



Rectangular expansion joints

Large rectangular expansion joints are usually found in low-pressure, high-temperature duct work and are used to accommodate expansion of the duct without generating large forces at the fixed points.

In addition to our core product of circular compensators in a wide range of styles, sizes and materials we also provide rectangular compensators. The unit shown is to be installed in a gas duct work in Wales. The expansion joint is complete in our factory and awaiting shipment. It is a tailored solution and was designed by our sister company in United Kingdom, John Cardwell Limited, and fabricated at the Belman facility in Denmark, where the large workshop space and superb handling facilities lend themselves to such work.

1068°C inside and 90°C on the outside

This compensator is designed to carry exhaust gas at temperatures up to 1068°C. To withstand this temperature a special flow liner made from 1.4845 is fitted. The liner is made with expansion gaps to enable it to expand at the operating temperature without generating unacceptable buckling at the hot face of the liner. As part of the installation the void in the flow liner is filled with an insulation bolster comprising high-temperature insulating materials. This reduces the temperature across the insulation to give a "skin" temperature of just 90°C. The compensator is installed in a horizontal duct and to prevent the tendency of the insulation bolster sections in the vertical sides compressing under their own weight support pins are introduced in the vertical flow liner sections.

Large dimension

The dimensions of the compensator are 7100 x 5200mm and the installed face-to-face length is 280mm. A single convolution is used on this unit as the movement is relatively low, 30mm compression from the installed condition, where larger movements are to be absorbed multi-convolution bellows are employed and different convolution profiles can be designed to accommodate specific movement and stiffness requirements specified by the system designer.

An air jet test was carried out to prove the integrity of the welds attaching the bellows section to the frames. When required we can also undertake dye-penetrant inspection of these welds. A special paint finish, matching the finish on the surrounding ductwork, was specified by the user, this involved blast-cleaning of exposed carbon steel surfaces and application of epoxy paint with the film thickness verified.

Is supplied in sections

For ease of transit and installation the unit is supplied broken down into 4-sections with butt joints in the frames at the long sides of the unit. On installation make-up sections of the bellows and flow liner are fitted and welded into position by the installer. The unit is fitted with shipping bars temporarily welded to the flange edges to brace the unit and prevent deflection during transit and handling into final position at the jobsite.

Many design options

We design and manufacture rectangular compensators with single and multi-convolution bellows, these units can be made with no restriction on size since they can be supplied broken-down for transport and installation as demonstrated here. Rectangular compensators can be designed to accept axial and lateral movement in combination, where significant lateral movement is to be absorbed a twin-bellows arrangement is usually required. Alternative corner arrangements can be supplied including single- and double miter and when necessary rounded corners are used. Frames and bellows are available in a wide range of materials, sizes and configurations to suit individual customer requirements. These compensators are invariably used as customised solutions to expansion problems in rectangular ducting; they are purpose-designed and manufactured to exactly match customer requirements.

Further information

For further information on this product or to discuss a specific requirement please contact us. Information about our expansion joints in general is found on our homepage:

www.belman.dk