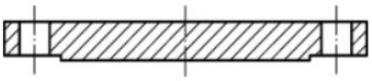
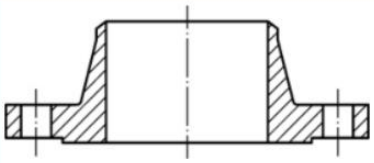
Type 01, Plate flange for welding

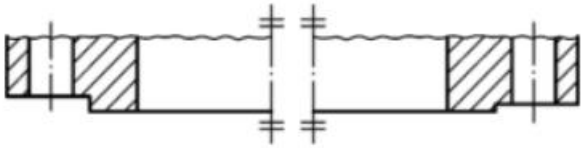


Type 05, Blank flange



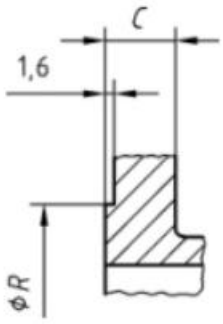
Type 11, Weld-neck flange

Type 12, Hubbed slip-on flange for welding

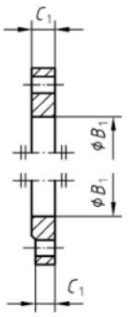


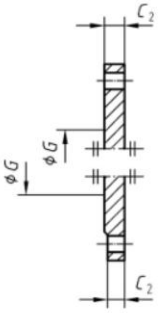
Type B, Raised face

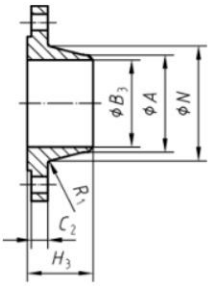
Dimensions in millimetres



Type B 1,6 mm (Raised face)







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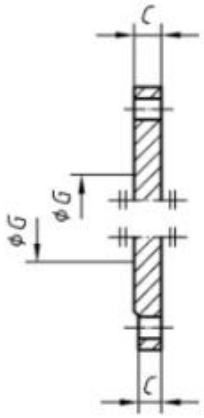
Type 01, Plate flange for welding **Type 05, Blank flange** **Type 11, Weld-neck flange**

Table 9 — Dimensions of Class 150 flanges (see Figure 8)

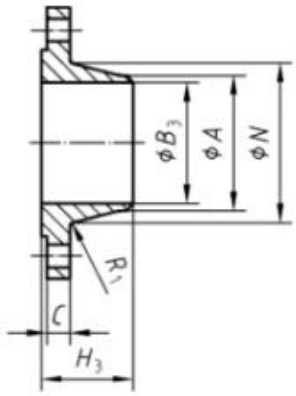
Nominal size		Outside diameter of flange	Mating dimensions				Flange thickness			Hub diameter	Hub diameter at weld end	Length through hub			Minimum thread length of threaded flange	Bore			Corner radius of bore of lapped flange and pipe	Depth of socket	Shoulder diameter	Hub radius (min.)
			Diameter of bolt circle	Diameter of bolt holes	Number of bolts	Nominal diameter of bolts						Threaded; slip-on; socked weld	Lapped	Weld neck		Plate; slip-on; socket weld	Lapped	Weld neck socket weld				
		D	*K*	*L*			C_1	C_2	C_3	*N*	*A*	H_1	H_2	H_3	*T*	B_1	B_2	B_3	*r*	*U*	*G*	R_1
Types affected		01, 05, 11, 12, 13, 14, 15, 21					01	05, 13 11, 14 12, 15	21	11, 12 13, 14 15, 21	11, 21	12, 13 14	15	11	13	01, 12 14	15	11, 14	15	14	05	11, 14 12, 15 13, 21
NPS	DN	mm	mm	in (mm)		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
½	15	89	60,3	⅝ (15,9)	4	½	12,0	11,1	11,1	30	21,3	15,9	15,9	47,6	15,9	22,4	23,0	15,8	3,0	9,5	—	3
¾	20	98	69,8	⅝ (15,9)	4	½	14,0	12,7	11,1	38	26,7	15,9	15,9	52,4	15,9	27,7	28,0	20,8	3,0	11,0	—	3
1	25	108	79,4	⅝ (15,9)	4	½	16,0	14,3	11,1	49	33,4	17,5	17,5	55,6	17,5	34,5	35,0	26,7	3,0	12,5	—	3
1¼[a]	32	117	88,9	⅝ (15,9)	4	½	18,0	15,9	12,7	59	42,2	20,6	20,6	57,2	20,6	43,2	43,5	35,1	5,0	14,5	—	3
1½	40	127	98,4	⅝ (15,9)	4	½	19,0	17,5	14,3	65	48,3	22,2	22,2	61,9	22,2	49,5	50,0	40,9	6,5	16,0	—	3
2	50	152	120,6	¾ (19,0)	4	⅝	21,0	19,0	15,9	78	60,3	25,4	25,4	63,5	25,4	62,0	62,5	52,6	8,0	17,5	—	3
2½[a]	65	178	139,7	¾ (19,0)	4	⅝	24,0	22,2	17,5	90	73,0	28,6	28,6	69,9	28,6	74,7	75,5	62,7	8,0	19,0	38	3
3	80	190	152,4	¾ (19,0)	4	⅝	26,0	23,8	19,0	108	88,9	30,2	30,2	69,9	30,2	90,7	91,5	78,0	9,5	20,5	51	3
4	100	229	190,5	¾ (19,0)	8	⅝	27,0	23,8	23,8	135	114,3	33,3	33,3	76,2	33,3	116,1	117,0	102,4	11,0	—	76	3
5[a]	125	254	215,9	⅞ (22,2)	8	¾	28,0	23,8	23,8	164	141,3	36,5	36,5	88,9	36,5	143,8	145,0	128,3	11,0	—	102	6,5
6	150	279	241,3	⅞ (22,2)	8	¾	31,0	25,4	25,4	192	168,3	39,7	39,7	88,9	39,7	170,7	171,0	154,2	12,5	—	127	6,5
8	200	343	298,4	⅞ (22,2)	8	¾	34,0	28,6	28,6	246	219,1	44,5	44,5	101,6	—	221.5	222,0	202,7	12,5	—	200	6,5
10	250	406	362,0	1 (25,4)	12	⅞	38,0	30,2	30,2	305	273,0	49,2	49,2	101,6	—	276,4	277,0	254,5	12,5	—	225	6,5
12	300	483	431,8	1 (25,4)	12	⅞	42,0	31,8	31,8	365	323,9	55,6	55,6	114,3	—	327,2	328,0	304,8	12,5	—	279	9,5
14	350	533	476,2	1⅛ (28,6)	12	1	43,0	34,9	34,9	400	355,6	57,2	79,4	127,0	—	359,2	360,0	To be supplied by purchaser	12,5	—	311	9,5
16	400	597	539,8	1⅛ (28,6)	16	1	48,0	36,5	36,5	457	406,4	63,5	87,3	127,0	—	410,5	411,0		12,5	—	362	9,5
18	450	635	577,8	1¼ (31,8)	16	1⅛	56,0	39,7	39,7	505	457,2	68,3	96,8	139,7	—	461,8	462,0		12,5	—	413	9,5
20	500	698	635,0	1¼ (31,8)	20	1⅛	59,0	42,9	42,9	559	508,0	73,0	103,2	144,5	—	513,1	514,0		12,5	—	463	9,5
24	600	813	749,3	1⅜ (34,9)	20	1¼	62,0	47,6	47,6	664	609,6	82,6	111,1	152,4	—	616,0	616.0		12,5	—	565	9,5

See the notes to this Table on page 43.

[a] The use of these sizes should be avoided in new constructions.



Type 05, Blank flange



Type 11, Weld-neck flange

Table 10 — Dimensions of Class 300 flanges (see Figure 9)

Nominal size		Outside diameter of flange	Mating dimensions				Flange thickness	Hub diameter	Hub diameter at weld end	Length through hub			Minimum thread length of threaded flange	Bore			Corner radius of bore of lapped flange and pipe	Dept of socket	Minimum diameter of counter-bore threaded flange	Shoulder diameter	Hub radius (min.)
			Diameter of bolt circle	Diameter of bolt holes	Number of bolts	Nominal diameter of bolts				Threaded; slip-on; socked weld	Lapped	Weld neck		Slip-on; socket weld	Lapped	Weld neck socket weld					
		D	*K*	*L*			*C*	*N*	*A*	H_1	H_2	H_3	*T*	B_1	B_2	B_3	*r*	*U*	*V*	*G*	R_1
Types affected		05, 11, 12, 13, 14, 15, 21					05, 11 12, 13 14, 15 21	11, 12 13, 14 15, 21	11, 21	12, 13 14	15	11	13	12, 14	15	11, 14	15	14	13	05	11, 14 12, 15 13, 21
NPS	DN	mm	mm	in (mm)		in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
½	15	95	66,7	⅝ (15,9)	4	½	14,3	38	21,3	22,2	22,2	52,4	16	22,4	23,0	15,8	3,0	9,5	23,5	—	3
¾	20	117	82,6	⅝ (19,0)	4	⅝	15,9	48	26,7	25,4	25,4	57,2	16	27,7	28,0	20,8	3,0	11,0	29,0	—	3
1	25	124	88,9	¾ (19,0)	4	⅝	17,5	54	33,4	27,0	27,0	61,9	17	34,5	35,0	26,7	3,0	12,5	36,0	—	3
1¼[a]	32	133	98,4	¾ (19,0)	4	⅝	19,0	64	42,2	27,0	27,0	65,1	21	43,2	43,5	35,1	5,0	14,5	44,5	—	3
1½	40	156	114,3	⅞ (22,2)	4	¾	20,6	70	48,3	30,2	30,2	68,3	22	49,5	50,0	40,9	6,5	16,0	50,5	—	3
2	50	165	127,0	¾ (19,0)	8	⅝	22,2	84	60,3	33,3	33,3	69,9	29	62,0	62,5	52,6	8,0	17,5	63,5	—	3
2½[a]	65	190	149,2	⅞ (22,2)	8	¾	25,4	100	73,0	38,1	38,1	76,2	32	74,7	75,5	62,7	8,0	19,0	76,0	38	3
3	80	210	168,3	⅞ (22,2)	8	¾	28,6	117	88,9	42,9	42,9	79,4	32	90,7	91,5	78,0	9,5	20,5	92,0	51	3
4	100	254	200,0	⅞ (22,2)	8	¾	31,8	146	114,3	47,6	47,6	85,7	37	116,1	117,0	102,4	9,5	—	118,0	76	3
5[a]	125	279	235,0	⅞ (22,2)	8	¾	34,9	178	141,3	50,8	50,8	98,4	43	143,8	145,0	128,3	11,0	—	145,0	102	6,5
6	150	318	269,9	⅞ (22,2)	12	¾	36,5	206	168,3	52,4	52,4	98,4	46	170,7	171,0	154,2	12,5	—	171,0	127	6,5
8	200	381	330,2	1 (25,4)	12	⅞	41,3	260	219,1	61,9	61,9	111,1	—	221,5	222,0	202,7	12,5	—	—	200	6,5
10	250	444	387,4	1⅛ (28,6)	16	1	47,6	321	273,0	66,8	95,3	117,5	—	276,4	277,0	254,5	12,5	—	—	225	6,5
12	300	521	450,8	1¼ (31,8)	16	1⅛	50,8	375	323,9	73,0	101,6	130,2	—	327,2	328,0	304,8	12,5	—	—	279	9,5
14	350	584	514,4	1¼ (31,8)	20	1⅛	54,0	425	355,6	76,2	111,1	142,9	—	359,2	360,0	To be supplied by purchaser	12,5	—	—	311	9,5
16	400	648	571,5	1⅜ (34,9)	20	1¼	57,2	483	406,4	82,6	120,7	146,1	—	410,5	411,0		12,5	—	—	362	9,5
18	450	711	628,6	1⅜ (34,9)	24	1¼	60,3	533	457,2	88,9	130,2	158,8	—	461,8	462,0		12,5	—	—	406	9,5
20	500	775	685,8	1⅜ (34,9)	24	1¼	63,5	587	508,0	95,3	139,7	162,0	—	513,1	514,0		12,5	—	—	457	9,5
24	600	914	812,8	1⅜ (41,3)	24	1½	69,8	702	609,6	106,4	152,4	168,3	—	616,0	616,0		12,5	—	—	559	9,5

See the notes to this Table on page 43.

[a] The use of these sizes should be avoided in new constructions.

Table 15 — Tolerances

Dimension	Flange types		Tolerance mm	Size in
Hub diameter at weld end A	11, 21		$^{+2,4}_{-0,8}$	≤ 5
			$^{+4,0}_{-0,8}$	> 5
Bore diameter B_1, B_2	01, 12, 14, 15		$^{+0,8}_{-0}$	≤ 10
			$^{+1,6}_{-0}$	> 10
Bore diameter B_3	11, 14		± 0,8	≤ 10
			± 1,6	> 10 ≤ 18
			$^{+3,2}_{-1,6}$	> 18
Length through hub H_1, H_2, H_3	11, 12, 13, 14, 15		± 1,6	≤ 10
			± 3,2	> 10
Flange thickness C	All		$^{+3,2}_{0}$	≤ 18
			$^{+4,8}_{0}$	>18
Outside diameter of raised face 0	All	1,6 mm raised face	± 0,8 mm	All sizes
		6,4 mm raised face	± 0,4 mm	
Facing dimensions M, Q, W, Y and Z	All	facing types C, D, E and F	± 0,4 mm	All sizes
Ring-joint depth E	All	facing type J	$^{+4,8}_{-0}$	All sizes
Ring-joint width F			± 0,2 mm	
Ring-joint pitch P			± 0,13 mm	
23° angle			± ½°	
Diameter of bolt circle K	All		± 1,6 mm	All sizes
Centre-to-centre of adjacent bolt holes	All		± 0,8 mm	All sizes
Eccentricity of bolt circle and machined facing diameters	All		0,8 mm	≤ 2½
			1,6 mm	> 2½
Parallelism between bolting bearing surfaces and flange jointing face	All		1°	All sizes

Table E.1 — Masses of flanges Class 150

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
15	0,42	0,42	0,49	0,39	0,41	0,40	0,45
20	0,61	0,61	0,72	0,56	0,57	0,57	0,62
25	0,85	0,86	1,05	0,78	0,80	0,79	0,85
32	1,11	1,16	1,38	1,02	1,05	1,05	1,10
40	1,39	1,53	1,77	1,32	1,37	1,35	1,41
50	2,18	2,41	2,64	2,05	2,12	2,10	2,17
65	3,46	3,95	4,21	3,28	3,40	3,38	3,45
80	4,05	4,90	5,04	3,83	3,99	3,96	3,99
100	5,76	7,03	7,13	5,33	5,56	—	5,53
125	6,63	8,63	8,98	6,08	6,45	—	6,26
150	8,29	11,30	11,00	7,42	7,90	—	7,67
200	13,15	19,65	18,24	12,12		—	12,46
250	18,39	28,74	24,94	16,46	—	—	16,87
300	29,89	43,43	38,28	26,28	—	—	26,89
350	37,48	57,99	50,35	34,49	—	—	39,47
400	50,52	76,05	62,55	44,85	—	—	51,75
450	58,99	93,72	71,07	48,89	—	—	57,13
500	72,86	122,27	87,56	61,77	—	—	71,59
600	96,74	185,27	119,59	87,17	—	—	99,52

Table E.2 — Masses of flanges Class 300

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
15	—	0,64	0,77	0,64	0,66	0,66	0,70
20	—	1,10	1,30	1,11	1,13	1,14	1,21
25	—	1,39	1,64	1,36	1,40	1,41	1,47
32	—	1,78	2,09	1,67	1,72	1,72	1,79
40	—	2,67	3,00	2,51	2,57	2,57	2,66
50	—	3,17	3,52	2,87	2,96	2,97	3,01
65	—	4,83	5,32	4,30	4,46	4,49	4,48
80	—	6,84	7,19	5,87	6,10	6,17	6,07
100	—	11,52	11,63	9,64	9,98	—	9,94
125	—	15,51	15,52	12,14	12,65	—	12,42
150	—	20,95	19,91	15,69	16,32	—	16,14
200	—	34,35	30,89	24,21	—	—	24,77
250	—	53,23	44,34	33,97	—	—	39,23
300	—	78,86	64,04	49,92	—	—	56,60
350	—	105,40	89,10	69,51	—	—	81,63
400	—	137,77	111,00	88,49	—	—	105,12
450	—	175,18	136,08	108,38	—	—	128,16
500	—	221,43	164,68	134,30	—	—	158,03
600	—	338,78	238,07	201,06	—	—	236,32

Table E.3 — Masses of flanges Class 600

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
15	—	0,76	0,89	0,74	0,76	0,76	0,70
20	—	1,27	1,49	1,26	1,29	1,29	1,21
25	—	1,61	1,88	1,53	1,57	1,58	1,47
32	—	2,22	2,55	2,02	2,08	2,09	1,93
40	—	3,27	3,62	2,99	3,06	3,08	2,86
50	—	4,14	4,49	3,61	3,73	3,78	3,42
65	—	6,10	6,61	5,24	5,44	5,53	5,00
80	—	8,51	8,85	7,05	7,33	7,49	6,70
100	—	17,27	17,92	14,51	14,94	—	14,00
125	—	29,38	30,01	24,38	25,05	—	23,70
150	—	36,15	36,20	28,84	29,71	—	28,10
200	—	58,89	55,59	43,37	—	—	42,33
250	—	97,54	89,52	70,26	—	—	75,37
300	—	124,21	107,02	84,25	—	—	90,66
350	—	151,00	126,83	98,87	—	—	108,32
400	—	213,77	176,16	142,20	—	—	155,50
450	—	272,28	210,79	173,52	—	—	188,28
500	—	349,81	262,82	220,69	—	—	242,23
600	—	533,60	368,57	312,90	—	—	346,29

Table E.4 — Masses of flanges Class 900

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
80	—	13,07	14,02	11,58	11,91	—	11,22
100	—	22,10	23,12	19,73	20,27	—	19,20
125	—	36,46	37,05	31,88	32,75	—	31,17
150	—	47,44	49,23	41,14	42,25	—	40,40
200	—	82,53	84,17	70,72	—	—	72,75
250	—	122,44	122,85	100,45	—	—	105,98
300	—	173,67	162,88	133,13	—	—	141,89
350	—	206,09	186,20	153,24	—	—	162,40
400	—	259,52	224,24	185,08	—	—	200,10
450	—	366,87	301,27	258,06	—	—	279,92
500	—	463,67	373,75	316,70	—	—	351,14
600	—	875,65	681,13	604,92	—	—	672,06

Table E.5 — Masses of flanges Class 1500

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
15	—	1,78	1,91	1,75	1,78	1,79	1,72
20	—	2,41	2,59	2,33	2,36	2,39	2,28
25	—	3,56	3,77	3,42	3,48	3,53	3,36
32	—	4,16	4,42	3,93	4,01	4,07	3,84
40	—	5,78	6,08	5,40	5,50	5,57	5,27
50	—	10,08	11,14	9,87	10,05	10,22	9,67
65	—	13,93	15,34	13,62	13,92	14,20	13,37
80	—	19,18	20,34	—	18,35	—	17,55
100	—	29,93	30,56	—	28,46	—	27,23
125	—	58,51	58,15	—	53,06	—	51,17
150	—	72,02	70,16	—	62,78	—	60,51
200	—	121,91	119,78	—	—	—	102,32
250	—	210,62	204,65	—	—	—	180,64
300	—	315,83	304,04	—	—	—	284,28
350	—	420,57	399,73	—	—	—	383,75
400	—	559,16	508,66	—	—	—	493,98
450	—	759,99	659,54	—	—	—	636,46
500	—	965,37	806,96	—	—	—	765,15
600	—	1 556,84	1 278,03	—	—	—	1 220,79

Table E.6 — Masses of flanges Class 2500

Masses in kilograms

DN	Type						
	01	05	11	12	13	14	15
15	—	2,98	3,23	—	2,97	—	2,91
20	—	3,52	3,90	—	3,51	—	3,42
25	—	4,99	5,53	—	4,91	—	4,78
32	—	7,34	8,19	—	7,23	—	7,04
40	—	10,38	11,48	—	10,12	—	9,86
50	—	15,58	17,22	—	15,05	—	14,63
65	—	22,68	25,44	—	21,88	—	21,25
80	—	34,88	38,92	—	33,18	—	32,26
100	—	54,11	60,07	—	50,74	—	49,35
125	—	90,76	100,27	—	84,40	—	82,20
150	—	141,64	156,37	—	130,14	—	127,45
200	—	214,06	233,79	—	—	—	186,30
250	—	410,84	445,71	—	—	—	353,61
300	—	592,20	628,13	—	—	—	501,81