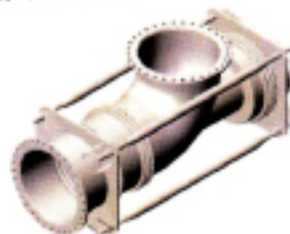


■ PRESSURE BALANCED TYPE EXPANSION JOINT (MSB)

If the diameter of the pipe is excessively large or high pressure is running in the pipes, anchors must be installed to restrain the thrust of the expansion joint. However when conditions would not allow the installation of anchors, this pressure balance type expansion joint has to be used. According to the location of installation, L type (MSB-Bent Pipe Balanced) or S type (MSB-Straight Pipe Balanced type) is used.



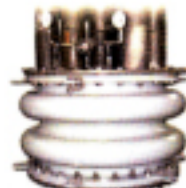
"L" type PRESSURE BALANCED EXPANSION JOINT



"S" type PRESSURE BALANCED EXPANSION JOINT

■ EXPANSION BELLOWS FOR HEAT EXCHANGER

The expansion bellows for heat exchanger is used to restrain the heat stress, which is generated by temperature difference between the heat exchanger shell and the tube. Installed on the shell of the heat exchanger, the bellows prevent the heat stress from reaching the body or the tube.



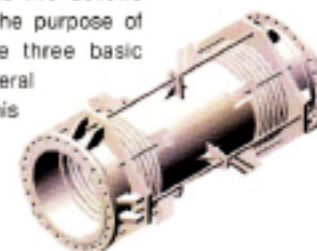
■ BELLOWS for GIS (SF6 GAS Insulated Switchgear)

Expansion bellows used for the GIS device absorbs the shock generated during switching on and off. This bellows also permits changes in shape and length due to fluctuations in temperature while absorbing movements due to repair, reassembly or earthquake.



■ UNIVERSAL TYPE EXPANSION JOINT-UN TIED & TIED

A universal expansion joint contains two bellows joined by a intermediate pipe for the purpose of absorbing any combination of the three basic movements, i.e. axial movements, lateral deflection, and angular rotation. This model is used for pipelines with bigger lateral movements than the single type.



■ SINGLE TYPE EXPANSION JOINT-UN TIED & TIED

The simplest form of expansion joint, of single bellows construction, designed to absorb all of the movements of the pipe section in which it is installed. According to operated pressure of a device, this model is manufactured with or without the shrink ring.



Design Applications

Note: Above design is available for all applications. Different types of main body structures are available according to user's duct installation conditions.

Components and Features

- A Belt**
High performance gas seal membrane
Heat Seal Splice
Flexibility for moderate movements
Repairable
- B Insulation**
Formed by needle insulation blanket
Reinforced with wire mesh
Must not allow temperature to exceed belt maximum
- C Flow Liner**
Increase Service Life
Outage personnel safety
- D Radiused Back-Up Bar and Frame Edges**
Protects belt from damage
- E Outboard Flanges**
Allows radiant cooling
Lower cost belt installation
Easier belt access
- F Cuff-Flange Insulation**
Produced with woven glass fiber tape
Protects a belt from high hot flange and back-up bar

Design Applications

Note: Above design is available for all applications. Different types of main body structures are available according to user's duct installation conditions.

Components and Features

- A Belt**
High performance gas seal membrane
Heat Seal Splice
Flexibility for large movements
Repairable
- B Insulation**
Formed by needle insulation blanket
Reinforced with wire mesh
Must not allow temperature to exceed belt maximum
- C Insulation Pillow**
Critical for reducing cavity temperatures
High performance insulation blanket
Wire mesh/silica cloth cover for long life integrity
- D Radiused Back-Up Bar and Frame Edges**
Prevents damage to the belt
- E Outboard Flanges**
Allows radiant cooling
Lower cost belt installation
- F Cuff**
Made of woven glass fiber tape
Protects a belt from Hot Flange and Back-Up Bar
- G Telescoping Lingers**
Required to install an insulation pillow properly
Dampens turbulence reduces temperature at the belt element



EXPANSION JOINT

METALLIC EXPANSION JOINT NON-METALLIC EXPANSION JOINT

HINGE TYPE EXPANSION JOINT (MSH)

A hinged expansion joint contains one bellows and is designed to permit angular rotation, by the use of a pair of pins through hinge plates attached to the expansion joint ends. The hinge arms and hinge pins must be designed to restrain the thrust of the expansion joint due to internal pressure. Hinged expansion joints should be used in sets of two or three to function properly.



GIMBAL TYPE EXPANSION JOINT (MSG)

A gimbal expansion joint is designed to absorb combined movements by the use of two pairs of gimbal arm and gimbal pin, which restrains the thrust of the expansion joint due to internal pressure while the bellows is designed to absorb angular rotation only. Gimbal expansion joints should be used in sets of two or three to function properly just like hinged expansion joints.



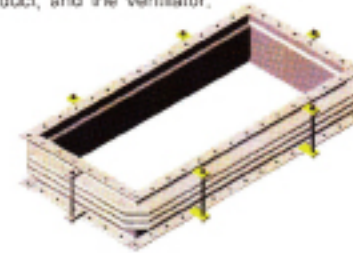
PRECISION BELLOWS

Hankook Raseonkwan's precision bellows are used for devices and valves requiring high precision and leakage protection.

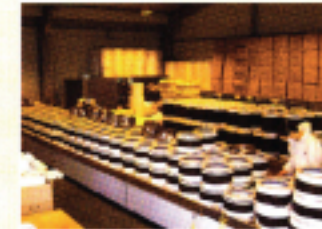
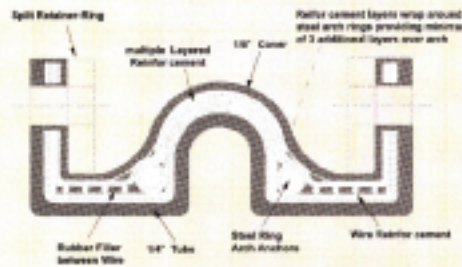


RECTANGULAR TYPE EXPANSION JOINT (MSQ)

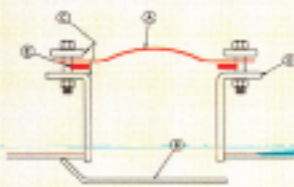
This product is designed to absorb heat expansion around large-scale rectangular line of high temperature and low pressure. This model is also designed to absorb movements and vibration of the dust collector, the exhaust duct, and the ventilator.



RUBBER EXPANSION JOINT



Design Applications

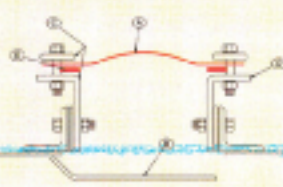


Note: Above design is available for all applications. Different types of main body structures are available according to user's duct installation conditions.

Components and Features

- A Belt**
High performance gas seal membrane
Heat Seal Splice (No vulcanization)
Flexibility for moderate movement
Repairable
- B Flow Liner**
Increases product's service life
Outage personnel safety
- C Radiused Back-Up Bar and Frame Edges**
Prevents the damage to the belt
- D Outboard Flanges**
Easy access reduces installation and replacement labor cost
- E Gasket**
Prevents gas leakage
Easy to installation
Selectively used according to the gas seal material in a belt

Design Applications



Note: Above design is available for all applications. Different types of main body structures are available according to user's duct installation conditions.

Components and Features

- A Belt**
Chemical resistant barrier,
High performance gas seal membrane,
Heat Seal Splice (No vulcanization)
Flexibility for moderate movements,
Repairable.
- B Flow Liner**
Increases product's service life,
Outage for personnel safety.
- C Radiused Back-Up Bar and Frame Edges**
Prevents damage to the belt.
- D Outboard Flanges**
Easy access reduces installation and replacement labor cost.
- E Gasketing**
Chemical resistance required,
Prevents gas leakage,
Easy to installation