

Zakład Produkcyjno Usługowy
Międzyrzecz
POLSKIE RURY PREIZOLOWANE Sp. z o. o.
66-300 Międzyrzecz, ul. Zakaszewskiego 4

PRODUCT CATALOGUE

DOUBLE PREINSULATED PIPES

**ZPU Międzyrzecz Sp. z o.o.
Preinsulated Pipe System
To Be Used In Buried
Thermal Utilities**

August 2024

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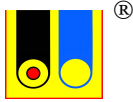
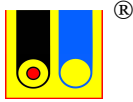


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1. General information on application of ZPU Międzyrzecz sp. z o.o. double preinsulated pipes and fittings

Double preinsulated pipes and fittings by *ZPU Międzyrzecz Sp. z o.o.* are intended for the construction of thermal distribution networks, whose function is to transmit a heating medium from its source up to the reception point. Double preinsulated pipes and fittings are resistant to the medium with maximal working temperature of up to 165°C predicted for thirty-year lifetime.

The function of double preinsulated pipes and fittings manufactured by *ZPU Międzyrzecz Sp. z o.o.* is to transmit a heating medium, characterised either by high and low working parameters, or other media used for process or construction purposes.

Double preinsulated pipes and fittings by *ZPU Międzyrzecz Sp. z o.o.* are composed of a two steel pipes placed inside a single casing pipe made of hard polyethylene of high density (PEHD) and a layer of thermal insulation: standard, standard plus or plus plus, made of rigid polyurethane foam (PUR) filling up the space between the pipes. *ZPU Międzyrzecz Sp. z o.o.* preinsulated pipes, used in the transmission of hot water, are manufactured within the nominal diameters of DN 2×20 to DN 2×250 mm, in standard lengths of 6m, 12m and 16m¹. The ends of pre-insulated pipes and fittings are not insulated at a length of 150 mm \pm 10 mm with diameters up to 2×DN 200 and at a length of 200 mm \pm 10 mm with a diameter of 2×DN 250.

Pipes can be produced by the continuous method (with or without an aluminum barrier) up to the diameter of the casing pipe Dz 355 mm and by the injection and foaming method of PUR foam components in the full range of diameters.

ZPU Międzyrzecz Sp. z o.o. double preinsulated pipes and fittings meet the requirements set down by standards: PN-EN 253, PN-EN 448, PN-EN 488, PN-EN 489, PN-EN 13941 i PN-EN 14419.

All preinsulated pipes and fittings with two steel carrier pipes have couplings welded inside (anchors) and there is no need to use additional couplings in the coupling units.

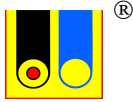
Tees are made in solutions in accordance with the PN-EN 448 standard, as directly welded, reinforced, with a "pull neck" and forged. As a standard, we produce tees as directly welded, while for tees where the diameter of the branchings are the same - as forged tees.

In the case of fittings with a polyethylene barrier (thickened wall of a casing pipe), the product symbol is created by adding its wall thickness to the diameter of the casing pipe (eg II-K-20 + 20 (125 * 5.0) / 90°, etc.).

The suitability of the construction element referred to as: "Preinsulated pipes, fittings and coupling units *ZPU Międzyrzecz Sp. z o.o.* to underground heating networks" is confirmed by: National Technical Assessment ITB-KOT-2018/0286 edition 3, validity date 28 December 2028.

1

On individual customer's request.



2. Properties of Materials Used in Double Preinsulated Pipes and Fittings by ZPU Międzyrzecz sp. z o.o.

Carrier pipe

Carrier pipe is certified **seamless steel pipe, seamed or other**, made according to the contractor's order.

To increase the adhesion of rigid polyurethane foam (PUR) to steel pipes, the external surface of steel pipes is shot-blasted to SA 2 purity according to PN-EN ISO 8501-1.

The ends of the steel service pipes are prepared for bevelling according to PN-EN ISO 9692-1.

Thermal (heat) insulation

The insulation is made of rigid polyurethane foam (PUR), evenly filling the space between the pipes along the entire length, made in accordance with the requirements of PN-EN 253.

Casing pipe

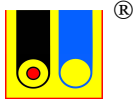
The casing pipe is made in accordance with the requirements of PN-EN 253 with high-density polyethylene (PEHD) in the PE 100 class.

The inner surface of polyethylene pipes is activated by the electrocoronation method to increase adhesion of rigid polyurethane foam.

The protective casing of pre-insulated pipes, fittings, armature and joint units of the ZPU Międzyrzecz Sp. z o.o. system has a test confirming the use of the products for the construction of above-ground heating networks.

3. Pipe Insulation Moisture Detection System

ZPU Międzyrzecz Sp. z o.o. double preinsulated pipes and fittings can be equipped with any system detecting PUR insulation moisture, that is a pulse system (Nordic), resistance system (Brandes), or an HDW system or any system chosen by the customer. Such a system comprises wires embedded in the insulation layer. The system signals moisture spots in any place of the pipeline.



4. Cross-sections of Jacket and Carrier Pipes

ZPU Międzyrzecz Sp. z o.o. double pipes and fittings are manufactured from jacket and carrier pipes of the following diameters:

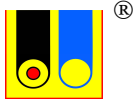
Steel Carrier Pipe				PEHD Jacket Pipe		PEHD Jacket Pipe		PEHD Jacket Pipe	
DN	Dz	welded	seamless	Standard insulation (Serie 1)		Insulation Plus (Serie 2)		Insulation 2xPlus (Serie 3)	
		min[g]	min[g]	Dzp	gp	Dzp	gp	Dzp	gp
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2x20	26,9	2,6	2,9	125	3,0	140	3,0	160	3,0
2x25	33,7	2,6	2,9	140	3,0	160	3,0	180	3,0
2x32	42,4	2,6	2,9	160	3,0	180	3,0	200	3,2
2x40	48,3	2,6	2,9	160	3,0	180	3,0	200	3,2
2x50	60,3	2,9	3,2	200	3,2	225	3,4	250	3,6
2x65	76,1	2,9	3,2	225	3,4	250	3,6	280	3,9
2x80	88,9	3,2	3,6	250	3,6	280	3,9	315	4,1
2x100	114,3	3,6	4,0	315	4,1	355	4,5	400	4,8
2x125	139,7	3,6	4,0	400	4,8	450	5,2	500	5,6
2x150	168,3	4,0	4,5	450	5,2	500	5,6	560	6,0
2x200	219,1	4,5	6,3	560	6,0	630	6,6	710	7,2
2x250	273,0	5,0	7,1	710	7,2	800	7,9	900	8,7

DN - steel pipe nominal diameter, Dz - external diameter, gp - wall thickness

Recommended diameters of preinsulated jacket pipes and fittings are given on further pages of the catalogue.

Tables show geometric dimensions for pipes and double fittings subject to standard production, if it is necessary to use products with other geometric dimensions, it should be individually agreed each time.

Specification of the ordered pre-insulated products should include the carrier pipe's steel grade (welded, seamless or other), type (series) of thermal insulation, type of moisture detection installation embedded in the polyurethane insulation or lack thereof, and in the case of pipes, also their length and use symbols specified in the catalogue.



5. Preinsulated Pipes

5.1. Straight Preinsulated Pipes

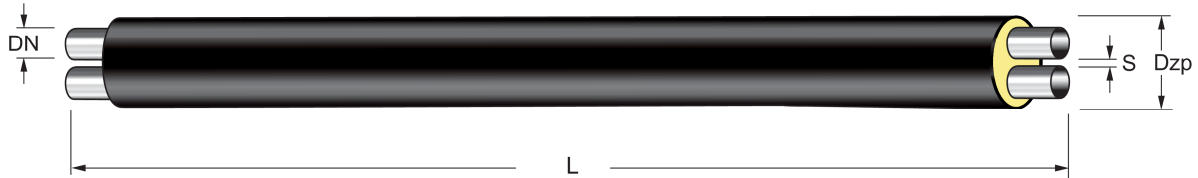


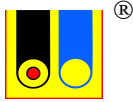
Table 1

Steel carrier pipe		Casing pipe	Length	Pipes spacing	Catalogue reference number
Nominal diameter	External diameter	External diameter			
DN	Dz	Dzp	L	s	
mm	mm	mm	m	mm	
2x20	26,9	125	6/12**	19	II-R-20+20/125
2x25	33,7	140	6/12	19	II-R-25+25/140
2x32	42,4	160	6/12	19	II-R-32+32/160
2x40	48,3	160	6/12	19	II-R-40+40/160
2x50	60,3	200	6,12	20	II-R-50+50/200
2x65	76,1	225	6,12	20	II-R-65+65/225
2x80	88,9	250	6,12	25	II-R-80+80/250
2x100	114,3	315	6,12,16**	25	II-R-100+100/315
2x125	139,7	400	6,12,16*	30	II-R-125+125/400
2x150	168,3	450	6,12,16*	40	II-R-150+150/450
2x200	219,1	560	6,12,16*	45	II-R-200+200/560
2x250	273,0	710	6,12,16*	45	II-R-250+250/710

Note: When ordering, the product name should include the steel grade (welded, seamless or other).

* The pipes with a length of 16 m are manufactured after agreement with the customer.

** Production is optional after individual agreement



5.2. Straight Preinsulated Pipes with polyethylene barrier

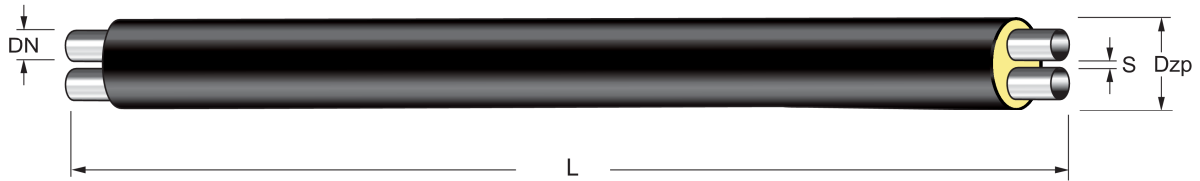


Table 2

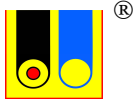
Steel carrier pipe		Casing pipe	Length	Pipes spacing	Catalogue reference number
Nominal diameter	External diameter	External diameter			
DN	Dz	Dzp	L	s	
mm	mm	mm	m	mm	
2x20	26,9	125	6/12**	19	II-RBP-20+20/125+5,0
2x25	33,7	140	6/12	19	II-RBP-25+25/140*5,0
2x32	42,4	160	6/12	19	II-RBP-32+32/160*5,0
2x40	48,3	160	6/12	19	II-RBP-40+40/160*5,0
2x50	60,3	200	6,12	20	II-RBP-50+50/200*5,2
2x65	76,1	225	6,12	20	II-RBP-65+65/225*5,4
2x80	88,9	250	6,12	25	II-RBP-80+80/250*5,6
2x100	114,3	315	6,12,16**	25	II-RBP-100+100/315*5,9
2x125	139,7	400	6,12,16*	30	II-RBP-125+125/400*6,3
2x150	168,3	450	6,12,16*	40	II-RBP-150+150/450*6,7
2x200	219,1	560	6,12,16*	45	II-RBP-200+200/560*7,5

Note: When ordering, the product name should include the steel grade (welded, seamless or other).

* The pipes with a length of 16 m are manufactured after agreement with the customer.

** Production is optional after individual agreement

For pipes with a diameter of 2xDN 250/710 the diffusion barrier is the wall thickness of the casing pipes.



6. Line up of Preinsulated Fittings

6.1. 90° elbow Option A

- elbow assembled horizontally on the construction site
 (8 - vertical arrangement of carrier pipes in the elbow)

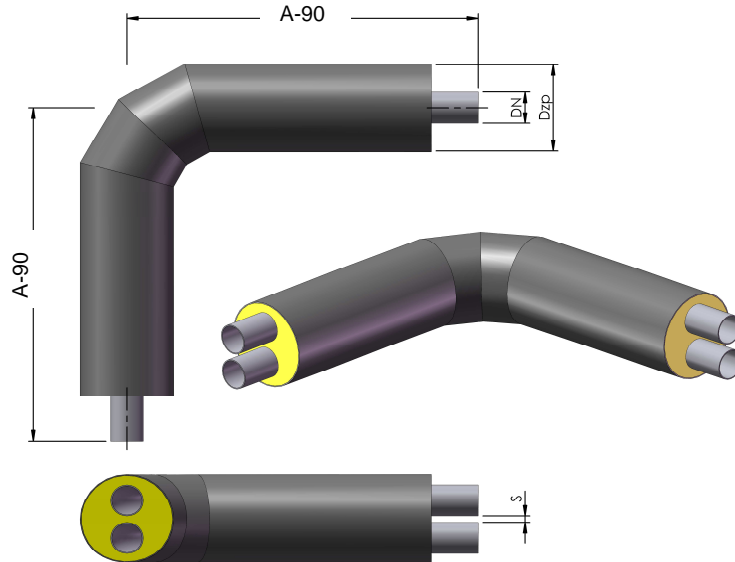


Table 3

Steel carrier pipe			Casing pipe	Elbow length	Catalogue reference number
Nominal diameter	External diameter	Pipes spacing	External diameter		
DN	Dz	s	Dzp	A-90	
mm	mm	mm	mm	mm	
2x20	26,9	19	125	1000	II-K-20+20/90
2x25	33,7	19	140	1000	II-K-25+25/90
2x32	42,4	19	160	1000	II-K-32+32/90
2x40	48,3	19	160	1000	II-K-40+40/90
2x50	60,3	20	200	1000	II-K-50+50/90
2x65	76,1	20	225	1000	II-K-65+65/90
2x80	88,9	25	250	1000	II-K-80+80/90
2x100	114,3	25	315	1000	II-K-100+100/90
2x125	139,7	30	400	1000	II-K-125+125/90
2x150	168,3	40	450	1000	II-K-150+150/90
2x200	219,1	45	560	1000	II-K-200+200/90
2x250	273,0	45	710	1200	II-K-250+250/90

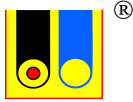
Bend radius:

for diameters from DN 20 up to DN 40 - 3Dz

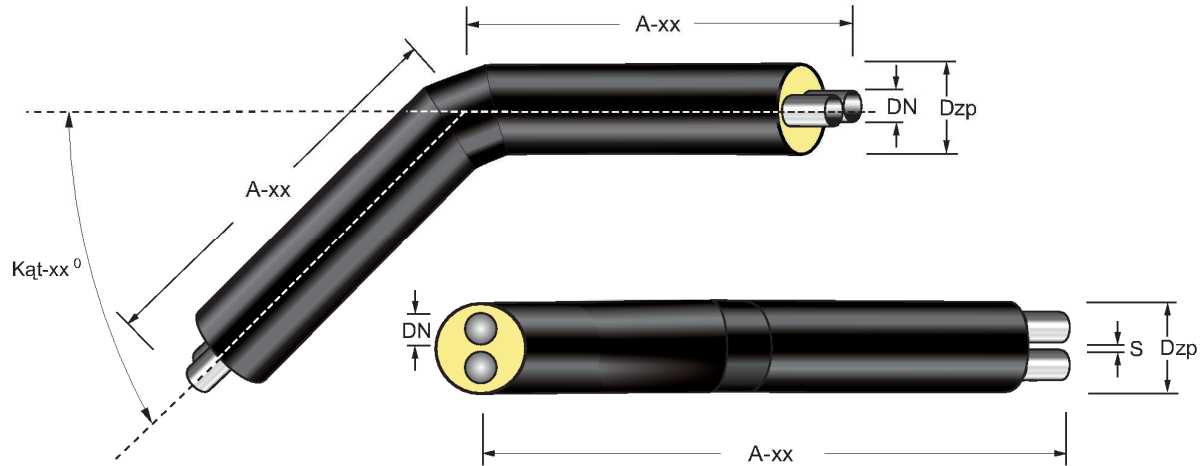
for diameters from DN 50 up to DN 250 - 2.5Dz

On customer's request, bends can be made with "hamburg" elbows or cold bent with any bend radius and other arms lengths and angles, as agreed between manufacturer and customer.

Note: when ordering, please describe the elbow with the symbol "K-A" - this applies to elbows assembled horizontally on the construction site.



6.2. XX° Elbow (any angle)



*XX means any elbow angle specified by the customer (when placing an order)
 - normally performed every 15° (15°, 30°, 45°, 60°, 75°)*

Table 4

Steel carrier pipe			Casing pipe	Elbow length	Catalogue reference number
Nominal diameter	External diameter	Pipes spacing	External diameter		
DN	Dz	s	Dzp	A-90	
mm	mm	mm	mm	mm	
2x20	26,9	19	125	1000	II-K-20+20/xx
2x25	33,7	19	140	1000	II-K-25+25/xx
2x32	42,4	19	160	1000	II-K-32+32/xx
2x40	48,3	19	160	1000	II-K-40+40/xx
2x50	60,3	20	200	1000	II-K-50+50/xx
2x65	76,1	20	225	1000	II-K-65+65/xx
2x80	88,9	25	250	1000	II-K-80+80/xx
2x100	114,3	25	315	1000	II-K-100+100/xx
2x125	139,7	30	400	1000	II-K-125+125/xx
2x150	168,3	40	450	1000	II-K-150+150/xx
2x200	219,1	45	560	1000	II-K-200+200/xx
2x250	273,0	45	710	1200	II-K-250+250/xx

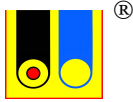
Bend radius:

for diameters from DN 20 up to DN 40 - 3Dz

for diameters from DN 50 up to DN 250 - 2.5Dz

On customer's request, bends can be made with "hamburg" elbows or cold bent with any bend radius and other arms lengths and angles, as agreed between manufacturer and customer.

Note: when ordering, please describe the elbow with the symbol "K-A" - this applies to elbows assembled horizontally on the construction site.



6.3. Elbow - Option B

- elbow mounted vertically on the construction site
 (OO - horizontal arrangement of pipes in the elbow)

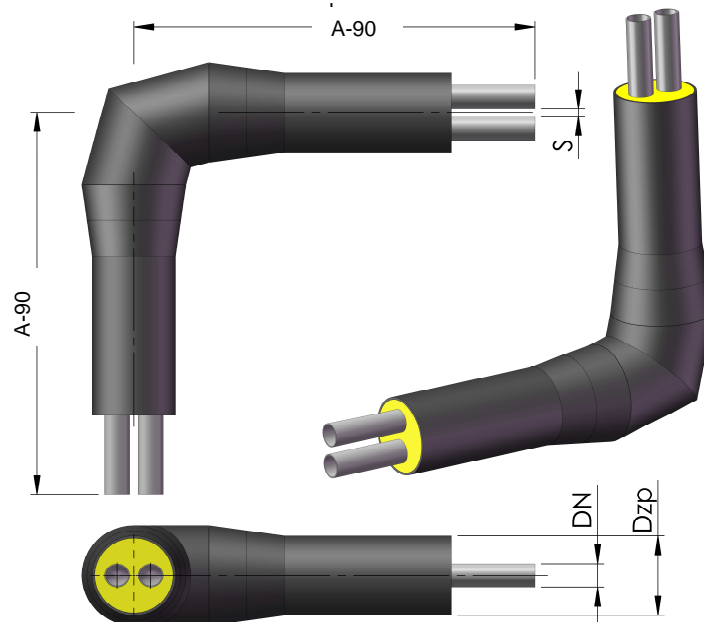


Table 5

Steel carrier pipe			Casing pipe	Elbow length	Catalogue reference number
Nominal diameter	External diameter	Pipes spacing	External diameter		
DN	Dz	s	Dzp	A-90	
mm	mm	mm	mm	mm	
2x20	26,9	19	125	1000	II-K-20+20/P
2x25	33,7	19	140	1000	II-K-25+25/P
2x32	42,4	19	160	1000	II-K-32+32/P
2x40	48,3	19	160	1000	II-K40+40/P
2x50	60,3	20	200	1000	II-K-50+50/P
2x65	76,1	20	225	1000	II-K-65+65/P
2x80	88,9	25	250	1000	II-K-80+80/P
2x100	114,3	25	315	1200	II-K-100+100/P
2x125	139,7	30	400	1200	II-K-125+125/P
2x150	168,3	40	450	1600	II-K-150+150/P
2x200	219,1	45	560	1600	II-K-200+200/P
2x250	273,0	45	710	2000	II-K-250+250/P

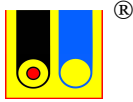
Bend radius:

for diameters from DN 20 up to DN 40 - 3Dz

for diameters from DN 50 up to DN 250 - 2.5Dz

On customer's request, bends can be made with "hamburg" elbows or cold bent with any bend radius and other arms lengths and angles, as agreed between manufacturer and customer.

Note: when ordering, please describe the elbow with the symbol "K-A" - this applies to elbows assembled horizontally on the construction site.



6.4. Preinsulated Elevated Tee

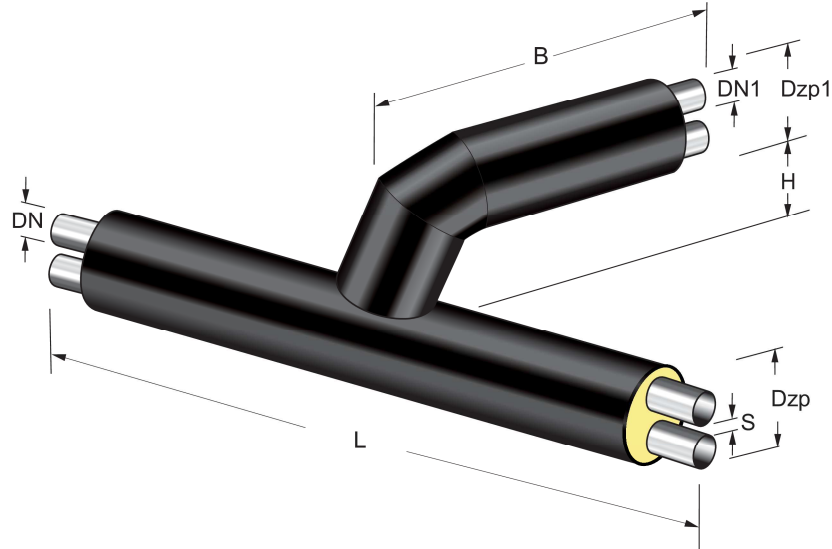
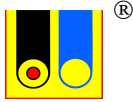


Table 6

Straight Section (pass)		Vertical Section (lateral)		Tee length L	Dimension H	Dimension B	Catalogue reference number
Nominal diameter (carrier pipe)	External diameter (casing pipe)	Nominal diameter (carrier pipe)	External diameter (casing pipe)				
DN	Dzp	DN1	Dzp1	mm	mm	mm	
2x20	125	2x20	125	1200	50	700	II-TW-20/20
2x25	140	2x25	140	1200	50	700	II-TW-25/25
2x32	160	2x32	160	1200	50	700	II-TW-32/32
2x40	160	2x40	160	1200	50	700	II-TW-40/40
2x50	200	2x50	200	1200	50	700	II-TW-50/50
2x65	225	2x65	225	1200	50	900	II-TW-65/65
2x80	250	2x80	250	1200	50	900	II-TW-80/80
2x100	315	2x100	315	1200	50	900	II-TW-100/100
2x125	400	2x125	400	1200	50	900	II-TW-125/125
2x150	450	2x150	450	1200	50	900	II-TW-150/150
2x200	560	2x200	560	1300	50	1000	II-TW-200/200
2x250	710	2x250	710	1600	50	1200	II-TW-250/250

- Note:**
1. Tees are manufactured in any diameter configuration
 2. Dimension H changes with the change in the nominal diameter of the branch-off
 3. Preinsulated tees can be produced in dimensions other than those in the catalog, agreed with the customer.



6.5. Flat preinsulated Tee

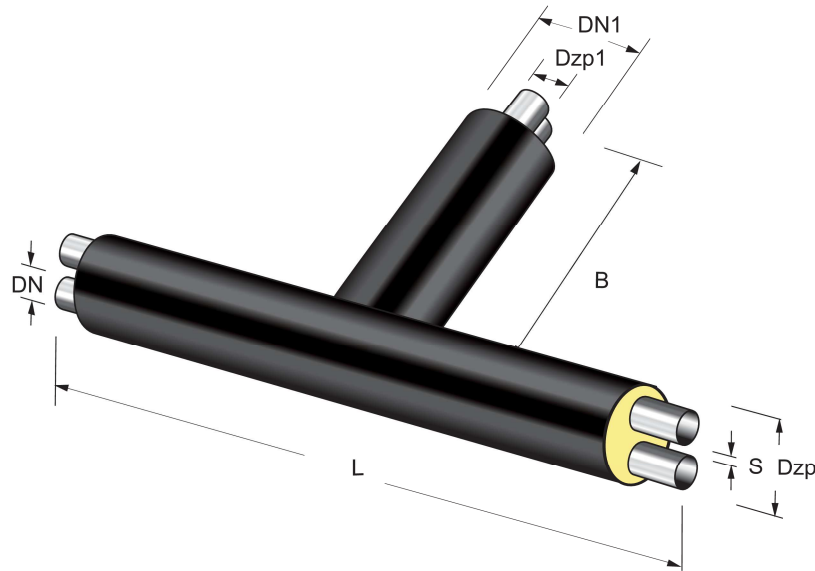
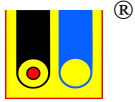


Table 7

Straight Section (pass)		Vertical Section (lateral)		Tee length L	Dimension B	Catalogue reference number
Nominal diameter (carrier pipe)	External diameter (casing pipe)	Nominal diameter (carrier pipe)	External diameter (casing pipe)			
DN	Dzp	DN1	Dzp1	mm	mm	
mm	mm	mm	mm	mm	mm	
2x20	125	2x20	125	1200	600	II-TP-20/20
2x25	140	2x25	140	1200	600	II-TP-25/25
2x32	160	2x32	160	1200	600	II-TP-32/32
2x40	160	2x40	160	1200	600	II-TP-40/40
2x50	200	2x50	200	1200	600	II-TP-50/50
2x65	225	2x65	225	1200	600	II-TP-65/65
2x80	250	2x80	250	1200	600	II-TP-80/80
2x100	315	2x100	315	1200	600	II-TP-100/100
2x125	400	2x125	400	1200	700	II-TP-125/125
2x150	450	2x150	450	1200	700	II-TP-150/150
2x200	560	2x200	560	1300	700	II-TP-200/200
2x250	710	2x250	710	1600	800	II-TP-250/250

- Note:**
1. Tees are manufactured in any diameter configuration
 2. Dimension H changes with the change in the nominal diameter of the branch-off
 3. Pre-insulated tees can be produced in dimensions other than those in the catalog, agreed with the customer.



6.6. Double reducer

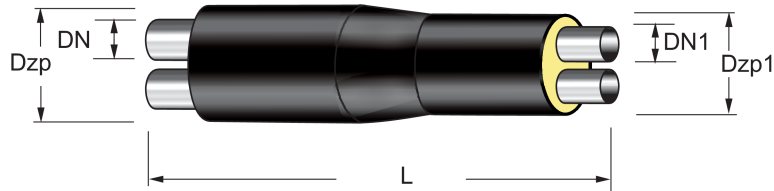
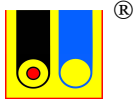


Table 8

Pass pipe		Reducer		Reducer length	Catalogue reference number
Nominal diameter (carrier pipe)	External diameter (casing pipe)	Nominal diameter (carrier pipe)	External diameter (casing pipe)		
DN	Dzp	DN1	Dzp1	L	
<i>mm</i>	<i>mm</i>	<i>mm</i>	<i>mm</i>	<i>mm</i>	
2x25	140	2x20	125	1000	II-Z-25/20
2x32	160	2x25	140	1000	II-Z-32/25
2x40	160	2x32	160	1000	II-Z-40/32
2x50	200	2x40	160	1000	II-Z-50/40
2x65	225	2x50	200	1000	II-Z-65/50
2x80	250	2x65	225	1000	II-Z-80/65
2x100	315	2x80	250	1000	II-Z-100/80
2x125	400	2x100	315	1000	II-Z-125/100
2x150	450	2x125	400	1000	II-Z-150/125
2x200	560	2x150	450	1000	II-Z-200/150
2x250	710	2x200	560	1400	II-Z-250/200

Note:

1. Reducing pipes are also manufactured in the configuration of the diameter agreed between the manufacturer and the customer.
2. Reducing pipes can also be manufactured in dimensions other than those in the catalogue, agreed between the manufacturer and the customer.



6.7. Transition fitting type Y

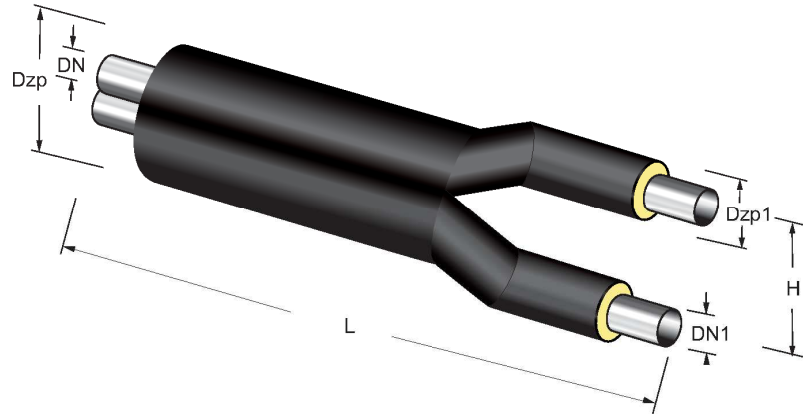
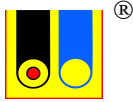


Table 9

Pass pipe			Single pipes			Lenght L	Catalogue reference number
Nominal diameter (carrier pipe)	External diameter (casing pipe)	Spacing between Carrier Pipes s	Nominal diameter (carrier pipe)	External diameter (casing pipe)	Spacing between Carrier Pipes H		
DN	Dzp		DN	Dzp1	H		
mm	mm	mm	mm	mm	mm	mm	
2x20	125	19	20	75	240	2000	KY-2x20/20
2x25	140	19	25	90	240	2000	KY-2x25/25
2x32	160	19	32	110	260	2000	KY-2x32/32
2x40	160	19	40	110	260	2000	KY-2x40/40
2x50	200	20	50	125	280	2000	KY-2x50/50
2x65	225	20	65	140	290	2000	KY-2x65/65
2x80	250	25	80	160	310	2000	KY-2x80/80
2x100	315	25	100	200	350	2000	KY-2x100/100
2x125	400	30	125	225	380	2500	KY-2x125/125
2x150	450	40	150	250	400	2500	KY-2x150/150
2x200	560	45	200	315	480	2500	KY-2x200/200
2x250	710	45	250	400	600	2500	KY-2x250/250

Note: Transition fittings can be manufactured in dimensions other than those in the catalogue, agreed between the manufacturer and the customer.



6.8. Transition fitting type F

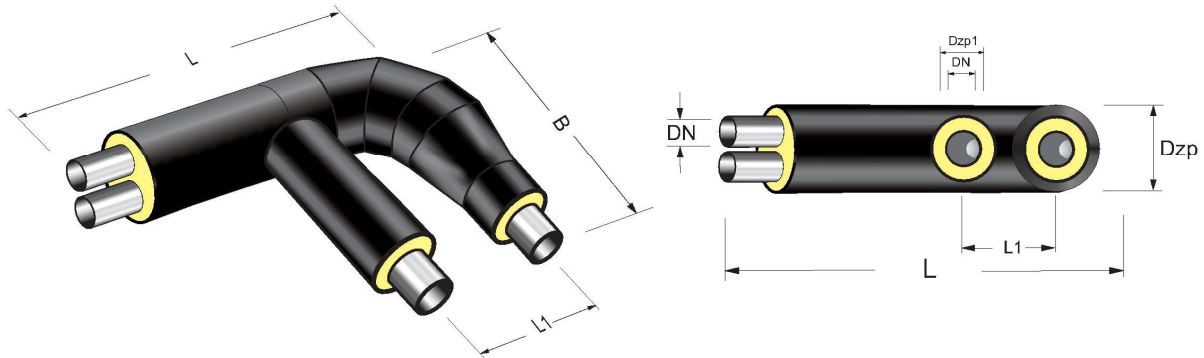
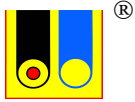


Table 10

Pass pipe			Single pipes			Lenght	Lenght	Catalogue reference number
Nominal diameter (carrier pipe)	External diameter (casing pipe)	Spacing between Carrier Pipes	Nominal diameter (carrier pipe)	External diameter (casing pipe)	Spacing between Carrier Pipes			
DN	Dzp	s	DN	Dzp1	L1	L	B	
mm	mm	mm	mm	mm	mm	mm	mm	
2x20	125	19	20	75	265	1500	1000	KF-2x20/20
2x25	140	19	25	90	265	1500	1000	KF-2x25/25
2x32	160	19	32	110	280	1500	1000	KF-2x32/32
2x40	160	19	40	110	280	1500	1000	KF-2x40/40
2x50	200	20	50	125	300	1500	1000	KF-2x50/50
2x65	225	20	65	140	330	1500	1000	KF-2x65/65
2x80	250	25	80	160	350	1500	1000	KF-2x80/80
2x100	315	25	100	200	450	2000	1200	KF-2x100/100
2x125	400	30	125	225	500	2000	1500	KF-2x125/125
2x150	450	40	150	250	570	2000	1500	KF-2x150/150
2x200	560	45	200	315	720	2500	2000	KF-2x200/200
2x250	710	45	250	400	870	2500	2200	KF-2x250/250

Note: Transition fittings can be manufactured in dimensions other than those in the catalogue, agreed between the manufacturer and the customer.



6.9. Double Anchor Point

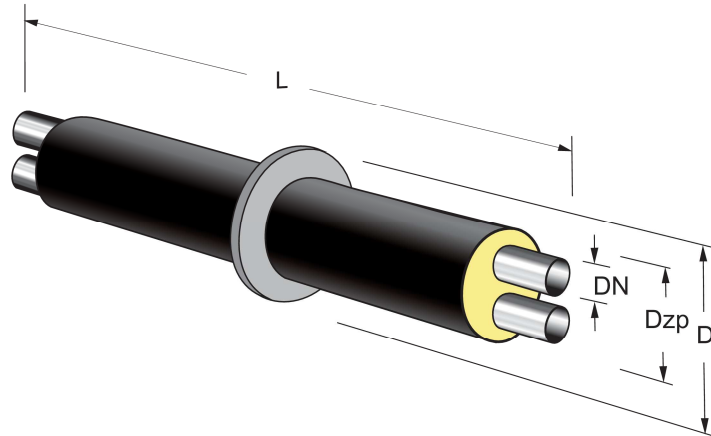
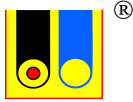


Table 11

Carrier pipe	Spacing between Pipes	Casing pipe	Ring diameter	Lenght	Catalogue reference number
Nominal diameter		External diameter			
DN	s	Dzp	D	L	
[mm]	[mm]	[mm]	[mm]	[mm]	
2x20	19	125	170	2000	II-PS-20
2x25	19	140	200	2000	II-PS-25
2x32	19	160	220	2000	II-PS-32
2x40	19	160	220	2000	II-PS-40
2x50	20	200	260	2000	II-PS-50
2x65	20	225	300	2000	II-PS-65
2x80	25	250	320	2000	II-PS-80
2x100	25	315	400	2000	II-PS-100
2x125	30	400	500	2000	II-PS-125
2x150	40	450	560	2000	II-PS-150
2x200	45	560	680	2000	II-PS-200
2x250	45	710	830	2500	II-PS-250

Note: Fixed points can be manufactured in dimensions other than those in the catalogue, agreed between the manufacturer and the customer.



7. Preinsulated Steel Fittings and Fixtures

7.1. Double Cut-off Valve

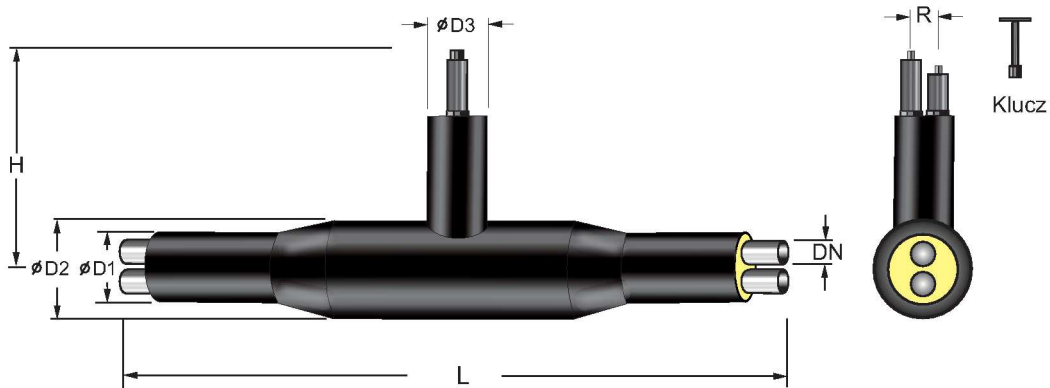
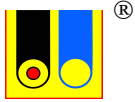


Table 12

Steel carrier pipe		Casing pipe diameter			Spacing between pipes	Spacing between valves	Hight	Lenght	Catalogue reference number
Nominal diameter	External diameter	D1	D2	D3	s	R	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x20	26,9	125	140	110	19	50	505	1400	II-ZK-20
2x25	33,7	140	140	110	19	50	505	1400	II-ZK-25
2x32	42,4	160	200	140	19	65	495	1500	II-ZK-32
2x40	48,3	160	200	160	19	80	505	1700	II-ZK-40
2x50	60,3	200	225	160	20	80	525	1800	II-ZK-50
2x65	76,1	225	250	200	20	105	530	1800	II-ZK-65
2x80	88,9	250	315	225	25	120	545	1900	II-ZK-80
2x100	114,3	315	400	250	25	140	570	2200	II-ZK-100
2x125	139,7	400	450	250	30	155	600	2300	II-ZK-125
2x150	168,3	450	500	400	40	200	625	2500	II-ZK-150
2x200	219,1	560	630	400	45	230	670	2700	II-ZK-200
2x250	273,0	710	800	450	45	250	770	3000	II-ZK-250

- Note:**
1. Shut off ball vales can be manufactured in dimensions other than those in the catalogue, agreed between the manufacturer and the customer.
 2. The above dimensions are for valves with a reduced bore. For full-flow valves, the dimensions are set individually.

Valves are manufactured as standard for a working pressure of min. 1.6 MPa. At the Customer's request, valves with other parameters indicated in the order are manufactured (e.g. full-bore valves for a working pressure of 2.5 MPa, etc.) The table provides the maximum dimension H, which may vary depending on the type of shut-off valve used (e.g. reduced-bore, full-bore, etc.) and depending on the supplier of the steel valve and the Customer's requirements.



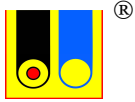
7.2. Vent Ball Valve



Table 13

Steel carrier pipe		Casing pipe diameter	Spacing between pipes	Height	Length	Catalogue reference number
Nominal diameter	External diameter					
DN	DZ	Dzp	s	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x25	33,7	140	19	384	1200	II-ZD-25
2x32	42,4	160	19	388	1200	II-ZD-32
2x40	48,3	160	19	403	1200	II-ZD-40
2x50	60,3	200	20	410	1200	II-ZD-50
2x65	76,1	225	20	414	1200	II-ZD-65
2x80	88,9	250	25	427	1200	II-ZD-80
2x100	114,3	315	25	450	1500	II-ZD-100
2x125	139,7	400	30	455	1500	II-ZD-125
2x150	168,3	450	40	457	1500	II-ZD-150
2x200	219,1	560	45	515	1500	II-ZD-200
2x250	273,0	710	45	590	1500	II-ZD-250

- Note:**
1. Vent valve diameter - 33,7 mm
 2. Valves can be produced with venting diameters and dimensions other than those in the catalog, agreed between the manufacturer and the customer.
 3. Vent valves with threaded end.



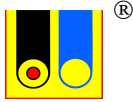
7.3. Double Strain Ball Valve



Table 14

Steel carrier pipe		Casing pipe diameter	Spacing between pipes	Height	Length	Catalogue reference number
Nominal diameter	External diameter					
DN	DZ	Dzp	s	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x40	48,3	160	19	403	1200	II-ZO-40
2x50	60,3	200	20	410	1200	II-ZO-50
2x65	76,1	225	20	414	1200	II-ZO-65
2x80	88,9	250	25	427	1200	II-ZO-80
2x100	114,3	315	25	450	1500	II-ZO-100
2x125	139,7	400	30	455	1500	II-ZO-125
2x150	168,3	450	40	457	1500	II-ZO-150
2x200	219,1	560	45	515	1500	II-ZO-200
2x250	273,0	710	45	590	1500	II-ZO-250

- Note:**
1. Strain valve diameter - 48,3 mm
 2. Strain valves can be manufactured with strain diameters and dimensions other than those in the catalog, agreed between the manufacturer and the customer.
 3. Strain valves with threaded end.



7.4. Double Cut-off Valve with Vent Ball Valve

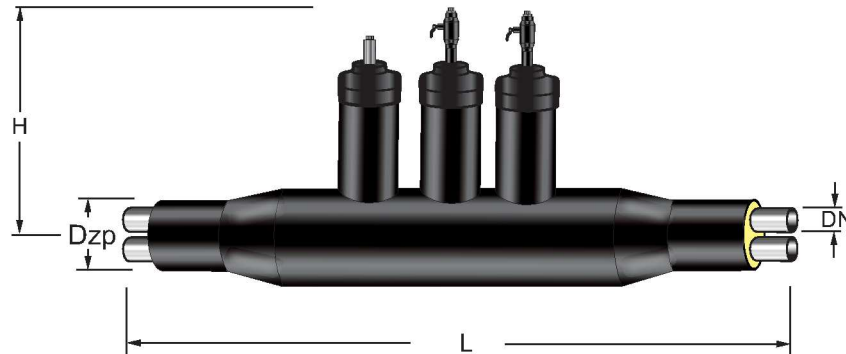
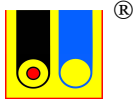


Table 15

Steel Carrier Pipe		Casing Pipe Diameter	Spacing between Pipes	Height	Length	Catalogue Reference Number
Nominal Diameter	External Diameter					
DN	DZ	Dzp	s	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x25	33,7	140	19	384	1800	II-ZKD-25
2x32	42,4	160	19	388	1800	II-ZKD-32
2x40	48,3	160	19	403	1800	II-ZKD-40
2x50	60,3	200	20	410	1800	II-ZKD-50
2x65	76,1	225	20	414	1800	II-ZKD-65
2x80	88,9	250	25	427	1900	II-ZKD-80
2x100	114,3	315	25	450	2300	II-ZKD-100
2x125	139,7	400	30	455	2300	II-ZKD-125
2x150	168,3	450	40	457	2500	II-ZKD-150
2x200	219,1	560	45	515	2700	II-ZKD-200
2x250	273,0	710	45	590	3000	II-ZKD-250

- Note:**
1. Diameter of the vent valve - 33,7 mm
 2. The valves can be manufactured with vent diameters and dimensions other than those in the catalog, agreed between the manufacturer and the customer.
 3. Stainless steel vent valves with a threaded end.
 4. The above dimensions are for valves with a reduced bore. For full-flow valves, dimensions are set individually. Valves are manufactured as standard for a working pressure of min. 1.6 MPa. At the Customer's request, valves with other parameters indicated in the order are manufactured (e.g. full-bore valves for a working pressure of 2.5 MPa, etc.) The table provides the maximum dimension H, which may vary depending on the type of shut-off valve used (e.g. reduced-bore, full-bore, etc.) and depending on the supplier of the steel valve and the Customer's requirements.



7.5. Double Cut-off Valve with Strain Ball Valve

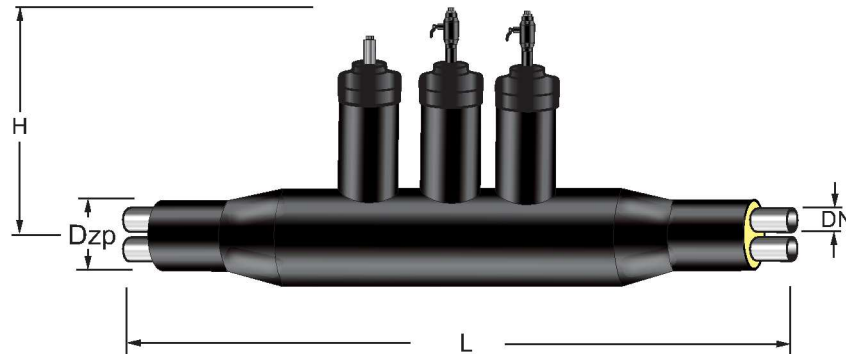
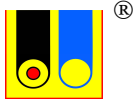


Table 16

Steel Carrier Pipe		Casing Pipe Diameter	Spacing between Pipes	Height	Length	Catalogue Reference Number
Nominal Diameter	External Diameter					
DN	DZ	Dzp	s	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x32	42,4	160	19	388	1800	II-ZKO-32
2x40	48,3	160	19	403	1800	II- ZKO-40
2x50	60,3	200	20	410	1800	II-ZKO-50
2x65	76,1	225	20	414	1800	II-ZKO-65
2x80	88,9	250	25	427	1900	II-ZKO-80
2x100	114,3	315	25	450	2300	II-ZKO-100
2x125	139,7	400	30	455	2300	II-ZKO-125
2x150	168,3	450	40	457	2500	II-ZKO-150
2x200	219,1	560	45	515	2700	II-ZKO-200
2x250	273,0	710	45	590	3000	II-ZKO-250

- Note:**
1. Diameter of the strain valve - 48,3 mm
 2. The valves can be manufactured with drainage diameters and dimensions other than those in the catalog, agreed between the manufacturer and the customer.
 3. Stainless steel strain valves with a threaded end.
 4. The above dimensions are for valves with a reduced bore. For equal port valves, the dimensions are set individually.

Valves are manufactured as standard for a working pressure of min. 1.6 MPa. At the Customer's request, valves with other parameters indicated in the order are manufactured (e.g. full-bore valves for a working pressure of 2.5 MPa, etc.) The table provides the maximum dimension H, which may vary depending on the type of shut-off valve used (e.g. reduced-bore, full-bore, etc.) and depending on the supplier of the steel valve and the Customer's requirements.



7.6. Double Cut-off Valve with Vent and Strain Ball Valves

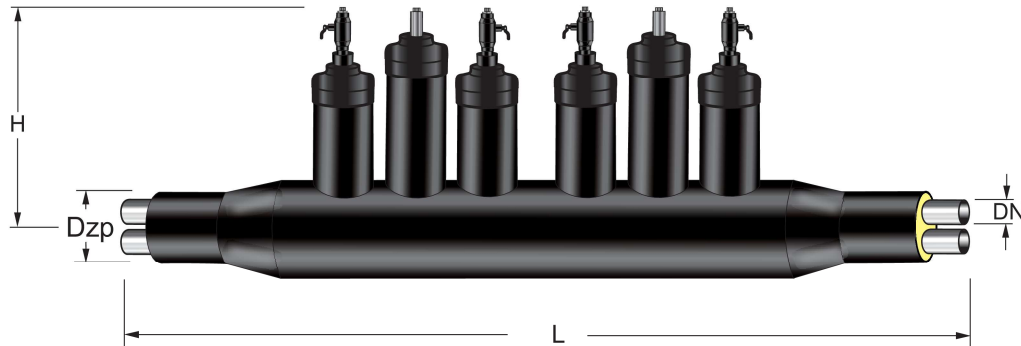


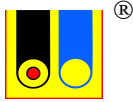
Table 17

Steel Carrier Pipe		Casing Pipe Diameter	Spacing between Pipes	Height	Length	Catalogue Reference Number
Nominal Diameter	External Diameter					
DN	DZ	Dzp	s	H	L	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
2x40	48,3	160	19	403	2800	II-ZKOD-40
2x50	60,3	200	20	410	2800	II-ZKOD-50
2x65	76,1	225	20	414	2800	II-ZKOD-65
2x80	88,9	250	25	427	2900	II-ZKOD-80
2x100	114,3	315	25	450	3300	II-ZKOD-100
2x125	139,7	400	30	455	3300	II-ZKOD-125
2x150	168,3	450	40	457	3500	II-ZKOD-150
2x200	219,1	560	45	515	3700	II-ZKOD-200
2x250	273,0	710	45	590	4000	II-ZKOD-250

Note:

1. Diameter of the vent valve - 33,7 mm, diameter of the strain valve - 48,3 mm
2. The valves can be manufactured with venting and drainage diameters and dimensions other than those in the catalog, agreed between the manufacturer and the customer.
3. Stainless steel vent and strain valves with a threaded end.
4. The above dimensions are for valves with a reduced bore. For equal port valves, the dimensions are set individually.

Valves are manufactured as standard for a working pressure of min. 1.6 MPa. At the Customer's request, valves with other parameters indicated in the order are manufactured (e.g. full-bore valves for a working pressure of 2.5 MPa, etc.) The table provides the maximum dimension H, which may vary depending on the type of shut-off valve used (e.g. reduced-bore, full-bore, etc.) and depending on the supplier of the steel valve and the Customer's requirements.



8. Coupling Unit

8.1. Common Coupling N

(HPDE sleeve sealed with heat shrinkable tape).

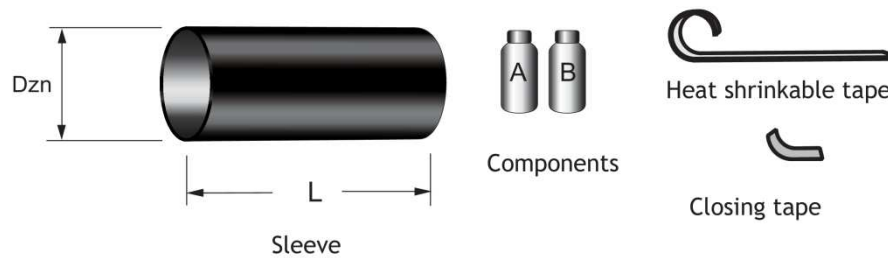


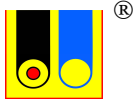
Table 18

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Length	Components		Heat Shrinkable Tape	Closing tape	Catalogue Reference Number
				A	B			
DN	Dzp	Dzn	L	g	g	cm	cm	
mm	mm	mm	mm	g	g	cm	cm	
2x20	125	136	600	121	198	105	30	II-N-20/136
2x25	140	153	600	149	244	114	30	II-N-25/153
2x32	160	174	600	192	313	129	30	II-N-32/174
2x40	160	174	600	181	296	129	30	II-N-40/174
2x50	200	216	600	156	254	155	30	II-N-50/216
2x65	225	243	600	344	561	171	30	II-N-65/243
2x80	250	269	600	412	672	187	30	II-N-80/269
2x100	315	338	600	649	1059	233	30	II-N-100/338
2x125	400	428	700	1083	1766	288	30	II-N-125/428
2x150	450	472	700	1305	2127	320	30	II-N-150/472

Note: At the customer's request, the couplings units can be delivered with heat-shrinkable bands according to the catalog sheet 8.2.1

Oval - not tolerated.

* The table shows the minimum external diameters of the sleeves.



8.2. Heat shrinkable coupling

8.2.1 Heat shrinkable coupling NT

(HDPE heat shrinkable sleeve sealed with heat shrinkable bands)

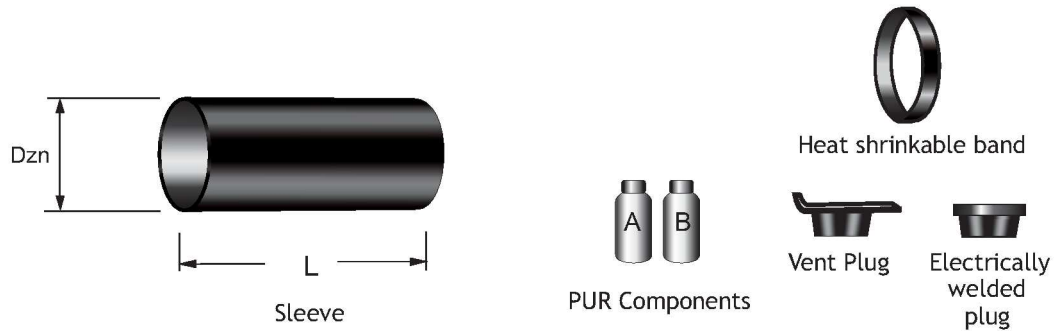
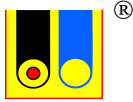


Table 19

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Length	Components		Heat Shrinkable Sleeve	Vent plug and electrically welded plug	Catalogue Reference Number
				A	B			
DN	Dzp	Dzn	L	A	B	pc	set	
mm	mm	mm	mm	g	g			
2x20	125	143	600	121	198	2	2	II-NT-20/143
2x25	140	156	600	149	244	2	2	II-NT-25/156
2x32	160	178	600	192	313	2	2	II-NT-32/178
2x40	160	178	600	181	296	2	2	II-NT-40/178
2x50	200	224	600	156	254	2	2	II-NT-50/224
2x65	225	255	600	344	561	2	2	II-NT-65/255
2x80	250	278	600	412	672	2	2	II-NT-80/278
2x100	315	341	600	649	1059	2	2	II-NT-100/341
2x125	400	430	700	1083	1766	2	2	II-NT-125/430
2x150	450	480	700	1305	2127	2	2	II-NT-150/480
2x200	560	590	700	1952	3182	2	2	II-NT-200/590
2x250	710	745	700	3365	5657	2	2	II-NT-250/745

Note: At the customer's request, the couplings units can be delivered with heat-shrinkable and closing tape according to catalog sheet 8.1
 Oval - not tolerated.
 * The table shows the minimum external diameters of the sleeves. We also manufacture larger sleeve diameters than those given in the tables above.



8.2.2. Radiation crosslinked heat shrinkable coupling NTX+M
 (Heat shrinkable PeX_c sleeve)

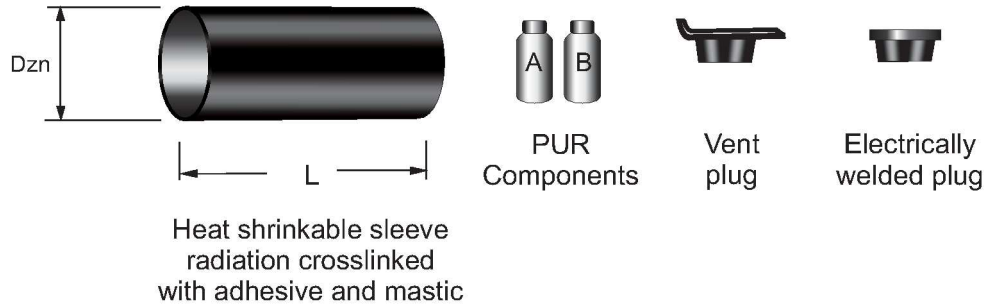
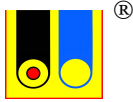


Table 20

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Length	Components		Plugs	Catalogue Reference Number
				A	B		
DN	Dzp	Dzn	L	g	g	set	
2x20	125	143	600	121	198	2	II-NTX+M-20/143
2x25	140	156	600	149	244	2	II-NTX+M-25/156
2x32	160	178	600	192	313	2	II-NTX+M-32/178
2x40	160	178	600	181	296	2	II-NTX+M-40/178
2x50	200	224	600	156	254	2	II-NTX+M-50/224
2x65	225	255	600	344	561	2	II-NTX+M-65/255
2x80	250	278	600	412	672	2	II-NTX+M-80/278
2x100	315	341	600	649	1059	2	II-NTX+M-100/341
2x125	400	430	700	1083	1766	2	II-NTX+M-125/430
2x150	450	480	700	1305	2127	2	II-NTX+M-150/480

- Note:**
1. Sleeve is manufactured with adhesive and mastic
 2. Radiation cross-linked heat shrinkable sleeves length L tolerance is ⁺¹⁰/₋₂₀ mm
 3. Ovality - intolerant
- The table shows the minimum external diameters of the sleeves. We also manufacture larger sleeve diameters than those given in the tables above.



8.2.3. Radiation crosslinked heat shrinkable coupling NTX-II

(Heat shrinkable PeX_c sleeve with two factory-made mounting holes with a place prepared for welding the plug)

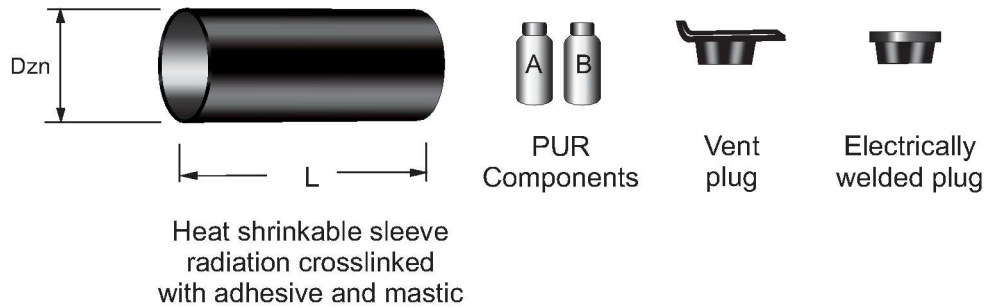
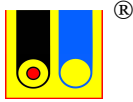


Table 21

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Length	Components		Plugs	Catalogue Reference Number
				A	B		
DN	Dzp	Dzn	L	g	g	set	
2x20	125	143	600/700	121	198	2	II-NTX-II-20/143
2x25	140	156	600/700	149	244	2	II-NTX-II-25/156
2x32	160	178	600/700	192	313	2	II-NTX-II-32/178
2x40	160	178	600/700	181	296	2	II-NTX-II-40/178
2x50	200	224	600/700	156	254	2	II-NTX-II-50/224
2x65	225	255	600/700	344	561	2	II-NTX-II-65/255
2x80	250	278	600/700	412	672	2	II-NTX-II-80/278
2x100	315	341	600/700	649	1059	2	II-NTX-II-100/341
2x125	400	430	700/600	1083	1766	2	II-NTX-II-125/430
2x150	450	480	700/600	1305	2127	2	II-NTX-II-150/480

Note:

1. Sleeve is manufactured with adhesive and mastic.
 2. Radiation cross-linked heat shrinkable sleeves length L tolerance is ⁺¹⁰/₋₂₀ mm
 3. Ovality - intolerant.
 4. Hole diameter - 24 mm
- The table shows the minimum external diameters of the sleeves.
 We also manufacture larger sleeve diameters than those given in the tables above.



8.3. Electrically welded couplings

8.3.1 Electrically welded heat shrinkable coupling DT - closed type (HDPE sleeve sealed with heat shrinkable band)

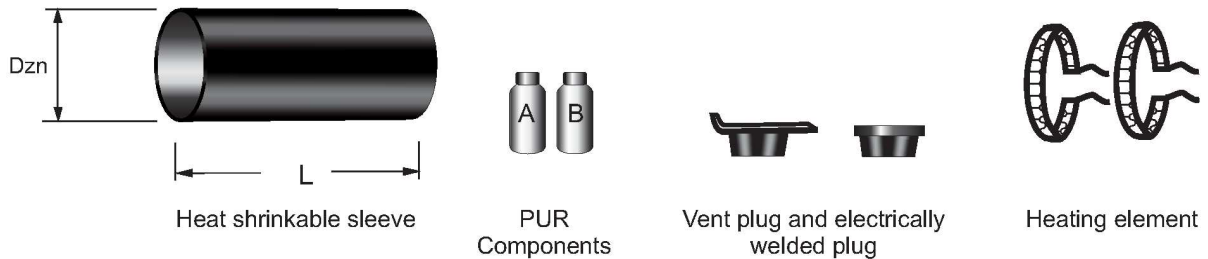
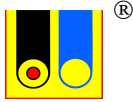


Table 22

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Length	Components		Heating Element	Plugs	Catalogue Reference Number
				A	B			
DN	Dzp	Dzn	L	g	g	pc	set	
2x20	125	143	600	121	198	2	2	II-DT-20/143
2x25	140	156	600	149	244	2	2	II-DT-25/156
2x32	160	178	600	192	313	2	2	II-DT-32/178
2x40	160	178	600	181	296	2	2	II-DT-40/178
2x50	200	224	600	156	254	2	2	II-DT-50/224
2x65	225	255	600	344	561	2	2	II-DT-65/255
2x80	250	278	600	412	672	2	2	II-DT-80/278
2x100	315	341	600	649	1059	2	2	II-DT-100/341
2x125	400	430	700	1083	1766	2	2	II-DT-125/430
2x150	450	480	700	1305	2127	2	2	II-DT-150/480
2x200	560	590	700	1952	3182	2	2	II-DT-200/590
2x250	710	745	700	3365	5657	2	2	II-DT-250/745

* Table shows the minimum external diameters of the sleeves.
 Oval - not tolerated.
 We also manufacture larger sleeve diameters than those given in the tables above.

Note: Assembly of couplings is performed by an authorized service center of ZPU Międzyrzecz Sp. z o.o., with appropriate qualifications and equipment, or by the customer after appropriate training and obtaining a certificate issued by the couplings manufacturer.



8.3.2 DX-II butt welded coupling - open type

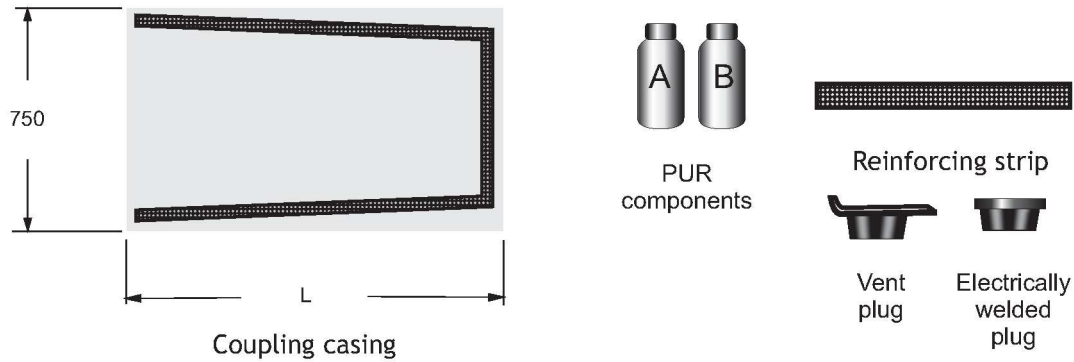
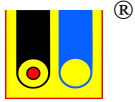


Table 23

Nominal Diameter	Casing Pipe External Diameter	Plate Length	Components		Plug	Catalogue Reference Number
			A	B		
DN	Dzp	L	g	g	pc	
mm	mm	mm	g	g	pc	
2x32	160	690	192	313	2	DX-II-160/750
2x40	160	690	181	296	2	DX-II-160/750
2x50	200	820	156	254	2	DX-II-200/750
2x65	225	900	344	561	2	DX-II-225/750
2x80	250	990	412	672	2	DX-II-250/750
2x100	315	1230	649	1059	2	DX-II-315/750
2x125	400	1500	1083	1766	2	DX-II-400/750
2x150	450	1660	1305	2127	2	DX-II-450/750
2x200	560	2000	1952	3182	2	DX-II-560/750
2x250	710	2530	3365	5657	2	DX-II-710/750

Note: Assembly of couplings is performed by an authorized service center of ZPU Międzyrzecz Sp. z o.o., with appropriate qualifications and equipment, or by the customer after appropriate training and obtaining a certificate issued by the couplings manufacturer.



9. Insulation and Pipeline Closing

9.1. Pipeline Closing - End Sleeve

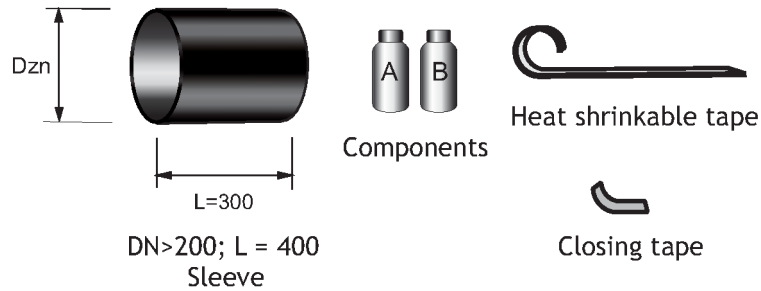
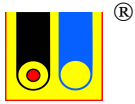


Table 24

Nominal Diameter	Casing Pipe External Diameter	Sleeve External Diameter	Components		Heat shrinkable tape	Closing tape	Catalogue Reference Number
			A	B			
DN	Dzp	Dzn	g	g	cm	cm	
2x20	125	143	61	99	52	15	II-NK20/143
2x25	140	156	75	122	56	15	II-NK25/156
2x32	160	178	96	157	64	15	II-NK-32/178
2x40	160	178	91	148	64	15	II-NK-40/178
2x50	200	224	78	127	76	15	II-NK-50/224
2x65	225	255	172	281	86	15	II-NK-65/255
2x80	250	278	206	336	94	15	II-NK-80/278
2x100	315	341	325	530	115	22	II-NK-100/341
2x125	400	430	542	883	145	22	II-NK-125/430
2x150	450	480	653	1064	161	22	II-NK-150/480
2x200	560	590	976	1591	196	30	II-NK-200/590
2x250	710	745	1683	2829	245	30	II-NK-250/745

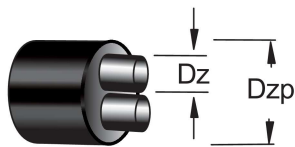
Note: At customer's request, End Sleeve may be supplied with heat-shrinkable bends according to the catalog card 8.2



9.2. End Cap - Heat Shrinkable Sleeve

Table 25

Jacket Pipe External Diameter	Catalogue Reference Number
125	E-125/2
140	E-140/2
160	E-160/2
200	E-200/2
225	E-225/2
250	E-250/2
315	E-315/2
400	E-400/2
450	E-450/2
560	E-560/2
630	E-630/2
710	E-710/2
800	E-800/2



10. Warning Tape

To be placed above a pipeline. Supplied in coils in 100 m multiple lengths. Carries a wording "WARNING! HEAT TRANSMITING PIPE" and a *ZPU Międzyrzecz Sp. z o. o.* logo.

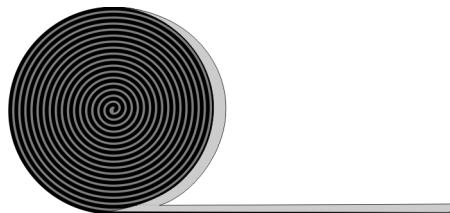
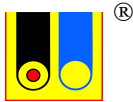


Table 26

	Colour	Width [mm]	Catalogue Reference Number
Warning Tape	yellow	150	T-150



11. Wall transition

11.1. Rubber ring

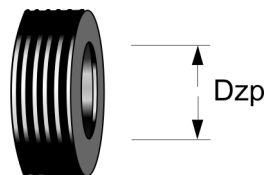


Table 27

Jacket Pipe External Diameter	Catalogue Reference Number
125	P-125
140	P-140
160	P-160
200	P-200
225	P-225
250	P-250
315	P-315
400	P-400
450	P-450
560	P-560
630	P-630
710	P-710
800	P-800

11.2 Branch-off protective tube - joint adapter

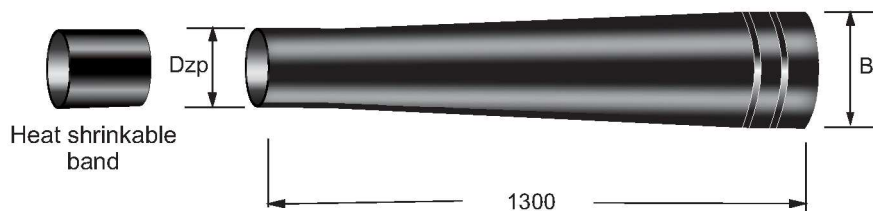
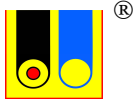


Table 28

Jacket pipe	Dimension	Catalogue Reference Number
Dzp	B	
<i>mm</i>	<i>mm</i>	
125	220	A-125
140	250	A-140
160	280	A-160



12. Expansion Cushion

Expansion Cushion:

- soft type - TYPE I
- hard type - TYPE II

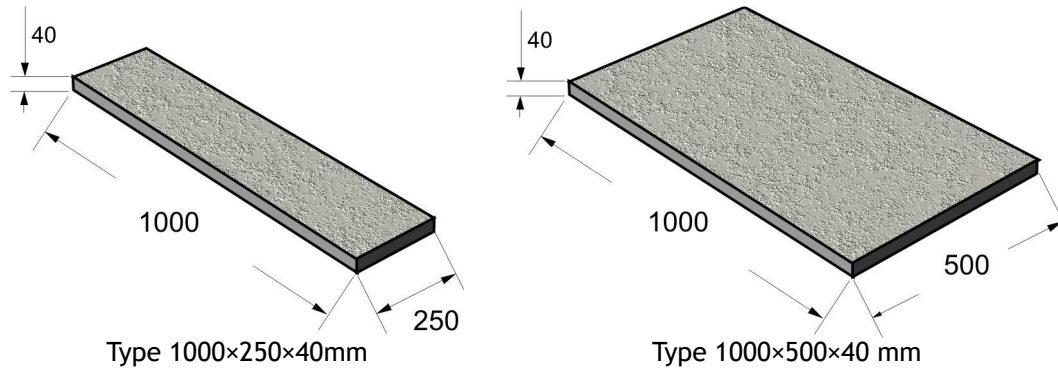
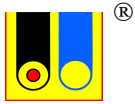


Table 29

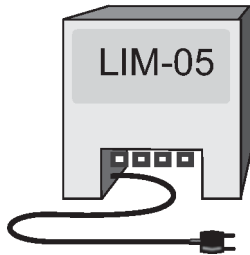
Nominal diameter	Jacket pipe external diameter	Expansion cushions dimensions			Expansion cushions type
		Lenght	Width	Thickness	
DN	Dzp	mm	mm	mm	
20+20	125	1000	250	40	1000×250×40
25+25	140	1000	250	40	1000×250×40
32+32	160	1000	250	40	1000×250×40
40+40	160	1000	250	40	1000×250×40
50+50	200	1000	250	40	1000×250×40
65+65	225	1000	500	40	1000×500×40
80+80	250	1000	500	40	1000×500×40
100+100	315	1000	500	40	1000×500×40
125+125	400	1000	500	40	1000×500×40
150+150	450	1000	500	40	1000×500×40
200+200	560	1000	500	40	1000×500×40
250+250	710	1000	500	40	1000×500×40

Note: At the stage of submitting an inquiry or order, the type and dimensions of the expansion cushions should be specified.



13. Leak detection system

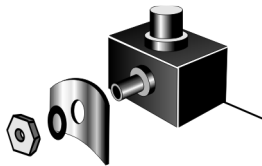
1. Measuring device



Dimension [mm]			Catalogue reference number
Lenght	Thickness	Height	
235	143	262	LIM-05

2. Leak detection system components

Universal connection box



Dimension [mm]			Catalogue reference number
Lenght	Thickness	Height	
35	35	50	UPP-1

Locating device resetting terminal

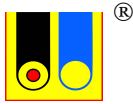


Dimension [mm]		Catalogue reference number
Diameter	Lenght	
18	40	KZL

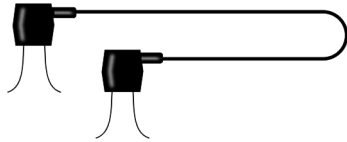
Locating device connecting coaxial cable



Dimension [mm]		Catalogue reference number
Diameter	Lenght	
7	1000	K-1
7	2000	K-2
7	3000	K-3
7	4000	K-4
7	5000	K-5

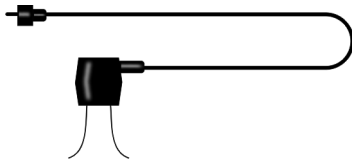


Pulse device jumper cable



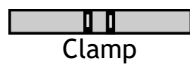
Dimension [mm]		Catalogue reference number
Diameter	Lenght	
7	5000	KPS-5

Pulse device connecting cable

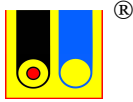


Dimension [mm]		Catalogue reference number
Diameter	Lenght	
7	5000	KP-5

Clamp - to connect coupling assembly



Dimension [mm]		Catalogue reference number
Diameter	Lenght	
4	15	S-4



14. Trade Information

Manufacturer and Seller:

Zakład Produkcyjno Usługowy
Międzyrzecz
POLSKIE RURY PREIZOLOWANE Sp. z o. o.,
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