

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

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.

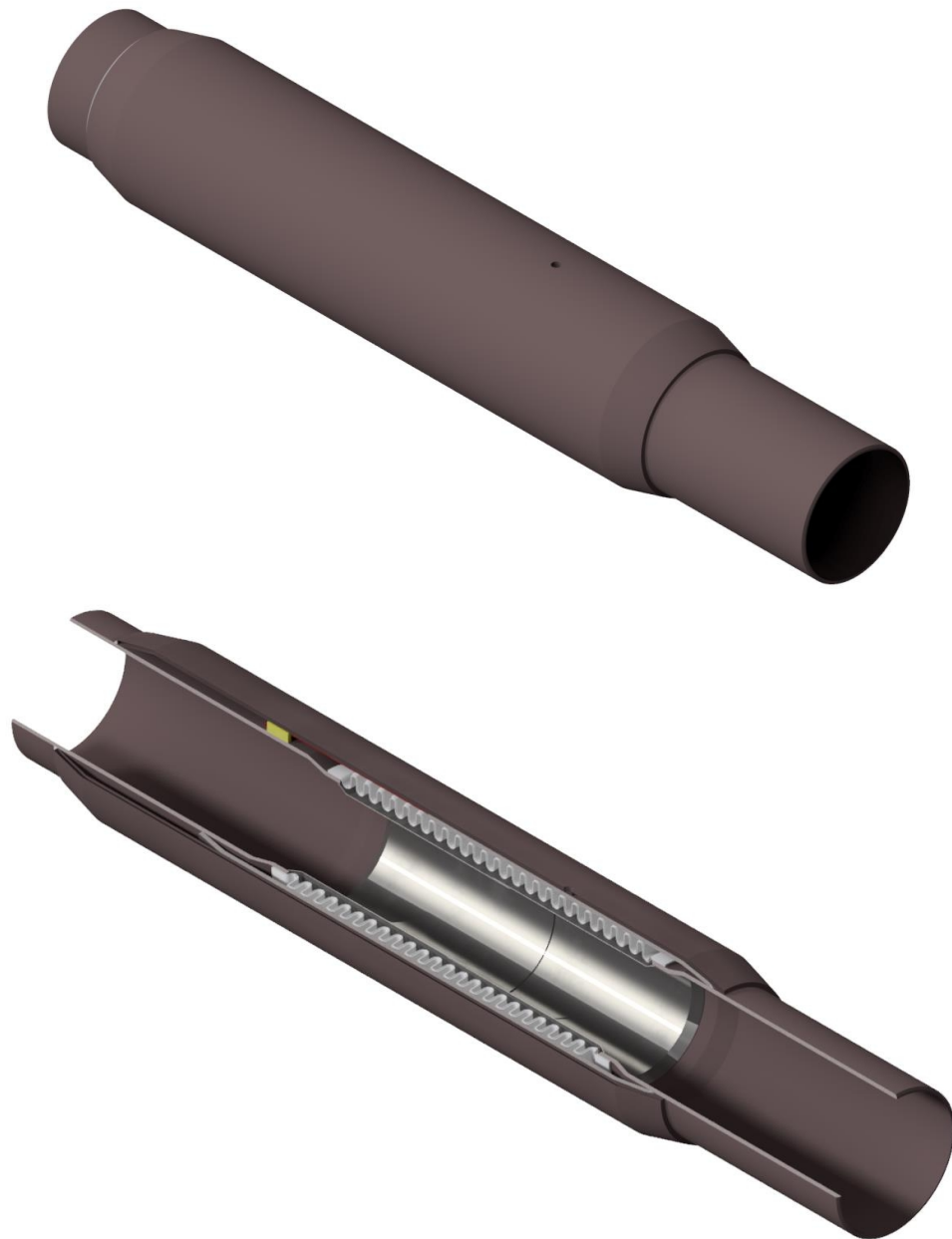
Depending on the purpose, district heating expansion joints can be divided into two categories.

- 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

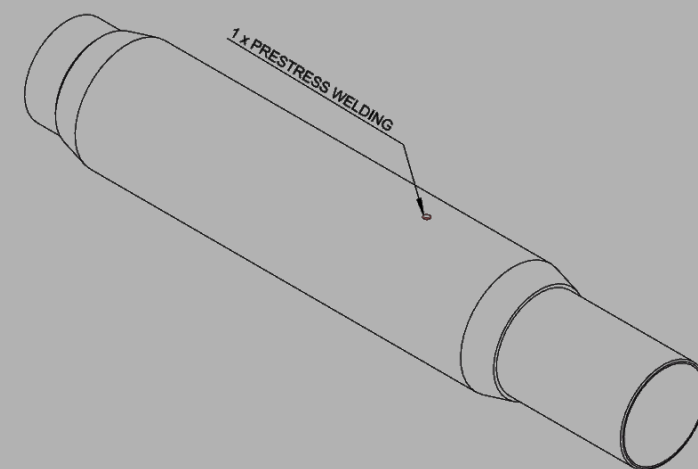
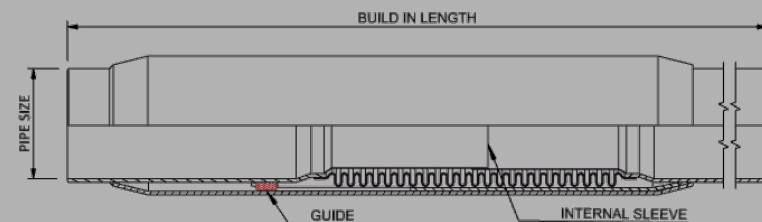
- Size: DN32 – DN1000
- Temp.: +120°C
- Pressure: 16 BarG – 25 BarG

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 ²	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



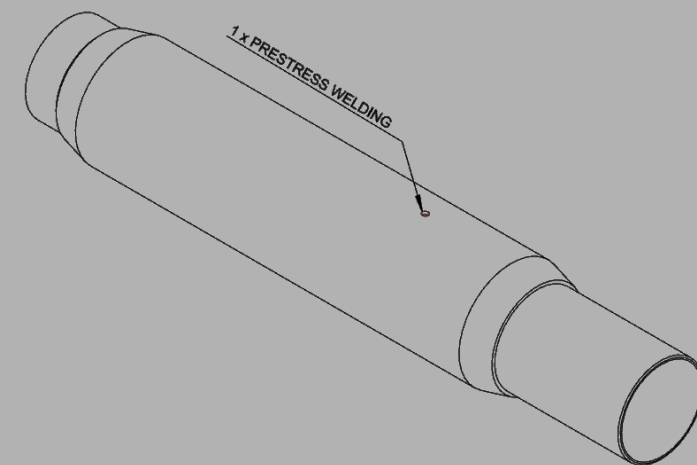
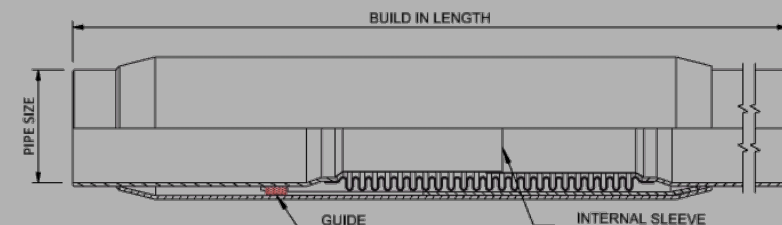
MATERIALS:

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 ²	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



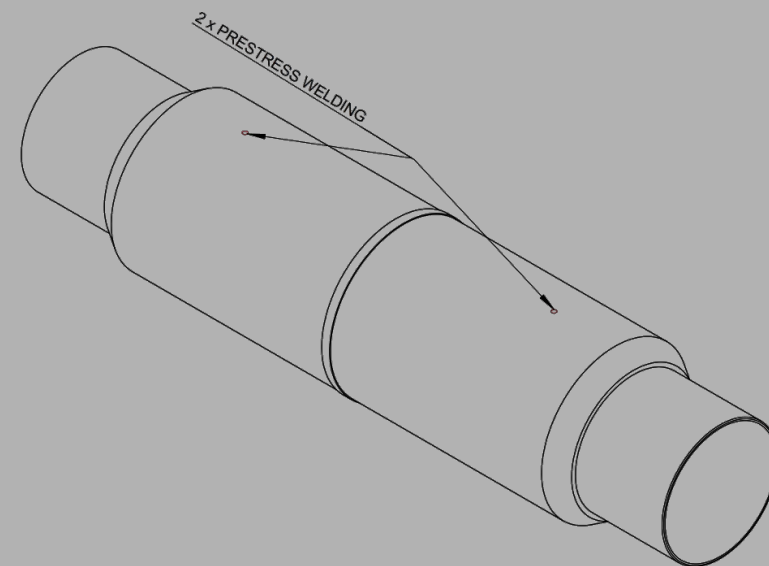
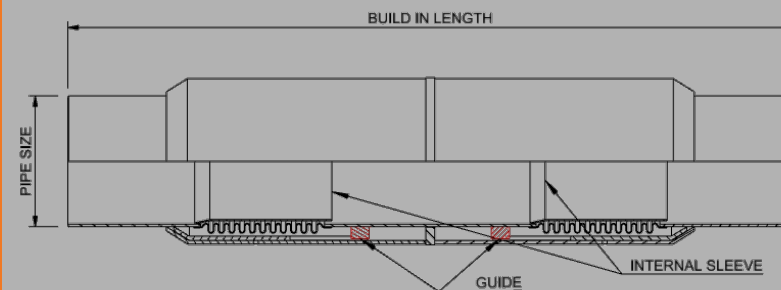
MATERIALS:

MEDIAPIPE: P235GH (EN 1.0345)
 SHROUD: P235GH (EN 1.0345) ≤DN150 / P265GH (EN 1.0425) >DN150
 BELLOW: 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 ²	Kg
80	OE25D-80-180	∅88,9 x 3,2	1100	-180	136	1506	23
100	OE25D-100-180	∅114,3 x 3,6	1100	-180	119	1940	32
125	OE25D-125-180	∅139,7 x 3,6	1100	-180	133	2990	40
150	OE25D-150-180	∅168,3 x 4	1100	-180	146	4645	50
200	OE25D-200-180	∅219,1 x 4,5	1200	-180	203	10400	88
250	OE25D-250-180	∅273 x 5	1200	-180	201	15372	104
300	OE25D-300-180	∅323,9 x 5,6	1200	-180	312	22778	148
350	OE25D-350-180	∅355,6 x 5,6	1200	-180	313	30079	164
400	OE25D-400-180	∅406,4 x 6,3	1200	-180	306	38400	190
450	OE25D-450-180	∅457,2 x 6,3	1200	-180	344	59400	207
500	OE25D-500-180	∅508 x 6,3	1200	-180	288	83420	233
600	OE25D-600-180	610 x 8	1300	-180	431	100540	389



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

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:

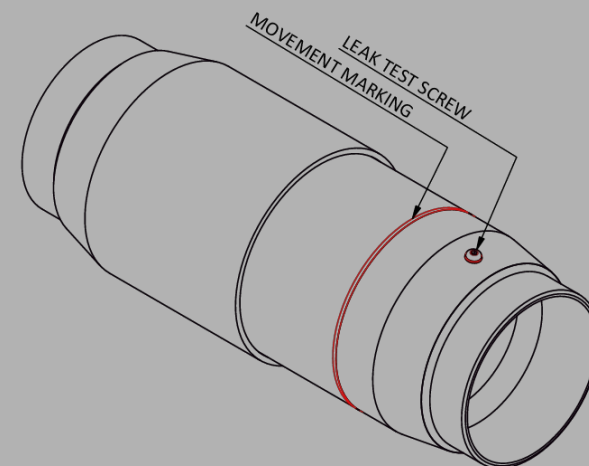
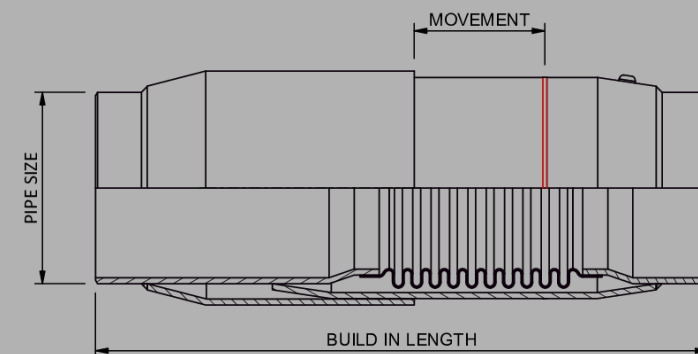
ITEM NUMBER:	OT25-125-80
NOMINAL SIZE:	DN100
PIPE SIZE	Ø114,3 x 3,6 mm
NOMINAL PRESSURE:	PN25
PIPE MATERIAL:	P235GH (EN 1.0345)
BELLOW MATERIAL:	AISI 321 (EN 1.4541)
STANDARD:	EN448
AXIAL MOVEMENT:	-100mm
MAX. AXIAL FORCES:	265N/mm ²
COMPR/TENSILE:	163N/mm ²
TEMPERATURE DIFFERENCE:	130°C



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 ²	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 / P265GH (EN 1.0425) >DN150
 BELLOW: AISI 321 (EN 1.4541)

TEMP: +130°C

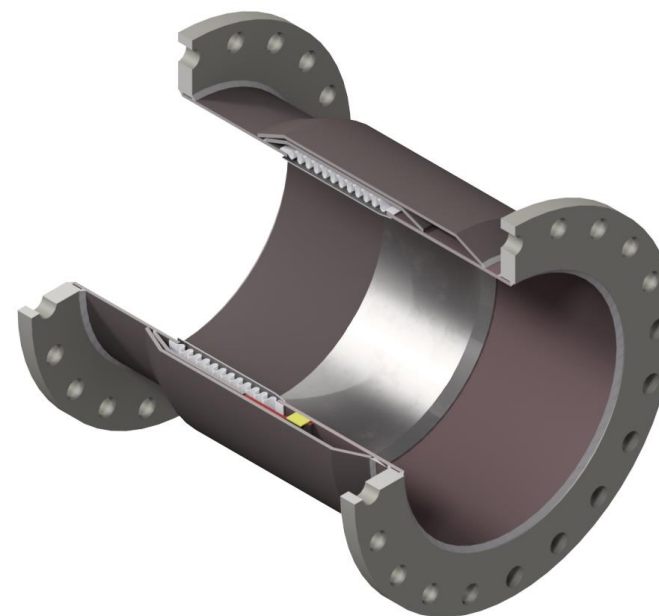
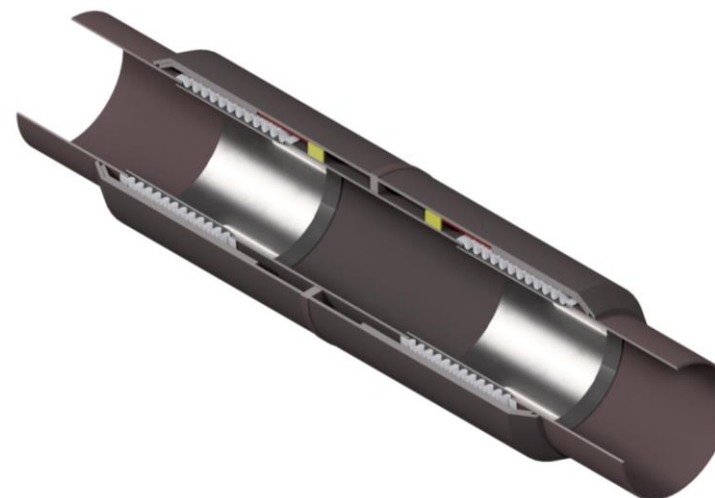
5. Customized solutions

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 or visit our website 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

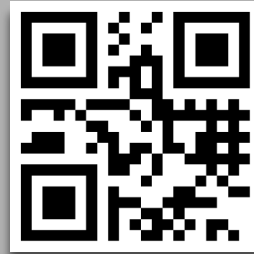
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You are welcome to contact us with your inquiry, we can handle other things than Expansion Joints, as we are sister company of Tjæreborg Industri A/S.

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