



Flexocon

Flexocon Engineers
Private Limited

Flexibility
is our business

EXPANSION JOINT

The Company

FLEXOCON ENGINEERS established in 2001, backed by few qualified Mechanical Engineers having more than 15 years Experience in Expansion Joints field at various application

FLEXOCON ENGINEERS is a dynamic service oriented manufacturing company specializing in the production of following

- ◆ Fabric composite bellow expansion joint assemblies
- ◆ Metallic Expansion Joint bellows
- ◆ Rubber expansion Bellows.

The technical calculations of FLEXOCON ENGINEERS designs are based on recognized standards and carried out on our specially developed computer program and displayed on our CAD system.

Experienced and well-trained staff in the Engineering Department and in Production, combined with continuous R&D efforts - that is how we believe optimum solutions can be found for the manufacturing of Non-metallic (fabric) composite expansion joint assemblies.

Quality Assurance

FLEXOCON ENGINEERS quality system is based on ISO 9001. This means that the system includes all links starting with through selection and inspection of materials to engineering, production, packaging and site supervision and service. We continuously strive to refine and further develop our system as it is essential for the company to be able to document product compliance with specified requirements.

FLEXOCON ENGINEERS's mission is to deliver expansion joint solutions that are **DESIGNED TO LAST A LIFETIME.**

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NON-METALLIC (FABRIC) EXPANSION JOINT

Introduction

These Expansion Joints are used for thermal and mechanical movement control as well as vibration absorption in modern duct systems.

FLEXOCON ENGINEERS manufactures a wide range of Non-metallic (fabric) composite bellow expansion joint assemblies from industrial standards to special service designs geared to filling customer wishes and requirements. With its in depth knowledge of materials and extensive application experience,

Applications

FLEXOCON ENGINEERS is able to supply reliable and well functioning design solutions to match any type of plant or system.

FLEXOCON ENGINEERS non-metallic expansion Joints are mainly used in air & flue gas ducting systems in:

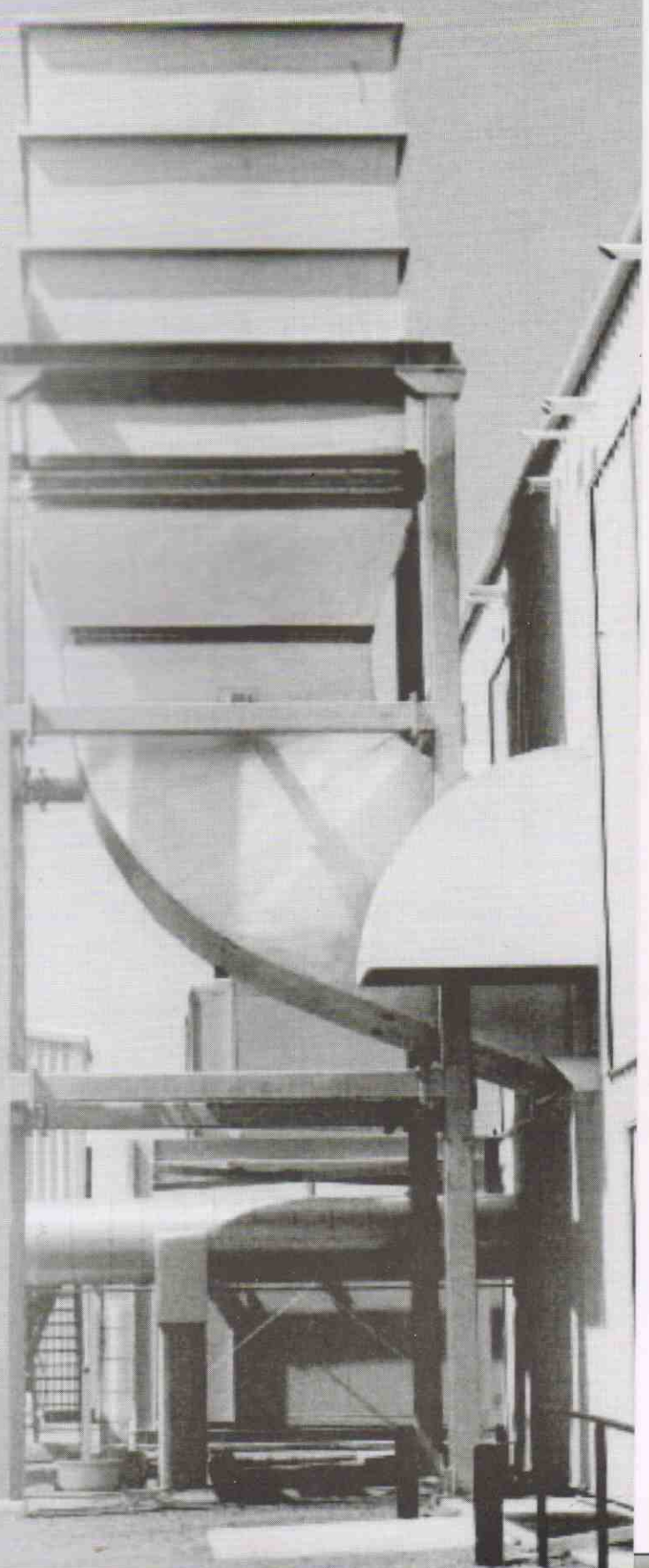
- ◆ Air pollution control equipment
- ◆ Transmission and distribution in energy generation
- ◆ Industrial process plants
- ◆ Natural gas and oil transmission including off-shore drilling platforms..

Range

Pressure = ± 2000 mm WC
Temperature = Upto 1400°C
Size = Any size circular, Rectangular or any shape.

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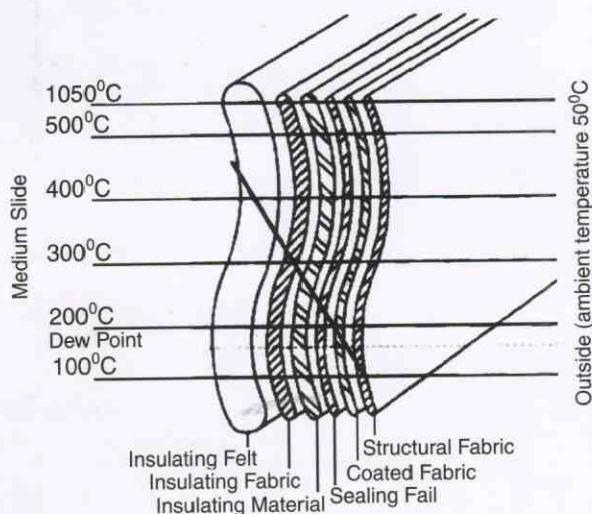
STANDARD EXPANSION JOINT DESIGNS (NON METALLIC)

FLEXOCON ENGINEERS production consists of single or multi layer composite fabric attached to steel support frames for axial, lateral or angular movement control, as well as special service designs. The assemblies are supplied ready to be installed.

Non-metallic expansion Joints are supplied in single or multiple layer composite construction with a variety of advanced technical fabrics to suit service conditions and temperatures including: SS316 and INCOLOY wire mesh, glass and ceramic woven and felt insulation, PTFE and Fluoroplastic films, and various elastomers. Steel support frames are generally fabricated from the same material as the connecting equipment including all available carbon, alloy and stainless steels.

A. Types: In general there are two types of non-metallic expansion joints; (1) those installed in systems operating at or below 120°C (Elastomeric types) and (2) those installed in systems operating above 120°C (Composite types,)

1. Elastomeric type: A solid product with one or more reinforcing piles laminated with on elastomeric material which is vulcanized into a homogenous solid product.



Expansion joints operating continuously at or below 120°C will generally be of the elastomeric type. The overall thickness and number of reinforcing plies may vary depending upon application conditions and design concept. The elastomeric type provides an inner cover elastomer selected for its resistance to the system gasses and operating temperature, and an outside cover elastomer selected for its resistance to external atmospheric conditions. The inner and outer covers can be the same or different elastomeric compounds depending upon the manufacturer's design.


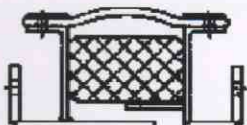




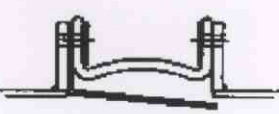
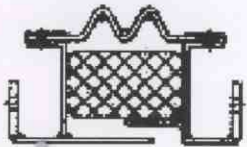
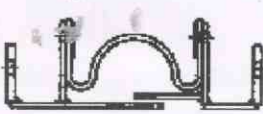
The ability of this product to withstand the system operating and excursion temperatures is based upon the elastomer selected by the expansion joint manufacturer.

2. Composite Type: A layered product that consists of various plies of material which are laid one over the other and are usually bonded, sewn, or mechanically fastened together in the clamp or flange area. This method of construction allows each material layer to function independently of the others. Expansion joints in systems that operate continuously above 120°C will be a composite type.

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Standard Non-metallic (fabric) Expansion Joint Configurations

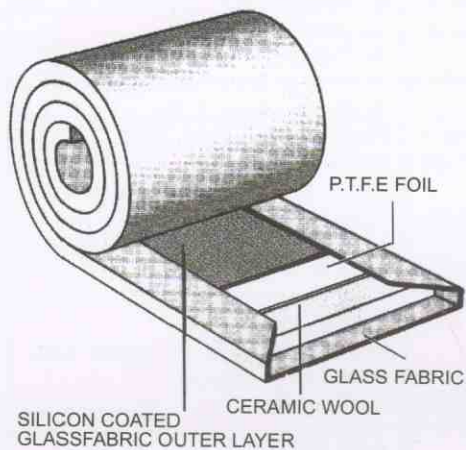
A TYPE		Clamp fixed type Sleeve establishment Positive pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$ Axial extension: 10% Axial compression: 25%	Lateral offset: 10% Low temperature duct line Air duct Round oval conical Rectangular
B TYPE		Clamp fixed type Sleeve establishment insert insulation between sleeve and tube Positive pressure Temperature: $-40^{\circ}\text{C} \sim +1100^{\circ}\text{C}$	Axial extension: 10% Axial compression: 25% Lateral offset: 10% High temperature duct line Round oval conical
C TYPE		Clamp fixed type Sleeve establishment insert insulation between sleeve and tube Negative pressure Temperature: $-40^{\circ}\text{C} \sim +1100^{\circ}\text{C}$	Axial extension: 10% Axial compression: 25% Lateral offset: 10% High temperature duct line Round oval conical Rectangular*
D TYPE		Clamp fixed type Sleeve establishment insert insulation between sleeve and tube Positive pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$	Axial extension: 20% Axial compression: 50% Lateral offset: 20% High temperature duct line Round oval Rectangular
E TYPE		Clamp fixed type Sleeve establishment insert insulation between sleeve and tube Positive pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$	Axial extension: 30% Axial compression: 50% Lateral offset: 20% High temperature duct line Round oval Rectangular
F TYPE		Flange fixed type Sleeve establishment Negative pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$ Axial extension: 30%	Axial extension: 50% Lateral offset: 20% Middle temperature duct line Round oval conical Rectangular
G TYPE		Flange fixed type Sleeve establishment Positive pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$ Axial extension: 10%	Axial compression: 25% Lateral offset: 10% High temperature duct line Round oval Rectangular
H TYPE		Flange fixed type Insert insulation between sleeve and bellows Negative pressure Positive pressure	Axial extension: 50% Axial compression: 50% Lateral offset: 15% High temperature duct line Round oval Rectangular
I TYPE		Flange fixed type Sleeve establishment Negative pressure Positive pressure Temperature: $-40^{\circ}\text{C} \sim +400^{\circ}\text{C}$ Axial extension: 20%	Axial compression: 40% Lateral offset: 20% Middle temperature duct line Round oval Rectangular

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Non-Metallic Expansion Joint in Roll form

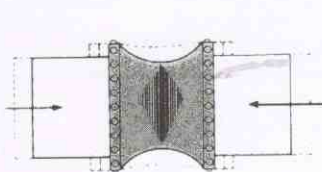
Flexocon Expansion Joints are available in Roll Form also. Standard Rolls are available in 200mm, 300mm and 400 mm with and of lengths of 10 m, 25 m and 50 m. Other width / length are also made as per order.



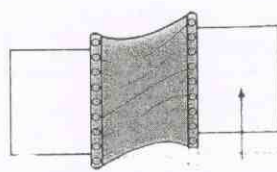
TYPE	Temperature	Construction
FER 1	Upto 100 ⁰ C	Elastomer impregnated Nylon Cloth
FER 2	Upto 250 ⁰ C	Elastomer Coated Glass cloth-Outer Layer PTFE Coated glass cloth Middle layer Resin Coated Glass Cloth Inner layer
FER 3	Upto 400 ⁰ C	Elastomer Coated Glass cloth-Outer Layer PTFE Coated glass cloth, Cerefelt (RTZ) Middle layer Resin Coated Glass Cloth Inner layer
FER 4	Upto 600 ⁰ C	Elastomer Coated Glass cloth-Outer Layer PTFE Coated glass cloth, Cerefelt (RTZ), Resin Coated Glass Cloth Middle layer Treated Glass Cloth Inner layer

Note : For your requirement of Roll for higher temperature, please contact our Design Department.

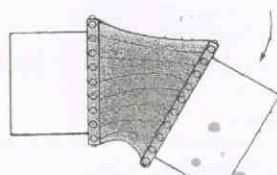
Advantages of non-metallic expansion joint



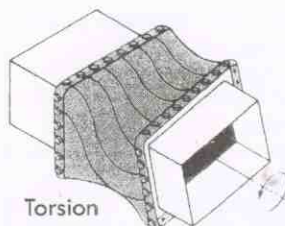
Axial Movement
(Compression, Elongation)



Lateral Movement



Angular Deflection
(Bending)



Torsion
(Rotation)

- ◆ Large movement capability
- ◆ Ability to absorb torsion
- ◆ Lower design costs
- ◆ Cost efficient for large ducting systems
- ◆ High corrosion resistance
- ◆ Isolates vibration
- ◆ Negligible spring forces
- ◆ Accommodates large misalignments in ducting systems
- ◆ Easy replacement of flexible element

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METALLIC EXPANSION JOINT

Bellow type metallic expansion joints are oldest and most efficient and functionally reliable compensator for all applications involving high temperature and pressure. These are made from metals like :

- ◆ AISI 304,316,321
- ◆ Inconel
- ◆ Monel
- ◆ M.S. Etc.



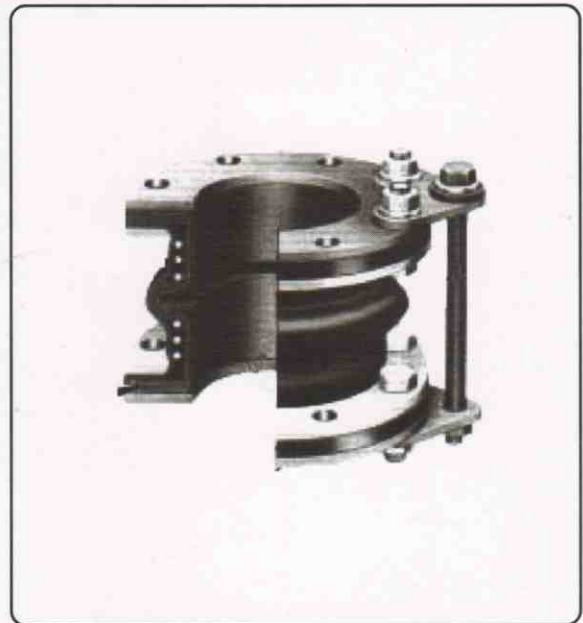
Features :

Highly flexible and able to absorb axial/lateral/angular movement.

- ◆ Individually designed on EJMA parameter.
- ◆ Suitable for temperature up to 1000° C.
- ◆ Available in circular size from 18 mm to 5000 mm and any size in rectangular construction.

RUBBER EXPANSION JOINT

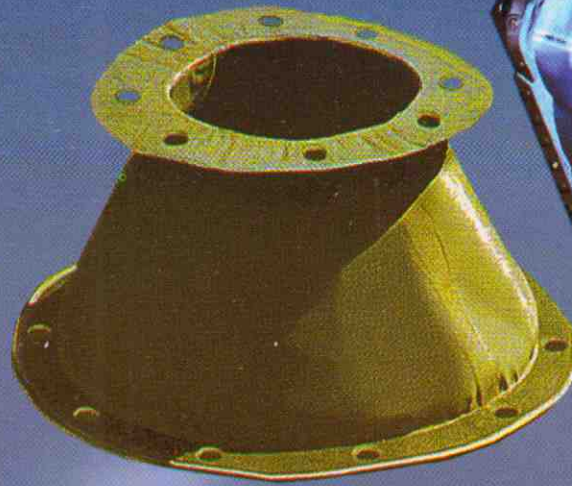
With extensive research and development in rubber manufacturing process these sort of joints are developed and designed for multipurpose applications. These are used to absorb and protect the system from vibration, noise, thermal expansion, stress and movement and protect against start up surge force. These are suited for high pressure up to 50 Bar and temperature up to 400 ° C (with special construction the same can be increased).



These are made from high tensile rubber with Rayon/Nylon reinforcement and metal rings for various duties. These are available up to the circular size of 3000mm I.D.. These are generally required at pumps, turbines, ballast lines, vacuum lines etc.

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