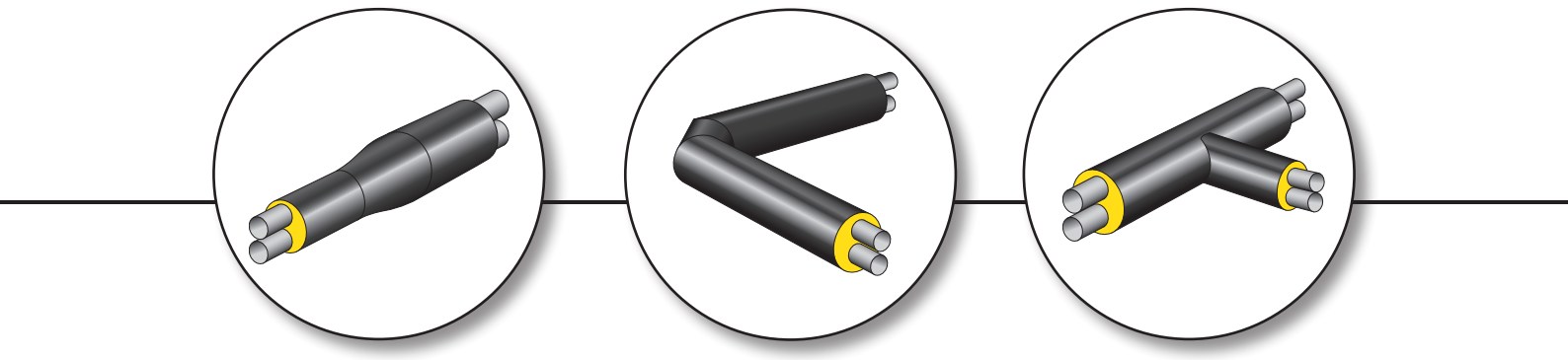
RADPOL
PIPES

PRE-INSULATED PIPE SYSTEMS
TWIN PIPES



2024

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About us

RAPDOL PIPES sp. z o.o. is an innovative manufacturer and supplier of technologically advanced, complete pre-insulated piping systems (pipes, fittings, fixtures, radiation-crosslinked joints) for the transmission of media at continuous temperatures up to 120 °C conditionally up to 140°C acording to PN-EN13941-1 and working pressures up to 2.5 MPa. We offer efficient and environmentally friendly complete pre-insulated pipelines for underground and overhead heating networks, which can be used in various industries.

Pre-insulated pipes manufactured in our technology are installed in 6-, 12- and 16-meter sections, with a diameter ranging from DN 20 to DN 1000 mm. In the manufacturing process, we use welded and seamless steel carrier pipes, special steel pipes and copper and plastic pipes. Pre-insulated pipes and components are equipped with monitoring systems. Depending on the Customer's needs, we use the Brandes resistance alarm system or the Nordic pulse type system. Alarm systems allow to locate damage with an accuracy of up to 1 m on a network section of 1 km.

Apart from what is presented in the catalog, we offer:
- pre-insulated pipes for the transmission of process steam with a temperature up to 300 °C, with multi-layer insulation of an appropriate wall thickness
- pre-insulated pipes suitable for heating with heating cables, for transmitting process utilities, including oil derivative materials, sulfur and others, where transfers with constant parameters are required, even on multi-kilometer distances.

Our products are provided with the National Technical Assessment – ITB-KOT-2019/0824.

Additionally, we offer:
- preparation of technical designs of district heating networks in the RADPOL technology,
- static calculations of underground and overground district heating networks. During calculations, stress, elongation, natural expansion and bellows expansion joints are analyzed, and expansion zones (expansion pads) are selected,
- adaptations of designs made in other technologies,
- supervision over project implementation,
- training and consulting services for design engineers and contractors,
- complete pre-insulated systems with heating cables (resistance system or STS),
- maintenance services including connection of alarm systems, coupling and insulating connections on the construction site with the use of mobile units.

We ensure a high quality of the manufactured products, while respecting the requirements of environmental protection.

The environmental policy so designed is guaranteed by the implemented, maintained and continuously improved Integrated Management System compliant with the requirements of PN EN ISO 9001: 2009, PN EN ISO 14001: 2005.

PRZYJAZNE dla środowiska naturalnego

NARASTAJĄCE oszczędności

Euroheat & Power
GUIDELINES: EHP/001
CERTIFICATE: 1/30

SYSTEMES PRE-ISOLES
QB
80-013-2317_V1

ISOQAR REGISTERED
Nr Cert. 15557
ISO 9001
ISO 14001
ISO 45001

1. Carrier
Steel pipes with longitudinal seam – of steel grade P235GH of quality according to PN-EN 10217-2.
- Steel pipes with spiral seam – of steel grade P235GH of quality according to PN-EN 10217-5,
- Seamless steel pipes – made of steel grade P235GH with quality according to PN-EN 10216-1, PN-EN 10216-2.

2. Casing jacket
PN-EN 253 casing pipes.

Properties	HDPE
Density, [kg/m^3]	> 944 kg/m^3
Melt flow rate, MFR [g/10 min]	0,2<=MFR <=1,0
Linear expansion coefficient, λ [1/°C]	180 × 10^{-6}
Yield point min., Rmin [MPa]	19
Heat conductivity coefficient, λ [W/mK]	0,43
Elongation at break	min. 350%
Breaking strength N/mm^2	–

3. Thermal insulation
Manufactured in accordance with PN-EN253 standard.

4. Pre-insulated pipes
Pre-insulated TWIN pipes in the range of diameters DN20 ÷ DN200 with a steel carrier pipe (made in accordance with PN-EN 253, PN-EN-15698).

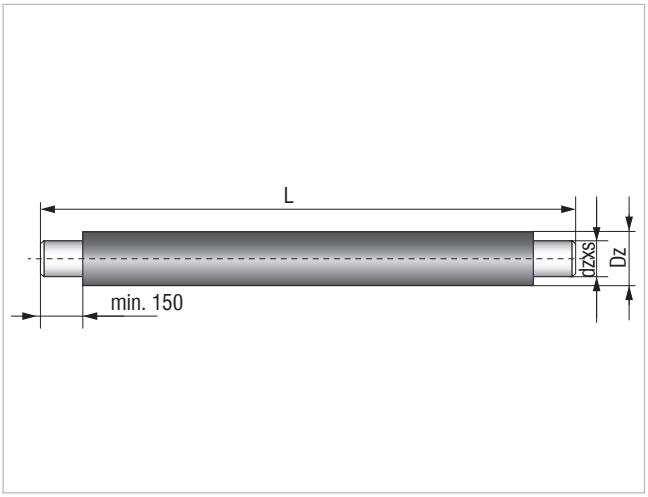
5. Pre-insulated elements
Made in accordance with PN-EN-15698, PN-EN-253, PN-EN-448 standards.
- Bends,
- Reductions,
- Branches,
- Merge pipes.

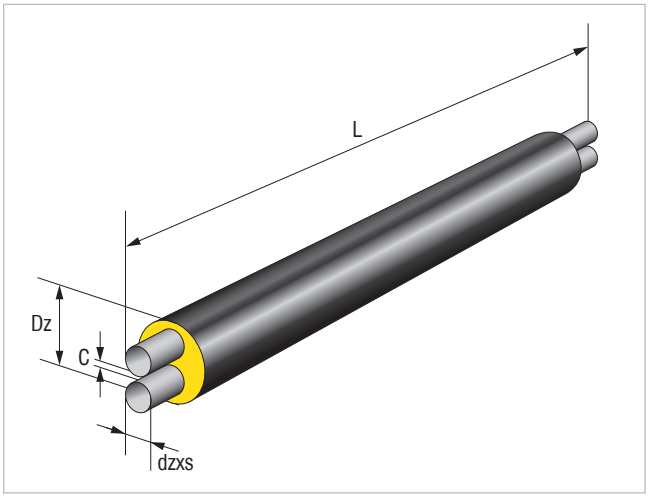
6. Pre-insulated fittings
Made in accordance with PN-EN 253, PN-EN 448, and PN-EN 488.
- Vents,
- Drains,
- Shut-off valves.

7. Other pre-insulated network components
Components made in accordance with PN-EN-15698, PN-EN-253, and PN-EN-489.
- Heat-shrinkable joint,
- Rubber sealing rings,
- Heat-shrinkable tapes,
- Heat shrinkable end seals,
- PUR foam.

8. Alarm system components
The alarm systems comply with the requirements of the 14419 standard.

Pre-insulated Twin HDPE-jacket pipes / UV-Protect Color jacket pipes / pipes with a diffusion barrier

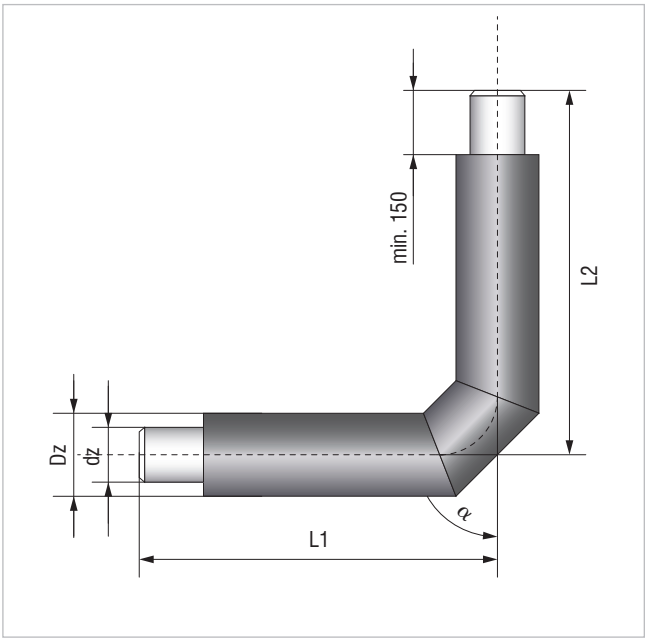


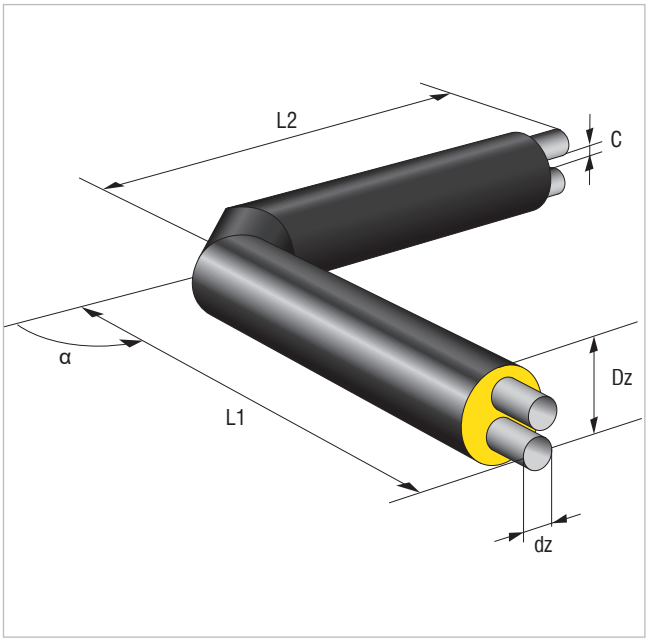


DN	Steel pipe			Distance between tubes line	STANDARD Insulation	PLUS Insulation	2×PLUS Insulation	Section length
	Outer pipe diameter	Wall thickness						
		Welded	Seamless					
	dz [mm]	s [mm]	s [mm]	C [mm]	Dz [mm]	Dz [mm]	Dz [mm]	L [m]
20	26,9	3,2	3,2	19	125	140	160	6/12
25	33,7	3,2	3,2	19	140	160	180	6/12
32	42,4	3,2	3,2	19	160	180	200	6/12
40	48,3	3,2	3,2	19	160	180	200	6/12
50	60,3	3,2	3,2	20	200	225	250	6/12
65	76,1	3,2	3,2	20	225	250	280	6/12
80	88,9	3,2	3,2	25	250	280	315	6/12
100	114,3	3,6	3,6	25	315	355	400	6/12
125	139,7	3,6	3,6	30	400	450	500	6/12
150	168,3	4,0	4,0	40	450	500	560	6/12
200	219,1	4,5	4,5	45	560	630	710	6/12

Pre-insulated pipes with lengths L = 6, 12 m.
Untypical diameters and wall thicknesses not listed in the catalog – on request.
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Pre-insulated Twin Pipe bends



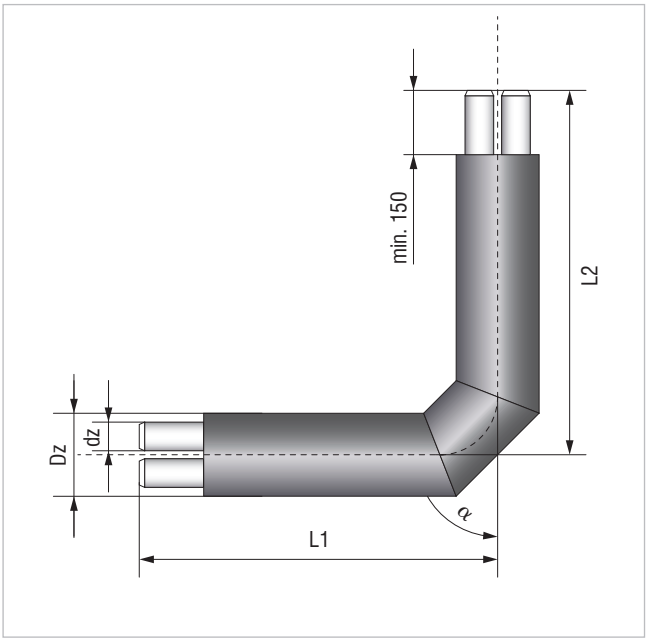


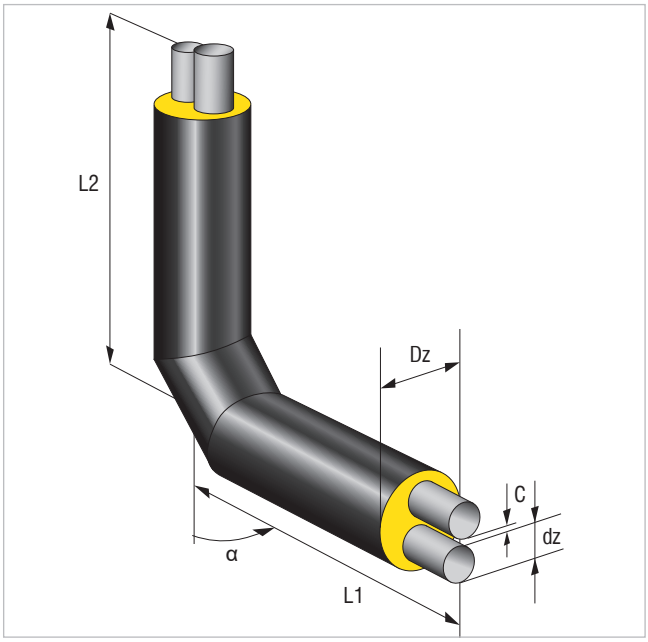
Steel pipe		Distance between tubes line	HDPE casing pipe			Arm length	
DN	Wall thickness dz [mm]	C [mm]	STANDARD Insulation Dz [mm]	PLUS Insulation Dz [mm]	2×PLUS Insulation Dz [mm]	L1 [mm]	L2 [mm]
20	26,9	19	125	140	160	1000/1500/2000	1000/1500/2000*
25	33,7	19	140	160	180	1000/1500/2000	1000/1500/2000*
32	42,4	19	160	180	200	1000/1500/2000	1000/1500/2000*
40	48,3	19	160	180	200	1000/1500/2000	1000/1500/2000*
50	60,3	20	200	225	250	1000/1500/2000	1000/1500/2000*
65	76,1	20	225	250	280	1000/1500/2000	1000/1500/2000*
80	88,9	25	250	280	315	1000/1500/2000	1000/1500/2000*
100	114,3	25	315	355	400	1000/1500/2000	1000/1500/2000*
125	139,7	30	400	450	500	1000/1500/2000	1000/1500/2000*
150	168,3	40	450	500	560	1000/1500/2000	1000/1500/2000*
200	219,1	45	560	630	710	1000/1500/2000	1000/1500/2000*

Typical angles $\alpha = 90°$, untypical angles $5° \leq \alpha \leq 90°$, on request.
With an alarm system.
Untypical diameters, wall thicknesses and bend radii not listed in the catalog – on request.

* The total length of the arms (L1 + L2) must not exceed 3 m
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Pre-insulated Twin Pipe vertical bends



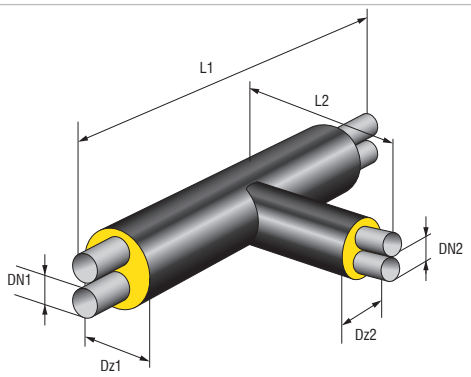


Steel pipe		Distance between tubes line	HDPE casing pipe			Arm length	
DN	Wall thickness dz [mm]	C [mm]	STANDARD Insulation Dz [mm]	PLUS Insulation Dz [mm]	2×PLUS Insulation Dz [mm]	L1 [mm]	L2 [mm]
20	26,9	19	125	140	160	1000/1500/2000	1000/1500/2000*
25	33,7	19	140	160	180	1000/1500/2000	1000/1500/2000*
32	42,4	19	160	180	200	1000/1500/2000	1000/1500/2000*
40	48,3	19	160	180	200	1000/1500/2000	1000/1500/2000*
50	60,3	20	200	225	250	1000/1500/2000	1000/1500/2000*
65	76,1	20	225	250	280	1000/1500/2000	1000/1500/2000*
80	88,9	25	250	280	315	1000/1500/2000	1000/1500/2000*
100	114,3	25	315	355	400	1000/1500/2000	1000/1500/2000*
125	139,7	30	400	450	500	1000/1500/2000	1000/1500/2000*
150	168,3	40	450	500	560	1000/1500/2000	1000/1500/2000*
200	219,1	45	560	630	710	1000/1500/2000	1000/1500/2000*

Typical angles $\alpha = 90°$, untypical angles $5° \leq \alpha \leq 90°$, on request.
With an alarm system.
Untypical diameters, wall thicknesses and bend radii not listed in the catalog – on request.

* The total length of the arms (L1 + L2) must not exceed 3 m.
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Pre-insulated Twin Pipe T-branch straight



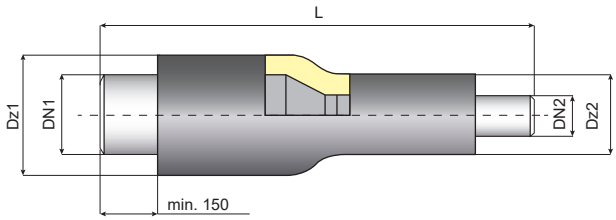
Main pipe		Branch					STANDARD						
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150	200
		Dz2	125	140	160	160	200	225	250	315	400	450	560
20	125		✓										
25	140		✓	✓									
32	160		✓	✓	✓								
40	160		✓	✓	✓	✓							
50	200		✓	✓	✓	✓	✓						
65	225		✓	✓	✓	✓	✓	✓					
80	250		✓	✓	✓	✓	✓	✓	✓				
100	315		✓	✓	✓	✓	✓	✓	✓	✓			
125	400		✓	✓	✓	✓	✓	✓	✓	✓	✓		
150	450		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
200	560				✓	✓	✓	✓	✓	✓	✓	✓	✓

Main pipe		Branch					PLUS						
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150	200
		Dz2	140	160	180	180	225	250	280	355	450	500	630
20	140		✓										
25	160		✓	✓									
32	180		✓	✓	✓								
40	180		✓	✓	✓	✓							
50	225		✓	✓	✓	✓	✓						
65	250		✓	✓	✓	✓	✓	✓					
80	280		✓	✓	✓	✓	✓	✓	✓				
100	355		✓	✓	✓	✓	✓	✓	✓	✓			
125	450		✓	✓	✓	✓	✓	✓	✓	✓	✓		
150	500		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
200	630				✓	✓	✓	✓	✓	✓	✓	✓	✓

Main pipe		Branch					2×PLUS						
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150	200
		Dz2	160	180	200	200	250	280	315	400	500	560	710
20	160		✓										
25	180		✓	✓									
32	200		✓	✓	✓								
40	200		✓	✓	✓	✓							
50	250		✓	✓	✓	✓	✓						
65	280		✓	✓	✓	✓	✓	✓					
80	315		✓	✓	✓	✓	✓	✓	✓				
100	400		✓	✓	✓	✓	✓	✓	✓	✓			
125	500		✓	✓	✓	✓	✓	✓	✓	✓	✓		
150	560		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
200	710				✓	✓	✓	✓	✓	✓	✓	✓	✓

L1 = 1,5 m
L2 = 1,0 m
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Pre-insulated Twin Pipe reductions



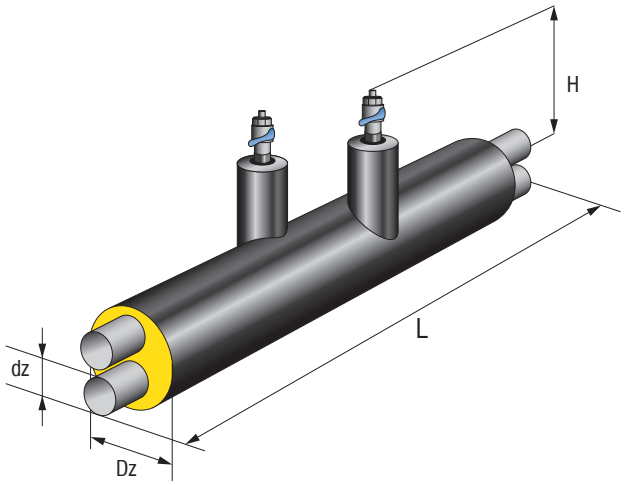
From the diameter		For diameter	STANDARD								
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150
		Dz2	125	140	160	160	200	225	250	315	400	450
25	140		✓									
32	160		✓	✓								
40	160		✓	✓	✓							
50	200		✓	✓	✓	✓						
65	225			✓	✓	✓	✓					
80	250			✓	✓	✓	✓	✓				
100	315				✓	✓	✓	✓	✓			
125	400						✓	✓	✓	✓		
150	450						✓	✓	✓	✓	✓	
200	560								✓	✓	✓	✓

From the diameter		For diameter	PLUS								
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150
		Dz2	140	160	180	180	225	250	280	355	450	500
25	160		✓									
32	180		✓	✓								
40	180		✓	✓	✓							
50	225		✓	✓	✓	✓						
65	250			✓	✓	✓	✓					
80	280			✓	✓	✓	✓	✓				
100	355				✓	✓	✓	✓	✓			
125	450						✓	✓	✓	✓		
150	500						✓	✓	✓	✓	✓	
200	630								✓	✓	✓	✓

From the diameter		For diameter	2×PLUS								
DN1	Dz1	DN2	20	25	32	40	50	65	80	100	125	150
		Dz2	160	180	200	200	250	280	315	400	500	560
25	180		✓									
32	200		✓	✓								
40	200		✓	✓	✓							
50	250		✓	✓	✓	✓						
65	280			✓	✓	✓	✓					
80	315			✓	✓	✓	✓	✓				
100	400				✓	✓	✓	✓	✓			
125	500						✓	✓	✓	✓		
150	560						✓	✓	✓	✓	✓	
200	710								✓	✓	✓	✓

For DN1 ≤ 100 L = 1,0 m
For DN1 > 100 L = 1,5 m
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

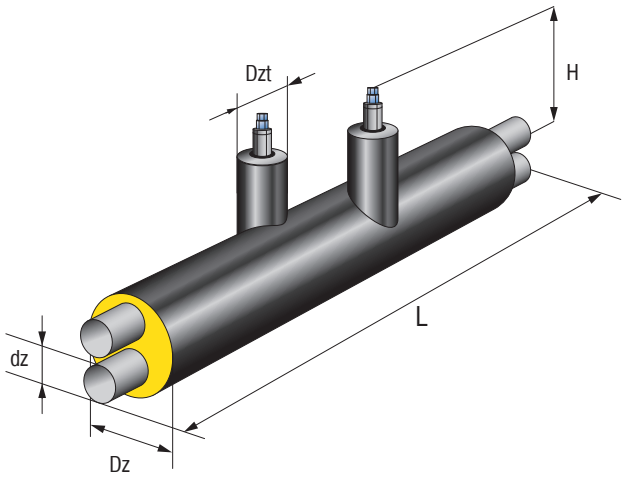
Top pre-insulated Twin Pipe vents / Top pre-insulated Twin Pipe drains



Steel pipe		STANDARD Insulation	PLUS Insulation	2×PLUS Insulation	Nominal drain meter	Nominal vent diameter	Section length
DN	Outer pipe diameter						
	dz [mm]	Dz [mm]	Dz [mm]	Dz [mm]	H [mm]	DN	L [m]
32	42,4	160	180	200	25	25	2
40	48,3	160	180	200	25	25	2
50	60,3	200	225	250	32	25	2
65	76,1	225	250	280	32	25	2
80	88,9	250	280	315	32	25	2,5
100	114,3	315	355	400	32	25	2,5
125	139,7	400	450	500	50	25	3
150	168,3	450	500	560	50	25	3
200	219,1	560	630	710	50	25	3

The required H value should be determined on the basis of the district heating network profile and specified in the purchase order.
Other drainage diameters – on request.
Stainless steel body valves.
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Pre-insulated Twin Pipe DN25÷200 shut-off valves



Steel pipe		STANDARD insulation	PLUS Insulation	2×PLUS Insulation	Valve stem insulation	Height	Section length
DN	Outer pipe diameter						
	dz [mm]	Dz [mm]	DZ [mm]	DZ [mm]	Dzt [mm]	H [mm]	L [m]
25	33,7	140	160	180	90	480	2
32	42,4	160	180	200	110	485	2
40	48,3	160	180	200	110	495	2
50	60,3	200	225	250	110	500	2,2
65	76,1	225	250	280	110	504	2,2
80	88,9	250	280	315	110	515	2,5
100	114,3	315	355	400	125	525	2,7
125	139,7	400	450	500	140	545	3,5
150	168,3	450	500	560	140	565	4,2
200	219,1	560	630	710	160	585	5

Notes:
For operation of valves with a diameter of DN25÷DN80, use a "T" handle wrench, for those with a diameter of DN100÷DN200, use a portable planetary gear.
Valves are recommend to be placed in chambers.
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

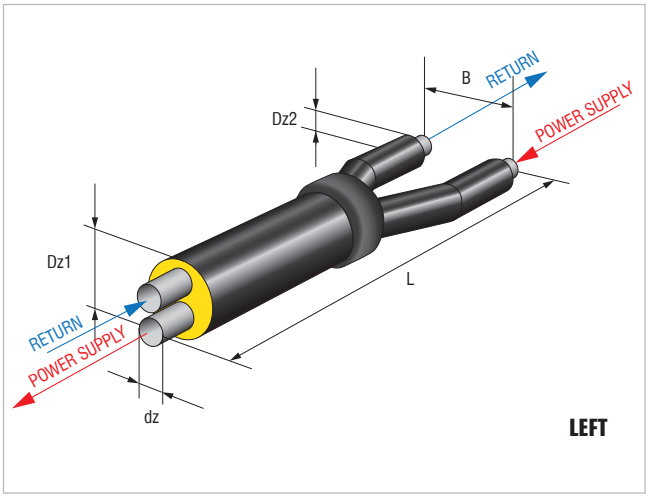
Pre-insulated “Y” merge pipe from Twin Pipe to single pipes

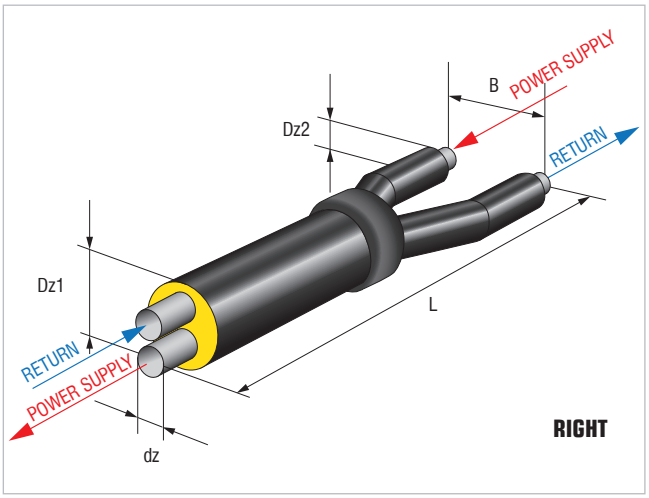
Steel pipes		STANDARD Insulation HDPE	STANDARD Insulation HDPE	Distance	Section length
DN	Outer pipe diameter	Dz1	Dz2	B	L
	dz [mm]	[mm]	[mm]	[mm]	[m]
20	26,9	125	90	240	1,5
25	33,7	140	90	240	1,5
32	42,4	160	110	260	1,5
40	48,3	160	110	260	1,5
50	60,3	200	125	275	1,5
65	76,1	225	140	290	1,5
80	88,9	250	160	310	1,5
100	114,3	315	200	350	1,5
125	139,7	400	225	375	1,5
150	168,3	450	250	400	1,5
200	219,1	560	315	465	2

Steel pipes		2×PLUS Insulation HDPE	2×PLUS Insulation HDPE	Distance	Section length
DN	Outer pipe diameter	Dz1	Dz2	B	L
	dz [mm]	[mm]	[mm]	[mm]	[m]
20	26,9	160	125	275	1,5
25	33,7	180	125	275	1,5
32	42,4	200	140	290	1,5
40	48,3	200	140	290	1,5
50	60,3	250	160	310	1,5
65	76,1	280	180	330	1,5
80	88,9	315	200	350	1,5
100	114,3	400	250	400	1,5
125	139,7	500	280	430	1,5
150	168,3	560	315	465	1,5
200	219,1	710	400	550	2

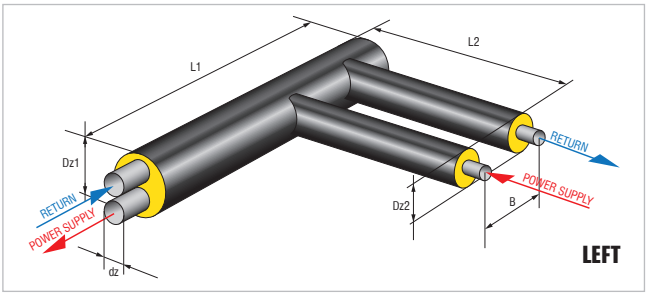
Steel pipes		PLUS Insulation HDPE	PLUS Insulation HDPE	Distance	Section length
DN	Outer pipe diameter	Dz1	Dz2	B	L
	dz [mm]	[mm]	[mm]	[mm]	[m]
20	26,9	140	110	260	1,5
25	33,7	160	110	260	1,5
32	42,4	180	125	275	1,5
40	48,3	180	125	275	1,5
50	60,3	225	140	290	1,5
65	76,1	250	160	310	1,5
80	88,9	280	180	330	1,5
100	114,3	355	225	375	1,5
125	139,7	450	250	400	1,5
150	168,3	500	280	430	1,5
200	219,1	630	355	505	2

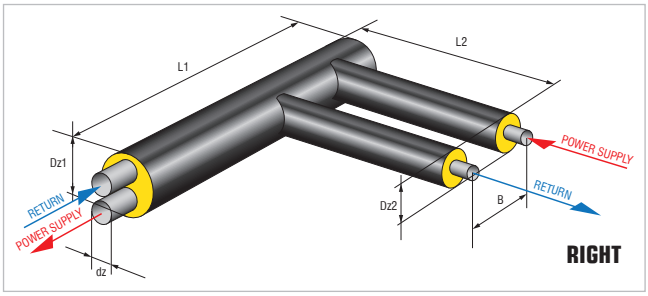
HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).





Pre-insulated “F” merge pipe from Twin Pipe to single pipes





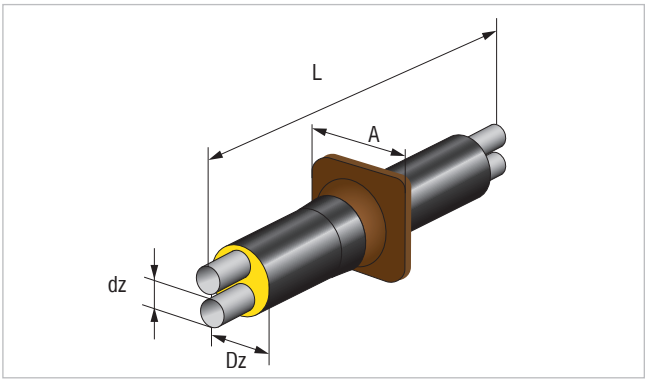
Steel pipe		STANDARD HDPE	STANDARD HDPE	Distance	Section length	Section length
DN	Outer pipe diameter dz	insulation Dz1	Insulation Dz2	B	L1	L1
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
20	26,9	125	90	265	1500	1100
25	33,7	140	90	265	1500	1100
32	42,4	160	110	280	1500	1100
40	48,3	160	110	280	1500	1100
50	60,3	200	125	295	1600	1200
65	76,1	225	140	315	1600	1200
80	88,9	250	160	335	1600	1200
100	114,3	315	200	430	1800	1200
125	139,7	400	225	460	1800	1400
150	168,3	450	250	535	2000	1400
200	219,1	560	315	615	2200	1600

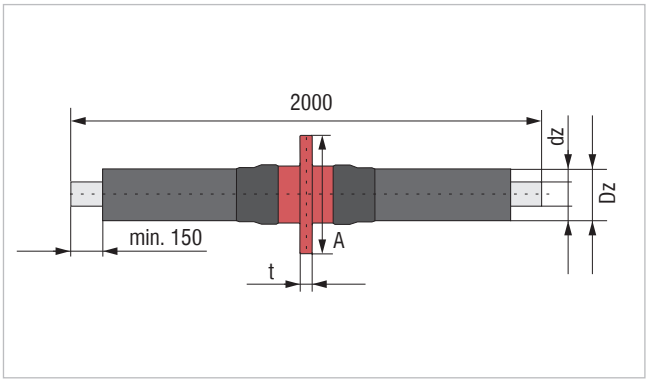
Steel pipe		STANDARD HDPE	STANDARD HDPE	Distance	Section length	Section length
DN	Outer pipe diameter dz	insulation Dz1	Insulation Dz2	B	L1	L1
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
20	26,9	140	110	265	1500	1100
25	33,7	160	110	265	1500	1100
32	42,4	180	125	280	1500	1100
40	48,3	180	125	280	1500	1100
50	60,3	225	140	295	1600	1200
65	76,1	250	160	315	1600	1200
80	88,9	280	180	335	1600	1200
100	114,3	355	225	430	1800	1200
125	139,7	450	250	460	1800	1400
150	168,3	500	280	535	2000	1400
200	219,1	630	355	615	2200	1600

Steel pipe		STANDARD HDPE	STANDARD HDPE	Distance	Section length	Section length
DN	Outer pipe diameter dz	insulation Dz1	Insulation Dz2	B	L1	L1
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
20	26,9	160	125	265	1500	1100
25	33,7	180	125	265	1500	1100
32	42,4	200	140	280	1500	1100
40	48,3	200	140	280	1500	1100
50	60,3	250	160	295	1600	1200
65	76,1	280	180	315	1600	1200
80	88,9	315	200	335	1600	1200
100	1114,3	400	250	430	1800	1200
125	139,7	500	280	460	1800	1400
150	168,3	560	315	535	2000	1400
200	219,1	710	400	615	2200	1600

HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Preinsulated fixed points



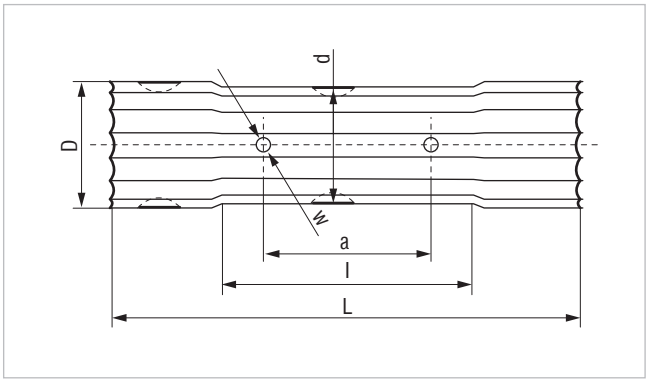


Steel pipe		STANDARD Insulation	Dimension plates resistance	PLUS Insulation	Dimension plates resistance	2×PLUS Insulation	Dimension plates resistance	Max. force
DN	dz [mm]	Dz [mm]	A [mm]	Dz [mm]	A [mm]	Dz [mm]	A [mm]	Fx [kN]
32	42,4	160	260	180	280	200	300	230
40	48,3	160	260	180	280	200	300	230
50	60,3	200	300	225	330	250	350	280
65	76,1	225	250	250	350	280	380	400
80	88,9	250	350	280	380	315	420	710
100	114,3	315	415	355	455	400	500	710
125	139,7	400	500	450	550	500	650	990
150	168,3	450	600	500	650	560	700	1650
200	219,1	560	700	630	800	710	850	2000

Notes:
The specified force is the admissible load of the retaining plate.
The force for the concrete block should be calculated separately.
The permissible block displacement is 2% in relation to its height

HDPE-jacket available with diffusion barrier or UV-resistant Protect Color jacket (black, grey and blue – other color jacket compliant with RAL on request).

Heat-shrink radially cross-linked joints



Material – high-density polyethylene (HDPE)

Socket dimensions								
Dz [mm]	**Bell**	**Neck**	**Catalog length**	**Delivery length**	**Length between bells**	**Fill opening spacing**	**Fill opening diameter**	**Outlet pipe dimensions**
	D [mm]	**d** [mm]	**Cat. L** [mm]	**Deliv. L (±20)** [mm]	**l** [mm]	**a** [mm]	**w** [mm]	**DzxS** [mm]
125	147^{+5}	137^{+5}	650	670	350	240	20	110×3,2
140	150^{+5}	150^{+5}	650	670	350	240	20	125×3,2
160	182^{+10}	172^{+10}	650	670	350	240	20	140×3,5
200	220^{+10}	210^{+10}	650	670	350	240	20	160×3,8
225	249^{+10}	239^{+10}	650	670	350	240	20	200×3,7
250	275^{+10}	265^{+10}	650	670	350	240	20	225×4,1
315	340^{+15}	330^{+15}	650	670	350	240	20	250×4,5
400	430^{+15}	420^{+15}	650	670	350	240	20	338×5,8
450	490^{+15}	480^{+15}	650	670	350	240	20	338×5,8
560	590^{+20}	580^{+20}	750	770	350	240	20	398×5,8

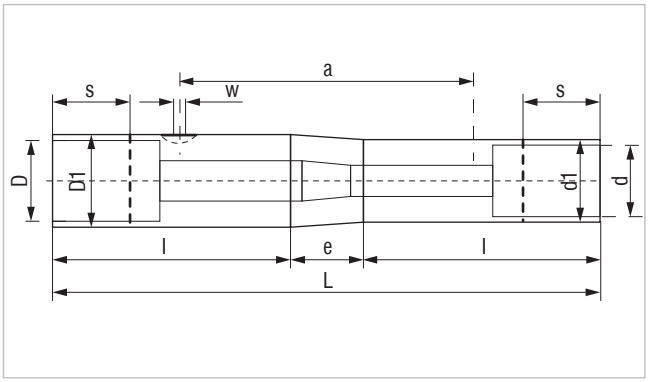
The following items are delivered together with the joint:
- vent plugs – 2 pcs.
- welded plugs – 2 pcs.
- cleaning tissues – 2 pcs.

illustrative photo

Integrally for the cross-linked joint, we recommend to provide:
- polyurethane foam components,
- required elements of the alarm system

We offer joints in standard version (HDPE) and with diffusion barrier.
Radionally cross-linked shrink joints are resistant to UV radiation and can be used to insulate jacket connections with UV barrier.
Color: black, grey and blue – other color jacket compliant with RAL on request.

Heat-shrink reducer joints



Material – black, radially cross-linked high density polyethylene (HDPE)

Scope of application of the casing pipe	Preinsulateed pipe		Sleeve dimensions								Outlet pipe inlet dimensions
	inlet	outlet	Large diameter	Small diameter	Length	Straight section	Cone	Fill opening spacing	Fill opening spacing	Fill opening spacing	
Dz [mm]	D [mm]	d [mm]	D1 ±5 [mm]	d1 ±5 [mm]	L + 5 [mm]	l-2 [mm]	e [mm]	a ±5 [mm]	w [mm]	s [mm]	Dz×S [mm]
160/140/125	160	140/125	180	160	700	295	115	330	20	120	110×5,0
200/160/140	200	160/140	220	180	700	295	115	330	20	120	125×5,0
225/200/160	225	200/160	245	220	760	325	115	380	20	120	140×7,0
250/225/200	250	225/200	265	245	760	325	115	380	20	120	160×7,0
315/250/225	315	250/225	330	265	760	325	115	380	20	120	200×7,5

The following items are delivered together with the joint:
- vent plugs – 2 pcs.
- welded plugs – 2 pcs.
- cleaning tissues – 2 pcs.

Integrally for the cross-linked joint, we recommend to provide:
- polyurethane foam components.
- steel reducer.

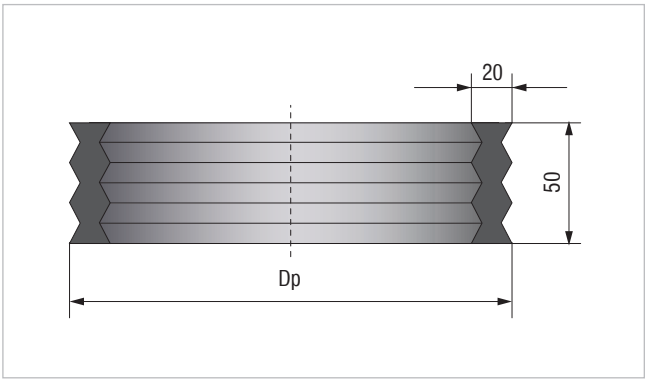
We offer joints in standard version (HDPE) and with diffusion barrier.
Radionally cross-linked shrink joints are resistant to UV radiation
and can be used to insulate jacket connections with UV barrier.
Color: black, grey and blue – other color jacket compliant with RAL on request.

illustrative photo

Heat-shrink terminal gaskets for pre-insulated pipes with two carrier pipes END-CAP type

Casing pipe	Carrier pipe	END-CAP
Dz [mm]	DN	
110/125	20, 25	REC2×20(25)/110(125)
140/160	32, 40	REC2×32(40)/160(180)
160/180	40	REC2×40/160(180)
200/225	50, 65	REC2×50(65)/200(225)
225/250	65, 80	REC2×65(80)/225(250)
250/280	80	REC2×80/250(280)

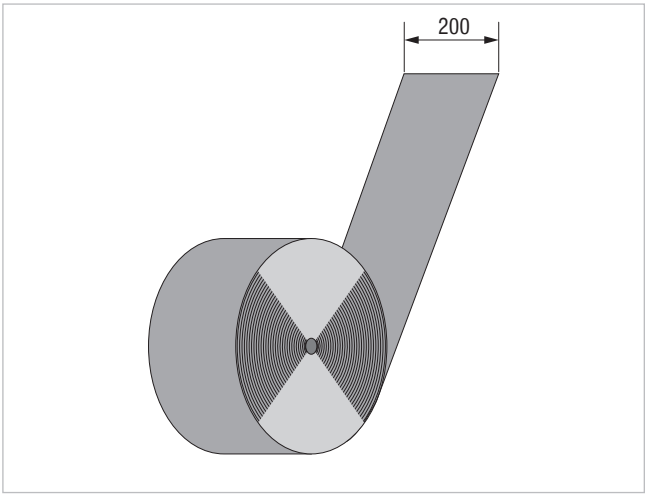
Rubber sealing rings



Material – rubber

Pre-insulated pipe	Diameter
Dz [mm]	**Dp** [mm]
90	130
110	150
125	165
140	180
160	200
200	240
225	265
250	290
315	355
400	440
450	490
560	660

Warning tapes



Roll length – 200 running meters, 100 running meters, 50 running meters
Roll width – 200 mm

Blanking plugs

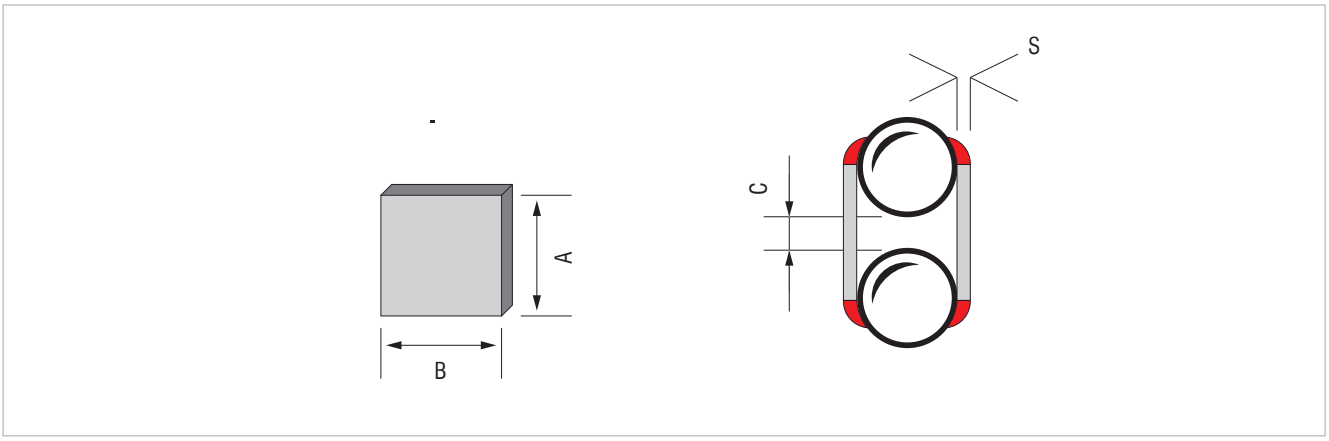
Vent plug

Welded plug (to be fused)

Vent plug
Plugs with a nominal diameter of 20 mm are made of HDPE. They evacuate
excess air during the PUR foam binding reaction and are removed after the foam has hardened.

Welded plug
Plugs with a nominal diameter of 34 mm made of HDPE, with a melt flowrate comparable to the sleeve material. They protect the fill openings in the sleeve.

Anchors



Steel pipe	Anchor dimension			Distance between pipes
[mm]	**A** [mm]	**B** [mm]	**S** [mm]	**C** [mm]
2×26,9	50	46	4	19
2×33,7	50	53	4	19
2×42,4	50	61	4	19
2×48,3	50	67	4	19
2×60,3	70	80	4	20
2×76,1	90	96	4	20
2×88,9	110	114	6	25
2×114,3	140	139	6	25
2×139,7	170	170	6	30
2×168,3	200	208	6	40
2×219,1	260	264	8	45

Polyurethane foam components for filling joints

Casing pipe Dz [mm]	PUR No.	Set Quantity of components A+B [g]	Number component A (Polyol) [g]	Number containers/ capacity pcs. / dm^3	Number component B (Isocianian) [g]	Number containers/ capacity pcs. / dm^3
125	D125	653	251	1/1	402	1/0,5
140	D140	794	305	1/1	488	1/0,5
160	D160	1061	408	1/1	653	1/1
180	D180	1304	502	1/2	803	1/1
200	D200	1527	587	1/2	940	1/1
225	D225	1879	723	1/2	1156	1/2
250	D250	2373	913	1/5	1460	1/2
280	D280	2844	1094	1/5	1750	1/2
315	D315	3510	1350	1/5	2160	1/2
355	D355	4176	1606	1/5	2570	1/5
400	D400	5665	2179	2/5	3486	2/2
450	D450	7214	2775	2/5	4440	2/2
500	D500	9118	3507	2/5	5611	2/5
560	D560	10546	4056	2/5	6490	2/5
630	D630	12802	4924	2/10	7878	2/5
710	D710	17028	6549	2/10	10479	2/5

For PUR D500 and larger, foaming with an aggregate is recommended
Components should be stored at 18 + 23°C – see "RADPOL pre-insulated pipeline assembly instructions"

Heat-shrink radially cross-linked joints installation tools

Straight plug welding machine
The straight plug welding machine is intended for fusing blanking plugs for the fill openings in joints. The device is provided with the option of temperature control and heating time signaling.
Power: 600 W.
Head excluded (available on request).

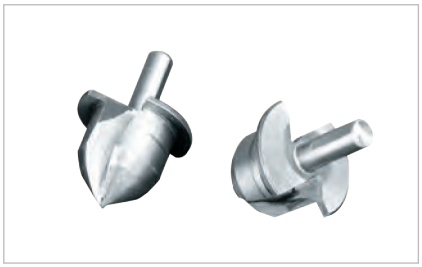
Welding machine head
The head is covered with a Teflon anti-adhesive layer. It is used for heating the plug and opening in the sleeve as a spare part for the welding machine.
If the Teflon layer becomes damaged or a deposit of burnt polyethylene is formed, the head should be replaced with a new one. The head cannot be contaminated with PUR foam.

Plug holder
The holder allows to heat the plug properly, without the risk of its perforation with the tip screwed into the plug. It facilitates the control of the plasticity degree of the plug material by observing material flashes.
It protects the surface of the plug with the manufacturer's identification mark in accordance with the requirements of EN 489.

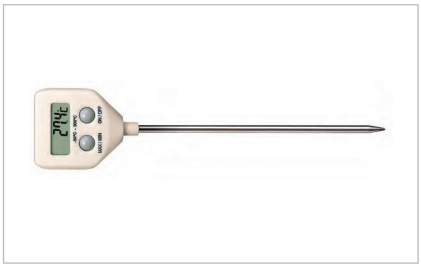
Burner with 3 nozzles ∅ 25; 35; 50 mm
Specification:
- fueled with propane butane,
- easy to use while maintaining very good performance and operational safety,
- hand grip with flame control,
- nozzle replacement option,
- designed for shrinking heat-shrink radial cross-linked joints.

Technical data:
- maximum flame temperature: 1850°C,
- gas consumption: 2000 g/h,
- thermal capacity: 19.5 kW.

The set includes:
- 3 nozzles: ∅ 25; 35; 50 mm,
- 1.5 m reinforced rubber hose,
- burner.



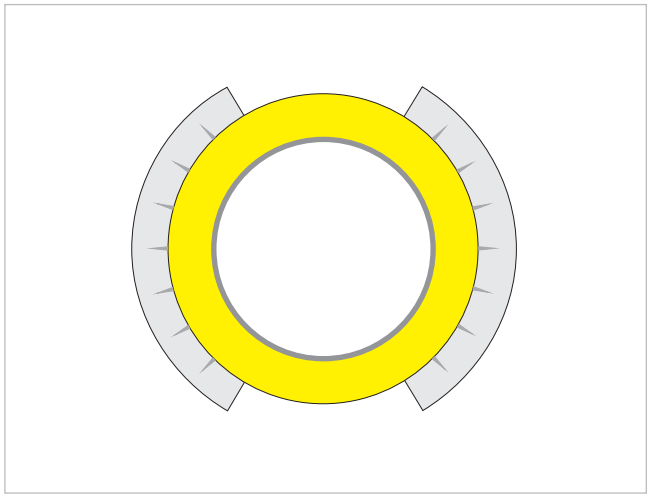
Tapered cutter
The ∅ 27 or ∅ 24,5 tapered cutter allows to make holes for fused plugs.
It cuts out the appropriate hole. It should be sharpened only with the use of a tool grinder (not manually) to maintain the required blade geometry. Otherwise, a defective cutter can damage the sleeve while drilling the opening.

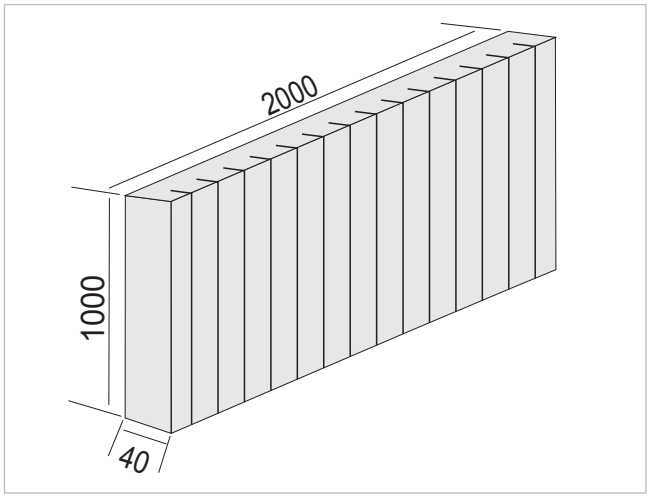


Thermometer ST 9293A
Scope: -50°C to +300°C
- 133 mm long stainless probe,
- HOLD function,
- measurement every 1 second,
- waterproof IP67,
- LCD display.

Optionally, calibration certificate available against an additional fee.

Compensating cushions typ B PE





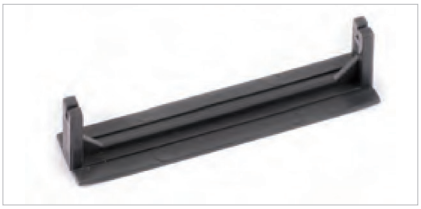
Material: cross-linked foamed polyethylene

Properties of PE expansion pads	
Deformation	**Shear stress**
40%	0,06MPa
50%	0,09MPa
75%	0,275MPa

Thermal conductivity $\lambda = 0{,}05 W/mK$

Pulse alarm signaling components

Clamping ferrules
Used for connecting alarm system wiring with a cross-section of 1.5 mm^2 with the use of special clamping pliers.
There are two clamping ferrules per sleeve.



Wire bracket
It is used as a support for signaling wires to ensure appropriate distance between the wire and the steel pipe.
There are two wire brackets per sleeve.

Paper tape (roll)
It is used for fixing brackets to a steel pipe. 1 roll = 50 running meters.

Tin LC60-TLR 157 Ø2 (250 g)
It is used for soldering alarm signaling wires connected by means of a clamping ferrule.

Soldering paste (100 g)
Double junction box 67LV45 with KE-001 cable

Double junction box 67LV45 with KE-001 cable
The box is used where an alarm loop must be closed, one box per loop.

Single junction box 67LV15
The box is used where it is necessary to connect the alarm system to the detector or resetting terminal.

Detector resetting terminal 66LV72
It is used to "mute" the signal sent by the detector. It is used together with the single junction box 67LV15.
It is used for closing the measuring sockets of unused ducts in the measuring device.

Pulse system – measuring equipment

Below we present the most popular products from the category of alarm signaling elements. In order to see the full offer, please contact us.

LX9024

A meter for measuring the pulse alarm system in pre-insulated district heating networks – LX9024

1. Measurement information is presented on an alphanumeric LCD display, 2 × 16 characters, illuminated.
2. Measurement voltage of polyurethane insulation: 24 V DC.
3. Measurement ranges:
   - polyurethane insulation resistance measurement: 0.1 kΩ to 200 M,
   - alarm loop wiring resistance measurement: 0 to 68Ω,
   - instrument battery temperature measurement: 5 to 50°C.

4 Measuring errors:
   - polyurethane insulation resistance measurement accuracy from 0.1 kΩ to 200 MΩ: ± 5% ± 2 digits of measured value,
   - alarm loop wiring resistance measurement accuracy: ± 5% ± 2 digits.
   - power supply – set of 7.2 V NiCd /700 mAh batteries.
   - range of working and storage temperatures: 5 to 50°C.

ACN-2Z

A fixed detector is used to control the technical condition of two sections of a pre-insulated district heating network with a pulse alarm system – ACN-2Z

1. Number of controlled sections of the district heating network: 2.
2. Maximum length of the controlled section of the district heating network: 2000 m.
3. Limit value of the polyurethane insulation resistance: 150Ω (100 to 550Ω).
4. Polyurethane insulation resistance measurement accuracy: ±10%.
5. Power consumption: 0.75 VA.
6. Power supply: 230 V 50 Hz.
7. Working temperature range: 5 to 50°C.

ACN-4N

A fixed detector used to control the technical condition of four sections of a pre-insulated district heating network with a pulse alarm system – ACN-4N

1. Number of controlled sections of the district heating network: 4.
2. Maximum length of the controlled section of the district heating network: 2000 m.
3. Measurement information is presented on an alphanumeric display, 2 ×16 characters.
4. Limit value of the polyurethane insulation resistance: 150Ω (100 to 550Ω).
5. Polyurethane insulation resistance measurement accuracy: ±10%.
6. Power consumption: 3 VA.
7. Power supply: 230 V 50 Hz.
8. Working temperature range: 5 to 50°C.

LPS-2C

A fixed detector used to control the technical condition of two sections of a pre-insulated district heating network with an alarm system – LPS-2C

1. Total length of the controlled district heating network: ≤ 2000 m.
2. Polyurethane insulation resistance measurement error: ±10%.
3. Power supply: 24 V (4 VA).

LPS-2I

The instrument is designed to monitor two sections of a pre-insulated district heating network with a pulse alarm system – LPS-2I.

1. Number of controlled sections of the pre-insulated network: 2.
2. Maximum length of the controlled section of the district heating network: 2000 m.
3. Measurement information is presented on an alphanumeric display, 2 × 16 characters: red LED – FAILURE.
4. Polyurethane insulation resistance measurement range: 0.2 kΩ to 200 MΩ.
5. Polyurethane insulation resistance measurement accuracy: ± 5% of read value ± 3 digits.
6. Alarm loop resistance measurement range: 0 to 70Ω.
7. District heating network section length measurement range: 0 to 2,000 m.
8. Power supply: 230 V 50 Hz.
9. Working temperature range: 5 to 50°C.

Resistance alarm signaling components

BS-QU clamping ferrules
Used for connecting alarm system wiring with the use of special clamping pliers.
There are two clamping ferrules per sleeve.

BS-SRA heat-shrink tubing
Used for insulation of alarm wires clamped in the BS-QU ferrule.

Wire bracket
It is used as a support for signaling wires to ensure appropriate distance between the wire and the steel pipe.
There are two wire brackets per sleeve.

PPM metering box
The box is used at the end of the measuring loop in the building. There are two loops per one PPM box. A portable LH20S tester or LP-10S fault finder can be connected to it.
Alarm wires from a pre-insulated pipe are connected to the box by means of ME2019TK2 and ME2019TK4 wires and a ZPB connector.

PPA junction box
The box is used at the ends of the measuring loop in buildings and chambers.
Alarm wires from a pre-insulated pipe are connected to the box by means of a ME2019TK2 wire.

ME2019TK2 wire
A two-core wire used to connect the alarm wires to the junction box or a ZPB connector.
A two-core wire used to lead the alarm wires from underneath the heat-shrink gasket and to connect them to the junction box or a ZPB connector.

ME2019TK4 wire
A four-core wire used to connect a ZPB connector to a PPM metering box.

ZPB type connector
Chassis ground during moisture measurements.

Resistance system – measuring equipment

LH-20S

Instrument for measuring and detecting characteristic states in a pre-insulated district heating network with a BRANDES resistance alarm system – LH-20S

1. Measurement information is presented on an alphanumeric LCD display, 2 × 16 characters.
2. Measuring errors:
   - resistance measurement accuracy within the rangedetermined by MH: ±5%,
   - alarm loop resistance measurement accuracy: ±0.2%.
3. Power supply: 2×6F22 (2×9 V).
4. Working temperature range: 5 to 50°C.

LP-10S

Designed for locating moisture in pre-insulated district heating networks with a resistance alarm system – LP-10S

1. Length of the controlled alarm loop: 3 to 2000 m.
2. Resistance of the controlled alarm loop: 16 to 12,000Ω.
3. Polyurethane insulation resistance: <10MΩ (MH≤11).
4. The measurement result is presented on a digital LCD display.
5. Measuring range: 0 to 100% of the length of the controlled alarm loop.
6. Measurement resolution: 0.1%.
7. Moisture location error: ± 1 m/± 0.1%.
8. Power supply: 2 × 6 F22.
9. Range of changes of the working and storage temperature: 5 to 50°C.

LPS-2B

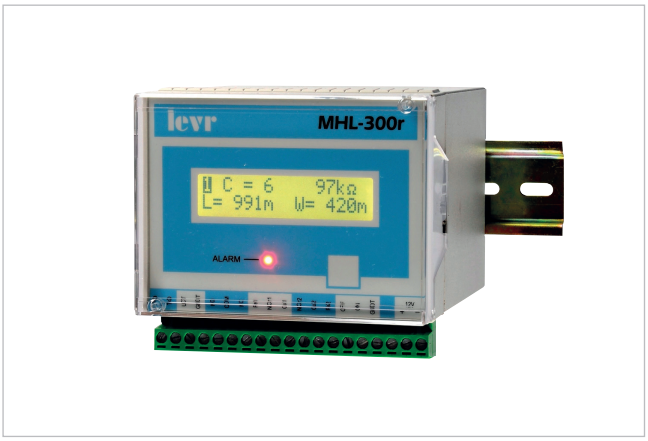
A fixed detector used to control the technical condition of two sections of a pre-insulated district heating network with an alarm system – LPS-2B

1. Total length of the controlled district heating network: ≤ 2000 m.
2. Polyurethane insulation resistance measurement error: ±10%.
3. Power supply: 24 V (4 VA).

MSP-1

A device for automatic continuous control of four sections of a district heating network with a Brandes resistance alarm system – MSP-1

1. Maximum number of controlled sections of the district heating network: 4.
2. Measurement ranges:
   - MH: 1 to 14 and 0,
   - insulation resistance between the sensor wire and the steelpipe: 100Ω to 50 MΩ,
   - resistance of the sensor loop: 11 to 5,734Ω,
   - sensor loop resistance length: 2 to 1,750 m,,
   - leakage location: 2 to 1750 m.
3. Power consumption: 16 VA.



Designed to monitor two sections of a district heating network with a Brandes alarm system – MHL-300R

1. Number of controlled sections of the pre-insulated district heating network: 2.
2. Maximum length of the controlled section of the district heatingnetwork: 2000 m.
3. Measurement information is presented on an alphanumeric display, 2×20 characters.
4. Moisture level measurement range: MH1 to 14 and 0.
5. Polyurethane insulation resistance measurement range: 0.1Ω to 200 MΩ.
6. Alarm loop resistance measurement range: 0 to 12,050Ω.
7. Alarm loop resistance measurement accuracy: ±0.1%.
8. Supply voltage: 12 V DC.
9. Working temperature range: 5 to 50°C.

Designed to monitor two sections of a pre-insulated district heating network with a Brandes alarm system and automatic moisture location – LPS-2R

1. Number of controlled sections of the pre-insulated network: 2.
2. Maximum length of the controlled section of the district heatingnetwork: 2000 m.
3. Measurement information is presented on an alphanumeric display, 2×20 characters: red LED – FAILURE.
4. Polyurethane insulation resistance measurement range: 0.2 kΩ to 200 MΩ.
5. Moisture level measurement range: MH1 to 14 and 0.
6. Polyurethane insulation resistance measurement accuracy: ±5% of read value ±3 digits.
7. Alarm loop resistance measurement range: 0 to 12,050Ω.
8. District heating network section length measurement range: 0 to 2,000 m.
9. Leakage location accuracy: ± 2 m/± 0.2%.
10. Power supply: 230 V 50 Hz.
11. Working temperature range: 5 to 50°C.

Weight of Twin pipes

Welded steel pipe			HDPE casing pipe			Weight of 1 running meter [kg/1 running meter]		
DN	Pipe outer diameter OD [mm]	Outer thickness of the pipe s [mm]	STANDARD insulation OD [mm]	PLUS insulation OD [mm]	2×PLUS insulation OD [mm]	STANDARD insulatiom [kg]	PLUS insulation m [kg]	2×PLUS insulation m [kg]
20	26,9	2,9	125	140	160	5,7	6,0	6,5
25	33,7	2,9	140	160	180	6,9	7,4	8,0
32	42,4	3,2	160	180	200	9,2	9,8	10,3
40	48,3	3,2	160	180	200	10,1	10,6	11,2
50	60,3	3,2	200	225	250	13,0	13,7	14,6
65	76,1	3,2	225	250	280	16,0	16,9	18,1
80	88,9	3,2	250	280	315	18,7	19,9	21,5
100	114,3	3,6	315	355	400	27,1	29,1	31,6
125	139,7	3,6	400	450	500	35,2	38,2	42,0
150	168,3	4	450	500	560	45,7	49,4	54,7
200	219,1	4,5	560	630	710	66,9	73,4	81,2

RADPOL PIPES

PIPE SOLUTIONS

PRE-INSULATED SYSTEMS

RADPOL PIPES SP. Z O.O.

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