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## Expansion Joint

### Material Sample

Graphited fiberglass /Silicone



## General Overview

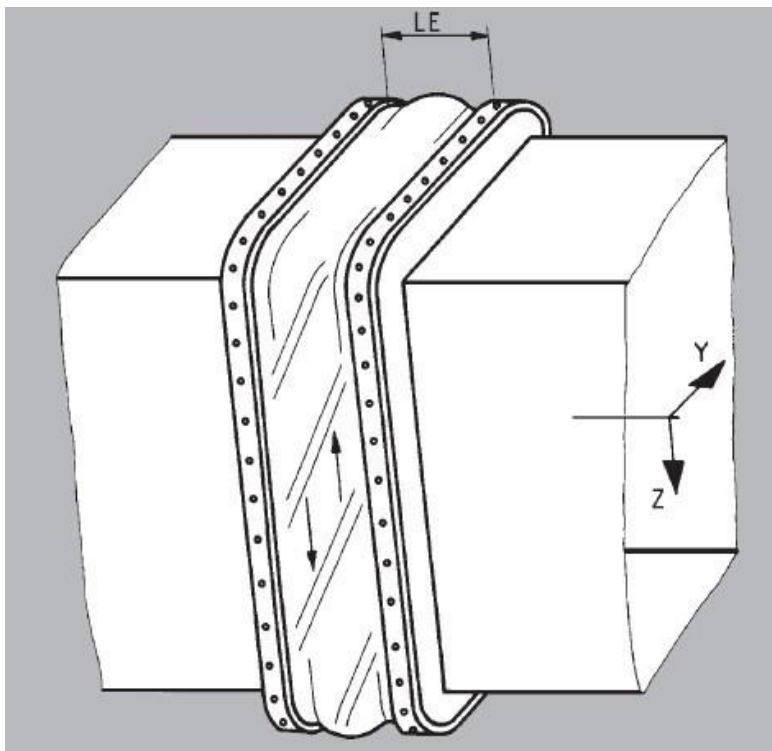
For several years, SEALUX has developed strong expertise in the design and manufacture of textile expansion joints, used in piping systems and pressure equipment.

In our 900 m<sup>2</sup> workshops and thanks to our extensive machinery park, we manufacture custom-made expansion joints. Our installation team is also available to assist with the on-site installation of expansion joints on your facilities.

Fields of activity of our customers :

**- Pulp & Paper – Heat Exchangers - Cogeneration – Engineering – Glass Industry – District Heating – Steel Industry – Petrochemicals – Chemical Industry ...**

## Operation





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Expansion joints are often incorporated into industrial piping systems to allow for movement resulting from thermal and mechanical changes within the system.

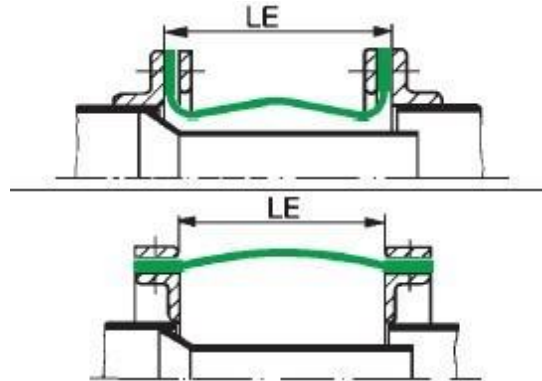
Piping expansion joints are required in systems conveying high-temperature media such as steam or exhaust gases, or to absorb movements (axial, lateral, and angular) as well as vibrations. Expansion joints absorb vibrations, facilitate installation of structures, and extend their service life.

The selection of the appropriate type of joint depends on the nature of the fluid, temperature, pressure, and other operating conditions. Three main categories of expansion joints can be identified : Modeld rubber expansion joints, maily used for liquid transfer or Metal expansion joints, used in systems subject to high pressures or **Textile expansion joints**, used for air and gas conveyance, mainly due to their resistance to aggressive media and extreme temperatures.

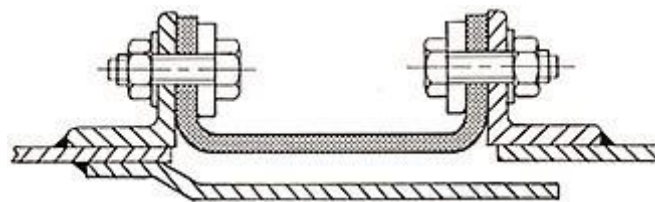
## Profile

Different textile expansion joint profiles are available. The choice of profile and material is made according to the following criteria: pressure/vacuum, temperature, type of fluid, humidity, vibration, number of cycles, external environment, as well as installation constraints (connection to the piping, available space, etc.).

### Standard Design : “U” Type or Flat Type

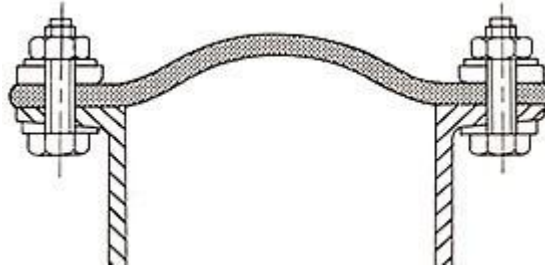


### « U » Type



The “U” type is the most common design and is generally used in simple applications. As such, it offers several advantages. First, standard piping often features a metal angle or a reinforced metal frame at its end, which allows the expansion joint to be mounted directly onto these existing connection flanges. Second, with this type of installation, the expansion joint is generally manufactured as a closed unit, avoiding the need for on-site sewing. However, this type of installation has a major drawback: the expansion joint is located in close proximity to the deflector and the fluid flow to be sealed. Therefore, this design is not recommended for applications where the temperature exceeds 400 °C.

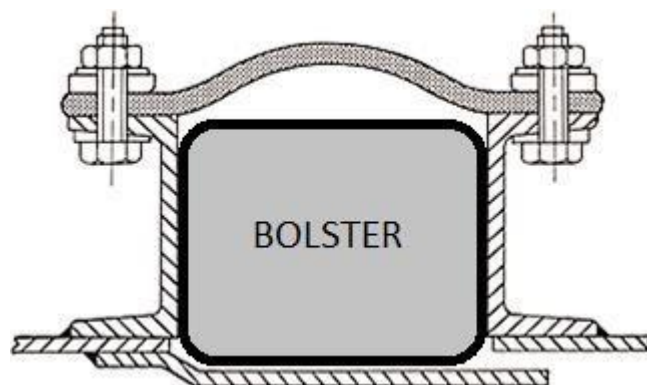
### Flat Type



The “flat” type, which is less frequently encountered in installations, nevertheless offers a number of advantages. Although it requires a higher initial investment—due to the modification of existing flanges by adding an “L” angle—the expansion joint itself is significantly less expensive than a “U” type joint, as no angled construction is required (this investment is generally recovered by the second installation). In addition, this type of assembly allows the expansion joint to be positioned further away from the deflector, leaving free space for the installation of a bolster (see next section). This configuration allows for much higher pressure and temperature tolerances.

## Bolster

Suitable for high-temperature applications



As stated above, the expansion joint itself has temperature tolerance limits of around 400 °C. For applications where the temperature exceeds this limit, Sealux recommends the use of a protective bolster. This protective bolster takes the form of an insulating cushion/mattress installed between the deflector and the expansion joint. Its purpose is to create a thermal barrier between the fluid flow and the expansion joint, which provides the

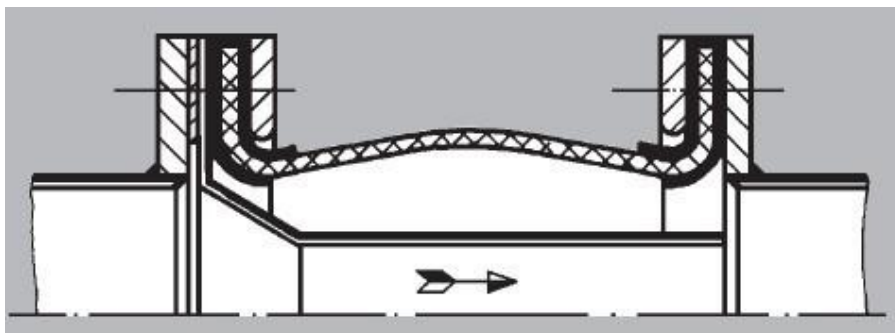
sealing of the installation. Often made of fiberglass wool or ceramic materials, the bolster allows textile expansion joints to be used in installations where temperatures can reach up to 1200 °C.



## Deflector

A deflector takes the form of a metal plate (round or square tube) installed inside the piping. Its main function is to reduce abrasion on the expansion joint as much as possible. The installation of this type of device is strongly recommended as a general practice.

For horizontal piping, the deflector should always be installed in the direction of the flow. In the case of vertical or inclined piping, the deflector may be installed against the flow. This configuration is used when it is necessary to prevent the space between the expansion joint and the deflector from filling with dust or condensate.



## **Special Designs:**

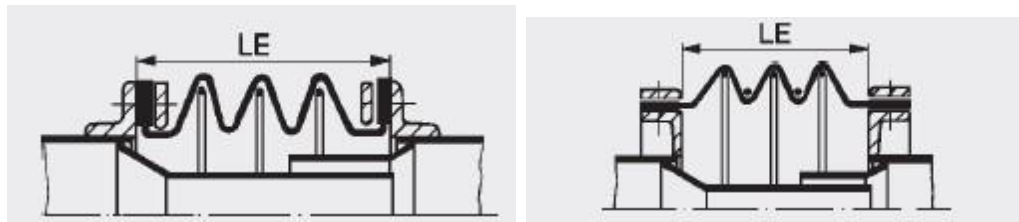
### Bulged expansion joint

For axial movements greater than those allowed by the standard design. Axial  $\Delta L \rightarrow 0.5$



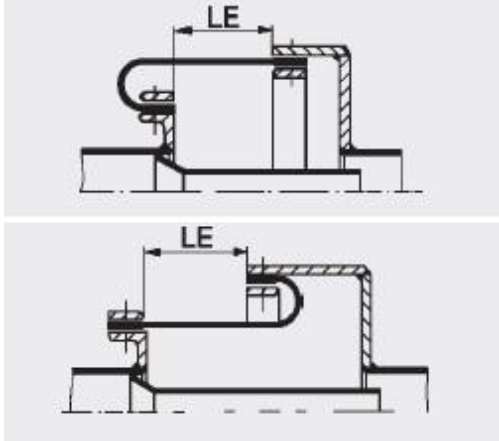
### Bellows expansion joint

For axial movements even greater than those allowed by the bulged design. Axial  $\Delta L \rightarrow 0.7$



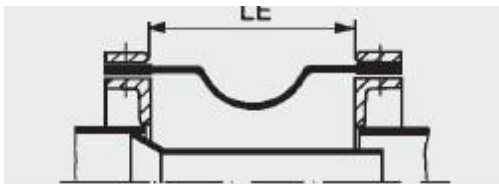
### Sliding expansion joint

For metal chimneys. Axial  $\Delta L \rightarrow 0.8$



## Expansion Joint for Vacuum Applications

Negative/vacuum :



## Installation and Repair

To ensure correct installation, Sealux has a specialized installation team. During your shutdowns, whether planned or unplanned, our team carries out the replacement or repair of your expansion joints within a very short timeframe.



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# Materials

## Materials

### Temperature and resistance to contents

The table shows the resistance of the Fabric Compensator foils, bonded coatings on various support materials, weaves and mats against long-term and short-term peak temperatures. Also their resistance against acids, alkalis and solvents.

Please note that within the limits of this booklet, only general indications of chemical resistance can be given.

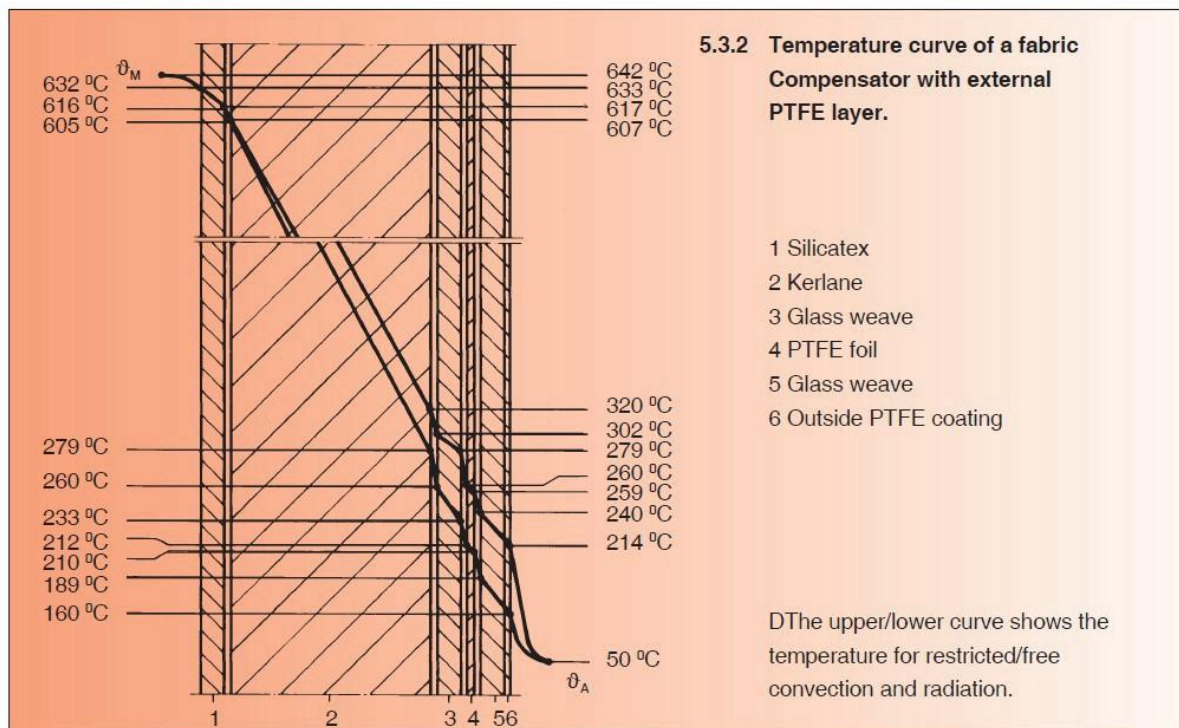
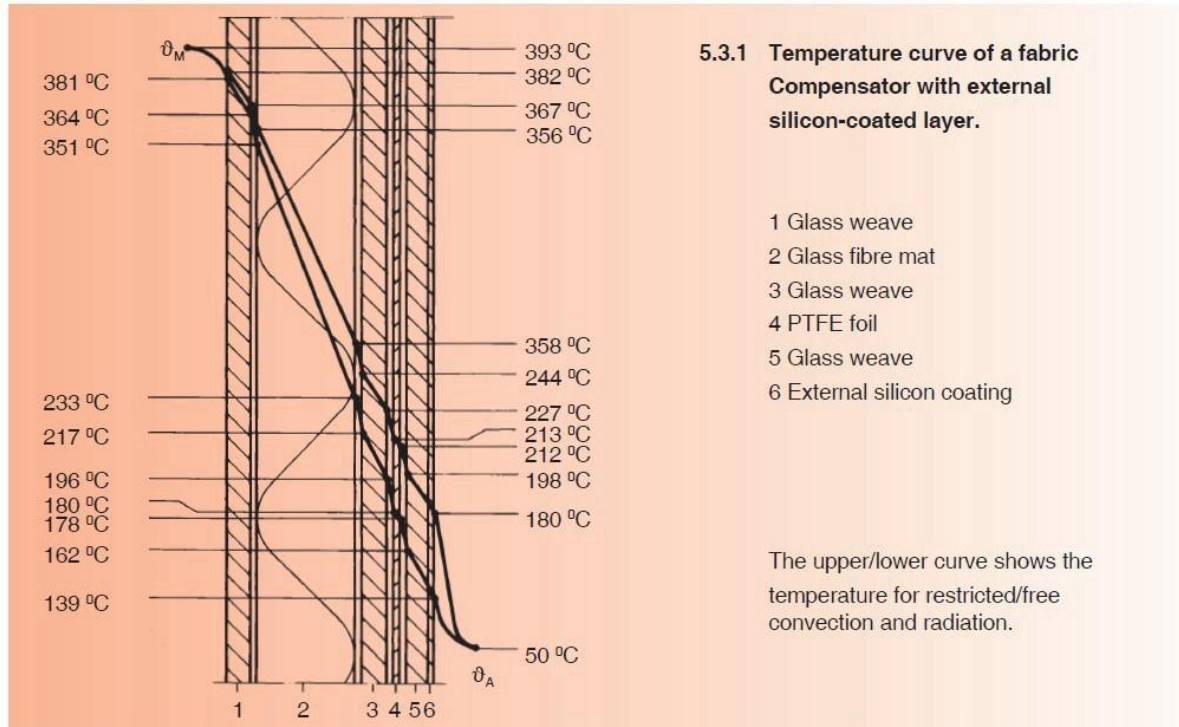
Application conditions		Long-term temperature resistance		Short-time peak temperature resistance		Acid resistance	Alkali resistance	Solvent resistance
		°C	°F	°C	°F			
Foil								
PTFE (Teflon) <sup>®</sup>		260	500	280	536	+	+	+
Aluminium		500	932	550	1,022	-	-	+
Stainless steel		600	1,112	850	1,562	+	+	+
Bonded coating / Carrier Woven material								
PVC	Polyester	60	140	65	149	+	+	0
Neoprene <sup>®</sup>	Polyester	90	194	100	212	0	0	-
Hypalon <sup>®</sup>	Polyester	90	194	100	212	+	+	-
Butyl/EPDM	Woven Glass Fibre*	100	212	120	248	+	+	0
Silicon	Polyester	150	302	160	320	-	-	0
Viton <sup>®</sup>	Polyester	150	302	160	320	+	-	0
Silicon	Woven Glass Fibre	220	428	230	446	-	-	0
Viton <sup>®</sup>	Nomex	205	401	250	482	+	-	0
Viton <sup>®</sup>	Woven Glass Fibre*	205	401	250	482	+	-	0
PTFE <sup>1)</sup>	Woven Glass Fibre*	260	500	290	554	+	+	+
single-ply composite material								
EPDM	1.4539 <sup>3)</sup> * with wire mesh	100	212	130	266	+	+	0
Butyl	1.4539 <sup>3)</sup> * with wire mesh	100	212	120	248	+	+	-
Viton <sup>®</sup>	1.4539 <sup>3)</sup> * with wire mesh	180	401	>250 <sup>2)</sup>	>482 <sup>2)</sup>	+	-	0
Weaves and Mats								
Kevlar <sup>®</sup>		180	356	250	482	+	+	+
Glass fibre weave		400	752	450	842	0	-	+
Glass fibre mats		500	932	650	1,202	0	-	+
Rock wool mat		700	1,292	750	1,382	0	0	+
Ceramic weave		1,200	2,192	1,300	2,372	0	0	+
Ceramic fibre mat		1,000	1,832	1,250	2,282	0	0	0
Silicate fibre mat		1,200	2,192	1,350	2,462	0	-	+
Silicate weave		1,200	2,192	1,350	2,462	0	-	+

<sup>1)</sup>interfered <sup>®</sup> registered trade mark Messrs. DuPont (+) = yes (0) = limited resistance (-) = no \* for FGD, FGS, incinerating plants  
<sup>2)</sup>short-time peak temperature; please consult our engineers regarding insulation <sup>3)</sup>alternatively also possible with glass weave

## Illustration : Temperature Curves

### Temperature Curves

### Example of Design





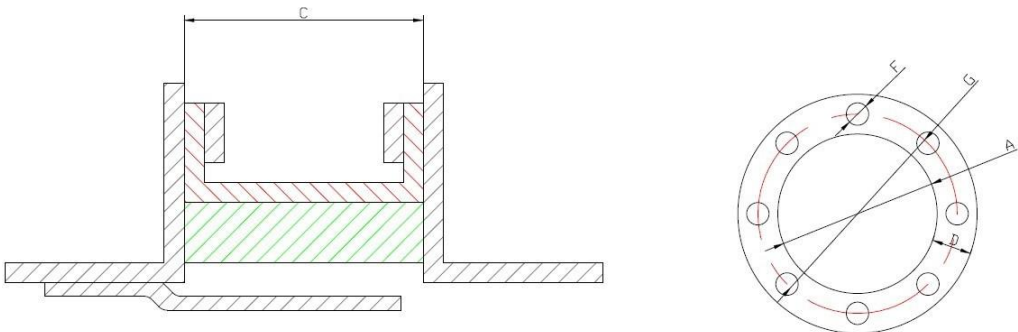
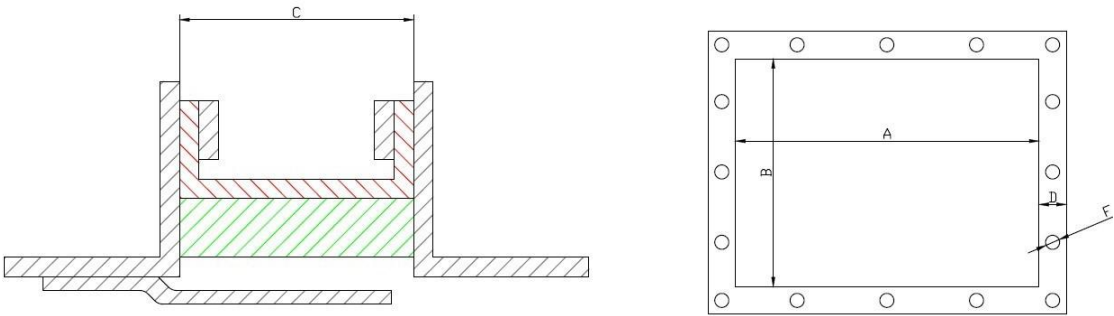
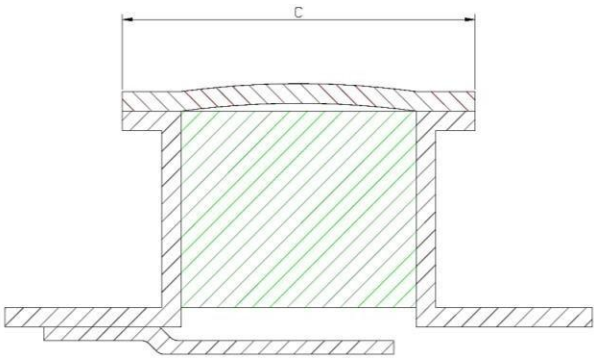
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If you require further details or additional information, our team will be pleased to assist you or visit your facilities..

You will find attached a quotation request form to be completed (also available on our website).

You can also discover the rest of our product range (flat gaskets, spiral wound gaskets, RTJ, sealing rings, etc.) on our website: [www.sealuxsa.eu](http://www.sealuxsa.eu) !

### Quotation Request Form

<u>Standard Profiles</u>			
TYPE « U »  R O U N D			
TYPE « U »  R E C T A N G U L A R			
FLAT TYPE  D E V E L O P E D			
DIMENSIONS in mm	TYPE « U » ROND	TYPE « U » RECTANGLE	TYPE PLAT
A			
B			



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C			
D			
F			
G			
Developed length			

<b><u>TECHNICAL INFORMATION</u></b>	
Operating temperature	
Peak temperature	
Pressure	
Fluid to be sealed	
External environment (dust, acid vapors, weather conditions)	
Installation constraints	
Other remarks	