FABRIC EXPANSION JOINT

WHAT IS A FABRIC EXPANSION JOINT?

Fabric expansion joints are extremely flexibel and can be made from a variety of special woven fabrics coated or laminated with selected elastomers or fluoropolymers.

Fabric expansion joints are used to insulate, to avoid mechanical loads and to protect against abrasion. They offer advantages for the pipe work designer as they absorb movements simultaneously in several directions, they have almost no reactive forces and require little space.

Fabric expansion joints are easy to customize to suit existing operating conditions and are easy to transport and install. In comparison to metallic expansion joints, fabric expansion joints offer almost unlimited flexibility and give numerous options for the pipe work designer.

Fabric expansion joints are installed in systems operating with low pressure and dry media.

HOW DOES A FABRIC EXPANSION JOINT WORK?

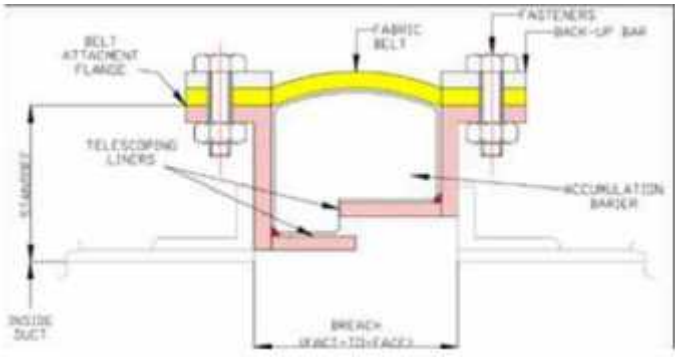
A fabric expansion joint is inserted into a gap in the ductwork where the movement will occur.

A fabric expansion joint has two main components :The fabric gas seal and The metal frames.

The fabric gas seal is a closed loop, like a belt, with its two edges clamped all around to the metal frames that are in turn connected to the end of the duct. As the ducting moves, the fabric belt deforms.

The fabric material must do this without tearing or leaking while sometimes being exposed to high temperatures and/or corrosive media.

In some instances, additional components such as insulation pillows, accumulation barriers or flow liners are utilized to help protect the fabric material.



APPLICATIONS

Fabric expansion joints are found in a wide range of industries including:

- Chemical Process Plants
- Cement manufacturing
- Pulp and Paper Industry
- PowerStation
- Refineries
- Shipbuilding
- Sugar Plants
- Gas Turbine Installations
- Steel Plants

PRODUCT RANGE

Types	:	Circular and rectangular
Dimension	:	All sizes and with or without steel parts. For installation in existing duct- and/or pipework the fabric expansion joints are supplied with either closed- or open ended band.
Temperature	:	Up to +1200°C
Pressure	:	Up to 3.0 bar

CONSTRUCTION

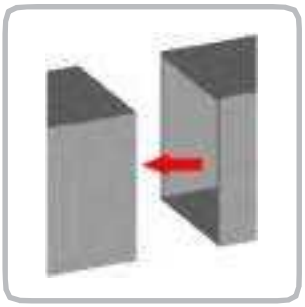
Selection of the optimum construction for fabric expansion joints depends on a number of factors which need to be considered for the application, generally speaking, there are no “standard” designs.

Fabric expansion joints are available in many Configurations with single-layer or multi-layer fabric elements. The multilayer expansion joint is generally made from:

1. Internal material; to avoid abrasion
2. Insulation material; to resist high temperature
3. Sealing foil; for gas-tight construction
4. Outer cover; against mechanical loads
5. Reinforcement; protection ensuring strong construction in the area where bolts are fixed.

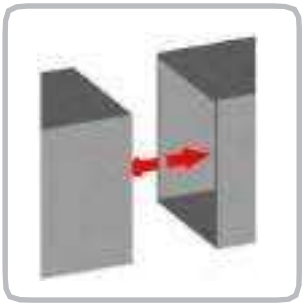
MOVEMENTS

The movements that the units are capable of accepting can be singular or a combination of:



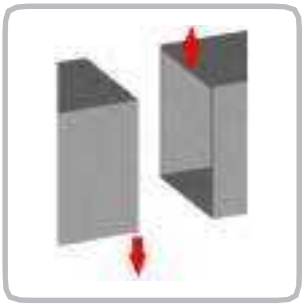
Axial Compression

The reduction in the breach opening along the axis of the duct. This is usually a result of thermal expansion of the ducting



Axial Extension

The increase in the breach opening along the axis of the duct. In certain configurations, the duct thermal expansion may result in extension of the expansion joint location



Lateral Movement

The relative movement of the upstream and downstream faces in the direction perpendicular to the axis of the duct

Torsional Rotation

The twisting of one side of the duct about the longitudinal axis

Angular Rotation

The twisting of one side of the duct about an axis perpendicular of the longitudinal axis

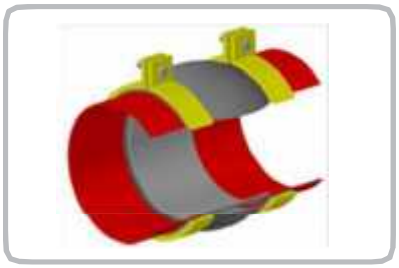
DESIGN STYLES

Fabric expansion joints are usually supplied as a “belt” or with integral flanges, the preferred arrangement will depend on the conditions of the installation and system temperature. Simple flanged solutions are common for installing against flanges mounted onto the ductwork, an arrangement suitable for low-temperature areas.

Belt type expansion joint attached directly onto the outside of the duct using clamping bands normally used for:

1. Low temperatures (up to 300°C)
2. Low to medium velocity
3. Low to medium dust load

i.e.: Clean air ducts



Convoluted fabric expansion joints are attached directly onto the outside of the duct using clamping bands normally used for:

1. Large movements
2. Low velocity
3. Low dust content
4. Low temperature

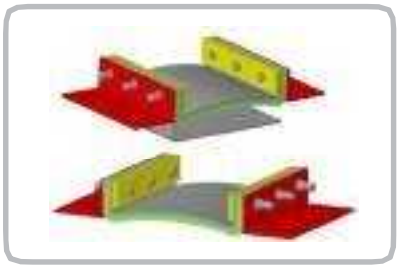
i.e.: Pulp and paper industry

Fabric expansion joints mounted on vertical flanges, typically used in systems with:

1. Low flow velocity
2. Low dust content
3. Low temperature (up to 450°C)

The design can be made both with and without sleeve. The sleeve primarilyacts to protect the fabric expansion joint from the particles in the flow medium

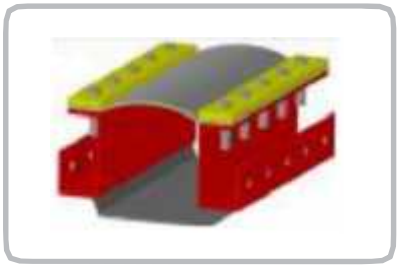
i.e.: Chemical industry (wet and dry)



Fabric expansion joints mounted on parallel flanges, typically used in ductwork with:

1. Medium temperature range (up to 500°C)
2. Higher flow velocities
3. Medium dust content in the flow

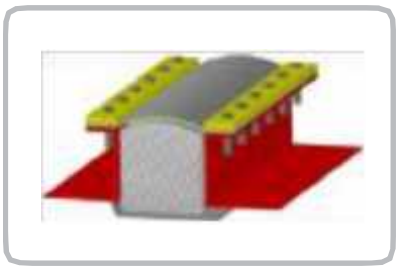
i.e.: Low temperature flue gas ductwork in conventional power stations



Fabric expansion joints mounted on parallel flanges with insulation bolster, typically used in plants with:

1. High temperatures (up to 600°C)
2. High dust content
3. High flow

i.e.: High temperature flue gas duct systems in conventional power stations

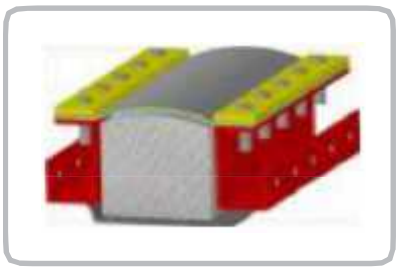


Fabric expansion joints with floating sleeve, construction are typically used in plants with:

1. Medium to high temperatures (up to 600◦C)
2. Very high dust content
3. Low to high flow velocities

The floating sleeve gives good protection againts dust whilst allowing lateral movement.

i.e: Cement industry



SPECIAL DESIGNS

In this brochure we have tried to provide a general idea of our capacity to design and supply fabric expansion joints for commonly-found applications. In addition to the styles shown here we can assist with very special applications such as “picture-frame” units, units with pantographic linkage, pipe penetration seals and other special arrangements including “dog-bone” seals for low-pressure ductwork carrying condensates and fluids. Further details are available on request.

ONSITE SERVICES FOR FABRIC EXPANSION JOINTS

Our competence in the provision of fabric expansion joint solutions extends also to onsite services. We pro-vide support from the initial design, construction and installation stages and continuously thereafter through- out the service life of the equipment. We have a team of skilled installers with experience in a wide range of site conditions who work in compliance with the prevailing safety regulations.

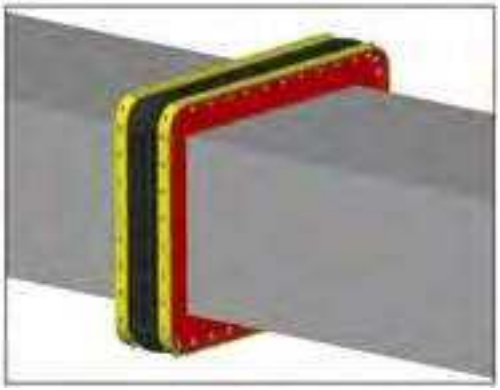
Our services for fabric expansion joints include:

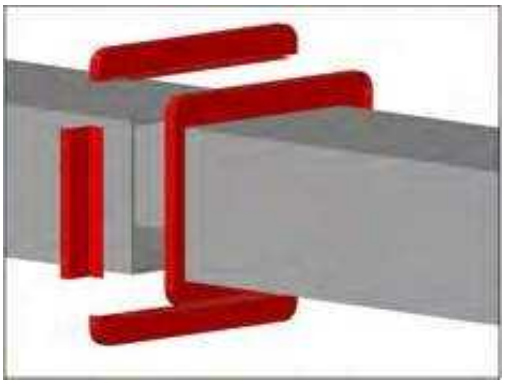
- Installation
- Replacement (dismantling and installation)
- Repair
- Supervision of installation
- Assisting plant personnel in the installation/ replacement work
- Inspection, i.e. estimation of remaining service life (incl. report of status, evaluation and recommendations)

For such onsite work we have equipment ready and packed to ensure quick support if needed.

FACTORY ASSEMBLED

Where conditions allow, fabric expansion joints can be shipped factory assembled ready to in- stall. The Complete joint can be lifted in place with crane and attached, either by welding or bolting, to ducting or equipment





UNASSEMBLED

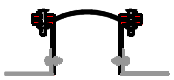
In some instances, it may be preferable to pur-chase the expansion joint unassambled and complete the assembly of the joint in place on the ducting. In this case, the frame wil typically ship as rails attached to cornersfor rectangular joints and in c-sections for round joints. The fluoroplastic fabric belt is easy to field drill and splice in place

Fabric Expansion Joint Data Sheet

Customer : Pelanggan	Address : Alamat	Contact : Kontak	
Phone : Telephone	Fax number : Nomor Fax	Email : E-mail	Date : Tanggal
Industry : Perusahaan	Location : Lokasi	Area : Tempat	Item/Tag : Barang / menandai	Quantity : Jumlah

☐ New Expansion Joint (Complete set) / Expansion Joint Baru (Set lengkap)
☐ Repair Expansion Joint / Perbaikan Expansion Joint
☐ New Fabric Expansion Joint / Kain Baru Expansion Joint

Expansion joint Style / Options — Pilihan Model Expansion Joint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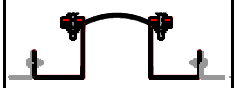
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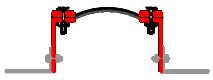
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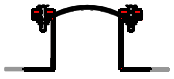
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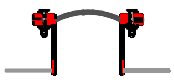
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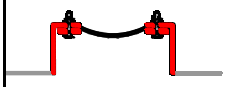
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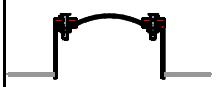

☐ BNS04W


☐ BSS01B


☐ BDS01B


☐ BDS01W


☐ FNS01B


☐ FSS01B


☐ FDS01B

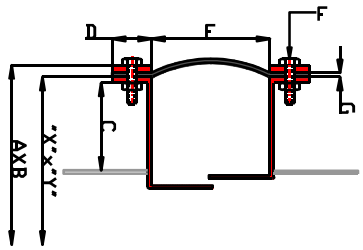
Options: Pilihan

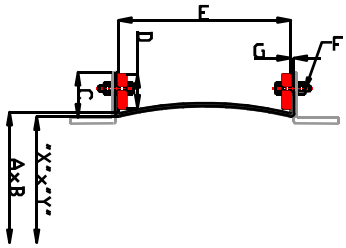
☐ Include pillow / Termasuk Pillow
☐ Use Bolt / Menggukan Baut
☐ Weld In the Field Weld / Las di lapangan

Other: lainnya

Fabric Only

"A,B" Size expansion joint (Ø OD / P X L) / Luas ukuran permukaan luar Expansion Joint	
"X,Y" Size expansion joint (Ø ID / P X L) / Luas ukuran dalam Expansion Joint	
"C" Size ducting / pillow / Ukuran ducting (Untuk mengetahui Pillow)	
"D" Width And Thiknes Back up Flange Expansion joint / Lebar dan tebal Back up flange	
"E" Length Expansion joint / Lebar Expansion Joint	
"F" Bolt & Nut / Baut dan mur	
"G" Thicknes Cuff Expansion Joint / Tebal Cuff Expansion joint	
Corner Radius (Rect. Only) / Jari - Jari Expansion Joint (Hanya untuk Persegi)	





☐ Close Band / Tersambung
☐ Open Band / Lembaran
☐ Factory Holes / Melubangi di pabrik
☐ Field Holes / Melubangi di lapangan

Frame Assy

☐ Fully Assembled / Perakitan dan pemasangan
☐ Expansion Joint Fabric only with welding and splices in the field / Kain Expansion Joint saja dan pengelasan di lapangan
☐ Unassembled , Field Welds ,Fabric Splice and Drill / Belum dirakit , pengelasan,pengeboran di lapangan
☐ Fabric Expansion Joint Only / Kain Expansion joint

Application — Aplikasi

	Operating / Operasi	Design / Desain	Excursion / Excursi	Duration (min) / Durasi (min)
Temperature (°C) / Suhu (°C)				
Pressure (BAR) / Tekanan (BAR)				
	Compration / Kompresi	Extension / Extensi	Lateral / Lateral	Other / Lainnya
Movements / Pergerakan				

Media :
☐ Air (clean) / Udara (bersih) ☐ Flue Gas / Gas Buang ☐ Dirty Flue Gas / Gas Buang Kotor ☐ Wet Flue Gas / Gas Buang Basah
Other / Lainnya

Flow Direction / Arah Aliran
Flow Velocity (Ft,Sec) / Kecepatan Aliran(Ft, Sec)

Note Actual Lapangan :

Teknisi Lapangan	User	Marketing	Date