BUFCO

"Technology for next generation!"

창업이래 꾸준히 걸어온 고객이 먼저라는 신념! 그 변하지 않는 굳은 신념으로 다가오는 미래에도
세계최고의 기술력으로 고객과 사회를 먼저 생각하는 책임있는 일류기업이 되겠습니다!

BUFCO (주)부성후렌지

Greetings

We offer our sincere welcome to all customers visiting our website.

Since our establishment in 1998, we have been exerting our utmost efforts to make nothing but flange with enterprise quality controls and technology development. As a leading specialized production in flange industry, we have made progress by acquisitions of Korea Industrial Standards (KS) and ISO Quality Management System. Our ambition is providing the best products to customers by continued research and development. For global customers' satisfaction with best quality, we point to customer-centered management and quality management.

Fueled by our customers' love and support, all employees of BUSUNG FLANGE Co,. Ltd. will offer our greatest efforts and sincerity to be the best company in the world.

PRESIDENT

Lee Seon Ryeol

HISTORY

1998 07	(주)부성후렌지 설립
1998 07	STX조선해양(주) 협력업체 등록
1998 08	한국 산업 규격 표시 KS승인 (KS B 1503)
1998 11	ISO 9002 인증 획득, KSA 9002 인증 획득
2001 11	현대중공업(주) 협력업체 등록
2002 05	(주)현대미포조선 협력업체 등록
2004 06	대우조선해양(주) 협력업체 등록
2006 03	스테인레스 강제용접식 플랜지 KS 표시인증 획득 (KS B 1506)
2007 10	부산광역시 전략산업의 선도기업 선정 (기계 부품 소재 산업)
2013 07	특허청 디자인등록 (제 30-0704128호), (제 30-0704147호)
2013 12	경영혁신형 중소기업 (중소기업청장)
2014 03	확장이전 부산광역시 강서구 미음산단4로 32 (미음동)

1998 07	Establishment of BUSUNG FLANGE Co., Ltd.
1998 07	Registered to vendor of STX OFFSHORE & SHIPBUILDING Co.,Ltd
1998 08	Approved K.S (KOREAN INDUSTRIAL STANDARD) MARK
1998 11	Ceritificate of ISO 9002 Quality Management System Ceritificate of KSA 9002 Quality Management System
2001 11	Registered to vendor of Hyundai Heavy Industry Co., Ltd. (HHI)
2002 05	Registered to vendor of Hyundai Mipo Dockyard Co., Ltd. (HMD)
2004 06	Registered to vendor of Daewoo Shipbuilding & Marine Engineering Co., Ltd. (DSME)
2006 03	Approved K.S (KOREAN INDUSTRIAL STANDARD) MARK
2007 10	Appointed as the leading company of strategic industry in Busan
2013 07	Design registration at the Patent Office
2013 12	Innovation SMEs confirmation
2014 03	MOVE FOR EXPANSION (32, Mieumsandan 4-ro, Gangseo-gu, Busan, Korea.)

Quality Certificates


제 품 인 증 서

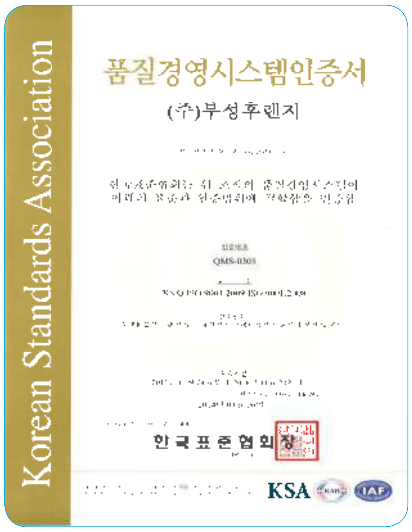
산업표준화법 제17조 제1항에 따른 인증심사를 실시한 결과
한국산업표준(KS)과 인증심사기준에 적합하므로 산업표준화법 제15조에 따라
위와 같이 한국산업표준(KS)에 적합함을 인증합니다.
2014 년 5 월 29 일

한국표준협회장


제 품 인 증 서

산업표준화법 제17조 제1항에 따른 인증심사를 실시한 결과
한국산업표준(KS)과 인증심사기준에 적합하므로 산업표준화법 제15조에 따라
위와 같이 한국산업표준(KS)에 적합함을 인증합니다.
2014 년 5 월 29 일

한국표준협회장


Korean Standards Association

품질경영시스템인증서

(주)부성후렌지

QMS-0303

한국표준협회장

KSA


Korean Standards Association

CERTIFICATE OF APPROVAL

BUSUNG FLANGE Co., Ltd.

Korean Standards Association hereby certifies that the Quality Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION No
QMS-0303

STANDARD
KS Q ISO 9001:2009/ISO 9001:2008

SCOPE OF CERTIFICATION
PRODUCTION AND SALES OF STEEL WELDING FLANGES & STAINLESS STEEL WELDING FLANGES

VALID FROM
24 November, 2013

VALID UNTIL
23 November, 2016

KOREAN STANDARDS ASSOCIATION

KSA


디자인등록증

등 록 제 30-0704147 호

위의 디자인은 「디자인보호법」에 따라 디자인등록원부에 등록되었음을 증명합니다.

2013년 07월 31일

특 허 청 장


디자인등록증

등 록 제 30-0704128 호

위의 디자인은 「디자인보호법」에 따라 디자인등록원부에 등록되었음을 증명합니다.

2013년 07월 31일

특 허 청 장


제 2014154556 호

연구개발전담부서 인정서

1. 전담부서명: 연구개발전담부서
[소속기업명: (주)부성후렌지]
2. 소 재 지: 부산광역시 강서구 미음산단4로 32
3. 신고 연월일: 2014년 10월 14일

미래창조과학부

「기초연구진흥 및 기술개발지원에 관한 법률」 제14조, 같은 법 시행령 제16조제2항 및 제27조제1항에 따라 위와 같이 기업의 연구개발전담부서로 인정합니다.

2014년 10월 28일

한국산업기술진흥협회장

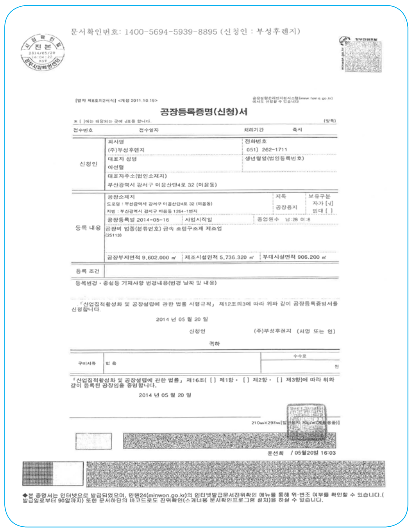

사 업 자 등 록 증

(법인사업자)

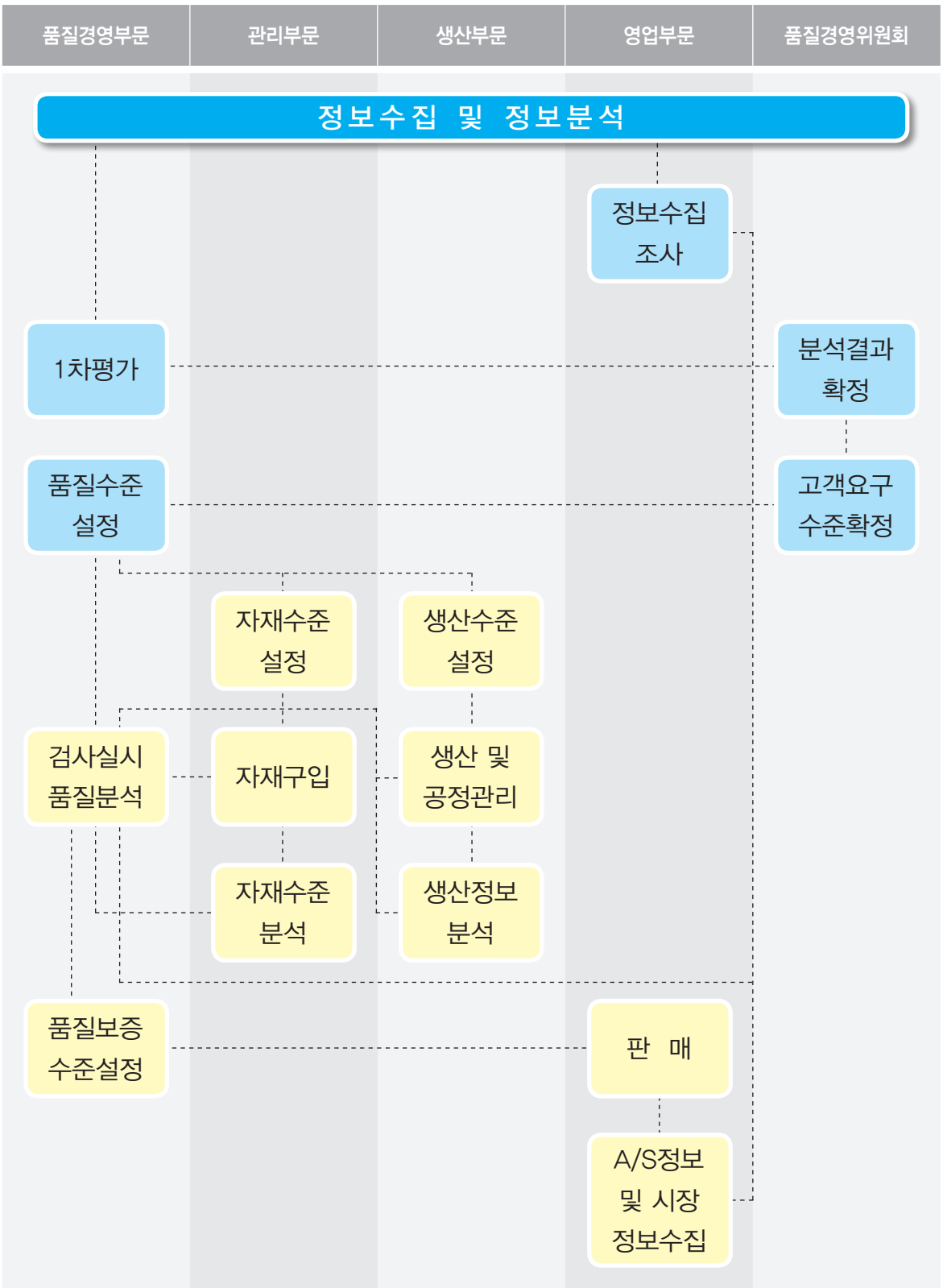
등록번호 : 603-81-35438

2014 년 03 월 20 일

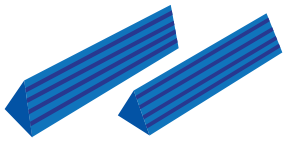
북부산 세무서장


공장등록증명(신청)서

Quality Assurance (품질보증 체계도)

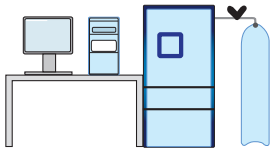


MANUFACTRUING PROCESSAND QUALITY CONTROL



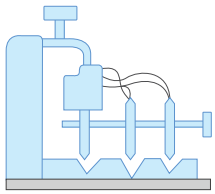
Raw Material

- Raw Material Check
- Quantity Check
- Visual & Dimension Check

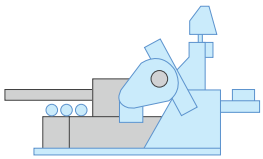


Material Analyzing

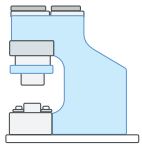
- Chemical Analyzings Check
- Preservation of Analysis Certificate



Gas Cutting

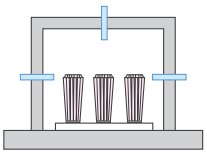


Bandsaw Cutting



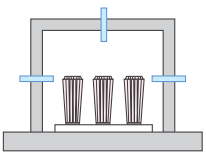
Forging

- Material Grade Check
- Weight Measuring
- Temperature Control
- Mechanical Test



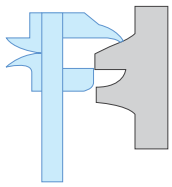
Heating

- Material Grade Check
- Dimension Check
- Weight Measuring



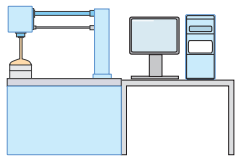
Heat Treatment

- Normalizing
- Tempering
- Q.T
- Solution Treatment



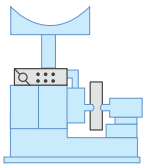
Inspection

- Dimension Test
- Visual Test
- Nondestructive Test

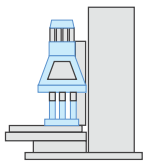


Marking

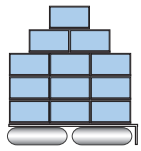
- Description Marking
- Size Marking
- Lot No. Marking



Lathe

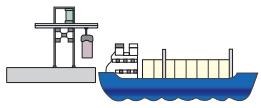


Drilling



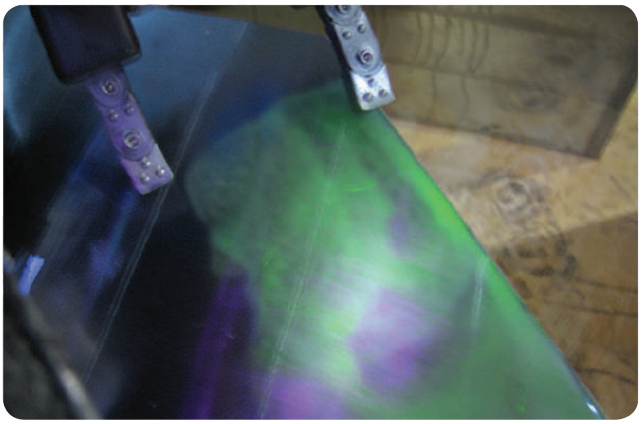
Packing

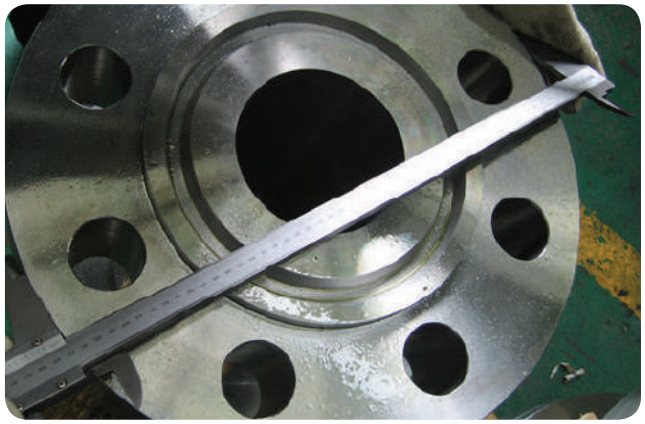
- Packing spec. Check
- Packing Inspection



Shipping

- Dispatching Shipping Documents
- Check Cert. of Origin





Facilities

Quality Management

Strives to ensure the Better Quality. the Batter service for your Business.

We will be the most Valuable Partner in the near Future with your care!

Universal Testing Machine

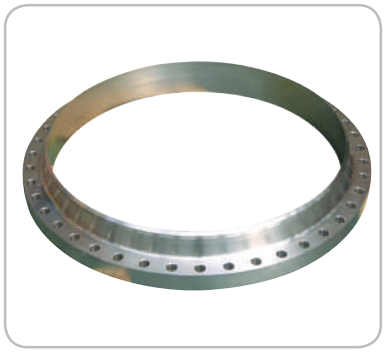
Hardness

Spectrometer

Products (생산제품)

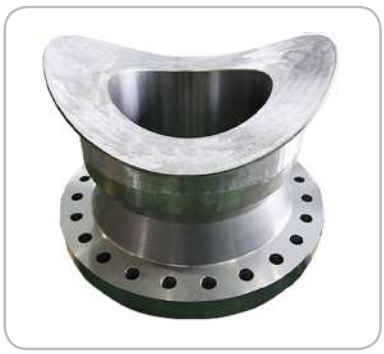
▲ STANDARD FLANGES

▲ ORIFICE FLANGE

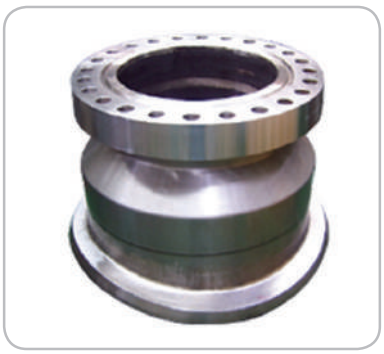


▲ CHANNEL FLANGE

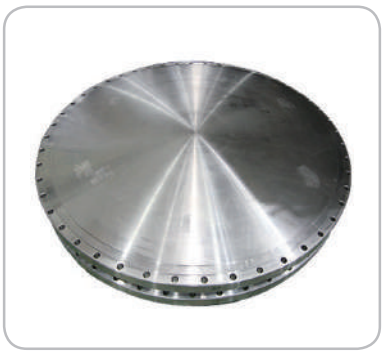
▲ STEEL LINE BLANKS



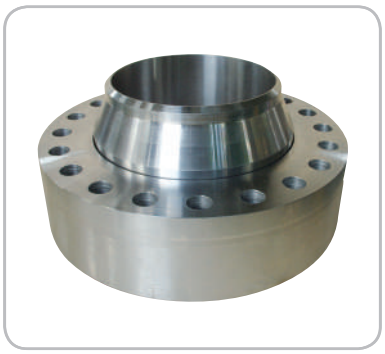
▲ FORGED NOZZLE



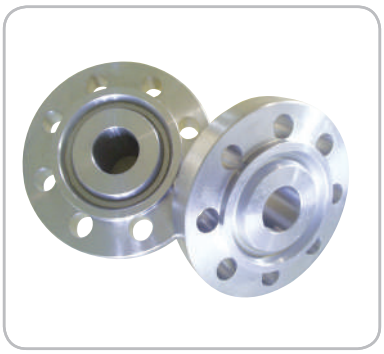
▲ FORGED NOZZLE



▲ CHANNEL COVER FLANGE



▲ SWIVEL FLANGE



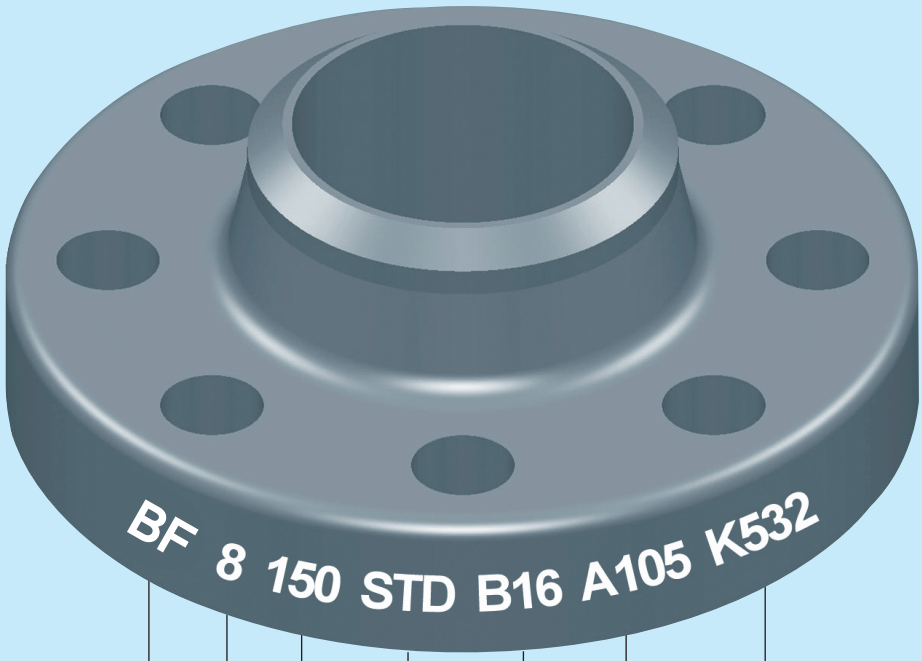
▲ RING JOINT TYPE FLANGE

▲ WELDING NECK FLANGE

▲ WNRF FLANGE

▲ FLEXIBLE FLANGE

STANDARD MARKING



TRADE MARK

NOMINAL SIZE

CLASS

NOMINAL
WALL THICKNESS

HEAT NO

MATERIAL DESIGNATION

ANSI STANDARD

Quality Certificates

Lap Joint Flanges

The lap joint flange is practically identical to a slip–on flange except it has a radius at the intersection of the bore and flange face. This radius if necessary to have the flange accommodate a lap joint stub end.
Normally, a lap joint flange and a lap joint stub end are mated together in an assembly system.

Blind Flanges

The blind flanges is a flange without a bore. It is used to close off the ends of a piping system and/or pressure vessel opening. It also permits easy access to the interior of a line or vessel once it has been sealed and must be reopened.

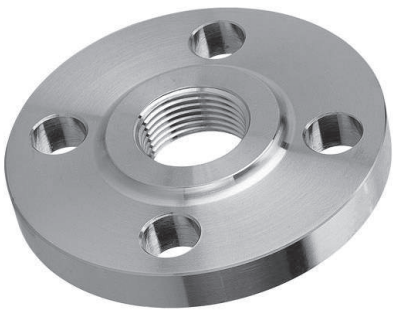
Socket Welding Flanges

The socket welding flange is similar to a slip–on flange except it has a bore and a counterbore dimension.
The cunterbore is slightly larger than the O.D. of the matching pipe, allowing the pipe to be inserted into the flange similar to a slip–on flange. The diameter of the smaller bore is the same as the I.D. of the matching pipe A restriction is built into the bottom of the bore which sets as a shoulder for the pipe to rest on. This eliminates any restriction in flow when using a socket welding flange.

Welding Neck Flanges

The welding neck flange is normally referred to as the "high hup" flange. It is desingned to transfer stresses to the pipe, thereby reducing high stress concentrations at the base of the flange. The welding neck flange is the best designed butt–welded flange of those currently available because of its inherent structural value.
It is expensive because of the design.

Threaded(Screwed) Flanges

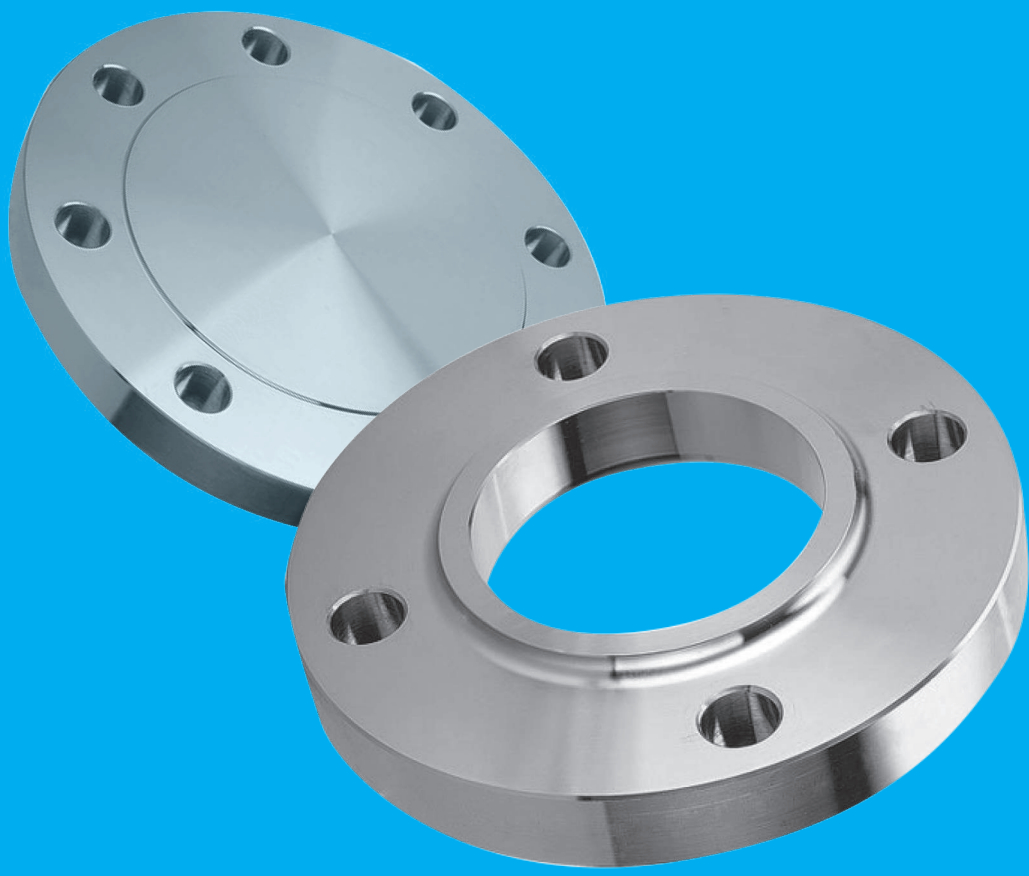


The threaded flange is similar to the slip–on flange, but the bore is threaded. Its chief merit is that It can be assembled without weding, explanining its use in low pressure services at ordinary atmospheric temperatures, and in highly explosive areas where welding createa a hazard.

Slip–On Flanges

The Slip–on flange has a low hub because the pipe slips into the flange prior to welding. It is welded both inside and out to provide sufficient strength and prevent leakage. Slip–on flanges are all bored slightly larger than the O.D. of the matching pipe. They are preferred over welding neck flanges by many users due to their lower initial cost, but final installation cost is probably not much less than that of the welding neck flange because of the additional welding involved.

Contents



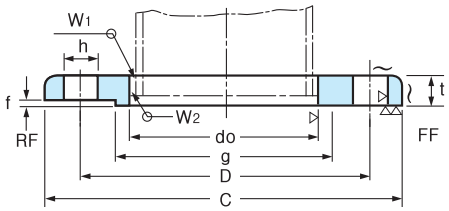
JIS & KS FLANGES

- 5K FLANGES
- 10K FLANGES
- 16K FLANGES
- 20K FLANGES
- 30K FLANGES
- 40K FLANGES
- 210K FLANGES
- 280K FLANGES
- 350K FLANGES
- KS B 2332/3 FLANGES
- KS D 3578 FLANGES
- KS B 6216 FLANGES
- 1K FLANGES
- 2K FLANGES
- 5K SET-ON FLANGES
- 10K SET-ON FLANGES

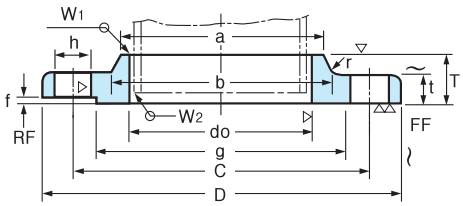
5Kg/Cm^2

JIS B 2220-2012(KS B 1503-2007)
5Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

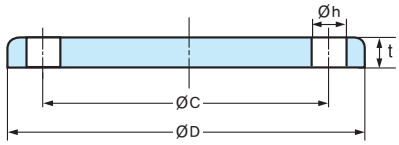
SOP TYPE
NOMINAL SIZE 10-1500A



SOH TYPE
NOMINAL SIZE 450-1500A



BL TYPE
NOMINAL SIZE 10-1500A



Unit:mm

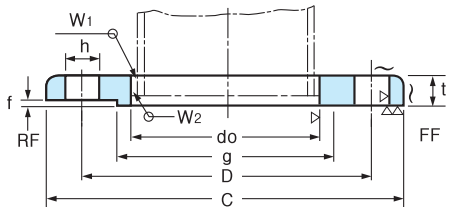
Nominal Size	Outside Diam.of steel pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Dia. of Bolt			Nominal Bolt Size	Weight(kg)		
				Thick-ness	Total Length	Diam. of Hub		Radius	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.		SOP	BL	SOH
		do	D	t (BL)	T	a	b	r	f	g	C	N	h				
10	17.3	17.8	75	9	–	–	–	–	1	39	55	4	12	M10	0.26	0.28	–
15	21.7	22.2	80	9	–	–	–	–	1	44	60	4	12	M10	0.30	0.32	–
20	27.2	27.7	85	10	–	–	–	–	1	49	65	4	12	M10	0.36	0.41	–
25	34.0	34.5	95	10	–	–	–	–	1	59	75	4	12	M10	0.45	0.52	–
32	42.7	43.2	115	12	–	–	–	–	2	70	90	4	15	M12	0.77	0.91	–
40	48.6	49.1	120	12	–	–	–	–	2	75	95	4	15	M12	0.82	1.00	–
50	60.5	61.1	130	14	–	–	–	–	2	85	105	4	15	M12	1.06	1.38	–
65	76.3	77.1	155	14	–	–	–	–	2	110	130	4	15	M12	1.48	2.00	–
80	89.1	90.0	180	14	–	–	–	–	2	121	145	4	19	M16	1.97	2.67	–
90	101.6	102.6	190	14	–	–	–	–	2	131	155	4	19	M16	2.08	2.99	–
100	114.3	115.4	200	16	–	–	–	–	2	141	165	8	19	M16	2.35	3.66	–
125	139.8	141.2	235	16	–	–	–	–	2	176	200	8	19	M16	3.20	5.16	–
150	165.2	166.6	265	18	–	–	–	–	2	206	230	8	19	M16	4.39	7.47	–
175	190.7	192.1	300	18	–	–	–	–	2	232	260	8	23	M20	5.42	9.52	–
200	216.3	218.0	320	20	–	–	–	–	2	252	280	8	23	M20	6.24	12.1	–
225	241.8	243.7	345	20	–	–	–	–	2	277	305	12	23	M20	6.57	13.9	–
250	267.4	269.5	385	22	–	–	–	–	2	317	345	12	23	M20	9.39	19.2	–
300	318.5	321.0	430	22	–	–	–	–	3	360	390	12	23	M20	10.2	24.2	–
350	355.6	358.1	480	24	–	–	–	–	3	403	435	12	25	M22	14.0	33.0	–
400	406.4	409.0	540	24	–	–	–	–	3	463	495	16	25	M22	16.9	41.7	–
450	457.2	460.0	605	24	40	495	500	5	3	523	555	16	25	M22	21.4	52.7	24.9
500	508.0	511.0	655	24	40	546	552	5	3	573	605	20	25	M22	23.0	61.6	27.0
550	558.8	562.0	720	26	42	597	603	5	3	630	665	20	27	M24	30.1	80.8	34.5
600	609.6	613.0	770	26	44	648	654	5	3	680	715	20	27	M24	32.5	92.7	37.8
650	660.4	664.0	825	26(28)	48	702	708	5	3	735	770	24	27	M24	35.6	114.0	43.2
700	711.2	715.0	875	26(30)	48	751	758	5	3	785	820	24	27	M24	38.0	138.0	45.8
750	762.0	766.0	945	28(32)	52	802	810	5	3	840	880	24	33	M30	48.4	171.0	57.7
800	812.8	817.0	995	28(34)	52	854	862	5	3	890	930	24	33	M30	51.2	202.0	61.3
850	863.6	868.0	1045	28(36)	54	904	912	5	3	940	980	24	33	M30	53.9	237.0	65.3
900	914.4	919.0	1095	30(36)	56	956	964	5	3	990	1030	24	33	M30	60.7	260.0	73.1
1000	1016.0	1021.0	1195	32(40)	60	1058	1066	5	3	1090	1130	28	33	M30	70.1	345.0	84.8
1100	1117.6	1122.0	1305	32(44)	71	1158	1170	7	3	1200	1240	28	33	M30	81.6	454.0	105.0
1200	1219.2	1224.0	1420	34(48)	77	1260	1272	7	3	1305	1350	32	33	M30	101.0	586.0	129.0
1350	1371.6	1376.0	1575	34(54)	80	1414	1426	7	3	1460	1505	32	33	M30	116.0	814.0	151.0
1500	1524.0	1529.0	1730	36(58)	86	1568	1580	7	3	1615	1660	36	33	M30	137.0	1060.0	180.0

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

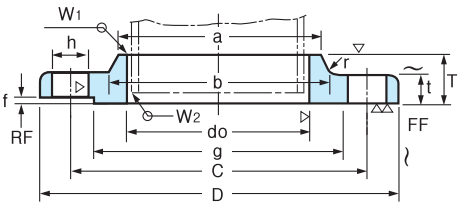
10kg/Cm2

JIS B 2220-2012(KS B 1503-2007)
10Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

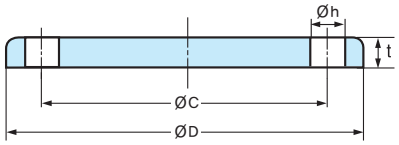
SOP TYPE
NOMINAL SIZE 10-1500A



SOH TYPE
NOMINAL SIZE 250-1500A



BL TYPE
NOMINAL SIZE 10-1500A



NORMAL THICKNESS FLANGE

Unit : mm

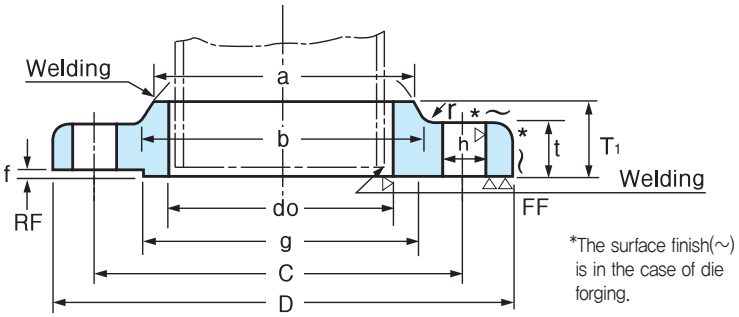
Nominal Size	Outside Diam.of steel pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Dia. of Bolt			Nominal Bolt Size	Weight(kg)		
				Thick-ness	Total Length	Diam. of Hub		Radius	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.		SOP	BL	SOH
		do	D	t (BL)	T	a	b	r	f	g	C	N	h				
10	17.3	17.8	90	12	–	–	–	–	1	46	65	4	15	M12	0.51	0.53	–
15	21.7	22.2	95	12	–	–	–	–	1	51	70	4	15	M12	0.56	0.60	–
20	27.2	27.7	100	14	–	–	–	–	1	56	75	4	15	M12	0.72	0.79	–
25	34.0	34.5	125	14	–	–	–	–	1	67	90	4	19	M16	1.12	1.22	–
32	42.7	43.2	135	16	–	–	–	–	2	76	100	4	19	M16	1.47	1.66	–
40	48.6	49.1	140	16	–	–	–	–	2	81	105	4	19	M16	1.55	1.79	–
50	60.5	61.1	155	16	–	–	–	–	2	96	120	4	19	M16	1.86	2.23	–
65	76.3	77.1	175	18	–	–	–	–	2	116	140	4	19	M16	2.58	3.24	–
80	89.1	90.0	185	18	–	–	–	–	2	126	150	8	19	M16	2.58	3.48	–
90	101.6	102.6	195	18	–	–	–	–	2	136	160	8	19	M16	2.73	3.90	–
100	114.3	115.4	210	18	–	–	–	–	2	151	175	8	19	M16	3.10	4.57	–
125	139.8	141.2	250	20	–	–	–	–	2	182	210	8	23	M20	4.73	7.18	–
150	165.2	166.6	280	22	–	–	–	–	2	212	240	8	23	M20	6.30	10.1	–
175	190.7	192.1	305	22	–	–	–	–	2	237	265	12	23	M20	6.75	11.8	–
200	216.3	218.0	330	22	–	–	–	–	2	262	290	12	23	M20	7.46	13.9	–
225	241.8	243.7	350	22	–	–	–	–	2	282	310	12	23	M20	7.70	15.8	–
250	267.4	269.5	400	24	36	288	292	6	2	324	355	12	25	M22	11.8	22.6	12.7
300	318.5	321.0	445	24	38	340	346	6	3	368	400	16	25	M22	12.6	27.8	13.8
350	355.6	358.1	490	26	42	380	386	6	3	413	445	16	25	M22	16.3	36.9	18.2
400	406.4	409.0	560	28	44	436	442	6	3	475	510	16	27	M24	23.2	52.1	25.8
450	457.2	460.0	620	30	48	496	502	6	3	530	565	20	27	M24	29.3	68.4	33.4
500	508.0	511.0	675	30	48	548	554	6	3	585	620	20	27	M24	33.3	81.6	38.0
550	558.8	562.0	745	32(34)	52	604	610	6	3	640	680	20	33	M30	42.9	112.0	49.4
600	609.6	613.0	795	32(36)	52	656	662	6	3	690	730	24	33	M30	45.4	134.0	52.6
650	660.4	664.0	845	34(38)	56	706	712	6	3	740	780	24	33	M30	51.8	161.0	60.2
700	711.2	715.0	905	34(40)	58	762	770	6	3	800	840	24	33	M30	59.0	196.0	70.2
750	762.0	766.0	970	36(44)	62	816	824	6	3	855	900	24	33	M30	72.8	248.0	86.5
800	812.8	817.0	1020	36(46)	64	868	876	6	3	905	950	28	33	M30	76.0	286.0	92.0
850	863.6	868.0	1070	36(48)	66	920	928	6	3	955	1000	28	33	M30	80.1	330.0	98.7
900	914.4	919.0	1120	38(50)	70	971	979	6	3	1005	1050	28	33	M30	88.9	377.0	110.0
1000	1016.0	1021.0	1235	40(56)	74	1073	1081	6	3	1110	1160	28	39	M36	109.0	512.0	133.0
1100	1117.6	1122.0	1345	42(62)	76	1175	1185	8	3	1220	1270	28	39	M36	131.0	675.0	175.0
1200	1219.2	1224.0	1465	44(66)	78	1278	1290	8	3	1325	1380	32	39	M36	163.0	854.0	215.0
1350	1371.6	1376.0	1630	48(74)	82	1432	1450	8	3	1480	1540	36	45	M42	204.0	1180.0	274.0
1500	1524.0	1529.0	1795	50(82)	90	1585	1605	8	3	1635	1700	40	45	M42	248.0	1590.0	340.0

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

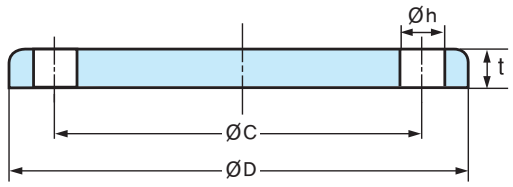
16kg/Cm2

JIS B 2220-2012(KS B 1503-2007)
16Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

SOH TYPE
NOMINAL SIZE 10-600A



BL TYPE
NOMINAL SIZE 10-600A



Unit:mm

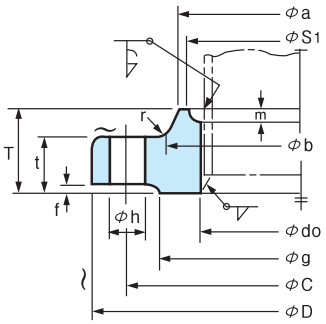
Nominal Size	Outside Diam.of steel pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Dia. of Bolt			Nominal Bolt Size	Weight(kg)		
				Thick-ness	Total Length	Diam. of Hub		Radius	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.		SOP	BL	SOH
		do	D	t (BL)	T	a	b	r	f	g	C	N	h				
10	17.3	17.8	90	12	16	26	28	4	1	46	65	4	15	M12	0.52	0.53	0.52
15	21.7	22.2	95	12	16	30	32	4	1	51	70	4	15	M12	0.57	0.60	0.58
20	27.2	27.7	100	14	20	38	42	4	1	56	75	4	15	M12	0.73	0.79	0.75
25	34.0	34.5	125	14	20	46	50	4	1	67	90	4	19	M16	1.13	1.22	1.16
32	42.7	43.2	135	16	22	56	60	5	2	76	100	4	19	M16	1.48	1.66	1.53
40	48.6	49.1	140	16	24	62	66	5	2	81	105	4	19	M16	1.56	1.79	1.64
50	60.5	61.1	155	16	24	76	80	5	2	96	120	8	19	M16	1.8	2.09	1.83
65	76.3	77.1	175	18	26	94	98	5	2	116	140	8	19	M16	2.5	3.08	2.58
80	89.1	90.0	200	20	28	108	112	6	2	132	160	8	23	M20	3.5	4.41	3.61
90	101.6	102.6	210	20	30	120	124	6	2	145	170	8	23	M20	3.7	4.92	3.89
100	114.3	115.4	225	22	34	134	138	6	2	160	185	8	23	M20	4.5	6.29	4.87
125	139.8	141.2	270	22	34	164	170	6	2	195	225	8	25	M22	6.5	9.21	7.09
150	165.2	166.6	305	24	38	196	202	6	2	230	260	12	25	M22	8.7	12.7	9.57
200	216.3	218.0	350	26	40	244	252	6	2	275	305	12	25	M22	10.9	18.4	12.0
250	267.4	269.5	430	28	44	304	312	6	2	345	380	12	27	M24	18.0	30.4	20.1
300	318.5	321.0	480	30	48	354	364	8	3	395	430	16	27	M24	21.5	40.5	24.3
350	355.6	358.1	540	34	52	398	408	8	3	440	480	16	33	M30X3	30.8	57.5	34.4
400	406.4	409.0	605	38	60	446	456	10	3	495	540	16	33	M30X3	42.8	81.7	47.4
450	457.2	460.0	675	40	64	504	514	10	3	560	605	20	33	M30X3	55.1	107.0	61.8
500	508.0	511.0	730	42	68	558	568	10	3	615	660	20	33	M30X3	65.1	132.0	73.7
550	558.8	562.0	795	44	70	612	622	10	3	670	720	20	39	M36X3	77.9	163.0	87.9
600	609.6	613.0	845	46	74	666	676	10	3	720	770	24	39	M36X3	86.0	192.0	98.4
650	660.4	664.0	895	48	77	704	726	10	5	770	820	24	39	M36X3	96.3	–	–
700	711.2	715.0	960	50	80	754	776	10	5	820	875	24	42	M39X3	114.1	–	–
750	762.0	766.0	1020	52	83	806	832	10	5	880	935	24	42	M39X3	132.7	–	–
800	812.8	817.0	1085	54	86	865	885	10	5	930	990	24	48	M45X3	152.1	–	–
850	863.6	868.0	1135	56	89	916	936	10	5	980	1040	24	48	M45X3	166.5	–	–
900	914.4	919.0	1185	58	93	968	986	10	5	1030	1090	28	48	M45X3	178.1	–	–
1000	1016.0	1021.0	1320	62	99	1070	1098	12	5	1140	1210	28	56	M52X3	235.3	–	–
1100	1117.6	1123.0	1420	66	105	1180	1200	12	5	1240	1310	32	56	M52X3	267.9	–	–
1200	1219.2	1225.0	1530	70	112	1282	1302	12	5	1350	1420	32	56	M52X3	321.1	–	–
1300	1320.8	1326.0	1645	74	–	–	–	–	5	1450	1530	32	62	–	378.6	–	–
1350	1371.6	1377.0	1700	76	–	–	–	–	5	1510	1590	32	62	–	410.0	–	–
1400	1422.4	1428.0	1755	78	–	–	–	–	5	1560	1640	36	62	–	436.0	–	–
1500	1524.0	1529.0	1865	80	–	–	–	–	5	1670	1750	36	62	–	496.4	–	–

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

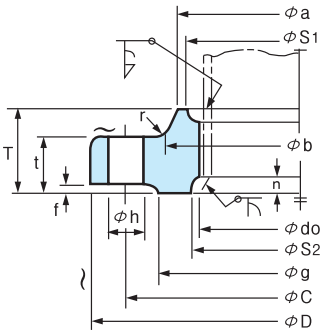
20kg/Cm2

JIS B 2220-2012(KS B 1503-2007)
20Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

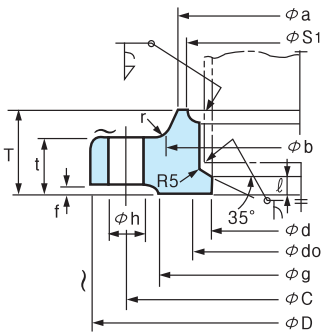
A-TYPE
NOMINAL SIZE 10-600A



B-TYPE
NOMINAL SIZE 10-50A

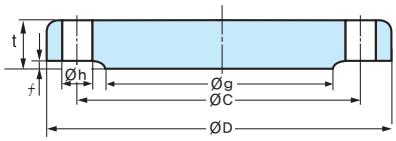


C-TYPE
NOMINAL SIZE 65-600A



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

BL TYPE
NOMINAL SIZE 10-600A



Unit:mm

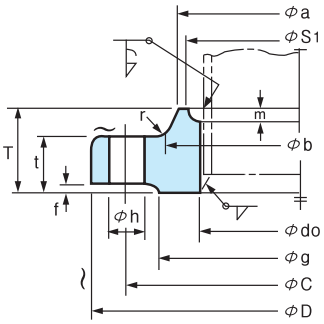
Nominal Diam. of Flange	Outside Diam.of Steel Pipe	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange								Bolt Hole				Reference					Weight(kg)			
				t (BL)	T	Diam.of Hub		Rad -ius	f	g	d	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Daim.	Nominal Bolt Size	S_1	m	S_2	n	l	SOP			BL
		do	D			a	b	r				C	N	h							A	B	C	
10	17.3	17.8	90	14	20	30	32	4	1	46	–	65	4	15	M12	27	4	27	4	–	0.58	0.58	–	0.59
15	21.7	22.2	95	14	20	34	36	4	1	51	–	70	4	15	M12	31	4	31	4	–	0.65	0.64	–	0.67
20	27.2	27.7	100	16	22	40	42	4	1	56	–	75	4	15	M12	37	4	37	4	–	0.81	0.80	–	0.86
25	34.0	34.5	125	16	24	48	50	4	1	67	–	90	4	19	M16	44	4	44	4.5	–	1.27	1.26	–	1.34
32	42.7	43.2	135	18	26	56	60	5	2	76	–	100	4	19	M16	52	4	53	5	–	1.58	1.57	–	1.73
40	48.6	49.1	140	18	26	62	66	5	2	81	–	105	4	19	M16	58	4	59	5.5	–	1.68	1.66	–	1.87
50	60.5	61.1	155	18	26	76	80	5	2	96	–	120	8	19	M16	70	4	72	5.5	–	1.89	1.86	–	2.20
65	76.3	77.1	175	20	30	100	104	5	2	116	65.9	140	8	19	M16	94	6	85	6	6	2.73	–	2.81	3.24
80	89.1	90.0	200	22	34	113	117	6	2	132	78.1	160	8	23	M20	107	6	–	–	6	3.85	–	3.95	4.63
90	101.6	102.6	210	24	36	126	130	6	2	145	90.2	170	8	23	M20	120	6	–	–	6	4.47	–	4.59	5.67
100	114.3	115.4	225	24	36	138	142	6	2	160	102.3	185	8	23	M20	132	6	–	–	6	5.03	–	5.18	6.61
125	139.8	141.2	270	26	40	166	172	6	2	195	126.6	225	8	25	M22	160	7	–	–	6	7.94	–	8.15	10.5
150	165.2	166.6	305	28	42	196	202	6	2	230	151.0	260	12	25	M22	186	8	–	–	6	10.4	–	10.7	14.4
200	216.3	218.0	350	30	46	244	252	6	2	275	199.9	305	12	25	M22	237	9	–	–	6	13.1	–	13.6	20.8
250	267.4	269.5	430	34	52	304	312	6	2	345	248.8	380	12	27	M24	290	10	–	–	6	23.1	–	23.8	36.2
300	318.5	321.0	480	36	56	354	364	8	3	395	297.9	430	16	27	M24	345	11	–	–	6	27.2	–	28.1	47.4
350	355.6	358.1	540	40	62	398	408	8	3	440	333.4	480	16	33	M30X3	384	12	–	–	6	38.4	–	39.5	66.1
400	406.4	409.0	605	46	70	446	456	10	3	495	381.0	540	16	33	M30X3	437	13	–	–	7	53.9	–	55.5	97.0
450	457.2	460.0	675	48	78	504	514	10	3	560	431.8	605	20	33	M30X3	490	15	–	–	7	71.0	–	72.9	126.0
500	508.0	511.0	730	50	84	558	568	10	3	615	482.6	660	20	33	M30X3	544	16	–	–	7	84.6	–	86.7	155.0
550	558.8	562.0	795	52	90	612	622	10	3	670	533.4	720	20	39	M36X3	595	16	–	–	7	102.0	–	104.0	190.0
600	609.6	613.0	845	54(56)	96	666	676	10	3	720	584.2	770	24	39	M36X3	646	18	–	–	7	115.0	–	117.0	223.0
650	660.4	664.0	945	60	–	–	–	–	5	790	–	850	24	48	M45X3	–	–	–	–	–	147.6	–	–	–
700	711.2	715.0	995	64	–	–	–	–	5	840	–	900	24	48	M45X3	–	–	–	–	–	168.0	–	–	–
750	762.0	766.0	1080	68	–	–	–	–	5	900	–	970	24	56	M52X3	–	–	–	–	–	212.7	–	–	–
800	812.8	817.0	1140	72	–	–	–	–	5	960	–	1030	24	56	M52X3	–	–	–	–	–	248.5	–	–	–
850	863.6	868.0	1200	74	–	–	–	–	5	1020	–	1090	24	56	M52X3	–	–	–	–	–	280.5	–	–	–
900	914.6	919.0	1250	76	–	–	–	–	5	1070	–	1140	28	56	M52X3	–	–	–	–	–	296.9	–	–	–

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

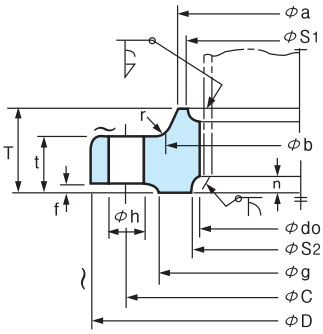
30kg/Cm2

JIS B 2220-2012(KS B 1503-2007)
30Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

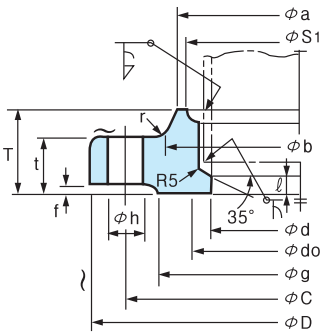
A-TYPE
NOMINAL SIZE 10-400A



B-TYPE
NOMINAL SIZE 10-50A

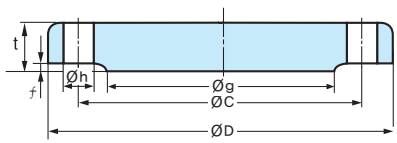


C-TYPE
NOMINAL SIZE 65-600A



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

BL TYPE
NOMINAL SIZE 10-400A



Unit:mm

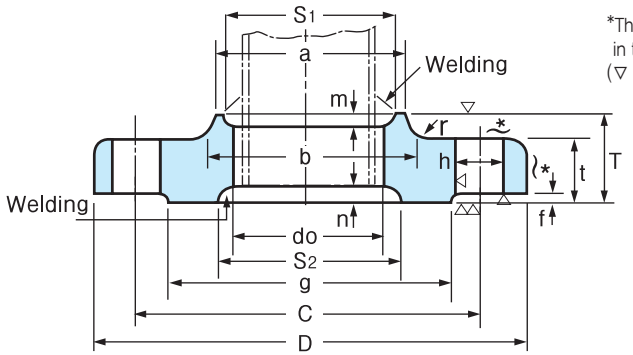
Nominal Diam. of Flange	Outside Diam.of Steel Pipe	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange								Bolt Hole				Reference					Weight(kg)			
				t	T	Diam.of Hub		Radius	f	g	d	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Daim.	Nominal Bolt Size	S_1	m	S_2	n	l	SOP			BL
		do	D			a	b	r				C	N	h							A	B	C	
10	17.3	17.8	110	16	24	30	34	4	1	52	–	75	4	19	M16	–	–	–	–	–	1.00	1.00	–	1.00
15	21.7	22.2	115	18	26	36	40	5	1	55	–	80	4	19	M16	31	4	40	5	–	1.24	1.22	–	1.25
20	27.2	27.7	120	18	28	42	46	5	1	60	–	85	4	19	M16	37	5	44	5	–	1.36	1.34	–	1.38
25	34.0	34.5	130	20	30	50	54	5	1	70	–	95	4	19	M16	44	6	52	5	–	1.77	1.75	–	1.84
32	42.7	43.2	140	22	32	60	64	6	2	80	–	105	4	19	M16	52	6	60	5	–	2.17	2.15	–	2.32
40	48.6	49.1	160	22	34	66	70	6	2	90	–	120	4	23	M20	58	6	66	5	–	2.82	2.79	–	3.00
50	60.5	61.1	165	22	36	82	86	6	2	105	–	130	8	19	M16	70	6.5	78	5	–	2.89	2.86	–	3.14
65	76.3	77.1	200	26	40	102	106	8	2	130	65.9	160	8	23	M20	96	9.5	94	5	6	4.88	–	4.96	5.50
80	89.1	90.0	210	28	44	115	121	8	2	140	78.1	170	8	23	M20	109	9.5	–	–	6	5.70	–	5.80	6.63
90	101.6	102.6	230	30	46	128	134	8	2	150	90.2	185	8	25	M22	122	9.5	–	–	6	7.13	–	7.25	8.55
100	114.3	115.4	240	32	48	141	147	8	2	160	102.3	195	8	25	M22	135	9.5	–	–	6	8.01	–	8.16	10.0
125	139.8	141.2	275	36	54	166	172	8	2	195	126.6	230	8	25	M22	160	9.5	–	–	6	11.6	–	11.9	15.3
150	165.2	166.6	325	38	58	196	204	8	2	235	151.0	275	12	27	M24	186	9.5	–	–	6	17.0	–	17.3	22.2
200	216.3	218.0	370	42	64	248	256	8	2	280	199.9	320	12	27	M24	237	9.5	–	–	6	22.2	–	22.6	32.6
250	267.4	269.5	450	48	72	306	314	10	2	345	248.8	390	12	33	M30X3	290	10	–	–	6	36.8	–	37.5	55.2
300	318.5	321.0	515	52	78	360	370	10	3	405	297.9	450	16	33	M30X3	345	12	–	–	6	49.1	–	50.0	77.9
350	355.6	358.1	560	54	84	402	412	12	3	450	333.4	495	16	33	M30X3	383	13	–	–	6	60.4	–	61.5	96.9
400	406.4	409.0	630	60	92	456	468	15	3	510	381.0	560	16	39	M36X3	435	14	–	–	7	82.0	–	83.7	136.0

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

40kg/Cm2

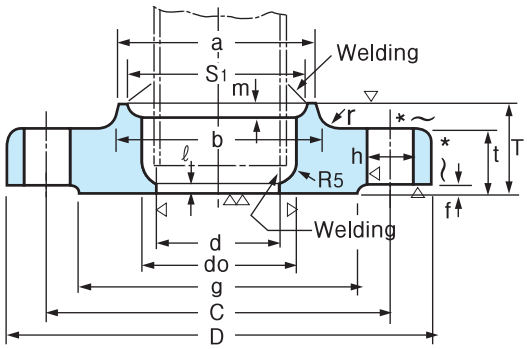
40Kg/Cm^2 SLIP-ON WELDING STEEL PIPE FLANGES

NOMINAL SIZE 10-50A



*The surface finish(~)is in the case of forging (▽ : in other cases)

NOMINAL SIZE 65-250A



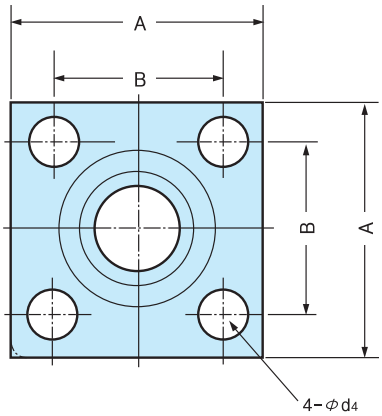
Unit:mm

Nominal Diam. of Flange	Outside Diam.of Steel Pipe	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange								Bolt Hole				Reference					Approx Weight (kg)
				t	T	Diam.of Hub		Radius	f	g	d	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Daim.	Nominal Bolt Size	S_1	m	S_2	n	l	
		do	D			a	b	r				C	N	h							
10	17.3	17.8	110	18	26	34	38	5	1	52	–	75	4	19	M16	28.0	6	28	5	–	1.11
15	21.7	22.2	115	20	30	39	43	5	1	55	–	80	4	19	M16	32.5	6	32.5	5	–	1.39
20	27.2	27.7	120	20	30	45	49	5	1	60	–	85	4	19	M16	38.0	6	38.0	5	–	1.51
25	34.0	34.5	130	22	32	55	59	5	1	70	–	95	4	19	M16	47.8	6	47.8	5	–	1.97
32	42.7	43.2	140	24	35	64	68	6	2	80	–	105	4	19	M16	56.5	6	56.5	5	–	2.50
40	48.6	49.1	160	24	35	70	74	6	2	90	–	120	4	23	M20	62.5	6	62.5	5	–	3.26
50	60.5	61.1	165	26	38	86	90	6	2	105	–	130	8	19	M16	74.5	6	74.5	5.5	–	3.47
65	76.3	77.1	200	30	44	106	110	8	2	130	62.3	160	8	23	M20	91.5	7	91.5	7	–	5.97
80	89.1	90.3	210	32	46	118	124	8	2	140	73.9	170	8	23	M20	105.5	7.5	105.5	7	–	6.76
100	114.3	115.4	250	36	52	145	151	8	2	165	97.1	205	8	25	M22	133.0	8.5	133.0	7	–	10.48
125	139.8	141.4	300	40	58	182	188	8	2	200	120.8	250	8	27	M24	160.5	9.5	160.5	7	–	16.97
150	165.2	167.0	355	44	64	200	208	8	2	240	143.2	295	12	33	M30	188.0	11	188.0	7	–	22.6
200	216.3	218.2	405	50	72	255	263	8	2	290	190.9	345	12	33	M30	243.0	13	243.0	7	–	34.9
250	267.4	269.5	475	56	80	310	318	10	2	355	237.2	410	12	33	M30	298.0	15	298.0	7	–	41.1

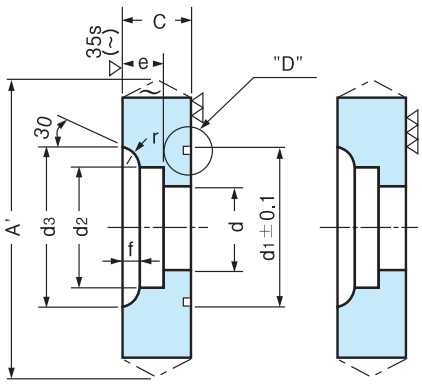
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

210kgf/Cm2

JIS B 2291-1994
FLANGE FOR OIL PRESSURE

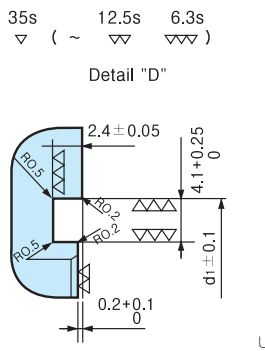


SHA



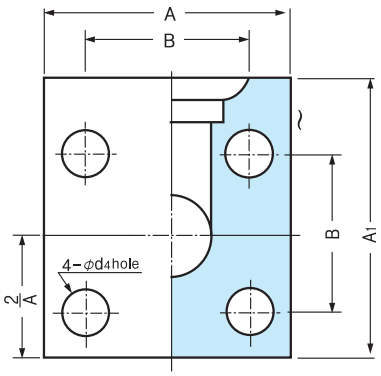
SHB

Unit : mm

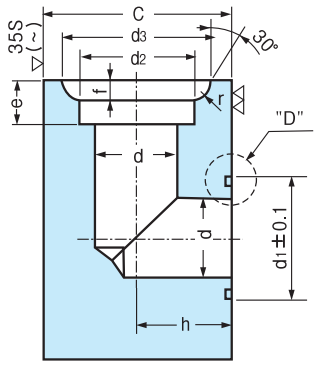


Unit:mm

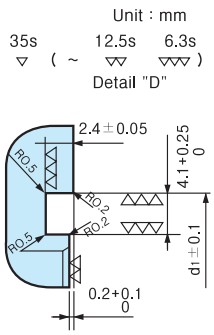
Nominal Size	A		A' (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)	REMARK	
																			O-RING	BOLT
15	63	±1	67	40	±0.2	22	0 −1	16	30	±0.1	22.2	+0.2 0	11	32	11	3.5	5	0.6	G25	M10
20	68		72	45		22		20	35		27.7		12	38	11	4.0	5	0.7	G30	M10
25	80	±1.2	85	53		28	0 −1.5	25	40		34.5	+0.3 0	14	45	13	4.0	5	1.2	G35	M12
32	90		95	63		28		31.5	45		43.2		16	56	13	6.0	5	1.5	G40	M12
40	100	±1.5	106	70	±0.4	36	0 −2	37.5	55		49.1		18	63	18	7.0	5	2.4	G50	M16
50	112		118	80		36		47.5	65		61.1		20	75	18	7.0	5	2.8	G60	M16
65	140	±2	148	100		45		60	80		77.1	+0.4 0	22	95	22	9.5	6	5.3	G75	M20
80	155		163	112		45		71	90		90.0		25	108	24	11.0	6	6.2	G85	M22



LSA



Unit : mm



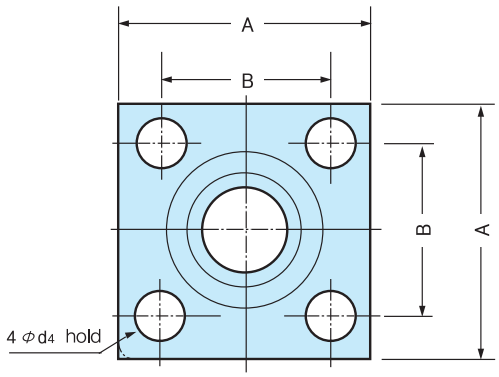
Unit:mm

Nominal Size	A		A_1		B		C		h	d	d1	d_2		e	d_3	d_4	f	r	Weight (kg)	REMARK	
																				O-RING	BOLT
15	54	±1	63	±1	36	±0.2	40	0 −2	20	16	30	22.2	+0.2 0	11	32	11	3.5	5	1.0	G25	M10
20	58		70		40		45		22.5	20	35	27.7		12	38	11	4.0	5	1.3	G30	M10
25	68		82		48		50		25	25	40	34.5	+0.3 0	14	45	13	4.0	5	1.9	G35	M12
32	76	±1.2	92	±1.2	56		63		31.5	31.5	45	43.2		16	56	13	6.0	5	2.9	G40	M12
40	92		110		65		71		35.5	37.5	55	49.1		18	63	18	7.0	5	4.7	G50	M16
50	100	±1.5	125	±1.5	73	±0.4	85		42.5	47.5	65	61.1		20	75	18	7.0	5	6.8	G60	M16
65	128		150		92		106		53	60	80	77.1	+0.4 0	22	95	22	9.0	6	12.8	G75	M20
80	140	±2	170	±2	103		118		59	71	90	90.0		25	108	24	11.0	6	17.0	G85	M22

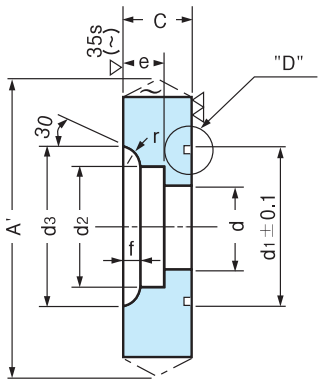
· SS41, S20C, S22C, S25C
· BOLT : 인장강도 80Kg/cm² MIN, 신율 15% MIN
· NUT : 60Kg/cm² MIN, 신율 10% MIN
· ORING : JIS B2401의 고정용

210kgf/Cm2

JIS B 2291-1994
FLANGE FOR OIL PRESSURE



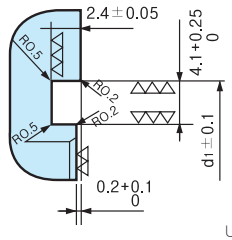
SSA



Unit : mm

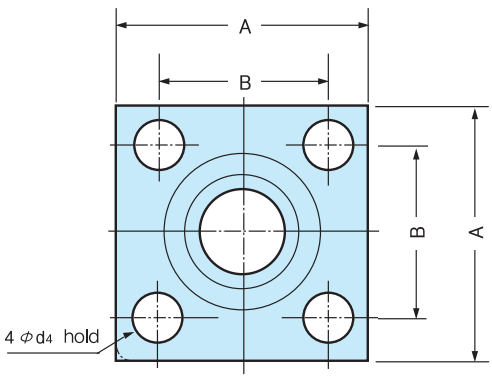
35s (~ 12.5s 6.3s)

Detail "D"

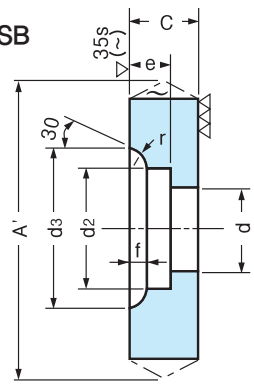


Unit:mm

Nominal Size	A		A' (MAX)	B		C		d	d_1		d_2		e	d_3	d_4	f	r	Weight (kg)	REMARK	
																			O링	BOLT
15	54	±1	58	36	±0.2	22	0 −1	16	30	±0.1	22.2	+0.2 0	11	32	11	3.5	5	0.5	G25	M10
20	58		62	40		22		20	35		27.7		12	38	11	4.0	5	0.6	G30	M10
25	68		73	48		28	0 −1.5	25	40		34.5	+0.3 0	14	45	13	4.0	5	0.8	G35	M12
32	76	±1.2	81	56		28		31.5	45		43.2		16	56	13	6.0	5	1.0	G40	M12
40	92		98	65	±0.4	36	0 −2	37.5	55		49.1		18	63	18	7.0	5	1.9	G50	M16
50	100	±1.5	106	73		36		47.5	65		61.1		20	75	18	7.0	5	2.0	G60	M16
65	128		136	92		45		60	80		77.1	+0.4 0	22	95	22	9.5	6	4.1	G75	M20
80	140	±2	148	103		45		71	90		90.0		25	108	24	11.0	6	4.7	G85	M22



SSB



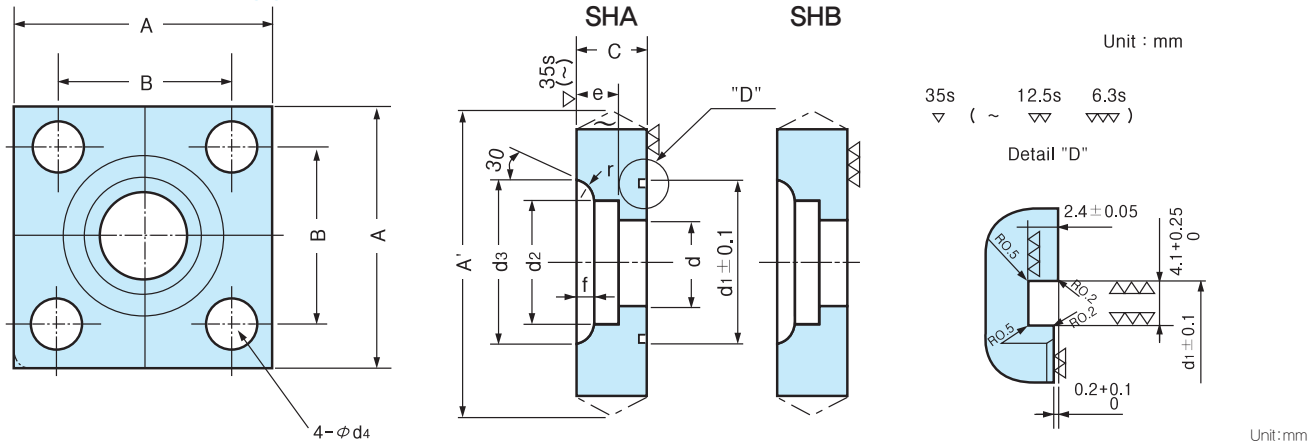
35s (~ 6.3s)

Unit:mm

Nominal Size	A		A' (MAX)	B		C		d	d_2		e	d_3	d_4	f	r	Weight (kg)
15	54	±1	58	36	±0.2	22	0 −1	16	22.2	+0.2 0	11	32	M10	3.5	5	0.5
20	58		62	40		22		20	27.7		12	38	M10	4.0	5	0.6
25	68		73	48		28	0 −1.5	25	34.5	+0.3 0	14	45	M12	4.0	5	0.8
32	76	±1.2	81	56		28		31.5	43.2		16	56	M12	6.0	5	1.0
40	92		98	65	±0.4	36	0 −2	37.5	49.1		18	63	M16	7.0	5	1.9
50	100	±1.5	106	73		36		47.5	61.1		20	75	M16	7.0	5	2.0
65	128		136	92		45		60	77.1	+0.4 0	22	95	M20	9.5	6	4.1
80	140	±2	148	103		45		71	90.0		25	108	M22	11.0	6	4.7

280kgf/Cm2

JIS F 7806:1996
FLANGE FOR OIL PRESSURE

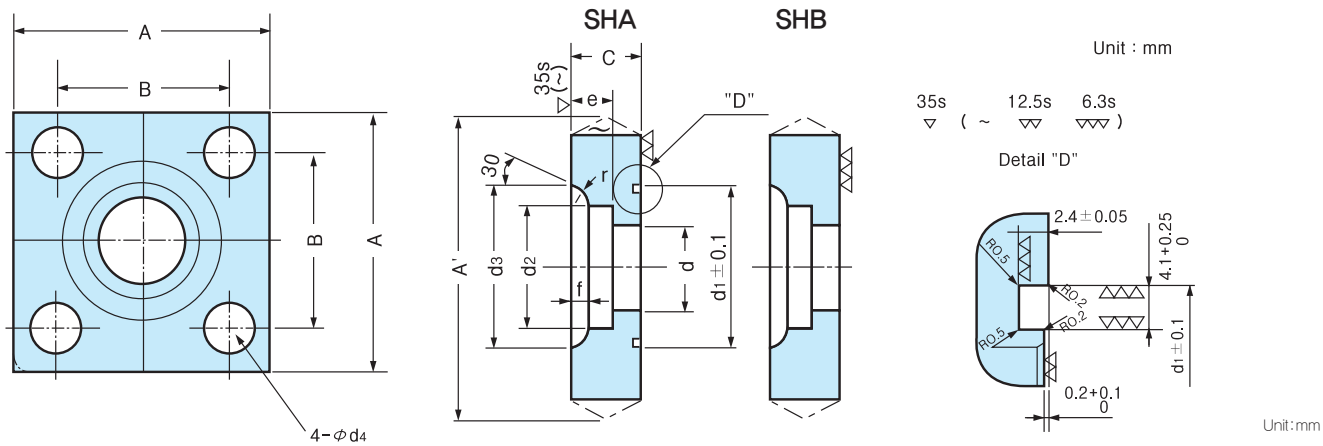


Unit:mm

Nominal Size	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)
15	66	±1	70	43	±0.2	22	0 −1	12.3	24	±0.1	22.2	+0.2 0	12	34	11	4.0	5	0.63
20	72		76	48		25		16.2	30		27.7		12	40	11	4.5	5	0.85
25	85	±1.2	91	58		35	0 −1.5	21.2	35		34.5	+0.3 0	14	48	13.5	5.0	5	1.64
32	98		104	68		35		29.9	45		43.2		18	60	17.5	6.5	5	2.03
40	105	±1.5	112	74	±0.4	40	0 −2	34.4	50		49.1		20	66	17.5	7.5	5	2.66
50	130		139	90		50		43.1	60		61.1		20	79	22	8.0	5	5.14
65	150	±2	161	108		60		57.3	75		77.1	+0.4 0	25	100	24	10.0	6	7.95
80	170		181	120		65		66.9	85		90.0		25	114	26	12.0	6	11.0

350kgf/Cm2

JIS F 7806:1996 / FLANGE FOR OIL PRESSURE



Unit:mm

Nominal Size	A		A' (MAX)	B		C		d	d1		d2		e	d3	d4	f	r	Weight (kg)
15	68	±1.2	73	45	±0.2	28	0 −1.5	12.3	24	±0.1	22.2	+0.2 0	12	37.5	11	4	5	0.88
20	82		87	55		30		16.2	30		27.7		12	43.5	13.5	5	5	1.34
25	95	±1.5	101	65		35		21.2	35		34.5	+0.3 0	14	53	17.5	5.5	6	2.02
32	100		106	70		35		23.3	40		43.2		18	63	17.5	7	6	2.16
40	105		112	75	±0.4	42	0 −2	28.2	45		49.1		20	70	17.5	8	6	2.84
50	132	±2	140	92		50		38.3	55		61.1		25	84	22	9	6	5.30
65	160		170	112		60		48.3	65		77.1	+0.4 0	30	105	26	12	7	9.92
80	190		202	130		68		58.7	75		90.0		30	120	33	13.5	7	14.8

KS B 2332–1994 & KS D 4308

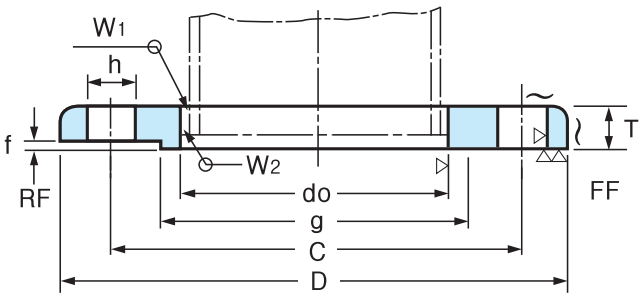
수도용 제수밸브용 플랜지 & 수도용 덕타일 주철 이형관용 플랜지

Sluice Valves For Water Works Flange

KS B 2333–1995

수도용 버터플라이 밸브용 플랜지

Butterfly Valves For Water Works Flange

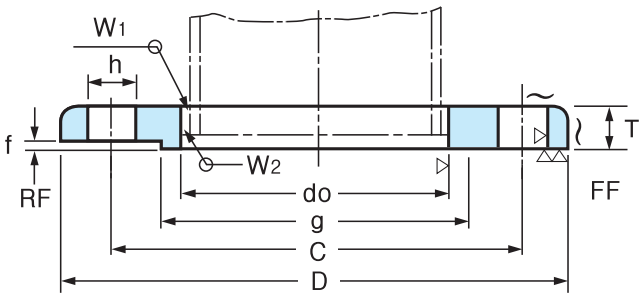


Unit : mm

Nominal Bore of Flange	Inside Diam. of Flange do	KS B 2332–1994 수도용 제수밸브용 플랜지 KS D 4308 수도용 덕타일 주철 이형관용 플랜지 Sluice Valves For Water Works Flange Sectional Dimensions of Flange							KS B 2333–1995 수도용 버터플라이 밸브용 플랜지 Butterfly Valves For Water Works Flange Sectional Dimensions of Flange							
		T	D	C	g	f	Bolt Hole		T	D	C	g	f	Bolt Hole		Weight (kg)
							h	N						h	N	
50	61.1	16	155	120	100	2	19	4								1.88
80	90.0	19	200	160	133	3	19	4								3.0
100	115.4	19	220	180	153	3	19	8								3.3
125	141.2	19	250	210	183	3	19	8								4.0
150	166.6	19	285	240	209	3	23	8								4.9
200	218.0	20	340	295	264	3	23	8	24	340	295	264	3	23	8	6.8
250	269.5	22	400	350	319	3	23	12	25	395	350	319	3	23	12	9.6
300	321.5	24	455	400	367	4	23	12	27	445	400	367	4	23	12	12.8
350	358.1	24	505	460	427	4	23	16	28	505	460	427	4	23	16	14.1
400	409.0	24	565	515	477	4	28	16	29	565	515	477	4	28	16	16.3
450	460.0	26	615	565	527	4	28	20	30	615	565	527	4	28	20	18.1
500	511.0	26	670	620	582	4	28	20	31	670	620	582	4	28	20	21.8
600	613.0	30	780	725	682	4	31	20	32	780	725	382	4	31	20	30.8
700	715.0	32	895	840	797	4	31	24	34	895	840	797	4	31	24	40.5
800	817.0	35	1015	950	904	5	34	24	36	1015	950	904	5	34	24	54.8
900	919.0	38	1115	1050	1004	5	34	28	38	1115	1050	1004	5	34	28	64.3
1000	1021.0	40	1230	1160	1111	5	37	28	40	1230	1160	1111	5	37	28	81.4
1100	1122.0	43	1340	1270	1218	5	37	32	42	1366	1270	1200	5	37	32	105.0
1200	1224.0	45	1455	1380	1328	5	40	32	44	1470	1387	1304	5	37	32	120.9
1350	1376.0								48	1642	1552	1462	6	38	36	
1500	1529.0								50	1800	1710	1620	6	38	36	
1600	1617.0								50	1915	1820	1760	6	40	40	
1650	1682.0								50	1950	1860	1770	6	40	40	
1800	1817.0								50	2115	2020	1960	6	48	44	
2000	2017.0								54	2325	2230	2170	6	48	48	

수도용 도복장 강관 이형관용(KS D 3578 – 1997)플랜지

FITTING OF COATED STEEL PIPES FOR WATER SERVICE

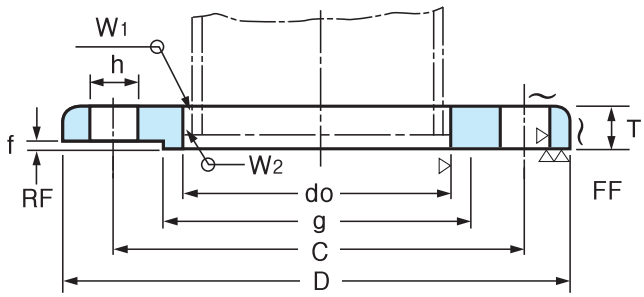


Unit:mm

Nominal Bore of Flange	Inside Diam. of Flange do	F12 KS D 3578 10kgf/cm² Sectional Dimensions RF Flange								F15 KS D 3578 16kgf/cm² Sectional Dimensions RF Flange							
		T	D	C	g	f	Bolt Hole		Weight (kg)	T	D	C	g	f	Bolt Hole		Weight (kg)
							h	N							h	N	
80	90.0	18	211	160	133	2	19	4	3.59	18	211	160	133	2	19	4	3.56
100	115.4	18	238	180	153	2	19	8	4.14	18	238	180	153	2	19	8	4.14
125	141.2	20	263	210	183	2	19	8	5.36	20	263	210	183	2	19	8	5.36
150	166.6	22	290	240	209	2	23	8	6.69	22	290	240	209	2	23	8	6.69
200	218.0	22	342	295	264	2	23	8	8.41	22	342	295	264	2	23	8	8.41
250	269.5	24	410	350	319	3	23	12	12.2	24	410	350	319	3	23	12	12.2
300	321.0	24	464	400	367	3	23	12	14.5	24	464	400	367	3	23	12	17.81
350	358.1	26	530	460	427	3	23	16	21.7	26	530	460	427	3	23	16	21.7
400	409.0	26	582	515	477	3	27	16	24.1	28	582	515	477	3	27	16	26.1
450	460.0	28	652	565	518	3	27	20	32.2	30	652	565	518	3	27	20	34.6
500	511.0	28	706	620	582	3	27	20	36.3	30	706	620	582	3	27	20	39.1
600	613.0	30	810	725	682	3	30	20	46.1	34	810	725	682	3	30	20	52.7
700	715.0	32	928	840	797	3	30	24	62.1	34	928	840	797	3	30	24	66.2
800	817.0	34	1034	950	904	3	33	24	76.0	36	1034	950	904	3	33	24	80.7
900	919.0	36	1156	1050	1004	3	33	28	98.8	38	1156	1050	1004	3	33	28	105.0
1000	1021.0	38	1262	1160	1111	3	36	28	117	42	1262	1160	1111	3	36	28	130.0
1100	1122.0	41	1366	1270	1200	3	36	32	138	43	1366	1270	1200	3	36	32	145.0
1200	1224.0	43	1470	1387	1304	3	36	32	160	45	1470	1387	1304	3	36	32	168.0
1350	1376.0	45	1642	1552	1462	3	40	36	201	51	1642	1552	1462	3	40	36	229.0
1500	1529.0	48	1800	1710	1620	3	40	36	244	53	1800	1710	1620	3	40	36	271.0
1600	1631.0	53	1915	1820	1760	3	40	40	305	58	1915	1820	1760	3	40	40	334.0
1650	1682.0	53	1950	1870	1770	3	40	40	292	58	1950	1870	1770	3	40	40	321.0
1800	1834.0	55	2115	2020	1960	3	49	44	337	59	2115	2020	1960	3	49	44	362.0
1900	1936.0	56	2220	2126	2066	4	49	44	378	59	2220	2126	2066	4	49	44	389.0
2000	2038.0	58	2325	2230	2170	4	49	48	401	62	2325	2230	2170	4	49	48	430.0
2100	2143.0	59	2440	2340	2240	4	49	48	448	64	2440	2340	2240	4	49	48	487.0
2200	2242.0	61	2550	2440	2370	4	56	52	487	68	2550	2440	2370	4	56	52	545.0
2300	2342.0	62	2655	2540	2240	4	56	52	522	69	2655	2540	2240	4	56	52	583.0
2400	2444.0	64	2760	2650	2570	4	56	56	570	70	2760	2650	2570	4	56	56	625.0
2500	2545.0	68	2860	2750	2670	5	56	56	624	72	2860	2750	2670	5	56	56	662.0
2600	2647.0	68	2960	2850	2780	5	56	60	643	72	2960	2850	2780	5	56	60	682.0
2700	2759.0	71	3080	2960	2850	5	56	60	740								
2800	2850.0	72	3180	3070	3000	5	56	64	779								
2900	2952.0	74	3292	3180	3104	5	56	64	861								
3000	3054.0	76	3405	3290	3210	5	56	64	952								

수도용 도복장 강관 이형관용(KS D 3578 – 1997)플랜지

FITTING OF COATED STEEL PIPES FOR WATER SERVICE



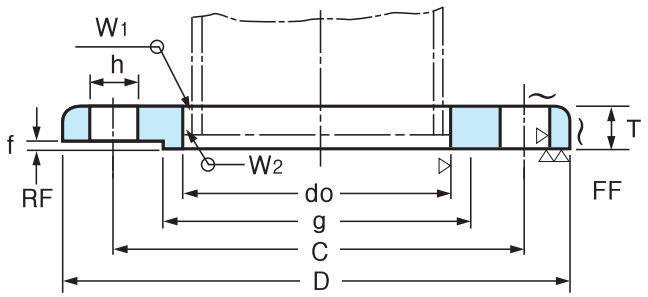
Unit : mm

Nominal Bore of Flange	Inside Diam. of Flange do	F20 KS D 3578 20kgf/cm² Sectional Dimensions RF Flange								F20 KS D 3578 20kgf/cm² Sectional Dimensions BL Flange							
		T	D	C	g	f	Bolt Hole		Weight (kg)	T	D	C	g	f	Bolt Hole		Weight (kg)
							h	N							h	N	
80	90.0	22	200	160	135	2	23	8	3.56	12	211	160	60	2	19	4	2.80
100	115.4	22	225	185	160	2	23	8	4.26	12	238	180	85	2	19	8	3.50
125	141.2	23	270	225	195	2	25	8	6.49	12	263	210	110	2	19	8	4.33
150	166.6	27	305	260	230	2	25	12	9.27	12	290	240	135	2	23	8	5.25
200	218.0	27	350	305	275	2	25	12	10.9	14	342	295	185	2	23	8	9.00
250	269.5	28	430	380	345	2	27	12	17.7	16	410	350	235	2	23	12	15.0
300	321.0	30	480	430	395	3	27	16	20.5	19	464	400	285	3	23	12	22.8
350	358.1	34	540	480	440	3	33	16	29.5	21	530	460	325	3	23	16	32.9
400	409.0	38	605	540	495	3	33	16	41.1	23	582	515	375	3	27	16	43.8
450	460.0	40	675	605	560	3	33	20	53.2	26	652	565	425	3	27	20	62.8
500	511.0	42	730	660	615	3	33	20	63.1	28	706	620	475	3	27	20	80.0
600	613.0	46	845	770	720	3	39	24	83.8	33	810	725	580	3	30	20	126.0
700	715.0	50	960	875	820	5	42	24	109.0	37	928	840	680	3	30	24	186.0
800	817.0	54	1085	990	930	5	48	24	146.0	42	1034	950	780	3	33	24	264.0
900	919.0	58	1185	1090	1030	5	48	28	171.0	47	1156	1050	880	3	33	28	370.0
1000	1021.0	64	1320	1210	1140	5	56	28	235.0	51	1262	1160	980	3	36	28	480.0
1100	1122.0	67	1420	1310	1240	5	56	32	264.0	–	–	–	–	–	–	–	–
1200	1224.0	70	1530	1420	1350	5	56	32	313.0	–	–	–	–	–	–	–	–
1350	1376.0	76	1700	1590	1510	5	62	32	400.0	–	–	–	–	–	–	–	–
1500	1529.0	80	1865	1750	1670	5	62	36	485.0	–	–	–	–	–	–	–	–

Nominal Bore of Flange	Inside Diam. of Flange do	F12 KS D 3578 10kgf/cm² Sectional Dimensions BL Flange								F15 KS D 3578 16kgf/cm² Sectional Dimensions BL Flange							
		T	D	C	g	f	Bolt Hole		Weight (kg)	T	D	C	g	f	Bolt Hole		Weight (kg)
							h	N							h	N	
80	90.0	13	185	160	60	2	19	4	2.51	18	200	160	60	2	23	8	3.81
100	115.4	13	210	180	85	2	19	8	3.12	18	225	185	85	2	23	8	4.77
125	141.2	14	250	210	110	2	19	8	4.80	18	270	225	110	2	25	8	6.95
150	166.6	14	280	240	135	2	23	8	5.95	22	305	260	135	2	25	12	10.9
200	218.0	16	330	295	185	2	23	8	9.75	22	350	305	185	2	25	12	14.8
250	269.5	17	400	350	235	2	23	12	15.2	23	430	380	235	2	27	12	23.8
300	321.0	19	445	400	285	3	23	12	21.3	26	480	430	285	3	27	16	33.4
350	358.1	22	490	460	325	3	23	16	30.0	28	540	480	325	3	33	16	45.1
400	409.0	25	560	515	375	3	27	16	44.5	32	605	540	375	3	33	16	65.8
450	460.0	27	620	565	425	3	27	20	59.4	36	675	605	425	3	33	20	92.9
500	511.0	30	675	620	475	3	27	20	78.9	39	730	660	475	3	33	20	119.0
600	613.0	35	795	725	580	3	30	20	129.0	45	845	770	580	3	33	24	183.0
700	715.0	40	905	840	680	3	30	24	192.0	–	–	–	–	–	–	–	–
800	817.0	45	1020	950	780	3	33	24	276.0	–	–	–	–	–	–	–	–
900	919.0	50	1120	1032	880	3	33	28	371.0	–	–	–	–	–	–	–	–
1000	1021.0	62	1235	1160	980	3	36	28	561.0	–	–	–	–	–	–	–	–

KS B 6216 – 1998
JIS B 8210 – 1978 스프링 안전밸브 설치 플랜지

전량정식 및 전량식 안전밸브 플랜지(온양정식 및 온량식)

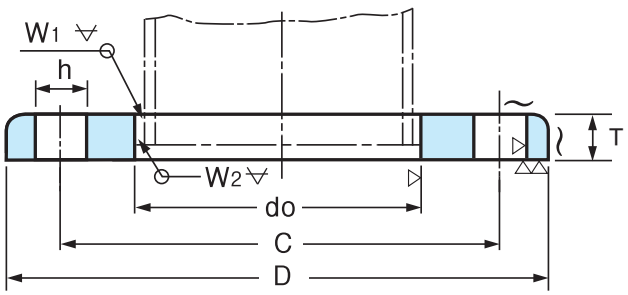


Unit:mm

Pressure kgf/㎠	Nominal Size	Inside Diam. of Flange do	Sectional Dimensions of Flange				Bolt Hole		
			T	D	g	f	C	h	N
10K	20	27.7	22	125	70	1	90	19	4
	25	34.5	22	130	75	1	95	19	4
	32	43.2	24	140	85	2	105	19	4
	40	49.1	24	155	100	2	120	19	8
	50	61.1	26	165	110	2	130	19	8
	65	77.1	28	200	135	2	160	23	8
	80	90.0	30	210	145	2	170	23	8
	100	115.4	32	245	180	2	205	23	8
	125	141.2	34	280	205	2	235	25	12
	150	166.6	36	325	250	2	280	25	12
	200	218.0	38	385	300	2	335	27	12
20K	20	27.7	22	130	70	1	95	19	4
	25	34.5	22	135	75	1	100	19	4
	32	43.2	24	160	90	2	120	23	4
	40	49.1	24	165	105	2	130	19	8
	50	61.1	26	185	115	2	145	23	8
	65	77.1	30	210	140	2	170	23	8
	80	90.0	32	230	150	2	185	25	8
	100	115.4	36	265	185	2	220	25	8
	125	141.2	38	290	210	2	245	25	12
	150	166.6	42	350	260	2	300	27	12
	200	218.0	46	410	310	2	350	33	12
30K	20	27.7	24	130	70	1	95	19	4
	25	34.5	24	135	75	1	100	19	4
	32	43.2	26	160	90	2	120	23	4
	40	49.1	28	165	105	2	130	19	8
	50	61.1	30	185	115	2	145	23	8
	65	77.1	34	210	140	2	170	23	8
	80	90.0	36	230	150	2	185	25	8
	100	115.4	40	285	190	2	235	27	8
	125	141.2	44	315	215	2	265	27	12
	150	166.6	48	375	265	2	315	33	12
	200	218.0	54	435	315	2	370	36	12

1kg/Cm2 FLANGE FOR EXH. GAS PIPE(F-TYPE)

KS V 7815 JIS F 7805
SLIP-ON FLANGES

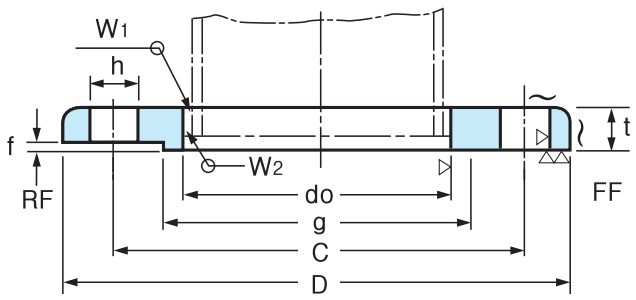


Unit:mm

Nominal Size	PIPE	FLANGE			BOLT HOLE			BOLT (M)	Weight (kg)
	O/D(d)	D	I/D(do)	T	C	N	H		
25	34.0	95	34.5	10	75	4	12	M10	0.45
32	42.7	115	43.2	12	90	4	15	M12	0.73
40	48.6	120	49.1	12	95	4	15	M12	0.83
50	60.5	130	61.1	14	105	4	15	M12	1.06
65	76.3	155	77.1	14	130	4	15	M12	1.48
80	89.1	180	90.0	14	145	4	19	M16	1.97
100	114.3	200	115.4	16	165	8	19	M16	2.35
125	139.8	235	141.2	16	200	8	19	M16	3.20
150	165.2	265	166.6	16	230	8	19	M16	3.90
200	216.3	320	218.0	16	280	8	23	M20	5.00
250	267.4	385	269.5	16	345	12	23	M20	6.83
300	318.5	430	321.0	16	390	12	23	M20	7.45
350	355.6	480	358.1	16	435	12	25	M22	9.45
400	406.4	540	409.0	16	495	16	25	M22	11.43
450	457.2	605	460.0	16	555	16	25	M22	14.40
500	508.0	655	511.0	16	605	16	25	M22	15.73
550	555.8	660	562.0	16	620	16	23	M20	12.00
600	609.6	710	613.0	16	670	16	23	M20	12.12
650	660.4	760	664.0	16	720	16	23	M20	12.15
700	711.2	815	715.0	16	775	16	23	M20	14.26
750	762.0	865	766.0	16	825	20	23	M20	14.88
800	812.8	915	817.0	16	875	20	23	M20	15.70
850	863.6	965	868.0	16	925	20	23	M20	16.50
900	914.4	1025	919.0	18	980	20	25	M22	21.48
950	962.0	1075	967.0	18	1030	20	25	M22	21.97
1000	1016.0	1125	1021.0	18	1080	20	25	M22	23.38
1050	1062.0	1175	1067.0	18	1130	24	25	M22	25.21
1100	1117.6	1225	1122.0	18	1180	24	25	M22	25.16
1150	1162.0	1275	1167.0	18	1230	24	25	M22	26.64
1200	1219.0	1325	1224.0	18	1280	24	25	M22	27.60
1250	1262.0	1375	1267.0	18	1330	28	25	M22	29.72
1300	1312.0	1425	1317.0	18	1380	28	25	M22	30.92
1350	1371.6	1475	1376.0	18	1430	28	25	M22	32.38
1400	1412.0	1525	1417.0	20	1480	28	25	M22	37.02
1450	1462.0	1595	1467.0	20	1540	28	27	M24	45.81
1500	1524.0	1645	1529.0	20	1590	28	27	M24	46.88
1600	1612.0	1745	1617.0	20	1690	28	27	M24	50.54
1700	1712.0	1845	1717.0	20	1790	28	27	M24	53.70
1800	1812.0	1950	1817.0	20	1895	32	27	M24	58.90
1900	1912.0	2050	1917.0	20	1995	32	27	M24	62.18
2000	2012.0	2150	2017.0	20	2095	36	27	M24	65.10
2100	2116.0	2250	2121.0	24	2195	36	27	M24	79.55
2200	2216.0	2350	2221.0	24	2295	40	27	M24	82.94
2300	2316.0	2450	2321.0	24	2395	40	27	M24	86.75
2400	2416.0	2550	2421.0	24	2495	40	27	M24	89.71
2500	2516.0	2650	2521.0	24	2595	48	27	M24	93.52
2600	2616.0	2750	2621.0	24	2695	48	27	M24	97.34

2kg/Cm2

KS B 1511 – 1987, JIS B 2220 –2012
SLIP – ON FLANGES

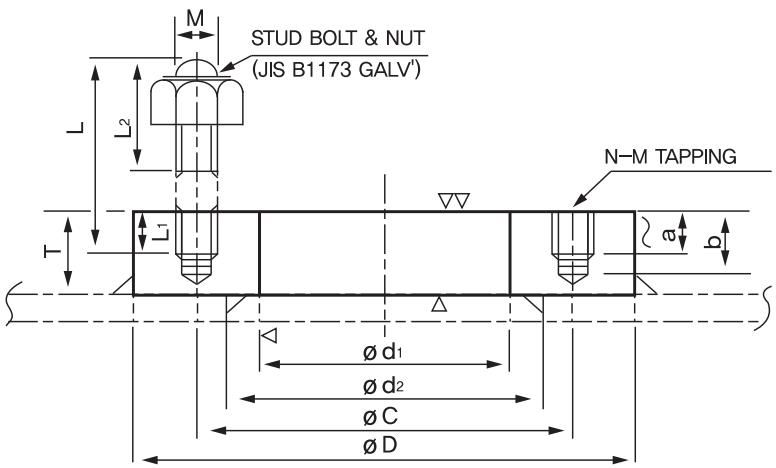


Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange do	Sectional Dimensions		Bolt Hole			Nominal Bolt Size
			t	D	C	h	N	
450	457.2	460	22	605	555	23	16	M20
500	508.0	511	22	655	605	23	20	M20
550	558.8	562	24	720	665	25	20	M22
60	609.6	613	24	770	715	25	20	M22
650	660.4	664	24	825	770	25	24	M22
700	711.2	715	24	875	820	25	24	M22
750	762.0	766	24	945	880	27	24	M24
800	812.8	817	24	995	930	27	24	M24
850	863.6	868	24	1045	980	27	24	M24
900	914.4	919	24	1095	1030	27	24	M24
1000	1016.0	1021	26	1195	1130	27	28	M24
1150	1117.6	1123	26	1305	1240	27	28	M24
1200	1219.2	1224	26	1420	1350	27	32	M24
1350	1371.6	1377	26	1575	1505	27	32	M24
1500	1524.0	1529	28	1730	1660	27	36	M24

5kg/Cm² SET-ON FLANGE

JIS B 2220 – 1984

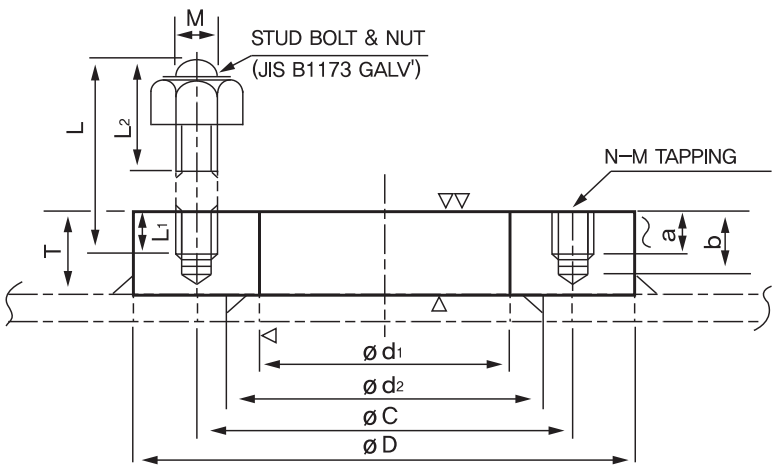


Unit : mm

Nominal Size	Sectonal Dimensions						STUD BOLT					Weight (kg)
	D	C	d_1	T	a	b	N	M	L	L_2	L_1	
10	75	55	17.8	16	10	12	4	M10	32	CONTINOUS THREAD		0.47
15	80	60	22.2	16	10	12	4	M10	32			0.53
20	85	65	27.7	16	10	12	4	M10	32			0.60
25	95	75	34.5	16	10	12	4	M10	32			0.72
32	115	90	43.2	22	12	16	4	M12	40	22	12	1.45
40	120	95	49.1	22	12	16	4	M12	40	22	12	1.54
50	130	105	61.1	22	12	16	4	M12	45	22	12	1.70
65	155	130	77.1	22	12	16	4	M12	45	22	12	2.36
80	180	145	90.0	26	16	19	4	M16	50	28	16	3.74
100	200	165	115.4	26	16	19	8	M16	55	28	16	4.01
125	235	200	141.2	26	16	19	8	M16	55	28	16	5.38
150	265	230	166.6	26	16	19	8	M16	55	28	16	6.52
200	320	280	218.0	30	20	23	8	M20	65	36	20	9.66
250	385	345	269.5	30	20	23	12	M20	65	36	20	13.25
300	430	390	321.0	30	20	23	12	M20	65	36	20	14.41
350	480	435	358.1	34	22	25	12	M22	75	40	22	20.55
400	540	495	409.0	34	22	25	16	M22	75	40	22	24.85
450	605	555	460.0	34	22	25	16	M22	75	40	22	31.15

10Kg/Cm² SET-ON FLANGE

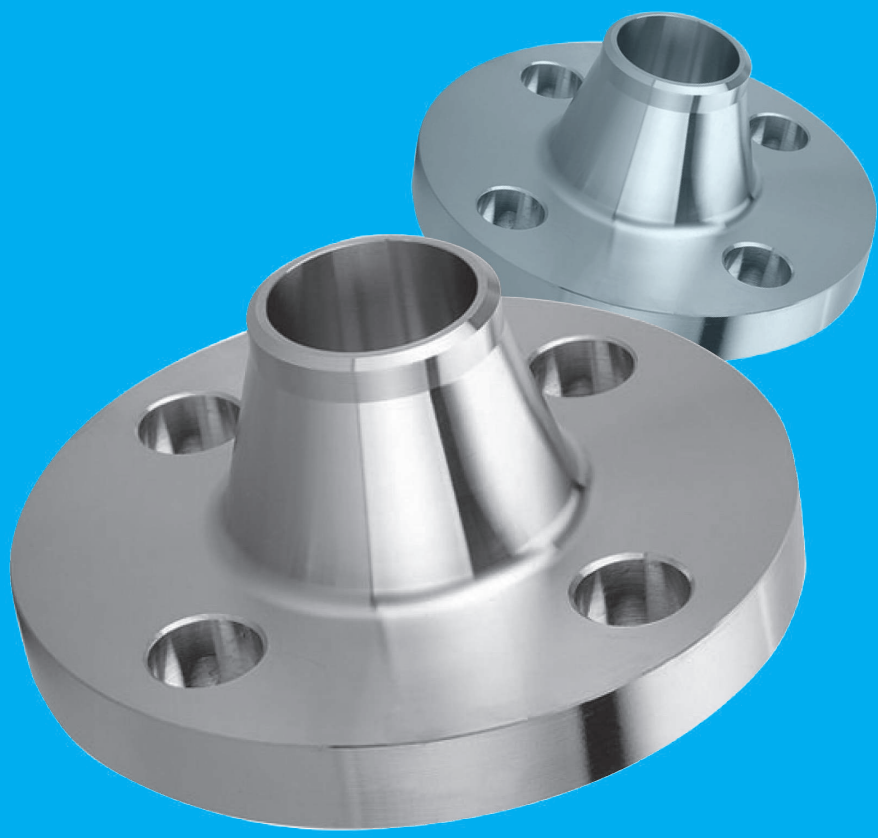
JIS B 2220 – 1984



Unit : mm

Nominal Size	Sectonal Dimensions						STUD BOLT					Weight (kg)
	D	C	d_1	T	a	b	N	M	L	L_2	L_1	
10	90	65	17.8	22	12	16	4	M12	40	22	12	0.97
15	95	70	22.2	22	12	16	4	M12	40	22	12	1.07
20	100	75	27.7	22	12	16	4	M12	40	22	12	1.17
25	125	90	34.5	26	16	19	4	M16	50	28	16	2.27
32	135	100	43.2	26	16	19	4	M16	50	28	16	2.57
40	140	105	49.1	26	16	19	4	M16	50	28	16	2.67
50	155	120	61.1	26	16	19	4	M16	50	28	16	3.07
65	175	140	77.1	26	16	19	4	M16	55	28	16	3.11
80	185	150	90.0	26	16	19	8	M16	55	28	16	3.87
100	210	175	115.4	26	16	19	8	M16	55	28	16	4.67
125	250	210	141.2	30	20	23	8	M20	65	36	20	7.36
150	280	240	166.6	30	20	23	8	M20	70	36	20	8.84
200	330	290	218.0	30	20	23	12	M20	70	36	20	10.64
250	400	355	269.5	34	22	25	12	M22	75	40	22	17.51
300	445	400	321.0	34	22	25	16	M22	75	40	22	18.63

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.



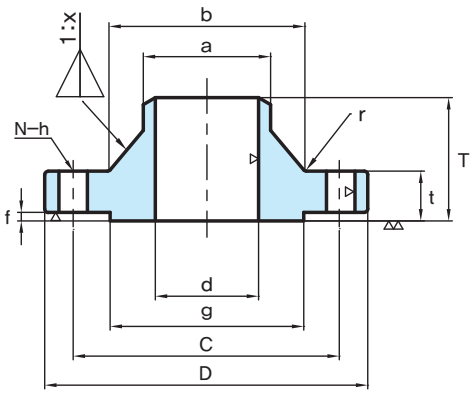
WELDING NECK FLANGES

- 5K FLANGES
- 10K FLANGES
- 16K FLANGES
- 20K FLANGES
- 30K FLANGES
- 40K FLANGES
- 63K FLANGES
- TOLERANCE

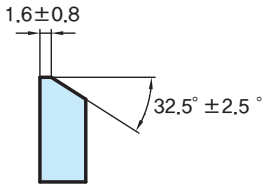
5Kg/Cm2

JIS B 2220 : 2012
WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

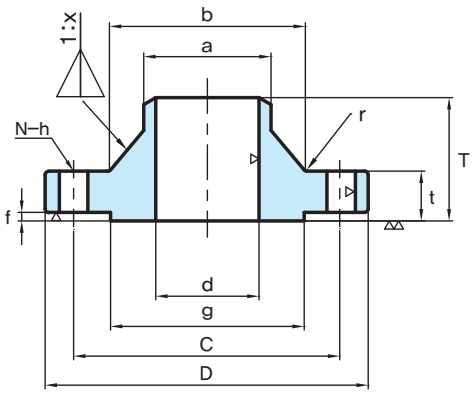
Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange								Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
10	17.3	To be specified by Purchaser	75	9	24	17.3	26	4	1.25	1	39	55	4	12	M10	0.30
15	21.7		80	9	25	21.7	31	4	1.25	1	44	60	4	12	M10	0.35
20	27.2		85	10	28	27.2	38	4	1.25	1	49	65	4	12	M10	0.44
25	34.0		95	10	30	34.0	46	4	1.25	1	59	75	4	12	M10	0.56
32	42.7		115	12	33	42.7	55	4	1.25	2	70	90	4	15	M12	0.94
40	48.6		120	12	34	48.6	62	4	1.25	2	75	95	4	15	M12	1.03
50	60.5		130	14	36	60.5	73	4	1.25	2	85	105	4	15	M12	1.33
65	76.3		155	14	39	76.3	91	4	1.25	2	110	130	4	15	M12	1.92
80	89.1		180	14	41	89.1	105	4	1.25	2	121	145	4	19	M16	2.53
90	101.6		190	14	41	101.6	117	4	1.25	2	131	155	4	19	M16	2.70
100	114.3		200	16	41	114.3	128	4	1.25	2	141	165	8	19	M16	3.04
125	139.8		235	16	43	139.8	156	4	1.25	2	176	200	8	19	M16	4.17
150	165.2		265	18	49	165.2	184	4	1.25	2	206	230	8	19	M16	5.87
175	190.7		300	18	49	190.7	209	4	1.25	2	232	260	8	23	M20	7.16
200	216.3		320	20	53	216.3	235	4	1.25	2	252	280	8	23	M20	8.50
225	241.8		345	20	54	241.8	261	4	1.25	2	277	305	12	23	M20	9.30
250	267.4		385	22	61	267.4	290	4	1.25	2	317	345	12	23	M20	13.2
300	318.5		430	22	62	318.5	342	4	1.25	3	360	390	12	23	M20	15.1
350	355.6		480	24	73	355.6	385	4	1.25	3	403	435	12	25	M22	21.6
400	406.4		540	24	76	406.4	438	4	1.25	3	463	495	16	25	M22	26.2
450	457.2		605	24	79	457.2	491	5	1.25	3	523	555	16	25	M22	32.7
500	508.0		655	24	79	508.0	541	5	1.25	3	573	605	20	25	M22	35.4
550	558.8		720	26	81	558.8	593	5	1.25	3	630	665	20	27	M24	44.4
600	609.6		770	26	81	609.6	643	5	1.25	3	680	715	20	27	M24	47.8
650	660.4		825	26	85	660.4	698	5	1.25	3	735	770	24	27	M24	54.3
700	711.2		875	26	94	711.2	748	5	1.5	3	785	820	24	27	M24	60.6
750	762.0		945	28	100	762.0	802	5	1.5	3	840	880	24	33	M30	75.4
800	812.8		995	28	100	812.8	852	5	1.5	3	890	930	24	33	M30	79.5
850	863.6		1045	28	108	863.6	902	5	1.75	3	940	980	24	33	M30	87.0
900	914.4		1095	30	108	914.4	952	5	1.75	3	990	1030	24	33	M30	95.2
1000	1016.0		1195	32	116	1016.0	1052	5	2	3	1090	1130	28	33	M30	111.0
1100	1117.6		1305	32	136	1117.6	1162	8	2	3	1200	1240	28	33	M30	146.0
1200	1219.2		1420	34	155	1219.2	1272	8	2	3	1305	1350	32	33	M30	190.0
1350	1371.6		1575	34	164	1371.6	1427	8	2	3	1460	1505	32	33	M30	240.0
1500	1524.0		1730	36	172	1524.0	1582	10	2	3	1615	1660	36	33	M30	284.0

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

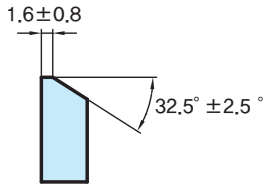
10Kg/Cm2

JIS B 2220 : 2012
WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange								Drilling				Nominal Weight (kg)
				Thick-ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
10	17.3	To be specified by Purchaser	90	12	29	17.3	28	4	1.25	1	46	65	4	15	M12	0.55
15	21.7		95	12	31	21.7	33	4	1.25	1	51	70	4	15	M12	0.63
20	27.2		100	14	32	27.2	38	4	1.25	1	56	75	4	15	M12	0.80
25	34.0		125	14	36	34.0	47	4	1.25	1	67	90	4	19	M16	1.26
32	42.7		135	16	38	42.7	56	4	1.25	2	76	100	4	19	M16	1.67
40	48.6		140	16	38	48.6	62	4	1.25	2	81	105	4	19	M16	1.78
50	60.5		155	16	40	60.5	75	4	1.25	2	96	120	4	19	M16	2.18
65	76.3		175	18	44	76.3	92	4	1.25	2	116	140	4	19	M16	3.07
80	89.1		185	18	45	89.1	105	5	1.25	2	126	150	8	19	M16	3.17
90	101.6		195	18	45	101.6	117	5	1.25	2	136	160	8	19	M16	3.40
100	114.3		210	18	45	114.3	130	5	1.25	2	151	175	8	19	M16	3.89
125	139.8		250	20	47	139.8	156	5	1.25	2	182	210	8	23	M20	5.77
150	165.2		280	22	53	165.2	184	5	1.25	2	212	240	8	23	M20	7.86
175	190.7		305	22	55	190.7	210	5	1.25	2	237	265	12	23	M20	8.70
200	216.3		330	22	58	216.3	238	5	1.25	2	262	290	12	23	M20	10.1
225	241.8		350	22	58	241.8	261	5	1.25	2	282	310	12	23	M20	10.6
250	267.4		400	24	65	267.4	292	6	1.25	2	324	355	12	25	M22	16.0
300	318.5		445	24	68	318.5	345	6	1.25	3	368	400	16	25	M22	18.1
350	355.6		490	26	79	355.6	388	6	1.25	3	413	445	16	25	M22	24.8
400	406.4		560	28	85	406.4	442	6	1.25	3	475	510	16	27	M24	34.2
450	457.2		620	30	90	457.2	495	6	1.25	3	530	565	20	27	M24	42.7
500	508.0		675	30	99	508.0	546	6	1.5	3	585	620	20	27	M24	50.3
550	558.8		745	32	111	558.8	597	6	1.75	3	640	680	20	33	M30	64.4
600	609.6		795	32	112	609.6	648	6	1.75	3	690	730	24	33	M30	69.1
650	660.4		845	34	116	660.4	700	6	1.75	3	740	780	24	33	M30	78.7
700	711.2		905	34	132	711.2	754	6	2	3	800	840	24	33	M30	94.5
750	762.0		970	36	139	762.0	807	6	2	3	855	900	24	33	M30	114.0
800	812.8		1020	36	139	812.8	858	6	2	3	905	950	28	33	M30	120.0
850	863.6		1070	36	139	863.6	908	6	2	3	955	1000	28	33	M30	126.0
900	914.4		1120	38	140	914.4	959	6	2	3	1005	1050	28	33	M30	138.0
1000	1016.0		1235	40	151	1016.0	1065	6	2	3	1110	1160	28	39	M36	171.0
1100	1117.6		1345	42	170	1117.6	1174	10	2	3	1220	1270	28	39	M36	222.0
1200	1219.2		1465	44	182	1219.2	1281	10	2	3	1325	1380	32	39	M36	275.0
1350	1371.6		1630	48	200	1371.6	1438	10	2	3	1480	1540	36	45	M42	368.0
1500	1524.0		1795	50	218	1524.0	1598	12	2	3	1635	1700	40	45	M42	459.0

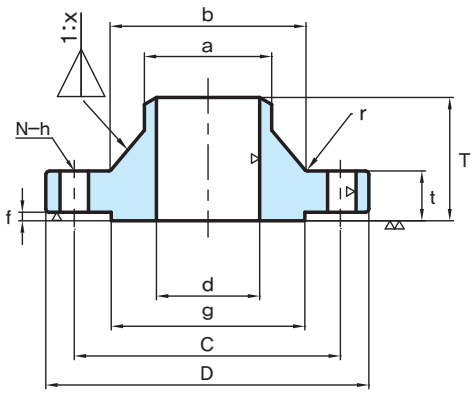
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

16Kg/Cm2

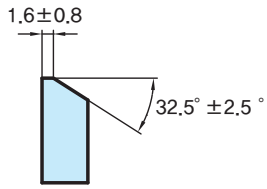
JIS B 2220 : 2012

WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
10	17.3	To be specified by Purchaser	90	12	31	17.3	29	4	1.25	1	46	65	4	15	M12	0.56
15	21.7		95	12	32	21.7	34	4	1.25	1	51	70	4	15	M12	0.64
20	27.2		100	14	34	27.2	39	4	1.25	1	56	75	4	15	M12	0.81
25	34.0		125	14	36	34.0	47	4	1.25	1	67	90	4	19	M16	1.27
32	42.7		135	16	39	42.7	56	5	1.25	2	76	100	4	19	M16	1.67
40	48.6		140	16	39	48.6	62	5	1.25	2	81	105	4	19	M16	1.79
50	60.5		155	16	40	60.5	75	5	1.25	2	96	120	8	19	M16	2.05
65	76.3		175	18	46	76.3	92	5	1.25	2	116	140	8	19	M16	3.00
80	89.1		200	20	49	89.1	105	6	1.25	2	132	160	8	23	M20	4.16
90	101.6		210	20	50	101.6	118	6	1.25	2	145	170	8	23	M20	4.53
100	114.3		225	22	56	114.3	134	6	1.25	2	160	185	8	23	M20	5.76
125	139.8		270	22	60	139.8	162	6	1.25	2	195	225	8	25	M22	8.39
150	165.2		305	24	69	165.2	192	6	1.25	2	230	260	12	25	M22	11.5
200	216.3		350	26	73	216.3	244	6	1.25	2	275	305	12	25	M22	15.3
250	267.4		430	28	81	267.4	298	6	1.25	2	345	380	12	27	M24	24.8
300	318.5		480	30	88	318.5	352	8	1.25	3	395	430	16	27	M24	31.3
350	355.6		540	34	104	355.6	398	8	1.25	3	440	480	16	33	M30X3	45.7
400	406.4		605	38	115	406.4	452	10	1.25	3	495	540	16	33	M30X3	63.6
450	457.2		675	40	126	457.2	510	10	1.25	3	560	605	20	33	M30X3	82.8
500	508.0		730	42	128	508.0	561	10	1.25	3	615	660	20	33	M30X3	96.3
550	558.8		795	44	135	558.8	616	10	1.25	3	670	720	20	39	M36X3	116.0
600	609.6		845	46	141	609.6	670	10	1.25	3	720	770	24	39	M36X3	130.0

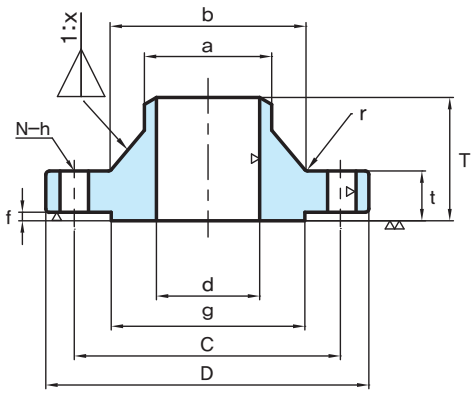
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

20Kg/Cm2

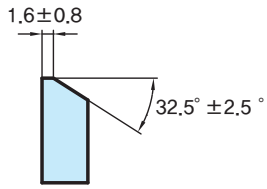
JIS B 2220 : 2012

WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
10	17.3	To be specified by Purchaser	90	14	33	17.3	29	4	1.25	1	46	65	4	15	M12	0.61
15	21.7		95	14	34	21.7	34	4	1.25	1	51	70	4	15	M12	0.70
20	27.2		100	16	36	27.2	39	4	1.25	1	56	75	4	15	M12	0.88
25	34.0		125	16	38	34.0	47	4	1.25	1	67	90	4	19	M16	1.37
32	42.7		135	18	41	42.7	56	5	1.25	2	76	100	4	19	M16	1.73
40	48.6		140	18	41	48.6	62	5	1.25	2	81	105	4	19	M16	1.85
50	60.5		155	18	42	60.5	75	5	1.25	2	96	120	8	19	M16	2.12
65	76.3		175	20	48	76.3	92	5	1.25	2	116	140	8	19	M16	3.11
80	89.1		200	22	51	89.1	105	6	1.25	2	132	160	8	23	M20	4.30
90	101.6		210	24	54	101.6	118	6	1.25	2	145	170	8	23	M20	5.08
100	114.3		225	24	58	114.3	134	6	1.25	2	160	185	8	23	M20	5.95
125	139.8		270	26	64	139.8	162	6	1.25	2	195	225	8	25	M22	9.31
150	165.2		305	28	73	165.2	192	6	1.25	2	230	260	12	25	M22	12.6
200	216.3		350	30	77	216.3	244	6	1.25	2	275	305	12	25	M22	16.6
250	267.4		430	34	87	267.4	298	6	1.25	2	345	380	12	27	M24	28.3
300	318.5		480	36	94	318.5	352	8	1.25	3	395	430	16	27	M24	34.9
350	355.6		540	40	110	355.6	398	8	1.25	3	440	480	16	33	M30X3	50.2
400	406.4		605	46	123	406.4	452	10	1.25	3	495	540	16	33	M30X3	71.7
450	457.2		675	48	134	457.2	510	10	1.25	3	560	605	20	33	M30X3	92.8
500	508.0		730	50	136	508.0	561	10	1.25	3	615	660	20	33	M30X3	108.0
550	558.8		795	52	143	558.8	616	10	1.25	3	670	720	20	39	M36X3	128.0
600	609.6		845	54	149	609.6	670	10	1.25	3	720	770	24	39	M36X3	144.0

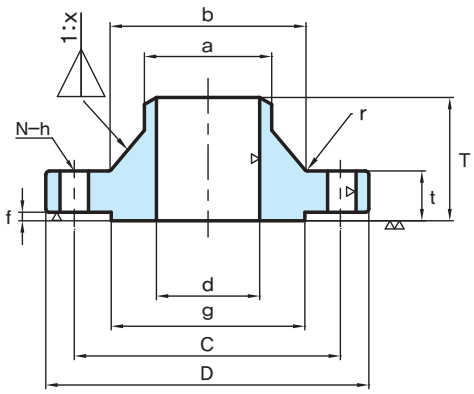
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

30Kg/Cm2

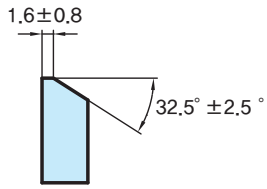
JIS B 2220 : 2012 (KS B 1503 : 2007)

WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
15	21.7	To be specified by Purchaser	115	18	45	21.7	40	6	1.25	1	55	80	4	19	M16	1.33
20	27.2		120	18	45	27.2	44	6	1.25	1	60	85	4	19	M16	1.45
25	34.0		130	20	48	34.0	52	6	1.25	1	70	95	4	19	M16	1.92
32	42.7		140	22	52	42.7	62	6	1.25	2	80	105	4	19	M16	2.39
40	48.6		160	22	54	48.6	70	6	1.25	2	90	120	4	23	M20	3.09
50	60.5		165	22	57	60.5	84	8	1.25	2	105	130	8	19	M16	3.24
65	76.3		200	26	69	76.3	104	8	1.25	2	130	160	8	23	M20	5.70
80	89.1		210	28	73	89.1	118	8	1.25	2	140	170	8	23	M20	6.72
90	101.6		230	30	74	101.6	130	8	1.25	2	150	185	8	25	M22	8.31
100	114.3		240	32	76	114.3	142	8	1.25	2	160	195	8	25	M22	9.40
125	139.8		275	36	86	139.8	172	10	1.25	2	195	230	8	25	M22	14.0
150	165.2		325	38	95	165.2	202	10	1.25	2	235	275	12	27	M24	20.2
200	216.3		370	42	102	216.3	254	10	1.25	2	280	320	12	27	M24	27.2
250	267.4		450	48	118	267.4	312	12	1.25	2	345	390	12	33	M30X3	45.2
300	318.5		515	52	127	318.5	366	15	1.25	3	405	450	16	33	M30X3	61.0
350	355.6		560	54	134	355.6	406	15	1.25	3	450	495	16	33	M30X3	74.5
400	406.4		630	60	149	406.4	462	20	1.25	3	510	560	16	39	M36X3	103.0

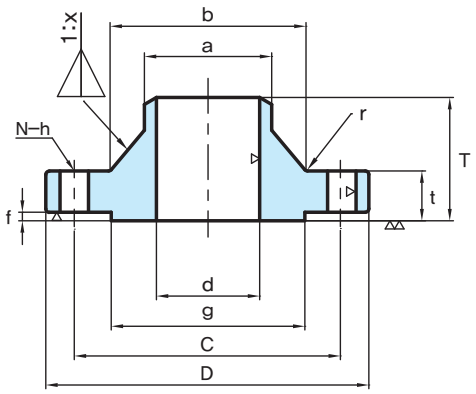
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

40Kg/Cm2

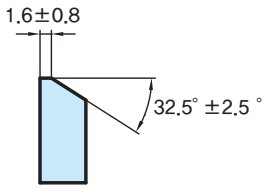
JIS B 2220 : 2012

WELDING NECK FLANGES

WNRF



Reference : Beveling



When particularly necessary, customers can order another beveling form the above.

Unit : mm

Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
15	21.7	To be specified by Purchaser	115	20	48	21.7	40	6	1.25	1	55	80	4	19	M16	1.47
20	27.2		120	20	48	27.2	45	6	1.25	1	60	85	4	19	M16	1.61
25	34.0		130	22	53	34.0	54	6	1.25	1	70	95	4	19	M16	2.14
32	42.7		140	24	54	42.7	62	6	1.25	2	80	105	4	19	M16	2.60
40	48.6		160	24	59	48.6	72	6	1.25	2	90	120	4	23	M20	3.41
50	60.5		165	26	65	60.5	87	8	1.25	2	105	130	8	19	M16	3.88
65	76.3		200	30	78	76.3	108	8	1.25	2	130	160	8	23	M20	6.68
80	89.1		210	32	78	89.1	119	8	1.25	2	140	170	8	23	M20	7.61
90	101.6		230	34	79	101.6	130	8	1.25	2	150	185	8	25	M22	9.31
100	114.3		250	36	85	114.3	146	8	1.25	2	165	205	8	25	M22	11.8
125	139.8		300	40	108	139.8	186	10	1.25	2	200	250	8	27	M24	20.3
150	165.2		355	44	117	165.2	215	10	1.25	2	240	295	12	33	M30X3	29.2
200	216.3		405	50	130	216.3	270	10	1.25	2	290	345	12	33	M30X3	41.9
250	267.4		475	56	152	267.4	333	12	1.25	2	355	410	12	33	M30X3	66.1
300	318.5		540	60	153	318.5	380	15	1.25	3	410	470	16	39	M36X3	81.2
350	355.6		585	64	168	355.6	425	15	1.25	3	455	515	16	39	M36X3	103.0
400	406.4		645	70	168	406.4	466	20	1.25	3	515	570	16	39	M36X3	127.0

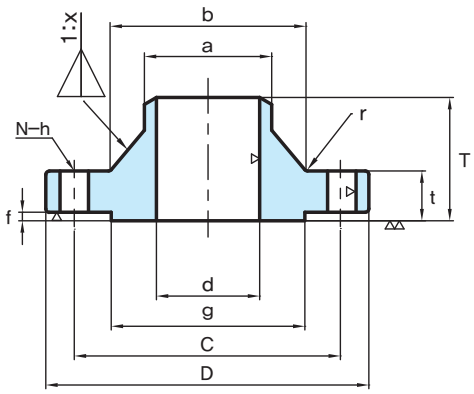
Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

63Kg/Cm2

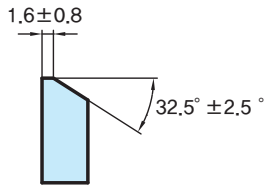
JIS B 2220 : 2012

WELDING NECK FLANGES

WNRF



Reference : Beveling



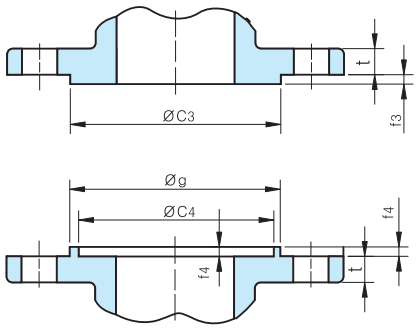
When particularly necessary, customers can order another beveling form the above.

Unit : mm

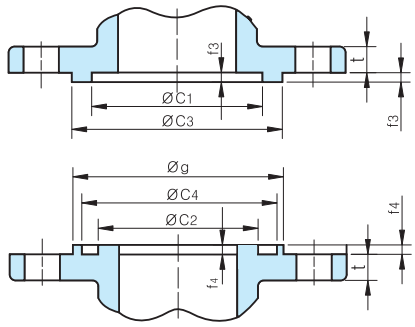
Nominal Size	Outside Diam. of Steel Pipes	Inside Diam. of Flange	Outside Diam. of Flange	Sectional Dimensions of Flange							Drilling				Nominal Weight (kg)
				Thick–ness	Total Length	Diam. of hub		Radius	Taper of hub	RF Height	RF Diam.	Diam. of Bolt Circle	No. of Bolt Hole	Bolt Hole Diam.	Nominal Bolt Size	
		d	D	t	T	a	b	r	x	f	g	C	N	h		
15	21.7	To be specified by Purchaser	120	23	57	21.7	42	6	1.25	1	55	85	4	19	M16	1.89
20	27.2		135	25	57	27.2	46	6	1.25	1	60	95	4	23	M20	2.51
25	34.0		140	27	61	34.0	55	6	1.25	1	70	100	4	23	M20	2.98
32	42.7		150	30	61	42.7	60	6	1.25	2	80	110	4	23	M20	3.65
40	48.6		175	32	73	48.6	75	6	1.25	2	90	130	4	25	M22	5.54
50	60.5		185	34	82	60.5	92	8	1.25	2	105	145	8	23	M20	6.43
65	76.3		220	38	101	76.3	118	8	1.25	2	130	175	8	25	M22	10.9
80	89.1		230	40	103	89.1	130	8	1.25	2	140	185	8	25	M22	12.4
90	101.6		255	42	103	101.6	140	8	1.25	2	150	205	8	27	M24	15.4
100	114.3		270	44	107	114.3	154	8	1.25	2	165	220	8	27	M24	18.1
125	139.8		325	50	127	139.8	190	10	1.25	2	200	265	8	33	M30X3	30.0
150	165.2		365	54	152	165.2	230	10	1.25	2	240	305	12	33	M30X3	42.4
200	216.3		425	60	159	216.3	280	10	1.25	2	290	360	12	33	M30X3	61.0
250	267.4		500	68	189	267.4	346	12	1.25	2	355	430	12	39	M36X3	97.3
300	318.5		560	77	199	318.5	395	15	1.25	3	410	485	16	39	M36X3	128.0
350	355.6		615	81	202	355.6	429	15	1.25	3	455	530	16	45	M42X3	154.0
400	406.4		680	89	212	406.4	479	20	1.25	3	515	590	16	45	M42X3	202.0

Notes:
1. Adjustment shall be made according to the inside diameter of the steel pipes to be joined with.
2. For IT flanges, the values shown for this diamension are informative.
3. This may be rounded off with the dimension c as a radius.
4. These dimensions may be applied upon agreement between the interested parties.

FACING



Male–female face(MF)



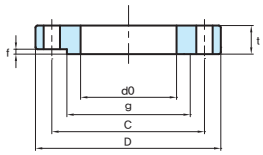
Tongue and groove(TG)

Unit : mm

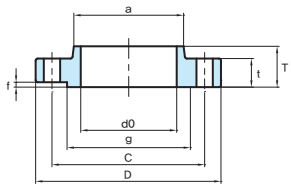
Nominal Size A	Male · Female face (MF)				Tongue and groove (TG)					
	Male seat (MF · M)		Female seat (MF · F)		Tongue seat (TG · T)			Groove seat (TG · G)		
	C_3	f_3	C_4	f_4	C_1	C_3	f_3	C_2	C_4	f_4
10	38	6	39	5	28	38	6	27	39	5
15	42	6	43	5	32	42	6	31	43	5
20	50	6	51	5	38	50	6	37	51	5
25	60	6	61	5	45	60	6	44	61	5
32	70	6	71	5	55	70	6	54	71	5
40	75	6	76	5	60	75	6	59	76	5
50	90	6	91	5	70	90	6	69	91	5
65	110	6	111	5	90	110	6	89	111	5
80	120	6	121	5	100	120	6	99	121	5
90	130	6	131	5	110	130	6	109	131	5
100	145	6	146	5	125	145	6	124	146	5
125	175	6	176	5	150	175	6	149	176	5
150	215	6	216	5	190	215	6	189	216	5
175	–	–	–	–	–	–	–	–	–	–
200	260	6	261	5	230	260	6	229	261	5
225	–	–	–	–	–	–	–	–	–	–
250	325	6	326	5	295	325	6	294	326	5
300	375	6	376	5	340	375	6	339	376	5
350	415	6	416	5	380	415	6	379	416	5
400	475	6	476	5	440	475	6	439	476	5
450	523	6	524	5	483	523	6	482	524	5
500	575	6	576	5	535	575	6	534	576	5
550	625	6	626	5	585	625	6	584	626	5
600	675	6	676	5	635	675	6	634	676	5
650	727	6	728	5	682	727	6	681	728	5
700	777	6	778	5	732	777	6	731	778	5
750	832	6	833	5	787	832	6	786	833	5
800	882	6	883	5	837	882	6	836	883	5
850	934	6	935	5	889	934	6	888	935	5
900	987	6	988	5	937	987	6	936	988	5
1000	1092	6	1094	5	1042	1092	6	1040	1094	5
1100	1192	6	1194	5	1142	1192	6	1140	1194	5
1200	1292	6	1294	5	1237	1292	6	1235	1294	5
1350	1442	6	1444	5	1387	1442	6	1385	1444	5
1500	1592	6	1594	5	1537	1592	6	1535	1594	5

(4) The female seat(MF · UF) and the groove (TG · UG) for nominal pressure 5K and 10K shall be of the shapes shown by an imaginary line of the figures.

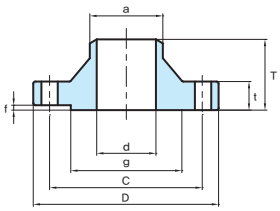
DIMENSIONAL TOLERANCE ON FLANGE (JIS B 2220)



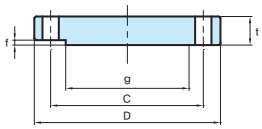
SOP–FF (RF)



SOH–FF (RF)



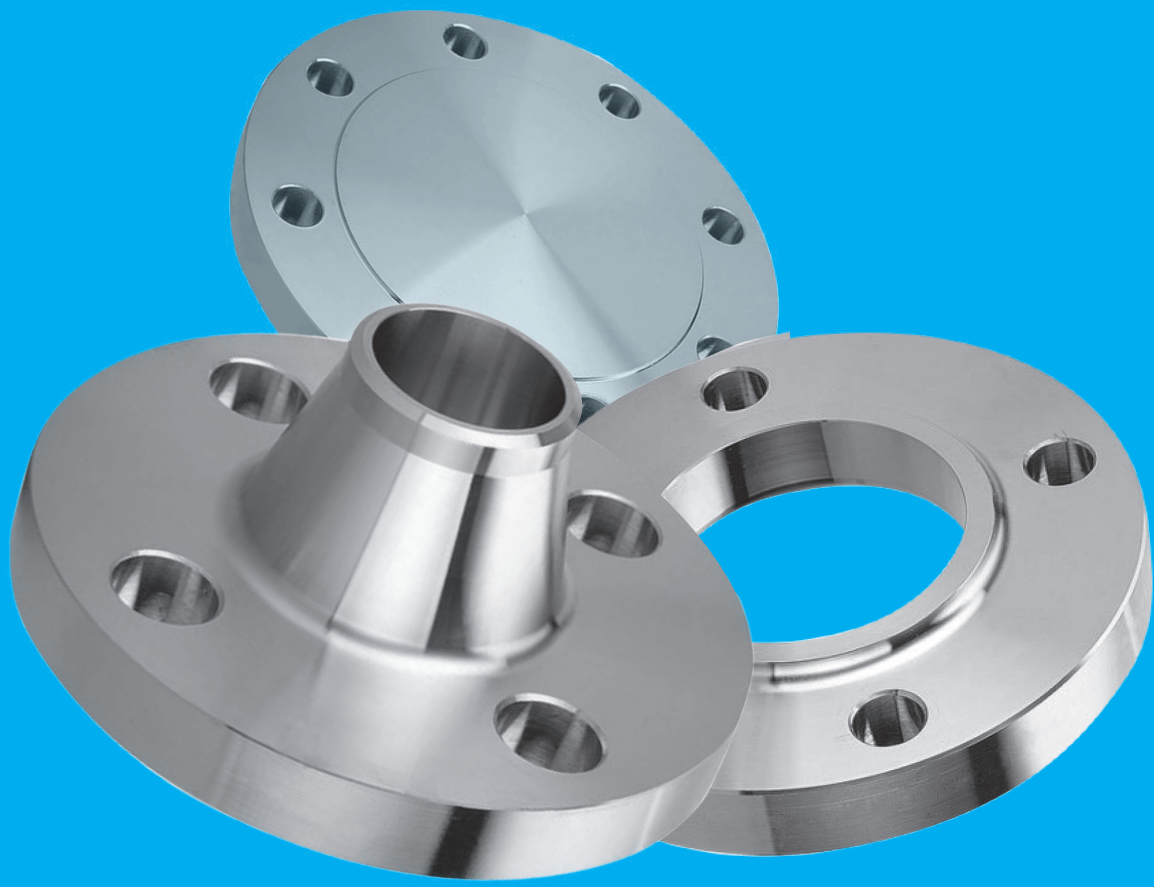
WN–FF (RF)



BL–FF (RF)

Unit : mm

Dimension	Type of flange	Gasket face	Dimensional division	Dimensional tolerance
Outside Diameter of flange D	WN, SOP, SOH, BL	–	600 or under	±1.5
			Over 600	±3
	IT	–	1000 or under	+Not specified −2
			Over 1000	+Not specified −3
Diameter of bolt hole centre circle C	All	–	950 or under	±0.8
			Over 950	±1.5
Diameter of bolt Hole h	All	–	–	±0.5
Pitch of bolt hole	All	–	–	±0.8
Inside Diameter d0	SOP, SOH SW, LJ	–	400 or under	+1, −0
			Over 400 up to and incl. 600	+1.5, −0
			Over 600 up to and incl. 800	+2, −0
			Over 800 up to and incl. 1000	+2.5, −0
			Over 1000	+3, −0
Inside Diameter d	WN, SW	–	100 or under	+0, −0.5
			Over 100 up to and incl. 400	+0, −1
			Over 400 up to and incl. 600	+0, −1.5
			Over 600 up to and incl. 800	+0, −2
			Over 800 up to and incl. 1000	+0, −2.5
			Over 1000	+0, −3
Diameter of gasket face g	WN, SOP, SOH, BL SW, IT	RF	700 or under	±0.8
			Over 700	±1.5
Thickness of flange t	WN, SOP, SOH, BL SW, IT	FF	20 or under	+1.5, −0
			Over 20 up to and incl. 50	+2, −0
			Over 50	+3, −0
Thickness of flange t–f	WN, SOP, SOH, BL SW, IT	RF	20 or under	+1.5, −0
			Over 20 up to and incl. 50	+2, −0
			Over 50	+3, −0
Diameter of hub small diameter side a	WN, SOH, SW	–	220 or under	+2, −0
			Over 220 up to and incl. 650	+4, −0
			Over 650	+8, −0
Total length of flange T	SOH, SW	–	–	±2
	WN	–	200 or under	+2, −0
			Over 200	+3, −0
Parallelism between gasket face and bolt nut bearing surface	WN, SOP, SOH, BL	All	–	within 1°



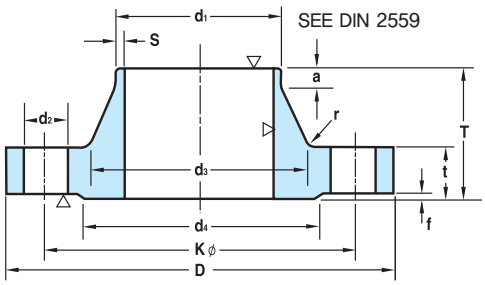
DIN FLANGES

- 6 – BAR (DIN 2573, 2527, 2631)
- 10 – BAR (DIN 2576, 2527, 2632)
- 16 – BAR (DIN 2543, 2527, 2633)
- 25 – BAR (DIN 2544, 2527, 2634)
- 40 – BAR (DIN 2545, 2527, 2635)

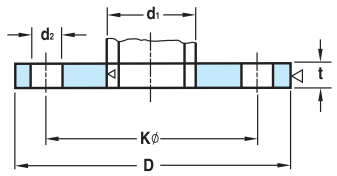
6BAR

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

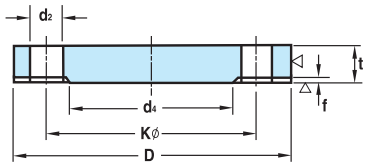
WELDING NECK



SLIP-ON



BLIND



Unit : mm

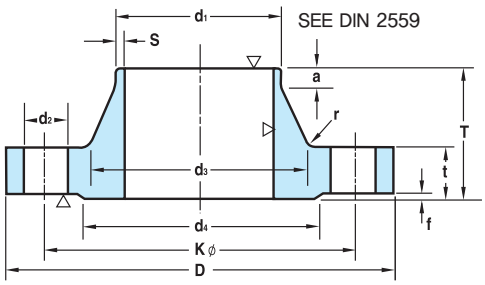
Bore		Common Dimention						Hub				Raised Fade		Drilling				Approx. Weight(kg)	
Nominal Bore	d_1	D	t			k	T	d_3	s	r	a ≈	d_4	f	No. of Bolt	Dia. of Bolt		d_2	DIN 2573	DIN 2631
			Welding Neck	Slip-on	Blind														
10	14 17.2*)	75	12	12	12	50	28	22 26	1.8	4	6	35	2	4	M10	–	11.5	0.36	0.35
15	20 21.3*)	80	12	12	12	55	30	28 30	2.0	4	6	40	2	4	M10	–	11.5	0.40	0.41
20	25 26.9*)	90	14	14	14	65	32	35 38	2.3	4	6	50	2	4	M10	–	11.5	0.59	0.62
25	30 33.7*)	100	14	14	14	75	35	40 42	2.6	4	6	60	2	4	M10	–	11.5	0.72	0.76
32	38 42.4*)	120	14	16	14	90	35	50 55	26	6	6	70	2	4	M12	(1/2″)	14	1.16	1.11
40	44.5 48.3*)	130	14	16	14	100	38	58 62	2.6	6	7	80	3	4	M12	(1/2″)	14	1.35	1.26
50	57 60.3*)	140	14	16	14	110	38	70 74	2.9	6	8	90	3	4	M12	(1/2″)	14	1.48	1.43
65	76.1*)	160	14	16	14	130	38	88	2.9	6	9	110	3	4	M12	(1/2″)	14	1.86	1.77
80	88.9*)	190	16	18	16	150	42	102	3.2	8	10	128	3	4	M16	(5/8″)	18	2.95	2.88
100	108 114.3*)	210	16	18	16	170	45	122 130	3.6	8	10	148	3	4	M16	(5/8″)	18	3.26	3.41
125	133 139.7*)	240	18	20	18	200	48	148 155	4.0	8	10	178	3	8	M16	(5/8″)	18	4.31	4.65
150	159 168.3*)	265	18	20	18	225	48	172 184	4.5	10	12	202	3	8	M16	(5/8″)	18	4.76	5.50
200	216 219.1*)	320	20	22	20	280	55	230 236	5.9	10	15	258	3	8	M16	(5/8″)	18	6.88	8.60
250	267 273*)	375	22	24	22	335	60	282 290	6.2	12	15	312	3	12	M16	(5/8″)	18	8.92	11.7
300	318 323.9*)	440	22	24	22	395	62	335 342	7.1	12	15	365	4	12	M20	(3/4″)	23	11.9	15.3
350	355.6*) 368	490	22	26	22	445	62	385	7.1	12	15	415	4	12	M20	(3/4″)	23	16.8	20.3
400	406.4*) 419	540	22	28	22	495	65	438	7.1	12	15	455	4	16	M20	(3/4″)	23	19.8	23.1
500	508*) 521	645	24	30	24	600	68	538	7.1	12	15	570	4	20	M20	(3/4″)	23	26.4	30.8
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	–	–

Note : Out side diameter of pipe complies with ISO recommendation R64.

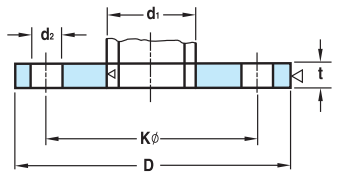
10BAR

DIN 2576 SLIP-N FLANGES
DIN 2527 BLIND FLANGES
DIN 2632 WELDING NECK FLANGES

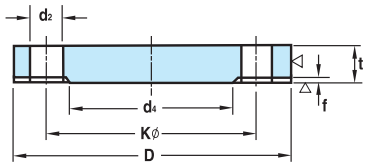
WELDING NECK



SLIP-ON



BLIND



Unit : mm

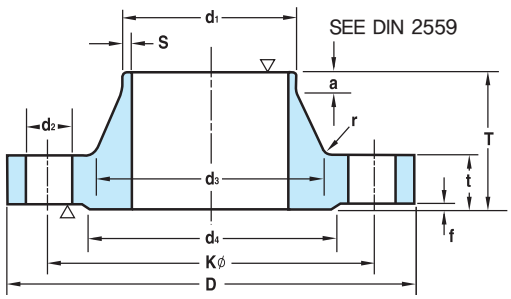
Bore		Common Dimention						Hub				Raised Fade		Drilling				Approx. Weight(kg)	
Nominal Bore	d_1	D	t			k	T	d_3	s	r	a ≈	d_4	f	No. of Bolt	Dia. of Bolt		d_2	DIN 2576	DIN 2632
			Welding Neck	Slip-on	Blind														
10	14 17.2*)	90	14	14	14	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2″)	14	0.60	0.58
15	20 21.3*)	95	14	14	14	65	35	30 32	2.0	4	6	45	2	4	M12	(1/2″)	14	0.67	0.65
20	25 26.9*)	105	16	16	16	75	38	38 40	2.3	4	6	58	2	4	M12	(1/2″)	14	0.94	0.95
25	30 33.7*)	115	16	16	16	85	38	42 45	2.6	4	6	68	2	4	M12	(1/2″)	14	1.11	1.14
32	38 42.4*)	140	16	16	16	100	40	52 56	2.6	6	6	78	2	4	M16	(5/8″)	18	1.62	1.69
40	44.5 48.3*)	150	16	16	16	110	42	60 64	2.6	6	7	88	3	4	M16	(5/8″)	18	1.86	1.86
50	57 60.3*)	165	18	18	18	125	45	72 75	2.9	6	8	102	3	4	M16	(5/8″)	18	2.47	2.53
65	76.1*)	185	18	18	18	145	45	90	2.9	6	10	122	3	4	M16	(5/8″)	18	3.00	3.03
80	88.9*)	200	20	20	20	160	50	105	3.2	8	10	138	3	8(4)	M16	(5/8″)	18	3.60	3.92
100	108 114.3*)	220	20	20	20	180	52	125 131	3.6	8	12	158	3	8	M16	(5/8″)	18	4.03	4.65
125	133 139.7*)	250	22	22	22	210	55	150 156	4.0	8	12	188	3	8	M16	(5/8″)	18	5.41	6.30
150	159 168.3*)	285	22	22	22	240	55	175 184	4.5	10	12	212	3	8	M20	(3/4″)	23	6.68	7.81
200	216 219.1*)	340	24	24	24	295	62	232 235	5.9	10	16	268	3	8	M20	(3/4″)	23	9.27	11.6
250	267 273*)	395	26	26	26	350	68	285 292	6.3	12	16	320	3	12	M20	(3/4″)	23	11.8	15.8
300	318 323.9*)	445	26	26	26	400	68	335 344	7.1	12	16	370	4	12	M20	(3/4″)	23	13.8	18.3
350	355.6*) 368	505	26	28	26	460	68	385	7.1	12	16	430	4	16	M20	(3/4″)	23	20.4	25.3
400	406.4*) 419	565	26	32	26	515	72	440	7.1	12	16	482	4	16	M24	(7/8″)	27	27.5	30.6
500	508*) 521	670	28	38	28	620	75	542	7.1	12	16	585	4	20	M24	(7/8″)	27	40.2	40.5
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	745	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 ″)	33	–	–
900	914.4*) 920	1115	34	–	–	1050	95	950	10.0	12	20	1005	5	28	M30	(1 1/8″)	33	–	–
1000	1016*) 1020	1230	34	–	–	1160	95	1052	10.0	16	20	1110	5	28	M33	(1 1/4″)	36	–	–

Note : Out side diameter of pipe complies with ISO recommendation R64.

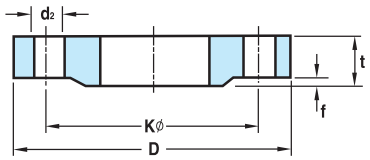
16BAR

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

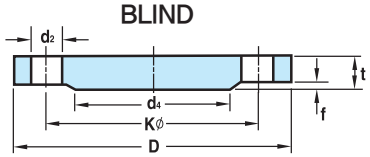
WELDING NECK



SLIP-ON



BLIND



Unit : mm

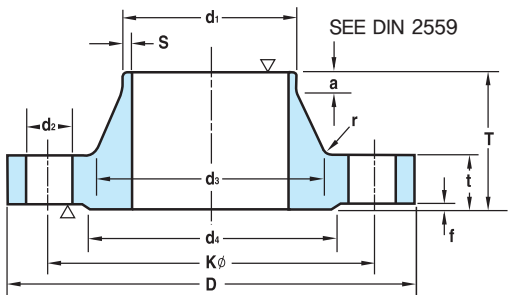
Bore		Common Dimention						Hub				Raised Fade		Drilling				Approx. Weight(kg)	
No-minal Bore	d_1	D	t			k	T	d_3	s	r	a ≈	d_4	f	No. of Bolt	Dia. of Bolt		d_2	DIN 2543	DIN 2633
			Welding Neck	Slip-on	Blind														
10	14 17.2*)	90	14	14	14	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2″)	14	0.60	0.58
15	20 21.3*)	95	14	14	14	65	35	30 32	2.0	4	6	45	2	4	M12	(1/2″)	14	0.67	0.65
20	25 26.9*)	105	16	16	16	75	38	38 40	2.3	4	6	58	2	4	M12	(1/2″)	14	0.94	0.95
25	30 33.7*)	115	16	16	16	85	38	45 45	2.6	4	6	68	2	4	M12	(1/2″)	14	1.11	1.14
32	38 42.4*)	140	16	16	16	100	40	52 56	2.6	6	6	78	2	4	M16	(5/8″)	18	1.62	1.69
40	44.5 48.3*)	150	16	16	16	110	42	60 64	2.6	6	7	88	3	4	M16	(5/8″)	18	1.85	1.86
50	57 60.3*)	165	18	18	18	125	45	72 75	2.9	6	8	102	3	4	M16	(5/8″)	18	2.46	2.53
65	76.1*)	185	18	18	18	145	45	90	2.9	6	10	122	3	4	M16	(5/8″)	18	3.00	3.03
80	88.9*)	200	20	20	20	160	50	105	3.2	8	10	138	3	8	M16	(5/8″)	18	3.60	3.92
100	108 114.3*)	220	20	20	20	180	52	125 131	3.6	8	12	158	3	8	M16	(5/8″)	18	4.01	4.62
125	133 139.7*)	250	22	22	22	210	55	150 156	4.0	8	12	188	3	8	M16	(5/8″)	18	5.41	6.30
150	159 168.3*)	285	22	22	22	240	55	175 184	4.5	10	12	212	3	8	M20	(3/4″)	23	6.68	7.81
200	216 219.1*)	340	24	24	24	295	62	232 235	5.9	10	16	268	3	12	M20	(3/4″)	23	9.14	11.5
250	267 273*)	405	26	26	26	355	70	285 292	6.3	12	16	320	3	12	M24	(7/8″)	27	13.25	16.7
300	318 323.9*)	460	28	28	28	410	78	338 344	7.1	12	16	378	4	12	M24	(7/8″)	27	17.24	22.0
350	355.6*) 368	520	30	30	30	470	82	390	8.0	12	16	438	4	16	M24	(7/8″)	27	24.15	32.8
400	406.4*) 419	580	32	32	32	525	85	445	8.0	12	16	490	4	16	M27	(1″)	30	30.54	41.1
500	508*) 521	715	34	36	34	650	90	548	8.0	12	16	610	4	20	M30	(1 1/8″)	33	50.70	61.0
600	609.6*) 622	840	36	–	–	770	95	652	8.8	12	18	725	5	20	M33	(1 1/4″)	36	–	–
700	711.2*) 720	910	36	–	–	840	100	755	8.8	12	18	795	5	24	M33	(1 1/4″)	36	–	–
800	812.8*) 820	1025	38	–	–	950	105	855	10.0	12	20	900	5	24	M36	(1 3/8″)	39	–	–
900	914.4*) 920	1125	40	–	–	1050	110	955	10.0	12	20	1000	5	28	M36	(1 3/8″)	39	–	–
1000	1016*) 1020	1255	42	–	–	1170	120	1058	10.0	16	20	1115	5	28	M39	(1 1/2″)	42	–	–

Note : Out side diameter of pipe complies with ISO recommendation R64.

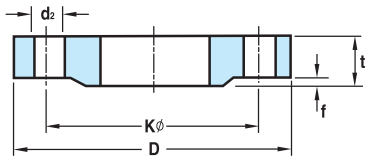
25BAR

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

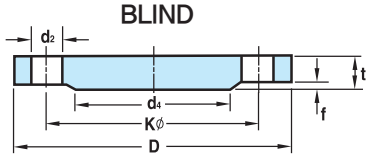
WELDING NECK



SLIP-ON



BLIND



Unit : mm

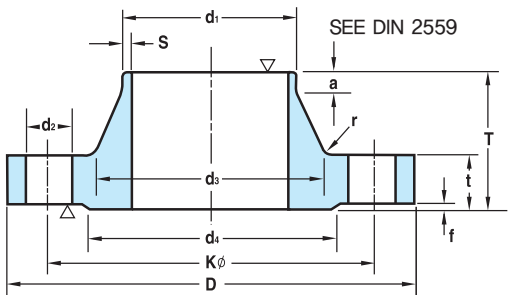
Bore		Common Dimention						Hub				Raised Fade		Drilling				Approx. Weight(kg)	
No-minal Bore	d_1	D	t			k	T	d_3	s	r	a ≈	d_4	f	No. of Bolt	Dia. of Bolt		d_2	DIN 2544	DIN 2634
			Welding Neck	Slip-on	Blind														
10	14 17.2*)	90	16	16	16	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2″)	14	0.69	0.72
15	20 21.3*)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(1/2″)	14	0.76	0.81
20	25 26.9*)	105	18	18	18	75	40	28 40	2.3	4	6	58	2	4	M12	(1/2″)	14	1.05	1.24
25	30 33.7*)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(1/2″)	14	1.25	1.38
32	38 42.4*)	140	18	18	18	100	45	52 56	2.6	6	6	78	2	4	M16	(5/8″)	18	1.82	2.03
40	44.5 48.3*)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(5/8″)	18	2.09	2.35
50	57 60.3*)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(5/8″)	18	2.74	3.20
65	76.1*)	185	22	22	22	145	52	90	2.9	6	10	122	3	8	M16	(5/8″)	18	3.49	4.29
80	88.9*)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(5/8″)	18	4.34	5.88
100	108 114.3*)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(3/4″)	23	5.58	7.54
125	133 139.7*)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(7/8″)	27	7.56	10.8
150	159 168.3*)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(7/8″)	27	9.74	14.5
200	216 219.1*)	360	30	30	30	310	80	240 244	6.3	10	16	278	3	12	M24	(7/8″)	27	13.57	22.3
250	267 273*)	425	32	32	32	370	88	292 298	7.1	12	18	335	3	12	M27	(1″)	30	19.18	33.5
300	318 323.9*)	485	34	34	34	430	92	345 352	8.0	12	18	395	4	16	M27	(1″)	30	24.70	46.3
350	355.6* 368	555	38	38	38	490	100	398	8.0	12	20	450	4	16	M30	(1 1/8″)	33	38.06	68.0
400	406.4*) 419	620	40	40	40	550	110	452	8.8	12	20	505	4	16	M33	(1 1/4″)	36	48.45	89.7
500	508*) 521	730	44	44	45	660	125	558	10.0	12	20	615	4	20	M33	(1 1/4″)	36	66.72	138.0
600	609.6*) 622	845	46	–	–	770	125	660	11.0	12	20	720	5	20	M36	(1 3/8″)	39	–	–
700	721.2* 720	960	46	–	–	875	125	760	12.5	12	20	820	5	24	M39	(1 1/2″)	42	–	–
800	812.8*) 820	1085	50	–	–	990	135	865	14.2	12	22	930	5	24	M45	(1 3/4″)	48	–	–
900	914.4*) 920	1185	54	–	–	1090	145	968	16.0	12	24	1030	5	28	M45	(1 3/4″)	48	–	–
1000	1016*) 1020	1320	58	–	–	1210	155	1070	17.5	16	24	1140	5	28	M52	(2″)	56	–	–

Note : Out side diameter of pipe complies with ISO recommendation R64.

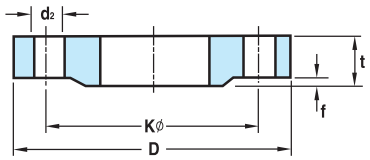
40BAR

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

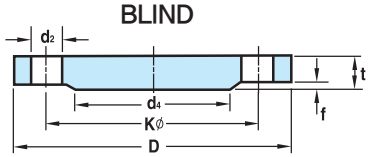
WELDING NECK



SLIP-ON



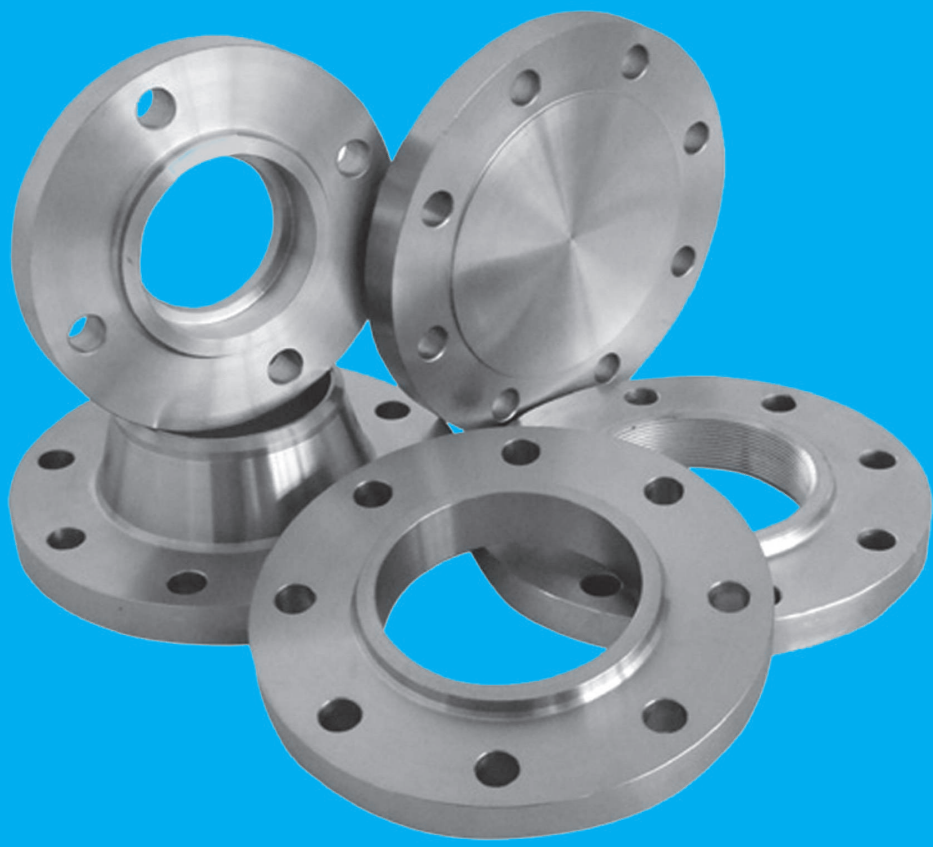
BLIND



Unit : mm

Bore		Common Dimention						Hub				Raised Fade		Drilling				Approx. Weight(kg)	
Nominal Bore	d_1	D	t			k	T	d_3	s	r	a ≈	d_4	f	No. of Bolt	Dia. of Bolt		d_2	DIN 2545	DIN 2635
			Welding Neck	Slip-on	Blind														
10	14 17.2*)	90	16	16	16	60	35	25 28	1.8	4	6	40	2	4	M12	(1/2″)	14	0.69	0.72
15	20 21.3*)	95	16	16	16	65	38	30 32	2.0	4	6	45	2	4	M12	(1/2″)	14	0.76	0.81
20	25 26.9*)	105	18	18	18	75	40	38 40	2.3	4	6	58	2	4	M12	(1/2″)	14	1.05	1.24
25	30 33.7*)	115	18	18	18	85	40	42 46	2.6	4	6	68	2	4	M12	(1/2″)	14	1.25	1.38
32	38 42.4*)	140	18	18	18	100	42	52 56	2.6	6	6	78	2	4	M16	(5/8″)	18	1.82	2.03
40	44.5 48.3*)	150	18	18	18	110	45	60 64	2.6	6	7	88	3	4	M16	(5/8″)	18	2.09	2.35
50	57 60.3*)	165	20	20	20	125	48	72 75	2.9	6	8	102	3	4	M16	(5/8″)	18	2.74	3.20
65	76.1*)	185	22	22	22	145	52	90	2.9	6	10	122	3	8	M16	(5/8″)	18	3.49	4.29
80	88.9*)	200	24	24	24	160	58	105	3.2	8	12	138	3	8	M16	(5/8″)	18	4.34	5.88
100	108 114.3*)	235	24	24	24	190	65	128 134	3.6	8	12	162	3	8	M20	(3/4″)	23	5.58	7.54
125	133 139.7*)	270	26	26	26	220	68	155 162	4.0	8	12	188	3	8	M24	(7/8″)	27	7.56	10.8
150	159 168.3*)	300	28	28	28	250	75	182 192	4.5	10	12	218	3	8	M24	(7/8″)	27	9.74	14.5
175	191 193.7*)	350	32	32	32	295	82	215 218	5.6	10	15	260	3	12	M27	(1″)	30	18.2	22.1
200	216 219.1*)	375	34	34	34	320	88	240 244	6.3	10	16	285	3	12	M27	(1″)	30	17.26	27.2
250	267 273*)	450	38	38	38	385	105	298 306	7.1	12	18	345	3	12	M30	(1 1/8″)	33	27.38	43.8
300	318*) 323.9	515	42	42	42	450	115	352 362	8.0	12	18	410	4	16	M30	(1 1/8″)	33	37.50	63.3
350	355.6*) 368	580	46	46	46	510	125	408	8.8	12	20	465	4	16	M33	(1 1/4″)	36	53.18	89.5
400	406.4*) 419	660	50	50	50	585	135	462	11.0	12	20	535	4	16	M36	(1 3/8″)	39	75.24	127.0
500	508*) 521	755	52	52	52	670	140	562	14.2	12	20	615	4	20	M39	(1 1/2″)	42	87.76	172.0

Note : Out side diameter of pipe complies with ISO recommendation R64.



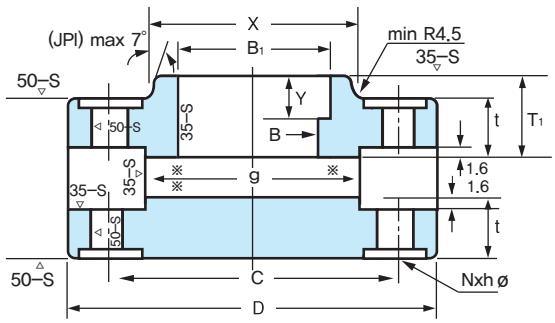
ASME B16.5 FLANGES

- Class 150 FLANGES
- Class 300 FLANGES
- Class 400 FLANGES
- Class 600 FLANGES
- Class 900 FLANGES
- Class 1500 FLANGES
- Class 2500 FLANGES
- TOLERANCE

CLASS 150–300 FLANGES

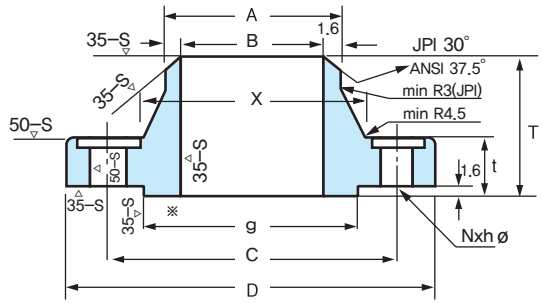
JPI 7S-15-84 & ANSI B16.5

SLIP-ON · SOCKET-WELDING



BLIND

WELDING-NECK



Class 150

Unit : mm

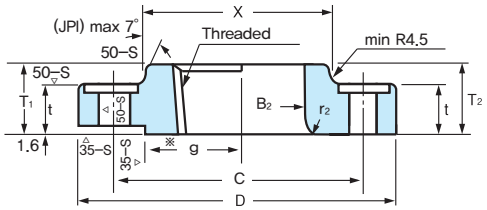
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	89	22.2	22.4	23.4	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	30	35.1	11.2	3
20	3/4	98	27.7	27.7	28.9	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	38	42.9	12.7	3
25	1	108	34.5	34.6	35.6	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	49	50.8	14.3	3
(32)	(1 1/4)	117	43.2	43.2	44.3	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	59	63.5	15.9	5
40	1 1/2	127	49.1	49.6	50.4	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	65	73.2	17.5	6
50	2	152	61.1	62.0	62.7	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	78	91.9	19.1	8
65	2 1/2	178	77.1	74.7	78.7	75.4	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	90	104.6	22.3	8
80	3	191	90.0	90.7	91.6	91.4	78.1	73.9	66.7	77.9	73.7	66.7	89.1	88.9	108	127.0	23.9	10
(90)	(3 1/2)	216	102.6	103.4	104.2	104.2	90.2	85.4	76.2	90.1	85.5	–	101.6	101.6	122	139.7	23.9	10
100	4	229	115.4	116.1	116.9	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	135	157.2	23.9	11
(125)	(5)	254	141.2	143.8	143.0	144.6	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	164	185.7	23.9	11
150	6	279	166.6	170.7	168.4	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	192	215.9	25.4	13
200	8	343	218.0	221.5	219.3	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	246	269.7	28.6	13
250	10	406	269.5	296.4	271.7	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.1	305	323.9	30.2	13
300	12	483	321.0	327.2	322.8	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	365	381.0	31.8	13
350	14	533	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	400	412.8	35.0	13
400	16	597	409.0	409.0	–	411.3	381.0	363.6	325.4	381.0	363.6	325.5	406.4	406.4	457	469.9	36.6	13
450	18	635	460.0	460.0	–	462.4	428.6	409.6	366.8	428.7	409.6	366.7	457.2	457.2	505	533.4	39.7	13
500	20	699	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	559	584.2	42.9	13
600	24	815	613.0	613.0	–	616.0	574.6	547.8	490.6	574.7	547.7	490.6	609.6	609.6	663	692.2	47.7	13

Class 300

Unit : mm

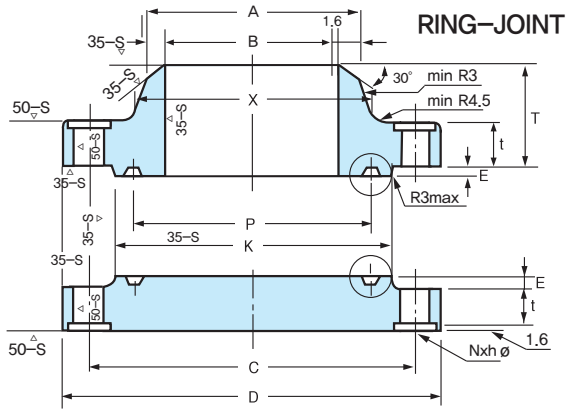
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	95	22.2	22.4	23.4	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	38	35.1	14.3	3
20	3/4	117	27.7	27.7	28.9	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	48	42.9	15.9	3
25	1	124	34.5	34.6	35.6	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	54	50.8	17.5	3
(32)	(1 1/4)	133	43.2	43.2	44.3	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	64	63.5	19.1	5
40	1 1/2	156	49.1	49.6	50.4	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	70	73.2	20.6	6
50	2	165	61.1	62.0	62.7	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	84	91.9	22.4	8
65	2 1/2	191	77.1	74.7	78.7	75.5	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	100	104.6	25.4	8
80	3	210	90.0	90.7	91.6	91.4	78.1	73.9	66.9	77.9	73.7	66.7	89.1	88.9	117	127.0	28.6	10
(90)	(3 1/2)	229	102.6	103.4	104.1	104.2	90.2	85.4	76.2	90.1	85.5	–	101.6	101.6	133	139.7	30.2	10
100	4	254	115.4	116.1	116.9	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	146	157.2	31.8	11
(125)	(5)	279	141.2	143.8	143.0	144.6	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	178	185.7	35.1	11
150	6	318	166.6	170.7	168.4	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	206	215.9	36.6	13
200	8	381	218.0	221.5	219.5	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	260	269.7	41.3	13
250	10	445	269.5	296.4	271.7	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.1	321	323.9	47.8	13
300	12	520	321.0	327.2	322.8	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	375	381.0	50.8	13
350	14	585	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	425	412.8	54.0	13
400	16	650	409.0	409.0	–	411.2	381.0	363.6	325.4	381.0	363.6	325.5	406.4	406.4	483	469.9	57.2	13
450	18	710	460.0	460.0	–	462.3	428.6	409.6	366.8	428.7	409.6	366.7	457.2	457.2	533	533.4	60.4	13
500	20	775	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	587	584.2	63.5	13
600	24	914	613.0	613.0	–	616.0	574.6	547.8	490.6	574.7	547.7	490.6	609.6	609.6	702	692.2	69.9	13

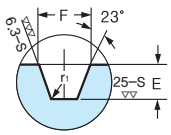
THREADED



LAP-JOINT

RING-JOINT





Class 150

Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip-on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
15.9	15.9	47.6	10	60.5	4	16	–	–	–	–	–	–	0.50	0.41	0.42	0.43	15	1/2
15.9	15.9	52.4	11	70.0	4	16	–	–	–	–	–	–	0.75	0.57	0.58	0.62	20	3/4
17.5	17.5	55.6	13	79.5	4	16	63.5	47.62	R15	6.35	8.74	0.8	1.02	0.78	0.80	0.87	25	1
20.6	20.6	57.1	14	89.0	4	16	73.0	57.15	R17	6.35	8.74	0.8	1.33	1.03	1.06	1.16	(32)	(1 1/4)
22.2	22.2	61.9	16	98.5	4	16	82.5	69.07	R19	6.35	8.74	0.8	1.72	1.32	1.35	1.54	40	1 1/2
25.4	25.4	63.5	17	120.5	4	19	102	82.55	R22	6.35	8.74	0.8	2.59	2.09	2.13	2.46	50	2
28.6	28.6	69.8	19	139.5	4	19	121	101.60	R25	6.35	8.74	0.8	4.06	3.25	3.35	3.99	65	2 1/2
30.2	30.2	69.8	21	152.5	4	19	133	114.30	R29	6.35	8.74	0.8	4.95	3.87	4.02	4.98	80	3
31.8	31.8	71.4	22.4	178.0	8	19	154	131.78	R33	6.35	8.74	0.8	5.45	4.86	4.99	5.90	(90)	(3 1/2)
33.3	33.3	76.2	24.1	190.5	8	19	171	149.22	R36	6.35	8.74	0.8	6.91	5.35	5.99	7.05	100	4
36.5	36.5	88.9	23.9	216.0	8	22	194	171.45	R40	6.35	8.74	0.8	8.75	6.22	6.68	8.67	(125)	(5)
39.7	39.7	88.9	26.9	241.5	8	22	219	193.68	R43	6.35	8.74	0.8	10.8	7.38	7.99	11.3	150	6
44.5	44.5	101.6	31.8	298.5	8	22	273	247.65	R48	6.35	8.74	0.8	17.68	12.36	13.29	19.9	200	8
49.2	49.2	101.6	33.3	362.0	12	25	330	304.80	R52	6.35	8.74	0.8	24.79	17.1	19.50	29.0	250	10
55.6	55.6	114.3	39.6	432.0	12	25	406	381.00	R56	6.35	8.74	0.8	38.6	27.68	29.03	43.7	300	12
57.2	*79.3	127.0	41.4	476.0	12	29	425	396.88	R59	6.35	8.74	0.8	50.6	35.2	38.56	58.6	350	14
63.5	*87.4	127.0	44.5	539.5	16	29	483	454.02	R64	6.35	8.74	0.8	63.9	42.18	44.49	76.6	400	16
68.3	*96.8	139.7	49.3	578.0	16	32	546	517.52	R68	6.35	8.74	0.8	74.9	49.7	54.43	94.5	450	18
73.0	*103.1	144.5	54.1	635.0	20	32	597	558.80	R72	6.35	8.74	0.8	89.36	63.5	70.31	123.0	500	20
82.6	*111.3	152.4	63.5	749.5	20	35	711	673.10	R76	6.35	8.74	0.8	119.66	90.5	95.25	188.0	600	24

Class 300

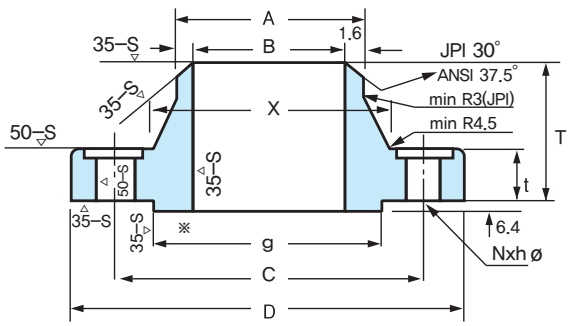
Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip-on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
22.2	22.2	52.4	10	66.5	4	16	51.0	34.14	R11	5.56	7.14	0.8	0.78	0.62	0.62	0.62	15	1/2
25.4	25.4	57.2	11	82.6	4	19	63.5	42.88	R13	6.35	8.74	0.8	1.25	1.10	1.12	1.09	20	3/4
27.0	27.0	61.9	13	88.9	4	19	70.0	50.80	R16	6.35	8.74	0.8	1.58	1.35	1.39	1.38	25	1
27.0	27.0	65.1	14	98.6	4	19	79.5	60.32	R18	6.35	8.74	0.8	2.05	1.67	1.73	1.79	(32)	(1 1/4)
30.2	30.2	68.3	16	114.3	4	22	90.5	68.28	R20	6.35	8.74	0.8	2.93	2.53	2.60	2.68	40	1 1/2
33.3	33.3	69.8	17	127.0	8	19	108	82.55	R23	7.92	11.91	0.8	3.40	2.80	2.94	3.09	50	2
38.1	38.1	76.2	19	149.4	8	22	127	101.60	R26	7.92	11.91	0.8	5.10	4.24	4.43	4.75	65	2 1/2
42.9	42.9	79.4	21	168.1	8	22	146	123.82	R31	7.92	11.91	0.8	7.01	5.81	6.20	6.79	80	3
44.5	44.5	81.0	22.4	184.2	8	22	159	131.78	R34	7.92	11.91	0.8	8.17	7.72	–	8.79	(90)	(3 1/2)
47.6	47.6	85.7	23.9	200.2	8	22	175	149.22	R37	7.92	11.91	0.8	11.3	9.71	–	11.6	100	4
50.8	50.8	98.4	23.9	235.0	8	22	210	180.98	R41	7.92	11.91	0.8	15.1	12.4	–	15.5	(125)	(5)
52.4	52.4	98.4	26.9	269.7	12	22	241	211.12	R45	7.92	11.91	0.8	19.6	16.04	–	21.2	150	6
61.9	61.9	111.1	31.8	330.2	12	26	302	269.88	R49	7.92	11.91	0.8	30.3	24.5	–	34.5	200	8
66.7	95.3	117.5	33.3	387.3	16	29	356	323.85	R53	7.92	11.91	0.8	43.74	34.16	–	53.9	250	10
73.0	101.3	130.2	39.6	450.9	16	32	413	381.00	R57	7.92	11.91	0.8	64.1	51.0	–	78.9	300	12
76.2	*111.3	142.9	41.4	514.4	20	32	457	419.10	R61	7.92	11.91	0.8	88.3	70.1	–	106.0	350	14
82.6	*120.7	146.0	44.5	571.5	20	35	508	469.90	R65	7.92	11.91	0.8	112.94	90.4	–	139.0	400	16
89.9	*130.0	158.8	49.3	628.7	24	35	575	533.40	R69	7.92	11.91	0.8	138.0	109.0	–	175.0	450	18
95.2	*139.7	161.9	54.1	685.8	24	35	635	584.20	R73	9.52	13.49	1.5	167.37	136.0	–	222.0	500	20
106.4	*152.4	168.3	63.5	812.8	24	42	749	692.15	R77	11.13	16.66	1.5	235.41	204.0	–	340.0	600	24

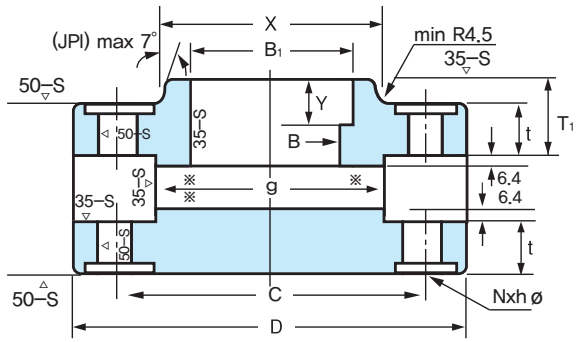
CLASS 400–600 FLANGES

JPI 7S-15-84 & ANSI B16.5

WELDING-NECK



SLIP-ON SOCKET-WELDING



BLIND

Class 400

Unit : mm

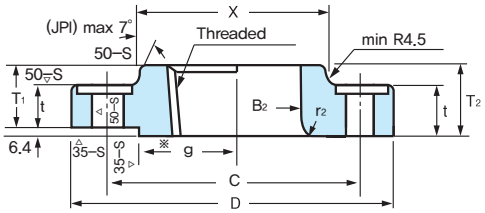
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	95	22.2	22.4	23.4	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	38	34.9	14.3	3
20	3/4	117	27.7	27.7	28.9	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	48	42.9	15.9	3
25	1	124	34.5	34.6	35.6	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	54	50.8	17.5	3
(32)	(1 1/4)	133	43.2	43.2	44.3	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	64	63.5	20.7	5
40	1 1/2	155	49.1	49.6	50.4	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	70	73.0	22.3	6
50	2	165	61.1	62.0	62.7	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	84	92.1	25.4	8
65	2 1/2	191	77.1	74.7	78.7	75.5	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	100	104.8	28.6	8
80	3	210	90.0	90.7	91.6	91.4	78.1	73.9	66.9	77.9	73.7	66.7	89.1	88.9	117	127.0	31.8	10
(90)	(3 1/2)	229	102.6	103.4	104.1	104.2	90.2	85.4	76.2	90.1	85.5	–	101.6	101.6	133	139.7	35.0	10
100	4	254	115.4	116.1	116.9	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	146	157.2	35.0	11
(125)	(5)	279	141.2	143.8	143.0	144.6	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	178	185.7	38.1	11
150	6	318	166.6	170.7	168.4	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	206	215.9	41.1	13
200	8	381	218.0	221.5	219.5	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	260	269.9	47.7	13
250	10	445	269.5	276.4	271.7	277.4	248.8	237.2	210.2	254.5	242.9	215.9	267.4	273.1	321	323.8	54.0	13
300	12	521	321.0	327.2	322.8	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	375	381.0	57.2	13
350	14	584	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	425	412.8	60.4	13
400	16	648	409.0	409.0	–	411.3	381.0	363.6	325.4	381.0	363.6	325.5	406.4	406.4	483	469.8	63.5	13
450	18	710	460.0	460.0	–	462.4	428.6	409.6	366.8	428.7	409.6	366.7	457.2	457.2	533	533.4	66.7	13
500	20	775	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	587	584.2	69.9	13
600	24	914	613.0	613.0	–	616.0	574.6	547.8	490.6	574.7	547.7	490.6	609.6	609.6	702	692.2	76.2	13

Class 600

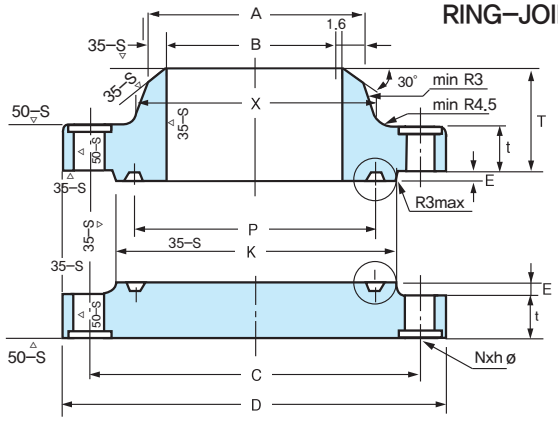
Unit : mm

Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	95	22.2	22.4	–	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	38	34.9	14.3	3
20	3/4	117	27.7	27.7	–	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	48	42.9	15.9	3
25	1	124	34.5	34.6	–	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	54	50.8	17.5	3
(32)	(1 1/4)	133	43.2	43.2	–	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	64	63.5	20.7	5
40	1 1/2	156	49.1	49.6	–	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	70	73.0	22.3	6
50	2	165	61.1	62.0	–	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	84	92.1	25.4	8
65	2 1/2	191	77.1	74.7	–	75.5	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	100	104.8	28.6	8
80	3	210	90.0	90.7	–	91.4	78.1	73.9	66.9	77.9	73.7	66.7	89.1	88.9	117	127.0	31.8	10
(90)	(3 1/2)	229	102.6	103.4	–	104.2	90.2	85.4	76.2	90.1	85.5	–	101.6	101.6	133	139.7	35.0	10
100	4	273	115.4	116.1	–	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	152	157.2	38.1	11
(125)	(5)	330	141.2	143.8	–	144.6	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	189	185.7	44.5	11
150	6	356	166.6	170.7	–	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	222	215.9	47.7	13
200	8	419	218.0	221.5	–	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	273	269.9	55.6	13
250	10	508	269.5	276.4	–	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.1	343	323.8	63.5	13
300	12	559	321.0	327.2	–	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	400	381.0	66.7	13
350	14	603	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	432	412.8	69.9	13
400	16	686	409.0	409.0	–	411.3	381.0	363.6	325.4	381.0	363.6	325.5	406.4	406.4	495	469.9	76.2	13
450	18	743	460.0	460.0	–	462.4	428.6	409.6	366.8	428.7	409.6	366.7	457.2	457.2	546	533.4	82.6	13
500	20	813	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	610	584.2	88.9	13
600	24	940	613.0	613.0	–	616.0	574.6	547.8	490.6	574.7	547.7	490.6	609.6	609.6	718	692.2	101.6	13

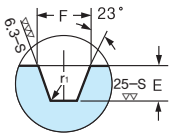
THREADED



LAP–JOINT



RING–JOINT



Class 400

Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip–on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
22.4	22	52.3	10	66.5	4	16	51.0	34.14	R11	5.56	7.14	0.8	0.86	0.74	0.77	0.76	15	1/2
25.4	25	57.2	11	82.6	4	19	63.5	42.88	R13	6.35	8.74	0.8	1.40	1.24	1.28	1.27	20	3/4
26.9	27	62.0	13	88.9	4	19	70.0	50.80	R16	6.35	8.74	0.8	1.76	1.51	1.57	1.59	25	1
28.4	29	66.5	14	98.6	4	19	79.5	60.32	R18	6.35	8.74	0.8	2.41	2.03	2.11	2.24	(32)	(1 1/4)
31.8	32	69.9	16	114.3	4	22	90.5	68.28	R20	6.35	8.74	0.8	3.44	3.01	3.11	3.30	40	1 1/2
36.6	37	73.2	17	127.0	8	19	108	82.55	R23	7.92	11.91	0.8	4.18	3.62	3.77	4.11	50	2
41.1	41	79.2	19	149.4	8	22	127	101.60	R26	7.92	11.91	0.8	6.11	5.20	5.58	6.20	65	2 1/2
46.0	46	82.6	21	168.1	8	22	146	123.82	R31	7.92	11.91	0.8	8.17	7.08	7.47	8.51	80	3
49.3	49	85.9	22.2	184.2	8	25	159	131.78	R34	7.92	11.91	0.8	10.3	8.86	–	10.9	(90)	(3 1/2)
50.8	51	88.9	23.8	200.2	8	25	175	149.22	R37	7.92	11.91	0.8	12.9	10.89	–	13.7	100	4
53.8	54	101.6	23.8	235.0	8	25	210	180.98	R41	7.92	11.91	0.8	17.1	14.07	–	18.6	(125)	(5)
57.2	57	103.1	27.0	269.7	12	25	241	211.12	R45	7.92	11.91	0.8	22.23	18.9	–	25.7	150	6
68.3	68	117.3	31.8	330.2	12	29	302	269.88	R49	7.92	11.91	0.8	35.39	29.4	–	42.9	200	8
73.2	101.6	124.0	33.3	387.4	16	32	356	323.85	R53	7.92	11.91	0.8	49.89	41.1	–	64.6	250	10
79.2	108.0	136.7	39.7	450.9	16	35	413	381.00	R57	7.92	11.91	0.8	72.57	59.02	–	95.7	300	12
84.1	117.3	149.4	44.3	514.4	20	35	457	419.10	R61	7.92	11.91	0.8	99.0	80.0	–	125.0	350	14
93.7	127	152.4	44.5	571.5	20	39	508	469.90	R65	7.92	11.91	0.8	125.0	103.0	–	162.0	400	16
98.0	136.7	165.1	49.2	628.7	24	39	575	533.40	R69	7.92	11.91	0.8	153.0	123.0	–	205.0	450	18
101.6	146.1	168.1	54.0	685.8	24	42	635	584.20	R73	9.52	13.49	1.5	184.0	148.0	–	255.0	500	20
114.3	158.8	174.8	63.5	812.8	24	48	749	692.15	R77	11.13	16.66	1.5	270.0	223.0	–	388.0	600	24

Class 600

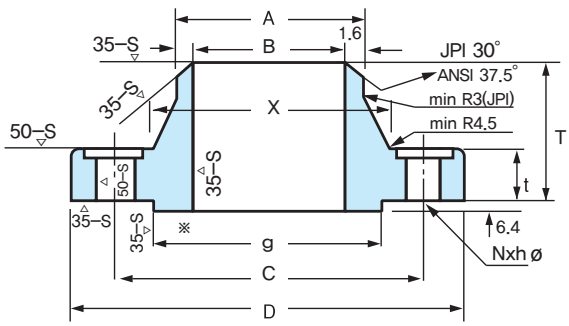
Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip–on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
22.4	22	52.3	10	66.5	4	16	51.0	34.14	R11	5.56	7.14	0.8	0.88	0.74	0.78	0.76	15	1/2
25.4	25	57.2	11	82.6	4	19	63.5	42.88	R13	6.35	8.74	0.8	1.44	1.24	1.29	1.27	20	3/4
26.9	27	62.0	13	88.9	4	19	70.0	50.80	R16	6.35	8.74	0.8	1.81	1.51	1.58	1.59	25	1
28.4	29	66.5	14	98.6	4	19	79.5	60.32	R18	6.35	8.74	0.8	2.49	2.03	2.14	2.24	(32)	(1 1/4)
31.8	32	69.9	16	114.3	4	22	90.5	68.28	R20	6.35	8.74	0.8	3.55	3.01	3.14	3.30	40	1 1/2
36.6	37	73.0	17	127.0	8	19	108.0	82.55	R23	7.92	11.91	0.8	4.34	3.62	3.82	4.11	50	2
41.1	41	79.2	19	149.4	8	22	127.0	101.60	R26	7.92	11.91	0.8	6.35	5.20	5.57	6.20	65	2 1/2
46.0	46	82.6	21	168.1	8	22	146.0	123.82	R31	7.92	11.91	0.8	8.17	7.08	7.40	8.51	80	3
49.3	49	85.9	22.2	184.2	8	26	159.0	131.78	R34	7.92	11.91	0.8	10.8	8.86	–	10.9	(90)	(3 1/2)
53.8	54	101.6	23.8	215.9	8	26	175.0	149.22	R37	7.92	11.91	0.8	16.78	14.6	–	17.4	100	4
60.5	60	114.3	23.8	266.9	8	29	210.0	180.98	R41	7.92	11.91	0.8	29.4	24.6	–	29.4	(125)	(5)
66.5	67	117.3	27.0	292.1	12	29	241.0	211.12	R45	7.92	11.91	0.8	35.7	29.6	–	36.4	150	6
76.2	76	133.4	31.8	349.3	12	32	302.0	269.88	R49	7.92	11.91	0.8	50.8	44.3	–	58.8	200	8
85.9	111.3	152.4	33.3	431.8	16	35	356.0	323.85	R53	7.92	11.91	0.8	86.26	73.3	–	98.4	250	10
91.9	117.3	155.4	39.7	489.0	20	35	413.0	381.00	R57	7.92	11.91	0.8	102.51	87.0	–	124.0	300	12
93.7	127.0	165.1	41.3	527.1	20	39	457.0	419.10	R61	7.92	11.91	0.8	121.56	99.8	–	152.0	350	14
106.4	139.7	177.8	44.5	603.3	20	42	508.0	469.90	R65	7.92	11.91	0.8	177.06	142.0	–	214.0	400	16
117.3	152.4	184.2	49.2	654.1	20	45	575.0	533.40	R69	7.92	11.91	0.8	215.65	176.0	–	275.0	450	18
127.0	165.1	190.5	54.0	723.9	24	45	635.0	584.20	R73	9.52	13.49	1.5	267.86	224.0	–	352.0	500	20
139.7	184.2	203.2	63.5	838.2	24	51	749.0	692.15	R77	11.13	16.66	1.5	372.0	317.0	–	536.0	600	24

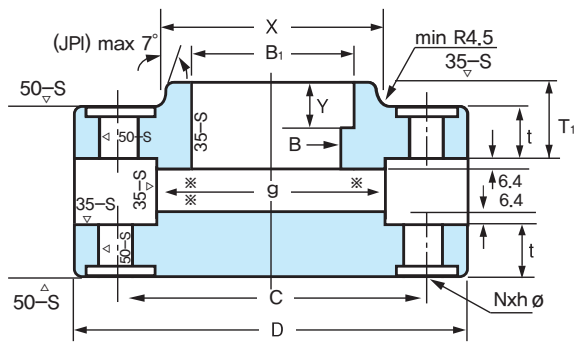
CLASS 900 FLANGES

JPI 7S-15-84 & ANSI B16.5

WELDING-NECK



SLIP-ON SOCKET-WELDING



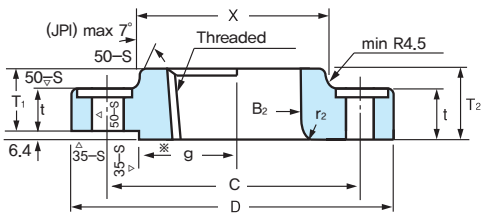
BLIND

Class 900

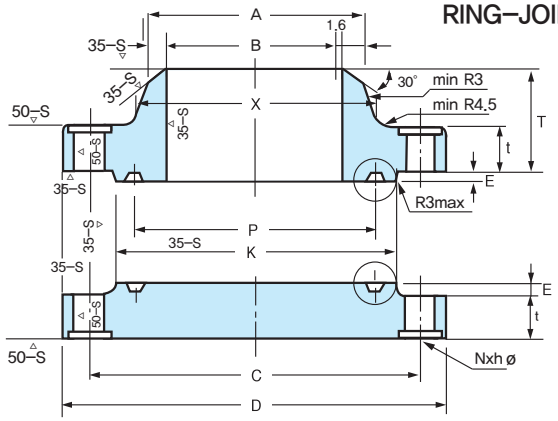
Unit : mm

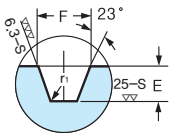
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	121	22.2	22.4	–	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	38	34.9	22.4	3
20	3/4	130	27.7	27.7	–	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	44	42.9	25.4	3
25	1	149	34.5	34.5	–	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.4	52	50.8	28.4	3
(32)	(1 1/4)	159	43.2	43.2	–	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	64	63.5	28.4	5
40	1 1/2	178	49.1	49.5	–	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	70	73.0	31.8	6
50	2	216	61.1	62.0	–	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.3	105	92.1	38.1	8
65	2 1/2	244	77.1	74.7	–	75.4	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.0	124	104.8	41.1	8
80	3	241	90.0	90.7	–	91.4	78.1	73.9	66.9	77.9	73.7	66.9	89.1	88.9	127	127.0	38.1	10
(90)	(3 1/2)	–	–	–	–	–	–	90.2	85.4	76.2	90.1	85.5	–	–	–	–	–	–	–
100	4	292	115.4	116.1	–	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	159	157.2	44.5	11
(125)	(5)	349	141.2	143.8	–	144.5	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.3	190	185.7	50.8	11
150	6	381	166.6	170.7	–	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.3	235	215.9	55.6	13
200	8	470	218.0	221.5	–	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.1	298	269.9	63.5	13
250	10	546	269.5	276.4	–	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.0	368	323.8	69.9	13
300	12	610	321.0	327.2	–	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.8	419	381.0	79.2	13
350	14	641	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	451	412.8	85.9	13
400	16	705	409.0	409.0	–	411.2	381.0	363.6	325.4	381.0	363.6	325.5	406.4	406.4	508	469.9	88.9	13
450	18	787	460.0	460.0	–	462.3	428.6	409.6	366.8	428.7	409.6	366.7	457.2	457.2	565	533.4	101.6	13
500	20	857	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	622	584.2	108.0	13
600	24	1041	613.0	613.0	–	616.0	574.6	547.8	490.6	574.6	547.6	490.6	609.6	609.6	749	692.2	139.7	13

THREADED LAP-JOINT



RING-JOINT





Class 900

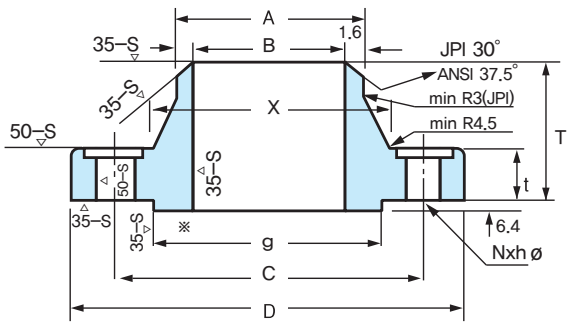
Unit : mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip-on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
31.8	32	60.5	9.5	82.6	4	23	60.5	39.67	R12	6.35	8.74	0.8	1.98	1.76	1.81	1.88	15	1/2
35.1	35	69.9	11.1	88.9	4	23	66.5	44.45	R14	6.35	8.74	0.8	2.64	2.32	2.39	2.50	20	3/4
41.1	41	73.2	12.7	101.6	4	26	71.5	50.80	R16	6.35	8.74	0.8	3.84	3.41	3.56	3.68	25	1
41.1	41	73.2	14.3	111.3	4	26	81.0	60.32	R18	6.35	8.74	0.8	4.47	3.95	4.11	4.19	(32)	(1 1/4)
44.5	44	82.6	15.9	124.0	4	29	92.0	68.28	R20	6.34	8.74	0.8	5.90	5.41	5.61	5.90	40	1 1/2
57.2	57	101.6	17.5	165.1	8	26	124	95.25	R24	7.92	11.91	0.8	10.89	9.92	10.3	10.5	50	2
69.9	64	104.6	19.0	190.5	8	29	137	107.95	R27	7.92	11.91	0.8	15.3	13.5	14.2	14.2	65	2 1/2
53.8	54	101.6	20.6	190.5	8	26	156	123.82	R31	7.92	11.91	0.8	14.2	11.6	–	13.17	80	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(90)	(3 1/2)
69.9	70	114.3	23.8	235.0	8	32	181	149.20	R37	7.92	11.91	0.8	23.1	19.8	–	22.7	100	4
79.2	79	127.0	23.8	279.4	8	35	216	180.98	R41	7.92	11.91	0.8	37.4	32.4	–	37.5	(125)	(5)
85.9	86	139.7	27.0	317.5	12	32	241	211.12	R45	7.92	11.91	0.8	49.3	42.1	–	48.7	150	6
101.6	114.3	162.2	31.8	393.7	12	39	308	269.88	R49	7.92	11.91	0.8	79.45	71.6	–	84.0	200	8
108.0	127.0	184.2	33.3	469.9	16	39	362	323.85	R53	7.92	11.91	0.8	118.04	102.0	–	124.0	250	10
117.3	142.7	200.2	39.7	533.4	20	39	419	381.00	R57	7.92	11.91	0.8	157.0	136.0	–	176.0	300	12
130.0	155.4	212.9	44.3	558.8	20	42	467	419.10	R62	11.13	16.66	1.5	171.6	153.0	–	213.0	350	14
133.4	165.1	215.9	44.5	616.0	20	45	524	469.90	R66	11.13	16.66	1.5	224.73	186.0	–	269.0	400	16
152.4	190.5	228.6	49.2	685.8	20	51	594	533.40	R70	12.70	19.84	1.5	308.72	258.0	–	382.0	450	18
158.8	209.6	247.7	54.0	749.3	20	54	648	584.20	R74	12.70	19.84	1.5	376.82	317.0	–	481.0	500	20
203.2	266.7	292.1	63.5	901.7	20	67	772	692.15	R78	15.58	26.97	2.4	685.0	608.0	–	905.0	600	24

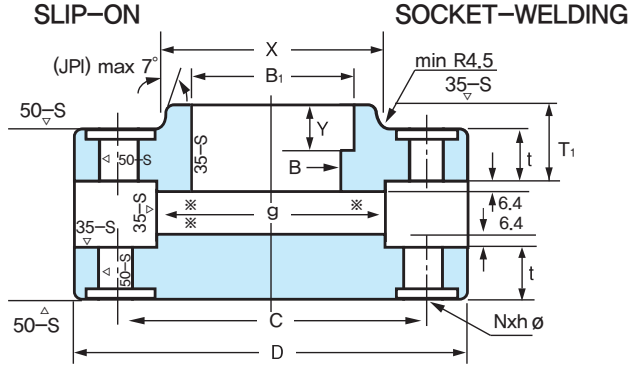
CLASS 1500–2500 FLANGES

JPI 7S-15-84 & ANSI B16.5

WELDING-NECK



SLIP-ON SOCKET-WELDING



BLIND

Class 1500

Unit : mm

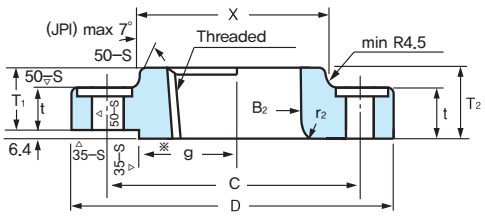
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	121	22.2	22.4	–	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	38	34.9	22.4	3
20	3/4	130	27.7	27.7	–	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	44	42.9	25.4	3
25	1	149	34.5	34.5	–	35.1	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	52	50.8	28.6	3
(32)	(1 1/4)	159	43.2	43.2	–	43.7	35.5	32.9	29.9	35.1	32.5	29.5	42.7	42.2	64	63.5	28.6	5
40	1 1/2	178	49.1	49.5	–	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	70	73.0	31.8	6
50	2	216	61.1	62.0	–	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	105	92.1	38.1	8
65	2 1/2	244	77.1	74.7	–	75.5	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	124	104.8	41.3	8
80	3	267	90.0	90.7	–	91.4	78.1	73.9	66.9	77.9	73.7	66.7	89.1	88.91	133	127.0	47.8	10
(90)	(3 1/2)	–	102.6	103.4	–	–	90.2	85.4	76.2	90.1	85.5	–	–	–	–	–	–	–
100	4	311	115.4	116.1	–	116.9	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	162	157.2	54.0	11
(125)	(5)	375	141.2	143.8	–	144.5	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	197	185.7	73.2	11
150	6	394	166.6	170.7	–	171.5	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	229	215.9	82.6	13
200	8	483	218.0	221.5	–	222.3	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	292	269.9	92.1	13
250	10	584	269.5	276.4	–	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.1	368	323.8	108.0	13
300	12	673	321.0	327.2	–	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	451	381.0	124.0	13
350	14	749	358.1	358.1	–	360.2	333.4	317.6	284.2	333.3	317.5	284.2	355.6	355.6	495	412.8	133.4	13
400	16	826	409.0	409.0	–	411.2	381.0	363.6	325.4	381.0	363.5	325.5	406.4	406.4	552	469.8	146.1	13
450	18	914	460.0	460.0	–	462.3	428.6	409.6	366.8	428.7	409.5	366.7	457.2	457.2	597	533.4	162.1	13
500	20	984	511.0	511.0	–	514.4	477.8	455.6	408.0	477.8	455.6	408.0	508.0	508.0	641	584.2	177.8	13
600	24	1168	613.0	613.0	–	616.0	574.6	547.8	490.6	574.6	547.7	490.5	609.6	609.6	762	692.2	203.2	13

Class 2500

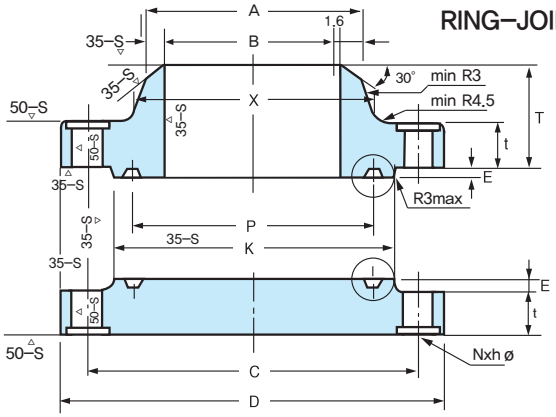
Unit : mm

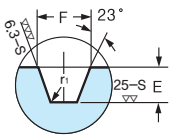
Nominal Pipe Size		Outside Dia. of Flanges	Dia. of Bore										Dia. of Hub at Bevel A		Dia. of Hub at Base	Dia. of Raised Face	Thick of Flanges Flanges	Radius of Fillet
			Slip-on Socket, B_1		Lap-joint B_2		Welding-Neck, Socket B											
							JPI			ANSI								
A	B	D	JPI	ANSI	JPI	ANSI	SCH40	SCH80	SCH160	SCH40	SCH80	SCH160	JPI	ANSI	X	g	t	r_2
15	1/2	133	22.2	22.4	–	22.9	16.1	14.3	12.3	15.8	13.9	11.8	21.7	21.3	43	34.9	30.2	3
20	3/4	140	27.7	27.7	–	28.2	21.4	19.4	16.2	20.9	18.8	15.6	27.2	26.7	51	42.9	31.8	3
25	1	159	34.5	34.5	–	34.9	27.2	25.0	21.2	26.6	24.3	20.7	34.0	33.5	57	50.8	35.1	3
(32)	(1 1/4)	184	43.2	43.2	–	43.7	35.3	32.9	29.9	35.1	32.5	29.5	42.7	42.2	73	63.5	38.1	5
40	1 1/2	203	49.1	49.5	–	50.0	41.2	38.4	34.4	40.9	38.1	34.0	48.6	48.3	79	73.0	44.5	6
50	2	235	61.1	62.0	–	62.5	52.7	49.5	43.1	52.5	49.3	42.9	60.5	60.5	95	92.1	50.8	8
65	2 1/2	267	77.1	74.7	–	75.5	65.9	62.3	57.3	62.7	59.0	54.0	76.3	73.2	114	104.8	57.2	8
80	3	305	90.0	90.7	–	91.4	78.1	73.9	66.9	77.9	73.7	66.7	89.1	88.9	133	127.0	66.5	10
(90)	(3 1/2)	–	–	–	–	–	90.2	85.4	76.2	90.1	85.5	–	–	–	–	–	–	–
100	4	356	115.4	116.1	–	116.8	102.3	97.1	87.3	102.3	97.2	87.3	114.3	114.3	165	157.2	76.8	11
(125)	(5)	419	141.2	143.8	–	144.5	126.6	120.8	108.0	128.2	122.3	109.6	139.8	141.2	203	185.7	92.5	11
150	6	483	166.6	170.7	–	171.4	151.0	143.2	128.8	154.1	146.3	131.8	165.2	168.4	235	215.9	108.0	13
200	8	552	218.0	221.5	–	222.2	199.9	190.9	170.3	202.7	193.7	173.1	216.3	219.2	305	269.9	127.0	13
250	10	673	269.5	276.4	–	277.4	248.8	237.2	210.2	254.4	242.9	215.9	267.4	273.1	375	323.8	165.1	13
300	12	762	321.0	327.2	–	328.2	297.9	283.7	251.9	303.2	288.9	257.2	318.5	323.9	441	381.0	184.2	13

THREADED LAP-JOINT



RING-JOINT





Class 1500

Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip-on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
31.8	31.8	60.5	10	82.6	4	23	60.5	39.67	R12	6.35	8.74	0.8	1.98	1.76	1.81	1.88	15	1/2
35.1	35.1	69.9	11	88.9	4	23	66.5	44.45	R14	6.35	8.74	0.8	2.64	2.32	2.39	2.50	20	3/4
41.1	41.1	73.2	13	101.6	4	26	71.5	50.80	R16	6.35	8.74	0.8	3.84	3.41	3.56	3.68	25	1
41.1	41.1	73.2	14	111.3	4	26	81.0	60.32	R18	6.35	8.74	0.8	4.47	3.95	4.11	4.29	(32)	(1 1/4)
44.5	44.5	82.6	16	124.0	4	29	92.0	68.28	R20	6.35	8.74	0.8	5.90	5.41	5.61	5.90	40	1 1/2
57.2	57.2	101.6	17	165.1	8	26	124	95.25	R24	7.92	11.91	0.8	10.89	9.92	10.3	10.5	50	2
63.5	63.5	104.6	19	190.5	8	29	137	107.95	R27	7.92	11.91	0.8	15.3	13.5	14.2	14.4	65	2 1/2
73.2	73.2	117.3	20.6	203.2	8	32	168	136.52	R35	7.92	11.91	0.8	20.7	18.1	–	20.0	80	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(90)	(3 1/2)
90.4	90.4	124.0	23.8	241.3	8	35	194	161.92	R39	7.92	11.91	0.8	30.8	27.8	–	30.8	100	4
104.6	104.6	155.4	27.8	292.1	8	42	229	193.68	R44	7.92	11.91	0.8	58.6	52.6	–	60.0	(125)	(5)
119.1	119.1	171.5	27.0	317.5	12	39	248	211.12	R46	9.52	13.49	1.5	70.7	62.1	–	73.7	150	6
142.7	142.7	212.9	31.8	393.7	12	45	318	269.88	R50	11.13	16.66	1.5	121	105.0	–	125.0	200	8
158.8	177.8	254.0	33.3	482.6	12	51	371	323.85	R54	11.13	16.66	1.5	205.93	180.0	–	216.0	250	10
180.8	218.9	282.4	39.7	571.5	16	54	438	381.00	R58	14.27	23.01	1.5	306.0	264.0	–	316.0	300	12
–	241.3	298.5	41.3	635.0	16	61	489	419.10	R63	15.88	26.97	2.4	415.0	–	–	421.0	350	14
–	260.4	311.2	44.5	704.9	16	67	546	469.90	R67	17.48	30.18	2.4	535.0	–	–	559.0	400	16
–	276.4	327.2	49.2	774.7	16	74	613	533.40	R71	17.48	30.18	2.4	702.0	–	–	761.0	450	18
–	292.1	355.6	54.0	831.9	16	80	673	584.20	R75	17.48	33.32	2.4	871.0	–	–	967.0	500	20
–	330.2	406.4	63.5	990.6	16	93	794	692.15	R79	20.62	36.53	2.4	1405.0	–	–	1568.0	600	24

Class 2500

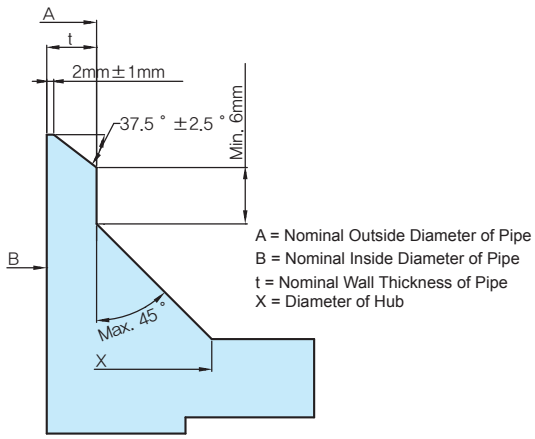
Unit:mm

Length thru Hub			Depth of Socket	Drilling			Dia.of Raised Face for Ring Joint	Pitch Dia.of Ring & Groove	Ring No.	RTJ Type			Approx. Weight(kg)				Nominal Pipe Size	
Slip-on Socket Thread	Lap Joint	Welding Neck		Dia.of Bolt Circle	Number of Bolt	Dia.of Bolt Hole				Depth of Groove	Width of Groove	Radius of Groove	W.N	S.O	S.W	B.L		
T_1	T_2	T	Y	C	N	h	K(min)	P		E	F	r_1					A	B
39.6	39.6	73.2	9.5	88.9	4	23	65.0	42.88	R13	6.35	8.74	0.8	3.18	3.18	–	3.18	15	1/2
42.9	42.9	79.2	11.1	95.3	4	23	73.0	50.80	R16	6.35	8.74	0.8	3.86	3.6	–	3.66	20	3/4
47.8	47.8	88.9	12.7	108.0	4	26	82.5	60.32	R18	6.35	8.74	0.8	5.40	5.0	–	5.14	25	1
52.3	52.3	95.3	14.3	130.0	4	29	102	72.24	R21	7.92	11.91	0.8	8.13	7.3	–	7.74	(32)	(1 1/4)
60.5	60.5	111.3	15.9	146.1	4	32	114	82.55	R23	7.92	11.91	0.8	11.3	10.0	–	10.44	40	1 1/2
69.9	69.9	127.0	17.5	171.5	8	29	133	101.60	R26	7.92	11.91	0.8	16.7	17.2	–	16.1	50	2
79.2	79.2	142.7	19.0	196.9	8	32	149	112.12	R28	9.52	13.49	1.5	24.5	24.9	–	23.7	65	2 1/2
91.9	92.9	168.1	20.6	228.6	8	35	168	127.00	R32	9.52	13.49	1.5	37.4	37.6	–	36.0	80	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(90)	(3 1/2)
108	108	190.5	23.8	273.1	8	42	203	157.18	R38	11.13	16.66	1.5	57.3	56.7	–	55.9	100	4
130	130	228.6	23.8	323.9	8	48	241	190.50	R42	12.70	19.84	1.5	96.1	95.25	–	94.1	(125)	(5)
152.4	152.4	273.1	27.0	368.3	8	54	279	228.60	R47	12.70	19.84	1.5	149.0	146.51	–	146.0	150	6
177.8	177.8	317.5	31.8	438.2	12	54	340	279.40	R51	14.27	23.01	1.5	222.0	219.99	–	220.0	200	8
228.6	228.6	419.1	33.3	540.0	12	67	425	342.90	R55	17.48	30.18	2.4	434.0	419.57	–	429.0	250	10
254.0	254.0	463.6	39.7	619.3	12	74	495	404.40	R60	17.48	33.32	2.4	610.0	499.0	–	604.09	300	12

WELDING ENDS

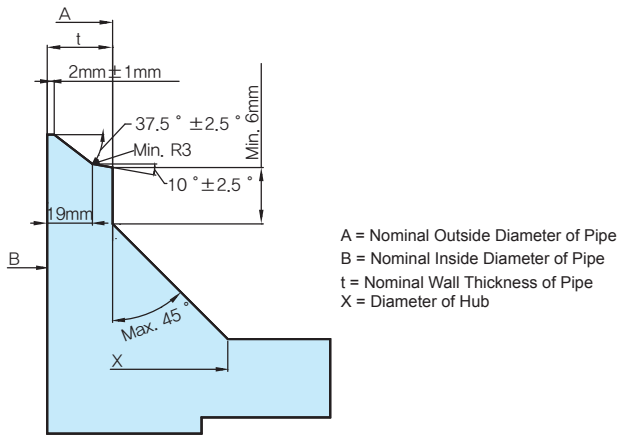
ASME B16.5 PIPE FLANGES

Bevel for wall thickness t
from 5mm to 22mm inclusive



Welding Ends
(Welding Neck Flanges, No Backing Rings)

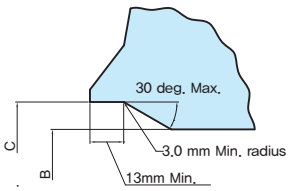
Bevel for wall thickness t
greater than 22mm



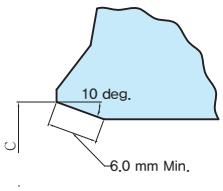
Welding Ends
(Welding Neck Flanges, No Backing Rings)

Notes :

When the thickness of the hub at the bevel is greater than that of the pipe to which the flange is joined and the additional thickness is provided on the outside diameter, a taper weld having a slope not exceeding 1 to 3 may be used, or, alternatively, the greater outside diameter may be tapered at the same maximum slope or less, from a point on the welding bevel equal to the OD of the mating pipe. Similarly, when the greater thickness is provided on the inside of the flange, it shall be taper–bored from the welding end at a slope not exceeding 1 to 3.
When flanges covered by ASME B16.5 are intended for services with light wall, higher strength pipe, the thickness of the hub at the bevel may be greater than that of the pipe to which the flange is joined. Under these conditions, a single taper hub may be provided.
The additional thickness may be provided on either inside or outside or partially on each side, but the total additional thickness shall not exceed one–half times the nominal wall thickness of intended mating pipe. (See Figs. A through C below)



Inside Contour for Use With
Rectangular Backing Ring



Inside Contour for Use With
Taper Backing Ring

A = nominal outside diameter of welding end, mm
B = nominal inside diameter of pipe (= A - 2t), mm
C = A - 0.79 - 1.75t - 0.25, mm
t= nominal wall thickness of pipe, mm
0.79mm = minus tolerance on outside diameter of pipe to ASTM A106, etc.
1.75t = 87 1/2% of nominal wall (pemitted by ASTM A106, etc) multiplied by two to convert into terms of diameter
0.25mm = plus tolerance of diameter C, mm

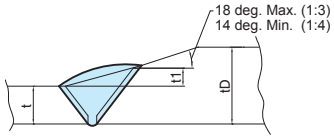


Fig. A Bevel for Outside Thickness

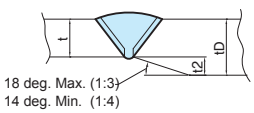


Fig. B Bevel for Inside Thickness

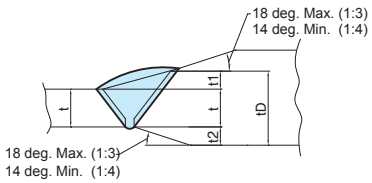


Fig. C Bevel for Combined Thickness

Notes :

(a) When the materials joined have equal minimum specified yield strength, there shall be no restriction on the minimum slope.
(b) Neither t1, t2 nor their sum (t1+t2) shall exceed 0.5t.
(c) When the minimum specified yield strengths of the sections to be joined are unequal, the value of tD shall at least equal the mating wall thickness times the ratio of minimum specified yield strength of the pipe to minimum specified yield strength of the flange.

TOLERANCE

ASME B16.5 PIPE FLANGES

THREAD, SOCKET-WELDING, SLIP-ON, LAP JOINT AND BLIND

OD	(D)	NPS ≤ 24	±1.5 (1)
Bore (LJF, SOF)	(B)	NPS ≤ 10	+1.0, 0
		NPS ≥ 12	+1.5, −0
Counter Bore	THDF	NPS ≤ 10	+1.0, −0
		NPS ≥ 12	−1.5, −0
	SWF	1/2 ≤ NPS ≤ 3	±0.25
Diam. of Hub	(X)	NPS ≤ 24	±2.0 (1)
		Slope	7° max
OD of RF	(G)	RF 2mm	±1.0
		RF 7mm	±0.5
		Tongue & Groove	
		Male, Female	
Raised Face (1)	2	Height	±0.5
	7		±2.0
Drilling		Bolt Circle Diameter	±1.5
		Bolt Hole to Bolt Hole	±0.8
		Concentricity between BCD and machined Facing	NPS ≤ 2 1/2: 0.8 max NPS ≥ 3: 1.5 max
Thickness	(t)	NPS ≤ 18	+3.0, −0
		NPS ≥ 20	+5.0, −0
Length thru Hub	(T)	NPS ≤ 10	±1.5 (1)
		NPS ≥ 12	±3.0 (1)

RING JOINT FACING

Ring Joint facing	P (Pitch)	±0.13
	F (Width)	±0.2
	E (Depth)	+0.4, −0
	R (Radius at bottom)	R≤2 : +0.8, −0.0
		R>2 : ±0.8
	23° (angle)	±0.5°

WELDING NECK

Unit : mm

Outside Diam.	(D)	NPS ≤ 24	±1.5 (1)
Bore (2) (SWF, WNF)	(B)	NPS ≤ 10	±1.0
		12 ≤ NPS ≤ 18	±1.5
		NPS ≥ 20	+3.0, −1.5
Bore (3) (WNF)	(B)	NPS ≤ 10	+0.0, −1.0
		NPS ≥ 12	+0.0, −1.5
OD of RF	(G)	RF 2mm	±1.0
		RF 7mm	±0.5
		Tongue & Groove	
		Male, Female	
Raised Face(1)	2	Height	±0.5
	7		±2.0
Diam. of Hub	(X)	NPS ≤ 24	±2.0 (1)
		Slope	1:3 max (45deg max)
Hub Thickness		NPS ≤ 24	87.5% (min), 12.5%
Diam. of Hub at Point of Welding	(A)	NPS ≤ 5	+2.0, −1.0
		NPS ≥ 6	+4.0, −1.0
Drilling		Bolt Circle Diam.	±1.5
		Bolt Hole to Bolt Hole	±0.8
		Concentricity between BCD and machined Facing	NPS ≤ 2 1/2 : 0.8 max NPS ≥ 3 : 1.5 max
Thickness	(t)	NPS ≤ 18	+3.0, −0
		NPS ≥ 20	+5.0, −0
Length thru Hub	(T)	NPS ≤ 4	±1.5
		5 ≤ NPS ≥ 12	+1.5, −3.0
		NPS ≥ 12	+3.0, −5.0

Notes :

(1) Tolerances shall be in accordance with BUFCO STD.
(2) Smaller bore of socket welding flange.
(3) Tolerances applied to inside contour for use with rectangular backing ring.

REDUCING FLANGES

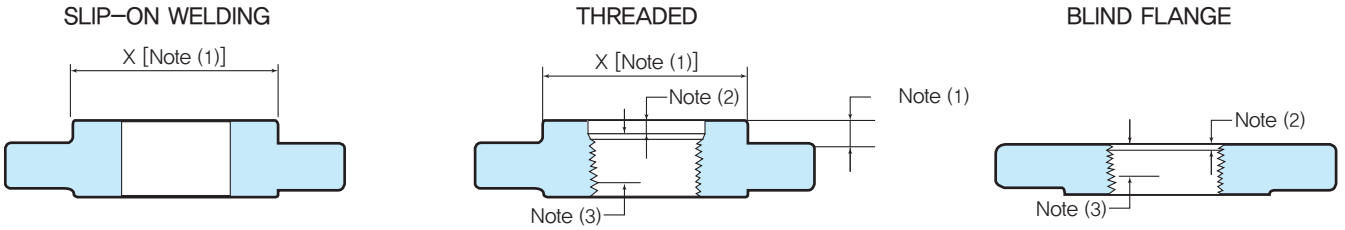
1. Drilling, Outside diameter, Thickness, and Facing Dimensions

Flange drilling, outside diameter, thickness, and facing are the same as those of the standard flange of the size from which the reduction is being made.

2. Hub Dimensions

2.1. Threaded, Socket Weld, and Slip-On Flanges

The hub dimension shall be at least as large as those of the standard flange of the size to which the reduction is being made. The hub may be larger or omitted as detailed in below Table.



1	2	3	4	5	6
NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]	NPS [Note (4)]	Smallest Size of Reducing Outlet Requiring Hub Flanges [Note (1)]
1 1 1/4 1 1/2 2 2 1/2 3	1/2 1/2 1/2 1 1 1/4 1 1/4	3 1/2 4 5 6 8 10	1 1/2 1 1/2 1 1/2 2 1/2 3 3 1/2	12 14 16 18 20 24	3 1/2 3 1/2 4 4 4 4

Reducing Threaded and Slip-On Pipe Flanges for Classes 150 Through 2500

Notes:

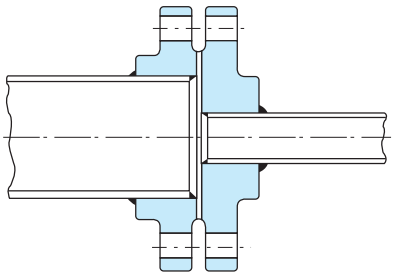
(1) The hub dimensions shall be at least as large as those of the standard flanges of the size to which the reduction is being machined, except flanges reducing to a size smaller than those of Columns 2, 4 and 6 may be made from blind flanges (See example).

(2) Class 150 flanges do not have a counterbore. Class 300 and higher pressure flanges will have depth of counterbore Q of 7mm for NPS 2 and smaller tapping and 9.50mm for NPS 2 1/2 and larger. The diameter Q of counterbore is the same as that given in the tables of threaded flanges for the corresponding tapping.

(3) Minimum length of effective threads shall be at least equal dimension T of the corresponding pressure class threaded flange as shown in tables but does not necessarily extend for the face of the flange.

(4) For method of designating reducing threaded and reducing Slip-On Flange (SOF), reducing flanges shall be designated by the NPS for each opening. See examples below.

Examples:



NPS 2 1/2 =	Taper pipe thread tapping (ASME B1.20.1)
320mm =	Diameter of regular NPS 6 Class 300 threaded flange
35mm =	Thickness of regular NPS 6 Class 300 threade d flange
178mm =	Diameter of hub for regular NPS 5 Class 300 threaded flange. Hub diameter may be one size small to reduce machining. In this example, a hub diameter of NPS 2 1/2 would be the smallest acceptable.
15.5mm =	Height of hub for regular NPS 5 Class 300 threaded flange

(1) The size designation is NPS 6 x 2 1/2 – Class 300 reducing threaded flange. This flange has the following dimensions:

(2) The size designation is NPS 6 x 2 – Class 300 reducing threaded flange. Use regular NPS 6 Class 300 blind flange tapped with NPS 2 taper pipe thread (ASME B1.20.1).

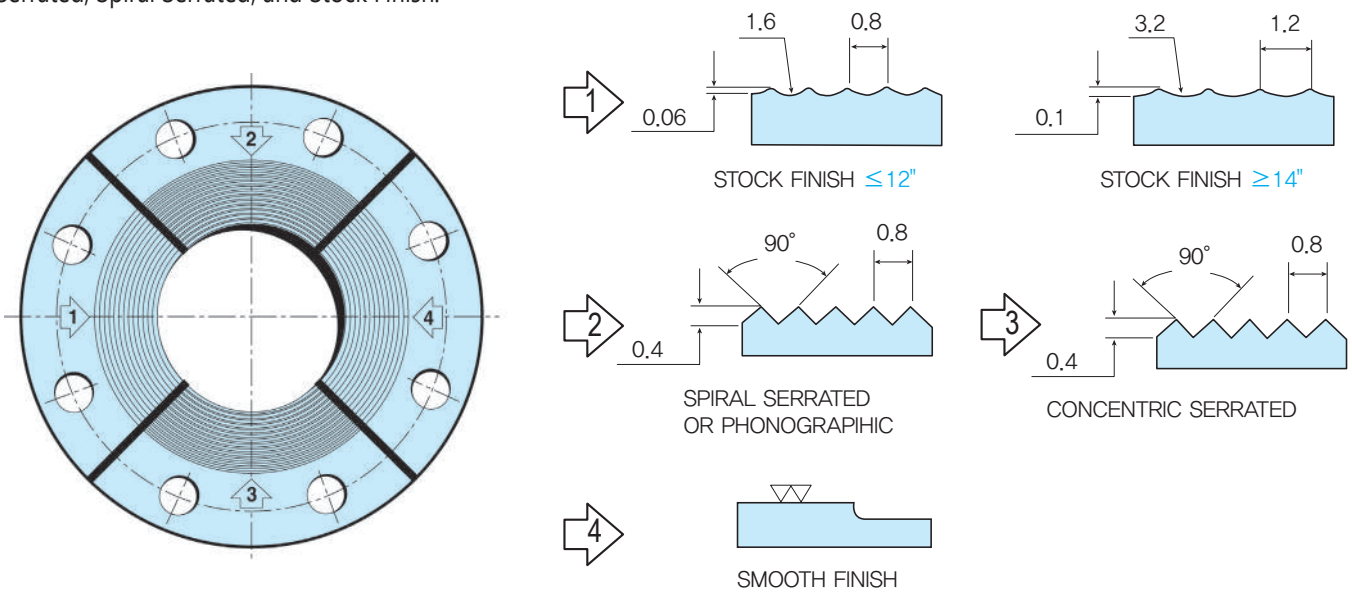
2.2. Welding Neck Flanges

The hub dimensions shall be the same as those of the standard flange of the size to which the reduction is being made.

STANDARD FINISH

FLANGE FACING FINISH (ASME B 16.5, PARA.6.4.5.)

A flange face (raised face and flat face) has a specific roughness to ensure that this surface be compatible with the gasket and provide a high quality seal as under compression. The soft face from a gasket will embed into this finish, which helps create a seal, and a high level of friction is generated between the mating surfaces. The most used surfaces are smooth finish, Concentric Serrated, Spiral Serrated, and Stock Finish.



STOCK FINISH :

This is a continuous spiral or phonographic groove. Suitable for practically all general service conditions, it is the most widely used of any flange surface finish. This finish is suitable for gaskets that have a soft conformable face. Under compression, the soft face will embed into this finish, which helps create a seal, and a high level of friction is generated between the mating surfaces.

SPIRAL SERRATED OR PHONOGRAPHIC :

This is also a continuous or phonographic spiral groove, but it differs from the stock finish in that the groove typically is generated using a 90-deg tool which creates a "V" geometry with 45-deg angled serration.

CONCENTRIC SERRATED :

As the name suggests, this finish is comprised of concentric grooves. A 90-deg tool is used and the serrations are spaced evenly across the face.

SMOOTH FINISH :

This finish shows no visually apparent tool markings. These finishes are typically utilized for gaskets with metal facings such as double jacketed, flat steel and corrugated metal. The smooth surfaces mate to create a seal and depend on the flatness of the opposing faces to effect a seal. AARH/RMS finishes are typically smoother than 63-µin. (1.6µm)

Lapped Finish (Cold Water Finish):

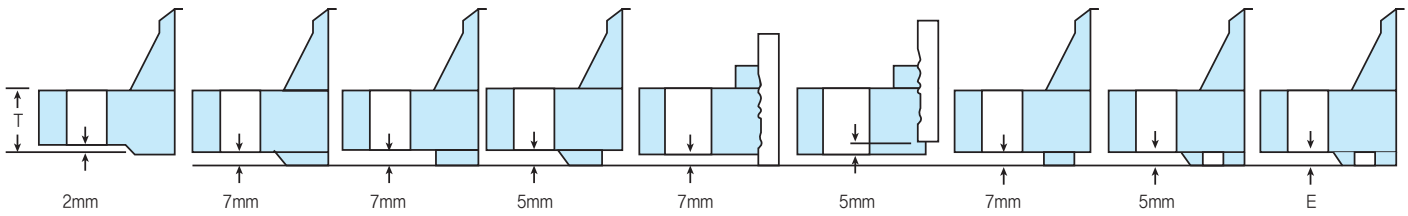
Produced using a wide tool at high speeds, this finish is equivalent to a ground surface. It is mirror-like in appearance. Surfaces such as this are typically intended to be used without a gasket.

Blind :

Blind flanges need not be faced in the center if, when this 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 required.

FLANGE FACES

The flange faces are also made to standardized dimensions and are typically "flat face", or "raised face" but other types are available.



Flat Face or Full Face (FF) -

Sealing is also by compression of a flat non-metallic gasket (very rarely a flat metallic gasket), between the phonographic/ concentric grooved surfaces of the mating FF flanges. The gasket fits over the entire face of the flange. FF flanges are normally used on the least arduous of duties such as low pressure water drains and in particular when using cast iron, conifer or bronze alloy, where the large gasket contact area spreads the flange loading and reduces flange bending on this type of flange facing.

Raised Face (RF) -

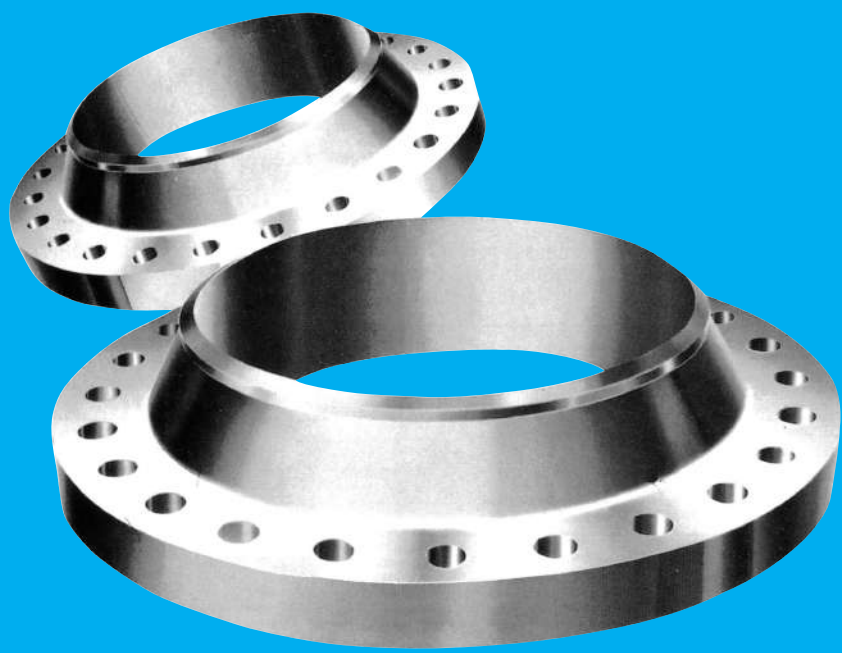
The Raised Face flange is the most common type used in process plant applications, and is easily to identify. It is referred to as a raised face because the gasket surfaces are raised above the bolting circle face. This face type allows the use of a wide combination of gasket designs, including flat ring sheet types and metallic composites such as spiral wound and double jacketed types.

The purpose of a RF flange is to concentrate more pressure on a smaller gasket area and thereby increase the pressure containment capability of the joint. Diameter and height are in ASME B16.5 defined, by pressure class and diameter. Pressure rating of the flange determines the height of the raised face.

The typical flange face finish for ASME B16.5 RF flanges is 125 to 250 µin Ra (3.2 to 6.3 µm Ra).

Ring Type Joint (RTJ) -

Typically found on the most severe duties, for example high pressure gas pipework. Ring type metal gaskets must be used, and the inside contact surface does not exceed 63µin (1.6µm), roughness.

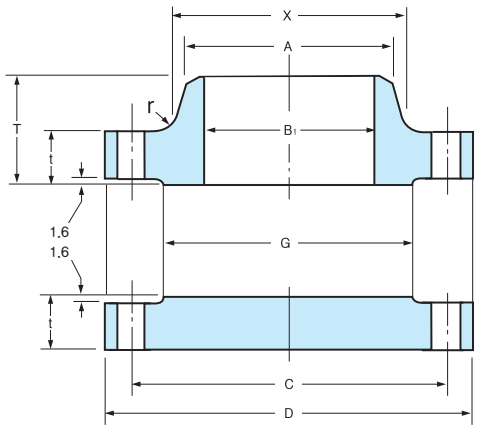


ANSI/ASME B16.47 SERIES A FLANGES (MSS SP44)

- Class 150 FLANGES
- Class 300 FLANGES
- Class 400 FLANGES
- Class 600 FLANGES
- Class 900 FLANGES
- TOLERANCE

CLASS 150 FLANGES

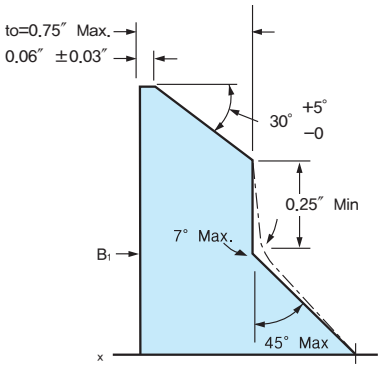
WELDING-ENDS FOR WELDING NECK FLANGES



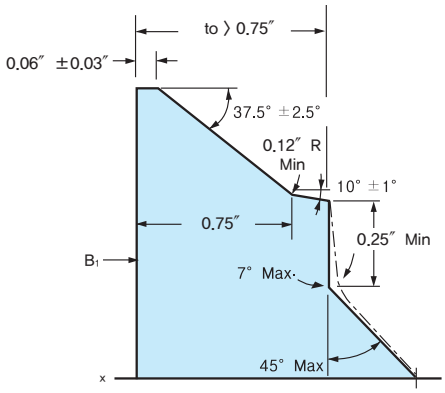
MSS SP44 FORGED FLANGES

Nominal Pipe Size	Outside Dia.of Flanges		Dir of Bore			HUB				Raised face
			WALL THK0.375"	WALL THK0.5"		Hub Dia at Base		Hub Dia at Bevel		
B	D		B_1			X		※ A		G±0.8
(5)12	483		304.8	298.5		365.3		323.9		381.0
(5)14	533		336.6	330.2		400.1		355.6		412.8
(5)16	597		387.4	381.0		457.2		406.4		469.9
(5)18	635	±1.6	438.2	431.8	±1.6	505.0		457.2		533.4
(5)20	699		489.0	482.6		558.8		508.0		584.2
(5)22	749		539.8	533.4		610.0		558.8		641
(5)24	813		590.6	584.2		663.4		609.6		692.2
26	870		641.4	635.0		676		660.4		749
28	927		692.2	685.8		727		711.2		00
30	984		743.0	736.6		781		762.0		857
32	1060		793.8	787.4		832		812.8		914
34	1111		844.6	838.2		883		863.6		965
36	1168		895.4	889.0		933	±1.6	914.4	+4.0 −0.8	1022
38	1238		946.2	939.8		991		965.2		1073
40	1289		997.0	990.6		1041		1016.0		1124
42	1346	±3.2	1047.8	1041.4	+3.2 −1.6	1092		1066.8		1194
44	1403		1098.6	1092.2		1143		1117.6		1245
46	1454		1149.4	1143.0		1197		1168.4		1295
48	1511		1200.2	1193.8		1248		1219.2		1359
50	1568		1251.0	1244.6		1302		1270.0		1410
52	1626		1301.8	1295.4		1353		1320.8		1460
54	1683		1352.6	1346.2		1403		1371.6		1511
56	1746		1403.4	1397.0		1457		1422.4		1575
58	1803		1454.2	1447.8		1508		1473.2		1626
60	1854		1505.0	1498.6		1559		1524.0		1676

Notes :
(1) For the 'Bore' (B) other than wall thickness 0.375″ and 0.500″ , refer to page 122~123
(2) Manle to specified by purchason.



BEVEL FOR WALL THICKNESS(to)
*0.75″ IN(20mm) OR LESS.



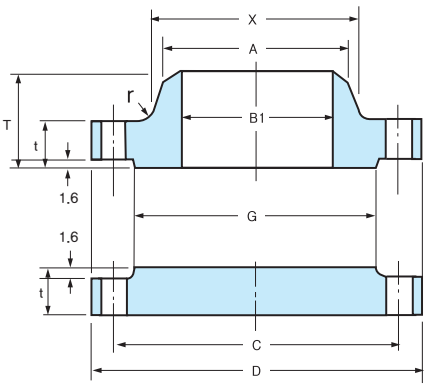
BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.75IN(20mm)

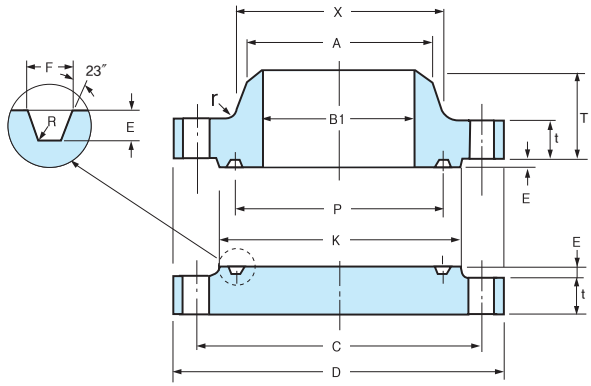
Unit : mm

Thickness		Radius	Lengh through Hub		DRILLING			
					Bolt Circle Diameter		Number of hole	Dia of Bolt hole
t		r	T		C			
31.8		10	114.3		431.8		12	25.4
35.0	+3.2 −0	10	127.0		476.3		12	28.4
36.6		10	127.0		539.8		16	28.4
39.6		10	139.7		577.9		16	31.8
42.9		10	144.5		635.0		20	31.8
46.0		10	149.4		692.2		20	35.1
47.8		10	152.4		749.3		20	35.1
68.3		10	121		806.5		24	35
71.4		11	125		863.6		28	35
74.7		11	137		914.4		28	35
81.0		11	144.5		978		28	41
82.5		13	149		1029		32	41
90.5		13	157	±3.2	1086	±1.6	32	41
87.5		13	157		1149.4		32	41
90.5	+4.8 −0	13	164		1200		36	41
97.0		13	171.5		1257		36	41
102.0		13	178		1314		40	41
103.0		13	186		1365		40	41
108.0		13	192		1422		44	41
111.0		13	203		1480		44	48
116.0		13	210		1537		44	48
121.0		13	216		1594		44	48
124.0		13	229		1651		48	48
129.0		13	235		1708		48	48
132.0		13	240		1759		52	48

CLASS 300 FLANGES

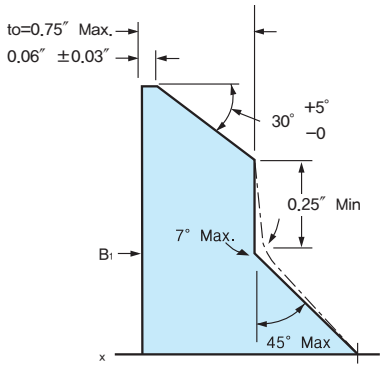
WELDING-ENDS FOR WELDING NECK FLANGES



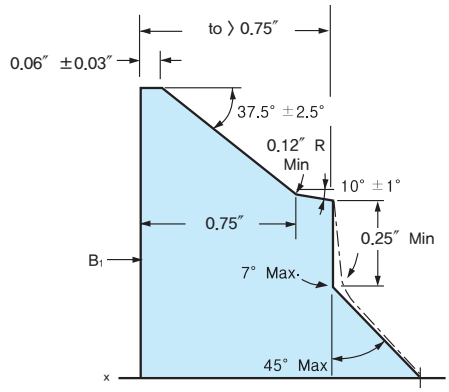


MSS SP44 FORGED FLANGES

Nominal Pipe Size	Outside Dia.of Flanges		Dir of Bore			HUB				Raised face	Thickness	
			WALL THK0.375"	WALL THK0.5"		Hub Dia at Base		Hub Dia at Bevel			Welding Neck	Blind
B	D		B_1			X		※ A		G±0.8	t	
(4)12	521		304.8	298.5		374.7		323.9		381.0	50.8	50.8
(4)14	584		336.6	330.2		425.5		355.6		412.8	53.8	53.8
(4)16	648		387.4	381.0		482.6		406.4		469.9	57.2	57.2
(4)18	711	±1.6	438.2	431.8	±1.6	533.4		457.2		533.4	60.5	60.5
(4)20	775		489.0	482.6		587.2		508.0		584.2	63.5	63.5
(4)22	838		539.8	533.4		641		558.8		641.0	66.7	66.7
(4)24	914		590.6	584.2		701.5		609.6		692.2	69.9	69.9
26	972		641.4	635.0		721		666.8		749	79.5	84.0
28	1035		692.2	685.8		775		717.6		800	85.5	90.5
30	1092		743.0	736.6		827		768.4		857	92.0	95.0
32	1149		793.8	787.1		881		819.2		914	98.5	100.0
34	1207		844.6	838.2		937		871.7		965	102.0	105.0
36	1270		895.4	889.0		991	±1.6	922.5	+4.0 −0.8	1022	105.0	111.0
38	1169		946.2	939.8		994		965.2		1029	108.0	108.0
40	1238		997.0	990.6		1048		1016.0		1086	114.0	114.0
42	1289		1047.8	1041.4	+3.2 −1.6	1099		1066.8		1137	119.0	119.0
44	1353	±3.2	1098.6	1092.2		1150		1117.6		1194	124.0	124.0
46	1416		1149.4	1143.0		1204		1168.4		1245	129.0	129.0
48	1467		1200.2	1193.8		1254		1219.2		1301	133.0	133.0
50	1530		1251.0	1244.6		1305		1270.0		1359	140.0	140.0
52	1581		1301.8	1295.4		1366		1320.8		1410	144.0	144.0
54	1657		1352.6	1346.2		1410		1371.6		1467	152.0	152.0
56	1708		1403.4	1397.0		1464		1422.4		1518	154.0	154.0
58	1759		1454.2	1447.8		1514		1473.2		1575	159.0	159.0
60	1810		1505.0	1498.6		1565		1524.0		1626	164.0	164.0



BEVEL FOR WALL THICKNESS(to)
*0.75″ IN(20mm) OR LESS.



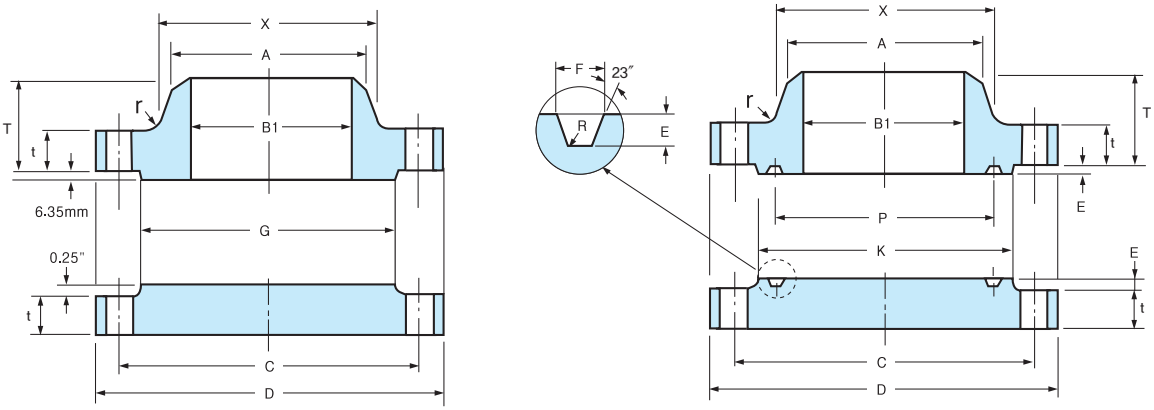
BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.75IN(20mm)

Unit : mm

Hub Radius	Length through		DRILLING				Ring Type Joint					
			Bolt Circle Diameter		NO	Dia of Bolt hole	Dia of Raised Face	Center to Center	Ring NO	Depth	Weigh	Radius
r	T		C				K	p		E	E	R
10	130.0		450.9		16	31.8	413.0	381.00	R57	7.92	11.91	0.8
10	142.7		514.4		20	31.8	457.0	419.10	R61	7.92	11.91	0.8
10	146.1		571.5		20	35.1	508.0	469.90	R65	7.92	11.91	0.8
10	158.8		628.8		24	35.1	575.0	533.40	R69	7.92	11.91	0.8
10	162.1		685.8		24	35.1	635.0	584.20	R73	9.52	13.49	1.5
10	165.1		743.0		24	41.1	685.0	635.00	R81	11.13	15.08	1.5
10	168.1		812.8		24	41.1	749.0	692.15	R77	11.13	16.66	1.5
10	184		876		28	44	810	749.30	R93	12.70	19.85	2
11	197		940		28	44	860	800.10	R94	12.70	19.85	2
11	210		997		28	48	918	857.25	R95	12.70	19.85	2
11	222		1054		28	51	984	914.40	R96	14.30	23.00	2
13	232		1105		28	51	1035	965.20	R97	14.30	23.00	2
13	241	±3.2	1168	±1.6	32	53.8	1092	1022.35	R98	14.30	23.00	2
13	181		1092		32	41	–	–	–	–	–	–
13	194		1156		32	44	–	–	–	–	–	–
13	200		1206		32	44	–	–	–	–	–	–
13	206		1264		32	48	–	–	–	–	–	–
13	216		1321		28	51	–	–	–	–	–	–
13	224		1372		32	51	–	–	–	–	–	–
13	232		1429		32	51	–	–	–	–	–	–
13	238		1480		32	54	–	–	–	–	–	–
13	252		1549		28	54	–	–	–	–	–	–
13	260		1600		28	60	–	–	–	–	–	–
13	267		1651		32	60	–	–	–	–	–	–
13	273		1702		32	60	–	–	–	–	–	–

CLASS 400 FLANGES

WELDING-ENDS FOR WELDING NECK FLANGES

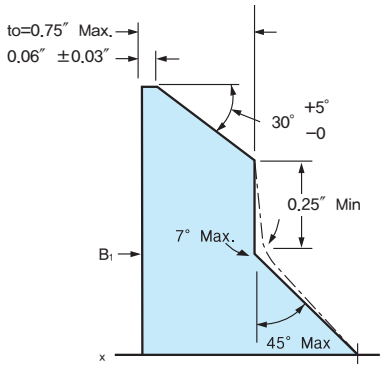


MSS SP44 FORGED FLANGES

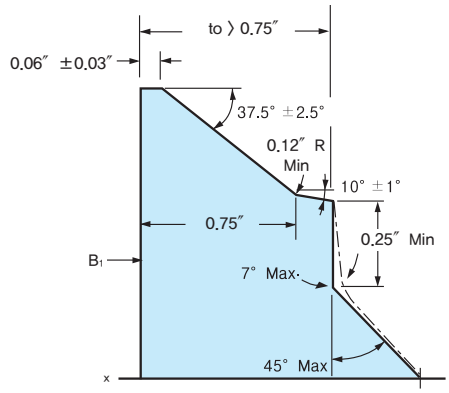
Dimensions in mm

Nominal Pipe Size	Outside Diam	O.D. of Raised Face	Diam at Base of Hub	Thickness		Bore		Length Through Hub	Diam of Hub	Radius of Fillete
				Welding Neck	Blind	Wall Thickness				
						0.075″	0.500″			
B	D	G	X	t_1	t_2	B_1		T	A	r
22	838	641	641	73.0	73.0	539.8	533.4	171	558.8	11.2
26	971	749	727	89.0	98.5	641.4	635.0	194	660.4	11.2
28	1035	800	783	95.0	105	692.2	685.8	206	711.2	12.7
30	1092	857	837	102	111	743.0	736.6	219	812.8	12.7
32	1150	914	890	108	116	793.6	787.4	232	812.8	12.7
34	1205	965	945	111	122	844.6	838.2	241	863.6	14.2
36	1270	1022	1000	114	129	895.4	889.0	251	914.4	14.2
38	1207	1035	1003	124	124	946.2	939.8	206	965.2	14.2
40	1270	1092	1054	130	130	997.0	990.6	216	1016.0	14.2
42	1321	1143	1108	133	133	1047.8	1041.4	224	1066.8	14.2
44	1385	1200	1159	140	140	1098.6	1092.2	233	1117.6	14.2
46	1441	1257	1213	146	146	1149.4	1143.0	244	1168.4	14.2
48	1511	1308	1267	152	152	1200.2	1193.8	257	1219.2	14.2
50	1570	1362	1321	157	159	1251.0	1244.6	268	1270.0	14.2
52	1620	1413	1372	162	164	1301.8	1295.4	276	1320.8	14.2
54	1702	1470	1425	170	171	1352.6	1346.2	289	1371.6	14.2
56	1753	1527	1480	175	176	1403.4	1397.0	298	1422.4	14.2
58	1803	1578	1530	178	181	1454.2	1447.8	306	1473.2	14.2
60	1886	1635	1585	186	189	1505.0	1498.6	319	1524.0	14.2

Notes :
(1) For the 'Bore' (B) other than wall thickness 0.375″ and 0.500″
(2) Class 400 Flanges will be furmish with 0.25″ raised face, which is not 'Thickness' (t) and 'Length throgh Hub' (T1)
(3) Dimensional tolerances are in accordance with ANSI B16.5
(4) Maximum Pressure Rating for raised face flanges is 985 psi (68BARS) at atomospheric temperature.
(5) Flange dimensions of 12″ through 24″ flanges(except 22″) are in accordance with ANSI B16.5
(6) For size 26″ and larger, Diameter of Hub at Bevel (A) are in accordance with ASME Boiler and pressure vessel code.



BEVEL FOR WALL THICKNESS(to)
*0.75″ IN(20mm) OR LESS.



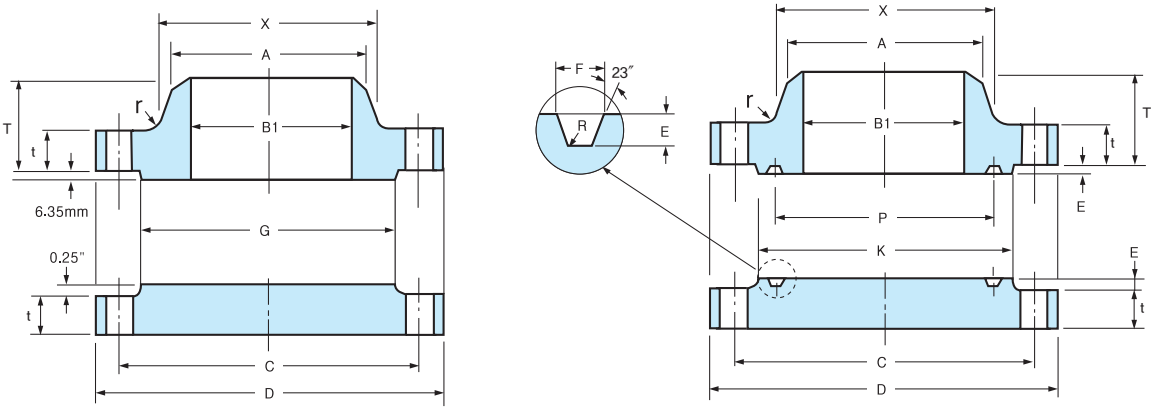
BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.75IN(20mm)

Unit:mm

DRILLING			Pitch Diam.	Groove Dimensions			Diam of Raised Face	Ring and Groove Number	Nominal Pipe Size
Bolt Circle Diam	Number of Holes	Diam of Holes		Width	Depth	Radius			
C			P	F	E	R	K		
743	24	44	635.00	15.10	11.13	1.5	686	R81	22
876	28	48	749.30	19.84	12.70	1.5	810	R93	26
940	28	51	800.10	19.84	12.70	1.5	860	R94	28
997	28	54	857.25	19.84	12.70	1.5	918	R95	30
1054	28	54	914.40	23.00	14.30	1.5	984	R96	32
1105	28	54	965.20	23.00	14.30	1.5	1035	R97	34
1168	32	54	1022.35	23.00	14.30	1.5	1092	R98	36
1118	32	48	–	–	–	–	–	–	38
1175	32	51	–	–	–	–	–	–	40
1226	32	51	–	–	–	–	–	–	42
1283	32	54	–	–	–	–	–	–	44
1340	36	54	–	–	–	–	–	–	46
1403	28	60	–	–	–	–	–	–	48
1460	32	60	–	–	–	–	–	–	50
1511	32	60	–	–	–	–	–	–	52
1581	28	67	–	–	–	–	–	–	54
1632	32	67	–	–	–	–	–	–	56
1683	32	68	–	–	–	–	–	–	58
1753	32	73	–	–	–	–	–	–	60

CLASS 600 FLANGES

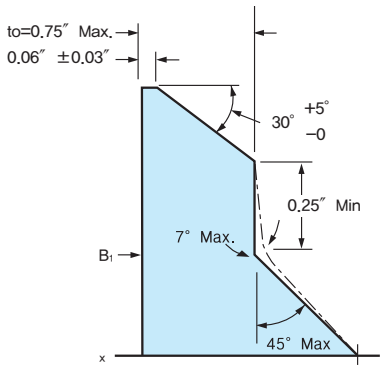
WELDING-ENDS FOR WELDING NECK FLANGES



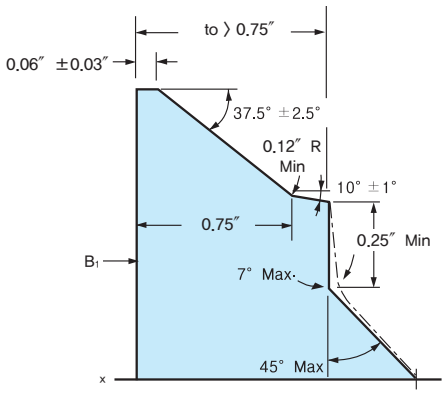
MSS SP44 FORGED FLANGES

Unit : mm

Nominal Pipe size	Outside Dia of Flanges		Dir of Bore			HUB				Raised face	Thickness	
			Wall THK 0.375″	WAll THK 0.5″		Hub Dia at Base		Hub Dia at Bevel			Welding Nede	Blind
B	D		B1			X		※A		G±0.8	t	
12	559	±1.6	304.8	298.5	±1.6	400.1	±1.6	323.9	+4.0 −0.8	381.0	66.5	66.5
14	603		336.6	330.2		431.8		355.6		412.8	69.9	69.9
16	686		387.4	381.0		495.3		406.4		469.9	76.2	76.2
18	743		438.2	431.8		546.1		457.2		533.4	82.6	82.6
20	813		489.0	482.6		609.6		508.0		584.2	88.9	88.9
22	870		539.8	533.4		667.0		558.8		641.0	95.3	95.3
24	940		590.6	584.2		717.6		609.6		692.2	101.6	101.6
26	1016	±3.2	641.4	635.0	+3.2 −1.6	748		660.4		749	108.0	125.0
28	1073		692.5	685.8		803		711.2		800	111.0	132.0
30	1130		743.0	736.6		862		762.0		857	114.0	140.0
32	1194		793.8	787.4		918		812.8		914	117.0	148.0
34	1245		844.6	838.2		973		863.6		965	121.0	154.0
36	1315		895.4	889.0		1032		914.4		1022	124.0	162.0
38	1270		946.2	939.8		1022		965.2		1054	152.0	156.0
40	1320		997.0	990.6		1073		1016.0		1111	159.0	162.0
42	1404		1047.8	1041.4		1127		1066.8		1168	168.0	171.0
44	1454		1098.6	1092.2		1181		1117.6		1226	173.0	178.0
46	1511		1149.4	1143.0		1235		1168.4		1276	179.0	186.0
48	1594		1200.2	1193.8		1290		1219.2		1334	189.0	195.0
50	1670		1251.0	1244.6		1343		1270.0		1384	197.0	203.0
52	1721		1301.8	1295.4		1395		1320.8		1435	203.0	210.0
54	1778		1352.6	1346.2		1448		1371.6		1492	210.0	217.0
56	1854		1403.4	1397.0		1500		1422.4		1543	217.0	225.0
58	1905		1454.2	1447.8		1552		1473.2		1600	222.0	232.0
60	1994		1505.0	1498.6		1610		1524.0		1657	232	243.0



BEVEL FOR WALL THICKNESS(to)
*0.75″ IN(20mm) OR LESS.



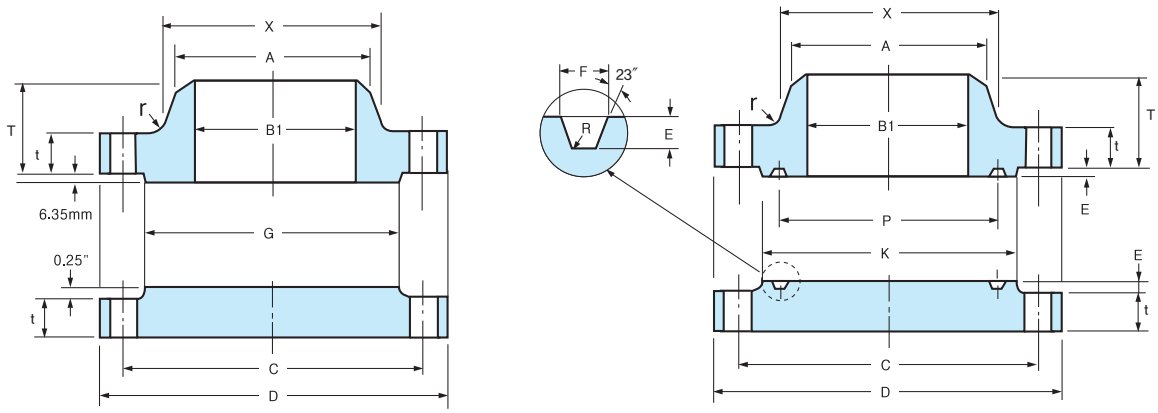
BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.75IN(20mm)

Unit : mm

Hub Radius	Length through Hub		DRILLING				Ring Type Joint					
			Pitch Circle Diameter		NO	Dia of Bolt hole	Dia of Rased Face	Center to Center	Ring NO	Depth	Width	Radius
r_1	T		C				K	p		E	E	r_2
13	155.4		489.0		20	35.1	413.0	381.00	R57	7.92	11.91	0.8
13	165.1		527.1		20	38.1	457.0	419.10	R61	7.92	11.91	0.8
13	177.8		603.3		20	41.1	508.0	469.90	R65	7.92	11.91	0.8
13	184.2		654.1		20	44.5	575.0	533.40	R69	7.92	11.91	0.8
13	190.5		723.9		24	44.5	635.0	584.20	R73	9.52	13.49	1.5
11	196.9		777.9		24	47.7	686.0	635.00	R81	11.13	15.08	1.5
13	203.2		838.2		24	50.8	749.0	692.15	R77	11.13	16.66	1.5
11	222		914		28	51	810	749.30	R93	12.70	19.85	2
13	235		965		28	54	860	800.10	R94	12.70	19.85	2
13	248		1022		28	54	918	857.25	R95	12.70	19.85	2
13	260		1080		28	60	984	914.40	R96	14.30	23.00	2
14	270		1130		28	60	1035	965.20	R97	14.30	23.00	2
14	283	±3.2	1194	±1.6	28	66.5	1092	1022.35	R98	14.30	23.00	2
14	254		1162		28	60	–	–	–	–	–	–
14	264		1213		32	60	–	–	–	–	–	–
14	279		1283		28	67	–	–	–	–	–	–
14	289		1334		32	67	–	–	–	–	–	–
14	300		1391		32	67	–	–	–	–	–	–
14	316		1460		32	73	–	–	–	–	–	–
14	329		1524		28	79	–	–	–	–	–	–
14	337		1575		32	79	–	–	–	–	–	–
14	349		1632		32	79	–	–	–	–	–	–
16	362		1695		32	86	–	–	–	–	–	–
16	370		1746		32	86	–	–	–	–	–	–
17	389		1822		28	92	–	–	–	–	–	–

CLASS 900 FLANGES

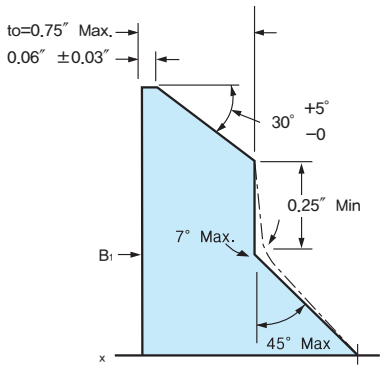
WELDING-ENDS FOR WELDING NECK FLANGES



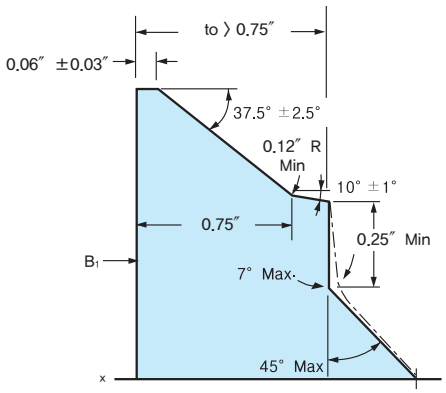
MSS SP44 FORGED FLANGES

Unit:mm

Nominal Pipe size	Outside Dia of Flanges		Dia of Bore			HUB				Raised face	Thickness		
			WALL THK0.375″	WALL THK0.5″		Hub Dia at Base		Hub Dia at Bevel			Welding Nede	Blind	
B	D		B			X		※A		G±0.8	t		
12	610	±1.6	304.8	298.5	±1.6	419.1	±1.6	323.9	+4.0 −0.8	381.0	79.2	79.2	+3.2 −0
14	641		336.8	330.2		450.9		355.6		412.8	85.9	85.9	
16	705		387.4	381.0		508.0		406.4		469.9	88.9	88.9	
18	787		438.2	431.8		565.2		457.2		533.4	101.6	101.6	
20	857		489.0	482.6		622.3		508.0		584.2	108.0	108.0	+4.8 −0
24	1041		590.6	584.2		749.3		609.6		692.2	139.7	139.7	
26	1086	±3.2	641.4	635.0	+3.2 −1.6	775		660.4		749	140.0	160.0	
28	1169		692.2	685.8		830		711.2		800	143.0	171.0	
30	1232		743.0	736.6		890		762.0		857	149.0	183.0	
32	1315		793.8	787.4		945		812.8		914	159.0	194.0	
34	1397		844.6	838.2		1005		863.6		965	165.0	205.0	
36	1460		895.4	889.0		1065		914.4		1022	171.0	214.0	
38	1460		946.2	939.8		1075		965.2		1099	190.0	216.0	
40	1511		997.0	990.6		1125		1016.0		1162	197.0	224.0	
42	1562		1047.8	1041.4		1175		1066.8		1213	206.0	232.0	
44	1650		1098.6	1092.2		1235		1117.6		1270	214.0	243.0	
46	1734		1149.4	1143.0		1290		1168.4		1334	225.0	256.0	
48	1784		1200.2	1193.8		1345		1219.2		1384	233.0	264.0	



BEVEL FOR WALL THICKNESS(to)
*0.75″ IN(20mm) OR LESS.



BEVEL FOR WALL THICKNESS(to)
GREATER THAN 0.75IN(20mm)

Unit:mm

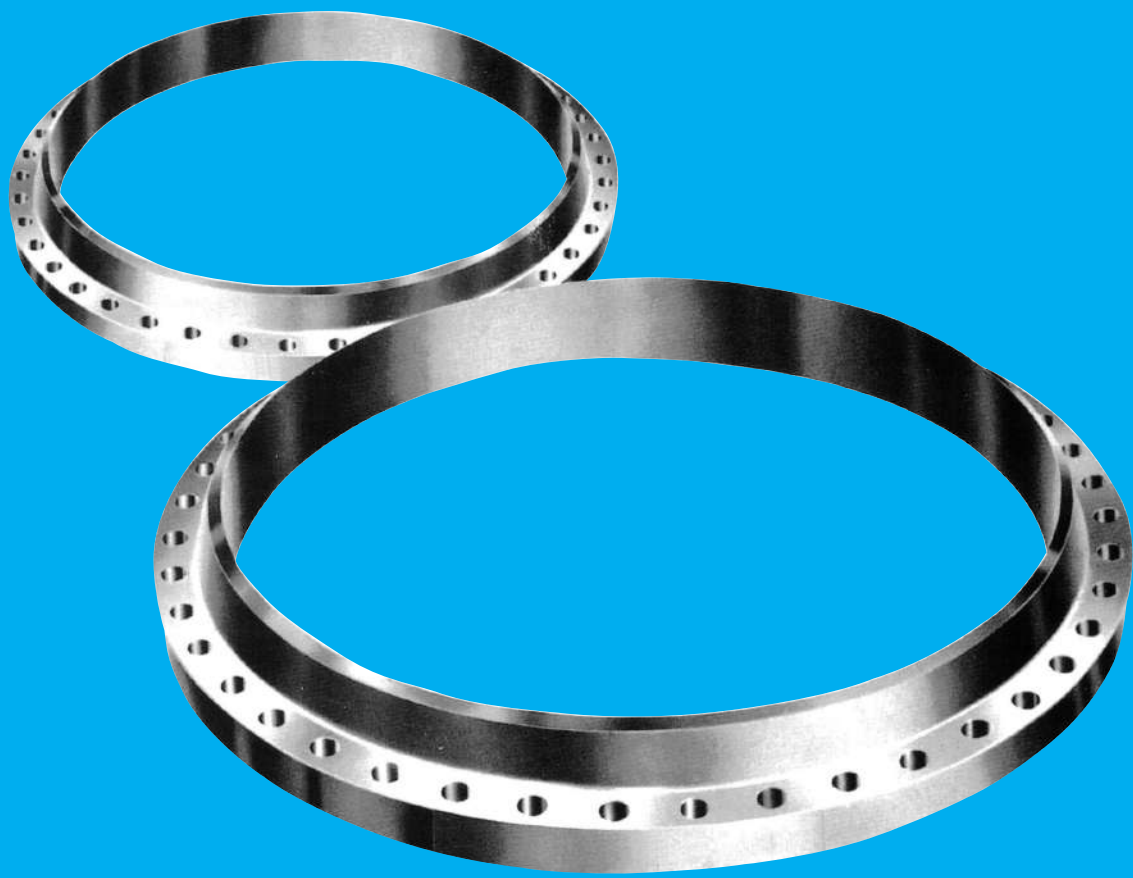
Hub Radius	Length through Hub		DRILLNG				Ring Type Joint					
			Pitch Circle Diameter		NO	Dia of Bolt hole	Dia of Rased Face	Center to Center	Ring NO	Depth	Width	Radius
r_1	T		C				K	p		E	E	r_2
13	220.2		533.4		20	38.1	419.0	381.00	R57	7.92	11.91	0.8
13	212.9		558.8		20	41.1	467.0	419.10	R62	11.13	16.66	1.5
13	215.9		616.0		20	44.5	524.0	469.90	R66	11.13	16.66	1.5
13	228.6		685.8		20	50.8	594.0	533.40	R70	12.70	19.84	1.5
13	247.7		749.3		20	53.8	648.0	584.20	R74	12.70	19.84	1.5
11	292.1		901.7		20	66.5	772.0	692.15	R78	15.88	26.97	1.5
11	286		952		20	73	832	749.30	R100	17.46	30.16	2
13	298	±3.2	1022	±1.6	20	79	889	800.10	R101	17.46	33.34	2
13	311		1086		20	79	946	857.25	R102	17.46	33.34	2
13	330		1156		20	86	1003	914.40	R103	17.46	33.34	2
14	349		1226		20	92	1067	965.20	R104	20.64	36.51	2
14	362		1289		20	92	1124	1022.35	R105	20.64	36.51	2
19	352		1289		20	92	–	–	–	–	–	–
21	364		1340		24	92	–	–	–	–	–	–
21	371		1391		24	92	–	–	–	–	–	–
22	391		1464		24	98	–	–	–	–	–	–
22	411		1537		24	105	–	–	–	–	–	–
24	419		1588		24	105	–	–	–	–	–	–

MSS SP-44

FORGED FLANGES TOLERANCE

Place		Range		Tolerance
Outside Diameter	D			±3.2*(±0.125in*)
Inside Diameter	B_1		12≤NPS≤18	±1.5(±0.06in)
			NPS≥20	+3.0(0.12in) −1.5(−0.16in)
	G	2.0mm Raised Face	12≤NPS≤24	±1.0(±0.03in)
			NPS≥26	±2.0(±0.08in)
		7.0mm Raised Face	12≤NPS≤24	±0.5(±0.02in)
			NPS≥26	±1.0(±0.04in)
Diameter of Hub at Base	X			±3.2*(±0.125in*)
Diameter of Hub at Welding Point	A		12≤NPS≤24	±4.0(±0.16in) −1.0(−0.03in)
			NPS≥26	±5.0(±0.21in) −1.5(−0.06in)
Drilling	Bolt Circle Diameter			±1.5(±0.06in)
	Bolt to Bolt Hole			±0.8(±0.03in)
	Eccentricity of Bolt Circle with Respect to Facing		12≤NPS≤24	±1.5(±0.06in)
			NPS≥26	±2.0(±0.09in)
Thickness	t	NPS≤18		+3.0(+0.12in) −0.0(−0.00in)
		NPS≥20		+5.0(+0.19in) −0.0(−0.00in)
Length Thru Hub	T		12≤NPS≤24	+3.0(±0.12in) −5.0(−0.18in)
			NPS≥26	+5.0(+0.19in)

Notes :
Sizes NPS 10 and smaller
Tolerances for these sizes shall be as specified in ASME B 16.5. The listing of decimal tolerances does not imply method of measurement.

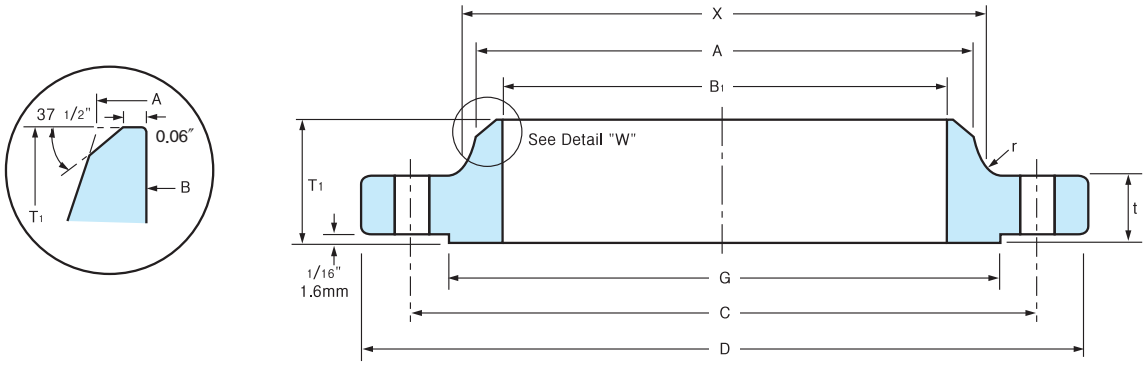


ANSI/ASME B16.47 SERIES B FLANGES (API 605)

- Class 75 FLANGES
- Class 150 FLANGES
- Class 300 FLANGES
- TOLERANCE

CLASS 75 FLANGES

ASME B 16.47 SER B(API 605)



API 605 FORGED FLANGES

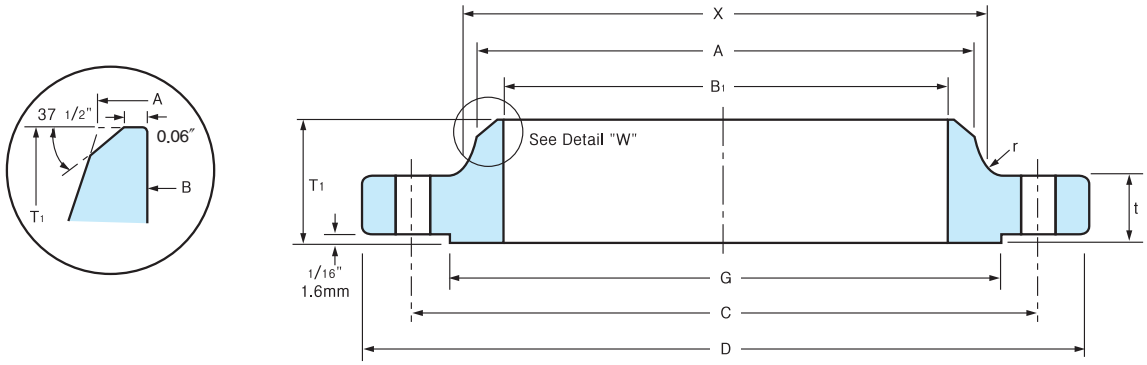
Unit : mm

Nominal Pipe Size	Outside Diam.	Thickness	O.D. of Raised Face	Diam at Base of Hub	Bore			Length Through Hub	Diam of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximate Weight Pounds(kg)
					Wall Thickness						Bolt Circle Diam.	Number of Holes	Diam. of Holes	
					6.35mm	9.5mm	12.7mm							
	D	t	g	X	B_1			T_1	A	r	C	N	h	
26	762	33.3	704.9	676.1	647.7	641.4	635.0	58.7	661.9	7.9	723.9	36	19.1	63.9 (29.01)
28	813	33.3	755.7	726.9	698.5	692.2	685.8	62.0	712.7	7.9	774.7	40	19.1	68.3 (31.01)
30	864	33.3	806.5	777.7	749.3	743.0	736.6	65.0	763.5	7.9	825.5	44	19.1	777.2 (35.05)
32	914	35.1	857.3	828.5	800.1	793.8	787.4	69.9	814.3	7.9	876.3	48	19.1	105.8 (48.03)
34	965	35.1	908.1	879.3	850.9	844.6	838.2	73.2	865.1	7.9	927.1	52	19.1	110.2 (50.03)
36	1034	36.6	965.2	935.0	850.9	895.4	889.0	85.9	915.9	9.7	992.1	40	22.4	136.7 (62.06)
38	1084	38.1	1016.0	985.8	952.5	946.2	939.8	88.9	966.7	9.7	1042.9	40	22.4	154.3 (70.05)
40	1135	38.1	1066.8	1036.6	1003.3	997.0	990.6	91.9	1017.5	9.7	1093.7	44	22.4	163.1 (74.05)
42	1186	39.6	1117.6	1087.4	1054.1	1047.8	1041.4	95.3	1068.3	9.7	1144.5	48	22.4	169.8 (77.09)
44	1251	42.9	1174.8	1140.0	1104.9	1049.4	1143.0	104.6	1119.1	9.7	1203.5	36	25.4	180.8 (82.08)
46	1302	44.5	1225.6	1190.8	1155.7	1149.4	1143.0	108.0	1169.9	9.7	1254.3	40	25.4	231.5 (105.01)
48	1353	46.0	1276.4	1241.6	1206.5	1200.2	1193.8	111.3	1220.7	9.7	1305.1	44	25.4	264.6 (120.03)
50	1403	47.8	1327.2	1293.9	1257.3	1251.0	1244.6	115.8	1271.5	9.7	1355.9	44	25.4	295.8 (134.28)
52	1457	47.8	1378.0	1344.7	1308.1	1301.8	1295.4	120.7	1322.3	9.7	1409.7	48	25.4	313.2 (142.18)
54	1508	49.3	1428.8	1397.0	1358.9	1352.6	1346.2	125.5	1373.1	9.7	1460.5	48	25.4	396.8 (180.15)
56	1575	50.8	1485.9	1450.8	1409.7	1403.4	1397.0	134.9	1423.9	11.2	1521.0	40	28.4	406.6 (184.58)
58	1626	52.3	1536.7	1501.6	1460.5	1454.2	1447.8	138.2	1474.7	11.2	1571.8	44	28.4	430.8 (195.56)
60	1676	55.6	1587.5	1552.4	1511.3	1505.0	1498.6	144.5	1525.5	11.2	1622.6	44	28.4	463.0 (210.20)

Notes :
(1) 'Bore' (B_1) of flanges is shall be specified by the purchaser.
(2) Class 75 flanges will be furnished with 0.06″ (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T_1).

CLASS 150 FLANGES

ASME B 16.47 SER B(API 605)



API 605 FORGED FLANGES

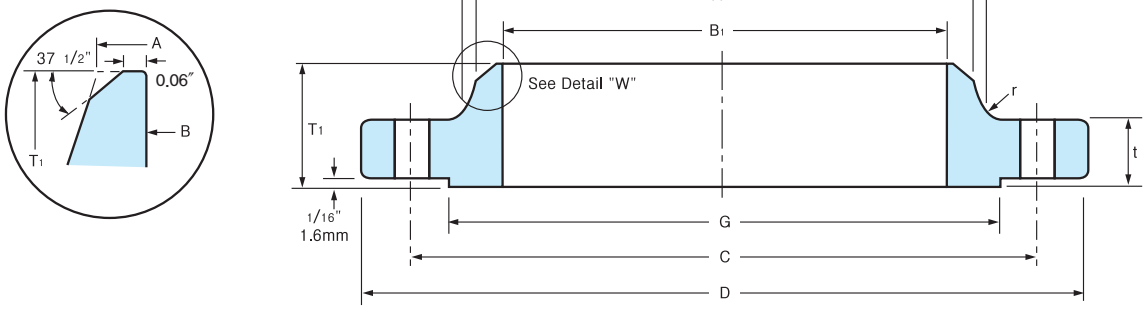
Unit:mm

Nominal Pipe Size	Outside Diam.	Thickness	O.D. of Raised Face	Diam at Base of Hub	Bore			Length Through Hub	Diam of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximate Weight Pounds(kg)
					Wall Thickness						Bolt Circle Diam.	Number of Holes	Diam. of Holes	
					6.35mm	9.5mm	12.7mm							
	D	t	g	X	B1			T_1	A	r	C	N	h	
26	786	41.1	711.2	684.3	647.7	641.4	635.0	88.9	661.9	9.7	744.5	36	22.4	114.6 (52.03)
28	837	44.5	762.0	735.1	698.5	692.2	685.8	95.3	712.7	9.7	795.3	40	22.4	127.9 (58.07)
30	887	44.5	812.8	787.4	749.3	743.0	736.6	100.1	763.5	9.7	846.1	44	22.4	143.3 (65.06)
32	941	46.0	863.6	839.7	800.1	793.8	787.4	108.0	814.3	9.7	900.2	48	22.4	187.4 (85.08)
34	1005	49.3	920.8	892.0	850.9	844.6	838.2	110.2	865.1	9.7	957.3	40	25.4	220.5 (100.11)
36	1057	52.3	971.6	944.6	901.7	895.4	889.0	117.3	915.9	9.7	1009.7	44	25.4	253.5 (115.09)
38	1124	53.8	1022.4	997.0	952.5	946.2	939.8	124.0	968.2	9.7	1069.8	40	28.4	297.5 (135.07)
40	1175	55.6	1079.5	1049.3	1003.3	997.0	990.6	128.5	1019.0	9.7	1120.6	44	28.4	330.7 (150.14)
42	1226	58.7	1130.3	1101.9	1054.1	1047.8	1041.4	133.4	1069.8	11.2	1171.4	48	28.4	363.8 (165.17)
44	1276	60.5	1181.1	1152.7	1104.9	1098.6	1092.2	136.7	1120.6	11.2	1222.2	52	31.8	440.9 (200.17)
46	1341	62.0	1234.9	1205.0	1155.7	1149.4	1143.0	144.5	1171.4	11.2	1284.2	40	31.8	463.0 (210.20)
48	1392	65.0	1289.1	1257.3	1206.5	1200.2	1193.8	149.4	1222.2	11.2	1335.0	44	31.8	529.1 (240.21)
50	1442	68.3	1339.9	1308.1	1257.3	1251.0	1244.6	153.9	1273.0	11.2	1385.8	48	31.8	552.4 (250.27)
52	1494	69.9	1390.7	1360.4	1308.1	1301.8	1295.4	157.2	1323.8	11.2	1436.6	52	31.8	585.9 (265.77)
54	1549	71.4	1441.5	1412.7	1358.9	1352.6	1346.2	162.1	1374.6	11.2	1492.3	56	31.8	683.4 (310.26)
56	1600	73.2	1492.3	1465.3	1409.7	1403.4	1397.0	166.6	1425.4	14.2	1543.1	60	31.8	674.8 (306.08)
58	1675	74.7	1543.1	1516.1	1460.5	1454.2	1447.8	174.8	1476.2	14.2	1611.4	48	35.1	810.6 (367.76)
60	1726	76.2	1600.2	1570.0	1511.3	1505.0	1498.6	179.3	1527.0	14.2	1662.2	52	35.1	903.9 (410.37)

Notes :
(1) 'Bore' (B_1) of flanges is shall be specified by the purchaser.
(2) Class 75 flanges will be furnished with 0.06″ (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T_1).

CLASS 300 FLANGES

ASME B 16.47 SER B(API 605)



Unit:mm

Nominal Pipe Size	Outside Diam.	Thickness	O.D. of Raised Face	Diam at Base of Hub	Bore			Length Through Hub	Diam of Hub at Bevel	Radius at Base of Hub	DRILLING			Approximate Weight Pounds(kg)
					Wall Thickness						Bolt Circle Diam.	Number of Holes	Diam. of Holes	
					6.35mm	9.5mm	12.7mm							
	D	t	g	X	B_1			T_1	A	r	C	N	h	
26	867	88.9	736.6	701.5	647.7	641.4	635.0	144.5	665.2	14.2	803.1	32	35.1	440.9 (200.17)
28	921	88.9	787.4	755.7	698.5	692.2	685.8	149.4	716.0	14.2	857.3	36	35.1	463.0 (210.20)
30	991	93.7	844.6	812.8	749.3	743.0	736.6	158.0	768.4	14.2	920.8	36	38.1	595.2 (270.22)
32	1054	103.1	901.7	863.6	800.1	793.8	787.4	168.1	819.2	15.7	977.9	32	41.1	727.5 (330.29)
34	1108	103.1	952.5	917.4	850.9	844.6	838.2	173.0	870.0	15.7	1031.7	36	41.1	793.7 (360.34)
36	1171	103.1	1009.7	965.2	901.7	895.4	889.0	180.8	920.8	15.7	1089.2	32	44.5	903.9 (410.37)
38	1222	111.3	1060.5	1016.0	952.5	946.2	939.8	192.0	971.6	15.7	1140.0	36	44.5	1256.6 (570.50)
40	1273	115.8	1114.6	1066.8	1003.3	997.0	990.6	198.4	1022.4	15.7	1190.8	40	44.5	1455.0 (660.57)
42	1334	119.1	1168.4	1117.6	1054.1	1047.8	1041.4	204.7	1074.7	15.7	1244.6	36	47.8	1587.3 (720.63)
44	1384	127.0	1219.2	1173.2	1104.9	1098.6	1092.2	214.4	1125.5	15.7	1295.4	40	47.8	1763.7 (800.72)
46	1461	128.5	1270.0	1128.9	1155.7	1149.4	1143.0	222.3	1176.3	15.7	1365.3	36	50.8	2138.5 (970.88)
48	1511	128.5	1327.2	1277.9	1206.5	1200.2	1193.8	223.8	1227.1	15.7	1416.1	40	50.8	2182.5 (990.86)
50	1562	138.2	1378.0	1330.5	1257.3	1251.0	1244.6	235.0	1277.9	15.7	1466.9	44	50.8	2308.2 (1047.92)
52	1613	142.7	1428.8	1382.8	1308.1	1301.8	1295.4	242.8	1328.7	15.7	1517.7	48	50.8	2453.3 (1113.79)
54	1673	136.7	1479.6	1435.1	1358.9	1352.6	1346.2	239.8	1379.5	15.7	1577.8	48	50.8	2557.3 (1161.01)
56	1765	153.9	1536.7	1493.8	1409.7	1403.4	1397.0	268.2	1422.4	17.5	1651.0	36	60.5	2942.9 (1336.07)
58	1827	153.9	1593.9	1547.9	1460.5	1454.2	1447.8	274.6	1481.1	17.5	1712.0	40	60.5	3144.5 (1427.60)
60	1878	150.9	1651.0	1598.7	1511.3	1505.0	1498.6	271.5	1531.9	17.5	1763.8	40	60.5	3196.7 (1451.30)

Notes :

(1) 'Bore' (B_1) of flanges is shall ve specified by the purchaser.

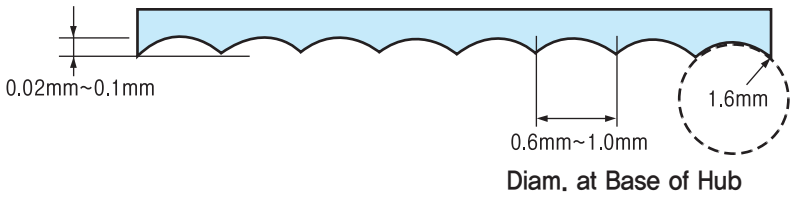
(2) Class 300 flanges will be furnished with 0.06″ (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub' (T_1).

FINISH & TOLERANCE

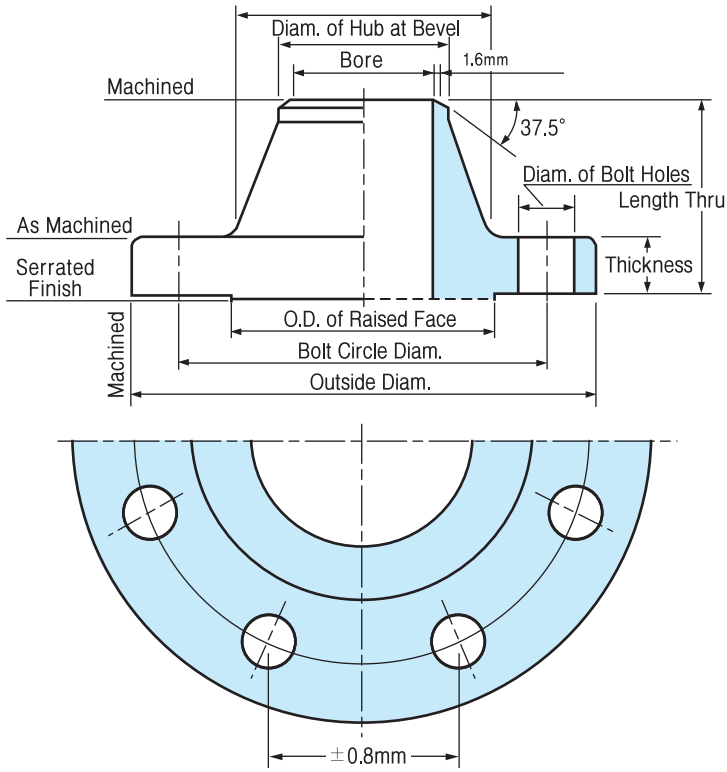
API 605 FORGED FLANGES

1. Standard Finishes for Contact Face of Flanges

The flange face shall have a serrated finish consistig of 20 to 40 grooves per inch, 0.002inch to 0.005 inch deep, cut spirally or concentrically with a round-nose tool.



2. Dimensional Tolerances for API 605 Flange



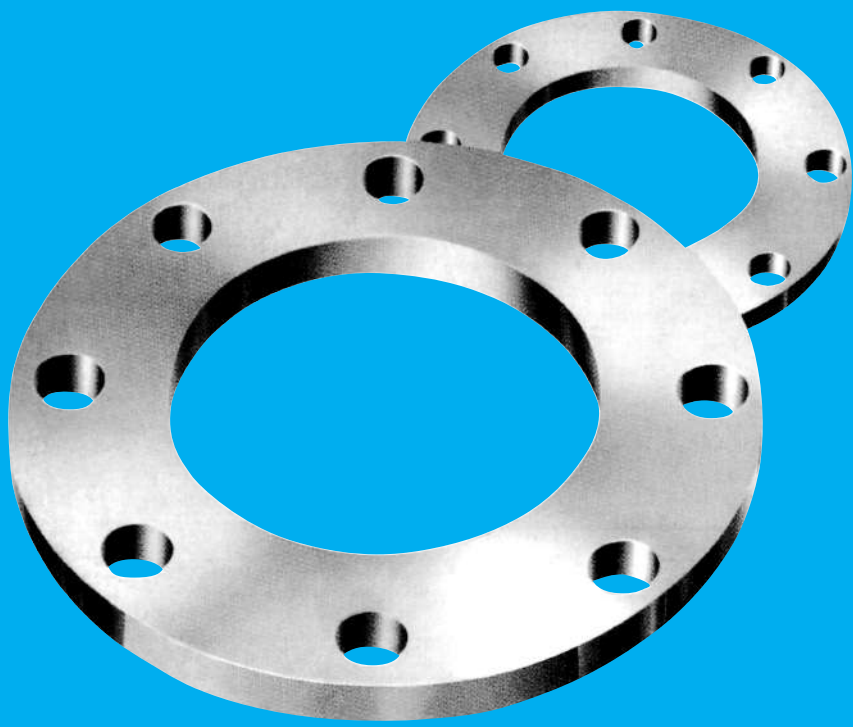
Notes :

(1) Flanges shall have bearing surfaces for bolting that are parallel to the flange face within 1 degree. Any back facing or spot facing required to accomplish parallelism between the flange face and nut bearing surface on the back of the flange shall not reduce the flange thickness.
(2) Tolerances for the welding end of a welding neck flange shall be in coformance with ASME B12.25
(3) Other tolerances than specified the table shall be in accordances with ASME B16.5
(4) The flange shall be either back-faced or spot-faced at the bolt-holes on the flange back if the nut bearing surface at the back of the flange is not parallel with the flange face within the tolerances listed in Note (1), if the fillet at the hub interferes with the nut bearing surface of if the flange thickness exceeds the minimum required thickness by more than 0.19 inch(4.8mm) The nut bearing surface is the spot-facing diameter at the bolt-holes as given in MSS SP-9. Spot-facing shall be in accordance with MSS SP-9
(5) Tolerances marked * are not covered in ASME B16.47 SER.B

Range	Tolerance (mm)
Outside diameter of Raised Face	±0.8 (±0.03in)
Flange Thickness	+4.8 (+0.19in) −0.0 (−0.00in)
Length Thru Hub	±3.2 (±0.12in)
Diameter of Hub at Bevel	+4.0 (+0.16in) −0.8 (−0.03in)
Bolt Circle Diameter	±1.6 (±0.06in)
Center to Center of adjacent bolt holes	±0.8 (±0.03in)
Bore	±3.0 (±0.12in) −1.6 (−0.06in)
Outside diameter	±3.2 (±0.12in)*
Diameter of Base of Hub	±3.0 (±0.12in)*

ASME B16.47-2006 TOLERANCE

Place	Range	Tolerance (mm)
Outside Diameter		±3.2* (±0.125in*)
Inside Diameter		+3.0 (+0.12in) −2.0 (−0.06in)
Facing	Outside diameter of Raised Face	±2.0 (±0.08in)
	2.0mm Raised Face	±0.5 (±0.02in)
	7.0mm Raised Face	±2.0 (±0.08in)
Diameter of Hub at Base		±3.2* (±0.125in*)
Diameter of Hub at Welding Point		+5.0 (+0.19in) −2.0 (−0.06in)
Drilling		±1.5 (±0.06in)
		±0.8(±0.03in)
		±1.5 (±0.06in)
Thickness	t ≤ 25mm (1.0in)	+3.0 (+0.12in) −0.0 (−0.00in)
	25mm (1.0in) 〈 t ≤ 50mm (2.0in)	+5.0(+0.19in) −0.0 (−0.00in)
	50mm (2.0in) 〈 t ≤ 75mm (3.0in)	+8.0 (+0.31in) −0.0 (−0.00in)
	t 〉 75mm (3.0in)	+10.0 (+0.38in) −0.0 (−0.00in)
Length Thru Hub		+3.0 (+0.12in) −5.0 (−0.19in)

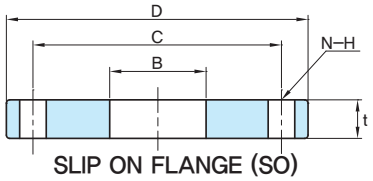


AWWA C207
FLANGES

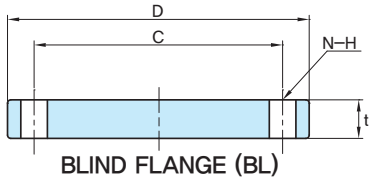
- CLASS B & D (RING FLANGES)
- CLASS D (HUB FLANGES)
- CLASS E (HUB FLANGES)
- CLASS E (RING FLANGES)
- CLASS F (RING FLANGES)
- TOLERANCE

TABLE 2 CLASS B & D

AWWA STANDARD STEEL RING FLANGES, CLASS B (86 PSI) AND CLASS D (175–150 PSI)



SLIP ON FLANGE (SO)



BLIND FLANGE (BL)

AWWA C207

Unit : mm

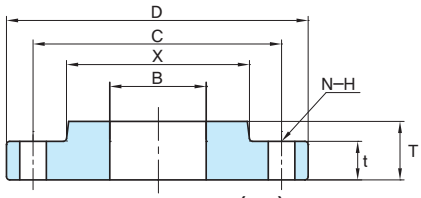
NPS	OD of Flange	ID of Flange	Thickness of Flange				Drilling			
			Class B		Class D		BCD	Number of Bolt Holes	Diam. Of Bolt Hole	Diam. of Bolt (Inch)
			SO	BL	SO	BL				
	D	B	t	t	t	t	C	N	H	
4	228.60	116.08	15.88	15.88	15.88	15.88	190.50	8	19.05	0.625
5	254.00	143.76	15.88	15.88	15.88	16.51	215.90	8	22.23	0.750
6	279.40	170.69	17.48	17.48	17.48	17.59	241.30	8	22.23	0.750
8	342.90	221.49	17.48	17.48	17.48	20.62	298.45	8	22.23	0.750
10	406.40	276.35	17.48	17.48	17.48	24.21	361.95	12	25.40	0.875
12	482.60	327.15	17.48	18.26	20.62	28.37	431.80	12	25.40	0.875
14	533.40	360.43	17.48	20.10	23.83	28.78	476.25	12	28.58	1.000
16	596.90	411.23	17.48	22.66	25.40	32.13	539.75	16	28.58	1.000
18	635.00	462.03	17.48	24.13	26.97	33.81	577.85	16	31.75	1.125
20	698.50	512.83	17.48	26.42	28.58	36.77	635.00	20	31.75	1.125
22	749.30	563.63	19.05	28.74	30.18	39.83	692.15	20	34.93	1.250
24	812.80	614.43	19.05	30.89	31.75	42.18	749.30	20	34.93	1.250
26	869.95	To be specified by Purchaser (1)	20.62	33.20	33.32	45.37	806.45	24	34.93	1.250
28	927.10		22.23	35.50	33.32	48.40	863.60	28	34.93	1.250
30	984.25		22.23	37.53	34.93	51.00	914.40	28	34.93	1.250
32	1,060.45		23.83	40.16	38.10	54.60	977.90	28	41.28	1.500
34	1,111.25		23.83	42.19	38.10	57.21	1,028.70	32	41.28	1.500
36	1,168.40		25.40	44.48	41.28	60.20	1,085.85	32	41.28	1.500
38	1,238.25		25.40	47.06	41.28	63.66	1,149.35	32	41.28	1.500
40	1,289.05		25.40	49.09	41.28	66.28	1,200.15	36	41.28	1.500
42	1,346.20		28.58	51.40	44.45	69.32	1,257.30	36	41.28	1.500
44	1,403.35		28.58	53.70	44.45	72.36	1,314.45	40	41.28	1.500
46	1,454.15		28.58	55.73	44.45	74.99	1,365.25	40	41.28	1.500
48	1,511.30		31.75	58.03	47.63	78.03	1,422.40	44	41.28	1.500
50	1,568.45		31.75	60.38	50.80	81.17	1,479.55	44	47.63	1.750
52	1,625.60		31.75	62.69	50.80	84.21	1,536.70	44	47.63	1.750
54	1,682.75		34.93	64.99	53.98	87.25	1,593.85	44	47.63	1.750
60	1,854.20		38.10	71.63	57.15	95.97	1,758.95	52	47.63	1.750
66	2,032.00		41.28	78.53	63.50	105.06	1,930.40	52	47.63	1.750
72	2,197.10		44.45	85.17	66.68	113.80	2,095.50	60	47.63	1.750
78	2,362.20		50.80	–	69.85	–	2,260.60	64	53.98	2.000
84	2,533.65		50.80	–	73.03	–	2,425.70	64	53.98	2.000
90	2,705.10		57.15	–	76.20	–	2,590.80	68	61.91	2.250
96	2,876.55		57.15	–	82.55	–	2,755.90	68	61.91	2.250
102	3,048.00		63.50	–	82.55	–	2,908.30	72	68.26	2.500
108	3,219.45		63.50	–	85.73	–	3,067.05	72	68.26	2.500
114	3,390.90		69.85	–	88.90	–	3,219.45	76	74.61	2.750
120	3,562.35		69.85	–	88.90	–	3,371.85	76	74.61	2.750
126	3,733.80		76.20	–	95.25	–	3,536.95	80	80.96	3.000
132	3,905.25		76.20	–	98.43	–	3,702.05	80	80.96	3.000
144	4,248.15		82.55	–	104.78	–	4,019.55	84	87.31	3.250

Notes :

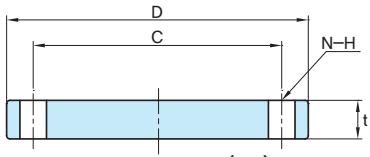
(1) The purchser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and larger. The diamater of the flange bore shall not exceed the pipe OD by more than 6.35mm (0.25in).

TABLE 3 CLASS D

AWWA STANDARD STEEL HUB FLANGES, CLASS D (175–150 PSI)



SLIP ON FLANGE (SO)



BLIND FLANGE (BL)

AWWA C207

Unit : mm

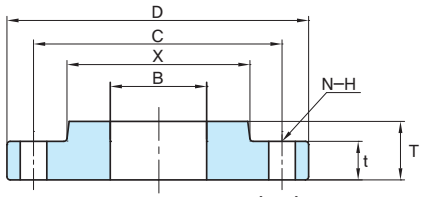
NPS	OD of Flange	ID of Flange	Thickness of Flange		Length Through Hub	Diameter of Hub	Drilling			
			SO	BL			BCD	Number of Bolt Holes	Diam. Of Bolt Hole	Diam. of Bolt (Inch)
	D	B	t	t	T	X	C	N	H	
4	228.60	116.08	12.70	15.88	22.23	134.92	190.50	8	19.05	0.625
5	254.00	143.76	14.27	16.51	31.75	160.32	215.90	8	22.23	0.750
6	279.40	170.69	14.27	17.59	31.75	192.07	241.30	8	22.23	0.750
8	342.90	221.49	14.27	20.62	31.75	246.08	298.45	8	22.23	0.750
10	406.40	276.35	17.48	24.21	31.75	304.80	361.95	12	25.40	0.875
12	482.60	327.15	17.48	28.37	31.75	365.13	431.80	12	25.40	0.875
14	533.40	360.43	19.05	28.78	31.75	400.05	476.25	12	28.58	1.000
16	596.90	411.23	19.05	32.13	31.75	457.20	539.75	16	28.58	1.000
18	635.00	462.03	19.05	33.81	31.75	504.83	577.85	16	31.75	1.125
20	698.50	512.83	19.05	36.77	31.75	558.80	635.00	20	31.75	1.125
22	749.30	563.63	25.40	39.83	44.45	615.95	692.15	20	34.93	1.250
24	812.80	614.43	25.40	42.18	44.45	663.58	749.30	20	34.93	1.250
26	869.95	665.23	25.40	45.37	44.45	723.90	806.45	24	34.93	1.250
28	927.10	716.03	25.40	48.40	44.45	774.70	863.60	28	34.93	1.250
30	984.25	766.83	25.40	51.00	44.45	825.50	914.40	28	34.93	1.250
32	1,060.45	817.63	28.58	54.60	44.45	882.65	977.90	28	41.28	1.500
34	1,111.25	868.43	28.58	57.21	44.45	933.45	1,028.70	32	41.28	1.500
36	1,168.40	919.23	28.58	60.20	44.45	984.25	1,085.85	32	41.28	1.500
38	1,238.25	970.03	28.58	63.66	44.45	1,035.05	1,149.35	32	41.28	1.500
40	1,289.05	1,020.83	28.58	66.28	44.45	1,092.20	1,200.15	36	41.28	1.500
42	1,346.20	1,071.63	31.75	69.32	44.45	1,143.00	1,257.30	36	41.28	1.500
44	1,403.35	1,122.43	31.75	72.36	57.15	1,193.80	1,314.45	40	41.28	1.500
46	1,454.15	1,173.23	31.75	74.99	57.15	1,244.60	1,365.25	40	41.28	1.500
48	1,511.30	1,224.03	34.93	78.03	63.50	1,295.40	1,422.40	44	41.28	1.500
50	1,568.45	1,274.83	34.93	81.17	63.50	1,346.20	1,479.55	44	47.63	1.750
52	1,625.60	1,325.63	34.93	84.21	63.50	1,397.00	1,536.70	44	47.63	1.750
54	1,682.75	1,376.43	34.93	87.25	63.50	1,447.80	1,593.85	44	47.63	1.750
60	1,854.20	1,528.83	38.10	95.97	69.85	1,600.20	1,758.95	52	47.63	1.750
66	2,032.00	1,681.23	38.10	105.06	69.85	1,752.60	1,930.40	52	47.63	1.750
72	2,197.10	1,833.63	38.10	113.80	69.85	1,905.00	2,095.50	60	47.63	1.750
78	2,362.20	1,986.03	44.45	–	76.20	2,063.75	2,260.60	64	53.98	2.000
84	2,533.65	2,138.43	44.45	–	76.20	2,222.50	2,425.70	64	53.98	2.000
90	2,705.10	2,290.83	50.80	–	82.55	2,381.25	2,590.80	68	61.91	2.250
96	2,876.55	2,443.23	50.80	–	82.55	2,540.00	2,755.90	68	61.91	2.250

Notes :

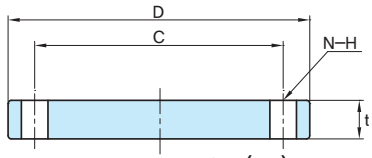
(1) For Slip On Flanges (Hub Type Flange), the hub can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

TABLE 4 CLASS E

AWWA STANDARD STEEL HUB FLANGES, CLASS E (275 PSI)



SLIP ON FLANGE (SO)



BLIND FLANGE (BL)

AWWA C207

Unit : mm

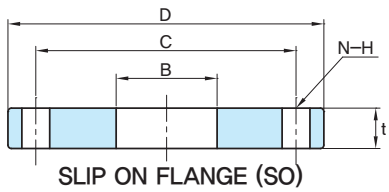
NPS	OD of Flange	ID of Flange	Thickness of Flange		Length Through Hub	Diameter of Hub	Drilling			
			SO	BL			BCD	Number of Bolt Holes	Diam. Of Bolt Hole	Diam. of Bolt (Inch)
	D	B	t	t	T	X	C	N	H	
4	228.60	116.08	23.83	28.58	33.32	134.92	190.50	8	19.05	0.625
5	254.00	143.76	23.83	30.18	36.53	163.53	215.90	8	22.23	0.750
6	279.40	170.69	25.40	33.35	39.67	192.07	241.30	8	22.23	0.750
8	342.90	221.49	28.58	38.10	44.45	246.08	298.45	8	22.23	0.750
10	406.40	276.35	30.18	39.70	49.23	304.80	361.95	12	25.40	0.875
12	482.60	327.15	31.75	44.45	55.58	365.13	431.80	12	25.40	0.875
14	533.40	360.43	34.93	47.63	57.15	400.05	476.25	12	28.58	1.000
16	596.90	411.23	36.53	50.80	63.50	457.20	539.75	16	28.58	1.000
18	635.00	462.03	39.67	53.98	68.28	504.83	577.85	16	31.75	1.125
20	698.50	512.83	42.88	60.33	73.03	558.80	635.00	20	31.75	1.125
22	749.30	563.63	46.02	63.50	79.38	609.60	692.15	20	34.93	1.250
24	812.80	614.43	47.63	66.68	82.55	663.58	749.30	20	34.93	1.250
26	869.95	665.23	50.80	69.85	85.73	723.90	806.45	24	34.93	1.250
28	927.10	716.03	52.37	69.85	87.33	781.05	863.60	28	34.93	1.250
30	984.25	766.83	53.98	73.03	88.90	831.85	914.40	28	34.93	1.250
32	1,060.45	817.63	57.15	76.20	92.08	889.00	977.90	28	41.28	1.500
34	1,111.25	868.43	58.72	77.46	93.68	939.80	1,028.70	32	41.28	1.500
36	1,168.40	919.23	60.33	81.51	95.25	996.95	1,085.85	32	41.28	1.500
38	1,238.25	970.03	60.33	86.20	95.25	1,060.45	1,149.35	32	41.28	1.500
40	1,289.05	1,020.83	63.50	89.74	98.43	1,111.25	1,200.15	36	41.28	1.500
42	1,346.20	1,071.63	66.68	93.86	101.60	1,168.40	1,257.30	36	41.28	1.500
44	1,403.35	1,122.43	66.68	97.97	101.60	1,219.20	1,314.45	40	41.28	1.500
46	1,454.15	1,173.23	68.28	101.53	103.17	1,270.00	1,365.25	40	41.28	1.500
48	1,511.30	1,224.03	69.85	105.65	104.78	1,327.15	1,422.40	44	41.28	1.500
50	1,568.45	1,274.83	69.85	109.90	104.78	1,377.95	1,479.55	44	47.63	1.750
52	1,625.60	1,325.63	73.03	114.02	107.95	1,435.10	1,536.70	44	47.63	1.750
54	1,682.75	1,376.43	76.20	118.14	111.13	1,492.25	1,593.85	44	47.63	1.750
60	1,854.20	1,528.83	79.38	129.95	114.30	1,657.35	1,758.95	52	47.63	1.750
66	2,032.00	1,681.23	85.73	142.26	123.83	1,816.10	1,930.40	52	47.63	1.750
72	2,197.10	1,833.63	88.90	154.08	127.00	1,993.90	2,095.50	60	47.63	1.750
78	2,362.20	1,986.03	98.43	–	136.53	2,146.30	2,260.60	64	53.98	2.000
84	2,533.65	2,138.43	98.43	–	136.53	2,298.70	2,425.70	64	53.98	2.000
90	2,705.10	2,290.83	107.95	–	146.05	2,457.45	2,590.80	68	61.91	2.250
96	2,876.55	2,443.23	107.95	–	146.05	2,609.85	2,755.90	68	61.91	2.250

Notes :

(1) For Slip On Flanges (Hub Type Flange), the hub can be shaped either vertical from base to top or tapered within the limits of 7 degrees.

TABLE 4 CLASS E

AWWA STANDARD STEEL RING FLANGES, CLASS E (275 PSI)



SLIP ON FLANGE (SO)

AWWA C207

Unit : mm

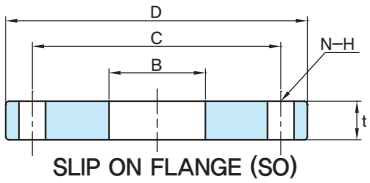
NPS	OD of Flange	ID of Flange	Thickness of Flange (SO)	Drilling			
				BCD	Number of Bolt Holes	Diam. Of Bolt Hole	Diam. of Bolt (Inch)
	D	B	t	C	N	H	
4	228.60	116.08	28.58	190.50	8	19.05	0.625
5	254.00	143.76	30.18	215.90	8	22.23	0.750
6	279.40	170.69	33.35	241.30	8	22.23	0.750
8	342.90	221.49	38.10	298.45	8	22.23	0.750
10	406.40	276.35	39.70	361.95	12	25.40	0.875
12	482.60	327.15	44.45	431.80	12	25.40	0.875
14	533.40	360.43	47.63	476.25	12	28.58	1.000
16	596.90	411.23	50.80	539.75	16	28.58	1.000
18	635.00	462.03	53.98	577.85	16	31.75	1.125
20	698.50	512.83	60.33	635.00	20	31.75	1.125
22	749.30	563.63	63.50	692.15	20	34.93	1.250
24	812.80	614.43	66.68	749.30	20	34.93	1.250
26	869.95	To be specified by Purchaser (1)	69.85	806.45	24	34.93	1.250
28	927.10		69.85	863.60	28	34.93	1.250
30	984.25		73.03	914.40	28	34.93	1.250
32	1,060.45		76.20	977.90	28	41.28	1.500
34	1,111.25		76.20	1,028.70	32	41.28	1.500
36	1,168.40		79.38	1,085.85	32	41.28	1.500
38	1,238.25		79.38	1,149.35	32	41.28	1.500
40	1,289.05		82.55	1,200.15	36	41.28	1.500
42	1,346.20		85.73	1,257.30	36	41.28	1.500
44	1,403.35		85.73	1,314.45	40	41.28	1.500
46	1,454.15		87.33	1,365.25	40	41.28	1.500
48	1,511.30		88.90	1,422.40	44	41.28	1.500
50	1,568.45		88.90	1,479.55	44	47.63	1.750
52	1,625.60		92.08	1,536.70	44	47.63	1.750
54	1,682.75		95.25	1,593.85	44	47.63	1.750
60	1,854.20		98.43	1,758.95	52	47.63	1.750
66	2,032.00		107.95	1,930.40	52	47.63	1.750
72	2,197.10		111.13	2,095.50	60	47.63	1.750
78	2,362.20		120.65	2,260.60	64	53.98	2.000
84	2,533.65		120.65	2,425.70	64	53.98	2.000
90	2,705.10		130.18	2,590.80	68	61.91	2.250
96	2,876.55		130.18	2,755.90	68	61.91	2.250
102	3,048.00		139.70	2,908.30	72	68.26	2.500
108	3,219.45		139.70	3,067.05	72	68.26	2.500
114	3,390.90		149.23	3,219.45	76	74.61	2.750
120	3,562.35		149.23	3,371.85	76	74.61	2.750
126	3,733.80		158.75	3,536.95	80	80.96	3.000
132	3,905.25		158.75	3,702.05	80	80.96	3.000
144	4,248.15		171.45	4,019.55	84	87.31	3.250

Notes :

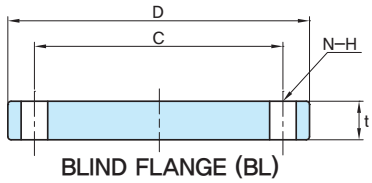
(1) The Purchaser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and larger. The Diam. of the flange bore shall not exceed the pipe OD by more than 6.35mm (0.25 in).

TABLE 5 CLASS F

AWWA STANDARD STEEL RING FLANGES, CLASS F (300 PSI)



SLIP ON FLANGE (SO)



BLIND FLANGE (BL)

AWWA C207

Unit : mm

NPS	OD of Flange	ID of Flange	Thickness of Flange		Drilling			
			SO	BL	BCD	Number of Bolt Holes	Diam. Of Bolt Hole	Diam. of Bolt (Inch)
	D	B	t	t	C	N	H	
4	254.00	116.08	28.70	28.70	200.15	8	22.23	0.750
5	279.40	143.76	30.73	30.73	234.95	8	22.23	0.750
6	317.50	170.94	33.27	33.27	269.75	12	22.23	0.750
8	381.00	221.74	33.27	33.27	330.20	12	25.40	0.875
10	444.50	276.35	38.10	38.10	387.35	16	28.58	1.000
12	520.70	327.15	41.40	41.40	450.85	16	31.75	1.125
14	584.20	360.43	49.28	49.28	514.35	20	31.75	1.125
16	647.70	411.23	54.36	54.36	571.50	20	34.93	1.250
18	711.20	462.03	57.15	57.15	628.65	24	34.93	1.250
20	774.70	512.83	59.18	59.18	685.80	24	34.93	1.250
22	838.20	563.63	63.50	63.50	742.95	24	34.93	1.250
24	914.40	614.43	68.33	68.53	812.80	24	41.28	1.500
26	971.55	To be specified by Purchaser (1)	76.20	76.20	876.30	28	47.63	1.750
28	1,035.05		79.50	79.50	939.80	28	47.63	1.750
30	1,092.20		80.01	80.42	996.95	28	47.63	1.750
32	1,149.35		82.55	84.62	1,054.10	28	47.63	1.750
34	1,206.50		85.85	88.25	1,104.90	28	47.63	1.750
36	1,270.00		87.88	93.25	1,168.40	32	53.98	2.000
38	1,327.15		88.90	96.90	1,219.20	32	53.98	2.000
40	1,377.95		92.20	101.40	1,276.35	36	53.98	2.000
42	1,447.80		96.77	105.92	1,339.85	36	53.98	2.000
44	1,504.95		101.60	110.19	1,397.00	36	53.98	2.000
46	1,562.10		104.90	114.43	1,454.15	40	53.98	2.000
48	1,651.00		114.30	121.44	1,543.05	40	53.98	2.000

Notes :

(1) The Purchaser shall specify the ID of the flange, dimension B, for nominal pipe sizes 26 in. and larger.
The Diam. of the flange bore shall not exceed the pipe OD by more than 6.35mm (0.25 in).

TOLERANCE & FACING

AWWA C207 FLANGES

1) Tolerance

Dimension		Tolerance
Bore		+1.6, −0
Outside diameter		±3.2
Thickness	18 in. and smaller	+3.2, −0
	20 in. and larger	+4.8, −0
Length through hub	18 in. and smaller	+3.2, −0.79
	20 in. and larger	+4.8, −1.6
Bolt circle diameter	BCD	±1.6
Bolt–hole spacing		±0.79

2) Facing

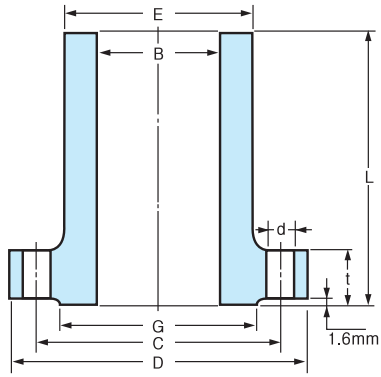
(1) Flanges of all classes shall be flat faced.
(2) Either a serrated concentric or serrated spiral finish having 24 to 54 grooves/in. (0.94 to 2.17 grooves/mm) shall be used. The cutting tool used shall have a radius of 0.06in. (1.52mm) or larger.
(3) The resultant surface finish shall have a 250 to 500 μ inch (6.35 to 12.7 μ meter) roughness.

LONG WELDING NECKS FLANGES

- Class 150 FLANGES
- Class 300 FLANGES
- Class 400 FLANGES
- Class 600 FLANGES
- Class 900 FLANGES
- Class 1500 FLANGES
- Class 2500 FLANGES

CLASS 150 FLANGES

LONG WELDING NECKS



Unit : mm

Nominal Pipe Size	Outside Diameter	Thickness of Flange Min.	O.D. of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1/2	89	35.1	30.2	12.7	11.2	228.6	60.5	4	15.7
3/4	99	42.9	38.1	19.1	12.7	228.6	69.9	4	15.7
1	108	50.8	50.8	25.4	14.2	228.6	79.2	4	15.7
1 1/4	117	63.5	60.5	31.8	15.7	228.6	88.9	4	15.7
1 1/2	127	73.2	66.5	38.1	17.5	228.6	98.6	4	15.7
2	152	91.9	82.6	50.8	19.1	228.6	120.7	4	19.1
2 1/2	178	104.6	95.3	63.5	22.4	228.6	139.7	4	19.1
3	191	127.0	108.0	76.2	23.9	228.6	152.4	4	19.1
3 1/2	216	139.7	124.0	88.9	23.9	228.6	177.8	8	19.1
4	229	157.2	139.7	101.6	23.9	304.8	190.5	8	19.1
5	254	185.7	165.1	127.0	23.9	304.8	215.9	8	22.4
6	279	215.9	196.9	152.4	25.4	304.8	241.3	8	22.4
8	343	269.7	247.7	203.2	28.4	304.8	298.5	8	22.4
10	406	323.9	304.8	254.0	30.2	304.8	362.0	12	25.4
12	483	381.0	365.3	304.8	31.8	304.8	431.8	12	25.4
14	533	412.8	406.4	355.6	35.1	304.8	476.3	12	28.4
16	597	469.9	457.2	406.4	36.6	304.8	539.8	16	28.4
18	635	533.4	508.0	457.2	39.6	304.8	577.9	16	31.8
20	699	584.2	558.8	508.0	42.9	304.8	635.0	20	31.8
24	813	692.2	666.8	609.6	47.8	304.8	749.3	20	35.1

CLASS 300 FLANGES

LONG WELDING NECKS

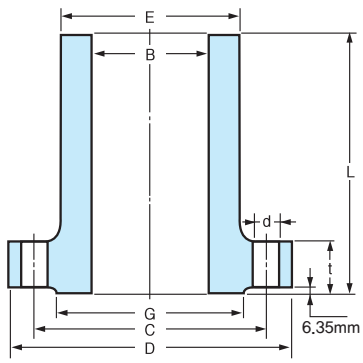
Unit : mm

Nominal Pipe Size	Outside Diameter	Hub Diameter at Bevel	O.D. of Raised Face	Thickness of Flange Min.	Diameter of Bore	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	t	B	L	C		d
1/2	95	38.1	35.1	14.2	12.7	228.6	66.5	4	15.7
3/4	117	47.8	42.9	15.7	19.1	228.6	82.6	4	19.1
1	124	53.8	50.8	17.5	25.4	228.6	88.9	4	19.1
1 1/4	133	63.5	63.5	19.1	31.8	228.6	98.6	4	19.1
1 1/2	155	69.9	73.2	20.6	38.1	228.6	114.3	4	22.4
2	165	84.1	91.9	22.4	50.8	228.6	127.0	8	19.1
2 1/2	191	100.1	104.6	25.4	63.5	228.6	149.4	8	22.4
3	210	117.3	127.0	28.4	76.2	228.6	168.1	8	22.4
3 1/2	229	133.4	139.7	30.2	88.9	228.6	184.2	8	22.4
4	254	146.1	157.2	31.8	101.6	304.8	200.2	8	22.4
5	279	177.8	185.7	35.1	127.0	304.8	235.0	8	22.4
6	318	206.2	215.9	36.6	152.4	304.8	269.7	12	22.4
8	381	260.4	269.7	41.1	203.2	304.8	330.2	12	25.4
10	445	320.5	323.9	47.8	254.0	304.8	387.4	16	28.4
12	521	374.7	381.0	50.8	304.8	304.8	450.9	16	31.8
14	584	425.5	412.8	53.8	355.6	304.8	514.4	20	31.8
16	648	482.6	469.9	57.2	406.4	304.8	571.5	20	35.1
18	711	533.4	533.4	60.5	457.2	304.8	628.7	24	35.1
20	775	587.2	584.2	63.5	508.0	304.8	685.8	24	35.1
24	914	701.5	692.2	69.9	609.6	304.8	812.8	24	41.1

Notes :
(1) Bore (B) is the same as nominal pipe size.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 400 FLANGES

LONG WELDING NECKS



Unit : mm

Nominal Pipe Size	Outside Diameter	Thickness of Flange Min.	O.D. of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Length Through Hub	Length DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1 1 1/4 1 1/2 2 2 1/2 3 3 1/2	Use Class 600 dimensions in the these sizes.								
4	254	157.2	146.1	101.6	35.1	304.8	200.2	8	25.4
5	279	185.7	177.8	127.0	38.1	304.8	235.0	12	25.4
6	318	215.9	206.2	152.4	41.1	304.8	269.7	12	25.4
8	381	269.7	260.4	203.2	47.8	304.8	330.2	12	28.4
10	445	323.9	320.5	254.0	53.8	304.8	387.4	16	31.8
12	521	381.0	374.7	304.8	57.2	304.8	450.9	16	35.1
14	584	412.8	425.5	355.6	60.5	304.8	514.4	20	35.1
16	648	469.9	482.4	406.4	63.5	304.8	571.5	24	38.1
18	711	533.4	533.4	457.2	66.5	304.8	628.7	24	38.1
20	775	584.2	587.2	508.0	69.9	304.8	685.8	24	41.1
24	914	692.2	701.5	609.6	76.2	304.8	812.8	24	47.8

CLASS 600 FLANGES

LONG WELDING NECKS

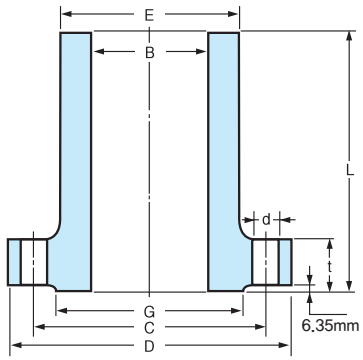
Unit : mm

Nominal Pipe Size	Outside Diameter	Thickness of Flange Min.	O.D. of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Length Through Hub	Length DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	B	t	L	C		d
1	124	53.8	50.8	25.4	17.5	228.6	88.9	4	19.1
1 1/4	133	63.5	63.5	31.8	20.6	228.6	98.6	4	19.1
1 1/2	155	69.9	73.2	38.1	22.4	228.6	114.3	4	22.4
2	165	84.1	91.9	50.8	25.4	228.6	127.0	8	19.1
2 1/2	191	100.1	104.6	63.5	28.4	228.6	149.4	8	22.4
3	210	117.3	127.0	76.2	31.8	228.6	168.1	8	22.4
3 1/2	229	133.4	139.7	88.9	35.1	228.6	184.2	8	25.4
4	273	152.4	157.2	101.6	38.1	304.8	215.9	8	25.4
5	330	190.5	185.7	127.0	44.5	304.8	266.7	8	28.4
6	356	222.3	215.9	152.4	47.8	304.8	292.1	12	28.4
8	419	273.1	269.7	203.2	55.6	304.8	349.3	12	31.8
10	508	342.9	323.9	254.0	63.5	304.8	431.8	16	35.1
12	559	400.1	381.0	304.8	66.5	304.8	489.0	20	35.1
14	603	431.8	412.8	355.6	69.9	304.8	527.1	20	38.1
16	686	495.3	469.9	406.4	76.2	304.8	603.3	20	41.1
18	743	546.1	533.4	457.2	82.6	304.8	654.1	20	44.5
20	813	609.6	584.2	508.0	88.9	304.8	723.9	24	44.5
24	940	717.6	692.2	609.6	101.6	304.8	838.2	24	50.8

Notes :
(1) Bore (B) is the same as nominal pipe size.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 900 FLANGES

LONG WELDING NECKS



Unit:mm

Nominal Pipe Size	Outside Diameter	O.D. of Raised Face	Hub Diameter at Bevel	Diameter of Bore	Thickness of Flange Min.	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	G	E	B	t	L	C		d
1 1 1/4 1 1/2 2 2 1/2	Use Class 1500 dimensions in the these sizes.								
3	241	127.0	127.0	76.2	38.1	304.8	190.5	8	25.4
4	292	157.2	158.8	101.6	44.5	304.8	235.0	8	31.8
5	349	185.7	190.5	127.0	50.8	304.8	279.4	8	35.1
6	381	215.9	235.0	152.4	55.6	304.8	317.5	12	31.8
8	470	269.7	298.5	203.2	63.5	304.8	393.7	12	38.1
10	546	323.9	368.3	254.0	69.9	406.4	469.9	16	38.1
12	610	381.0	419.1	304.8	79.2	406.4	533.4	20	38.1
14	641	412.8	450.9	355.6	85.9	To be specified by puchaser	558.8	20	41.1
16	705	469.9	508.0	406.4	88.9		616.0	20	44.5
18	787	533.4	565.2	457.2	101.6		685.8	20	50.8
20	857	584.2	622.3	508.0	108.0		749.3	20	53.8
24	1041	692.2	749.3	609.6	139.7		901.7	20	66.5

CLASS 1500 FLANGES

LONG WELDING NECKS

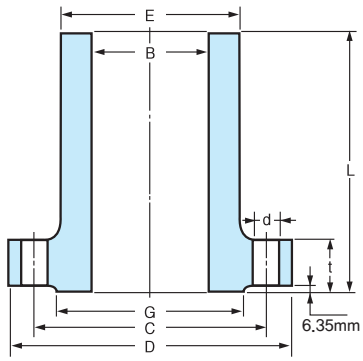
Unit:mm

Nominal Pipe Size	Outside Diameter	Hub Diameter at Bevel	O.D. of Raised Face	Thickness of Flange Min.	Diameter of Bore	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	t	B	L	C		d
1	149	52.3	50.8	28.4	25.4	228.6	101.6	4	25.4
1 1/4	159	63.5	63.5	28.4	31.8	228.6	111.3	4	25.4
1 1/2	178	69.9	73.2	31.8	38.1	228.6	124.0	4	28.4
2	216	104.6	91.9	38.1	50.8	228.6	165.1	8	25.4
2 1/2	244	124.0	104.6	41.1	63.5	304.8	190.5	8	28.4
3	267	133.4	127.0	47.8	76.2	304.8	203.2	8	31.8
4	311	162.1	157.2	53.8	101.6	304.8	241.3	8	35.1
5	375	196.9	185.7	73.2	127.0	304.8	292.1	8	41.1
6	394	228.6	215.9	82.6	152.4	304.8	317.5	12	38.1
8	483	292.1	269.7	91.9	203.2	304.8	393.7	12	44.5
10	584	368.3	323.9	108.0	254.0	406.4	482.6	12	50.8
12	673	450.9	381.0	124.0	304.8	406.4	571.5	16	53.8
14	749	495.3	412.8	133.4	355.6	To be specified by puchaser	635.0	16	60.5
16	826	552.5	469.9	146.1	406.4		704.9	16	66.5
18	914	596.9	533.4	162.1	457.2		774.7	16	73.2
20	984	641.4	584.2	177.8	508.0		831.9	16	79.2
24	1168	762.0	692.2	203.2	609.6		990.6	16	91.9

Notes :
(1) Bore (B) is the same as nominal pipe size.
(2) Welding necks longer than listed are available in all sizes on special order.

CLASS 2500 FLANGES

LONG WELDING NECKS



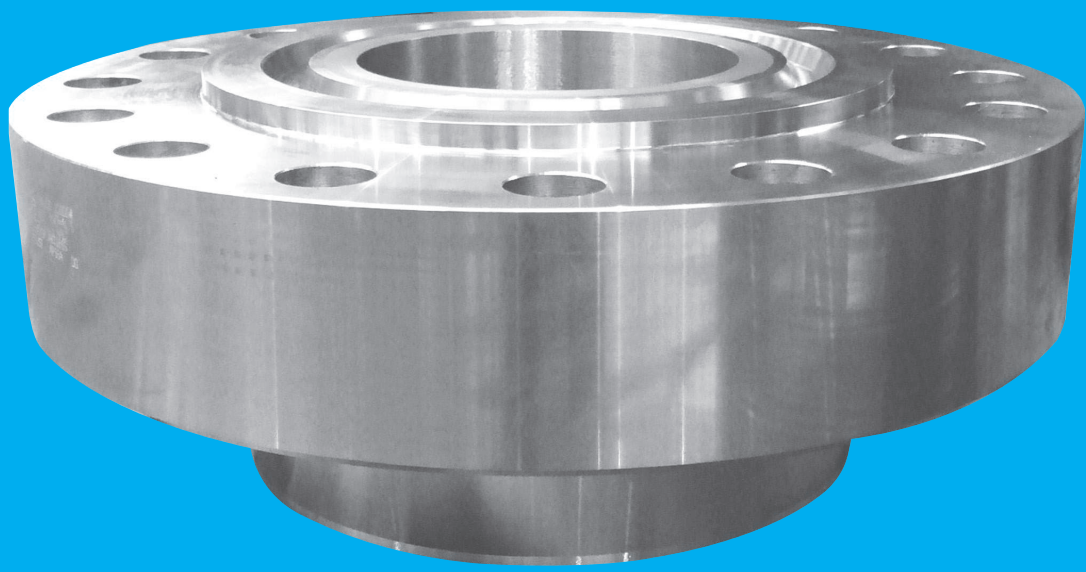
Unit : mm

Nominal Pipe Size	Outside Diameter	Hub Diameter at Bevel	O.D. of Raised Face	Thickness of Flange Min	Diameter of Bore	Length Through Hub	DRILLING		
							Diameter of Bolt Circle	Number of Holes	Diameter of Holes
	D	E	G	t	B	L	C		d
1	159	57.2	50.8	35.1	25.4	228.6	108.0	4	25.4
1 1/4	184	73.2	63.5	38.1	31.8	228.6	130.0	4	28.4
1 1/2	203	79.2	73.2	44.5	38.1	228.6	146.1	4	31.8
2	235	95.3	91.9	50.8	50.8	228.6	171.5	8	28.4
2 1/2	267	114.3	104.6	57.2	63.5	304.8	196.9	8	31.8
3	305	133.4	127.0	66.5	76.2	304.8	228.6	8	35.1
4	356	165.1	157.2	76.2	101.6	304.8	273.1	8	41.1
5	419	203.2	185.7	91.9	127.0	304.8	323.9	8	47.8
6	483	235.0	215.9	108.0	152.4	304.8	368.3	8	53.8
8	552	304.8	269.7	127.0	203.2	304.8	438.2	12	53.8
10	673	374.7	323.9	165.1	254.0	406.4	539.8	12	66.5
12	762	441.5	381.0	184.2	304.8	406.4	619.3	16	73.2

GUIDE TO MATERIAL LAYOUT & SPECIFICATIONS

Pipe	Weld Fittings	Screwed & Socket Fittings	Flanges	Valves
A-53	A-234 WPB	A-105, A-181 Gr.60 or 70	A-105, A-181 Gr.60 or 70	A-105, A-216 WCB
A-106B	A-234 WPB	A-105, A-181 Gr.60 or 70	A-105, A-181 Gr.60 or 70	A-105, A-216 WCB
A-312 T304	A-403 WP-304	A-182 F-304	A-182 F-304	A-182, F-304 CMO
A-312 T316	A-403 WP-316	A-182 F-316	A-182 F-316	A-350, F-316 CM 8MO
A-333 Gr. 1 or 6	A-420 WPL 1 & 6	A-350 LF-1	A-350 LF-1	A-350 LF-1, A-352 LCB
A-333 Gr. 3	A-420 WPL-3	A-350 LF-3	A-350 LF-3	A-350 LF-3, A-352 LC-3
A-335 P-1	A-234 WP-1	A-182 F-1	A-182 F-1	A-217 WC-6
A-335 P-11	A-234 WP-11	A-182 F-11	A-182 F-11	A-182 F-11, A-217 WC-6
A-335 P-12	A-234 WP-12	A-182 F-12	A-182 F-12	A-217 WC-6
A-335 P-22	A-234 WP-22	A-182 F-22	A-182 F-22	A-182 F-22, A-217 WC-9
A-335 P-5	A-234 WP-5	A-182 F-5	A-182 F-5	A-182 F-5, A-216 WC-5
A-335 P-7	A-234 WP-7	A-182 F-7	A-182 F-7	A-182 F-7, A-217 WC-12
A-335 P-9	A-234 WP-9	A-182 F-9	A-182 F-9	A-182 F-9, A-217 WC-12

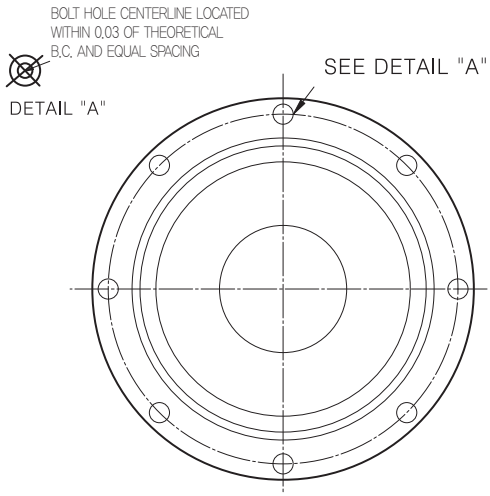
Notes :
(1) Bore (B) is the same as nominal pipe size.
(2) Welding necks longer than listed are available in all sizes on special order.



API 6A / TYPE 6B & 6BX FLANGES

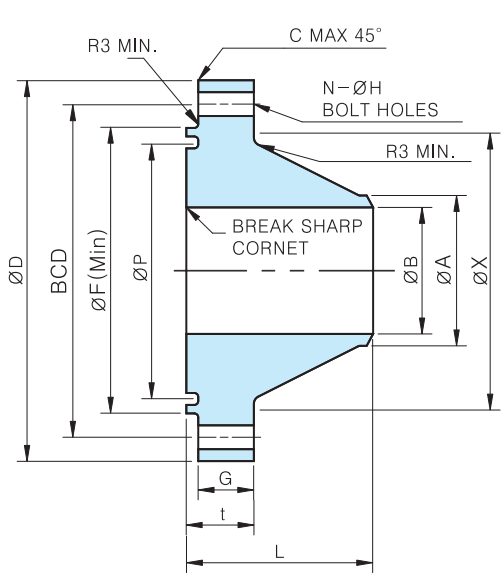
- 6B & 6Bx – 2000psi
- 6B & 6Bx – 3000psi
- 6B & 6Bx – 5000psi
- 6Bx – 10000psi
- 6Bx – 15000psi
- 6Bx – 20000psi
- TABLE 1~4

TYPE 6B & 6BX 2000psi



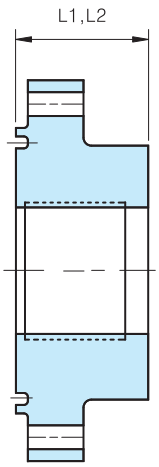
RING GROOVE MUST BE CONCENTRIC
WITH BORE WITHIN 0.010 TOTAL
INDICATOR RUNOUT

*Outside Diametr (D) TOLERANCE
−2 1/16 ~5 1/8 : ±1.52
−7 1/16 ~30 : ±3.05
*BOLT HOLE TOLERANCE (H)
−2 1/16 ~ 13 5/8: +1.52 ~ −0.51
−16 3/4 ~ 30 : +2.29 ~ −0.51
*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16 : +2.29 ~ −0.76
−5 1/8 : +2.29 ~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76



Welding Neck
Line Pipe Flange

*Large Diameer of Hub(X) TOLERANCE
−26 3/4 ~ 30 : +0 ~ −3.05
*Total Thickness(t) TOLERANCE
− ±3.05, −0
*Hub Length Welding Neck(L) TOLERANCE
− ±1.52



*L1:Hub length Threaded
Line Pipe flange

*L2:Hub Length Threaded
Casting flange

Threaded Flange

*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16: +2.29 ~ −0.76
−5 1/8 : +2.29 ~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76
−26 3/4 ~ 30 : +0 ~ 3.05

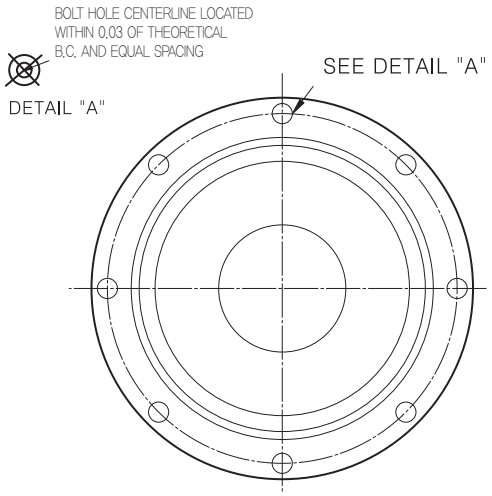
2000#

Unit:mm

Nominal Size & Bore of Flange	Outside Diam.	Max. Cham-fer	Max. Bore	Diam. of Raised Face	Total Thick.	Basic Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Hub Length	Hub Length	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No (R or RX)	Ring No. (BX)
	D	C	B	F	t	G	X	A	L	L_1	L_2	P		N	H		
2 1/16	165.10	3.0	53.09	107.95	33.27	25.40	84.07	60.45	81.03	44.45	–	82.55	127.00	8	19.05	23	–
2 9/16	190.50	3.0	65.79	127.00	36.58	28.45	100.08	73.15	87.38	49.28	–	101.60	149.35	8	22.35	26	–
3 1/8	209.55	3.0	81.79	146.05	39.62	31.75	117.35	88.90	90.42	53.85	–	123.83	168.15	8	22.35	31	–
4 1/16	273.05	3.0	108.71	174.75	45.97	38.10	152.40	114.30	109.47	61.98	88.90	149.23	215.90	8	25.40	37	–
5 1/8	330.20	3.0	131.06	209.55	52.32	44.45	188.98	141.22	122.17	68.33	101.60	180.98	266.70	8	28.45	41	–
7 1/16	355.60	6.4	181.86	241.30	55.63	47.74	222.25	168.40	125.48	74.68	114.30	211.15	292.10	12	28.48	45	–
9	419.10	6.4	229.36	301.75	63.50	55.63	273.05	219.20	141.22	84.07	127.00	269.88	349.25	12	31.75	49	–
11	508.00	6.4	287.02	355.60	71.37	63.50	342.90	273.05	160.27	93.73	133.35	323.85	431.80	16	35.05	53	–
13 5/8	558.80	6.4	346.96	412.75	74.68	66.55	400.05	–	–	100.08	100.08	381.00	488.95	20	35.05	57	–
16 3/4	685.80	6.4	426.21	508.00	84.07	76.20	495.30	–	–	114.30	114.30	469.90	603.25	20	41.15	65	–
21 1/4	812.80	6.4	540.51	635.00	98.55	88.90	609.60	–	–	136.65	136.65	584.20	723.90	24	44.45	73	–
26 3/4	1041.40	6.4	680.21	804.93	126.64	104.90	835.91	742.95	318.26	–	–	756.87	952.50	20	47.75	–	167
30	1122.43	6.4	762.76	908.05	134.11	111.50	931.93	833.12	337.31	–	–	848.61	1039.88	32	44.45	–	303

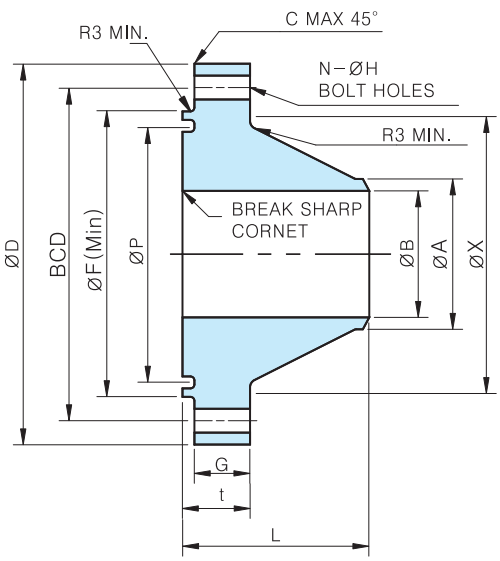
*Total Thickness of Flange and Minimum Length of Hub

TYPE 6B & 6BX 3000psi



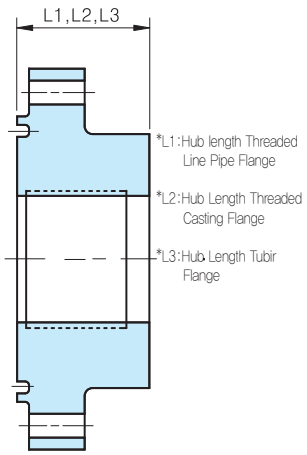
RING GROOVE MUST BE CONCENTRIC
WITH BORE WITHIN 0.010 TOTAL
INDICATOR RUNOUT

*Outside Diametr (D) TOLERANCE
−2 1/16 ~ 5 1/8 : ±1.52
−7 1/16 ~ 30 : ±3.05
*BOLT HOLE TOLERANCE (H)
−2 1/16 ~ 13 5/8: +1.52 ~ −0.51
−16 3/4 ~ 30 : +2.29 ~ −0.51
*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16 : +2.29 ~ −0.76
−5 1/8 : +2.29 ~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76



Welding Neck
Line Pipe Flange

*Large Diameer of Hub(X) TOLERANCE
*Total Thickness(t) TOLERANCE
− ±3.05, −0
*Hub Length Welding Neck(L) TOLERANCE
− ±1.52



Threaded Flange

*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16: +2.29 ~ −0.76
−5 1/8 : +2.29~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76
−26 3/4 ~ 30 : +0 ~ 3.05

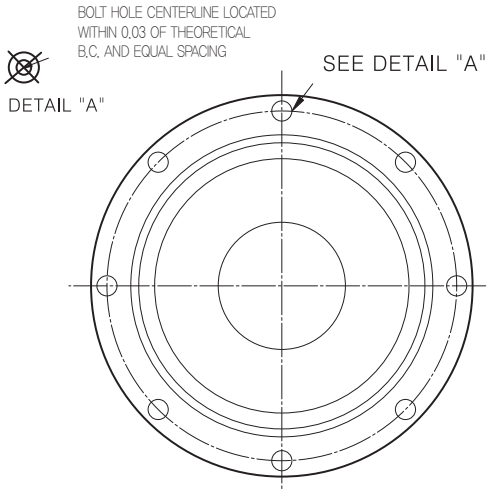
3000#

Unit:mm

Nominal Size & Bore of Flange	Outside Diam.	Max. Cham-fer	Max. Bore	Diam. of Raised Face	Total Thick.	Basic Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Hub Length	Hub Length	Hub Length	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No (R or RX)	Ring No. (BX)
	D	C	B	F	t	G	X	A	L	L_1	L_2	L_3	P		N	H		
2 1/16	215.90	3.0	53.09	123.95	45.97	38.10	104.65	60.45	109.47	65.02	–	65.02	95.25	165.10	8	25.40	24	–
2 9/16	244.35	3.0	65.79	136.65	49.28	41.15	123.95	73.15	112.78	71.37	–	71.37	107.95	190.50	8	28.45	27	–
3 1/8	241.30	3.0	81.79	155.45	45.97	38.10	127.00	88.90	109.47	61.98	–	74.68	123.83	190.50	8	25.40	31	–
4 1/16	292.10	3.0	108.71	180.85	52.32	44.45	158.75	114.30	122.17	77.72	88.90	88.90	149.23	234.95	8	31.75	37	–
5 1/8	349.25	3.0	131.06	215.90	58.67	50.80	190.50	141.22	134.87	87.38	101.60	–	180.98	279.40	8	35.05	41	–
7 1/16	381.00	6.4	181.86	241.30	63.50	55.63	234.95	168.40	147.57	93.73	114.30	–	211.15	317.50	12	31.75	45	–
9	469.90	6.4	229.36	307.85	71.37	63.50	298.45	219.20	169.93	109.47	127.00	–	269.88	393.70	12	38.10	49	–
11	546.10	6.4	280.16	361.95	77.72	69.85	368.30	273.05	192.02	115.82	133.35	–	323.85	469.90	16	38.10	53	–
13 5/8	609.60	6.4	346.96	419.10	87.38	79.25	419.10	–	–	125.48	125.48	–	381.00	533.40	20	38.10	57	–
16 3/4	704.85	6.4	426.21	523.75	100.08	88.90	508.00	–	–	128.52	144.53	–	469.90	615.95	20	44.45	66	–
21 1/4	857.25	6.4	527.81	647.70	120.65	107.95	622.30	–	–	171.45	171.45	–	584.20	749.30	24	53.85	74	–
26 3/4	1101.85	6.4	680.21	831.85	161.04	139.70	869.95	776.22	353.06	–	–	–	761.29	1000.25	20	53.85	–	168
30	1185.67	6.4	762.76	922.27	167.13	144.53	970.03	871.22	370.33	–	–	–	848.61	1090.68	32	50.80	–	303

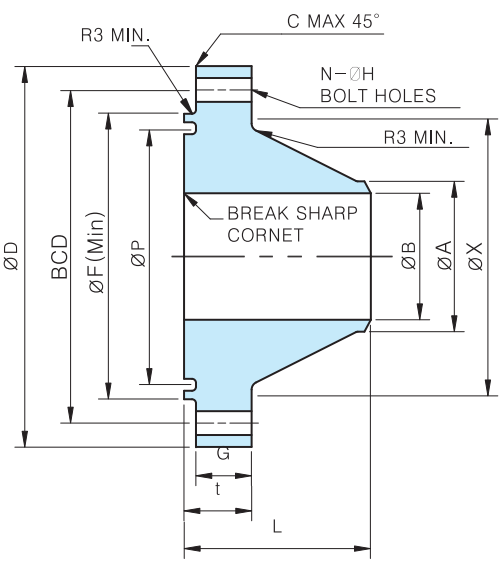
*Total Thickness of Flange and Minimum Length of Hub

TYPE 6B & 6BX 5000psi



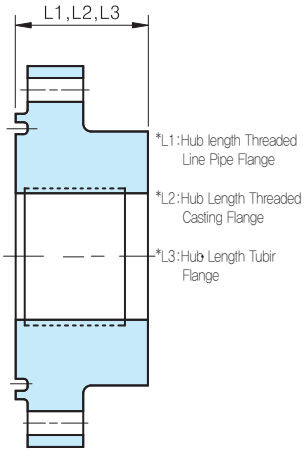
RING GROOVE MUST BE CONCENTRIC
WITH BORE WITHIN 0.010 TOTAL
INDICATOR RUNOUT

*Outside Diametr (D) TOLERANCE
−2 1/16" ~ 5 1/8 : ±1.52
−7 1/16 ~ 30 : ±3.05
*BOLT HOLE TOLERANCE (H)
−2 1/16 ~ 13 5/8: +1.52 ~ −0.51
−16 3/4 ~ 30 : +2.29 ~ −0.51
*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16 : +2.29 ~ −0.76
−5 1/8 : +2.29 ~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76



Welding Neck
Line Pipe Flange

*Large Diameer of Hub(X) TOLERANCE
*Total Thickness(t) TOLERANCE
− ±3.05, −0
*Hub Length Welding Neck(L) TOLERANCE
− ±1.52



Threaded Flange

*Neck Diameter Welding Neck(A) TOLERANCE
−2 1/16 ~ 4 1/16: +2.29 ~ −0.76
−5 1/8 : +2.29 ~ −2.03
−7 1/16 ~ 11 : +4.06 ~ −0.76
−13 5/8 ~ 21 1/4 : +0 ~ −3.05

5000#

Unit:mm

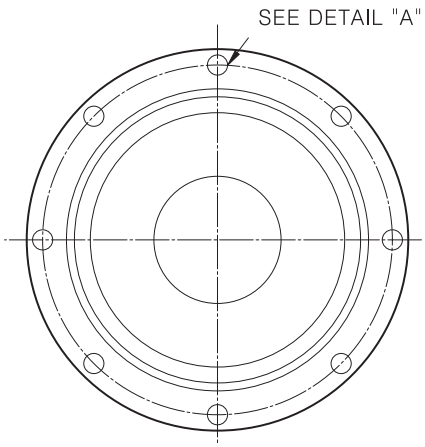
Nominal Size & Bore of Flange	Outside Diam.	Max. Cham-fer	Max. Bore	Diam. of Raised Face	Total Thick.	Basic Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Hub Length	Hub Length	Hub Length	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No (R or RX)	Ring No. (BX)
	D	C	B	F	t	G	X	A	L	L_1	L_2	L_3	P		N	H		
2 1/16	215.90	3.0	53.09	123.95	45.97	38.10	104.65	60.45	109.47	65.02	–	65.02	95.25	165.10	8	25.40	24	–
2 9/16	244.35	3.0	65.79	136.65	49.28	41.15	123.95	73.15	112.78	71.37	–	71.37	107.95	190.50	8	28.45	27	–
3 1/8	266.70	3.0	81.79	168.15	55.63	47.75	133.35	88.90	125.48	81.03	–	81.03	136.53	203.20	8	31.75	35	–
4 1/16	311.15	3.0	108.71	193.55	61.98	53.85	162.05	114.30	131.83	98.55	98.55	98.55	161.93	241.30	8	35.05	39	–
5 1/8	374.65	3.0	131.06	228.60	81.03	73.15	196.85	141.22	163.58	112.78	112.78	–	193.68	292.10	8	41.15	44	–
7 1/16	393.70	6.4	181.86	247.65	91.95	82.55	228.60	168.40	181.10	128.52	128.52	–	211.15	317.50	12	38.10	46	–
9	482.60	6.4	229.36	317.50	103.12	91.95	292.10	219.20	223.77	153.92	153.92	–	269.88	393.70	12	44.45	50	–
11	584.20	6.4	280.16	371.60	119.13	107.95	368.30	273.05	265.18	169.93	169.93	–	323.85	482.60	12	50.80	54	–
13 5/8	673.10	6.4	346.96	457.20	112.78	98.55	481.08	423.93	233.43	–	–	–	398.02	590.55	16	44.45	–	160
16 3/4	771.65	6.4	426.21	534.92	130.30	121.92	555.75	527.05	212.85	–	–	–	469.38	676.15	16	50.80	–	162
18 1/4	904.75	6.4	477.01	627.13	165.86	147.57	674.62	598.42	324.61	–	–	–	550.72	803.15	20	53.85	–	163
21 1/4	990.60	6.4	540.51	701.55	180.85	161.80	758.95	679.45	352.30	–	–	–	618.96	885.95	24	53.85	–	165

*Total Thickness of Flange and Minimum Length of Hub

TYPE 6BX 10000psi

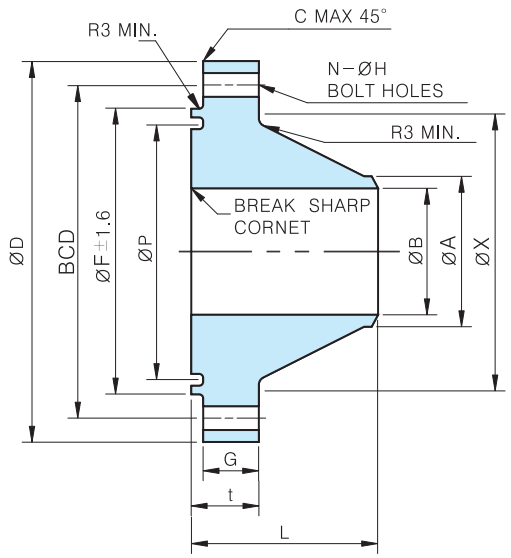
BOLT HOLE CENTERLINE LOCATED
WITHIN 0.03 OF THEORETICAL
B.C. AND EQUAL SPACING

DETAIL "A"



B TO RING GROOVE MUST BE CONCENTRIC
WITHIN 0.010 TOTAL INDICATOR RUNOUT

*Outside Diameter(ØD) TOLERANCE
–1 13/16 ~ 5 1/8 : ±1.52
–7 1/16 ~ 21 1/4 : ±3.05
*BOLT HOLE TOLERANCE(ØH)
–1 13/16 ~ 5 1/8 : +1.52 ~ –0.51
–7 1/16 ~ 21 1/4 : +2.29 ~ –0.51



*Total Thickness(t) TOLERANCE
– ±3.05, –0
*Hub Length Welding Neck(L TOLERANCE
– +0., –3.05
*Large diameter of Hub(X) TOLERANCE
– +0, –3.05
*Total Thickness(t) TOLERANCE
– +3.05, –0

10000#

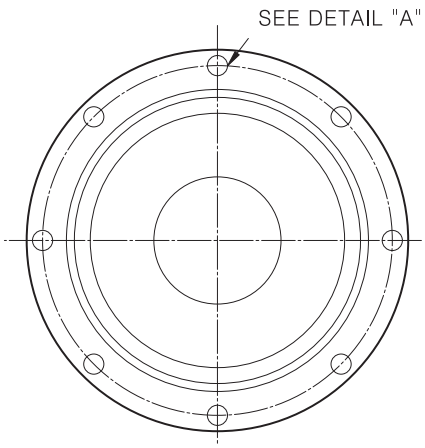
Unit:mm

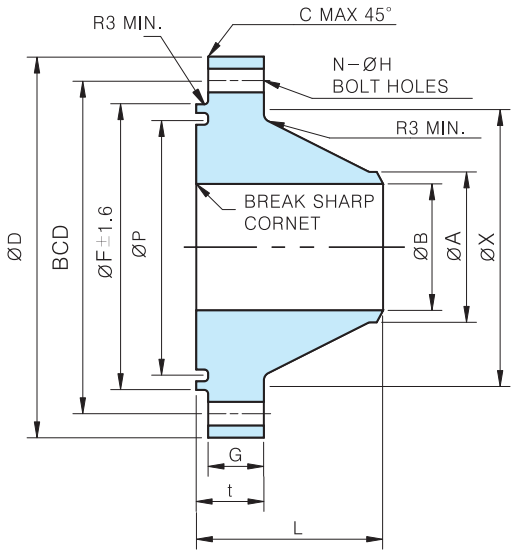
Nominal Size & Bore of Flange	Outside Diam.	Max. Chamfer	Max. Bore	Diam. of Raised Face	Total Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No. (BX)
	D	C	B	F	T	X	A	L	P		N	H	
1 13/16	187.45	3.0	46.74	104.65	42.16	88.90	65.02	97.03	71.86	146.05	8	22.35	151
2 1/16	200.15	3.0	53.09	111.25	43.94	100.08	74.68	101.85	79.91	158.75	8	22.35	152
2 9/16	231.65	3.0	65.79	131.83	51.31	120.65	91.95	114.81	95.73	184.15	8	25.40	153
3 1/16	269.75	3.0	78.49	152.40	58.42	141.99	110.24	128.27	111.30	215.90	8	28.45	154
4 1/16	315.98	3.0	103.89	184.91	70.36	182.63	146.05	149.86	141.76	258.83	8	31.75	155
5 1/8	357.12	3.0	131.06	220.73	79.25	223.77	182.63	166.62	168.20	299.97	12	31.75	169
7 1/16	479.55	6.4	180.09	301.75	103.12	301.75	254.00	204.72	230.14	403.35	12	41.15	156
9	552.45	6.4	229.36	358.65	123.95	374.65	327.15	224.03	285.86	476.25	16	41.15	157
11	654.05	6.4	280.16	428.75	141.22	450.85	400.05	250.70	342.63	565.15	16	47.75	158
13 5/8	768.35	6.4	346.96	517.65	168.15	552.45	495.30	288.80	416.39	673.10	20	50.80	159
16 3/4	871.47	6.4	426.21	576.33	168.15	655.57	601.73	250.70	469.38	776.22	24	50.80	162
18 3/4	1039.88	6.4	477.01	696.98	223.01	752.35	674.62	384.81	561.52	925.58	24	60.45	164
21 1/4	1143.00	6.4	540.51	781.05	241.30	847.85	762.00	412.75	630.44	1022.35	24	66.55	166

TYPE 6BX 15000psi

BOLT HOLE CENTERLINE LOCATED WITHIN 0,03 OF THEORETICAL B.C. AND EQUAL SPACING

DETAIL "A"





R TO RING GROOVE MUST BE CONCENTRIC WITHIN 0,010 TOTAL INDICATOR RUNOUT

*Outside Diameter(ØD) TOLERANCE
–1 13/16 ~ 5 1/8 : ±1,52
–7 1/16 ~ 21 1/4 : ±3,05
*BOLT HOLE TOLERANCE(ØH)
–1 13/16 ~ 5 1/8 : +1,52 ~ –0,51
–7 1/16 ~ 21 1/4 : +2,29 ~ –0,51

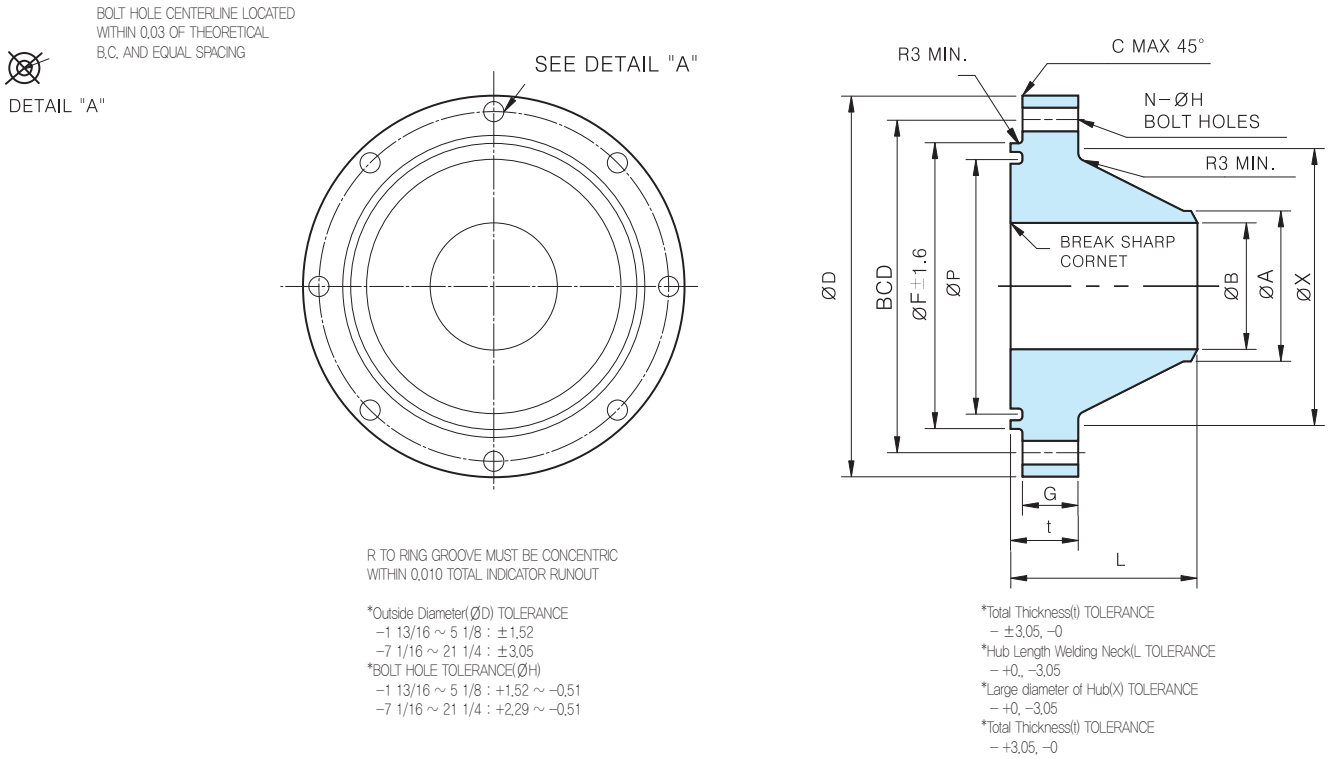
*Total Thickness(t) TOLERANCE
– ±3,05, –0
*Hub Length Welding Neck(L TOLERANCE
– +0., –3,05
*Large diameter of Hub(X) TOLERANCE
– +0, –3,05
*Total Thickness(t) TOLERANCE
– +3,05, –0

15000#

Unit:mm

Nominal Size & Bore of Flange	Outside Diam.	Max. Chamfer	Max. Bore	Diam. of Raised Face	Total Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No. (BX)
	D	C	B	F	T	X	A	L	P		N	H	
1 13/16	208.03	3.0	46.74	106.43	45.21	97.54	71.37	99.31	71.86	160.27	8	25.40	151
2 1/16	222.25	3.0	53.09	114.30	50.80	111.25	82.55	111.00	79.91	174.75	8	25.40	152
2 9/16	254.00	3.0	65.79	133.35	57.15	128.52	100.08	120.65	95.73	200.15	8	28.45	153
3 1/16	287.27	3.0	78.49	153.92	64.26	153.92	122.17	134.11	111.30	230.12	8	31.75	154
4 1/16	360.43	3.0	103.89	193.55	78.49	195.33	158.75	157.99	141.76	290.58	8	38.10	155
5 1/8	419.10	3.0	131.06	225.55	98.55	244.35	200.15	186.69	168.20	342.90	12	41.15	169
7 1/16	504.95	6.4	180.09	304.80	119.13	325.37	276.35	192.02	230.14	428.75	16	41.15	156
9	647.70	6.4	229.36	381.00	146.05	431.80	349.25	276.35	285.86	552.45	16	50.80	157
11	812.80	6.4	280.16	454.15	187.45	584.20	426.97	429.51	342.63	711.20	20	53.85	158
13 5/8	885.95	6.4	346.96	541.27	204.72	595.38	528.57	325.37	416.39	771.65	20	60.45	159
18 3/4	1162.05	6.4	477.01	722.38	255.52	812.80	730.25	417.32	561.52	1016.00	20	79.25	164

TYPE 6BX 20000psi



R TO RING GROOVE MUST BE CONCENTRIC
WITHIN 0.010 TOTAL INDICATOR RUNOUT

*Outside Diameter(ØD) TOLERANCE
−1 13/16 ~ 5 1/8 : ±1.52
−7 1/16 ~ 21 1/4 : ±3.05
*BOLT HOLE TOLERANCE(ØH)
−1 13/16 ~ 5 1/8 : +1.52 ~ −0.51
−7 1/16 ~ 21 1/4 : +2.29 ~ −0.51

*Total Thickness(t) TOLERANCE
− ±3.05, −0
*Hub Length Welding Neck(L TOLERANCE
− +0., −3.05
*Large diameter of Hub(X) TOLERANCE
− +0, −3.05
*Total Thickness(t) TOLERANCE
− +3.05, −0

20000#

Unit:mm

Nominal Size & Bore of Flange	Outside Diam.	Max. Chamfer	Max. Bore	Diam. of Raised Face	Total Thick.	Dim. of Hub	Neck Dia of W.N	Hub Length of W.N	Pitch of Diam.	Diam. of Bolt Circle	Num. of Bolt	Diam. of Bolt Holes	Ring No. (BX)
	D	C	B	F	T	X	A	L	P		N	H	
1 13/16	257.05	3.0	46.74	117.35	63.50	133.35	109.47	119.13	71.86	203.20	8	28.45	151
2 1/16	287.27	3.0	53.09	131.83	71.37	153.92	127.00	130.05	79.91	230.12	8	31.75	152
2 9/16	325.37	3.0	65.78	150.88	79.25	172.97	144.53	144.27	95.73	261.87	8	35.05	153
3 1/16	357.12	3.0	78.49	171.45	85.85	192.02	160.27	155.70	111.30	287.27	8	38.10	154
4 1/16	446.02	3.0	103.89	218.95	106.43	242.82	206.25	185.93	141.76	357.12	8	47.75	155
7 1/6	655.57	6.4	180.09	352.55	165.10	385.83	338.07	268.22	230.14	553.97	16	53.85	156
9	804.93	6.4	229.36	441.45	204.72	481.08	428.75	319.02	285.86	685.80	16	66.55	157
11	882.65	6.4	280.16	504.95	223.70	566.67	508.00	333.25	342.63	749.30	16	73.15	158
13 5/8	1162.05	6.4	346.96	614.43	292.10	693.67	628.65	431.80	416.39	1016.00	20	79.25	159

TABLE 1

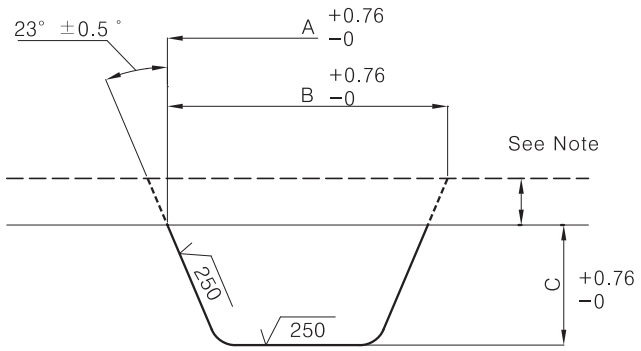


TABLE 1. ROUGH MACHING DETAIL FOR CORROSION RESISTAT API RING GROOVE

Unit:mm

(1)	(2)	(3)	(4)
Ring Number	Outside Diam. of Groove	Width of Groove	Width of Groove
	A	B	C
BX 150	81.79	18.29	9.14
BX 151	86.11	18.80	9.14
BX 152	94.49	19.56	9.65
BX 153	111.25	21.08	10.41
BX 154	127.25	22.35	11.18
BX 155	159.00	24.64	11.94
BX 156	250.19	30.48	14.73
BX 157	307.34	33.53	16.26
BX 158	365.51	36.07	17.78
BX 159	440.94	39.37	19.56
BX 160	416.31	26.92	17.78
BX 162	486.66	24.89	11.94
BX 163	571.75	32.51	21.84
BX 164	586.23	39.88	21.84
BX 165	640.84	34.29	22.61
BX 166	656.34	41.91	22.61
BX 167	776.73	29.97	24.89
BX 168	782.57	32.77	24.89
BX 169	185.17	23.88	13.21
R 20	85.34	15.75	9.91
R 23	102.87	19.05	11.43
R 24	115.57	19.05	11.43
R 25	118.62	15.75	9.91
R 26	121.92	19.05	11.43
R 27	128.27	19.05	11.43
R 31	144.02	19.05	11.43
R 35	156.72	19.05	11.43
R 37	169.42	19.05	11.43
R 39	182.12	19.05	11.43
R 41	201.17	19.05	11.43

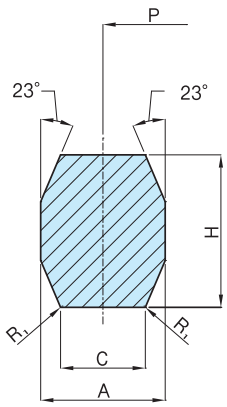
(1)	(2)	(3)	(4)
Ring Number	Outside Diam. of Groove	Width of Groove	Width of Groove
	A	B	C
R 44	213.87	19.05	11.43
R 45	231.89	19.05	11.43
R 46	232.92	20.57	13.21
R 47	256.79	26.92	16.26
R 49	290.07	19.05	11.43
R 50	294.89	23.88	14.73
R 53	344.17	19.05	11.43
R 54	349.00	23.88	14.73
R 57	401.32	19.05	11.43
R 63	454.41	34.04	19.56
R 65	490.22	19.05	11.43
R 66	495.05	23.88	14.73
R 69	553.72	19.05	11.43
R 70	561.59	26.92	16.26
R 73	606.04	20.57	13.21
R 74	612.39	26.92	16.26
R 82	77.47	19.05	11.43
R 84	83.82	19.05	11.43
R 85	101.35	20.57	13.21
R 86	115.57	23.88	14.73
R 87	124.97	23.88	14.73
R 88	152.15	26.92	16.26
R 89	142.49	26.92	16.26
R 90	186.94	30.23	17.78
R 91	302.01	40.39	21.08
R 99	255.27	19.05	11.43
R 201	59.94	12.70	7.62
R 205	71.12	12.70	10.67
R 210	106.68	16.76	9.91
R 215	150.37	19.05	11.43

Notes :
Allow 1/8 in. or greater for final machining of weld overlay

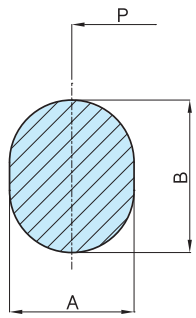
TABLE 2

TOLERANCES

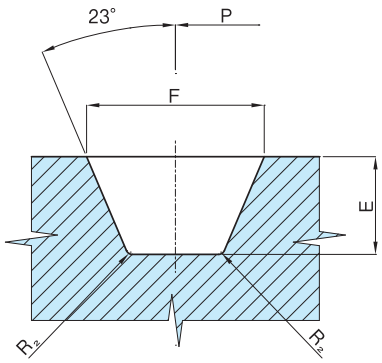
A (width of ring) ±0.203
B&H(height of ring) ±0.508
C(width of flat on octagonal ring) ±0.203
E (depth of groove) +0.508/–0
F (widh of groove) ±0.203
P(average pith diameter of ring)±0.178
(overage pith diameter of groove) ±0.127
R1(radius in rings) ±0.508
R2(radius in groove) max
23° (angle) ±1/2deg



a) Octagonal



b) Oval



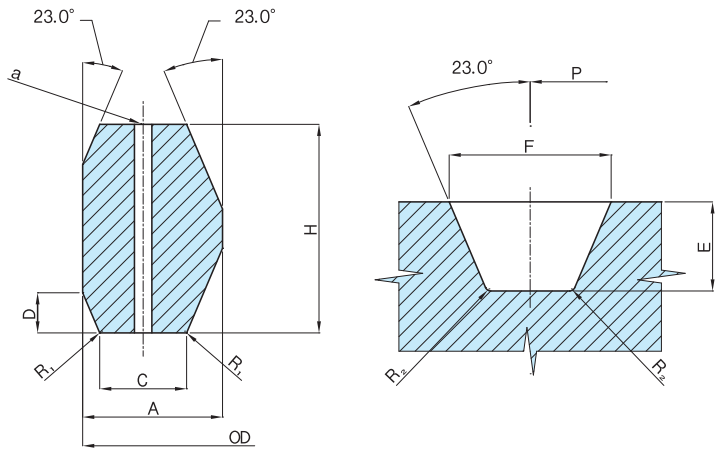
c) Groove

TABLE 2. TYPE R RING GASKETS

Unit : mm

Ring Number	Pitch Diameter of Ring and Groove	Width of Ring	Height of Ring Oval	Height of Ring Octagnal	Width of Flat of Octagonal Ring	Radius in Octagonal Ring	Depth of Groove	Width of Groove	Radius in Groove	Approx. Distance Between Made-up Flanges
	P	A	B	H	C	R_1	E	F	R_2	S
R 20	68.28	7.95	14.22	12.70	5.23	1.52	6.35	8.74	0.76	4.06
R 23	82.55	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 24	95.25	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 26	101.60	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 27	107.95	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 31	123.83	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 35	136.53	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 37	149.23	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 39	161.93	11.13	17.53	16.00	7.75	1.52	7.87	11.91	1.76	4.83
R 41	180.98	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 44	193.68	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 45	211.15	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 46	211.15	12.70	19.05	17.53	8.66	1.52	9.65	13.49	1.52	4.83
R 47	228.60	19.05	25.40	23.88	12.32	1.52	12.70	19.84	1.52	4.06
R 49	269.88	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 50	269.88	15.88	22.35	20.57	10.49	1.52	11.18	16.66	1.52	4.06
R 53	323.85	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 54	323.85	15.88	22.35	20.57	10.49	1.52	11.18	16.66	1.52	4.06
R 57	381.00	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 63	419.10	25.40	33.27	31.75	17.30	2.29	15.75	27.00	2.29	5.59
R 65	469.90	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 66	469.90	15.88	22.35	20.57	10.49	1.52	11.18	16.66	1.52	4.06
R 69	533.40	11.13	17.53	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 70	533.40	19.05	25.40	23.88	12.32	1.52	12.70	19.84	1.52	4.83
R 73	584.20	12.70	19.05	17.53	8.66	1.52	9.65	13.49	1.52	3.30
R 74	584.20	19.05	25.40	23.88	12.32	1.52	12.70	19.84	1.52	4.83
R 82	57.15	11.13	–	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 84	63.50	11.13	–	16.00	7.75	1.52	7.87	11.91	0.76	4.83
R 85	79.38	12.70	–	17.53	8.66	1.52	9.65	13.49	1.52	3.30
R 86	90.50	15.88	–	20.57	10.49	1.52	11.18	16.66	1.52	4.06
R 87	100.03	15.88	–	20.57	10.49	1.52	11.18	16.66	1.52	4.06
R 88	123.83	19.05	–	23.88	12.32	1.52	12.70	19.84	1.52	4.83
R 89	114.30	19.05	–	23.88	12.32	1.52	12.70	19.84	1.52	4.83
R 90	155.58	22.23	–	26.92	14.81	1.52	14.22	23.01	1.52	4.83
R 91	260.35	31.75	–	38.10	22.33	2.29	17.53	33.35	2.29	4.06
R 99	234.95	11.13	–	16.00	7.75	1.52	7.87	11.91	0.76	4.83

TABLE 3



TOLERANCES

A* (width of ring) ———— ±0.203/–0
C(width of flat) ———— +0.015,–0
D(height of chamfer) ———— +0/–0.762
E(depth of groove) ———— +0.508/–0
F(widh of groove) ———— ±0.203

*A plus tolerancee of 0.008 in. for width a and height H is permitted, provided the variation in width or height of any ring does not exceed 0.004 in. throughtout its entire circumference.

*Note: The pressure passage hole illustrated in the RX ring cross section in rings RX–82 through RX–91 only, centerline of hole shall be located at midpoint of dimension C.Hole diameter shall be 0.06 in. for rings RX–82 through RX–85, 0.09 in. for rings RX–86, and RX–87, and 0.12 in.for rings RX–88 through RX–91.

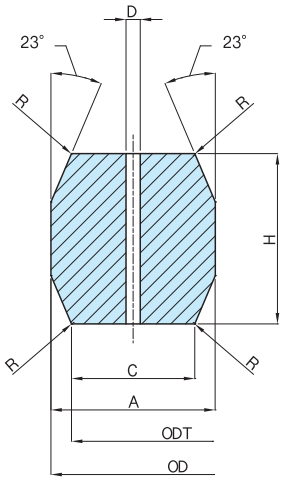
TABLE 3. API Type RX Pressure Energized Ring Gaskets

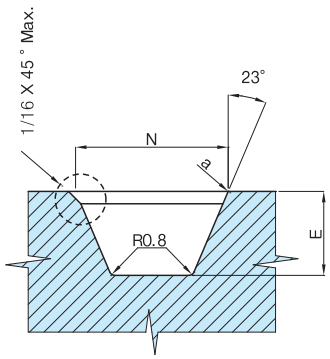
Unit:mm

Ring Number	Pitch Diameter of Ring and Groove	Outside Diameter of Ring	Width of Ring	Width of Flat	Height of Outside Bevel	Height of Ring	Radius in Ring	Depth of Groove	Width of Groove	Raaius in Groove	Approx. Distance Between Made–up Flanges
	P	OD	A	C	D	H	R_1	E	F	R_2	S
RX 20	68.3	76.2	8.7	4.6	3.2	19.1	1.5	6.4	8.7	0.8	9.7
RX 23	82.6	93.3	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 24	95.3	106.0	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 25	101.6	109.6	8.7	4.6	3.2	19.1	1.5	6.4	8.7	0.8	–
RX 26	101.6	111.9	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 27	108.0	118.3	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 31	123.8	134.5	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 35	136.5	147.2	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 37	136.5	159.9	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 39	161.9	172.6	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 41	181.0	191.7	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 44	193.7	204.4	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 45	211.2	221.8	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 46	211.2	222.3	13.5	6.7	4.8	28.6	1.5	9.7	13.5	1.5	11.9
RX 47	228.6	245.3	19.8	10.3	6.9	41.3	2.3	12.7	19.8	1.5	23.1
RX 49	269.9	280.6	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 50	269.9	283.4	16.7	8.5	5.3	31.8	1.5	11.2	16.7	1.5	11.9
RX 53	323.9	334.6	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 54	323.9	337.3	16.7	8.5	5.3	31.8	1.5	11.2	16.7	1.5	11.9
RX 57	381.0	391.7	11.9	9.0	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 63	419.1	441.7	27.0	14.8	8.5	50.8	2.3	16.0	27.0	2.3	21.3
RX 65	469.9	480.6	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 66	469.9	483.4	16.7	8.5	5.3	31.8	1.5	11.2	16.7	1.5	11.9
RX 69	533.4	544.1	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 70	533.4	550.1	19.8	10.3	6.9	41.3	2.3	12.7	19.8	1.5	18.3
RX 73	584.2	596.1	13.5	6.7	5.3	31.8	1.5	9.7	13.5	1.5	15.0
RX 74	584.2	600.9	19.8	10.3	6.9	41.3	2.3	12.7	19.8	1.5	18.3
RX 82	57.2	67.9	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 84	63.5	74.2	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 85	79.4	90.1	13.5	6.7	4.2	25.4	1.5	9.7	13.5	1.5	9.7
RX 86	90.5	103.6	15.1	8.5	4.8	28.6	1.5	11.2	16.7	1.5	9.7
RX 87	100.0	113.1	15.1	8.5	4.8	28.6	1.5	11.2	16.7	1.5	9.7
RX 88	123.8	139.3	17.5	10.3	5.3	31.8	1.5	12.7	19.8	1.5	9.7
RX 89	114.3	129.8	18.3	10.3	5.3	31.8	1.5	12.7	19.8	1.5	9.7
RX 90	155.6	174.6	19.8	12.2	7.4	44.5	2.3	14.2	23.0	1.5	18.3
RX 91	260.4	286.9	30.2	19.8	7.5	45.2	2.3	17.5	33.4	2.3	19.1
RX 99	235.0	245.7	11.9	6.5	4.2	25.4	1.5	7.9	11.9	0.8	11.9
RX 201	46.1	51.5	5.7	3.2	1.4	1.45[a]	11.3	0.5[b]	4.1	0.8	–
RX 205	57.2	62.3	5.6	3.0	1.8	1.83[a]	11.1	0.5[b]	4.1	0.5	–
RX 210	88.9	97.6	9.5	5.4	3.2	3.18[a]	19.1	0.8[b]	6.4	0.8	–
RX 215	130.2	140.9	11.9	5.3	4.2	4.24[a]	25.4	1.5[b]	7.9	0.8	–

a) Tolerance on these dimensions is +0, –0.381
b) Tolerance on these dimensions is +0.508, –0

TABLE 4





TOLERANCES

A (width of ring)———— +0.203/–0
C(width of flat)———— +0.152,–0
D(height of chamfer)———— ±0.508
E(depth of groove)———— +0.508/–0
G(OD of groove) ———— +0.102/–0

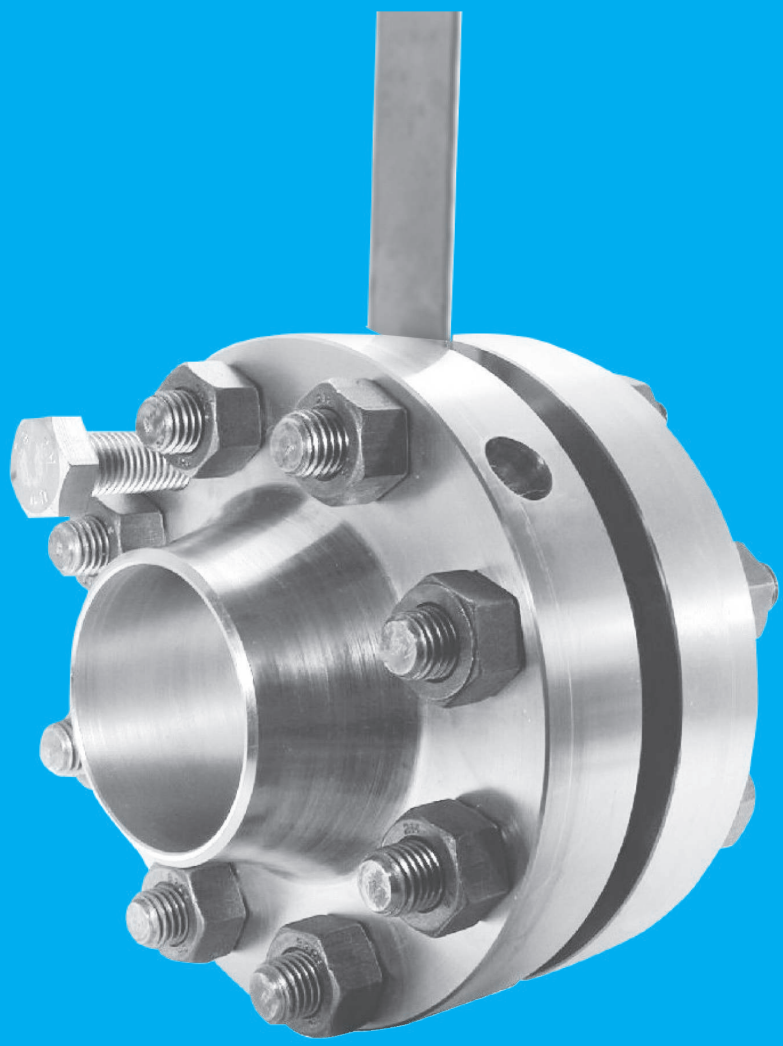
*A plus tolerancee of 0.008 in, for width a and height H is permitted, provided the variation in width or height of any ring does not exceed 0.004 in. throught out its entire circumference.

*Radius "R" shall be 8 to 12% of the gasket height "H".

TABLE 4. API Type RX Pressure Energized Ring Gaskets

Unit : mm

Ring Number	Number Size	Outside Diameter of Ring	Height of Ring	Width of Ring	Diameter of Flat	Width of Flat	Hole Size	Depth of Groove	Outside Diameter of Groove	Width of Groove
		OD	H	A	ODT	C	D	E	G	N
BX 150	1 11/16	72.19	9.30	9.30	70.87	7.98	1.52	5.59	73.48	11.43
BX 151	1 13/16	76.40	9.63	9.63	75.03	8.26	1.52	5.59	77.77	11.84
BX 152	2 1/16	84.68	10.24	10.24	83.24	8.79	1.52	5.84	86.23	12.65
BX 153	2 9/16	100.94	11.38	11.38	99.31	9.78	1.52	6.86	102.77	14.07
BX 154	3 1/16	116.84	12.40	12.40	115.09	10.64	1.52	7.62	119.00	15.39
BX 155	4 1/16	147.96	14.22	14.22	145.95	12.22	1.52	8.38	150.62	17.73
BX 156	7 1/16	237.92	18.62	18.62	235.28	15.98	3.05	11.18	241.83	23.39
BX 157	9	294.46	20.98	20.98	291.49	18.01	3.05	12.70	299.06	26.39
BX 158	11	352.04	23.14	23.14	348.77	19.86	3.05	14.22	357.23	29.18
BX 159	13 5/8	426.72	25.70	25.70	423.09	22.07	3.05	15.75	432.64	32.49
BX 160	13 5/8	402.59	23.83	13.74	399.21	10.36	3.05	14.22	408.00	19.96
BX 161	16 5/8	491.41	28.07	16.21	487.45	12.24	3.05	17.02	497.94	23.62
BX 162	16 5/8	475.49	14.22	14.22	473.48	12.22	1.52	8.38	478.33	17.91
BX 163	18 3/4	556.16	30.10	17.37	551.89	13.11	3.05	18.29	563.50	25.55
BX 164	18 3/4	570.56	30.10	24.59	566.29	20.32	3.05	18.29	577.90	32.77
BX 165	21 1/4	624.71	32.03	18.49	620.19	13.97	3.05	19.05	632.56	27.20
BX 166	21 1/4	640.03	32.03	26.14	635.51	21.62	3.05	19.05	647.88	34.87
BX 167	26 3/4	759.36	35.86	13.11	754.28	8.03	1.52	21.34	768.32	22.91
BX 168	26 3/4	765.25	35.86	16.05	760.17	10.97	1.52	21.34	774.22	25.86
BX 169	5 1/8	173.51	15.85	12.93	171.27	10.69	1.52	9.65	176.66	16.92
BX 170	9	218.03	14.22	14.22	216..03	12.22	1.52	8.38	220.88	17.91
BX 171	11	267.44	14.22	14.22	265.43	12.22	1.52	8.38	270.28	17.91
BX 172	13 5/8	333.07	14.22	14.22	331.06	12.22	1.52	8.38	335.92	17.91
BX 303	30	852.75	37.95	16.97	847.37	11.61	1.52	22.61	862.30	27.38



ORIFICE FLANGES

- CLASS 300 ORIFICE FLANGES
- CLASS 400 ORIFICE FLANGES
- CLASS 600 ORIFICE FLANGES
- CLASS 900 ORIFICE FLANGES
- CLASS 1500 ORIFICE FLANGES
- CLASS 2500 ORIFICE FLANGES

ASME ORIFICE FLANGE (ASME B16.36-1996) FORGED-FLANGES

ORIFICE FLANGES are widely used in conjunction with orifice meters for measuring the rate of flow of liquids and gases. They are basically the same as standard welding neck, slip-on and screwed flanges except for the provision of radial, tapped holes in the flange ring for meter connections and additional bolts to act as jack screws to facilitate separating the flanges for inspection or replacement of the orifice plate.

NOTES:

1. JACK SCREW PROVISION

(1) Locaton
Each flange shall have a machine bolt mounted in a hole drilled on the flange center line at 90 deg.
From the pressure taps, for use as a jackscrew. Machine bolt shall be regular, with one heavy hex. nut.

(2) Solt fo Nut
A slot shall be provided in the flange 0.06 in. (1.6mm) wider than the width across flats of the nut. The depth of the slot shall admit the nut so that there is no interference with the joining of the flanges when bolted together without orifice plate.

(3) Tapped Hole
A tapped hole may be provided and te hex nut omitted when agreed on between the purchaser and the manufacturer.

2. PRESSURE TAPS

Each orifice flange is provided with two pressure tap holes extending radially from the outside diameter of the flange to the inside diameter of the flange.

(1) Location
The 0.94 in (23.9mm) locating dimension for raised face and 0.75 in. (19.1mm) for ring joint shall be measured at the bore.

(2) Each pressure tap hole shall be equipped with a pipe plug.

3. FACING

The finish of contact faces shall conform to the requirements Of ASME B16.5

4. FLANGE THREADS

Threaded flanges shall have an American National Standard taper pipe thread conforming to ASME B1.20. 1

(1) The thread shall be concentric with the axis of the flange and variations in alignment shall not exceed 0.06 in./ft.(0.5%)

(2) The flanges are made with counterbores at the back of the flange and the threads shall be chamfered to the diameter of the counterbore at an angle of approximately 45 degrees with the axis of the thread to afford easy entrance in making a joint. The counterbore and chamfer shall be concentric with the thread.

(3) In order to permit the pipe to be inserted to the face of the flange, the threads should have full root diameters through to the face of the flange, or shall have a counterbore at face of the flange.

(4) The gaging notch of the working gage shall come flush with the bottom of the chamfer in all threaded flanges and shall be considered as being the intersection of the chamfer cone and the pitch cone of the thread.
This depth of chamfer is approximately equal to one-half(1/2) of the pitch of the thread.

(5) The maximum allowable thread variation is one turn large or small from the gaging notch.

5. TOLERANCES

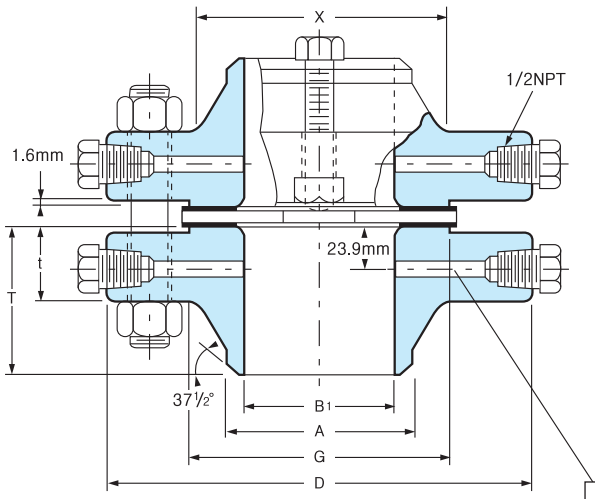
Tolerances on all dimensions shall be as shown in ASME B16.5 except for those shown below.

(1) Pressure Tap Location
Tolerance on location of center of pressure tap hole from flange face shall be:
a. Flanges smaller than NPS 4±0.02 in (0.51mm)
b. Flanges NPS 4 and larger ±0.03 in. (0.76mm)

(2) Bore diameter
Bore diameter tolerance (welding neck flanges only) is ±0.5% of nominal value.

CLASS 300 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



1/4 ″ Drill for Sizes 2 1/2 ″ and Under
3/8 ″ Drill for Sizes 3 ″
1/2 ″ Drill for Sizes 4 ″ and Over

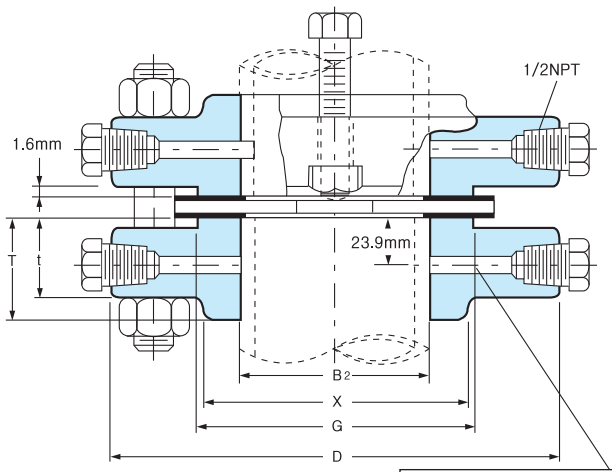
ASME B16.36 FORGED FLANGES

Unit:mm

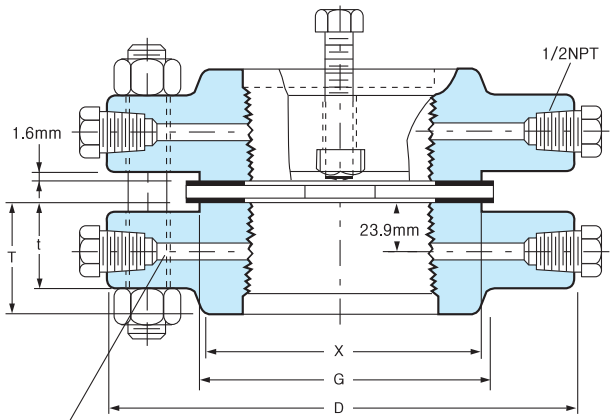
Nominal Pipe Size	Outside Diam.of Flanges	Thickness of Flange(t)	Diam. of Hub at Base	Diam. of Raised Face	Diam. of Hub. at Bevel	Length Thru Hub(T)		Bore(B)	
						Welding Neck	Slip-on & Threaded	Welding Neck	Slip-on
	D	Raised Face	X	G	A	Raised Face	Raised Face		
1	124	38.1	53.8	50.8	33.5	82.6	47.8	26.7	34.5
1 1/4	133	38.1	63.5	63.5	42.2	84.1	46.0	35.1	43.2
1 1/2	155	38.1	69.9	73.2	48.3	85.9	47.8	40.9	49.5
2	165	38.1	84.1	91.9	60.5	85.9	49.3	52.6	62.0
2 1/2	191	38.1	100.1	104.6	73.2	88.9	50.8	62.7	74.7
3	210	38.1	117.3	127.0	88.9	88.9	52.3	78.0	90.7
4	254	38.1	146.1	157.2	114.3	91.9	53.8	102.4	116.1
5	279	38.1	177.8	185.7	141.2	101.6	53.8	128.3	143.8
6	318	38.1	206.2	215.9	168.4	100.1	53.8	154.2	170.7
8	381	41.1	260.4	269.7	219.2	111.3	62.0	202.7	221.5
10	445	47.8	320.5	323.9	273.1	117.3	66.5	254.5	276.4
12	521	50.8	374.7	381.0	323.9	130.0	73.2	304.8	327.2
14	584	53.8	425.5	412.8	355.6	142.7	76.2	336.6	359.2
16	648	57.2	482.6	469.9	406.4	146.1	82.6	387.4	410.5
18	711	60.5	533.4	533.4	457.2	158.8	88.9	438.2	461.8
20	755	63.5	587.2	584.2	508.0	162.1	95.3	489.0	513.1
24	914	69.9	701.5	692.2	609.6	168.1	106.4	590.6	616.0

Notes :
(1) For the 'Bore'(B) of Welding Neck Flanges other than Standard Wall Thickness, refer to 122~123
(2) Class 300 Welding Neck Flanges of size 24″ (609.6mm) and smaller will be bored to match Standard Wall Pipe unless otherwise specified.
(3) Class 300 Orifice flanges will be furnished with 0.06″ (1.6mm) raised face, which is included in 'thickness' (t) and 'Length through Hub'(T)

SLIP-ON



THREADED



1/4″ Drill for Sizes 2 1/2″ and Under
3/8″ Drill for Sizes 3″
1/2″ Drill for Sizes 4″ and Over

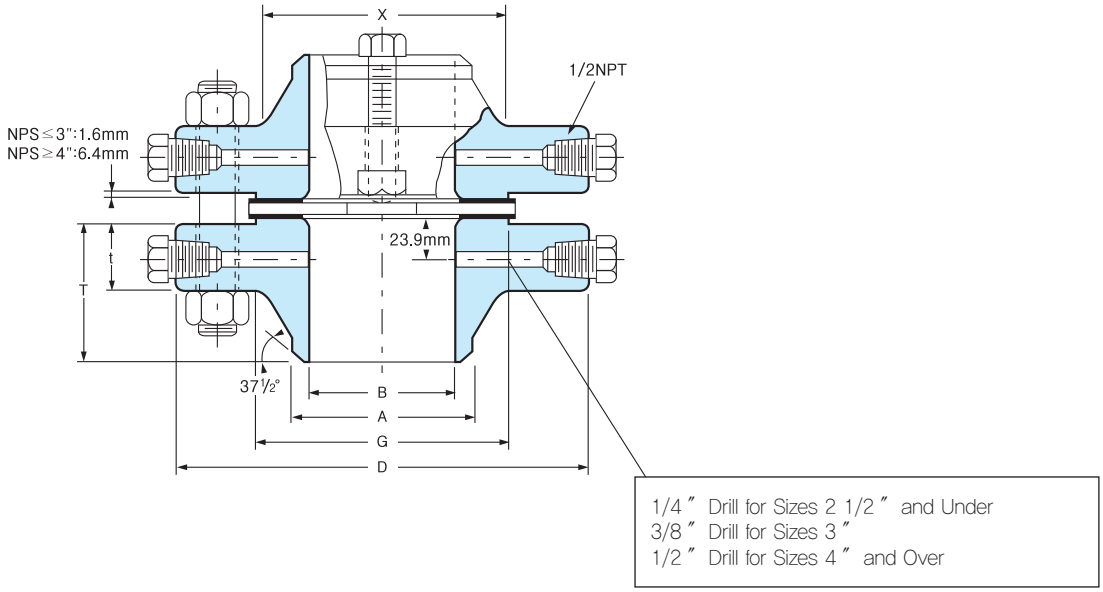
Unit : mm

Nominal Pipe Size	Pitch Diam of Ring and Groove	Ring Number	Depth of Jack Screw Slot	Jack Screw Size	Drilling Template				
					Diam. of Bolt Circle	Number of Holes	Diam. of Stud Bolts (inch)	Diam. of Bolt Holes	Length of Stud Bolts
	P		Raised Face	Raised Face					Raised Face
1	50.8	R16	9.7	Jack screw size for 1″ thru 24″ are those shown for length and diameter of bolts	88.9	4	5/8	17.5	139.7
1 1/4	60.3	R18	9.7		98.6	7	5/8	17.5	152.4
1 1/2	68.3	R20	12.7		114.3	4	3/4	20.6	152.4
2	82.6	R23	9.7		127.0	8	5/8	17.5	152.4
2 1/2	101.6	R26	12.7		149.4	8	3/4	20.6	152.4
3	123.8	R31	12.7		168.1	8	3/4	20.6	152.4
4	149.2	R37	12.7		200.2	8	3/4	20.6	152.4
5	181.0	R41	12.7		235.0	8	3/4	22.4	152.4
6	211.1	R45	12.7		269.7	12	3/4	22.4	152.4
7	269.9	R49	15.7		330.2	12	7/8	25.4	158.8
10	323.9	R53	19.1		387.4	16	1	28.4	165.1
12	381.0	R57	22.4		450.9	16	1 1/8	31.8	177.8
14	419.1	R61	22.4		541.4	20	1 1/8	31.8	184.2
16	469.9	R65	25.4		571.5	20	1 1/4	35.1	196.9
18	533.4	R69	25.4		628.7	24	1 1/4	35.1	203.2
20	584.2	R73	25.4		685.8	24	1 1/4	35.1	215.9
24	692.2	R77	31.8		812.8	24	1 1/2	41.1	241.3

(4) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6.4mm) for NPS 1–12 and 0.38″ (9.7mm) for NPS 14–24.
(5) Unless otherwise specified, unions of 1″ (25.4mm) thru 24″ (609.6mm) furnished with carbon steel regular square headed bolts with semifinished American Standard heavy series hex nuts.

CLASS 400 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



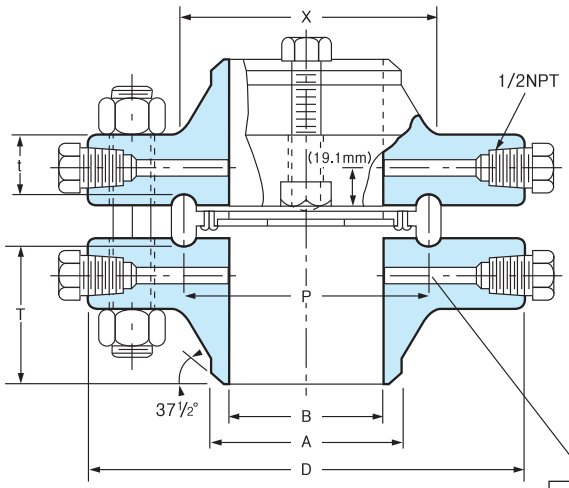
ASME B16.36 FORGED FLANGES

Unit:mm

Nominal Pipe size	Outside Diam. of Flange	Thickness of Flange(t)		Diam. of Hub at Base	Diam. of Raised Face	Diam.of Hub. at Bevel	Length Thru Hub(T)				Bore	
							Welding Neck		Slip-on & Thread		Welding Neck	Slip-on
	D	Raised Face	Ring Joint	X	G	A	Raised Face	Ring Joint	Raised Face	Ring Joint		
1	124	38.1	31.8	53.8	50.8	33.5	82.6	76.2	47.8	41.1	See Note (1) To be specified by purchaser	34.5
1 1/4	133	38.1	31.8	63.5	63.5	42.2	84.1	77.7	46.0	39.6		43.2
1 1/2	155	38.1	31.8	69.9	73.2	48.3	85.9	79.2	47.8	41.1		49.5
2	165	38.1	31.8	84.1	91.9	60.5	85.9	79.8	49.3	42.9		62.0
2 1/2	191	38.1	31.8	100.1	104.6	73.2	88.9	82.6	50.8	44.5		74.7
3	210	38.1	31.8	117.3	127.0	88.9	88.9	82.6	52.3	46.0		90.7
4	254	35.1	35.1	146.1	157.2	114.3	88.9	88.9	50.8	50.8		116.1
5	279	38.1	31.8	177.8	185.7	141.2	101.6	101.6	53.8	53.8		143.8
6	318	41.1	41.1	206.2	215.9	168.4	103.1	103.1	57.2	57.2		170.7
8	381	47.8	47.8	260.4	269.7	219.2	117.3	117.3	68.3	68.3		221.5
10	445	53.8	53.8	320.5	323.9	273.1	124.0	124.0	73.2	73.2		276.4
12	521	57.2	57.2	374.7	381.0	323.9	136.7	136.7	79.2	79.2		327.2
14	584	60.7	60.5	425.5	412.8	355.6	149.4	149.4				359.2
16	648	63.5	63.5	482.6	469.9	406.4	152.4	152.4				410.5
18	711	66.5	66.5	533.4	533.4	457.2	165.1	165.1				461.8
20	775	69.9	69.9	587.2	584.2	508.0	168.1	168.1				513.1
24	914	76.2	76.2	701.2	692.2	609.6	174.8	174.8				564.4

Notes :
(1) (1) For the inside diameter of pipes (corresponding to 'Bore'(B) of Welding Neck Flanges), refer to page 122~123
(2) Class 400 Flanges of sizes 3″ (76.2mm) and smaller will be furnished with 0.06 ″ (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub'(T)
(3) Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK (RING-TYPE JOINT)



1/4 ″ Drill for Sizes 2 1/2 ″ and Under
3/8 ″ Drill for Sizes 3 ″
1/2 ″ Drill for Sizes 4 ″ and Over

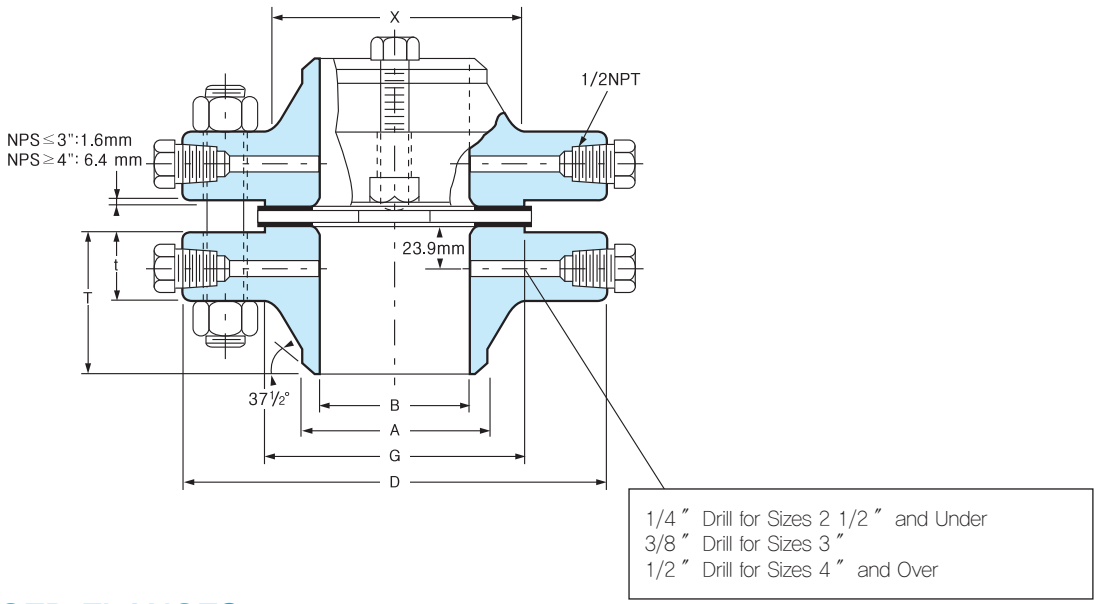
Unit:mm

Nominal Pipe size	Pitch Diam.of Ring and Groove	Ring Number	Depth of Jack Screw Slot		Jack Screw Size		Drilling Template					
			Raised Face	Ring Joint	Raised Face (inch)	Ring Joint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts (inch)	Diam.of Bolt Holes	Length of Stud Bolts	
	P										Raised Face	Ring Joint
1	50.8	R16	9.7	6.4	5/8 x 4.00	5/8 x 4.75	88.9	4	5/8	17.5	127.0	146.1
1 1/4	60.3	R18	9.7	6.4	5/8 x 4.00	5/8 x 4.75	98.6	7	5/8	17.5	127.0	120.7
1 1/2	68.3	R20	12.7	6.4	3/4 x 4.25	3/4 x 5.00	114.3	4	3/4	21.0	133.4	152.4
2	82.6	R23	9.7	6.4	5/8 x 4.00	5/8 x 4.75	127.0	8	5/8	17.5	127.0	152.4
2 1/2	101.6	R26	12.7	6.4	3/4 x 4.25	3/4 x 5.00	149.4	8	3/4	20.6	133.4	158.8
3	123.8	R31	12.7	6.4	3/4 x 4.25	3/4 x 5.00	168.1	8	3/4	20.6	133.4	158.8
4	149.2	R37	6.4	15.7	3/4 x 3.00	3/4 x 4.00	200.2	8	7/8	25.4	139.7	152.4
5	181.0	R41	6.4	15.7	3/4 x 3.00	3/4 x 4.00	235.0	8	7/8	25.4	146.1	158.8
6	211.1	R45	12.7	22.4	1 x 3.50	1 x 4.00	269.7	12	7/8	25.4	158.8	165.1
8	269.9	R49	12.7	22.4	1 x 3.50	1 x 4.50	330.2	12	1	28.4	171.5	184.2
10	323.9	R53	12.7	22.4	1 x 4.00	1 x 4.50	387.4	16	1 1/8	31.8	190.5	203.2
12	381.0	R57	12.7	22.4	1 x 4.00	1 x 5.00	450.9	16	1 1/4	35.1	203.2	215.9
14	419.1	R61	12.7	22.4	1 x 4.25	1 x 5.00	514.4	20	1 1/4	35.1	209.6	228.6
16	469.9	R65	12.7	22.4	1 x 4.25	1 x 5.00	571.5	20	1 3/8	38.1	222.3	235.0
18	533.4	R69	12.7	22.4	1 x 4.50	1 x 5.00	628.7	24	1 3/8	38.1	235.0	241.3
20	584.2	R73	12.7	22.4	1 x 4.75	1 x 5.50	685.8	24	1 1/2	41.1	247.7	260.4
24	692.2	R77	12.7	22.4	1 x 5.00	1 x 6.00	812.8	24	1 3/4	47.8	279.4	285.8

Notes :
(4) Unless otherwise specified, raised face union are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy series hex nuts ASTM A194 Class 2H.
(5) On ring joint flanges having a groove depth 0.375″ (9.5mm) and less, the distance from the center line of the tap hole to the flange face is 0.750″ (19.1mm). When the depth of groove is 0.438″ (11.1mm) or greater, changes in drill size or method of drilling are necessary.
(6) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6.4mm) for NPS 4–12 and 0.38″ (9.7mm) for NPS 14–24. Bolt lengths for ring type joint flanges include allowance of 0.62″ (15.7mm) for NPS 4–10, 0.75″ (19.1mm) for NPS 12–18 and 0.88″ (22.4mm) for NPS 20.

CLASS 600 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



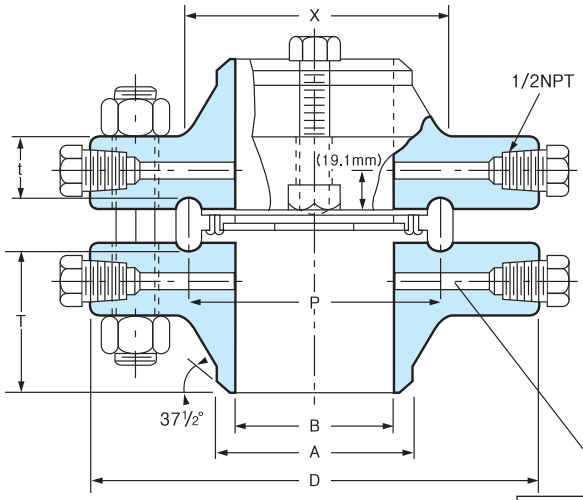
ASME B16.36 FORGED FLANGES

Unit:mm

Nominal Pipe size	Outside Diam. of Flange	Thickness of Flange(t)		Diam. of Hub at Base	Diam. of Raised Face	Diam.of Hub. at Bevel	Length Thru Hub(T)				Bore	
							Welding Neck		Slip-on & Thread		Welding Neck	Slip-on
	D	Raised Face	Ring Joint	X	G	A	Raised Face	Ring Joint	Raised Face	Ring Joint		
1	124	38.1	38.1	53.8	50.8	33.5	82.6	76.2	47.8	41.1	See Note (1) To be specified by purchaser	34.5
1 1/4	133	38.1	38.1	63.5	63.5	42.2	84.1	77.7	46.0	39.6		43.2
1 1/2	155	38.1	38.1	69.9	73.2	48.3	85.9	79.2	47.8	41.1		49.5
2	165	38.1	38.1	84.1	91.9	60.5	85.9	79.2	49.3	42.9		62.0
2 1/2	191	38.1	38.1	100.1	104.6	73.2	88.9	82.6	50.8	44.5		74.7
3	210	38.1	38.1	117.3	127.0	88.9	88.9	82.6	52.3	46.0		90.7
4	273	38.1	38.1	152.4	157.2	114.3	101.6	101.6	53.8	53.8		116.1
5	330	44.5	44.5	189.0	185.7	141.2	114.3	114.3	60.5	60.5		143.8
6	356	47.8	47.8	222.3	215.9	168.4	117.3	117.3	66.5	66.5		170.7
8	419	55.6	55.6	273.1	269.7	219.2	133.4	133.4	76.2	76.2		221.5
10	508	63.5	63.5	342.9	323.9	273.1	152.4	152.4	85.9	85.9		276.4
12	559	66.5	66.5	400.1	381.0	323.9	155.4	155.4	91.9	91.9		327.2
14	603	69.9	69.9	431.8	412.8	355.6	165.1	165.1				
16	686	76.2	76.2	495.3	469.9	406.4	177.8	177.8				
18	743	82.6	82.6	546.1	533.4	457.2	184.2	184.2				
20	813	88.9	88.9	609.6	584.2	508.0	190.5	190.5				
24	940	101.6	101.6	717.6	692.2	609.6	203.2	203.2				

Notes :
(1) For the inside diameter of pipes (corresponding to 'Bore'(B) of Welding Neck Flanges), reger to pare 122~123
(2) Class 600 Flanges of size 3″ (76.2mm) and smaller will be furnished with 0.06″ (1.6mm) raised face, which is included in 'Thickness' (t) and 'Length through Hub'(T). The 0.25″ (6.4mm) raised face for size 4″ (101.6mm) and larger is not included in (t) and (T).
(3) Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK (RING-TYPE JOINT)



1/4″ Drill for Sizes 2 1/2″ and Under
3/8″ Drill for Sizes 3″
1/2″ Drill for Sizes 4″ and Over

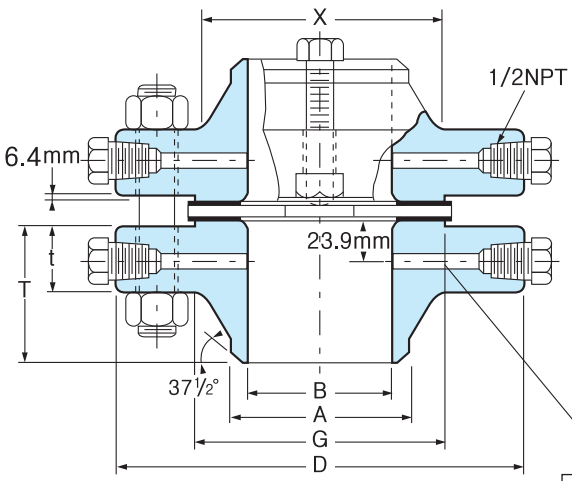
Unit:mm

Nominal Pipe size	Pitch Diam.of Ring and Groove	Ring Number	Depth of Jack Screw Slot		Jack Screw Size		Drilling Template						
			Raised Face	Ring Joint	Raised Face (inch)	Ring Joint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts (inch)	Diam.of Bolt Holes		Length of Stud Bolts	
	P									RF	RTJ	Raised Face	Ring Joint
1	50.8	R16	9.7	6.4	5/8 x 4.00	5/8 x 4.75	88.9	4	5/8	17.5	19.1	127.0	146.1
1 1/4	60.3	R18	9.7	6.4	5/8 x 4.00	5/8 x 4.75	98.6	4	5/8	17.5	–	127.0	146.1
1 1/2	68.3	R20	12.7	6.4	3/4 x 4.25	3/4 x 5.00	114.3	4	3/4	20.6	22.4	133.4	152.4
2	82.6	R23	9.7	6.4	5/8 x 4.00	5/8 x 4.75	127.0	8	5/8	17.5	19.7	127.0	152.4
2 1/2	101.6	R26	12.7	6.4	3/4 x 4.25	3/4 x 5.00	149.4	8	3/4	20.6	22.4	133.4	158.8
3	123.8	R31	12.7	6.4	3/4 x 4.25	3/4 x 5.00	168.1	8	3/4	20.6	22.4	133.4	158.8
4	149.2	R37	6.4	15.7	3/4 x 3.00	3/4 x 4.00	215.9	8	7/8	25.4	25.4	152.4	165.1
5	181.0	R41	6.4	15.7	3/4 x 3.00	3/4 x 4.50	266.7	8	1	28.4	28.4	139.7	117.8
6	211.1	R45	12.7	22.4	1 x 3.50	1 x 4.50	292.1	12	1	28.4	28.4	177.8	190.5
8	269.9	R49	12.7	22.4	1 x 4.00	1 x 4.75	349.3	12	1 1/8	31.8	31.8	196.9	209.6
10	323.9	R53	12.7	22.4	1 x 4.00	1 x 5.00	431.8	16	1 1/4	35.1	35.1	222.3	235.0
12	381.0	R57	12.7	22.4	1 x 4.50	1 x 5.00	489.0	20	1 1/4	35.1	35.1	228.6	241.3
14	419.1	R61	12.7	22.4	1 x 5.00	1 x 5.50	527.1	20	1 3/8	38.1	38.1	241.3	254.0
16	469.9	R65	12.7	22.4	1 x 5.00	1 x 5.50	603.3	20	1 1/2	41.1	41.4	260.4	273.1
18	533.4	R69	12.7	22.4	1 x 5.00	1 x 5.75	654.1	20	1 5/8	44.5	44.5	279.4	292.1
20	584.2	R73	12.7	22.4	1 x 6.00	1 x 6.25	723.9	24	1 5/8	44.5	44.5	298.5	317.5
24	692.2	R77	12.7	22.4	1 x 6.00	1 x 7.00	838.2	24	1 7/8	50.8	50.8	336.6	342.9

Notes :
(4) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6.4mm) for NPS 1–12 and 0.38″ (9.7mm) for NPS 14–24. Bolt lengths for ring type joint flanges included allowance of 0.62″ (15.7mm) for NPS 1–10. 0.75″ (19.1mm) for NPS 12–18 and 0.88″ (22.4mm) for NPS 20.
(5) Unless otherwise specified, raised face union are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard hevy series hex nuts ASTM A194 Class 2H.
(6) On ring joint flanges having a groove depth 0.375″ (9.5mm) and less, the distance from the center line of the tap hole to the flange face is 0.750″ (19.1mm). When the depth of groove is 0.438″ (11.1mm) or greater, changes in drill size or method of drilling are necessary.

CLASS 900–1500 ORIFICE FLANGES

WELDING NECK
(RAISED FACE)



1/4 ″ Drill for Sizes 2 1/2 ″ and Under
3/8 ″ Drill for Sizes 3 ″
1/2 ″ Drill for Sizes 4 ″ and Over

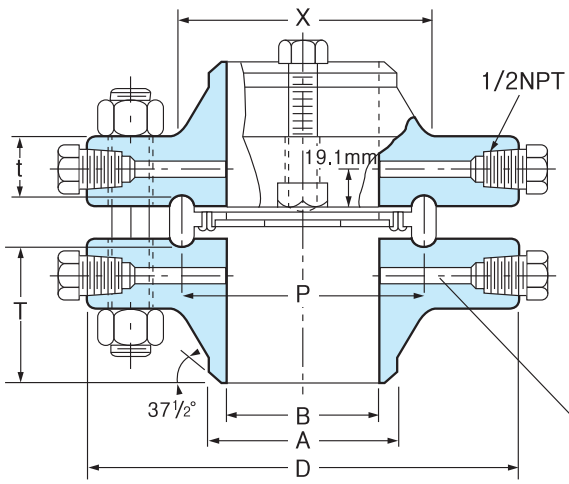
ASME B16.36 FORGED FLANGES

Unit:mm

Nominal Pipe size	Outside Diam. of Flange	Thickness of Flange(t)		Diam. of Hub at Base	Diam. of Raised Face	Diam.of Hub. at Bevel	Length Thru Hub(T)				Bore(B)	
							Welding Neck		Slip-on & Threaded		Welding Neck	Slip-on
	D	Raised Face	Ring Joint	X	G	A	Raised Face	Ring Joint	Raised Face	Ring Joint		
CLASS 900												
3	341	38.1	38.1	127.0	127.0	88.9	101.6	101.6	53.8	53.8	To be specified by purchaser	90.7
4	292	44.5	44.5	158.8	157.2	114.3	114.3	114.3	69.9	69.9		116.1
5	349	50.8	50.8	190.5	185.7	141.2	127.0	127.0	79.2	79.2		143.8
6	381	55.6	55.6	235.0	215.9	168.4	139.7	139.7	85.9	85.9		170.7
8	470	63.5	63.5	298.5	269.7	219.2	162.1	162.1	101.6	101.6		221.5
10	546	69.9	69.9	368.3	323.9	273.1	184.2	184.2	108.0	108.0		276.4
12	610	79.2	79.2	419.1	381.0	323.9	200.2	200.2	117.3	117.3		327.2
14	641	85.9		450.9	412.8	355.6	212.9					
16	705	88.9		508.0	469.9	406.4	215.9					
18	787	101.6		565.2	533.4	457.2	228.6					
20	857	108.0		622.3	584.2	208.0	247.7					
24	1041	139.7		749.3	692.2	609.6	292.1					
CLASS 1500												
1	149	38.1	38.1	52.3	50.8	33.5	82.6	82.6	47.8	44.5	To be specified by purchaser	34.5
1 1/4	159	35.1	35.1	63.5	63.5	42.2	73.2	73.2	47.8	44.5		43.2
1 1/2	178	38.1	38.1	69.9	73.2	48.3	88.9	88.9	47.8	44.5		49.5
2	216	38.1	38.1	104.6	91.9	60.5	101.6	101.6	57.2	57.2		62.0
2 1/2	244	41.1	41.1	124.0	104.6	73.2	104.6	104.6	63.5	63.5		74.7
3	267	47.8	47.8	133.4	127.0	88.9	117.3	117.3	73.2	73.2		90.7
4	311	53.8	53.8	162.1	157.2	114.3	124.0	124.0	90.4	90.4		116.1
5	375	73.2	73.2	196.9	185.7	141.2	155.4	104.6	104.6	104.6		143.8
6	394	82.6	82.6	228.6	215.9	168.4	171.5	171.5	119.1	119.1		170.7
8	483	92.0	92.0	292.1	269.7	219.2	212.9	212.9	142.7	142.7		221.5
10	584	108.0	108.0	368.3	323.9	273.1	254.0	254.0	158.8	158.8		276.4
12	673	124.0	124.0	450.9	381.0	323.9	282.4	282.4	180.8	180.8		327.2
14	749	133.4		495.3	412.8	355.6	298.5					
16	826	146.1		552.5	469.9	406.4	311.2					
18	914	162.1		596.9	533.4	457.2	327.2					
20	984	177.8		641.4	584.2	508.0	355.6					
24	1168	203.2		762.0	692.2	609.6	406.4					

Notes :
(1) For the inside diameter of pipes (corresponding to 'Bore'(B) of Welding Neck Flanges), refer to page 122~123
(2) Class 900 dimensions of size 1″ (25.4mm) throught 21/2″ are the same as for Class 1500.
(3) Class 900 and 1500 is not included in 'thickness'(t)and 'Length through Hub'(T).
(4) Each union includes two carbon steel jack screw bolts with hex nuts.

WELDING NECK
(RING-TYPE JOINT)



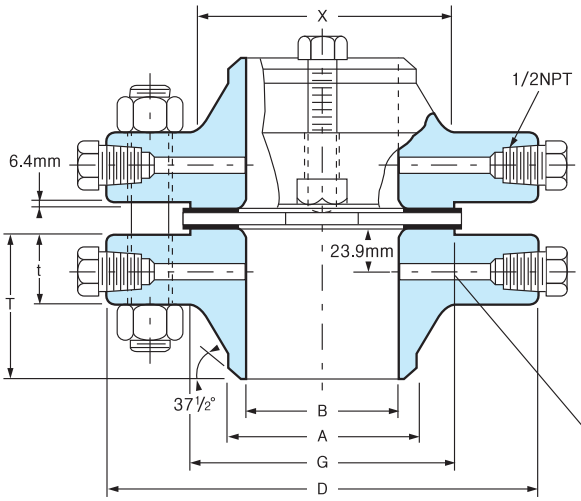
Unit:mm

Nominal Pipe size	Pitch Diam.of Ring and Groove P	Ring Number	Depth of Jack Screw Slot		Jack Screw Size		Drilling Template					
			Raised Face	Ring Joint	Raised Face (inch)	Ring Joint (inch)	Diam.of Bolt Circle	Number of Bolt	Diam.of Stud Bolts (inch)	Diam.of Bolt Holes	Length of Stud Bolts	
											Raised Face	Ring Joint
CLASS 900												
3	123.8	R31	9.7	15.7	3/4 x 3.50	3/4 x 4.00	190.5	8	7/8	25.4	152.4	165.1
4	149.2	R37	9.7	15.7	3/4 x 3.50	3/4 x 4.50	235.0	8	1 1/8	31.8	177.8	190.5
5	181.0	R41	9.7	15.7	3/4 x 3.50	3/4 x 4.50	279.4	8	1 1/4	35.1	190.5	203.2
6	211.1	R45	15.7	22.4	1 x 4.50	1 x 4.75	317.5	12	1 1/8	31.8	196.9	209.6
8	269.9	R49	15.7	22.4	1 x 4.50	1 x 5.50	393.7	12	1 3/8	38.1	228.6	241.3
10	323.9	R53	15.7	22.4	1 x 4.50	1 x 5.25	469.9	16	1 3/8	38.1	241.3	254.0
12	381.0	R57	15.7	22.4	1 x 4.50	1 x 5.50	533.4	20	1 3/8	38.1	260.4	273.1
14							558.8	20	1 1/2	41.1	279.4	
16							616.0	20	1 5/8	44.5	292.1	
18							685.8	20	1 7/8	50.8	330.2	
20							749.3	20	2	53.8	355.6	
24							901.7	20	2 1/2	66.5	444.5	
CLASS 1500												
1	50.8	R16	6.4	12.7	5/8 x 3.00	5/8 x 3.50	101.6	4	7/8	25.4	152.4	158.8
1 1/4	60.3	R18	6.4	12.7	5/8 x 3.00	5/8 x 3.50	111.3	4	7/8	25.4	139.7	146.1
1 1/2	68.3	R20	6.4	12.7	5/8 x 3.00	5/8 x 3.50	124.0	4	1	28.4	158.8	165.1
2	95.3	R24	6.4	12.7	5/8 x 3.00	5/8 x 4.00	165.1	8	1 7/8	25.4	152.4	165.1
2 1/2	108.0	R27	6.4	12.7	5/8 x 3.00	5/8 x 4.00	190.5	8	1	28.4	165.1	177.8
3	136.5	R35	9.7	15.7	5/8 x 3.50	3/4 x 4.00	203.2	8	1 1/8	31.8	184.2	196.9
4	161.9	R39	9.7	15.7	3/4 x 3.50	3/4 x 4.50	241.3	8	1 1/4	35.1	203.2	215.9
5	193.7	R44	9.7	15.7	3/4 x 3.50	3/4 x 4.50	292.1	8	1 1/2	41.1	247.7	260.4
6	211.1	R46	15.8	22.4	1 x 6.00	1 x 6.50	317.5	12	1 3/8	38.1	266.7	279.4
8	269.9	R50	15.7	22.4	1 x 6.50	1 x 6.50	393.7	12	1 5/8	44.5	298.5	317.5
10	323.9	R54	15.7	22.4	1 x 6.50	1 x 7.00	482.6	12	1 7/8	50.8	342.9	362.0
12	381.0	R58	15.7	22.4	1 x 6.50	1 x 8.00	571.5	16	2	53.8	381.0	406.4
14							635.0	16	2 1/4	60.5	412.8	
16							704.9	16	2 1/2	66.5	450.9	
18							774.7	16	2 3/4	73.2	501.7	
20							831.9	16	3	79.2	546.1	
24							990.6	16	3 1/2	91.9	622.3	

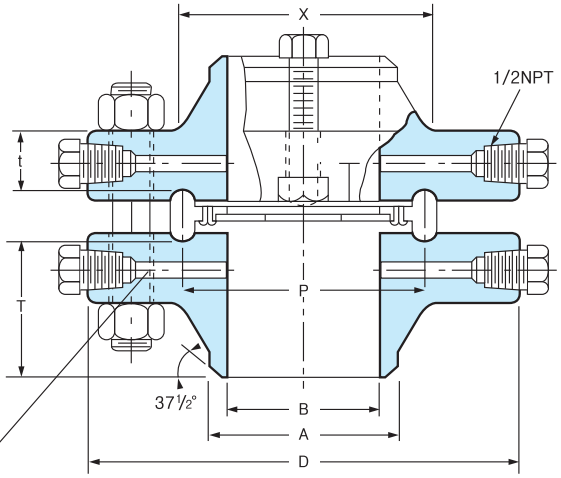
(5) Unless otherwise specified, raised face unionos are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy series hex nuts ASTM A194 Class 2H.
(6) On ring joint flanges having a groove depth 0.375″ (9.5m)and less, the distance from the center line of the tap hole to the flange face is 0.750″ (19.1mm). When in depth of groove is 0.438″ (11.1mm) or greater, changes in drill size or method of drilling are necessary.
(7) Bot lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6.4mm) for NPS 3-12(#900), 1-12(#1500) and 0.38″ (9.7mm) for NPS 14-24(#900, #1500). Bolt lengths for ring type joint flanges include. Allowance of 0.62 in (15.7mm) for NPS 3-10(#900). NPS 1-6(#1500) and 0.75 in (19.1mm) for NPS 12 (#900)

CLASS 2500 ORIFICE FLANGES

WELDING NECK (RAISED FACE)



WELDING NECK (RING-TYPE JOINT)



1/4 ″ Drill for Sizes 2 1/2 ″ and Under
3/8 ″ Drill for Sizes 3 ″
1/2 ″ Drill for Sizes 4 ″ and Over

ASME B16.36 FORGED FLANGES

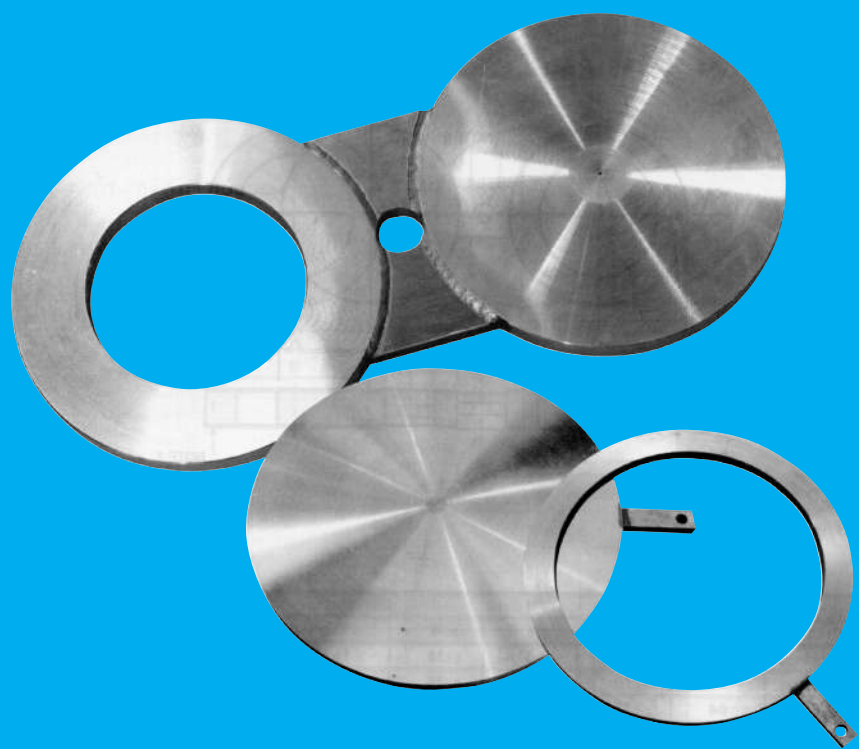
Unit : mm

Nominal Pipe size	O.D. of Flange Face	O.D. of Raised Flange	Thick-ness of Flange	Length Thru	Diam. of Hub	Diam. of Hub at Bevel	Bore	Ring Joint Type	Ring Number	Drilling Template					
								Pitch Diam		Diam. Bolt Circle	Number of Holes	Diam. of Holes	Diam. of Bolt (inch)	Length of Stud Bolts	
	D	G	t	T	X	A	B	P						Raised Face	Ring Joint
1	159	50.8	38.1	91.9	57.2	33.5	See Note(1) To be specified by purchaser	60.3	R18	108.0	4	25.4	7/8	152.4	158.8
1 1/2	203	73.2	44.5	111.3	79.2	48.3		82.6	R23	146.1	4	31.8	1 1/8	177.8	190.5
2	235	91.9	50.8	127.0	95.3	60.5		101.6	R26	171.5	8	28.4	1	184.2	196.9
2 1/2	267	104.6	57.2	142.7	114.3	73.2		111.1	R28	196.9	8	31.8	1 1/8	203.2	215.9
3	305	127.0	66.5	168.1	133.4	88.9		127.0	R32	228.6	8	35.1	1 1/4	228.6	241.3
4	356	157.2	76.2	190.5	165.1	114.3				273.1	8	41.1	1 1/2	260.4	
6	483	215.9	108.0	273.1	235.0	168.4				368.3	8	53.8	2	349.3	
8	552	269.7	127.0	317.5	304.8	219.2				438.2	12	53.8	2	387.4	
10	673	323.9	165.1	419.1	374.7	273.1				539.8	12	66.5	2 1/2	489.0	
12	762	381.0	184.2	463.6	441.5	323.9				619.3	12	73.2	2 3/4	539.8	

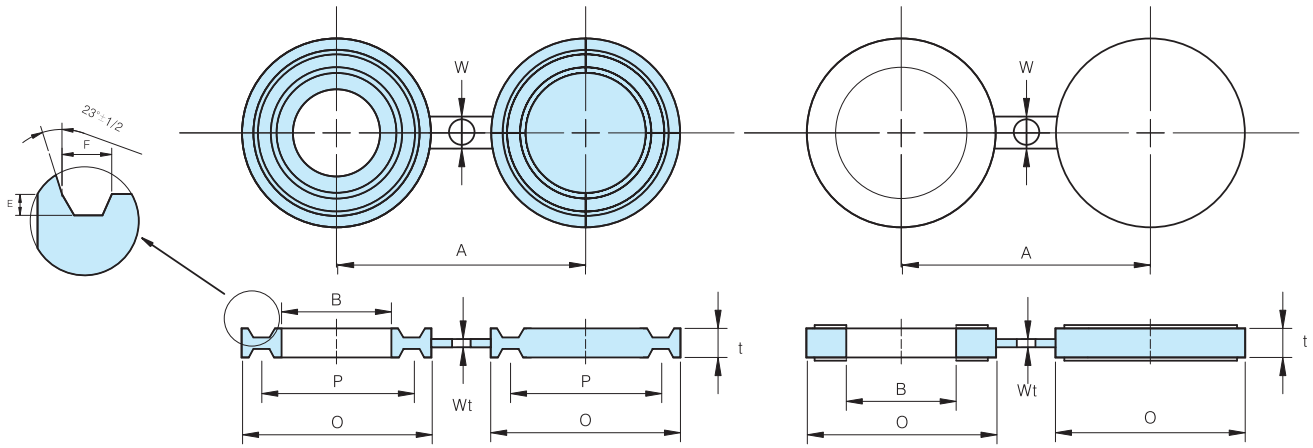
Notes :
(1) For the inside diameter of pipes (corresponding to 'Bore'(B) of Welding Neck Flanges), refer to page 122~123
(2) Class 2500 flanges will be furnished with 0.25″ (6.24mm) raised face, which is not included in 'Thickness'(t) and 'Length throuh Hub'(T).
(3) Each union includes two carbon steel jack screw bolts with hex nuts.
(4) Unless otherwise specified, raised face unions are furnished with alloy bolt studs per ASTM A193 Grade B7 with American Standard heavy seires hex nuts ASTM A194 Class 2H.
(5) On ring joint flanges having a groove depth 0.375″ (9.5mm) and less, the distance from the center line of the tap hole to the flange face is 0.750″ (19.1mm). When the depth of groove is 0.438″ (11.1mm) or greater, changes in drill size or method of drilling are necessary.
(6) Class 2500 Slip-on flanges are not covered by ASME B16.5.
(7) Bolt lengths for raised face flanges include allowance for orifice and gasket thickness of 0.25″ (6.4mm) for NPS 1-12. Bolt lengths for ring type joint flanges incude allowance of 0.62″ (15.7mm) for NPS 1-3.

ANSI/ASME B16.48 STEEL LINE BLANKS (API STANDARD 590)

- CLASS 150 FIGURE 8 BLANKS
- CLASS 300 FIGURE 8 BLANKS
- CLASS 600 FIGURE 8 BLANKS
- CLASS 900 FIGURE 8 BLANKS
- CLASS 1500 FIGURE 8 BLANKS
- CLASS 2500 FIGURE 8 BLANKS
- STEEL LINE BLANKS



CLASS 150–300 FLANGES



Class 150 FIGURE 8 BLANK RAISED FACE & FEMALE RING-JOINT FACING

Unit:mm

Nominl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	44.5	60.5	3.0	38.1	15.7	–	–	–	–	–	–	–	–	–
3/4	20.8	53.8	69.9	3.0	38.1	15.7	–	–	–	–	–	–	–	–	–
1	26.7	63.5	79.2	3.0	38.1	15.7	33.5	63.5	79.2	19.1	50.8	47.6	8.7	6.4	15.7
1 1/4	42.2	73.2	88.9	6.4	38.1	15.7	42.2	73.2	88.9	19.1	50.8	57.2	8.7	6.4	15.7
1 1/2	48.3	82.6	98.6	6.4	38.1	15.7	48.3	82.6	98.6	19.1	57.2	65.1	8.7	6.4	15.7
2	60.5	101.6	120.7	6.4	50.8	19.1	60.5	101.6	120.7	19.1	57.2	82.6	8.7	6.4	19.1
2 1/2	73.2	120.7	139.7	6.4	50.8	19.1	73.2	120.7	139.7	22.4	57.2	101.6	8.7	6.4	19.1
3	88.9	133.4	152.4	6.4	63.5	19.1	88.9	133.4	152.4	22.4	57.2	114.3	8.7	6.4	19.1
3 1/2	101.6	158.8	177.8	9.7	63.5	19.1	101.6	153.9	177.8	22.4	63.5	131.8	8.7	6.4	19.1
4	114.3	171.5	190.5	9.7	63.5	19.1	114.3	171.5	190.5	22.4	63.5	149.2	8.7	6.4	19.1
5	141.2	193.5	215.9	9.7	76.2	22.4	141.2	193.5	215.9	25.4	69.9	171.5	8.7	6.4	22.4
6	168.1	218.9	241.3	12.7	76.2	22.4	168.1	218.9	241.3	25.4	82.6	193.7	8.7	6.4	22.4
8	218.9	276.4	298.5	12.7	76.2	22.4	218.9	273.1	298.5	28.4	95.3	247.7	8.7	6.4	22.4
10	273.1	336.6	362.0	15.7	101.6	25.4	273.1	330.2	362.0	31.8	101.6	304.8	8.7	6.4	25.4
12	323.9	406.4	431.8	19.1	101.6	25.4	323.9	406.4	431.8	35.1	120.7	381.0	8.7	6.4	25.4
14	355.6	447.5	476.3	19.1	108.0	28.4	355.6	425.5	476.3	35.1	127.0	396.9	8.7	6.4	28.4
16	406.4	511.0	539.8	22.4	108.0	28.4	406.4	482.6	539.8	38.1	127.0	454.0	8.7	6.4	28.4
18	457.2	546.1	577.9	25.4	114.3	31.8	457.2	546.1	577.9	41.1	127.0	517.5	8.7	6.4	31.8
20	508.0	603.3	635.0	28.4	120.7	31.8	508.0	596.9	635.0	41.1	127.0	558.8	8.7	6.4	31.8
24	609.6	714.2	749.3	31.8	139.7	35.1	609.6	711.2	749.3	47.8	152.4	673.1	8.7	6.4	35.1

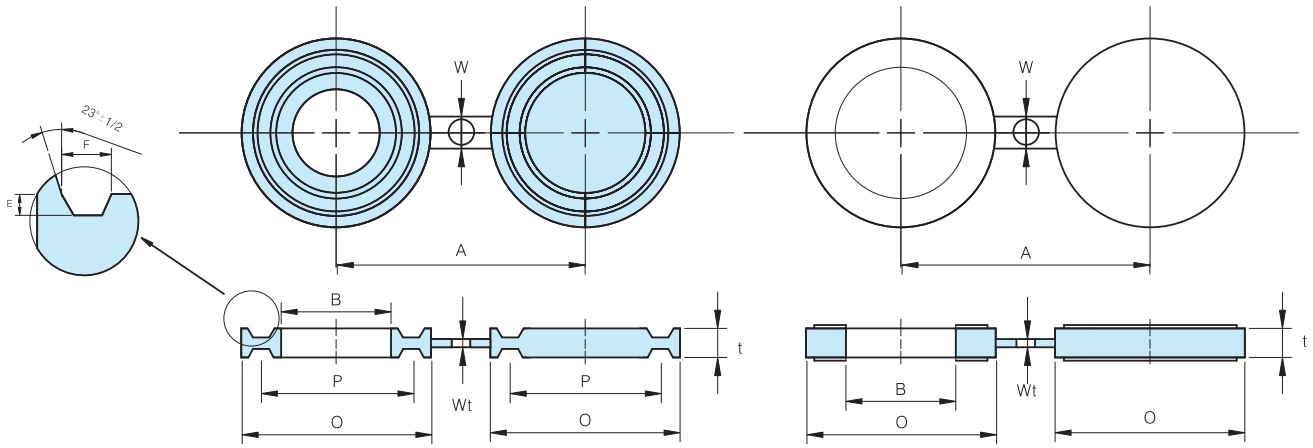
Class 300 FIGURE 8 BLANK RAISED FACE & FEMALE RING-JOINT FACING

Unit:mm

Nominl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	50.8	66.5	6.4	38.1	15.7	21.3	50.8	57.4	15.7	38.1	34.1	7.1	5.6	15.7
3/4	20.8	63.5	82.6	6.4	38.1	19.1	26.7	63.5	82.6	19.1	44.5	42.9	8.7	6.4	19.1
1	26.7	69.9	88.9	6.4	38.1	19.1	33.5	69.9	88.9	19.1	50.8	50.8	8.7	6.4	19.1
1 1/4	42.2	79.2	98.6	6.4	38.1	19.1	42.2	79.2	98.6	22.4	50.8	60.3	8.7	6.4	19.1
1 1/2	48.3	91.9	114.3	6.4	50.8	22.4	48.3	90.4	114.3	22.4	57.2	68.3	8.7	6.4	22.4
2	60.5	108.0	127.0	9.7	50.8	19.1	60.5	108.0	127.0	25.4	57.2	82.6	11.9	7.9	19.1
2 1/2	73.2	127.0	149.4	9.7	63.5	22.4	73.2	127.0	149.4	28.4	57.2	101.6	11.9	7.9	22.4
3	88.9	146.1	168.1	9.7	63.5	22.4	88.9	146.1	168.1	28.4	57.2	123.8	11.9	7.9	22.4
3 1/2	101.6	162.1	184.2	12.7	63.5	22.4	101.6	158.8	184.2	28.4	63.5	131.8	11.9	7.9	22.4
4	114.3	177.8	200.2	12.7	63.5	22.4	114.3	174.8	200.2	31.8	63.5	149.2	11.9	7.9	22.4
5	141.2	212.9	235.0	15.7	76.2	22.4	141.2	209.6	235.0	35.1	69.9	181.0	11.9	7.9	22.4
6	168.1	247.7	269.7	15.7	76.2	22.4	168.1	241.3	269.7	35.1	82.6	211.2	11.9	7.9	22.4
8	218.9	304.8	330.2	22.4	88.9	25.4	218.9	301.8	330.2	41.1	95.3	269.9	11.9	7.9	25.4
10	273.1	358.6	387.4	25.4	101.6	28.4	273.1	355.6	387.4	44.5	101.6	323.9	11.9	7.9	28.4
12	323.9	419.1	450.9	28.4	101.6	31.8	323.9	412.8	450.9	50.8	120.7	381.0	11.9	7.9	31.8
14	355.6	482.6	514.4	31.8	120.7	31.8	355.6	457.2	514.4	53.8	127.0	419.1	11.9	7.9	31.8
16	406.4	536.4	571.5	38.1	124.0	35.1	406.4	508.0	571.5	57.2	127.0	469.9	11.9	7.9	35.1
18	457.2	593.9	628.7	41.1	114.3	35.1	457.2	574.5	628.7	60.5	127.0	533.4	11.9	7.9	35.1
20	508.0	650.7	685.8	44.5	120.7	35.1	508.0	635.0	685.8	69.9	127.0	584.2	13.5	9.5	35.1
24	609.6	771.7	812.8	50.8	139.7	41.1	609.6	749.3	812.8	79.2	152.4	692.2	16.7	11.1	41.1

Notes :
(1) Holes size(where required due to bolt spacing) shall be the same as the flange bolt hole, and located such that it will not interfere with bolting between two flanges.
(2) The thickness of the web(or tie bar) dimension Wt shall be 0.25 in.minimum, except when t is less than 0.25 in., Wt shall equal t

CLASS 600–900 FLANGES



Class 600 FIGURE 8 BLANK RAISED FACE & FEMALE RING-JOINT FACING

Unit:mm

No-minl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	50.8	66.5	6.4	38.1	15.7	21.3	50.8	57.4	19.1	38.1	34.1	7.1	5.6	15.7
3/4	20.8	63.5	82.6	6.4	38.1	19.1	26.7	63.5	82.6	22.4	44.5	42.9	8.7	6.4	19.1
1	26.7	69.9	88.9	6.4	57.2	19.1	33.5	69.9	88.9	22.4	50.8	50.8	8.7	6.4	19.1
1 1/4	36.6	79.2	98.6	9.7	57.2	19.1	42.2	79.2	98.6	22.4	50.8	60.3	8.7	6.4	19.1
1 1/2	42.7	91.9	114.3	9.7	66.5	22.4	48.3	90.4	114.3	22.4	57.2	68.3	8.7	6.4	22.4
2	54.9	108.0	127.0	9.7	57.2	19.1	60.5	108.0	127.0	28.4	57.2	82.6	11.9	7.9	19.1
2 1/2	67.1	127.0	149.4	12.7	66.5	22.4	73.2	127.0	149.4	31.8	57.2	101.6	11.9	7.9	22.4
3	82.8	146.1	168.1	12.7	66.5	22.4	88.9	146.1	168.1	31.8	57.2	123.8	11.9	7.9	22.4
3 1/2	95.5	158.8	184.2	15.7	76.2	25.4	101.6	158.8	184.2	35.1	63.5	131.8	11.9	7.9	25.4
4	108.2	190.5	215.9	15.7	76.2	25.4	114.3	174.8	215.9	35.1	63.5	149.2	11.9	7.9	25.4
5	134.6	238.3	266.7	19.1	85.9	28.4	141.2	209.6	266.7	38.1	69.9	181.0	11.9	7.9	28.4
6	161.5	263.7	292.1	22.4	85.9	28.4	168.1	241.3	292.1	44.5	82.6	211.2	11.9	7.9	28.4
8	211.6	317.5	349.3	28.4	95.3	31.8	218.9	301.8	349.3	50.8	95.3	269.9	11.9	7.9	31.8
10	264.7	396.7	431.8	35.1	104.6	35.1	273.1	355.6	431.8	57.2	101.6	323.9	11.9	7.9	35.1
12	314.7	454.2	489.0	41.1	104.6	35.1	323.9	412.8	489.0	63.5	120.7	381.0	11.9	7.9	35.1
14	345.9	489.0	527.1	44.5	114.3	38.1	355.6	457.2	527.1	66.5	127.0	419.1	11.9	7.9	38.1
16	396.7	561.8	603.3	50.8	124.0	41.1	406.4	508.0	603.3	73.2	127.0	469.9	11.9	7.9	41.1
18	447.5	609.6	654.1	53.8	133.4	44.5	457.2	574.5	654.1	79.2	127.0	533.4	11.9	7.9	44.5
20	496.8	679.5	723.9	63.5	133.4	44.5	508.0	635.0	723.9	88.9	127.0	584.2	13.5	9.5	44.5
24	596.9	787.4	838.2	73.2	152.4	50.8	609.6	749.3	838.2	104.6	152.4	692.2	16.7	11.1	50.8

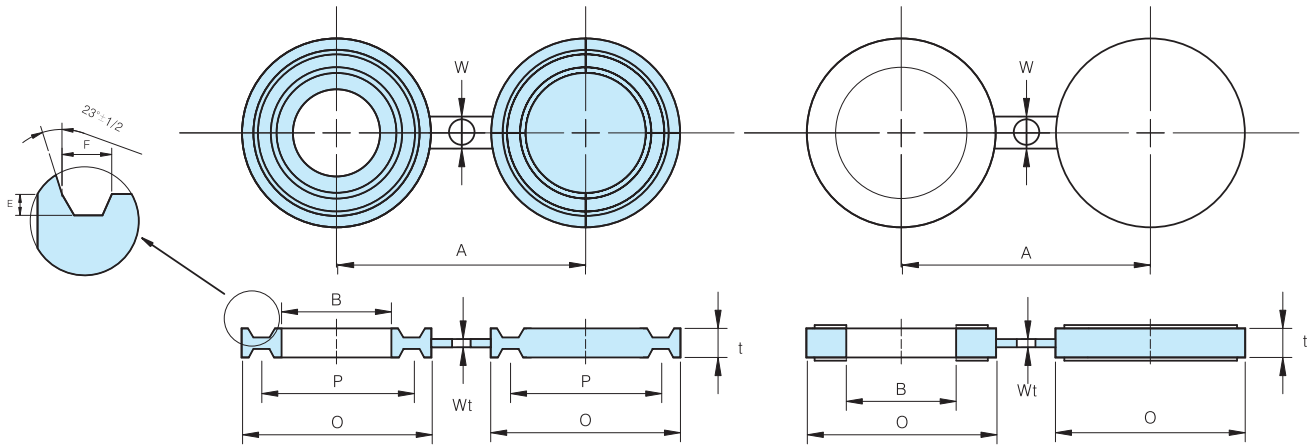
Class 900 FIGURE 8 BLANK RAISED FACE & FEMALE RING-JOINT FACING

Unit:mm

No-minl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center-line Diam.	Thick-ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	60.5	82.6	6.4	38.1	22.4	21.3	60.5	82.6	22.4	38.1	39.4	8.7	6.4	22.4
3/4	20.8	66.5	88.9	6.4	41.1	22.4	26.7	66.5	88.9	22.4	44.5	44.5	8.7	6.4	22.4
1	26.7	76.2	101.6	6.4	57.2	25.4	33.5	71.4	101.6	22.4	50.8	50.8	8.7	6.4	25.4
1 1/4	36.6	85.9	111.3	9.7	57.2	25.4	42.2	81.0	111.3	25.4	50.8	60.3	8.7	6.4	25.4
1 1/2	42.7	95.3	124.0	9.7	66.5	28.4	48.3	91.9	124.0	25.4	63.5	68.3	8.7	6.4	28.4
2	54.9	139.7	165.1	12.7	57.2	25.4	60.5	124.0	165.1	31.8	50.8	95.3	11.9	7.9	25.4
2 1/2	67.1	162.1	190.5	12.7	66.5	28.4	73.2	136.7	190.5	35.1	66.5	108.0	11.9	7.9	28.4
3	82.8	165.1	190.5	15.7	66.5	25.4	88.9	155.4	190.5	35.1	66.5	123.8	11.9	7.9	25.4
4	108.2	203.2	235.0	19.1	76.2	31.8	114.3	180.8	235.0	41.1	73.2	149.2	11.9	7.9	31.8
5	134.6	244.3	279.4	22.4	85.9	35.1	141.2	215.9	279.4	44.5	73.2	181.0	11.9	7.9	35.1
6	161.5	285.8	317.5	25.4	85.9	31.8	168.1	241.3	317.5	47.8	73.2	211.2	11.9	7.9	31.8
8	211.6	355.6	393.7	35.1	95.3	38.1	218.9	307.8	393.7	57.2	79.2	269.9	11.9	7.9	38.1
10	264.7	431.8	469.9	41.1	104.6	38.1	273.1	362.0	469.9	63.5	120.7	323.9	11.9	7.9	38.1
12	314.7	495.3	533.4	47.8	104.6	38.1	323.9	419.1	533.4	73.2	120.7	381.0	11.9	7.9	38.1
14	345.9	517.7	558.8	53.8	114.3	41.1	355.6	466.9	558.8	82.6	120.7	419.1	16.7	11.1	41.1
16	396.7	571.5	616.0	60.5	124.0	44.5	406.4	523.7	616.0	91.9	127.0	469.9	16.7	11.1	44.5
18	447.5	635.0	685.8	66.5	133.4	50.8	457.2	593.9	685.8	101.6	133.4	533.4	19.8	12.7	50.8
20	496.8	695.5	749.3	73.2	133.4	53.8	508.0	647.7	749.3	111.3	127.0	584.2	19.8	12.7	53.8
24	596.9	835.2	901.7	88.9	152.4	66.5	609.6	771.7	901.7	133.4	139.7	692.2	27.0	15.9	66.5

Notes :
(1) Holes size(where required due to bolt spacing) shall be the same as the flange bolt hole, and located such that it will not interfere with bolting between two flanges.
(2) The thickness of the web(or tie bar) dimension Wt shall be 0.25 in.minimum, except when t is less than 0.25 in., Wt shall equal t

CLASS 1500–2500 FLANGES



Class 1500 FIGURE 8 BLANK RAISED FACE & FEMALE RING–JOINT FACING

Unit : mm

No–minl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center–line Diam.	Thick–ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center–line Diam.	Thick–ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	60.5	82.6	6.4	38.1	22.4	21.3	60.5	82.6	22.4	38.1	39.4	8.7	6.4	22.4
3/4	20.8	66.5	88.9	9.7	41.1	22.4	26.7	66.5	88.9	25.4	44.5	44.5	8.7	6.4	22.4
1	26.7	76.2	101.6	9.7	63.5	25.4	33.5	71.4	101.6	25.4	53.8	50.8	8.7	6.4	25.4
1 1/4	35.1	85.9	111.3	9.7	63.5	25.4	42.2	81.0	111.3	25.4	53.8	60.3	8.7	6.4	25.4
1 1/2	40.9	95.3	124.0	12.7	69.9	28.4	48.3	91.9	124.0	28.4	57.2	68.3	8.7	6.4	28.4
2	52.6	139.7	165.1	12.7	69.9	25.4	60.5	124.0	165.1	35.1	53.8	95.3	11.9	7.9	25.4
2 1/2	62.7	162.1	190.5	15.7	76.2	28.4	73.2	136.7	190.5	38.1	57.2	108.0	11.9	7.9	28.4
3	78.0	171.5	203.2	19.1	76.2	31.8	88.9	168.1	203.2	44.5	73.2	136.5	11.9	7.9	31.8
4	102.4	206.2	241.3	22.4	88.9	35.1	114.3	193.5	241.3	47.8	76.2	161.9	11.9	7.9	35.1
5	128.3	251.0	292.1	28.4	88.9	41.1	141.2	228.6	292.1	53.8	76.2	193.7	11.9	7.9	41.1
6	153.9	279.4	317.5	35.1	88.9	38.1	168.1	247.7	393.7	60.5	79.2	211.2	13.5	9.5	38.1
8	202.7	349.3	393.7	41.1	101.6	44.5	218.9	317.5	482.6	73.2	85.9	269.9	16.7	11.1	44.5
10	254.5	431.8	482.6	50.8	114.3	50.8	273.1	371.3	571.5	82.6	133.4	323.9	16.7	11.1	50.8
12	303.3	517.7	571.5	60.5	114.3	53.8	323.9	438.2	635.0	101.6	133.4	381.0	23.0	14.3	53.8
14	333.2	574.5	635.0	66.5	127.0	60.5	355.6	489.0	704.9	111.3	139.7	419.1	27.0	15.9	60.5
16	381.0	638.0	704.9	76.2	133.4	66.5	406.4	546.1	774.7	124.0	146.1	469.9	30.2	17.5	66.5
18	428.8	701.5	774.7	85.9	146.1	73.2	457.2	612.6	831.9	133.4	152.4	533.4	30.2	17.5	73.2
20	477.8	752.3	831.9	95.3	152.4	79.2	508.0	673.1	749.3	142.7	165.1	584.2	33.4	17.5	79.2
24	574.5	898.7	990.6	111.3	177.8	91.9	609.6	793.8	990.6	168.1	177.8	692.2	36.5	20.6	91.9

Class 2500 FIGURE 8 BLANK RAISED FACE & FEMALE RING–JOINT FACING

Unit : mm

No–minl Pipe Size	SPECTACLE RAISED FACE						SPECTACLE RING JOINT FACING								
	Inside Diam.	Outside Diam.	Center–line Diam.	Thick–ness	Web Width	Hole Diam.	Inside Diam.	Outside Diam.	Center–line Diam.	Thick–ness	Web Width	Pitch Diam.	Width of Groove	Depth of Groove	Hole Diam.
	B	O	A	t	W		B	O	A	t	W	P	F	E	
1/2	15.7	66.5	88.9	9.7	38.1	22.4	21.3	65.0	88.9	25.4	38.1	42.9	8.7	6.4	22.4
3/4	20.8	73.2	95.3	9.7	41.1	22.4	26.7	73.2	95.3	28.4	44.5	50.8	8.7	6.4	22.4
1	26.7	82.6	108.0	9.7	63.5	25.4	33.5	82.6	108.0	28.4	53.8	60.3	8.7	6.4	25.4
1 1/4	35.1	101.6	130.0	12.7	63.5	28.4	42.2	101.6	130.0	35.1	53.8	72.2	11.9	7.9	28.4
1 1/2	40.9	114.3	146.1	15.7	69.9	31.8	48.3	114.3	146.1	38.1	60.5	82.6	11.9	7.9	31.8
2	52.6	142.7	171.5	15.7	69.9	28.4	60.5	133.4	171.5	41.1	57.2	101.6	11.9	7.9	28.4
2 1/2	62.7	165.1	196.9	19.1	76.2	31.8	73.2	149.4	196.9	47.8	60.5	111.1	13.5	9.5	31.8
3	78.0	193.5	228.6	22.4	76.2	35.1	88.9	168.1	228.6	50.8	76.2	127.0	13.5	9.5	35.1
4	102.4	231.6	273.1	28.4	88.9	41.1	114.3	203.2	273.1	63.5	82.6	157.2	16.7	11.1	41.1
5	128.3	276.4	323.9	35.1	88.9	47.8	141.2	241.3	323.9	73.2	88.9	190.5	19.8	12.7	47.8
6	153.9	314.5	368.3	41.1	88.9	53.8	168.1	279.4	368.3	82.6	95.3	228.6	19.8	12.7	53.8
8	198.4	384.0	438.2	53.8	101.6	53.8	218.9	339.9	438.2	98.6	95.3	279.4	23.0	14.3	53.8
10	247.7	472.9	539.8	66.5	114.3	66.5	273.1	425.5	539.8	117.3	90.9	342.9	30.2	17.5	66.5
12	288.8	546.1	619.3	79.2	114.3	73.2	323.9	495.3	619.3	133.4	152.4	406.4	33.4	17.5	73.2

Notes :

(1) Holes size(where required due to bolt spacing) shall be the same as the flange bolt hole, and located such that it will not interfere with bolting between two flanges.

(2) The thickness of the web(or tie bar) dimension Wt shall be 0.25 in.minimum, except when t is less than 0.25 in., Wt shall equal t.

STEEL LINE BLANKS

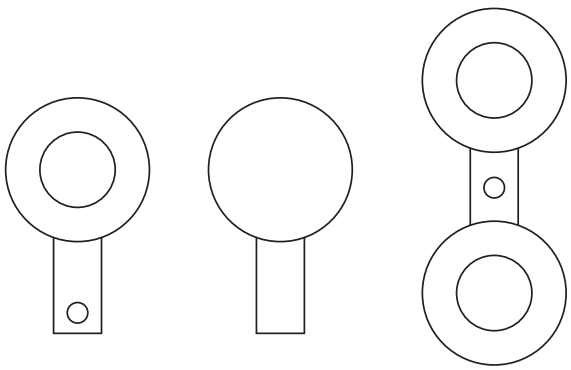
ASME B16.48-1997

1. GENERAL

(1) Fogire 8 Blank
A figure 8 blank(also called a spectacle blank) is a pressure retaining plate with one solid end and one open end connected with a web or tie bar

(2) Paddle Blank
A paddle blank is similar to the solid end of a figure 8 blank(with handle) and is generally used in conjunction with a paddle spacer in lage sizes.

(3) Paddle Spacer
A paddle spacer is similar to the open end of a figure 8 blank(with handle) and is generally used in conjunction with a paddle blank.



Paddle Spacer Paddle Blank Figure 8 Blank

2. MATERIAL

Material Group	Forgings	Plate	Castings
1.1	A105(1)	A515 Gr.70(1)	A216 Gr.WCB(1)
		A516 Gr.70(1)(2)	
		A537 Cl 3)	
1.7	A182 Gr.F2(4)	A204 Gr.C(5)	
1.9	A182 Gr.F11 Cl.2(6)	A387 Gr.11 Cl.2(7)	A217 Gr.WC6(8)
1.10	A182 Gr.F22 Cl.3(7)	A387 Gr.22. Cl.2(7)	A217 Gr.WC9(8)
1.13	A182 Gr.F5	–	–
2.1	A182 Gr.F304(9)	A240 Gr.304(9)	A351 Gr.CF8(9)
2.2	A182 Gr.F316(9)	A240 Gr.316(9)	A351 Gr.CF8M(9)
2.4	A182 Gr.F321(4)	A240 Gr.321(4)	–
2.5	A182 Gr.F347(4)	A240 Gr.347(4)	A351 Gr.CF8C(9)

Notes:

(1) Upon prolonged exposure to temperatures above 427° C, the carbide phase of carbon steel may be converted to graphite, Permissible but not recommended for prolonged service above 427° C
(2) Not to be used over 454° C
(3) Not to be used over 371° C
(4) Not to be used above 538° C
(5) Upon prolonged exposure to temperatures above 468° C, the carbide phase of carbon-molyb-denum steel may be converted graphite. Permssible but to not recommended for prolonged service above 468° C
(6) Permissible but not recommended for prolonged use above 593° C. Use normalized and tempered material only.
(7) Permissible but not recommended for prolonged use above 593° C.
(8) Not to be used over 593° C. Use normalized and tempered material only.
(9) At temperatures over 538° C, use the material only when the carbon content is 0.04% or higher.

3. TOLERANCE

Tolerance for facings shall be in accordance with ASME B16.5. Thickness tolerances are :
NPS 18 and smaller +3 / -0
NPS 20 and larger +4.8 / -0

JIS MATERIAL CHEMICAL COMPOSITION & MECHANICAL REQUIREMENTS

MATE-RIAL		Chemical Comosition (%)													Mechanical Requirements				
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Sn	Y.S (N/mm²)	T.S (N/mm²)	E.L (%) axial	E.L (%) tangen.	R.A (%) axial	R.A (%) tangen.	H.B
SF440A	Max.	0.60	0.50	1.20	0.030	0.035									540					121
	Min.		0.15	0.30										195	440	24.0	19.0	45.0	35.0	
SF490A	Max.	0.60	0.50	1.20	0.030	0.035									590					134
	Min.		0.15	0.30										245	490	22.0	17.0	40.0	30.0	
SFVC 1	Max.	0.30	0.35	1.35	0.030	0.030									560					
	Min.			0.40										205	410	21.0		38.0		
SFVC 2A	Max.	0.35	0.35	1.10	0.030	0.030									640					
	Min.			0.40										245	490	18.0		33.0		
SFVC 2B	Max.	0.30	0.35	1.35	0.030	0.030									640					
	Min.			0.70										245	490	18.0		38.0		
SFL 1	Max.	0.30	0.35	1.35	0.030	0.030									590					
	Min.													225	440	22.0		38.0		
SFL 2	Max.	0.30	0.35	1.35	0.030	0.030									640					
	Min.													245	490	19.0		30.0		
S15C	Max.	0.18	0.35	0.60	0.030	0.035														111~167
	Min.	0.13	0.15	0.30										235	370	30.0				
S20C	Max.	0.23	0.35	0.30	0.030	0.035														116~174
	Min.	0.18	0.15	0.30										245	400	28.0				
S25C	Max.	0.28	0.35	0.60	0.030	0.035														123~138
	Min.	0.22	0.15	0.30										265	440	27.0				
S30C	Max.	0.33	0.35	0.90	0.030	0.035														137~197
	Min.	0.27	0.15	0.60										285	470	25.0				
S35C	Max.	0.38	0.35	0.90	0.030	0.035														149~207
	Min.	0.32	0.15	0.60										305	510	23.0				
S40C	Max.	0.43	0.35	0.90	0.030	0.035														156~217
	Min.	0.37	0.15	0.60										325	540	22.0				
S45C	Max.	0.48	0.35	0.90	0.030	0.035														167~229
	Min.	0.42	0.15	0.60										345	570	20.0				
SFVA F1	Max.	0.30	0.35	0.90	0.030	0.030			0.65						660					
	Min.			0.60					0.45					275	480	18.0		35.0		
SFVA F5A/B	Max.	0.15	0.50	0.60	0.030	0.030		6.00	0.65					A: 245	410~590	18.0		40.0		
	Min.			0.30				4.00	0.45					B: 275	480~660	18.0		35.0		
SFVA F9	Max.	0.15	1.00	0.60	0.030	0.030		10.00	1.10						760					
	Min.		0.50	0.30				8.00	0.90					380	590	18.0		40.0		
SFVA F11A/B	Max.	0.20	1.00	0.80	0.030	0.030		1.50	0.65					A: 275	A:480~660	18.0		35.0		
	Min.		0.50	0.30				1.00	0.45					B: 315	B:520~690	18.0		35.0		
SFVA F12	Max.	0.20	0.60	0.80	0.030	0.030		1.25	0.65						660					
	Min.			0.30				0.80	0.45					275	480	18.0		35.0		
SFVA F22A/B	Max.	0.15	0.50	0.60	0.030	0.030		2.50	1.10					A: 205	A:410~590	18.0		40.0		
	Min.			0.630				2.00	0.90					B: 315	B:520~690	18.0		35.0		
SFL3	Max.	0.20	0.35	0.90	0.030	0.030	3.75								640					
	Min.						3.25							255	490	19.0		35.0		
SFVQ 1A	Max.	0.25	0.40	1.50	0.030	0.030	1.00	0.25	0.60		0.05				730					
	Min.			1.20			0.40		0.45					345	550	16.0		38.0		
SFVQ 2A	Max.	0.27	0.40	1.00	0.030	0.030	1.00	0.45	0.70		0.05				730					
	Min.			0.50			0.50	0.25	0.55					345	550	16.0				
SFVQ 3	Max.	0.23	0.40	0.40	0.020	0.020	3.90	2.00	0.60		0.03				790					
	Min.			0.20			2.75	1.50	0.40					490	620	18.0		48.0		
SFVQ 2B	Max.	0.30	0.35	1.35	0.030	0.030									640					
	Min.			0.70										245	490	18.0		38.0		187
SUS F304	Max.	0.08	1.00	2.00	0.040	0.030	11.00	20.00						130under : 205	520	43.0		50.0		187
	Min.						8.00	18.00						130~200 : 205	480	29.0		45.0		187
SUS F304L	Max.	0.03	1.00	2.00	0.040	0.030	13.00	20.00						130under : 175	480	29.0		50.0		187
	Min.						9.00	18.00						130~200 : 175	450	29.0		45.0		187
SUS F304H	Max.	0.10	1.00	2.00	0.040	0.030	12.00	20.00						130under : 205	520	43.0		50.0		187
	Min.	0.04					8.00	18.00						130~200 : 205	480	29.0		45.0		187
SUS F310	Max.	0.15	1.00	2.00	0.040	0.030	22.00	26.00						130under : 205	520	34.0		50.0		187
	Min.						19.00	24.00						130~200 : 205	480	29.0		45.0		187
SUS F316	Max.	0.08	1.00	2.00	0.040	0.030	14.00	18.00	3.00					130under : 205	520	43.0		50.0		187
	Min.						10.00	16.00	2.00					130~200 : 205	480	29.0		45.0		187
SUS F316L	Max.	0.03	1.00	2.00	0.040	0.030	15.00	18.00	3.00					130under : 175	480	29.0		50.0		187
	Min.						12.00	16.00	2.00					130~200 : 175	450	29.0		45.0		187
SUS F316H	Max.	0.10	1.00	2.00	0.010	0.030	14.00	18.00	3.00					130under : 205	520	43.0		50.0		187
	Min.	0.04					10.00	16.00	2.00					130~200 : 205	480	29.0		45.0		187
SUS F317	Max.	0.08	1.00	2.00	0.040	0.030	15.00	20.00	4.00					130under : 205	520	29.0		50.0		187
	Min.						11.00	18.00	3.00					130~200 : 205	480	29.0		50.0		187
SUS F317L	Max.	0.03	1.00	2.00	0.040	0.030	15.00	20.00	4.00					130under : 175	480	29.0		50.0		187
	Min.						11.00	18.00	3.00					130~200 : 175	450	29.0		50.0		187
SUS F321	Max.	0.08	1.00	2.00	0.040	0.030	12.00		Ti : 5*C%~0.60					130under : 205	520	43.0		50.0		187
	Min.						9.00	17.00						130~200 : 205	480	29.0		45.0		187
SUS F347	Max.	0.08	1.00	2.00	0.040	0.030	13.00	20.00			Nb : 10*C%~1.00			130under : 205	520	43.0		50.0		187
	Min.						9.00	17.00						130~200 : 205	480	29.0		45.0		187
SUS F410A	Max.	0.15	1.00	1.00	0.040	0.030	0.50	13.50												187
	Min.							11.50						275	480	16.0		35.0		143

ASTM MATERIAL CHEMICAL COMPOSITION & MECHANICAL REQUIREMENTS

ATSM 2013 SECTION 1, VOLUME 1.01

MATE-RIAL			Chemical Compsition (%)												Mechanical Requirements				
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Y.S (Mpa)	T.S (Mpa)	E.l (%)	R.A (%)	H.B
A 105	K03504	Max.	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.12	0.40	0.08							187
		Min.		0.10	0.60										250	485	22	30	
A266 GR.1	K03506	Max.	0.30	0.35	1.05	0.025	0.025									585			
		Min.		0.15	0.40										205	415	23	38	
A266 GR.2	K03506	Max.	0.30	0.35	1.05	0.025	0.025									655			
		Min.		0.15	0.40										250	485	20	33	
A266 GR.3	K05001	Max.	0.35	0.35	1.35	0.025	0.025									690			
		Min.		0.15	0.80										260	515	19	30	
A266 GR.4	K03017	Max.	0.30	0.35	1.35	0.025	0.025									655			
		Min.		0.15	0.80										250	485	20	33	
A350 LF.1	K03009	Max.	0.30	0.30	1.35	0.035	0.040	0.40	0.30	0.12	0.40	0.08	0.02			585			197
		Min.		0.15	0.60								0.02		205	415	25	38	
A350 LF.2	K03011	Max.	0.30	0.30	1.35	0.035	0.040	0.40	0.30	0.12	0.40	0.08				655			197
		Min.		0.15	0.60										250	485	22	30	
A350 LF3	K32025	Max.	0.20	0.35	0.90	0.035	0.040	3.70	0.30	0.12	0.40	0.03	0.02			655			197
		Min.		0.20				3.30							260	485		35	
A694	K03014	Max.	0.26	0.35	1.60	0.025	0.025								F42:290 F46:315 F48:330 F50:345 F52:360 F56:385 F60:415 F65:450 F70:485	F42:415 F46:415 F48:425 F50:440 F52:455 F56:470 F60:515 F65:530 F70:565	F42~F65 :20 F70:18		
		Min.		0.15															
A182 F1	K12822	Max.	0.28	0.35	0.90	0.045	0.045			0.65									192
		Min.		0.15	0.60					0.44					275	485	20	30	143
A182 F5	K41545	Max.	0.15	0.50	0.60	0.030	0.030	0.50	6.00	0.65									217
		Min.			0.30				4.00	0.44					275	485	20	35	143
A182 F5a	K42544	Max.	0.25	0.50	0.60	0.040	0.030	0.50	6.00	0.65									248
		Min.							4.00	0.44					450	620	22	50	187
A182 F9	K90941	Max.	0.15	1.00	0.60	0.030	0.030		10.00	1.10									217
		Min.		0.50	0.30				8.00	0.90					380	585	20	40	179
A182 F91	K90901	Max.	0.12	0.50	0.60	0.020	0.010	0.40	9.50	1.05		0.25	0.10	0.07					248
		Min.	0.08	0.20	0.30	Al 0.02 Ti 0.01 Zr 0.01			8.00	0.85		0.18	0.06	0.03	415	620	20	40	190
A182 F11CL1	K11597	Max.	0.15	1.00	0.60	0.030	0.030		1.50	0.65									174
		Min.	0.05	0.50	0.30				1.00	0.44					205	415	20	45	121
A182 F11CL2	K11572	Max.	0.20	1.00	0.80	0.040	0.040		1.50	0.65									207
		Min.	0.10	0.50	0.30				1.00	0.44					275	485	20	30	143
A182 F11CL3	K11572	Max.	0.20	1.00	0.80	0.040	0.040		1.50	0.65									207
		Min.	0.10	0.50	0.30				1.00	0.44					310	515	20	30	156
A182 F12CL1	K11562	Max.	0.15	0.50	0.60	0.045	0.045		1.25	0.65									174
		Min.	0.05		0.30				0.80	0.44					220	415	20	45	121
A182 F12CL2	K11564	Max.	0.20	0.60	0.80	0.040	0.040		1.25	0.65									207
		Min.	0.10	0.10	0.30				0.80	0.44					275	485	20	30	143
A182 F22CL1	K21590	Max.	0.15	0.50	0.60	0.040	0.040		2.50	1.13									170
		Min.	0.05		0.30				2.00	0.87					205	415	20	35	
A182 F22CL3	K21590	Max.	0.15	0.50	0.60	0.040	0.040		2.50	1.13									207
		Min.	0.05		0.30				2.00	0.87					310	515	20	30	156
A182 F22V	K31835	Max.	0.15	0.10	0.60	0.015	0.010	0.25	2.50	1.10	0.20	0.35	0.07			780			237
		Min.	0.11		0.30	B 0.002 Ca 0.015			2.00	0.90		0.25	Ti 0.030		415	620	18	45	174
A182 F304	S30400	Max.	0.08	1.00	2.00	0.045	0.030	11.00	20.00					0.1					
		Min.						8.00	18.00						205	515[8]	30	50	
A182 F304L	S30403	Max.	0.03	1.00	2.00	0.045	0.030	13.00	20.00					0.1					
		Min.						8.00	18.00						170	485[9]	30	50	
A182 F304H	S30409	Max.	0.10	1.00	2.00	0.045	0.030	11.00	20.00										
		Min.	0.04					8.00	18.00						205	515[8]	30	50	
A182 F310	S31000	Max.	0.25	1.00	2.00	0.045	0.030	22.00	26.00										
		Min.						19.00	24.00						205	515[8]	30	50	
A182 F316	S31600	Max.	0.08	1.00	2.00	0.045	0.030	14.00	18.00	3.0				0.1					
		Min.						10.00	16.00	2.0					205	515[8]	30	50	
A182 F316L	S31603	Max.	0.03	1.00	2.00	0.045	0.030	15.00	18.00	3.00				0.1					
		Min.						10.00	16.00	2.00					170	485[9]	30	50	
A182 F316H	S31609	Max.	0.10	1.00	2.00	0.045	0.030	14.00	18.00	3.00									
		Min.	0.04					10.00	16.00	2.00					205	515[8]	30	50	
A182 F317	S31700	Max.	0.08	1.00	2.00	0.045	0.030	15.00	20.00	4.0									
		Min.						11.00	18.00	3.0					205	515[8]	30	50	
A182 F317L	S31703	Max.	0.03	1.00	2.00	0.045	0.030	15.00	20.00	4.0									
		Min.						11.00	18.00	3.0					170	485[9]	30	50	
A182 F321	S32100	Max.	0.08	1.00	2.00	0.045	0.030	12.00	19.00										
		Min.						9.00	17.00		Ti C%*5~0.7				205	515[8]	30	50	
A182 F347	S34700	Max.	0.08	1.00	2.00	0.045	0.030	13.00	20.00			1.10							
		Min.						9.00	17.00			C*10			205	515[8]	30	50	
A182 F6aCL1	S41000	Max.	0.15	1.00	1.00	0.040	0.030	0.50	13.50										207
		Min.							11.50						275	485	18	35	143
A182 F51	S31803	Max.	0.03	1.00	2.00	0.030	0.020	6.50	23.00	3.50				0.20					
		Min.						4.50	21.00	2.50				0.08	450	620	25	45	
A182 F53	S32750	Max.	0.03	0.80	1.20	0.035	0.020	8.00	26.00	5.00	0.5			0.32					310
		Min.						6.00	24.00	3.0				0.24	550[10]	800[10]	15		

Notes :

(1) All values are maximum unless otherwise stated.
(2) The present grade F5a(0.25 max carbon) previous to 1955 was assigned the identification symbol F5. Identification F5 in 1955 was assigned to the 0.15 max carbon grade to be consistent with ASTM specifications for other products such as pipe, tubing, bolting, welding fittings, and the like.

JIS G 3454/5, JIS G 3459

Nominal Pipe Size		Outside Diam.	SS	CS	SS	CS	SS	CS
			5S	10	10S	20	20S	30
A	B	OD (mm)	ID / mm	ID / mm	ID / mm	ID / mm	ID / mm	ID / mm
			WT / mm	WT / mm	WT / mm	WT / mm	WT / mm	WT / mm
6	1/8	10.5	8.5		8.1		7.5	
			1.0		1.2		1.5	
8	1/4	13.8	11.4		10.5		9.8	
			1.2		1.65		2.0	
10	3/8	17.3	14.9		14.0		13.3	
			1.2		1.65		2.0	
15	1/2	21.7	18.4		17.5		16.7	
			1.65		2.1		2.5	
20	3/4	27.2	23.9		23.0		22.2	
			1.65		2.1		2.5	
25	1	34.0	30.7		28.4		28.0	
			1.65		2.8		3.0	
32	1 1/4	42.7	39.4		37.1		36.7	
			1.65		2.8		3.0	
40	1 1/2	48.6	45.3		43.0		42.6	
			1.65		2.8		3.0	
50	2	60.5	57.2		54.9	54.1	53.5	
			1.65		2.8	3.2	3.5	
65	2 1/2	76.3	72.1		70.3	67.3	69.3	
			2.1		3.0	4.5	3.5	
80	3	89.1	84.9		83.1	80.1	81.1	
			2.1		3.0	4.5	4.0	
90	3 1/2	101.6	97.4		95.6	92.6	93.6	
			2.1		3.0	4.5	4.0	
100	4	114.3	110.1		108.3	104.5	106.3	
			2.1		3.0	4.9	4.0	
125	5	139.8	134.2		133.0	129.6	129.8	
			2.8		3.4	5.1	5.0	
150	6	165.2	159.6		158.4	154.2	155.2	
			2.8		3.4	5.5	5.0	
200	8	216.3	210.7		208.3	203.5	203.3	202.3
			2.8		4.0	6.4	6.5	7.0
250	10	267.4	260.6		259.4	254.6	254.4	251.8
			3.4		4.0	6.4	6.5	7.8
300	12	318.5	310.5		309.5	305.7	305.5	301.7
			4.0		4.5	6.4	6.5	8.4
350	14	355.6		342.8		339.8		336.6
				6.4		7.9		9.5
400	16	406.4		393.6		390.6		387.4
				6.4		7.9		9.5
450	18	457.2		444.4		441.4		435.0
				6.4		7.9		11.1
500	20	508.0		495.2		489.0		482.6
				6.4		9.5		12.7
550	22	558.8		546.0		539.8		533.4
				6.4		9.5		12.7
600	24	609.6		596.8		590.6		581.0
				6.4		9.5		14.3
650	26	660.4		644.6		635.0		
				7.9		12.7		

General Note

1) Schedule is referred to JIS G3454:2012 and G3455:2012 for CS, and JIS G3459:2012 for SS.
2) The blue color in boxes may be used with Alloy Steel based on JIS G3458:2012.

PIPE & FITINGS WALL THICKNESS SCHEDULES DIMENSION

SS / CS *1)	CS *1)	SS / CS *1)	CS *1)	SS / CS *1)	CS *1)	SS / CS *1)	Nominal Pipe Size		Outside Diam.
40	60	80	100	120	140	160			
ID / mm	ID / mm	ID / mm	ID / mm	ID / mm	ID / mm	ID / mm	A	B	OD (mm)
WT / mm	WT / mm	WT / mm	WT / mm	WT / mm	WT / mm	WT / mm			
7.1	6.1	5.7					6	1/8	10.5
1.7	2.2	2.4							
9.4	9.0	7.8					8	1/4	13.8
2.2	2.4	3.0							
12.7	11.7	10.9					10	3/8	17.3
2.3	2.8	3.2							
16.1	15.3	14.3				12.3	15	1/2	21.7
2.8	3.2	3.7				4.7			
21.4	20.4	19.4				16.2	20	3/4	27.2
2.9	3.4	3.9				5.5			
27.2	26.2	25.0				21.2	25	1	34.0
3.4	3.9	4.5				6.4			
35.5	33.7	32.9				29.9	32	1 1/4	42.7
3.6	4.5	4.9				6.4			
41.2	39.6	38.4				34.4	40	1 1/2	48.6
3.7	4.5	5.1				7.1			
52.7	50.7	49.5				43.1	50	2	60.5
3.9	4.9	5.5				8.7			
65.9	64.3	62.3				57.3	65	2 1/2	76.3
5.2	6.0	7.0				9.5			
78.1	75.9	73.9				66.9	80	3	89.1
5.5	6.6	7.6				11.1			
90.2	87.6	85.4				76.2	90	3 1/2	101.6
5.7	7.0	8.1				12.7			
102.3	100.1	97.1		92.1		87.3	100	4	114.3
6.0	7.1	8.6		11.1		13.5			
126.6	123.6	120.8		114.4		108.0	125	5	139.8
6.6	8.1	9.5		12.7		15.9			
151.0	146.6	143.2		136.6		128.8	150	6	165.2
7.1	9.3	11.0		14.3		18.2			
199.9	195.7	190.9	186.1	179.9	175.1	170.3	200	8	216.3
8.2	10.3	12.7	15.1	18.2	20.6	23.0			
248.8	242.0	237.2	231.0	224.6	216.6	210.2	250	10	267.4
9.3	12.7	15.1	18.2	21.4	25.4	28.6			
297.9	289.9	283.7	275.7	267.7	261.3	251.9	300	12	318.5
10.3	14.3	17.4	21.4	25.4	28.6	33.3			
333.4	325.4	317.6	308.0	300.0	292.0	284.2	350	14	355.6
11.1	15.1	19.0	23.8	27.8	31.8	35.7			
381.0	373.0	363.6	354.0	344.6	333.4	325.4	400	16	406.4
12.7	16.7	21.4	26.2	30.9	36.5	40.5			
428.6	419.2	409.6	398.4	387.4	377.8	366.8	450	18	457.2
14.3	19.0	23.8	29.4	34.9	39.7	45.2			
477.8	466.8	455.6	443.0	431.8	419.2	408.0	500	20	508.0
15.1	20.6	26.2	32.5	38.1	44.4	50.0			
527.0	514.4	501.6	489.0	476.2	463.6	450.8	550	22	558.8
15.9	22.2	28.6	34.9	41.3	47.6	54.0			
574.6	560.4	547.6	531.8	517.6	504.8	490.6	600	24	609.6
17.5	24.6	31.0	38.9	46.0	52.4	59.5			
622.6	607.6	592.4	577.2	562.2	547.2	532.0	650	26	660.4
18.9	26.4	34.0	41.6	49.1	56.6	64.2			

ASME B36.10 & B36.19

Nominal Pipe Size		Outside Diam.	Wall	Nominal Wall thickness (Stainless steel)					Nominal Wall Thickness (Carbon & Low Alloy Steel)			
A	B		I.D	S5S	S10S	S20S	S40S	S80S	S5	S10	S20	S30
6	1/8	10.3	W.T	–	1.24	–	1.73	2.41	–	1.24	–	1.45
			I.D	–	7.82	–	6.84	5.48	–	7.82	–	7.40
8	1/4	13.7	W.T	–	1.65	–	2.24	3.02	–	1.65	–	1.85
			I.D	–	10.40	–	9.22	7.66	–	10.40	–	10.00
10	3/8	17.1	W.T	–	1.65	–	2.31	3.20	–	1.65	–	1.85
			I.D	–	13.80	–	12.48	10.70	–	13.80	–	13.40
15	1/2	21.3	W.T	1.65	2.11	–	2.77	3.73	1.65	2.11	–	2.41
			I.D	18.00	17.08	–	15.76	13.84	18.00	17.08	–	16.48
20	3/4	26.7	W.T	1.65	2.11	–	2.87	3.91	1.65	2.11	–	2.41
			I.D	23.40	22.48	–	20.96	18.88	23.40	22.48	–	21.88
25	1	33.4	W.T	1.65	2.77	–	3.38	4.55	1.65	2.77	–	2.90
			I.D	30.10	27.86	–	26.64	24.30	30.10	27.86	–	27.60
32	1 1/4	42.2	W.T	1.65	2.77	–	3.56	4.85	1.65	2.77	–	2.97
			I.D	38.90	36.66	–	35.08	32.50	38.90	36.66	–	36.26
40	1 1/2	48.3	W.T	1.65	2.77	–	3.68	5.08	1.65	2.77	–	3.18
			I.D	45.00	42.76	–	40.94	38.14	45.00	42.76	–	41.94
50	2	60.3	W.T	1.65	2.77	–	3.91	5.54	1.65	2.77	–	3.18
			I.D	57.00	54.76	–	52.48	49.22	57.00	54.76	–	53.94
65	2 1/2	73.0	W.T	2.11	3.05	–	5.16	7.01	2.11	3.05	–	4.78
			I.D	68.78	66.90	–	62.68	58.98	68.78	66.90	–	63.44
80	3	88.9	W.T	2.11	3.05	–	5.49	7.62	2.11	3.05	–	4.78
			I.D	84.68	82.80	–	77.92	73.66	84.68	82.80	–	79.34
90	3 1/2	101.6	W.T	2.11	3.05	–	5.74	8.08	2.11	3.05	–	4.78
			I.D	97.38	95.50	–	90.12	85.44	97.38	95.50	–	92.04
100	4	114.3	W.T	2.11	3.05	–	6.02	8.56	2.11	3.05	–	4.78
			I.D	110.08	108.20	–	102.26	97.18	110.08	108.20	–	104.74
125	5	141.3	W.T	2.77	3.40	–	6.55	9.53	2.77	3.40	–	–
			I.D	135.76	134.50	–	128.20	122.24	135.76	134.50	–	–
150	6	168.3	W.T	2.77	3.40	–	7.11	10.97	2.77	3.40	–	–
			I.D	162.76	161.50	–	154.08	146.36	162.76	161.50	–	–
200	8	219.1	W.T	2.77	3.76	–	8.18	12.70	2.77	3.76	6.35	7.04
			I.D	213.56	211.58	–	202.74	193.70	213.56	211.58	206.40	205.02
250	10	273.1	W.T	3.40	4.19	–	9.27	12.70	3.40	4.19	6.35	7.80
			I.D	266.30	264.72	–	254.56	247.70	266.30	264.72	260.40	257.50
300	12	323.9	W.T	3.96	4.57	–	9.53	12.70	3.96	4.57	6.35	8.38
			I.D	315.98	314.76	–	304.84	298.50	315.98	314.76	311.20	307.14
350	14	355.6	W.T	3.96	4.78	–	9.53	12.70	3.96	6.35	7.92	9.53
			I.D	347.68	346.04	–	336.54	330.20	347.68	342.90	339.76	33.54
400	16	406.4	W.T	4.19	4.78	–	9.53	12.70	4.19	6.35	7.92	9.53
			I.D	398.02	396.84	–	387.34	381.00	398.02	393.70	390.56	387.34
450	18	457.2	W.T	4.19	4.78	–	9.53	12.70	4.19	6.35	7.92	11.13
			I.D	448.62	447.44	–	437.94	431.60	448.62	444.30	441.16	434.74
500	20	508.0	W.T	4.78	5.54	7.90	9.53	12.70	4.78	6.35	9.53	12.70
			I.D	498.44	496.52	492.20	488.94	482.60	498.44	495.30	488.94	482.60
550	22	558.8	W.T	4.78	5.54	–	–	–	4.78	6.35	9.53	12.70
			I.D	549.44	547.92	–	–	–	549.44	546.30	539.94	533.60
600	24	609.6	W.T	5.54	6.35	–	9.53	12.70	5.54	6.35	9.53	14.27
			I.D	598.92	597.30	–	590.94	584.60	598.82	597.30	590.94	581.46
650	26	660.4	W.T	–	–	–	9.53	12.70	–	7.92	12.70	–
			I.D	–	–	–	641.34	635.00	–	644.56	635.00	–
700	28	711.2	W.T	–	–	–	–	–	–	7.92	12.70	15.88
			I.D	–	–	–	–	–	–	695.36	685.80	679.44
750	30	762.0	W.T	6.35	7.92	–	–	–	6.35	7.92	12.70	15.88
			I.D	749.30	746.16	–	–	–	749.30	746.16	736.60	730.24
800	32	812.8	W.T	–	–	–	–	–	–	7.92	12.70	15.88
			I.D	–	–	–	–	–	–	797.16	787.60	781.24
850	34	863.6	W.T	–	–	–	–	–	–	7.92	12.70	15.88
			I.D	–	–	–	–	–	–	848.16	838.60	832.24
900	36	914.4	W.T	–	–	–	–	–	–	7.92	12.70	15.88
			I.D	–	–	–	–	–	–	898.16	888.60	882.24
950	38	965.2	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–
1000	40	1016.0	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–
1050	42	1066.8	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–
1100	44	1117.6	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–
1150	46	1168.4	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–
1200	48	1219.2	W.T	–	–	–	–	–	–	–	–	–
			I.D	–	–	–	–	–	–	–	–	–

▶Carbon & Low Alloy Steel (B36.10M)
The wall thickness shown represent nominal or average wall diamensions which are subject to a–121/2% mill tolerance.
Note that schdule 40 in. sizes 12″ (304.8mm) and larger and that schedule 80 in sizes 10″ (254mm) and larger do not agree with schedules 40S and 80S of ASME B36. 19 nor with standard weight and extra strong respectively.

PIPE & FITTNGS WALL THICKNESS SCHEDULES DIMENSION

Nominal Wall Thickness (Carbon & Low Alloy Steel)										Outside Diam.	Nominal Pipe Size	
STD	S40	S60	XS	S80	S100	S120	S140	S160	XXS		A	B
1.73	1.73	–	2.41	2.41	–	–	–	–	–	10.3	6	1/8
6.84	6.84	–	5.48	5.48	–	–	–	–	–			
2.24	2.24	–	3.02	3.02	–	–	–	–	–	13.7	8	1/4
9.22	9.22	–	7.66	7.66	–	–	–	–	–			
2.31	2.31	–	3.20	3.20	–	–	–	–	–	17.1	10	3/8
12.48	12.48	–	10.70	10.70	–	–	–	–	–			
2.77	2.77	–	3.73	3.73	–	–	–	4.78	7.47	21.3	15	1/2
15.76	15.76	–	13.84	13.84	–	–	–	11.74	6.36			
2.87	2.87	–	3.91	3.91	–	–	–	5.56	7.82	26.7	20	3/4
20.96	20.96	–	18.88	18.88	–	–	–	15.58	11.06			
3.38	3.38	–	4.55	4.55	–	–	–	6.35	9.09	33.4	25	1
26.64	26.64	–	24.30	24.30	–	–	–	20.70	15.22			
3.56	3.56	–	4.85	4.85	–	–	–	6.35	9.70	42.2	32	1 1/4
35.08	35.08	–	32.50	32.50	–	–	–	29.50	22.80			
3.68	3.68	–	5.08	5.08	–	–	–	7.14	10.15	48.3	40	1 1/2
40.94	40.94	–	38.14	38.14	–	–	–	34.02	28.00			
3.91	3.91	–	5.54	5.54	–	–	–	8.74	11.07	60.3	50	2
52.48	52.48	–	49.22	49.22	–	–	–	42.82	38.16			
5.16	5.16	–	7.01	7.01	–	–	–	9.53	14.02	73.0	65	2 1/2
62.68	62.68	–	58.98	58.98	–	–	–	53.94	44.96			
5.49	5.49	–	7.62	7.62	–	–	–	11.13	15.24	88.9	80	3
77.92	77.92	–	73.66	73.66	–	–	–	66.64	58.42			
5.74	5.74	–	8.08	8.08	–	–	–	12.70	–	101.6	90	3 1/2
90.12	90.12	–	85.44	85.44	–	–	–	76.20	–			
6.02	6.02	–	8.56	8.56	–	11.13	–	13.49	17.12	114.3	100	4
102.26	102.26	–	97.18	97.18	–	92.04	–	87.32	80.06			
6.55	6.55	–	9.53	9.53	–	12.70	–	15.88	19.05	141.3	125	5
128.20	128.20	–	122.24	122.24	–	115.90	–	109.54	103.20			
7.11	7.11	–	10.97	10.97	–	14.27	–	18.26	21.95	168.3	150	6
154.08	154.08	–	146.36	146.36	–	139.76	–	131.78	124.40			
8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.23	219.1	200	8
202.74	202.74	198.48	193.70	193.70	188.92	182.58	177.86	173.08	174.64			
9.27	9.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	273.1	250	10
254.56	254.56	247.70	247.70	242.92	236.58	230.22	222.30	215.94	222.30			
9.53	10.31	14.27	12.70	17.48	21.44	25.40	28.58	33.32	25.40	323.9	300	12
304.84	303.28	295.36	298.50	288.94	281.02	273.10	266.74	257.26	273.10			
9.53	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71	–	355.6	350	14
336.54	333.34	325.42	330.20	317.50	307.94	300.02	292.10	284.18	–			
9.53	12.70	16.66	12.70	21.44	26.19	30.96	36.53	40.49	–	406.4	400	16
387.34	381.00	373.08	381.00	363.52	354.02	344.48	333.34	325.42	–			
9.53	14.27	19.05	12.70	23.83	29.36	34.93	39.67	45.24	–	457.2	450	18
437.94	428.46	418.90	431.60	409.34	398.28	387.14	377.66	366.52	–			
9.53	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01	–	508.0	500	20
488.94	477.82	466.76	482.60	455.62	442.92	431.80	419.10	407.98	–			
9.53	–	22.22	12.70	28.58	34.93	41.28	47.63	53.98	–	558.8	550	22
539.94	–	514.54	533.60	501.84	489.14	476.44	463.74	451.04	–			
9.53	17.48	24.61	12.70	30.96	38.89	46.02	52.37	59.54	–	609.6	600	24
590.94	575.04	560.78	584.60	548.08	532.22	517.96	505.26	490.92	–			
9.53	–	–	12.70	–	–	–	–	–	–	660.4	650	26
641.34	–	–	635.00	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	711.2	700	28
692.14	–	–	685.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	762.0	750	30
742.94	–	–	736.60	–	–	–	–	–	–			
9.53	17.48	–	12.70	–	–	–	–	–	–	812.8	800	32
739.94	778.04	–	787.60	–	–	–	–	–	–			
9.53	17.48	–	12.70	–	–	–	–	–	–	863.6	850	34
844.94	829.04	–	838.60	–	–	–	–	–	–			
9.53	19.05	–	12.70	–	–	–	–	–	–	914.4	900	36
894.94	875.90	–	888.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	965.2	950	38
945.94	–	–	939.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	1016.0	1000	40
996.94	–	–	990.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	1066.8	1050	42
1047.94	–	–	1041.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	1117.6	1100	44
1098.94	–	–	1092.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	1168.4	1150	46
1148.94	–	–	1142.60	–	–	–	–	–	–			
9.53	–	–	12.70	–	–	–	–	–	–	1219.2	1200	48
1199.94	–	–	1193.60	–	–	–	–	–	–			

▶Stainless Steel (B36.19M)

The wall thickness shown represent nominal or average wall diamensions which are subject to a–121/2% mill tolerance.
+Sizes 14″ (355.6mm) through 30″ (762.0mm) are not at publication date covered in B36 19, and dimansions listed are those commonly used in the industry.
*Schedules 55 and 105 wall thicknesses do not permit threading in accordance with ASME B2 1.
**Note that schdule 40S and schedule 80S in these sizes do not agree with schedule 40 and schedule 80 of ASME B36. 10. and that they are identical to standard weight and extra strong respectively of ASME B36. 10.

COMPARISION FLANGE BORES OF WELDING NECK FLANGE FOR ANSI WITH JIS

Nomnal Pipe Size	OD		SCH10		SCH20		SCH30		STD	SCH40		SCH60		XS	SCH80		SCH100		SCH120		SCH140		SCH160		XXS
	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	JIS	ANSI	JIS	ANSI	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	ANSI
1/2″	21.7	21.34	–	–	–	–	–	–	15.798	16.1	15.798	15.3	–	13.87	14.3	13.87	–	–	–	–	–	–	12.3	11.84	6.4
3/4″	27.2	26.67	–	–	–	–	–	–	20.929	21.4	20.929	20.4	–	18.85	19.4	18.85	–	–	–	–	–	–	16.2	15.60	11.02
1″	34.0	33.40	–	–	–	–	–	–	26.65	27.2	26.65	26.2	–	24.31	25.0	24.31	–	–	–	–	–	–	21.2	20.70	15.22
11/4″	42.7	42.16	–	–	–	–	–	–	35.05	35.5	35.05	33.7	–	32.46	32.9	32.46	–	–	–	–	–	–	29.9	29.47	22.76
11/2″	48.6	48.26	–	–	–	–	–	–	40.89	41.2	40.89	39.6	–	38.10	38.4	38.10	–	–	–	–	–	–	34.4	33.99	27.94
2″	60.5	60.32	–	–	54.1	–	–	–	52.5	52.7	52.50	50.7	–	49.25	49.5	49.25	–	–	–	–	–	–	43.1	42.90	38.18
21/2″	76.3	73.02	–	–	67.3	–	–	–	62.71	65.9	62.71	64.3	–	59.00	62.3	59.00	–	–	–	–	–	–	57.3	53.98	44.98
3″	89.1	88.90	–	–	80.1	–	–	–	77.93	78.1	77.93	75.9	–	73.66	73.9	73.66	–	–	–	–	–	–	66.9	66.65	58.42
31/2″	101.6	101.60	–	–	92.6	–	–	–	90.12	90.2	90.12	87.6	–	85.45	85.4	85.45	–	–	–	–	–	–	76.2	–	–
4″	114.3	114.30	–	–	104.5	–	–	–	102.26	102.3	102.26	100.1	–	97.18	97.1	97.18	–	–	92.1	92.05	–	–	87.3	87.33	80.06
5″	139.8	141.30	–	–	129.6	–	–	–	128.19	126.6	128.19	123.6	–	122.25	120.8	122.25	–	–	114.4	115.90	–	–	108.0	109.55	103.20
6″	165.2	168.28	–	–	154.2	–	–	–	154	151	154.0	146.6	–	146.33	143.2	146.33	–	–	136.6	139.73	–	–	128.8	131.8	124.38
8″	216.3	219.08	–	–	203.5	206.38	202.3	205.0	202.72	199.9	202.72	195.7	198.45	193.68	190.9	193.68	186.1	188.95	179.9	182.60	175.1	177.83	170.3	173.05	174.63
10″	267.4	273.05	–	–	254.5	260.35	251.7	257.45	254.51	248.8	254.51	242.0	247.65	247.65	237.2	242.93	230.9	236.58	224.5	230.23	216.5	222.25	210.2	215.90	–
12″	318.5	323.85	–	–	305.7	311.15	301.7	307.09	304.8	297.9	303.23	289.9	295.30	298.45	283.7	288.95	275.7	281.03	267.7	273.05	261.3	266.7	251.9	257.20	–
14″	355.6	355.60	342.8	342.9	339.8	339.70	336.6	336.55	336.55	333.4	333.35	325.4	325.48	330.2	317.6	317.50	308.0	308.0	300.0	300.08	292.0	292.1	284.2	284.18	–
16″	406.4	406.40	393.6	393.7	390.6	390.53	387.4	387.35	387.35	381.0	381.0	373.4	373.07	381.0	363.6	363.58	353.0	354.03	344.6	344.53	333.4	333.35	325.4	325.48	–
18″	457.2	457.20	444.4	444.5	441.4	441.33	435.0	434.95	438.15	428.6	428.65	419.2	419.1	431.8	409.6	409.6	398.4	398.48	387.4	387.35	377.8	377.85	366.8	366.73	–
20″	508.0	508.0	495.2	495.3	489.0	489.95	482.6	482.60	488.95	477.8	477.88	466.8	466.75	482.6	455.6	455.63	443.0	442.93	431.8	431.80	419.2	419.10	408.0	408.03	–
24″	609.6	609.6	–	–	–	590.55	–	581.05	590.55	–	574.8	–	560.43	584.2	–	547.73	–	531.83	–	517.55	–	504.85	–	490.58	–
30″	762.0	762.0	–	–	–	736.6	–	730.25	742.95	–	–	–	–	736.6	–	–	–	–	–	–	–	–	–	–	–

LOCATION

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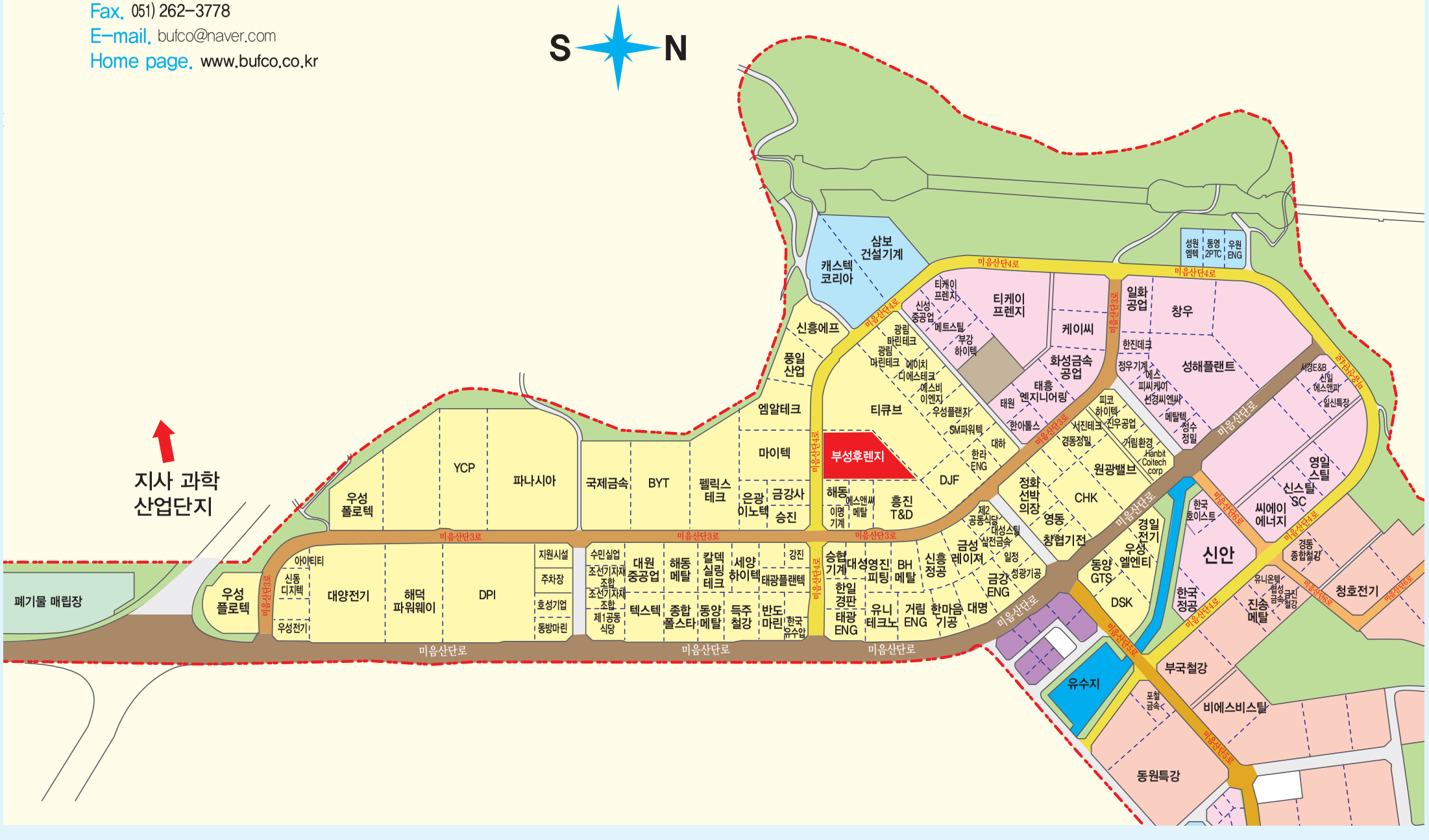

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