



DISPOFLEX

Dispositivos Flexibles S.A. de C.V.

Elastomeric Expansion Joints

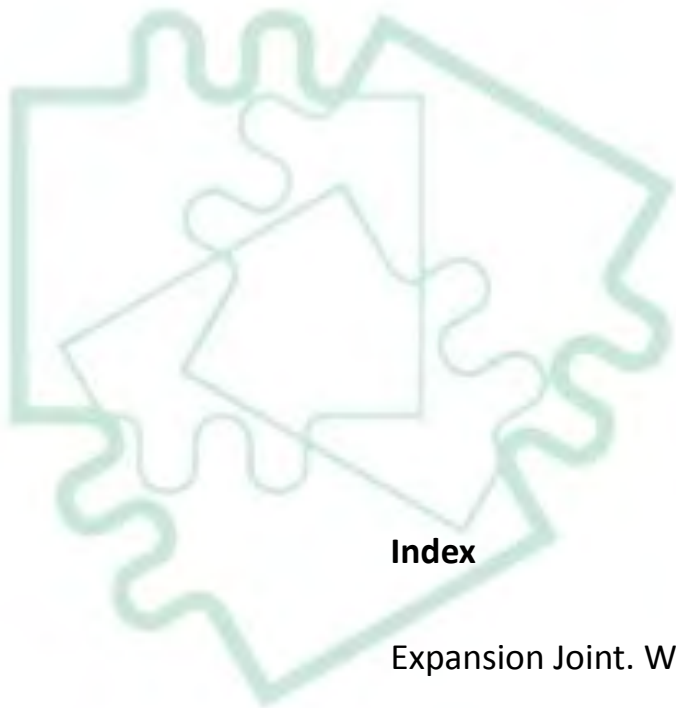




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Dispositivos Flexibles S.A. de C.V.

Product Catalog



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Expansion Joint

What is an expansion joint?

When designing, producing and maintaining industrial pipe systems, different situations have to be taken into account. Such situations can be mechanical movements, vibrations, misalignments in pipes or movement caused by thermal expansion. All of these movements in the pipe are transmitted to the mounting and equipment connected to them, provoking deformations, failure and ruptures in the systems, which can lead to pricy production stops.

There are different ways to attack this situation, being the correct use of Expansion Joints in the pipes one of the most effective ones.



Expansion Joints are flexible devices designed to absorb movements generated by the pipe system because of variations in temperature and pressures. By absorbing those movements, the joints reduce the mechanical vibration caused by other equipment and diminishes the noise of the pipes.

The essential part of an Expansion Joint, which allows the movement and flexibility, is the bellow. The bellow requires to be very resistant to support the pressure of the fluids handled, but also flexible enough to absorb the present movements such as axial, lateral, angular, rotations and vibrations.



Types of Movement

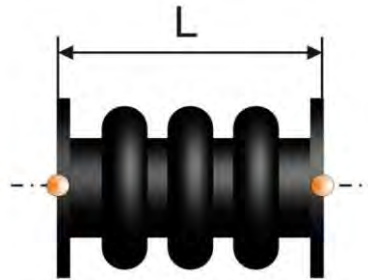
Basic movements that can exist in an Expansion Joint are:

Axial movement that can be of *compression* or *extension*, **lateral** movement and **angular** movement.

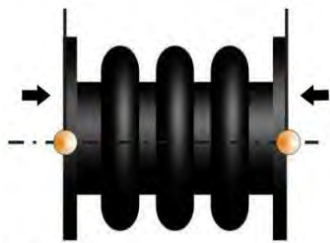
One can also find **rotational** and **vibratory** movement.

Neutral Bellow

Under any pressure or temperature.



Axial movement to compression



Axial movement to extension



Lateral Movement



Angular Movement



Elastomeric Expansion Joints

An expansion joint of this type is a flexible connector, produced with natural or synthetic elastomer, reinforced with polyester canvas and steel rings.

Its design and material depend on the service needed, as well as the operation condition and the containing liquid. Additionally to the characteristics of design and properties of the material, a variety of accessories can be added to adapt to the presented specific situation.

For more information or questions please contact our technical support team. If you should not know any data or characteristic required we will gladly help you.



Elastomeric Expansion Joints

Advantages

There have been technological developments in the compounds of rubber and synthetic canvas, which gives the expansion joints with these materials benefits that cannot be found with other materials.

Its compact size provides a considerable saving in Loop systems or pipe configuration, optimizing the size of the plant, installation work and loss of pressure.

The flexibility of these joints provide major absorption capacity and because of the material does not cause fatigues or cracking and prevents any electrolytic action, thanks to the rubber-metal interface of the joints with corresponding flanges.

They resist corrosion and erosion and due to the elasticity of the used material resist sudden increase in pressure or a water hammer.



Manufacturing



Depending on the use given to the expansion joint, as well as the operation conditions and the containing liquid, the material is different.

The elastomers used are generally: natural, Neoprene, Viton, Nitrile, Hypalon, medical rubber. These materials can be combined as one can be on the inside and the other of the outside of the joint.

As a special manner we can design and manufacture elastomeric joints with metallic liner or Teflon interior.



Types of Elastomeric Expansion Joints

One arch with integrated flanges

The construction is out of canvas and rubber, reinforced with metal or wire rings. It is designed with one simple arch or with major radio, which increases its capacity of movement and self-cleaning.

Flanges with complete face are integrated in the body of the joint. The rubber flange is thick enough to seal efficiently the partner flange without the use of gaskets.



Multiple arches with integrated flanges

This joint is similar to the one arch joint, but it has an increased capacity in absorption, depending on the number or arcs. To maintain horizontal stability it is recommended to not use more than 4 arches.



Joint with one arch and flanges of different sizes

Similar to the joint with one arch, but its flanges are of different size allowing the connection to tubes of different size according the pipe system.



Types of Elastomeric Expansion Joints

Concentric reduction

The reduction joints are used to join pipes with different diameters without the loss of the axial shaft center. They can be manufactured with or without arch.



Eccentricity reduction

This reduction joints are used to join pipes with different diameters and the loss of the axial shaft center. They can be manufactured with or without arch.



Joint with revolving flange

Expansion joint built with revolving flanges at the extremes. The special construction counts with steel rings to reinforce the contact with the flange.



Types of Elastomeric Expansion Joints

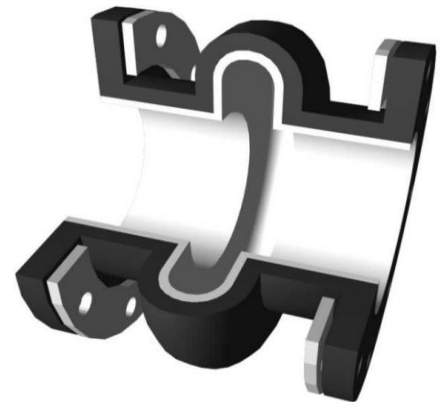
Joints with a stuffed arch

The arch can be stuffed with soft rubber, providing a smooth pipe. It is only recommended when necessary, since the absorption capacity decreases by 50%.



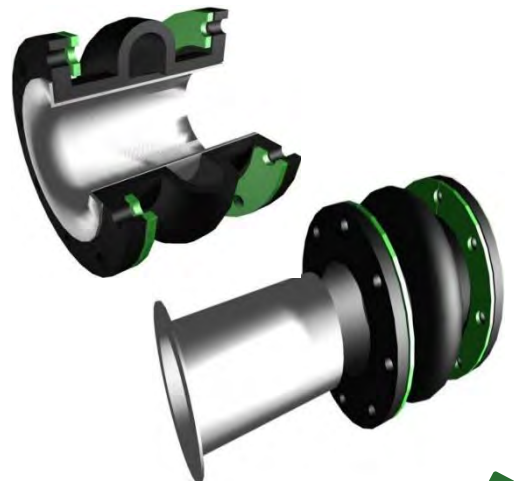
Joint with inner tube suitable to service

The inner tube can be manufactured with the most suitable material according to the containing fluid.



Inner sleeve

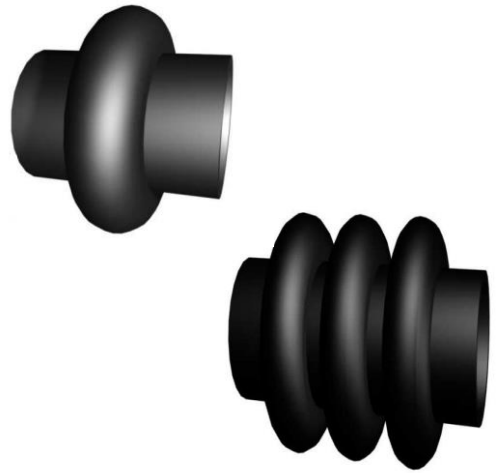
This accessory is a sleeve with a van stone end or complete flange face, that made of hard rubber, metal or Teflon, that extends through the interior of the extension joint. It reduces wear on the joint and smooths the flow, reducing turbulence. It is not recommended for thick fluids.



Types of Elastomeric Expansion Joints

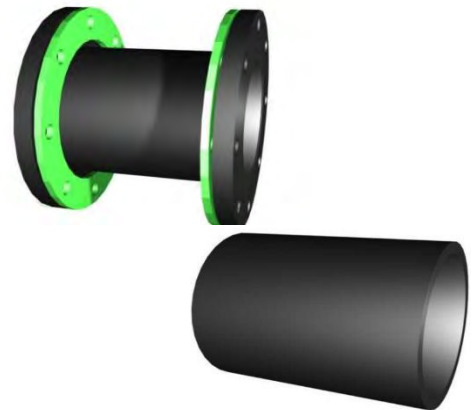
Joints with sleeve extrens

Sleeve ends have the same inner diameter as the pipes outer diameter, where the joint is placed and fixed with clamps. The use is only recommended with medium pressure or vacuum, since air tightness cannot be guaranteed with the clamp.



“U” type joints with or without flanges

“U” type joints are recommended for a total vacuum or a pressure of max. 25 PSIG and are normally used between turbines and condenser.



Joints with sphere type corrugation

This joint has an arch with big radius which gives it greater the movement absorption capacity over the traditional design. The design is also self-cleaning which eliminates the need for a stuffing in the arch.



Types of Elastomeric Expansion Joints

Rectangular joint

This joint fits rectangular flanges and their behaviour is similar to the circular ones.



Special Orders

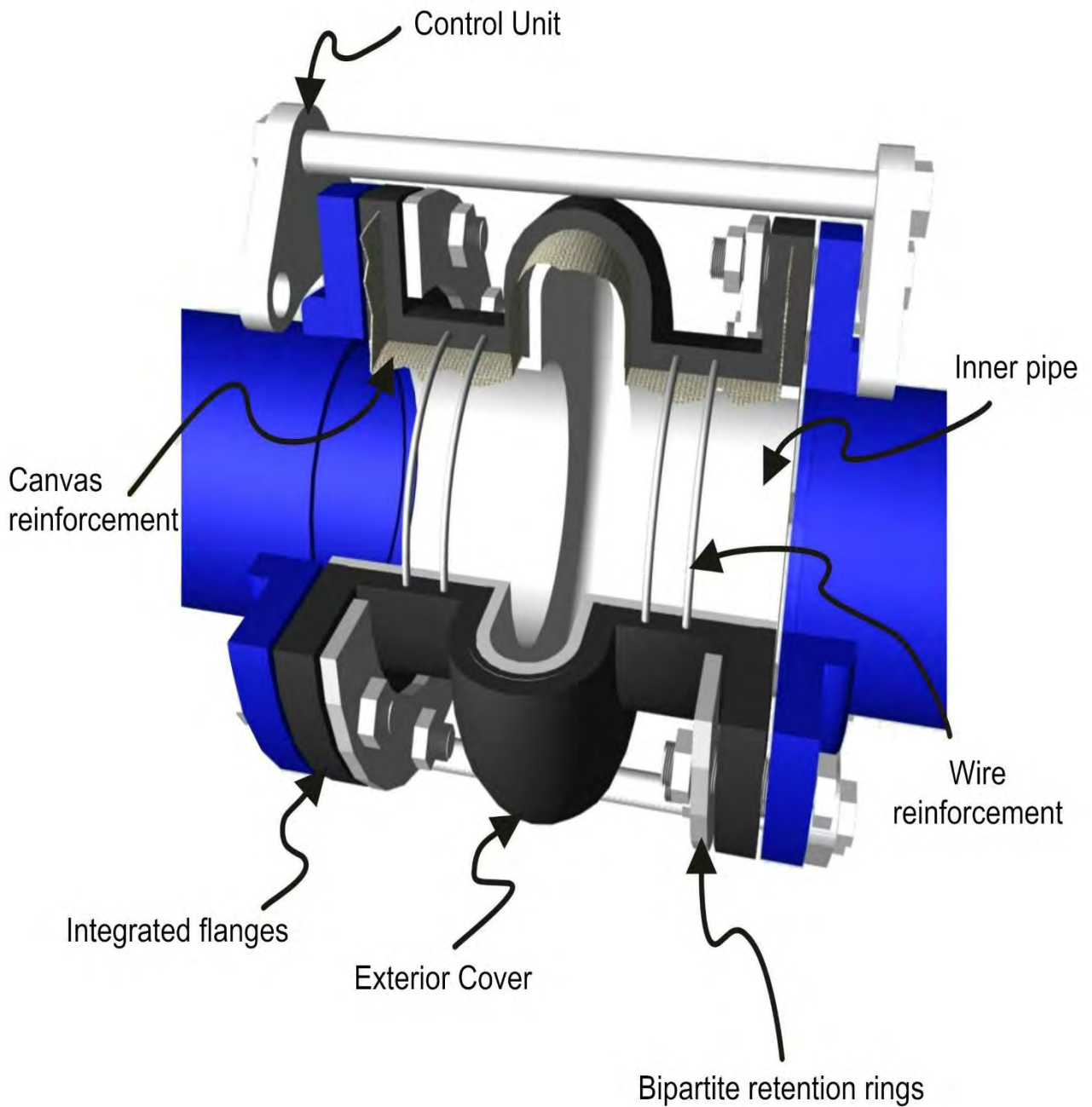
Joints with gap

This specialty joint is generally used when there is a level difference in the pipes, so as to join them without a problem.



- For more information or special requirements please contact our technical support team. Our engineers will attend you swiftly.

Accessories for Elastomeric Expansion Joints



Accessories for Elastomeric Expansion Joints

Inner pipe

Internal surface that is in direct contact with the liquid. It is made of the appropriate elastomer for the operation conditions and the containing liquid of the joint.

Body

It is build out of rubber layers and reinforced by nylon canvas to support the pressure.

Integrated flanges

The flanges are made of the body of the joint and the same material. Built under norms ANSI 150# and 300#.

Control Unit

Limits the movements of the expansion joint to the permitted value.

Exterior cover

Can be made of the same elastomer as the inner pipe or a different one, depending on the environmental conditions the pipe will be subdued.

Wire reinforcement

It reinforces the body of the joint to support the pressure and avoid deformations.

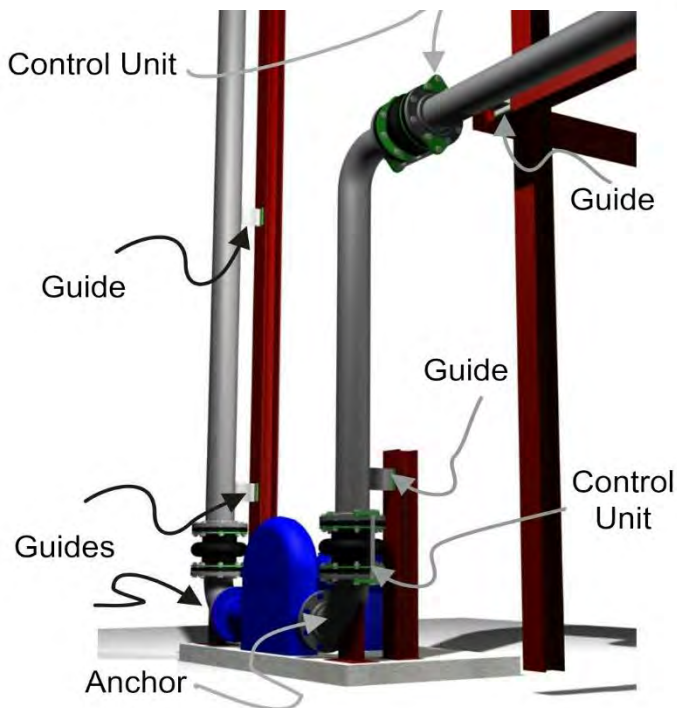
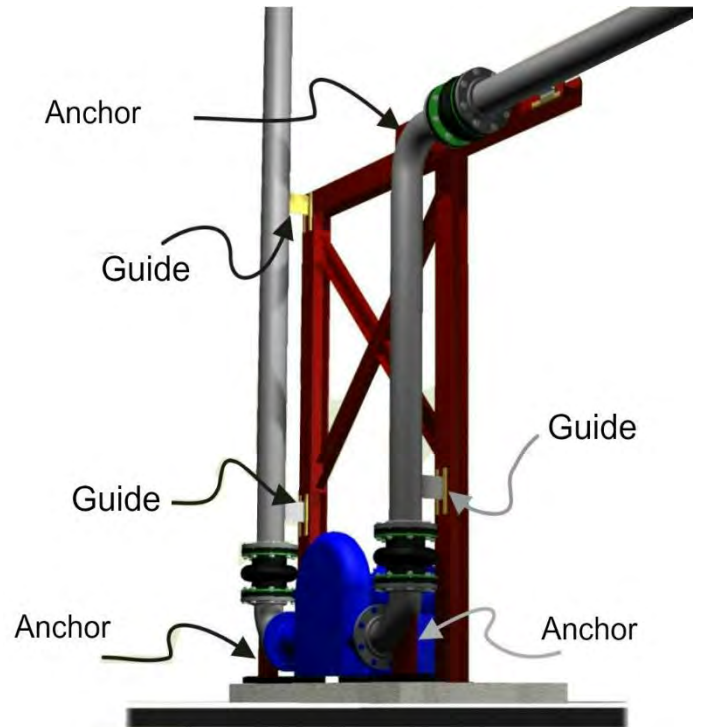
Bipartite retention rings

Their function is to reinforce the sealing between the integrated flanges of the joint and the flanges where it will be installed.



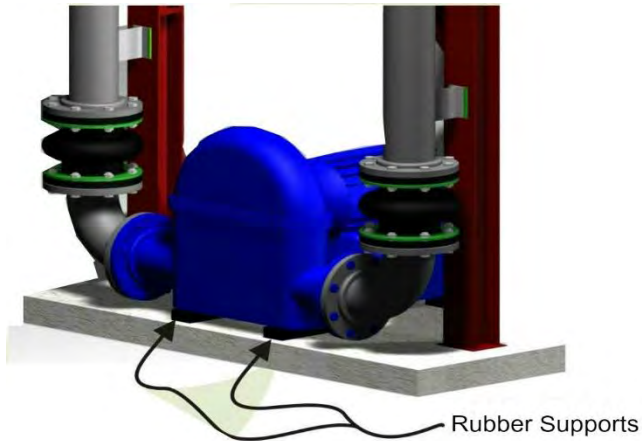
Anchoring and guiding of the pipe system

Typical pipe arrangement with correct use of expansion joints, guides and anchoring.

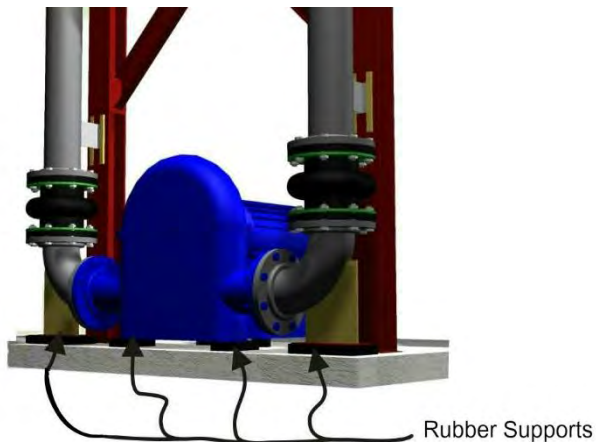


Typical arrangement using expansion joints and control units, where is not possible anchoring.

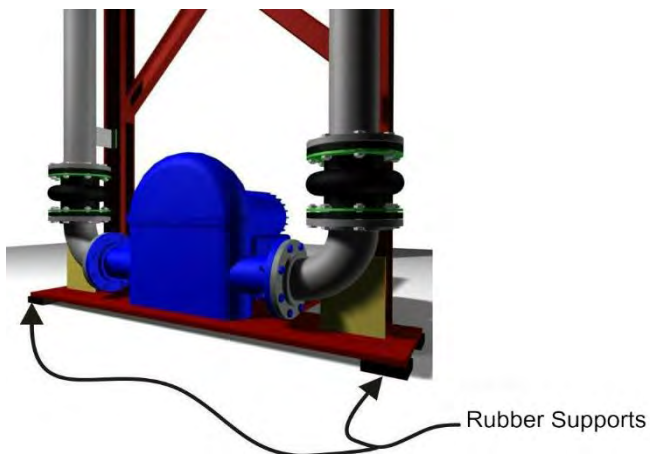
Other types of installations



System with only one pump installed on a rubber support that can bear the systems weight and the push of pressure. The pump Shell, nozzles and elbows need to support the same strength.

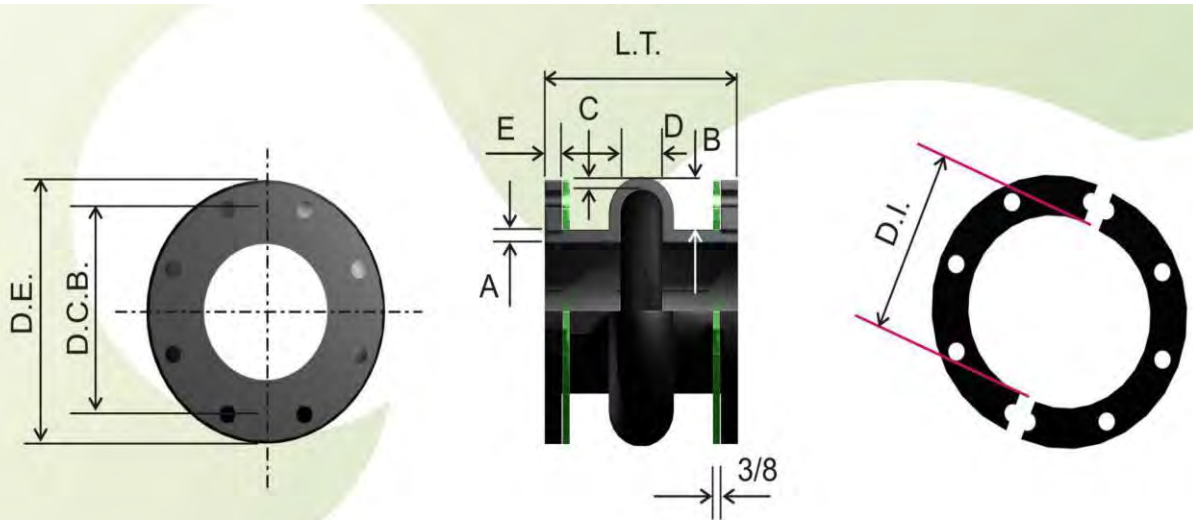


System with the pump and elbow on a rubber support. The pump shell doesn't need to support the force on the nozzles and elbow because of the system weight, as well as the push of pressure on joints since the elbows have their own support.



Alternative system with a second level supported on rubber, in this case the pump doesn't need to support the force on the nozzles and elbow because of the system weight, as well as the push of pressure on joints neither, since the elbows have their own support.

Dimensional table



DIAM. NOM.	BRIDA DIAM. EXT.	DIAM. C.B.	BARRENOS		A. RET. DIAM. INT.	A	B	C	D	E	LON. TOT			MOV. /ARCO		PRES. TRABAJO		PESO (lbs)	
			NÚMERO	DIÁMETRO							1 ARCO	2 ARCO	3 ARCO	AXIAL COMP	AXIAL EXT.	P	J.E.	ANILLO	
2	6	4 3/4	4	3/4	3 5/8	3/4	1 1/4	1/2	1/2	9/16	6	10	12	7/16	1/4	165	4	4	
2 1/2	7	5 1/2	4	3/4	4 1/8	3/4	1 1/4	1/2	1/2	9/16	6	10	12	7/16	1/4	165	4.5	5.5	
3	7 1/2	6	4	3/4	4 5/8	3/4	1 1/4	1/2	1/2	9/16	6	10	12	7/16	1/4	165	5.25	6	
4	9	7 1/2	8	3/4	5 7/8	7/8	1 1/4	1/2	1/2	9/16	6	10	12	7/16	1/4	165	8	7.38	
5	10	8 1/2	8	7/8	6 7/8	7/8	1 1/4	1/2	1/2	9/16	6	10	12	7/16	1/4	140	8.25	8.75	
6	11	9 1/2	8	7/8	7 7/8	7/8	1 1/4	1/2	1/2	5/8	6	10	12	7/16	1/4	140	9.75	10	
8	13 1/2	11 3/4	8	7/8	9 7/8	7/8	1 1/2	5/8	3/4	3/4	6	10	14	11/16	3/8	140	15	14	
10	16	14 1/4	12	1	12 1/8	1	1 1/2	11/16	3/4	3/4	8	12	14	11/16	3/8	140	23	18	
12	19	17	12	1	14 1/2	1 3/16	1 1/2	11/16	3/4	3/4	8	12	14	11/16	3/8	140	40	25	
14	21	18 3/4	12	1 1/8	16 1/2	1 3/16	2	3/4	3/4	7/8	8	12	16	11/16	3/8	85	39	28	
16	23 1/2	21 1/4	16	1 1/8	18 1/2	1 3/16	2	3/4	3/4	7/8	8	12	16	11/16	3/8	65	45.5	35	
18	25	22 3/4	16	1 1/4	20 1/2	1 3/16	2	3/4	3/4	7/8	8	12	16	11/16	3/8	65	50.5	30	
20	27 1/2	25	20	1 1/4	22 5/8	1 1/4	2	25/32	7/8	1	8	12	16	13/16	7/16	65	61	41	
24	32	29 1/2	20	1 3/8	26 5/8	1 1/4	2	25/32	7/8	1	10	14	18	13/16	7/16	65	75	53	
26	34 1/4	31 3/4	24	1 3/8	28 7/8	1 3/8	2 1/4	13/16	1	1	10	14	18	15/16	1/2	55	85.5	57	
30	38 3/4	36	28	1 3/8	32 7/8	1 3/8	2 1/4	13/16	1	1	10	14	18	15/16	1/2	55	134	66	
36	46	42 3/4	32	1 5/8	39	1 3/8	2 1/4	13/16	1	1	10	14	18	15/16	1/2	55	137.5	99	
40	50 1/4	47 1/4	36	1 3/4	43	1 3/8	2 1/4	13/16	1	1	10	14	18	15/16	1/2	55	160	121.25	
42	53	49 1/2	36	1 5/8	45 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	258	127	
44	55 1/4	51 3/4	40	1 3/4	47 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	198	136.75	
48	59 1/2	56	44	1 5/8	51 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	275	154.5	
50	61 3/4	58 1/4	44	1 7/8	53 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	240	163.25	
54	66 1/4	62 3/4	44	2	57 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	265.5	185	
60	73	69 1/4	52	2	63 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	385	221	
62	75 3/4	71 3/4	52	2	65 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	325	250	
66	80	76	52	2	69 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	55	350	270	
72	86 1/2	82 1/2	60	2	75 1/4	1 1/2	2 1/2	29/32	1 1/8	13/16	12	14	18	1 1/16	9/16	45	445	303	

Movement capacity/ strength/ constant spring

tamaño nominal de la junta de expansión	longitud mínima recomendada cara a cara	pulgadas de compresión axial	pulgadas de extensión axial	pulgadas de deflexión lateral	grados de movimiento angular	grados de movimiento torsional	carga total para el rango de compresión en libras	carga total para el rango de extensión en libras	carga total para el rango de deflexión lat. en libras	carga total para el rango de rotación ang. en pie- libras	fuerza en lbs. para comprimir 1"	fuerza en lbs para extender 1"	fuerza en lbs para desplazar lateral 1"	fuerza en pie-lbs para rotar angularmente 1°
pulg.	pulg.	axial	axial	lateral	angular	torsional	de compresión en libras	de extensión en libras	de deflexión lat. en libras	rotación ang. en pie- libras	comprimir 1"	extender 1"	desplazar lateral 1"	rotar angularmente 1°
1/4	6	7/16	1/4	1/2	-	-	-	-	-	-	-	-	-	-
3/8	6	7/16	1/4	1/2	-	-	-	-	-	-	-	-	-	-
1/2	6	7/16	1/4	1/2	46	3	58	43	87	0.3	133	172	174	0.006
3/4	6	7/16	1/4	1/2	34	3	87	64	131	0.7	199	256	262	0.02
1	6	7/16	1/4	1/2	27.5	3	103	76	175	1	235	304	350	0.04
1-1/4	6	7/16	1/4	1/2	22.5	3	129	96	219	2	294	383	438	0.1
1-1/2	6	7/16	1/4	1/2	18.5	3	154	115	262	3	353	459	524	0.15
2	6	7/16	1/4	1/2	14.5	3	185	138	350	4	423	552	700	0.3
2-1/2	6	7/16	1/4	1/2	11.5	3	232	172	381	6	530	689	762	0.5
3	6	7/16	1/4	1/2	10	3	278	207	412	8	635	828	824	0.8
3-1/2	6	7/16	1/4	1/2	8.3	3	324	241	444	11	742	965	888	1.3
4	6	7/16	1/4	1/2	7.5	3	371	276	476	14	848	1104	952	1.9
5	6	7/16	1/4	1/2	6	3	463	344	546	22	1058	1376	1092	3.7
6	6	7/16	1/4	1/2	5.0	3	556	413	617	32	1271	1652	1234	6.4
8	6	11/16	3/8	1/2	5.5	3	971	689	753	70	1412	1837	1506	12.7
10	8	11/16	3/8	1/2	4.5	3	1214	861	809	109	1766	2296	1618	24.2
12	8	11/16	3/8	1/2	3.75	3	1456	1033	948	158	2118	2755	1896	42.1
14	8	11/16	3/8	1/2	3.25	2	1274	904	1117	160	1853	2411	2234	19.2
16	8	11/16	3/8	1/2	2.75	2	1456	1033	1286	209	2118	2755	2572	76
18	8	11/16	3/8	1/2	2.5	1	1638	1163	1420	266	2382	3101	2840	106
20	8	13/16	7/16	1/2	2.5	1	2152	1505	1588	381	2649	3440	3176	152
22	10	13/16	7/16	1/2	2.25	1	2367	1656	1648	463	2913	3785	3296	205
24	10	13/16	7/16	1/2	2	1	2582	1807	1706	549	3178	4130	3412	274
26	10	15/16	1/2	1/2	2.3	1	2869	1990	1829	659	3060	3980	3658	292
28	10	15/16	1/2	1/2	2	1	3090	2143	1952	765	3296	4286	3904	382
30	10	15/16	1/2	1/2	2	1	3311	2297	2075	875	3532	4594	4150	437
32	10	15/16	1/2	1/2	1.8	1	3531	2450	2438	1000	3769	4899	4876	555
34	10	15/16	1/2	1/2	1.75	1	3752	2603	2801	1130	4002	5602	5602	645
36	10	15/16	1/2	1/2	1.5	1	3973	2756	3164	1266	4238	5512	6328	844
38	10	15/16	1/2	1/2	1.5	1	4194	2909	3251	1415	4475	5818	6502	943
40	10	15/16	1/2	1/2	1.5	1	4414	3062	3338	1563	4708	6124	6676	1042
42	12	1-1/16	9/16	1/2	1.5	1	4732	3253	3423	1745	4452	5783	6846	1163
44	12	1-1/16	9/16	1/2	1.5	1	4958	3407	3571	1906	4664	6057	7142	1270
46	12	1-1/16	9/16	1/2	1.3	1	5181	3562	3718	2090	4870	6339	7436	1680
48	12	1-1/16	9/16	1/2	1.25	1	5408	3717	3866	2282	5087	6608	7732	1825
50	12	1-1/16	9/16	1/2	1.25	1	5634	3872	4012	2460	5300	6884	8024	1968
52	12	1-1/16	9/16	1/2	1.25	1	5856	4027	4157	2672	5512	7166	8314	2138
54	12	1-1/16	9/16	1/2	1.25	1	6085	4182	4303	2885	5724	7435	8606	2308
56	12	1-1/16	9/16	1/2	1.25	1	6310	4341	4448	3081	5936	7717	8896	2464
58	12	1-1/16	9/16	1/2	1	1	6532	4492	4592	3310	6148	7992	9184	3310
60	12	1-1/16	9/16	1/2	1	1	6761	4651	4736	3537	6360	8268	9472	3537
66	12	1-1/16	9/16	1/2	1	1	7437	5116	5108	4288	6996	9095	10216	4288
72	12	1-1/16	9/16	1/2	0.9	1	8113	5581	5477	5113	7632	9922	10954	5681
78	12	1-1/16	9/16	1/2	0.9	1	8789	6046	5951	6022	8268	10748	11902	7022
84	12	1-1/16	9/16	1/2	0.8	1	9465	6511	6425	6913	8904	11575	12850	8641
96	12	1-1/16	9/16	1/2	0.7	1	10817	7441	7375	9409	10176	13228	14750	13441
102	12	1-1/16	9/16	1/2	0.66	1	11488	7899	7850	11198	10812	14056	15700	16967
108	12	1-1/16	9/16	1/2	0.62	1	12169	8372	8325	13550	11448	14883	16652	21855
120	12	1-1/16	9/16	1/2	0.56	1	13521	9302	9275	16728	12720	16537	18550	29871
132	12	1-1/16	9/16	1/2	0.51	1	14866	10222	10144	17109	13992	18190	20288	33547
144	12	1-1/16	9/16	1/2	0.47	1	16218	11152	11013	20164	15264	19843	22026	42902

Comparison of the chemical composition and physical properties of different elastomers

CODIGO DE LA ESCALA

7- EXCEPCIONAL	5- MUY BUENO	3- DE JUSTO A BUENO	1- DE POBRE A JUSTO	X- CONTACTAR AL FABRICANTE
6- EXCELENTE	4- BUENO	2- JUSTO	0- POBRE	

NOMBRE COMUN / nombre de grupo químico								
CARACTERISTICAS	NEOPRENO	HULE NATURAL	CLOROBUTILO	BUNA-N/NITRILO	HYPALON	VITON	EPDM	TEFLON/PTFE
QUIMICAS	chloroprene	Polyisoprene, sintético	Cloroisobutene-isoprene	Nitrile-butadieno	Clorosulfonil-polietileno	fluorocarbonelastomer	Etileno propylene-diene-terpolymer	Fluoro-etilenopolimeros
DESIGNACION MATERIAL								
ANSI/ASTM D1418-77	CR	IR	CIIR	NBR	Csm	FKM	Epr	AFMU
ASTM D-2000 D1418-77	A.C. SEA	Aa	Aa BA	SEA BK Ch	CE	HK	BA Ca DA	
OZONO	5	0	6	2	7	7	7	7
TIEMPO	6	2	5	2	6	7	6	7
LUZ DEL SOL	5	0	5	0	7	7	7	7
OXIDACION	5	4	6	4	6	7	6	7
CALOR	4	2	5	4	4	7	6	7
FRIO	4	5	4	3	4	2	5	X
LLAMA	4	0	0	0	4	6	0	X
RASGON	4	5	4	3	3	2	4	X
ABRASION	5	6	4	4	4	5	5	4
IMPERMIABILIDAD	4	2	6	4	4	5	4	X
DINAMICO	2	2	2	5	2	5	5	X
REBOTE - CALIENTE	5	6	5	4	4	4	6	X
REBOTE - FRIO	4	6	0	4	2	2	6	X
SISTEMA DE LA COMPRESION	2	4	3	5	2	6	4	X
FUERZA EXTENSIBLE	4	6	4	5	2	5	5	X
FUERZA DIELECTRICA	5	6	5	0	5	5	7	X
AISLAMIENTO ELECTRICO	3	5	5	1	3	3	6	X
ABSORCION DEL AGUA	4	5	5	4	4	5	6	7
RADIACION	5	6	4	5	5	5	7	3
EL HINCHARSE EN ACEITE	4	0	0	5	4	6	0	7
ACIDO, DILUIDO	6	3	6	4	6	5	6	7
ACIDO, CONCENTRADO	4	3	4	4	4	6	4	7
HIDROCARBUROS ALIFATICOS	3	0	0	6	3	6	0	7
HIDROCARBUROS AROMATICOS	2	0	0	4	2	6	0	7
HIDROCARBUROS OXIGENADOS	1	4	4	0	1	0	6	7
LACAS	0	0	3	2	3	1	3	7
GASOLINA Y ACEITE	4	0	0	5	4	6	0	7
ALCALI, DILUIDO	4	X	4	4	4	4	6	7
ALCALI, CONCENTRADO	0	X	4	0	4	0	6	7
ACEITE VEGETAL Y ANIMAL	4	X	5	5	4	6	5	7
PRODUCTO QUIMICO	3	3	6	3	6	6	6	7
AGUA	4	5	5	4	5	5	5	7

* EL TEFLON ES MARCA REGISTRADA DE DUPONT Y AQUÍ ES UTILIZADO UNICAMENTE COMO NOMBRE GENERICO PARA EL PTFE.



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