

MJ FORGINGS

FLANGE

HAMMER UNION

FASTENERS

CARBON STEEL

PIPES

CATALOGUE



LIST OF MACHINERY

**MPM Hammers : 2.5 TONS, 4
TONS Range of Press for
Trimming Ring Rolling Machines
for 150mm & 800mm OD
Induction Heaters of 75kw
,350kw & 650kw and
750kw. Hydraulic Extrusion press -
630MT LASCOCNC Machine Shop
Automatic Paint Line Automatic
Multi Spindle Drilling Machines
Automatic Stamping Machines
Physical Lab Band Saws and
Automatic Billet Shearing
Machines cutting up to 250mm
square Die shop - Die designing
and Tool room Component Design
Department with CAD/CAM
facilities**



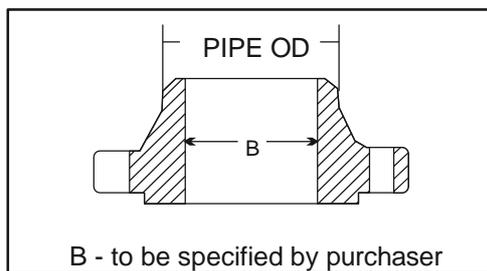
CARBON STEEL FLANGE



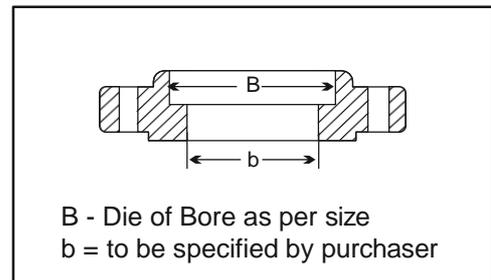


FLANGE

WELDING NECK FLANGE



SOCKET-WELD FLANGE



All dimensions are in Millimeters



FLANGE

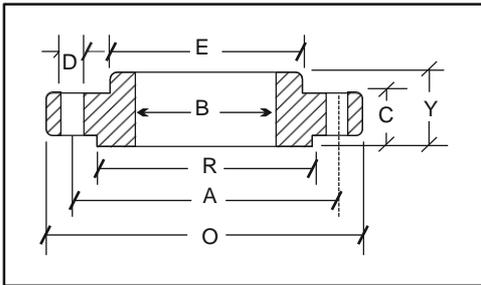
WELDING NECK FLANGE BORES (B)

Nominal Pipe Size	Outside Diam	Sch 20	Sch 30	Std. Wall	Sch 40	Extra Strong	Sch 80	Sch 120	Sch 160	Double Extra Strong
15	21.33	-	-	15.7	15.7	13.8	13.8	-	11.7	6.4
20	26.67	-	-	20.8	20.8	18.8	18.8	-	15.5	11.0
25	33.40	-	-	26.6	25.4	24.3	24.3	-	20.7	15.2
32	42.16	-	-	35.0	35.0	32.4	32.4	-	29.4	22.7
40	48.26	-	-	40.8	40.8	38.1	38.1	-	33.7	27.9
50	60.31	-	-	52.3	52.3	49.2	49.2	-	42.8	38.1
65	73.02	-	-	62.4	62.4	59.0	59.0	-	53.9	44.9
80	88.90	-	-	77.9	77.9	73.6	73.6	-	66.6	58.4
100	114.30	-	-	102.2	102.2	97.1	97.1	92.0	87.3	80.0
125	141.30	-	-	128.1	128.1	122.2	122.2	115.9	109.5	103.2
150	168.27	-	-	154.0	154.0	146.3	146.3	139.7	131.7	124.3
200	219.07	206.2	204.9	202.7	202.7	193.6	193.6	182.5	173.0	174.6
250	273.05	260.3	257.4	254.5	254.5	247.6	242.8	230.1	215.9	222.2
300	323.85	311.1	307.0	304.8	303.2	298.4	288.8	273.0	257.2	273.0
350	355.60	337.8	336.5	336.5	333.3	330.2	317.5	300.0	284.1	-
400	406.40	390.3	387.3	387.3	381.0	381.0	363.5	344.5	325.4	-
450	457.20	441.1	434.9	438.1	428.6	431.8	409.5	387.3	366.7	-
500	508.00	488.9	482.6	488.9	477.8	482.6	455.6	431.8	407.9	-
600	609.60	590.5	581.0	590.5	574.6	584.2	547.6	517.5	490.5	-

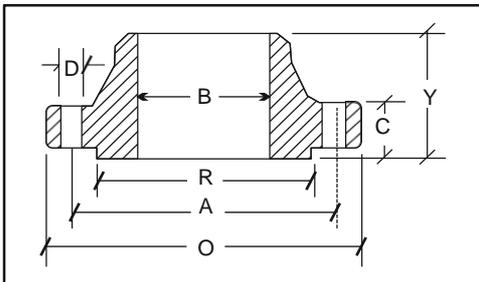


FLANGE

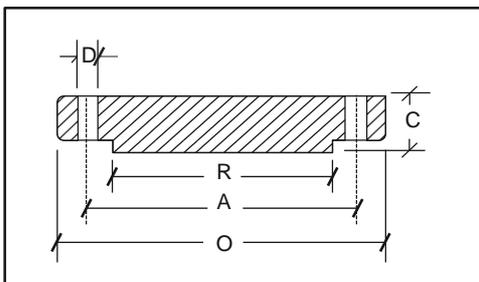
SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE



- 1) All dimensions are in Millimeters. 2) Welding neck flange bore (B) see page no. 1 to be specified by purchaser.
- 3) Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in "Thickness (C)" and "Length through Hub (Y)".



FLANGE

DIMENSIONS OF CLASS 150 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	88.9	60.3	15.9	4	11.1	30.2	15.9	47.6	15.9	22.3	22.9	34.9	9.5
20	98.4	69.8	15.9	4	12.7	38.1	15.9	52.4	15.9	27.7	28.2	42.9	11.1
25	107.9	79.4	15.9	4	14.3	49.2	17.5	55.6	17.5	34.5	35.0	50.8	12.7
32	117.5	88.9	15.9	4	15.9	58.7	20.6	57.1	20.6	43.2	43.7	63.5	14.3
40	127.0	98.4	15.9	4	17.5	65.1	22.2	61.9	22.2	49.5	50.0	73.0	15.9
50	152.4	120.6	19.0	4	19.0	77.8	25.4	63.5	25.4	62.0	62.5	92.1	17.5
65	177.8	139.7	19.0	4	22.2	90.5	28.6	69.8	28.6	74.7	75.4	104.8	19.0
80	190.5	152.4	19.0	4	23.8	107.9	30.2	69.8	30.2	90.7	91.4	127.0	20.6
100	228.6	190.5	19.0	8	23.8	134.9	33.3	76.2	33.3	116.1	116.8	157.2	23.8
125	254.0	215.9	22.2	8	23.8	163.5	36.5	88.9	36.5	143.8	144.5	185.7	23.8
150	279.4	241.3	22.2	8	25.4	192.1	39.7	88.9	39.7	170.7	171.4	215.9	27.0
200	342.9	298.4	22.2	8	28.6	246.1	44.4	101.6	44.4	221.5	222.2	269.9	31.7
250	406.4	361.9	25.4	12	30.2	304.8	49.2	101.6	49.2	276.3	277.4	323.8	33.3
300	482.6	431.8	25.4	12	31.8	365.1	55.6	114.3	55.6	327.1	328.2	381.0	39.7
350	533.4	476.2	28.6	12	34.9	400.0	57.1	127.0	79.4	359.1	360.2	412.7	41.3
400	596.9	539.7	28.6	16	36.5	457.2	63.5	127.0	87.3	410.5	411.2	469.9	44.4
450	635.0	577.8	31.7	16	39.7	504.8	68.3	139.7	96.8	461.8	462.3	533.4	49.2
500	698.5	635.0	31.7	20	42.9	558.8	73.0	144.5	103.2	513.1	514.3	584.2	54.0
600	812.8	749.3	34.9	20	47.6	663.6	82.5	152.4	111.1	615.9	615.9	692.1	63.5

DIMENSIONS OF CLASS 300 FLANGES AS PER ANSI B 16.5

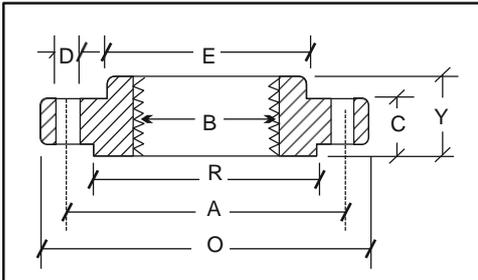
Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.2	22.3	22.9	34.9	9.5
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.2	42.9	11.1
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	27.0	34.5	35.0	50.8	12.7
32	133.3	98.4	19.0	4	19.0	63.5	27.0	65.1	27.0	43.2	43.7	63.5	14.3
40	155.6	114.3	22.2	4	20.6	69.8	30.2	68.3	30.2	49.5	50.0	73.0	15.9
50	165.1	127.0	19.0	8	22.2	84.1	33.3	69.8	33.3	62.0	62.5	92.1	17.5
65	190.5	149.2	22.2	8	25.4	100.0	38.1	76.2	38.1	74.7	75.4	104.8	19.0
80	209.5	168.3	22.2	8	28.6	117.5	42.9	79.4	42.9	90.7	91.4	127.0	20.6
100	254.0	200.0	22.2	8	31.8	146.0	47.6	85.7	47.6	116.1	116.8	157.2	23.8
125	279.4	234.9	22.2	8	34.9	177.8	50.8	98.4	50.8	143.8	144.5	185.7	-
150	317.5	269.9	22.2	12	36.5	206.4	52.4	98.4	52.4	170.7	171.4	215.9	-
200	381.0	330.2	25.4	12	41.3	260.3	61.9	111.1	61.9	221.5	222.2	269.9	-
250	444.5	387.3	28.6	16	47.6	320.7	66.7	117.5	95.2	276.3	277.4	323.8	-
300	520.7	450.8	31.7	16	50.8	374.6	73.0	130.2	101.6	327.1	328.2	381.0	-
350	584.2	514.3	31.7	20	54.0	425.4	76.2	142.9	111.1	359.1	360.2	412.7	-
400	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.5	411.2	469.9	-
450	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	462.3	533.4	-
500	774.7	685.8	34.9	24	63.5	587.4	95.2	161.9	139.7	513.1	514.3	584.2	-
600	914.4	812.8	41.3	24	69.8	701.7	106.4	168.3	152.4	615.9	615.9	692.1	-

- 1) All dimensions are in Millimeters. 2) Welding neck flange bore (B) see page no. 1 to be specified by purchaser.
 3) Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in "Thickness (C)" and "Length through Hub (Y)".

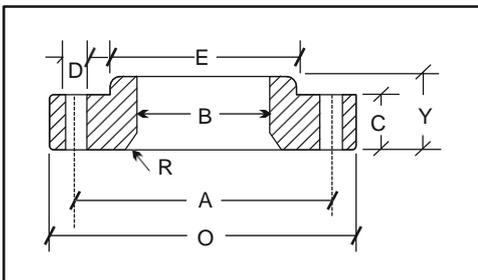


FLANGE

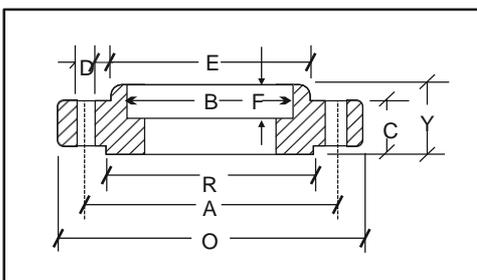
THREADED FLANGE



LAP JOINT FLANGE



SOCKET-WELD FLANGE





FLANGE

DIMENSIONS OF CLASS 600 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	22.3	22.8	34.9	9.5
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.1	42.9	11.1
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	26.9	34.5	35.0	50.8	12.7
32	133.3	98.4	19.0	4	20.6	63.5	28.6	66.7	28.4	43.2	43.6	63.5	14.2
40	155.6	114.3	22.2	4	22.2	69.8	31.7	69.8	31.7	49.5	50.0	73.0	15.8
50	165.1	127.0	19.0	8	25.4	84.1	36.5	73.0	36.5	62.0	62.4	92.1	17.4
65	190.5	149.2	22.2	8	28.6	100.0	41.3	79.4	41.1	74.7	75.4	104.8	19.0
80	209.5	168.3	22.2	8	31.8	117.5	46.0	82.5	45.9	90.7	91.4	127.0	-
100	273.0	215.9	25.4	8	38.1	152.4	54.0	101.6	53.8	116.1	116.8	157.2	-
125	330.2	266.7	28.6	8	44.4	188.9	60.3	114.3	60.4	143.8	141.5	185.7	-
150	355.6	292.1	28.6	12	47.6	222.2	66.7	117.5	66.5	170.7	171.4	215.9	-
200	419.1	349.2	31.7	12	55.6	273.0	76.2	133.3	76.2	221.5	222.2	269.9	-
250	508.0	431.8	34.9	16	63.5	342.9	85.7	152.4	111.2	276.3	277.3	323.8	-
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.1	381.0	-
350	603.2	527.0	38.1	20	69.9	431.8	93.7	165.1	127.0	359.1	360.1	412.7	-
400	685.8	603.2	41.3	20	76.2	495.3	106.4	177.8	139.7	410.5	411.2	469.9	-
450	742.9	654.0	44.4	20	82.6	546.1	117.5	184.1	152.4	461.8	462.2	533.4	-
500	812.8	723.9	44.4	24	88.9	609.6	127.0	190.5	165.1	513.1	514.3	584.2	-
600	939.8	838.2	50.8	24	101.6	717.5	139.7	203.2	184.1	615.9	615.9	692.1	-

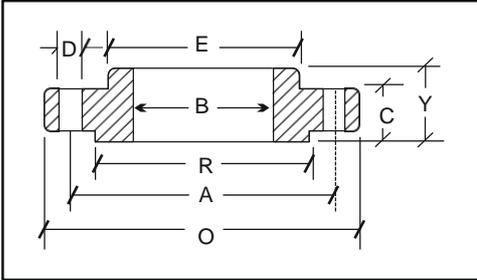
DIMENSIONS OF CLASS 900 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	35.0	27.7	28.1	42.9	11.1
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.1	34.5	35.0	50.8	12.7
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.1	43.2	43.6	63.5	14.2
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.4	92.1	17.4
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0
80	241.3	190.5	25.4	8	38.1	127.0	53.9	101.6	53.8	90.7	91.4	127.0	-
100	292.1	234.9	31.7	8	44.4	158.7	69.8	114.3	69.8	116.0	116.8	157.1	-
125	349.2	279.4	35.0	8	50.8	190.5	79.3	127.0	79.2	143.7	144.5	185.7	-
150	381.0	317.5	31.7	12	55.6	234.9	85.8	139.7	85.8	170.6	171.4	215.9	-
200	469.9	393.7	38.1	12	63.5	298.4	101.6	162.0	144.3	221.4	222.2	269.8	-
250	546.1	469.9	38.1	16	69.8	368.3	107.9	184.1	127.0	276.3	277.3	323.8	-
300	609.6	533.4	38.1	20	79.3	419.1	117.4	200.0	142.7	327.1	328.1	381.0	-

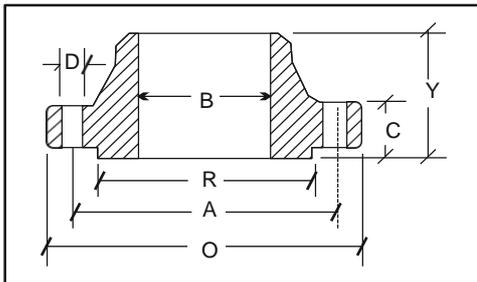


FLANGE

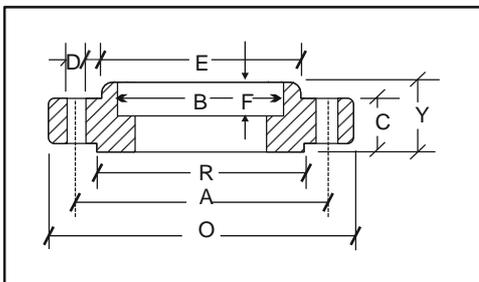
SLIP-ON FLANGE



WELDING NECK FLANGE



SOCKET-WELD FLANGE





FLANGE

DIMENSIONS OF CLASS 1500 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	34.9	27.7	28.1	42.9	11.1
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.3	34.5	35.0	50.8	12.7
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.3	43.2	43.6	63.5	14.2
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.0	92.1	17.4
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0
80	266.7	203.2	31.7	8	47.6	133.3	73.0	117.5	73.0	90.7	91.4	127.0	-
100	311.1	241.3	34.9	8	54.0	161.9	90.5	123.0	90.4	116.1	116.8	157.2	-
125	374.6	292.1	41.3	8	73.0	196.8	104.8	155.6	104.8	143.8	144.5	185.7	-
150	393.7	317.5	38.1	12	82.6	228.6	119.1	171.4	119.1	170.7	171.4	215.9	-
200	482.6	393.7	44.4	12	92.1	292.1	142.9	212.7	142.8	221.5	222.2	269.9	-
250	584.2	482.6	50.8	12	107.9	368.3	158.7	254.0	177.8	276.3	277.3	323.8	-
300	673.1	571.5	54.0	16	123.8	450.8	181.0	282.5	218.9	327.1	328.1	381.0	-

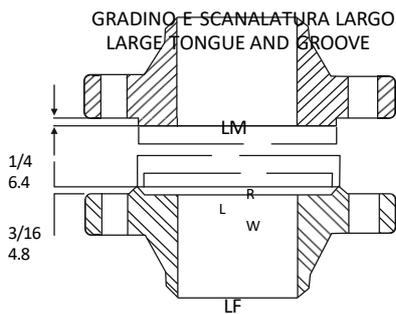
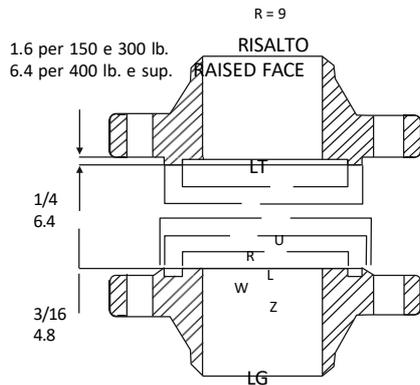
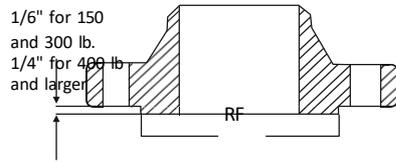
DIMENSIONS OF CLASS 2500 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia of Bore		Dia of R/F	Depth of Socket
							S/O & SW	W/N	L/J	S/O & SW	L/J		
							Y	Y	Y	B	B		
15	133.3	88.9	22.2	4	30.2	42.9	39.7	73.0	39.7	22.3	22.3	34.9	-
20	139.7	95.2	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-
25	158.7	107.9	25.4	4	34.9	57.1	47.7	88.9	47.7	34.5	34.5	50.8	-
32	184.1	130.2	28.6	4	38.1	73.0	52.4	95.2	52.4	43.2	43.2	63.5	-
40	203.2	146.0	31.7	4	44.4	79.4	60.3	111.1	60.3	49.5	49.5	73.0	-
50	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.0	92.1	-
65	266.7	196.8	31.7	8	57.1	114.3	79.4	142.9	79.4	74.7	74.7	104.8	-
80	304.8	228.6	34.9	8	66.7	133.3	92.1	168.3	92.1	90.7	90.7	127.0	-
100	355.6	273.0	41.3	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-
125	419.1	323.8	47.6	8	92.1	203.2	130.0	228.6	130.0	143.8	143.8	185.7	-
150	482.6	368.3	54.0	8	107.9	234.9	152.4	273.0	152.4	170.7	170.7	215.9	-
200	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-
250	673.1	539.7	66.7	12	165.1	374.6	228.6	419.1	228.6	276.3	276.3	323.8	-
300	762.0	619.1	73.0	12	184.1	441.3	254.0	463.5	254.0	327.1	327.1	381.0	-

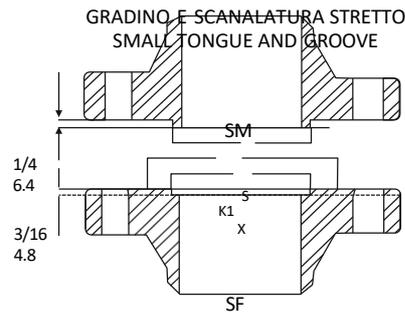
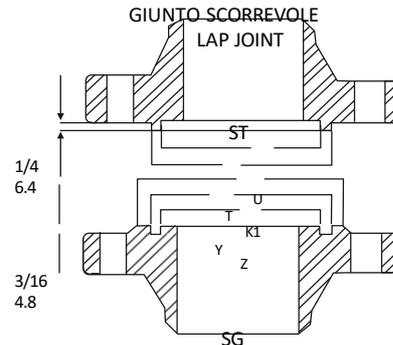
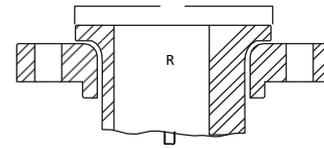


FLANGE

Finiture facce di contatto Flange Facings



MASCHIO E FEMMINA LARGO
LARGE MALE AND FEMALE



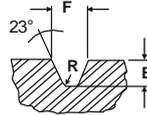
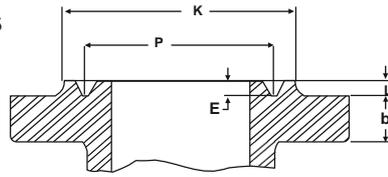
MASCHIO E FEMMINA STRETTO
SMALL MALE AND FEMALE

Ø	R	S	T	U	W	X	Y	Z	K1	I
½"	34.9	18.3	34.9	25.4	36.5	19.8	36.5	23.8	44.5	46.0
¾"	42.9	23.8	42.9	33.3	44.4	25.4	44.4	31.7	52.4	54.0
1"	50.8	30.2	47.6	38.1	52.4	31.7	49.2	36.5	57.1	61.9
1¼"	63.5	38.1	57.1	47.6	65.1	39.7	58.8	46.0	66.7	74.6
1½"	73.0	44.4	63.5	54.0	74.6	46.0	65.1	52.4	73.0	84.1
2"	92.1	57.1	82.5	73.0	93.7	58.8	84.1	71.4	92.1	103.2
2½"	104.8	68.3	95.2	85.7	106.4	69.8	96.8	84.1	104.8	115.9
3"	127.0	84.1	117.5	108.0	128.6	85.7	119.1	106.4	127.0	138.1
4"	157.2	109.5	144.5	131.8	158.8	111.1	146.1	130.2	157.2	168.3
5"	185.7	136.5	173.0	160.3	187.3	138.1	174.6	158.8	185.7	196.9
6"	215.9	161.9	203.2	190.5	217.5	163.5	204.8	188.9	215.9	227.0
8"	269.9	212.7	254.0	238.1	271.5	214.3	255.6	236.5	269.9	281.0
10"	323.8	266.7	304.8	285.7	325.4	268.3	306.4	284.2	323.8	335.0
12"	381.0	317.5	361.9	342.9	382.6	319.1	363.5	341.3	381.0	392.1
14"	412.7	349.2	393.7	374.6	414.3	350.8	395.3	373.1	412.7	423.9
16"	469.9	400.0	447.7	425.4	471.5	401.6	449.3	423.9	469.9	481.0
18"	533.4	450.8	511.2	488.9	535.0	452.4	512.8	487.4	533.4	544.5
20"	584.2	501.6	558.8	533.4	585.8	503.2	560.4	531.8	584.2	595.3
24"	692.1	603.2	666.7	641.2	693.7	604.8	668.3	639.8	692.1	703.3



FLANGE

Dimensioni scanalature per Ring-Joint Facing Dimensions of Ring-Joint grooves 150-300-400-600-900 lbs



b = minimum flange thickness
minimo spessore flangia

L = E

Nominal Pipe Size DN	Ring number No. def.	150 lbs					Corner Radius Raggio sul fondo
		P	F	K	E	R	
1/2"							
3/4"							
1"	R15	1 7/8 47.6	11/32 8.7	2 1/2 63.5	1/4 6.4	1/32 0.8	
1 1/4"	R17	2 1/4 57.1	11/32 8.7	2 7/8 73.0	1/4 6.4	1/32 0.8	
1 1/2"	R19	2 9/16 65.1	11/32 8.7	3 1/4 82.5	1/4 6.4	1/32 0.8	
2"	R22	3 3/4 82.5	11/32 8.7	4 101.6	1/4 6.4	1/32 0.8	
2 1/2"	R25	4 101.6	11/32 8.7	4 3/4 120.3	1/4 6.4	1/32 0.8	
3"	R29	4 1/2 114.3	11/32 8.7	5 1/4 133.3	1/4 6.4	1/32 0.8	
3 1/2"	R33	5 3/16 131.8	11/32 8.7	6 1/16 154.0	1/4 6.4	1/32 0.8	
4"	R36	5 7/8 149.2	11/32 8.7	6 3/4 171.4	1/4 6.4	1/32 0.8	
5"	R40	6 3/4 171.4	11/32 8.7	7 5/8 193.7	1/4 6.4	1/32 0.8	
6"	R43	7 7/8 193.7	11/32 8.7	8 5/8 219.1	1/4 6.4	1/32 0.8	
8"	R48	9 3/4 247.6	11/32 8.7	10 3/4 273.0	1/4 6.4	1/32 0.8	
10"	R52	12 304.8	11/32 8.7	13 330.2	1/4 6.4	1/32 0.8	
12"	R56	15 381.0	11/32 8.7	16 406.4	1/4 6.4	1/32 0.8	
14"	R59	15 5/8 396.9	11/32 8.7	16 3/4 425.1	1/4 6.4	1/32 0.8	
16"	R64	17 7/8 454.0	11/32 8.7	19 482.6	1/4 6.4	1/32 0.8	
18"	R68	20 517.5	11/32 8.7	21 1/2 546.1	1/4 6.4	1/32 0.8	
20"	R72	22 558.8	11/32 8.7	23 1/2 596.9	1/4 6.4	1/32 0.8	
22"	R80	24 3/8 615.9	11/32 8.7	25 1/2 647.7	1/4 6.4	1/32 0.8	
24"	R76	26 1/2 673.1	11/32 8.7	28 711.2	1/4 6.4	1/32 0.8	
26"		28 3/8 727.1	11/32 10.3	30 3/8 771.5	5/16 7.9	1/32 0.8	
28"							
30"		32 7/8 835.0	13/32 10.3	34 3/8 879.5	5/16 7.9	1/32 0.8	
32"							
34"		37 939.8	17/32 13.5	38 7/8 987.4	3/8 9.5		
36"		39 3/4 996.9	17/32 13.5	41 1/8 1044.6	3/8 9.5		
42"		46 1168.4	17/32 13.5	47 7/8 1216.0	3/8 9.5		

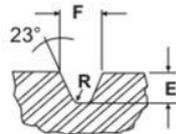
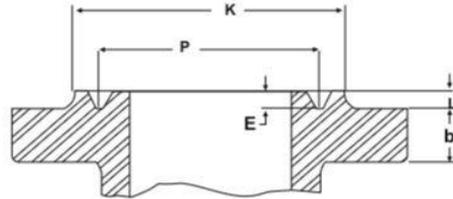
Ring number No. def.	300-400-600 lbs				
	P	F	K	E	R
R11	1 11/32 34.1	9/32 7.1	2 50.8	7/32 5.6	1/32 0.8
R13	1 11/16 42.9	11/32 8.7	2 1/2 63.5	1/4 6.4	1/32 0.8
R16	2 50.8	11/32 8.7	2 3/4 69.8	1/4 6.4	1/32 0.8
R18	2 1/8 60.3	11/32 8.7	3 3/8 79.4	1/4 6.4	1/32 0.8
R20	2 11/16 68.3	11/32 8.7	3 9/16 90.5	1/4 6.4	1/32 0.8
R23	3 1/4 82.5	15/32 11.9	4 1/4 107.9	5/16 7.9	1/32 0.8
R26	4 101.6	15/32 11.9	5 127.0	5/16 7.9	1/32 0.8
R31	4 7/8 123.8	15/32 11.9	5 3/4 146.0	5/16 7.9	1/32 0.8
R34	5 1/8 131.8	15/32 11.9	6 1/4 158.7	5/16 7.9	1/32 0.8
R37	5 7/8 149.2	15/32 11.9	6 3/4 174.6	5/16 7.9	1/32 0.8
R41	7 1/8 181.0	15/32 11.9	8 1/4 209.5	5/16 7.9	1/32 0.8
R45	8 5/16 211.1	15/32 11.9	9 1/2 241.3	5/16 7.9	1/32 0.8
R49	10 5/8 269.9	15/32 11.9	11 7/8 301.6	5/16 7.9	1/32 0.8
R53	12 3/8 323.8	15/32 11.9	14 356.6	5/16 7.9	1/32 0.8
R57	15 381.0	15/32 11.9	16 1/4 412.7	5/16 7.9	1/32 0.8
R61	16 1/2 419.1	15/32 11.9	18 457.2	5/16 7.9	1/32 0.8
R65	18 3/8 469.9	15/32 11.9	20 508.0	5/16 7.9	1/32 0.8
R69	21 533.4	15/32 11.9	22 5/8 574.7	5/16 7.9	1/32 0.8
R73	23 584.2	17/32 13.5	25 635.0	3/8 9.5	1/16 1.6
R81	25 635.0	19/32 15.1	27 685.8	7/16 11.1	1/16 1.6
R77	27 1/4 692.1	21/32 16.7	29 1/2 749.3	7/16 12.7	1/16 1.6
R93	29 749.3	25/32 19.8	31 1/8 809.6	1/2 12.7	1/16 1.6
R94	31 1/2 800.1	25/32 19.8	33 3/8 860.4	1/2 12.7	1/16 1.6
R95	33 3/4 857.2	25/32 19.8	36 1/8 917.6	1/2 12.7	1/16 1.6
R96	36 914.4	29/32 23.0	38 3/4 984.2	9/16 14.3	1/16 1.6
R97	38 965.2	29/32 23.0	40 3/4 1035	9/16 14.3	1/16 1.6
R98	40 1/4 1022.3	29/32 23.0	43 1092.2	9/16 14.3	1/16 1.6
	47 1193.8	11/16 27.0	50 3/16 1274.7	5/8 15.9	

Nominal Pipe Size DN	Ring number No. def.	900 lbs					Corner Radius Raggio sul fondo
		P	F	K	E	R	
1/2"	R12	1 9/16 39.7	11/32 8.7	2 3/8 60.3	1/4 6.4	1/32 0.8	
3/4"	R14	1 3/4 44.4	1/32 8.7	2 5/8 66.7	1/4 6.4	1/32 0.8	
1"	R16	2 50.8	11/32 8.7	2 13/16 71.4	1/4 6.4	1/32 0.8	
1 1/4"	R18	2 3/8 60.3	11/32 8.7	2 31/16 81.0	1/4 6.4	1/32 0.8	
1 1/2"	R20	2 11/16 68.3	11/32 8.7	3 3/8 92.1	1/4 6.4	1/32 0.8	
2"	R24	3 3/4 95.2	15/32 11.9	4 1/8 123.8	5/16 7.9	1/32 0.8	
2 1/2"	R27	4 1/4 107.9	15/32 11.9	5 3/8 136.5	5/16 7.9	1/32 0.8	
3"	R31	4 7/8 123.8	15/32 11.9	6 1/8 155.6	5/16 7.9	1/32 0.8	
4"	R37	5 7/8 149.2	15/32 11.9	7 1/8 181.0	5/16 7.9	1/32 0.8	
5"	R41	7 1/8 181.0	15/32 11.9	8 3/4 215.9	5/16 7.9	1/32 0.8	
6"	R45	8 5/16 211.1	15/32 11.9	9 1/2 241.3	5/16 7.9	1/32 0.8	
8"	R49	10 5/8 269.9	15/32 11.9	12 3/8 308.0	5/16 7.9	1/32 0.8	
10"	R53	12 3/8 323.8	15/32 11.9	14 1/4 361.9	5/16 7.9	1/32 0.8	
12"	R57	15 381.0	15/32 11.9	16 1/2 419.1	5/16 7.9	1/32 0.8	
14"	R62	16 1/2 419.1	21/32 16.7	18 3/8 466.7	7/16 11.1	1/16 1.6	
16"	R66	18 1/2 469.9	21/32 16.7	20 5/8 523.9	7/16 11.1	1/16 1.6	
18"	R70	21 533.4	25/32 19.8	23 3/8 593.7	1/2 12.7	1/16 1.6	
20"	R74	23 584.2	25/32 19.8	25 1/2 647.7	1/2 12.7	1/16 1.6	
24"	R78	27 1/4 692.1	11/16 17.5	30 3/8 771.5	5/8 15.9	3/32 2.4	
26"	R100	29 1/2 749.3	13/16 30.2	32 3/4 831.9	11/16 17.5	3/32 2.4	
28"	R101	31 1/2 800.1	15/16 35.1	35 889.0	11/16 17.5	3/32 2.4	
30"	R102	33 3/4 857.2	15/16 33.3	37 1/4 946.2	11/16 17.5	3/32 2.4	
32"	R103	36 914.4	15/16 33.3	39 1/2 1003.3	11/16 17.5	3/32 2.4	
34"	R104	38 965.2	17/16 36.5	42 1066.3	13/16 20.6	3/32 2.4	
36"	R105	40 1/4 1022.3	17/16 36.5	44 1/4 1124.0	13/16 20.6	3/32 2.4	



FLANGE

Dimensioni scanalature per Ring-Joint Facing Dimensions of Ring-Joint grooves 1500-2500 lbs



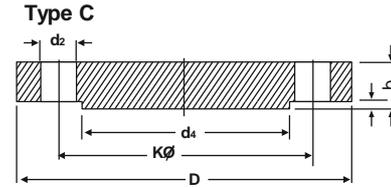
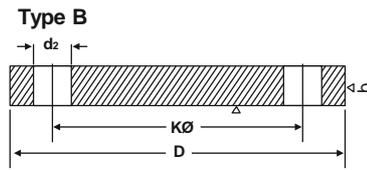
b = minimum flange thickness
minimo spessore flangia

L = E

Nominal Pipe Size	DN	1500 lbs					
		Ring number No dell'anello	Pitch diameter of groove Diam. medio scanalatura	Width of groove Largh. scanal.	Diameter of Raised Face Diam. risalto	Depth of Groove Profond. scanal.	Corner Radius Raggio sul fondo
		P	F	K	E	R	
1/2"	inches mm	R12	1 ^{9/16} 39.7	1 ^{1/32} 8.7	2 ^{3/4} 60.3	1/4 6.4	1/32 0.8
3/4"	inches mm	R14	1 ^{1/4} 44.4	1/32 8.7	2 ^{3/4} 66.7	1/4 6.4	1/32 0.8
1"	inches mm	R16	2 50.8	1 ^{1/32} 8.7	2 ^{13/16} 71.4	1/4 6.4	1/32 0.8
1 1/4"	inches mm	R18	2 ^{3/4} 60.3	1 ^{1/32} 8.7	2 ^{3/16} 81.0	1/4 6.4	1/32 0.8
1 1/2"	inches mm	R20	2 ^{11/16} 68.3	1 ^{1/32} 8.7	3 ^{3/4} 92.1	1/4 6.4	1/32 0.8
2"	inches mm	R24	3 ^{1/4} 95.2	1 ^{5/32} 11.9	4 ^{7/8} 123.8	5/16 7.9	1/32 0.8
2 1/2"	inches mm	R27	4 ^{1/4} 107.9	1 ^{5/32} 11.9	5 ^{3/4} 136.5	5/16 7.9	1/32 0.8
3"	inches mm	R35	5 ^{3/4} 136.5	1 ^{5/32} 11.9	6 ^{3/4} 168.3	5/16 7.9	1/32 0.8
4"	inches mm	R39	6 ^{3/4} 161.9	1 ^{5/32} 11.9	7 ^{3/4} 193.7	5/16 7.9	0 ^{1/32} 0.8
5"	inches mm	R44	7 ^{3/4} 193.7	1 ^{5/32} 11.9	9 228.6	5/16 7.9	1/32 0.8
6"	inches mm	R46	8 ^{5/16} 211.1	1 ^{7/32} 13.5	9 ^{3/4} 247.6	3/8 9.5	1/16 1.6
8"	inches mm	R50	10 ^{3/4} 269.9	2 ^{1/32} 16.7	12 ^{1/2} 317.5	7/16 11.1	1/16 1.6
10"	inches mm	R54	12 ^{3/4} 323.8	2 ^{1/32} 16.7	14 ^{3/4} 371.5	7/16 11.1	1/16 1.6
12"	inches mm	R58	15 381.0	2 ^{9/32} 23.0	17 ^{1/4} 438.1	9/16 14.3	1/16 1.6
14"	inches mm	R63	16 ^{1/2} 419.1	1 ^{1/16} 27.0	19 ^{1/4} 488.9	5/8 15.9	3/32 2.4
16"	inches mm	R67	18 ^{1/2} 469.1	1 ^{3/16} 30.2	21 ^{1/2} 546.1	1 ^{1/16} 17.5	3/32 2.4
18"	inches mm	R71	21 533.4	1 ^{3/16} 30.2	24 ^{3/8} 612.8	1 ^{1/16} 17.5	3/32 2.4
20"	inches mm	R75	23 584.2	1 ^{5/16} 33.3	26 ^{1/2} 673.1	1 ^{1/16} 17.5	3/32 2.4
24"	inches mm	R79	27 ^{1/4} 692.1	1 ^{7/16} 36.5	31 ^{1/4} 795.7	1 ^{3/16} 20.6	3/32 2.4

Nominal Pipe Size	DN	2500 lbs					
		Ring number No dell'anello	Pitch diameter of groove Diam. medio scanalatura	Width of groove Largh. scanal.	Diameter of Raised Face Diam. risalto	Depth of Groove Profond. scanal.	Corner Radius Raggio sul fondo
		P	F	K	E	R	
1/2"	inches mm	R13	1 ^{11/16} 42.9	1 ^{1/32} 8.7	2 ^{9/16} 65.1	1/4 6.4	1/32 0.8
3/4"	inches mm	R16	2 50.8	1 ^{1/32} 8.7	2 ^{7/8} 73.0	1/4 6.4	1/32 0.8
1"	inches mm	R18	2 ^{3/4} 60.3	1 ^{1/32} 8.7	3 ^{1/4} 82.5	1/4 6.4	1/32 0.8
1 1/4"	inches mm	R21	2 ^{27/32} 72.2	1 ^{5/32} 11.9	4 101.6	5/16 7.9	1/32 0.8
1 1/2"	inches mm	R23	3 ^{1/4} 82.5	1 ^{5/32} 11.9	4 114.3	5/16 7.9	1/32 0.8
2"	inches mm	R26	4 101.6	1 ^{5/32} 11.9	5 ^{1/4} 133.3	5/16 7.9	1/32 0.8
2 1/2"	inches mm	R28	4 ^{3/4} 111.1	1 ^{7/32} 13.5	5 ^{3/4} 149.2	3/8 9.5	1/16 1.6
3"	inches mm	R32	5 127.0	1 ^{7/32} 13.5	6 ^{3/4} 168.3	3/8 9.5	1/16 1.6
4"	inches mm	R38	6 ^{3/16} 157.2	2 ^{1/32} 16.7	8 203.2	7/16 11.1	1/16 1.6
5"	inches mm	R42	7 ^{1/2} 190.5	2 ^{5/32} 19.8	9 ^{1/4} 241.3	1/2 12.7	1/16 1.6
6"	inches mm	R47	9 228.6	2 ^{5/32} 19.8	11 279.4	1/2 12.7	1/16 1.6
8"	inches mm	R51	11 279.4	2 ^{9/32} 23.0	13 ^{3/8} 339.7	9/16 14.3	1/16 1.6
10"	inches mm	R55	13 ^{1/2} 342.9	1 ^{3/16} 30.2	16 ^{3/4} 425.4	1 ^{1/16} 17.5	3/32 2.4
12"	inches mm	R60	16 406.4	1 ^{5/16} 33.3	19 ^{1/2} 495.3	1 ^{1/16} 17.5	3/32 2.4

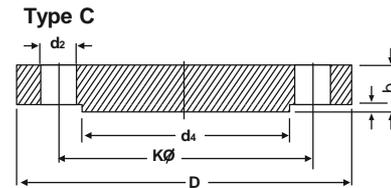
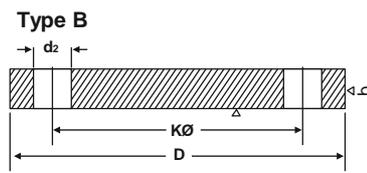
DIN 2527



	NW	D	Flange		Raised face		No.	Bolts		Dia. of Bolt Hole	Weight of One Flange (7.85 kg/dm ³)	
			b	k	d ₄	f					Type-B	Type-C
											d ₂	kg kg
ND-6	10	75	12	50	35	2	4	M 10	-	11.5	0.38	0.33
	15	80	12	55	40	2	4	M 10	-	11.5	0.44	0.38
	20	90	14	65	50	2	4	M 10	-	11.5	0.65	0.59
	25	100	14	75	60	2	4	M 10	-	11.5	0.82	0.74
	32	120	14	90	70	2	4	M 12	(1/2")	14	1.17	1.07
	40	130	14	100	80	3	4	M 12	(1/2")	14	1.39	1.21
	50	140	14	110	90	3	4	M 12	(1/2")	14	1.62	1.43
	65	160	14	130	110	3	4	M 12	(1/2")	14	2.44	2.21
	80	190	16	150	128	3	4	M 16	(5/8")	18	3.43	3.09
	100	210	16	170	148	3	4	M 16	(5/8")	18	4.76	4.37
	125	240	18	200	178	3	8	M 16	(5/8")	18	6.11	5.68
	150	265	18	225	202	3	8	M 16	(5/8")	18	7.51	7.02
	(175)	295	20	255	232	3	8	M 16	(5/8")	18	10.40	9.85
	200	320	20	280	258	3	8	M 16	(5/8")	18	12.30	11.70
	250	375	22	335	312	3	12	M 16	(5/8")	18	18.30	17.60
	ND-10 Note from 10 mm to 175 mm see ND-16	200	340	24	295	268	3	8	M 20	(3/4")	23	16.50
250		395	26	350	320	3	12	M 20	(3/4")	23	24.00	23.10
300		445	26	400	370	4	12	M 20	(3/4")	23	30.90	29.40
350		505	26	460	430	4	16	M 20	(3/4")	23	40.60	38.00
400		565	26	515	482	4	16	M 24	(7/8")	27	49.40	47.50
500		670	28	620	585	4	20	M 24	(7/8")	27	75.00	72.70
ND-16 Note : For DIN 2527ND-10-4 Holes	10	90	14	60	40	2	4	M 12	(1/2")	14	0.63	0.56
	15	95	14	65	45	2	4	M 12	(1/2")	14	0.72	0.64
	20	105	16	75	58	2	4	M 12	(1/2")	14	1.01	0.93
	25	115	16	85	68	2	4	M 12	(1/2")	14	1.23	1.13
	32	140	16	100	78	2	4	M 16	(5/8")	18	1.80	1.66
	40	150	16	110	88	3	4	M 16	(5/8")	18	2.09	1.85
	50	165	18	125	102	3	4	M 16	(5/8")	18	2.88	2.59
	65	185	18	145	122	3	4	M 16	(5/8")	18	3.66	3.33
	80	200	20	160	138	3	4/8	M 16	(5/8")	18	4.77	4.34
	100	220	20	180	158	3	8	M 16	(5/8")	18	5.65	5.26
	125	250	22	210	188	3	8	M 16	(5/8")	18	8.42	7.67
	150	285	22	240	212	3	8	M 20	(3/4")	23	10.40	9.85
	(175)	315	24	270	242	3	8	M 20	(3/4")	23	14.00	13.50
	200	340	24	295	268	3	12	M 20	(3/4")	23	16.10	15.60
	250	405	26	355	320	3	12	M 24	(7/8")	27	24.90	23.90
	300	460	28	410	378	4	12	M 24	(7/8")	27	35.10	33.60
350	520	30	470	438	4	16	M 24	(7/8")	27	47.80	46.20	
400	580	32	525	490	4	16	M 27	(1")	30	63.50	61.50	
500	715	34	650	610	4	20	M 30	(1 1/8")	33	102	99.50	



FLANGE



DIN 2527

	NW	D	Flange		Raised face		No.	Bolts		Dia. of Bolt Hole	Weight of One Flange (7.85 kg/dm ³)	
			b	k	d ₄	f					d ₂	kg kg
ND-25 Note : From 10 mm to 150 mm see ND-40	(175)	330	28	280	248	3	12	M 24	(7/8")	27	17.3	16.5
	200	360	30	310	278	3	12	M 24	(7/8")	27	22.3	21.5
	250	425	32	370	335	3	12	M 27	(1")	30	33.5	32.5
	300	485	34	430	395	4	16	M 27	(1")	30	46.3	44.7
	350	555	38	490	450	4	16	M 30	(1 1/8")	33	68.0	65.9
	400	620	40	550	505	4	16	M 33	(1 1/4")	36	89.7	87.0
ND-40	500	730	44	660	615	4	20	M 33	(1 1/4")	36	138	134
	10	90	16	60	40	2	4	M 12	(1/2")	14	0.72	0.62
	15	95	16	65	45	2	4	M 12	(1/2")	14	0.81	0.74
	20	105	18	75	58	2	4	M 12	(1/2")	14	1.24	1.05
	25	115	18	85	68	2	4	M 12	(1/2")	14	1.38	1.31
	32	140	18	100	78	2	4	M 16	(5/8")	18	2.03	1.82
	40	150	18	110	88	3	4	M 16	(5/8")	18	2.35	2.11
	50	165	20	125	102	3	4	M 16	(5/8")	18	3.20	2.91
	65	185	22	145	122	3	8	M 16	(5/8")	18	4.29	4.13
	80	200	24	160	138	3	8	M 16	(5/8")	18	5.88	5.21
	100	236	24	190	162	3	8	M 12	(3/4")	23	7.54	7.08
	125	270	26	220	188	3	8	M 24	(7/8")	27	10.8	10.4
	150	300	28	250	218	3	8	M 24	(7/8")	27	14.5	13.9
	175	350	32	295	260	3	12	M 27	(1")	30	22.1	21.3
	200	375	34	320	285	3	12	M 27	(1")	30	27.2	26.2
	250	450	38	385	345	3	12	M 30	(1 1/8")	33	43.8	43.1
	300	515	42	450	410	4	16	M 30	(1 1/8")	33	63.3	62.2
	350	580	46	510	465	4	16	M 33	(1 1/4")	36	89.5	87.2
	400	660	50	585	535	4	16	M 36	(1 3/8")	39	127	124
	500	755	52	670	615	4	20	M 39	(1 1/2")	42	172	168

FLANGE FACINGS TONGUE AND GROOVE, NOMINAL PRESSURE 10 TO 100 ACORDING TO DIN 2512	Nominal		Groove					Nominal Tongue		Groove				
	Pipe	d ₄₃	f ₁	d ₄₁	d ₄₄	f ₂	Pipe	d ₄₂	d ₄₃	f ₁	d ₄₁	d ₄₄	f ₂	
	Size	-0.5	+0.5	-0.5	+0.5	-0.5	Size	+0.5	-0.5	+0.5	-0.5	+0.5	-0.5	
GROOVE	10	24	34	4	23	35	3	175	213	233	4.5	212	234	3.5
	15	29	39	4	28	40	3	200	239	259	4.5	238	260	3.5
	20	36	50	4	35	51	3	250	292	312	4.5	291	313	3.5
	25	47	57	4	42	58	3	300	343	363	4.5	342	364	3.5
	32	51	65	4	50	66	3	350	395	421	5	394	422	4
	40	61	75	4	60	76	3	400	447	473	5	446	474	4
	50	73	87	4	72	88	3	500	549	575	5	548	576	4
	65	95	109	4	94	110	3	600	649	675	5	648	676	4
	80	106	120	4	105	121	3	700	751	777	5	750	778	4
	100	129	149	4.5	128	150	3.5	800	856	882	5	855	883	4
	125	155	175	4.5	154	176	3.5	900	961	987	5	960	988	4
	150	183	203	4.5	182	204	3.5	1000	1061	1091	6	1060	1092	5

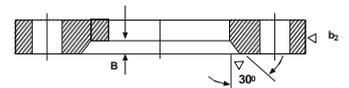
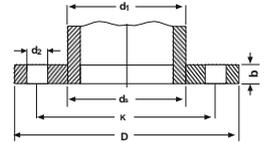


FLANGE

DIN 2576

Flanges, Slip-on type for Bracing or Welding nominal pressure 10

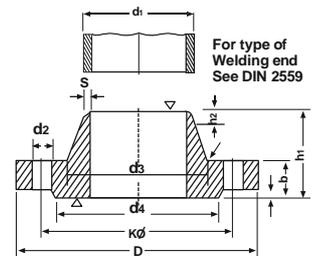
Pipe		Flange				Bolts			Weight of one flange 7.85 kg. /dm ³ kg
NW	d ₁	ds	D	b ₁	k	Number	Thread	d ₂	
10	14 17.2*)	14.5 17.7	90	14	60	4	M 12 (1/2")	14	0.613 0.605
15	20 21.3*)	20.5 21.8	95	14	65	4	M 12 (1/2")	14	0.675 0.669
20	25 26.9*)	25.5 27.4	105	16	75	4	M 12 (1/2")	14	0.947 0.936
25	30 33.7*)	30.5 34.2	115	16	85	4	M 12 (1/2")	14	1.14 1.11
32	38 42.4*)	38.5 42.9	140	16	100	4	M 16 (5/8")	18	1.66 1.62
40	44.5 48.3*)	45 48.8	150	16	110	4	M 16 (5/8")	18	1.89 1.86
50	57 60.3*)	57.5 60.8	165	18	125	4	M 16 (5/8")	18	2.51 2.47
65	76.1*)	76.6	185	18	145	4	M 16 (5/8")	18	3.00
80	88.9*)	89.4	200	20	160	4	M 16 (5/8")	18	3.79
100	108 114.3*)	108.5 114.8	220	20	180	8	M 16 (5/8")	18	4.20 4.03
125	133 139.7*)	133.5 140.2	250	22	210	8	M 16 (5/8")	18	5.71 5.46
150	159 168.3*)	159.5 168.8	285	22	240	8	M 20 (3/4")	23	6.72 6.57
175	191 193.7*)	192 194.7	315	24	270	8	M 20 (3/4")	23	8.60 8.45
200	216 219.1*)	217 220.1	340	24	295	8	M 20 (3/4")	23	9.50 9.31
250	267 273*)	268 274	395	26	350	12	M 20 (3/4")	23	12.5 11.9
300	318 323.9*)	319 324.9	445	26	400	12	M 20 (3/4")	23	14.4 13.8
350	355.6*) 368	356.6 369	505	28	460	18	M 20 (3/4")	23	20.6 19.0
400	406.4*) 419	407.4 420	565	32	515	16	M 24 (7/8")	27	27.9 25.9
500	508*) 521	509 522	670	38	620	20	M 24 (7/8")	27	37.9 41.1



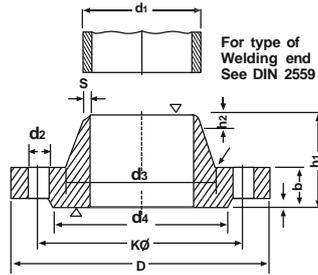
DIN 2632

Welding Neck Flanges for Nominal pressure 10

Pipe		Flange				Neck				Raised Face		Bolts		Weight of one flange 7.85 kg. /dm ³ kg	
NW	d ₁	D	b	k	h ₁	d ₃	s	-s	h ₂	d ₄	f	No.	Thread		d ₂
200	216 219.1	340	24	295	62	232 235	5.9	10	16	268	3	8			11.3
250	267 273	395	26	350	68	285 292	6.3	12	16	320	3				14.7
300	318 323.9	445	26	400	68	335 344	7.1	12	16	370	4	12	M 20 (3/4")	23	17.6
350	355.6*) 368	505	26	460	68	385	7.1	12	16	430	4				21.4
400	406.4*) 419	565	26	515	72	440	7.1	12	16	482	4	16		27	26.1
500	508*) 521	670	28	620	75	542	7.1	12	16	585	4		M 24 (7/8")	30	34.7
600	609.6*) 622	780	28	725	80	642	7.1	12	18	685	5	20	M 27 (1")		42.2



Note : For nominal sizes 10 upto 175 see DIN-2633.



DIN 2633 Welding Neck Flanges for Nominal pressure 16

Pipe		Flange				Neck				Raisd face		Bolts			Weight of one flange 7.85 kg. /dm ³) kg																					
NW	d ₁	D	b	k	h ₁	d ₃	s	r	h ₂	d ₄	f	No.	Thread	d ₂																						
10	14	90	14	60	35	25	1.8	4	6	40	2	4	M 12	(1/2")	14	0.580																				
	17.2					28										0.648																				
15	20.	95	14	65	35	30	2	4	6	45	2					8	M 16	(5/8")	18	0.952																
	21.3					32														1.14																
20	25	105	16	75	38	38	2.3	4	6	58	2									8	M 20	(3/4")	23	1.69												
	26.9					40																		1.86												
25	30	115	16	85	38	42	2.6	4	6	68	2													12	M 24	(7/8")	27	2.53								
	33.7					45																						3.06								
32	38	140	16	100	40	52	2.6	6	6	78	2																	16	M 27	(1")	30	1.69				
	42.4					56																										1.86				
40	44.5	150	16	110	42	60	2.6	6	7	88	3																					20	M 30	(1 1/8")	33	1.69
	48.3					64																														1.86
50	57	165	18	125	45	72	2.9	6	8	102	3	24	M 33	(1 1/4")	36																					2.53
	60.3					75																														3.06
65	76.1	185	18	145	45	90	2.9	6	10	122	3					28	M 36	(1 3/8")	39																	3.06
	88.9					105																														3.70
80	88.9	200	20	160	50	105	3.2	8	10	138	3									4	M 39	(1 1/2")	42													4.62
	108					125																														6.30
100	114.3	220	20	180	52	131	3.6	8	12	158	3													8	M 20	(3/4")	23									7.75
	133					150																														10.0
125	139.7	250	22	210	55	156	4	8	12	188	3																	8	M 20	(3/4")	23					6.30
	159					175																														7.75
150	168.3	285	22	240	55	184	4.5	10	12	212	3																					8	M 24	(7/8")	27	10.0
	191					208																														11.0
175	193.7	315	24	270	60	210	5.4	10	12	242	3	12	M 24	(7/8")	27																					15.6
	216					232																														22.0
200	219.1	340	24	295	62	235	5.9	10	16	268	3					12	M 24	(7/8")	27																	11.0
	267					285																														15.6
250	273	405	26	355	70	292	6.3	12	16	320	3									16	M 27	(1")	30													22.0
	318					338																														28.7
300	323.9	460	28	410	78	344	7.1	12	16	378	4													16	M 27	(1")	30									28.7
	355.6					390																														36.3
350	368	520	30	470	82	390	8	12	16	438	4																	20	M 30	(1 1/8")	33					36.3
	406.4					445																														59.3
400	419	580	32	525	85	445	8	12	16	490	4																					20	M 33	(1 1/4")	36	59.3
	508					48																														73.4
500	521	715	34	650	90	548	8	12	16	610	4	24	M 36	(1 3/8")	39																					73.4
	609.6					52																														75.0
600	622	840	36	770	95	652	8.8	12	18	725	5					24	M 36	(1 3/8")	39																	75.0
	711.2					52																														99.0
700	720	910	36	840	100	755	8.8	12	18	795	5									28	M 39	(1 1/2")	42													99.0
	812.8					52																														119
800	820	1025	38	950	105	855	10	12	20	900	5													28	M 39	(1 1/2")	42									119
	914.4					52																														159
900	920	1125	40	1050	110	955	10	12	20	1000	5																	28	M 39	(1 1/2")	42					159
	1016					52																														
1000	1020	1255	42	1170	120	1058	10	16	22	1115	5																					28	M 39	(1 1/2")	42	

* 4 bolts for ND 10 (nominal pressure) (the order than reeds welding neck flange 80/88.9 ND 10 DIN 2633)



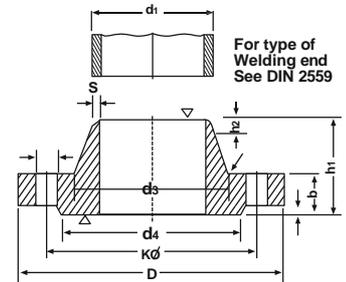
FLANGE

DIN 2634

Welding Neck Flanges for Nominal pressure 25

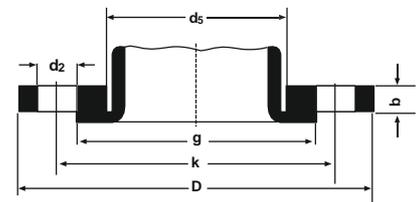
Pipe		Flange				Neck				Raised face		Bolts		Weight of one flange 7.85 kg. /(dm ³) kg	
NW	d ₁	D	b	k	h ₁	d ₃	s	r	h ₂	h ₄	f	No.	Thread		d ₂
175	(191)	330	28	280	75	215	5.6	10	15	248	3	12	M 24 (7/8")	27	13.4
	193.7					218									17.0
200	216	360	30	310	80	240	6.3	10	16	278	3	16	M 27 (1")	30	24.4
	219.1					244									31.2
250	267	425	32	370	88	292	7.1	12	18	335	3	16	M 30 (1 1/8")	33	45.0
	273					298									58.7
300	318	485	34	430	92	345	8	12	18	395	4	16	M 33 (1 1/4")	36	86.1
	323.9					352									101
350	355.6	555	38	490	100	398	8	12	20	450	4	20	M 36 (1 3/8")	39	101
	368					419									101
400	406.4	620	40	550	110	452	8.8	12	20	505	4	20	M 36 (1 3/8")	39	101
	419					452									101
500	508	730	44	660	125	558	10	12	20	615	4	20	M 36 (1 3/8")	39	101
	521					558									101
600	609.6	845	46	770	125	660	11	12	20	720	5	20	M 36 (1 3/8")	39	101
	622					660									101

For nominal sizes 10 up to 150 see DIN 2635



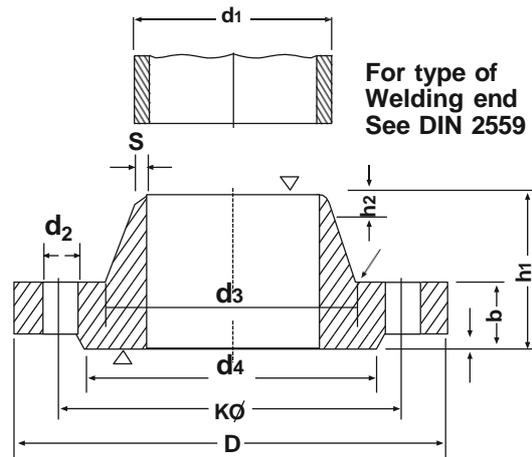
LOOSE Flange for Flange Collar PN 10 (DIN 2642, DIN Connections)

Nom Pipe size	Flange D mm	d _s mm	b mm	r mm	k mm	Drilling Number	d ₂ mm	Weight kg	Collar & mm
10	90	16	16	5	60	4	15	0.23	45
15	95	23	16	5	65	4	15	0.26	50
20	105	28	16	5	75	4	15	0.30	60
25	115	33	16	5	85	4	15	0.37	70
32	140	42	16	5	100	4	18	0.54	82
40	150	50	16	5	110	4	18	0.59	92
50	165	62	18	5	125	4	18	0.80	107
65	185	81	18	5	145	4	18	0.90	127
80	200	94	20	5	160	4	18	1.28	142
100	220	113	20	5	180	8	18	1.37	162
125	250	138	22	6	210	8	18	1.78	192
150	285	164	22	6	240	8	22	2.27	218
175	315	195	24	6	270	8	22	2.90	248
200	340	222	24	7	295	8	22	3.16	273
250	395	273	26	7	350	12	22	4.22	328
300	445	324	26	7	400	12	22	4.80	378
350	505	374	26	8	460	16	22	5.85	438
400	565	426	32	8	515	16	25	8.45	490
450	615	475	32	8	565	20	25	9.45	540
500	670	530	34	8	620	20	25	11.35	595
600	780	630	36	10	725	20	30	15.30	695
700	895	730	40	10	840	24	30	21.40	810
800	1015	832	44	10	950	24	34	30.50	916





FLANGE



DIN 2635 Welding Neck Flanges for Nominal pressure 10

Pipe		Flange				Neck			Raisd face		Bolts			Weight of one flange 7.85 kg. /(dm ³) kg					
NW	d ₁	D	b	k	h ₁	d ₃	s	r	h ₂	d ₄	f	No.	Thread		d ₂				
10	14	90	16	60	35	25	1.8	4	6	40	2	4	M 12	(1/2")	14	0.661			
	17.2					28										0.746			
15	20.	95	16	65	38	30	2	4	6	45	2					M 16	(5/8")	18	1.06
	21.3					32													1.29
20	25	105	18	75	40	38	2.3	4	6	58	2					M 20	(3/4")	23	1.88
	26.9					40													2.33
25	30	115	18	85	40	42	2.6	4	6	68	2		M 24	(7/8")	27	2.82			
	33.7					46										3.74			
32	38	140	18	100	42	52	2.6	6	6	78	2		8	M 27	(1")	30	4.75		
	42.4					56											6.52		
40	44.5	150	18	110	45	60	2.6	6	7	88	3		12	M 30	(1 1/8")	33	9.07		
	48.3					64											11.8		
50	57	165	20	125	48	72	2.9	6	8	102	3	16	M 33	(1 1/4")	36	18.2			
	60.3					75										21.5			
65	76.1	185	22	145	52	90	2.9	6	10	122	3	8	M 36	(1 3/8")	39	34.9			
80	88.9	200	24	160	58	105	3.2	8	12	138	3					49.7			
100	108	235	24	190	65	128	3.6	8	12	162	3	20	M 39	(1 1/2")	42	68.1			
	114.3					134										96.5			
125	133	270	26	220	68	155	4	8	12	188	3	20	M 39	(1 1/2")	42	117			
	139.7					162													
150	159	300	28	250	75	182	4.5	10	12	218	3	20	M 39	(1 1/2")	42				
	168.3					192													
175	191	350	32	295	82	215	5.6	10	15	260	3	20	M 39	(1 1/2")	42				
	193.7					218													
200	216	375	34	320	88	240	6.3	10	16	285	3	20	M 39	(1 1/2")	42				
	219.1					244													
250	267	450	38	385	105	298	7.1	12	18	345	3	20	M 39	(1 1/2")	42				
	273					306													
300	318	515	42	450	115	352	8	12	18	410	4	20	M 39	(1 1/2")	42				
	323.9					362													
350	355.6	580	46	510	125	408	8.8	12	20	460	4	20	M 39	(1 1/2")	42				
	368																		
400	406.4	660	50	585	135	462	11	12	20	535	4	20	M 39	(1 1/2")	42				
	419																		
500	508	755	52	670	140	562	14.2	12	20	615	4	20	M 39	(1 1/2")	42				
	521																		



FLANGE

Table D : For Working Steam Pressure upto 50 lbs per sq. inch

Nominal Pipe Size	O.D. of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	27/32"	3.3/4"	2.5/8"	4	1/2"	3/16"
3/4"	1.1/16"	4"	2.7/8"	4	1/2"	3/16"
1"	1.11/32"	4.1/2"	3.1/4"	4	1/2"	3/16"
1.1/4"	1.11/16"	4.3/4"	3.7/16"	4	1/2"	1/4"
1.1/2"	1.29/32"	5.1/4"	3.7/8"	4	1/2"	1/4"
2"	2.3/8"	6"	4.1/2"	4	5/8"	5/16"
2.1/2"	3"	6.1/2"	5"	4	5/8"	5/16"
3"	3.1/2"	7.1/4"	5.3/4"	4	5/8"	3/8"
3.1/2"	4"	8"	6.1/2"	4	5/8"	3/8"
4"	4.1/2"	8.1/2"	7"	4	5/8"	3/8"
5"	5.1/2"	10"	8.1/4"	8	5/8"	1/2"
6"	6.1/2"	11"	9.1/4"	8	5/8"	1/2"
7"	7.1/2"	12"	10.1/4"	8	5/8"	1/2"
8"	8.5/8"	13.1/4"	11.1/2"	8	5/8"	1/2"
9"	9.5/8"	14.1/2"	12.3/4"	8	5/8"	5/8"
10"	10.3/4"	16"	14"	8	3/4"	5/8"
12"	12.3/4"	18"	16"	12	3/4"	5/8"
14"	14"	20.3/4"	18.1/2"	12	7/8"	3/4"
16"	16"	22.3/4"	20.1/2"	12	7/8"	3/4"
18"	18"	25.1/4"	23"	12	7/8"	7/8"
20"	20"	27.3/4"	25.1/4"	16	7/8"	1"
24"	24"	32.1/2"	29.3/4"	16	1"	1.1/8"

Table E : For Working Steam Pressure 50 lbs and upto 100 lbs per sq. inch.

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	3.3/4"	2.5/8"	4	1/2"	1/4"
3/4"	4"	2.7/8"	4	1/2"	1/4"
1"	4.1/2"	3.1/4"	4	1/2"	9/32"
1.1/4"	4.3/4"	3.7/16"	4	1/2"	5/16"
1.1/2"	5.1/4"	3.7/8"	4	1/2"	11/32"
2"	6"	4.1/2"	4	5/8"	3/8"
2.1/2"	6.1/2"	5"	4	5/8"	13/32"
3"	7.1/4"	5.3/4"	4	5/8"	7/16"
3.1/2"	8"	6.1/2"	8	5/8"	15/32"
4"	8.1/2"	7"	8	5/8"	1/2"
5"	10"	8.1/4"	8	5/8"	9/16"
6"	11"	9.1/4"	8	3/4"	11/16"
7"	12"	10.1/4"	8	3/4"	3/4"
8"	13.1/4"	11.1/2"	8	3/4"	3/4"
9"	14.1/2"	12.3/4"	12	3/4"	13/16"
10"	16"	14"	12	3/4"	7/8"
12"	18"	16"	12	7/8"	1"
14"	20.3/4"	18.1/2"	12	7/8"	1"
16"	22.3/4"	20.1/2"	12	7/8"	1"
18"	25.1/4"	23"	16	7/8"	1.1/8"
20"	27.3/4"	25.1/4"	16	7/8"	1.1/4"
24"	32.1/2"	29.3/4"	16	1.1/8"	1.1/2"

Table F : For Working Steam Pressure above 100 lbs and upto 150 lbs per sq. inch

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	3.3/4"	2.5/8"	4	1/2"	3/8"
3/4"	4"	2.7/8"	4	1/2"	3/8"
1"	4.3/4"	3.7/16"	4	5/8"	3/8"
1.1/4"	5.1/4"	3.7/8"	4	5/8"	1/2"
1.1/2"	5.1/2"	4.1/8"	4	5/8"	1/2"
2"	6.1/2"	5"	4	5/8"	5/8"
2.1/2"	7.1/4"	5.3/4"	8	5/8"	5/8"
3"	8"	6.1/2"	8	5/8"	5/8"
3.1/2"	8.1/2"	7"	8	5/8"	3/4"
4"	9"	7.1/2"	8	5/8"	3/4"
5"	11"	9.1/4"	8	3/4"	7/8"
6"	12"	10.1/4"	12	3/4"	7/8"
7"	13.1/4"	11.1/2"	12	3/4"	7/8"
8"	14.1/2"	12.3/4"	12	3/4"	1"
9"	16"	14"	12	7/8"	1"
10"	17"	15"	12	7/8"	1"
12"	19.1/4"	17.1/2"	16	7/8"	1.1/8"
14"	21.3/4"	19.1/2"	16	1"	1.1/4"
16"	24"	21.3/4"	20	1"	1.1/4"
18"	26.1/2"	24"	20	1.1/8"	1.3/8"
20"	29"	26.1/2"	24	1.1/8"	1.1/2"
24"	33.1/2"	30.3/4"	24	1.1/4"	1.5/8"

Table H : For Working Steam Pressure 50 lbs above 150 lb and upto 250 lbs per sq. inch

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	4.1/2"	3.1/4"	4	5/8"	1/2"
3/4"	4.1/2"	3.1/4"	4	5/8"	1/2"
1"	4.3/4"	3.7/16"	4	5/8"	9/16"
1.1/4"	5.1/4"	3.7/8"	4	5/8"	11/16"
1.1/2"	5.1/2"	4.1/8"	4	5/8"	11/16"
2"	6.1/2"	5"	4	5/8"	3/4"
2.1/2"	7.1/4"	5.3/4"	8	5/8"	3/4"
3"	8"	6.1/2"	8	5/8"	7/8"
3.1/2"	8.1/2"	7"	8	5/8"	7/8"
4"	9"	7.1/2"	8	5/8"	1"
5"	11"	9.1/4"	8	3/4"	1.1/8"
6"	12"	10.1/4"	12	3/4"	1.1/8"
7"	13.1/4"	11.1/2"	12	3/4"	1.1/4"
8"	14.1/2"	12.3/4"	12	3/4"	1.1/4"
9"	16"	14"	12	7/8"	1.3/8"
10"	17"	15"	12	7/8"	1.3/8"
12"	19.1/4"	17.1/4"	16	7/8"	1.1/2"
14"	21.3/4"	19.1/2"	16	1"	1.5/8"
16"	24"	21.3/4"	20	1"	1.3/4"
18"	26.1/2"	24"	20	1.1/8"	1.7/8"
20"	29"	26.1/2"	24	1.1/8"	2"
24"	33.1/2"	30.3/4"	24	1.1/4"	2.1/4"



FLANGE

British Standard Pipe Flanges

Table J : For Working Steam Pressure above 250 lbs and upto 350 lbs per sq. inch

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	4.1/2"	3.1/4"	4	5/8"	5/8"
3/4"	4.1/2"	3.1/4"	4	5/8"	5/8"
1"	4.3/4"	3.7/16"	4	5/8"	3/4"
1.1/4"	5.1/4"	3.7/8"	4	5/8"	3/4"
1.1/2"	5.1/2"	4.1/8"	4	5/8"	7/8"
2"	6.1/2"	5"	4	3/4"	1"
2.1/2"	7.1/4"	5.3/4"	8	3/4"	1"
3"	8"	6.1/2"	8	3/4"	1.1/4"
3.1/2"	8.1/2"	7"	8	3/4"	1.1/4"
4"	9"	7.1/2"	8	3/4"	1.3/8"
5"	11"	9.1/4"	8	7/8"	1.1/2"
6"	12"	10.1/4"	12	7/8"	1.1/2"
7"	13.1/4"	11.1/2"	12	7/8"	1.5/8"
8"	14.1/2"	12.3/4"	12	7/8"	1.5/8"
9"	16"	14"	12	1"	1.3/4"
10"	17"	15"	12	1"	1.7/8"
12"	19.1/4"	17.1/4"	16	1"	2"
14"	21.3/4"	19.1/2"	16	1.1/8"	2.1/8"
16"	24"	21.3/4"	20	1.1/8"	2.1/4"
18"	26.1/2"	24"	20	1.1/4"	2.3/8"
20"	29"	26.1/2"	24	1.1/4"	2.1/2"
24"	33.1/2"	30.3/4"	24	1.3/8"	2.3/4"

Table K : For Working Steam Pressure above 350 lbs upto 450 lbs per sq. inch

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	4.1/2"	3.1/4"	4	5/8"	3/4"
3/4"	4.1/2"	3.1/4"	4	5/8"	3/4"
1"	5"	3.3/4"	4	5/8"	7/8"
1.1/4"	5.1/4"	3.7/8"	4	5/8"	7/8"
1.1/2"	6"	4.1/2"	4	3/4"	1"
2"	6.1/2"	5"	8	5/8"	1"
2.1/2"	7.1/4"	5.3/4"	8	3/4"	1.1/8"
3"	8"	6.1/2"	8	3/4"	1.1/4"
3.1/2"	9"	7.1/4"	8	7/8"	1.1/4"
4"	9.1/2"	7.3/4"	8	7/8"	1.3/8"
5"	11"	9.1/4"	12	7/8"	1.5/8"
6"	12"	10.1/4"	12	7/8"	1.5/8"
7"	13.1/2"	11.1/2"	12	1"	1.3/4"
8"	14.1/2"	12.1/2"	12	1"	1.7/8"
9"	16"	14"	16	1"	2"
10"	17"	15"	16	1"	2"
12"	19.1/4"	17"	16	1.1/8"	2.1/4"
14"	22.1/2"	20"	16	1.1/4"	2.3/4"
16"	24.3/4"	22.1/4"	20	1.1/4"	2.5/8"
18"	28.1/4"	25.3/4"	20	1.3/8"	3"
20"	31"	28"	20	1.1/2"	3.1/4"

For 1/2" and 5/8" Bolts the diameters of the holes 1/6" in larger than the bolts.
 For 3/4" Bolts and size above, the diameter shall be 1/8" in larger than the bolts.

BRITISH STANDARD PIPE FLANGES

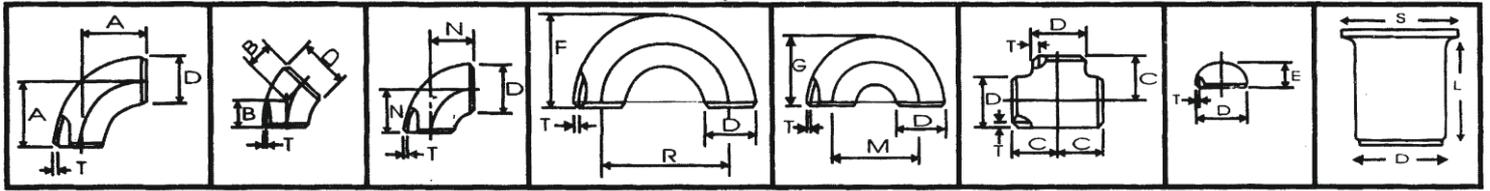
PRESSURE TEMPERATURE RATINGS FOR CARBON STEEL FLANGES

TEMPERATURE

Table	°F 0-450	500	550	600	650	700	750	800	825	850	875	900	Max. Hydraulic Test Pressure
	-17.8 °C to 232.2	260.0	287.8	315.6	343.3	371.1	399	427	441	454	468	482	
D	100	95	85	80	70	65	55	50	-	-	-	-	150
E	200	185	170	155	140	130	115	100	-	-	-	-	300
F	300	280	255	235	215	195	170	150	-	-	-	-	450
H	500	465	430	395	355	320	285	250	215	180	150	115	750
J	700	650	600	550	500	450	400	350	300	255	210	160	1050
K	900	835	770	705	645	580	515	450	390	325	265	205	1350
R	1200	1115	1030	945	855	770	685	600	520	435	355	275	1800
S	1800	1670	1545	1415	1285	1155	1030	900	780	655	535	415	2700
T	2800	2600	2400	2200	2000	1800	1600	1400	1210	1025	835	645	4200



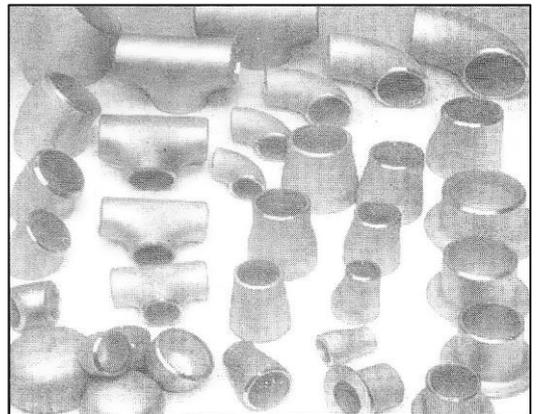
FLANGE



BUTT-WELDING PIPE FITTINGS

DIMENSIONAL STANDARD ANSI B 16.9 AND B 16.28

Nominal Pipe Size		Outside Diameter D	Center to Face				Back to Face			Center to Center			Length 'L'	
Inch	mm		A	B	C	N	E	F	G	R	M	S	MSS SP 43	ANSI B 16.9
1/2	15	21.3	38	16	25	-	25	48	-	76	-	34.9	50.8	76.2
3/4	20	26.7	29	11	29		25	43	-	57	-	42.8	50.8	76.2
1	25	33.4	38	22	38	25	38	56	41	76	51	50.8	50.8	101.6
1.1/4	32	42.2	48	25	48	32	38	70	52	95	64	63.5	50.8	101.6
1.1/2	40	48.3	57	29	57	38	38	83	62	114	76	73	50.8	101.6
2	50	60.3	76	35	64	51	38	106	81	152	102	92	63.5	152.4
2.1/2	65	73.0	95	44	76	64	38	132	100	191	127	104.8	63.5	152.4
3	80	88.9	114	51	86	76	51	159	121	229	152	127	63.5	152.4
3.1/2	90	101.6	133	57	95	89	64	184	140	267	178	139.7	76.2	152.4
4	100	114.3	152	64	105	102	64	210	159	305	203	157.2	76.2	152.4
5	125	141.3	190	79	124	127	76	262	197	381	254	185.7	76.2	203.2
6	150	168.3	229	95	143	152	89	313	237	457	305	215.9	88.9	203.2
8	200	219.1	305	127	178	203	102	414	313	610	406	270	101.6	203.2
10	250	273.1	381	159	216	254	127	518	391	762	508	324	127.0	254.0
12	300	323.9	457	190	254	305	152	619	467	914	610	381	152.4	254.0
14	350	355.6	533	222	279	356	165	711	533	1067	711	412	152.4	305.0
16	400	406.4	610	254	305	406	178	813	610	1219	813	470	152.4	305.0
18	450	457.0	686	286	343	457	203	914	686	1372	914	533.4	152.4	305.0
20	500	508.0	762	318	381	508	229	1016	762	1524	1016	584.2	152.4	305.0
22	550	559.0	838	343	419	559	254	1118	838	1676	1118	6144	152.4	305.0
24	600	610.0	914	381	432	610	267	1219	914	1829	1219	692.2	152.4	305.0
26	650	660.0	991.0	406.0	495	660	267							
28	700	771.0	1067.0	438.0	521	771	267							
30	750	762.0	1143.0	470.0	559	762	267							
32	800	813.0	1219.0	502.0	597	813	267							
34	850	864.0	1295.0	533.0	635	864	267							
36	900	914.0	1372.0	565.0	673	914	267							
38	950	965.0	1448.0	600.0	711	965	305							
40	1000	1016.0	1524.0	632.0	749	1016	305							
42	1050	1067.0	1600.0	660.0	762	1067	305							
44	1100	1118.0	1676.0	695.0	813	1118	343							
46	1150	1168.0	1753.0	727.0	851	1168	343							
48	1200	1219.0	1829.0	759.0	889	1219	343							

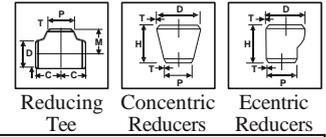




FLANGE



BUTT-WELDING PIPE FITTINGS



DIMENSIONAL STANDARD ANSI B 16.9

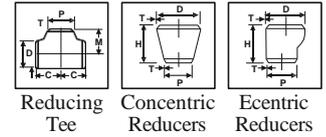
Nominal Pipe Size		Outside Diameter		Center to end		Length	Nominal Pipe Size		Outside Diameter		Center to end		Length
Inch	mm	D	P	C	M	H	Inch	mm	D	P	C	M	H
1/2 x 3/8	15 x 10	21.3	17.1	25	25	-	8 x 6	200 x 150	219.1	168.3	178	168	152
1/2 x 1/4	15 x 8	21.3	13.7	25	25	-	8 x 5	200x 125	219.1	141.3	178	162	152
3/4 x 1/2	20 x 15	26.7	21.3	29	29	38	8 x 4	200 x 100	219.1	114.3	178	156	152
3/4 x 3/8	20 x 10	26.7	17.1	29	29	38	8 x 3.1/2	200 x 90	219.1	101.6	178	152	152
1 x 3/4	25 x 20	33.4	26.7	38	38	51	10 x 8	250 x 200	273.1	219.1	216	203	178
1 x 1/2	25 x 15	33.4	21.3	38	38	51	10 x 6	250 x 150	273.1	168.1	216	194	178
1.1/4 x 1	32 x 25	42.2	33.4	48	48	51	10 x 5	250 x 125	273.1	141.3	216	191	178
1.1/4 x 3/4	32 x 20	42.2	26.7	48	48	51	10 x 4	250 x 100	273.1	114.3	216	184	178
1.1/4 x 1/2	32 x 15	42.2	21.3	48	48	51	12 x 10	300 x 250	323.9	273.1	254	241	203
1.1/2 x 1.1/2	40 x 32	48.3	42.2	57	57	64	12 x 8	300 x 200	323.9	219.1	254	229	203
1.1/2 x 1	40 x 25	48.3	33.4	57	57	64	12 x 6	300 x 150	323.9	168.3	254	219	203
1.1/2 x 3/4	40 x 20	48.3	26.7	57	57	64	12 x 5	300 x 125	323.9	141.3	254	216	203
1.1/2 x 1/2	40x 15	48.3	21.3	57	57	64	14 x 12	350 x 300	355.6	323.9	279	270	330
2 x 1.1/2	50 x 40	60.3	48.2	64	60	76	14 x 10	50 x 250	355.6	273.1	279	257	330
2 x 1 1/4	50 x 32	60.3	42.2	64	57	76	14 x 8	350 x 200	355.6	219.1	279	248	330
2 x 1	50 x 25	60.3	33.4	64	51	76	14 x 6	350 x 150	355.6	168.3	279	238	330
2 x 3/4	50 x 20	60.3	26.7	64	44	76	"16 x 14"	"400 x 350"	"406.4"	"355.6"	305	305	356
2.1/2 x 2	65 x 50	73.0	60.3	76	70	89	16 x 12	400 x 300	406.4	323.9	305	295	356
2.1/2 x 1.1/2	65 x 40	73.0	48.3	76	67	89	16 x 10	400 x 250	406.4	273.1	305	283	356
2.1/2 x 1.1/4	65 x 32	73.0	42.2	76	64	89	16 x 8	400 x 200	406.4	219.1	305	273	356
2.1/2 x 1	65 x 25	73.0	33.4	76	57	89	16 x 6	400 x 150	406.4	168.3	305	264	-
3 x 2.1/2	80 x 65	88.9	73.0	86	83	89	18 x 16	450 x 400	457.0	406.4	343	330	381
3 x 2	80 x 50	88.9	60.3	86	76	89	18 x 14	450 x 350	457.0	355.6	343	330	381
3 x 1.1/2	80 x 40	88.9	48.3	86	73	89	18 x 12	450 x 300	457.0	323.9	343	321	381
3 x 1.1/4	80 x 32	88.9	42.2	86	70	89	18 x 10	450 x 250	457.0	273.1	343	308	381
3.1/2 x 3	90 x 80	101.6	88.9	95	92	102	18 x 8	450 x 200	457.0	219.1	343	298	-
3.1/2 x 2.1/2	90 x 65	101.6	73.0	95	89	102	20 x 18	500 x 450	508.0	457.0	381	368	508
3.1/2 x 2	90 x 50	101.6	60.3	95	83	102	20 x 16	500 x 400	508.0	406.4	381	356	508
3.1/2 x 1.1/2	90 x 40	101.6	48.3	95	79	102	20 x 14	500 x 350	508.0	355.6	381	356	508
3.1/2 x 1.1/4	90 x 32	101.6	42.2	-	-	102	20 x 12	500 x 300	508.0	323.9	381	346	508
4 x 3.1/2	100 x 90^	114.3	101.6	105	102	102	20 x 10	500 x 250	508.0	273.1	381	333	-
4 x 3	100 x 80	114.3	88.9	105	98	102	20 x 8	500 x 200	508.0	219.1	381	324	-
4 x 2.1/2	100 x 65	114.3	73.0	105	95	102	22 x 20	550 x 500	559.0	508.0	419	406	508
4 x 2	100 x 50	114.3	60.3	105	89	102	22 x 18	550 x 450	559.0	457.0	419	394	508
4 x 1.1/2	100 x 40	114.3	48.3	105	86	102	22 x 16	550 x 400	559.0	406.0	419	381	508
5 x 4	125 x 100	141.3	114.3	124	117	127	22 x 14	550 x 350	559.0	355.6	419	381	508
5 x 3.1/2	125 x 90	141.3	101.6	124	114	127	22 x 12	550 x 300	559.0	323.9	419	371	-
5 x 3	125 x 80	141.3	88.9	124	111	127	22 x 10	550 x 250	559.0	273.1	419	359	-
5 x 2.1/2	125 x 65	141.3	73.0	124	108	127	24 x 22	600 x 550	610.0	559.0	432	432	508
5 x 2	125 x 50	141.3	60.3	124	105	127	24 x 20	600 x 500	610.0	508.0	432	432	508
6 x 5	150 x 125	168.3	141.3	143	137	140	24 x 18	600 x 450	610.0	457.0	432	419	508
6 x 4	150 x 100	168.3	114.3	143	130	140	24 x 16	600 x 400	610.0	406.4	432	406	508
6 x 3.1/2	150 x 90	168.3	101.6	143	127	140	24 x 14	600 x 350	610.0	355.6	432	406	-
6 x 3	150 x 80	168.3	88.9	143	124	140	24 x 12	600 x 300	610.0	323.9	432	397	-
6 x 2.1/2	150 x 65	168.3	73.0	143	121	140	24 x 10	600 x 250	610.0	273.1	432	384	-



FLANGE



BUTT-WELDING PIPE FITTINGS



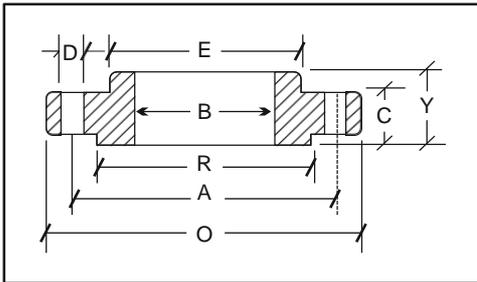
DIMENSIONAL STANDARD ANSI B 16.9

Nominal Pipe Size		Outside Diameter		Center to end		Length	Nominal Pipe Size		Outside Diameter		Center to end		Length
Inch	mm	D	P	C	M	H	Inch	mm	D	P	C	M	H
26 x 24	650 x 600	660.0	610.0	495	483	610	36 x 22	900 x 550	914.0	559.0	673	597	610
26 x 22	650 x 550	660.0	559.0	495	470	610	36 x 20	900 x 500	914.0	508.0	673	584	610
26 x 20	650 x 500	660.0	508.0	495	457	610	36 x 18	900 x 450	914.0	457.0	673	572	610
26 x 18	650 x 450	660.0	457.0	495	444	610	38 x 36	950 x 900	965.0	914.0	711	711	610
26 x 16	650 x 400	660.0	406.4	495	432	610	38 x 34	950 x 850	965.0	864.0	711	698	610
26 x 14	650 x 350	660.0	355.6	495	432	610	38 x 32	950 x 800	965.0	813.0	711	686	610
26 x 12	650 x 300	660.0	323.9	495	432	610	38 x 30	950 x 750	965.0	762.0	711	673	610
28 x 26	700 x 650	771.0	660.0	521	521	610	38 x 28	950 x 700	965.0	771.0	711	648	610
28 x 24	700 x 600	771.0	610.0	521	508	610	38 x 26	950 x 650	965.0	660.0	711	648	610
28 x 22	700 x 550	771.0	559.0	521	495	610	38 x 24	950 x 600	965.0	610.0	711	635	610
28 x 20	700 x 500	771.0	508.0	521	483	610	38 x 22	950 x 550	965.0	559.0	711	622	610
28 x 18	700 x 450	771.0	457.0	521	470	610	40 x 38	1000 x 950	1016.0	965.0	749	749	610
28 x 16	700 x 400	771.0	406.4	521	457	610	40 x 36	1000 x 900	1016.0	914.0	749	737	610
28 x 14	700 x 350	771.0	355.6	521	457	610	40 x 34	1000 x 850	1016.0	864.0	749	724	610
28 x 12	700 x 300	771.0	323.9	521	448	610	40 x 32	1000 x 800	1016.0	813.0	749	711	610
30 x 28	750 x 700	762.0	771.0	559	546	610	40 x 30	1000 x 750	1016.0	762.0	749	698	610
30 x 26	750 x 650	762.0	660.0	559	546	610	40 x 28	1000 x 700	1016.0	771.0	749	673	610
30 x 24	750 x 600	762.0	610.0	559	533	610	40 x 26	1000 x 650	1016.0	660.0	749	673	610
30 x 22	750 x 550	762.0	559.0	559	521	610	40 x 24	1000 x 600	1016.0	610.0	749	660	610
30 x 20	750 x 500	762.0	508.0	559	508	610	40 x 22	1000 x 550	1016.0	559.0	749	648	610
30 x 18	750 x 450	762.0	457.0	559	495	610	42 x 40	1050 x 1000	1067.0	1016.0	762	711	610
30 x 16	750 x 400	762.0	406.4	559	483	610	42 x 38	1050 x 950	1067.0	965.0	762	711	610
30 x 14	750 x 350	762.0	355.6	559	483	610	42 x 36	1050 x 900	1067.0	914.0	762	711	610
30 x 12	750 x 300	762.0	323.9	559	473	610	42 x 34	1050 x 850	1067.0	864.0	762	711	610
30 x 10	750 x 250	762.0	273.1	559	460	610	42 x 32	1050 x 800	1067.0	813.0	762	711	610
32 x 30	800 x 750	813.0	762.0	597	584	610	42 x 30	1050 x 750	1067.0	762.0	762	711	610
32 x 28	800 x 700	813.0	771.0	597	572	610	42 x 28	1050 x 700	1067.0	771.0	762	698	610
32 x 26	800 x 650	813.0	660.0	597	572	610	42 x 26	1050 x 650	1067.0	660.0	762	698	610
32 x 24	800 x 600	813.0	610.0	597	559	610	42 x 24	1050 x 600	1067.0	610.0	762	660	610
32 x 22	800 x 550	813.0	559.0	597	546	610	42 x 22	1050 x 550	1067.0	559.0	762	660	610
32 x 20	800 x 500	813.0	508.0	597	533	610	44 x 42	1100 x 1050	1118.0	1067.0	813	762	610
32 x 18	800 x 450	813.0	457.0	597	521	610	44 x 40	1100 x 1000	1118.0	1016.0	813	749	610
32 x 16	800 x 400	813.0	406.4	597	508	610	44 x 38	1100 x 950	1118.0	965.0	813	737	610
32 x 14	800 x 350	813.0	355.6	597	508	610	44 x 36	1100 x 900	1118.0	914.0	813	724	610
34 x 32	850 x 800	864.0	813.0	635	622	610	44 x 34	1100 x 850	1118.0	864.0	813	724	610
34 x 30	850 x 750	864.0	762.0	635	610	610	44 x 32	1100 x 800	1118.0	813.0	813	711	610
34 x 28	850 x 700	864.0	771.0	635	597	610	44 x 30	1100 x 750	1118.0	762.0	813	711	610
34 x 26	850 x 650	864.0	660.0	635	597	610	44 x 28	1100 x 700	1118.0	771.0	813	698	610
34 x 24	850 x 600	864.0	610.0	635	584	610	44 x 26	1100 x 650	1118.0	660.0	813	698	610
34 x 22	850 x 550	864.0	559.0	635	572	610	46 x 44	1150 x 1100	1168.0	1118.0	851	800	711
34 x 20	850 x 500	864.0	508.0	635	559	610	46 x 42	1150 x 1050	1168.0	1067.0	851	787	711
34 x 18	850 x 450	864.0	457.0	635	546	610	46 x 40	1150 x 1000	1168.0	1016.0	851	775	711
36 x 34	900 x 850	914.0	864.0	673	660	610	46 x 38	1150 x 950	1168.0	965.0	851	762	711
36 x 32	900 x 800	914.0	813.0	673	648	610	46 x 36	1150 x 900	1168.0	914.0	851	762	711
36 x 30	900 x 750	914.0	762.0	673	635	610	46 x 34	1150 x 850	1168.0	864.0	851	749	711
36 x 28	900 x 700	914.0	771.0	673	622	610	46 x 32	1150 x 800	1168.0	813.0	851	749	711
36 x 26	900 x 650	914.0	660.0	673	622	610	46 x 30	1150 x 750	1168.0	762.0	851	737	711
36 x 24	900 x 600	914.0	610.0	673	610	610	46 x 28	1150 x 700	1168.0	771.0	851	737	711

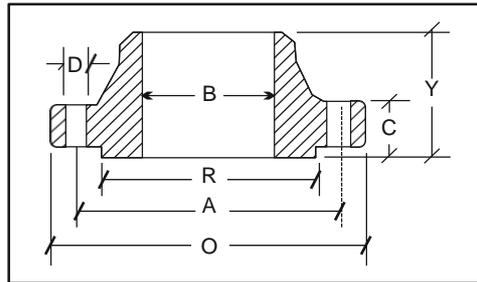


FLANGE

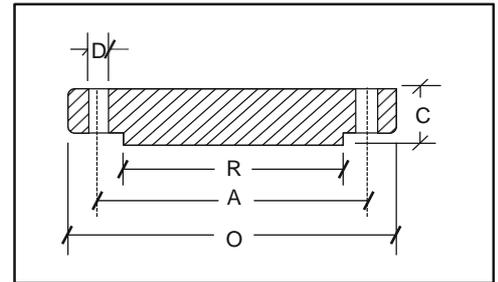
SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE



DIMENSIONAL TOLERANCES

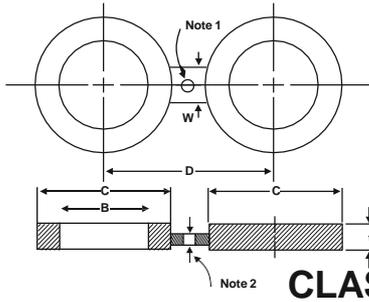
Welding Neck			Threaded, slip on, lap joint, socket welding and blind		
★ Outside diameter	O. D. 600 or smaller	±1.6	★ Outside diameter	O. D. 50 or smaller	± 1.6
	O. D. over 600	±3.1		O. D. over 600	± 3.1
inside diameter (bore)	250 and smaller	± 0.7	inside diameter (bore)	threaded :	to standard gauge limits slip on : lap join : socket-welding :
	12 through 450	± 1.6		250 and smaller	+0.7 -0.0
	500 and larger	+3.1 -1.6		300 and larger	+1.6 -0.0
diameter of contact face	1.6 raised face	± 0.7	diameter of counter bore	threaded	
	6.3 raised face : tongue & grooved male and female	± 0.4		250 and smaller	+0.7 -0.0
★ diameter of hub at base	When E is 600 or smaller	± 1.6		★ outside diameter of hub	300 and larger
	When E is over 600	+3.1	300 and smaller		+2.3 -1.6
diameter of hub at point of welding	125 and smaller	+0.7 ± 0.7	diameter of contact face	1.6 raised face	± 0.7
	150 and larger	+4.0 ± 0.0		6.3 raised : tongue & grooved. male & female	± 0.4
thickness	450 and smaller	+3.1 -0.0	thickness	450 and smaller	+3.1 -0.0
	500 and larger	+4.7 -0.0		500 and larger	+4.7 -0.0
length through hub	250 and smaller	± 1.6	★ length through hub	250 and smaller	± 1.6
	300 and larger	± 3.1		300 and larger	± 3.1
drilling	bolt circle	± 1.6	drilling	bolt circle	± 1.6
	bolt hole spacing	± 0.7		bolt hole spacing	± 0.7
	eccentricity with respect to bore	0.7 max		eccentricity with respect to bore	0.7 max

★ Not covered by ANSI-B 16.5

All dimensions are in Millimeters.

SPECTACLE BLINDS TO API 590

ANSI Class 150, 300 & 600



CLASS 150

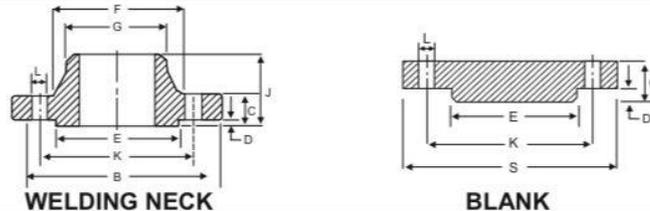
CLASS 300

CLASS 600

Nominal Pipe Size	Outside Diameter Of Pipe	Inside Diameter	Outside Diameter	Centre line Spacing	Thickness	Web Width	CLASS 300			CLASS 600			Nominal Pipe Size				
							Inside Diameter	Outside Diameter	Centre line Spacing	Inside Diameter	Outside Diameter	Centre line Spacing		Thickness	Web Width		
mm. (in)	A	B	C	D	t	W	B	C	D	t	W	B	C	D	t	W	mm. (in)
15 1/2	21.3	16	44	60	3	38	16	51	67	6	38	16	51	67	6	38	15 1/2
20 3/4	26.7	21	54	70	3	38	21	64	83	6	38	21	64	83	6	38	20 3/4
25 1	33.4	27	64	79	3	38	27	70	89	6	38	27	70	89	6	57	25 1
32 1 1/4	42.2	42	73	89	6	38	42	79	99	6	38	37	79	99	10	57	32 1 1/4
40 1 1/2	48.3	48	83	99	6	38	48	92	114	6	51	43	92	114	10	67	40 1 1/2
50 2	60.3	60	102	121	6	51	60	108	127	10	51	55	108	127	10	57	50 2
65 2 1/2	73	73	121	140	6	51	73	127	149	10	64	67	127	149	13	67	65 2 1/2
80 3	88.9	89	133	152	6	64	89	146	168	10	64	83	146	168	13	67	80 3
100 4	114.3	114	171	190	10	64	114	178	200	13	64	108	191	216	16	76	100 4
125 5	141.3	141	194	216	10	76	141	213	235	16	76	135	238	267	19	86	125 5
150 6	168.3	168	219	241	13	76	168	248	270	16	76	162	264	292	22	86	150 6
200 8	219.1	219	276	298	13	76	219	305	330	22	89	212	318	349	28	95	200 8
250 10	273.1	273	337	362	16	102	273	359	387	25	102	265	397	432	35	105	250 10
300 12	323.8	324	406	432	19	102	324	419	451	28	102	315	454	489	41	105	300 12
350 14	355.6	356	448	476	19	108	356	483	514	32	121	346	489	527	44	114	350 14
400 16	406.4	406	511	540	22	108	406	537	572	38	124	397	562	603	51	124	400 16
450 18	457	457	546	578	25	114	457	594	629	41	114	448	610	654	54	133	450 18
500 20	508	508	603	635	28	121	508	651	686	44	121	497	679	724	64	133	500 20
600 24	610	610	714	749	32	140	610	772	813	51	140	597	787	838	73	152	600 24

NOTES : 1. HOLE SIZE SHALL BE THE SAME AS THE FLANGE BOLT HOLE.
 2. THE THICKNESS OF WEB SHALL BE THE LEAST OF 't' OR 6.4 mm.
 3. ALSO AVAILABLE IN LARGER SIZES & RING TYPE JOINT FACING.

ASME B 16.47 - 1996



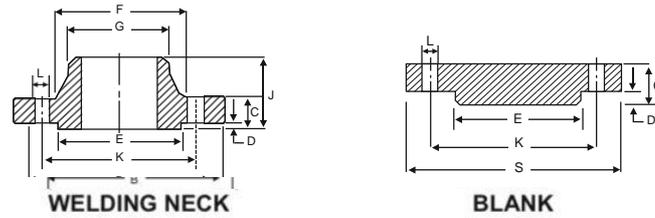
Series A Class 150

CLASS 150

Nominal Pipe Size	Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size
										Bolt Circle Diameter	Diameter of Bolt Holes	Number of Bolts	
mm. (in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm. (in)
650 26	660.4	870.0	68.3	68.3	1.6	749.3	676.1	660.4	120.7	806.5	35.1	24	650 26
700 28	711.2	927.1	71.4	71.4	1.6	800.1	726.9	711.2	125.5	863.6	35.1	28	700 28
750 30	762.0	984.3	74.7	74.7	1.6	857.3	781.1	762.0	136.7	914.4	35.1	28	750 30
800 32	812.8	1060.5	81.0	81.0	1.6	914.4	831.9	812.8	144.5	977.9	41.1	28	800 32
850 34	863.6	1111.3	82.6	82.6	1.6	965.2	882.7	863.6	149.4	1028.7	41.1	32	850 34
900 36	914.4	1168.4	90.4	90.4	1.6	1022.4	933.5	914.4	157.2	1085.9	41.1	32	900 36
950 38	965.2	1238.3	87.4	87.4	1.6	1073.2	990.6	965.2	157.2	1149.4	41.1	32	950 38
1000 40	1016.0	1289.1	90.4	90.4	1.6	1124.0	1041.4	1016.0	163.6	1200.2	41.1	36	1000 40
1050 42	1066.8	1346.2	96.8	96.8	1.6	1193.8	1092.2	1066.8	171.5	1257.3	41.1	36	1050 42
1100 44	1117.6	1403.4	101.6	101.6	1.6	1244.6	1143.0	1117.6	177.8	1314.5	41.1	40	1100 44
1150 46	1168.4	1454.2	103.1	103.1	1.6	1295.4	1196.8	1168.4	185.7	1365.3	41.1	40	1150 46
1200 48	1219.2	1511.3	108.0	108.0	1.6	1358.9	1247.6	1219.2	192.0	1422.4	41.1	44	1200 48
1250 50	1270.0	1568.5	111.3	111.3	1.6	1409.7	1301.8	1270.0	203.2	1479.6	47.8	44	1250 50
1300 52	1320.8	1625.6	115.8	115.8	1.6	1460.5	1352.6	1320.8	209.6	1536.7	47.8	44	1300 52
1350 54	1371.6	1682.8	120.7	120.7	1.6	1511.3	1403.4	1371.6	215.9	1593.9	47.8	44	1350 54
1400 56	1422.4	1746.3	124.0	124.0	1.6	1574.8	1457.5	1422.4	228.6	1651.0	47.8	48	1400 56
1450 58	1473.2	1803.4	128.5	128.5	1.6	1625.6	1508.3	1473.2	235.0	1708.2	47.8	48	1450 58
1500 60	1524.0	1854.2	131.8	131.8	1.6	1676.4	1559.1	1524.0	239.8	1759.0	47.8	52	1500 60

NOTE : 1. DIMENSIONS ARE IN MM. 2. BORE IS TO BE SPECIFIED BY THE CUSTOMER TO SUIT PIPES. 3. RING TYPE JOINT ALSO AVAILABLE PREVIOUSLY MSS SP44

ASME B 16.47 - 1996 Series A Class 300



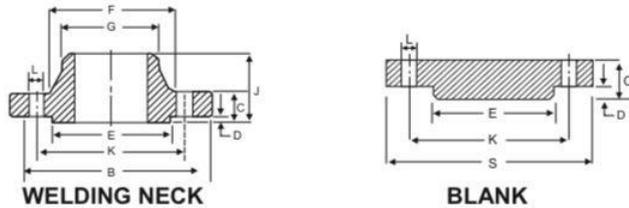
CLASS 150

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	785.9	41.1	44.5	1.6	711.2	684.3	661.9	88.9	744.5	22.4	36	650	26
700	28	711.2	836.7	44.5	47.8	1.6	762.0	735.1	712.7	95.3	795.3	22.4	40	700	28
750	30	762.0	887.5	44.5	50.8	1.6	812.8	787.4	763.5	100.1	846.1	22.4	44	750	30
800	32	812.8	941.3	46.0	53.8	1.6	863.6	839.7	814.3	108.0	900.2	22.4	48	800	32
850	34	863.6	1004.8	49.3	57.2	1.6	920.8	892.0	865.1	110.2	957.3	25.4	40	850	34
900	36	914.4	1057.1	52.3	58.7	1.6	971.6	944.6	915.9	117.3	1009.7	25.4	44	900	36
950	38	965.2	1124.0	53.8	63.5	1.6	1022.4	997.0	968.2	124.0	1069.8	28.4	40	950	38
1000	40	1016.0	1174.8	55.6	66.5	1.6	1079.5	1049.3	1019.0	128.5	1120.6	28.4	44	1000	40
1050	42	1066.8	1225.6	58.7	68.3	1.6	1130.3	1101.9	1069.8	133.4	1171.4	28.4	48	1050	42
1100	44	1117.6	1276.4	60.5	71.4	1.6	1181.1	1152.7	1120.6	136.7	1222.2	28.4	52	1100	44
1150	46	1168.4	1341.4	62.0	74.7	1.6	1234.9	1205.0	1171.4	144.5	1284.2	31.8	40	1150	46
1200	48	1219.2	1392.2	65.0	77.7	1.6	1289.1	1257.3	1222.2	149.4	1335.0	31.8	44	1200	48
1250	50	1270.0	1443.0	68.3	80.8	1.6	1339.9	1308.1	1273.0	153.9	1385.8	31.8	48	1250	50
1300	52	1320.8	1493.8	69.9	84.1	1.6	1390.7	1360.4	1323.8	157.2	1436.6	31.8	52	1300	52
1350	54	1371.6	1549.4	71.4	87.4	1.6	1441.5	1412.7	1374.6	162.1	1492.3	31.8	56	1350	54
1400	56	1422.4	1600.2	73.2	90.4	1.6	1492.3	1465.3	1425.4	166.6	1543.1	31.8	60	1400	56
1450	58	1473.2	1674.9	74.7	93.5	1.6	1543.1	1516.1	1476.2	174.8	1611.4	35.1	48	1450	58
1500	60	1524.0	1725.7	76.2	96.8	1.6	1600.2	1570.0	1527.0	179.3	1662.2	35.1	52	1500	60

NOTES : 1. Dimensions are in mm.
 2. Bore is to be specified by the customer to suit pipes.
 3. Ring type joint also available.

Previously MSS SP44

ASME B 16.47 - 1996 Series B Class 300

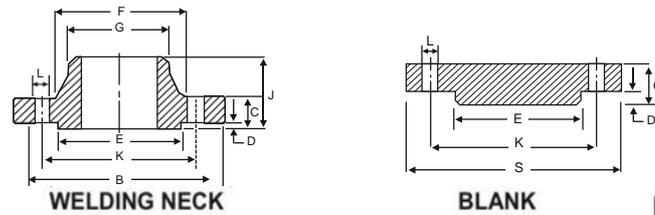


Class 300

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	866.6	88.9	88.9	1.6	736.6	701.5	665.2	144.5	803.1	35.1	32	650	26
700	28	711.2	920.8	88.9	88.9	1.6	787.4	755.7	716.0	149.4	857.3	35.1	36	700	28
750	30	762.0	990.6	93.7	93.7	1.6	844.6	812.8	768.4	158.0	920.8	38.1	36	750	30
800	32	812.8	1054.1	103.1	103.1	1.6	901.7	863.6	819.2	168.1	977.9	41.1	32	800	32
850	34	863.6	1107.9	103.1	103.1	1.6	952.5	917.4	870.0	173.0	1031.7	41.1	36	850	34
900	36	914.4	1171.4	103.1	103.1	1.6	1009.7	965.2	920.8	180.8	1089.2	44.5	32	900	36
950	38	965.2	1222.2	111.3	111.3	1.6	1060.5	1016.0	971.6	192.0	1140.0	44.5	36	950	38
1000	40	1016.0	1273.0	115.8	115.8	1.6	1114.6	1066.8	1022.4	198.4	1190.8	44.5	40	1000	40
1050	42	1066.8	1333.5	119.1	119.1	1.6	1168.4	1117.6	1074.7	204.7	1244.6	47.8	36	1050	42
1100	44	1117.6	1384.3	127.0	127.0	1.6	1219.2	1173.2	1125.5	214.4	1295.4	47.8	40	1100	44
1150	46	1168.4	1460.5	130.0	128.5	1.6	1270.0	1228.9	1176.3	222.3	1365.3	50.8	36	1150	46
1200	48	1219.2	1511.3	134.9	128.5	1.6	1327.2	1277.9	1227.1	223.8	1416.1	50.8	40	1200	48
1250	50	1270.0	1562.1	139.7	138.2	1.6	1378.0	1330.5	1277.9	235.0	1466.9	50.8	44	1250	50
1300	52	1320.8	1612.9	144.3	142.7	1.6	1428.8	1382.8	1328.7	242.8	1517.7	50.8	48	1300	52
1350	54	1371.6	1673.4	149.4	136.7	1.6	1479.6	1435.1	1379.5	239.8	1577.8	50.8	48	1350	54
1400	56	1422.4	1765.3	157.0	153.9	1.6	1536.7	1493.8	1430.3	268.2	1651.0	60.5	36	1400	56
1450	58	1473.2	1827.3	162.1	153.9	1.6	1593.9	1547.9	1481.1	274.6	1713.0	60.5	40	1450	58
1500	60	1524.0	1878.1	166.6	150.9	1.6	1651.0	1598.7	1531.9	271.5	1763.8	60.5	40	1500	60
1400	56	1422.4	1854.2	217.4	225.6	6.4	1543.1	1501.6	1422.4	362.0	1695.5	85.9	32	1400	56
1450	58	1473.2	1905.0	222.3	231.6	6.4	1600.2	1552.4	1473.2	369.8	1746.3	85.9	32	1450	58
1500	60	1524.0	1993.9	233.4	242.8	6.4	1657.4	1609.9	1524.0	388.9	1822.5	91.9	28	1500	60

Previously MSS SP44

ASME B 16.47 - 1996 Series B Class 150



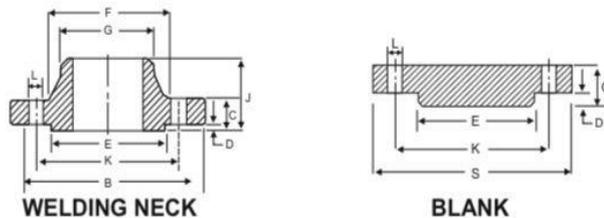
CLASS 150

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	785.9	41.1	44.5	1.6	711.2	684.3	661.9	88.9	744.5	22.4	36	650	26
700	28	711.2	836.7	44.5	47.8	1.6	762.0	735.1	712.7	95.3	795.3	22.4	40	700	28
750	30	762.0	887.5	44.5	50.8	1.6	812.8	787.4	763.5	100.1	846.1	22.4	44	750	30
800	32	812.8	941.3	46.0	53.8	1.6	863.6	839.7	814.3	108.0	900.2	22.4	48	800	32
850	34	863.6	1004.8	49.3	57.2	1.6	920.8	892.0	865.1	110.2	957.3	25.4	40	850	34
900	36	914.4	1057.1	52.3	58.7	1.6	971.6	944.6	915.9	117.3	1009.7	25.4	44	900	36
950	38	965.2	1124.0	53.8	63.5	1.6	1022.4	997.0	968.2	124.0	1069.8	28.4	40	950	38
1000	40	1016.0	1174.8	55.6	66.5	1.6	1079.5	1049.3	1019.0	128.5	1120.6	28.4	44	1000	40
1050	42	1066.8	1225.6	58.7	68.3	1.6	1130.3	1101.9	1069.8	133.4	1171.4	28.4	48	1050	42
1100	44	1117.6	1276.4	60.5	71.4	1.6	1181.1	1152.7	1120.6	136.7	1222.2	28.4	52	1100	44
1150	46	1168.4	1341.4	62.0	74.7	1.6	1234.9	1205.0	1171.4	144.5	1284.2	31.8	40	1150	46
1200	48	1219.2	1392.2	65.0	77.7	1.6	1289.1	1257.3	1222.2	149.4	1335.0	31.8	44	1200	48
1250	50	1270.0	1443.0	68.3	80.8	1.6	1339.9	1308.1	1273.0	153.9	1385.8	31.8	48	1250	50
1300	52	1320.8	1493.8	69.9	84.1	1.6	1390.7	1360.4	1323.8	157.2	1436.6	31.8	52	1300	52
1350	54	1371.6	1549.4	71.4	87.4	1.6	1441.5	1412.7	1374.6	162.1	1492.3	31.8	56	1350	54
1400	56	1422.4	1600.2	73.2	90.4	1.6	1492.3	1465.3	1425.4	166.6	1543.1	31.8	60	1400	56
1450	58	1473.2	1674.9	74.7	93.5	1.6	1543.1	1516.1	1476.2	174.8	1611.4	35.1	48	1450	58
1500	60	1524.0	1725.7	76.2	96.8	1.6	1600.2	1570.0	1527.0	179.3	1662.2	35.1	52	1500	60

- NOTES : 1. Dimensions are in mm.
 2. Bore is to be specified by the customer to suit pipes.
 3. Ring type joint also available.

Previously MSS SP44

ASME B 16.47 - 1996 Series B Class 300



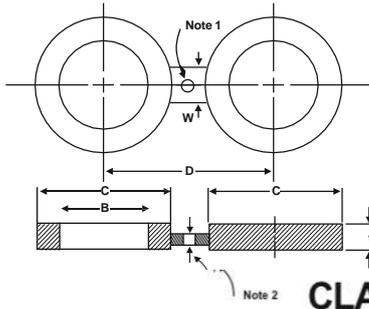
Class 300

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	866.6	88.9	88.9	1.6	736.6	701.5	665.2	144.5	803.1	35.1	32	650	26
700	28	711.2	920.8	88.9	88.9	1.6	787.4	755.7	716.0	149.4	857.3	35.1	36	700	28
750	30	762.0	990.6	93.7	93.7	1.6	844.6	812.8	768.4	158.0	920.8	38.1	36	750	30
800	32	812.8	1054.1	103.1	103.1	1.6	901.7	863.6	819.2	168.1	977.9	41.1	32	800	32
850	34	863.6	1107.9	103.1	103.1	1.6	952.5	917.4	870.0	173.0	1031.7	41.1	36	850	34
900	36	914.4	1171.4	103.1	103.1	1.6	1009.7	965.2	920.8	180.8	1089.2	44.5	32	900	36
950	38	965.2	1222.2	111.3	111.3	1.6	1060.5	1016.0	971.6	192.0	1140.0	44.5	36	950	38
1000	40	1016.0	1273.0	115.8	115.8	1.6	1114.6	1066.8	1022.4	198.4	1190.8	44.5	40	1000	40
1050	42	1066.8	1333.5	119.1	119.1	1.6	1168.4	1117.6	1074.7	204.7	1244.6	47.8	36	1050	42
1100	44	1117.6	1384.3	127.0	127.0	1.6	1219.2	1173.2	1125.5	214.4	1295.4	47.8	40	1100	44
1150	46	1168.4	1460.5	130.0	128.5	1.6	1270.0	1228.9	1176.3	222.3	1365.3	50.8	36	1150	46
1200	48	1219.2	1511.3	134.9	128.5	1.6	1327.2	1277.9	1227.1	223.8	1416.1	50.8	40	1200	48
1250	50	1270.0	1562.1	139.7	138.2	1.6	1378.0	1330.5	1277.9	235.0	1466.9	50.8	44	1250	50
1300	52	1320.8	1612.9	144.3	142.7	1.6	1428.8	1382.8	1328.7	242.8	1517.7	50.8	48	1300	52
1350	54	1371.6	1673.4	149.4	136.7	1.6	1479.6	1435.1	1379.5	239.8	1577.8	50.8	48	1350	54
1400	56	1422.4	1765.3	157.0	153.9	1.6	1536.7	1493.8	1430.3	268.2	1651.0	60.5	36	1400	56
1450	58	1473.2	1827.3	162.1	153.9	1.6	1593.9	1547.9	1481.1	274.6	1713.0	60.5	40	1450	58
1500	60	1524.0	1878.1	166.6	150.9	1.6	1651.0	1598.7	1531.9	271.5	1763.8	60.5	40	1500	60

Previously MSS SP44

SPECTACLE BLINDS TO API 590

ANSI Class 150, 300 & 600



CLASS 150

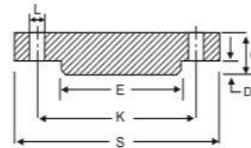
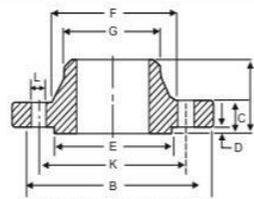
CLASS 300

CLASS 600

Nominal Pipe Size	CLASS 150					CLASS 300					CLASS 600					Nominal Pipe Size			
	mm.	(in)	Outside Diameter Of Pipe	Inside Diameter	Outside Diameter	Centre line Spacing	Thickness	Web Width	Inside Diameter	Outside Diameter	Centre line Spacing	Thickness	Web Width	Inside Diameter	Outside Diameter	Centre line Spacing	Thickness	Web Width	mm.
		A	B	C	D	t	W	B	C	D	t	W	B	C	D	t	W		
15	½	21.3	16	44	60	3	38	16	51	67	6	38	16	51	67	6	38	15	½
20	¾	26.7	21	54	70	3	38	21	64	83	6	38	21	64	83	6	38	20	¾
25	1	33.4	27	64	79	3	38	27	70	89	6	38	27	70	89	6	57	25	1
32	1 ¼	42.2	42	73	89	6	38	42	79	99	6	38	37	79	99	10	57	32	1 ¼
40	1 ½	48.3	48	83	99	6	38	48	92	114	6	51	43	92	114	10	67	40	1 ½
50	2	60.3	60	102	121	6	51	60	108	127	10	51	55	108	127	10	57	50	2
65	2 ½	73	73	121	140	6	51	73	127	149	10	64	67	127	149	13	67	65	2 ½
80	3	88.9	89	133	152	6	64	89	146	168	10	64	83	146	168	13	67	80	3
100	4	114.3	114	171	190	10	64	114	178	200	13	64	108	191	216	16	76	100	4
125	5	141.3	141	194	216	10	76	141	213	235	16	76	135	238	267	19	86	125	5
150	6	168.3	168	219	241	13	76	168	248	270	16	76	162	264	292	22	86	150	6
200	8	219.1	219	276	298	13	76	219	305	330	22	89	212	318	349	28	95	200	8
250	10	273.1	273	337	362	16	102	273	359	387	25	102	265	397	432	35	105	250	10
300	12	323.8	324	406	432	19	102	324	419	451	28	102	315	454	489	41	105	300	12
350	14	355.6	356	448	476	19	108	356	483	514	32	121	346	489	527	44	114	350	14
400	16	406.4	406	511	540	22	108	406	537	572	38	124	397	562	603	51	124	400	16
450	18	457	457	546	578	25	114	457	594	629	41	114	448	610	654	54	133	450	18
500	20	508	508	603	635	28	121	508	651	686	44	121	497	679	724	64	133	500	20
600	24	610	610	714	749	32	140	610	772	813	51	140	597	787	838	73	152	600	24

NOTES: 1. HOLE SIZE SHALL BE THE SAME AS THE FLANGE BOLT HOLE.
 2. THE THICKNESS OF WEB SHALL BE THE LEAST OF 't' OR 6.4 mm.
 3. ALSO AVAILABLE IN LARGER SIZES & RING TYPE JOINT FACING.

ASME B 16.47 - 1996



Series A Class 150

CLASS 150

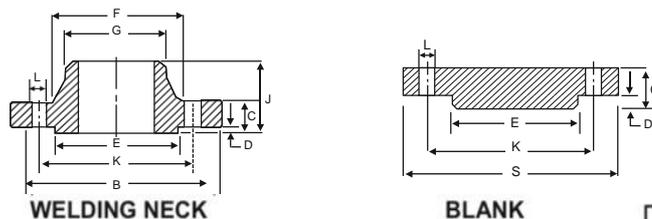
WELDING NECK

BLANK

DRILLING DATA

Nominal Pipe Size	Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	Bolt Circle Diameter	Diameter of Bolt Holes	Number of Bolts	Nominal Pipe Size		
										K	L	M	mm.	(in)	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	870.0	68.3	68.3	1.6	749.3	676.1	660.4	120.7	806.5	35.1	24	650	26
700	28	711.2	927.1	71.4	71.4	1.6	800.1	726.9	711.2	125.5	863.6	35.1	28	700	28
750	30	762.0	984.3	74.7	74.7	1.6	857.3	781.1	762.0	136.7	914.4	35.1	28	750	30
800	32	812.8	1060.5	81.0	81.0	1.6	914.4	831.9	812.8	144.5	977.9	41.1	28	800	32
850	34	863.6	1111.3	82.6	82.6	1.6	965.2	882.7	863.6	149.4	1028.7	41.1	32	850	34
900	36	914.4	1168.4	90.4	90.4	1.6	1022.4	933.5	914.4	157.2	1085.9	41.1	32	900	36
950	38	965.2	1238.3	87.4	87.4	1.6	1073.2	990.6	965.2	157.2	1149.4	41.1	32	950	38
1000	40	1016.0	1289.1	90.4	90.4	1.6	1124.0	1041.4	1016.0	163.6	1200.2	41.1	36	1000	40
1050	42	1066.8	1346.2	96.8	96.8	1.6	1193.8	1092.2	1066.8	171.5	1257.3	41.1	36	1050	42
1100	44	1117.6	1403.4	101.6	101.6	1.6	1244.6	1143.0	1117.6	177.8	1314.5	41.1	40	1100	44
1150	46	1168.4	1454.2	103.1	103.1	1.6	1295.4	1196.8	1168.4	185.7	1365.3	41.1	40	1150	46
1200	48	1219.2	1511.3	108.0	108.0	1.6	1358.9	1247.6	1219.2	192.0	1422.4	41.1	44	1200	48
1250	50	1270.0	1568.5	111.3	111.3	1.6	1409.7	1301.8	1270.0	203.2	1479.6	47.8	44	1250	50
1300	52	1320.8	1625.6	115.8	115.8	1.6	1460.5	1352.6	1320.8	209.6	1536.7	47.8	44	1300	52
1350	54	1371.6	1682.8	120.7	120.7	1.6	1511.3	1403.4	1371.6	215.9	1593.9	47.8	44	1350	54
1400	56	1422.4	1746.3	124.0	124.0	1.6	1574.8	1457.5	1422.4	228.6	1651.0	47.8	48	1400	56
1450	58	1473.2	1803.4	128.5	128.5	1.6	1625.6	1508.3	1473.2	235.0	1708.2	47.8	48	1450	58
1500	60	1524.0	1854.2	131.8	131.8	1.6	1676.4	1559.1	1524.0	239.8	1759.0	47.8	52	1500	60

ASME B 16.47 - 1996 Series A Class 300



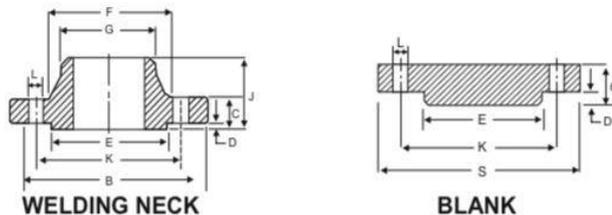
CLASS 300

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	971.6	79.2	84.1	1.6	749.3	720.9	660.4	184.2	876.3	44.5	28	650	26
700	28	711.2	1035.1	85.9	90.4	1.6	800.1	774.7	711.2	196.9	939.8	44.5	28	700	28
750	30	762.0	1092.2	91.9	95.3	1.6	857.3	827.0	762.0	209.6	997.0	47.8	28	750	30
800	32	812.8	1149.4	98.6	100.1	1.6	914.4	881.1	812.8	222.3	1054.1	50.8	28	800	32
850	34	863.6	1206.5	101.6	104.6	1.6	965.2	936.8	863.6	231.6	1104.9	50.8	28	850	34
900	36	914.4	1270.0	104.6	111.3	1.6	1022.4	990.6	914.4	241.3	1168.4	53.8	32	900	36
950	38	965.2	1168.4	108.0	108.0	1.6	1028.7	993.6	965.2	180.8	1092.2	41.1	32	950	38
1000	40	1016.0	1238.3	114.3	114.3	1.6	1124.0	1047.8	1016.0	193.5	1155.7	44.5	32	1000	40
1050	42	1066.8	1289.1	119.1	119.1	1.6	1085.9	1098.6	1066.8	200.2	1206.5	44.5	32	1050	42
1100	44	1117.6	1352.6	124.0	124.0	1.6	1136.7	1149.4	1117.6	206.2	1263.7	47.8	32	1100	44
1150	46	1168.4	1416.1	128.5	128.5	1.6	1193.8	1203.5	1168.4	215.9	1320.8	50.8	28	1150	46
1200	48	1219.2	1466.9	133.4	133.4	1.6	1244.6	1254.3	1219.2	223.8	1371.6	50.8	32	1200	48
1250	50	1270.0	1530.4	139.7	139.7	1.6	1301.8	1305.1	1270.0	231.6	1428.8	53.8	32	1250	50
1300	52	1320.8	1581.2	144.5	144.5	1.6	1409.7	1355.9	1320.8	238.3	1479.6	53.8	32	1300	52
1350	54	1371.6	1657.4	152.4	152.4	1.6	1466.9	1409.7	1371.6	252.5	1549.4	60.5	28	1350	54
1400	56	1422.4	1708.2	153.9	153.9	1.6	1517.7	1463.5	1422.4	260.4	1600.2	60.5	28	1400	56
1450	58	1473.2	1759.0	158.8	158.8	1.6	1574.8	1514.3	1473.2	266.7	1651.0	60.5	32	1450	58
1500	60	1524.0	1809.8	163.6	163.6	1.6	1625.6	1565.1	1524.0	273.1	1701.8	60.5	32	1500	60

NOTES : 1. Dimensions are in mm.
 2. Bore is to be specified by the customer to suit pipes.
 3. Ring type joint also available.

Previously MSS SP44

ASME B 16.47 - 1996 Series A Class 600

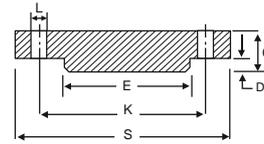
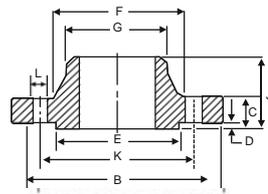


CLASS 300

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	DRILLING DATA			Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	1016.0	108.0	125.5	6.4	749.3	747.8	660.4	222.3	914.4	50.8	28	650	26
700	28	711.2	1073.2	111.3	131.8	6.4	800.1	803.1	711.2	235.0	965.2	53.8	28	700	28
750	30	762.0	1130.3	114.3	139.7	6.4	857.3	862.1	762.0	247.7	1022.4	53.8	28	750	30
800	32	812.8	1193.8	117.3	147.6	6.4	914.4	917.4	812.8	260.4	1079.5	60.5	28	800	32
850	34	863.6	1244.6	120.7	153.9	6.4	965.2	973.1	863.6	269.7	1130.3	60.5	28	850	34
900	36	914.4	1314.5	124.0	162.1	6.4	1022.4	1031.7	914.4	282.4	1193.8	66.5	28	900	36
950	38	965.2	1270.0	152.4	155.4	6.4	1054.1	1022.2	965.2	254.0	1162.1	60.5	28	950	38
1000	40	1016.0	1320.8	158.8	162.1	6.4	1111.3	1073.2	1016.0	263.7	1212.9	60.5	32	1000	40
1050	42	1066.8	1403.4	168.1	171.5	6.4	1168.4	1127.3	1066.8	279.4	1282.7	66.5	28	1050	42
1100	44	1117.6	1454.2	173.0	177.8	6.4	1225.6	1181.1	1117.6	289.1	1333.5	66.5	32	1100	44
1150	46	1168.4	1511.3	179.3	185.7	6.4	1276.4	1234.9	1168.4	300.0	1390.7	66.5	32	1150	46
1200	48	1219.2	1593.9	189.0	195.3	6.4	1333.5	1289.1	1219.2	316.0	1460.5	73.2	32	1200	48
1250	50	1270.0	1670.1	196.9	203.2	6.4	1384.3	1343.2	1270.0	328.7	1524.0	79.2	28	1250	50
1300	52	1320.8	1720.9	203.2	209.6	6.4	1435.1	1394.0	1320.8	336.6	1574.8	79.2	32	1300	52
1350	54	1371.6	1778.0	209.6	217.4	6.4	1492.3	1447.8	1371.6	349.3	1632.0	79.2	32	1350	54
1400	56	1422.4	1854.2	217.4	225.6	6.4	1543.1	1501.6	1422.4	362.0	1695.5	85.9	32	1400	56
1450	58	1473.2	1905.0	222.3	231.6	6.4	1600.2	1552.4	1473.2	369.8	1746.3	85.9	32	1450	58
1500	60	1524.0	1993.9	233.4	242.8	6.4	1657.4	1609.9	1524.0	388.9	1822.5	91.9	28	1500	60

Previously MSS SP44

ASME B 16.47 - 1996 Series B Class 150



CLASS 150

WELDING NECK

BLANK

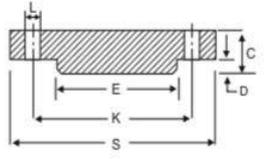
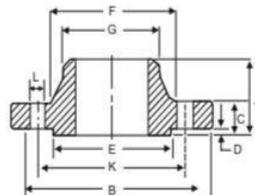
DRILLING DATA

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	Bolt Circle Diameter	Diameter of Bolt Holes	Number of Bolts	Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	785.9	41.1	44.5	1.6	711.2	684.3	661.9	88.9	744.5	22.4	36	650	26
700	28	711.2	836.7	44.5	47.8	1.6	762.0	735.1	712.7	95.3	795.3	22.4	40	700	28
750	30	762.0	887.5	44.5	50.8	1.6	812.8	787.4	763.5	100.1	846.1	22.4	44	750	30
800	32	812.8	941.3	46.0	53.8	1.6	863.6	839.7	814.3	108.0	900.2	22.4	48	800	32
850	34	863.6	1004.8	49.3	57.2	1.6	920.8	892.0	865.1	110.2	957.3	25.4	40	850	34
900	36	914.4	1057.1	52.3	58.7	1.6	971.6	944.6	915.9	117.3	1009.7	25.4	44	900	36
950	38	965.2	1124.0	53.8	63.5	1.6	1022.4	997.0	968.2	124.0	1069.8	28.4	40	950	38
1000	40	1016.0	1174.8	55.6	66.5	1.6	1079.5	1049.3	1019.0	128.5	1120.6	28.4	44	1000	40
1050	42	1066.8	1225.6	58.7	68.3	1.6	1130.3	1101.9	1069.8	133.4	1171.4	28.4	48	1050	42
1100	44	1117.6	1276.4	60.5	71.4	1.6	1181.1	1152.7	1120.6	136.7	1222.2	28.4	52	1100	44
1150	46	1168.4	1341.4	62.0	74.7	1.6	1234.9	1205.0	1171.4	144.5	1284.2	31.8	40	1150	46
1200	48	1219.2	1392.2	65.0	77.7	1.6	1289.1	1257.3	1222.2	149.4	1335.0	31.8	44	1200	48
1250	50	1270.0	1443.0	68.3	80.8	1.6	1339.9	1308.1	1273.0	153.9	1385.8	31.8	48	1250	50
1300	52	1320.8	1493.8	69.9	84.1	1.6	1390.7	1360.4	1323.8	157.2	1436.6	31.8	52	1300	52
1350	54	1371.6	1549.4	71.4	87.4	1.6	1441.5	1412.7	1374.6	162.1	1492.3	31.8	56	1350	54
1400	56	1422.4	1600.2	73.2	90.4	1.6	1492.3	1465.3	1425.4	166.6	1543.1	31.8	60	1400	56
1450	58	1473.2	1674.9	74.7	93.5	1.6	1543.1	1516.1	1476.2	174.8	1611.4	35.1	48	1450	58
1500	60	1524.0	1725.7	76.2	96.8	1.6	1600.2	1570.0	1527.0	179.3	1662.2	35.1	52	1500	60

- NOTES : 1. Dimensions are in mm.
 2. Bore is to be specified by the customer to suit pipes.
 3. Ring type joint also available.

Previously MSS SP44

ASME B 16.47 - 1996 Series B Class 300



WELDING NECK

BLANK

Class 300

DRILLING DATA

Nominal Pipe Size		Outside Diameter Of Pipe	Flange Outside Diameter	Thickness of Flange Min W Neck	Thickness of Flange Min Blind	Raised Face Thickness	Raised Face Diameter	Hub Diameter	Hub Dia. Start of Chamfer	Length Through Hub	Bolt Circle Diameter	Diameter of Bolt Holes	Number of Bolts	Nominal Pipe Size	
mm.	(in)	A	B	C	C1	D	E	F	G	J	K	L	M	mm.	(in)
650	26	660.4	866.6	88.9	88.9	1.6	736.6	701.5	665.2	144.5	803.1	35.1	32	650	26
700	28	711.2	920.8	88.9	88.9	1.6	787.4	755.7	716.0	149.4	857.3	35.1	36	700	28
750	30	762.0	990.6	93.7	93.7	1.6	844.6	812.8	768.4	158.0	920.8	38.1	36	750	30
800	32	812.8	1054.1	103.1	103.1	1.6	901.7	863.6	819.2	168.1	977.9	41.1	32	800	32
850	34	863.6	1107.9	103.1	103.1	1.6	952.5	917.4	870.0	173.0	1031.7	41.1	36	850	34
900	36	914.4	1171.4	103.1	103.1	1.6	1009.7	965.2	920.8	180.8	1089.2	44.5	32	900	36
950	38	965.2	1222.2	111.3	111.3	1.6	1060.5	1016.0	971.6	192.0	1140.0	44.5	36	950	38
1000	40	1016.0	1273.0	115.8	115.8	1.6	1114.6	1066.8	1022.4	198.4	1190.8	44.5	40	1000	40
1050	42	1066.8	1333.5	119.1	119.1	1.6	1168.4	1117.6	1074.7	204.7	1244.6	47.8	36	1050	42
1100	44	1117.6	1384.3	127.0	127.0	1.6	1219.2	1173.2	1125.5	214.4	1295.4	47.8	40	1100	44
1150	46	1168.4	1460.5	130.0	128.5	1.6	1270.0	1228.9	1176.3	222.3	1365.3	50.8	36	1150	46
1200	48	1219.2	1511.3	134.9	128.5	1.6	1327.2	1277.9	1227.1	223.8	1416.1	50.8	40	1200	48
1250	50	1270.0	1562.1	139.7	138.2	1.6	1378.0	1330.5	1277.9	235.0	1466.9	50.8	44	1250	50
1300	52	1320.8	1612.9	144.3	142.7	1.6	1428.8	1382.8	1328.7	242.8	1517.7	50.8	48	1300	52
1350	54	1371.6	1673.4	149.4	136.7	1.6	1479.6	1435.1	1379.5	239.8	1577.8	50.8	48	1350	54
1400	56	1422.4	1765.3	157.0	153.9	1.6	1536.7	1493.8	1430.3	268.2	1651.0	60.5	36	1400	56
1450	58	1473.2	1827.3	162.1	153.9	1.6	1593.9	1547.9	1481.1	274.6	1713.0	60.5	40	1450	58
1500	60	1524.0	1878.1	166.6	150.9	1.6	1651.0	1598.7	1531.9	271.5	1763.8	60.5	40	1500	60

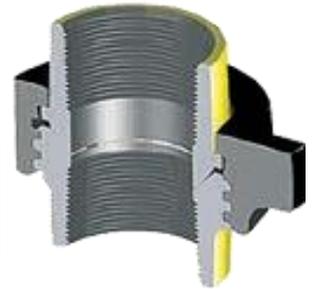


HAMMER UNION



Figure 100

MJ Figure 100 is an economical union with precision machined metal-to-metal sealing surfaces. Recommended for water, oil or gas up to 1,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
1,000 PSI	1,500 PSI	1,000 PSI	1,500 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings(NSCWP)

Figure 100 Threaded
Color Code: Yellow Subs/Black Nut

Nominal Pipe Size	2"	2 1/2"	3"	4"	5"	6"	8"
Qty. / Box	16	8	6	4	2	1	1
Part No.	U010200	U012500	U010300	U010400	U010500	U010600	U010800
Clearance Radius (A)	2.91"	3.66"	4.00"	4.69"	5.20"	6.97"	7.67"
End to End Threaded (B)	3.63"	4.38"	5.07"	6.24"	6.58"	7.10"	8.60"
Weight (lbs)	6.10	10.75	14.50	22.40	31.00	47.00	60.00
Material, Sub	A105	A105	A105	A395 D.I.	A395 D.I.	A395 D.I.	A395 D.I.
Material, Nut	A105	A395 D.I.	A105	A395 D.I.	A395 D.I.	A395 D.I.	A395 D.I.

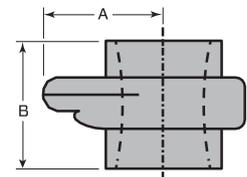


Figure 100 Butt Weld Schedule 80*
Color Code: Yellow Subs/Black Nut

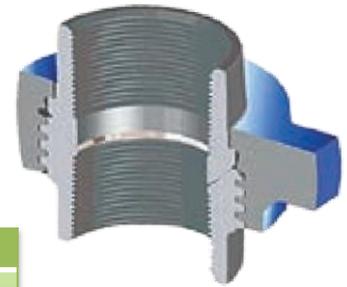
Nominal Pipe Size	2"	3"	4"	6"	8"
Qty. / Box	16	6	4	1	1
Part No.	U010220	U010320	U010420	U010620	U010820
Clearance Radius (A)	2.91"	4.00"	4.69"	6.97"	7.67"
End to End (B)	3.79"	4.80"	4.98"	7.56"	7.31"
Weight (lbs)	6.63	16.00	23.50	54.00	80.00
Material, Sub	A105	A105	A105	A105	A105
Material, Nut	A105	A105	A395 D.I.	A105	A395 D.I.

Schedule 40 available upon request Availability in Socket Weld varies per size



Figure 200

MJ Figure 200 is a union of great utility. It meets most requirements in the medium pressure ranges. Precision seating surfaces assure dependable pressure seal. Like parts in each size are interchangeable with other manufacturers' unions. Recommended for water, oil or gas service up to 2,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,000 PSI	3,000 PSI	2,000 PSI	3,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

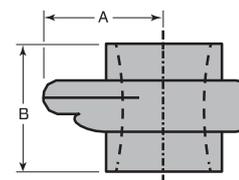
Figure 200 Threaded
Color Code: Gray Subs/Blue Nut

Nominal Pipe Size	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"
Qty. / Box	40	30	30	16	8	6	4	1	1	1
Part No.	U020100	U021200	U021500	U020200	U022500	U020300	U020400	U020600	U020800	U021000
Clearance Radius (A)	1.87"	2.50"	2.50"	2.91"	3.66"	3.96"	4.53"	6.125"	7.70"	8.98"
End to End Threaded (B)	2.65"	2.78"	2.85"	3.57"	4.31"	4.57"	5.04"	6.75"	7.31"	9.11"
Weight (lbs)	2.05	3.20	3.27	6.13	10.88	14.66	20.00	47.00	68.00	100.00
Material, Sub	A105	A105	A105	A105	A105	A105	A105	A105	A105	A216 WCB
Material, Nut	A105	A395 D.I.	A395 D.I.	A105	A395 D.I.	A105	A105	A105	A216 WCB	A216 WCB

* Also available with 316SS Subs

Figure 200 Butt Weld Schedule 40 and 80 Color Code: Gray Subs/Blue Nut

Nominal Pipe Size	2"	3"	4"	6"	8"	10"
Qty. / Box	16	6	4	1	1	1
Part No.	*	*	*	*	*	*
Clearance Radius (A)	2.91"	3.96"	4.53"	6.125"	7.70"	8.98"
End to End (B)	3.79"	4.50"	5.03"	6.75"	7.31"	9.25"
Weight (lbs)	6.63	15.67	22.00	52.00	78.00	108.00
Material, Sub	A105	A105	A105	A105	A105	A216 WCB
Material, Nut	A105	A105	A105	A105	A216 WCB	A216 WCB



*Part numbers vary per weld type and schedule
 Also available in Socket Weld



8RND EUE Union

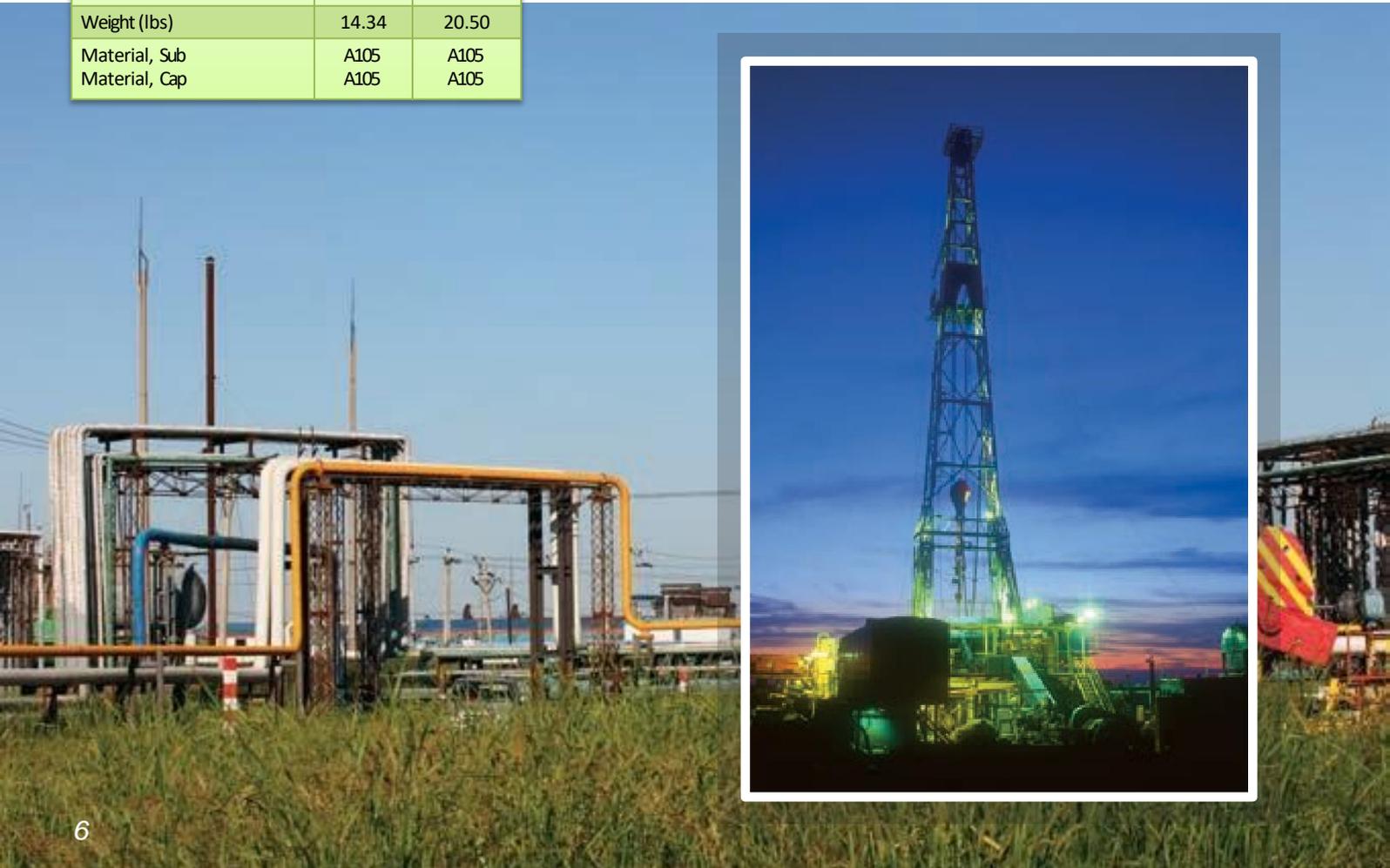
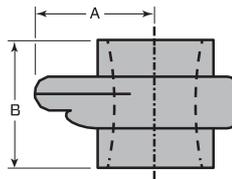


MJ Figure 201 has EUE 8 Round Tubing Threads. This union is a Flat-Face type union that utilizes an O-Ring seal. The Figure 201 is available in 2 3/8" EUE and 2 7/8" EUE. Like parts in each size are interchangeable with other manufacturers' unions. Recommended for water, oil or gas service to 3,000 PSI NSCWP.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
3,000 PSI	4,000 PSI	3,000 PSI	4,000 PSI

* All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 201 Threaded		
Nominal Pipe Size	2" (2 3/8")	2 1/2" (2 7/8")
Qty. / Box	6	4
Part No.	U210250	U212550
Clearance Radius (A)	3.625"	4.00"
End to End Threaded (B)	5.50"	6.00"
Weight (lbs)	14.34	20.50
Material, Sub	A105	A105
Material, Cap	A105	A105



MJ Figure 206 has an O-Ring Seal added to the Male Sub, which functions as a secondary seal. Subs and Nuts of the Figure 206 union are interchangeable with the Figure 200 and other manufacturers' parts. Recommended for water, oil or gas service up to 2,000 PSI NSCWP

Figure 206



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,000 PSI	3,000 PSI	2,000 PSI	3,000 PSI

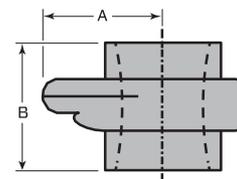
All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)
 Viton® O-Rings required for H2S Service and are available upon request

Figure 206 Threaded
Color Code: Gray Subs/Blue Nut

Nominal Pipe Size	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"
Qty. / Box	40	30	30	16	8	6	4	1	1	1
Part No.	U260100	U261200	U260500	U260200	U262500	U260300	U260400	U260600	U260800	U261000
Clearance Radius (A)	1.87"	2.50"	3.00"	2.91"	3.66"	3.96"	4.53"	6.125"	7.70"	8.98"
End to End Threaded (B)	2.65"	2.78"	4.875"	3.94"	4.31"	4.50"	5.08"	6.75"	7.31"	9.11"
Weight (lbs)	2.05	3.20	3.27	6.13	10.88	14.66	20.00	47.00	68.00	100.00
Material, Sub	A105	A105	A105	A105	A105	A105	A105	A105	A105	A216 WCB
Material, Nut	A105	A395 D.I.	A395 D.I.	A105	A395 D.I.	A105	A105	A105	A216 WCB	A216 WCB

Figure 206 Butt Weld Schedule 40 and 80
Color Code: Gray Subs/Blue Nut

Nominal Pipe Size	2"	3"	4"	6"	8"	10"
Qty. / Box	16	6	4	1	1	1
Part No.	*	*	*	*	*	*
Clearance Radius (A)	2.91"	3.96"	4.53"	6.125"	7.70"	8.98"
End to End (B)	3.81"	4.57"	5.03"	6.75"	7.31"	9.25"
Weight (lbs)	6.63	15.67	22.00	52.00	78.00	108.00
Material, Sub	A105	A105	A105	A105	A105	A216 WCB
Material, Nut	A105	A105	A105	A105	A216 WCB	A216 WCB



Part numbers vary per butt weld schedule
 Also available in Socket Weld



Figure 110—Insulated Union



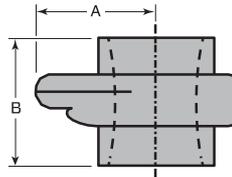
MJ Figure 110 is recommended for use in piping systems where isolation of electrical current may be required, such as when cathodic protection is applied to a piping system in order to mitigate corrosion. The metallic components are separated by two insulating rings, one of which also functions as a sealing member. Materials used for insulating the connection and the double O-Ring arrangement used for sealing are constructed of high quality materials that are resistant to most of the process fluids and chemicals that are routinely encountered during oil and gas production.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,500 PSI	3,750 PSI	2,500 PSI	3,750 PSI
4,000 PSI	6,000 PSI	4,000 PSI	3,750 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Threaded Ends — 2,500 PSI NSCWP Color Code: Orange Subs /Orange Nut

Nominal Pipe Size	2"
Qty. / Box	12
Part No.	UY11200B100
Clearance Radius (A)	3.16"
End to End Threaded (B)	3.70"
Weight (lbs)	6.79
Material, Sub	A105
Material, Nut	A105



Threaded Ends — 4,000 PSI NSCWP Color Code: Brown Subs/Brown Nut

Nominal Pipe Size	2"	3"
Qty. / Box	6	3
Part No.	UY11200D100	UY11300D100
Clearance Radius (A)	3.94"	4.58"
End to End Threaded (B)	5.67"	6.89"
Weight (lbs)	13.47	25.66
Material, Sub	A105	A105
Material, Nut	A105	A105



Figure 26H–Frac Hose Fitting



MJ Figure 26H Frac Hose Fitting is constructed of high quality cast ductile iron. This union is also referred to as a Hose Barb Union. It features a union end connection that is interchangeable with a figure 200/206 connection, and it comes with an integral hose shank on both the male and female sub. The figure 26H union is designed to save time and money by eliminating the need to weld a hose nipple onto a figure 200/206 hammer union. This union is uniquely designed to be tested to twice the rated working pressure, which is often a requirement for hoses used in oilfield applications.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
400 PSI	800 PSI	400 PSI	800 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 26H – Frac Hose Fitting
Ends/Blue Nut/Electro Zinc Plate Subs

Nominal Pipe Size	4"
Qty. / Box	3
Part No.	U26H400
Clearance Radius (A)	4.53"
End to End Threaded (B)	16.47"
Weight (lbs)	30
Material, Sub	A395 D.I.
Material, Nut	A105

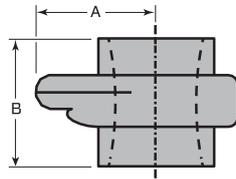


Figure 207– Blanking Union

MJ blanking cap with a Buna-N O-Ring seal provides an efficient and dependable closure. The threaded sub is interchangeable with Figure 200 threaded sub and other manufacturers' parts. Recommended for water, oil, or gas service up to 2,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,000 PSI	3,000 PSI	2,000 PSI	3,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 207 Threaded
Color Code: Gray Subs/Blue Cap

Figure 207 Butt Weld Schedule 40 and 80
Color Code: Gray Subs/Blue Cap

Nominal Pipe Size	3"	4"
Qty. / Box	6	4
Part No.	U270300	U270400
Clearance Radius (A)	2.88"	3.59"
End to End Threaded (B)	3.75"	4.31"
Weight (lbs)	10.60	18.75
Material, Sub	A105	A105
Material, Cap	A105	A395 D.I.

Nominal Pipe Size	3"	4"
Qty. / Box	6	4
Part No.	U270320	U270420
Clearance Radius (A)	2.88"	3.59"
End to End (B)	3.75"	4.31"
Weight (lbs)	11.60	18.75
Material, Sub	A105	A105
Material, Nut	A105	A395 D.I.

*Part numbers vary per butt weld schedule

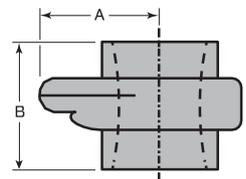


Figure 211–Insulating Union

MJ Figure 211 (Insulating Union) is constructed of forged carbon steel. This union has insulating seals and flange rings. Recommended for 2,000 PSI systems where isolation of electrical current may be required, such as when cathodic protection is applied to a piping system in order to mitigate corrosion.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,000 PSI	3,000 PSI	2,000 PSI	3,000 PSI

* All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 211 Threaded
Color Code: Blue Subs/Gray Nut

Nominal Pipe Size	2"	3"
Qty. / Box	16	6
Part No.	U110200	U110300
Clearance Radius (A)	2.91"	3.96"
End to End Threaded (B)	3.47"	4.47"
Weight (lbs)	6.88	14.00
Material, Sub	A105	A105
Material, Nut	A105	A105

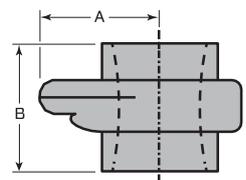


Figure 300– Flat Face Union



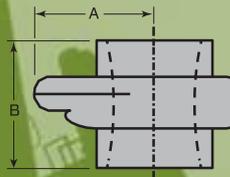
MJ Figure 300 is manufactured from carbon steel. This Flat-Face type union has an O-Ring seal. Recommended for use where straight breakout of pipe segments is required. Suitable for water, oil, or gas service at pressures up to 12,500 PSI NSCWP. Please note that colors vary per pressure rating.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
2,000 PSI	3,000 PSI	2,000 PSI	3,000 PSI
2,500 PSI	3,750 PSI	2,500 PSI	3,750 PSI
12,500 PSI	18,750 PSI	N/A	N/A

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Thread Ends - 2,000 PSI NSCWP Color Code: Yellow Subs/ Black Nut

Nominal Pipe Size	2"
Qty. / Box	16
Part No.	U030200
Clearance Radius (A)	2.91"
End to End Threaded (B)	3.76"
Weight (lbs)	6.50
Material, Sub	A105*
Material, Nut	A105



Also available with 316SS Subs

Thread Ends - 2,500 PSI NSCWP Color Code: Light Gray Subs/ Green Nut

Nominal Pipe Size	1"
Qty. / Box	32
Part No.	UY30100C100
Clearance Radius (A)	2.33"
End to End Threaded (B)	3.20"
Weight (lbs)	2.79
Material, Sub	A105
Material, Nut	A105

Thread Ends - 12,500 PSI NSCWP Color Code: Zn-plated Subs/ Zn-plated Nut

Nominal Pipe Size	1/2"	3/4"	1"
Qty. / Box	40	40	16
Part No.	UY30050G100	UY30075G100	UY30100G100
Clearance Radius (A)	1.80"	1.80"	2.52"
End to End Threaded (B)	2.96"	3.08"	3.53"
Weight (lbs)	2.05	2.09	4.36
Material, Sub	SAE 4130	SAE 4130	SAE 4130
Material, Nut	SAE 4140	SAE 4140	SAE 4140

Figure 301

MJ unique Figure 301 is a union of great utility. It meets most requirements in the medium pressure ranges. Precision seating surfaces assure dependable pressure seal. Recommended for water, oil or gas service up to 3,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
3,000 PSI	4,500 PSI	3,000 PSI NSCWP	4,500 PSI

*All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 301 Threaded
Color Code: Yellow Subs/Gray Nut

Nominal Pipe Size	2"
Qty. / Box	16
Part No.	U210200
Clearance Radius (A)	2.91"
End to End Threaded (B)	3.75"
Weight (lbs)	6.13
Material, Sub	A105
Material, Nut	A105

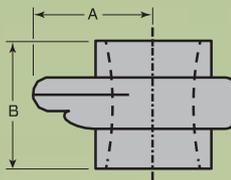


Figure 301 Socket Weld
Color Code: Yellow Subs/Gray Nut

Nominal Pipe Size	2"
Qty. / Box	16
Part No.	U210200-SW
Clearance Radius (A)	N/A
End to End Threaded (B)	3.75"
Weight (lbs)	6.13
Material, Sub	A105
Material, Nut	A105



Figure 400



MJ Figure 400 features a precision ball and cone sealing surface for sure metal- to-metal seal. Recommended for water, oil and gas service to 4,000 PSI NSCWP.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
4,000 PSI	6,000 PSI	4,000 PSI	6,000 PSI

*All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 400 Threaded Color Code: Red Subs/Black Nut

Nominal Pipe Size	2"	3"	4"	12"
Qty. / Box	6	4	3	1
Part No.	U040200	U040300	U040400	U041200
Clearance Radius (A)	3.35"	4.125"	5.00"	10.39"
End to End Threaded (B)	5.39"	6.125"	8.125"	10.98"
Weight (lbs)	11.50	21.00	32.00	160.00
Material, Sub	A105	A105	A105	A105
Material, Nut	1045	A105	A105	A105

Figure 400 Butt Weld Schedule 80 Color Code: Red Subs/Black Nut

Nominal Pipe Size	12"
Qty. / Box	1
Part No.	U041220
Clearance Radius (A)	10.39"
End to End (B)	10.98"
Weight (lbs)	188.00
Material, Sub	A105
Material, Nut	A105

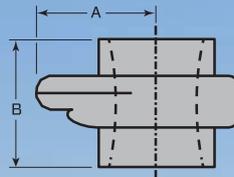


Figure 402

MJ Figure 402 has a resilient lip-type seal plus precision metal-to-metal seals. Recommended for water, oil or gas service to 4,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
4,000 PSI	6,000 PSI	4,000 PSI	6,000 PSI

Figure 402 Threaded
Color Code: Black Subs/Black Nut

Nominal Pipe Size	2"
Qty. / Box	6
Part No.	U420200
Clearance Radius (A)	3.56"
End to End Threaded (B)	5.25"
Weight (lbs)	11.34
Material, Sub	A105
Material, Nut	1045

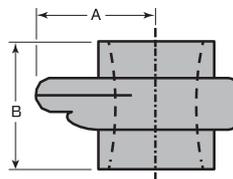


Figure 402

Figure CGC

MJ Figure CGC is made with NPT Ends, and manufactured from forged Low Alloy Steel. This union has a "vee lip" type Seal Rings, and is commonly used in hot oil applications. Recommended for water, oil, or gas up to 6000 PSI NSCWP. Interchangeable with other manufacturers.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
6,000 PSI	9,000 PSI	6,000 PSI	9,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure CGC Threaded
Color Code: Silver Subs/Yellow Nut

Nominal Pipe Size	1 1/2"	2"
Qty. / Box	12	6
Part No.	UC61500	UC60200
Clearance Radius (A)	2.83"	3.27"
End to End Threaded (B)	4.12"	5.78"
Weight (lbs)	7.50	12.67
Material, Sub	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS

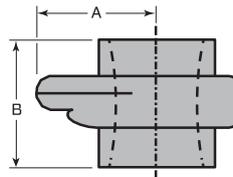


Figure 602



MJ Figure 602 has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. The replaceable lip-type ring also provides a pressure seal and protection for the metal-to-metal seating surfaces. These unions are recommended for manifold and truck mounting where size and weight are critical. Recommended for air, water, oil, gas or mud service up to 6,000 PSI NSCWP.

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
6,000 PSI	9,000 PSI	6,000 PSI	9,000 PSI

*All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 602 Threaded
Color Code: Orange Subs/Black Nut

Nominal Pipe Size	1"	1 1/2"	2"	3"	4"
Qty. / Box	32	10	6	3	2
Part No.	U620100	U621500	U620200	U620300	U620400
Clearance Radius (A)	2.15"	3.00"	3.60"	4.50"	4.875"
End to End Threaded (B)	3.55"	4.875"	5.30"	6.25"	8.125"
Weight (lbs)	3.88	10.75	15.00	26.67	37.00
Material, Sub	4130 AS	4140 AS	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS				

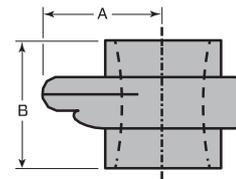


Figure 602 Butt Weld Schedule 80, 160 and XXH
Color Code: Orange Subs/Black Nut

Nominal Pipe Size	2"	3"	4"
Qty. / Box	6	4	2
Part No.	*	*	*
Clearance Radius (A)	3.60"	4.50"	4.875"
End to End (B)	5.09"	5.375"	5.625"
Weight (lbs)	17.00	28.00	36.00
Material, Sub	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS	4140 AS

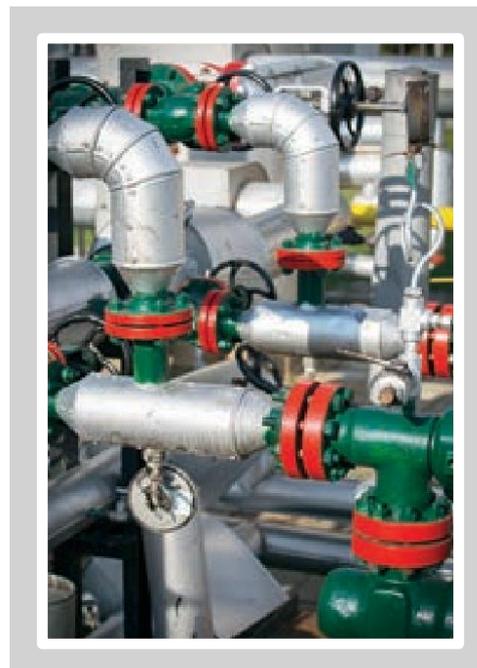


Figure 1002

MJ Figure 1002 has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. The lip-type ring works similarly to the Figure 602 Union. These unions are for use on high pressure systems and trucks. Recommended for air, water, oil, gas and mud service up to 10,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
10,000 PSI	15,000 PSI	7,500 PSI	12,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP) 5" rated at 7,500 PSI NSCWP

Figure 1002 Threaded
Color Code: Blue Subs/Red Nut

Nominal Pipe Size	1"	1 1/2"	2"	3"	4"	5"
Qty. / Box	32	10	6	3	2	1
Part No.	U120100	U121500	U120200	U120300	U120400	U120500
Clearance Radius (A)	2.15"	3.00"	3.60"	4.50"	4.875"	6.00"
End to End Threaded (B)	3.55"	4.875"	5.30"	6.25"	8.125"	10.375"
Weight (lbs)	3.94	10.75	15.00	26.67	38.00	82.00
Material, Sub	4130 AS	4140 AS	4130 AS	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS					

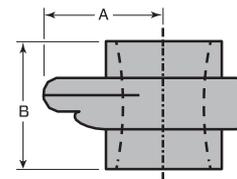


Figure 1002 Butt Weld Schedule 160 and XXH
Color Code: Blue Subs/Red Nut

Nominal Pipe Size	2"	3"	4"	5"	6"
Qty. / Box	6	3	2	1	1
Part No.	U120240	U120340	U120440	U120540	U120640
Clearance Radius (A)	3.60"	4.50"	4.875"	6.00"	6.81"
End to End (B)	5.18"	5.375"	5.625"	6.125"	6.73"
Weight (lbs)	17.00	28.00	35.00	66.00	88.00
Material, Sub	4130 AS				
Material, Nut	4140 AS				

Figure 1002 Combination Ends
Color Code: Blue Subs/Red Nut

Nominal Pipe Size	5" x 4"	4" x 5"	5" x 4"
	4" NPT BOTH ENDS	4" MALE SE x 5" FEMALE BW	5" MALE BW x 4" FEMALE SE
Qty. / Box	1	1	1
Part No.	U125400	U124540	U125440
Weight (lbs)	71.00	71.00	71.00
Material, Sub	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS	4140 AS

*5" 1002 utilizes an O-Ring

Figure 1003 – Misaligning Union



MJ Figure 1003 (Mis-aligning Union) has NPT or Butt Weld Ends. It is constructed of Forged Alloy Steel, and comes with a Buna N O-Ring. Recommended for high pressure water, oil, mud or gas service where alignment of piping is a problem, with up to 7 1/2° angular adjustment from center (15° total).

Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
10,000/7,500 PSI	15,000/11,250 PSI	5,000 PSI	7,500 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP) 3" rated at 10,000 PSI NSCWP; 4" and larger rated at 7,500 PSI NSCWP

Figure 1003 Threaded
Color Code: Green Subs/Black Nut

Nominal Pipe Size	4"
Qty. / Box	1
Part No.	U130400
Clearance Radius (A)	5.75"
End to End Threaded (B)	10.94"
Weight (lbs)	84.00
Material, Sub	4130 AS
Material, Nut	4140 AS

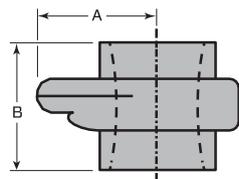


Figure 1003 Butt Weld Schedule 160 and XXH
Color Code: Green Subs/Black Nut

Nominal Pipe Size	3"	4"	5"
Qty. / Box	2	1	1
Part No.	U130340	U130440	U130540
Clearance Radius (A)	4.88"	5.75"	5.75"
End to End (B)	9.13"	10.94"	10.94"
Weight (lbs)	44.50	85.00	84.00
Material, Sub	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS	4140 AS

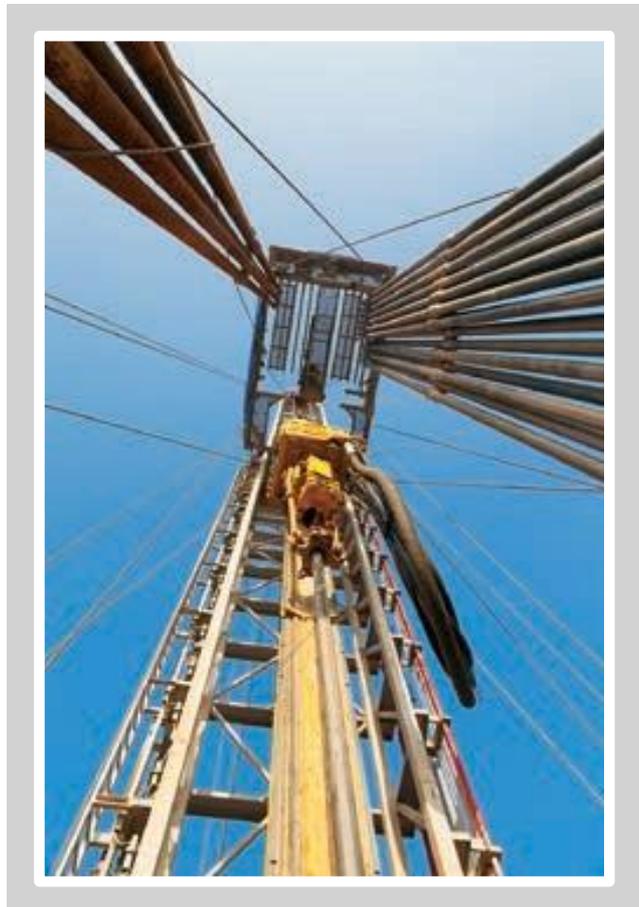


Figure 1502

MJ Figure 1502 has a replaceable lip-type seal ring of Buna-N specifically designed to minimize fluid flow turbulence. The lip-type ring also provides a pressure seal and protection for the metal-to-metal seating surfaces. These unions are recommended for manifold and truck mounting or other installations where extreme high pressure is encountered. Recommended for air, water, oil, gas and mud service up to 15,000 PSI NSCWP.



Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
15,000 PSI	22,500 PSI	10,000 PSI	15,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure 1502 Threaded
Color Code: Red Subs/Blue Nut

Nominal Pipe Size	1"	1 1/2"	2"	3"	4"
Qty. / Box	9	5	5	4	1
Part No.	U150100	U151500	U150200	U150300	U150400
Clearance Radius (A)	3.00"	3.74"	3.74"	4.50"	6.00"
End to End Threaded (B)	4.375"	4.52"	7.05"	7.625"	8.50"
Weight (lbs)	9.11	19.20	20.00	34.67	76.00
Material, Sub	4130 AS				
Material, Nut	4140 AS				

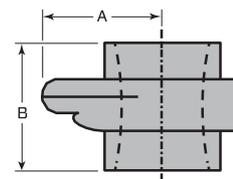


Figure 1502 Butt Weld
Color Code: Red Subs/Blue Nut

Nominal Pipe Size	2"	3"	4"	5"
Qty. / Box	5	4	1	1
Part No.	*	*	*	*
Clearance Radius (A)	3.74"	4.50"	6.00"	6.75"
End to End (B)	6.30"	5.25"	8.50"	9.00"
Weight (lbs)	20.00	30.00	84.00	96.00
Material, Sub	4130 AS	4130 AS	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS	4140 AS	4140 AS

Figure 1502 Butt Weld–NACE Unions
(Derated–10,000 PSI NSCWP)
Color Code: Silver Subs/Green Nut

Nominal Pipe Size	2"	3"
Qty. / Box	5	4
Part No.	U150240-SG	U150330SG
Clearance Radius (A)	3.74"	4.50"
End to End (B)	6.30"	5.25"
Weight (lbs)	20.00	30.00
Material, Sub	4130 AS	4130 AS
Material, Nut	4140 AS	4140 AS

Figure OCT



MJ Figure OCT is manufactured from forged and normalized carbon steel to ASTM A105 with high speed ACME Threads. The Figure OCT is precision machined in dimensional compliance with MSS SP 83.

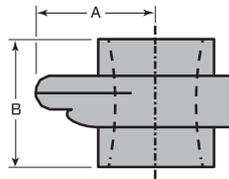
Standard Service		H2S Service**	
NSCWP	Test	NSCWP	Test
3,000 PSI	4,000 PSI	3,000 PSI	4,000 PSI

All Working Pressures are Non-shock Cold Working Pressure Ratings (NSCWP)

Figure OCT Threaded

Color Code: Silver Subs/Zinc Plated Nut

Nominal Pipe Size	1"	2"
Qty. / Box	40	16
Part No.	U3000100	U3000200
Clearance Radius (A)	1.36"	2.19"
End to End Threaded (B)	2.50"	3.41"
Weight (lbs)	2.00	6.50
Material, Sub	A105	A105
Material, Nut	A105	A105



Hammer Union Accessories

	<p>Segments*</p> <p>Sizes: 1" – 3", Figure 1502 Comes ; in sets of 3*When utilizing segments all segments must be of the same brand and must not be mixed with other brands otherwise connection problems may occur which may lead to possible injury or death.</p>		O-Ring, Seal Ring and Metal- backed Seal Ring
	<p>Female Flange Adapter</p> <p>Size: 4" FIG 200 FEMALE x 4" ANSI 125 FLANGE Qty.1 Box Part No. U020402-FL125 Bolt Holes 6 Weight (lbs) 12</p> <p>Size: 4" FIG 200 FEMALE x 4" ANSI 150 FLANGE Qty.1 Box Part No. U020402-FLANGE Bolt Holes 8 Weight (lbs) 15</p>		Snap Rings Sizes: 1" – 3", Figure 1502 4" – 5", Figure 1002
	<p>Solid Male Sub Figures: 200, 206, 602, 1002, 1502 Sizes: 1" – 5" available with taps sizes and figures vary</p>		<p>Solid Female Sub Figures: 200, 206, 602, 1002, 1502 Sizes: 1" – 5" available with taps sizes and figures vary</p>

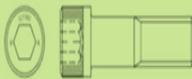
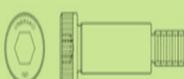


SOCKET SCREWS



Metric	Size	Grade	EQUIVALENT STANDARDS			
			Dimensional ASME	ISO	Material ASTM	
<input type="checkbox"/> Socket Head Cap Screw		M1.6 to M64	12.9	B18.3.1M	4762	A574M
<input type="checkbox"/> Socket Low Head Cap Screw		M4 to M20	10.9	MJ SPECIFICATION		
<input type="checkbox"/> Socket Head Shoulder Screw		M6 to M24	012.9	B18.3.3M	MJ SPECIFICATION	
<input type="checkbox"/> Countersunk Socket Head Screw		M3 to M20	012.9	B18.3.5M	10642	F835M
<input type="checkbox"/> Button Head Socket Screw		M3 to M12	012.9	B18.3.4M	7380	F835M
<input type="checkbox"/> Flange Button Head Socket Screw		M3 to M10	012.9	MJ SPECIFICATION		F835M
<input type="checkbox"/> Socket set screws		M3 to M20	45H	B18.3.6M	4029	F912M
<input type="checkbox"/> Knurled Cup Point						
<input type="checkbox"/> Flat Point		M6 to M12	45H	B18.3.6M	4026	F912M
<input type="checkbox"/> Dog Point (Dog/Half Dog)		M3 to M20	45H	B18.3.6M	4028	F912M
<input type="checkbox"/> Cone Point		M3 to M12	45H	B18.3.6M	4027	F912M
<input type="checkbox"/> Plain Cup Point		M3 to M20	45H	B18.3.6M	4029	F912M
<input type="checkbox"/> Taper Pressure Plug		M8 to M22	-	MJ SPECIFICATION		



Inch	Size Range	Tensile psi / Hardness	EQUIVALENT STANDARDS				
			Dimensional ANSI/ASME	BS	Material ASTM		
<input type="checkbox"/> Socket Head Cap Screw	 #0 to 2	1936 & 1960 UNC/UNF/BSW 190,000 ≤ 1/2 180,000 > 1/2	B18.3	2470	A574		
<input type="checkbox"/> Socket Low Head Cap Screw	 #8 to 1/2	UNC/UNF	170,000	MJ SPECIFICATION	F835		
<input type="checkbox"/> Socket Head Shoulder Screw	 1/4 to 2	UNC	HRC 36-43	B18.3	2470	-	
<input type="checkbox"/> Countersunk Socket Head Screw	 #4 to 1 1/2	UNC/UNF	160,000	B18.3	2470	F835	
<input type="checkbox"/> Button Head Socket Screw	 #10 to 5/8	UNC/UNF	160,000	B18.3	2470	F835	
<input type="checkbox"/> Flange Button Head Socket Screw	 #8 to 1/2	UNC/UNF	MJ SPECIFICATION	2470	F835		
<input type="checkbox"/> Socket set screws		#4 to 5/8	UNC/UNF	HRC 45-53	B18.3	2470	F912
<input type="checkbox"/> Knurled Cup Point							
<input type="checkbox"/> Plain Cup Point		#0 to 5/8	UNC/UNF	HRC 45-53	B18.3	2470	F912
<input type="checkbox"/> Taper Pressure Plug		3/4 to 7/8	--	--	MJ SPECIFICATION		

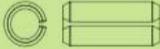
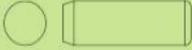
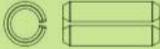




PINS & TOOL



PINS

Metric		Size	Hardness	Standard
<input type="checkbox"/> Dowel Pin		2mm to 16mm	HRC 50-58 (core)	MJ SPECIFICATION
<input type="checkbox"/> Sel-lok Pin		1.5mm to 12mm	HV 440 to 560	ISO 8752
Inch		Size	Hardness	Standard
<input type="checkbox"/> Dowel Pin		1/8 to 1	HRC 50-58 (core)	MJ SPECIFICATION
<input type="checkbox"/> Sel-lok Pin		1/16 to 1/2	MJ SPECIFICATION	ASME B18.8.2
<input type="checkbox"/> Pull-out Dowel Pin		1/8 to 1	HRC 60 min (surface)	MJ SPECIFICATION



WRENCHES and TOOLS

Metric / Inch		Size	Hardness	Standard
<input type="checkbox"/> Hexagon Wrench - Metric (long & short arm)		0.71mm to 32mm	MJ SPECIFICATION	ISO 2936
<input type="checkbox"/> Hexagon Wrench - Inch (long, 6" & short arm)		1/16 to 1	MJ SPECIFICATION	BS 2470, ASME B18.3
<input type="checkbox"/> Hex Driver - Metric		1.5mm to 5.0mm	HRC 40-43	MJ SPECIFICATION



TOOL SETS

A range of elegantly engineered folded wrench sets and wallet sets are available with distinctive colored casings for Metric & Inch series.

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**SELF LOCKING
ANTI
VIBRATION
FASTENERS**



Metric		Size	Property Class	Tensile Strength	Standard
<input type="checkbox"/> Durlok BOLT		M6 to M20	12.9	1220 N/mm ² min	
<input type="checkbox"/> Durlok NUT		M6 to M20	12	Hardness HRC 28 to 36	
<input type="checkbox"/> Durlok WASHER		M6 to M20		HRC 47 to 52	
<input type="checkbox"/> Durlok SAFTY WASHER		M6 to M20		HRC 47 to 52	

MJ SPECIFICATION

[WWW.mjforgings.com](http://www.mjforgings.com)

Durlok washer 2. Durlok washers are designed for use with standard hex bolts & nuts. Durlok washers should not be used with other flat washers.



HEX BOLTS / SCREWS

Metric		Size	Property Class	Tensile Strength	Standard
<input type="checkbox"/> Hex Head Bolt/Screw		M4 to M80	10.9	1040N/mm ² min	ISO 4017 (Full Thread) ISO 4014 (Half Thread)

Inch		Size	Grade	Tensile Strength	Standard
<input type="checkbox"/> Hex Cap Screw		1/4 to 2	8	150,000 psi min	ASME B18.2.1
<input type="checkbox"/> Hex Cap Screw		1/4 to 2	5	120,000 psi min (1/4 to 1) 105,000 psi min (over 1 to 1-1/2)	ASME B18.2.1
<input type="checkbox"/> Hex Bolt		1/4 to 1	A	60 ksi min	ASTM A307 / ASME B18.2.1





HEX -NUT



Metric		Size	Property Class	Standard
<input type="checkbox"/> Hex Nut		M6 to M80	8 & 10	ISO 4032
<input type="checkbox"/> Nylock Nut		M6 to M20 (Gr. 8) M10 to M24 (Gr. 10)	8 & 10	DIN 982
<input type="checkbox"/> Nylock Nut		M6 to M20 (Gr. 8) M10 to M24 (Gr. 10)	8 & 10	DIN 985
<input type="checkbox"/> Hex Weld Nut		M6 to M12	8	DIN 929
<input type="checkbox"/> Hex Lock Nut		M3 to M64		DIN 439, A563

Inch		Size	Grade	Standard
<input type="checkbox"/> Hex Nut		1/4 to 2	8	ASME B18.2.2
<input type="checkbox"/> Hex Nut		1/4 to 2	5	ASME B18.2.2
<input type="checkbox"/> Nylock Nut		#8, #10 (NM Pattern) 1/4 to 3/4 (NE Pattern)	2	ASME B18.16.6
<input type="checkbox"/> Hex Serrated Flange Nut		1/4 to 3/4	-	ASME B18.16.4
<input type="checkbox"/> Hex Coupling Nut		1/4 to 3/4	Hardness Rockwell B68 - C32	ASME B18.2.2





WASHER



Metric		Size	Hardness	Standard
<input type="checkbox"/> Square Section Spring Washer		3mm to 39mm	HV 430 to 530	DIN 7980
<input type="checkbox"/> Flat Section Spring Washer		3mm to 39mm	HV 430 to 530	DIN 127 B
<input type="checkbox"/> Hardened Washer		12mm to 30mm	HV 300 min	IS 2016
<input type="checkbox"/> Hardened Steel Washer		12mm to 56mm	Rockwell 26 to 45 (HDG) Rockwell 38 to 45 (Coated)	ASTM F436M

Inch		Size	Tensile Strength	Standard
<input type="checkbox"/> USS Plain Washer		1/4 to 1 1/2	HRC 38-45	ASME B18.21.1-A
<input type="checkbox"/> SAE Plain Washer		1/4 to 2	HRC 38-45 (Coated) HRC 26-45 (HDG)	ASME B18.21.1-A
<input type="checkbox"/> Spring-Lock Washer		1/4 to 1 1/2	HRC 38-46	ASME B18.21.1
<input type="checkbox"/> Hardened Washer		1/4 to 1 3/8	HRC 38-45 (Coated) HRC 26-45 (HDG)	ASTM F436





STRUCTURAL ASSEMBLIES

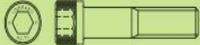
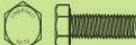
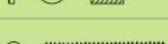


Metric		Size	Property Class	Standard
<input type="checkbox"/> System HR Structural Bolt		M12 to M36	8.8 / 10.9	BS EN 14399-3
<input type="checkbox"/> System HR Pre-Load Nut		M12 to M36	8 / 10	BS EN 14399-3
<input type="checkbox"/> System HV Structural Bolt		M12 to M36	10.9	BS EN 14399-4
<input type="checkbox"/> System HV Pre-Load Nut		M12 to M36	10	BS EN 14399-4
<input type="checkbox"/> Plain Non-Chamfered Washer Plain Chamfered Washer		M12 to M36	HV 300 to 370	BS EN 14399-5 BS EN 14399-6
<input type="checkbox"/> Tension Control Structural Bolt*		M12 to M30	10.9	BS EN 14399-10
<input type="checkbox"/> Pre-Load Nut		M12 to M30	10	BS EN 14399-10 (h=d)
<input type="checkbox"/> Non Pre-Load Structural Bolt		M12 to M36	4.6, 5.6, 6.8, 8.8, 10.9	BS EN 15048-1, 2
<input type="checkbox"/> Non Pre-Load Structural Nut		M12 to M36	4, 5, 6, 8, 10, 12	BS EN 15048-1, 2
<input type="checkbox"/> High-Strength Structural Bolt		M12 to M36	8.8	AS1252 - 1983 Dimensional AS1252 - 1996 Mechanical
<input type="checkbox"/> Structural Nut		M12 to M36	8	AS1252 - 1983 Dimensional AS1252 - 1996 Mechanical
<input type="checkbox"/> Structural Washer		M12 to M36	35-45HRC	AS1252 - 1983 Dimensional AS1252 - 1996 Mechanical

Metric		Size	Property Class	Standard
<input type="checkbox"/> Heavy Hex Structural Bolt		M16 to M36	10.9S	IS 3757
<input type="checkbox"/> Heavy Hex Nut		M16 to M36	10S / 8S	IS 6623
<input type="checkbox"/> Structural Washer		M16 to M36	35-45 HRC (Plain) 26-45 HRC min (HDG)	IS 6649
Inch		Size	Tensile Strength/Hardness	Standard
<input type="checkbox"/> Heavy Hex Structural Bolt		1/2 to 1 1/4	120,000 psi (1/2 to 1 dia) 105,000 psi (1 1/8 to 1 1/2 dia)	ASTM A325
<input type="checkbox"/> Heavy Hex Structural Bolt		1/2 to 1 1/4	150,000 - 173,000 psi	ASTM A490
<input type="checkbox"/> Heavy Hex Nuts Grade DH		1/4 to 2	C24 - C38	ASTM A563
<input type="checkbox"/> Heavy Hex Nut Grade 2H		1/4 to 2	24-35 HRC	ASTM A194 2H
<input type="checkbox"/> Hardened Washer		1/4 to 1 3/8	38-45 HRC (coated) 26-45 HRC (HDG)	ASTM F436
<input type="checkbox"/> Tension Control Structural Bolt*		5/8 to 1 1/8	120,000 psi (1/2 to 1 dia) 105,000 psi (1 1/8 to 1 1/2 dia)	ASTM F1852
<input type="checkbox"/> Tension Control Structural Bolt*		1/2 to 1 1/8	150,000 - 173,000 psi	ASTM F2280



STAINLESS STEEL BOLT

Metric		Size	Property Class	Standards
<input type="checkbox"/> Socket Head Cap Screw		M3 to M30	A2-70/80, A4-70/80	DIN 912 / ISO 4762
<input type="checkbox"/> Hex Head Screw (Full Thread)		M3 to M30	A2-70/80, A4-70/80	DIN 933 / ISO 4017
<input type="checkbox"/> Hex Head Bolt (Partial Thread)		M4 to M30	A2-70/80, A4-70/80	DIN 931 / ISO 4014
<input type="checkbox"/> Hex Nut		M3 to M30	A2-70/80, A4-70/80	DIN 934 / ISO 4032
<input type="checkbox"/> Non Pre-Load Structural Bolt		M12 to M36	A2-50, A4-50, A2-70, A4-70, A2-80, A4-80	BS EN 15048-1, 2
<input type="checkbox"/> Non Pre-Load Structural Nut		M12 to M36	A2-50, A4-50, A2-70, A4-70, A2-80, A4-80	BS EN 15048-1, 2
<input type="checkbox"/> Plain Washer		M3 to M64	A2, A4	DIN 125 A
<input type="checkbox"/> Flat-section Spring Washer		M3 to M36	A2, A4	DIN 127 B
<input type="checkbox"/> Square-section Spring Washer		M3 to M36	A2, A4	DIN 7980
<input type="checkbox"/> Threaded Rod		M3 to M36	A2-70/80, A4-70/80	DIN 975
Inch		Size	Grade	Standards
<input type="checkbox"/> Socket Head Cap Screw		3/16 to 1	F837B & F837E	ASME B18.3 / F837
<input type="checkbox"/> Hex Head Bolt/Screw		1/4 to 1	F593C, F593D & F593G, F593H	ASME B18.2.1 / ASTM F593
<input type="checkbox"/> 304, 316 Hex Nut		1/4 to 1 1/2	F594C, F594D & F594G, F594H	ASME B18.2.2 / F594
<input type="checkbox"/> Plain Washer		1/4 to 1	304, 316	

Stainless Steel Fasteners also available in High-Tensile A4-90 and A4-100 grades.

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PETROCHEMICAL BOLT



Metric		Size	Property Class	Standards
<input type="checkbox"/> Stud Bolt		M12 to M56	B7, B7M, B8, B8M, B16, L7, L7M	ASTM A193M, ASTM A320M
<input type="checkbox"/> Nut		M12 to M56	2H, 2HM, 4, 7, 8, 8M	ANSI B18.2.4.6M, A194M

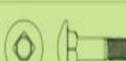
Inch		Size	Grade	Standards
<input type="checkbox"/> Stud Bolt		1/2 to 2 1/4	B7, B7M, B8, B8M, B16, L7, L7M	ASTM A193, ASTM A320
<input type="checkbox"/> Nut		1/2 to 2	2H, 2HM, 4, 7, 8, 8M	ASTM A194





SPECIALS



Metric		Size	Property Class	Standards
<input type="checkbox"/> Arc Welding Stud / Shear Connector ^a		M13 to M25	Type SD1,SD2 & Type A, Type B	ISO 13918, AWS D1.1
<input type="checkbox"/> Upset Parallel Threaded Rebar Coupler ^a		12mm to 50mm	MJ SPECIFICATION	ASTM A615, A706, A775, IS 1786, 16172
<input type="checkbox"/> Parallel Threaded Rebar Coupler ^a		12mm to 40mm	MJ SPECIFICATION	ASTM A615, A706, A775, IS 1786, 16172
<input type="checkbox"/> Tee Bolt		M8 to M24	Tensile strength: 1250 Mpa Hardness: HRC 40 to 43	
<input type="checkbox"/> Trackshoe Bolt		M16 to M27	MJ SPECIFICATION	
<input type="checkbox"/> Square Nut		M16 to M27	MJ SPECIFICATION	
<input type="checkbox"/> Hex Lock Nut		M3 to M64		DIN 439, A563
<input type="checkbox"/> Hex Slotted & Castle Nut		M6 to M48		DIN 935, 937 A563
<input type="checkbox"/> Anchor Plate		M16 to M24	MJ SPECIFICATION	
<input type="checkbox"/> Shear Nut		M8 to M16	MJ SPECIFICATION	
<input type="checkbox"/> Anti-Theft Bolt		M12 to M16	MJ SPECIFICATION	
<input type="checkbox"/> Carriage Bolt		M5 to M20		DIN 603
<input type="checkbox"/> Threaded Bar		M6 to M64	4.6, 5.8, 6.8, 8.8, 10.9, 12.9	DIN 975 / DIN 976

Inch		Size	Grade	Standards
<input type="checkbox"/> Tee Bolt		BSW 3/8 to 1	Tensile Strength: 180 ksi	as per Unbrako Spec.
<input type="checkbox"/> Carriage Bolt		#10 to 1	Grade A	ASTM A307
<input type="checkbox"/> Trackshoe Bolt		5/8 to 1	MJ SPECIFICATION	
<input type="checkbox"/> Square Nut		5/8 to 1	MJ SPECIFICATION	
<input type="checkbox"/> Threaded Bar		1/4 to 2	B7, B7M, B8, B8M, B16, L7, L7M	ASTM A193
<input type="checkbox"/> Threaded Bar		1/4 to 2	Grade A	ASTM A307



EPDM RUBBER GASKET



Flange Tite™ Rubber Gasket made of EPDM Rubber suitable for making instant flange joints of PN 10 and PN 16 Flanges. No wastage of rubber, no requirement of cutting holes.

Available sizes: 80mm to 300mm



Flat Rubber Gasket made of EPDM Rubber (3/6 mm dual thickness) suitable for making instant flange joints of PN 10 Flanges. No wastage of rubber, no requirement of cutting holes.

Available sizes: 80 mm to 1000 mm.





USEFUL REFERENCES

DIMENSIONAL DIFFERENCES AMONG IS:1538, BS 4504, BS EN 1092 & IS:6392

Size	OD of Flange			PCD			Hole dia.			No. of holes			Bolt dia.		
	IS 1538	IS 6392		IS 1538	IS 6392		IS 1538	IS 6392		IS 1538	IS 6392		IS 1538	IS 6392	
		PN 10	PN 16		PN 10	PN 16		PN 10	PN 16		PN 10	PN 16		PN 10	PN 16
40	xxx	150	150	xxx	110	110	xxx	18	18	xxx	4	4	xxx	16	16
50	xxx	165	165	xxx	125	125	xxx	18	18	xxx	4	4	xxx	16	16
65	xxx	185	185	xxx	145	145	xxx	18	18	xxx	4	4	xxx	16	16
80	200	200	200	160	160	160	19	18	18	4	8	8	16	16	16
100	220	220	220	180	180	180	19	18	18	8	8	8	16	16	16
125	250	250	250	210	210	210	19	18	18	8	8	8	16	16	16
150	285	285	285	240	240	240	23	22	22	8	8	8	20	20	20
200	340	340	340	295	295	295	23	22	22	8	8	12	20	20	20
250	395	395	405	350	350	355	23	22	26	12	12	12	20	20	24
300	445	445	460	400	400	410	23	22	26	12	12	12	20	20	24
350	505	505	520	460	460	470	23	22	26	16	16	16	20	20	24
400	565	565	580	515	515	525	28	26	30	16	16	16	24	24	27
450	615	xxx	xxx	565	xxx	xxx	28	xxx	xxx	20	xxx	xxx	24	xxx	xxx
500	670	670	715	620	620	650	28	26	33	20	20	20	24	24	30
600	780	780	840	725	725	770	31	30	36	20	20	20	27	27	33
700	895	895	910	840	840	840	31	30	36	24	24	24	27	27	33
750	960	xxx	xxx	900	xxx	xxx	31	xxx	xxx	24	xxx	xxx	27	xxx	xxx
800	1015	1015	1025	950	950	950	34	33	39	24	24	24	30	30	36
900	1115	1115	1125	1050	1050	1050	34	33	39	28	28	28	30	30	36
1000	1230	1230	1255	1160	1160	1170	37	36	42	28	28	28	33	33	39
1100	1340	xxx	xxx	1270	xxx	xxx	37	xxx	xxx	32	xxx	xxx	33	xxx	xxx
1200	1455	1455	1485	1380	1380	1390	40	39	48	32	32	32	36	36	45

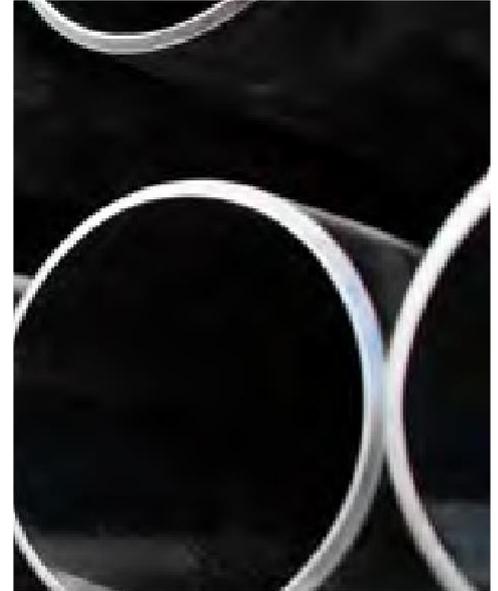
Size	Flange Thickness			
	IS 1538	BS EN 1092-2	BS 4504 S 3.1	IS 6392 T 17
	CI	PN 10 (CI)	PN 10 (MS)	PN 16 (MS)
40	xxx	19	18	16
50	xxx	19	20	18
65	xxx	19	20	18
80	21	19	20	20
100	22	19	22	20
125	22.5	19	22	22
150	23	19	24	22
200	24.5	20	24	24
250	26	22	26	26
300	27.5	24.5	26	28
350	29	24.5	28	32
400	30	24.5	32	36
450	31.5	25.5	36	xxx
500	33	26.5	38	44
600	36	30	42	52
700	38.5	32.5	60	58
750	40	xxx	xxx	xxx
800	41.5	35	68	64
900	44	37.5	76	72
1000	47	40	84	78
1100	50	42.5	xxx	xxx
1200	53	45	98	94



CARBON STEEL PIPES & TUBES

SPECIFICATIONS

SPECIFICATION : ASTM A53/ ASME SA53
GRADE : A, B
PRODUCT : Seamless & Welded Pipe for Mechanical & Pressure Purpose
DIMENSION : ASME B36.10M
ENDS : Plain End, Beveled, Threaded, Coupling

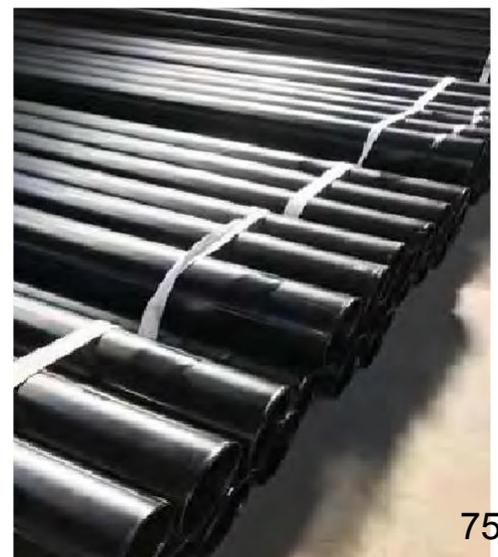


Specification : ASTM A106/ ASME SA106
Grade : A, B, C
Product : Seamless Pipe for High Temperature Service
Dimension : ASME B36.10M
Ends : Plain End, Beveled, Threaded, Coupling



Specification : ASTM A135
Grade : A, B
Product : Electric-Resistance-Welded Steel Pipe
Dimension : ASME B36.10M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A179/ ASME SA179
Product : Seamless Heat Exchanger Tube
General Requirement : ASTM A450/A450M
Ends : Plain End, Beveled, Threaded, Coupling



Specification : ASTM A192/ ASME SA192
Product : Seamless Boiler Tube for High Pressure Service
General Requirement : ASTM A450/A450M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A210/ ASME SA210
Grade : A1, C
Product : Seamless Boiler Tube
General Requirement : ASTM A450/A450M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A252
Grade : 2, 3
Product : Seamless & Welded Pipe For Piling Purpose
General Requirement : ASTM A450/A450M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A333/ ASME SA333
Grade : 1, 3, 6
Product : Seamless and Welded Low Temperature Service Pipe
General Requirement : ASTM A999/A999M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A334/ ASME SA334
Grade : 1, 6
Product : Seamless and Welded Low Temperature Service Tube
General Requirement : ASTM A1016/A1016M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : ASTM A500/ ASME SA500
Grade : 2, 3
Product : Cold-Formed Welded and Seamless Structural Tubing
Ends : Plain End, Beveled, Threaded, Coupling



Specification : ASTM A556/ ASME SA556
Grade : A2, B2
Product : Seamless Cold-Drawn Feedwater Heater Tubes
General Requirement : ASTM A450/A450M
Ends : Plain End, Beveled, Threaded, Coupling

Specification : DIN 1629/ DIN 2391
Grade : St37.0, St44.0, St52.0, St52.3
Condition : Seamless Tubes For Boiler And Heat Exchanger
Ends : Plain End, Beveled, Threaded, Coupling

Specification : DIN 2440
Grade : St33.2
Condition : Seamless Threaded Steel Tube
Ends : Plain End, Beveled, Threaded, Coupling

Specification : DIN 2393
Grade : St28, USt28, RSt28, St34.2, US34.2, RSt34.2, St37.2, USt37.2, RSt37.2, St44.2, St52.3
Condition : Welded Precision Tube
Ends : Plain End, Beveled, Threaded, Coupling



Specification : BS 970
Grade : 360, 410, 440, 460, 490
Condition : Boiler And Superheater Tubes With Specified Elevated Temperature Properties
Ends : Plain End, Beveled, Threaded, Coupling

Specification : API 5L
Grade : A, B, X42, X46, X52, X56, X60, X65, X70, X80
Condition : Seamless & Welded Line Pipe
Dimension : ASME B36.10M, API 5L
Ends : Plain End, Beveled, Threaded, Coupling



Specification : JIS G3444
Condition : Tubes for general structural and low-pressure application
Ends : Plain End, Beveled, Threaded, Coupling

Specification : JIS G3445
Grade : STKM11A, STKM12A, STKM12B, STKM12C, STKM13A, STKM13B, STKM13C, STKM14A, STKM14B, STKM14C
Condition : Seamless Tubes for machine structural purposes
Ends : Plain End, Beveled, Threaded, Coupling

Specification : JIS G3454
Grade : STPG370, STPG410
Condition : Seamless Pipe for Pressure Service
Ends : Plain End, Beveled, Threaded, Coupling

Specification : JIS G3466
Grade : STKR 400, STKR 490
Condition : Square and Rectangular Tubes for Structural Purpose
Ends : Plain End, Beveled, Threaded, Coupling





BASIC CHEMICAL AND MECHANICAL ANALYSIS

	ASTM A53		ASTM A106			ASTM A135	
	Gr A	Gr B	Gr A	Gr B	Gr C	Gr A	Gr B
Chemical Composition (Max values %)							
C	0.25	C 0.30	C 0.25	C 0.30	C 0.35	C 0.25	C 0.30
Mn	0.95	Mn 1.20	Mn 0.93	Mn 1.06	Mn 1.06	Mn 0.95	Mn 1.20
P	0.050	P 0.050	P 0.035	P 0.035	P 0.035	P 0.035	P 0.035
S	0.045	S 0.045	S 0.035	S 0.035	S 0.035	S 0.035	S 0.035
Cu	0.40	Cu 0.40	Si	0.10	Si 0.10(min)	Si 0.10(min)	
Ni	0.40	Ni 0.40	Ni	0.40	Ni 0.40	Ni 0.40	
Cr	0.40	Cr 0.40	Cr	0.40	Cr 0.40	Cr 0.40	
Mo	0.15	Mo 0.15	Mo	0.15	Mo 0.15	Mo 0.15	
V	0.08	V 0.08	V	0.08	V 0.08	V 0.08	
			Cu	0.40	Cu 0.40	Cu 0.40	
Tensile Strength, min, ksi [MPa]	48 [330]	60 [415]	48 [330]	60 [415]	70 [485]	48 [330]	60 [415]
Yield Strength, min, ksi [MPa]	30 [205]	35 [240]	30 [205]	35 [240]	40 [275]	30 [205]	35 [240]
Elongation in 2 in. or 50 mm, min, %	20	20	35	22	30	35	30

	ASTM A179	ASTM A192	ASTM A210		ASTM A252	
			Gr A1	Gr C	Gr 2	Gr 3
Chemical Composition (Max values %)						
C	0.18	C 0.18	C 0.27	C 0.27	P 0.050	P 0.050
Mn	0.63	Mn 0.63	Si	0.10	Si 0.10	
P	0.035	P 0.035	Mn	0.93	Mn 1.06	
S	0.035	S 0.035	P	0.035	P 0.035	
		Si	0.25	S	0.035	
Tensile Strength, min, ksi [Mpa]	47 [325]	47 [325]	60 [415]	70 [485]	60 [415]	66 [455]
Yield Strength, min, ksi [Mpa]	26 [180]	26 [180]	37 [255]	40 [275]	35 [205]	45 [310]
Elongation in 2 in. or 50 mm, min, %	35	35	30	30	25	20



ASTM A333

Chemical Composition (Max values %)	Gr 1	Gr 3	Gr 4	Gr 6	Gr 7	Gr 8	Gr 9	Gr 10	Gr 11
C	0.30	C 0.19	C 0.12	C 0.30	C 0.19	C 0.13	C 0.20	C 0.20	C 0.10
Mn	1.06	Mn 0.64	Mn 1.05	Mn 1.06	Mn 0.90	Mn 0.90	Mn 1.06	Mn 1.50	Mn 0.60
P	0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.035	P 0.025
S	0.025	S 0.025	S 0.025	S 0.025	S 0.025	S 0.025	S 0.025	S 0.015	S 0.025
		Si 0.37	Si 0.37	Si 0.10(min)	Si 0.32	Si 0.32	Ni 2.24	Si 0.35	Si 0.35
		Ni 3.82	Ni 0.98		Ni 2.57	Ni 9.60	Cu 1.25	Ni 0.25	Ni 37.0
			Cr 1.01					Cr 0.15	Cr 0.50
			Cu 0.75					Cu 0.15	Mo 0.50
			Al 0.30					Al 0.06	Co 0.50
								V 0.12	
								Nb 0.05	
								Mo 0.05	
Tensile Strength, min, ksi [MPa]	55 [380]	65 [450]	60 [415]	60 [415]	65 [450]	100 [690]	63 [435]	80 [550]	65 [450]
Yield Strength, min, ksi [MPa]	30 [205]	35 [240]	35 [240]	35 [240]	35 [240]	75 [515]	46 [315]	65 [450]	35 [240]
Elongation in 2 in. or 50 mm, min, %	35	30	30	30	30	22	28	22	18

ASTM A334

Chemical Composition (Max values %)	Gr 1	Gr 3	Gr 6	Gr 7	Gr 8	Gr 9	Gr 11
C	0.30	C 0.19	C 0.30	C 0.19	C 0.13	C 0.20	C 0.10
Mn	1.06	Mn 0.64	Mn 1.06	Mn 0.90	Mn 0.90	Mn 1.06	Mn 0.60
P	0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025
S	0.025	S 0.025	S 0.025	S 0.025	S 0.025	S 0.025	S 0.025
		Si 0.37	Si 0.10(min)	Si 0.32	Si 0.32	Ni 2.24	Si 0.35
		Ni 3.82		Ni 2.57	Ni 9.60	Cu 1.25	Ni 37.0
							Cr 0.50
							Co 0.50
							Mo 0.50
Tensile Strength, min, ksi [MPa]	55 [380]	65 [450]	60 [415]	65 [450]	100 [690]	63 [435]	65 [450]
Yield Strength, min, ksi [MPa]	30 [205]	35 [240]	35 [240]	35 [240]	75 [520]	46 [315]	35 [240]
Elongation in 2 in. or 50 mm, min, %	35	30	30	30	22	28	18



	ASTM A500				ASTM A556			DIN 17175	
Chemical Composition (Max values %)	Gr A	Gr B	Gr C	Gr D	Gr A2	Gr B2	Gr C2	St35.8	St45.8
C	0.26	C 0.30	C 0.23	C 0.27	C 0.18	C 0.27	C 0.30	C 0.17	C 0.21
Mn	1.35	Mn 1.40	Mn 1.35	Mn 1.40	Mn 0.63	Mn 0.93	Mn 1.06	Mn 0.80	Mn 1.20
P	0.035	P 0.045	P 0.035	P 0.045	P 0.035	P 0.030	P 0.030	P 0.030	P 0.030
S	0.035	S 0.045	S 0.035	S 0.045	S 0.035	S 0.030	S 0.030	S 0.030	S 0.030
Cu	0.20	Cu 0.18	Cu 0.20	Cu 0.18				Si 0.35	Si 0.35
Tensile Strength, min, ksi [MPa]	45 [310]	58 [400]	62 [427]	58 [400]	47 [320]	60 [410]	70 [480]	52 [360]	59 [410]
Yield Strength, min, ksi [MPa]	33 [228]	42 [290]	46 [317]	36 [250]	26 [180]	37 [260]	40 [280]	34 [235]	37 [255]
Elongation in 2 in. or 50 mm, min, %	25	23	21	23	35	30	30	25	21

	DIN 1629/ DIN 2391			DIN 2393 Welded Precision Steel Tubes			
Chemical Composition (Max values %)	St37.0	St44.0	St52.0	St28	RSt34.2	RSt37.2	St44.2
C	0.17	C 0.21	C 0.22	C 0.13	C 0.15	C 0.17	C 0.21
P	0.040	P 0.040	P 0.040	P 0.50	P 0.50	P 0.50	P 0.50
S	0.040	S 0.040	S 0.035	S 0.50	S 0.50	S 0.50	S 0.50
			Si 0.55				
			Mn 1.70				
Tensile Strength, min, ksi [MPa]	50 [350]	60 [420]	73 [500]	[992]	49 [340]	64 [440]	81 [560]
Yield Strength, min, ksi [MPa]	34 [235]	40 [275]	51 [355]	[393]	34 [235]	37 [255]	51 [355]
Elongation in 2 in. or 50 mm, min, %	25	21	21	44	25	21	22



API 5L PSL 1 Seamless

	A	B	X42	X46	X52	X56	X60	X65	X70
Chemical Composition (Max values %)									
C	0.22	C 0.28							
Mn	0.90	Mn 1.20	Mn 1.30	Mn 1.40					
P	0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030
S	0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030
Tensile Strength, min, ksi [MPa]	49 [335]	60 [415]	60 [415]	63 [435]	67 [460]	71 [490]	75 [520]	78 [535]	83 [570]
Yield Strength, min, ksi [MPa]	31 [210]	36 [245]	42 [290]	46 [320]	52 [360]	57 [390]	60 [415]	65 [450]	70 [485]
Elongation in 2 in. or 50 mm, min, %	-	-	-	-	-	-	-	-	-

API 5L PSL 1 Welded

	A	B	X42	X46	X52	X56	X60	X65	X70
Chemical Composition (Max values %)									
C	0.22	C 0.26							
Mn	0.90	Mn 1.20	Mn 1.30	Mn 1.40	Mn 1.40	Mn 1.40	Mn 1.40	Mn 1.45	Mn 1.65
P	0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030	P 0.030
S	0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030	S 0.030
Tensile Strength, min, ksi [MPa]	49 [335]	60 [415]	60 [415]	63 [435]	67 [460]	71 [490]	75 [520]	78 [535]	83 [570]
Yield Strength, min, ksi [MPa]	31 [210]	36 [245]	42 [290]	46 [320]	52 [360]	57 [390]	60 [415]	65 [450]	70 [485]
Elongation in 2 in. or 50 mm, min, %	-	-	-	-	-	-	-	-	-



**Chemical Composition
(Max values %)**

	BN	X42N	X46N	X52N	X56N	X60N
C	0.24	C 0.24	C 0.24	C 0.24	C 0.24	C 0.24
Si	0.40	Si 0.40	Si 0.40	Si 0.45	Si 0.45	Si 0.45
Mn	1.20	Mn 1.20	Mn 1.40	Mn 1.40	Mn 1.40	Mn 1.40
P	0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025
S	0.015	S 0.015	S 0.015	S 0.015	S 0.015	S 0.015
Ti	0.04	V 0.06	V 0.07	V 0.10	V 0.10	V 0.10
		Nb 0.05				
		Ti 0.04				



API 5L PSL 2 Seamless & Welded

Chemical Composition (Max values %)	BM	X42M	X46M	X52M	X56M	X60M
C	0.22	C 0.22	C 0.22	C 0.22	C 0.22	C 0.12
Si	0.45	Si 0.45	Si 0.45	Si 0.45	Si 0.45	Si 0.45
Mn	1.20	Mn 1.30	Mn 1.30	Mn 1.40	Mn 1.40	Mn 1.60
P	0.025	P 0.025	P 0.025	P 0.025	P 0.025	P 0.025
S	0.015	S 0.015	S 0.015	S 0.015	S 0.015	S 0.015
V	0.05	V 0.05	V 0.05			
Nb	0.05	Nb 0.05	Nb 0.05			
Ti	0.04	Ti 0.04	Ti 0.04			
Tensile Strength, min, ksi [MPa]	60 [415]	60 [415]	63 [435]	67 [460]	71 [490]	75 [520]
Yield Strength, min, ksi [MPa]	36 [245]	42 [290]	46 [320]	52 [360]	57 [390]	60 [415]
Elongation in 2 in. or 50 mm, min, %	-	-	-	-	-	-

API 5L PSL 2 Seamless & Welded

Chemical Composition (Max values %)	X65M	X70M	X80M	X90M	X100M	X120M
C	0.12	C 0.12	C 0.12	C 0.10	C 0.10	C 0.10
Si	0.45	Si 0.45	Si 0.45	Si 0.55	Si 0.55	Si 0.55
Mn	1.60	Mn 1.70	Mn 1.85	Mn 2.10	Mn 2.10	Mn 2.10
P	0.025	P 0.025	P 0.025	P 0.020	P 0.020	P 0.020
S	0.015	S 0.015	S 0.015	S 0.010	S 0.010	S 0.010
Tensile Strength, min, ksi [MPa]	78 [535]	83 [570]	90 [625]	101 [695]	110 [760]	133 [915]
Yield Strength, min, ksi [MPa]	65 [450]	70 [485]	81 [555]	91 [625]	100 [690]	120 [830]
Elongation in 2 in. or 50 mm, min, %	-	-	-	-	-	-



JIS G3444

Chemical Composition (Max values %)	STK290	STK400	SKT490	STK500	STK540
P	0.050	C 0.25	C 0.18	C 0.24	C 0.23
S	0.050	P 0.040	Si 0.55	Si 0.35	Si 0.55
		S 0.040	Mn 1.65	Mn 1.30	Mn 1.50
			P 0.035	P 0.040	P 0.040
			S 0.035	S 0.040	S 0.040
Tensile Strength, min, ksi [MPa]	[290]	[400]	[490]	[500]	[540]
Yield Strength, min, ksi [MPa]	-	[235]	[315]	[355]	[390]
Elongation in 2 in. or 50 mm, min, %	35	23	23	15	20

JIS G3445

Chemical Composition (Max values %)	STKM11A	STKM12A	STKM12B	STKM12C	STKM13A	STKM13B	STKM13C	STKM14A	STKM14B	STKM14C
C	0.12	C 0.20	C 0.20	C 0.20	C 0.25	C 0.25	C 0.25	C 0.30	C 0.30	C 0.30
Si	0.35	Si 0.35	Si 0.35	Si 0.35	S 0.35	S 0.35	S 0.35	Si 0.35	Si 0.35	Si 0.35
Mn	0.60	Mn 0.60	Mn 0.60	Mn 0.60	Mn 0.90	Mn 0.90	Mn 0.90	Mn 1.00	Mn 1.00	Mn 1.00
P	0.040	P 0.040	P 0.040	P 0.040	P 0.040	P 0.040	P 0.040	P 0.040	P 0.040	P 0.040
S	0.040	S 0.040	S 0.040	S 0.040	S 0.040	S 0.040	S 0.040	S 0.040	S 0.040	S 0.040
Tensile Strength, min, ksi [MPa]	30 [290]	35 [340]	40 [390]	48 [470]	38 [370]	45 [440]	52 [510]	42 [410]	51 [500]	56 [550]
Yield Strength, min, ksi [MPa]	-	18 [175]	28 [275]	36 [355]	22 [215]	31 [305]	39 [380]	25 [245]	36 [355]	42 [410]
Elongation in 2 in. or 50 mm, min, %	35	35	25	20	30	20	15	25	15	15





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