

RELY ON EXCELLENCE

## Penetration seal metal expansion joints

Expansion Joints | Metal expansion joints



### Features

- 100 % airtight solution to boiler penetration.
- Permits axial and lateral movement without causing high stresses in penetration pipe and boiler wall.
- Maintenance-free
- Used in heat recovery steam generators (HRSGs).

### Functional description

Metal expansion joints are used in pipelines to compensate for thermal growth, typically in applications with high internal temperatures; or to prevent vibrations from being transmitted beyond the expansion joint.

### Notes

#### Standard quality control and testing:

- Air and soap bubble leak check.

#### Service:

- Skilled field service teams can provide site support.
- Expert clamshell (split bellows, for in situ repair) bellows welders.

### Advantages

- Improved boiler efficiency through zero gas seepage.
- Improved boiler efficiency through reduced heat loss.
- No emissions
- Noise reduction

### Operating range

Diameter: 75 mm (3") ... 750 mm (30") bellows inside diameter

Process temperature: Up to 650 °C (1,200 °F)

Pressure: Up to 1 bar (15 PSI)

Typical axial movement limit: ±200 mm (±8")

Typical lateral movement limit: 200 mm (8")

Typical angular movement: 0°

Movements are non-concurrent.

### Materials

- Bellows material options: 1.4301(ANSI 304), 1.4404 (ANSI 316/L dual-certified), 1.4541 (ANSI 321), Inconel® 600, Inconel® 625, 254 SMO®, Incoloy® 25-6HN.
- Bellows basics: formed by punch mandrel, thin-wall ply thickness ≤1.5 mm (0.060").
- Rings, bands: carbon steel, chrome-moly.
- Metal covers: carbon steel, stainless steel.

### Standards and approvals

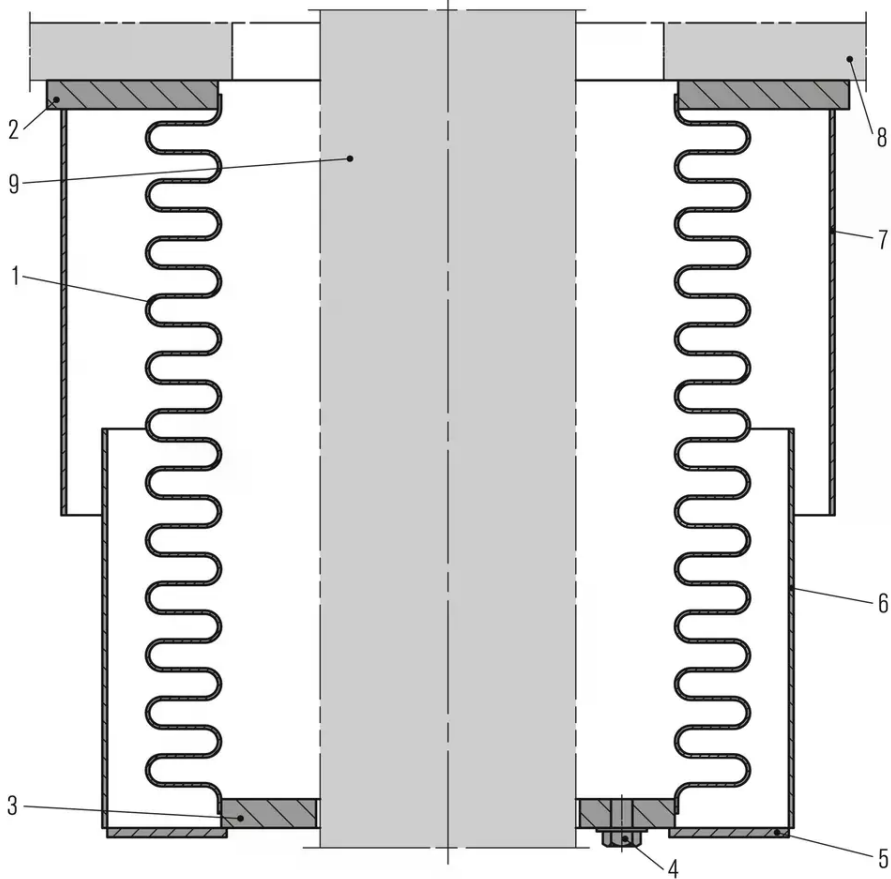
- GE Specification
- Expansion Joint Manufacturers Association (EJMA)
- ISO 9001:2008

### Recommended applications

- Power plant technology
- Refining technology
- HRSGs (heat recovery steam generators)

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- Experienced supervision by our field service personnel available.



**Penetration seal (with telescopic covers option) area cross section.**

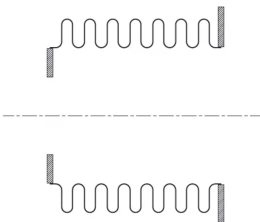
Item	Description
1	Bellows
2	Outside ring
3	Inside ring
4	Drain plug (optional)
5	Cover ring (optional)
6	Inside cover (optional)
7	Outside cover (optional)
8	Boiler wall*
9	Penetration pipe*

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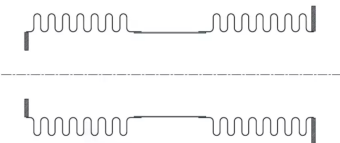
## Installation, details, options

- Depending on the application:
- Single-ply or multi-ply
  - Inside ring options: inside diameter to fit pipe or pipe band; rectangular slot to fit hanger.
  - Drain plug

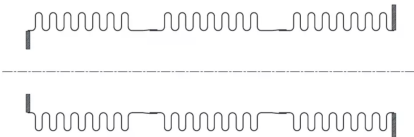
### Standard bellows configuration



*+Universal bellows configuration\**

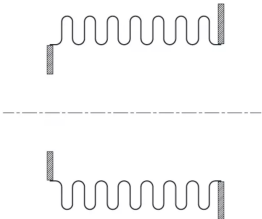


### Bellows for extreme movements

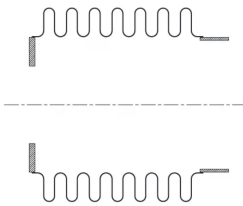


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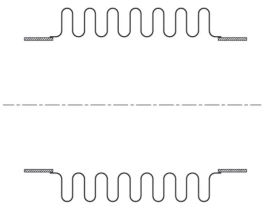
*End configuration: Ring - Ring\**



**End configuration: Ring - Band**



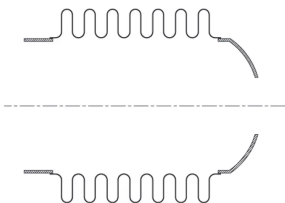
**End configuration: Band - Band**



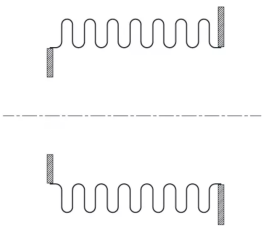
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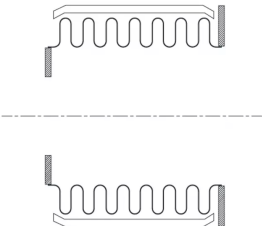
**End configuration: Band - Perforated pipe cap**



**Cover option: No cover**

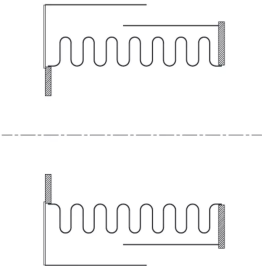


**Cover option: Soft cover (fire-resistant fabric)**

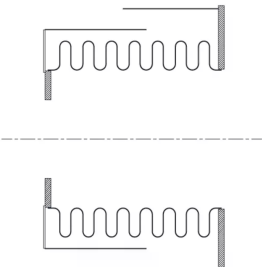


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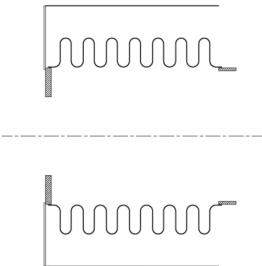
**Cover option: Reverse telescopic cover**



**Cover option: Telescopic cover**



*Cover option: Single cover\**



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Cover option: Universal cover

