



# HI-TECH THERMAL INSULATIONS PVT LTD

( AN ISO 9001:2008 Certified Company)

## MULTI-LAYER FABRIC EXPANSION JOINTS & ACCESSORIES

for flue Gas & Hot Air Duct applications

100%  
Asbestos free  
insulation



Multy-layer fabric  
expansion joint



Flue-gas duct  
expansion joint



Cylinder piston  
bellows

### Products offered :

- ❖ Cylinder Piston corrugated expansion bellows
- ❖ Single layered Fabric Expansion Joints
- ❖ Single layered NM-EJ assemblies
- ❖ Muti-Layered fabric Expansion joint belts
- ❖ Complete NM-EJ assemblies
- ❖ Isulation Bolsters
- ❖ Expansion joint fabrics & Gaskets
- ❖ Flexible Covers for Metallic Bellows
- ❖ Lamellar seals for cement plants
- ❖ Custom designs as per application and process conditions



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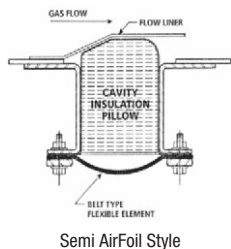
India Ratings  
& Research



ISO 9001 - 2008



# Hi-Tech Fabric Expansion Joints & Accessories



Corrugated Bellows for Hydraulic Piston cylinder



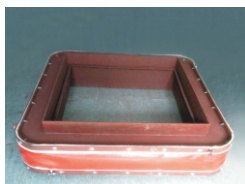
Single layer Fabric expansion joint with metal flange



Multi-layer fabric EJ belt



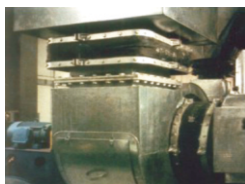
Multi-Layer Fabric Expansion Joint



Multi-Layer Fabric Expansion Joint



Expansion joint with liner



Flue-Gas Duct Expansion Joint

Hi-Tech Thermal Insulations pvt ltd, has been manufacturing single to multi-layer fabric expansion joints for a variety of industrial uses including steel, cement, paper, fertilizer, boiler power, automotive, air pollution and utility applications. Hi-Tech multi-layer construction type composite belts and assemblies are noted for their exceptional thermal & chemical resistance, expansion movements, longevity and ease of installations. Experienced, to design compensator assemblies up to 6mtr length and round up to 5mtr. Dia and more.

Our material allow fabrication of round to round transitions, rectangular to round transitions, or almost any other imaginable shape, making them ideal for fan vibration isolation or high temperature expansion needs.

High temperature textiles and insulation materials used in the construction of fabric expansion joints are tested as per BS 476 part 6, 7 & 20, EN 532 and ASTM methods. These are designed confirming to standards as per FSA.

These are designed taking into system considerations such as thermal expansion, pressure, media, isolation of vibration, noise reductions misalignments in different types of duct systems used in variety of industrial applications upto 1250°C. HI-Tech warranties all of its expansion joints for twelve months after installation. Extended warranties are also available for specific applications.

## TYPES OF FABRIC EXPANSION JOINTS :

- I corrugated fabric expansion joints :** are collapsible bellows made from heat resistant fabrics & ss wire reinforcements, having minimum compression and larger expansion lengths. These are used over hydraulic cylinder piston equipments in tilting furnaces, tundish cars, heavy earth movers etc; at high temperature furnace applications upto 1600°C.

### Benefits:

1. Protects piston rods from heat, dust and molten slag.
2. Prevents drying of lubrications, oil seals, from piston cylinders
3. Completely covers the pistons with flange arrangements
4. Provides maximum stroke lengths and minimum closing lengths
5. Impermeable to liquids and weather resistant
6. These are available in fixed and removable types with Velcro arrangements

| EJC-700 | Corrugated fabric expansion bellow | EL x CL x Dia of Piston Rod |
|---------|------------------------------------|-----------------------------|
|---------|------------------------------------|-----------------------------|

- II Low temperature Fabric Expansion joints : Type SEJ :** Low temperature fabric expansion joint belts are made from one or more reinforcement piles with coating of elastomers or fluoro-plastics lined with heat and abrasion resistant vermiculite fiber glass, with gasket arrangements. This is a simple design for low temperature applications upto 600°C

### Salient features :

- Simple design for easy replacements for low temperature applications upto 600°C.
- Highest flexibility and therefore the most allowance for movement.
- Belt systems are available for clamping at sites.
- Available in fabric flanges for simple clamping at site.
- Allows for metal liner designs to prevent flue ash accumulation in the ducts.
- Simple installation that be often carried out by the customers own personnel.
- Ready to use fabric expansion joint belts in different width & lengths.
- Cost effective and available ex-stock deliveries

| EJS-300 | Single layer Fabric Expansion joint belt temp300°C | Width x length or as per drg. |
|---------|--|-------------------------------|
| EJS-600 | Single layer Fabric Expansion joint belt temp600°C | Width x length or as per drg. |

- III Expansion Joints : Multi- layer Type MEJ :** These are fabric expansion joint belts made from one or more reinforcement piles with coating of elastomer or fluoro-plastics to form a homogenous material. They have inner layer made from ultra heat resistant silica or fiber glass or ceramic reinforced with SS 304 wire mesh, followed by silica mats /Glass mats or ceramic blankets lined with Teflon sealing layer. The outer layer consist of heat and weather resistant elastomer coated fabrics. These belts are usually bonded, sewn or mechanically fastened together using high temperature teflon coated silica threads with gasket arrangements on either side of the belt. These are designed for temperatures maximum 1260°C with Maximum Melting points upto 1649°C.

**Insulation Bolster :** These are cavity pillows made from ceramic or glass layers encapsulated in a fiber glass fabric and ss 304 wire mesh to prevent the accumulation of particulate matter or un burnt fuel trapped in the Expansion Joint cavity. This is designed for Expansion joint assembly along with the EJ belt. This is a complex belt design for heavy duty applications to handle corrosive flues at high temperature and pressures.

### Salient features :

- Composite layered fabric belts recommended for Ultra high temperature flue gas applications.
- Designed for Highest flexibility and therefore the most allowance for movement.
- Belt systems are available for clamping at sites.
- Insulation bolster prevents the accumulation of corrosion particles in the EJ duct cavities protecting the fabric belts.
- Belts can be often installed by customers own personnel
- Cost effective and available ex-stock deliveries.

| EJM-600  | Multi-layer fabric expansion joint belt upto 800°C  | Width x length or as per drg. |
|----------|---|-------------------------------|
| EJM-1000 | Multi-layer fabric expansion joint belt upto 1000°C | Width x length or as per drg. |
| EJM-1260 | Multi-layer fabric expansion joint belt upto 1260°C | width x length or as per drg. |

# FABRIC EXPANSION JOINT DESIGN CONSIDERATIONS



Multi-layer fabric Expansion Joint



Installation of Fabric Comapanensators at site



bellow covers at power plant



Multi-Layer Fabric Expansion Joint

## FABRIC EXPANSION JOINT DESIGN CONSIDERATIONS

**EXPANSION JOINT METALLIC STRUCTURE :** Is fabricated as per system Design, process conditions, size or as per drg. with MS thickness ranging from 6mm to 20mmthk. with internal metal liners, supports and Guide bars. All the metal parts are coated with heat resistant paint or galvanised as per customer requirements. Metal flanges supplied are as per as per ASTM and IS Standards. Material tested as per ASTM D:1777:96 and IS: 11056:84

### Temperature Considerations

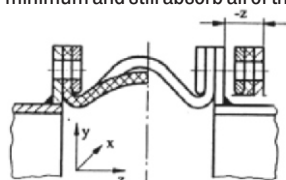
Expansion Joints- with multi-layer fabric construction are designed to handle, wide range of temperatures from 250°C to 1649°C.

### Flue Gas / corrosion Particulates

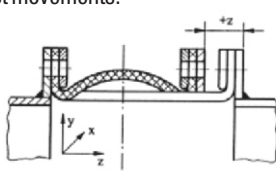
Can handle medium to heavy flue or unburnt coal particulates, with safe design of Protective metallic liners and insulation pillows. The hot face used will have graphite coated or Hi-Sil or ceramic fabrics with ss wire reinforcements, to resist heavy corrosion depending upon application & temperature.

### Typical fabric expansion joint movements

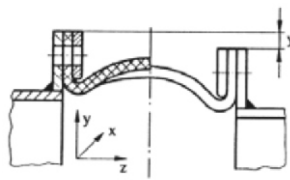
Non metallic ducting movements can be calculated at both the design and maximum excursion temperatures. Fabric expansion joints can handle combined axial, lateral, angular and torsional movements with just one unit. Expansion joint locations should be carefully selected to keep the number of expansion joints in the system to a minimum and still absorb all of the duct movements.



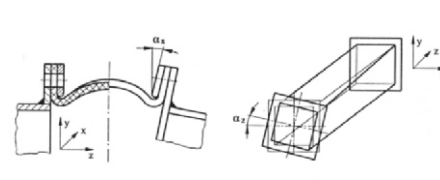
Axial compression



Axial elongation



lateral offset



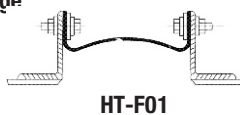
Angular movements

Incase if you need to an expansion joint location have very large axial and/or lateral movements, please contact our technical team for recommendation on how these movements can be best be handled.

## Expansion joint Design :

### HT-F01: Internal flange type : with Integral flexible flange

- Recommended at low to moderation applications
- Used at field installations
- Lower initial and transportation cost.
- Flexible part will have flanges moulded at corners



HT-F01

### HT-RF06: Economic Belt Type with metal flange Expansion joint

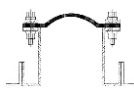
- Recommended at high temperature duct applications
- Metallic structure is prefabricated
- Accepts pillow design
- Accepts large lateral movements
- Easy belt replacement



HT-F06

### HT-F08: Easy belt expansion joint for Fans

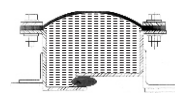
- Suitable for normal temperatures
- Frequently fan application
- Economic metallic structure
- Easy belt replacement



HT-F08

### HT-F05: Expansion joint for High temperature

- Recommended at high temperature duct applications
- Metallic structure is prefabricated
- Accepts pillow design
- Integral telescopic flow liners protects the pillows
- Accepts lateral and axial movements
- Easy belt and pillow replacement



HT-F05

**Application Industries :** Boilers, Nuclear Power plants, Coal Power Plants, De Knox Plants, Flue Gas De-Sulphurisation Plant (FGDP), OEMS, Gas Turbine Plants, Sinter & Pallet Plants, Power plants, Industrial Furnaces, Petrochemicals, Copper & Smelter plants, Incinerator plants, Dust Removable filtering Plants, Cement Industry, Steel Industry, Glass & Ceramic Industry, Dehydration Plants, Chemical Industry, Paint & Dye Industries, Lime Plants, paper and pulp industry, Conveying plants, Fan Combustion/ Ventilation, ship building and marine technology, automotive and more.

### Application Areas :

- **COAL FIRED POWER PLANTS :** Air Pre-Heater ducts, Boiler system, Chimneys, Coal Mill Inlet and outlet, Fan inlet and outlet, Pulverized fuel pipes
- **CEMENT :** All flue gas ducts and process pipes, Cement Mill ducts, Chimneys, Down comer ducts, From Cyclones to Fans, From fans to bag filters, From Fans to ESPs, Raw Mill/coal mill ducts
- **FERTILIZER :** Fan inlet and outlet, Flue gas/hot air ducts, Gas Turbines, Packing plant, Reformer Tubes, Waste Heat Recovery systems.
- **GAS TURBINE AND COMBINED CYCLE PLANTS :** Boiler inlet, Bypass stack, Exhaust plenum, GT INLET, Pipe penetrations, Super heater
- **METALLURGY (STEEL, COPPER ALUMINUM, ZINC) :** Air Pre-Heater ducts, Chimney, CPP/Gas Turbines, Fan inlet and outlet, From Fan to ESPs, Roasters Smelters, Waste Heat Recovery system
- **PETROCHEMICAL :** Air Pre-Heater, Fan inlet and outlet, Flue Gas/Hot air ducts, Gas Turbines, Reformer tubes, Waste Heat Recovery systems

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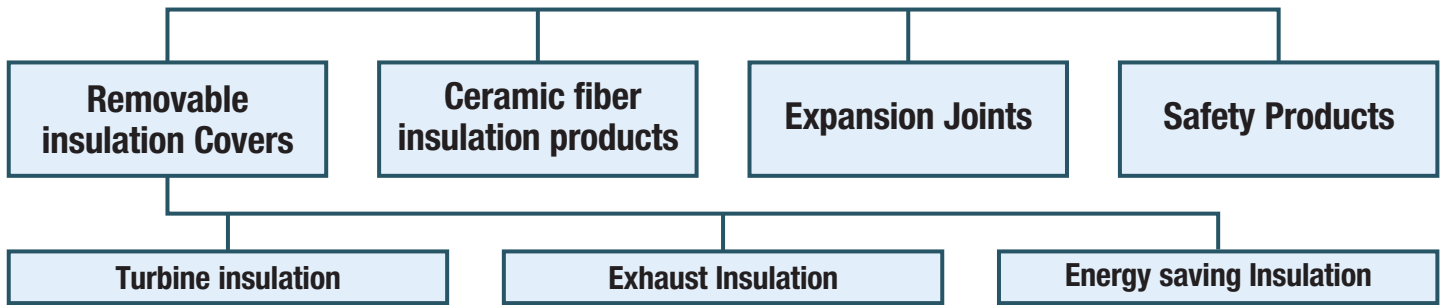
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ISO 9001 - 2008

# PRODUCT DIVISIONS



*Hi-Tech Thermal Insulations pvt ltd,. The only Integrated manufacturer and supplier of wide range of Removable Insulation Covers for Turbine & Exhaust Insulation, high temperature technical fabrics, Expansion joints, Energy Saving insulation covers ,ceramic insulation products & Safety Products, covering varieties of industrial applications with an ultimate objective to replace asbestos.*

*HI-TECH over two decades serving to Petrochemicals, Steel, Power, Cement, Nuclear, Heavy Engineering, DG set manufacturers, Automotive, shipbuilding Industry, Defense R&D and many more..... Exports to Gulf, Europe, Malaysia, Russia, South Africa through our OEM Partners,.*

*Hi-Tech backed up by highly qualified professionals, engineers who are expertized in the field of thermal management applications over decades. We at Hi-Tech Thermal, engineered to work for Ultra- high temperature applications upto 2,000° C.*

*At Hi-Tech Research is an ongoing process ..... Not merely developing new products ? But also reducing the "processing and purchasing costs of our customers"*

### **Production Capabilities & Infrastructure :**

*Our comprehensive line and custom fabrication capabilities covers to an area of 15000sq.mtrs. in Navi Mumbai and Kolhapur, can accommodate even the most extreme sizes in the manufacture of varieties of thermal insulation products. The Complete production process is thoroughly screened for consistency in the quality of the product.*

**ISO Certification :** *Our Company updated with latest ISO Certification: ISO 9001: 2008*

**Crisil Rating :** *Our Company is verified by Crisil*

### **Global Energy- Conservation :**

*Realizing the global energy conservation, Hi-Tech not only confined to the supply of thermal insulation products but also offers services in helping the industry control extreme temperature applications, in recommending the appropriate innovative energy saving insulation products to its customers*

## **Authorised Local Representative**



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