TOBO GROUP

TOBO INTERNATIONAL TRADING (SHANGHAI)CO.,LTD

TOBO PIPELINE EQUIPMENT (SHANGHAI) CO., LTD

诚信专业的工业管道配件服务商

中国 • 上海

CHINA • SHANGHA

企业简介 BRIEF INTRODUCTION

TOBO GROUP

TOBO GROUP TOBO International Trading (Shanghai) Co.,Ltd ;TOBO Pipeline Equipments(Shanghai) Co., Ltd).is located in Shanghai,we are one of the biggest manufacturers Pipeline products in China .Our company was established in 1998, the plant covers 55, 000 square meters and a construction area of 6, 800 square meters, existing 160 workers and 15 technicians. Now, it owns a number of advanced pipe production equipments, metal, forging, machining, cold forming, hot extrusion, such as heat treapment process, producing 6, 000 tons of pipe fittings. Company with a variety of detection devices, such as nondestructive testing, chemical analysis, metallographic examination, physical experiments. The technical is very strength, our main products contain fittings(elbow, tee, flanges, cap, reducer, bend) forged socket welding fittings and threaded fittings, pipe (SMLS WELD ERWW , hot-dipped galvanized, electrical galvanized) and the materials of the products contain stainless steel ,duplex-stainless steel alloy steel.

In order to comply with the global modernization services development trends and eliminating the varieties distress of the global enterprise‘s purchase in the consumables, which especially in TOBO products. We coordinate the pressure pipe manufacturer which with the scale of production, quality control and high cost performance (has passed ISO 9001 quality series attestation, ccs, DNV,PED/97/23/EC,AD2000-WO, special equipment manufacturing license,ASME-SA182,) through a variety of effective assort mechanism to make up the shortage of supply and Post-processing of VAT enterprise, and to supply high quality pipe fittings, because of the superior quality and good service, we have established long term business cooperation with more than 30 countries and areas,which covers Europe, Africa, South America, North America, Middle East, Taiwan and South East Asia and so on.

With many years effort and support from our valuable customers, these products have obtained a big market share in the world. Our business principle is "Superior quality, Competitive price, Timely delivery and Considerate service " Standing to the principle of “Enterprises focus on the core business”, we will actively promotes the globalization of business strategy approach, using advanced supply chain management technology to service for clients with higher quality and more competitiveness ‘ s products. At the same time, we sincerely reply your inquiry, honesty waiting for your visiting and wish to have cooperation with you at the any time. We welcome all the customers to contact us for more information. We assure you, with our technical knowledge and experience, our company will be one of your Stable, Continuate business parters in China!

3、锻造：(Forging)

根据不同的产品，采用自由锻、胎模锻和模锻。
According to different products using drop forging, open dieforging and die forging.

4、热处理：(Heat treatment)

根据不同需求，可进行正火处理、退火处理、回火处理、固溶处理等。
Annealing, normalizing and solution treatment as per the different requirements.

7、表面处理：(Surface treatment

根据不同的标准及客户要求，对产品涂防锈油、涂黄黑漆、电镀及热镀锌处理。
According to the different standard or customer's requirements using Anti-rust oil、black or yellow paint、electrical galvanize or hot dipping treatment

8、包装：(Packing)

按照不同的市场要求，采用欧式托盘、胶合板箱、铁箱等形式包装。
For different market and customer's requirement, packed in E.U type pallets、glued wooden cases、steel cases etc.

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KS(JIS) FLANGES(06)
5k
10k
16k
TOLERANCE FOR PIPE FLANGES

ASME B16.5 FLANGES(10)
CLASS 150 FLANGES
CLASS 300 FLANGES
CLASS 400 FLANGES
CLASS 600 FLANGES
CLASS 900 FLANGES
CLASS 1500 FLANGES
CLASS 2500 FLANGES

ASME B16.47 SERIES A FLANGES(36)
CLASS 150 FLANGES
CLASS 300 FLANGES
CLASS 400 FLANGES
CLASS 600 FLANGES
CLASS 900 FLANGES

ASME B16.47 SERIES B FLANGES(43)
CLASS 75 FLANGES
CLASS 150 FLANGES
CLASS 300 FLANGES

CLASS 400 FLANGES
CLASS 600 FLANGES
CLASS 900 FLANGES

STANDARD FINISH(49)
TOLERANCE(50)
WELDED & SEAMLESS PIPE CARBON & ALLOY,STAILESS STEELS(51)

DIN(57)
6BAR
10BAR
16BAR
25BAR
40BAR

EN 1092—1:2007(E)(62)
PN 2.5 FLANGES
PN 6 FLANGES
PN 10 FLANGES
PN 16 FLANGES
PN 25 FLANGES
PN 40 FLANGES

* Annular forging can make 5 meters to the greatest extent .
* The special flange can be processed according to the drawing.
* material: A105、ST37.2、S235、A350LF2、C22.8、A694、304、304L、316、316L etc.

法兰生产工艺流程 >>>>>>>>>>>>>>>>>>>

PRODUCTIONG PROCESS FOR FLANGE

尺寸、炉号外观、检验
Dimension appearance material heat Number control (record).

入 库
PUT IN STORAGE

材质、炉号检验，机械性能化学分析
MATERIAL HEATNO.PROPERTY, CHEMICAL ANALYSIS

领料出库
MATERIAL OUT FROM STORAGE

材质复查
REVIEW RAW MATERIAL

切 料
CUTTING

A.几何尺寸，材质炉号控制（作记录）
DIMENSION MATERIAL HEAT NO CONTROL(RECORD)

加 热
HEATING

B.始锻温度
FIRST TEMPERATURE OF FORGING

锻 造
FORGING

C.终锻温度
FINAL TEMPERATURE OF FORGING

热处理
HEAT TREATMENT

D.温度保温时间（作记录）
TEMPERATURE AND HOLDING TIME (RECORD)

车加工
MACHINING SIZE CONTROL

超声波检验
UT CHECKING

钻加工
DRILLING SIZE CONTROL

成品验收
FINAL INSPECTION

G.按标准作全面验收
OVERAL INSPECTION ACCORDING TO STANDARD

不锈钢法兰 耐腐性检验
STAINLESS FLANGE. COATING TREATMENT

PMI抽查
PMI SPOT TEST S.S/A.S

F.时间
TIME

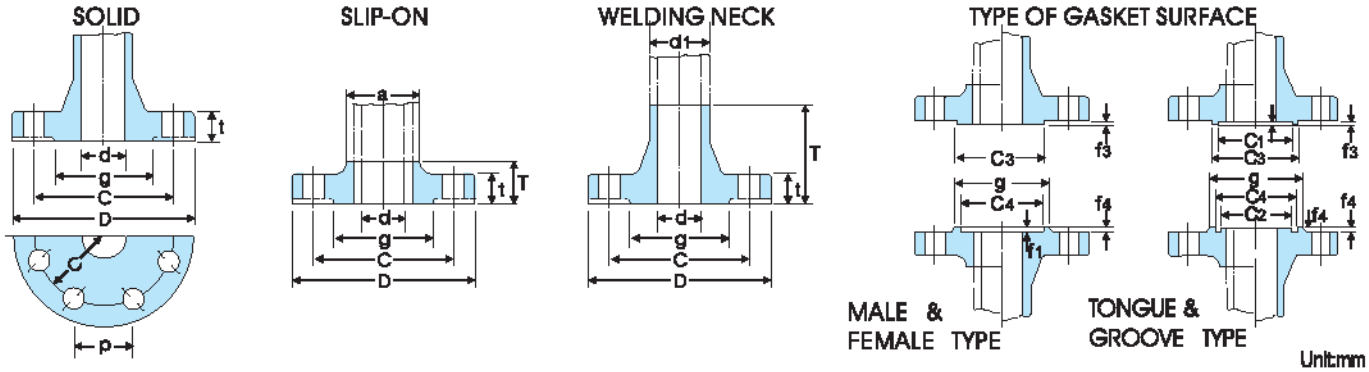
打钢字
MARKING

H.规格材质及炉号控制
SIZE MTERIAL HEAT NO CONTROL

防腐处理入库
SURFACE COATING STORAGE

TOLERANCE FOR PIPE FLANGES

KS B1502
JIS B2203



Unit:mm

Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Outside Dia D		As Forged (1)	300 & below	+Not Specified
			over 300 thru 600	
			over 600 thru 1000	−2.0
			over 1000 thru 1500	+Not Specified −3.0
			over 1500	
		Finish	300 & below	±1
			over 300 thru 600	±1.5
			over 600 thru 1000	±2
			over 1000 thru 1500	±2.5
			over 1500	±3
Inside Dia	Solid Flange d(2)	As Forged (1)	16 & below	±1
			over 16 thru 63	±1.5
			over 63 thru 125	±2
			over 125 thru 150	±2.5
			over 250 thru 500	±3
			over 500 thru 1000	±4
			over 1000	±5
	Slip-on Flange do	Finish	100 & below	$+^{0.5}_{0}$
			over 100 thru 400	$+^{1}_{0}$
			over 400 thru 600	$+^{1.5}_{0}$
			over 600 thru 800	$+^{2}_{0}$
			over 800 thru 1000	$+^{2.5}_{0}$
			over 1000	$+^{3}_{0}$
	Welding Neck Flange d		100 & below	$^{0}_{-0.5}$
			over 100 thru 400	$^{0}_{-1}$
			over 400 thru 600	$^{0}_{-1.5}$
			over 600 thru 800	$^{0}_{-2}$
			over 800 thru 1000	$^{0}_{-2.5}$
			over 1000	$^{0}_{-3}$
Bolt Hole	Bolt Circle Dia d		250 & below	±0.5
			over 250 thru 550	±0.6
			over 550 thru 950	±0.8
			over 950 thru 1350	±1
			over 1350	±1.5

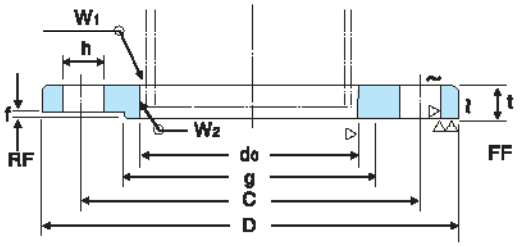
Flange Section		Surface Condition	Basic Size	Dimensional Tolerance
Bolt Hole	Pitch of Hole p	Drilling Hole	−	±0.5
Dia. of Hub	Slip-on Flange(a) and Welding Neck Flange (d_1)	As Forged	220 & below	$+^{2}_{0}$
			over 220 thru 450	$+^{3}_{0}$
			over 450 thru 650	$+^{4}_{0}$
			over 650 thru 850	$+^{6}_{0}$
			over 850 thru 1000	$+^{7}_{0}$
			over 1000	$+^{8}_{0}$
		Finish	220 & below	$+^{1}_{0}$
			over 220 thru 450	$+^{1.5}_{0}$
			over 450 thru 650	$+^{2}_{0}$
			over 650 thru 850	$+^{2.5}_{0}$
			over 850 thru 1000	$+^{3}_{0}$
			over 1000	$+^{3.5}_{0}$
	C_1, C_2 C_3, C_4	Finish	500 & below	±0.3
			over 500 thru 1000	±0.35
			over 1000 thru 1500	±0.4
			over 1500	±0.5
Gasket Seat	f_4, f_3	Finish	8 & below	±0.2
			over 8	±0.25
	g	Finish	200 & below	±0.8
			over 200 thru 650	±0.9
			over 650 thru 1000	±1
			over 1000	±1.2
Thickness t		One-side Finish	20 & below	$+^{1.5}_{0}$
			over 20 thru 50	$+^{2}_{0}$
			over 50 thru 100	$+^{3}_{0}$
		Both-side Finish	20 & below	$+^{1}_{0}$
			over 20 thru 50	$+^{1.5}_{0}$
			over 50 thru 100	$+^{2}_{0}$
Hub Height T	Flange with Pipe Inserted	Finish	50 & below	±1
			over 50 thru 100	±1.5
			over 100 thru 200	±2
	Flange with But-welded Pipe	Finish	over 200 & below	$+^{2}_{0}$
			over 200 thru 300	$+^{3}_{0}$

Notes
(1)This dimensional tolerance applies to the machined surface,as required.
(2)This dimension d has been specified only for the flange, of which the bore part is cylindrical in shape.

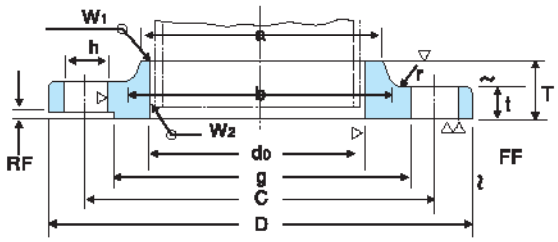
Remarks
(1)This dimension d of bore part of the solid flanges with surface, as forged of valves, pumps, etc. are allowed up to plus 100%of the above dimensional tolerance Provided that the required thickness shall be free from its influence.
(2)The thickness of flange of valve and the like, of which the dimension between flange faces is limited to a fixed value, are allowed up to plus 100% of the above dimensional tolerance in the column of thickness
(3)In the case of spot facing of the single surface finishing, the thickness of spot facing is allowed up to 70% of the dimensional tolerance in the above column of thickness in negative side.
(4)The chain double-dashed lines in the figures of solid flange and socket welding type flange illustrate the cases of large raised face flange.

5K KS B1503 JIS B2220

NOMINAL SIZE 10-400mm



NOMINAL SIZE 450-1000mm



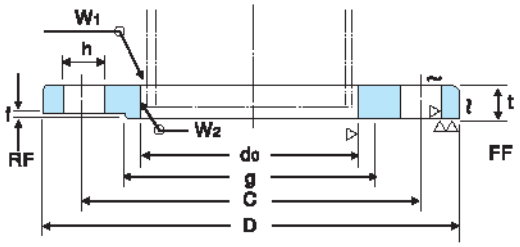
Unit:mm

Nominal Bore of Flange	Outside Dia. of Appli-Cable pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Dia. of Bolt			Nominal Bolt Size	Welding		Weigh (Kg)
				t	T	Dia. of Hub a	Dia. of Hub b	Radius r	Raised Face f	Dia.of Raised Face g	Dia.of Bolt Circle c	Number of Bolt Holes	Hole Dia. h		W1	W2	
(10)	17.3	17.8	75	9	–	–	–	–	1	39	55	4	12	M10	5	2.5	0.27
15	21.7	22.2	80	9	–	–	–	–	1	44	60	4	12	M10	5	3	0.30
(20)	27.2	27.7	85	10	–	–	–	–	1	49	65	4	12	M10	5	3	0.37
25	34.0	34.5	95	10	–	–	–	–	1	59	75	4	12	M10	5	3	0.45
(32)	42.7	43.2	115	12	–	–	–	–	2	70	90	4	15	M12	6	3	0.78
40	48.6	49.1	120	12	–	–	–	–	2	75	95	4	15	M12	6	3	0.83
50	60.5	61.1	130	14	–	–	–	–	2	85	105	4	15	M12	6	3	1.07
65	76.3	77.1	155	14	–	–	–	–	2	110	130	4	15	M12	6	4	1.49
80	89.1	90.0	180	14	–	–	–	–	2	121	145	4	19	M16	6	4	1.99
(90)	101.6	102.6	190	14	–	–	–	–	2	131	155	4	19	M16	6	4	2.09
100	114.3	115.4	200	16	–	–	–	–	2	141	165	8	19	M16	7	4	2.39
125	139.8	141.2	235	16	–	–	–	–	2	176	200	8	19	M16	7	4	3.23
150	165.2	166.8	265	18	–	–	–	–	2	206	230	8	19	M16	7	5	4.41
(175)	190.7	192.1	300	18	–	–	–	–	2	232	260	8	23	M20	7.5	5	5.51
200	216.3	218.0	320	20	–	–	–	–	2	252	280	8	23	M20	8.5	6	6.33
(225)	241.8	243.7	345	20	–	–	–	–	2	277	305	12	23	M20	9	6	6.64
250	267.4	269.5	385	22	–	–	–	–	2	317	345	12	23	M20	10	6	9.45
300	318.5	321.0	430	22	–	–	–	–	3	360	390	12	23	M20	10	6	10.30
350	355.6	358.1	480	24	–	–	–	–	3	403	435	12	25	M22	12	7	14.00
400	406.4	409.0	540	24	–	–	–	–	3	463	495	16	25	M22	12	7	16.90
450	457.2	460.0	605	24	40	495	500	5	3	523	555	16	25	M22	12	7	24.80
500	508.0	511.0	655	24	40	546	552	5	3	573	605	20	25	M22	12	7	26.90
550	558.8	562.0	720	26	42	597	603	5	3	630	665	20	27	M24	12	7	34.10
600	609.6	613.0	770	26	44	648	654	5	3	680	715	20	27	M24	12	7	37.50
650	660.4	664.0	825	26	48	702	708	5	3	735	770	24	27	M24	12	7	42.80
700	711.2	715.0	875	26	48	751	758	5	3	785	820	24	27	M24	12	7	45.40
750	762.0	766.0	945	28	52	802	810	5	3	840	880	24	33	M30	12	7	57.40
800	812.8	817.0	995	28	52	854	862	5	3	890	930	24	33	M30	13	8	60.80
850	863.6	868.0	1045	28	54	904	912	5	3	940	980	24	33	M30	13	8	63.50
900	914.4	919.0	1095	30	56	956	964	5	3	990	1030	24	33	M30	13	8	75.30
1000	1016.0	1021.0	1195	32	60	1058	1066	5	3	1090	1130	28	33	M30	14	9	88.50
*(1100)	1117.6	1123	1305	32	–	–	–	–	3	1200	1240	28	33	M30			
*1200	1219.2	1225	1420	34	–	–	–	–	3	1305	1350	32	33	M30			
*1350	1371.6	–	1575	34	–	–	–	–	3	1460	1505	32	33	M30			
*1500	1524.0	–	1730	36	–	–	–	–	3	1615	1660	36	33	M30			

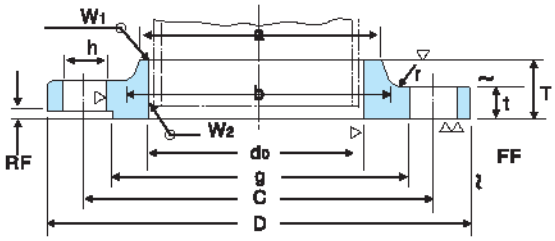
(1)Flanges of parenthesized nominal diameter had letter not be used.
(1)The facing of flanges shall conform to KS B 1519(JIS B2205) 1984.
(3)Nominal diameter over 1000 is manufacturer's standard(*).

IOK KS B1503 JIS B2220

NOMINAL SIZE 10-225mm



NOMINAL SIZE 250-1000mm



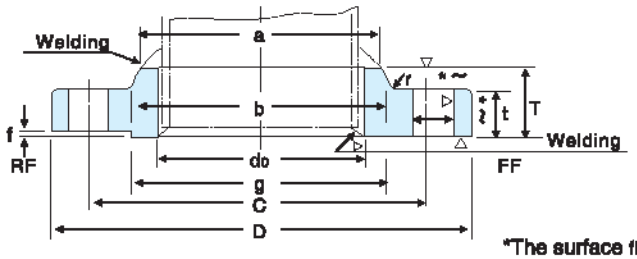
Unit:mm

Nominal Dia. of Flange	Outside Dia. of Steel Pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Bolt Hole			Nominal Bolt Size	Weld Length (Reference)		Approx. Weigh (Kg/w)
				t	T	Dia. of Hub a	Dia. of Hub b	Radius r	Raised Face f	Dia.of Raised Face g	Bolt Circle Dia. c	Number of Bolt Holes	Hole Dia. h		W_1	W_2	
10	17.3	17.8	90	12	–	–	–	–	1	48	65	4	15	M12	5	2.5	0.52
15	21.7	22.2	95	12	–	–	–	–	1	51	70	4	15	M12	5	3	0.57
20	27.2	27.7	100	14	–	–	–	–	1	58	75	4	15	M12	5	3	0.73
25	34.0	34.5	125	14	–	–	–	–	1	67	90	4	19	M16	5	3	1.13
32	42.7	43.2	135	16	–	–	–	–	2	78	100	4	19	M16	6	3	1.48
40	48.6	49.1	140	16	–	–	–	–	2	81	105	4	19	M16	6	3	1.56
50	60.5	61.1	155	16	–	–	–	–	2	96	120	4	19	M16	6	3	1.88
65	76.3	77.1	175	18	–	–	–	–	2	116	140	4	19	M16	6.5	4	2.6
80	89.1	90.0	185	18	–	–	–	–	2	126	150	8	19	M16	6.5	4	2.61
(90)	101.6	102.6	195	18	–	–	–	–	2	136	160	8	19	M16	6.5	4	2.76
100	114.3	115.4	210	18	–	–	–	–	2	151	175	8	19	M16	7	4	3.14
125	139.8	141.2	250	20	–	–	–	–	2	182	210	8	23	M20	7.5	4	4.77
150	165.2	166.6	280	22	–	–	–	–	2	212	240	8	23	M20	8	5	6.34
(175)	190.7	192.1	305	22	–	–	–	–	2	237	265	12	23	M20	9	5	6.82
200	216.3	218.0	330	22	–	–	–	–	2	262	290	12	23	M20	9	6	7.53
(225)	241.8	243.7	350	22	–	–	–	–	2	282	310	12	23	M20	9	6	7.74
250	267.4	269.5	400	24	36	288	292	6	2	324	355	12	25	M22	10	6	12.7
300	318.5	321.0	445	24	38	340	346	6	3	368	400	16	25	M22	10	6	13.8
350	355.6	358.1	490	26	42	380	386	6	3	413	445	16	25	M22	12	7	18.2
400	406.4	409.0	560	28	44	436	442	6	3	475	510	16	27	M24	12	7	25.2
450	457.2	460.0	620	30	48	496	502	6	3	530	565	20	27	M24	14	8	33
500	508.0	511.0	675	30	48	548	554	6	3	585	620	20	27	M24	14	8	37.6
550	558.8	562.0	745	32	52	604	610	6	3	640	680	20	33	M30	15	9	49.7
600	609.6	613.0	795	32	52	656	662	6	3	690	730	24	33	M30	16	10	52.6
650	660.4	664.0	845	34	56	706	712	6	3	740	780	24	33	M30	16	10	60.6
700	711.2	715.0	905	34	58	762	770	6	3	800	840	24	33	M30	17	10	70.6
750	762.0	766.0	970	36	62	816	824	6	3	855	900	24	33	M30	18	11	85.8
800	812.8	817.0	1020	36	64	868	876	6	3	905	950	28	33	M30	19	12	91.2
(850)	863.6	868.0	1070	36	66	920	928	6	3	955	1000	28	33	M30	19	12	98.6
900	914.4	919.0	1120	38	70	971	979	6	3	1005	1050	28	33	M30	22	14	109
1000	1016.0	1021.0	1235	40	74	1073	1081	6	3	1110	1160	28	39	M36	22	14	133
*(1100)	1117.6	1123	1345	42	76	–	–	–	3	1220	1270	28	39	M36			
*1200	1219.2	1225	1465	44	78	–	–	–	3	1325	1380	32	39	M36			
*1350	1371.6	–	1630	48	82	–	–	–	3	1480	1540	36	45	M42			
*1500	1524.0	–	1795	50	90	–	–	–	3	1635	1700	40	45	M42			

(1)Flanges of parenthesized nominal diameter had letter not be used.
(1)The facing of flanges shall conform to KS B 1519(JIS B2202) 1984.
(3)Nominal diameter over 1000 is manufacturer's standard(*).

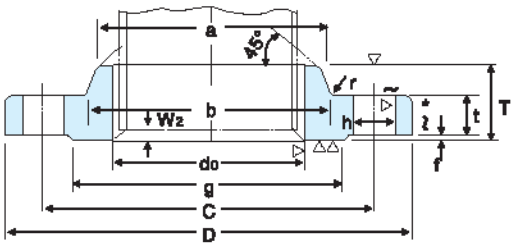
16K KS B1503 JIS B2220

NOMINAL SIZE 10-600mm



*The surface finish(~) is in the case of die forging.

NOMINAL SIZE 650-1200mm

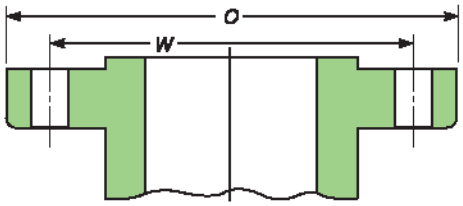


Unit:mm

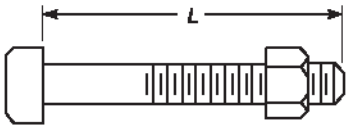
Nominal Dia. of Flange	Outside Dia. of Steel Pipe	Inside Dia. of Flange do	Outside Dia. of Flange D	Sectional Dimensions of Flange							Dia. of Bolt			Nominal Bolt Size	Approx. Weigh (Kg)
				t	T	Dia. of Hub		Radius r	f	g	Bolt Circle Dia. C Dia.	Number of Bolt Holes	Hole Dia. h		
						a	b								
10	17.3	17.8	90	12	16	26	28	4	1	46	65	4	15	M12	0.52
15	21.7	22.2	95	12	16	30	32	4	1	51	70	4	15	M12	0.58
20	27.2	27.7	100	14	20	38	42	4	1	56	75	4	15	M12	0.75
25	34.0	34.5	125	14	20	46	50	4	1	67	90	4	19	M16	1.16
32	42.7	43.2	135	16	22	56	60	5	2	76	100	4	19	M16	1.53
40	48.6	49.1	140	16	24	62	66	5	2	81	105	4	19	M16	1.64
50	60.5	61.1	155	16	24	76	80	5	2	96	120	8	19	M16	1.83
65	76.3	77.1	175	18	26	94	98	5	2	116	140	8	19	M16	2.58
80	89.1	90.0	200	20	28	108	112	6	2	132	160	8	23	M20	3.66
(90)	101.6	102.6	210	20	30	120	124	6	2	145	170	8	23	M20	3.95
100	114.3	115.4	225	22	34	134	138	6	2	160	185	8	23	M20	4.94
125	139.8	141.2	270	22	34	164	170	6	2	195	225	8	25	M22	7.00
150	165.2	166.6	305	24	38	196	202	6	2	230	260	12	25	M22	9.62
200	216.3	218.0	350	26	40	244	252	6	2	275	305	12	25	M22	12.1
250	267.4	269.5	430	28	44	304	312	6	2	345	380	12	27	M24	20.0
300	318.5	321.0	480	30	48	354	364	8	3	395	430	16	27	M24	24.4
350	355.6	358.1	540	34	52	398	408	8	3	440	480	16	33	M30×3	35.0
400	406.4	409.0	605	38	60	446	456	10	3	495	540	16	33	M30×3	46.2
450	457.2	460.0	675	40	64	504	514	10	3	560	605	20	33	M30×3	61.9
500	508.0	511.0	730	42	68	558	568	10	3	615	660	20	33	M30×3	73.25
(550)	558.8	562.0	795	44	70	612	622	10	3	670	720	20	39	M36×3	88.1
600	609.6	613.0	845	46	74	666	676	10	3	720	770	24	39	M36×3	98.8
(650)	660.4	664	895	48	77	704	726	10	5	770	820	24	39	M36×3	101
700	711.2	715	960	50	80	754	776	10	5	820	875	24	42	M39×3	120
(750)	762.0	766	1020	52	83	806	832	10	5	880	935	24	42	M39×3	141
800	812.8	817	1085	54	86	865	885	10	5	930	990	24	48	M45×3	161
(850)	863.6	868	1135	56	89	916	936	10	5	980	1040	24	48	M45×3	177
900	914.4	919	1185	58	93	968	986	10	5	1030	1090	28	48	M45×3	191
1000	1016.0	1021	1320	62	99	1070	1098	12	5	1140	1210	28	56	M52×3	230
(1100)	1117.6	1123	1420	66	105	1180	1200	12	5	1240	1310	32	56	M52×3	289
1200	1219.2	1225	1530	70	112	1282	1302	12	5	1350	1420	32	56	M52×3	348

(1)Flanges of parenthesized nominal diameter had letter not be used.
(1)The facing of flanges shall conform to KS B 1519(JIS B2202) 1984.
(3)The dimension of flange of 650A and larger in nominal sizes excluding 850A, are in accordance with the nominal pressure 25BAR specified in ISO2084–1974.

CLASS 150 PIPE FLANGES AND FLANGED FITTINGS



Flange



MachineBolt With Nuts

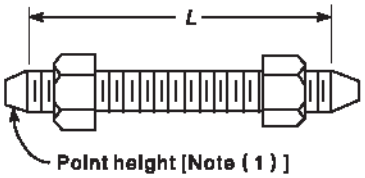


Table 7 Templates for Drilling Class 150 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
						Stud Bolts [Note (1)]		Machine Bolts
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	2 mm Raised Face	Ring joint	2 mm Raised Face
1/2	90	60.3	5/8	4	1/2	55	...	50
3/4	100	69.9	5/8	4	1/2	65	...	50
1	110	79.4	5/8	4	1/2	65	75	55
1 1/4	115	88.9	5/8	4	1/2	70	85	55
1 1/2	125	98.4	5/8	4	1/2	70	85	65
2	150	120.7	3/4	4	5/8	85	95	70
2 1/2	180	139.7	3/4	4	5/8	90	100	75
3	190	152.4	3/4	4	5/8	90	100	75
3 1/2	215	177.8	3/4	8	5/8	90	100	75
4	230	190.5	3/4	8	5/8	90	100	75
5	255	215.9	7/8	8	3/4	95	110	85
6	280	241.3	7/8	8	3/4	100	115	85
8	345	298.5	7/8	8	3/4	110	120	90
10	405	362.0	1	12	7/8	115	125	100
12	485	431.8	1	12	7/8	120	135	100
14	535	476.3	1 1/8	12	1	135	145	115
16	595	539.8	1 1/8	16	1	135	145	115
18	635	577.9	1 1/4	16	1 1/8	145	160	125
20	700	635.0	1 1/4	20	1 1/8	160	170	140
24	815	749.3	1 3/8	20	1 1/4	170	185	150

GENERAL NOTES:

(a) Dimensions of Table 7 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F, Table F7.

(b) For other dimensions, see Tables 8 and 9.

NOTES:

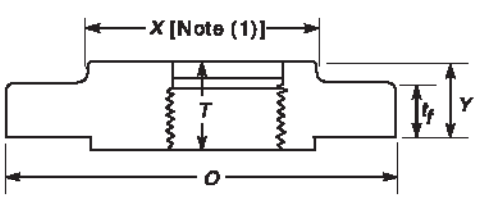
(1) Length of stud bolt does not include the height of the points. See para. 6.10.2.

(2) For flange bolt holes, see para. 6.5.

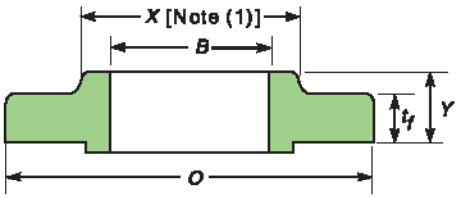
(3) For spot facing, see para. 6.6.

(4) Bolt lengths not shown in table may be determined in accordance with Annex D. See para. 6.10.2.

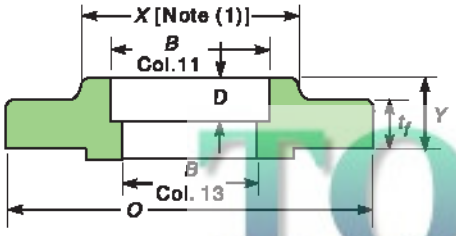
PIPE FLANGES AND FLANGED FITTINGS



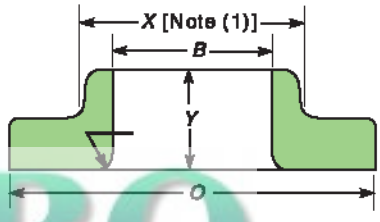
Threaded



Slip-on Welding

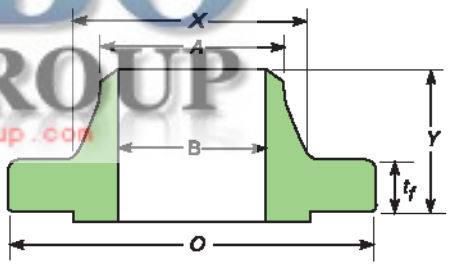


Socket Welding (NPS 1/2 to 3 Only)



Lapped

Blind



Welding Neck

Table 8 Dimensions of Class 150 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
						Length Through Hub				Bore				
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f [Notes(2)–(4)]	Thickness Lap Joint Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(5)]	Threaded/ Slip–on/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Min., T [Notes(6)]	Slip–on/ Socket Welding, Min., B	Lapped Min., B	Welding Neck/ Socket Welding, B [Notes(7)]	Corner Radius of Bore of Lapped Flange and Pipe, r	Depth of Socket, D
1/2	90	9.6	11.2	30	21.3	14	16	46	16	22.2	22.9	15.8	3	10
3/4	100	11.2	12.7	38	26.7	14	16	51	16	27.7	28.2	20.9	3	11
1	110	12.7	14.3	49	33.4	16	17	54	17	34.5	34.9	26.6	3	13
1 1/4	115	14.3	15.9	59	42.2	19	21	56	21	43.2	43.7	35.1	5	14
1 1/2	125	15.9	17.5	65	48.3	21	22	60	22	49.5	50.0	40.9	6	16
2	150	17.5	19.1	78	60.3	24	25	62	25	61.9	62.5	52.5	8	17
2 1/2	180	20.7	22.3	90	73.0	27	29	68	29	74.6	75.4	62.7	8	19
3	190	22.3	23.9	108	88.9	29	30	68	30	90.7	91.4	77.9	10	21
3 1/2	215	22.3	23.9	122	101.6	30	32	70	32	103.4	104.1	90.1	10	...
4	230	22.3	23.9	135	114.3	32	33	75	33	116.1	116.8	102.3	11	...
5	255	22.3	23.9	164	141.3	35	36	87	36	143.8	144.4	128.2	11	...
6	280	23.9	25.4	192	168.3	38	40	87	40	170.7	171.4	154.1	13	...
8	345	27.0	28.6	246	219.1	43	44	100	44	221.5	222.2	202.7	13	...
10	405	28.6	30.2	305	273.0	48	49	100	49	276.2	277.4	254.6	13	...
12	485	30.2	31.8	365	323.8	54	56	113	56	327.0	328.2	304.8	13	...
14	535	33.4	35.0	400	355.6	58	79	125	57	359.2	360.2	To be Specified by Purchaser	13	...
16	595	35.0	36.6	457	406.4	62	87	125	64	410.5	411.2		13	...
18	635	38.1	39.7	505	457.0	67	97	138	68	461.8	462.3		13	...
20	700	41.3	42.9	559	508.0	71	103	143	73	513.1	514.4		13	...
24	815	46.1	47.7	663	610	81	111	151	83	616.0	616.0		13	...

Notes to Table 8

GENERAL NOTES:

(a) Dimensions of Table 8 are in millimeters. For dimensions in inches, refer to Table F8 of Annex F.

(b) For tolerance, see para. 7.

(c) For facings, see para. 6.4.

(d) For flange bolt holes, see para 6.5 and Table 7.

(e) For spot facing, see para. 6.6.

(f) For reducing threaded and slip-on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

(h) For reducing welding neck flanges, see para. 6.8.

NOTES:

(1) This dimension is for large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on

threaded, slip-on, socket-welding,and lapped flanges. This dimension is defined as the diameter at the

Table 8 Dimensions of Class 150 Flanges

Nominal Pipe Size NPS	16	17	18	19	20	21	22	23	24	25
	APPROXIMATE WEIGHT									
	Welding Neck		Slip–on And Threaded		Lap Joint		Blind		Socket welding	
	kg	lb	Kg	lb	Kg	Lb	Kg	Lb	Kg	Lb
½	0.51	1.10	0.47	1.00	0.51	1.00	0.47	1.00	0.47	1.00
¾	0.74	1.62	0.58	1.30	0.64	1.40	0.63	1.40	0.59	1.30
1	1.07	2.40	0.86	1.90	0.93	1.80	0.94	2.10	0.87	1.90
1¼	1.40	3.10	1.08	2.40	1.16	2.00	1.23	2.70	1.11	2.40
1½	1.81	4.00	1.41	3.10	1.51	3.30	1.62	3.60	1.45	3.20
2	2.64	5.70	2.26	5.00	2.38	5.20	2.64	5.80	2.33	5.00
2½	4.28	9.40	3.43	7.60	3.60	7.90	4.06	9.00	3.55	7.80
3	5.18	11.40	3.90	8.50	4.08	8.90	4.98	10.80	4.02	8.90
3½	6.30	13.88	4.99	11.00	4.99	11.00	6.21	13.00	4.99	11.00
4	7.32	16.10	5.75	12.70	5.96	13.00	7.41	16.30	5.99	13.20
5	8.95	19.60	6.22	13.70	6.44	14.00	8.76	19.30	6.68	14.70
6	11.26	24.80	7.41	16.32	7.61	16.70	11.31	24.90	7.99	17.60
8	18.20	40.09	12.36	27.30	12.66	27.80	19.92	43.90	13.29	29.30
10	24.94	54.96	17.10	37.70	16.78	37.00	29.39	64.80	19.50	43.00
12	38.98	85.90	27.68	61.00	28.30	62.40	43.70	96.30	29.03	64.00
14	51.71	114.00	35.20	77.60	41.50	91.50	59.42	140.00	38.56	85.00
16	64.41	142.00	45.03	99.19	52.98	116.80	77.11	170.00	47.19	103.94
18	74.84	165.00	49.71	109.60	59.00	130.00	94.80	209.00	54.43	120.00
20	89.36	197.00	65.50	140.00	72.12	159.00	123.38	272.00	70.31	155.00
24	119.66	263.80	90.50	199.50	99.52	218.30	188.24	415.00	95.25	210.00

(2) The minimum thickness of these loose flanges, in sizes NPS 3½ and smaller, is slightly greater than the thickness of flanges on fittings, Table 9, which are reinforced by being cast integral with the body of the fitting.

(3) These flanges may be supplied with a flat face. The flat face may be either the full tf dimension of thickness plus 2 mm, or the tf dimension thickness without the raised face height. See Para 6.3.2 for additional restrictions.

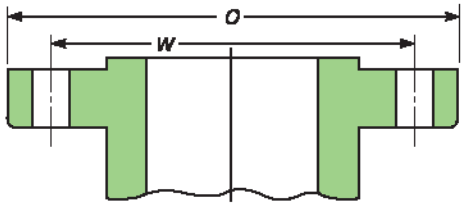
(4) The flange dimensions illustrated are for regularly furnished 2 mm raised face (except lapped); for requirements of other facings, see Fig. 7.

(5) For welding end bevel. See para. 6.7.

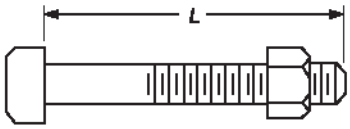
(6) For thread of threaded flanges, see para. 6.9.

(7) Dimensions in Column 13 correspond to the inside diameters of pipe as given in ASME B36.10M for Standard Wall pipe. Thickness of Standard Wall is the same as Schedule 40 in sizes NPS 10 and smaller. Tolerances in para. 7.5.2 apply. These bore sizes are furnished unless otherwise specified by the purchaser.

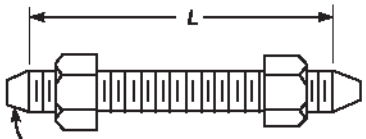
CLASS 300 PIPE FLANGES, AND FLANGED FIITINGS



Flange



Machine Bolt With Nuts



Stud Bolt With Nuts

Table 10 Templates for Drilling Class 300 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
						Stud Bolts [Note (1)]		Machine Bolts
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	2 mm Raised Face	Ring Joint	2 mm Raised Face
1/2	95	66.7	5/8	4	1/2	65	75	55
3/4	115	82.6	3/4	4	5/8	75	90	65
1	125	88.9	3/4	4	5/8	75	90	65
1 1/4	135	98.4	3/4	4	5/8	85	95	70
1 1/2	155	114.3	7/8	4	3/4	90	100	75
2	165	127.0	3/4	8	5/8	90	100	75
2 1/2	190	149.2	7/8	8	3/4	100	115	85
3	210	168.3	7/8	8	3/4	110	120	90
3 1/2	230	184.2	7/8	8	3/4	110	125	95
4	255	200.0	7/8	8	3/4	115	125	95
5	280	235.0	7/8	8	3/4	120	135	110
6	320	269.9	7/8	12	3/4	120	140	110
8	380	330.2	1	12	7/8	140	150	120
10	445	387.4	1 1/8	16	1	160	170	140
12	520	450.8	1 1/4	16	1 1/8	170	185	145
14	585	514.4	1 1/4	20	1 1/8	180	190	160
16	650	571.5	1 3/8	20	1 1/4	190	205	165
18	710	628.6	1 3/8	24	1 1/4	195	210	170
20	775	685.8	1 3/8	24	1 1/4	205	220	185
24	915	812.8	1 3/8	24	1 1/2	230	255	205

GENERAL NOTES:

(a) Dimensions of Table 10 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F. Table FIO.

(b) For other dimensions, see Tables 11 and 12.

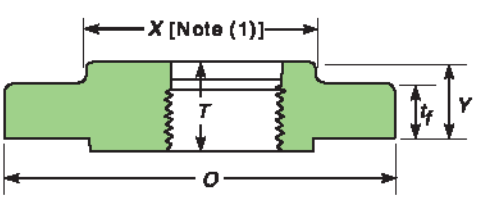
NOTES:

(1) Length of stud bolt does not include the height of the points. See para. 6.10.2.

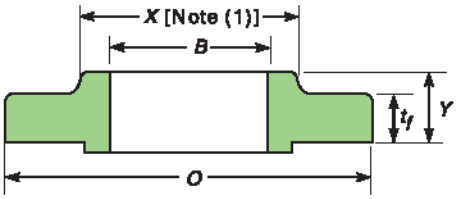
(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para 6.6.

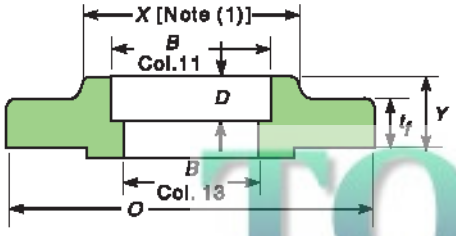
(4) Bolt lengths not shown in table may be determined in accordance with Annex D. See para. 6.10.2.



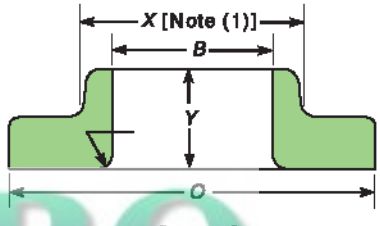
Threaded



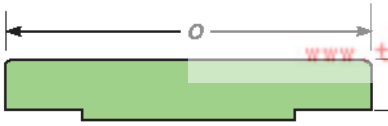
Slip-on Welding



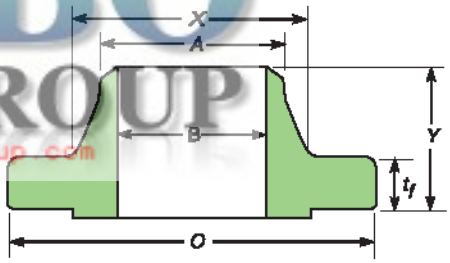
Socket Welding (NPS $\frac{1}{2}$ to 3 Only)



Lapped



Blind



Welding Neck

CLASS 300 PIPE FLANGES, AND FLANGED FITTINGS

Table 11 Dimensions of Class 300 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
						Length Through Hub				Bore					
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f [Notes(2)–(3)]	Thickness Lap Joint Min., t_r	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(5)]	Threaded/ Slip–on/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Min., T [Notes(6)]	Slip–on/ Socket Welding, Min., B	Lapped Min., B	Welding Neck/ Socket Welding, B [Notes(6)]	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter–bore Threaded Flange, Min., Q	Depth of Socket, D
1/2	95	12.7	14.3	38	21.3	21	22	51	16	22.2	22.9	15.8	3	23.6	10
3/4	115	14.3	15.9	48	26.7	24	25	56	16	27.7	28.2	20.9	3	29.0	11
1	125	15.9	17.5	54	33.4	25	27	60	18	34.5	34.9	26.6	3	35.8	13
1 1/4	135	17.5	19.1	64	42.2	25	27	64	21	43.2	43.7	35.1	5	44.4	14
1 1/2	155	19.1	20.7	70	48.3	29	30	67	23	49.5	50.0	40.9	6	50.3	16
2	165	20.7	22.3	84	60.3	32	33	68	29	61.9	62.5	52.5	8	63.5	17
2 1/2	190	23.9	25.4	100	73.0	37	38	75	32	74.6	75.4	62.7	8	76.2	19
3	210	27.0	28.6	117	88.9	41	43	78	32	90.7	91.4	77.9	10	92.2	21
3 1/2	230	28.6	30.2	133	101.6	43	44	79	37	103.4	104.1	90.1	10	104.9	...
4	255	30.2	31.8	146	114.3	46	46	84	37	116.1	116.8	102.3	11	117.6	...
5	280	33.4	35.0	178	141.3	49	51	97	43	143.8	144.4	128.2	11	144.4	...
6	320	35.0	36.6	206	168.3	51	52	97	47	170.7	171.4	154.1	13	171.4	...
8	380	39.7	41.3	260	219.1	60	62	110	51	221.5	222.2	202.7	13	222.2	...
10	445	46.1	47.7	321	273.0	65	95	116	56	276.2	277.4	254.6	13	276.2	...
12	520	49.3	50.8	375	323.8	71	102	129	61	327.0	328.2	304.8	13	328.6	...
14	585	52.4	54.0	425	355.6	75	111	141	64	359.2	360.2	To be	13	360.4	...
16	650	55.6	57.2	483	406.4	81	121	144	69	410.5	411.2	Specified	13	411.2	...
18	710	58.8	60.4	533	457.0	87	130	157	70	461.8	462.3	by	13	462.0	...
20	775	62.0	63.5	587	508.0	94	140	160	74	513.1	514.4	Purchas–	13	512.8	...
24	915	68.3	69.9	702	610.0	105	152	167	83	616.0	616.0	er	13	614.4	...

Notes to Table 11

GENERAL NOTES:

(a) Dimensions of Table 11 are in millimeters. For dimensions in inch units, refer to Annex F Table, F11.

(b) For tolerances, see para 7.

(c) For facings, see para. 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 10

(e) For spot facing, see para. 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

(h) For reducing welding neck flanges, see para. 6.8.

NOTES:

(1) This dimension is For large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip–on, socket–welding, and lapped flanges. This dimension is defined as the diameter at the

Table 11 Dimensions of Class 300 Flanges

Nominal Pipe Size NPS	17	18	19	20	21	22	23	24	25	26
	APPROXIMATE WEIGHT									
	Welding Neck		Slip–on And Threaded		Lap Joint		Blind		Socket welding	
	Kg	Lb	Kg	lb	Kg	Lb	Kg	Lb	Kg	Lb
½	0.78	1.70	0.64	1.40	0.71	1.30	0.64	1.40	0.66	1.40
¾	1.34	3.00	1.15	2.50	1.20	2.50	1.16	2.50	1.19	2.60
1	1.64	3.60	1.39	3.10	1.47	3.00	1.42	3.00	1.44	3.20
1¼	2.06	4.50	1.67	3.70	1.79	3.70	1.79	3.90	1.73	3.80
1½	3.06	6.70	2.53	5.60	2.62	5.60	2.68	5.90	2.62	5.80
2	3.54	7.50	2.89	6.20	3.03	6.20	3.20	6.80	2.99	6.50
2½	5.38	11.70	4.35	9.40	4.54	9.30	4.88	10.50	4.54	9.90
3	7.32	16.10	5.84	12.80	6.04	12.70	6.79	14.90	6.20	13.70
3½	9.00	18.00	7.72	17.00	7.72	17.00	9.53	21.00		
4	11.62	24.90	10.13	22.30	10.07	22.20	12.00	26.50		
5	15.55	33.30	12.58	27.70	12.52	27.60	15.96	35.20		
6	19.95	43.40	16.04	35.40	16.15	35.20	21.20	46.70		
8	30.90	67.20	24.50	54.00	24.69	53.70	34.60	76.30		
10	44.70	96.40	34.16	75.30	39.92	88.00	55.34	122.20		
12	64.41	142.00	51.26	113.00	58.70	129.40	78.90	174.00		
14	88.92	194.70	72.12	159.00	83.46	184.00	107.05	236.00		
16	112.94	249.00	90.40	199.30	106.14	234.00	139.25	307.00		
18	138.34	305.00	109.00	240.30	133.95	295.30	176.90	396.00		
20	167.37	369.00	136.00	300.00	157.65	347.60	223.17	492.00		
24	238.4	525.67	204.00	449.70	240.40	530.00	342.00	754.00		

intersection between the hub taper and the back face of the flange.

(2) These flanges may be supplied with a flat face. The flat face may be either the full tf dimension thickness plus 2 mm or the tf dimension thickness without the raised face height. See para. 6.3.2 for additional restrictions.

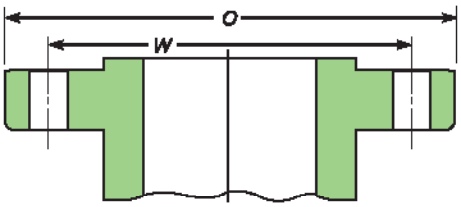
(3) The flange dimensions illustrated are for regularly furnished 2 mm raised face (except lapped); for requirements of other facings, see Fig. 7.

(4) For welding end bevel, see para. 6.7.

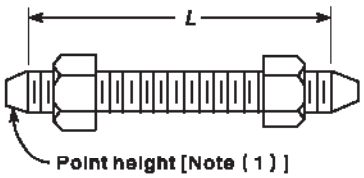
(5) For thread of threaded flanges, see para. 6.9.

(6) Dimensions in Column 13 correspond to the inside diameters of pipe as given in ASME B36.10M for Standard Wall pipe. Standard Wall dimensions are the same as Schedule 40 in sizes NPS 10 and smaller. Tolerances in para. 7.5.2 apply. These bore sizes are furnished unless otherwise specified by the purchaser.

CLASS 400 PIPE FLANGES



Flange



Stud Bolt With Nuts

Table 13 Templates for Drilling Class 400 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, In.	Number of Bolts	Diameter of Bolts, in.	7 mm Raised Face	Male and Female/Tongue and Groove	Ring Joint
1/2 3/4 1 1 1/4 1 1/2	Use Class 600 Dimensions In these sizes							
2 2 1/2 3 3 1/2								
4	255	200.0	1	8	7/8	140	135	140
5	280	235.0	1	8	7/8	145	135	145
6	320	269.9	1	12	7/8	150	145	150
8	380	330.0	1 1/8	12	1	170	165	170
10	445	387.4	1 1/4	16	1 1/8	190	185	190
12	520	450.8	1 3/8	16	1 1/4	205	195	205
14	585	514.4	1 3/8	20	1 1/4	210	205	210
16	650	571.5	1 1/2	20	1 3/8	220	215	220
18	710	628.6	1 1/2	24	1 3/8	230	220	230
20	775	685.8	1 5/8	24	1 1/2	240	235	250
24	915	812.8	1 7/8	24	1 3/4	265	260	280

GENERAL NOTES:

(a) Dimensions of Table 13 are in milimeters, except for diameter of bolts and bolt holes, which are in inch units. For dimensions in inch units refer to Annex F, Table F13.

(b) For other dimensions, see Table 14.

NOTES:

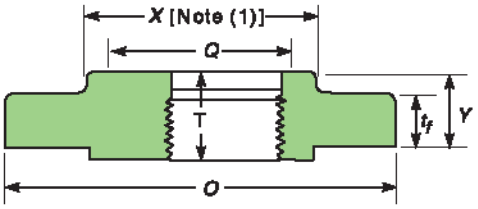
(1) Length of stud bolt does not include the height of the points. See para. 6.10.2.

(2) For flange bolt holes, see para. 6.5.

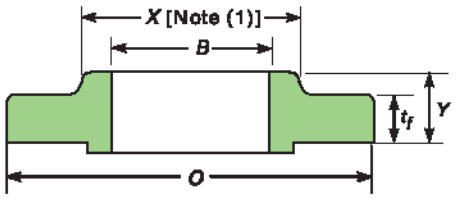
(3) For spot facing, see para. 6.6.

(4) Bolt lengths not shown in table may be determined in accordance with Annex D. See, para. 6.10.2.

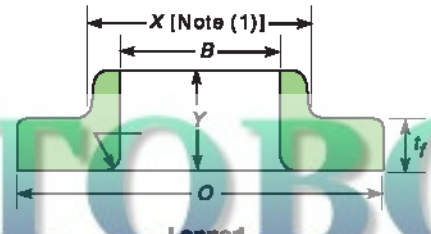
CLASS 400 PIPE FLANGES



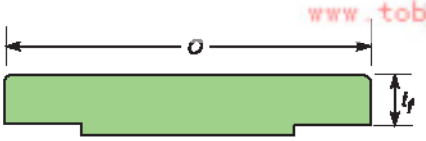
Threaded



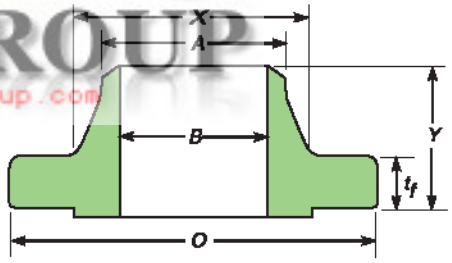
Slip–on Welding



Lapped



Blind



Welding Neck

Table 14 Dimensions of Class 400 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14
					Length Through Hub				Bore				
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(2)]	Threaded/ Slip–on/ Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Min., T [Notes(3)]	Slip–on/ Min., B	Lapped Min., B	Welding Neck/ B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter–bore Threaded Flange Min., Q
1/2 3/4 1 1 1/4 1 1/2 2 2 1/2 3 3 1/2	Use Class 600 Dimensions in these sizes [Notes(4)] .												
4	255	35.0	146	114.3	51	51	89	37	116.1	116.8	To be Specified by Purchaser	11	117.6
5	280	38.1	178	141.3	54	54	102	43	143.8	144.5		11	144.4
6	320	41.3	206	168.3	57	57	103	46	170.7	171.4		13	171.4
8	380	47.7	260	219.1	68	68	117	51	221.5	222.2		13	222.2
10	445	54.0	321	273.0	73	102	124	56	276.2	277.4		13	276.2
12	520	57.2	375	323.8	79	108	137	61	327.0	328.2		13	328.6
14	585	60.4	425	355.6	84	117	149	64	359.2	360.2		13	360.4
16	650	63.5	483	406.4	94	127	152	69	410.5	411.2		13	411.2
18	710	66.7	533	457.0	98	137	165	70	461.8	462.3		13	462.0
20	775	69.9	587	508.0	102	146	168	74	513.1	514.4		13	512.8
24	915	76.2	702	610.0	114	159	175	83	616.0	616.0		13	614.4

GENERAL NOTES:

(a) Dimensions of Table 14 are in milimeters,except for diameter of bolts and bolt holes,which are in inch units.For dimensions in inch units,refer to Annex F,Table F7.

(b) For tolerances, see para,7.

(c) For facings,see para. 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 13.

(e) For spot facing, see para 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufactures's option.

(h)For reducing welding neck flangs, see para 6.8.

NOTES:

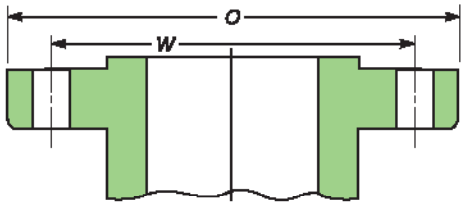
(1)This dimension is for large end of hub, which may be straight or tapered. Taper shall ont exceed 7 deg on threaded, slip–on ,socket–welding, and lapped flanges. This dimension is defined as the diameter at the Intersection between the hub taper and the back face of the flange.

(2)For welding end bevel, see para 6.7.

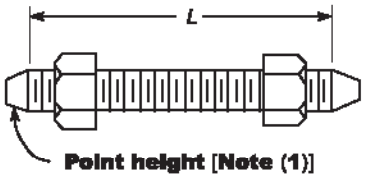
(3)For thread of threaded flanges, see para. 6.9.

(4)Socket welding flanges may be provided in NPS 1/2 through NPS 1/2 using Class 600 dimensions.

CLASS 600 PIPE FLANGES



Flange



Stud Bolt With Nuts

Table 15 Templates for Drilling Class 600 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]					Length of Bolts, L [Notes (1), (4)]	
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7 mm Raised Face	Male and Female / Tongue and Groove	Ring Joint
1/2	95	66.7	5/8	4	1/2	75	70	75
3/4	115	82.6	3/4	4	5/8	90	85	90
1	125	88.9	3/4	4	5/8	90	85	90
1 1/4	135	98.4	3/4	4	5/8	95	90	95
1 1/2	155	114.3	7/8	4	3/4	110	100	110
2	165	127.0	3/4	8	5/8	110	100	110
2 1/2	190	149.2	7/8	8	3/4	120	115	120
3	210	168.3	7/8	8	3/4	125	120	125
3 1/2	230	184.2	1	8	7/8	140	135	140
4	275	215.9	1	8	7/8	145	140	145
5	330	266.7	1 1/8	8	1	165	160	165
6	355	292.1	1 1/8	12	1	170	165	170
8	420	349.2	1 1/4	12	1 1/8	190	185	195
10	510	431.8	1 3/8	16	1 1/4	215	210	215
12	560	489.0	1 3/8	20	1 1/4	220	215	220
14	605	527.0	1 1/2	20	1 3/8	235	230	235
16	685	603.2	1 5/8	20	1 1/2	255	250	255
18	745	654.0	1 3/4	20	1 5/8	275	265	275
20	815	723.9	1 3/4	24	1 5/8	285	280	290
24	940	838.2	2	24	1 7/8	330	325	335

GENERAL NOTES:

(a) Dimensions of Table 15 are in millimeters, except for diameters of bolts and bolt holes, which are expressed in units. For dimensions in inch units, refer to Annex F, Table F15.

(b) For other dimensions, see Table 16.

NOTES:

(1) Length of stud bolt does not include the height of the points. See para 6.10.2.

(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para 6.6.

(4) Bolt lengths not shown in table may be in accordance with Annex D. See para. 6.10.2.

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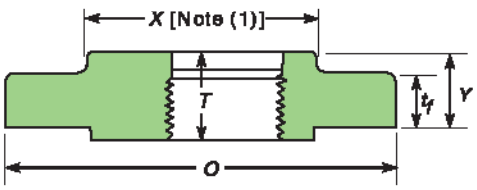
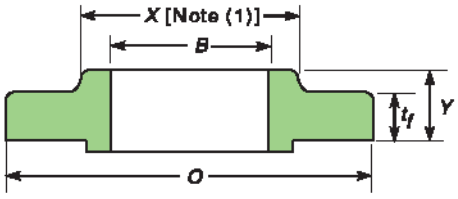
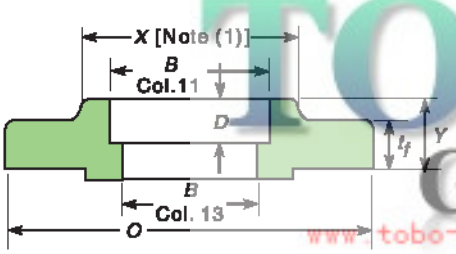


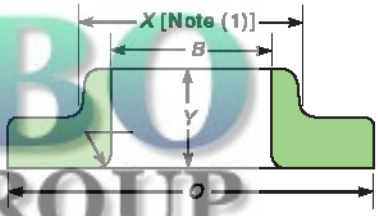
Threaded



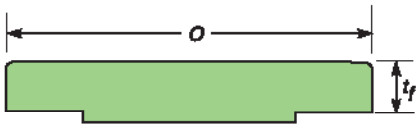
Slip-on Welding



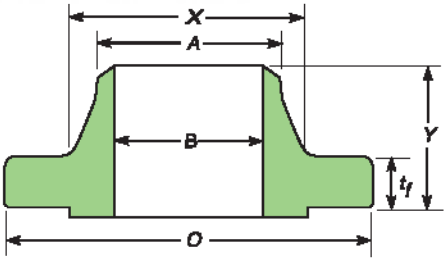
Socket Welding (NPS $^1/_2$ to 3 Only)



Lapped



Blind



Weding Neck

Table 16 Dimensions of Class 600 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(2)]	Threaded/ Slip–on/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Min., T [Notes(3)]	Slip–on/ Min., B	Lapped Min., B	Welding Neck, B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter bore Threaded Flange Min., Q	Depth of Socket, D
1/2	95	14.3	38	21.3	22	22	52	16	22.2	22.9	To be specified by Purchaser	3	23.6	10
3/4	115	15.9	48	26.7	25	25	57	16	27.7	28.2		3	29.0	11
1	125	17.5	54	33.4	27	27	62	18	34.5	34.9		3	35.8	13
1 1/4	135	20.7	64	42.2	29	29	67	21	43.2	43.7		5	44.4	14
1 1/2	155	22.3	70	48.3	32	32	70	23	49.5	50.0		6	50.6	16
2	165	25.4	84	60.3	37	37	73	29	61.9	62.5		8	63.5	17
2 1/2	190	28.6	100	73.0	41	41	79	32	74.6	75.4		8	76.2	19
3	210	31.8	117	88.9	46	46	83	35	90.7	91.4		10	92.2	21
3 1/2	230	35.0	133	101.6	49	49	86	40	103.4	104.1		10	104.9	...
4	275	38.1	152	114.3	54	54	102	42	116.1	116.8		11	117.6	...
5	330	44.5	189	141.3	60	60	114	48	143.8	144.4		11	144.4	...
6	355	47.7	222	168.3	67	67	117	51	170.7	171.4		13	171.4	...
8	420	55.6	273	219.1	76	76	133	58	221.5	222.2		13	222.2	...
10	510	63.5	343	273.0	86	111	152	66	276.2	277.4		13	276.2	...
12	560	66.7	400	323.8	92	117	156	70	327.0	328.2		13	328.6	...
14	605	69.9	432	355.6	94	127	165	74	359.2	360.2		13	360.4	...
16	685	76.2	495	406.4	106	140	178	78	410.5	411.2		13	411.2	...
18	745	82.6	546	457.0	117	152	184	80	461.8	462.3		13	462.0	...
20	815	88.9	610	508.0	127	165	190	83	513.1	514.4		13	512.8	...
24	940	101.6	718	610.0	140	184	203	93	616.0	616.0		13	614.4	...

GENERAL NOTES:

(a) Dimensions of Table 16 are in millimeters, except for diameter of bolts and bolt holes, which are in inch Units. For dimensions in inch units,refer to Annex F, Table F16.

(b) For tolerance, see para. 7.

(c) For facings, see para. 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 15.

(e) For spot facing, see para. 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

(h) For reducing welding neck flanges, see para. 6.8.

NOTES:

(1)This dimension is for large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded.slip–on , socket–welding, and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and the back face of the flange.

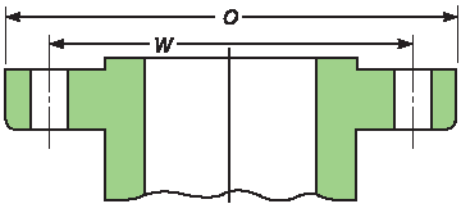
(2) For welding end bevel, see para. 6.7.

(3) For thread of threaded flanges, see para.6.9.

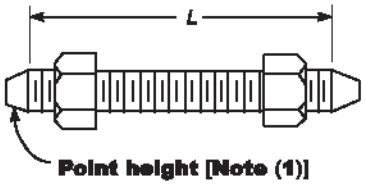
Table 16 Dimensions of Class 600 Flanges

Nominal Pipe Size NPS	16	17	18	19	20	21	22	23	24	25
	APPROXIMATE WEIGHT									
	Welding Neck		Slip–on And Threaded		Lap Joint		Blind		Socket welding	
	Kg	Lb	Kg	lb	Kg	Lb	Kg	Lb	Kg	Lb
½	0.90	2.00	0.91	2.00	0.80	1.80	0.91	2.00	0.91	2.00
¾	1.59	3.50	1.40	3.00	1.36	3.00	1.40	3.00	1.36	3.00
1	1.90	4.00	1.70	3.70	1.59	3.50	1.81	4.00	1.81	4.00
1¼	2.49	5.50	2.27	5.00	2.04	4.50	2.40	5.30	2.60	5.70
1½	3.63	8.00	3.10	6.80	2.95	6.50	3.40	7.50	3.18	7.00
2	4.54	10.00	3.63	8.00	3.63	8.00	4.40	9.70	3.90	8.60
2½	6.40	14.44	5.44	12.00	5.03	11.00	6.80	15.00	5.90	13.00
3	8.50	19.10	7.26	16.00	6.70	14.74	8.90	19.60	7.40	16.30
3½	11.80	26.00	9.53	21.00	9.08	20.00	13.17	29.00		
4	17.27	38.52	14.97	33.00	14.06	31.00	18.60	41.00		
5	30.87	68.00	28.50	62.80	27.50	60.60	30.84	68.00		
6	36.77	81.00	36.32	80.00	35.33	78.00	38.00	83.80		
8	52.57	116.97	44.00	97.00	50.80	112.00	62.20	137.00		
10	86.26	191.52	76.20	168.00	74.00	163.00	102.00	224.90		
12	102.95	229.14	97.52	215.00	108.86	240.00	132.00	291.00		
14	122.16	271.88	102.00	224.80	111.00	244.70	158.00	348.30		
16	177.06	390.42	149.82	330.20	165.71	365.30	224.73	495.40		
18	215.65	475.40	180.10	396.00	194.00	427.70	285.00	628.30		
20	267.86	590.50	231.54	510.50	258.78	570.50	365.00	804.70		
24	372.00	818.40	330.00	725.50	362.00	798.00	533.45	1176.0		

CLASS 900 PIPE FLANGES



Flange



Stud Bolt With Nuts

Table 17 Templates for Drilling Class 900 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]				Length of Bolts, L [Notes (1), (4)]		
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, in.	7 mm Raised Face	Male and Female/Tongue and Groove	Ring Joint
½ ¾ 1	Use Class 1500 Dimensions in these sizes							
1¼ 1½ 2 2½								
3	240	190.5	1	8	⅞	145	140	145
4	290	235.0	1¼	8	1⅛	170	165	170
5	350	279.4	1⅜	8	1¼	190	185	190
6	360	317.5	1¼	12	1⅛	190	185	195
8	470	393.7	1½	12	1⅜	220	215	220
10	545	469.9	1½	16	1⅜	235	230	235
12	610	533.4	1⅝	20	1⅜	255	250	255
14	640	558.8	1⅝	20	1½	275	265	280
16	705	616.0	1¾	20	1⅝	285	280	290
18	785	685.8	2	20	1⅞	325	320	335
20	855	749.3	2⅛	20	2	350	345	360
24	1040	901.7	2¼	20	2½	440	430	455

GENERAL NOTES:

(a) Dimensions of Table 17 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F, Table F17.

(b) For other dimensions, see Tables 18 and 19.

NOTES:

(1) Length of stud bolt does not include the height of the points. See para 6.10.2.

(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para. 6.6.

(4) Bolt lengths not shown in Table may be determined in accordance with Annex D. See para. 6.10.2.

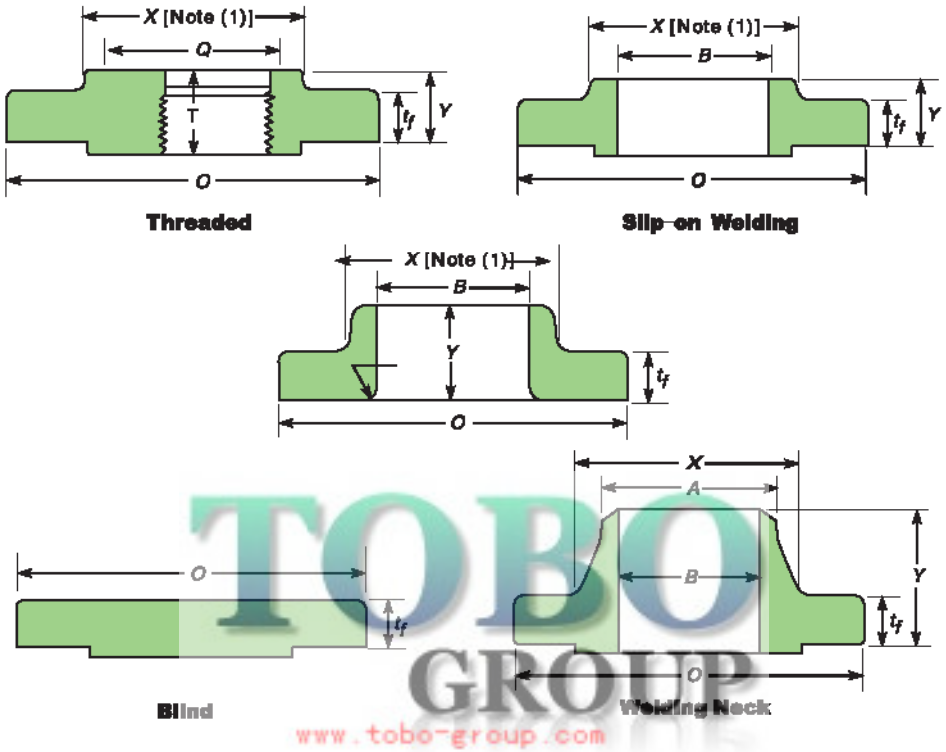


Table 18 Dimensions of Class 900 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14
					Length Through Hub				Bore				
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(2)]	Threaded/ Slip-on/ Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Flange Min., T [Notes(3)]	Slip-on Min., B	Lapped Min., B	Welding Neck B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter-bore Threaded Flange Min., Q
½ ¾ 1 1¼ 1½ 2 2½	Use Class 1500 Dimensions in these sizes [Notes(4)] .												
3	240	38.1	127	88.9	54	54	102	42	90.7	91.4	To be Specified by Purchaser	10	92.2
4	290	44.5	159	114.3	70	70	114	48	116.1	116.8		11	117.6
5	350	50.8	190	141.3	79	79	127	54	143.8	144.4		11	144.4
6	380	55.6	235	168.3	86	86	140	58	170.7	171.4		13	171.4
8	470	63.5	298	219.1	102	114	162	64	221.5	222.2		13	222.2
10	545	69.9	368	273.0	108	127	184	72	276.2	277.4		13	276.2
12	610	79.4	419	323.8	117	143	200	77	327.0	328.2		13	328.6
14	640	85.8	451	355.6	130	156	213	83	359.2	360.2		13	360.4
16	705	88.9	508	406.4	133	165	216	86	410.5	411.2		13	411.2
18	785	101.6	565	457.0	152	190	229	89	461.8	462.3		13	462.0
20	855	108.0	622	508.0	159	210	248	93	513.1	514.4		13	512.8
24	1040	139.7	749	610.0	203	267	292	102	616.0	616.0		13	614.4

CLASS 900 PIPE FLANGES

Table 18 Dimensions of Class 900 Flanges

Nominal Pipe Size NPS	15	16	17	18	19	20	21	22
	APPROXIMATE WEIGHT							
	Welding Neck		Slip–on And Threaded		Lap Joint		Blind	
	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
½	2.10	4.60	1.81	4.00	1.81	4.00	1.90	4.20
¾	2.72	6.00	2.40	5.30	2.30	5.00	2.70	6.00
1	3.86	8.50	3.41	7.50	3.40	7.50	4.09	9.00
1¼	4.54	10.00	4.10	9.00	4.09	9.00	4.54	10.00
1½	5.97	13.45	5.45	12.00	5.40	11.90	5.90	13.00
2	10.92	24.52	9.98	22.00	9.67	21.32	11.34	25.00
2½	16.33	36.00	15.80	34.80	13.36	29.46	16.00	35.30
3	15.00	33.00	11.80	26.00	11.34	25.00	13.17	29.00
4	23.13	51.00	23.20	51.00	22.60	48.50	24.50	54.00
5	38.50	84.90	37.65	83.00	36.74	81.00	39.46	87.00
6	49.89	110.00	48.30	106.50	47.50	104.70	51.50	113.50
8	80.63	179.29	75.00	166.30	86.00	189.60	89.00	106.20
10	119.05	264.60	111.13	245.00	125.64	277.00	131.54	290.00
12	157.97	346.00	146.00	321.80	167.00	368.00	187.00	412.30
14	181.60	400.40	172.36	380.00	180.07	397.00	224.07	494.00
16	224.73	495.50	192.95	425.40	211.11	465.40	272.40	600.50
18	308.72	680.60	272.40	600.50	295.10	650.60	385.90	850.80
20	376.82	830.70	331.42	730.60	367.74	810.70	488.00	1076.00
24	685.00	1510.00	632.00	1393.30	700.00	1543.00	905.00	1995.00

GENERAL NOTES:

(a) Dimensions of Table 18 are in millimeters. For dimensions in inch units, refer to Annex F, Tabel F18.

(b) For tolerances, see para. 7.

(c) For facings, see para, 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 17.

(e) For spot facing, see para 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer’ s option.

(h) For reducing welding neck flanges, see para.6.8.

NOTES:

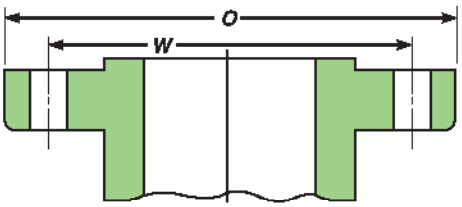
(1) This dimension is for large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip–on , socket–welding, and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and the back face of the flange.

(2) For welding end bevel, see para 6.7.

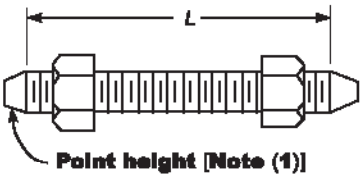
(3) For thread of threaded flanges, see para.6.9.

(4) Socket welding flanges may be provided in NPS ½ through NPS 2½ , using Class 1500 dimensions.

CLASS 1500 PIPE FLANGES



Flange



Stud Bolt With Nuts

Table 19 Templates for Drilling Class 1500 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]					Length of Bolts, L [Notes (1), (4)]	
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, In.	Number of Bolts	Diameter of Bolts, in.	7 mm Raised Face	Male and Female / Tongue and Groove	Ring Joint
1/2	120	82.6	7/8	4	3/4	110	100	110
3/4	130	88.9	7/8	4	3/4	115	110	115
1	150	101.6	1	4	7/8	125	120	125
1 1/4	160	111.1	1	4	7/8	125	120	125
1 1/2	180	123.8	1 1/8	4	1	140	135	140
2	215	165.1	1	8	7/8	145	140	145
2 1/2	245	190.5	1 1/8	8	1	160	150	160
3	265	203.2	1 1/4	8	1 1/8	180	170	180
4	310	241.3	1 3/8	8	1 1/4	195	190	195
5	375	292.1	1 5/8	8	1 1/2	250	240	250
6	395	317.5	1 1/2	12	1 3/8	260	255	265
8	485	393.7	1 3/4	12	1 5/8	290	285	325
10	585	482.6	2	12	1 7/8	335	330	345
12	675	571.5	2 1/4	16	2	375	370	385
14	750	635.0	2 3/8	16	2 1/4	405	400	425
16	825	704.8	2 3/4	16	2 1/2	445	440	470
18	915	774.7	2 7/8	16	2 3/4	495	490	525
20	985	831.8	3 1/8	16	3	540	535	565
24	1170	990.6	3 3/8	16	3 1/2	615	610	650

GENERAL NOTES:

(a) Dimensions of Table 19 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F, Table F19.

(b) For other dimensions, see Table 20.

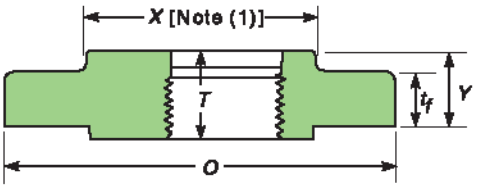
NOTES:

(1) Length of stud bolt does not include the height of the points. See para. 6.10.2.

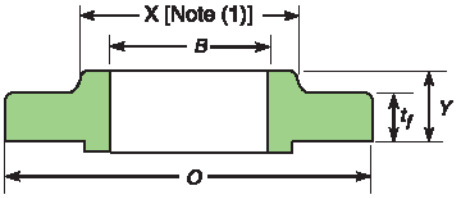
(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para. 6.6.

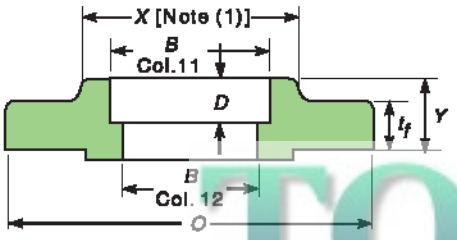
(4) Bolt lengths not shown in table may be determined in accordance with Annex D. See para. 6.10.2.



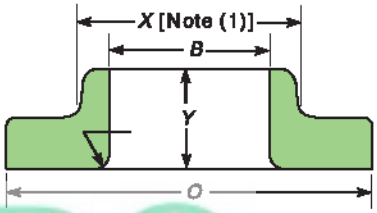
Threaded(NPS ½ to 2$^1/_2$ Only)



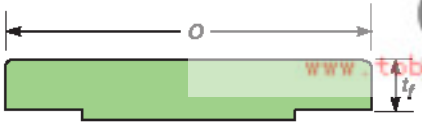
Slip-on Welding(NPS ½ to 2$^1/_2$ Only)



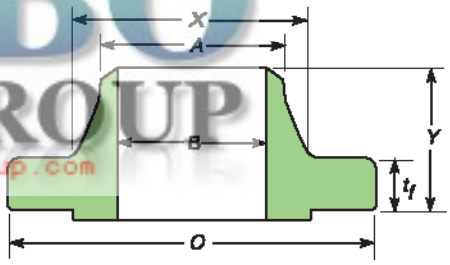
Socket Welding(NPS ½ to 2$^1/_2$ Only)



Lapped



Blind



Welding Neck

Table 20 Dimensions of Class 1500 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					Length Through Hub				Bore					
Nominal Pipe Size, NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(2)]	Thread-ed/ Slip-on/ Socket Welding, Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Flange Min., T [Notes(3)]	Slip-on/ Socket Welding Min., B	Lapped Min., B	Welding Neck/ Socket Welding, B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter-bore Threaded Flange Min., Q	Depth of Socket, D
1/2	120	22.3	38	21.3	32	32	60	23	22.2	22.9	To be specified by Purchaser	3	23.6	10
3/4	130	25.4	44	26.7	35	35	70	26	27.7	28.2		3	29.0	11
1	150	28.6	52	33.4	41	41	73	29	34.5	34.9		3	35.8	13
1 1/4	160	28.6	64	42.2	41	41	73	31	43.2	43.7		5	44.4	14
1 1/2	180	31.8	70	48.3	44	44	83	32	49.5	50.0		6	50.6	16
2	215	38.1	105	60.3	57	57	102	39	61.9	62.5		8	63.5	17
2 1/2	245	41.3	124	73.0	64	64	105	48	74.6	75.4		8	76.2	19
3	265	47.7	133	88.9	...	73	117	...	...	91.4		10	...	...
4	310	54.0	162	114.3	...	90	124	...	...	116.8		11	...	...
5	375	73.1	197	141.3	...	105	156	...	...	144.4		11	...	...
6	395	82.6	229	168.3	...	119	171	...	...	171.4		13	...	...
8	485	92.1	292	219.1	...	143	213	...	...	222.2		13	...	...
10	585	108.0	368	273.0	...	178	254	...	...	277.4		13	...	...
12	675	123.9	451	323.8	...	219	283	...	...	328.2		13	...	...
14	750	133.4	495	355.6	...	241	298	...	...	360.2		13	...	...
16	825	146.1	552	406.4	...	260	311	...	...	411.2		13	...	...
18	915	162.0	597	457.0	...	276	327	...	...	462.3		13	...	...
20	985	177.8	641	508.0	...	292	356	...	...	514.4		13	...	...
24	1170	203.2	762	610.0	...	330	406	...	...	616.0		13	...	...

GENERAL NOTES:

(a) Dimensions of Table 20 are in millimeters. For dimensions n inch units, refer to Annex F, Table F20.

(b) For tolerances, see para. 7.

(c) For facings, see para.6.4.

(d) For flange bolt holes, see para.6.5 and Table 19.

(e) For spot facing, see para 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

(h) For reducing welding neck flanges, see para 6.8.

NOTES:

(1) This dimension is for large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip–on, socket–welding, and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and the back face of the flange.

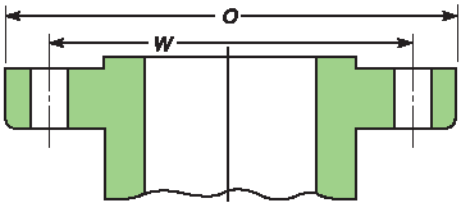
(2) For welding end bevel, see para.6.7.

(3) For thread of threaded flanges, see para.6.9.

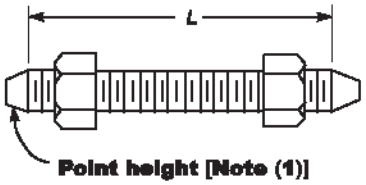
Table 20 Dimensions of Class 1500 Flanges

Nominal Pipe Size NPS	16	17	18	19	20	21	22	23	24	25
	APPROXIMATE WEIGHT									
	Welding Neck		Slip-on And Threaded		Lap Joint		Blind		Socket welding	
	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
½	2.10	4.60	1.80	4.00	1.80	4.00	1.90	4.18	1.81	4.00
¾	2.72	6.00	2.33	5.00	2.28	5.00	2.72	6.00	2.81	6.20
1	3.86	8.50	3.41	7.50	3.40	7.50	4.08	9.00	3.61	8.00
1¼	4.54	10.00	4.10	9.00	4.09	10.80	4.30	9.50	4.99	11.00
1½	5.97	13.00	5.45	12.00	5.40	11.90	5.90	13.00	6.76	14.90
2	10.92	24.00	10.50	23.00	9.67	21.32	11.30	25.00	10.89	24.00
2½	16.34	36.00	15.80	34.80	13.36	29.46	16.00	35.30	16.34	36.00
3	21.79	48.00	21.77	48.00	17.65	38.00	21.79	48.00		
4	31.30	70.25	31.00	68.40	29.00	63.90	33.11	73.00		
5	59.02	139.35	58.80	129.60	54.00	119.00	60.00	132.30		
6	74.91	167.90	74.00	163.00	62.00	136.70	75.00	165.30		
8	123.83	306.34	117.73	258.00	129.73	286.00	136.98	302.00		
10	205.93	524.92	197.49	435.40	220.19	485.40	229.87	507.00		
12	306.00	769.74	264.41	582.00	286.02	630.60	316.78	698.50		
14	416.00	950.75			404.06	890.80	421.00	928.00		
16	567.50	1264.67			522.10	1151.00	559.90	1234.58		
18	736.00	1628.14			669.65	1476.30	761.00	1677.70		
20	929.00	2048.00			805.85	1776.60	967.00	2131.80		
24	1504.00	3408.36			1285.55	2834.00	1568.00	3456.80		

CLASS 2500 PIPE FLANGES



Flange



Stud Bolt With Nuts

Table 21 Templates for Drilling Class 2500 Flanges

1	2	3	4	5	6	7	8	9
		Drilling [Notes (2), (3)]					Length of Bolts, L [Notes (1), (4)]	
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Diameter of Bolt Circle, W	Diameter of Bolt Holes, in.	Number of Bolts	Diameter of Bolts, In.	7 mm Raised Face	Male and Female / Tongue and Groove	Ring Joint
1/2	135	88.9	7/8	4	3/4	120	115	120
3/4	140	95.2	7/8	4	3/4	125	120	125
1	160	108.0	1	4	7/8	140	135	140
1 1/4	185	130.2	1 1/8	4	1	150	145	150
1 1/2	205	146.0	1 1/4	4	1 1/8	170	165	170
2	235	171.4	1 1/8	8	1	180	170	180
2 1/2	265	196.8	1 1/4	8	1 1/8	195	190	205
3	305	228.6	1 3/8	8	1 1/4	220	215	230
4	355	273.0	1 5/8	8	1 1/2	255	250	260
5	420	323.8	1 7/8	8	1 3/4	300	290	310
6	485	368.3	2 1/8	8	2	345	335	355
8	550	438.2	2 1/8	12	2	380	375	395
10	675	539.8	2 5/8	12	2 1/2	490	485	510
12	760	619.1	2 7/8	12	2 3/4	540	535	560

GENERAL NOTES:

(a) Dimensions of Table 21 are in millimeters, except for diameters of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F, Table F21.

(b) For other dimensions, see Table 22.

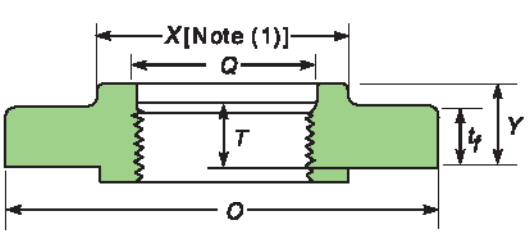
NOTES:

(1) Length of stud bolt does not include the height of the points. See para. 6.10.2.

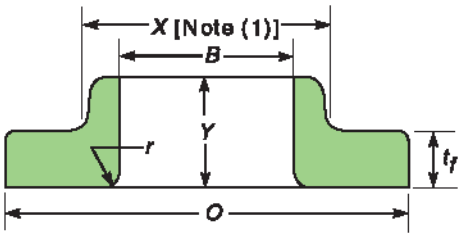
(2) For flange bolt holes, see para. 6.5.

(3) For spot facing, see para. 6.6.

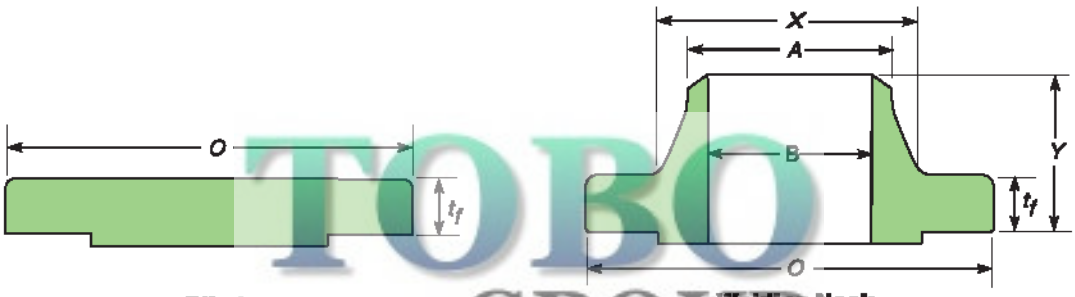
(4) Bolt lengths not shown in table may be determined with Annex D. See para. 6.10.2.



Threaded(NPS ½ to 2½, Only)



Lapped



Blind

Welding Neck

Table 22 Dimensions of Class 2500 Flanges

1	2	3	4	5	6	7	8	9	10	11	12	13
					Length Through Hub				Bore			
Nominal Pipe Size NPS	Outside Diameter of Flange, O	Thickness of Flange, Min., t_f	Diameter of Hub, X	Hub Diameter Beginning of Chamfer Welding Neck, A [Notes(2)]	Threaded Y	Lapped, Y	Welding Neck, Y	Thread Length Threaded Flange Min., T [Notes(3)]	Lapped Min., B	Welding Neck B	Corner Radius of Bore of Lapped Flange and Pipe, r	Counter bore Threaded Flange Min., Q
½	135	30.2	43	21.3	40	40	73	29	22.9		3	23.6
¾	140	31.8	51	26.7	43	43	79	32	28.2		3	29.0
1	160	35.0	57	33.4	48	48	89	35	34.9		3	35.8
1¼	185	38.1	73	42.2	52	52	95	39	43.7		5	44.4
1½	205	44.5	79	48.3	60	60	111	45	50.0		6	50.6
2	235	50.9	95	60.3	70	70	127	51	62.5	To be Specified by Purchaser	8	63.5
2½	265	57.2	114	73.0	79	79	143	58	75.4			76.2
3	305	66.7	133	88.9	···	92	168	···	91.4		10	···
4	355	76.2	165	114.3	···	108	190	···	116.8		11	···
5	420	92.1	203	141.3	···	130	229	···	144.4		11	···
6	485	108.0	235	168.3	···	152	273	···	171.4		13	···
8	550	127.0	305	219.1	···	178	318	···	222.2		13	···
10	675	165.1	375	273.0	···	229	419	···	277.4		13	···
12	760	184.2	441	323.8	···	254	464	···	328.2		13	···

Table 22 Dimensions of Class 2500 Flanges

Nominal Pipe Size NPS	14	15	16	17	18	19	20	21
	APPROXIMATE WEIGHT							
	Welding Neck		Slip–on And Threaded		Lap Joint		Blind	
	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb
½	3.18	7.00	3.18	7.00	3.00	6.60	3.18	7.00
¾	4.08	9.00	4.08	9.00	3.63	8.00	4.54	10.00
1	5.45	12.00	5.44	12.00	4.99	11.00	5.44	12.00
1¼	9.07	20.00	8.16	18.00	7.26	16.00	8.16	18.00
1½	11.35	25.00	11.00	24.30	9.99	22.00	10.44	23.00
2	19.07	42.00	17.25	38.00	16.80	37.00	17.71	39.00
2½	23.61	52.00	24.97	55.00	24.06	53.00	25.42	56.00
3	42.68	94.00	37.68	83.00	36.32	80.00	39.04	86.00
4	64.00	141.00	58.00	127.90	54.48	120.00	60.38	133.00
5	110.68	244.00	95.25	210.00	92.53	204.00	101.15	223.00
6	176.46	378.00	146.51	323.00	143.01	315.30	156.63	345.30
8	261.27	576.00	219.99	485.00	213.38	470.40	240.62	530.50
10	484.43	1068.00	419.57	925.00	408.60	900.80	465.36	1026.00
12	692.35	1526.00	590.20	1301.00	572.95	1263.00	664.06	1464.00

Notes to Table 22

GENERAL NOTES:

(a) Dimensions of Table 22 are in milimeters, except for diameter of bolts and bolt holes, which are in inch units. For dimensions in inch units, refer to Annex F, Table F22.

(b) For tolerances, see para. 7.

(c) For facings, see para. 6.4.

(d) For flange bolt holes, see para. 6.5 and Table 21.

(e) For spot facing, see para 6.6.

(f) For reducing threaded and slip–on flanges, see Table 6.

(g) Blind flanges may be made with or without hubs at the manufacturer' s option.

(h) For reducing welding neck flanges, see para 6.8.

NOTES:

(1) This dimension is for large end of hub, which may be straight or tapered. Taper shall not exceed 7 deg on threaded, slip–on, socket–welding, and lapped flanges. This dimension is defined as the diameter at the intersection between the hub taper and the back face of the flange.

(2) For welding end bevel, see para. 6.7.

(3) For thread of threaded flanges, see para. 6.9.

NPS 26 Through NPS 60 Metric/Inch Standard

Gaskets

1、Ring–Joint Gaskets.Ring–joint gasket dimensions should conform to ASME B16.20.

2、Nonmetallic Gaskets.Nonmetallic gasket dimensions should conform to ASME B16.21.

3、Spiral Wound and Double–Jacketed Gaskets. Spiral wound and double–jacketed corrugated metal gaskets should conform to ASME B16.20.

Hub Dimensions

Any modification to hub dimensions shown in Tables 30 through 40 (Tables I – 28 through I –38) shall be by agreement between the purchaser and manufacturer and shall be confirmed by calculations in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1,Appendix 2. Flanges so modified shall be marked with the material designation of the pipe to which they are to be welded in addition to the marking per para.4.2.2.

TOLERANCES

1、Facings

Required tolerances for various flange facings are as follows:

(a)outside diameter of raised face, ± 2 mm (± 0.08 in.)

(b)2mm (0.06 in.) raised face, ± 0.5 mm (± 0.02 in.)

(c)7mm (0.25 in.) raised face, ± 2 mm (± 0.08 in.)

(d)ring–joint groove tolerances are shown in Table 28 (TableI–26)

2、Flange Thickness

Required tolerances for flange thickness, t_f, are as follows:

Flange Thickness,t_f	Tolerances
$t_f \leq$25mm(1.0 in.)	+3.0 mm,–0.0 mm (+0.12 in., –0.00 in.)
25 mm(1.0 in.) < $t_f \leq$50 mm(2.0 in.)	+5.0 mm,–0.0 mm (+0.19 in., –0.00 in.)
50 mm(2.0 In.) < $t_f \leq$75mm(3.0 In.)	+8.0 mm,–0.0 mm (+0.31 In., –0.00 In.)
t_f > 75 mm(3.0 In.)	+10.0 mm,–0.0 mm (+0.38 In., –0.00 In.)

The plus tolerance is applicable to bolting bearing surfaces whether as–forged, as–cast,spot–faced,or back–faced.See para.6.3.

3、Welding End Flange Ends and Hubs

(1)、Outside Diameter.The required tolerance for the nominal outside diameter, dimension A, of Fig.1(Fig. I – 1), of welding ends of welding neck flanges is: +5.0 mm,–2.0 mm (+0.19 in.,–0.06 in.).

(2)、Inside Diameter. Required tolerances for the nominal inside diameter, dimension B,of Figs.1 and 2(Figs. I – 1 and I – 2), of welding ends of welding neck flanges are as follows:

(a) for Fig.1:+ 3.0 mm,–2.0 mm(+0.12 In.,–0.06 In.)

(b) for Fig.2:+ 0.0 mm,–2.0 mm(+0.00 In.–0.06 In.)

(3)、Backing Ring Contact Surface. The required tolerance for the bore of the backing ring contact surface of welding neck flanges, dimension C of Fig. 2 (Fig. I – 2) is: + 0.25 mm,–0.0 mm(+0.01 in.,–0.00 in.).

(4)、Hub Thickness. Despite the tolerances speci–fied for dimensions A and B, the thickness of the hub at the welding end shall not be less than 87.5% of the nominal thickness of the pipe having an under tolerance of 12.5% for the pipe wall thickness to which the flange is to be attached or the minimum wall thickness as specified by the purchaser.

4、Hub Length for Welding Neck Flanges

The required tolerance for the overall length of hubs for welding neck flanges is:+3.0 mm,–5.0 mm(+0.12 in.,–0.19 in.).

5、Drilling and Facing

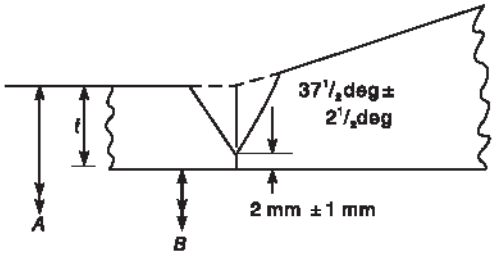
1、Bolt Circle Diameter. The required tolerance for all bolt circle diameters is: ± 1.5 mm(± 0.06 In.).

2、Bolt Hole to Bolt Hole. The required tolerance for the center–to–center of adjacent bolt holes is: ± 0.8 mm(± 0.03 in.).

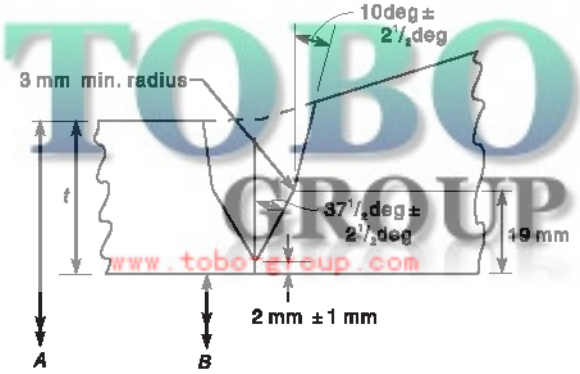
3、Bolt Circle Concentricity. The required toler–ance for concentricity between the flange bolt circle diameter and machined facing diameter is:1.5 mm(0.06 in.).

PRESSURE TESTING

Flange Test Flanges are not required to be pressure tested.



(a)Bevel for Wall Thickness t
From 5 mm to 22 mm Inclusive



(b)Bevel for Wall Thickness t
Grdater than 22 mm

A=nominal ourside diameter of pipe
B=nominal Inside diameter of pipe
C=nominal wall thickness of pipe

Fig. 1 Welding Ends
(Welding Neck Flanges, No Baching Rings)

GENERAL NOTES:

(a) See paras.6.4 and 7.4 for details and tolerances.

(b) see Fig.2 for additional details of welding ends.

(c) When the thickness of the hub at the bevel is greater than that of the pipe to which the flange is joined, the additional thickness may be provided on either the inside, or outside, or partially on each side, but the total additional thickness shall not exceed 1/2 times the nominal wall thickness of the mating pipe(see Fig.3).

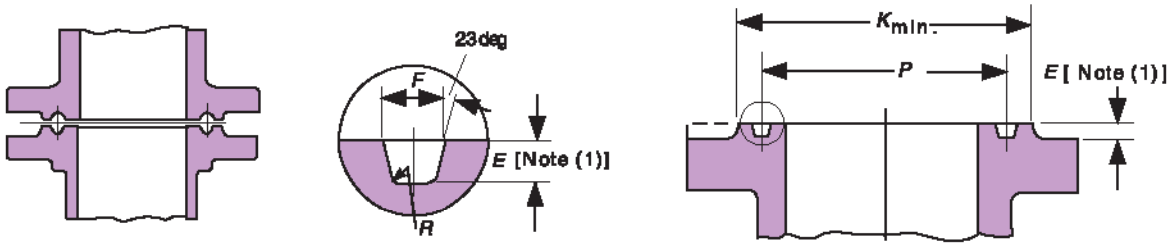


Table 28 Dimensions of Ring-Joint Facings

Nominal Pipe Size for Class				Groove Number	Groove Dimensions				Diameter of Raised Portion,K
300	400	600	900		Pitch Diameter, P	Depth, E	Width, F	Radius at Bottom, R	
26	26	26	...	R93	749.30	12.70	19.84	1.5	810
28	28	28	...	R94	800.10	12.70	19.84	1.5	861
30	30	30	...	R95	857.25	12.70	19.84	1.5	917
32	32	32	...	R96	914.40	14.27	23.01	1.5	984
34	34	34	...	R97	965.20	14.27	23.01	1.5	1035
36	36	36	...	R98	1022.35	14.27	23.01	1.5	1092
...	...	...	26	R100	749.30	17.48	30.18	2.3	832
...	...	...	28	R101	800.10	17.48	33.32	2.3	889
...	...	...	30	R102	857.25	17.48	33.32	2.3	946
...	...	...	32	R103	914.40	17.48	33.32	2.3	1003
...	...	...	34	R104	965.20	20.62	36.53	2.3	1067
...	...	...	36	R105	1022.35	20.62	36.53	2.3	1124

Tolerances

E(depth)	+0.4,–0.0
F(width)	± 0.2
P(pitch diameter)	± 0.13
R(radius at bottom)	+0.8,–0.0 for R≤2 ± 0.8 for R>2
23deg angle	± ½deg

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b)Ring–joint gaskets are not contemplated for NPS 38 and larger flanges.

(c)For facing requirements for flanges, see para. 6.1.

(d)See para. 4.2 for marking requirements.

NOTE:

(1) Height of raised portion is equal to the depth of groove dimension E, but is not subjected to the tolerances for E. Full face contour may be used.

Table 29 Permissible Imperfections in Flange Facing Finish

Nominal Pipe Size	Maximum Radial Projection of Imperfections That Are No Deeper Than Bottom of Serration, mm	Maximum Depth and Radial Projection of Imperfections That Are Deeper Than Bottom of Serration, mm
26—36	12.5	6.0
38—48	14.0	7.0
50—60	16.0	8.0

GENERAL NOTE: See para.6.1.5.

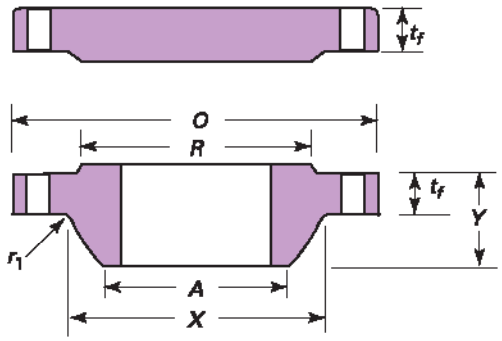


Table 30 Dimensions of Class 150 Series A Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	870	66.7	66.7	119	676	660.4	749	806.4	24	1⅜	1¼	10
28	925	69.9	69.9	124	727	711.2	800	863.6	28	1⅜	1¼	11
30	985	73.1	73.1	135	781	762.0	857	914.4	28	1⅜	1¼	11
32	1 060	79.4	79.4	143	832	812.8	914	977.9	28	1⅝	1½	11
34	1 110	81.0	81.0	148	883	863.6	965	1 028.7	32	1⅝	1½	13
36	1 170	88.9	88.9	156	933	914.4	1 022	1 085.8	32	1⅝	1½	13
38	1 240	85.8	85.8	156	991	965.2	1 073	1 149.4	32	1⅝	1½	13
40	1 290	88.9	88.9	162	1 041	1 016.0	1 124	1 200.2	36	1⅝	1½	13
42	1 345	95.3	95.3	170	1 092	1 066.8	1 194	1 257.3	36	1⅝	1½	13
44	1 405	100.1	100.1	176	1 143	1 117.6	1 245	1 314.4	40	1⅝	1½	13
46	1 455	101.6	101.6	184	1 197	1 168.4	1 295	1 365.2	40	1⅝	1½	13
48	1 510	106.4	106.4	191	1 248	1 219.2	1 359	1 422.4	44	1⅝	1½	13
50	1 570	109.6	109.6	202	1 302	1 270.0	1 410	1 479.6	44	1⅞	1¾	13
52	1 625	114.3	114.3	208	1 353	1 320.8	1 461	1 536.7	44	1⅞	1¾	13
54	1 685	119.1	119.1	214	1 403	1 371.6	1 511	1 593.8	44	1⅞	1¾	13
56	1 745	122.3	122.3	227	1 457	1 422.4	1 575	1 651.0	48	1⅞	1¾	13
58	1 805	127.0	127.0	233	1 508	1 473.2	1 626	1 708.2	48	1⅞	1¾	13
60	1 855	130.2	130.2	238	1 559	1 524.0	1 676	1 759.0	52	1⅞	1¾	13

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section 7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

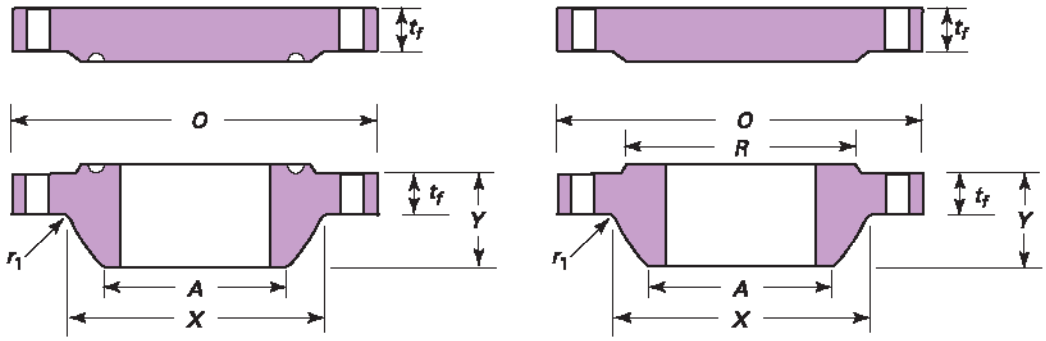


Table 31 Dimensions of Class 300 Series A Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	970	77.8	82.6	183	721	660.4	749	876.3	28	1¾	1⅝	10
28	1 035	84.2	88.9	195	775	711.2	800	939.8	28	1¾	1⅝	11
30	1 090	90.5	93.7	208	827	762.0	857	997.0	28	1⅞	1¾	11
32	1 150	96.9	98.5	221	881	812.8	914	1 054.1	28	2	1⅞	11
34	1 205	100.1	103.2	230	937	863.6	965	1 104.9	28	2	1⅞	13
36	1 270	103.2	109.6	240	991	914.4	1 022	1 168.4	32	2⅛	2	13
38	1 170	106.4	106.4	179	994	965.2	1 029	1 092.2	32	1⅝	1½	13
40	1 240	112.8	112.8	192	1 048	1 016.0	1 086	1 155.7	32	1¾	1⅝	13
42	1 290	117.5	117.5	198	1 099	1 066.8	1 137	1 206.5	32	1¾	1⅝	13
44	1 355	122.3	122.3	205	1 149	1 117.6	1 194	1 263.6	32	1⅞	1¾	13
46	1 415	127.0	127.0	214	1 203	1 168.4	1 245	1 320.8	28	2	1⅞	13
48	1 465	131.8	131.8	222	1 254	1 219.2	1 302	1 371.6	32	2	1⅞	13
50	1 530	138.2	138.2	230	1 305	1 270.0	1 359	1 428.8	32	2⅛	2	13
52	1 580	142.9	142.9	237	1 356	1 320.8	1 410	1 479.6	32	2⅛	2	13
54	1 660	150.9	150.9	251	1 410	1 371.6	1 467	1 549.4	28	2⅜	2¼	13
56	1 710	152.4	152.4	259	1 464	1 422.4	1 518	1 600.2	28	2⅜	2¼	13
58	1 760	157.2	157.2	265	1 514	1 473.2	1 575	1 651.0	32	2⅜	2¼	13
60	1 810	162.0	162.0	271	1 565	1 524.0	1 626	1 701.8	32	2⅜	2¼	13

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

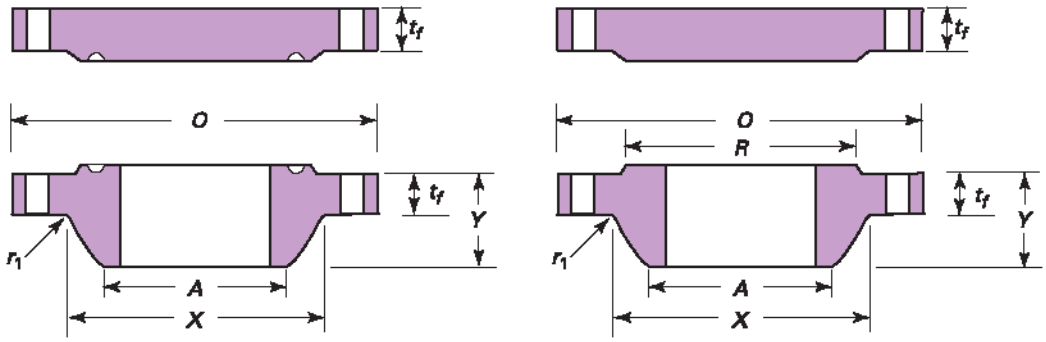


Table 32 Dimensions of Class 400 Series A Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	970	88.9	98.5	194	727	660.4	749	876.3	28	$1\frac{7}{8}$	$1\frac{3}{4}$	11
28	1 035	95.3	104.8	206	783	711.2	800	939.8	28	2	$1\frac{7}{8}$	13
30	1 090	101.6	111.2	219	837	762.0	857	997.0	28	$2\frac{1}{8}$	2	13
32	1 150	108.0	115.9	232	889	812.8	914	1 054.1	28	$2\frac{1}{8}$	2	13
34	1 205	111.2	122.3	241	945	863.6	965	1 104.9	28	$2\frac{1}{8}$	2	14
36	1 270	114.3	128.6	251	1 000	914.4	1 022	1 168.4	32	$2\frac{1}{8}$	2	14
38	1 205	123.9	123.9	206	1 003	965.2	1 035	1 117.6	32	$1\frac{7}{8}$	$1\frac{3}{4}$	14
40	1 270	130.2	130.2	216	1 054	1 016.0	1 092	1 174.8	32	2	$1\frac{7}{8}$	14
42	1 320	133.4	133.4	224	1 108	1 066.8	1 143	1 225.6	32	2	$1\frac{7}{8}$	14
44	1 385	139.7	139.7	233	1 159	1 117.6	1 200	1 282.7	32	$2\frac{1}{8}$	2	14
46	1 440	146.1	146.1	244	1 213	1 168.4	1 257	1 339.8	36	$2\frac{1}{8}$	2	14
48	1 510	152.4	152.4	257	1 267	1 219.2	1 308	1 403.4	28	$2\frac{3}{8}$	$2\frac{1}{4}$	14
50	1 570	157.2	158.8	268	1 321	1 270.0	1 362	1 460.5	32	$2\frac{3}{8}$	$2\frac{1}{4}$	14
52	1 620	162.0	163.6	276	1 372	1 320.8	1 413	1 511.3	32	$2\frac{3}{8}$	$2\frac{1}{4}$	14
54	1 700	169.9	171.5	289	1 426	1 371.6	1 470	1 581.2	28	$2\frac{5}{8}$	$2\frac{1}{2}$	14
56	1 755	174.7	176.3	298	1 480	1 422.4	1 527	1 632.0	32	$2\frac{5}{8}$	$2\frac{1}{2}$	14
58	1 805	177.8	181.0	306	1 530	1 473.2	1 578	1 682.8	32	$2\frac{5}{8}$	$2\frac{1}{2}$	14
60	1 885	185.8	189.0	319	1 584	1 524.0	1 635	1 752.6	32	$2\frac{7}{8}$	$2\frac{3}{4}$	14

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section 7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

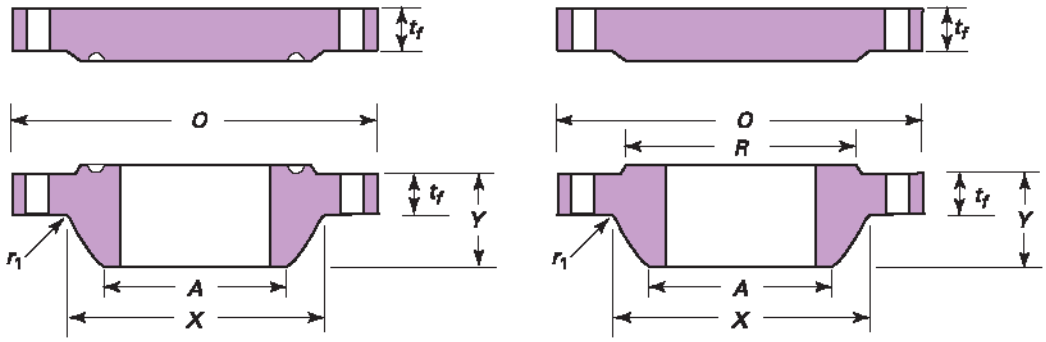
(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.



Ring Joint Raised Face

Table 33 Dimensions of Class 600 Series A Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	1 015	108.0	125.5	222	748	660.4	749	914.4	28	2	$1\frac{7}{8}$	13
28	1 075	111.2	131.8	235	803	711.2	800	965.2	28	$2\frac{1}{8}$	2	13
30	1 130	114.3	139.7	248	862	762.0	857	1 022.4	28	$2\frac{1}{8}$	2	13
32	1 195	117.5	147.7	260	918	812.8	914	1 079.5	28	$2\frac{3}{8}$	$2\frac{1}{4}$	13
34	1 245	120.7	154.0	270	973	863.6	965	1 130.3	28	$2\frac{3}{8}$	$2\frac{1}{4}$	14
36	1 315	123.9	162.0	283	1 032	914.4	1 022	1 193.8	28	$2\frac{5}{8}$	$2\frac{1}{2}$	14
38	1 270	152.4	155.0	254	1 022	965.2	1 054	1 162.0	28	$2\frac{3}{8}$	$2\frac{1}{4}$	14
40	1 320	158.8	162.0	264	1 073	1 016.0	1 111	1 212.8	32	$2\frac{3}{8}$	$2\frac{1}{4}$	14
42	1 405	168.3	171.5	279	1 127	1 066.8	1 168	1 282.7	28	$2\frac{5}{8}$	$2\frac{1}{2}$	14
44	1 455	173.1	177.8	289	1 181	1 117.6	1 226	1 333.5	32	$2\frac{5}{8}$	$2\frac{1}{2}$	14
46	1 510	179.4	185.8	300	1 235	1 168.4	1 276	1 390.6	32	$2\frac{5}{8}$	$2\frac{1}{2}$	14
48	1 595	189.0	195.3	316	1 289	1 219.2	1 334	1 460.5	32	$2\frac{7}{8}$	$2\frac{3}{4}$	14
50	1 670	196.9	203.2	329	1 343	1 270.0	1 384	1 524.0	28	$3\frac{1}{8}$	3	14
52	1 720	203.2	209.6	337	1 394	1 320.8	1 435	1 574.8	32	$3\frac{1}{8}$	3	14
54	1 780	209.6	217.5	349	1 448	1 371.6	1 492	1 632.0	32	$3\frac{1}{8}$	3	14
56	1 855	217.5	225.5	362	1 502	1 422.4	1 543	1 695.4	32	$3\frac{3}{8}$	$3\frac{1}{4}$	16
58	1 905	222.3	231.8	370	1 553	1 473.2	1 600	1 746.2	32	$3\frac{3}{8}$	$3\frac{1}{4}$	16
60	1 995	233.4	242.9	389	1 610	1 524.0	1 657	1 822.4	28	$3\frac{5}{8}$	$3\frac{1}{2}$	17

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section 7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub, which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

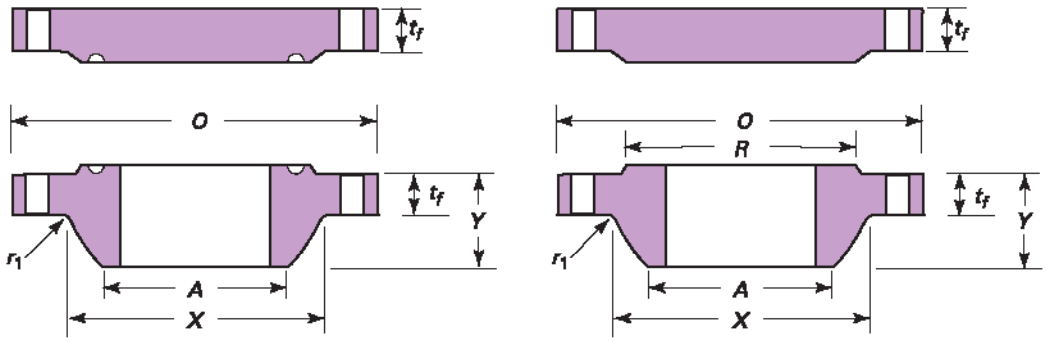


Table 34 Dimensions of Class 900 Series A Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	1 085	139.7	160.4	286	775	660.4	749	952.5	20	2⅞	2¾	11
28	1 170	142.9	171.5	298	832	711.2	800	1 022.4	20	3⅛	3	13
30	1 230	149.3	182.6	311	889	762.0	857	1 085.8	20	3⅛	3	13
32	1 315	158.8	193.7	330	946	812.8	914	1 155.7	20	3⅜	3¼	13
34	1 395	165.1	204.8	349	1 006	863.6	965	1 225.6	20	3⅝	3½	14
36	1 460	171.5	214.4	362	1 064	914.4	1 022	1 289.0	20	3⅝	3½	14
38	1 460	190.5	215.9	352	1 073	965.2	1 099	1 289.0	20	3⅝	3½	19
40	1 510	196.9	223.9	364	1 127	1 016.0	1 162	1 339.8	24	3⅝	3½	21
42	1 560	206.4	231.8	371	1 176	1 066.8	1 213	1 390.6	24	3⅝	3½	21
44	1 650	214.4	242.9	391	1 235	1 117.6	1 270	1 463.7	24	3⅞	3¾	22
46	1 735	225.5	255.6	411	1 292	1 168.4	1 334	1 536.7	24	4⅛	4	22
48	1 785	233.4	263.6	419	1 343	1 219.2	1 384	1 587.5	24	4⅛	4	24
50	...	...	...	...	...	...	...	...	...	...	...	...
52	...	...	...	...	...	...	...	...	...	...	...	...
54	...	...	...	...	...	...	...	...	...	...	...	...
56	...	...	...	...	...	...	...	...	...	...	...	...
58	...	...	...	...	...	...	...	...	...	...	...	...
60	...	...	...	...	...	...	...	...	...	...	...	...

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section 7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

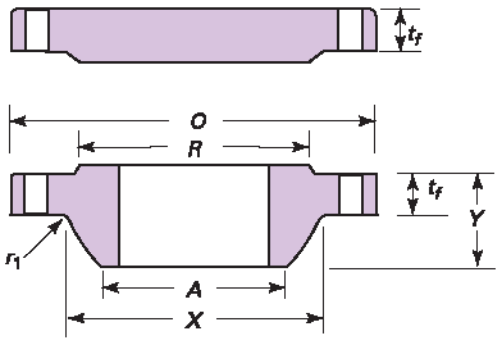


Table 35 Dimensions of Class 75 Series B Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	760	31.9	31.9	57	676	661.9	705	723.9	36	¾	⅝	8
28	815	31.9	31.9	60	727	712.7	756	774.7	40	¾	⅝	8
30	865	31.9	31.9	64	778	763.5	806	825.5	44	¾	⅝	8
32	915	33.5	35.0	68	829	814.3	857	876.3	48	¾	⅝	8
34	965	33.5	36.6	72	879	865.1	908	927.1	52	¾	⅝	8
36	1 035	35.0	40.9	84	935	915.9	965	992.2	40	⅞	¾	10
38	1 085	36.6	43.0	87	986	966.7	1 016	1 043.0	40	⅞	¾	10
40	1 135	36.6	43.0	91	1 037	1 017.5	1 067	1 093.8	44	⅞	¾	10
42	1 185	38.2	46.3	94	1 087	1 068.3	1 118	1 144.6	48	⅞	¾	10
44	1 250	41.4	47.7	103	1 140	1 119.1	1 175	1 203.3	36	1	⅞	10
46	1 300	43.0	49.3	106	1 191	1 169.9	1 226	1 254.1	40	1	⅞	10
48	1 355	44.6	52.5	110	1 241	1 220.7	1 276	1 304.9	44	1	⅞	10
50	1 405	46.2	54.1	114	1 294	1 271.5	1 327	1 355.7	44	1	⅞	10
52	1 455	46.2	55.7	119	1 345	1 322.3	1 378	1 409.7	48	1	⅞	10
54	1 510	47.8	58.9	124	1 397	1 373.1	1 429	1 460.5	48	1	⅞	10
56	1 575	49.3	60.4	133	1 451	1 423.9	1 486	1 520.8	40	1⅛	1	11
58	1 625	50.9	62.0	137	1 502	1 474.7	1 537	1 571.6	44	1⅛	1	11
60	1 675	54.1	65.2	143	1 553	1 525.5	1 588	1 622.4	44	1⅛	1	11

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section 7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

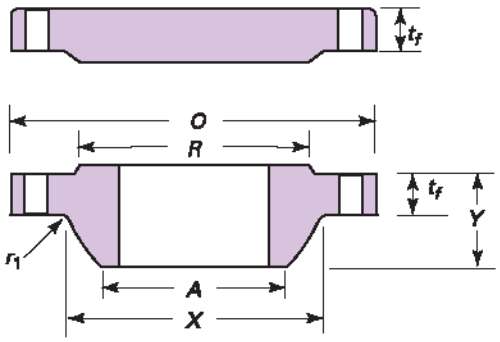


Table 36 Dimensions of Class 150 Series B Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	785	39.8	43.0	87	684	661.9	711	744.5	36	7/8	3/4	10
28	835	43.0	46.2	94	735	712.7	762	795.3	40	7/8	3/4	10
30	885	43.0	49.3	98	787	763.5	813	846.1	44	7/8	3/4	10
32	940	44.6	52.5	106	840	814.3	864	900.1	48	7/8	3/4	10
34	1 005	47.7	55.7	109	892	865.1	921	957.3	40	1	7/8	10
36	1 055	50.9	57.3	116	945	915.9	972	1 009.6	44	1	7/8	10
38	1 125	52.5	62.0	122	997	968.2	1 022	1 070.0	40	1 1/8	1	10
40	1 175	54.1	65.2	127	1 049	1 019.0	1 080	1 120.8	44	1 1/8	1	10
42	1 225	57.3	66.8	132	1 102	1 069.8	1 130	1 171.6	48	1 1/8	1	11
44	1 275	58.9	70.0	135	1 153	1 120.6	1 181	1 222.4	52	1 1/8	1	11
46	1 340	60.4	73.1	143	1 205	1 171.4	1 235	1 284.3	40	1 1/4	1 1/8	11
48	1 390	63.6	76.3	148	1 257	1 222.2	1 289	1 335.1	44	1 1/4	1 1/8	11
50	1 445	66.8	79.5	152	1 308	1 273.0	1 340	1 385.9	48	1 1/4	1 1/8	11
52	1 495	68.4	82.7	156	1 360	1 323.8	1 391	1 436.7	52	1 1/4	1 1/8	11
54	1 550	70.0	85.8	160	1 413	1 374.6	1 441	1 492.2	56	1 1/4	1 1/8	11
56	1 600	71.6	89.0	165	1 465	1 425.4	1 492	1 543.0	60	1 1/4	1 1/8	14
58	1 675	73.1	91.9	173	1 516	1 476.2	1 543	1 611.3	48	1 3/8	1 1/4	14
60	1 725	74.7	95.4	178	1 570	1 527.0	1 600	1 662.1	52	1 3/8	1 1/4	14

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section7.

(c) For facings, see para.6.1.

(d) For flange bolt holes,see para.6.2.

(e) For spot facing,see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimension is for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

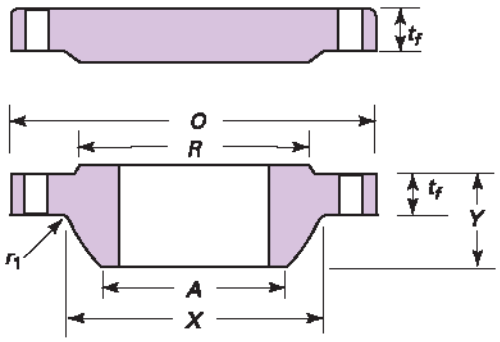


Table 37 Dimensions of Class 300 Series B Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, In.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, In.		
26	865	87.4	87.4	168	702	665.2	737	803.3	32	1⅜	1¼	14
28	920	87.4	87.4	148	756	716.0	787	857.2	36	1⅜	1¼	14
30	990	92.1	92.1	156	813	768.4	845	920.8	36	1½	1⅜	14
32	1 055	101.6	101.6	167	864	819.2	902	977.9	32	1⅝	1½	16
34	1 110	101.6	101.6	171	918	870.0	953	1 031.9	36	1⅝	1½	16
36	1 170	101.6	101.6	179	965	920.8	1 010	1 089.0	32	1¾	1⅝	16
38	1 220	109.6	109.6	165	1 016	971.6	1 060	1 139.8	36	1¾	1⅝	16
40	1 275	114.3	114.3	197	1 067	1 022.4	1 114	1 190.6	40	1¾	1⅝	16
42	1 335	117.5	117.5	203	1 118	1 074.7	1 168	1 244.6	36	1⅞	1¾	16
44	1 385	125.5	125.5	213	1 173	1 125.5	1 219	1 295.4	40	1⅞	1¾	16
46	1 460	127.0	128.6	221	1 229	1 176.3	1 270	1 365.2	36	2	1⅞	16
48	1 510	127.0	133.4	222	1 278	1 227.1	1 327	1 416.0	40	2	1⅞	16
50	1 560	136.6	138.2	233	1 330	1 277.9	1 378	1 466.8	44	2	1⅞	16
52	1 615	141.3	142.6	241	1 383	1 328.7	1 429	1 517.6	48	2	1⅞	16
54	1 675	135.0	147.7	238	1 435	1 379.5	1 480	1 578.0	48	2	1⅞	16
56	1 765	152.4	155.4	267	1 494	1 430.3	1 537	1 651.0	36	2⅜	2¼	17
58	1 825	152.4	160.4	273	1 548	1 481.1	1 594	1 712.9	40	2⅜	2¼	17
60	1 880	149.3	165.1	270	1 599	1 557.3	1 651	1 763.7	40	2⅜	2¼	17

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) For tolerances, see section7.

(c) For facings, see para.6.1.

(d) For flange bolt holes, see para.6.2.

(e) For spot facing, see para.6.3.

(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.

(g) Blind flanges may be made with or without hubs at the manufacturer's option.

NOTES:

(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).

(2) This dimensionis for the large end of hub,which may be straight or tapered.

(3) For welding and bevel, see para.6.4.

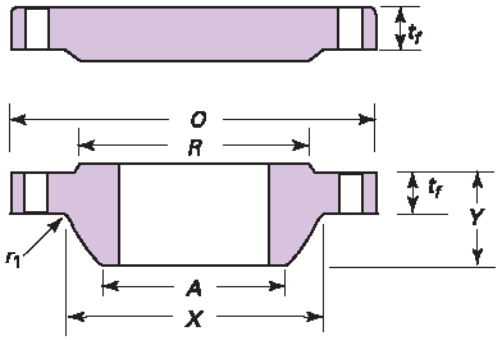


Table 38 Dimensions of Class 400 Series B Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	850	88.9	88.9	149	689	660.4	711	781.0	28	1½	1⅜	11
28	915	95.3	95.3	159	740	711.2	762	838.2	24	1⅝	1½	13
30	970	101.6	101.6	170	794	762.0	819	895.4	28	1⅝	1½	13
32	1 035	108.0	108.0	179	845	812.8	873	952.5	28	1¾	1⅝	13
34	1 085	111.2	111.2	187	899	863.6	927	1 003.3	32	1¾	1⅝	14
36	1 155	119.1	119.1	200	952	914.4	981	1 066.8	28	1⅞	1¾	14
38	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...	...	...	...	...
52	...	...	...	...	...	...	...	...	...	...	...	...
54	...	...	...	...	...	...	...	...	...	...	...	...
56	...	...	...	...	...	...	...	...	...	...	...	...
58	...	...	...	...	...	...	...	...	...	...	...	...
60	...	...	...	...	...	...	...	...	...	...	...	...

GENERAL NOTES:
(a) Dimensions are in millimeters.
(b) For tolerances, see section7.
(c) For facings, see para.6.1.
(d) For flange bolt holes, see para.6.2.
(e) For spot facing, see para.6.3.
(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.
(g) Blind flanges may be made with or without hubs at the manufacturer's option.
(h) Dimensions for Classes 400,600, and 900 NPS 38 and larger for Series B flanges are the same as for the Series A flanges.

NOTES:
(1) The minimum flange thickness does not include the raised face thickness(see para.6.1.1).
(2) This dimension is for the large end of hub,which may be straight or tapered.
(3) For welding and bevel, see para.6.4.

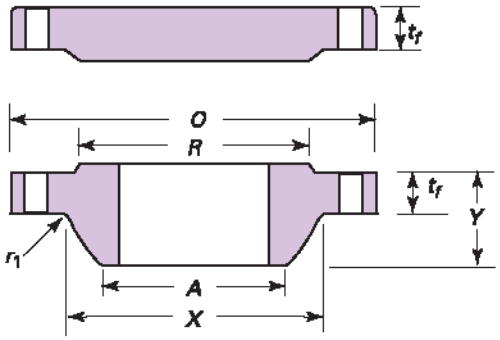


Table 39 Dimensions of Class 600 Series B Flanges

Nominal Pipe Size	O.D. of Flange, *O*	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, *Y*	Diam. of Hub, *X* [Note (2)]	Hub Diam. Top, *A* [Note (3)]	Raised Face Diam., *R*	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	890	111.2	111.3	181	698	660.4	727	806.4	28	1¾	1⅝	13
28	950	115.9	115.9	190	752	711.2	784	863.6	28	1⅞	1¾	13
30	1 020	125.5	127.0	205	806	762.0	841	927.1	28	2	1⅞	13
32	1 085	130.2	134.9	216	860	812.8	895	984.2	28	2⅛	2	13
34	1 160	141.3	144.2	233	914	863.6	953	1 054.1	24	2⅜	2¼	14
36	1 215	146.1	150.9	243	968	914.4	1 010	1 104.9	28	2⅜	2¼	14
38	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...	...	...	...	...
52	...	...	...	...	...	...	...	...	...	...	...	...
54	...	...	...	...	...	...	...	...	...	...	...	...
56	...	...	...	...	...	...	...	...	...	...	...	...
58	...	...	...	...	...	...	...	...	...	...	...	...
60	...	...	...	...	...	...	...	...	...	...	...	...

GENERAL NOTES:
(a) Dimensions are in millimeters.
(b) For tolerances, see section 7.
(c) For facings, see para.6.1.
(d) For flange bolt holes,see para.6.2.
(e) For spot facing, see para.6.3.
(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.
(g) Blind flanges may be made with or without hubs at the manufacturer's option.
(h) Dimensions for Classes 400,600, and 900 NPS 38 and larger for Series B flanges are the same as for the Series A flanges.

NOTES:
(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).
(2) This dimension is for the large end of hub,which may be straight or tapered.
(3) For welding and bevel, see para.6.4.

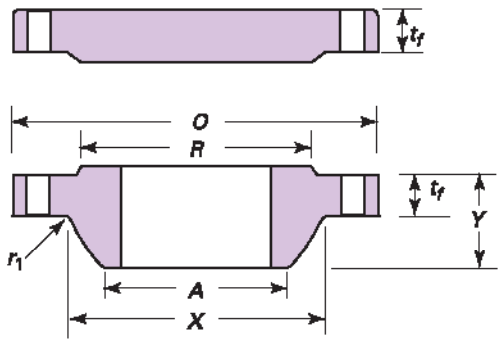


Table 40 Dimensions of Class 900 Series B Flanges

Nominal Pipe Size	O.D. of Flange, O	Minimum Thickness of Flange, t_f [Note (1)]		Length Through Hub, Y	Diam. of Hub, X [Note (2)]	Hub Diam. Top, A [Note (3)]	Raised Face Diam., R	Drilling			Diam. of Bolt, in.	Minimum Fillet Radius, r_1
		WNF	Blind					Diam. of Bolt Circle	No. of Bolt Holes	Diam. of Bolt Hole, in.		
26	1 020	135.0	154.0	259	743	660.4	762	901.7	20	$2\frac{5}{8}$	$2\frac{1}{2}$	11
28	1 105	147.7	166.7	276	797	711.2	819	971.6	20	$2\frac{7}{8}$	$2\frac{3}{4}$	13
30	1 180	155.6	176.1	289	851	762.0	876	1 035.0	20	$3\frac{1}{8}$	3	13
32	1 240	160.4	186.0	303	908	812.8	927	1 092.2	20	$3\frac{1}{8}$	3	13
34	1 315	171.5	195.0	319	962	863.6	991	1 155.7	20	$3\frac{3}{8}$	$3\frac{1}{4}$	14
36	1 345	173.1	201.7	325	1 016	914.4	1 029	1 200.2	24	$3\frac{1}{8}$	3	14
38	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...	...	...
50	...	...	...	...	...	...	...	...	...	...	...	...
52	...	...	...	...	...	...	...	...	...	...	...	...
54	...	...	...	...	...	...	...	...	...	...	...	...
56	...	...	...	...	...	...	...	...	...	...	...	...
58	...	...	...	...	...	...	...	...	...	...	...	...
60	...	...	...	...	...	...	...	...	...	...	...	...

GENERAL NOTES:
(a) Dimensions are in millimeters.
(b) For tolerances, see section 7.
(c) For facings, see para.6.1.
(d) For flange bolt holes,see para.6.2.
(e) For sport facing, see para.6.3.
(f) The bore is to be specified by the purchaser. Tolerances in para.7.3.2 apply.
(g) Blind flanges may be made with or without hubs at the manufacturer's option.
(h) Dimensions for Classes 400, 600, and 900 NPS 38 and larger for Series B flanges are the same as for the Series A flanges.

NOTES:
(1) The minimum flange thickness does not include the raised face thickness (see para.6.1.1).
(2) This dimension is for the large end of hub,which may be straight or tapered.
(3) For welding and bevel, see para.6.4.


TOBO
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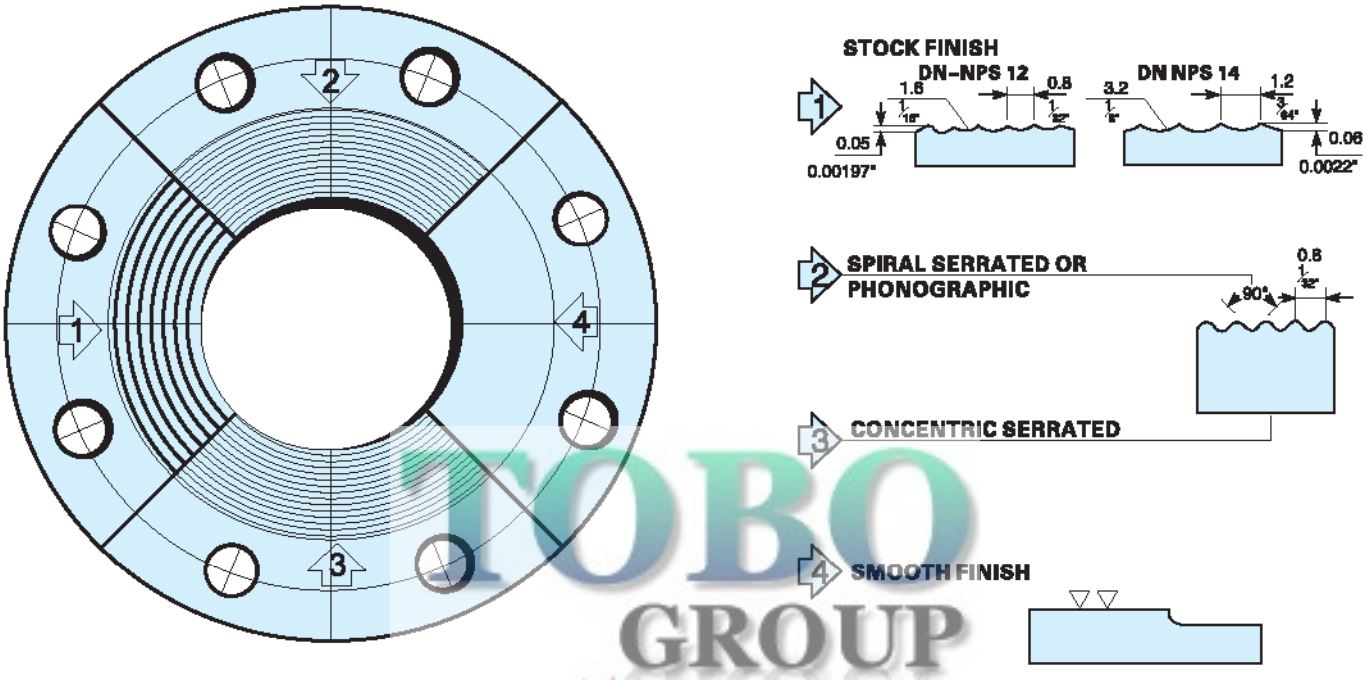
STANDARD FINISH

STANDARD FINISHES FOR FACE OF FLANGE(ANSL B 16.5)



STOCK FINISH:The most widely used of any gasket finish, because practically. is suitable for all ordinary service conditions.This is a continuous spiral groove. Flanges sizes 12"(304.8mm) and smller, are produced with a 1/16" round–nosed tool at a feed of 1/32" per revolution. For sizes 14"(355.6mm) and larger, the finish is made with 1/8" round–nosed tool at a feed of 3/64" per revolution.

SPIRAL SERRATED OR PHONOGRAPHIC:This finish is produced by using a 90° round–nosed tool.

CONCENTRLC SERRATED:This finish a produced by using a 90° round–nosed tool.

SMOOTH FINISH:The cutting tool employed shall have an approximate 0.06" radius. The resultant surface finish shall have a 125 μ inch to 250 μ inch (ANSL B 16.5 para 6.4;4.1)

1、RAISED FACE, AND LARGE MALE AND FEMALE

Either a serrated–concentric or serratded–spiral finish having from 34 to 64 grooves per inch is used.
The cutting tool employed has an approximate 0.06 in radius. The resultant surface finish shall have a 125 μ inch(3.2 μ m) to 500 μ inch (12.5 μ m)approximate roughness.

2、TONGUE AND GROOVE, AND SMALL MAKE AND FEMALE

The gasket contact surface does not exceed 125 μ in.(3.2 μ m) roughness.

3、RING JOINT

The inside wall surface of gasket groove does not exceed 63 μ in (1.6 μ m)roughness.

4、BLIND

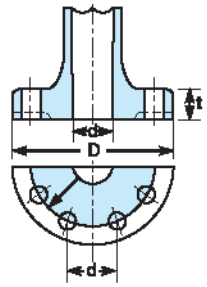
Blind flanges need not be faced in the center if ,when this center part is raised, its diameter is at least 1 in.Smaller than the inside diameter of fittings of the corresponding pressure class. When the center part is depressed, its diameter is not greater than the inside diameter of the corresponding pressure class fittings. Machining of the depressed center is not repuired.

ANSI

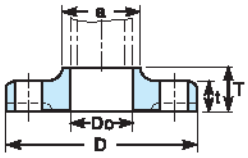
TOLERANCE

ANSI B16.5 FORGED FLANGES

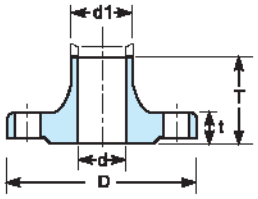
SOLID FLANGE



SLIP-ON FLANGE

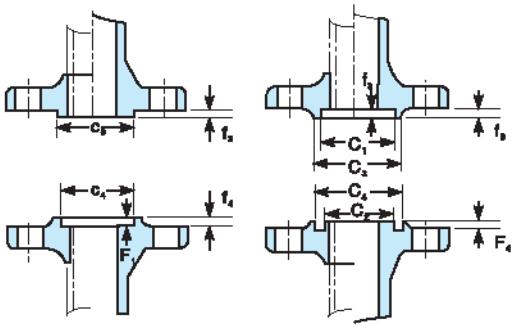


WELDING NECK FLANGE



TYPE OF GASKET SURFACE

MALE & FEMALE TYPE TONGUE & GROOVE TYPE



THREAD,SOCKET –WELDING. SLIP–ON,LAP JOINT AND BLIND

Outside Diameter	When O.D.Is 24" or less	± 1/16" (1.6mm)
	When O.D.Is Over 24"	± 1/8" (3.2mm)
Inside Diameter	Threaded	Within Limits on boring gauge
	Socket–Welding, Silp–on and Lap joint	10" & Smaller +1/32" (0.8mm), –0" 12" & Larger +1/16" (1.6mm), –0"
Outside Diameter of Hub	5" and Smaller	+3/32"(2.4mm) –1/32"(0.8mm)
	6" and Larger	+5/32"(4.0mm) –1/32"(0.8mm)
Diameter of Contact Face	1/16" Raised Face	± 1/32"(0.8mm)
	1/4" Raised Face Tongue & Groove Male, Female	± 1/64'(0.4mm)
Diameter of Counterbore	Same as for Inside Diameter	
Drilling	Bolt Circle	± 1/16" (1.6mm)
	Bolt Hole Spacing	± 1/32"(0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" Smaller 1/32"(0.8mm) Max 3" & Larger 1/16"(1.6mm) Max
	Eccentricity of Bolt Circle with Respect to Bore	1/32"(0.8mm) Max
	Eccentricity of Facing with Respect to Bore	1/32"(0.8mm) Max
Thickness	18" and Smaller	+1/8" (3.2mm). –0"
	20" and Larger	+3/16"(4.8mm). –0"
Length Thru Hub	10" and Smaller	± 1/16" (1.6mm)
	12" and Larger	± 1/8" (3.2mm)

WELDING NECK

Outside Diameter	When O.D.Is 24" or less	± 1/16" (1.6mm)
	When O.D.Is Over 24"	± 1/8" (3.2mm)
Inside Diameter	10" and Smaller	± 1/32"(0.8mm)
	12" thur 18"	± 1/16" (1.6mm)
	20" and Larger	+1/8" (3.2mm) –1/16" (1.6mm)
Diameter of Contact Face	1/16" Raised Face	± 1/32"(0.8mm)
	1/4" Raised Face Tongue & Groove Maid, Female	± 1/64'(0.4mm)
Diameter of Hub of Base	When Hub Base Is 24" or Smaller	± 1/16" (1.6mm)
	When Hub Base Is Over 24"	+1/8" (3.2mm)
Diameter of Hub at Point of Welding	5" and Smaller	+3/32"(2.4mm) –1/32"(0.8mm)
	6" and Larger	+5/32"(4.0mm) –1/32"(0.8mm)
Drilling	Bolt Circle	± 1/16" (1.6mm)
	Bolt Hole Spacing	± 1/32"(0.8mm)
	Eccentricity of Bolt Circle with Respect to Facing	2 1/2" Smaller 1/32"(0.8mm) Max 3" & Larger 1/16"(1.6mm) Max
	Eccentricity of Bolt Circle with Respect to Bore	1/32"(0.8mm) Max
	Eccentricity of Facing with Respect to Bore	1/32"(0.8mm) Max
Thickness	18" and Smaller	+1/8" (3.2mm). –0"
	20" and Larger	+3/16"(4.8mm). –0"
Length Thru Hub	10" and Smaller	± 1/16" (1.6mm)
	12" and Larger	± 1/8" (3.2mm)

Note This tolerance is covared in ANSI B16.5 , but maker's option.

WELDED AND SEAMLESS

PIPE CARBON AND ALLOY STEELS

ANSI B36.10

Unit:mm

Nominal Pipe Size	Outside Diam.	Wall I.D.	NOMINAL WALL THICKNESS AND INSIDE DIAMTER												
			Schedule 10	Schedule 20	Schedule 30	Standard	Schedule 40	Schedule 60	Extra Strong	Schedule 80	Schedule 100	Schedule 120	Schedule 140	Schedule 160	D & Ex. Strong
1/8	10	Wall	···	···	···	1.7	1.7	···	2.4	2.4	···	···	···	···	···
		I.D.	···	···	···	6.8	6.8	···	5.5	5.5	···	···	···	···	···
1/4	14	Wall	···	···	···	2.2	2.2	···	3.0	3.0	···	···	···	···	···
		I.D.	···	···	···	9.2	9.2	···	7.7	7.7	···	···	···	···	···
3/8	17	Wall	···	···	···	2.3	2.3	···	3.2	3.2	···	···	···	···	···
		I.D.	···	···	···	12.5	12.5	···	10.7	10.7	···	···	···	···	···
1/2	21	Wall	···	···	···	2.8	2.8	···	3.7	3.7	···	···	···	4.7	7.5
		I.D.	···	···	···	15.8	15.8	···	13.9	13.9	···	···	···	11.8	6.4
3/4	27	Wall	···	···	···	2.9	2.9	···	3.9	3.9	···	···	···	5.5	7.8
		I.D.	···	···	···	20.9	20.9	···	18.8	18.8	···	···	···	15.8	11.0
1	33	Wall	···	···	···	3.4	3.4	···	4.5	4.5	···	···	···	6.4	9.1
		I.D.	···	···	···	26.6	26.6	···	24.3	24.3	···	···	···	20.7	15.2
1 1/4	42	Wall	···	···	···	3.6	3.6	···	4.9	4.9	···	···	···	6.4	9.7
		I.D.	···	···	···	35.1	35.1	···	32.5	32.5	···	···	···	29.5	22.8
1 1/2	48	Wall	···	···	···	3.7	3.7	···	5.1	5.1	···	···	···	7.1	10.2
		I.D.	···	···	···	40.9	40.9	···	38.1	38.1	···	···	···	34.0	27.9
2	60	Wall	···	···	···	3.9	3.9	···	5.5	5.5	···	···	···	8.7	11.1
		I.D.	···	···	···	52.5	52.5	···	49.3	49.3	···	···	···	42.9	38.2
2 1/2	73	Wall	···	···	···	5.2	5.2	···	7.0	7.0	···	···	···	9.5	14.0
		I.D.	···	···	···	62.7	62.7	···	59.0	59.0	···	···	···	54.0	45.0
3	89	Wall	···	···	···	5.5	5.5	···	7.6	7.6	···	···	···	11.1	15.2
		I.D.	···	···	···	77.9	77.9	···	73.7	73.7	···	···	···	68.8	58.4
3 1/2	102	Wall	···	···	···	5.7	5.7	···	8.1	8.1	···	···	···	···	16.2
		I.D.	···	···	···	90.1	90.1	···	85.4	85.4	···	···	···	···	69.3
4	114	Wall	···	···	···	6.0	6.0	···	8.6	8.6	···	11.1	···	13.5	17.1
		I.D.	···	···	···	102.3	102.3	···	97.2	97.2	···	92.0	···	87.3	80.1
5	141	Wall	···	···	···	6.6	6.6	···	9.5	9.5	···	12.7	···	15.9	19.1
		I.D.	···	···	···	128.2	128.2	···	122.3	122.3	···	115.9	···	109.6	103.2
6	168	Wall	···	···	···	7.1	7.1	···	11.0	11.0	···	14.3	···	18.2	21.9
		I.D.	···	···	···	154.1	154.1	···	146.3	146.3	···	139.7	···	131.8	124.4
8	219	Wall	···	6.4	7.0	8.2	8.2	10.3	12.7	12.7	15.1	18.2	20.6	23.0	22.2
		I.D.	···	206.4	205.0	202.7	202.7	198.5	193.7	193.7	189.0	182.6	177.8	173.1	174.6
10	273	Wall	···	6.4	7.8	9.3	9.3	12.7	12.7	15.1	18.2	21.4	25.4	28.6	···
		I.D.	···	260.4	257.5	254.5	254.5	247.7	247.7	242.9	236.6	230.3	222.3	215.9	···
12	324	Wall	···	6.4	8.4	9.5	10.3	14.3	12.7	17.4	21.4	25.4	28.6	33.3	···
		I.D.	···	311.2	307.1	304.8	303.2	295.3	298.5	289.0	281.0	273.1	266.7	257.2	···
14	356	Wall	6.4	7.9	9.5	9.5	11.1	15.1	12.7	19.1	23.8	27.8	31.8	35.7	···
		I.D.	342.9	339.7	336.6	336.6	333.3	325.5	330.2	317.5	308.0	300.1	292.1	284.2	···
16	406	Wall	6.4	7.9	9.5	9.5	12.7	16.7	12.7	21.4	26.2	26.7	36.5	40.5	···
		I.D.	393.7	390.5	387.4	387.4	381.0	373.1	381.0	363.6	354.0	344.5	333.3	325.5	···
18	457	Wall	6.4	7.9	11.1	9.5	14.3	19.1	12.7	23.8	29.4	34.9	39.7	45.2	···
		I.D.	444.5	441.3	434.9	438.2	428.7	419.1	431.8	409.6	398.5	387.4	377.9	366.7	···
20	508	Wall	6.4	9.5	12.7	9.5	15.1	20.6	12.7	26.2	32.5	38.1	44.5	50.0	···
		I.D.	495.3	489.0	482.6	489.0	477.9	466.8	482.6	455.6	442.9	431.8	419.1	408.0	···
24	610	Wall	6.4	9.5	14.3	9.5	17.4	24.6	12.7	30.9	38.9	46.0	52.4	59.5	···
		I.D.	596.3	590.6	581.0	590.6	574.7	560.4	584.2	547.7	531.8	517.6	504.9	490.6	···

▶ Not included in B36.10

The wall thickness shown represent nominal or average wall dimensions which are subject to a –121/2% mill tolerance.Note that schedule 40 in.sizes 12"(304.8mm) and larger and that schedule 80 in.sizes 10"(254mm) and larger do not agree whth schedules 40S and 80S of ANSI B36.19 nor with standard weight and extra strong respectively.

ANSI

WELDED AND SEANLESS PIPE STAINLESS STEELS

ANSI B36.19

Unit:mm

Nominal Pipe Size	Outside Diameter.	Wall Thickness Inside Diameter	NOMINAL WALL THICKNESS AND INSIDE DIAMETER			
			Schedule 5 $ °	Schedule 10 $ °	Schedule 40 $	Schedule 50 $
1/8	10	Wall	···	1.2	1.7	2.4
		I.D.	···	7.8	6.8	5.5
1/4	14	Wall	···	1.7	2.2	3.0
		I.D.	···	10.4	9.2	7.7
3/8	17	Wall	···	1.7	2.3	3.2
		I.D.	···	13.8	12.5	10.7
1/2	21	Wall	1.7	2.1	2.8	3.7
		I.D.	18.0	17.1	15.8	13.9
3/4	27	Wall	1.7	2.1	2.9	3.9
		I.D.	23.4	22.5	20.9	18.8
1	33	Wall	1.7	2.8	3.4	4.5
		I.D.	30.1	27.9	26.6	24.3
1¼	42	Wall	1.7	2.8	3.6	4.9
		I.D.	38.9	36.6	35.1	32.5
1½	48	Wall	1.7	2.8	3.7	5.1
		I.D.	45.0	42.7	40.9	38.1
2	60	Wall	1.7	2.8	3.9	5.5
		I.D.	57.0	54.8	52.5	49.3
2½	73	Wall	2.1	3.0	5.2	7.0
		I.D.	68.8	66.9	62.7	59.0
3	89	Wall	2.1	3.0	5.5	7.6
		I.D.	84.7	82.8	77.9	73.7
3½	102	Wall	2.1	3.0	5.7	8.1
		I.D.	97.4	95.5	90.1	85.4
4	114	Wall	2.1	3.0	6.0	8.6
		I.D.	110.1	108.2	102.3	97.2
5	141	Wall	2.8	3.4	6.6	9.5
		I.D.	135.8	134.5	128.2	122.3
6	168	Wall	2.8	3.4	7.1	11.0
		I.D.	162.7	161.5	154.1	146.3
8	219	Wall	2.8	3.8	8.2	12.7
		I.D.	213.5	211.6	202.7	193.7
10	273	Wall	3.4	4.2	9.3	12.7**
		I.D.	266.2	264.7	254.5	247.7**
12	324	Wall	4.0	4.6	9.5**	12.7**
		I.D.	315.9	314.7	304.8**	298.5**
14‡	356	Wall	4.0	4.8	···	···
		I.D.	347.7	346.0	···	···
16‡	406	Wall	4.2	4.8	···	···
		I.D.	398.0	396.8	···	···
18‡	457	Wall	4.2	4.8	···	···
		I.D.	448.8	447.6	···	···
20‡	508	Wall	4.8	5.5	···	···
		I.D.	498.4	496.9	···	···
24‡	610	Wall	5.5	6.4	···	···
		I.D.	598.5	596.9	···	···

The Wall thickness shown represent nominal or Average wall dimensions which are subject to a–12½% mill tolerance.

‡ Sizes 14"(355.6mm)through 30"(762.0mm) are not at publication date covered in B36.19, and dimensions listed are those commonly used in the industry.

★Schedule 5S and 10S wall thicknesses do not permit threading in accordance with ANSI B2.1.

★★Note that schedule 40S and schedule 80S in these sizes do not agree with schedule 40 and schedule 80 of ANSI B36.10. And that they are identical to standard weight and extra strong respectively of ANSI B36.10.

Dimensions of Welded and Seamless steel Pipe

ASME B36.10/B36.19

Unit:mm

Nominal Pipe Size DN in.	Outside Diameter		Wall Thickness		Inside Diameter		Identification			Stainless
	in.	mm	in.	mm	in.	mm	API Standard	Std.1) XS.XXS	Schdeule Nr.	
Cont' 24"	d./Forts. 24.000	609.6	0.688 0.969 1.219 1.531 1.812 2.062 2.344	17.48 24.61 30.96 38.89 46.02 52.37 59.54	22.624 22.062 21.562 20.938 20.376 19.876 19.312	574.6 560.4 547.7 531.8 517.6 504.9 490.5	5L		40 60 80 100 120 140 160	
26"	26.000	660.4	0.250 0.281 0.312 0.344 0.375 0.406 0.438 0.469 0.500 0.562	6.35 7.14 7.92 8.74 9.53 10.31 11.13 11.91 12.70 14.27	25.500 25.438 25.376 25.312 25.250 25.188 25.124 25.062 25.000 24.876	647.7 646.1 644.6 642.9 641.3 639.8 638.1 636.6 635.0 631.9	5L 5L 5L 5L 5L 5L 5L 5L 5L 5L	STD XS	10 20	
28"	28.000	711.2	0.250 0.281 0.312 0.344 0.375 0.406 0.438 0.469 0.500 0.625	6.35 7.14 7.92 8.74 9.53 10.31 11.13 11.91 12.70 15.88	27.500 27.438 27.376 27.312 27.250 27.188 27.124 27.062 27.000 26.750	698.5 696.9 695.4 693.7 692.1 690.6 688.9 687.4 685.8 679.4	5L 5L 5L 5L 5L 5L 5L 5L 5L 5L	STD XS	10 20 30	
30"	30.000	762.0	0.250 0.281 0.312 0.344 0.375 0.406 0.438 0.469 0.500 0.625	6.35 7.14 7.92 8.74 9.53 10.31 11.13 11.91 12.70 15.88	29.500 29.438 29.376 29.312 29.250 29.188 29.124 29.062 29.000 28.750	749.3 747.7 746.2 744.5 742.9 741.4 739.7 738.2 736.6 730.2	5L 5L 5L 5L 5L 5L 5L 5L 5L 5L	STD XS	5 10 20 30	5S 10S
32"	32.000	812.8	0.250 0.281 0.312 0.344 0.375 0.406 0.438 0.469 0.500 0.625 0.688	6.35 7.14 7.92 8.74 9.53 10.31 11.13 11.91 12.70 15.88 17.48	31.500 31.438 31.376 31.312 31.250 31.188 31.124 31.062 31.000 30.750 30.624	800.1 798.5 797.0 795.3 793.7 792.2 790.5 789.0 787.4 781.0 777.8	5L 5L 5L 5L 5L 5L 5L 5L 5L 5L 5L	STD XS	10 20 30 40	

1) Std.=Standard Wall

XS =Extra Strong, XXS= Double Extra Strong

ANSI

Dimensions of Welded and Seamless steel Pipe

ASME B36.10/B36.19

Unit:mm

Nominal Pipe Size DN in.	Outside Diameter		Wall Thickness		Inside Diameter		Identification			Stainless
	In.	mm	In.	mm	In.	mm	API Standard	Std.1) XS.XXS	Schdeule Nr.	
34"	34.000	863.6	0.250	6.35	33.500	850.9	5L			
			0.281	7.14	33.438	849.3	5L			
			0.312	7.92	33.376	847.8	5L		10	
			0.344	8.74	33.312	846.1	5L			
			0.375	9.53	33.250	844.5	5L	STD		
			0.406	10.31	33.188	843.0	5L			
			0.438	11.13	33.124	841.3	5L			
			0.469	11.91	33.062	839.8	5L			
			0.500	12.70	33.000	838.2	5L	XS	20	
			0.625	15.88	32.750	831.8	5L		30	
			0.688	17.48	32.624	828.6	5L		40	
36"	36.000	914.4	0.250	6.35	35.500	901.7	5L			
			0.281	7.14	35.438	900.1	5L			
			0.312	7.92	35.376	898.6	5L		10	
			0.344	8.74	35.312	896.9	5L			
			0.375	9.53	35.250	895.3	5L	STD		
			0.406	10.31	35.188	893.8	5L			
			0.438	11.13	35.124	892.1	5L			
			0.469	11.91	35.062	890.6	5L			
			0.500	12.70	35.000	889.0	5L	XS	20	
			0.562	14.27	34.876	885.9	5L			
			0.625	15.88	34.750	882.6	5L		30	
			0.750	19.05	34.500	876.3	5L		40	
38"	38.000	965.2	0.312	7.92	37.376	949.4	5L			
			0.344	8.74	37.312	947.7	5L			
			0.375	9.53	37.250	946.1	5L			
			0.406	10.31	37.188	944.6	5L			
			0.438	11.13	37.124	942.9	5L	STD		
			0.469	11.91	37.062	941.4	5L			
			0.500	12.70	37.000	939.8	5L			
			0.562	14.27	36.876	936.7	5L	XS		
			0.625	15.88	36.750	933.4	5L			
			0.688	17.48	36.642	930.2	5L			
			0.750	19.05	36.500	927.1	5L			
40"	40.000	1016.0	0.312	7.92	39.376	1000.2	5L			
			0.344	8.74	39.312	998.5	5L			
			0.375	9.53	39.250	996.9	5L	STD		
			0.406	10.31	39.188	995.4	5L			
			0.438	11.13	39.124	993.7	5L			
			0.469	11.91	39.062	992.2	5L			
			0.500	12.70	39.000	990.6	5L	XS		
			0.562	14.27	38.876	987.5	5L			
			0.625	15.88	38.750	984.2	5L			
			0.688	17.48	38.624	981.0	5L			
			0.750	19.05	38.500	977.9	5L			
42"	42.000	1066.8	0.344	8.74	41.312	1049.3	5L			
			0.375	9.53	41.250	1047.7	5L	STD		
			0.406	10.31	41.188	1046.2	5L			
			0.438	11.13	41.124	1044.5	5L			
			0.469	11.91	41.062	1043.0	5L			
			0.500	12.70	41.000	1041.4	5L	XS		
			0.562	14.27	40.876	1038.3	5L			
			0.625	15.88	40.750	1035.0	5L			
			0.688	17.48	40.642	1031.8	5L			
			0.750	19.05	40.500	1028.7	5L			

1) Std.=Standard Wall

XS =Extra Strong, XXS= Double Extra Strong

Dimensions of Welded and Seamless steel Pipe

ASME B36.10/B36.19

Unit:mm

Nominal Pipe Size DN in.	Outside Diameter		Wall Thickness		Inside Diameter		Identification			Stainless
	in.	mm	in.	mm	in.	mm	API Standard	Std.1) XS.XXS	Schdeule Nr.	
44"	44.000	1117.6	0.344	8.74	43.312	1100.1	5L			
			0.375	9.53	43.250	1098.5	5L	STD		
			0.406	10.31	43.188	1097.0	5L			
			0.438	11.13	43.124	1095.3	5L			
			0.469	11.91	43.062	1093.8	5L			
			0.500	12.70	43.000	1092.2	5L	XS		
			0.562	14.27	42.876	1089.1	5L			
			0.625	15.88	42.750	1085.8	5L			
			0.688	17.48	42.624	1082.6	5L			
			0.750	19.05	42.500	1079.5	5L			
			0.812	20.62	40.376	1076.4				
			0.875	22.23	40.250	1073.1				
			0.938	23.83	40.124	1069.9				
			1.000	25.40	40.000	1066.8				
			1.062	26.97	39.876	1063.7				
			1.125	28.58	39.750	1060.4				
			1.188	30.18	39.624	1057.2				
			1.250	31.75	39.500	1054.1				
46"	46.000	1168.0	0.344	8.74	45.312	1150.5				
			0.375	9.53	45.250	1148.9		STD		
			0.406	10.31	45.188	1147.4				
			0.438	11.13	45.124	1145.7				
			0.469	11.91	45.062	1144.2				
			0.500	12.70	45.000	1142.6		XS		
			0.562	14.27	44.876	1139.5				
			0.625	15.88	44.750	1136.2				
			0.688	17.48	44.624	1133.0				
			0.750	19.05	44.500	1129.9				
			0.812	20.62	44.376	1126.8				
			0.875	22.23	44.250	1123.5				
			0.938	23.83	44.124	1120.3				
			1.000	25.40	44.000	1117.2				
			1.062	26.97	43.876	1114.1				
			1.125	28.58	43.750	1110.8				
			1.188	30.18	43.624	1107.6				
			1.250	31.75	43.500	1104.5				
48"	48.000	1219.0	0.344	8.74	47.312	1201.5				
			0.375	9.53	47.250	1199.9		STD		
			0.406	10.31	47.188	1198.4				
			0.438	11.13	47.124	1196.7				
			0.469	11.91	47.062	1195.2				
			0.500	12.70	47.000	1193.6		XS		
			0.562	14.27	46.876	1190.5				
			0.625	15.88	46.750	1187.2				
			0.688	17.48	46.624	1184.0				
			0.750	19.05	46.500	1180.9				
			0.812	20.62	46.376	1177.8				
			0.875	22.23	46.250	1174.5				
			0.938	23.83	46.124	1171.3				
			1.000	25.40	46.000	1168.2				
			1.062	26.97	45.876	1165.1				
			1.125	28.58	45.750	1161.8				
			1.188	30.18	45.624	1158.6				
			1.250	31.75	45.500	1155.5				

1) Std.=Standard Wall

XS =Extra Strong, XXS= Double Extra Strong

ANSI

Dimensions of Welded and Seamless steel Pipe

ASME B36.10/B36.19

Unit:mm

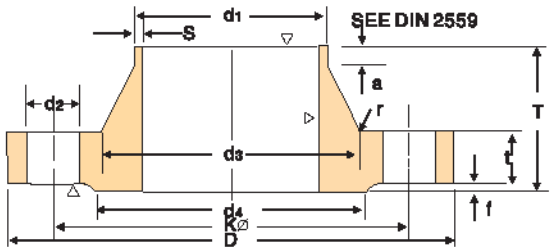
Nominal Pipe Size DN in.	Outside Diameter		Wall Thickness		Inside Diameter		Identification			Stainless
	in.	mm	in.	mm	in.	mm	API Standard	Std.1) XS.XXS	Schdeule Nr.	
52"	52.000	1321.0	0.375	9.53	51.250	1301.9				
			0.406	10.31	51.188	1300.4				
			0.438	11.13	51.124	1298.7				
			0.469	11.91	51.062	1297.2				
			0.500	12.70	51.000	1295.6				
			0.562	14.27	50.876	1292.5				
			0.625	15.88	50.750	1289.2				
			0.688	17.48	50.624	1286.0				
			0.750	19.05	50.500	1282.9				
			0.812	20.62	50.376	1279.8				
			0.875	22.23	50.250	1276.5				
			0.938	23.83	50.124	1273.3				
			1.000	25.40	50.000	1270.2				
			1.062	26.97	49.876	1267.1				
			1.125	28.58	49.750	1263.8				
			1.188	30.18	49.624	1260.6				
			1.250	31.75	49.500	1257.5				
56"	56.000	1442.0	0.375	9.53	55.250	1402.9				
			0.406	10.31	55.188	1401.4				
			0.438	11.13	55.124	1399.7				
			0.469	11.91	55.062	1398.2				
			0.500	12.70	55.000	1396.6				
			0.562	14.27	54.876	1393.5				
			0.625	15.88	54.750	1390.2				
			0.688	17.48	54.624	1387.0				
			0.750	19.05	54.500	1383.9				
			0.812	20.62	54.376	1380.8				
			0.875	22.23	54.250	1377.5				
			0.938	23.83	54.124	1374.3				
			1.000	25.40	54.000	1371.2				
			1.062	26.97	53.876	1368.1				
			1.125	28.58	53.750	1364.8				
			1.188	30.18	53.624	1361.6				
			1.250	31.75	53.500	1358.5				
60"	60.000	1524.0	0.375	9.53	59.250	1504.9				
			0.406	10.31	59.188	1503.4				
			0.438	11.13	59.124	1501.7				
			0.469	11.91	59.062	1500.2				
			0.500	12.70	59.000	1498.6				
			0.562	14.27	58.876	1495.5				
			0.625	15.88	58.750	1492.2				
			0.688	17.48	58.624	1489.0				
			0.750	19.05	58.500	1485.9				
			0.812	20.62	58.376	1482.8				
			0.875	22.23	58.250	1479.5				
			0.938	23.83	58.124	1476.3				
			1.000	25.40	58.000	1473.2				
			1.062	26.97	57.876	1470.1				
			1.125	28.58	57.750	1466.8				
			1.188	30.18	57.624	1463.6				
			1.250	31.75	57.500	1460.5				

1) Std.=Standard Wall

XS =Extra Strong, XXS= Double Extra Strong

6BAR

DIN 2573 SLIP–ON FLANGES
DIN 2527 BLIND FLANGES
DIN 2631 WELDING NECK FLANGES

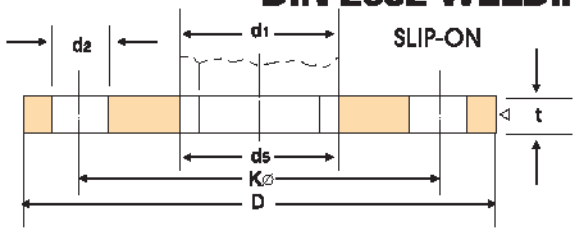


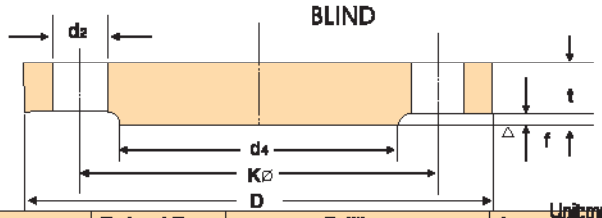
Bore		Common Dimension						Hub				Raised Face		Drilling				Approx. Weight	
Nominal Bore	d_1	D	t Welding neck	t Slip-on	t Blind	KØ	T	d_3	s	r	a ≈	d_4	f	Number of Bolt	Dia. of Bolt		d_2	DIN 2573	DIN 2631
10	14 17.2 *)	75	12	12	12	50	28	22 26	1.8	4	6	35	2	4	M10	–	11.5	0.036	0.035
15	20 21.3 *)	80	12	12	12	55	30	28 30	2.0	4	6	40	2	4	M10	–	11.5	0.410	0.392
20	25 26.9 *)	90	14	14	14	65	32	35 38	2.3	4	6	50	2	4	M10	–	11.5	0.600	0.592
25	30 33.7 *)	100	14	14	14	75	35	40 42	2.6	4	6	60	2	4	M10	–	11.5	0.740	0.747
32	38 42.4 *)	120	14	16	14	90	35	50 55	2.6	6	6	70	2	4	M12	(1/4")	14	1.19	1.05
40	44.5 48.3 *)	130	14	16	14	100	38	58 62	2.6	6	7	80	3	4	M12	(1/4")	14	1.39	1.18
50	57 60.3 *)	140	14	16	14	110	38	70 74	2.9	6	8	90	3	4	M12	(1/2")	14	1.53	1.34
65	76.1 *)	160	14	16	14	130	38	88	2.9	6	9	110	3	4	M12	(1/2")	14	1.89	1.67
80	88.9 *)	190	16	18	16	150	42	102	3.2	8	10	128	3	4	M16	(5/8")	18	2.98	2.71
100	108 114.3 *)	210	16	18	16	170	45	122 130	3.6	8	10	148	3	4	M16	(5/8")	18	3.46	3.24
125	133 139.7 *)	240	18	20	18	200	48	148 155	4.0	8	10	178	3	8	M16	(5/8")	18	4.60	4.49
150	159 168.3 *)	265	18	20	18	225	48	172 184	4.5	10	12	202	3	8	M16	(5/8")	18	5.22	5.15
200	216 219.1 *)	320	20	22	20	280	55	230 236	5.9	10	15	258	3	8	M16	(5/8")	18	7.15	7.78
250	267 273 *)	375	22	24	22	335	60	282 290	6.2	12	15	312	3	12	M16	(5/8")	18	9.61	10.8
300	318 323.9 *)	440	22	24	22	395	62	335 342	7.1	12	15	365	4	12	M20	(3/4")	23	12.6	14.0
350	355.6 *) 368	490	22	26	22	445	62	385	7.1	12	15	415	4	12	M20	(3/4")	23	15.6	16.1
400	406.4 *) 419	540	22	28	22	495	65	438	7.1	12	15	455	4	16	M20	(3/4")	23	18.4	18.3
500	508 *) 521	645	24	30	24	600	68	538	7.1	12	15	570	4	20	M20	(3/4")	23	24.5	24.6
600	609.6 *) 622	755	24			705	70	640	7.1	12	16	670	5	20	M24	(7/8")	27		
700	711.2 *) 720	860	24			810	70	740	7.1	12	16	775	5	24	M24	(7/8")	27		
800	812.8 *) 820	975	24			920	70	842	7.1	12	16	880	5	24	M27	(1")	30		
900	914.4 *) 920	1075	26			1020	70	942	7.1	12	16	980	5	24	M27	(1")	30		
1000	1016 *) 1020	1175	26			1120	70	1045	7.1	16	16	1080	5	28	M27	(1")	30		

Notes
* Out side diameter of pipe complies with ISO recommendation R64.

IOBAR

DIN 2576 SLIP–ON FLANGES
DIN 2527 BLIND FLANGES
DIN 2632 WELDING NECK FLANGES





Unit:mm

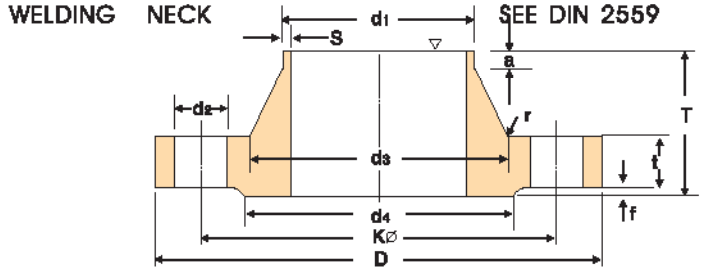
Bore		Common Dimension						Hub				Raised Face		Drilling				Approx. Weight	
Nominal Bore	d1	D	t Welding neck	t Slip-on (No-hub)	t Blind	KØ	T	d3	s	r	a	d4	f	Number of Bolt	Dia. of Bolt		d2	DIN 2576	DIN 2632
10	14 17.2 *)	90	14	14	14	60	35	25 28	1.8	4	6	40	2	4	M12	(½")	14	0.163	0.580
15	20 21.3 *)	95	14	14	14	65	35	30 32	2.0	4	6	45	2	4	M12	(½")	14	0.675	0.648
20	25 26.9 *)	105	16	16	16	75	38	38 40	2.3	4	6	58	2	4	M12	(½")	14	0.947	0.952
25	30 33.7 *)	115	16	16	16	85	38	42 45	2.6	4	6	68	2	4	M12	(½")	14	1.14	1.14
32	38 42.4 *)	140	16	16	16	100	40	52 56	2.6	6	6	78	2	4	M16	(⅝")	18	1.66	1.69
40	44.5 48.3 *)	150	16	16	18	110	42	60 64	2.6	6	7	88	3	4	M16	(⅝")	18	1.89	1.86
50	57 60.3 *)	165	18	18	18	125	45	72 75	2.9	6	8	102	3	4	M16	(⅝")	18	2.51	2.53
65	76.1 *)	185	18	18	18	145	45	90	2.9	6	10	122	3	4	M16	(⅝")	18	3.00	3.06
80	88.9 *)	200	20	20	20	160	50	105	3.2	8	10	138	3	4	M16	(⅝")	18	3.79	3.70
100	108 114.3 *)	220	20	20	20	180	52	125 131	3.6	8	12	158	3	8	M16	(⅝")	18	4.20	4.62
125	133 139.7 *)	250	22	22	22	210	55	150 156	4.0	8	12	188	3	8	M16	(⅝")	18	5.71	6.30
150	159 168.3 *)	285	22	22	22	240	55	175 184	4.5	10	12	212	3	8	M20	(¾")	23	6.72	7.75
200	216 219.1 *)	340	24	24	24	295	62	232 235	5.9	10	16	268	3	8	M20	(¾")	23	9.50	11.3
250	267 273 *)	395	26	26	26	350	68	285 292	6.3	12	16	320	3	12	M20	(¾")	23	12.5	14.7
300	318 323.9 *)	445	26	26	28	400	68	335 344	7.1	12	16	370	4	12	M20	(¾")	23	14.4	17.6
350	355.6 *) 368	505	26	28	30	460	68	385	7.1	12	16	430	4	16	M20	(¾")	23	20.6	21.4
400	406.4 *) 419	565	26	32	32	515	72	440	7.1	12	16	482	4	16	M24	(⅞")	27	27.9	26.1
500	508 *) 521	670	28	38	34	620	75	542	7.1	12	16	585	4	20	M24	(⅞")	27	41.1	34.7
600	609.6 *) 622	780	28			725	80	642	7.1	12	18	685	5	20	M27	(1")	30		
700	711.2 *) 720	895	30			840	80	754	8.0	12	18	800	5	24	M27	(1")	30		
800	812.8 *) 820	1015	32			950	90	850	8.0	12	18	905	5	24	M30	(1 ⅛")	33		
900	914.4 *) 920	1115	34			1050	95	950	10.0	12	20	1005	5	28	M30	(1 ⅛")	33		
1000	1016 *) 1020	1230	34			1160	95	1052	10.0	16	20	1110	5	28	M33	(1 ¼")	36		

Notes

* Out side diameter of pipe complies with ISO recommendation R64.

16BAR

DIN 2543 SLIP–ON FLANGES
DIN 2527 BLIND FLANGES
DIN 2633 WELDING NECK FLANGES



Unit:mm

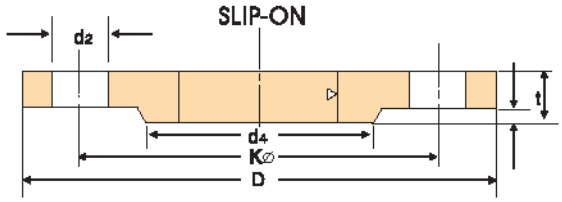
Bore		Common Dimension						Hub				Raised Face		Drilling				Approx. Weight	
Nominal Bore	d1	D	t Welding neck	t Slip-on (No-hub)	t Blind	KØ	T	d3	s	r	a ≈	d4	f	Number of Bolt	Dia. of Bolt		d	DIN 2543	DIN 2633
10	14 17.2 *)	90	14		14	60	35	25 28	1.8	4	6	40	2	4	M12	(½")	14	0.63	0.580
15	20 21.3 *)	95	14	14	14	65	35	30 32	2.0	4	6	45	2	4	M12	(½")	14	0.72	0.648
20	25 26.9 *)	105	16	16	16	75	38	38 40	2.3	4	6	58	2	4	M12	(½")	14	1.01	0.952
25	30 33.7 *)	115	16	16	16	85	38	42 45	2.6	4	6	68	2	4	M12	(½")	14	1.23	1.14
32	38 42.4 *)	140	16	16	16	100	40	52 56	2.6	6	6	78	2	4	M16	(⅝")	18	1.80	1.69
40	44.5 48.3 *)	150	16	18	16	110	42	60 64	2.6	6	7	88	3	4	M16	(⅝")	18	2.09	1.86
50	57 60.3 *)	165	18	18	18	125	45	72 75	2.9	6	8	102	3	4	M16	(⅝")	18	2.88	2.53
65	76.1 *)	185	18	18	18	145	45	90	2.9	6	10	122	3	4	M16	(⅝")	18	3.66	3.06
80	88.9 *)	200	20	20	20	160	50	105	2.2	8	10	138	3	8	M16	(⅝")	18	4.77	3.70
100	108 114.3 *)	220	20	20	20	180	52	125 131	3.6	8	12	158	3	8	M16	(⅝")	18	5.65	4.62
125	133 139.7 *)	250	22	22	22	210	55	150 156	4.0	8	12	188	3	8	M16	(⅝")	18	8.42	6.30
150	159 168.3 *)	285	22	22	22	240	55	175 184	4.5	10	12	212	3	8	M20	(¾")	23	10.4	7.75
200	216 219.1 *)	340	24	24	24	295	62	232 235	5.9	10	16	268	3	12	M20	(¾")	23	16.1	11.0
250	267 273 *)	405	26	26	26	355	70	285 292	6.3	12	16	320	3	12	M24	(⅞")	27	24.9	15.6
300	318 323.9 *)	460	28	28	28	410	78	338 344	7.1	12	16	378	4	12	M24	(⅞")	27	35.1	22.0
350	355.6 *) 368	520	30	30	30	470	82	390	8.0	12	16	438	4	16	M24	(⅞")	27	47.8	28.7
400	406.4 *) 419	580	32	32	32	525	85	445	8.0	12	16	490	4	16	M27	(1")	30	63.5	36.3
500	508 *) 521	715	34	36	34	650	90	548	8.0	12	16	610	4	20	M30	(1 ⅛")	33	102.0	59.3
600	609.6 *) 622	840	36	40		770	95	652	8.8	12	18	725	5	20	M33	(1 ¼")	36		
700	711.2 *) 720	910	36			840	100	755	8.8	12	18	795	5	24	M33	(1 ¼")	36		
800	812.8 *) 820	1025	38			950	105	855	10.0	12	20	900	5	24	M36	(1 ⅜")	39		
900	914.4 *) 920	1125	40			1050	110	955	10.0	12	20	1000	5	28	M36	(1 ⅜")	39		
1000	1016 *) 1020	1255	42			1170	120	1058	10.0	16	20	1115	5	28	M39	(1 ½")	42		

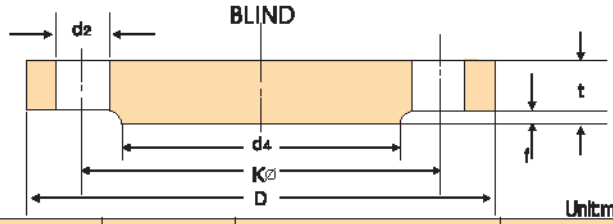
Notes

* Out side diameter of pipe complies with ISO recommendation R64.

25BAR

DIN 2544 SLIP–ON FLANGES
DIN 2527 BLIND FLANGES
DIN 2634 WELDING NECK FLANGES





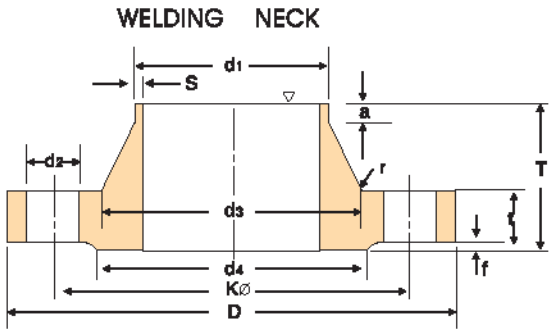
Unit:mm

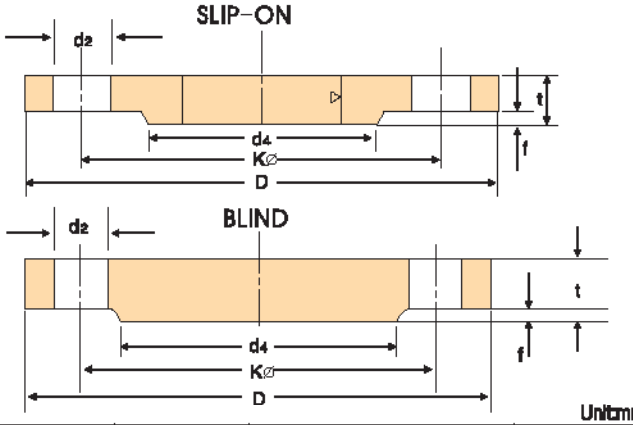
Bore		Common Dimension						Hub				Raised Face		Drilling				Approx. Weight≈	
Nominal Bore	d1	D	t Welding neck	t Slip-on (No-hub)	t Blind	Kø	T	d3	s	r	a ≈	d4	f	Number of Bolt	Dia. of Bolt		d2	DIN 2544	DIN 2634
10	14 17.2 *)	90	16		16	60	35	25 28	1.8	4	6	40	2	4	M12	(½")	14	0.72	0.661
15	20 21.3 *)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(½")	14	0.81	0.746
20	25 26.9 *)	105	18	18	18	75	40	38 40	2.3	4	6	58	2	4	M12	(½")	14	1.24	1.06
25	30 33.7 *)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(½")	14	1.38	1.29
32	38 42.4 *)	140	18	18	18	100	42	52 56	2.6	6	6	78	2	4	M16	(⅝")	18	2.03	1.88
40	44.5 48.3 *)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(⅝")	18	2.35	2.34
50	57 60.3 *)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(⅝")	18	3.20	2.82
65	76.1 *)	185	22	22	22	145	52	80	2.9	6	10	122	3	8	M16	(⅝")	18	4.29	3.74
80	88.9 *)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(⅝")	18	5.88	4.75
100	108 114.3 *)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(¾")	23	7.54	6.52
125	133 139.7 *)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(⅞")	27	10.8	9.07
150	159 168.3 *)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(⅞")	27	14.5	11.8
200	216 219.1 *)	360	30	30	30	310	80	240 244	6.3	10	16	278	3	12	M24	(⅞")	27	22.3	17.0
250	267 273 *)	425	32	32	32	370	88	292 298	7.1	12	18	335	3	12	M27	(1")	30	33.5	24.4
300	318 323.9 *)	485	34	34	34	430	92	345 352	8.0	12	18	395	4	16	M27	(1")	30	46.3	31.2
350	355.6 *) 368	555	38	38	38	490	100	398	8.0	12	20	450	4	16	M30	(1⅛")	33	68.0	45.0
400	406.4 *) 419	620	40	40	40	550	110	452	8.8	12	20	505	4	16	M33	(1 ¼")	36	89.7	58.7
500	508 *) 521	730	44	44	44	660	125	558	10.0	12	20	615	4	20	M33	(1 ¼")	36	138.0	86.1
600	609.6 *) 622	845	46			770	125	660	11.0	12	20	720	5	20	M36	(1 ⅜")	39		101.0
700	721.2 *) 720	960	46			875	125	780	12.5	12	20	820	5	24	M39	(1 ½")	42		134.0
800	812.8 *) 820	1085	50			990	135	865	14.2	12	22	930	5	24	M45	(1 ¾")	48		183.0
900	914.4 *) 930	1185	54			1090	145	968	16.0	12	24	1030	5	28	M45	(1 ¾")	48		232.0
1000	1016 *) 1020	1320	58			1210	155	1070	17.5	16	24	1140	5	28	M52	(2")	56		302.0

Notes
* Out side diameter of pipe complies with ISO recommendation R64.

40BAR

DIN 2545 SLIP-ON FLANGES
DIN 2527 BLIND FLANGES
DIN 2635 WELDING NECK FLANGES





Unit:mm

Bore		Common Dimension						Hub				Raised Face		Drilling				Approx. Weight(kg)	
Nominal Bore	d1	D	t Welding neck	t Slip-on (No-hub)	Blind	KØ	T	d3	s	r	a	d4	f	Number of Bolt	Dia. of Bolt		d2	DIN 2545	DIN 2635
10	14 17.2)	90	16		16	60	35	25 28	1.8	4	6	40	2	4	M12	(½")	14	0.72	0.661
15	20 21.3)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(½")	14	0.81	0.746
20	25 26.9)	105	18	18	18	75	40	38 40	2.3	4	6	58	2	4	M12	(½")	14	1.24	1.06
25	30 33.7)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(½")	14	1.38	1.29
32	38 42.4)	140	18	18	18	100	42	52 56	2.6	6	6	78	2	4	M16	(⅝")	18	2.03	1.88
40	44.5 48.3)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(⅝")	18	2.35	2.33
50	57 60.3)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(⅝")	18	3.20	2.82
65	76.1)	185	22	22	22	145	52	90	2.9	6	10	122	3	8	M16	(⅝")	18	4.29	3.74
80	88.9)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(⅝")	18	5.88	4.75
100	108 114.3)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(¾")	23	7.54	6.52
125	133 139.7)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(⅞")	27	10.8	9.07
150	159 168.3)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(⅞")	27	14.5	11.80
(175)	(191) 193.7)	350	32	32	32	295	82	215 218	5.6	10	15	260	3	12	M27	(1")	30	22.1	18.2
200	216 219.1)	375	34	34	34	320	88	240 244	6.3	10	16	285	3	12	M27	(1")	30	27.2	21.5
250	267 273)	450	38	38	38	385	105	298 306	7.1	12	18	345	3	12	M30	(1¼")	33	43.8	34.9
300	318) 323.9	515	42	42	42	450	115	352 362	8.0	12	18	410	4	16	M30	(1¼")	33	63.3	49.7
350	355.6) 368	580	46	46	46	510	125	408	8.8	12	20	465	4	16	M33	(1 ½")	36	89.5	68.1
400	406.4) 419	660	50	50	50	585	135	462	11.0	12	20	535	4	16	M36	(1 ½")	39	127.0	96.5
500	508) 521	755	52	52	52	670	140	562	142	12	20	615	4	20	M39	(1 ½")	42	172.0	117.0

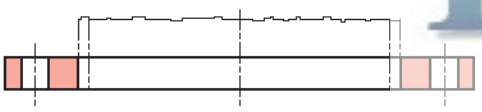
Notes

* Out side diameter of pipe compiles with ISO recommendation R64.

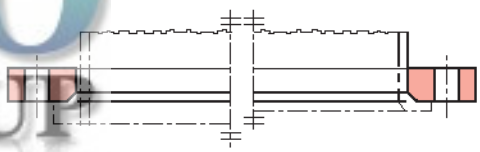
Table 2–Surface finish for jointing faces

Facing types	Method of machining	Radius of tool nose	R_a[a] µ m		R_z[a] µ m	
		min.	min.	max.	min.	max.
A,B1[b],E,F	Turning c	1.0	3.2	12.5	12.5	50
B2[b],C,D,G,H	Turning c	–	0.8	3.2	3.2	12.5
NOTE For certain applications, e.g. low temperature gases, it may be necessary to stipulate closer control to the surface finish.						

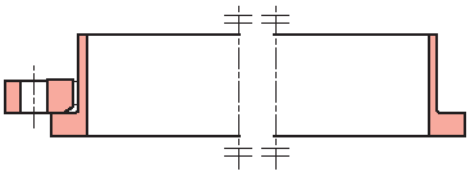
a R_a and R_z are defined in EN ISO 4287.
b Types B1 and B2are raised face (type B) flanges with different specified surface roughness values.
B1: Standard facing for all PN numbers.
B2: Only if agreed between the purchaser and the flange manufacturer.
c The term 'turning' includes any method of machine operation producing either serrated concentric or serrated spiral grooves.



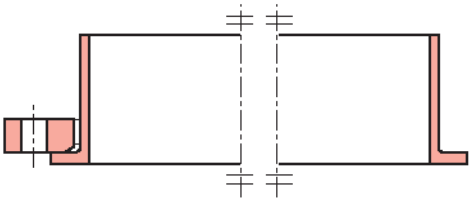
Type 01
Plate flange for welding



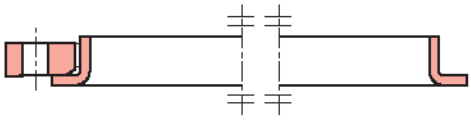
Type 02
Loose plate flange with weld–on collar (see type 32) or lapped pipe end (see type 33)



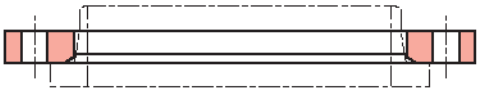
Type 02
Loose plate flange with weld ring neck (see type 35)



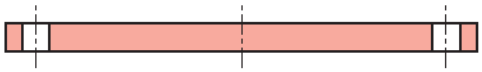
Type 02
Loose plate flange with pressed collar with long neck (see type 36)



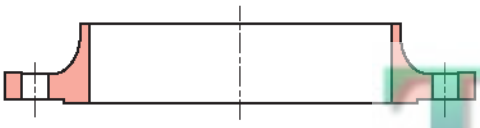
Type 02
Loose plate flange
with pressed collar (see type 37)



Type 04
Loose plate flange
with weld–neck collar (see type 34)



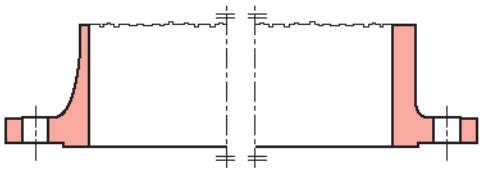
Type 05
Blind flange



Type 11
Weld–neck flange

Type 12
Hubbed slip–on flange for welding

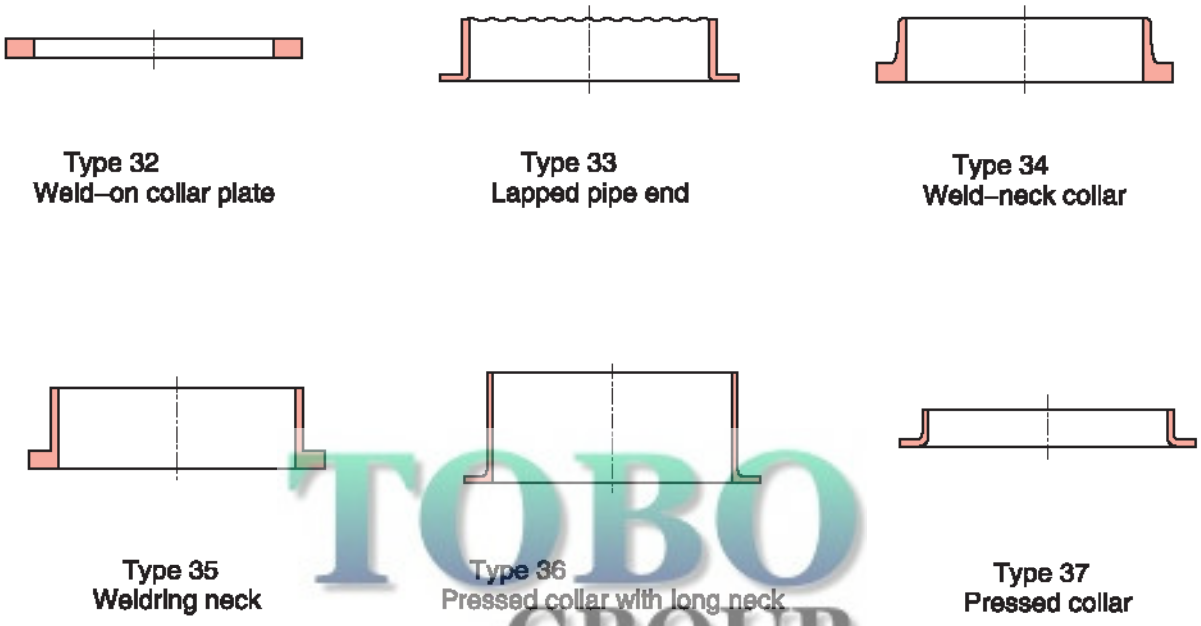
Type 13
Hubbed threaded flange



Type 21
Integral flange

NOTE These sketches are diagrammatic only ,in particular no detail is shown for the mating surfaces (see Figure 3)

Figure. 1–Flange types



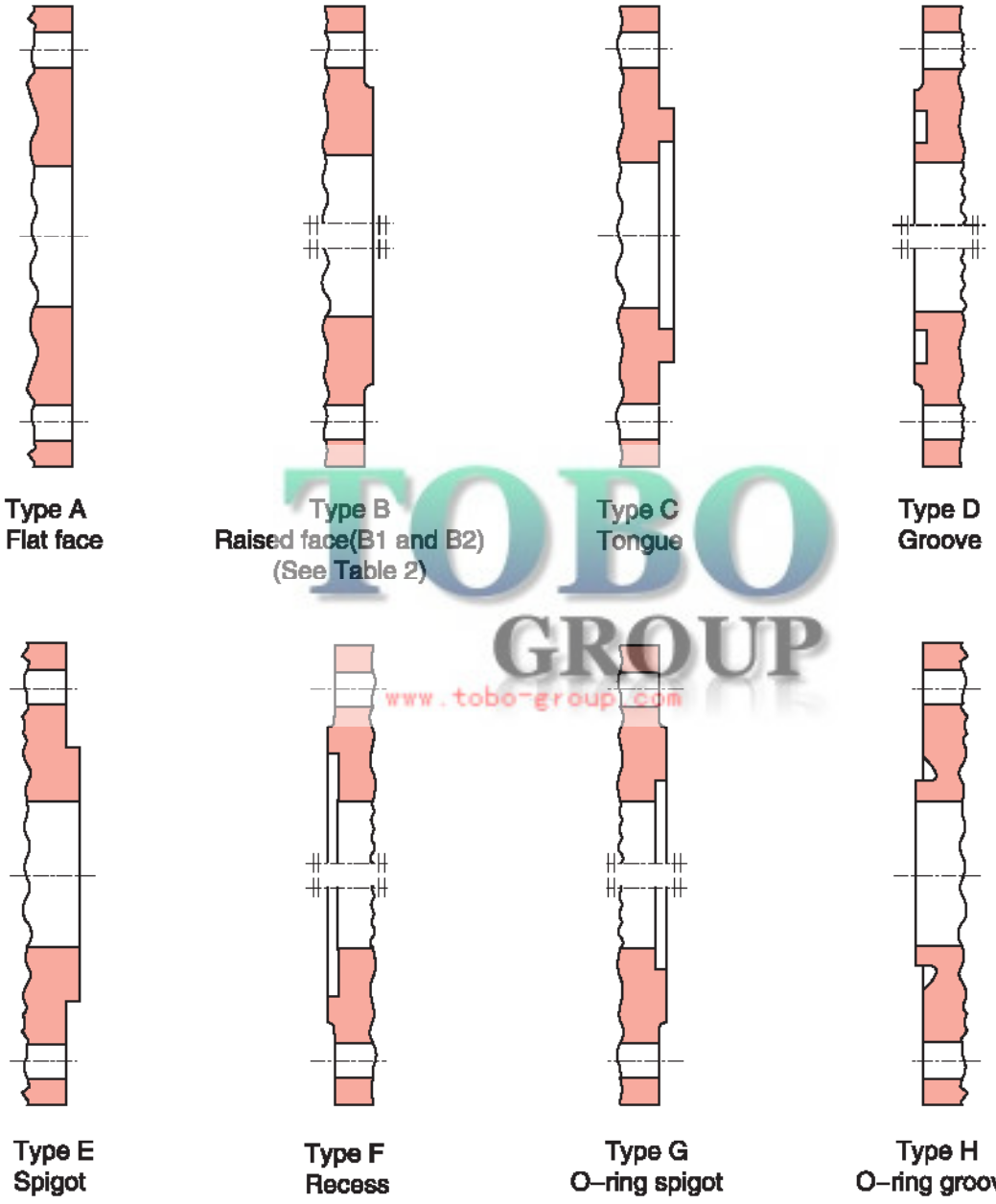
NOTE These sketches are diagrammatic only.

Fig. 2–Collars types 32 to 37

Table 6–Types of steel flanges and collars

Type No	Description
01	Plate flange for welding
02	Loose plate flange with weld–on plate collar or for lapped pipe end
04	Loose plate flange with weld–neck collar
05	Blind flange
11	Weld–neck flange
12	Hubbed slip–on flange for welding
13	Hubbed threaded flange
21[a]	Integral flange
32[b]	Weld–on plate collar
33[a,b]	Lapped pipe end
34[b]	Weld–neck collar
35[b]	Weldring neck
36[b]	Pressed collar with long neck
37[b]	Pressed collar
NOTE Type numbers have been made non–consecutive to permit possible future additions.	

a This is an integral part of a pressure equipment or a component.
b Type numbers 32,33,35,36 and 37 are for use with type 02 flanges and type number 34 for use with type 04 flanges.



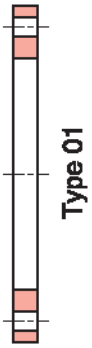
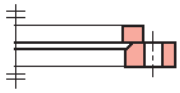
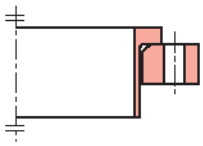
NOTE1 The transition from the edge of the raised face to the flange face may be by radius or chamfer for types B,D,F and G only (see 5.7.1).

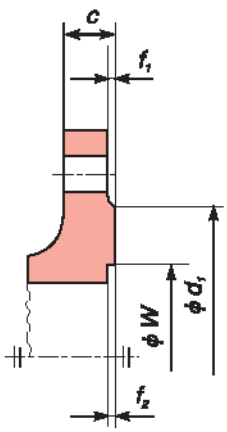
NOTE2 B1 and B2 are raised face (type B) for different applications (see 5.7.2.2, 5.7.2.3 and Table 2).

NOTE3 For the dimensions of flange facings, see Figure 4 and Table 8.

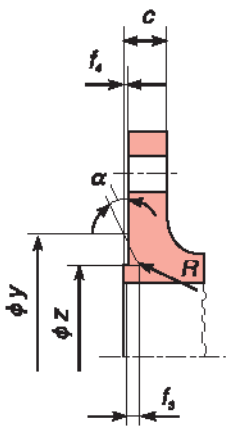
Fig. 3–Flange facing types

Table 7–Synoptic table

Flange type or collar type	DN / PN	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
 Type 01	2.5	dimensions identical with PN6																								x														
	6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x										
	10	dimensions identical with PN 40						dimensions identical with PN 16						x	x	x	x	x	x	x	x	x	x	x	x	x														
	16	dimensions identical with PN 40						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																
	25	dimensions identical with PN 40												x	x	x	x	x	x	x	x	x	x																		
	40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																						
	63	dimensions identical with PN 100						x	x	x	x	x	x	x	x	x	x	x																						
	100	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																							
 Type 02 and 32	2.5	dimensions identical with PN 6																																						
	6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																			
	10	dimensions identical with PN 40						dimensions identical with PN 16						x	x	x	x	x	x	x	x																			
	16	dimensions identical with PN 40						x	x	x	x	x	x	x	x	x	x	x	x	x	x																			
	25	dimensions identical with PN 40												x	x	x	x	x	x	x	x																			
	40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																						
 Type 02 and 35	2.5	dimensions identical with PN6																																						
	6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x														
	10	dimensions identical with PN 40						dimensions identical with PN 16						x	x	x	x	x	x	x	x	x	x	x	x	x														
	16	dimensions identical with PN 40						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																
	25	dimensions identical with PN 40						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																		
	40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																						



Type G:O–ring spigot



Type H:O–ring groove

NOTE 1 Dimension C includes the raised face thickness.

NOTE 2 Cross section diameter of the O–ring is 2 × R.

Figure. 4–Flange facing (dimensions see Tables 6 and 8 to 19)

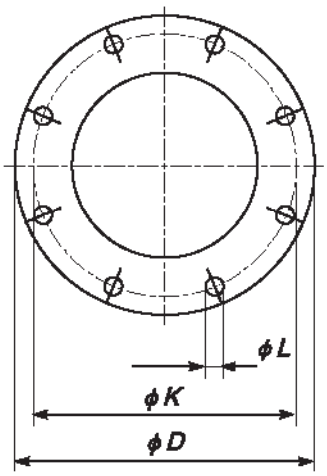
Table 8–Flange facing dimensions

DN	d_1												f_1	f_2	f_3	f_4	W^b	x	y	Z^b	$\alpha \approx$	R
	PN2.5[a]	PN6[a]	PN10	PN16	PN25	PN40	PN63	PN100	PN160	PN250	PN320	PN400										
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
10	35	35	40	40	40	40	40	40	40	40	40	40	2	4.5	4.0	2.0	24	34	35	23	–	2.5
15	40	40	45	45	45	45	45	45	45	45	45	45					29	39	40	28	–	
20	50	50	58	58	58	58	58	58	58	58	58	58					36	50	51	35	41°	
25	60	60	68	68	68	68	68	68	68	68	68	68					43	57	58	42		
32	70	70	78	78	78	78	78	78	78	78	78	78					51	65	66	50		
40	80	80	88	88	88	88	88	88	88	88	88	88					61	75	76	60		
50	90	90	102	102	102	102	102	102	102	102	102	102					73	87	88	72		
65	110	110	122	122	122	122	122	122	122	122	122	122					95	109	110	94		
80	128	128	138	138	138	138	138	138	138	138	138	138					106	120	121	105		
100	148	148	158	158	162	162	162	162	162	162	162	162	3	5.0	4.5	2.5	129	149	150	128	32°	3
125	178	178	188	188	188	188	188	188	188	188	188	188					155	175	176	154		
150	202	202	212	212	218	218	218	218	218	218	218	218					183	203	204	182		
200	258	258	268	268	278	285	285	285	285	285	285	285					239	259	260	238		
250	312	312	320	320	335	345	345	345	345	345	345	–					292	312	313	291		
300	365	365	370	378	395	410	410	410	410	–	–	–					343	363	364	342		
350	415	415	430	438	450	465	465	465	–	–	–	–	4	5.5	5.0	3.0	395	421	422	394	27°	3.5
400	465	465	482	490	505	535	535	535	–	–	–	–					447	473	474	446		
450	520	520	532	550	555	580	580	580	–	–	–	–					497	523	524	496		
500	570	570	585	610	615	615	615	615	–	–	–	–					549	575	576	548		
600	670	670	685	725	720	735	735	–	–	–	–	–	5				649	675	676	648		
700	775	775	800	795	820	840	840	–	–	–	–	–					751	777	778	750		
800	880	880	905	900	930	960	960	–	–	–	–	–					856	882	883	855		
900	980	980	1005	1000	1030	1070	1070	–	–	–	–	–					961	987	988	960		
1000	1080	1080	1110	1115	1140	1180	1180	–	–	–	–	–		8.5	8.0	4.0	1062	1092	1094	1060	28°	4
1200	1280	1295	1330	1330	1350	1380	1380	–	–	–	–	–					1262	1292	1294	1260		
1400	1480	1510	1535	1530	1580	1600	–	–	–	–	–	–					1462	1492	1494	1480		
1600	1690	1710	1760	1750	1780	1815	–	–	–	–	–	–					1662	1692	1694	1660		
1800	1890	1920	1960	1950	1985	–	–	–	–	–	–	–					1862	1892	1894	1860		
2000	2090	2125	2170	2150	2210	–	–	–	–	–	–	–					2062	2092	2094	2060		
2200	2295	2335	2370	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
2400	2495	2545	2570	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
2600	2695	2750	2780	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
2800	2910	2960	3000	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
3000	3110	3160	3210	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
3200	3310	3370	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
3400	3510	3580	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
3600	3720	3790	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
3800	3920	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–
4000	4120	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–

a Flange facing types C,D,E,F,G and H according to Figure 4 are not used for PN 2.5 and 6.
b Flange facing types G and H according to Figure 4 are only used for PN 10 to PN 40.

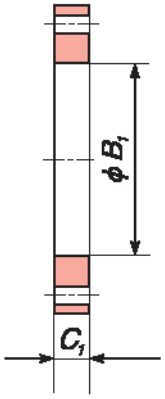
Table 9–Material selection for the manufacturing of flanges

Group	Forgings			Flat products			Castings			Bars'		
	Material name	Standard	Material number	Material name	Standard	Material number	Material name	Standard	Material number	Material name	Standard	Material number
2E0	–	–	–	–	–	–	GP240GR	EN 10213–2	1.0621	–	–	–
3E0	–	–	–	P235GH	EN 10028–2	1.0345	GP240GH	EN 10213–2	1.0619	P235GH	EN 10273	1.0345
3E0	–	–	–	–	–	–	–	–	–	P250GH	EN 10273	1.0460
3E0	P245GH	EN 10222–2	1.0352	P265GH	EN 10028–2	1.0425	GP280GH	EN 10213–2	1.0625	P265GH	EN 10273	1.0425
3E1	P280GH	EN 10222–2	1.0426	P295GH	EN 10028–2	1.0481	–	–	–	P295GH	EN 10273	1.0481
4E0	16Mo3	EN 10222–2	1.5415	16Mo3	EN 10028–2	1.5415	G20Mo5	EN 10213–2	1.5419	16Mo3	EN 10273	1.5415
5E0	13CrMo4–5	EN 10222–2	1.7335	13CrMo4–5	EN 10028–2	1.7335	G17CrMo5–5	EN 10213–2	1.7357	13CrMo4–5	EN 10273	1.7335
6E0	11CrMo9–10	EN 10222–2	17383	12CrMo9–10	EN 10028–2	1.7375	G17CrMo9–10	EN 10213–2	1.7379	11CrMo9–10	EN 10273	1.7383
	–	–	–	10CrMo9–10	EN 10028–2	1.7380	–			10CrMo9–10	EN 10273	1.7380
6E1	X16Cr–Mo5–1+NT	EN 10222–2	1.7366	–	–	–	GX15CrMo5	EN 10213–2	1.7365	–	–	–
7E0	–	–	–	P275NL1	EN 10028–3	1.0488	G17Mn5	EN 10213–3	1.1131	–	–	–
	–	–	–	P275NL2	EN 10028–3	1.1104	G20Mn5	EN 10213–3	1.6220	–	–	–
7E1	–	–	–	P355NL1	EN 10028–3	1.0566	–	–	–	–	–	–
	–	–	–	P355NL2	EN 10028–3	1.1106	–	–	–	–	–	–
7E2	15NiMn6	EN 10222–3	1.6228	15NiMn6	EN 10028–4	1.6228	G9Ni10	EN 10213–3	1.5636	–	–	–
	–	–	–	11MnNi5–3	EN 10028–4	1.6212	–	–	–	–	–	–
	13MnNi6–3	EN 10222–3	1.6217	13MnNi6–3	EN 10028–4	1.6217	–	–	–	–	–	–
7E3	–	–	–				–	–	–	–	–	–
	12Ni14	EN 10222–3	1.5637	12Ni14	EN 10028–4	1.5637	G9Ni14	EN 10213–3	1.5638	–	–	–
	X12Ni5	EN 10222–3	1.5680	X12N5	EN 10028–4	1.5680	–	–	–	–	–	–
	X8Ni9	EN 10222–3	1.5662	X8Ni9	EN 10028–4	1.5662	–	–	–	–	–	–
8E0	–	–	–	–	–	–	–	–	–	–	–	–
8E2	P285NH	EN 10222–4	1.0477	P275NH	EN 10028–3	1.0487	–	–	–	P275NH	EN 10273	1.0487
	P285QH	EN 10222–4	1.0478	–	–	–				–	–	–
8E3	P355NH	EN 10222–4	1.0565	P355N	EN 10028–3	1.0562	–	–	–	P355NH	EN 10273	1.0565
	P355QH1	EN 10222–4	1.0571	P355NH	EN 10028–3	1.0565				P355QH	EN 10273	1.8867
9E0	X20Cr–MoV11–1	EN 10222–2	1.4922	–	–	–	GX23Cr–MoV12–1	EN 10213–2	1.4931	–	–	–
9E1	X10Cr–MoVNb9–1	EN 10222–2	1.4903	X10Cr–MoVNb9–1	EN 10028–2	1.4903	–	–	–	–	–	–
10E0	X2CrNi18–9	EN 10222–5	1.4307	X2CrNi18–9	EN 10028–7	1.4307	GX2CrNi19–11	EN 10213–4	1.4309	X2CrNi18–9	EN 10272	1.4307
	–	–	–	X2CrNi19–11	EN 10028–7	1.4306	–	–	–	X2CrNi19–11	EN 10272	1.4306
10E0	–	–	–	X1CrNi25–21	EN 10028–7	1.4335	–	–	–	–	–	–
10E1	X2CrNiN18–10	EN 10222–5	1.4311	X2CrNiN18–10	EN 10028–7	1.4311	–	–	–	X2CrNIN18–10	EN 10272	1.4311
11E0	X5CrNi18–10	EN 10222–5	1.4301	X5CrNi18–10	EN 10028–7	1.4301	GX5CrNi19–10	EN 10213–4	1.4308	X5CrNi18–10	EN 10272	1.4301
	X6CrNi18–10	EN 10222–5	1.4948	X6CrNi18–10	EN 10028–7	1.4948	–	–	–	–	–	–

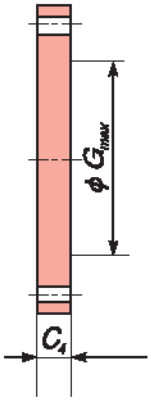


This diagram illustrates the arrangement but not necessarily the corect number of bolt holes.

Refer to the column "Bolting Number" In Table 10 for the actual number.



Type 01



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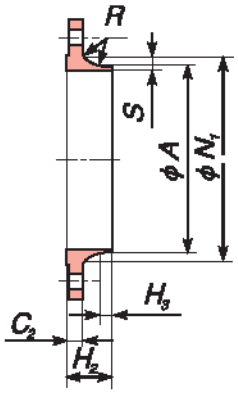

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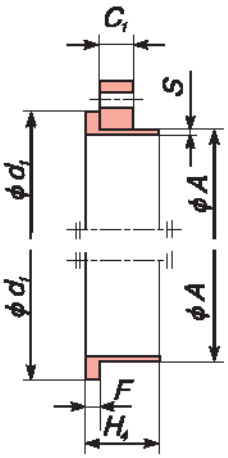
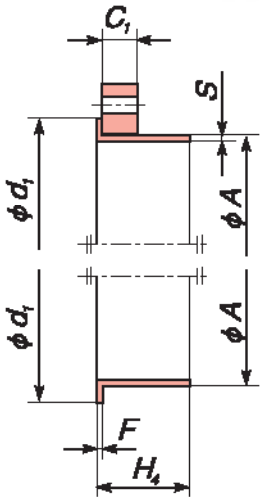


Type 02
and 35



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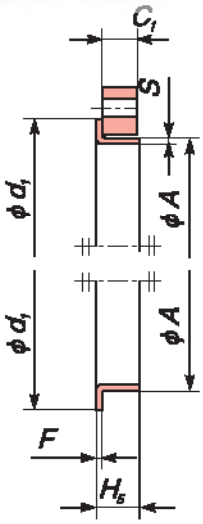

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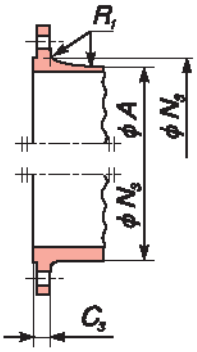
and 37



Type 21

NOTE1 Dimensions N_1 is measured at the intersection of the hub draft angle and the back face of the flange.

NOTE2 For dimensions G_{max} refer to NOTE 1 of 5.6.1.

Figure. 5–Dimensions of PN 2.5 flanges

Table 10–Dimensions of PN 2.5 flanges

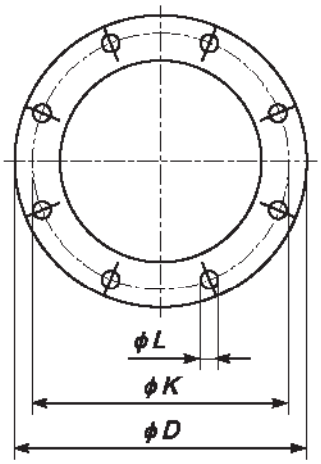
N	Meeting dimensions					Outside meter of neck	Bore diameters		Flange thickness				Collar thickness				Diam–eter of shoul–der		Length				Neck diameters		Cor–ner radii	Wall thick–ness (See 5.6.1)
	Out–side diam–eter	Diam–eter of bolt circle	Diam–eter of bolt hole	Bolting																						
				Num ber	Size	A	B_1	B_2	C_1	C_2	C_3	C_4	F				G_{max}	H_2	H_8	H_4	H_5		N_1	N_2	R_1	S
	Flange type																									
	01,02,05,11,21					11 21 35–37	01 32	02	01 02	11 21	05	32	35	36	37	05	11	11	35	36	37	11	21	11 13	11,35 to 37
10	75	50	11	4	M10	17.2	18.0	21	12	12	12	10	5	2	2.5	–	28	6	28	35	7	26	20	4	
15	80	55	11	4	M10	21.3	22.0	25	12	12	12	10	5	2	2.5	–	30	6	30	38	7	30	26	4	
20	90	65	11	4	M10	26.9	27.5	31	14	14	14	10	6	2.5	3	–	32	6	32	40	8	38	34	4	
25	100	75	11	4	M10	33.7	34.5	38	14	14	14	10	7	2.5	3	–	35	6	35	40	10	42	44	4	
32	120	90	14	4	M12	42.4	43.5	46	16	14	14	10	8	3	3	–	35	6	35	42	12	55	54	6	
40	130	100	14	4	M12	48.3	49.5	53	16	14	14	10	8	3	3	–	38	7	38	45	15	62	64	6	
50	140	110	14	4	M12	60.3	61.5	65	16	14	14	12	8	3	3	–	38	8	38	45	20	74	74	6	
65	160	130	14	4	M12	76.1	77.5	81	16	14	14	12	8	3	3	55	38	9	38	45	20	88	94	6	
80	190	150	18	4	M16	88.9	90.5	94	18	16	16	12	10	3	4	70	42	10	42	50	25	102	110	8	
100	210	170	18	4	M16	114.3	116.0	120	18	16	16	14	10	4	4	90	45	10	45	52	25	130	130	8	
125	240	200	18	8	M16	139.7	141.5	145	20	18	18	14	10	4	4	115	48	10	48	55	25	155	160	8	
150	265	225	18	8	M16	168.3	170.5	174	20	18	18	14	10	5	4	140	48	12	48	55	25	184	182	10	
200	320	280	18	8	M16	219.1	221.5	226	22	20	20	16	11	5	5	190	55	15	55	62	30	236	238	10	See Annex A
250	375	335	18	12	M16	273.0	276.5	281	24	22	22	18	12	8	–	235	60	15	60	68	–	290	284	12	
300	440	395	22	12	M20	323.9	327.5	333	24	22	22	18	12	8	–	285	62	15	62	68	–	342	342	12	
350	490	445	22	12	M20	355.6	359.5	365	26	22	22	18	13	8	–	330	62	15	62	68	–	385	392	12	
400	540	495	22	16	M20	406.4	411.0	416	28	22	22	20	14	8	–	380	65	15	65	72	–	438	442	12	
450	595	550	22	16	M20	457.0	462.0	467	30	22	24	20	15	8	–	425	65	15	65	72	–	492	494	12	
500	645	600	22	20	M20	508.0	513.5	519	30	24	24	22	16	8	–	475	68	16	68	75	–	538	544	12	
600	755	705	26	20	M24	610.0	616.5	622	32	30	30	22	16	–	–	575	70	16	70	–	–	640	642	12	
700	860	810	26	24	M24	711.0		721	40	30	40	–	16	–	–	670	76	16	70	–	–	740	746	12	
800	975	920	30	24	M27	813.0		824	44	30	44	–	16	–	–	770	76	16	70	–	–	842	850	12	
900	1075	1020	30	24	M27	914.0	a	926	48	30	48	–	16	–	–	860	74	16	70	–	–	942	950	12	
1000	1175	1120	30	28	M27	1016.0		1028	52	30	52	–	18	–	–	960	74	16	70	–	–	1045	1050	16	
1200	1375	1320	30	32	M27	1219		1234	60	32	50	–	20	–	–	1160	94	16	90	–	–	1245	–	16	

Table 10 (continued)

Dimensions in millimetres

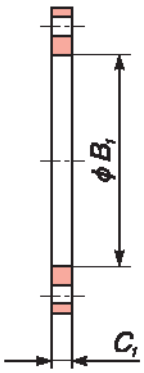
DN	Meeting dimensions					Outside diameter of neck	Bore diameters		Flange thickness				Collar thickness					Diameter of shoulder	Length					Neck diameters		Corner radii	Wall thickness (See 5.6.1)
	Outside diameter	Diameter of bolt circle	Diameter of bolt hole	Bolting																							
				Number	Size																						
						A	B_1	B_2	C_1	C_2	C_3	C_4	F					G_{max}	H_2	H_3	H_4		H_5	N_1	N_2	R_1	S
	Flange type																										
	01,02,05,11,21					11 21 35–37	01 32	02	01 02	11 21	05	32	35	36	37	05	11	11	35	36	37	11	21	11	11,35 to 37
1400	1575	1520	30	36	M27	1422	a	–	–	38	–	–	–	–	–	1346	96	16	–	–	–	1445	–	16	See Annex A
1600	1790	1730	30	40	M27	1626		–	–	46	–	–	–	–	–	1546	102	20	–	–	–	1645	–	16	
1800	1990	1930	30	44	M27	1829		–	–	46	–	–	–	–	–	1746	110	20	–	–	–	1845	–	16	
2000	2190	2130	30	48	M27	2032		–	–	50	–	–	–	–	–	1950	122	22	–	–	–	2045	–	16	
2200	2405	2340	33	52	M30	2235	–	–	–	58	–	–	–	–	–	–	129	25	–	–	–	2248	–	18	
2400	2605	2540	33	56	M30	2438	–	–	–	62	–	–	–	–	–	–	143	25	–	–	–	2448	–	18	
2600	2805	2740	33	60	M30	2620	–	–	–	64	–	–	–	–	–	–	148	25	–	–	–	2648	–	18	
2800	3030	2960	36	64	M33	2820	–	–	–	74	–	–	–	–	–	–	161	25	–	–	–	2848	–	18	
3000	3230	3160	36	68	M33	3020	–	–	–	80	–	–	–	–	–	–	170	25	–	–	–	3050	–	18	
3200	3430	3360	36	72	M33	3220	–	–	–	84	–	–	–	–	–	–	180	25	–	–	–	3250	–	20	
3400	3630	3560	36	76	M33	3420	–	–	–	90	–	–	–	–	–	–	194	28	–	–	–	3450	–	20	
3600	3840	3770	36	80	M33	3620	–	–	–	96	–	–	–	–	–	–	201	28	–	–	–	3652	–	20	
3800	4045	3970	39	80	M36	3820	–	–	–	102	–	–	–	–	–	–	212	28	–	–	–	3852	–	20	
4000	4245	4170	39	84	M36	4020	–	–	–	106	–	–	–	–	–	–	226	28	–	–	–	4052	–	20	

a To be specified by the purchaser.

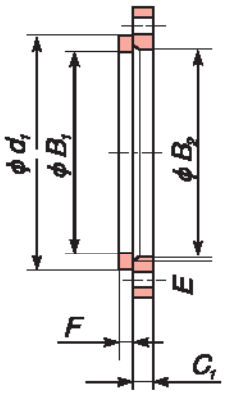


This diagram illustrates the arrangement but not necessarily the corect number of bolt holes.

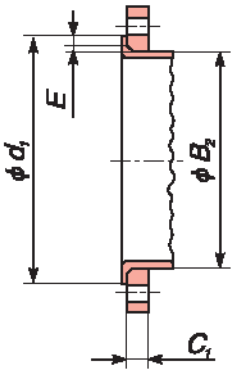
Refer to the column "Bolting Number" in Table 11 for the actual number.



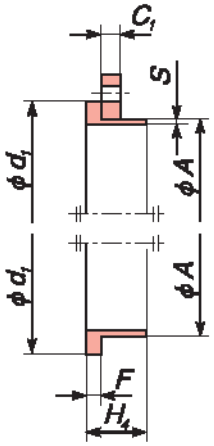
Type 01



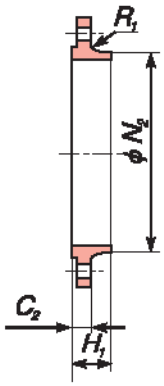
Type 02 and 32



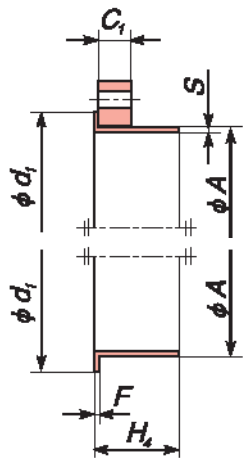
Type 02 and 33



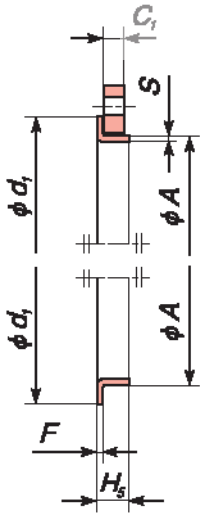
Type 02 and 35



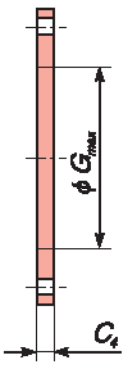
Type 13



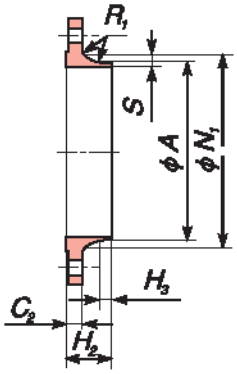
Type 02 and 36



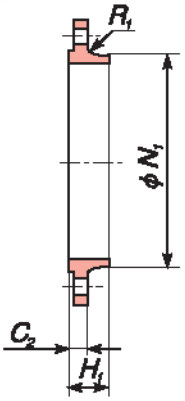
Type 02 and 37



Type 05



Type 11



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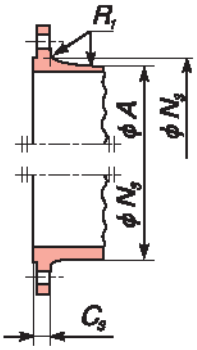


Type 21

NOTE1 Dimensions N_1、N_2 and N_3 are measured at the intersection of the hub draft angle and the back face of the flange.

NOTE2 For dimension d_1,see Table 8.

NOTE3 For dimensions Gmax refer to NOTE 1 of 5.6.1.

NOTE4 Type 33; lapped pipe end without determination of thickness and height.

Figure. 6–Dimensions of PN 6 flanges

Table 11–Dimensions of PN 6 flanges

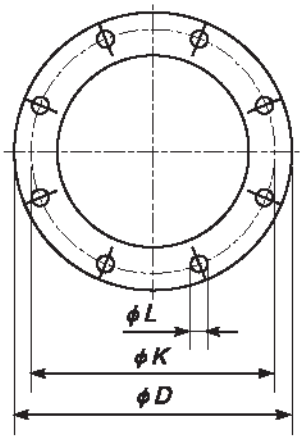
Dimensions in millimetres

DN	Mating dimensions					Outside diameter of neck A	Bore diameters		Flange thickness			Chamfer E	Collar thickness F				Diameter of shoulder G_{max}	Length						Neck diameters			Corner radii R_1	Wall thickness (see 5.6.1) S
	Outside diameter D	Diameter of bolt circle K	Diameter of bolt hole L	Bolting			B_1	B_2	C_1	C_2 C_3	C_4							H_1	H_2	H_3	H_4	H_5	N_1	N_2	N_3		
				Number	Size																						
	Flange type																										
	01,02,05,11,12,13,21					11 21a 35–37	01 12 32	02	01 02	11 12 13 21	05	02	32	35	36	37	05	12 13	11	11	35	36	37	11	12 13	21	11 12 13 21	11,35 to 37
10	75	50	11	4	M10	17.2	18.0	21	12	12	12	3	10	5	2	2.5	–	20	28	6	28	35	7	26	25	20	4	See Annex A
15	80	55	11	4	M10	21.3	22.0	25	12	12	12	3	10	5	2	2.5	–	20	30	6	30	38	7	30	30	26	4	
20	90	65	11	4	M10	26.9	27.5	31	14	14	14	4	10	6	2.5	3	–	24	32	6	32	40	8	38	40	34	4	
25	100	75	11	4	M10	33.7	34.5	38	14	14	14	4	10	7	2.5	3	–	24	35	6	35	40	10	42	50	44	4	
32	120	90	14	4	M12	42.4	43.5	48	16	14	14	5	10	8	3	3	–	26	35	6	35	42	12	55	60	54	6	
40	130	100	14	4	M12	48.3	49.5	53	16	14	14	5	10	8	3	3	–	26	38	7	38	45	15	62	70	64	6	
50	140	110	14	4	M12	60.3	61.5	65	16	14	14	5	12	8	3	3	–	28	38	8	38	45	20	74	80	74	6	
65	160	130	14	4	M12	76.1	77.5	81	16	14	14	6	12	8	3	3	55	32	38	9	38	45	20	88	100	94	6	
80	190	150	18	4	M16	88.9	90.5	94	18	16	16	6	12	10	3	4	70	34	42	10	42	50	25	102	110	110	8	
100	210	170	18	4	M16	114.3	116.0	120	18	16	16	6	14	10	4	4	90	40	45	10	45	52	25	130	130	130	8	
125	240	200	18	8	M16	139.7	141.5	145	20	18	18	6	14	10	4	4	115	44	48	10	48	55	25	155	160	160	8	
150	265	225	18	8	M16	168.3	170.5	174	20	18	18	6	14	10	5	4	140	44	48	12	48	55	25	184	185	182	10	
200	320	280	18	8	M16	219.1	221.5	226	22	20	20	6	16	11	5	5	190	44	55	15	55	62	30	236	240	238	10	
250	375	335	18	12	M16	273.0	276.5	281	24	22	22	8	18	12	8		235	44	60	15	60	68	–	290	295	284	12	
300	440	395	22	12	M20	323.9	327.5	333	24	22	22	8	18	12	8		285	44	62	15	62	68	–	342	355	342	12	
350	490	445	22	12	M20	355.6	359.5	365	26	22	22	8	18	13	8		330	–	62	15	62	68	–	385	–	392	12	
400	540	495	22	16	M20	406.4	411.0	416	28	22	22	8	20	14	8		380	–	65	15	65	72	–	438	–	442	12	
450	595	550	22	16	M20	457.0	462.0	467	30	22	24	8	20	15	8	–	425	–	65	15	72	72	–	492	–	494	12	

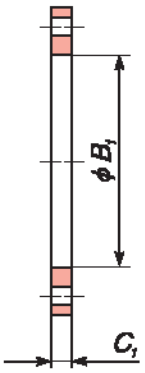
Table 11(concluded)

DN	Mating dimensions					Outside diameter of neck A	Bore diameters		Flange thickness			Chamfer E	Collar thickness F				Diameter of shoulder G_{max}	Length					Neck diameters			Corner radii R_1	Wall thickness (see 5.6.1) S
	Outside diameter D	Diameter of bolt circle K	Diameter of bolt hole L	Bolting			B_1	B_2	C_1	C_2 C_3	C_4							H_1	H_2	H_3	H_4	H_5	N_1	N_2	N_3		
				Number	Size																						
	Flange type																										
	01,02,05,11,12,13,21					11 21a 35–37	01 12 32	02	01 02	11 12 13 21	05	02	32	35	36	37	05	12 13	11	11	35	36	37	11	12 13	21	11 12 13 21	11,35 to 37
500	645	600	22	20	M20	508.0	513.5	519	30	24	24	8	22	16	8	–	475	–	68	15	75	75	–	538	–	544	12	
600	755	705	26	20	M24	610.0	616.5	622	32	30	30	8	22	16	–	–	575	–	70	16	70	–	–	640	–	642	12	
700	860	810	26	24	M24	711.0		721	40	30	40	4	–	16	–	–	670	–	76	16	70	–	–	740	–	746	12	
800	975	920	30	24	M27	813.0		824	44	30	44	4	–	16	–	–	770	–	78	16	70	–	–	842	–	850	12	
900	1075	1020	30	24	M27	914.0		926	48	34	48	4	–	16	–	–	860	–	78	16	70	–	–	942	–	950	12	
1000	1175	1120	30	28	M27	1016.0		1028	52	38	52	4	–	18	–	–	960	–	82	16	70	–	–	1045	–	1050	16	
1200	1405	1340	33	32	M30	1219.0	b	1234	60	42	60	5	–	20	–	–	1160	–	104	20	90	–	–	1248	–	1264	16	
1400	1630	1560	36	36	M33	1422.0		–	72	56	68	–	–	–	–	–	1346	–	114	20	–	–	–	1452	–	1480	16	
1600	1830	1760	36	40	M33	1626.0		–	80	63	76	–	–	–	–	–	1546	–	119	20	–	–	–	1655	–	1680	16	
1800	2045	1970	39	44	M36	1829.0		–	88	69	84	–	–	–	–	–	1746	–	133	20	–	–	–	1855	–	1878	16	See Annex A
2000	2265	2180	42	48	M39	2032.0		–	96	74	92	–	–	–	–	–	1950	–	146	25	–	–	–	2058	–	2082	16	
2200	2475	2390	42	52	M39	2235.0	–	–	–	81	–	–	–	–	–	–	–	–	154	25	–	–	–	2260	–	–	18	
2400	2685	2600	42	56	M39	2438.0	–	–	–	87	–	–	–	–	–	–	–	–	168	25	–	–	–	2462	–	–	18	
2600	2905	2810	48	60	M45	2620.0	–	–	–	91	–	–	–	–	–	–	–	–	175	25	–	–	–	2665	–	–	18	
2800	3115	3020	48	64	M45	2820.0	–	–	–	101	–	–	–	–	–	–	–	–	188	30	–	–	–	2865	–	–	18	
3000	3315	3220	48	68	M45	3020.0	–	–	–	102	–	–	–	–	–	–	–	–	192	30	–	–	–	3068	–	–	18	
3200	3525	3430	48	72	M45	3220.0	–	–	–	106	–	–	–	–	–	–	–	–	202	30	–	–	–	3272	–	–	20	
3400	3735	3640	48	76	M45	3420.0	–	–	–	110	–	–	–	–	–	–	–	–	214	35	–	–	–	3475	–	–	20	
3600	3970	3860	56	80	M52	3620.0	–	–	–	124	–	–	–	–	–	–	–	–	229	35	–	–	–	3678	–	–	20	

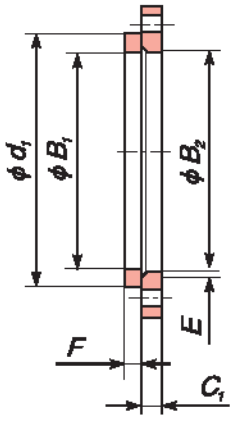
a For flanges type 21 the outside hub diameter approximately corresponds to the outside pipe diameter.
b To be specified by the purchaser.



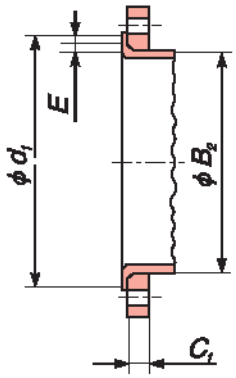
This diagram illustratesthe arrangement but not necessarily the correct number of bolt holes.
Refer to the column"Bolting Number" in Table12 for the actual number.



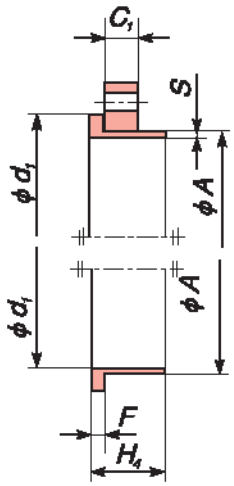
Type 01



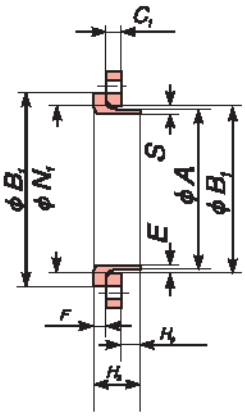
Type 02 and 32



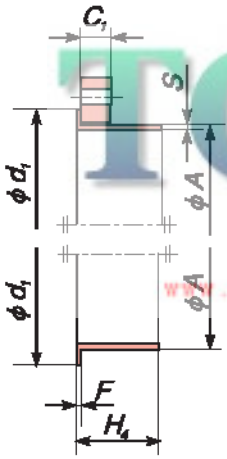
Type 02 and 33



Type 02and 35

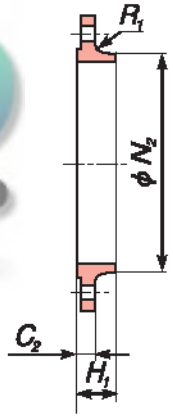


Type 04 and34



Type 02 and 36

Type 02 and 37



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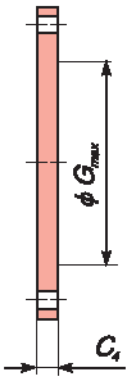
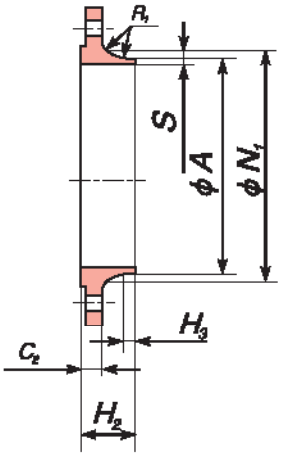
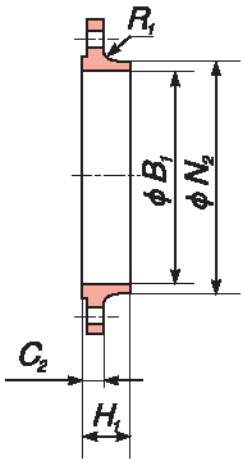


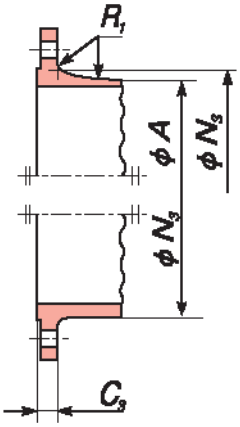
Type 05



Type 11



Type 12



Type 21

NOTE1 Dimensions N_1、N_2 and N_3 are measured at the intersection of the hub draft angle and the back face of the flange.
NOTE2 For dimension d_1,see Table 8.
NOTE3 For dimensions Gmax refer to NOTE 1 of 5.6.1.
NOTE4 Type 33; lapped pipe end without determination of thickness and height.

Figure. 7-Dimensions of PN 10 flanges

Table 12–Dimensions of PN 10 flanges

Dimensions in millimetres

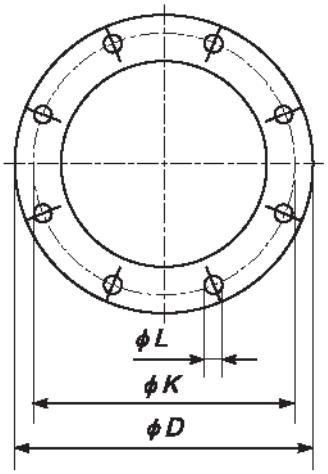
DN	Mating dimensions					Out-side diam-eter of neck A	Bore diameters			Flange thickness				Cha mfer E	Collar thickness F				Di-ame-ter of shoul der G_{max}	Length						Neck diameters			Cor ner radi i R_1	Wall thickness (see 5.6.1) S	
	Out-side di-ame-ter D	Di-ame-ter of bolt circle K	Di-ame-ter of bolt hole L	Bolting			B_1	B_2	B_3	C_1	C_2	C_3	C_4							H_1	H_2	H_3	H_4	H_5	N_1	N_2	N_3			
				Number	Size																										
	Flange type																													
	01,02,04,05,11,12,13,21					11 21[a] 34[c] 35–37	01 12 32	02	04	01 02 04	11 12 13	21	05	02 04	32 34	35	36	37	05	12 13	11 34[c]	11 34[c]	35	36	37	11 34[c]	12 13	21	11 12 13 21, 34	34	11,35 to 37
10	90	60	14	4	M12	17.2	18.0	21	31	14	16	16	16	3	12	5	2	2.5	–	22	35	6	35	35	7	28	30	28	4	1.8	
15	95	65	14	4	M12	21.3	22.0	25	35	14	16	16	16	3	12	5	2	2.5	–	22	38	6	38	38	7	32	35	32	4	2.0	
20	105	75	14	4	M12	26.9	27.5	31	42	16	18	18	18	4	14	6	2.5	3	–	26	40	6	40	40	8	40	45	40	4	2.3	
25	115	85	14	4	M12	33.7	34.5	38	49	18	18	18	18	4	14	7	2.5	3	–	28	40	6	40	40	10	46	52	50	4	2.6	
32	140	100	18	4	M16	42.4	43.5	47	59	18	18	18	18	5	14	8	3	3	–	30	42	6	42	42	12	56	60	60	6	2.6	
40	150	110	18	4	M16	48.3	49.5	53	67	18	18	18	18	5	14	8	3	3	–	32	45	7	45	45	15	64	70	70	6	2.6	
50	165	125	18	4	M16	60.3	61.5	65	77	20	18	18	18	5	16	8	3	4	–	28	45	8	45	45	20	74	84	84	6	2.9	
65	185	145	18	8	M16	76.1	77.5	81	96	20	18	18	18	6	16	8	3	4	55	32	45	10	45	45	20	92	104	104	6	2.9	
80	200	160	18	8	M16	88.9	90.5	94	108	20	20	20	20	6	16	10	3	4	70	34	50	10	50	50	25	105	118	120	6	3.2	
100	220	180	18	8	M16	114.3	116.0	120	134	22	20	20	20	6	18	10	4	4	90	40	52	12	52	52	25	131	140	140	8	3.6	
125	250	210	18	8	M16	139.7	141.5	145	162	22	22	22	22	6	18	10	4	4	115	44	55	12	55	55	25	156	168	170	8	4.0	
150	285	240	22	8	M20	168.3	170.5	174	188	24	22	22	22	6	20	10	4	4	140	44	55	12	55	55	25	184	195	190	10	4.5	
200	340	295	22	8	M20	219.1	221.5	226	240	24	24	24	24	6	20	11	5	4	190	44	62	16	62	62	30	234	246	246	10	6.3	
250	395	350	22	12	M20	273.0	276.5	281	294	26	26	26	26	8	22	12	8	–	235	46	68	16	68	68	–	292	298	298	12	6.3	See Annex A
300	445	400	22	12	M20	323.9	327.5	333	348	28	26	26	26	8	22	12	8	–	285	46	68	16	68	68	–	342	350	348	12	7.1	
350	505	460	22	16	M20	355.6	359.5	365	400	30	26	26	26	8	22	13	8	–	330	53	68	16	68	68	–	385	400	408	12	7.1	
400	565	515	26	16	M24	406.4	411.0	416	450	32	26	26	26	8	24	14	8	–	380	57	72	16	72	72	–	440	456	458	12	7.1	
450	615	565	26	20	M24	457.0	462.0	467	498	36	28	28	28	8	24	15	–	–	425	63	72	16	72	–	–	488	502	502	12	7.1	
500	670	620	26	20	M24	508.0	513.5	519	550	38	28	28	28	8	26	16	–	–	475	67	75	16	75	–	–	542	559	559	12	7.1	
600	780	725	30	20	M27	610.0	616.5	622	650	42	30	34	34	8	26	18	–	–	575	75	82	18	80	–	–	642	658	658	12	–	
700	895	840	30	24	M27	711.0		721	–	50	35		38	8	–	20	–	–	670	–	85	18	80	–	–	746	–	772	12	–	
800	1015	950	33	24	M30	813.0		824	–	58	38		48	8	–	20	–	–	770	–	96	18	90	–	–	850	–	878	12	–	
900	1115	1050	33	28	M30	914.0	b	926	–	62	38		50	8	–	22	–	–	860	–	99	20	95	–	–	950	–	976	12	–	
1000	1230	1160	36	28	M33	1016.0		1028	–	70	44	b	54	8	–	24	–	–	960	–	105	20	95	–	–	1052	–	1080	16	–	
1200	1455	1380	39	32	M36	1219.0		1234	–	83	55		66	8	–	26	–	–	1160	–	132	25	115	–	–	1256	–	1292	16	–	
1400	1675	1580	42	36	M39	1422.0	–	–	–		65		–	–	–	–	–	–	–	–	143	25	–	–	–	1460	–	1496	16	–	
1600	1915	1820	48	40	M45	1626.0	–	–	–	b	75		–	–	–	–	–	–	–	–	159	25	–	–	–	1666	–	1712	16	–	
1800	2115	2020	48	44	M45	1829.0	–	–	–		85		–	–	–	–	–	–	–	–	175	30	–	–	–	1868	–	1910	16	–	

Table 12(concluded)

Dimensions in millimetres

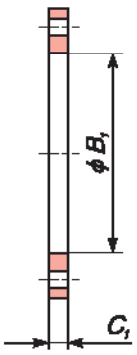
DN	Mating dimensions					Out-side diam-eter of neck A	Bore diameters			Flange thickness				Cha mfer E	Collar thickness F						Di-ame-ter of shoul der G_{max}	Length					Neck diameters			Cor ner radi l R_1	Wall thickness (see 5.6.1) S	
	Out-side di-ame-ter D	Di-ame-ter of bolt circle K	Di-ame-ter of bolt hole L	Bolting			B_1	B_2	B_3	C_1	C_2	C_3	C_4									H_1	H_2	H_3	H_4	H_5	N_1	N_2	N_3			
				Number	Size																											
	Flange type																															
	01,02,04,05,11,12,13,21					11 21[a] 34[a] 35–37	01 12 32	02	04	01 02 04	11 12 13	21	05	02 04	32 34	35	36	37	05	12 13	11 34[a]	11 34[c]	35	36	37	11 34[c]	12 13	21	11 12 13 21, 34	34	11,35 to 37	
2000	2325	2230	48	48	M45	2032.0	–	–	–		90	–	–	–	–	–	–	–	–	–	186	30	–	–	–	2072	–	2120	16	–		
2200	2550	2440	56	52	M52	2235.0	–	–	–		100	–	–	–	–	–	–	–	–	–	202	35	–	–	–	2275	–	–	18	–		
2400	2760	2650	56	56	M52	2438.0	–	–	–	[b]	110	–	–	–	–	–	–	–	–	–	218	35	–	–	–	2478	–	–	18	–	See Annex A	
2600	2960	2850	56	60	M52	2620.0	–	–	–		110	–	–	–	–	–	–	–	–	–	224	40	–	–	–	2680	–	–	18	–		
2800	3180	3070	56	64	M52	2820.0	–	–	–		124	–	–	–	–	–	–	–	–	–	244	40	–	–	–	2882	–	–	18	–		
3000	3405	3290	62	68	M56	3020.0	–	–	–		132	–	–	–	–	–	–	–	–	–	257	45	–	–	–	3085	–	–	18	–		

a For flanges type 21 the out side hub diameter approximately corresponds to the outside pipe diameter.
b To be specified by the purchaser.
c Use is limited up to DN 600.

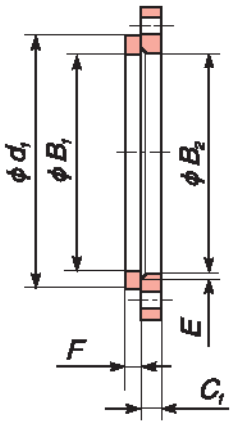


This diagram illustrates the arrangement but not necessarily the correct number of bolt holes.

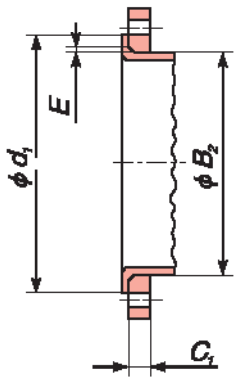
Refer to the column "Bolting Number" in Table 13 for the actual number.



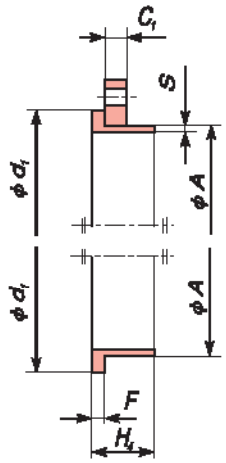
Type 01



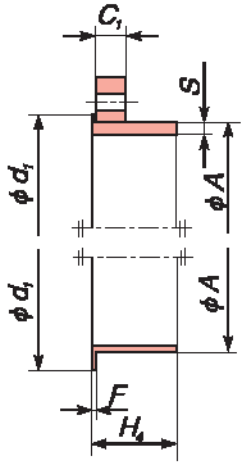
Type 02 and 32



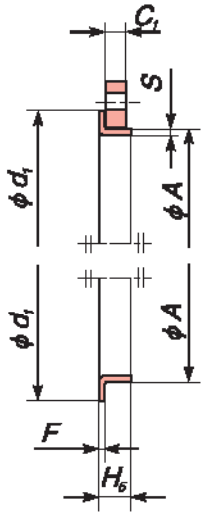
Type 02 and 33



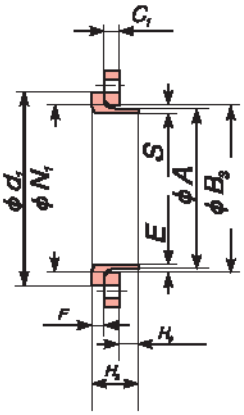
Type 02 and 35



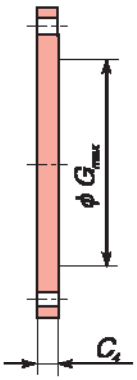
Type 02 and 36



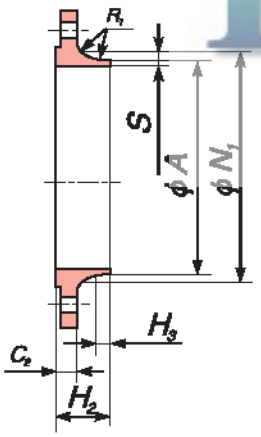
Type 02 and 37



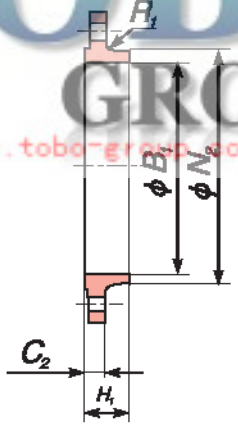
Type 04 and 34



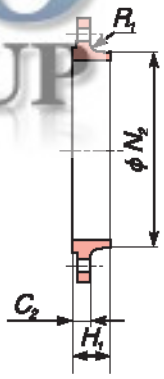
Type 05



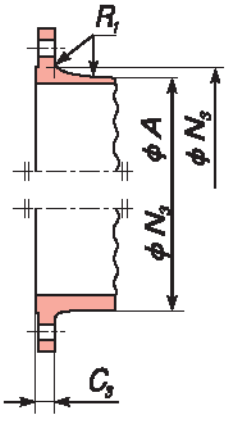
Type 11



Type 12



Type 13



Type 21

NOTE1 Dimensions N_1、 N_2 and N_3 are measured at the intersection of the hub draft angle and the back face of the flange.

NOTE2 For dimension d_1,see Table 8.

NOTE3 For dimensions Gmax refer to NOTE 1 of 5.6.1.

NOTE4 Type 33; lapped pipe end without determination of thickness and height.

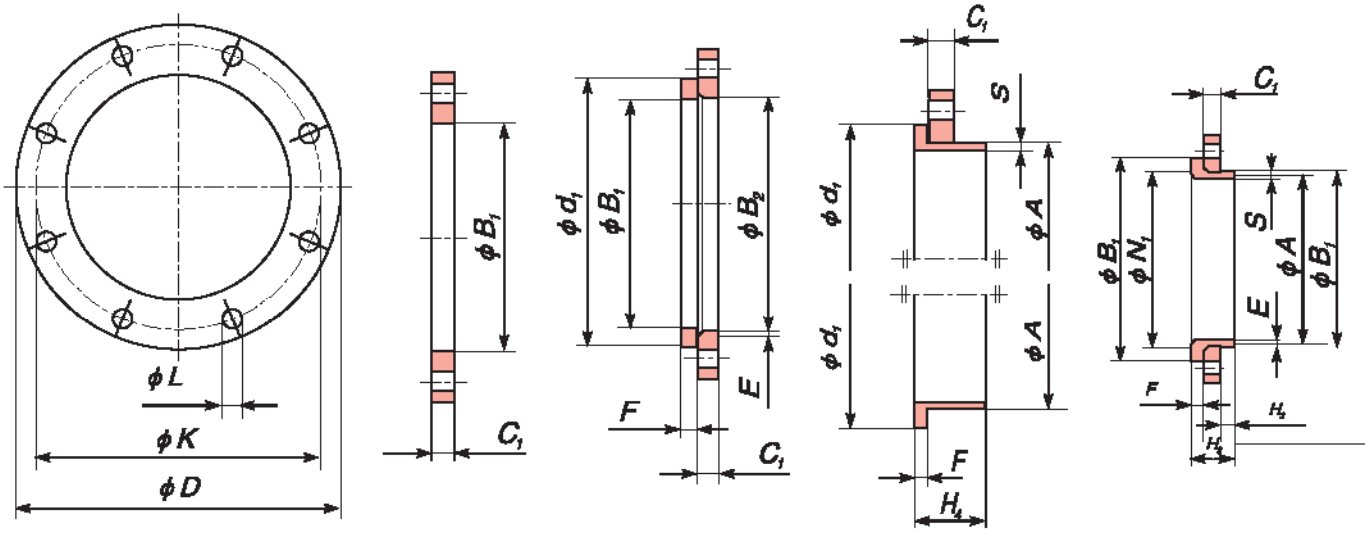
Figure. 8–Dimensions of PN 16 flanges

Table 13–Dimensions of PN 16 flanges

Dimensions in millimetres

DN	Mating dimensions					Outside diameter of neck	Bore diameters			Flange thickness				Chamfer	Collar thickness					Diameter of shoulder	Length					Neck diameters			Corner radii	Wall thickness (see 5.6.1)
	Outside diameter	Diameter of bolt circle	Diameter of bolt hole	Bolting																									
				Number	Size																									
	D	K	L			A	B_1	B_2	B_3	C_1	C_2	C_3	C_4	E	F					G_{min}	H_1	H_2	H_3	H_4	H_5	N_1	N_2	N_3	R_1	S
	Flange type																												
	01,02,04,05,11,12,13,21					11 21[a] 34[d] 35–37	01 12 32	02	04	01 02 04	11 12 13	21	05	02 04	32 34	35	36	37	05	12 13	11 34[c]	11 34[c]	35	36	37	11 34[c]	12 13	21	11 12 13 21, 34	34	11,35 to 37
10	90	60	14	4	M12	17.2	18.0	21	31	14	16	16	16	3	12	5	2	2.5	–	22	35	6	35	35	7	28	30	28	4	1.8	
15	95	65	14	4	M12	21.3	22.0	25	35	14	16	16	16	3	12	5	2	2.5	–	22	38	6	38	38	7	32	35	32	4	2.0	
20	105	75	14	4	M12	26.9	27.5	31	42	16	18	18	18	4	14	6	2.5	3	–	26	40	6	40	40	8	40	45	40	4	2.3	
25	115	85	14	4	M12	33.7	34.5	38	49	16	18	18	18	4	14	7	2.5	3	–	28	40	6	40	40	10	46	52	50	4	2.6	
32	140	100	18	4	M16	42.4	43.5	47	59	18	18	18	18	5	14	8	3	3	–	30	42	6	42	42	12	56	60	60	6	2.6	
40	150	110	18	4	M16	48.3	49.5	53	67	18	18	18	18	5	14	8	3	3	–	32	45	7	45	45	15	64	70	70	6	2.6	
50	165	125	18	4	M16	60.3	61.5	65	77	20	18	18	18	5	16	8	3	4	–	28	45	8	45	45	20	74	84	84	6	2.9	
65	185	145	18	8[b]	M16	76.1	77.5	81	96	20	18	18	18	6	16	8	3	4	55	32	45	10	45	45	20	92	104	104	6	2.9	
80	200	160	18	8	M16	88.9	90.5	94	108	20	20	20	20	6	16	10	3	4	70	34	50	10	50	50	25	105	118	120	6	3.2	
100	220	180	18	8	M16	114.3	116.0	120	134	22	20	20	20	6	18	10	4	4	90	40	52	12	52	52	25	131	140	140	8	3.6	
125	250	210	18	8	M16	139.7	141.5	145	162	22	22	22	22	6	18	10	4	4	115	44	55	12	55	55	25	156	168	170	8	4.0	
150	285	240	22	8	M20	168.3	170.5	174	188	24	22	22	22	6	20	10	5	5	140	44	55	12	55	55	25	184	195	190	10	4.5	
200	340	295	22	12	M20	219.1	221.5	226	240	26	24	24	24	6	20	11	6	6	190	44	62	16	62	62	30	235	248	246	10	6.3	
250	405	355	26	12	M24	273.0	276.5	281	294	29	26	26	26	8	22	12	10	–	235	46	70	16	70	68	–	292	298	296	12	6.3	
300	460	410	26	12	M24	323.9	327.5	333	348	32	28	28	28	8	24	14	10	–	285	46	78	16	78	68	–	344	350	350	12	7.1	See Annex A
350	520	470	26	16	M24	355.6	359.0	365	400	35	30	30	30	8	26	18	10	–	330	57	82	16	82	68	–	390	400	410	12	8.0	
400	580	525	30	16	M27	406.4	411.0	416	454	38	32	32	32	8	28	20	10	–	380	63	85	16	85	72	–	445	456	458	12	8.0	
450	640	585	30	20	M27	457.0	462.0	467	500	42	34	40	40	8	30	22	–	–	425	68	83	16	87	–	–	490	502	516	12	8.0	
500	715	650	33	20	M30	508.0	513.5	519	556	46	38	44	44	8	32	22	–	–	475	73	84	16	90	–	–	548	559	576	12	8.0	
600	840	770	36	20	M33	610.0	616.5	622	660	55	40	54	54	8	32	24	–	–	575	83	88	18	95	–	–	670	658	690	12	8.8	
700	910	840	36	24	M33	711.0	c	721	–	63	40	c	58	8	–	26	–	–	670	83	104	18	100	–	–	755	760	760	12	–	
800	1025	950	39	24	M36	813.0		824	–	74	41		62	8	–	28	–	–	770	90	108	20	105	–	–	855	864	862	12	–	
900	1125	1050	39	28	M36	914.0		926	–	82	48		64	8	–	30	–	–	860	94	118	20	110	–	–	955	968	962	12	–	
1000	1255	1170	42	28	M39	1016.0		1030	–	90	59		68	8	–	35	–	–	960	100	137	22	120	–	–	1058	1072	1076	16	–	
1200	1485	1390	48	32	M45	1219.0	–	–	–	c	78	c	–	–	–	–	–	–	1160	–	160	30	–	–	–	1262	–	1282	16	–	
1400	1685	1590	48	36	M45	1422.0	–	–	–		84		–	–	–	–	–	–	1348	–	177	30	–	–	–	1465	–	1482	16	–	
1600	1930	1820	56	40	M52	1626.0	–	–	–	c	102		–	–	–	–	–	–	1548	–	204	35	–	–	–	1668	–	1696	16	–	
1800	2130	2020	56	44	M52	1829.0	–	–	–		110		–	–	–	–	–	–	1746	–	218	35	–	–	–	1870	–	1896	16	–	
2000	2345	2230	62	48	M56	2032.0	–	–	–		124		–	–	–	–	–	–	1950	–	238	40	–	–	–	2072	–	2100	16	–	

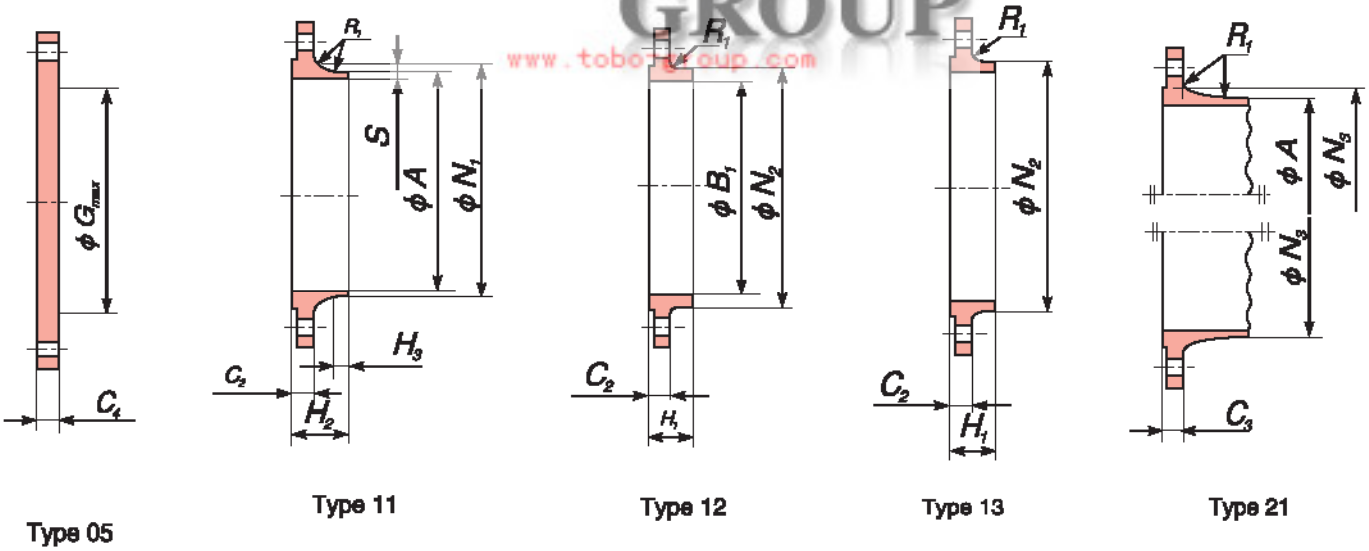
a For flanges type 21 the outside hub diameter approximately corresponds to the outside pipe diameter.
b According to EN 1092–2 (Cast iron flanges) and EN 1092–3(Copper alloy flanges). the flanges in this DN and PN may be supplied with 4 holes. Where steel flanges are required with 4 holes, these may be supplied by agreement between flange manufacturer and purchaser.
c To be specified by the purchaser.
d Use is limited up to DN 600.



This diagram illustrates the arrangement but not necessarily the correct number of bolt holes.

Refer to the column "Bolting Number" in Table 14 for the actual number.

Type 01 Type 02 and 32 Type 02 and 35 Type 04 and34



Type 05 Type 11 Type 12 Type 13 Type 21

NOTE1 Dimensions N_1、N_2 and N_3 are measured at the intersection of the hub draft angle and the back face of the flange.

NOTE2 For dimension d_1,see Table 8.

NOTE3 For dimensions G_{max} refer to NOTE 1 of 5.6.1.

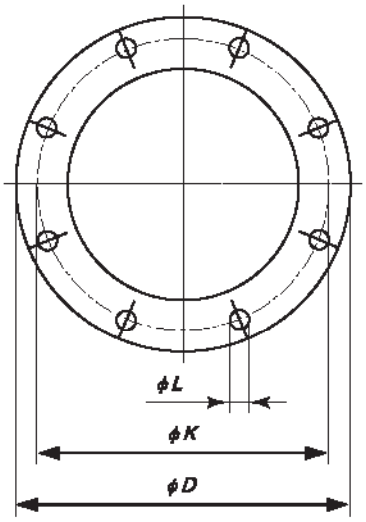
Figure. 9–Dimensions of PN 25 flanges

Table 14–Dimensions of PN 25 flanges

Dimensions in millimetres

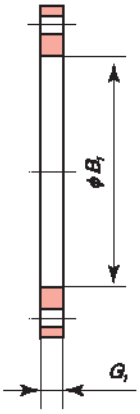
DN	Mating dimensions					Outside diameter of neck A	Bore diameters			Flange thickness				Chamfer E	Collar thickness F		Diameter of shoulder G_{min}	Length				Neck diameters			Corner radii R_1	Wall thickness (see 5.6.1) S	
	Outside diameter D	Diameter of bolt circle K	Diameter of bolt hole L	Bolting			B_1	B_2	B_3	C_1	C_2	C_3	C_4					H_1	H_2	H_3	H_4	N_1	N_2	N_3			
				Number	Size																						
	Flange type																										
	01,02,04,05,11,12,13,21					11 21[a] 34[d] 35–37	01 12 32	02	04	01 02 04	11 12 13	21	05	02 04	32 34	35	05	12 13	11 34[c]	11 34[a]	35	11 34[a]	12 13	21	11 12 13 21, 34	34	11,35 to 37
10	90	60	14	4	M12	17.2	18.0	21	31	14	16	16	16	3	12	5	–	22	35	6	35	28	30	28	4	1.8	See Annex A
15	95	65	14	4	M12	21.3	22.0	25	35	14	16	16	16	3	12	5	–	22	38	6	38	32	35	32	4	2.0	
20	105	75	14	4	M12	26.9	27.5	31	42	16	18	18	18	4	14	6	–	26	40	6	40	40	45	40	4	2.3	
25	115	85	14	4	M12	33.7	34.5	38	49	16	18	18	18	4	14	7	–	28	40	6	40	46	52	50	4	2.6	
32	140	100	18	4	M16	42.4	43.5	47	59	18	18	18	18	5	14	8	–	30	42	6	42	56	60	60	6	2.6	
40	150	110	18	4	M16	48.3	49.5	53	67	18	18	18	18	5	14	8	–	32	45	7	45	64	70	70	6	2.6	
50	165	125	18	4	M16	60.3	61.5	65	77	20	20	20	20	5	16	10	–	34	48	8	48	75	84	84	6	2.9	
65	185	145	18	8	M16	76.1	77.5	81	96	22	22	22	22	6	16	11	55	38	52	10	52	90	104	104	6	2.9	
80	200	160	18	8	M16	88.9	90.5	94	114	24	24	24	24	6	18	12	70	40	58	12	58	105	118	120	8	3.2	
100	235	190	22	8	M20	114.3	116.0	120	138	26	24	24	24	6	20	14	90	44	65	12	65	134	145	142	8	3.6	
125	270	220	26	8	M24	139.7	141.5	145	166	28	26	26	26	6	22	16	115	48	68	12	68	162	170	162	8	4.0	
150	300	250	26	8	M24	168.3	170.5	174	194	30	28	28	28	6	24	18	140	52	75	12	75	192	200	192	10	4.5	
200	360	310	26	12	M24	219.1	221.5	226	250	32	30	30	30	6	26	18	190	52	80	16	80	244	258	252	10	6.3	
250	425	370	30	12	M27	273.0	276.5	281	302	35	32	32	32	8	26	18	235	60	88	18	88	298	310	304	12	7.1	
300	485	430	30	16	M27	323.9	327.5	333	356	38	34	34	34	8	28	20	285	67	92	18	92	352	364	364	12	8.0	
350	555	490	33	16	M30	355.6	359.5	365	408	42	38	38	38	8	32	22	332	72	100	20	100	398	418	418	12	8.0	
400	620	550	36	16	M33	406.4	411.0	416	462	48	40	40	40	8	34	24	380	78	110	20	110	452	472	472	12	8.8	
450	670	600	36	20	M33	457.0	462.0	467	510	54	46	46	50	8	36	26	425	84	110	20	110	500	520	520	12	8.8	
500	730	660	36	20	M33	508.0	513.5	519	568	58	48	48	51	8	38	28	475	90	125	20	125	558	580	580	12	10.0	
600	845	770	39	20	M36	610.0	616.5	622	670	68	48	58	66	8	40	30	575	100	125	20	115	660	684	684	12	11.0	
700	960	875	42	24	M39	711.0		721	–	85	50			8	–	30	–	–	129	20	125	760	–	780	12		
800	1085	990	48	24	M45	813.0	b	824	–	95	53	b	b	8	–	35	–	–	138	22	135	864	–	882	12		
900	1185	1090	48	28	M45	914.0		–	–	b	57			–	–	–	–	–	148	24	–	968	–	982	12		
1000	1320	1210	56	28	M52	1016.0	–	–	–		63			–	–	–	–	–	160	24	–	1070	–	1086	16		
1200	d																										
1400																											
1600																											
1800																											
2000																											

a For flanges type 21 the outside hub diameter approximately corresponds to the outside pipe diameter.
b To be specified by the purchaser.
c Use is limited up to DN 500.
d Only mating dimensions fixed, see Annex J.

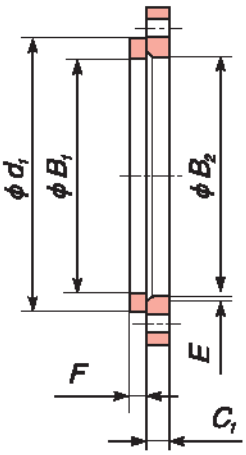


This diagram illustrates the arrangement but not necessarily the correct number of bolt holes.

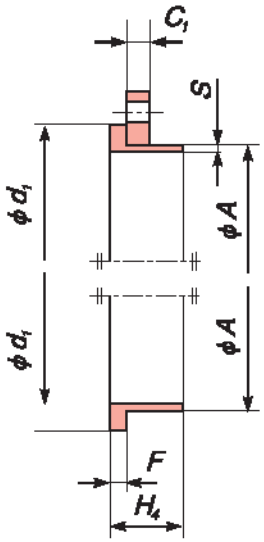
Refer to the column"Bolting Number" in Table 15 for the actual number.



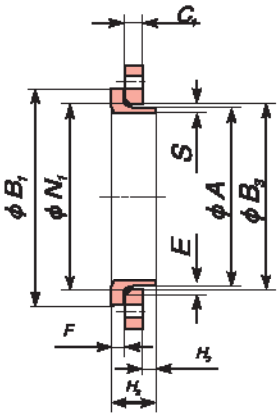
Type 01



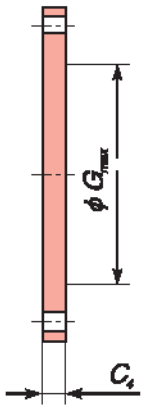
Type 02 and 32



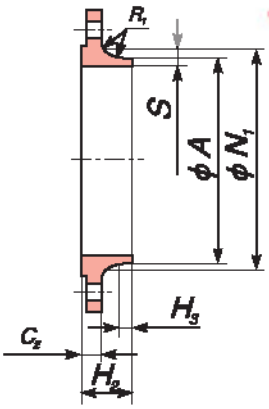
Type 02 and 35



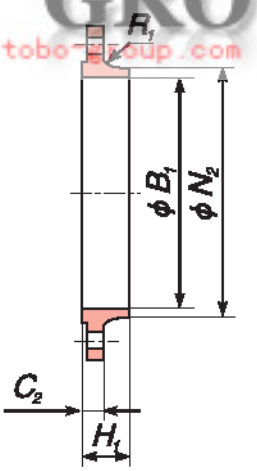
Type 04 and 34



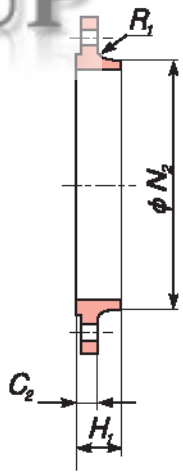
Type 05



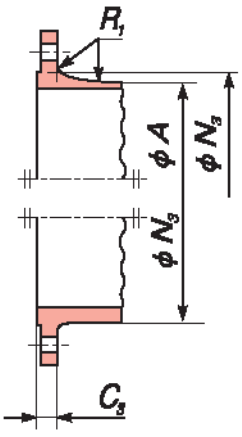
Type 11



Type 12



Type 13



Type 21

NOTE 1 Dim ensions N_1,$N_2$and$N_3$are measured at the intersection of the hub draft angle and the back face of the flange.

NOTE 2 For dimension d_1,see Table 8.

NOTE 3 For dimensions G_{max} refer to NOTE 1 of 5.6.1.

Figure 10-Dimensions of PN 40 flanges

Table 15 –Dimensions of PN 40 flanges

Dimensions in millimetres

DN	Mating dimensions					Outside diameter of neck A	Bore diameters			Flange thickness				Chamfer E	Collar thickness F	Diameter of shoulder G_{max}	Length				Neck diameters			Corner radius R_1	Wall thickness (see 5.6.1) S	
	Outside diameter D	Diameter of bolt circle K	Diameter of bolt hole L	Bolting			B_1	B_2	B_3	C_1	C_2	C_3	C_4				H_1	H_2	H_3	H_4	N_1	N_2	N_3			
				Number	Size																					
	Flange type																									
	01,02,04,05,11,12,13,21					11 21[a] 34[c]	01 12 32	02	04	01 02 04	11 12 13	21	05	02 04	32 34[c]	35	05	12 13	11 34[c]	11 34[c]	35	11 34	12 13	21	11 12 13 21	34[a]	11,35
10	90	60	14	4	M12	17.2	18.0	21	31	14	16	16	3	12	5	–	22	35	6	35	28	30	28	4	1.8	See Annex A
15	95	65	14	4	M12	21.3	22.0	25	35	14	16	16	3	12	5	–	22	38	6	38	32	35	32	4	2.0	
20	105	75	14	4	M12	26.9	27.5	31	42	16	18	18	4	14	6	–	26	40	6	40	40	45	40	4	2.3	
25	115	85	14	4	M12	33.7	34.5	38	49	16	18	18	4	14	7	–	28	40	6	40	46	52	50	4	2.6	
32	140	100	18	4	M16	42.4	43.5	47	59	18	18	18	5	14	8	–	30	42	6	42	56	60	60	6	2.6	
40	150	110	18	4	M16	48.3	49.5	53	67	18	18	18	5	14	8	–	32	45	7	45	64	70	70	6	2.6	
50	165	125	18	4	M16	60.3	61.5	65	77	20	20	20	5	16	10	–	34	48	8	48	75	84	84	6	2.9	
65	185	145	18	8	M16	76.1	77.5	81	98	22	22	22	6	16	11	55	38	52	10	52	90	104	104	6	2.9	
80	200	160	18	8	M16	88.9	90.5	94	114	24	24	24	6	18	12	70	40	58	12	58	105	118	120	8	3.2	
100	235	190	22	8	M20	114.3	116.0	120	138	26	24	24	6	20	14	90	44	65	12	65	134	145	142	8	3.6	
125	270	220	26	8	M24	139.7	141.5	145	166	28	26	26	6	22	16	115	48	68	12	68	162	170	162	8	4.0	
150	300	250	26	8	M24	168.3	170.5	174	194	30	28	28	6	24	18	140	52	75	12	75	192	200	192	10	4.5	
200	375	320	30	12	M27	219.1	221.5	226	250	36	34	36	6	28	20	190	52	88	16	88	244	260	254	10	6.3	
250	450	385	33	12	M30	273.0	276.5	281	312	42	38	38	8	30	22	235	60	105	18	105	306	312	312	12	7.1	
300	515	450	33	16	M30	323.9	327.5	333	368	52	42	42	8	34	25	285	67	115	18	115	362	380	378	12	8.0	
350	580	510	36	16	M33	355.6	359.5	365	418	58	46	46	8	36	28	330	72	125	20	125	408	424	432	12	8.8	
400	660	585	39	16	M36	406.4	411.0	416	472	65	50	50	8	42	32	380	78	135	20	135	462	478	498	12	11.0	
450	685	610	39	20	M36	457.0	462.0	467	510		57	57	8	46	–	425	84	135	20	–	500	522	522	12	12.5	
500	755	670	42	20	M39	508.0	513.5	519	572	d	57	57	8	50	–	475	90	140	20	–	562	578	576	12	14.2	
600	890	795	48	20	M45	610.0	616.5	622	676		72	72	8	54	–	575	100	150	20	–	666	686	686	12	16.0	
700	b																									
800																										
900																										
1000																										
1200																										
1400																										
1600																										

a For flanges type 21 the outside hub diameter approximately corresponds to the outside pipe diameter.
b Only mating dimensions fixed,see Annex J.
c Use is limited up to DN 600.
d To be specified by the purchaser.

先进工艺和生产设备

检 验

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按质量体系规定，从原材料进厂，经各个工艺流程，直到产品出厂，严格检验。主要通过化学分析、物理性能测试、金相分析等手段。

From acceptance of raw material to final products all inspection and testing is conducted according to the requirements of quality program including chemical analysis、mechanical properties and metalligraphy.

严格规范的检验系统

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