

RELY ON EXCELLENCE

## CB Clamshell metal expansion joints

Expansion Joints | Metal expansion joints



### Features

- Bellows or expansion joints split into longitudinal segments for installation without opening pipework.
- Temporary repair solution for damaged expansion joints.
- Can handle axial, lateral and angular movements.
- The permissible combination and magnitude of movements depends on the application and the existing expansion joint that is to be repaired.

### Functional description

CB Clamshell expansion joints are cut into (most commonly two) longitudinal segments once their manufacture is complete. Because they have been cut, they can be installed around existing pipe with no need for the pipe itself to be cut or opened. Once the pieces are in place, they are welded together by expert welders, to create the whole expansion joint.

### Notes

#### Quality control and testing options:

- Full x-ray of bellows longitudinal seam weld before formation of convolutions.

### Advantages

- In non-critical failures, permits repairs to expansion joints without shutting the plant down.
- Provides temporary expansion joint repair until a scheduled outage.
- In critical failures, enables rapid restart after an emergency shutdown.
- Can facilitate repair when access to the expansion joint is via confined spaces.

### Operating range

Diameter: Up to 4,250 mm (170")  
 Process temperature: Up to 900 °C (1,650 °F)  
 Pressure: Up to 80 bar (1,200 PSI)

### Materials

- Bellows material: SA240-304, SA240-304L, SA240-316, SA240-316L, SA240-321, Inconel® 625 LCF (low cycle fatigue) nickel alloy, Inconel® 800H, other materials on request.
- Bellows basics: single ply, formed by punch mandrel, thin-wall. Cut into longitudinal segments once manufacture is complete. Ply thickness 0.7 mm (0.03") ... 3.0 mm (0.12").
- Weld ends and/or rings: material selected to suit the application

### Standards and approvals

- B31.3 process piping
- ASME Section VIII, Division 1, R (repair, unfired) pressure vessel certificate.
- European Pressure Equipment Directive (PED) 97/23/CE
- Expansion Joint Manufacturers Association (EJMA)
- ISO 9001:2008

### Recommended applications

- Petrochemical industry
- Refining technology
- Any application in any industry where an existing expansion joint is to be repaired without cutting or opening the pipe.

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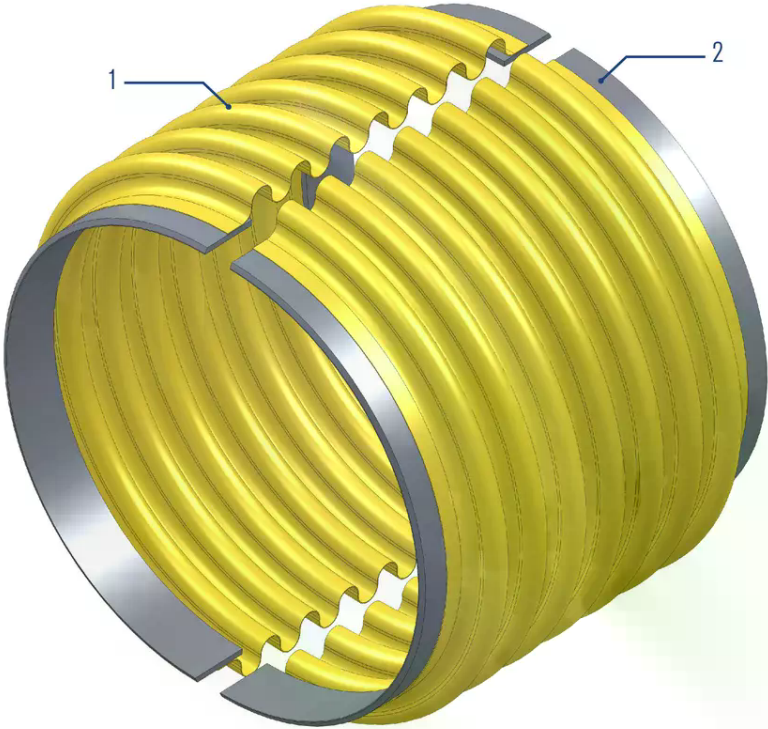
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- Full dye penetrant test of bellows longitudinal seam weld inside and outside before and after forming of convolutions.
- 100 % dye penetrant test of bellows attachment welds (if applicable). This would be done prior to the expansion joint being split into segments.
- Impact testing of weld ends
- Hardness test
- Positive Material Identification

### Service:

- Expert clamshell bellows welders available to perform these highly-specialized welds.
- All field welds can be 100 % dye penetrant tested.
- Welding teams able to work at height and in confined spaces, provided safety requirements are met.
- Experienced supervision by our field service personnel available for overall expansion joint repair guidance.

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Item	Description
1	Clamshell bellows 1-ply
2	Weld end

### Installation, details, options

- Depending on the application:
- Reinforced ply (bolted root rings) available when the design requires it.
  - Annealing may be performed depending on the application and design requirements.
  - Connections: none, weld ends, rings, weld ends with rings.
  - Covers: external protective cover.
  - External insulation
  - New external hardware or reinforcement of existing external hardware to accommodate modified CB Bellows geometry.