# EXHAUST EXPANSION JOINTS


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Ayvaz's special stainless steel expansion joints with carbon steel weld ends are designed to be used for compensating movements and misalignments in exhaust systems in situations with relatively high axial or small lateral movements and combination of these at the same time. Due to the double ply bellows, exhaust expansion joints are more flexible an their life cycle is greater than the simple expansion joints. According to the maximum operating temperature, weld end material could also be made by stainless steel or nickel alloys.

## Advantages of District Heating Expansion Joints

- Bellows design according to EJMA coding system.
- Construction according to EN14917 standard.
- Absortion of high axial and lateral movements
- High Life cycle design
- Lower spring rate values
- Easy installation and maintenance.

## Application Areas

Exhaust Systems
Vibration absorption
Industrial process & applications

## DESIGN (EN 14917&EJMA)

| | |
|---|---|
| Bellow Material | Stainless Steel AISI 321 (Opt.304,316L,316TI,309) |
| Connection Types | Welded Ended |
| Welded End Material | Carbon steel St 37,2 or Stainless Steel |
| Inner Sleeve | Available in stainless steel AISI 321 (opt.304,316L,316TI,309) on request |
| Accessories | Inner sleeve, cover, counter flange, gaskets, insulation etc. are available on request. |
| Certificates | Material certificate 3.1 according to EN 10204 and /or ASME<br>PED 2014/68/EU SEP (Sound Engineering Practice) |

## Operation Conditions

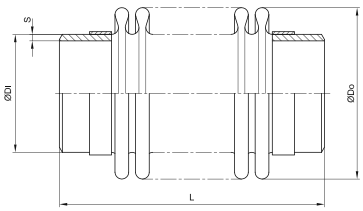
| | |
|---|---|
| Operating Temperature | -10C°/+550C°, higher temperatures at peak conditions are possible. |
| Operating Pressure | Standard pressure rating is PN2,5 & PN6<br>PN corresponds to the allowable operating pressure at room temperature |

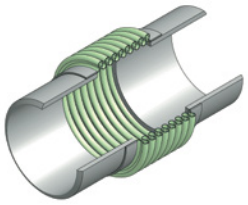
## Important

For detailed information, get in contact with Ayvaz's expert sales team.
We strongly advise against the use of expansion joints and bellows for misalignment.
Torsion on bellow parts are not desirable and should be eliminated.

## Exhaust Expansion Joints (PN2,5)

| Exhaust Expansion Joints with Welded Ends | | | | | |
|---|---|---|---|---|---|
| Type | Movement Range (axial) | Movement Range (axial) | Pressure Class (PN) | Available Size (DN) | Definition |
| EGZKKB-1 | ±20/±40 | ±7/±15 | 2,5 Bar | DN40-DN5000 | Carbon Steel Connections |
| EGZKKB-2 | | | | | Stainless Steel Connections |



| Bellows Information | | | | | | | EGZKKB-1 | | | EGZKKB-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | Ødi | Ødo | Effective Bellow Area $cm^2$ | Axial Move-ment "±" | Lateral Move-ment "±" | Axial Spring Rate N/ mm | Pipe Thick-nes "s" | Total Length "L" | Code | Pipe Thickness "s" | Total Length "L" | Code |
| DN40 | 48,3 | 64,0 | 24 | 20 | 15 | 29 | 2,6 | 245 | 702051101110 | 2 | 245 | 702051111110 |
| DN50 | 60,3 | 79,0 | 38 | 30 | 15 | 40 | 2,9 | 305 | 702051101112 | 2 | 305 | 702051111112 |
| DN65 | 76,1 | 96,7 | 59 | 30 | 15 | 36 | 2,9 | 305 | 702051101114 | 2 | 305 | 702051111114 |
| DN80 | 88,9 | 114,0 | 81 | 30 | 15 | 41 | 3,2 | 305 | 702051101116 | 2 | 305 | 702051111116 |
| DN100 | 114,3 | 142,0 | 129 | 35 | 15 | 34 | 3,6 | 305 | 702051101118 | 2 | 305 | 702051111118 |
| DN125 | 139,7 | 168,0 | 186 | 35 | 15 | 42 | 4,0 | 300 | 702051101120 | 2 | 300 | 702051111120 |
| DN150 | 168,3 | 204,0 | 272 | 35 | 15 | 33 | 4,5 | 305 | 702051101122 | 2 | 305 | 702051111122 |
| DN200 | 219,1 | 254,0 | 440 | 35 | 13 | 40 | 6,3 | 305 | 702051101124 | 2 | 305 | 702051111124 |
| DN250 | 273,0 | 314,0 | 677 | 35 | 12 | 44 | 6,3 | 310 | 702051101126 | 2 | 310 | 702051111126 |
| DN300 | 323,9 | 373,0 | 954 | 40 | 7 | 41 | 7,1 | 295 | 702051101128 | 2 | 295 | 702051111128 |
| DN350 | 355,6 | 407,0 | 1142 | 40 | 8 | 47 | 8,0 | 325 | 702051101130 | 3 | 325 | 702051111130 |
| DN400 | 406,4 | 457,0 | 1464 | 40 | 7 | 51 | 8,8 | 325 | 702051101132 | 3 | 325 | 702051111132 |

* All the dimensions in the table are given in "mm".
** Subject to technical alterations and deviations resulting from the manufacturing process without giving any notification
*** Movements are not in combination.

| Reduction Factors for Pressure | | | |
|---|---|---|---|
| Temperature °C | Reduction Factor Kp | Temperature °C | Reduction Factor Kp |
| 20 | 1,00 | 350 | 0,64 |
| 100 | 0,85 | 400 | 0,63 |
| 150 | 0,81 | 450 | 0,62 |
| 200 | 0,77 | 500 | 0,60 |
| 250 | 0,71 | 550 | 0,59 |
| 300 | 0,68 | 600 | 0,57 |

### Pressure reduction factor

The reduction factor is used to define the design pressure [PS] where temperatures exceed 20°C, it compensates for the decay in material mechanical properties at at elevated temperatures. The calculated pressure is lower than the nominal pressure of the standard item

Calculation: PS ≤ PN x Kp