

Solution

PosiFlex

Compensates for Expansion, Contraction
and Vibration in Pipe Systems



PIONEERS IN PIPE SOLUTIONS

CRANE

BUILDING SERVICES & UTILITIES



Advantages of PosiFlex Expansion Joints

Compensate for Axial Movements

Expansion and contraction movements, due to thermal changes or hydraulic surge effects, are compensated for by PosiFlex elastomeric expansion joints within a pipe system.

Compensate for Lateral, Torsion and Angular Movements

Pumps, compressors, fans, piping and related equipment move out of alignment due to wear, load stresses, relaxation and settling of supporting foundations. PosiFlex elastomeric expansion joints compensate for lateral, torsion and angular movements – preventing damage to equipment.

Vibration and Sound Absorption

PosiFlex elastomeric expansion joints dampen and insulate against the transmission of vibration and sound. This insulation is particularly important in air-conditioning and heating installations where piping-conducted noise can be transmitted throughout an entire building, and in piping systems where pump noises would ordinarily pass through equipment and pipelines. Unlike metal joints, PosiFlex elastomeric expansion joints are not subject to failure from vibration fatigue.

Corrosion/Erosion Resistant

PosiFlex elastomeric expansion joints do not corrode, the continuous flexing of the rubber does not permit scale to form. Unlike metal joints, which are susceptible to corrosion and erosion. A wide range of natural, synthetic and special purpose elastomers and fabrics can be used in the PosiFlex expansion joint construction to meet a wide range of pressure/temperature conditions, corrosive attack, abrasion and erosion. Teflon liners offer good resistance to corrosive and chemical attack.

Minimal Dimensions

PosiFlex elastomeric expansion joints are compact and often require less space than metal joints of the same internal diameter. The outside diameter of a PosiFlex expansion joint is often smaller than that of a comparable metal joint. PosiFlex multi-arch expansion joints have a smaller space requirement than pipe loops.

Ease of Installation

Because of their lightweight and extreme flexibility, PosiFlex expansion joints do not require special handling equipment and are easy to install. The rubber flanged design eliminates the need for gaskets, saving both cost and installation time. PosiFlex expansion joints do not have to be precompressed at the job site, as is sometimes necessary with metal expansion joints.

Shock Resistant

PosiFlex expansion joints are constructed mainly of synthetic elastomers which has natural 'shock-absorbing' properties. This provides protection against shock from excessive hydraulic surge, water hammer or pump cavitation from mechanical equipment, for example cooling towers, condensers and pipelines.

Greater Recovery from Movement

When a metal joint is fully compressed, it assumes a permanent set. A PosiFlex elastomeric expansion joint continues to return to its original form.

Freedom from Embrittlement

Failure of metal and polymeric joints is primarily due to continuous flexing which eventually results in fracture at the point of embrittlement. In PosiFlex elastomeric expansion joints, this same flexing keeps the rubber 'alive' and reduces flex cracking.

Eliminates Electrolysis

Since PosiFlex elastomeric expansion joints have full-face rubber flanges, no metal-to-metal contact is made through the joint, consequently electrolytic action is interrupted and its corrosive effects reduced.

Economy

PosiFlex elastomeric expansion joints are a low cost alternative to mechanical compensation systems. This economy is realised in space, ease of installation, labour and maintenance. This eliminates the need for related support equipment necessary for expansion loops or metal joints. PosiFlex expansion joints cause little or no pressure drop in piping systems (as would a loop), meaning that piping and pumping systems do not have to be 'upsized'.

Maintenance Free

Unlike metal joints, which often require periodic replacement of the mating flange gaskets, PosiFlex elastomeric expansion joints being gasket-free are virtually maintenance free over their entire service life.

Expansion Joint Selection

For the selection of the most suitable PosiFlex expansion joint, the following basic criteria must be determined:

Size – joint nominal bore size, required face-to-face length and mating flange size/specification.

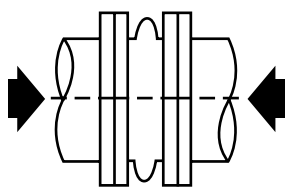
Pressure – operating, design, surge and test pressure of the system

Movement – axial, lateral, angular, and torsional (if applicable)

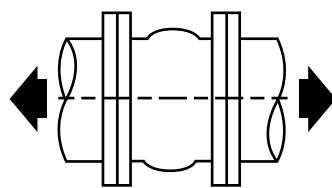
Medium – type of fluid, air, gas or powder

Temperature – minimum and maximum range

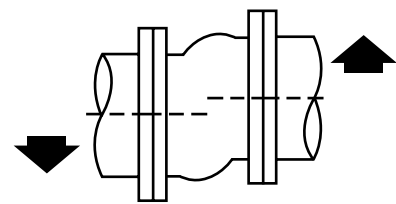
PED requirements – Group 1-2 liquid, Group 1-2 as, SEP, CAT 1. (EU applications only)



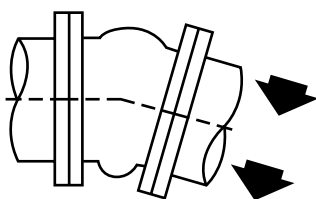
Axial Compression



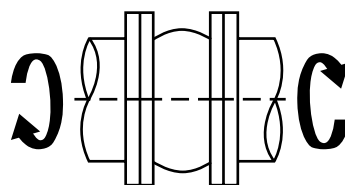
Axial Extension



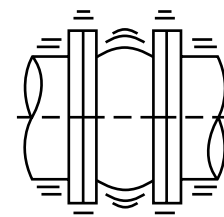
Lateral Deflection



Angular Movement



Torsional Movement



Vibration

1. Size

PosiFlex expansion joints are available in sizes from 25mm (1") nominal bore up to of approximately 3600mm (144"). NB. Special, larger sizes available on application, with dimensions available on request.

2. Pressure

When making any design calculations on PosiFlex expansion joints it is important to consider the maximum pressure of the system, not the operating pressure. This could be either surge or test pressure. Remember that pressure may be positive or negative (vacuum).

The pressure capabilities of a PosiFlex joint are limited by the reinforcement of the carcass at the arch area. Standard pressure ratings exist for each style of PosiFlex expansion joint. If requirements exceed these ratings, special constructions are available on request.

Standard face-to-face dimensions of the joints are detailed on the technical datasheets, other non standard dimensions available on request.

3. Movement

PosiFlex expansion joints are designed to accommodate axial (compression and elongation), lateral, angular and torsion movements.

All movement capabilities are dependent upon the size and number of arches. For increased movement capability, more arches can be added (up to a maximum of four for most sizes).

4. Medium

The medium conveyed through the PosiFlex expansion joint can be fluid, gaseous or powder. The tube material of the joint must be compatible with the medium it is carrying.

Abrasive materials may require a thicker and/or softer tube to improve service life.

Note that in some cases the surrounding environment must be considered. The outer cover may be exposed to oils, chemicals, acid fumes or sunlight.

5. Temperature

Temperature ratings of expansion joints are governed by the materials of construction. Please contact PosiFlex for details.

6. Pressure Equipment Directive (PED) Regulations 1999

The PosiFlex expansion joint is interpreted as being defined as a pressure accessory within the Pressure Equipment Regulations 1999.

For the purposes of defining the product classification, expansion joints are considered as piping, not vessel, where the nominal size DN is more appropriate than the volume. Therefore for group 2 liquids for pressures above 0.5bar up to and including 10bar for all sizes, the classification is SEP (Sound Engineering Practices) and therefore cannot bear the CE mark.

Against this requirement PosiFlex products are designed and manufactured under ISO 9000 quality management systems to sound engineering practices. Additionally the products are marked for manufacturer identification and traceability and are accompanied by appropriate fitting instructions.

PosiFlex Heavy Duty Expansion Joints / Maxi-Joint

Specifications

Style 1100



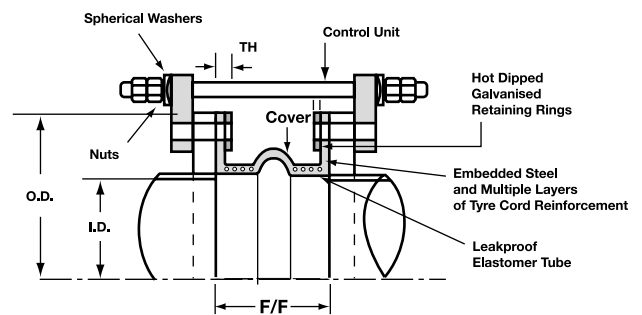
Features & Benefits

- ▶ Versatile hand-built construction
- ▶ Standard or custom face-to-face dimensions
- ▶ Wide flowing arch design
- ▶ Exceptional all directional movement capability
- ▶ Virtually eliminates sediment build-up
- ▶ Higher pressure rating than conventional expansion joints
- ▶ Excellent chemical and abrasion resistance
- ▶ Full vacuum rating (-1 Bar g) in all style 1101 sizes
- ▶ For multi-arch full vacuum applications refer to style 1200
- ▶ 121°C continuous services standard, 204°C available
- ▶ Filled arch design available
- ▶ Standard drillings include: ANSI/AWWA, DIN and PN
- ▶ Hot dip galvanised retaining rings standard
- ▶ Wide variety of tube and cover elastomers available, including pure gum rubber, EPDM, neoprene, butyl, nitrile, Viton®, food grade and more
- ▶ Absorbs noise, vibration and shock
- ▶ Compensates for minor misalignment and offset
- ▶ Low stiffness and deflection forces
- ▶ Integral flanged design, no gaskets required
- ▶ Simple to install, lightweight and high strength
- ▶ Provides easy access to piping and equipment

Style 1101

Features & Benefits

- ▶ Single (1) Arch



Control Unit Style SW/B
CStyle 1101 Single (1) Open Arch



Optional Filled Arch Construction
Also Typical for Other Styles

Style 1101 Single Filled Arch

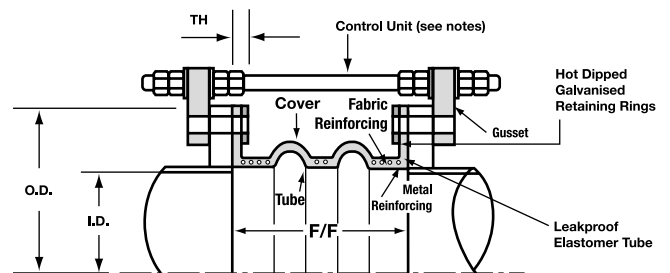
PosiFlex Heavy Duty Expansion Joints / Maxi-Joint

Specifications

Style 1102



Control Unit Style W/W

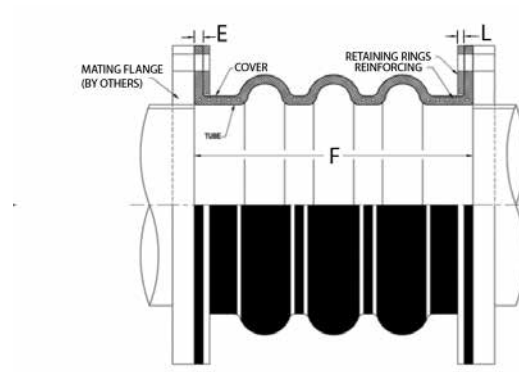


Style 1102 Double (2) Open Arch

Features & Benefits

- ▶ Double the movement with 1/2 the spring rate

Style 1103

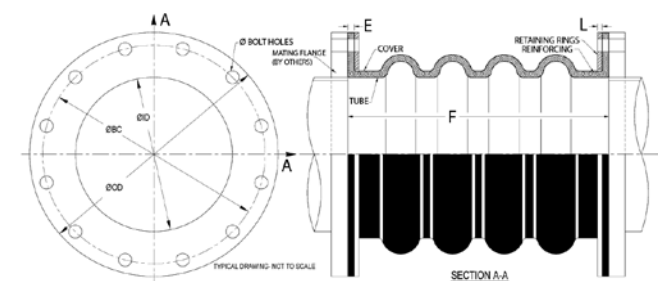


Style 1103

Features & Benefits

- ▶ Triple the movement with 1/3 the spring rate

Style 1104



Style 1104

Features & Benefits

- ▶ Quadruple the movement with 1/4 the spring rate

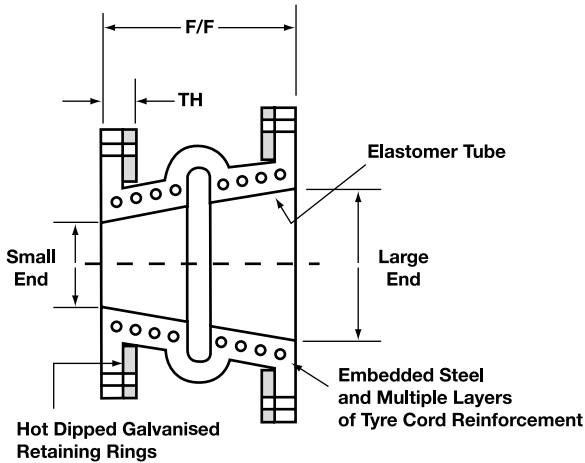
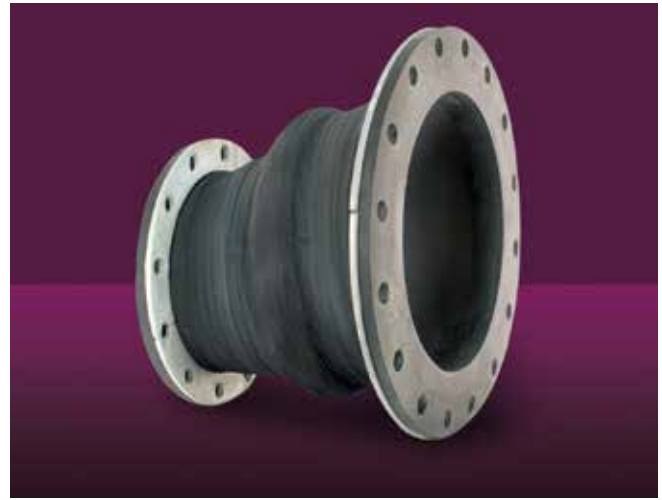
PosiFlex Reducer Type Expansion Joint - Concentric / Eccentric

Specifications

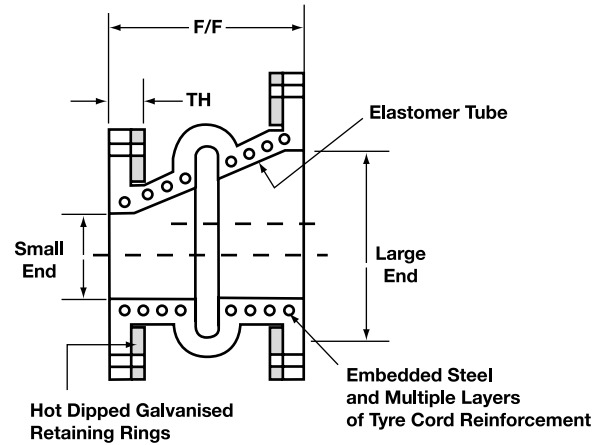
Style 1101CR



Style 1101ER



Concentric Reducer



Eccentric Reducer

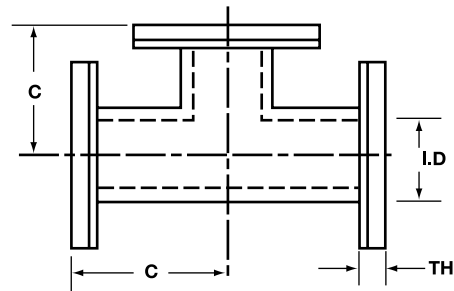
Features & Benefits

- ▶ An economic and space saving way to combine a reducing pipe fitting with an expansion joint
- ▶ Available in concentric, eccentric or custom offset arrangements
- ▶ Versatile hand-built construction
- ▶ Standard or custom face-to-face dimensions
- ▶ Excellent all directional movement capability
- ▶ Absorbs noise, vibration and shock
- ▶ Multiple plies of tyre cord reinforcement and a wide variety of tube and cover elastomers available
- ▶ 121°C continuous services standard, 204°C available
- ▶ Standard drillings include: ANSI/AWWA, DIN and PN
- ▶ Integral flange design, no gaskets required

PosiFlex Rubber Flanged Sound Zorbers

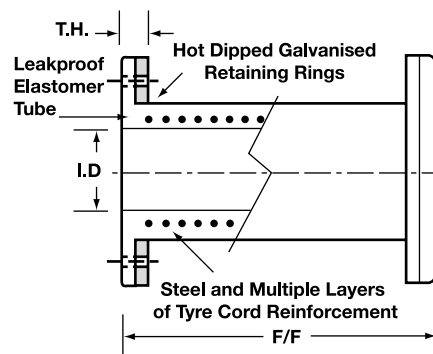
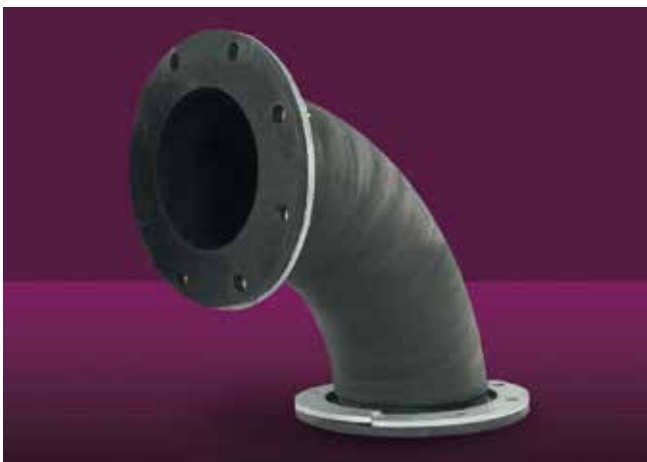
Specifications

Style A15



Style A15 - Tee

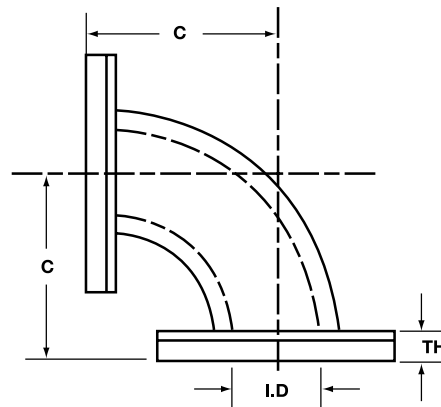
Style A15-90



Style A15 - Straight

Features & Benefits

- The capacity of a flexible connector to absorb noise and vibration is directly proportional to its flexible length; this original design pre-dates the spherical connector and is still preferred by many design engineers and is considered the ultimate in noise and vibration control
- 121°C continuous services standard, 204°C available
- Standard drillings include ANSI/AWWA, DIN and PN
- Versatile hand-built construction, available as reducers both concentric and eccentric, as well as elbows and tees; elbows in long or short radius to ANSI dimensions
- Excellent chemical and abrasion resistance
- Wide variety of tube and cover elastomers available
- Integrally flanged design, no gaskets required
- Style A15-TF = Tee Pieces
- Style A15-45 = 45° Elbow
- For elbows, tee pieces and reducers dimensions please contact PosiFlex



Style A15 - Elbow

PosiFlex Control Units & Dismantling Joints

Specifications

To Suit 1100 & 1200

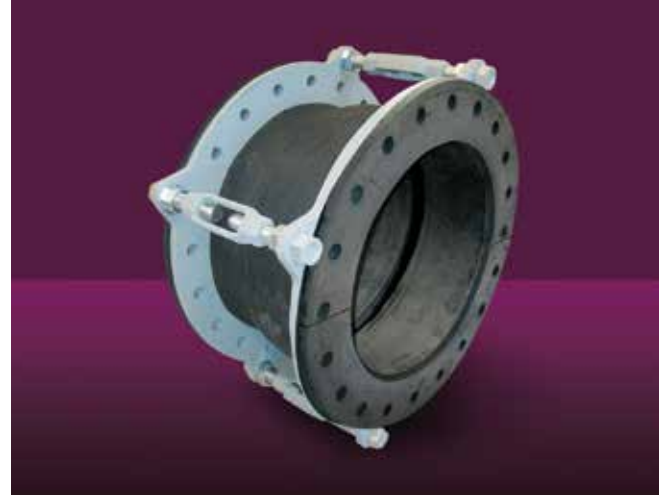
Control Unit



Features & Benefits

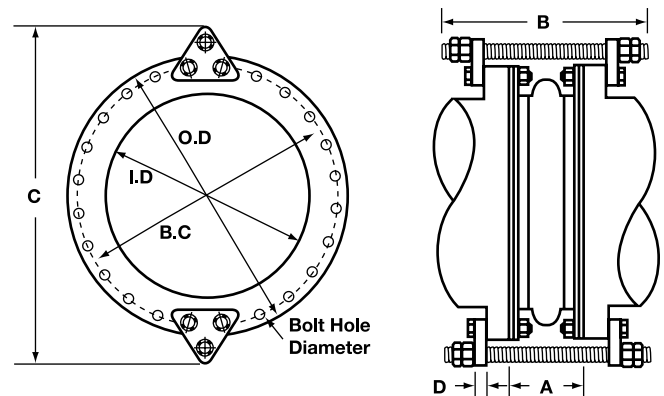
- ▶ Protects expansion joints from over-expansion and over-compression
- ▶ High tensile galvanised steel rods standard, stainless steel and other materials available
- ▶ Galvanised gusset plates standard, stainless steel and other materials available
- ▶ Rubber grommets isolate vibration and are standard on sizes 25-500 mm DN
- ▶ Internal nuts or compression sleeves available and prevent over-compression
- ▶ Spherical washers available and prevent binding while minimising lateral forces
- ▶ Double nuts are used to lock limit points and allow for field adjustment
- ▶ Standard drillings include ANSI/AWWA, DIN and PN
- ▶ Universal tied/self-guiding control units available and prevent squirming on longer expansion joints
- ▶ Hinges are available and allow for angular movement in one dimension
- ▶ Gimbals are available and allow for angular movement in two dimensions

Style 1101DJ

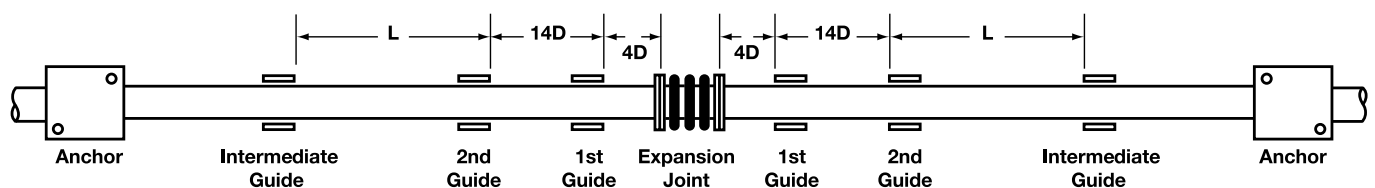


Features & Benefits

- ▶ D1101DJ can be made to suit site specifications
- ▶ Rubber joints that are easily pulled-back to allow clearance and easy access to an adjacent valve



Expansion Joint with Control Unit Fitted



Typical Application of Expansion Joint in Straight Line Pipework

United Kingdom - London

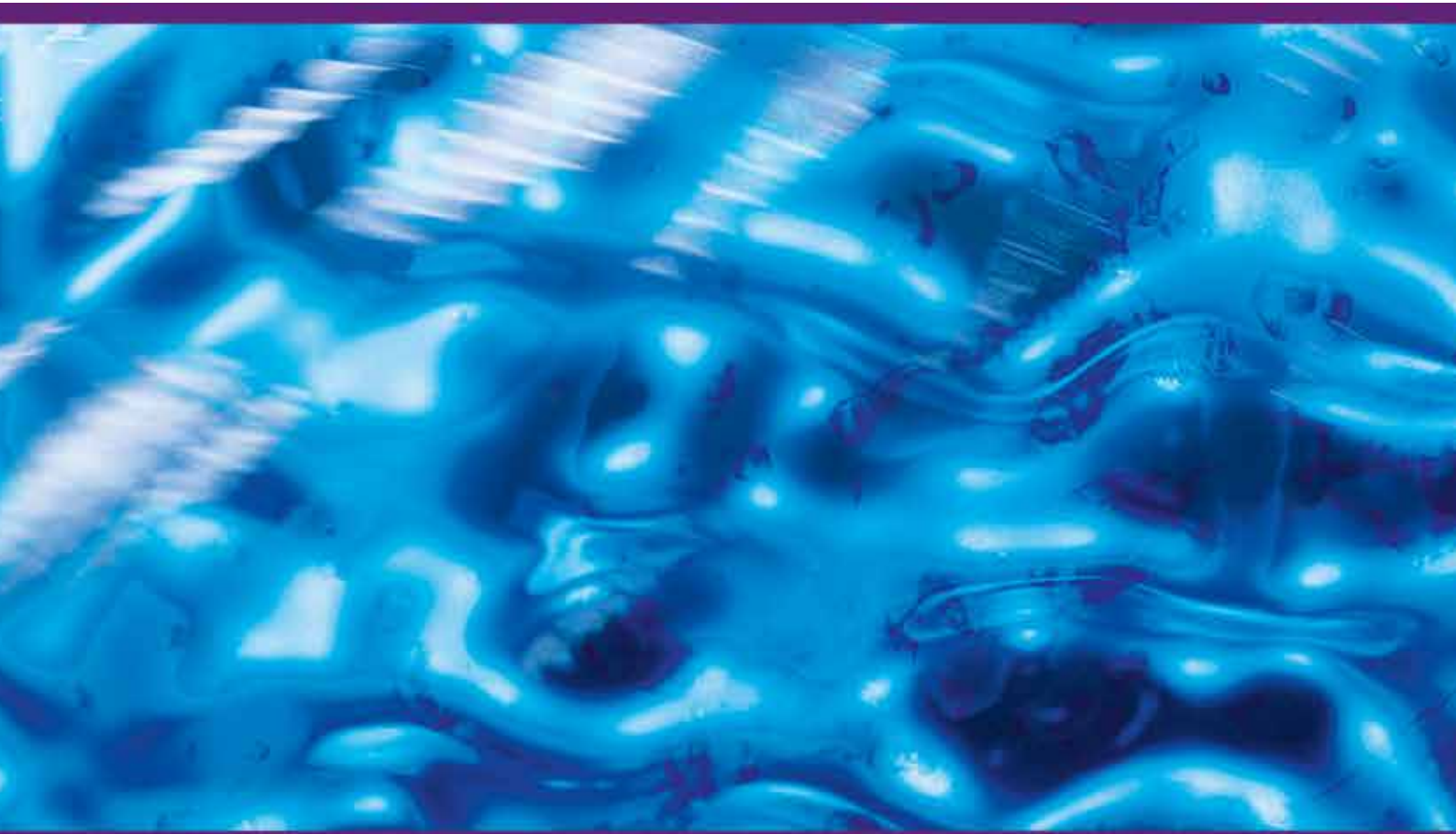
Heron Tower

PosiFlex Expansion Joints

Project

Heron Tower is the tallest building in London's financial district standing 230 metres high. Posiflex expansion joints were chosen to protect the gigantic foyer aquarium from pressure variations that can develop within the system. The joint was fitted in vertical pipework connecting filtered water supplies to 'the monster eye catching fish tank' - a key feature of the development.





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