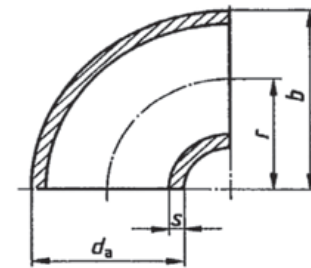


**Dimensions of Elbow & Return**

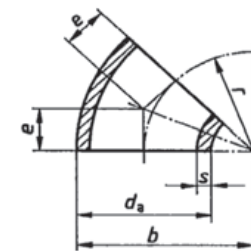
According to DIN 2605

Nominal size DN	Pipe outside diameter, $d_a$	Type	Wall thickness, s, for series					r	b	e
			1	2 <sup>2</sup>	3	4	5			
15	21.3	2	1.6	-	2.0	3.2	4.0	17.5	28	7
		3								
		5								
20	26.9	2	1.6	-	2.3	3.2	4.0	25.0	39	10
		3								
		5								
25	33.7	2	2.0	-	2.6	3.2	4.0	25.0	42	10
		3								
		5								
32	42.4	2	2.0	-	2.6	3.6	4.0	32.0	53	13
		3								
		5								
40	48.3	2	2.0	-	2.6	4.0	5.0	38.0	62	16
		3								
		5								
50	60.3	2	2.0	-	2.9	4.5	5.6	51	81	21
		3								
		5								
		10								
		20								
65	76.1	2	2.3	-	2.9	5.0	7.1	63	102	26
		3								
		5								
		10								
		20								
80	88.9	2	2.3	-	3.2	5.6	8.0	76	121	32
		3								
		5								
		10								
		20								
100	114.3	2	2.6	-	3.6	6.3	8.8	102	159	42
		3								
		5								
		10								
		20								
125	139.7	2	2.6	-	4.0	6.3	10.0	127	197	53
		3								
		5								
		10								
		20								
150	168.3	2	2.6	4.0	4.5	7.1	11.0	152	237	69
		3								
		5								
		10								
		20								

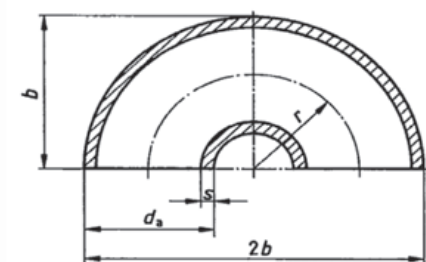
90° elbow



45° elbow



180° bend

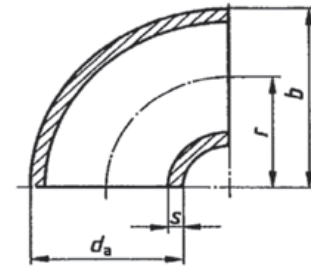


## Dimensions of Elbow & Return

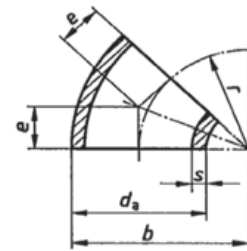
According to DIN 2605

Nominal size DN	Pipe outside diameter, $d_a$ <sup>1</sup>	Type	Wall thickness, s, for series					$r$	$b$	$e$
			1	2 <sup>2</sup>	3	4	5			
200	219.1	2	2.9	4.5	6.3	8.0	12.5	203	313	84
		3						305	414	126
		5						510	620	211
		10						1016	1126	421
		20						2032	2142	842
250	273	2	2.9	5.0	6.3	8.8	-	254	391	105
		3					381	518	158	
		5					650	787	269	
		10					1270	1407	526	
		20					2540	2677	1052	
300	323.9	2	2.9	5.6	7.1	10.0	-	305	467	126
		3					457	619	189	
		5					775	937	321	
		10					1524	1686	631	
		20					3048	3210	1263	
350	355.6	2	3.2	5.6	8.0	11.0	-	356	533	148
		3					533	711	221	
		5					850	1028	352	
		10					1778	1956	737	
		20					3556	3734	1473	
400	406.4	2	3.2	6.3	8.8	12.5	-	406	610	168
		3					610	813	253	
		5					970	1173	402	
		10					2032	2235	842	
		20					4064	4267	1683	
450	457	2	4.0	6.3	10	-	-	457	686	189
		3						686	914	284
		5						1122	1350	465
		10						2286	2515	947
		20						4572	4801	1894
500	508	2	4.0	6.3	11	-	-	508	762	210
		3						762	1016	316
		5						1245	1500	516
		10						2540	2794	1052
		20						5080	5334	2104
600	610	2	5.0	6.3	12.5	-	-	610	914	253
		3						914	1219	379
		5						1525	1830	632
		10						3050	3355	1263
		20						6100	6405	2527

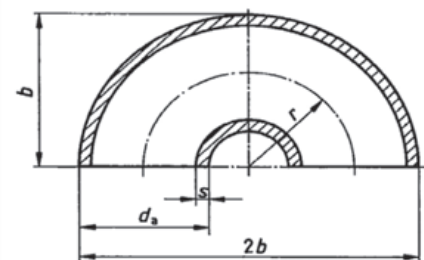
90° elbow



45° elbow



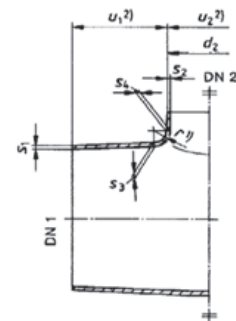
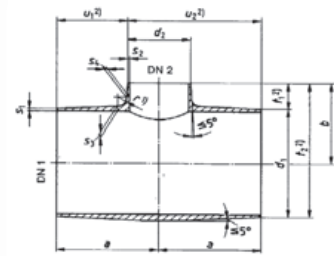
180° bend



### Dimensions of Tee

According to DIN 2615

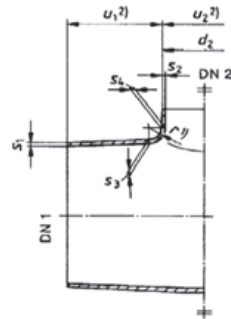
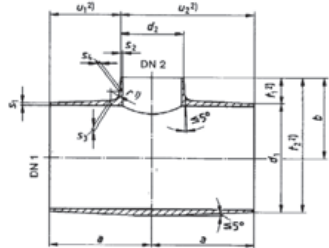
nominal size DN <sub>1</sub>	Outside diameter d <sub>1</sub>	wall thickness s <sub>1</sub> for series					nominal size DN <sub>2</sub>	Outside diameter d <sub>2</sub>	wall thickness s <sub>2</sub> for series					a	b
		1	2	3	4	5			1	2	3	4	5		
15	21.3	1.6	-	2.0	3.2	4.0	15	21.3	1.6	-	2.0	3.2	4.0	25	25
							10	17.2	1.6	-	1.8	2.9	-		25
20	26.9	1.6	-	2.3	3.2	4.0	20	26.9	1.6	-	2.3	3.2	4.0	29	29
							10	17.2	1.6	-	1.8	2.9	-		29
25	33.7	2.0	-	2.6	3.2	4.0	25	33.7	2.0	-	2.6	3.2	4.0	38	38
							15	21.3	1.6	-	2.0	3.2	4.0		38
32	42.4	2.0	-	2.6	3.6	4.0	32	42.4	2.0	-	2.6	3.6	4.0	48	48
							25	33.7	2.0	-	2.6	3.2	4.0		48
							20	26.9	1.6	-	2.3	3.2	4.0		48
							15	21.3	1.6	-	2.0	3.2	4.0		48
40	48.3	2.0	-	2.6	4.0	5.0	40	48.3	2.0	-	2.6	4.0	5.0	57	57
							32	42.4	2.0	-	2.6	3.6	4.0		57
							25	33.7	2.0	-	2.6	3.2	4.0		57
							20	26.9	1.6	-	2.3	3.2	4.0		57
50	60.3	2.0	-	2.9	4.5	5.6	50	60.3	2.0	-	2.9	4.5	5.6	64	64
							40	48.3	2.0	-	2.6	4.0	5.0		60
							32	42.4	2.0	-	2.6	3.6	4.0		57
							25	33.7	2.0	-	2.6	3.2	4.0		51
							20	26.9	1.6	-	2.3	3.2	4.0		44
65	76.1	2.3	-	2.9	5.0	7.1	65	76.1	2.3	-	2.9	5.0	7.1	76	76
							50	60.3	2.0	-	2.9	4.5	5.6		70
							40	48.3	2.0	-	2.6	4.0	5.0		67
							32	42.4	2.0	-	2.6	3.6	4.0		64
							25	33.7	2.0	-	2.6	3.2	4.0		57
80	88.9	2.3	-	3.2	5.6	8.0	80	88.9	2.3	-	3.2	5.6	8.0	86	86
							65	76.1	2.3	-	2.9	5.0	7.1		83
							50	60.3	2.0	-	2.9	4.5	5.6		76
							40	48.3	2.0	-	2.6	4.0	5.0		73
							32	42.4	2.0	-	2.6	3.6	4.0		70
100	114.3	2.6	-	3.6	6.3	8.8	100	114.3	2.6	-	3.6	6.3	8.8	105	105
							80	88.9	2.3	-	3.2	5.6	8.0		98
							65	76.1	2.3	-	2.9	5.0	7.1		95
							50	60.3	2.0	-	2.9	4.5	5.6		89
							40	48.3	2.0	-	2.6	4.0	5.0		86
125	139.7	2.6	-	4.0	6.3	10.0	125	139.7	2.6	-	4.0	6.3	10.0	124	124
							100	114.3	2.6	-	3.6	6.3	8.8		117
							80	88.9	2.3	-	3.2	5.6	8.0		111
							65	76.1	2.3	-	2.9	5.0	7.1		108
							50	60.3	2.0	-	2.9	4.5	5.6		105



### Dimensions of Tee

According to DIN 2615

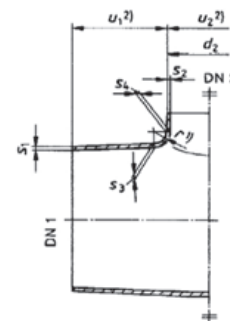
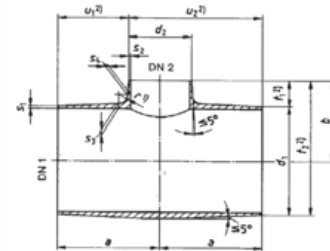
nominal size DN <sub>1</sub>	Outside diameter d <sub>1</sub>	wall thickness s <sub>1</sub> for series					nominal size DN <sub>2</sub>	Outside diameter d <sub>2</sub>	wall thickness s <sub>2</sub> for series					a	b
		1	2	3	4	5			1	2	3	4	5		
150	168.3	2.6	4.0	4.5	7.1	11.0	150	168.3	2.6	4.0	4.5	7.1	11.0	143	130
							125	139.7	2.6	-	4.0	6.3	10.0		
							100	114.3	2.6	-	3.6	6.3	8.8		
							80	88.9	2.3	-	3.2	5.6	8.0		
							65	76.1	2.3	-	2.9	5.0	7.1		
200	219.1	2.9	4.5	6.3	8.0	12.5	200	219.1	2.9	4.5	6.3	8.0	12.5	178	162
							150	168.3	2.6	4.0	4.5	7.1	11.0		
							125	139.7	2.6	-	4.0	6.3	10.0		
							100	114.3	2.6	-	3.6	6.3	8.8		
							80	88.9	2.3	-	3.2	5.6	8.0		
250	273.0	2.9	5.0	6.3	8.8	14.2	250	273.0	2.9	5.0	6.3	8.8	14.2	216	194
							200	219.1	2.9	4.5	6.3	8.0	12.5		
							150	168.3	2.6	4.0	4.5	7.1	11.0		
							125	139.7	2.6	-	4.0	6.3	10.0		
							100	114.3	2.6	-	3.6	6.3	8.8		
300	323.9	2.9	5.6	7.1	10.0	16.0	300	323.9	2.9	5.6	7.1	10.0	16.0	254	229
							250	273.0	2.9	5.0	6.3	8.8	14.2		
							200	219.1	2.9	4.5	6.3	8.0	12.5		
							150	168.3	2.6	4.0	4.5	7.1	11.0		
							125	139.7	2.6	-	4.0	6.3	10.0		
350	355.6	3.2	5.6	8.0	11.0	17.5	350	355.6	3.2	5.6	8.0	11.0	17.5	279	257
							300	323.9	2.9	5.6	7.1	10.0	16.0		
							250	273.0	2.9	5.0	6.3	8.8	14.2		
							200	219.1	2.9	4.5	6.3	8.0	12.5		
							150	168.3	2.6	4.0	4.5	7.1	11.0		
400	406.4	3.2	6.3	8.8	12.5	20.0	400	406.4	3.2	6.3	8.8	12.5	20.0	305	283
							350	355.6	3.2	5.6	8.0	11.0	17.5		
							300	323.9	2.9	5.6	7.1	10.0	16.0		
							250	273.0	2.9	5.0	6.3	8.8	14.2		
							200	219.1	2.9	4.5	6.3	8.0	12.5		
							150	168.3	2.6	4.0	4.5	7.1	11.0		
450	457.0	4.0	6.3	10.0	14.2	22.2	450	457.0	4.0	6.3	10.0	14.2	22.2	343	308
							400	406.4	3.2	6.3	8.8	12.5	20.0		
							350	355.6	3.2	5.6	8.0	11.0	17.5		
							300	323.9	2.9	5.6	7.1	10.0	16.0		
							250	273.0	2.9	5.0	6.3	8.8	14.2		
							200	219.1	2.9	4.5	6.3	8.0	12.5		



### Dimensions of Tee

*Dimension According to DIN 2615*

nominal size DN <sub>1</sub>	Outside diameter d <sub>1</sub>	wall thickness s <sub>1</sub> for series					nominal size DN <sub>2</sub>	Outside diameter d <sub>2</sub>	wall thickness s <sub>2</sub> for series					a	b		
		1	2	3	4	5			1	2	3	4	5				
500	508.0	4.0	6.3	11.0	16.0	25.0	500	508.0	4.0	6.3	11.0	16.0	25.0	381	381		
							450	457.0	4.0	6.3	10.0	14.2	22.2			368	
							400	406.4	3.2	6.3	8.8	12.5	20.0			356	
							350	355.6	3.2	5.6	8.0	11.0	17.5			381	356
							300	323.9	2.9	5.6	7.1	10.0	16.0			346	
							250	273.0	2.9	5.0	6.3	8.8	14.2			333	
							200	219.1	2.9	4.5	6.3	8.0	12.5			324	
600	610.0	5.0	6.3	12.5	17.5	-	600	610.0	5.0	6.3	12.5	17.5	-	432	432		
							500	508.0	4.0	6.3	11.0	16.0	-			432	
							450	457.0	4.0	6.3	10.0	14.2	-			419	
							400	406.4	3.2	6.3	8.8	12.5	-			432	406
							350	355.6	3.2	5.6	8.0	11.0	-			406	
							300	323.9	2.9	5.6	7.1	10.0	-			397	
							250	273.0	2.9	5.0	6.3	8.8	-			384	



*Limit deviations for dimentions a and b*

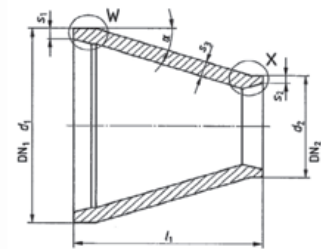
Nominal size DN	a	b
15 to 200	± 2.0	± 2.0
250 to 700	± 3.0	± 3.0
≥ 800	± 5.0	± 5.0



## Dimensions of Concentric Reducer

Dimension According to DIN 2616-2

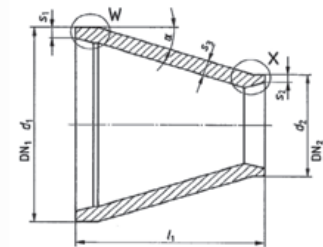
nominal size DN <sub>1</sub>	diameter d <sub>1</sub>	wall thickness s <sub>1</sub> for series					nominal size DN <sub>2</sub>	diameter d <sub>2</sub>	wall thickness s <sub>2</sub> for series					l <sub>1</sub>
		1	2	3	4	5			1	2	3	4	5	
15	21.3	1.6	-	2.0	3.2	4.0	10	17.2	1.6	-	1.8	2.9	-	38
20	26.9	1.6	-	2.3	3.2	4.0	15	21.3	1.6	-	2.0	3.2	4.0	38
							10	17.2	1.6	-	1.8	2.9	-	
25	33.7	2.0	-	2.6	3.2	4.0	20	26.9	1.6	-	2.3	3.2	4.0	50
							15	21.3	1.6	-	2.0	3.2	4.0	
32	42.4	2.0	-	2.6	3.6	4.0	25	33.7	2.0	-	2.6	3.2	4.0	50
							20	26.9	1.6	-	2.3	3.2	4.0	
							15	21.3	1.6	-	2.0	3.2	4.0	
40	48.3	2.0	-	2.6	4.0	5.0	32	42.4	2.0	-	2.6	3.2	4.0	64
							25	33.7	2.0	-	2.6	3.2	4.0	
							20	26.9	1.6	-	2.3	3.2	4.0	
50	60.3	2.0	-	2.9	4.5	5.6	40	48.3	2.0	-	2.6	4.0	5.0	76
							32	42.4	2.0	-	2.6	3.6	4.0	
							25	33.7	2.0	-	2.6	3.2	4.0	
							20	26.9	1.6	-	2.3	3.2	4.0	
65	76.1	2.3	-	2.9	5.0	7.1	50	60.3	2.0	-	2.9	4.5	5.6	90
							40	48.3	2.0	-	2.6	4.0	5.0	
							32	42.4	2.0	-	2.6	3.6	4.0	
							25	33.7	2.0	-	2.6	3.2	4.0	
80	88.9	2.3	-	3.2	5.6	8.0	65	76.1	2.3	-	2.9	5.0	7.1	90
							50	60.3	2.0	-	2.9	4.5	5.6	
							40	48.3	2.0	-	2.6	4.0	5.0	
							32	42.4	2.0	-	2.6	3.6	4.0	
100	114.3	2.6	-	3.6	6.3	8.8	80	88.9	2.3	-	3.2	5.6	8.0	100
							65	76.1	2.3	-	2.9	5.0	7.1	
							50	60.3	2.0	-	2.9	4.5	5.6	
							40	48.3	2.0	-	2.6	4.0	5.0	
125	139.7	2.6	-	4.0	6.3	10.0	100	114.3	2.6	-	3.6	6.3	8.8	127
							80	88.9	2.3	-	3.2	5.6	8.0	
							65	76.1	2.3	-	2.9	5.0	7.1	
							50	60.3	2.0	-	2.9	4.5	5.6	
150	168.3	2.6	4.0	4.5	7.1	11.0	125	139.7	2.6	4.0	4.0	6.3	10.0	140
							100	114.3	2.6	3.6	3.6	6.3	8.8	
							80	88.9	2.3	3.2	3.2	5.6	8.0	
							65	76.1	2.3	2.9	2.9	5.0	7.1	
200	219.1	2.9	4.5	6.3	8.0	12.5	150	168.3	2.6	4.0	4.5	7.1	11.0	152
							125	139.7	2.6	4.0	4.0	6.3	10.0	
							100	114.3	2.6	3.6	3.6	6.3	8.8	
							80	88.9	2.3	3.2	3.2	5.6	8.0	
250	273.0	2.9	5.0	6.3	8.8	14.2	200	219.1	2.9	4.5	6.3	8.0	12.5	178
							150	168.3	2.6	4.0	4.5	7.1	11.0	
							125	139.7	2.6	4.0	4.0	6.3	10.0	
							100	114.3	2.6	3.6	3.6	6.3	8.8	



### Dimensions of Concentric Reducer

Dimension According to DIN 2616-2

nominal size DN <sub>1</sub>	diameter d <sub>1</sub>	wall thickness s <sub>1</sub> for series					nominal size DN <sub>2</sub>	diameter d <sub>2</sub>	wall thickness s <sub>2</sub> for series					l <sub>1</sub>
		1	2	3	4	5			1	2	3	4	5	
300	323.9	2.9	5.6	7.1	10.0	16.0	250	273.0	2.9	5.0	6.3	8.8	14.2	203
							200	219.1	2.9	4.5	6.3	8.0	12.5	
							150	168.3	2.6	4.0	4.5	7.1	11.0	
							125	139.7	2.6	4.0	4.0	6.3	10.0	
350	355.6	3.2	5.6	8.0	11.0	15.0	300	323.9	2.9	5.6	7.1	10.0	16.0	330
							250	273.0	2.9	5.0	6.3	8.8	14.2	
							200	219.1	2.9	4.5	6.3	8.0	12.5	
400	406.4	3.2	6.3	5.8	12.5	20.0	350	355.6	3.2	5.6	8.0	11.0	17.5	355
							300	323.9	2.9	5.6	7.1	10.0	16.0	
							250	273.0	2.9	5.0	6.3	8.8	14.2	
							200	219.1	2.9	4.5	6.3	8.0	12.5	
450	457.0	4.0	6.3	10.0	14.2	22.2	400	406.4	3.2	6.3	8.8	12.5	20.0	381
							350	355.6	3.2	5.6	8.0	11.0	17.5	
							300	323.9	2.9	5.6	7.1	10.0	16.0	
							250	273.0	2.9	5.0	6.3	8.8	14.2	
							200	219.1	2.9	4.5	6.3	8.0	12.5	
500	508.0	4.0	6.3	11.0	16.0	25.0	450	457.0	4.0	6.3	10.0	14.2	22.2	508
							400	406.4	3.2	6.3	8.8	12.5	20.0	
							350	355.6	3.2	5.6	8.0	11.0	17.5	
							300	323.9	2.9	5.6	7.1	10.0	16.0	
							250	273.0	2.9	5.0	6.3	8.8	14.2	
							200	219.1	2.9	4.5	6.3	8.0	12.5	
600	610.0	5.0	6.3	12.5	17.5	30.0	500	508.0	4.0	6.3	11.0	16.0	25.0	508
							450	457.0	4.0	6.3	10.0	14.2	22.2	
							400	406.4	3.2	6.3	8.8	12.5	20.0	
							350	355.6	3.2	5.6	8.0	11.0	17.5	
							300	323.9	2.9	5.6	7.1	10.0	16.0	
							250	273.0	2.9	5.0	6.3	8.8	14.2	



Limit deviations for dimension l<sub>1</sub>

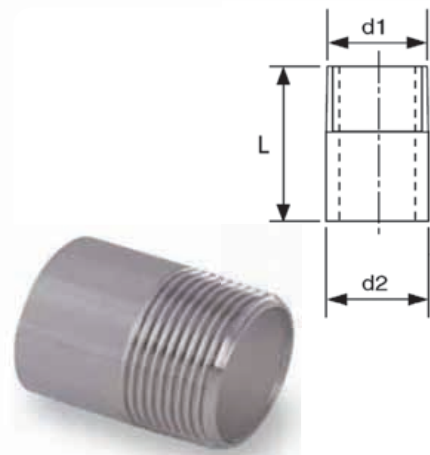
Nominal size DN	Limit deviations for dimension l <sub>1</sub>
15 to 65	± 2.5
80 to 100	± 3.0
125 to 200	± 3.5
250	± 4.0
300 to 450	± 5.0
500 to 800	± 6.0
900 or more	± 8.0



### Dimensions of Nipple

According to DIN 2982

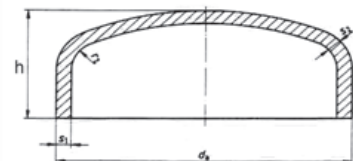
NW	d1	d2	L1
15	½"	21.3 mm	35 mm
20	¾"	26.9 mm	40 mm
25	1"	33.7 mm	40 mm
32	1¼"	42.4 mm	50 mm
40	1½"	48.3 mm	50 mm
50	2"	60.3 mm	50 mm
65	2½"	76.1 mm	60 mm
80	3"	88.9 mm	70 mm
100	4"	114.3 mm	80 mm
125	5"	139.7 mm	90 mm
150	6"	168.3 mm	100 mm



### Dimensions of Cap

According to DIN 2617

nom.- with DN	external diameter $d_a$	wall thickness $s_1, s_2$ line					height $h$		
		1 $s_1^{(1)}$	2 $s_2^{(2)}$	3 $s_1^{(1)}$	4 $s_1^{(1)}$	5 $s_1^{(1)}$	$s_1 \leq$ limited wall thicken.	$s_1 >$ limited wall thicken.	
15	21.3	1.6	-	-	2.0	3.2	4.0	25	25
20	26.9	1.6	-	-	2.3	3.2	4.0	25	25
25	33.7	2.0	-	-	2.6	3.2	4.0	38	38
32	42.4	2.0	-	-	2.6	3.6	4.0	38	38
40	48.3	2.0	-	-	2.6	4.0	5.0	38	38
50	60.3	2.0	-	-	2.9	4.5	5.6	38	38
65	76.1	2.3	-	-	2.9	5.0	7.1	38	38
80	88.9	2.3	-	-	3.2	5.6	8.0	51	51
100	114.3	2.6	-	-	3.6	6.3	8.8	64	64
125	139.7	2.6	-	-	4.0	6.3	10.0	76	76
150	168.3	2.6	-	4.0	4.5	7.1	11.0	89	89
200	219.1	2.9	-	4.5	6.3	8.0	12.5	102	102
250	273.0	2.9	-	5.0	6.3	8.8	14.2	127	127
300	323.9	2.9	3.0	5.6	7.1	10.0	16.0	152	152
350	355.6	3.2	3.3	5.6	8.0	11.0	17.5	165	165
400	406.4	3.2	3.4	6.3	8.8	12.5	20.0	178	178
450	457.0	4.0	4.1	6.3	10.0	14.2	22.2	203	203
500	508.0	4.0	4.2	6.3	11.0	16.0	25.0	229	229
600	610.0	5.0	5.1	6.3	12.5	17.5	30.0	267	267



Limiting -sizes of the dimentions h

nominal width DN	limiting-size h
15 to 100	± 4
125 to 600	± 7





**Dimension and Tolerance According to DIN 2609**

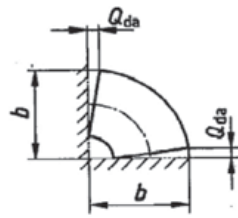


Figure 1.

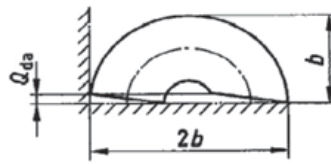


Figure 2.

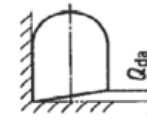
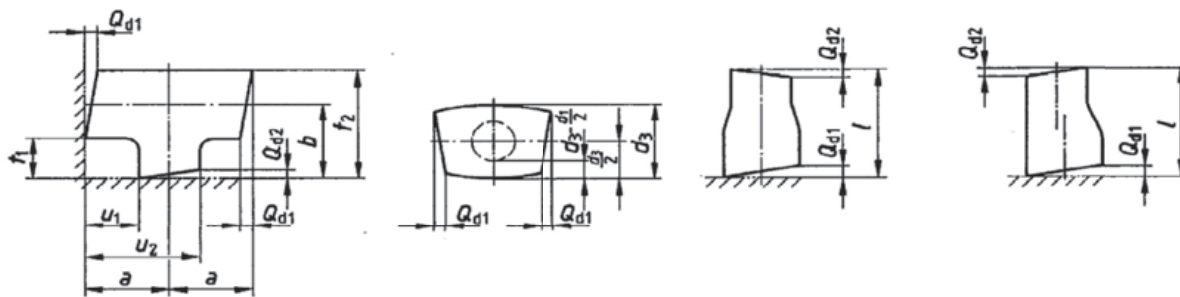


Figure 3.



	Tolerance Q
Standard design	1% of dimension (with a maximum of 1mm)
■ ■ Subject to agreement	0.5% of dimension (with a maximum of 0.5mm)

*Limit deviations for outer diameter and circularity tolerance*

Outer diameter, $d_a$ in mm	Limit deviations for outer diameter		Tolerance on circularity
		■ ■ Subject to agreement	
$\leq 100$	$\pm 1\% d_a$ (with a maximum of $\pm 0.5$ mm)	$\pm 0.4$ mm	Within the specified tolerance on diameter
$100 < d_a \leq 200$	$\pm 1\% d_a$	$\pm 0.5\% d_a$	
$> 200$	$\pm 1\% d_a$	$\pm 0.6\% d_a$	2%

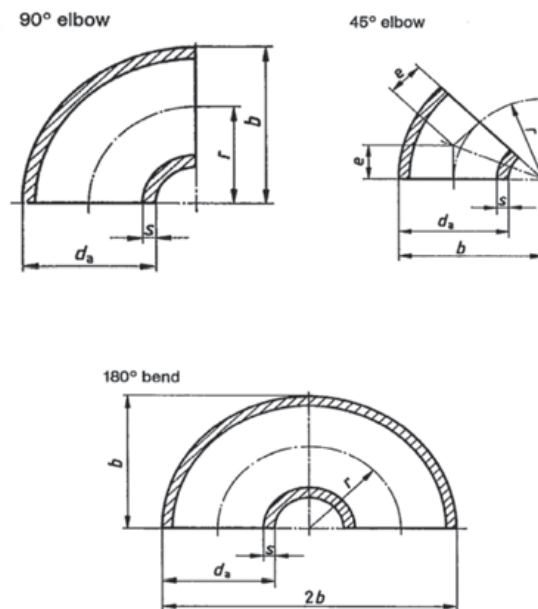


### Material According to DIN 2609

Limit deviation for dimensions  $b$  and  $2b$ <sup>1,2</sup>

Nominal size DN	Limit deviation for dimension		
	$b$ 45° elbow	$b$ 90° elbow	$2b$ 180° bend
15 to 65	± 6.0	± 2.5	± 8.0
80 to 100	± 7.0	± 3.0	± 9.0
125 to 200	± 8.5	± 3.5	± 10.0
250	± 9.5	± 4.0	± 14.0
300 to 450	± 12.0	± 5.0	± 14.0
500 to 600	± 14.5	± 6.0	± 16.0
700			to be agreed
800 or more	± 19.0	± 8.0	to be agreed

1) The limit deviation specified for  $b$  relate to types 2, 3 and 5, these for types 10 and 20 being subject to agreement  
2) Dimension  $b$  to be measured at the fitting and edges.



Manufacturing processes and semi-finished products<sup>1</sup> to be used for fitting

Manufacturing process Type of fitting	Worked hot			Worked cold			Machined from solid product (up to size DN 50)
	Bent	Forge pressed <sup>2</sup>	Rolled, Forged and machined	Bent	Forge pressed <sup>2</sup>	Cold shaped <sup>2</sup>	
Bend	1, 2, 4, 5	1, 2, 3, 4, 5	-	1, 2, 4, 5	1, 2, 3, 4, 5	-	-
Tee	-	1, 2, 3, 4, 5	4, 5	-	1, 2, 3, 4, 5	-	-
Reducer	-	1, 2, 3, 4, 5	4, 5	-	1, 2, 3, 4, 5	1, 2, 3,	5
Cap	-	1, 2, 3, 4, 5	4, 5	-	1, 2, 3, 4, 5	1, 2, 3,	5

1) Key to code numbers:

1- seamless tube

2- welded tube (only material where the design stress of the weld can be utilized to 100%)

3- plate

4- forging

5- bar

2) This manufacturing process also permits welding operations to be carried out on the fittings.



**Material According to DIN 2609**

Material symbols, standards to be complied with and service temperature range for semi-finished products

Material Group		Steel grade	Material number	Semi-finished product <sup>1</sup>					Relevant standard	Service temperature range * in °C
Code letter	Material designation			1	2	3	4	5		
A	St 37.0	St 37.0	1.0254	x					DIN 1629	-10 to 300
		St 37.0	1.0254		x				DIN 1626	
		RSt 37-2	1.0038			x	x	x	DIN 17100	
B	St 44.0	St 44.0	1.0256	x					DIN 1629	-10 to 300
		St 44.0	1.0256		x				DIN 1626	
		St 44-2	1.0044			x	x	x	DIN 17100	
C	St 52.0	St 52.0	1.0421	x					DIN 1629	-10 to 300
		St 52.0	1.0421		x				DIN 1626	
		St 52-3	1.0570			x	x	x	DIN 17100	
D	StE 290.7	StE 290.7	1.0484	x	x				DIN 17172	-10 to 50
E	StE 360.7	StE 360.7	1.0582	x	x				DIN 17172	-10 to 50
F	St 35.8 I	St 35.8 I	1.0305	x					DIN 17175	-10 to 420
		St 37.8 I	1.0315		x				DIN 17177	
		H I	1.0345			x			DIN 17155	
		H II	1.0425			x			DIN 17155	
		C 22.8	1.0460				x	x	DIN 17243	
G	St 35.8 III	St 35.8 III	1.0305	x					DIN 17175	-10 to 420
		St 37.8 III	1.0315		x				DIN 17177	
		H II	1.0425			x			DIN 17155	
		C22.8	1.0460				x	x	DIN 17243	
H	15 Mo 3	15 Mo 3	1.5415	x					DIN 17175	-10 to 530
					x				DIN 17177	
						x			DIN 17155	
							x	x	DIN 17243	
J	13 CrMo 44	13 Cr Mo 44	1.7335	x					DIN 17175	-10 to 570
						x			DIN 17155	
							x	x	DIN 17243	
K	10 CrMo 910	10 Cr Mo 910	1.7380	x					DIN 17175	-10 to 600
						x			DIN 17155	
							x	x	DIN 17243	
L	X 5 CrNi 1810	X5 CrNi 1810	1.4301	x					DIN 17458	-200 to 550 <sup>3</sup>
					x				DIN 17457	
						x	x	x	DIN 17440	
M	X 2 CrNi 1911	X 2 CrNi 1911	1.4306	x					DIN 17458	-200 <sup>5</sup> to 550 <sup>3</sup>
					x				DIN 17457	
						x	x	x	DIN 17440	



### Material According to DIN 2609

Material Group		Steel grade	Material number	Semi-finished product <sup>1</sup>					Relevant standard	Service temperature range * in °C	
Code letter	Material designation			1	2	3	4	5			
N	X 6 CrNiTi 1810	X 6 CrNiTi 1810	1.4541	x <sup>2)</sup>					DIN 17458	-200 <sup>5)</sup> to 550 <sup>3)</sup>	
					x						DIN 17457
						x	x	x			DIN 17440
O	X 5 CrNiMo 17122	X 5 CrNiMo 17122	1.4401	x					DIN 17458	-200 to 550 <sup>3)</sup>	
					x						DIN 17457
						x	x	x			DIN 17440
P	X 2 CrNiMo 17132	X 2 CrNiMo 17132	1.4404	x					DIN 17458	-200 to 550 <sup>3)</sup>	
					x						DIN 17457
						x	x	x			DIN 17440
Q	X 6 CrNiMoTi 17122	X 6 CrNiMoTi 17122	1.4571	x <sup>2)</sup>					DIN 17458	-200 <sup>5)</sup> to 550 <sup>3)</sup>	
					x						DIN 17457
						x	x	x			DIN 17440
R	WStE 355	WStE 355	1.0565	x					DIN 17179	-20 to 400	
					x						DIN 17178
						x		x			DIN 17102
							x				DIN 17103
S	TStE 355	TStE 355	1.0566	x					DIN 17179	-60 to 50 <sup>4)</sup>	
					x						DIN 17178
						x		x			DIN 17102
							x				DIN 17103
T	TStE 285	TStE 285	1.0488	x					DIN 17179	-50 to 50 <sup>4)</sup>	
					x						DIN 17178
						x		x			DIN 17102
							x				DIN 17103
U	10 Ni 14	10 Ni 14	1.5637	x					DIN 17173	-105 to 50 <sup>4)</sup>	
					x						DIN 17174
						x	x	x			DIN 17280

\*) The values given are guideline values; those specified in the relevant materials standards shall be used in the actual design.

- 1) For<sup>1)</sup>, see table Manufacturing processes and semi-finished products.
- 2) The information regarding pressure factors given in the relevant dimensional standards only applies where cold worked tubes are used as the semi-finished products. The purchaser and manufacturer shall agree whether hot worked tube may be used since this material is of lower strength.
- 3) When tested for 100 000h in accordance with DIN 50 914, it has been shown that the following materials up to the temperatures given are not susceptible to intercrystalline corrosion: group L or O (up to 300°C), group M (up to 350°C), and group N, P or Q (up to 400°C).
- 4) It shall be permitted, for short periods of operation only, to exceed the service temperatures specified. since the low-temperature toughness of such materials may be adversely affected when used for prolonged periods at high temperatures.
- 5) Where service temperatures are between -200°C and -270°C, the Impact energy, as measured on an ISO-V notch specimen at a test temperature of -196°C, shall be at least 40J; this applies to wall thicknesses of 10 mm or more and to bars and forgings not less than 15 mm in diameter.

