

# DISTRICT HEATING EXPANSION JOINTS PRODUCTS



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## 1. Company

Tcomp is a family owned company, founded in 1986 as a sister company to Tjæreborg Industri A/S. We have developed many innovative technologies, design and manufactured to almost all industries.

Most of our products is produced, according customized solutions from our customers requirements. In addition to this, we have a wide range of standard products in our inventory. See [www.tcomp.dk](http://www.tcomp.dk)

### Tcomp values:

- |                                                                                                |                                                                                                        |                                                                                                  |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  Our know-how |  Best Cooperation     |  Flexibility   |
|  Quality      |  Long-Lasting product |  Fast Delivery |



## 2. District Heating

District heating expansion joints are used to absorb the thermal expansion parallel to the axis of the straight pipelines. Long piping systems are normally divided into shorter expanding sections, and isolated by main anchors.

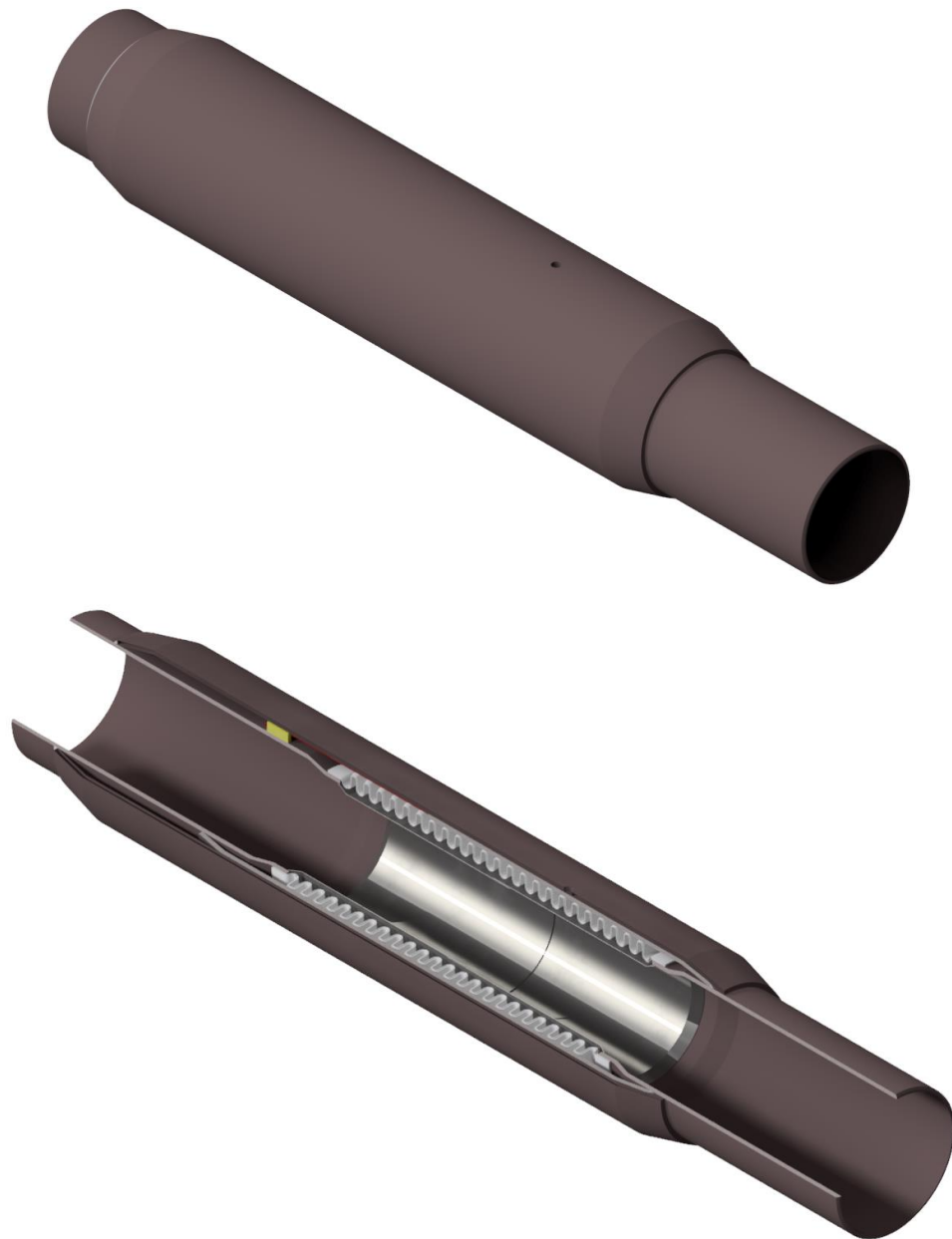
Depending on the purpose, district heating expansion joints can be divided into two categories.

- Operating Expansion Joints
- One-Time Expansion Joints

Both types are developed for district heating applications, and are suitable for ground-surface and underground pipeline systems.



### 3. Operating Expansion Joints



Operating Expansion Joints are specially designed and adapted for installation in all district heating pipe systems. The Operating Expansion Joints are designed so that, when it is fully compressed, the axial compressive forces of the pipeline, are transmitted directly through the exterior shroud. In case of shutdown or other situations where temperature drops, high tensile stresses occur, then bellow will retreat towards pre-stressed condition as installed.

To ensure against torsions in the bellow when operating, 2 pieces of guide are mounted. In addition also the telescopic joint between the shroud, forms a guide, so that the pipeline can be installed, without damaging the expansion joint.

This construction means that the number of fix points in the pipe system can be reduced, because the expansion joint can be installed in series without intermediate fix points. If the Operating Expansion Joints are installed in a curved pipe sections it will need 12 meters of pipe before and after. The Operating Expansion Joints will start each other individually.

The Operating Expansion Joints is 100% pre-set from the factory, and are activated automatically when the system is started up.

#### OPERATION RANGE

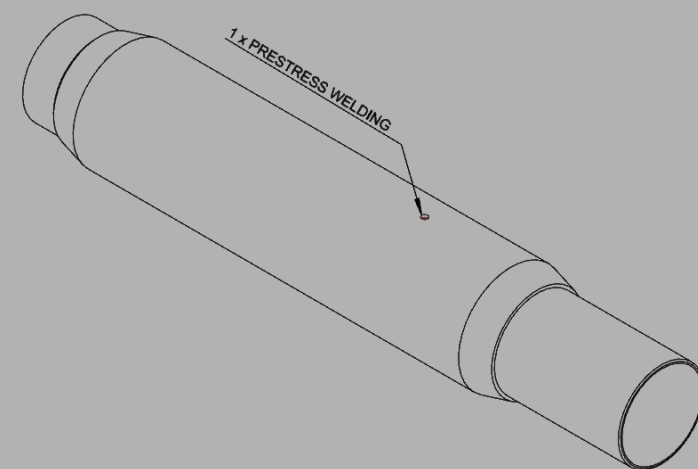
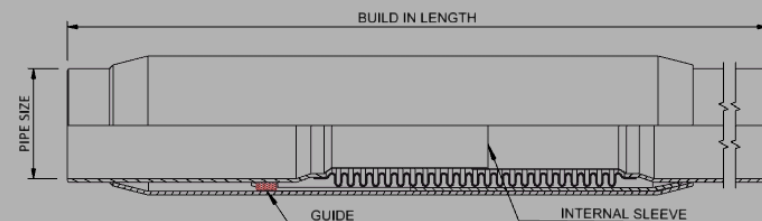
- Size: DN32 – DN1000
- Temp.: +120°C
- Pressure: 16 BarG – 25 BarG

#### FEATURES

- Maintenance free
- Protecting Shroud
- Easy installation and isolation
- Can be installed in series
- Torsion prevention

### 3.1 Operating Expansion Joints PN16

| DN  | TYPE         | PIPE SIZE    | BUILD IN LENGTH | AXIAL MOVEMENTS | SPRING RATE | EFFECTIVE AREA  | WEIGHT |
|-----|--------------|--------------|-----------------|-----------------|-------------|-----------------|--------|
|     | OE(PN)-DN-AX | mm           | mm              | mm              | N/mm        | mm <sup>2</sup> | Kg     |
| 32  | OE16-32-100  | Ø42,4 x 2,6  | 605             | -100            | 63          | 1506            | 5      |
| 40  | OE16-40-100  | Ø48,3 x 2,6  | 605             | -100            | 57          | 1940            | 5      |
| 50  | OE16-50-100  | Ø60,3 x 2,9  | 605             | -100            | 71          | 2990            | 6      |
| 65  | OE16-65-100  | Ø76,1 x 2,9  | 640             | -100            | 77          | 4645            | 8,5    |
| 80  | OE16-80-100  | Ø88,9 x 3,2  | 620             | -100            | 124         | 6096            | 12     |
| 100 | OE16-100-125 | Ø114,3 x 3,6 | 795             | -125            | 105         | 10400           | 16     |
| 125 | OE16-125-125 | Ø139,7 x 3,6 | 765             | -125            | 108         | 15372           | 20     |
| 150 | OE16-150-125 | Ø168,3 x 4   | 755             | -125            | 120         | 22778           | 32     |
| 200 | OE16-200-125 | Ø219,1 x 4,5 | 745             | -125            | 152         | 38400           | 48     |
| 250 | OE16-250-125 | Ø273 x 5     | 815             | -125            | 203         | 59400           | 64     |
| 300 | OE16-300-125 | Ø323,9 x 5,6 | 875             | -125            | 241         | 83420           | 81,5   |
| 350 | OE16-350-125 | Ø355,6 x 5,6 | 790             | -125            | 265         | 100540          | 103    |
| 400 | OE16-400-125 | Ø406,4 x 6,3 | 790             | -125            | 404         | 164173          | 112    |
| 450 | OE16-450-125 | Ø457,2 x 6,3 | 790             | -125            | 434         | 164173          | 135    |
| 500 | OE16-500-125 | Ø508 x 6,3   | 790             | -125            | 482         | 204282          | 155    |
| 600 | OE16-600-125 | Ø610 x 8     | 790             | -125            | 578         | 294166          | 226    |



**MATERIALS:**

MEDIAPIPE: P235GH (EN 1.0345)

SHROUD: P235GH (EN 1.0345) ≤DN150 / P265GH (EN 1.0425) >DN150

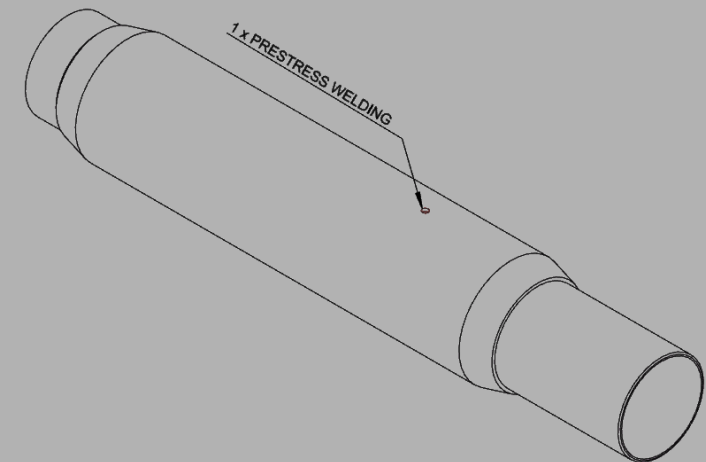
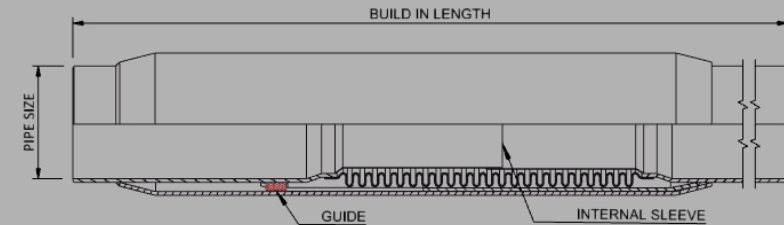
BELLOW: AISI 321 (EN 1.4541)

**TEMP:** +120°C



## 3.2 Operating Expansion Joints PN25

| DN  | TYPE         | PIPE SIZE    | BUILD IN LENGTH | AXIAL MOVEMENTS | SPRING RATE | EFFECTIVE AREA  | WEIGHT |
|-----|--------------|--------------|-----------------|-----------------|-------------|-----------------|--------|
|     | OE(PN)-DN-AX | mm           | mm              | mm              | N/mm        | mm <sup>2</sup> | Kg     |
| 80  | OE25-80-90   | Ø88,9 x 3,2  | 620             | -90             | 271         | 1506            | 12     |
| 100 | OE25-100-90  | Ø114,3 x 3,6 | 795             | -90             | 237         | 1940            | 16     |
| 125 | OE25-125-90  | Ø139,7 x 3,6 | 765             | -90             | 265         | 2990            | 20     |
| 150 | OE25-150-90  | Ø168,3 x 4   | 755             | -90             | 291         | 4646            | 32     |
| 200 | OE25-200-90  | Ø219,1 x 4,5 | 745             | -90             | 406         | 10400           | 48     |
| 250 | OE25-250-90  | Ø273 x 5     | 815             | -90             | 402         | 15372           | 64     |
| 300 | OE25-300-90  | Ø323,9 x 5,6 | 875             | -90             | 624         | 22778           | 81,5   |
| 350 | OE25-350-90  | Ø355,6 x 5,6 | 875             | -90             | 625         | 30079           | 103    |
| 400 | OE25-400-90  | Ø406,4 x 6,3 | 790             | -90             | 612         | 38400           | 135    |
| 450 | OE25-450-90  | Ø457,2 x 6,3 | 745             | -90             | 689         | 59400           | 135    |
| 500 | OE25-500-90  | Ø508 x 6,3   | 745             | -90             | 575         | 83420           | 155    |
| 600 | OE25-600-90  | Ø610 x 8     | 745             | -90             | 862         | 100540          | 226    |



### MATERIALS:

MEDIAPIPE: P235GH (EN 1.0345)

SHROUD: P235GH (EN 1.0345) ≤DN150

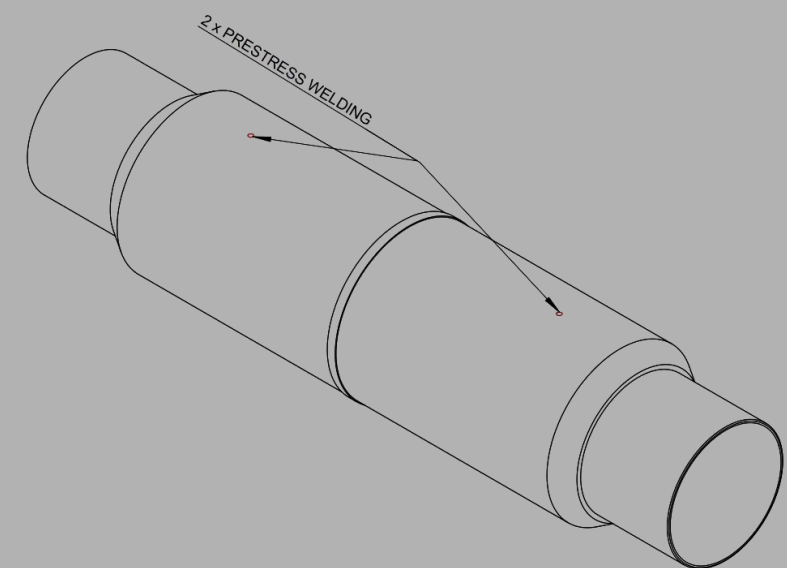
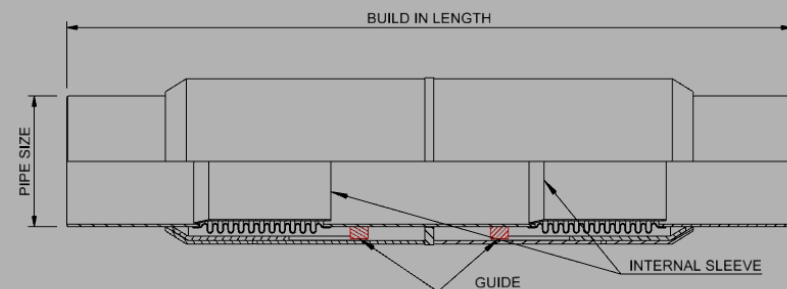
BELLOW: AISI 321 (EN 1.4541)

TEMP: +120°C

/ P265GH (EN 1.0425) >DN150

### 3.3 Operating Expansion Joints PN16 DUO

| DN  | TYPE          | PIPE SIZE    | BUILD IN LENGTH | AXIAL MOVEMENTS | SPRING RATE | EFFECTIVE AREA  | WEIGHT |
|-----|---------------|--------------|-----------------|-----------------|-------------|-----------------|--------|
|     | OE(PN)D-DN-AX | mm           | mm              | mm              | N/mm        | mm <sup>2</sup> | Kg     |
| 32  | OE16D-32-200  | Ø42,4 x 2,6  | 1100            | -200            | 32          | 1506            | 6      |
| 40  | OE16D-40-200  | Ø48,3 x 2,6  | 1100            | -200            | 29          | 1940            | 8      |
| 50  | OE16D-50-200  | Ø60,3 x 2,9  | 1100            | -200            | 36          | 2990            | 10     |
| 65  | OE16D-65-200  | Ø76,1 x 2,9  | 1350            | -200            | 38,5        | 4645            | 17     |
| 80  | OE16D-80-200  | Ø88,9 x 3,2  | 1150            | -200            | 62          | 6096            | 19,5   |
| 100 | OE16D-100-250 | Ø114,3 x 3,6 | 1450            | -250            | 53          | 10400           | 35     |
| 125 | OE16D-125-250 | Ø139,7 x 3,6 | 1400            | -250            | 54          | 15372           | 42     |
| 150 | OE16D-150-250 | Ø168,3 x 4   | 1400            | -250            | 60          | 22778           | 57,5   |
| 200 | OE16D-200-250 | Ø219,1 x 4,5 | 1350            | -250            | 76          | 38400           | 95     |
| 250 | OE16D-250-250 | Ø273 x 5     | 1470            | -250            | 102         | 59400           | 120    |
| 300 | OE16D-300-250 | Ø323,9 x 5,6 | 1600            | -250            | 121         | 83420           | 165    |
| 350 | OE16D-350-250 | Ø355,6 x 5,6 | 1450            | -250            | 133         | 100540          | 175    |
| 400 | OE16D-400-250 | Ø406,4 x 6,3 | 1450            | -250            | 202         | 131000          | 200    |
| 450 | OE16D-450-250 | Ø457,2 x 6,3 | 1450            | -250            | 217         | 164173          | 233    |
| 500 | OE16D-500-250 | Ø508 x 6,3   | 1450            | -250            | 241         | 204282          | 265    |

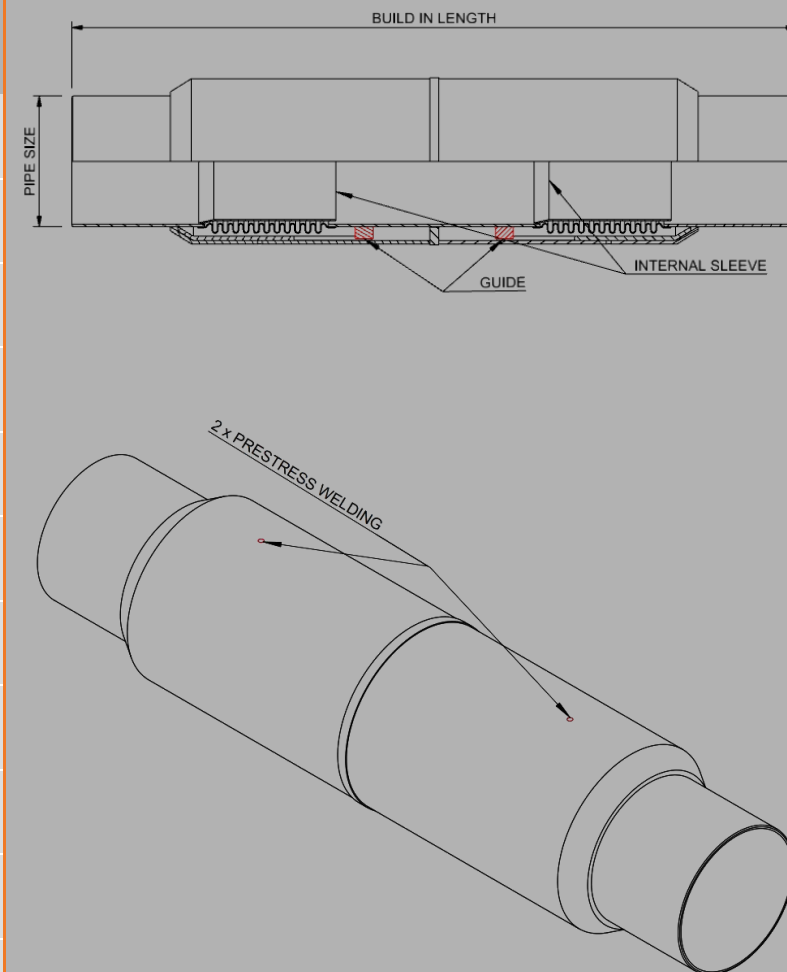


**MATERIALS:**  
 MEDIAPIPE: P235GH (EN 1.0345)  
 SHROUD: P235GH (EN 1.0345) ≤DN150 / P265GH (EN 1.0425) >DN150  
 BELLOWS: AISI 321 (EN 1.4541)

**TEMP:** +120°C

### 3.4 Operating Expansion Joints PN25 DUO

| DN  | TYPE          | PIPE SIZE    | BUILD IN LENGTH | AXIAL MOVEMENTS | SPRING RATE | EFFECTIVE AREA  | WEIGHT |
|-----|---------------|--------------|-----------------|-----------------|-------------|-----------------|--------|
|     | OE(PN)D-DN-AX | mm           | mm              | mm              | N/mm        | mm <sup>2</sup> | Kg     |
| 80  | OE25D-80-180  | Ø88,9 x 3,2  | 1100            | -180            | 136         | 1506            | 23     |
| 100 | OE25D-100-180 | Ø114,3 x 3,6 | 1100            | -180            | 119         | 1940            | 32     |
| 125 | OE25D-125-180 | Ø139,7 x 3,6 | 1100            | -180            | 133         | 2990            | 40     |
| 150 | OE25D-150-180 | Ø168,3 x 4   | 1100            | -180            | 146         | 4645            | 50     |
| 200 | OE25D-200-180 | Ø219,1 x 4,5 | 1200            | -180            | 203         | 10400           | 88     |
| 250 | OE25D-250-180 | Ø273 x 5     | 1200            | -180            | 201         | 15372           | 104    |
| 300 | OE25D-300-180 | Ø323,9 x 5,6 | 1200            | -180            | 312         | 22778           | 148    |
| 350 | OE25D-350-180 | Ø355,6 x 5,6 | 1200            | -180            | 313         | 30079           | 164    |
| 400 | OE25D-400-180 | Ø406,4 x 6,3 | 1200            | -180            | 306         | 38400           | 190    |
| 450 | OE25D-450-180 | Ø457,2 x 6,3 | 1200            | -180            | 344         | 59400           | 207    |
| 500 | OE25D-500-180 | Ø508 x 6,3   | 1200            | -180            | 288         | 83420           | 233    |
| 600 | OE25D-600-180 | 610 x 8      | 1300            | -180            | 431         | 100540          | 389    |



**MATERIALS:**  
MEDIPIPE: P235GH (EN 1.0345)  
SHROUD: P235GH (EN 1.0345) ≤DN150 / P265GH (EN 1.0425) >DN150  
BELLOW: AISI 321 (EN 1.4541)

**TEMP:** +120°C



## 4. One-Time Expansion Joints

One-Time Expansion Joints is a one-off axial expansion joint specially developed for installation in district heating systems, where the pipeline's temperature variations are absorbed as tensile and compressive stresses in the steel pipe instead of expansion movements.

The One-Time Expansion Joints are delivered 100% pre-set according to suppliers standard movements. If needed it could also be delivered pre-set according to customers calculated reduced movements, and fixed with tack weldings until pressure test have been approved. The movement will be marked with line on shroud, and before the pipeline is heated up with district heating water the tack welding should be removed.

When One-Time Expansion Joints are free of damage, correctly installed and filled with district heating water at mean temperature, it should be locked by fully welding at the non-welded end of shroud. Once the One-Time Expansion Joints are locked, and have absorbed the full movement, it has function as a normal pipe.

Leak test of the shroud welding can be done from the leak test hole placed on the middle of the conical shroud (small screw). Leak test hole must be closed with welding after leak test inspection.



### ONE-TIME RANGE

- Size: DN25 – DN1000
- Temp.: +120°C
- Pressure: 25 BarG

### FEATURES

- Maintenance free
- Sealing Shroud
- Easy installation and isolation
- Can be delivered with customized pre-setting

## 4.1 One-Time Expansion Joints Marking

One-Time Expansion Joints are marked with heat and water resistant stickers that includes information as shown on example to the right.

Special requirements to all district heating expansion joints as e.g. customized presetting, NDT, documentation, applicable standards/legislation, pressure test, painting etc. must always be agreed with manufacturer Tcomp before the order.

### One-Time Expansion Joint

#### TECHNICAL DATA:

|                         |                      |
|-------------------------|----------------------|
| ITEM NUMBER:            | OT25-125-80          |
| NOMINAL SIZE:           | DN100                |
| PIPE SIZE               | Ø114,3 x 3,6 mm      |
| NOMINAL PRESSURE:       | PN25                 |
| PIPE MATERIAL:          | P235GH (EN 1.0345)   |
| BELLOW MATERIAL:        | AISI 321 (EN 1.4541) |
| STANDARD:               | EN448                |
| AXIAL MOVEMENT:         | -100mm               |
| MAX. AXIAL FORCES:      | 265N/mm <sup>2</sup> |
| COMPR/TENSILE:          | 163N/mm <sup>2</sup> |
| TEMPERATURE DIFFERENCE: | 130°C                |

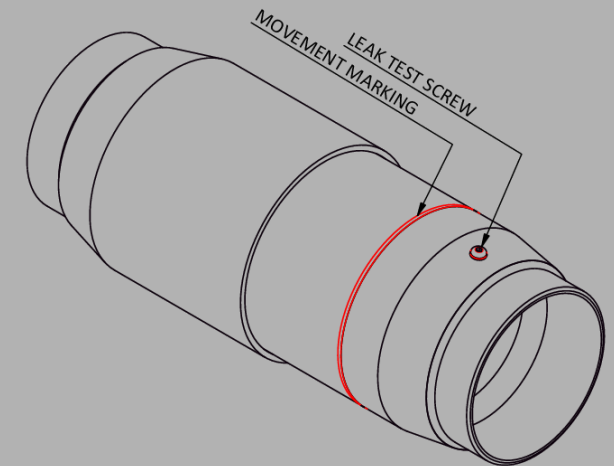
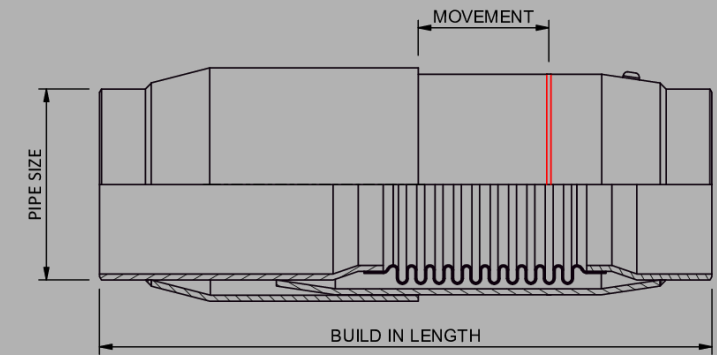


*Example.*



## 4.2 One-Time Expansion Joints PN25

| DN   | TYPE          | PIPE SIZE    | BUILD IN LENGTH | AXIAL MOVEMENTS | SPRING RATE | EFFECTIVE AREA  | WEIGHT |
|------|---------------|--------------|-----------------|-----------------|-------------|-----------------|--------|
|      | OT(PN)D-DN-AX | mm           | Mm              | mm              | N/mm        | mm <sup>2</sup> | Kg     |
| 25   | OT25-25-50    | Ø33,7 x 3,2  | 275             | -50             | 176         | 973             | 1,3    |
| 32   | OT25-32-50    | Ø42,4 x 2,6  | 275             | -50             | 204         | 1514            | 1,7    |
| 40   | OT25-40-50    | Ø48,3 x 2,6  | 275             | -50             | 177         | 1633            | 1,8    |
| 50   | OT25-50-50    | Ø60,3 x 2,9  | 275             | -50             | 224         | 2588            | 2,4    |
| 65   | OT25-65-70    | Ø76,1 x 2,9  | 335             | -70             | 219         | 4208            | 3,8    |
| 80   | OT25-80-70    | Ø88,9 x 3,2  | 345             | -70             | 180         | 6778            | 5,5    |
| 100  | OT25-100-80   | Ø114,3 x 3,6 | 390             | -80             | 212         | 10992           | 9,8    |
| 125  | OT25-125-80   | Ø139,7 x 3,6 | 400             | -80             | 226         | 15993           | 12,5   |
| 150  | OT25-150-100  | Ø168,3 x 4   | 475             | -100            | 261         | 23046           | 14,5   |
| 200  | OT25-200-120  | Ø219,1 x 4,5 | 515             | -120            | 361         | 38394           | 27,5   |
| 250  | OT25-250-120  | Ø273 x 5     | 515             | -120            | 362         | 59396           | 35     |
| 300  | OT25-300-140  | Ø323,9 x 5,6 | 660             | -140            | 353         | 83418           | 57,5   |
| 350  | OT25-350-140  | Ø355,6 x 5,6 | 650             | -140            | 617         | 100434          | 60     |
| 400  | OT25-400-140  | Ø406,4 x 6,3 | 650             | -140            | 505         | 130997          | 75,5   |
| 450  | OT25-450-150  | Ø457,2 x 6,3 | 660             | -150            | 528         | 165612          | 86     |
| 500  | OT25-500-150  | Ø508 x 6,3   | 660             | -150            | 537         | 204282          | 93     |
| 600  | OT25-600-150  | Ø610 x 8     | 690             | -150            | 864         | 293782          | 162    |
| 700  | OT25-700-150  | Ø711 x 10    | 860             | -150            | 1119        | 401000          | 282    |
| 800  | OT25-800-150  | Ø813 x 10    | 860             | -150            | 1177        | 533300          | 316    |
| 1000 | OT25-1000-150 | Ø1016 x 12,5 | 860             | -150            | 1469        | 828400          | 411    |



### MATERIALS:

MEDIAPIPE: P235GH (EN 1.0345)

SHROUD: P235GH (EN 1.0345) ≤DN150

BELLOW: AISI 321 (EN 1.4541)

TEMP: +130°C

/ P265GH (EN 1.0425) >DN150

## 5. Customized solutions

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Customized solutions is more than 70% of our product program. We make the design and produce bellows or expansions joints in accordance with the customers requirements.

We can with our know-how and our partners, produce nearly everything within steel expansion joints.

Contact us on mail [tcomp@tcomp.dk](mailto:tcomp@tcomp.dk) or visit our website [www.tcomp.dk](http://www.tcomp.dk), if you have any questions/inquiries to your project.

See some of our customized solutions in district heating to the right.



---

### PRODUCTION RANGE

- Size: DN25 – DN5000
- Temp.: -240°C – +1.050°C
- Pressure: Vacuum – +100Bar\*

### FEATURES

- All type of metal expansion joints
- A wide range of materials
- Long-lasting product (minimum 1.000 cycles)

## Tcomp - Tjæreborg Kompensatorfabrik A/S

Kærvej 19

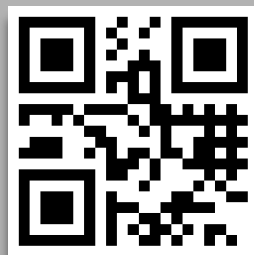
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Denmark

+45 70 70 76 12

tcomp@tcomp.dk

[www.tcomp.dk](http://www.tcomp.dk)



You are welcome to contact us with your inquiry, we can handle other things than Expansion Joints, as we are sister company of Tjæreborg Industri A/S.

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