	(S)A-240	SS310
B-8	L-8	E-8	S-8	(S)B-127	Monel 400
B-9	L-9	E-9	S-9	(S)B-168	Inconel 600
B-10	L-10	E-10	S-10	(S)B-443	Inconel 625
B-11	L-11	E-11	S-11	(S)B-409	Incoloy 800
B-12	L-12	E-12	S-12	(S)B-424	Incoloy 825
B-14	L-14	E-14	S-14	(S)B-409	Incoloy 800HT
B-15	L-15	E-15	S-15	(S)B-162	Nickel 201
B-16	L-16	E-16	S-16	(S)B-575	Inco C276
B-17	L-17	E-17	S-17	(S)B-364	Tantalum
B-18	L-18	E-18	S-18	-	Titanium Gr. 1
B-19	L-19	E-19	S-19	-	Zirconium Gr. 702
B-20	L-20	E-20	S-20	(S)A-285	Carbon Steel
B-21	L-21	E-21	S-21	(S)A-570	Carbon Steel
B-22	L-22	E-22	S-22	(S)B-588	Carbon Steel
B-23	L-23	E-23	S-23	(S)A-606	Corten A
B-24	L-24	E-24	S-24	(S)A516	Carbon Steel
B-25	L-25	E-25	S-25	(S)A240	304H
B-26	L-26	E-26	S-26	(S)A240	316H
B-27	L-27	E-27	S-27	(S)A240	253MA
B-28	L-28	E-28	S-28	(S)A240	Duplex SS
B-29	L-29	E-29	S-29	(S)A240	Super Duplex SS
B-30	L-30	E-30	S-30	SA204 Gr. B	Carbon Steel
B-31	L-31	E-31	S-31	SA516-60	Carbon Steel
B-32	L-32	E-32	S-32	(S)A387	Carbon Steel
B-X	L-X	E-X	S-X	-	Special - Specify

Series:
EFS = Single Bellows
EFD = Dual Belows
EFSD = Single Bellows Double Containment
EFDD = Dual Bellows Double Containment

End Type:
WW = Weld / Weld
FF = Flange / Flange
FW = Flange / Weld

Options:
D = Drain Connector, 1/2" NPT Coupling
P = Purge Connector, 1/2" NPT Coupling
A = Single Extra - Flex Anchor Foot

Standard Materials:
Bellows: ASTM A240 T321 (B5)
Shroud: ASTM A53/A106/A570/A36/44W
Pipe: ASTM A53/A106/A570/A36/44W
Rings: ASTM A285C/A570/A36/44W
Flanges: ASTM A105/ANSI B16.5 RFSO/A570/A36/44W
Drilling: 150# standard 300# option (Other drillings available upon request).

Special Notes

1) Use of material codes as a suffix in the catalogue part number designate the bellows, liner, end connectors, spool and accessories material supplied by Thorburn.

2) Special note for flanges and pipes: when forged flanges or scheduled pipe are used, the same nomenclature symbols are used (i.e.: E2 or S6).

3) ASME "SA" or "SB" materials are available upon request.

4) All bellows material purchased by Thorburn is "mill annealed" in accordance with "A", "SA" or "SB" specifications. Thorburn does not perform any other heat treating operations before welding, after welding, before forming convolutions or after forming convolutions unless specified by purchaser. Heat treatment of bellows after forming convolutions can lower bellows' spring rate, "squirm" pressure and cycle life. Thorburn
will cooperate with purchasers requiring heat treatment after forming to arrive at what effect the heat treatment will have on published bellows data.

Notes

1. Rated cycle life is 2000 cycles for any one movement tabulated minimum per EJMA.
2. To combine axial, lateral or angular movements the sum of each must not exceed 100%. Refer to pages 36 to 43.
3. To obtain greater movements or cycle life contact Thorburn.
4. Max. axial extension movement is 50% of tabulated axial value.
5. Maximum test pressure: 1-1/2 x rated working pressure.
6. Catalogue pressure ratings are based upon a design temperature range of - 20°F to 800°F. Actual operating temperature should always be specified.
7. For higher pressure temperature, movement and cycle ratings, contact Thorburn with your application details for fast action.

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European Conformity | ISO 9001 | B31.1, B31.3 | ASME "NPT" Sec. III Class 1 | ASME "U" Sec. VIII Div. 1 | N285.0, B51 CGA CR96-001 | 97/23/EC Module H | UL 536

ISIR Romania | CNCAN Romania | EN 13480-2002 | HAF 604 China | TSG China

How To Order Extra Flex

Nominal Size	Style	Ends	Pressure (PSI)	Axial Movement	Bellows Material	Spool Material	End Material	Anchor Material	Optional Features
2	**ESF**	**WW**	**300**	**4**	**B5**	**S1**	**E1**	**A1**	**DP**
2" I.D.	Extra Flex Single	Weld End	300 PSI	4 inches	321SS	304SS	304SS	304SS	Drain/Purge Connector

ThorburnFlex

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