



# Various Type of Bellows

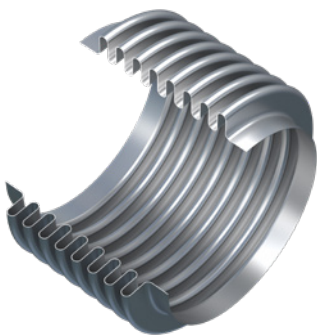
Since its founding in 1986, Megaflexon has devoted to research, development, and manufacture of the high levels of expansion joints in quality and reliability.

[www.megaflexon.com](http://www.megaflexon.com)

## THE BELLOWS

Bellows may be either U-shaped or toroidal ( $\Omega$ -shaped) in cross-section. The U-shaped bellows is superior for great deflection but has a lower pressure capacity for the same material thickness. Conversely, toroidal ( $\Omega$ -shaped) bellows is limited to small deflection but has a higher pressure capacity. The use of external reinforcement of the U-shaped can provide a combination of great deflection and high internal pressure capacity, and the pressure capacity can also be increased by the use of multi-ply construction or by increasing the material thickness of the bellows. The U-shaped bellows is mostly manufactured and used in industries, and the  $\Omega$ -shaped bellows has limited application in case of high pressure and small deflection requirements.

Megaflexon manufactures bellows using a variety of methods, such as hydroforming and hydraulic mandrel punch forming etc. Hydroform process is used for relatively small bellows forming, and hydraulic mandrel punch forming process is used for relatively large bellows forming (up to 4500mm). Although the forming method is different, both ways are providing efficient ways of uniform structure with adequate dimensional accuracy.



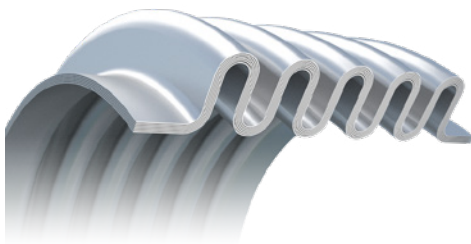
▲ HIGH CORRUGATION BELLOWS



▲ MIDDLE CORRUGATION BELLOWS



▲ OMEGA BELLOWS

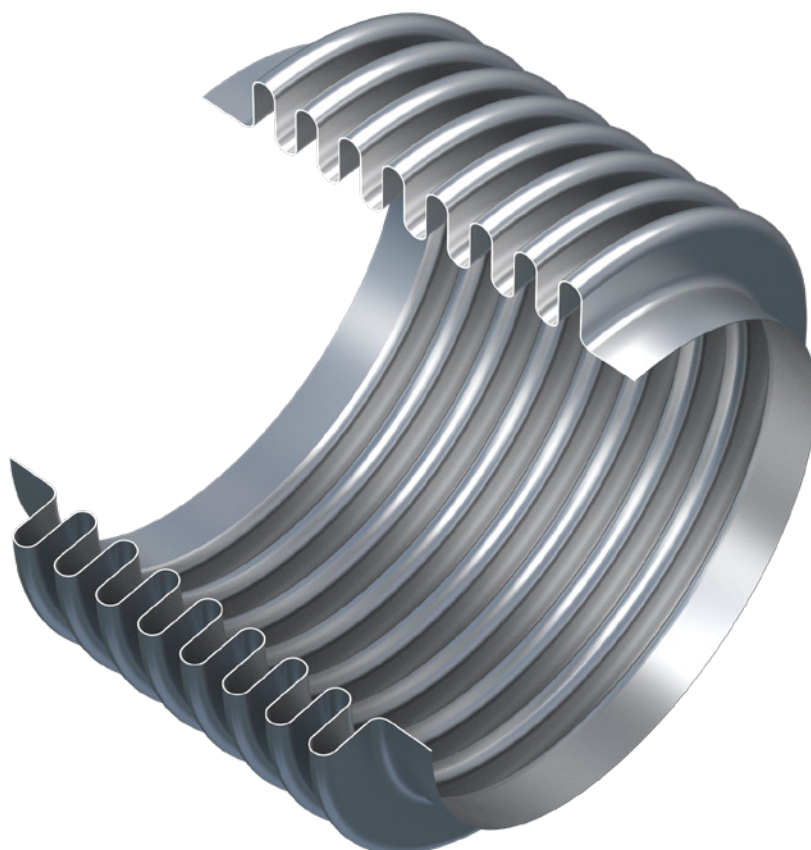


▲ MULTI-PLY BELLOWS



▲ TOROIDAL BELLOWS

## HIGH CORRUGATION BELLOWS

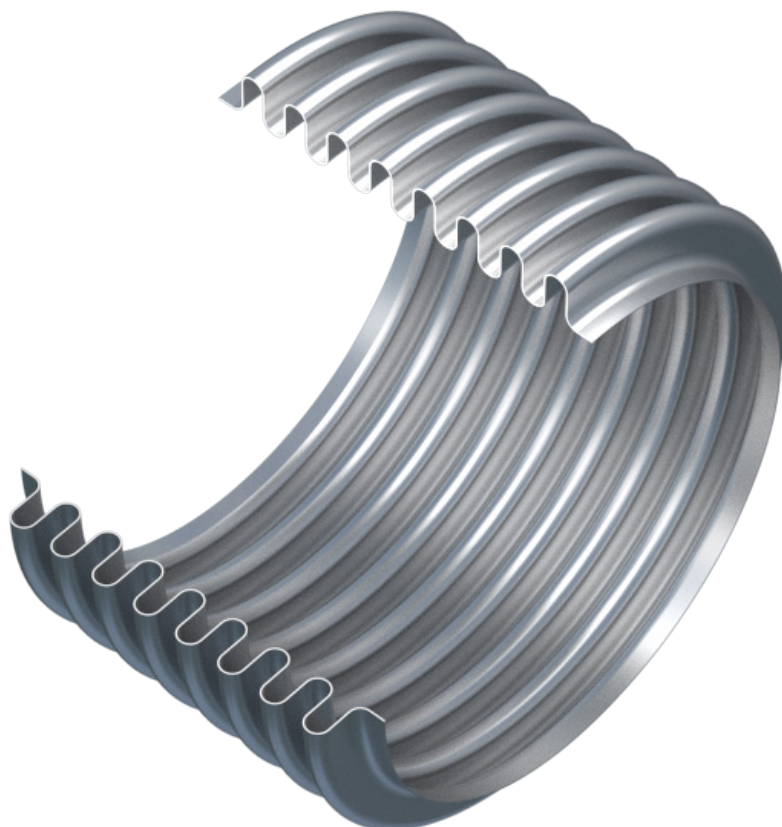


|                    |   |
|--------------------|---|
| <b>Nominal Dia</b> | 300A – 6000A  |
| <b>Materials</b>   | Stainless Steel–Type 300 Austenitic Series<br>Super Duplex Stainless Steel<br>Nickel Alloys<br>Hastelloy<br>Titanium<br>Zirconium<br>Hayness 230 & etc. |

### Features

- Excellent flexibility comes from the high convolution and long fatigue life.
- Bellows Forming Method : Hydroforming & Hydraulic Mandrel Punch Forming

## MIDDLE CORRUGATION BELLOWS

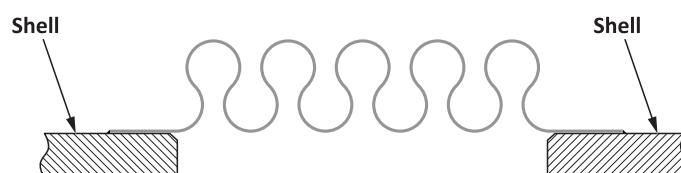
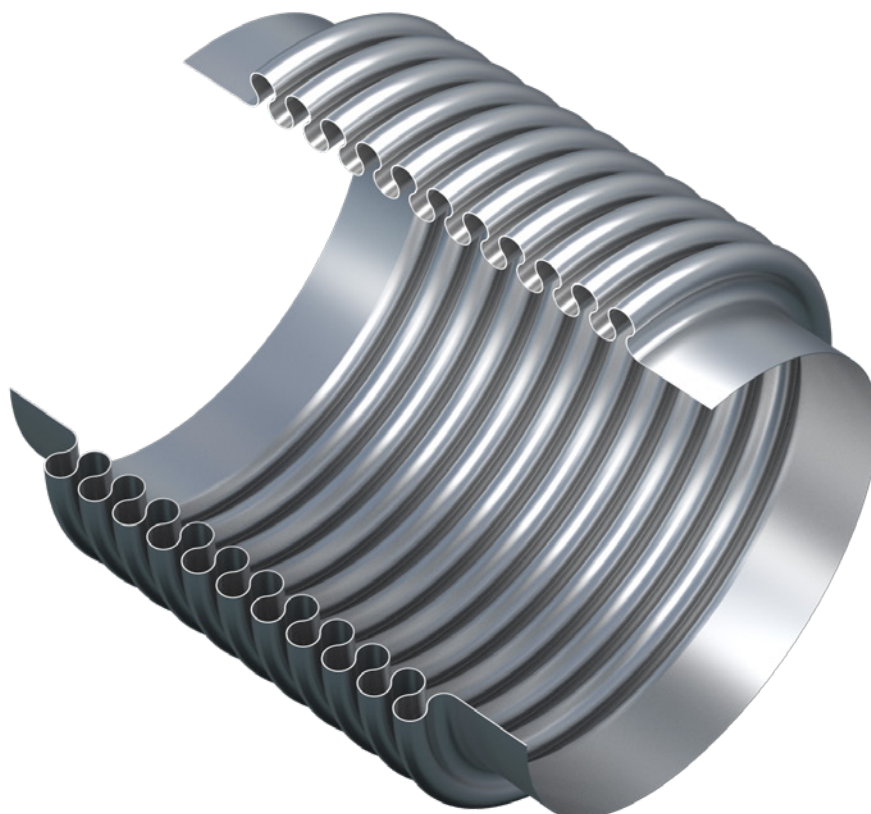


|                    |   |
|--------------------|---|
| <b>Nominal Dia</b> | 1000A – 3000A   |
| <b>Materials</b>   | Stainless Steel–Type 300 Austenitic Series<br>Super Duplex Stainless Steel<br>Nickel Alloys<br>Hastelloy<br>Titanium<br>Zirconium<br>Hayness 230 & etc. |

### Features

- Flexible & bellows in large size formed with 2ply of 0.3t ~ 1.2t plates.
- Bellows Forming Method : Hydroforming & Hydraulic Mandrel Punch Forming

## OMEGA BELLOWS



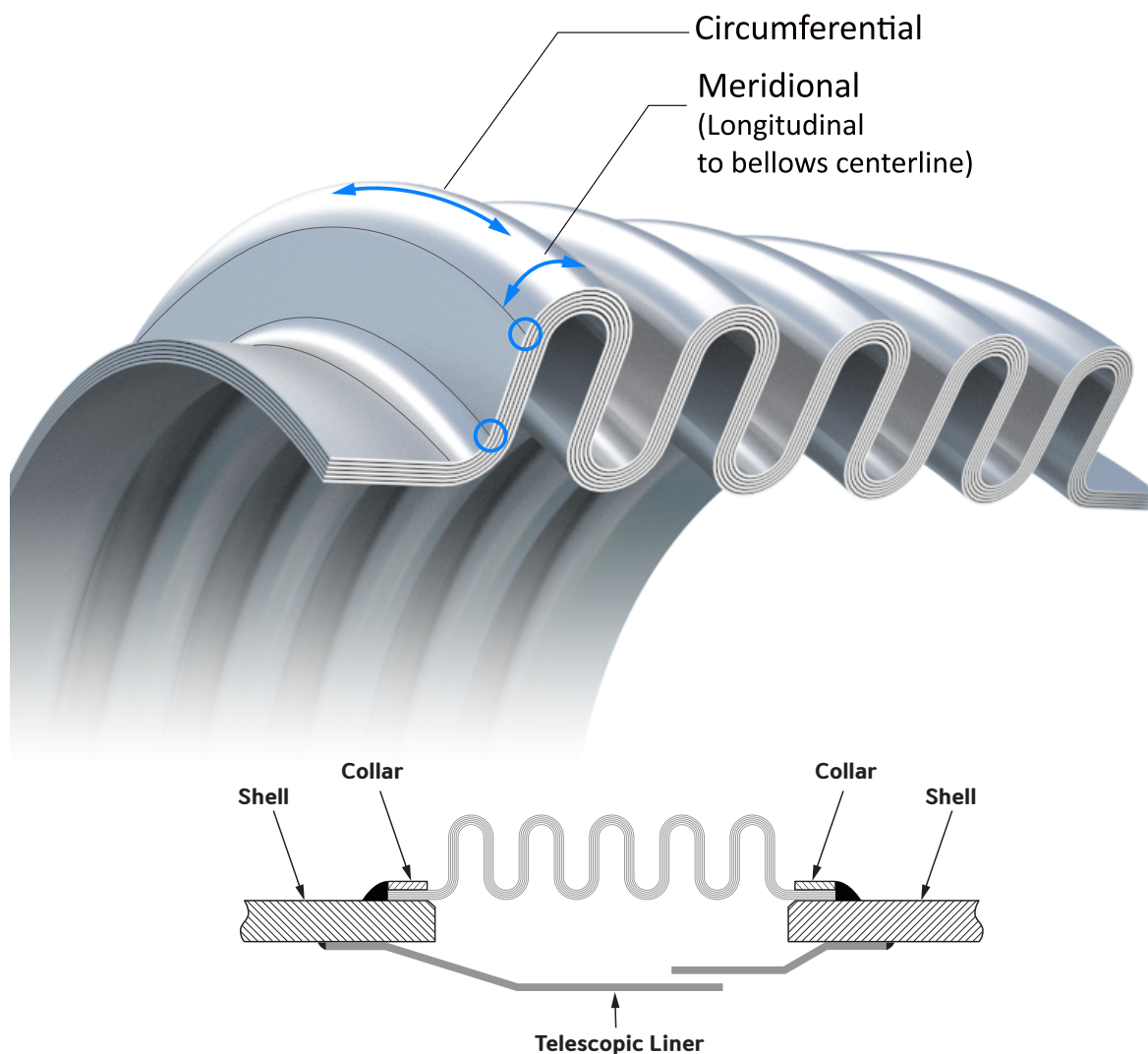
|                    |   |
|--------------------|---|
| <b>Nominal Dia</b> | 25A – 1800A   |
| <b>Materials</b>   | Stainless Steel–Type 300 Austenitic Series<br>Super Duplex Stainless Steel<br>Nickel Alloys<br>Hastelloy<br>Titanium<br>Zirconium<br>Hayness 230 & etc. |

### Features

- The convolution configuration is Omega shape which is circles connected continuously and has superior fatigue life.
- Bellows Forming Method : Hydroforming



## MULTI-PLY BELLOWS

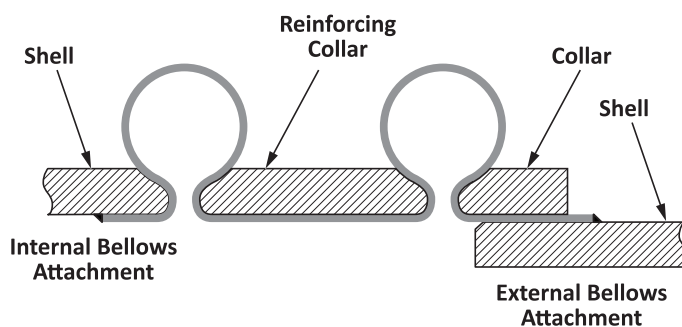


|                    |   |
|--------------------|---|
| <b>Nominal Dia</b> | 50A – 4500A   |
| <b>Materials</b>   | Stainless Steel–Type 300 Austenitic Series<br>Super Duplex Stainless Steel<br>Nickel Alloys<br>Hastelloy<br>Titanium<br>Zirconium<br>Hayness 230 & etc. |

### Features

- Form up to 6 layers of thin stainless sheets layered & laminated flexible ultrahigh pressure bellows.
- Bellows Forming Method : Hydroforming & Hydraulic Mandrel Punch Forming

## TOROIDAL BELLOWS



### Features

The Toroidal Expansion Joints are mainly designed for high-pressure application where needs small amounts of movement. The majority of these joints are designed for Heat Exchanger in accordance with ASME Sec VIII, Div-1, Appendix 26, and also as per EJMA for other applications. The natural stability of a circle under internal pressure allows the thin-walled toroid element to withstand pressures that an apparently more stable multi-ply, reinforced bellows could not. The advantage of this design is its easy to manufacture with a low material cost of bellows element and the stability of the expansion joint even at pressures well beyond the design conditions. The only drawback is the small amount of movement the joints can absorb, which when dealing with heat exchanger designs, is all that is required.

- Bellows Forming Method : Hydroforming