

Pipe Joints and Elements for High Density Polyethylene (HDPE) Pressure Pipelines

Types 1 and 2
Injection Moulded Elbows for Socket-welding
Dimensions

DIN
16 963
Part 8

Rohrverbindungen und Rohrleitungsteile für Druckrohrleitungen aus Polyethylen hoher Dichte (HDPE), Typ 1 und 2; Winkel aus Spritzguss für Muffenschweissung, Masse

Dimensions in mm

1 Scope

This Standard applies to injection moulded¹⁾ elbows of high density polyethylene (HDPE) types 1 and 2 which are socket-welded with a heating element in accordance with DIN 8074 Part 1 or Part 2 to pipes of HDPE types 1 and 2. The elbows must conform to the requirements of DIN 16963 Part 1 or Part 25*).

Note: Instead of the designation "Hard polyethylene (hard PE)", this Standard uses the designation "High density polyethylene (HDPE)" in accordance with DIN 7728 Part 1, April 1978 edition.

The previously used code designation "Hard polyethylene (hard PE)" may, however, continue to be used during the transitional period (e.g. the service life of the stamping tools for marking pipes and pipe elements).

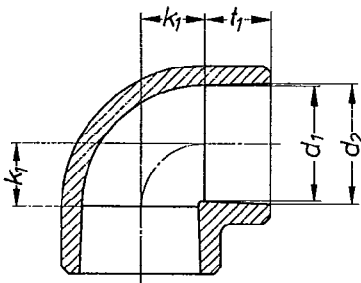
2 Other relevant Standards

- DIN 2999 Part 1 Whitworth threads for screwed pipes and fittings; straight internal thread and tapered external thread, thread dimensions
- DIN 8074 Part 1 Hard polyethylene (hard PE) pipes; type 1, dimensions
- DIN 8074 Part 2 High density polyethylene (HDPE) pipes; type 2, dimensions
- DIN 16963 Part 5 Pipe joints and elements of hard polyethylene (hard PE) for pressure pipelines; type 1, general quality requirements, testing
- DIN 16963 Part 25 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; type 2, general quality requirements, testing

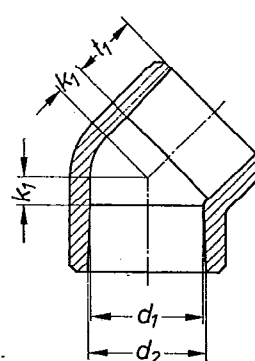
3 Dimensions, designation

The elbows do not have to conform to the illustrations; only the specified dimensions must be adhered to. The permissible angular deviation is $\pm 2^\circ$.

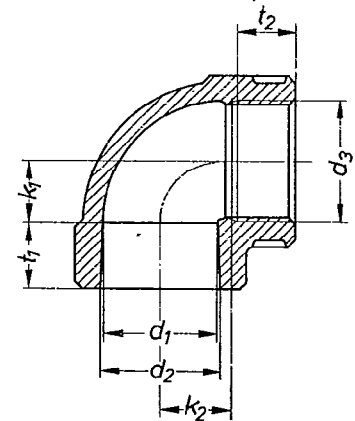
Type W 3
90° elbow



Type W 4
45° elbow



Type W 3 GI
90° elbow with internal thread at one end (reinforced)



Designation of a W 3 elbow for socket-welding type A with external pipe diameter $d = 25$ mm for pipe series 3 of HDPE type 1:

Elbow DIN 16 963 – W 3 A 25 – 3 – 1

For pipes with external diameters of $d = 16$ mm to $d = 63$ mm the elbows are only to be designated in accordance with type A.

*) At present still in draft form

1) For the term injection moulded see DIN 16 700

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Explanations on page 3

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External diameter of pipe d	per. dev. without peeling of the end of the pipe		$d_{1,2}^{2) 5)}$		per. dev.		Out-of-roundness $\delta_1^{7)}$	$d_{2,2}^{2) 5)}$		per. dev.	$d_{3,2}^{2) 5)}$	$t_1^{3) 5)}$		$t_2^{4)}$	$k_1^{6)}$		k_2
	Type A	Type B	Type A	Type B	Type A	Type B		Type A	Type B			Type A	Type B		Type W3 and W3 GI min.	Type W4 min.	
16	$+0,3$	$-0,2$	15,4				$-0,3$		15,5			R $\frac{3}{8}$	13	11,4	9	4,5	13
20	$+0,3$	$-0,2$	19,3				$-0,3$		19,5			R $\frac{1}{2}$	14,5	15	11	5	13
25	$+0,3$	$-0,2$	24,3				$-0,4$		24,5			R $\frac{3}{4}$	16	16,3	13,5	6	16
32	$+0,3$	$-0,2$	31,3				$-0,4$		31,5			R1	18	19,1	17	7,5	19
40	$+0,3$	$-0,2$	39,2				$-0,4$		39,45			R $1\frac{1}{4}$	20,5	21,4	21	9,5	23
50	$+0,4$	$-0,2$	49,2				$-0,5$		49,45			—	23,5	—	26	11,5	—
63	$+0,4$	$-0,3$	62,1				$-0,5$		62,5			—	27,5	—	32,5	14	—
75	$+0,5$	$-0,3$	73,7	73,95	$-0,6$	$-0,5$			74,9	74,25	$-0,6$	$-0,5$	30	31	38,5	16,5	—
90	$+0,6$	$-0,3$	88,5	88,85	$-0,6$	$-0,6$			89,9	89,2	$-0,6$	$-0,6$	33	35,5	46	19,5	—
110	$+0,6$	$-0,4$	108,3	108,65	$-0,6$	$-0,6$			110	109,05	$-0,6$	$-0,6$	37	41,5	56	23,5	—
125	$+0,6$	$-0,4$	123,2	123,5	$-0,6$	$-0,6$			125	123,95	$-0,6$	$-0,6$	40	46	—	27	—

2) The mean internal socket diameters are determined from the arithmetical mean of two internal socket diameters measured at right angles to each other.

3) For type A and B $d \leq 63$ mm: $t_1 = 0,3 d + 8,5$ mm

For type A $d \geq 75$ mm: $t_1 = 0,2 d + 15$ mm

For type B $d \geq 75$ mm: $t_1 = 0,3 d + 8,5$ mm

4) Lower limit of size t_2 ; corresponds to the maximum dimension of the effective thread length in accordance with DIN 2999 Part 1

5) Corresponding to ISO 138 N 787 and 789

6) Corresponding to ISO 264 – 1976

7) Out-of-roundness is the difference between the measured maximum and minimum internal diameter of the socket.

8) In accordance with DIN 2999 Part 1

Further Standards

- DIN 7728 Part 1 Plastics; symbols for homopolymers, copolymers and polymer compounds
- DIN 8075 Part 1 Hard polyethylene (hard PE) pipes; type 1, general quality requirements, testing
- DIN 8075 Part 2 High density polyethylene (HDPE) pipes; type 2, general quality requirements, testing
- DIN 16963 Part 1 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, pipe bends of segmental construction for butt-welding, dimensions
- DIN 16963 Part 2 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, tee pieces and branch connections of segmental construction with necked ends for butt-welding, dimensions
- DIN 16963 Part 3 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, pipe bends for butt-welding, dimensions
- DIN 16963 Part 4 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, bushes, flanges and seals for butt-welding, dimensions
- DIN 16963 Part 6 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded fittings for butt-welding, dimensions
- DIN 16963 Part 7 (Preliminary Standard) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded fittings for resistance-welding, dimensions
- DIN 16963 Part 9 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded tee pieces for socket-welding, dimensions
- DIN 16963 Part 10 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded sockets and caps for socket-welding, dimensions
- DIN 16963 Part 11 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, bushes, flanges and seals for socket-welding, dimensions
- DIN 16963 Part 12 (Preliminary Standard) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded reducing sockets for joining resistance-welded fittings, dimensions
- DIN 16963 Part 13 Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, turned and pressed reducing sockets for butt-welding, dimensions
- DIN 16963 Part 14 (at present still in draft form) Pipe joints and elements of high density polyethylene (HDPE) for pressure pipelines; types 1 and 2, injection moulded reducing sockets and nipples for socket-welding, dimensions

Explanations

It was necessary to make a distinction between the socket dimensions owing to differences in methods of welding as regards the preliminary treatment of the pipe end surface to be welded.

This led to their division into the two types A and B. Fundamental work by the ISO working group TC 138/GAH 2/4 on these two methods was embodied in Doc. ISO 138 N 787 and 789.

This Standard has been drawn up on the basis of these documents.