

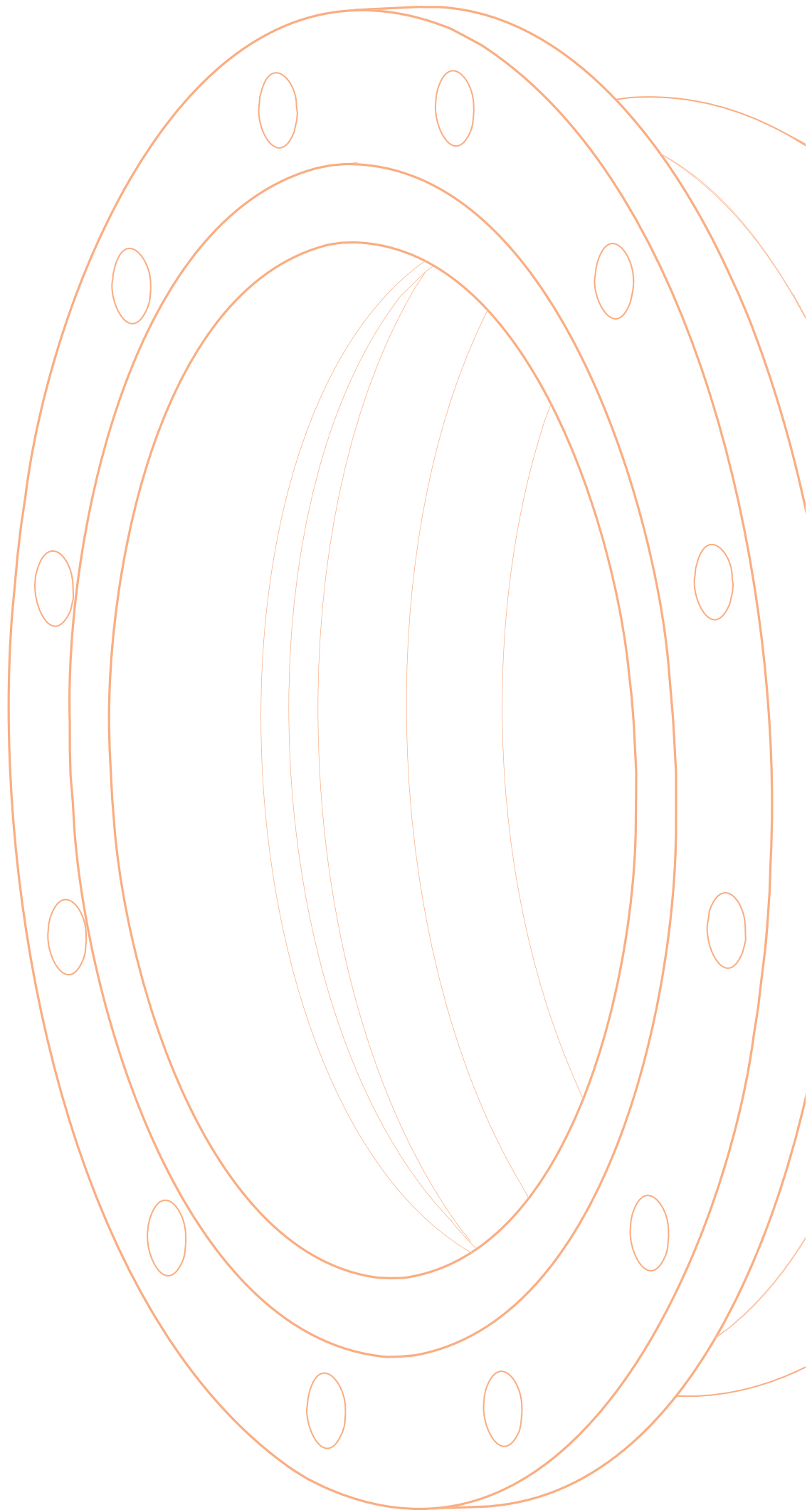
20 years R&D and manufacturing experience for marine and offshore

RUBBER EXPANSION JOINTS



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Floeriner expansion joints offer superior performance, reliability and service life. This in turn improves plant safety, increases the mechanical integrity of equipment and allows customers to gain a competitive advantage in the market place.

WHY CHOOSE FLOERINER?

One-Stop Service: We supply all kinds of marine products, from securing the order to final delivery, we work hard to make sure everything goes as required and with high standard quality.

High quality: We are here to provide you with safe and reliable goods. Quality is always our main priority, our quality control program make sure that no defect or poor workmanship will be supplied. According to customer's requirement, our quality can meet the rules and standards of International Class Society such as LR, and CCS.

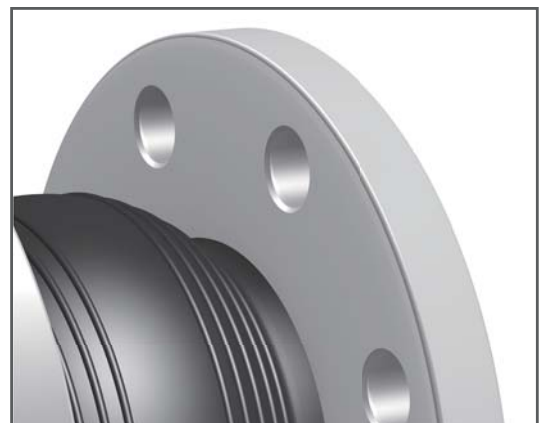
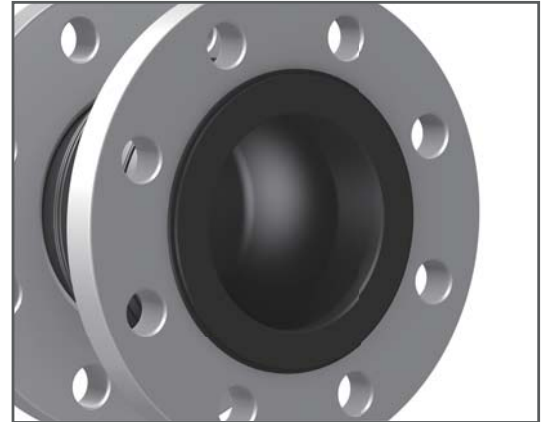
Professional: With many years of experience in marine field, our marketing and technical team can assure you that we can understand your requirement well and deal with your inquiry professionally.

Fast Delivery: We cooperate with the reliable logistic partner, including land, air and sea to help us deliver the goods to your hand on time.

Reliable Partner: With 95% clients' satisfactory, we are confident to be your reliable partner.

OUR TEAM

With our experienced marketing and technical team, we aim to respond your product inquiries including services related within 2 working days. Your concern is our top priority. We aim to offer you with optimal, time and money saving options and decision making that bring you cost-effective business.



INTRODUCTION

A rubber expansion joint is a specially engineered product installed in a rigid piping system or piping system connect with high-vibration equipment to achieve one or more of the following:

- »» Absorb movement (axial compression & elongation, lateral deflection, angular deflection)
- »» Reduce mechanical noise
- »» Relieve system strain due to thermal change, load stress, pumping surges, wear or settling
- »» Compensate for misalignment
- »» Eliminate electrolysis between dissimilar metals

At Floriner, we produce all expansion joints (including metalworking) in the same place where we develop them, strict quality management, rigid laboratory and field tests of floeriner expansion joints are what back up our assurances of long life and reliable service.

Our design of models puts us in a position to respond rapidly to orders at extremely short notice, and to produce single pieces as well.

Floeriner rubber expansion joints are ideally suited for hundreds of applications in a wide range of industries, including as following:

- »» Marine and offshore
- »» Power generating
- »» Pulp and paper
- »» Chemical
- »» Oil & Gas and Petrochemical
- »» Waste water and sewage disposal
- »» Heating, ventilating and air conditioning
- »» Food & Beverage

JOINT SELECTION

How to select the proper expansion joint?

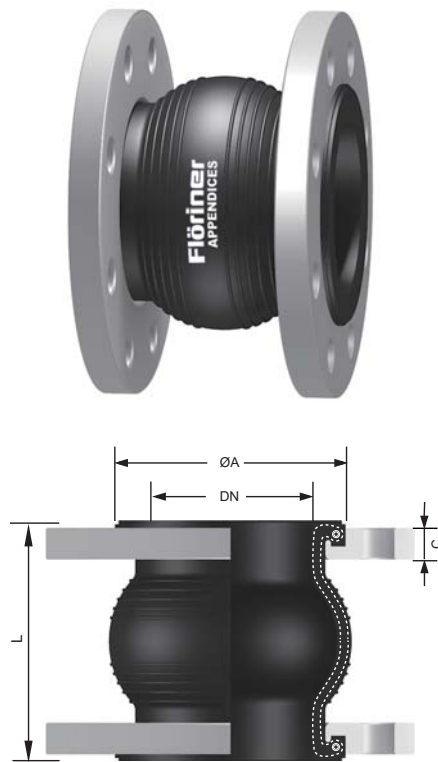
- »» Environment: degree of exposure to:
 - Weathering Oil
 - Sunlight Open flame
 - Liquids Chemicals
 - Gases Other
 - Vapors
- »» Pipe size
- »» Temperature range
- »» Operation conditions
 - Minimum and maximum temperature
 - Maximum pressure
 - Vacuum
 - Axial range of movement (elongation / compression)
 - Angular load
 - Lateral offset
 - Dynamic load
- »» Installed face-to-face dimensions
- »» Degree of pipe misalignment
- »» Connection: flange standard
- »» Need for retaining rings
 - Must be used in cases of insufficient pipe support
 - Recommended for use with most expansion joints
- »» Need for special construction



SF series expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space.

EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, esters and ketones. *Temperature (depending on medium) range -30°C up to +100°C, temporarily up to +120°C.* Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater. *Temperature (depending on medium) range -30°C up to +90°C, temporarily up to +100°C.*



- NOTE:**
- ① The material of the flange has other options: Austenitic stainless steel, Duplex stainless, etc.
 - ② Other neutral lengths can be customized according to customer's requirement.
 - ③ Concentric rubber reducer type can be customized according to customer's requirement.

DESCRIPTION	SPECIFICATION
Cover	EPDM (heat resistant)
Liner	EPDM/NBR
Reinforcement	Nylon Fabric
Flange	Swiveling, Carbon steel, zinc-plated ①
Flange standard	DIN, ANSI, JIS, BS & GB

NOMINAL PIPE SIZE		NEUTRAL LENGTH L ②	ØA	C	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
					AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]	
25	1"	130	59	14	24	16	24	24	16
		150			24	16	24	24	16
32	1 1/4"	130	71	14	24	16	24	24	16
		150			24	16	24	24	16
40	1 1/2"	130	81	14	24	16	24	24	16
		150			24	16	24	24	16
50	2"	130	91	15	24	16	24	24	16
		150			24	16	24	24	16
65	2 1/2"	130	109	15	24	16	24	24	16
		150			24	16	24	24	16
80	3"	130	125	17	24	16	24	24	16
		150			24	16	24	24	16
100	4"	130	147	17	24	16	24	16	16
		150			24	16	24	16	16
125	5"	130	182	19	24	16	24	16	16
		150			24	16	24	16	16
		170			24	20	24	16	16
150	6"	130	212	19	24	16	24	16	16
		150			24	16	24	16	16
		180			24	24	24	16	16
200	8"	130	261	20	20	24	20	12	16
		150			24	24	24	12	16
		205			24	24	24	12	16
250	10"	130	322	22	12	24	20	8	16
		200			24	24	20	8	16
		240			32	24	20	8	16
300	12"	130	372	22	12	24	20	8	16
		200			24	24	20	8	16
		260			32	24	20	8	16
350	14"	200	421	26	32	24	20	8	10
400	16"	200	478	28	32	24	20	8	10
450	18"	200	532	28	32	24	20	8	10
500	20"	200	584	30	32	24	20	8	10
600	24"	250	686	32	32	24	20	8	10
700	28"	250	791	32	32	24	20	4	10
800	32"	250	897	34	32	24	20	4	10
900	36"	250	997	34	32	28	24	4	10
1000	40"	300	1097	38	32	28	24	4	10
1200	48"	300	1312	38	32	28	24	4	10

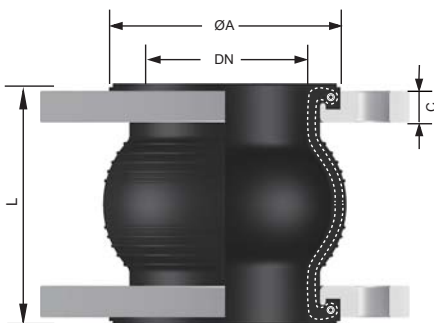
SF-R series expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space and high pressure pipeline systems.

EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, esters and ketones. Temperature (depending on medium) range -30°C up to +100°C, temporarily up to +120°C. Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater. Temperature (depending on medium) range -30°C up to +90°C, temporarily up to +100°C.



Resistant to high pressure



NOTE:

- ① The material of the flange has other options: Austenitic stainless steel, Duplex stainless, etc.
- ② Other neutral lengths can be customized according to customer's requirement.
- ③ Concentric rubber reducer type can be customized according to customer's requirement.

NOMINAL PIPE SIZE DN		NEUTRAL LENGTH L ②	ØA	C	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
					AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]	
25	1"	130	59	14	24	24	24	24	25
32	1 1/4"	130	71	14	24	24	24	24	25
40	1 1/2"	130	81	14	24	24	24	24	25
50	2"	130	91	15	24	24	24	24	25
65	2 1/2"	130	109	15	24	24	24	24	25
80	3"	130	125	17	24	24	24	24	25
100	4"	130	147	17	24	24	24	24	25
125	5"	130	182	19	24	24	24	24	25
150	6"	130	212	19	24	24	24	24	25

DESCRIPTION	SPECIFICATION
Cover	EPDM (heat resistant)
Liner	EPDM/NBR
Reinforcement	Nylon Fabric
Flange	Swiveling, Carbon steel, zinc-plated ①
Flange standard	DIN, ANSI, JIS, BS & GB

SF-FR series expansion joints are covered with special synthetic material, designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space and the area is required to prevent fire disaster.

EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, esters and ketones.

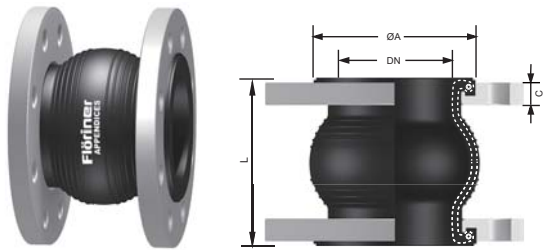
Temperature (depending on medium) range -30°C up to +100°C, temporarily up to +120°C.

Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater.

Temperature (depending on medium) range -30°C up to +90°C, temporarily up to +100°C.

The outside flame protection cover for SF-FR series rubber expansion joints, is one kind of special synthetic material with high temperature resistant. It reliably protects the expansion joint against radiation heat and direct flames up to + 800° C for 30 minutes (The fire tests have been already carried out in accordance with Standard ISO 15540, ISO 15541, ASTM F 1387).special synthetic material with high temperature resistant. It reliably protects the expansion joint against radiation heat and direct flames up to + 800° C for 30 minutes (The fire tests have been already carried out in accordance with Standard ISO 15540, ISO 15541, ASTM F 1387).



Fire protection



NOTE:

- ① The material of the flange has other options: Austenitic stainless steel, Duplex stainless, etc.
- ② Other neutral lengths can be customized according to customer's requirement.
- ③ Concentric rubber reducer type can be customized according to customer's requirement.

DESCRIPTION	SPECIFICATION
Cover	Special synthetic material
Liner	EPDM/NBR
Reinforcement	Steel wire cord
Flange	Swiveling, Carbon steel, zinc-plated ①
Flange standard	DIN, ANSI, JIS, BS & GB

NOMINAL PIPE SIZE		NEUTRAL LENGTH L ②	ØA	C	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
					AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]	
25	1"	130	59	14	24	12	12	16	16
		150			24	12	12	16	
32	1 1/4"	130	71	14	24	12	12	16	16
		150			24	12	12	16	
40	1 1/2"	130	81	14	24	12	12	16	16
		150			24	12	12	16	
50	2"	130	91	15	24	12	12	16	16
		150			24	12	12	16	
65	2 1/2"	130	109	15	24	12	12	16	16
		150			24	12	12	16	
80	3"	130	125	17	24	12	12	16	16
		150			28	16	12	16	
100	4"	130	147	17	24	12	12	12	16
		150			28	16	12	12	
125	5"	130	182	19	24	12	12	12	16
		150			28	16	12	12	
		170			28	18	12	12	
150	6"	130	212	19	24	12	12	12	16
		150			28	16	12	12	
		180			20	16	12	12	
200	8"	130	261	20	12	16	8	12	16
		150			28	16	12	12	
		205			24	24	20	12	
250	10"	130	322	22	12	16	8	8	16
		200			20	16	12	8	
		240			20	18	12	8	
300	12"	130	372	22	12	16	8	8	16
		200			24	24	20	8	
		260			24	24	20	8	
350	14"	200	421	26	24	24	20	8	10
400	16"	200	478	28	32	24	20	4	10
450	18"	200	532	28	32	24	20	4	10
500	20"	200	584	30	32	24	20	4	10
600	24"	250	686	32	32	24	24	4	10

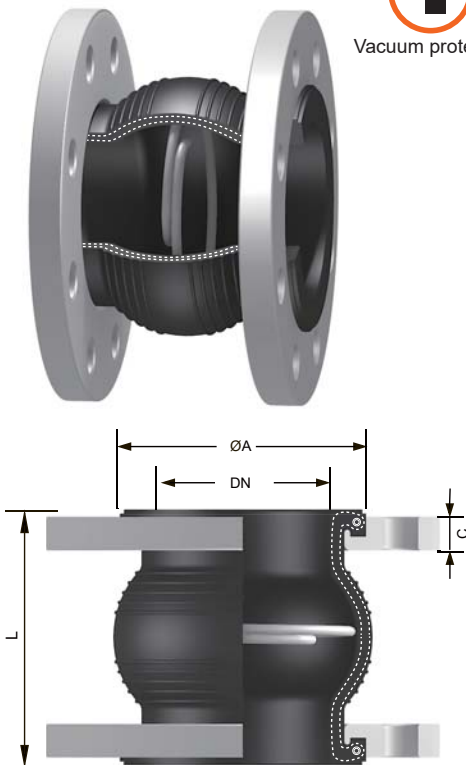
SF-VSR series expansion joints are designed with a vacuum support ring to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space, especially in a negative pressure pipe line systems.

EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, esters and ketones. *Temperature (depending on medium) range -30°C up to +100°C, temporarily up to +120°C.* Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater. *Temperature (depending on medium) range -30°C up to +90°C, temporarily up to +100°C.*



Vacuum protection



NOTE:

- ① The material of the flange has other options: Austenitic stainless steel, Duplex stainless, etc.
- ② Other neutral lengths can be customized according to customer's requirement.
- ③ The material of the vacuum support ring can be customized.
- ④ Concentric rubber reducer type can be customized according to customer's requirement.

DESCRIPTION	SPECIFICATION
Cover	EPDM (heat resistant)
Liner	EPDM/NBR
Reinforcement	Nylon Fabric
Flange	Swiveling, Carbon steel, zinc-plated ①
Flange standard	DIN, ANSI, JIS, BS & GB
Vacuum support ring	Stainless steel 316, 316Ti ③

NOMINAL PIPE SIZE		NEUTRAL LENGTH L ②	ØA	C	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
					AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]	
25	1"	130	59	14	24	8	24	24	16
		150			24	8	24	24	16
32	1 1/4"	130	71	14	24	8	24	24	16
		150			24	8	24	24	16
40	1 1/2"	130	81	14	24	8	24	24	16
		150			24	8	24	24	16
50	2"	130	91	15	24	8	24	24	16
		150			24	8	24	24	16
65	2 1/2"	130	109	15	24	8	24	24	16
		150			24	8	24	24	16
80	3"	130	125	17	24	8	24	24	16
		150			24	8	24	24	16
100	4"	130	147	17	24	8	24	16	16
		150			24	8	24	16	16
125	5"	130	182	19	24	8	24	16	16
		150			24	8	24	16	16
		170			24	10	24	16	16
150	6"	130	212	19	24	8	24	16	16
		150			24	8	24	16	16
		180			24	12	24	16	16
200	8"	130	261	20	20	12	20	12	16
		150			24	12	24	12	16
		205			24	12	24	12	16
250	10"	130	322	22	12	12	20	8	16
		200			24	12	20	8	16
		240			32	12	20	8	16
300	12"	130	372	22	12	12	20	8	16
		200			24	12	20	8	16
		260			32	12	20	8	16
350	14"	200	421	26	32	12	20	8	10
400	16"	200	478	28	32	12	20	8	10
450	18"	200	532	28	32	12	20	8	10
500	20"	200	584	30	32	12	20	8	10
600	24"	250	686	32	32	12	20	8	10
700	28"	250	791	32	32	12	20	4	10
800	32"	250	897	34	32	12	20	4	10
900	36"	250	997	34	32	14	24	4	10
1000	40"	300	1097	38	32	14	24	4	10
1200	48"	300	1312	38	32	14	24	4	10

TF series expansion joints are designed to alleviate piping larger stress, absorb pipe greater misalignment, compression and extension, noise and vibration greater than single sphere ones.

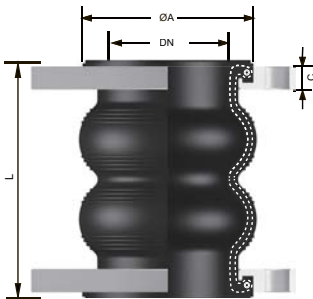
EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, eaters and ketones.

Temperature (depending on medium) range -30°C up to $+100^{\circ}\text{C}$, temporarily up to $+120^{\circ}\text{C}$.

Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater.

Temperature (depending on medium) range -30°C up to $+90^{\circ}\text{C}$, temporarily up to $+100^{\circ}\text{C}$.



NOTE:

- ① The material of the flange has other options: Austenitic stainless steel, Duplex stainless, etc.
- ② Other neutral lengths can be customized according to customer's requirement.
- ③ Limited control unit, optional for rubber expansion joints.

DESCRIPTION	SPECIFICATION
Cover	EPDM (heat resistant)
Liner	EPDM/NBR
Reinforcement	Nylon Fabric
Flange	Swiveling, Carbon steel, zinc-plated ①
Flange standard	DIN, ANSI, JIS, BS & GB

NOMINAL PIPE SIZE DN		NEUTRAL LENGTH L ②	ØA	C	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
					AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]
25	1"	175	59	14	53	30	45	40	16
32	1 1/4"	175	71	14	53	30	45	40	16
40	1 1/2"	175	81	14	53	30	45	40	16
50	2"	175	91	15	53	30	45	40	16
65	2 1/2"	175	109	15	53	30	45	40	16
80	3"	175	125	17	53	30	45	40	16
100	4"	225	147	17	57	35	40	35	16
125	5"	225	182	19	57	35	40	35	16
150	6"	225	212	19	57	35	40	35	16
200	8"	325	261	20	65	35	45	30	16
250	10"	325	322	22	65	35	45	30	16
300	12"	325	372	22	65	35	45	30	16
350	14"	350	421	26	43	30	30	20	10
400	16"	350	478	28	43	30	30	20	10
450	18"	350	532	28	43	30	30	20	10
500	20"	350	584	30	43	30	30	20	10
600	24"	350	686	32	43	30	30	20	10

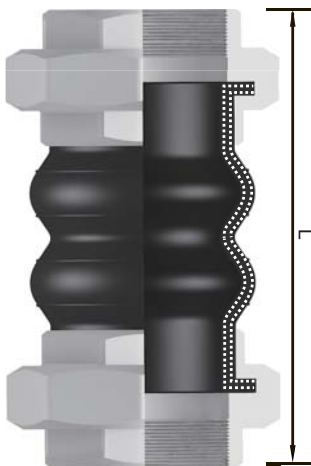
TU series expansion joints are designed to alleviate piping larger stress, absorb pipe larger misalignment, compression and extension, noise and vibration, in a relatively short space with thread connection.

EPDM liner expansion joints in High-Tech design for water, cold and warm waste water, seawater, cooling water, hot air, also with chemical additives for water treatment, low concentrated acids and alkalis, technical alcohols, esters and ketones.

Temperature (depending on medium) range -30°C up to +100°C, temporarily up to +120°C. Not suitable for all kinds of mineral oil products, cooling water with added oil containing corrosion preventatives, oily compressor air.

NBR liner expansion joints designed for petroleum based products, DIN EN fuels up to 50% aromatic content, cooling water with oily anticorrosion additives, lubrication and hydraulic oil, seawater.

Temperature (depending on medium) range -30°C up to +90°C, temporarily up to +100°C.



NOMINAL PIPE SIZE		NEUTRAL LENGTH L ②	PERMISSIBLE MOVEMENT (MAX.)				MAXIMUM OPERATING PRESSURE
			AXIAL COMPRESSION	AXIAL ELONGATION	LATERAL DEFLECTION	ANGULAR DEFLECTION	
[mm]	[ins]	[mm]	[mm]	[mm]	[mm]	[deg]	[bar]
20	3/4"	165	32	10	32	45	16
25	1"	175	32	10	32	45	16
32	1 1/4"	186	32	10	32	45	16
40	1 1/2"	186	32	10	32	45	16
50	2"	200	32	10	32	45	16
65	2 1/2"	218	32	10	32	45	16
80	3"	260	32	10	32	45	16

NOTE:

- ① The material of the union has other options: Austenitic stainless steel, Duplex stainless, etc.
- ② Other neutral lengths can be customized according to customer's requirement.

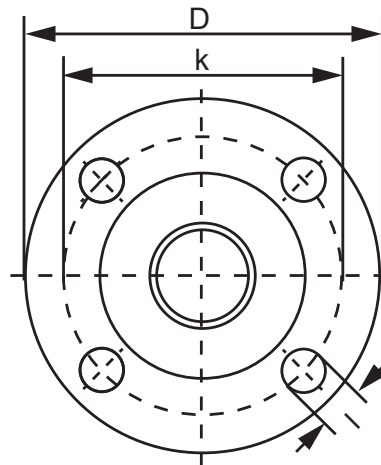
DESCRIPTION	SPECIFICATION
Cover	EPDM (heat resistant)
Liner	EPDM/NBR
Reinforcement	Nylon Fabric
Union	Swiveling, Carbon steel, zinc-plated ①
Union standard	BSP or NPT Thread



FLANGE CHOICE

For the choice of flanges a great variety of combinations concerning connection dimensions, materials and coatings is available. Also two different flange types on one compensator are possible. On the following pages the most common types and dimensions are listed. Special types are available to upon request.

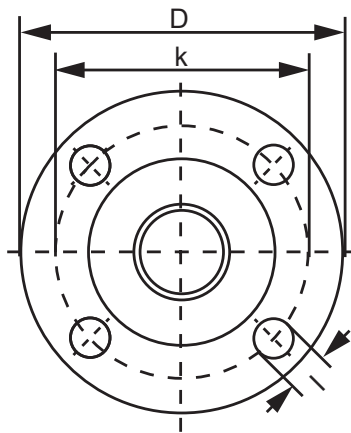
Flange Standard		DIN 1092 PN 6				DIN 1092 PN 10				DIN 1092 PN 16				DIN 1092 PN 25							
DN		D	k	n	l	D	k	n	l	D	k	n	l	D	k	n	l				
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm				
25	1"	100	75	4	11	identical with PN 16				115	85	4	14	115	85	4	14				
32	1 1/4"	120	90	4	14					140	100	4	18	140	100	4	18	140	100	4	18
40	1 1/2"	130	100	4	14					150	110	4	18	150	110	4	18	150	110	4	18
50	2"	140	110	4	14					165	125	4	18	165	125	4	18	165	125	4	18
65	2 1/2"	160	130	4	14					185	145	4	18	185	145	4	18	185	145	8	18
80	3"	190	150	4	18					200	160	8	18	200	160	8	18	200	160	8	18
100	4"	210	170	4	18					220	180	8	18	235	190	8	22	235	190	8	22
125	5"	240	200	8	18					250	210	8	18	270	220	8	26	270	220	8	26
150	6"	265	225	8	18					285	240	8	22	300	250	8	26	300	250	8	26
200	8"	320	280	8	18					340	295	8	22	340	295	12	22	360	310	12	26
250	10"	375	335	12	18					395	350	12	22	405	355	12	26	425	370	12	30
300	12"	440	395	12	22					445	400	12	22	460	410	12	26	485	430	16	30
350	14"	490	445	12	22					505	460	16	22	520	470	16	26	555	490	16	33
400	16"	540	495	16	22					565	515	16	26	580	525	16	30	620	550	16	36
450	18"	595	550	16	22					615	565	20	26	640	585	20	30	670	600	20	36
500	20"	645	600	20	22	670	620	20	26	715	650	20	33	730	660	20	36				
600	24"	755	705	20	26	780	725	20	30	840	770	20	36	845	770	20	39				
700	28"	860	810	24	26	895	840	24	30	910	840	24	36	960	875	24	42				
800	32"	975	920	24	30	1015	950	24	33	1025	950	24	39	1085	990	24	48				
900	36"	1075	1020	24	30	1115	1050	28	33	1125	1050	28	39	1185	1090	28	48				
1000	40"	1175	1120	28	30	1230	1160	28	36	1255	1170	28	42	1320	1210	28	56				
1200	48"	1450	1340	32	33	1455	1380	32	39	1485	1390	32	48	1530	1420	32	56				



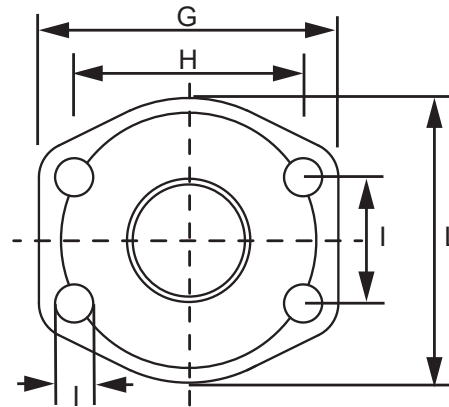
n = Number of Holes

Flange Standard		GB/T9119 PN 6				GB/T9119 PN 10				GB/T9119 PN 16				GB/T9119 PN 25							
DN		D	k	n	l	D	k	n	l	D	k	n	l	D	k	n	l				
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm				
25	1"	100	75	4	11	identical with PN 16				115	85	4	14	115	85	4	14				
32	1 1/4"	120	90	4	14					140	100	4	18	140	100	4	18	140	100	4	18
40	1 1/2"	130	100	4	14					150	110	4	18	150	110	4	18	150	110	4	18
50	2"	140	110	4	14					165	125	4	18	165	125	4	18	165	125	4	18
65	2 1/2"	160	130	4	14					185	145	4	18	185	145	4	18	185	145	8	18
80	3"	190	150	4	18					200	160	8	18	200	160	8	18	200	160	8	18
100	4"	210	170	4	18					220	180	8	18	235	190	8	22	235	190	8	22
125	5"	240	200	8	18					250	210	8	18	270	220	8	26	270	220	8	26
150	6"	265	225	8	18					285	240	8	22	300	250	8	26	300	250	8	26
200	8"	320	280	8	18					340	295	8	22	340	295	12	22	360	310	12	26
250	10"	375	335	12	18					395	350	12	22	405	355	12	26	425	370	12	30
300	12"	440	395	12	22					445	400	12	22	460	410	12	26	485	430	16	30
350	14"	490	445	12	22					505	460	16	22	520	470	16	26	555	490	16	33
400	16"	540	495	16	22					565	515	16	26	580	525	16	30	620	550	16	36
450	18"	595	550	16	22					615	565	20	26	640	585	20	30	670	600	20	36
500	20"	645	600	20	22	670	620	20	26	715	650	20	33	730	660	20	36				
600	24"	755	705	20	26	780	725	20	30	840	770	20	36	845	770	20	39				
700	28"	860	810	24	26	895	840	24	30	910	840	24	36	960	875	24	42				
800	32"	975	920	24	30	1015	950	24	33	1025	950	24	39	1085	990	24	48				
900	36"	1075	1020	24	30	1115	1050	28	33	1125	1050	28	39								
1000	40"	1175	1120	28	30	1230	1150	28	36	1255	1170	28	42								
1200	48"	1405	1340	32	33	1455	1380	32	39	1485	1390	32	48								

Flange Standard		ANSI B 16.5 150 lb/sq. in.								ANSI B 16.5 300 lb/sq. in.						SAE J518 c						
DN		D		k		n	l		D		k		n	l		G	H	I	L	n	l	
mm	in.	mm	in.	mm	in.		mm	in.	mm	in.	mm	in.		mm	in.	mm	mm	mm	mm	mm	mm	
25	1"	108	4 1/2"	79.4	3 1/8"	4	15.9	5/8"	123.8	4 7/8"	88.9	3 1/2"	4	19	3/4"							
32	1 1/4"	117.5	4 5/8"	88.9	3 1/2"	4	15.9	5/8"	133.4	5 1/4"	98.4	3 7/8"	4	19	3/4"	79	58.7	30.2	73	4	13	
40	1 1/2"	127	5"	98.4	3 7/8"	4	15.9	5/8"	155.6	6 1/8"	114.3	4 3/4"	4	22.2	3/4"	94	70	35.7	83	4	13	
50	2"	152.4	6"	120.7	4 3/4"	4	19	3/4"	165.1	6 1/2"	127	5"	8	19	3/4"	102	78	42.9	97	4	13	
65	2 1/2"	177.8	7"	139.7	5 1/2"	4	19	3/4"	190.5	7 1/2"	149.2	5 7/8"	8	22.2	7/8"	114	89	50.8	115	4	13	
80	3"	190.5	7 1/2"	152.4	6"	4	19	3/4"	209.6	8 1/4"	168.3	6 5/8"	8	22.2	7/8"	135	106.4	61.9	131	4	17	
100	4"	228.6	9"	190.5	7 1/2"	8	19	3/4"	254	10"	200	7 8/8"	8	22.2	7/8"	162	130.2	77.8	152	4	17	
125	5"	254	10"	215.9	8 1/2"	8	22.2	7/8"	279.4	11"	235	9 1/4"	8	22.2	7/8"	184	152.4	92.1	181	4	17	
150	6"	279.4	11"	241.3	9 1/2"	8	22.2	7/8"	317.5	12 1/2"	269.9	10 5/8"	12	22.2	7/8"							
200	8"	342.9	13 1/2"	298.5	11 3/4"	8	22.2	7/8"	381	15"	330.2	13"	12	25.4	1"							
250	10"	406.4	16"	361.9	14 1/4"	12	25.4	1"	444.5	17 1/2"	387.3	15 1/4"	16	28.6	1 1/8"							
300	12"	482.6	19"	431.8	17"	12	25.4	1"	520.7	20 1/2"	450.8	17 3/4"	16	31.7	1 1/4"							
350	14"	533.4	21"	476.2	18 3/4"	12	28.6	1 1/8"	584.2	23"	514.3	20 1/4"	20	31.7	1 1/4"							
400	16"	596.9	23 1/2"	539.7	21 1/4"	16	28.6	1 1/8"	647.7	25 1/2"	571.5	22 1/2"	20	34.9	1 3/8"							
450	18"	635	25"	577.9	22 3/4"	16	31.7	1 1/4"	711.2	28"	628.7	24 3/4"	24	34.9	1 3/8"							
500	20"	698.5	27 1/2"	635	25	20	31.7	1 1/4"	774.7	30 1/2"	685.8	27"	24	34.9	1 3/8"							
600	24"	812.8	32"	749.3	29 1/2"	20	34.9	1 3/8"	914.4	36"	812.8	32"	24	41.3	1 5/8"							



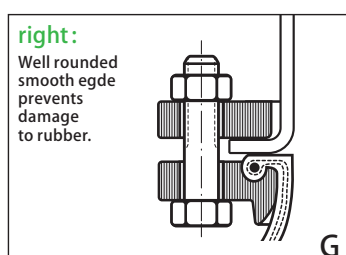
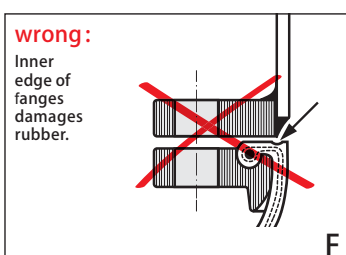
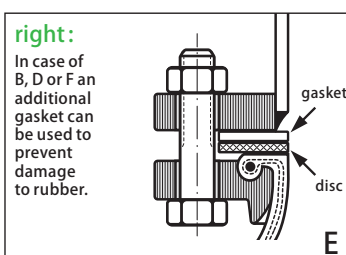
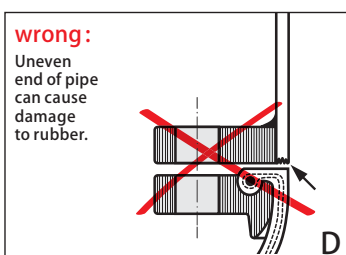
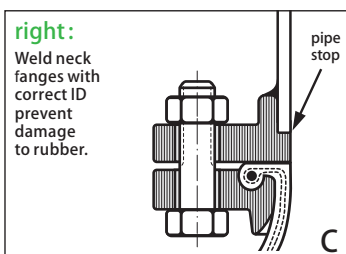
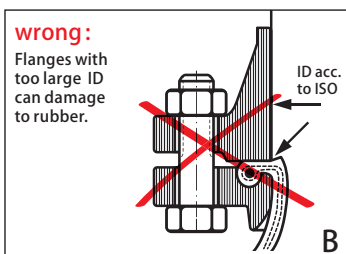
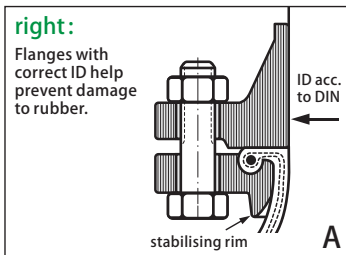
n = Number of Holes



n = Number of Holes

Flange Standard		VG 95959-1				DIN 28460 'TW'				JIS 5K				JIS 10K				JIS 16K			
DN		D	k	n	l	D	k	n	l	D	k	n	l	D	k	n	l	D	k	n	l
mm	in.	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm	mm	mm		mm
25	1"													125	90	4	19	125	90	4	19
32	1 1/4"	100	76	6	11					115	90	4	15	135	100	4	19	135	100	4	19
40	1 1/2"	108	84	6	11					120	95	4	15	140	105	4	19	140	105	4	19
50	2"	120	96	6	11	154	130	8	115	130	105	4	15	155	120	4	19	155	120	8	19
65	2 1/2"	140	116	8	11	154	130	8	115	155	130	4	15	175	140	4	19	175	140	8	19
80	3"	150	126	8	11	154	130	8	115	180	145	4	19	185	150	8	19	200	160	8	23
100	4"	172	148	10	11	174	150	8	140	200	165	8	19	210	175	8	19	225	185	8	23
125	5"	200	176	10	11	204	176	8	140	235	200	8	19	250	210	8	23	270	225	8	25
150	6"	226	202	12	11	240	210	12	140	265	230	8	19	280	240	8	23	305	260	12	25
200	8"	288	264	16	11	308	274	16	160	320	280	8	23	330	290	12	23	350	305	12	25
250	10"									385	345	12	23	400	355	12	25	430	380	12	27
300	12"									430	390	12	23	445	400	16	25	480	430	16	27
350	14"									480	435	12	25	490	445	16	25	540	480	16	33
400	16"									540	495	16	25	560	510	16	27	605	540	16	33
450	18"									605	555	16	25	620	565	20	27	675	605	20	27
500	20"									655	605	20	25	675	620	20	27	730	660	20	33
600	24"									770	715	20	27	795	730	24	33	845	770	24	39

Installation Precautions



Key factors of the pipework designer

Rubber expansion joints are delivered ready for installation. The swiveling flanges can be fitted in any desired position and have stabilising rims to ease the assembly. Flanges with stabilising rim (collar) also help to maintain a safety gap between screw ends and the bellows throughout the whole range of movement and avoid injuries.

Correct Mating Flanges

Gaskets are not required if the sealing surface of the pipework mating flanges are designed as shown on the left hand side. Gaskets should only be used in order to prevent damage to the rubber sealing surface, for example if the mating flanges show sharp inner edges or irregularities e. g. welding beads. If the internal diameter of the mating flanges is too large (sealing surface of the expansion joint not fully covered), install a gasket and an additional disc (fig. E).

Pressure Resistance

The maximum operating pressure and test pressure not only depend on the burst pressure of the rubber bellow but can also be affected by operating temperature and design pressure / nominal pressure of the used flanges. The burst pressure(at room temperature) is at least 3 - 4 times the nominal pressure (PN). Pressure test certificates can be issued upon request.

Vacuum Resistance

The maximum vacuum depends on size, operating temperature, length of installation and the installation of vacuum support rings. The vacuum resistance can be slightly increased even without vacuum support rings if the installation length is shortened (e. g. by 20 mm). The vacuum resistance decreases if a longer installation length is chosen, or the expansion joint is lengthened during operation.

Weather and Heat Resistance

The outer rubber (cover) is resistant against weathering and protects the reinforcements against ageing, abrasion and corrosion.

Pressure Loss

The internal design of the bellows allows a high flow with little turbulence. Therefore the pressure loss is usually negligible, even when dealing with high flowrates.

Noise Reduction

Due to their construction, rubber expansion joints are well suited to absorb vibrations and noise. Installed within a piping system achieves a partial decoupling of vibration and noise transmission. The degree of this effect is dependent on the layout of the piping system and the assembly situation of the expansion joint. The pipework and the installed expansion joint may be seen as spring-mass system ; its natural frequency is determined by the spring rigidity as well as by the oscillating mass. In comparison to the piping system, the mass of the rubber expansion joints has a neglectable influence on the natural frequency of the piping system.

Installation Length / Installation Gap

For the allowable range of movement please see type specific data sheets. If possible, the length of the installation gap is designed to be equal to the recommended installation length, or slightly shorter. The low inherent resistance of rubber expansion joints makes fitting into smaller gaps easy. For larger installation gaps or lateral offset, not more than 50 % of the maximum area of movement should be used up in order to leave a reserve for operation. If the bellows is lengthened during operation, a jolted (compressed) installation is recommended. The position of installation must be accessible for visual inspection.

Anchor Load / Tie Rods (Limiters)

The inherent resistance of rubber expansion joints is small and can be disregarded for anchor force calculation. But when pressurised, the bellows expands and generates an axial force. Therefore, especially for larger expansion joints, fixed points (anchors) should be provided. Since the rubber expansion joints construction absorbs part of these reaction forces, anchor points may be designed correspondingly weaker. If anchor points cannot be provided, or if the stability of the piping system or other fittings is insufficient, reaction forces have to be limited by tie rods.

FLOERINER expansion joints are provided ready for installation. The standard flanges can be turned into any desired position. Additional sealings usually are not necessary. For installation please observe the following :

- 1) Prior to the installation of the expansion joint ensure that the mating flanges have satisfactory sealing surfaces. Check that the sealing surface of the rubber bellows is completely covered by the mating flange. Mating flanges with too large inner diameter or protruding pipe ends, grooves and tongues can destroy the sealing surface of the bellows .
Attention : When using slip-on flanges the outside diameter must be larger than the sealing surface of the expansion joint.
- 2) Pay attention to the correct installation length : The pulling of expansion joints into installation gaps which are too large will lengthen the rubber bellow and might lead to the collar being drawn out of the flange groove (see picture). During the subsequent tightening of the screws the collar of the bellows would be crushed asymmetrically. Please note : A considerable lengthening during installation decreases the allowable range of movement during operation. To shorten installation gaps, distance flanges are available.
- 3) If possible install the expansion joints in such way that the date of production is visible.
- 4) Screws should be inserted from the expansion joint side. If this is not feasible, it must be assured that the bellows may not touch the screws in all operating conditions.
- 5) We recommend to use bolts of ISO grade 8.8 or higher. The bolts have to be fastened crosswise in 3 uniform steps.

When using a torque wrench :

1st step :

Tighten bolts equally by hand

(pay attention to parallel sealing surfaces!).

2nd step :

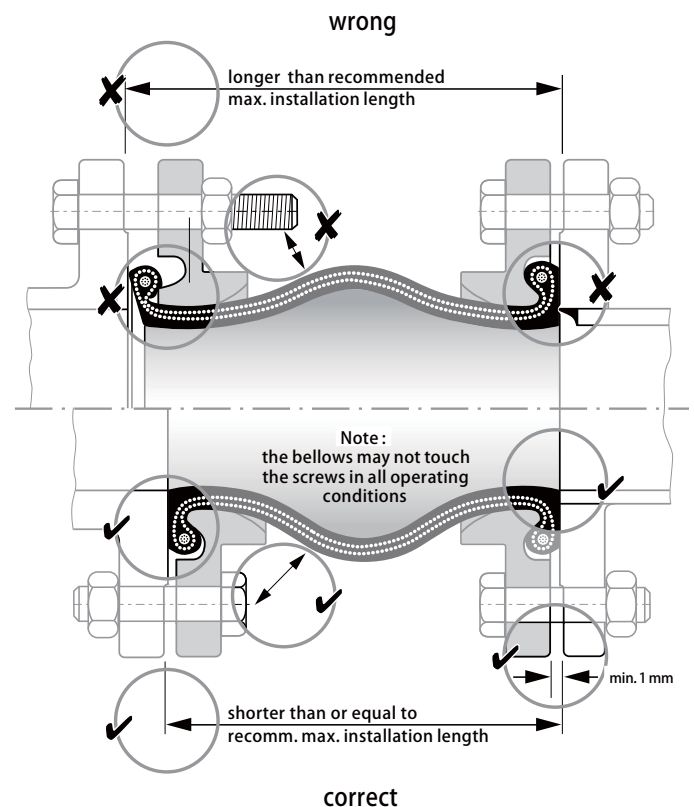
Fasten crosswise with torque 50 Nm.

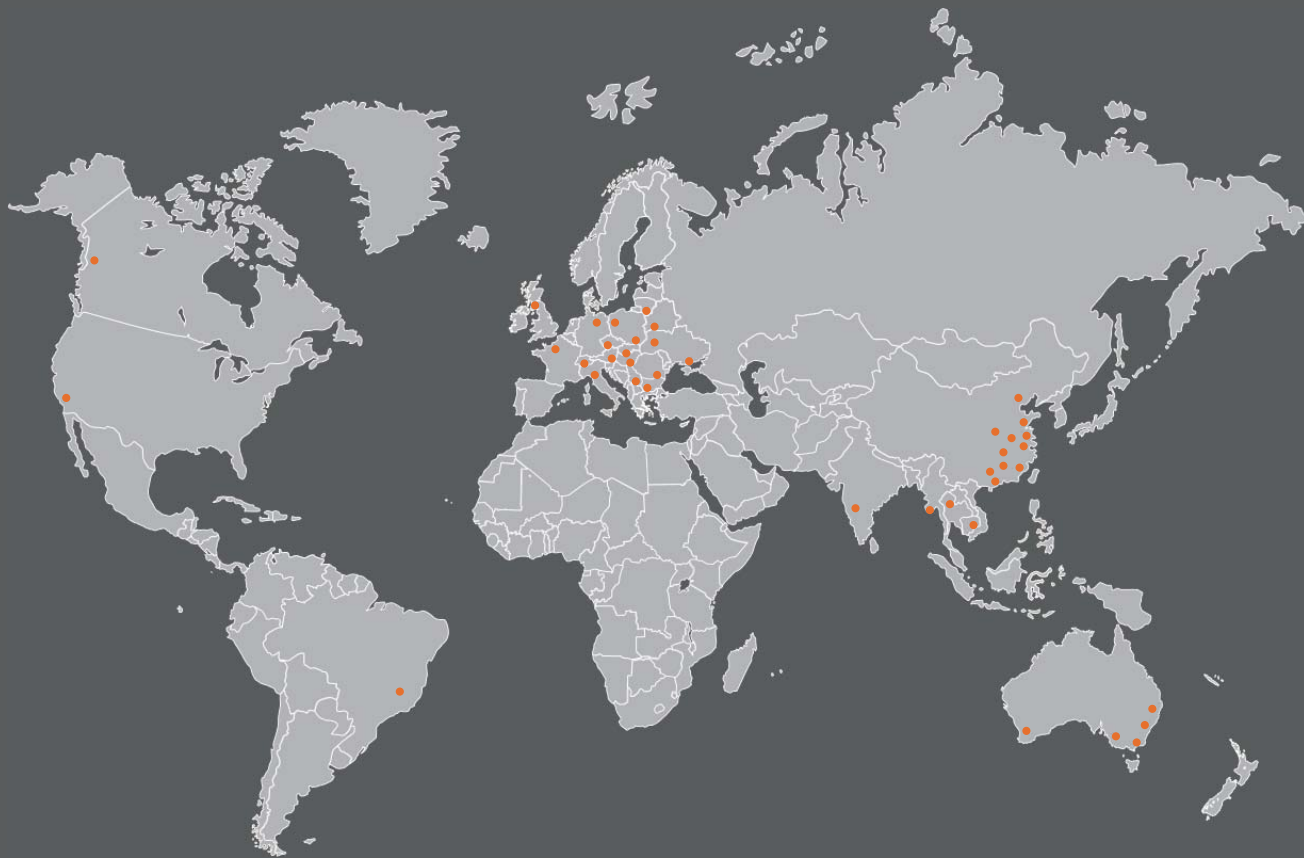
3rd step :

Fasten crosswise

	approx. torque
up to DN 80	max. 80 Nm
up to DN 300	max. 100 Nm
up to DN 500	max. 130 Nm
DN 600	190 Nm
DN 700	250 Nm
DN 800	300 Nm
DN 900	310 Nm
DN 1000	340 Nm

- 6) If no torque wrench can be used during installation, the screws may be tightened to an extent that between the metal flanges a distance 'y' of at least 1 mm remains (see picture).
- 7) The test pressure of a bellow or flange is 1.5 x PN. This value depends on which component is weaker.
- 8) The rubber bellow of the expansion joint must not be painted ! Solvents can damage the rubber cover, furthermore the colour coat impedes a proper visual inspection.
- 9) When welding and cutting, the rubber bellow must be protected against heat by all means. For electric welding it must be insured that the electric current does not pass through the bellows.
- 10) Rubber expansion joints are subject to wear and must be included to routine inspection of the pipe system (visual inspection of the expansion joint regarding damages as well as inspection for hardening by pushing in with a thumb).
- 11) Expansion joints with pull rods (tied flanges) are supplied in neutral position, with pre-installed counteracted nuts. During installation the required permissible length has to be set determined by the pipeline fitter, nuts have to be counteracted. After installation, the pull rods shall be firmly connected with the flanges.





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Flöriner

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