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Pipes and pipeline elements with foamed polyurethane thermal insulation

**Pipes and pipeline elements
with steel kelly in
protective polyethylene casing**

CATALOGUE

Attention!

- 1. Due to production development, the Producer reserves the right to change product structures and dimensions.***
- 2. When ordering pipes, it is recommended to specify the heat carrier parameters: working temperature T_w and working pressure P_w .***
- 3. The lengths of non-insulated ends of all of the pipeline elements are analogous to the lengths of non-insulated ends of the straight pipe with a respective diameter.***
- 4. The weight of all the elements that are presented herein is theoretic one. The weight comprises the kelly and thermal insulation structure weight.***
- 5. After consultation with the Producer, it is possible to supply bends with other bending angles, T-shaped pipes with all the diameters of branches and reducers of other standard dimensions.***
- 6. Impulse alarm system (Nordic type).***

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Product codes and types

Code	Product type
01 -	Pipe
01-1 -	Straight pipe
02 -	Bend
02-1 -	Standard bend
02-2 -	Elongated bend
03 -	T-shaped pipe
03-1 -	Straight T-shaped pipe
03-2 -	Angular T-shaped pipe
03-3 -	Parallel T-shaped pipe
04 -	Reduction pipe
04-1-	Concentric reduction pipe
04-2-	Non-concentric reduction pipe
05 -	End sleeve
06 -	Fixed point
06-1-	Straight fixed point
06-2-	Angular fixed point
07 -	Sliding support
08 -	Guiding support
09 -	Pre-insulated ventilation, dehydration
09-1-	Shutoff valve
09-2-	Vent
09-3-	Drain
09-4-	Combination shutoff valve with ventilation
09-5-	Combination shutoff valve with ventilation and dehydration
10 -	Axial compensator
10-1-	"Free" axial compensator
10-2-	"Disposable" axial compensator
11 -	End gasket
11-1	Pre-shaped end gasket
11-2	Removable end gasket
12 -	Rubber sealing ring
13 -	Adaptor
14 -	Sleeve joint
14-3-	Sleeve joints (EP-3 type) heat shrinkable sleeve
14-4-	Sleeve joints (EP-4 type) welded sleeve
15 -	Compensation cushion
16 -	Warning tape
17 -	Sliding tape
19 -	T-wrench
20 -	Portable mechanism for valve steering
28 -	Centering skid
29 -	Tools for centering skid fixation
30 -	Gasket
A-	Impulse alarm system
A-1-	Connecting elements set
A-2-	Wire connecting element set
A-3-	Tools
A-4-	Control and measuring tools

KELLY CODE

Code	Pipe name
1	Steel

PROTECTIVE CASING CODE

Code	Pipe name
1	Polyethylene

Pipe standard dimensions

Dimension dz/ Dz	Steel kelly		PE protective casing	
	dz, mm	S, mm	Dz, mm	S ₁ , mm
33,7/90	33,7	2,6	90	3,0
42,4/110	42,4		110	
48,3/110	48,3		110	
60,3/125	60,3	2,9	125	
76,1/140	76,1		140	
88,9/160	88,9	3,2	160	
114,3/200	114,3	3,6	200	3,2
139,7/225	139,7		225	3,4
168,3/250	168,3	4,0	250	3,6
219,1/315	219,1	4,5	315	4,1
273/400	273	5,0	400	4,8
323,9/450	323,9	5,6	450	5,2
355,6/500	355,6		500	5,6
406,4/560	406,4	6,3	560	6,0
508/630	508		630	6,6
610/800	610	7,1	800	7,9
711/900	711	8,0	900	8,7
813/1000	813	8,8	1000	9,4
914/1100	914	10,0	1100	10,2
1016/1200	1016	11,0	1200	11,0
1219/1400	1219	12,5	1400	12,5

dz – steel kelly outer diameter

Dz – polyethylene protective casing outer diameter

S – kelly wall thickness

S₁ – protective coating wall thickness

Methods of product code registration

No.	Registration	Name	Meas.	Amount	Notes
1	01-1-219,1/315-11-0	Straight pipe	m.b.		
2	02-1-114,3/200-60-11-A	Standard bend 90°	it.		
3	02-1-219,1/315-90-11-A	Standard bend 90° (vertical, downward)	it.		
4	02-2-610/800-15-11-0	Elongated bend 15° L=1,25 x 2,0m	it.		
5	03-1-76,1/140-60,3/125-11-A	Straight T-shaped pipe	it.		
6	03-2-406,4/560-406,4/560-11-A	Angular T-shaped pipe with leftward branches (downward)	it.		
7	03-3-88,9/160-60,3/125-11-0	Parallel T-shaped pipe	it.		
8	04-K-88,9/160-60,3/125-11-0	Concentric reduction pipe	set		
9	04-E-60,3/125-42,4/110-11-A	Excentric reduction pipe	set		
10	05-1-560	End gasket	set		
11	06-1-114,3/200-11-0	Straight fixed point	it.		
12	06-2-45-219,1/315-11-A	Angular fixed point	it.		
13	07-1-250	Sliding support	it.		
14	08-250	Guiding fixed point	it.		
15	09-1-219,1/315-11-A	Shutoff valve	it.		
16	09-2-114,3/200-33,7/90-11-A	Vent	it.		
17	09-3-168,3/250-88,9/160-11-0	Drain	it.		
18	09-4-323,9/450-33,7/90-11-0	Combination shutoff valve with ventilation	it.		
19	09-5-323,9/450-33,7/90-114,3/200-11-0	Combination shutoff valve with ventilation and dehydration	it.		
20	10-1-219,1/315-16-125-11-A	"Free" bellow compensator	set		
21	10-2-168,3-16-100-10-0	"Disposable" bellow compensator with products for local insulation	set		
22	11-1-60,3/125	End	it.		
23	11-2-168,3/250	End	set		
24	12-160	Rubber sealing ring	it.		
25	13-160	Adaptor	it.		
26	14-3-1-219,1/315	Sleeve joints (EP-3 type) heat shrinkable sleeve	set		
27	14-4-1-610/800	Sleeve joints (EP-4 type) welded sleeve	set		
28	15-125	Compensation cushion	it.		
29	16	Warning tape	m.b.		
30	17	Sliding tape (L=10m)	roll.		L=10m
31	19-27	T-wrench(for DN100)	it.		
32	20-50	Portable mechanism for valve steering (for DN250)	it.		
33	28-250-3-41	Centering skid	set		
33.1		Centering skid segment h=41mm	it.		
33.2		Brake lining L=810mm, B=250mm	it.		
34	29	Tools for centering skid fixation	it.		
35	30-900/1020	Gasket	set		

01-Pipe



Catalogue number:



alarm code

"A" - alarm system
with no alarm system

"0"

protective casing code

"1" - polyethylene pipe

kelly code

"1" - steel pipe

standard dim

dz / Dz

product type

"1" - straight pipe

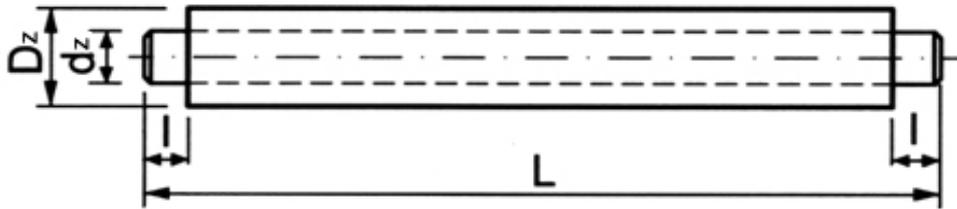
product code

"01" - pipe

Examples of a catalogue number entry

1). Straight pipe, dimensions 219/315, steel, alarm system:

01-1-219,1/315-11-A

01-1- Straight pipe


Dimensio n dz/Dz	Pipe length *		l, mm
	L, m		
	weight, kg		
	6m	12m	
33,7/90	18,28	37,06	220
42,4/110	24,25	49,21	
48,3/110	26,31	53,31	
60,3/125	34,94	70,7	
76,1/140	44,33	89,69	
88,9/160	55,68	112,56	
114,3/200	79,44	160,5	
139,7/225	97,06	196,06	
168,3/250	125,78	253,82	
219,1/315	187,46	378,44	
273/400	268,85	543,29	
323,9/450		704,73	
355,6/500		803,42	
406,4/560		1017,46	
508/630		1239,66	
610/800		1792,36	
711/900		2289,21	
813/1000		2777,56	
914/1100		3548,52	
1016/1200		4281,67	
1219/1400		5697,76	

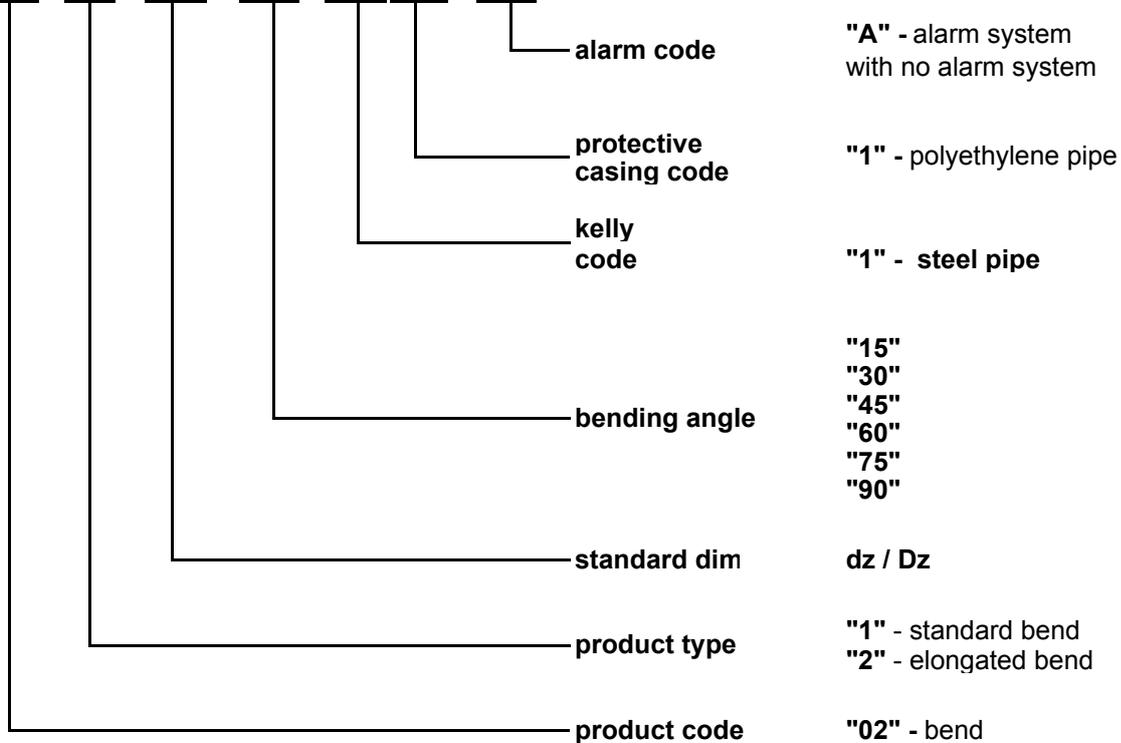
* The pipe length is cited for reference only. The real pipe length may be changed when making an order which depends on the real steel pipe length which is supplied by the manufacturer.

02 - Bend



Catalogue number:

02 - [] - [] - [] - [] - 1 - []

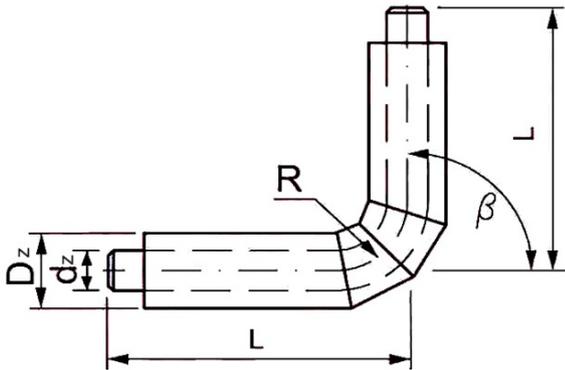
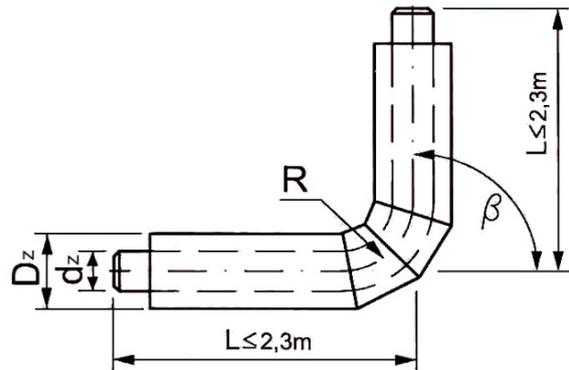


Example of a catalogue number entry

- 1). Standard bend 60°, dimensions 114,3/200, steel pipe with an alarm system:
02-1-114,3/200-60-11-A
- 2). Standard bend 90°, dimensions 159/250, steel pipe with no alarm system:
02-1-159/250-90-21-0

Notes:

1. 1. When ordering bends with an alarm system, it is necessary to separately specify the number of vertical bends (ascent, descent).
2. 2. When ordering elongated bends, it is necessary to specify branch (arm) lengths. L1 i L2 (see pages 9, lev. 4).

02-1 - Standard bend

02-2 - Elongated bend


Dimension dz/Dz	L, mm	Weight, kg					
		15°	30°	45°	60°	75°	90°
33,7/90	1000	5,76	5,75	5,74	5,72	5,69	5,62
42,4/110		7,61	7,60	7,58	7,54	7,47	7,34
48,3/110		8,31	8,30	8,27	8,21	8,11	7,92
60,3/125		11,12	11,10	11,01	10,93	10,72	10,35
76,1/140		14,11	14,09	14,02	13,87	13,60	13,14
88,9/160		17,76	17,72	17,60	17,36	16,91	16,14
114,3/200		25,67	25,93	26,14	26,28	26,31	26,17
139,7/225		31,47	31,87	32,20	32,43	32,49	32,29
168,3/250		41,11	41,75	42,30	42,68	42,79	42,49
219,1/315		61,55	62,88	64,01	64,82	65,10	64,56
273/400	1300	116,54	119,55	122,22	124,30	125,45	125,10
323,9/450	1500	175,16	178,94	182,18	184,51	185,38	183,94
355,6/500	1600	210,71	213,08	214,72	215,15	231,65	209,06
406,4/560		267,41	270,58	272,72	273,09	270,65	263,76
508/630		333,41	344,01	353,01	359,34	361,40	356,68
610/800	2000	602,98	620,56	635,39	645,57	648,33	639,30
711/900		768,35	787,53	802,62	810,77	807,87	787,41
813/1000		931,14	951,12	965,42	970,11	959,51	924,59
914/1100		1358,89	1374,21	1381,37	1374,70	1346,06	1282,44
1016/1200		1631,41	1640,13	1637,92	1617,19	1567,00	1469,97
1219/1400	2600	2441,11	2431,63	2404,69	4348,18	2244,64	2066,29

03 - T-shaped pipes

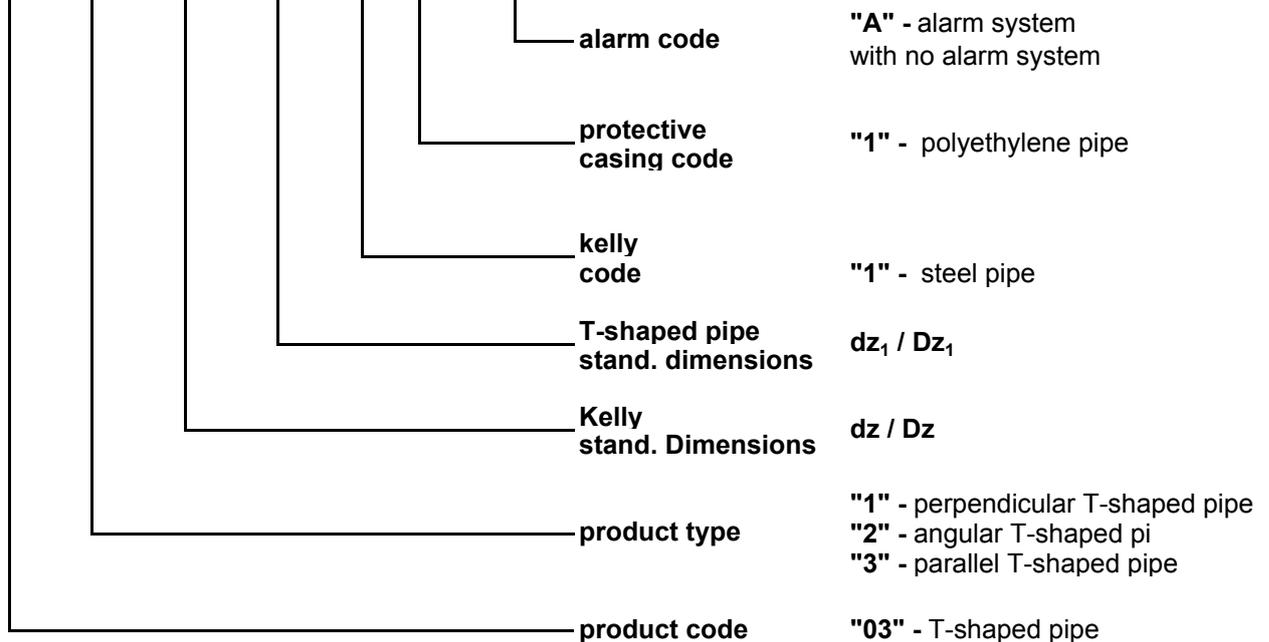


perpendicular

angular

parallel

Catalogue number:



Example of a catalogue number entry

- 1). Perpendicular T-shaped pipe, kelly dimensions 76/140, T-shaped pipe dimensions 57/125, steel pipe, alarm system.

03-1-76/140-57/125-11-A

- 2). Angular T-shaped pipe, kelly and T-shaped pipe dimensions 426/560, steel pipe, alarm system.

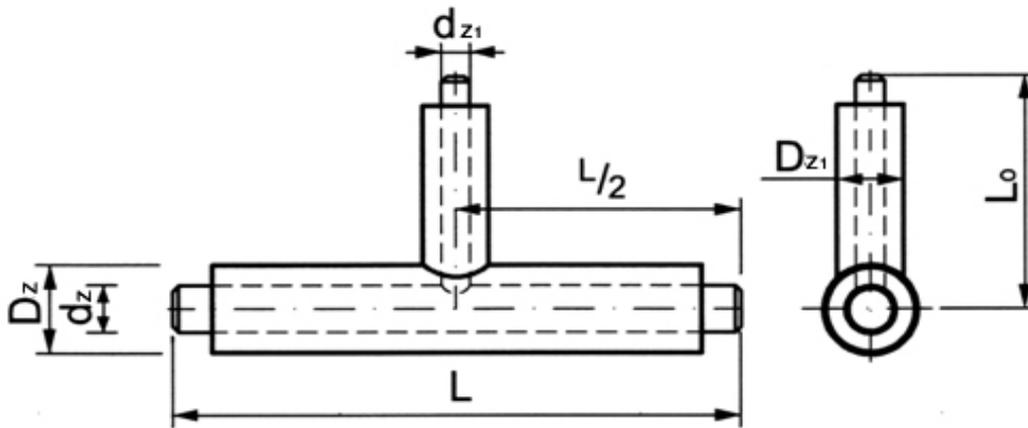
03-2-426/560-426/560-11-A

- 3). Parallel T-shaped pipe, kelly dimensions 89/160, with T-shaped pipe dimensions 60/125, steel pipe, with no alarm system:

03-3-89/160-60/125-11-0

Notes:

When ordering angular T-shaped pipes with an alarm, it is necessary to specify the branch direction (leftward, rightward, upward, or downward) according to the heat carrier movement.

03-1 - Perpendicular T-shaped pipe


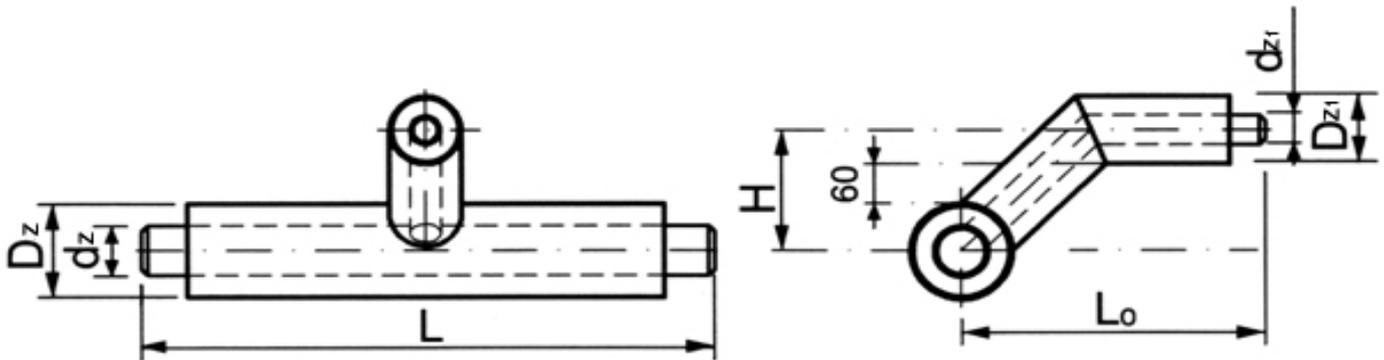
Main pipeline		Branch		Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	
33,7/90	1200	33,7/90	1050	6,2
		42,4/110		7,2
42,4/110		8,2		
33,7/90		7,6		
42,4/110		8,6		
48,3/110		9,0		
60,3/125		33,7/90	1060	9,2
		42,4/110		10,2
		48,3/110		10,6
		60,3/125		12,1
76,1/140		33,7/90	1070	10,9
		42,4/110		11,9
	48,3/110	12,2		
	60,3/125	13,7		
	76,1/140	15,5		
88,9/160	33,7/90	1080	14,9	
	42,4/110		15,9	
	48,3/110		16,2	
	60,3/125		17,7	
	76,1/140		19,3	
	88,9/160		21,5	
114,3/200	33,7/90	1100	20,2	
	42,4/110		21,1	
	48,3/110		21,4	
	60,3/125		22,9	
	76,1/140		24,4	
	88,9/160		26,4	
	114,3/200		31,0	
	139,7/225		38,1	
139,7/225	33,7/90	1120	24,0	
	42,4/110		24,9	
	48,3/110		25,3	
	60,3/125		26,7	
	76,1/140		28,2	
	88,9/160		30,1	
	114,3/200		34,3	
	139,7/225		38,1	

Main pipeline		Branch		Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	
168,3/250	1400	33,7/90	1130	30,4
		42,4/110		31,3
		48,3/110		31,7
		60,3/125		33,1
		76,1/140		34,6
		88,9/160		36,4
		114,3/200		40,4
		139,7/225		43,6
		168,3/250		50,0
		219,1/315		1700
42,4/110	54,3			
48,3/110	54,6			
60,3/125	55,9			
76,1/140	57,4			
88,9/160	59,2			
114,3/200	63,0			
139,7/225	66,0			
168,3/250	71,1			
219,1/315	84,5			
273/400	1200	33,7/90	1200	74,9
		42,4/110		75,8
		48,3/110		76,1
		60,3/125		77,5
		76,1/140		78,9
		88,9/160		80,7
		114,3/200		84,4
		139,7/225		87,3
		168,3/250		92,2
		219,1/315		103,1
273/400	121,8			
323,9/450	1230	33,7/90	1230	96,7
		42,4/110		97,6
		48,3/110		97,9
		60,3/125		99,3
		76,1/140		100,7
		88,9/160		102,4

Main pipeline		Branch		Weig kg	
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm		
323,9/450	1700	114,3/200	1230	106,0	
		139,7/225		108,8	
		168,3/250		113,5	
		219,1/315		124,0	
		273/400		138,9	
		323,9/450		160,2	
355,6/500		1250	48,3/110	1250	110,4
			60,3/125		111,7
			76,1/140		113,1
			88,9/160		114,8
			114,3/200		118,4
			139,7/225		121,1
	168,3/250		125,7		
	219,1/315		135,9		
	273/400		150,2		
406,4/560	1280	323,9/450	1280	167,0	
		355,6/500		182,0	
		48,3/110		164,8	
		60,3/125		166,0	
		76,1/140		167,4	
		88,9/160		169,1	
		114,3/200		172,6	
		139,7/225		175,3	
		168,3/250		179,7	
		219,1/315		189,5	
		273/400		203,2	
		323,9/450		218,4	
508/630	2000	355,6/500	1360	228,4	
		406,4/560		258,9	
		48,3/110		200,8	
		60,3/125		202,0	
		76,1/140		203,4	
		88,9/160		205,0	
		114,3/200		208,5	
		139,7/225		211,1	
		168,3/250		215,5	
		219,1/315		225,0	
		273/400		238,2	
		323,9/450		252,2	
610/800	1400	355,6/500	1400	261,1	
		406,4/560		281,9	
		508/630		324,7	
		48,3/110		285,6	
		60,3/125		286,8	
		76,1/140		288,0	
		88,9/160		289,6	

Main pipeline		Branch		Weig kg
dimension dz/Dz	L, mm	dz ₁ /Dz ₁	L ₀ , mm	
610/800	1400	114,3/200	1400	292,8
		139,7/225		295,2
		168,3/250		299,2
		219,1/315		308,1
		273/400		320,2
		323,9/450		332,8
		355,6/500		340,8
		406,4/560		359,1
		508/630		385,4
		610/800		465,3
711/900	2000	48,3/110	1450	365,1
		60,3/125		366,2
		76,1/140		367,4
		88,9/160		368,9
		114,3/200		372,0
		139,7/225		374,3
		168,3/250		378,0
		219,1/315		386,4
		273/400		397,9
		323,9/450		409,6
		355,6/500		417,1
		406,4/560		433,9
813/1000	1500	508/630	1500	456,5
		610/800		511,7
		48,3/110		444,5
		60,3/125		445,5
		76,1/140		446,7
		88,9/160		448,1
		114,3/200		451,0
		139,7/225		453,1
		168,3/250		456,7
		219,1/315		464,6
914/1100	1550	273/400	1550	475,4
		323,9/450		486,4
		355,6/500		493,5
		406,4/560		509,0
		508/630		529,2
		610/800		578,3
		48,3/110		566,8
		60,3/125		567,8
		76,1/140		568,9
88,9/160	570,2			
		114,3/200		572,9
		139,7/225		575,0
		168,3/250		578,3
		219,1/315		585,8

Main pipeline		Branch		Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	
914/1100	2000	273/400	1550	596,0
		323,9/450		606,2
		355,6/500		613,0
		406,4/560		627,5
		508/630		645,8
		610/800		691,0
1016/1200		48,3/110	1600	684,5
		60,3/125		685,4
		76,1/140		686,5
		88,9/160		687,7
		114,3/200		690,2
		139,7/225		692,2
		168,3/250		695,3
		219,1/315		702,3
		273/400		712,0
		323,9/450		721,5
		355,6/500		728,0
		406,4/560		741,5
508/630	758,2			
610/800	800,2			
1219/1400	48,3/110	1700	913,1	
	60,3/125		913,9	
	76,1/140		914,8	
	88,9/160		915,9	
	114,3/200		918,1	
	139,7/225		919,8	
	168,3/250		922,5	
	219,1/315		928,7	
	273/400		937,3	
	323,9/450		945,5	
	355,6/500		951,4	
	406,4/560		963,0	
508/630	977,2			
610/800	1014,0			

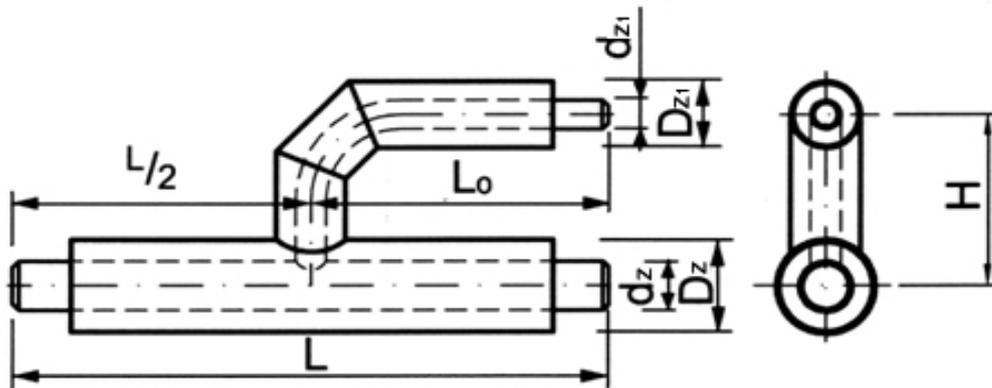
03-2 - Angular T-shaped pipe


Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
33,7/90	1200	33,7/90	1000	150	6,3
		42,4/110		160	7,3
42,4/110		170		8,3	
48,3/110		33,7/90		160	7,7
		42,4/110		170	8,6
		48,3/110		170	9,1
60,3/125		33,7/90		168	9,3
		42,4/110		178	10,2
		48,3/110		178	10,6
		60,3/125		185	12,2
76,1/140		33,7/90		175	11
		42,4/110		185	11,9
	48,3/110	185	12,3		
	60,3/125	192	13,8		
	76,1/140	200	15,5		
88,9/160	1400	33,7/90	1000	185	15
		42,4/110		195	15,9
		48,3/110		195	16,3
		60,3/125		202	17,8
		76,1/140		210	19,4
		88,9/160		220	21,6
114,3/200		33,7/90		205	20,1
		42,4/110		215	21,1
		48,3/110		215	21,4
		60,3/125		222	22,9
		76,1/140		230	24,5
		88,9/160		240	26,5
	114,3/200	260	31		
139,7/225	33,7/90	218	24		
	42,4/110	228	24,9		
	48,3/110	228	25,2		
	60,3/125	234	26,7		
	76,1/140	242	28,2		
	88,9/160	252	30,2		
	114,3/200	272	34,3		
139,7/225	285	38			

Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
168,3/250	1400	33,7/90	1000	230	30,4
		42,4/110		240	31,3
		48,3/110		240	31,6
		60,3/125		247	33,1
		76,1/140		255	34,6
		88,9/160		265	36,5
		114,3/200		285	40,5
		139,7/225		298	43,7
219,1/315	1700	168,3/250	1100	310	49,7
		33,7/90		262	53,6
		42,4/110		273	54,6
		48,3/110		273	54,9
		60,3/125		280	56,5
		76,1/140		288	58,1
		88,9/160		298	60,2
		114,3/200		318	64,5
		139,7/225		330	67,8
		168,3/250		343	73,4
273/400	2000	219,1/315	1500	375	87,1
		33,7/90		305	75,1
		42,4/110		315	76
		48,3/110		315	76,4
		60,3/125		322	78
		76,1/140		330	79,5
		88,9/160		340	81,5
		114,3/200		360	85,8
		139,7/225		372	88,9
		168,3/250		385	94,4
323,9/450	2000	273/400	1200	418	106,3
		33,7/90		330	97,2
		42,4/110		340	98,2
		48,3/110		340	98,6
		60,3/125		347	100,3
		76,1/140		355	102
		88,9/160		365	104,1

Main pipeline		Branch			Weig kg	Main pipeline		Branch			Weigh kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm		dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
323,9/450	1700	114,3/200	1200	385	2000	610/800	2000	139,7/225	1300	573	299,6
		139,7/225		397				168,3/250		585	
		168,3/250		410				219,1/315		618	
		219,1/315		443				273/400		660	
	2000	273/400	485	1500				323,9/450	685		
		323,9/450	510					355,6/500	710		
355,6/500	1700	48,3/110	1200	365	2000	711/900	2000	48,3/110	1400	565	366,4
		60,3/125		373				60,3/125		573	
		76,1/140		380				76,1/140		580	
		88,9/160		390				88,9/160		590	
		114,3/200		410				114,3/200		610	
		139,7/225		423				139,7/225		623	
		168,3/250		435				168,3/250		635	
		219,1/315		468				219,1/315		668	
	2000	273/400	510	1500				273/400	710		
		323,9/450	535					323,9/450	735		
		355,6/500	560					355,6/500	760		
		355,6/500	560					406,4/560	790		
406,4/560	2000	48,3/110	1200	395	2000	813/1000	2000	48,3/110	1400	615	445,7
		60,3/125		403				60,3/125		623	
		76,1/140		410				76,1/140		630	
		88,9/160		420				88,9/160		640	
		114,3/200		440				114,3/200		660	
		139,7/225		452				139,7/225		673	
		168,3/250		465				168,3/250		685	
		219,1/315		498				219,1/315		718	
	3000	273/400	540	1500				273/400	760		
		323,9/450	565					323,9/450	785		
		355,6/500	590					355,6/500	810		
		406,4/560	620					406,4/560	840		
508/630	2000	48,3/110	1200	430	2000	914/1100	2000	48,3/110	1500	665	568,4
		60,3/125		438				60,3/125		673	
		76,1/140		445				76,1/140		680	
		88,9/160		455				88,9/160		690	
		114,3/200		475				114,3/200		710	
		139,7/225		488				139,7/225		723	
		168,3/250		500				168,3/250		735	
		219,1/315		533				219,1/315		768	
	3000	273/400	575	1500				273/400	810		
		323,9/450	600					323,9/450	840		
		355,6/500	625					355,6/500	875		
		406,4/560	655					406,4/560	960		
610/800	2000	48,3/110	1300	515	2000	914/1100	2000	48,3/110	1500	665	568,4
		60,3/125		523				60,3/125		673	
		76,1/140		530				76,1/140		680	
		88,9/160		540				88,9/160		690	
		114,3/200		560				114,3/200		710	
		114,3/200		560				139,7/225		723	
114,3/200	560	168,3/250	735								
114,3/200	560	219,1/315	768								
114,3/200	560	273/400	810								
114,3/200	560	323,9/450	835								

Main pipeline		Branch			Weig kg	
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm		
914/1100	2000	355,6/500	1500	860	644,4	
		406,4/560		890	668,4	
	3000	508/630	1700	925	1016	
		610/800		1010	1090	
1016/1200	2000	48,3/110	1500	715	686	
		60,3/125		723	687,7	
		76,1/140		730	689,4	
		88,9/160		740	691,6	
		114,3/200		760	696,2	
		139,7/225		773	699,5	
		168,3/250		785	705,4	
		219,1/315		818	717,3	
		273/400		860	737,5	
		323,9/450		885	755,9	
	3000	355,6/500	1600	910	765,7	
		406,4/560		940	790,6	
		508/630		1800	975	1201
		610/800			1060	1275
1219/1400	2000	48,3/110	1500	815	1154	
		60,3/125		823	1156	
		76,1/140		830	1157	
		88,9/160		840	1159	
		114,3/200		860	1163	
		139,7/225		873	1166	
		168,3/250		885	1172	
		219,1/315		918	1183	
		273/400		960	1206	
		323,9/450		985	1225	
	3000	355,6/500	1700	1010	1234	
		406,4/560		1040	1259	
		508/630		1900	1075	1548
		610/800			1160	1621

03-3 - Parallel T-shaped pipe


Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
33,7/90	1200	33,7/90	600	240	5,5
				250	6,5
				285	7,3
				250	6,9
				285	7,6
				285	7,9
				258	8,5
				293	9,3
				293	9,5
				275	11,0
				265	10,2
				300	11,0
300	11,2				
283	12,7				
290	14,5				
42,4/110	1200	33,7/90	600	275	14,6
				310	15,4
				310	15,7
				293	17,3
				300	19,2
				360	21,7
48,3/110	1200	33,7/90	600	295	19,8
				330	20,7
				330	20,9
				313	22,5
				320	24,5
				380	26,8
60,3/125	1200	33,7/90	600	400	31,7
				308	23,7
				343	24,5
				343	24,7
				325	26,4
				333	28,3
76,1/140	1200	33,7/90	600	393	30,7
				413	35,3
				375	38,7
				375	38,7
				375	38,7
				375	38,7
88,9/160	1400	33,7/90	700	308	23,7
				343	24,5
				343	24,7
				325	26,4
				333	28,3
				393	30,7
				413	35,3
				375	38,7
				375	38,7
				375	38,7
				375	38,7
				375	38,7
375	38,7				
114,3/200	1400	33,7/90	700	308	23,7
				343	24,5
				343	24,7
				325	26,4
				333	28,3
				393	30,7
				413	35,3
				375	38,7
				375	38,7
				375	38,7
				375	38,7
				375	38,7
139,7/225	1400	33,7/90	700	308	23,7
				343	24,5
				343	24,7
				325	26,4
				333	28,3
				393	30,7
				413	35,3
				375	38,7
				375	38,7
				375	38,7
				375	38,7
				168,3/250	1400
355	31,0				
355	31,2				
338	32,8				
345	34,7				
405	37,1				
425	41,7				
388	44,7				
425	51,9				
353	53,6				
363	54,5				
388	54,9				
370	56,7				
378	58,9				
438	61,5				
458	66,7				
420	70,1				
458	77,5				
490	94,6				
191,1/315	1700	33,7/90	850	395	75,2
				405	76,1
				430	76,5
				413	78,4
				420	80,5
				480	83,2
				500	88,4
				463	91,8
				475	98,6
				533	115,3
				625	166,7
				219,1/315	1700
405	76,1				
430	76,5				
413	78,4				
420	80,5				
480	83,2				
273/400	2000	273/400	1000	625	166,7
				625	166,7
				625	166,7
				625	166,7
				625	166,7
				625	166,7
323,9/450	1700	33,7/90	850	420	97,1
				430	98,0
				455	98,4
				438	100,2
				445	102,4
				505	105,1

Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
323,9/450	1700	114,3/200	850	525	110,3
		139,7/225		488	113,6
		168,3/250		500	120,4
		219,1/315		558	136,9
	2000	273/400	1000	650	190,5
		323,9/450		725	220,1
355,6/500	1700	48,3/110	850	480	110,9
		60,3/125		463	112,7
		76,1/140		470	114,9
		88,9/160		530	117,6
		114,3/200		550	122,8
		139,7/225		513	126,2
	2000	168,3/250	1000	525	133
		219,1/315		583	149,4
		273/400		675	205,5
		323,9/450		750	233
406,4/560	1700	48,3/110	850	510	166
		60,3/125		493	168,1
		76,1/140		500	170,5
		88,9/160		560	173,5
		114,3/200		580	179,3
		139,7/225		543	183,1
	2000	168,3/250	1000	555	190,7
		219,1/315		613	208,6
		273/400		705	239,4
		323,9/450		780	266,3
508/630	1700	48,3/110	850	545	201,9
		60,3/125		528	204
		76,1/140		535	206,4
		88,9/160		595	209,4
		114,3/200		615	215,1
		139,7/225		578	218,9
	2000	168,3/250	1000	590	226,3
		219,1/315		648	244,1
		273/400		740	274,4
		323,9/450		815	300,6
3000	355,6/500	1500	890	306,8	
	406,4/560		970	343,7	
610/800	2000	48,3/110	1000	605	287
		60,3/125		613	289,3
		76,1/140		620	291,7
		88,9/160		680	294,7
		114,3/200		700	300,6

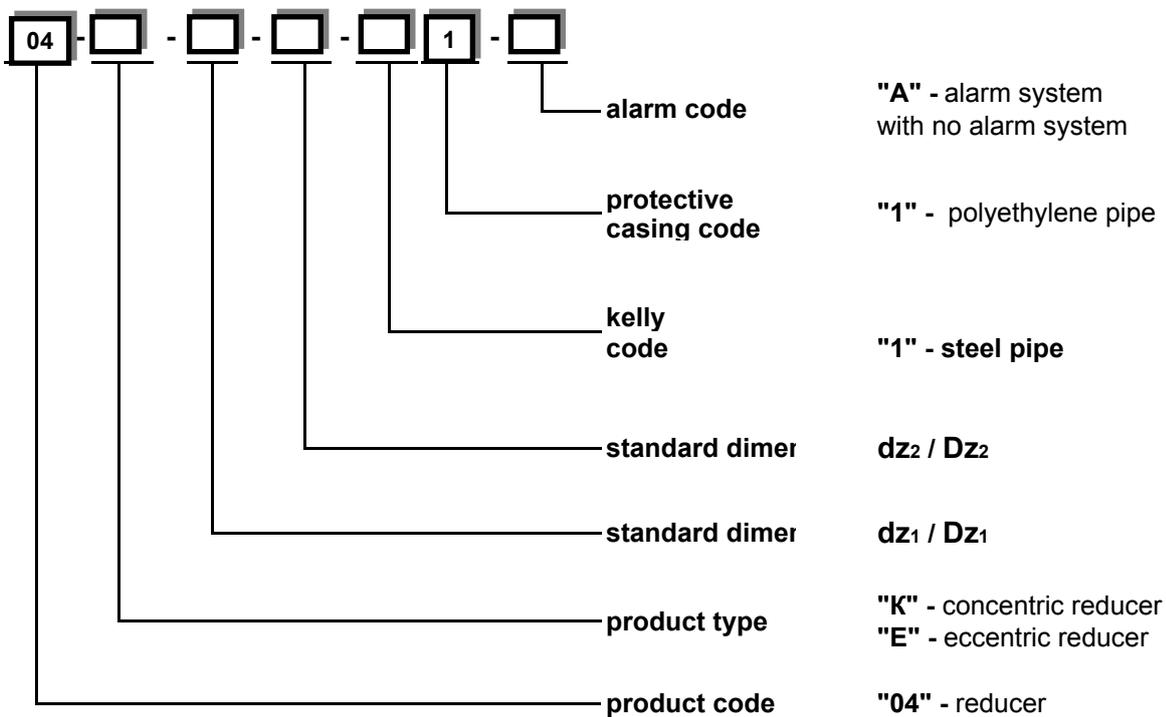
Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
610/800	2000	139,7/225	1000	663	304,4
		168,3/250		675	311,9
		219,1/315		733	329,9
		273/400		800	359,3
		323,9/450		875	385,2
		355,6/500		950	391,1
	3000	406,4/560	1500	1030	427,2
		610/800		1190	718,7
711/900	2000	48,3/110	1000	680	366,8
		60,3/125		663	368,9
		76,1/140		670	371,4
		88,9/160		730	374,4
		114,3/200		750	380,2
		139,7/225		713	384,1
	3000	168,3/250	1500	725	391,6
		219,1/315		783	409,5
		273/400		850	438,8
		323,9/450		925	464,5
813/1000	2000	355,6/500	1000	1000	470,3
		406,4/560		1080	506
		508/630		1240	837,8
		610/800		1375	994,2
		48,3/110		730	446,3
		60,3/125		713	448,5
914/1100	2000	76,1/140	1000	720	450,9
		88,9/160		780	453,9
		114,3/200		800	459,7
		139,7/225		763	463,6
		168,3/250		775	471,1
		219,1/315		833	488,9
	3000	273/400	1500	900	518,1
		323,9/450		975	543,7
		355,6/500		1050	549,4
		406,4/560		1130	584,9
914/1100	2000	508/630	1000	1290	956,7
		610/800		1425	1111
		48,3/110		780	568,8
		60,3/125		763	570,9
		76,1/140		770	573,4
		88,9/160		830	576,3
610/800	2000	114,3/200	1000	850	582,2
		139,7/225		813	586
		168,3/250		825	593,5
		219,1/315		883	611,3
		273/400		1000	758,2
		323,9/450		1075	783,7

Main pipeline		Branch			Weig kg
dimension dz/Dz	L, mm	dimension dz ₁ /Dz ₁	L ₀ , mm	H, mm	
914/1100	2000	219,1/315	1000	883	611,3
		273/400		950	640,5
		323,9/450		1025	666
		355,6/500		1100	671,6
		406,4/560		1180	706,9
	3000	508/630	1500	1340	1143
		610/800		1475	1295,8
1016/1200	2000	48,3/110	1000	830	686,6
		60,3/125		813	688,8
		76,1/140		820	691,2
		88,9/160		880	694,2
		114,3/200		900	700
		139,7/225		863	703,8
		168,3/250		875	711,3
		219,1/315		933	729,1
		273/400		1000	758,2
		323,9/450		1075	783,7
		355,6/500		1150	789,2
		406,4/560		1230	824,4
	3000	508/630	1500	1390	1321,6
		610/800		1525	1473,5
1219/1400	2000	48,3/110	1000	930	915,6
		60,3/125		913	917,7
		76,1/140		920	920,1
		88,9/160		980	923,1
		114,3/200		1000	928,9
		139,7/225		963	932,7
		168,3/250		975	940,2
		219,1/315		1033	957,9
		273/400		1100	987
		323,9/450		1175	1012,3
		355,6/500		1250	1017,8
		406,4/560		1330	1052,7
	3000	508/630	1500	1490	1668,2
		610/800		1625	1818,8

04 - Reducer



Catalogue number:

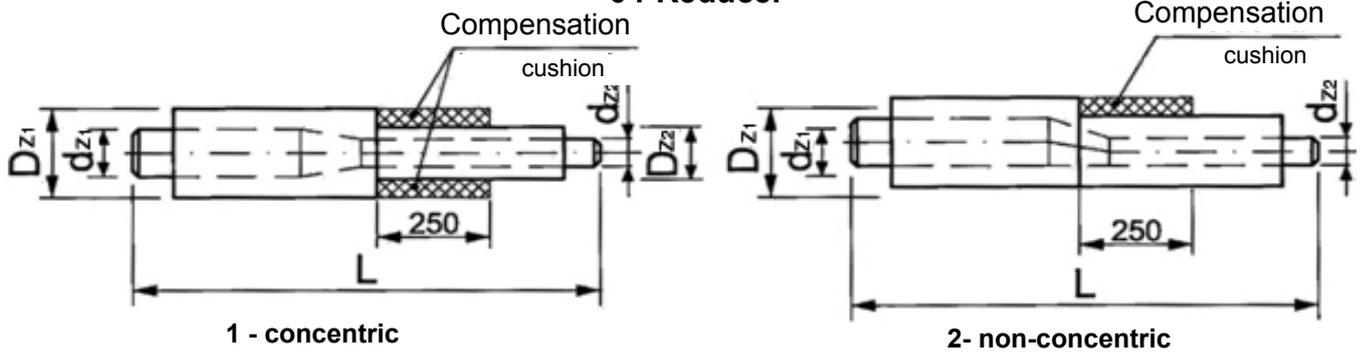


Example of a catalogue number entry

- 1). Concentric reducer of the pipeline with a dimension of 57/125 to the pipeline with a dimension of 38/110, steel pipe, with no alarm system:
04-K-57/125-38/110-11-0
- 2). Concentric reducer of the pipeline with a dimension of 89/160 to the pipeline with a dimension of 76/140, steel pipe, alarm system.
04-E-89/160-76/140-11-A

Notes:

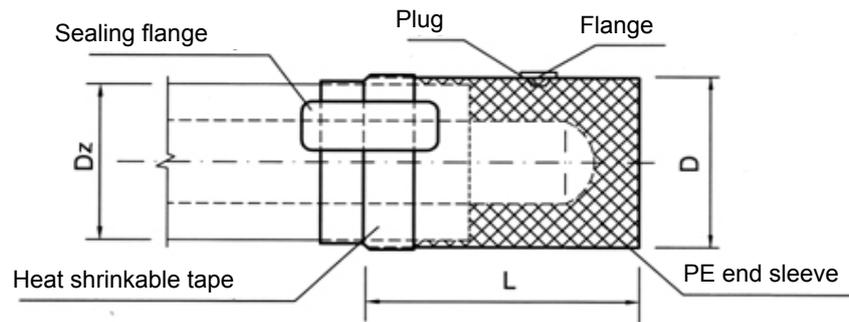
Reducers are equipped with compensation cushions.

04-Reducer


Main pipeline dimension dz_1/Dz_1	Reducer pipeline dimension dz_2/Dz_2	L, mm	Weight, kg
42,4/110	33,7/90	1000	3,1
48,3/110	33,7/90		3,31
	42,4/110		3,73
60,3/125	33,7/90		4,05
	42,4/110		4,46
	48,3/110		4,64
76,1/140	42,4/110		5,42
	48,3/110		5,59
	60,3/125		6,24
88,9/160	48,3/110		6,58
	60,3/125		7,23
	76,1/140		7,91
114,3/200	60,3/125		9,51
	76,1/140		10,17
	88,9/160		10,99
139,7/225	76,1/140		12,19
	88,9/160		12,96
	114,3/200		14,55
168,3/250	88,9/160		16,21
	114,3/200		17,75
	139,7/225	18,89	
219,1/315	114,3/200	23,93	
	139,7/225	25,1	
	168,3/250	27,12	
273/400	139,7/225	36,07	
	168,3/250	37,96	
	219,1/315	41,75	

Main pipeline dimension dz_1/Dz_1	Reducer pipeline dimension dz_2/Dz_2	L, mm	Weight, kg	
323,9/450	168,3/250	2000	87,5	
	219,1/315		96,27	
	273/400		107,73	
355,6/500	219,1/315		106,92	
	273/400		117,51	
	323,9/450		128,24	
406,4/560	273/400		139,92	
	323,9/450		150,5	
	355,6/500		156,52	
508/630	323,9/450		192,06	
	355,6/500		197,39	
	406,4/560		209,83	
610/800	355,6/500		267,45	
	406,4/560		279,89	
	508/630		293,08	
711/900	406,4/560		2500	385,36
	508/630			406,34
	610/800			454,32
813/1000	508/630			463,05
	610/800			511,03
	711/900	556,57		
914/1100	610/800	591,13		
	711/900	635,68		
	813/1000	681,19		
1016/1200	711/900	711,74		
	813/1000	755,25		
	914/1100	820,92		

05 - End sleeve



Catalogue number:



standard dimension Dz

protective casing code

"1" - polyethylene pipe

product code

"05" - end sleeve

Example of a catalogue number entry

End sleeve for a pre-insulated pipe of a PE protective casing, dimension 560:

05-1-560

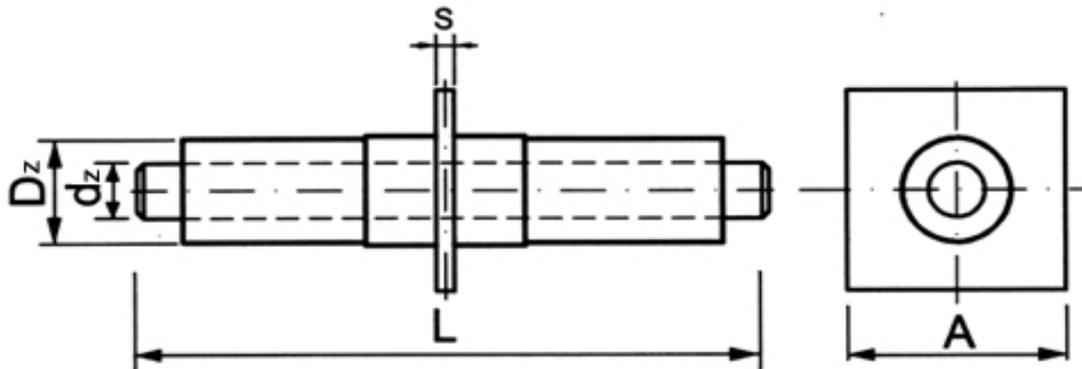
Dimension dz/Dz	L, mm	D, mm	Weight, kg
90	400	104	0.82
110		120	0.84
125		136	0.93
140		151	1.14
160		173	1.32
180		194	1.62
200		215	1.85
225		240	2.21
250		265	2.48
280		295	2.79
315	500	334	3.68
355		375	5.55
400		422	6.92
450		473	8.75
500		528	10.63
560		595	13.71
710		750	20.75
800	700	825	23.79
900		940	35.91
1000		1050	41.66
1100		1150	46.81
1200		1260	54,25
1400		1465	82,25

End sleeve is supplied with:

1. PE end sleeve
2. sealing flange
3. heat shrinkable tape
4. thermoinsulation materials
5. vent-plug
6. insulation flange.

Note:

End sleeves can be made using a welded plug.

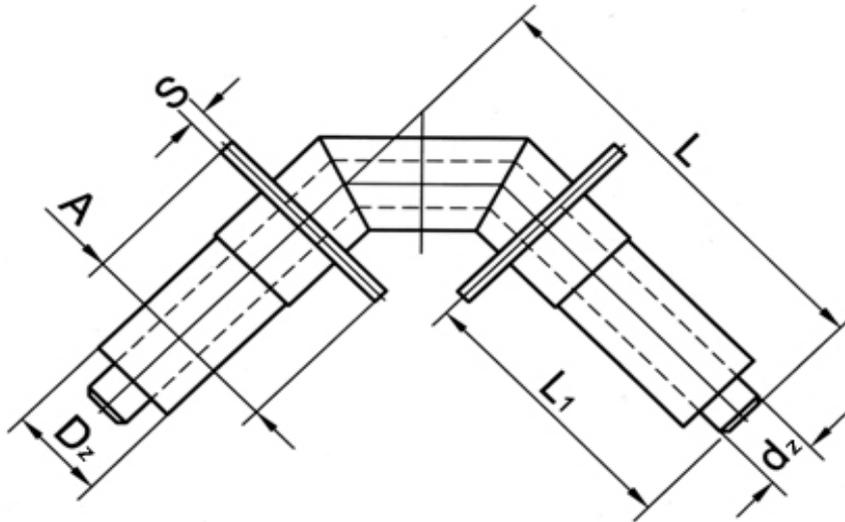
06-1 - Straight fixed point


Dimension dz/Dz	L, mm	A, mm	S, mm	F*, kH	Weight, kg
33,7/90	2000	180	10	29	10,2
42,4/110		200	10	39	13,1
48,3/110		200	12	45	14,4
60,3/125		225	12	73,5	18,5
76,1/140		250	14	100	23,7
88,9/160		270	16	117,5	30,1
114,3/200		320	20	173	44,8
139,7/225		360	25	203	59,6
168,3/250		400	25	303	74,9
219,1/315		450	30	502	108,6
273/400		2500	550	30	731
323,9/450	600		36	996	234,4
355,6/500	660		36	1300	275,2
406,4/560	720		40	1152	346,6
508/630	3000	900	50	1478	565,6
610/800		1000	55	1954	776,1
711/900		1120	60	2513	1007
813/1000		1240	65	2866	1247,7
914/1100		1360	70	3574	1579,7
1016/1200		1500	75	4358	2019,7
1219/1400		1700	90	5095	2508,7

Notes:

1.*- fixed point maximum permissible load [kN].

06 - 2 Angular fixed point
15°, 30°, 45°, 60°, 75°, 90°



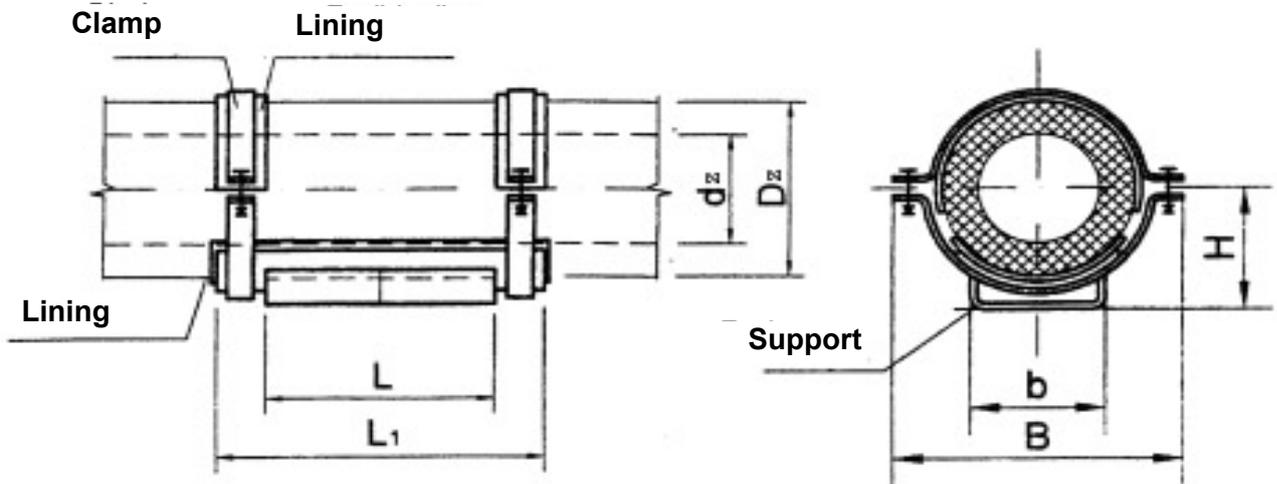
Dimension dz/Dz	A, mm	S, mm	15°			30°			45°		
			L, mm	L ₁ , mm	Weight kg	L, mm	L ₁ , mm	Weight kg	L, mm	L ₁ , mm	Weight kg
33,7/90	180	10	1400	1230	16,0	1400	1210	16,1	1400	1200	16,1
42,4/110	200	10	1400	1210	20,8	1400	1190	20,9	1400	1170	21,0
48,3/110	200	12	1400	1200	22,9	1400	1180	23	1400	1150	23,2
60,3/125	225	12	1600	1380	31,9	1600	1340	32,2	1600	1290	32,4
76,1/140	250	14	1600	1370	41,2	1600	1330	41,4	1600	1280	41,7
88,9/160	270	16	1600	1340	52,7	1600	1290	53,0	1600	1230	53,3
114,3/200	320	20	1600	1370	79,0	1600	1350	79,4	1600	1330	79,8
139,7/225	360	25	1600	1360	106,7	1600	1330	107,4	1600	1300	108,0
168,3/250	400	25	1600	1350	133,7	1600	1320	134,7	1600	1290	135,6
219,1/315	450	30	1600	1340	194,6	1600	1300	196,6	1600	1250	198,4
273/400	550	30	1800	1520	302,1	1800	1470	306,1	1800	1410	309,8
323,9/450	600	36	1800	1510	394,1	1800	1450	399,2	1800	1380	447,4
355,6/500	660	36	2200	1880	514,2	2200	1800	518,4	2300	1830	535,2
406,4/560	720	40	2200	1860	648,8	2200	1780	654,1	2400	1890	692,7
508/630	900	50	2200	1830	980,6	2200	1740	993,9	2500	1920	1068,8
610/800	1000	55	2200	1820	1341,9	2300	1790	1394,6	2600	1960	1504,7

06 - 2 Angular fixed point

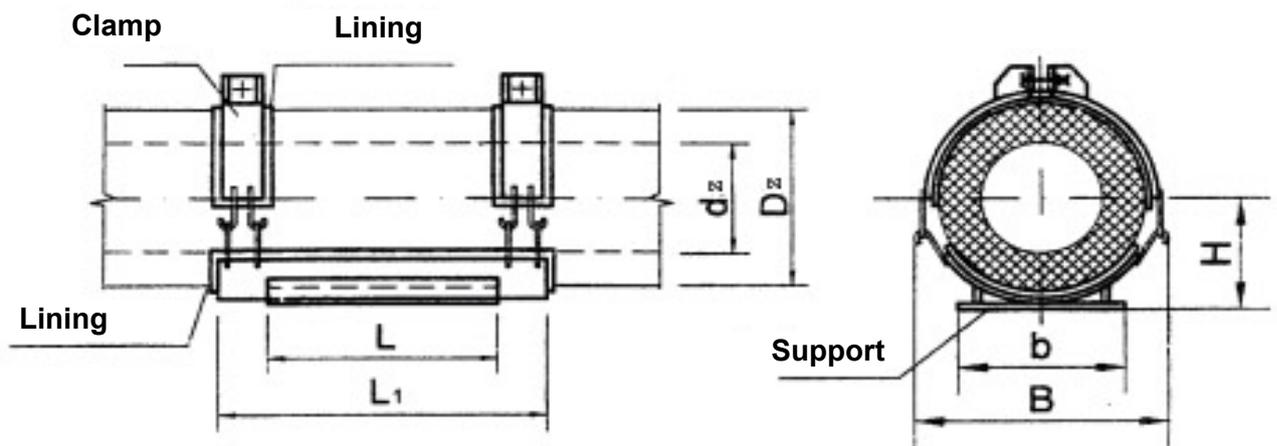
Dimension dz/Dz	A, mm	S, mm	60°			75°			90°		
			L, mm	L ₁ , mm	Weight, kg	L, mm	L ₁ , mm	Weight, kg	L, mm	L ₁ , mm	Weight, kg
33,7/90	180	10	1700	1480	18,1	1700	1460	18,1	1700	1440	18,1
42,4/110	200	10	1700	1440	23,6	1700	1410	23,6	1700	1380	23,6
48,3/110	200	12	1700	1410	26,0	1700	1380	26,0	1700	1330	26,0
60,3/125	225	12	2000	1650	37,2	2000	1590	37,3	2000	1520	37,2
76,1/140	250	14	2000	1630	47,9	2000	1580	47,8	2000	1510	47,6
88,9/160	270	16	2000	1570	61,0	2000	1490	61,0	2000	1400	60,7
114,3/200	320	20	2000	1700	91,0	2000	1670	91,3	2000	1640	91,3
139,7/225	360	25	2000	1670	121,7	2000	1640	122,0	2000	1590	122,1
168,3/250	400	25	2000	1650	153,4	2000	1610	153,9	2000	1550	154,0
219,1/315	450	30	2000	1600	225,3	2000	1550	226,1	2000	1480	226,2
273/400	550	30	2500	2050	376,9	2500	1980	379,0	2500	1890	379,7
323,9/450	600	36	2500	2000	490,7	2500	1920	492,7	2500	1810	492,7
355,6/500	660	36	3000	2440	632,1	3000	2340	632,3	3100	2310	643,1
406,4/560	720	40	2600	1990	729,6	3000	2280	797,7	3200	2340	827,3
508/630	900	50	2700	2000	1119,9	3100	2260	1208,3	3500	2480	1290,2
610/800	1000	55	2900	2110	1610,3	3300	2340	1738,5	3700	2520	1855,3

07- Sliding support

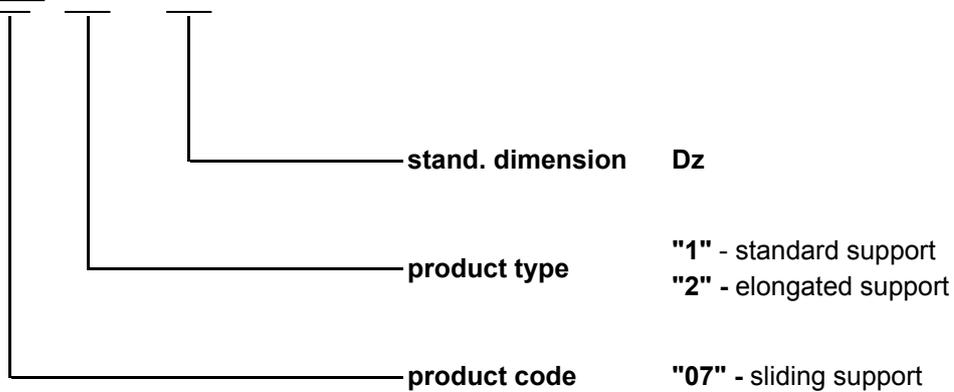
For $D_z=90...450\text{mm}$



For $D_z=500...1400\text{mm}$



Catalogue number:



Example of a catalogue number entry

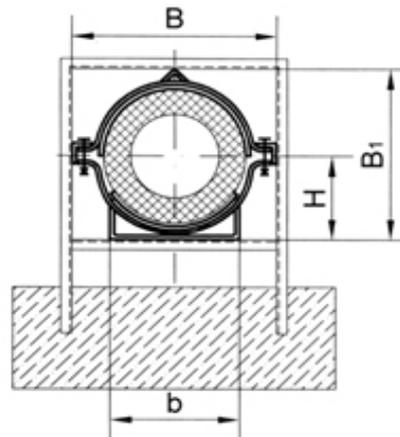
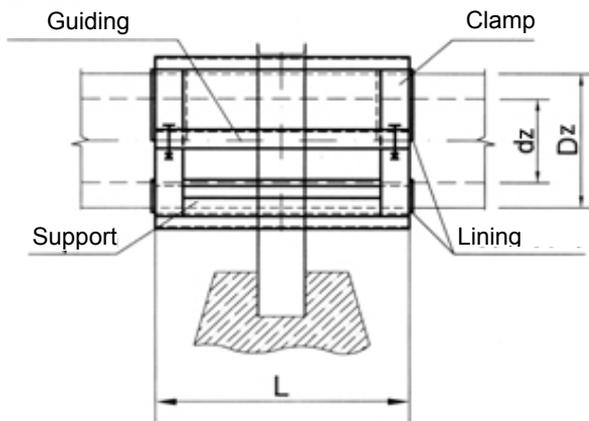
Standard sliding support, dimension 250

07-1-250

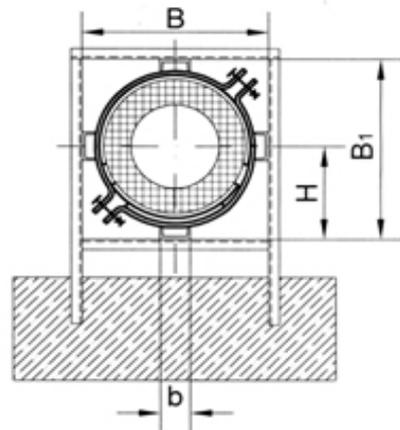
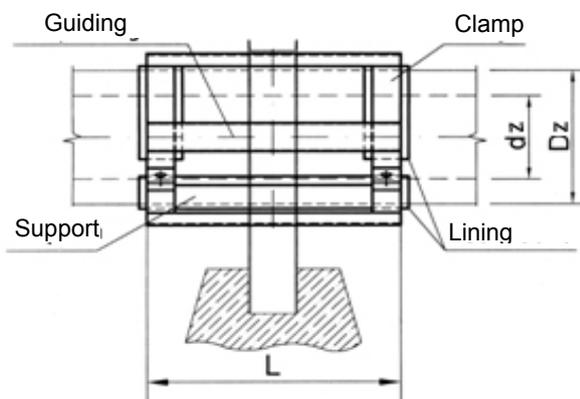
Dimension z/Dz	d _z mm	L, mm	L ₁ , mm	H, mm	b, mm	B, mm	Max step, m	kg
90	32	170	300	65	58	182	2	2,6
110	38			76	70	202	2,5	3,2
125	57			82	76	218		3,5
140	76			90	84	232	3,0	3,9
160	89			100	94	252	3,5	4,3
200	108			122	114	312	6,0	5,2
225	133			134	127	338		5,7
250	159	340	540	148	139	362		8,0
		170	300					6,3
315	219	170	340	181	172	448	7,0	8,6
		340	540				11,5	
400	273	170	340	223	214	537	9,0	10,5
		340	540				11,0	14,3
450	325			248	245	582	12,0	15,9
500	377			264	392	592	14,0	36,7
560	426			294	440	648		41,0
710	530			373	540	786		63,4
800	630	680	900	418	620	872	15,0	114
900	720			468	692	964		124
1000	820		1000	518	760	1060	16,0	150
1100	920		1100	568	860	1170		172
1200	1020	900	1500	622	910	1252	20,0	332
1400	1220	1200	2000	722	1035	1490		455

Rubber flat lining, 2...3 mm thick (supplied with the set).

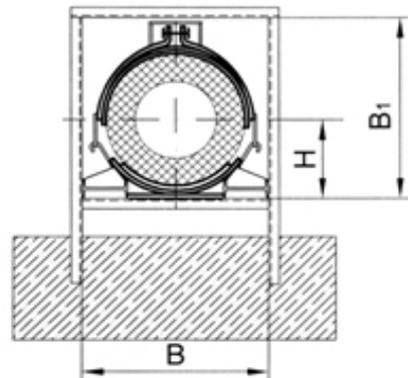
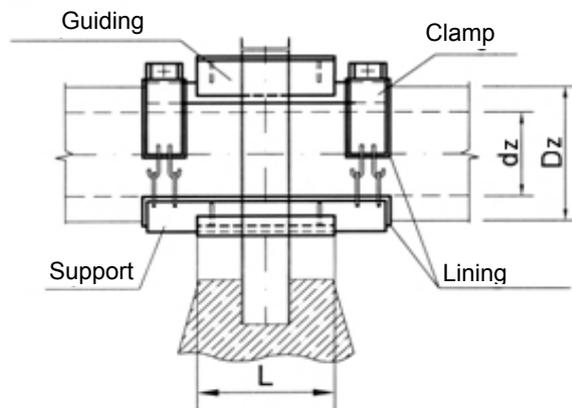
08 - Guiding support



For Dz=90...180mm

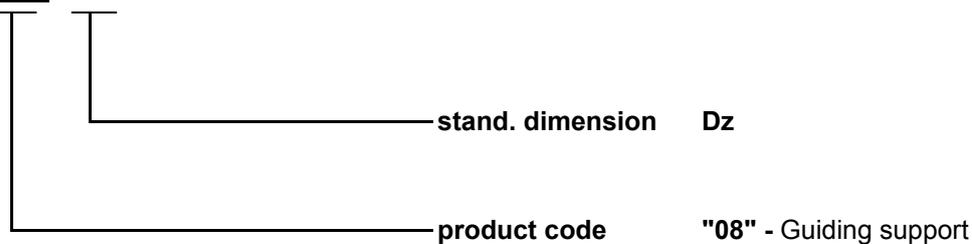


For Dz=200...450mm



For Dz=500...1400mm

Catalogue number:



Example of a catalogue number entry:

Guiding support, dimension 250:

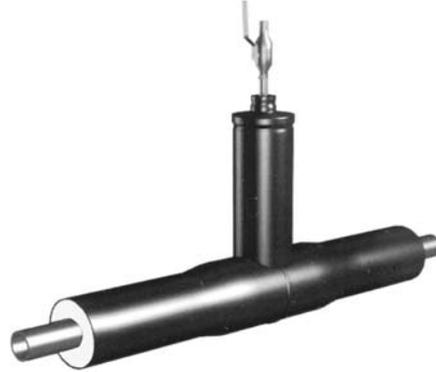
08-250

Dimension z/Dz	dz mm	L, mm	H, mm	B, mm	B ₁ , mm	b, mm	Weight, kg
90	32	170	65	207	135	58	3,4
110	38		76	227	156	70	3,64
125	57		82	243	170	76	4,14
140	76		90	257	184	84	4,34
160	89		100	302	202	94	4,74
200	108		144	287	287	65	11,8
225	133	340	157	313	313		12,9
250	159		170	339	339	13,3	
315	219		202	404	404	80	19,4
400	273		254,5	509	509		22,2
450	325		285	570	570	26,4	
500	377		264	628	591	36,7	
560	426	294	706	651	100	41,0	
710	530	373	848	805		63,4	
800	630	680	418	1034		895	114,0
900	720		468	1066	995	-	124,0
1000	820		518	1100	1095	-	150,0
1100	920		568	1220	1195	-	172,0
1200	1020	900	622	1350	1299	-	322,0
1400	1220		722	1550	1499	-	420,0

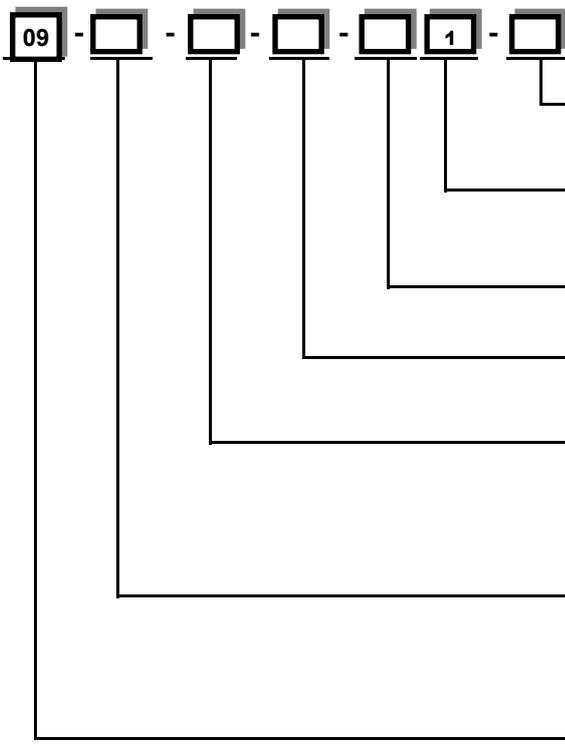
Note!

Provided metal construction structures are conditional and not included in the set.

09 - Pre-insulated ventilation, upper dehydration



Catalogue number:



alarm code

"A" - alarm system
"0" - with no alarm system

protective casing code

"1" - polyethylene pipe

kelly code

"1" - steel pipe

branch dimensions

dz_1 / Dz_1

kelly dimensions

dz / Dz

product type

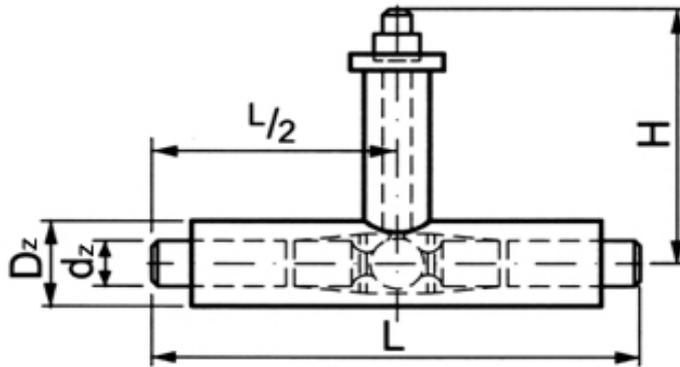
"1" - valve
"2" - vent
"3" - dehydration
"4" - combination shutoff valve with ventilation
"5" - combination shutoff valve with ventilation and dehydration

product code

"09" - Pre-insulated ventilation, upper dehydration

Example of a catalogue number entry

- Shutoff valve, dimensions 219/315, steel pipe, analogue alarm:
09-1-219/315-11-A
 - Vent, kelly dimensions 108/200, branch dimensions 32/90, steel pipe, alarm system :
09-2-108/200-57/125-11-A
 - * Shutoff valve with a vent, kelly dimensions 325/450, branch dimensions 32/90, steel pipe, with no alarm system:
09-4-325/450-32/90-11-0
 - * Shutoff valve with a vent DN25 and dehydrator DN100, kelly dimensions 325/450, steel pipe, with no alarm system:
09-5-325/450-32/90-108/200-11-0
- * When ordering, it is recommended to specify the auxiliary valve destination (p.7, no 19, 20)

09-1 - Shutoff valve


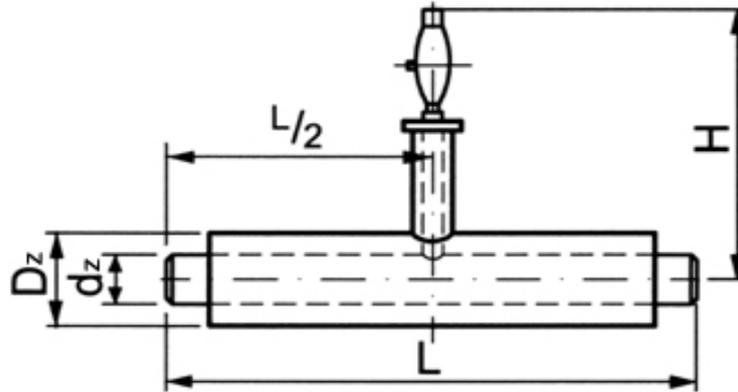
Dimension dz/Dz	L, mm	Hst., mm	Hmin mm	Hmax mm	Weight, kg (for Hst)
33,7/90	1000	400	150	3300	5,1
42,4/110		404	160	2000	6,0
48,3/110		413	175	5000	7,2
60,3/125		420	180	3500	8,7
76,1/140		424	235	3500	12,3
88,9/160		434	245	2800	14,8
114,3/200		453	275	4500	21,6
139,7/225		492	375	3000	30,6
168,3/250		513	410	2500	41,0
219,1/315	1200	537	460	3000	72,6
273/400	1500	613	549	1800	168,2
323,9/450		664	606	1100	262,3
355,6/500		727	727	1445	311,2
406,4/560		789	789	4350	311,9
508/630	2000	946	946	2240	802,2
610/800*		-	-	-	-
711/900*		-	-	-	-
813/1000*		-	-	-	-
914/1100*	2500	-	-	-	-
1016/1200*		-	-	-	-
1219/1400*		-	-	-	-

Hst., - spigot standard height
 Hmin., - spigot minimum height
 Hmax., - spigot maximum weight

Notes:

- Ball valves are used for $\Phi 325/450$, from $\Phi 325/450$ to $\Phi 530/710$ upon agreement with the manufacturer – ball valves or rotating apertures, from $\Phi 630/800$ – rotating apertures
- BROEN devices are used for $\Phi 530/710$, NAVAL devices are used for $\Phi 630/800$, $\Phi 720/900$, for $\Phi 820/1000$ and larger - to be agreed upon with the manufacturer.
- The following is used to steer the valve from the ground surface:
 - from $\Phi 32/90$ to $\Phi 89/160$ – T-wrench 19-19
 - from $\Phi 108/200$ to $\Phi 219/315$ – T-wrench 19-27
 - from $\Phi 219/315$ to $\Phi 325/450$ – portable mechanism 27-50.
- $\Phi 377/500$ and larger valves are equipped with stationary manual reducers with electric drive upon individual request.
- When installing valves in heat chambers or halls, it is recommended to use BROEN catalogues or contact the DD (design department) of Energoresurs-invest corporation.
- Upon agreement, it is possible to use shutoff valves made by other companies.
- * Dimensions are adapted to individual requests.

09-2 - Vent
09-3 - Dehydration

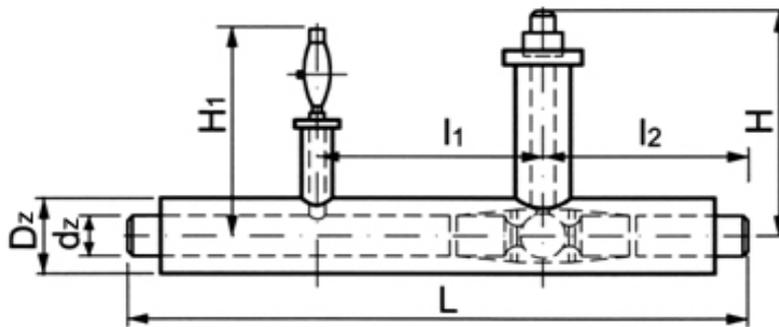


Main pipeline		Hst., mm	Vent	Weight, kg	Dehydration	Weight, kg		
Dimension dz/Dz	L, mm		Dimensio n		Dimension dz/Dz			
33,7/90	1000	700	32/90	4,9	32/90	4,9		
42,4/110				5,6		5,6		
48,3/110				6,0		6,0		
60,3/125				800	45/110	7,3	8,6	8,6
76,1/140						8,6	9,9	
88,9/160						10,3	11,6	
114,3/200						13,9	15,1	
139,7/225						16,8	18,1	
168,3/250						21,2	27,4	
219,1/315						46,2	52,1	
273/400	1500	900	45/110	64,9	70,4			
323,9/450				84,2	94,4			
355,6/500				96,1	104,8			
406,4/560				121,1	129,3			
508/630				200,0	245,2			
610/800	2000	1100	57/125	284,6	327,0			
711/900				364,4	406,9			
813/1000				444,1	544,2			
914/1100	2500	1200	57/125	715,9	816,3			
1016/1200				864,0	1031,8			
1219/1400				1153,0	1327,0			

Hst., - branch standard height for equipment.

1. It is possible to make equipment with other branch diameters.
2. According to another order, equipment may include automatic vents.

09 - 4 - Combination shutoff valve with a vent

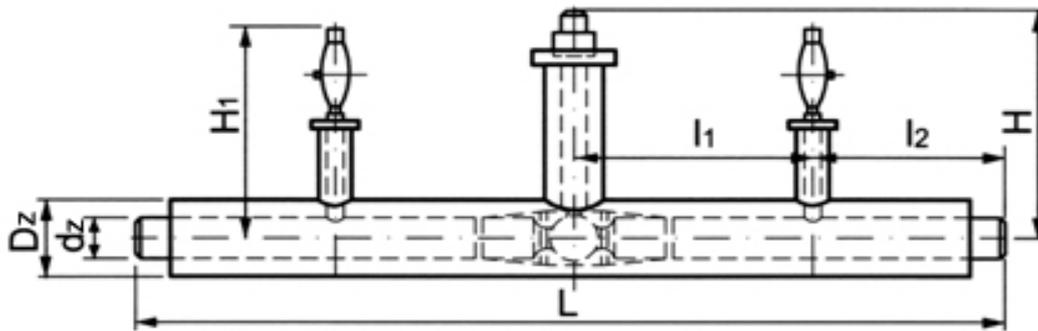


Main pipeline				H _{1st} mm
Dimension dz/Dz	L, mm	l ₁ mm	l ₂ mm	
33,7/90	1300	400	450	700
42,4/110				
48,3/110				
60,3/125				
76,1/140	1400	500	550	800
88,9/160				
114,3/200				
139,7/225	1500	500	600	800
168,3/250	1600			
219,1/315	1700	600	750	900
273/400	1900			
323,9/450	2000	900	850	1000
355,6/500				
406,4/560	2400	900	600	1100
508/630				
610/800				
711/900				
813/1000	2500	900	800	1200
914/1100				
1016/1200				

Notes:

1. Auxiliary valves are used for ventilation and dehydration.
2. Vent and dehydration diameters (see section 09 – 2 (Vent) i 09 – 3 (Dehydration))
3. For shutoff valve spigot and branch height see section 09 –1 (Shutoff valve), 09 – 2 (Vent) and 09 – 3 (Dehydration).

09 -5 - Combination shutoff valve with ventilation and dehydration



Main pipeline				H _{1st} mm	
Dimension dz/Dz	L, mm	l ₁ mm	l ₂ mm		
33,7/90	1700	400	450	700	
42,4/110					
48,3/110					
60,3/125			550		
76,1/140					
88,9/160					
114,3/200					
139,7/225	1800	600	800		
168,3/250					
219,1/315	2000	500	700	900	
273/400					
323,9/450	2300	600	750	900	
355,6/500			850		
406,4/560					
508/630	3000	900	900	1000	
610/800				1100	
711/900					
813/1000					
914/1100					
1016/1200					1200

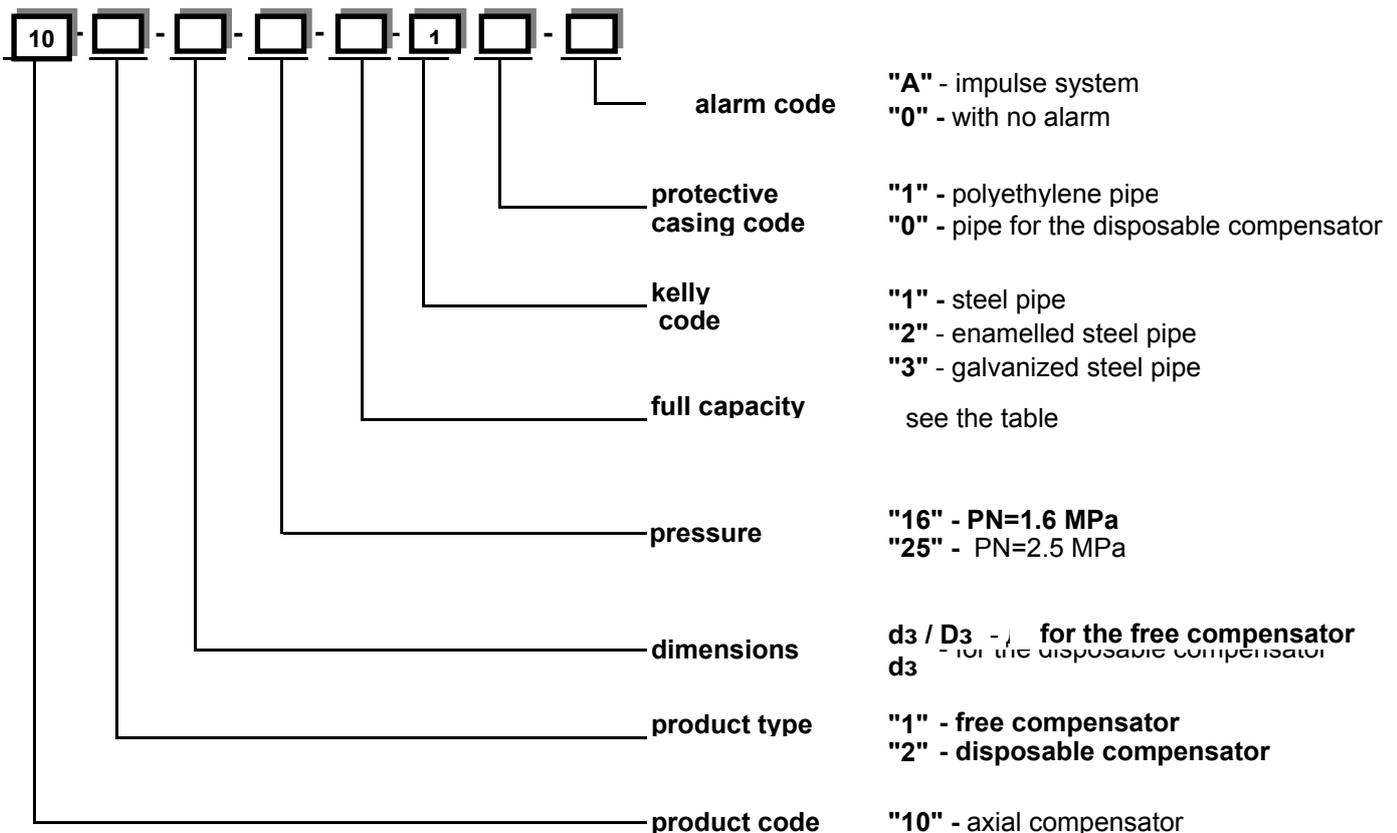
Notes:

1. Auxiliary valves are used for ventilation and dehydration
2. Vent and dehydration diameters (see section 09 – 2 (Vent) i 09 – 3 (Dehydration))
3. For shutoff valve spigot and branch height see section 09 –1 (Shutoff valve), 09 – 2 (Vent) and 09 – 3 (Dehydration).

10- Axial compensator



Catalogue number:



* Full compensating capacity – compensator compensating capacity when the bag is completely (Δ) expanded

Example of a catalogue number entry:

1) "Free" bellow compensator, dimensions 219/315, nominal pressure PN=1.6 MPa, full compensating capacity Δ =125 mm, impulse alarm:

10-1-219/315-16-125-11-A

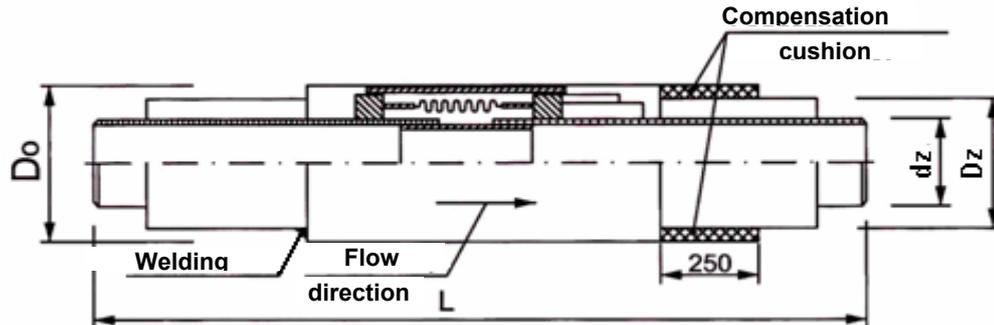
2) "Free" bellow compensator, dimensions 426/560, nominal pressure PN=1.6 MPa, full compensating capacity Δ =200 mm, with no alarm:

10-1-426/560-16-200-11-0

3) "Disposable" bellow compensator, dimensions 159, nominal pressure PN=1.6 MPa, full compensating capacity Δ =100 mm, with no alarm

10-2-159-16-100-10-0

Compensators are equipped with compensation cushions.

10-1 "Free" bellow compensator


Dimension dz/Dz	To mm	L mm	PN=1,6 MPa				PN=2,5 MPa			
			Cq H/mm	Ak mm ²	Δ* mm	Weight kg	Cq H/mm	Ak mm ²	Δ* mm	Weight kg
48,3/110	140	2200	39	3766	63	14,1	39	2200	90	15,1
60,3/125	160		88	4501	63	19,5	35	3500		20,8
76,1/140	200		114	6932	63	22,8	34	5300		22,3
88,9/160		37	9808	125	29,9	37	10920	28,9		
114,3/200	250	2500	49	9659	150	23,3	-	-	-	
			40	15383	125	44,1	31	16700	46,5	
139,7/225	315	2500	39	15449	155	48,2	58	24860	79,4	
			71	20663	125	72,3				
168,3/250	315	2500	76	20663	160	69,9	45	35100	108,7	
			95	27523	125	92,5				
219,1/315	400	2500	110	27641	165	95,6	66	48040	117,6	
			121	50910	125	86,0				
273/400	450	2500	85	50910	170	99,6	106	57600	224,8	
			141	77240	125	184,4				
323,9/450	500	2500	104	77240	170	209,2	153	85690	255,3	
			179	107812	125	119,5				
355,6/500	560	3000	110	107812	190	248,9	-	-	-	
		3500	202	139999	125	297,3	105	121620	368,1	
406,4/560	630	3000	147	139801	190	354,9	-	-	-	
		3500	222	174382	125	341,5	119	136450	419,2	
508/630	800	3000	151	174160	200	415,2	-	-	-	
		3500	310	262026	125	407,6	163	257240	404,4	
610/800	900	3000	165	261029	200	501,0	-	-	-	
		3500	323	360716	125	618,6	228	363710	770,4	
711/900	1000	3000	215	360290	200	750,5	-	-	-	
		3500	366	466510	125	675,2	356	413100	862,4	
813/1000	1100	3000	244	466026	200	818,3	-	-	-	
		3500	378	594878	125	799,8	458	541900	972,4	
914/1100	1200	3000	284	594878	200	959,2	-	-	-	
		3500	422	744018	125	1072,6	512	681700	1316,1	
1016/1200	1300	3000	317	744018	200	1279,2	-	-	-	
		3500	467	911514	125	1342,8	713	839100	1638,8	
1220/1400**	1500	3000	351	911514	200	1605,7	-	-	-	
		3500	-	-	125	-	2731	1270760	-	
			451	1195388	200	-	-	-	-	

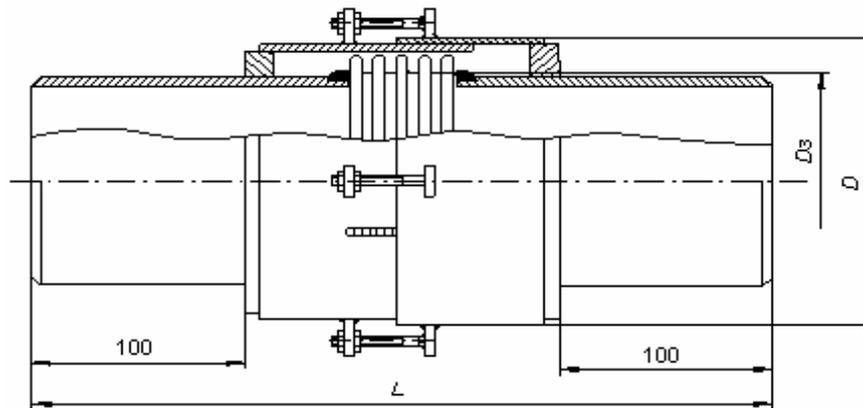
Cq - Axial elasticity coefficient; Ak – efficient bag surface;

Δ - full compensating capacity.

L*- compensator length in a maximum expanded condition;

* - upon agreement with the manufacturer, it is possible to make compensators

with other compensating capacities Δ



Dimension	L* mm	D, mm	PN=1,6 MPa			
			Psc, H	Ak mm ²	Δ mm	Weight kg
42,4	505	89	1600	2910	50	4,8
60,3	515	96	1700	4180		6,3
76,1	570	114	2000	6160	70	8,2
88,9		133	2300	8110		10,2
114,3	640	159	2800	12690	80	15,8
139,7		178	3600	18030		17,4
168,3	690	200	4800	25510	100	26,9
219,1	750	273	6700	44460	120	46,4
273		340	8900	67020		73,9
323,9	800	385	10800	92410	140	93,7
355,6		440	12000	110450		109,3
406,4	810	486	14000	142400	150	122,4
508	900	602	18200	218460		175,6
610		730	21800	310740		238
711		820	31070	435890		296,5
813		920	54050	895470		364
914		1025	68460	615890		470,2
1016		1125	89100	1195480		566,9
1219**		1340	-	-	-	-

Δ- full compensating capacity;

L*- compensator length in a maximum expanded condition;

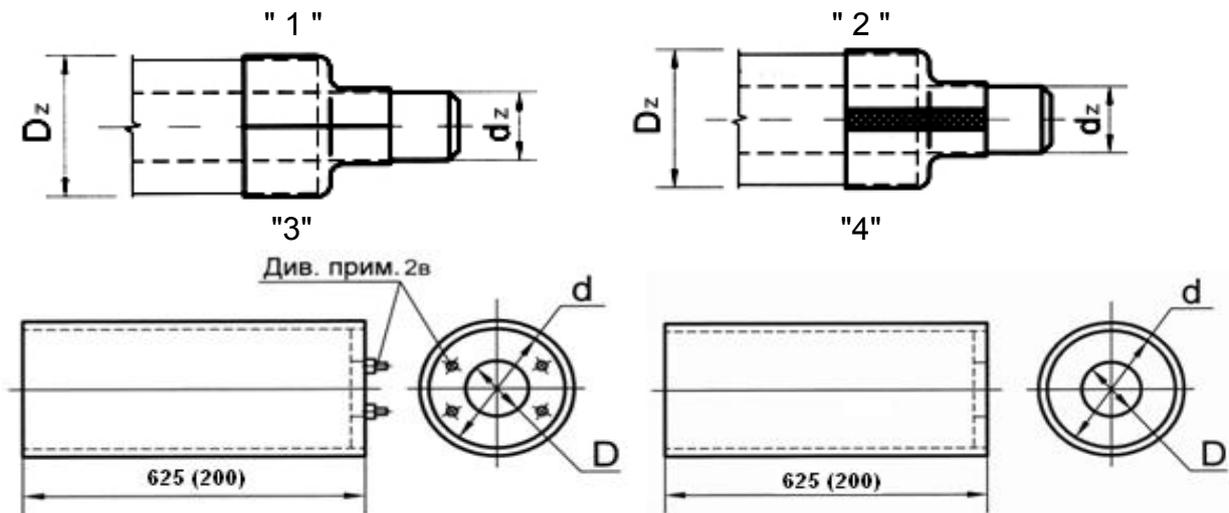
Psc – compensator compressive force

** - The compensator is in a testing stage. Characteristics according to an individual order.

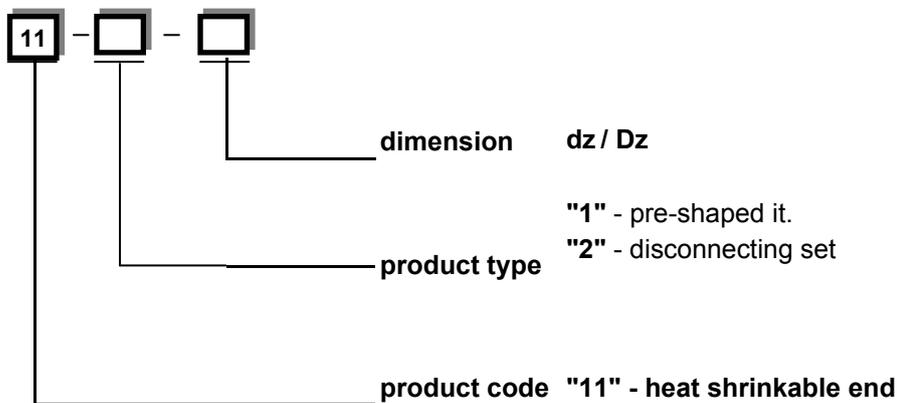
The compensator is supplied with products for local insulation:

1. Heat shrinkable sleeve – 2 it;
2. PUR insulation (2 it.) – 1 set;
3. Polyethylene rings (the diameter corresponds to the diameter of the PE protective coating);
4. Sealing tape;
5. Welded plugs (or ordinary plugs + flange);
6. Thermal insulation materials.

11 - Heat shrinkable end



Catalogue number:



Example of a catalogue number entry:

End, disconnecting, dimension 159/250:
11-2-168,3/250

Notes:

1. The end (type 2) is included in the set:

- a) heat shrinkable collar
- b) lock flange.

2. The metal end (type 3) is included in the set:

- a) metal end sleeve with anticorrosive coating,
- b) heat shrinkable sleeve,
- c) SA output wire insulation set (for $DN \leq 400$ mm – 2 it., for $DN \geq 450$ mm – 4 it.),
- d) mineral wool insert on the basalt fiber basis,
- f) insulation pipe $dz \times Dz \times 100$ mm.

3. The metal end (type 4) is included in the set:

- a) metal end sleeve with anticorrosive coating,
- b) heat shrinkable sleeve,
- c) mineral wool insert on the basalt fiber basis,

Pre-shaped end

Dimension dz/Dz	Weight kg
33,7/90	0,12
42,4/110	0,142
48,3/110	
60,3/125	0,15
76,1/140	0,167
88,9/160	0,186

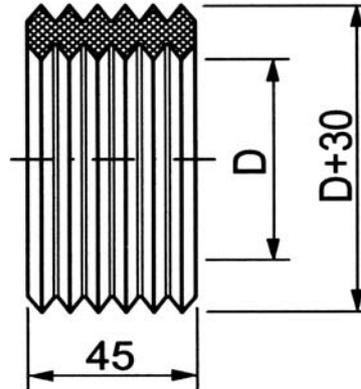
Disconnecting end

Dimension dz/Dz	Weight kg
114,3/200	0,209
139,7/225	0,324
168,3/250	0,356
219,1/315	0,441
273/400	0,54
323,9/450	0,77
355,6/500	0,84
406,4/560	0,94
508/630	1,414
610/800	1,586
711/900	1,76
813/1000	1,933
914/1100	2,05
1016/1200	2,235
1219/1400	2,737

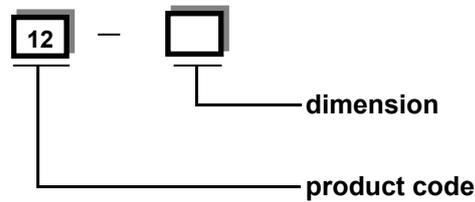
Metal end

Dimension dz/Dz	Weight kg
33,7/90	2,4
42,4/110	2,9
48,3/110	2,9
60,3/125	3,4
76,1/140	3,7
88,9/160	4,3
114,3/200	5,5
139,7/225	6,2
168,3/250	6,9
219,1/315	8,7
273/400	11,5
323,9/450	12,9
355,6/500	14,3
406,4/560	16,2
508/630	21,6
610/800	24,2
711/900	27,6
813/1000	30,8
914/1100	33,9
1016/1200	37
1219/1400	43,2

12 - Rubber sealing ring



Catalogue number:



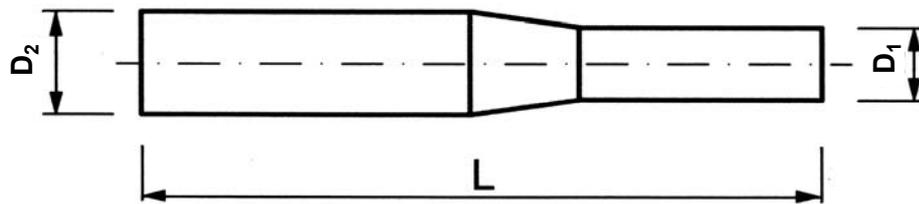
Example of a catalogue number entry:

Sealing ring, dimension 160:

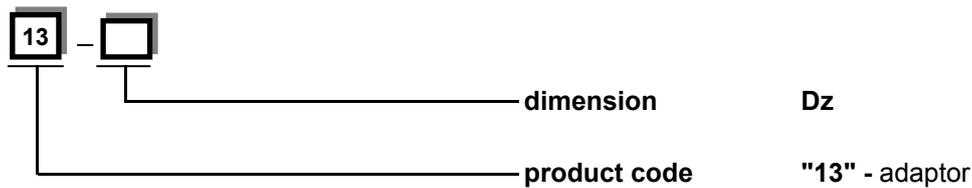
Dimensio n	Dz	Weight, kg
90		0,25
110		0,29
125		0,33
140		0,37
160		0,42
200		0,52
225		0,58
250		0,65
280		0,73
315		0,81
400		1,1

Dimension Dz	Weight, kg
450	1,15
500	1,26
560	1,42
630	1,78
800	2,01
900	2,26
1000	2,51
1100	2,76
1200	3,02
1400	4,133

13 - Adaptor



Catalogue number:



Example of a catalogue number entry:

Adaptor, dimension 160:
13-160

Dimension	L, mm	D ₂ , mm	D ₁ , mm	Weight, kg	
90	1300	200	104	1,69	
110			120	1,81	
125			136	2,53	
140	1500	250	151	3,32	
160			315	173	4,86
200				215	5,19
225	2000	400	240	9,16	
250			265	9,82	
315			334	11,88	
400		500	426	23.12	
450		560	473	29.60	

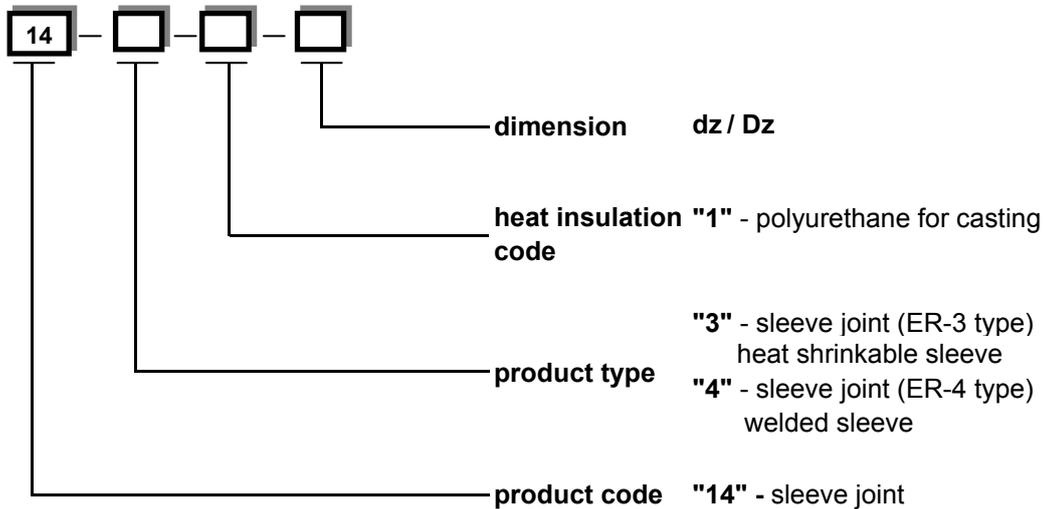
Notes:

An adaptor is supplied in the set

1. adaptor,
2. heat shrinkable tape,
3. lock flange

14 - Sleeve joints

Catalogue number:

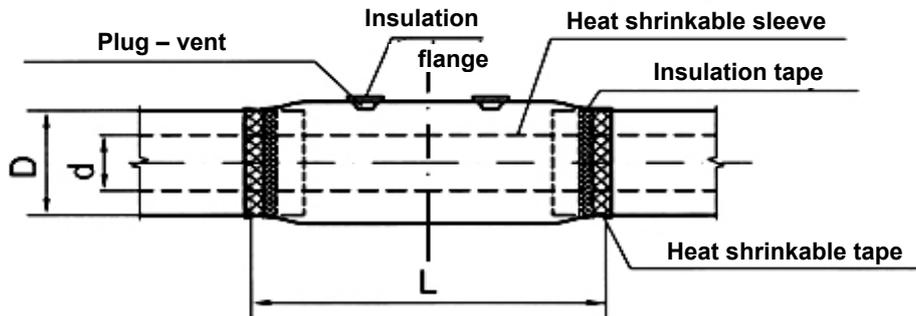


Example of a catalogue number entry:

ER-3 type sleeve joint with thermal insulation from polyurethane for casting, dimension 219,1/315 :

14-3-1-219/315

14-3 - Sleeve joints (ER-3 type) Heat shrinkable sleeve

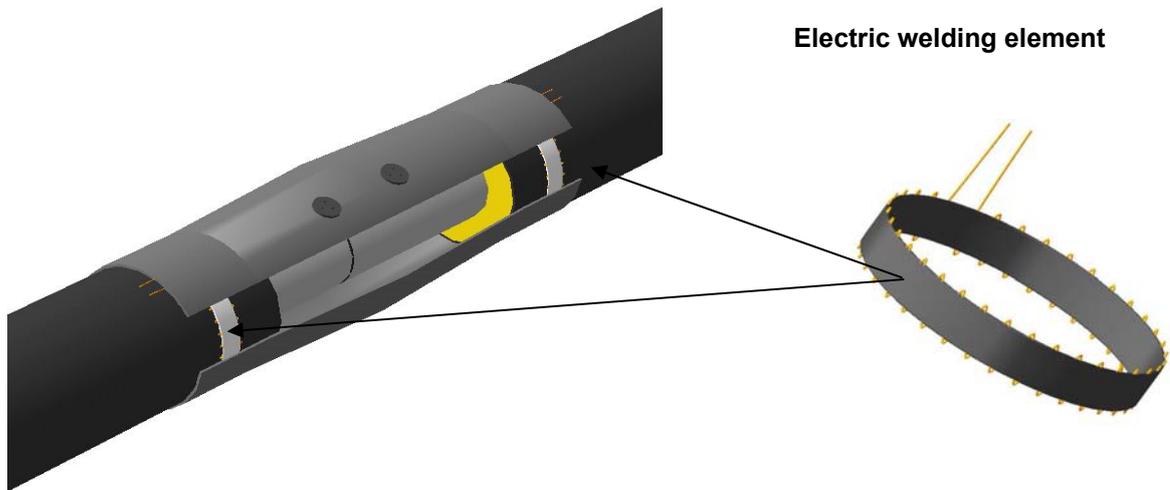


dimension dz/Dz	L,mm
42,4/110	650
60,3/125	
76,1/140	
88,9/160	
88,9/180	
114,3/200	
139,7/225	680
168,3/250	730
219,1/315	
273/400	
323,9/450	750

The sleeve joint (ER-3 type) includes:

1. PE heat shrinkable sleeve,
2. insulation flange – 2 it.,
3. plug - vent – 2 it.,
4. sealing tape – 2 it.,,
5. thermal insulation materials
6. heat shrinkable tape (for standard dimension $\geq 530/710$) – 2 it.
7. lock flange (for standard dimension $\geq 530/710$) – 2 it.

14-4 - Sleeve joint (ER-4 type) Welded sleeve

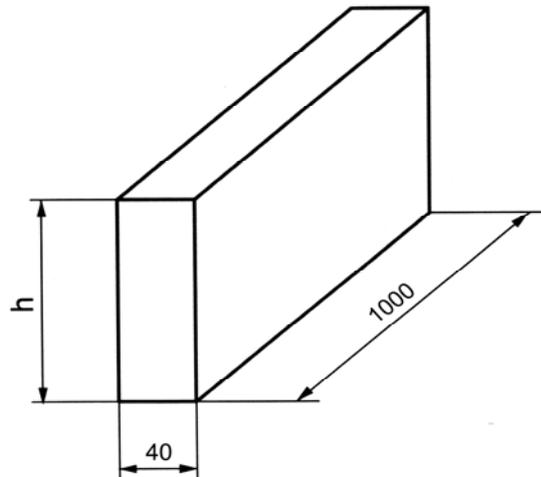


Dimension dz/Dz	L, mm
114,3/200	750
139,7/225	
168,3/250	
219,1/315	
273/400	
323,9/450	800
355,6/500	
406,4/560	
508/630	
558,8/710	
609,6/780	
610/800	
711/900	
813/1000	
914/1100	
1016/1200	
1219/1400	

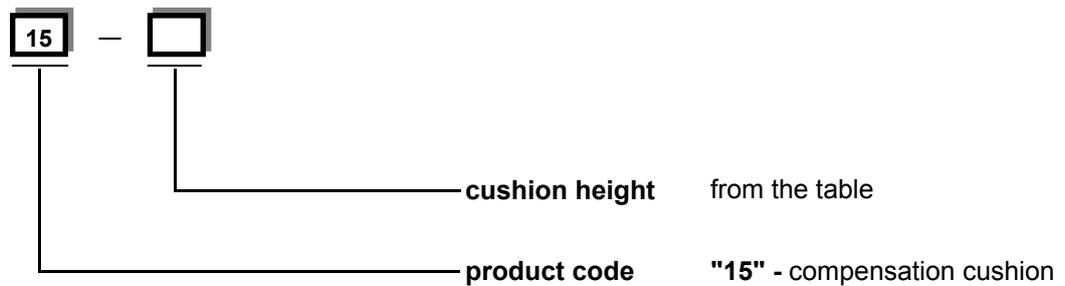
The sleeve joint (ER-4 type) includes:

1. heat shrinkable sleeve,
2. electric welding element – 2 it.,
3. plug-vent – 2 it.,
4. welded plug – 2 it.,
5. thermal insulation materials
6. thermal insulation materials

15 - Compensation cushion



Catalogue number:



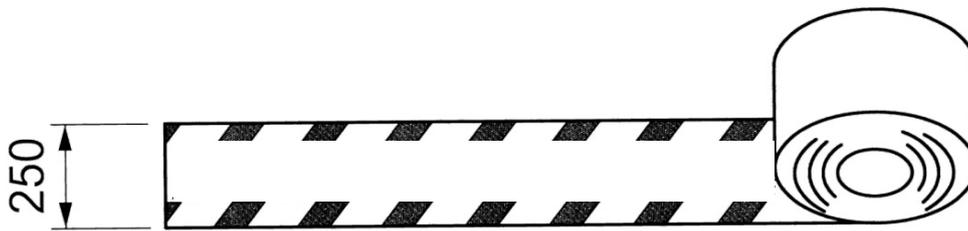
Example of a catalogue number entry:

compensation cushion, 125 mm high
15-125

Dz mm	Cushion height h, mm
90	125
110	
125	
140	
160	250
200	
225	
250	
315	500
400	

Dz mm	Cushion height h, mm
450	500
500	
560	750
630	
630	1000
800	
900	
1000	1250
1100	
1200	1400
1400	

16 - Warning tape



Catalogue number:

16

product code

"16" - warning tape

Example of a catalogue number entry:

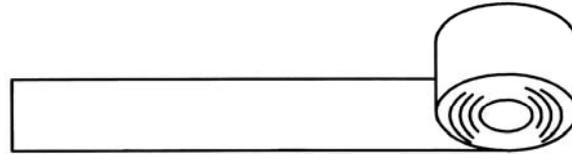
Warning tape:

16

Dimension dz/Dz	Number of tapes in a trench
33,7/90	1
42,4/110	
48,3/110	
60,3/125	
76,1/140	
88,9/160	
114,3/200	
168,3/250	
159/250	

Dimension dz/Dz	Number of tapes in a trench
219,1/315	2
273/400	
323,9/450	
355,6/500	
406,4/560	
508/630	
610/800	
711/900	
813/1000	
914/1100	
1016/1200	
1219/1400	

17 - Sliding tape



Catalogue number:

17

product code

"17" - sliding tape

Example of a catalogue number entry:

sliding tape:

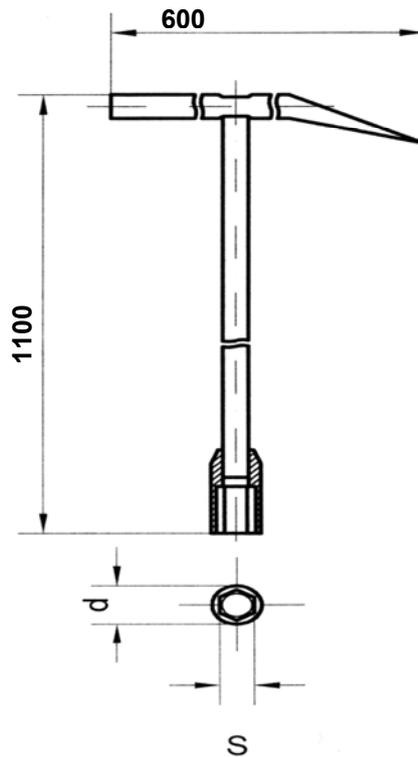
17

The sliding tape is supplied in rolls, 10 m long

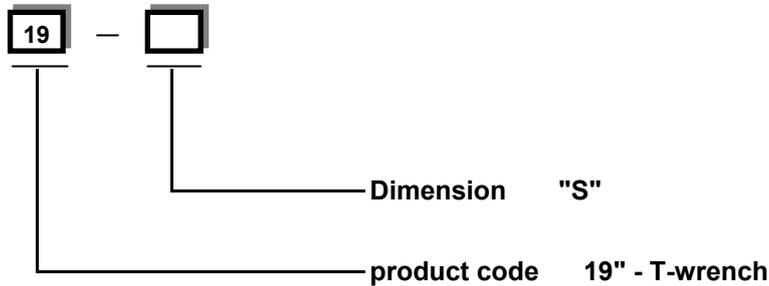
Sliding tape amount calculation for one cutting

Dz, mm	Building L,m	Chamber L,m	Trough L,m
90	3,96	2,83	1,13
110	4,84	3,45	1,38
125	5,5	3,93	1,57
140	6,15	4,4	1,76
160	7,03	5,02	2,01
180	7,91	5,65	2,26
200	8,79	6,28	2,51
225	9,89	7,07	2,83
250	10,99	7,85	3,14
315	13,85	9,89	3,96
400	17,58	12,56	5,02
450	19,78	14,13	5,65
500	21,98	15,7	6,28
560	24,62	17,58	7,03
630	31,21	22,29	8,92
800	35,17	25,12	10,05
900	39,56	28,26	11,3
1000	43,96	31,4	12,56
1100	48,36	34,54	13,82
1200	52,75	37,68	15,07
1400	92,61	66,15	26,46

19 - T- wrench



Catalogue number:



Example of a catalogue number entry:

T-wrench, S=19 mm

19-19

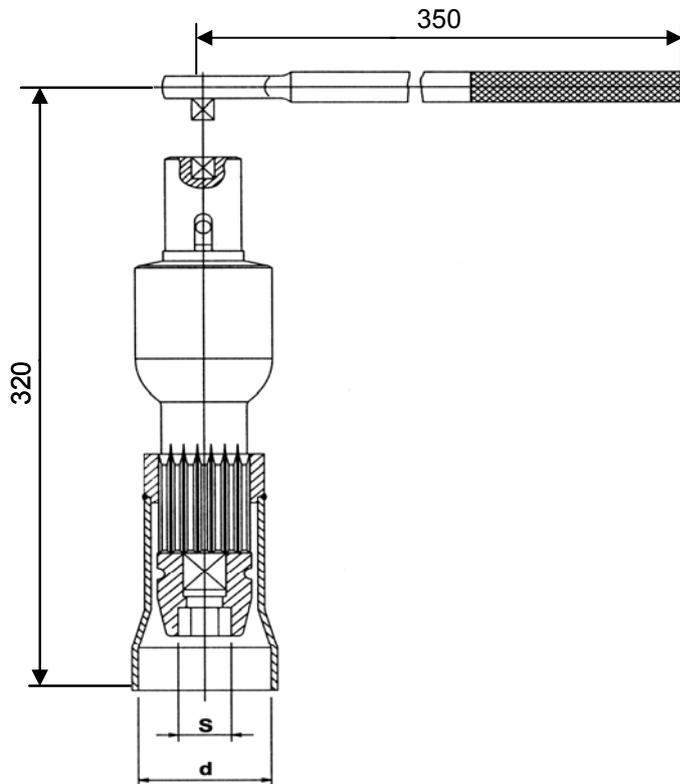
Dimension S, mm	d, mm
19	36
27	44

Notes:

Valves with the dimensions from 33,7/90 to 88,9/160 are locked and opened by the T-wrench, size 19.

Valves with the dimensions from 114,3/200 to 219,1/315 are locked and opened by the T-wrench, size 27.

20 - Portable mechanism for valve steering



Catalogue number:



Dimension "S"

product code „20” - portable mechanism for valve steering

Example of a catalogue number entry

Portable mechanism, S=50 mm:

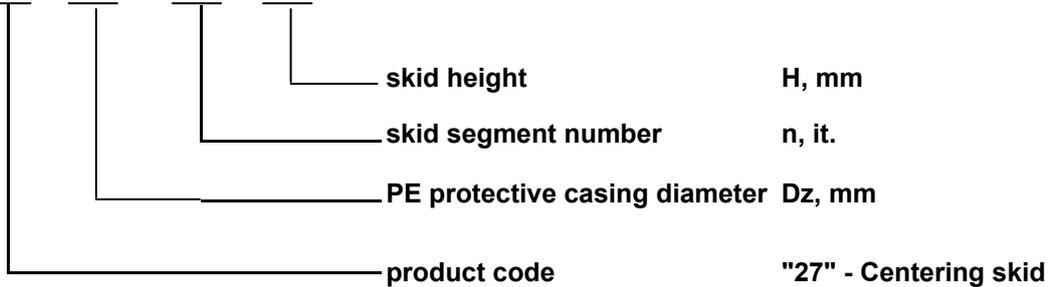
20-50

Dimension S, mm	d, mm
27	70
50	90

28 - CENTERING SKID



Catalogue number:



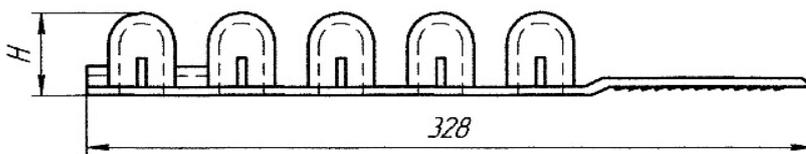
Example of a catalogue number entry:

A centering skid for the pre-insulated pipeline passage with the PE protective casing diameter of 250 mm through steel protective casings, skid segment number - 3 it., skid height - 41 mm.

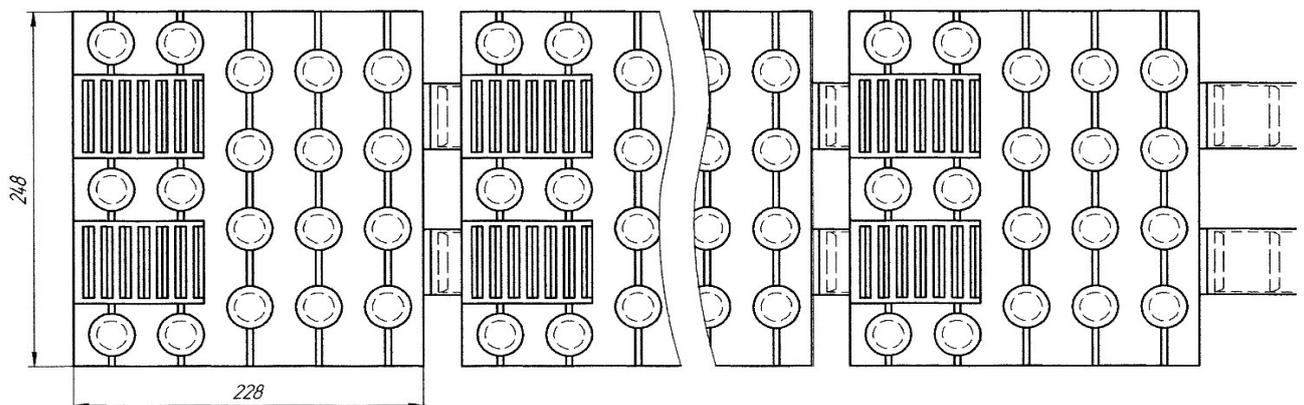
28-250-3-41

centering skid segment

H= 25, 34, 41, 50, 60, 75, 90, 110



Assembled centering skid



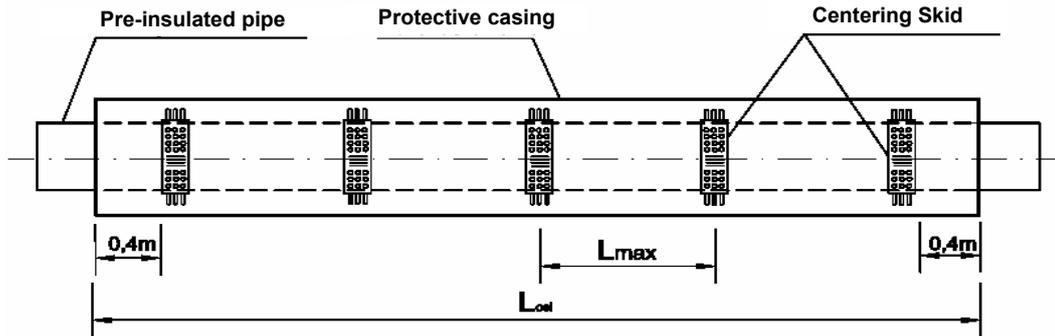


Table of the skid number selection, and also the segment number in skids

Dimension Dz / dz.	PE protective mantle	length between the skid bands	segment numbers in skids	brake lining B=250mm, δ=2,2MM
∅ mm	∅ mm	L _{max} m	N it	L _{con} mm
168,3/250	250	4	3	810
219,1/315	315		4	1010
273/400	400		5	1280
323,9/450	450		5	1440
355,6/500	500	3,5	6	1590
406,4/560	560		7	1780
508/630	630		9	2250
610/800	800		10	2540
711/900	900		11	2850
813/1000	1000	3	13	3160
914/1100	1100		14	3480
1016/1200	1200	2,5	15	3790
1219/1400	1400	1,5	18	4420

Notes:

1. The skid maximum height is equal to half the difference between the steel protective casing outer diameter and the kelly outer diameter (in this case, it is the PE protective casing) taking into account the space (min 15÷20 mm) necessary for installing the pipe with skids in the protective casing.

2. The centering skid is supplied in the set:

a) segments in the skid (number N, see the table)

б) brake lining B=250 mm; δ=2.2 mm

29 - TOOL FOR CENTERING SKID FIXATION



Catalogue number:

29

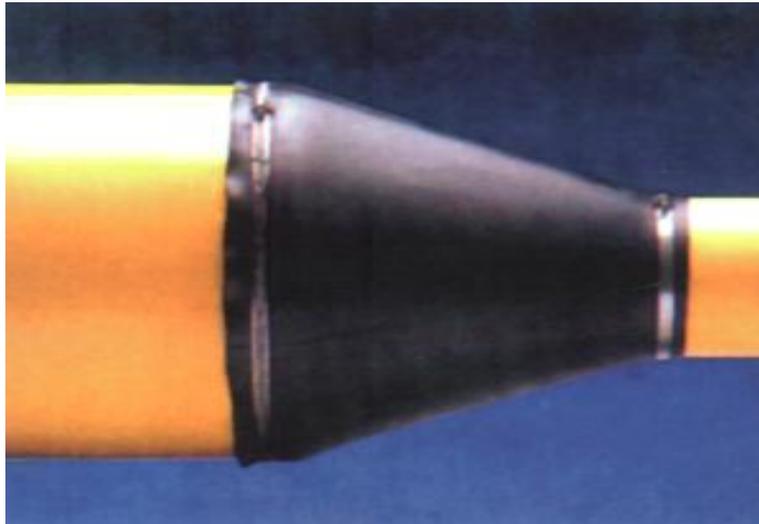
product code "29" - tool for centering skid fixation

Example of a catalogue number entry:

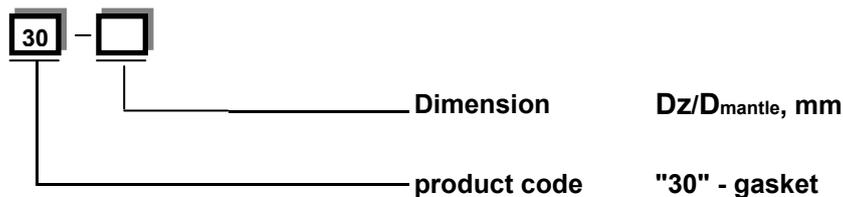
Tool for centering skid fixation

29

30 - GASKET



Catalogue number:



Example of a catalogue number entry:

The gasket for sealing the space between the kelly 711/900 and the casing 1019.

30-900/1019

Gaskets are made in the form of a sleeve clamped on pipes with two spiral clamps.

Notes:

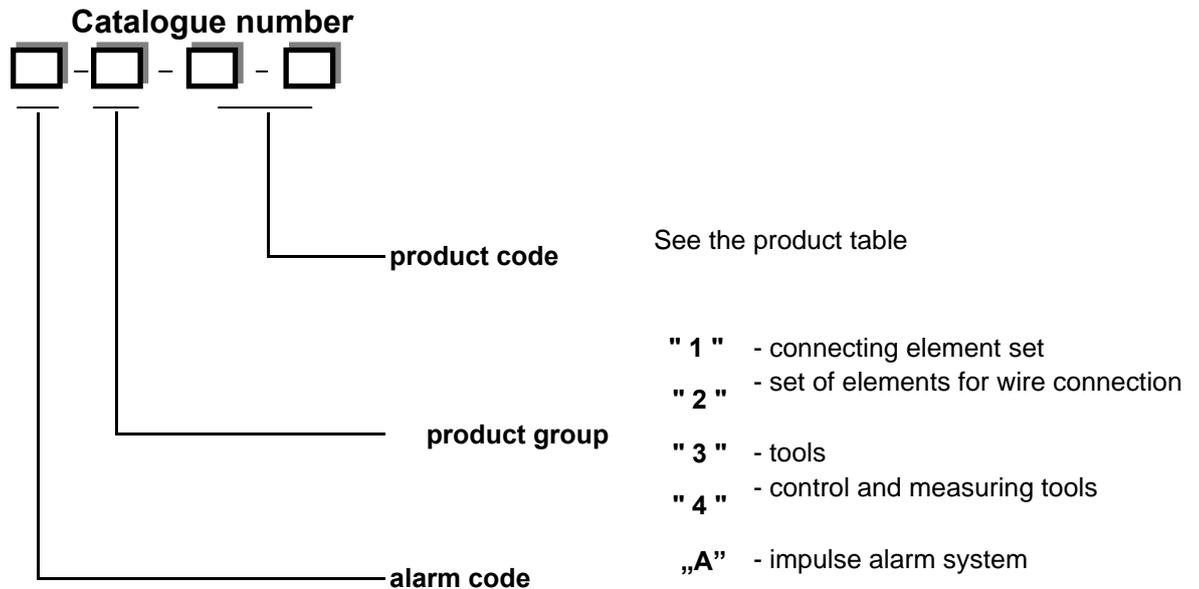
1. A gasket consists of:

a) A gasket of an appropriate diameter

b) spiral clamps: - 2 it.

- spiral clamp (Dz), which corresponds to the PE protective mantle diameter;
- spiral clamp (D_{mantle}), which corresponds to the steel protective casing diameter

A - Alarm system (AS)



Example of a catalogue number entry:

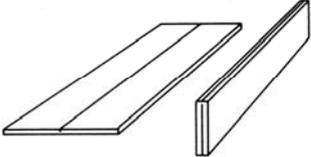
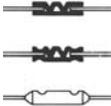
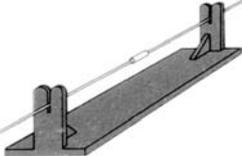
- 1) Felt, product group 1, product code 01, for an impulse type AS:

A-1-01

- 2) Control tool, product group 4, product code 01, for an impulse type AS:

A -4-01

A-1. Set of connecting elements

Product code	Product name	
01	Felt lining (2 it.)	
02	Clamping connector (100 it.)	
03	Wire support (50 it.)	
04	Solder (500 gr.)	
05	Solder paste (100 gr.)	
06	Copper wire (25 m.)	
07	Paper tape (30 m.)	

A-2. Set of elements for wire connection

Product code	Product name			Product code	Product name		
01	Ground			10	(2 it.)		
02	Connection tin (2 it.)			11	(2 it.)		
03	Connecting tin (2 it.)			12	(2 it.)		
04	Localizer zeroing tin			13	(2 it.)		
05	Detector zeroing tin			14	(2 it.)		
06	Zeroing end (2 it.)	Black		15	Double connecting cable for the electrically welded sleeve (2 it.)		
07		Red					
08	(2 it.)			16	Double connecting cable for the electrically welded sleeve (2 it.)		
09	(2 it.)			17	Transmission cable between electrically welded sleeves (1 it.)		

Product code	Product name	
18	relay cable	
19	Connector	
20	BOX (600-400-220) mm	

Product code	Product name	
21	Insulation jacket (50 it.)	

A-3. Tools

01	Clamping pliers	
02	Gas solder	

03	Container gas	
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