

# Orifice flange assembly

## Model : F500

Spec. sheet no. **FD05-01**

### Description

Orifice flange assembly is used in conjunction with orifice plate for flow measurement of smaller or medium size pipes at lower or medium pressure ranges. The flange connection is a RF type and the differential pressure tapping system is the flange taps.



### Specification

#### Flange mounting type

Welding neck  
Slip-on  
Socket-weld  
Ring-joint welding neck

#### Nominal diameter

25 ~ 600 mm  
1" ~ 24"

#### Flange ratings

JIS 10, 20, 30, 40 and 63 K  
ANSI (or JPI) 150, 300, 600, 900, 1500 and 2500Lb

#### Flange material

A105, A182-F304, A182-F316, A182-F11,  
A182-F22, A350-LF2 and Other

#### Materials of bolts and nuts

Stud bolts : SNB7, A193-B7, A194-B8 and Other  
Nuts : S45C, A194-2H, A194-8 and Other  
Jack bolts : 304SS

#### Gasket

Thickness : 4.5 mm or other  
Material : Spiral wound gaskets or other

#### Differential pressure piping connection

Select referring to the model number construction table

#### Orifice bore type

Concentric square edged orifice  
Quadrant edged orifice  
Eccentric orifice  
Segmental orifice

#### Flow calculation standards

ISO 5167-1 and 2 2003  
AGA-3  
ASME MFC-3M (R.W Miller)  
JIS Z 8762

#### Plate thickness

3,6,9,12 mm and Over

#### Plate material

Standard : 304SS and 316L SS  
Non-standard : Monel, Hastelloy B/C, Titanium etc.

#### Drain and vent hole

Per ASME/ISA recommendations  
Not drilled for orifice bores smaller than 25.4 mm

#### Markings

Upstream side of tab handle stamped "Upstream"  
and with bore type and size, line size, tag number  
and flange rating

#### Special markings

Special marking may be furnished to meet special  
requirement

**1. Base model**

**F500** Orifice flange assembly

**2. Line size**

<b>A01</b>	½"	<b>J01</b>	15A
<b>A02</b>	¾"	<b>J02</b>	20A
<b>A03</b>	1"	<b>J03</b>	25A
<b>A04</b>	1½"	<b>J04</b>	40A
<b>A05</b>	2"	<b>J05</b>	50A
<b>A06</b>	3"	<b>J06</b>	80A
<b>A07</b>	4"	<b>J07</b>	100A
<b>A08</b>	6"	<b>J08</b>	150A
<b>A09</b>	8"	<b>J09</b>	200A
<b>A10</b>	10"	<b>J10</b>	250A
<b>A11</b>	12"	<b>J11</b>	300A
<b>A12</b>	14"	<b>J12</b>	350A
<b>A13</b>	16"	<b>J13</b>	400A
<b>A14</b>	18"	<b>J14</b>	450A
<b>A15</b>	20"	<b>J15</b>	500A
<b>A16</b>	24"	<b>J16</b>	600A
<b>ZZZ</b>	Other		

**3. Connection**

<b>A01</b>	150Lb RF	<b>J01</b>	10K RF
<b>A02</b>	300Lb RF	<b>J02</b>	16K RF
<b>A03</b>	600Lb RF	<b>J03</b>	20K RF
<b>A04</b>	900Lb RF	<b>J04</b>	30K RF
<b>A05</b>	1500Lb RF	<b>J05</b>	40K RF
<b>A06</b>	2500Lb RF	<b>J06</b>	63K RF
<b>A11</b>	150Lb FF	<b>J11</b>	10K FF
<b>A12</b>	300Lb FF	<b>J12</b>	16K FF
<b>A13</b>	600Lb FF	<b>J13</b>	20K FF
<b>A14</b>	900Lb FF	<b>J14</b>	30K FF
<b>A15</b>	1500Lb FF	<b>J15</b>	40K FF
<b>A16</b>	2500Lb FF	<b>J16</b>	63K FF
<b>A21</b>	150Lb RTJ	<b>J21</b>	10K RTJ
<b>A22</b>	300Lb RTJ	<b>J22</b>	16K RTJ
<b>A23</b>	600Lb RTJ	<b>J23</b>	20K RTJ
<b>A24</b>	900Lb RTJ	<b>J24</b>	30K RTJ
<b>A25</b>	1500Lb RTJ	<b>J25</b>	40K RTJ
<b>A26</b>	2500Lb RTJ	<b>J26</b>	63K RTJ
<b>ZZZ</b>	Other		

**4. Element type**

<b>1</b>	Concentric
<b>2</b>	Quadrant
<b>3</b>	Conditioning
<b>4</b>	Eccentric
<b>5</b>	Segmental
<b>O</b>	Other

**5. Element material**

<b>6</b>	316L SS
<b>O</b>	Other

**6. Orifice flange and Bolt / Nuts material**

<b>C</b>	A105 and A193 B7 / A194 2H
<b>4</b>	A182 F304 and A193 B8 / A194 8
<b>6</b>	A182 F316 and A193 B8M / A194 8M
<b>O</b>	Other

**7. Gasket material**

<b>S</b>	Spiral wound 4.5T, RF type
<b>N</b>	Non-asbestos 3.0T, RF type
<b>I</b>	Soft Iron, RTJ type
<b>O</b>	Other

**8. Meter run type (Up / Down stream : 20D / 10D)**

<b>F</b>	Yes, Flange type
<b>B</b>	Yes, Butt weld
<b>O</b>	Other
<b>N</b>	None

**9. Tap and Valve type (As per flange material)**

<b>A</b>	½" NPT, 1 pair, Only plug
<b>B</b>	½" NPT, 1 pair, Globe valve with plug
<b>C</b>	½" NPT, 1 pair Gate valve with plug
<b>O</b>	Other

**10. Drain / Vent hole**

<b>D</b>	Drain hole
<b>V</b>	Vent hole
<b>N</b>	None (Bore size < 25.4 mm or Required)

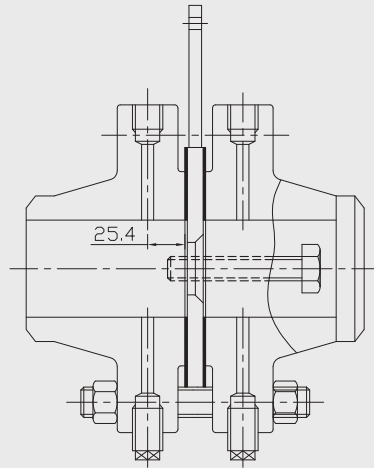
**11. Option**

<b>C</b>	Calibration test
<b>O</b>	Other
<b>N</b>	None

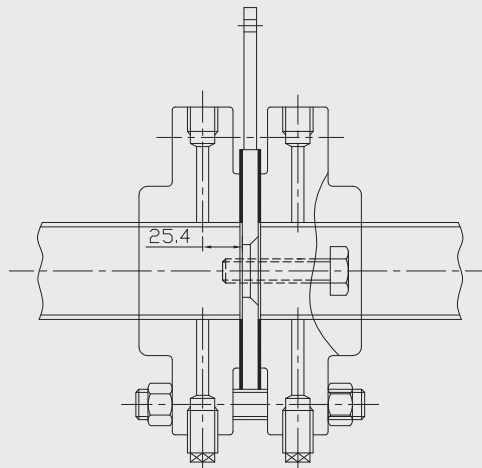
**Sample ordering code**

1	2	3	4	5	6	7	8	9	10	11
F500	A01	A01	1	6	C	S	F	A	D	C

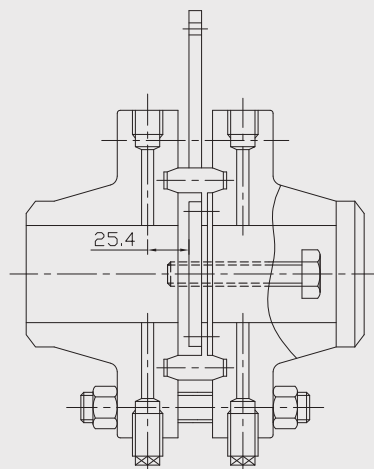
## Dimension



Model : F500-W

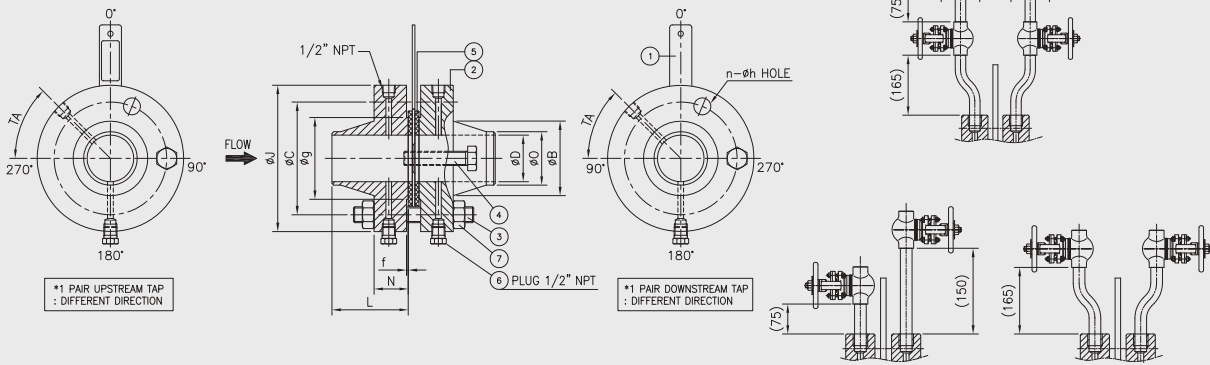


Model : F500-S



Model : F500-J

# Dimension



ORIFICE FLANGES DIMENSIONS: ANSI B16.36 FORGED FLANGES. (300Lb)

SIZE IN (INCH)	OUT-SIDE DIAM	THICK - NESS	RAISE. OF FACE	HUB LENG - TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR - CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH	JACK BOLT & LENGTH	TAP ANGLE (°)
J	N	g	L	B	O	X	C	h	n			TA	
2	165	38.6	92.1	86	84	60.3	6.4	127	17.5	8	5/8"x140	5/8"x75	45
2 1/2	190	38.6	104.8	89	100	73	6.4	149.2	20.6	8	3/4"x145	5/8"x75	45
3	210	38.6	127	89	117	88.9	9.5	168.3	20.6	8	3/4"x145	3/4"x75	45
4	255	38.6	157.2	92	146	114.3	12.7	200	20.6	8	3/4"x145	3/4"x75	45
5	280	38.6	185.7	102	178	141.3	12.7	235	22.2	8	3/4"x145	3/4"x75	45
6	320	38.6	215.9	100	206	168.3	12.7	269.9	22.2	12	3/4"x145	3/4"x75	30
8	380	41.7	269.9	112	260	219.1	12.7	330.2	25.4	12	7/8"x160	3/4"x75	30
10	445	48.1	323.8	118	321	273	12.7	387.4	28.6	16	1"x185	1"x115	45
12	520	51.3	381	131	375	323.8	12.7	450.8	31.8	16	1 1/8"x200	1"x115	45
14	585	54.4	412.8	143	425	355.6	12.7	514.4	31.8	20	1 1/8"x210	1"x115	36
16	650	57.6	469.9	146	483	406.4	12.7	571.5	34.9	20	1 1/4"x220	1"x115	36
18	710	60.8	533.4	159	533	457	12.7	628.6	34.9	24	1 1/4"x230	1"x115	45
20	775	64	584.2	162	587	508	12.7	685.8	34.9	24	1 1/4"x240	1"x115	45
24	915	70.3	692.2	169	702	610	12.7	812.8	41.3	24	1 1/2"x270	1"x140	45

ORIFICE FLANGES DIMENSIONS: ANSI B16.36 FORGED FLANGES. (600Lb)

SIZE IN (INCH)	OUT-SIDE DIAM	THICK - NESS	RAISE. OF FACE	HUB LENG - TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR - CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH	JACK BOLT & LENGTH	TAP ANGLE (°)
J	N	g	L	B	O	X	C	h	n			TA	
2	165	38.6	92.1	86	84	60.3	6.4	127	17.5	8	5/8"x140	5/8"x75	45
2 1/2	190	38.6	104.8	89	100	73	6.4	149.2	20.6	8	3/4"x145	3/4"x75	45
3	210	38.6	127	89	117	88.9	9.5	168.3	20.6	8	3/4"x145	3/4"x75	45
4	275	45.1	157.2	109	152	114.3	12.7	215.9	25.4	8	7/8"x165	3/4"x100	45
5	330	45.1	185.7	115	189	141.3	12.7	266.7	28.6	8	1" x 185	1"x110	45
6	355	54.7	215.9	124	222	168.3	12.7	292.1	28.6	12	1"x195	1"x110	30
8	420	62.6	269.9	140	273	219.1	12.7	349.2	31.8	12	1 1/8"x220	1"x120	30
10	510	70.5	323.8	159	343	273	12.7	431.8	34.9	16	1 1/4"x250	1"x140	45
12	560	73.7	381	163	400	323.8	12.7	489	34.9	20	1 1/4"x255	1"x140	36
14	605	76.9	412.8	172	432	355.6	12.7	527	38.1	20	1 3/8"x270	1"x150	36
16	685	83.2	469.9	185	495	406.4	12.7	603.2	41.3	20	1 1/2"x295	1"x155	36
18	745	89.6	533.4	191	546	457	12.7	654	44.5	20	1 5/8"x300	1"x165	36
20	815	95.9	584.2	197	610	508	12.7	723.9	44.5	24	1 5/8"x330	1"x180	45
24	940	108.6	692.2	210	718	610	12.7	838.2	50.8	24	1 7/8"x375	1"x195	45

ORIFICE FLANGES CLASS 900 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (900Lb)

SIZE IN (INCH)	OUT-SIDE DIAM	THICK - NESS	RAISE. OF FACE	HUB LENG - TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR - CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH	JACK BOLT & LENGTH	TAP ANGLE (°)
J	N	g	L	B	O	X	C	h	n			TA	
2	215	45.1	92.1	109	105	60.3	6.4	165.1	25.4	8	7/8"x165	5/8"x100	45
2 1/2	245	48.3	104.8	112	124	73	6.4	190.5	28.6	8	1"x180	5/8"x105	45
3	240	45.1	127	109	127	88.9	9.5	190.5	25.4	8	7/8"x165	3/4"x100	45
4	290	51.5	157.2	121	159	114.3	12.7	235	31.8	8	1 1/8"x200	3/4"x110	45
6	380	62.6	215.9	147	235	168.3	12.7	317.5	31.8	12	1 1/8"x220	1"x120	30
8	470	70.5	269.9	169	298	219.1	12.7	393.7	38.1	12	1 3/8"x255	1"x140	30
10	545	76.9	323.8	191	368	273	12.7	469.9	38.1	16	1 3/8"x270	1"x150	45
12	610	86.4	381	207	419	323.8	12.7	533.4	38.1	20	1 3/8"x270	1"x155	36
14	640	92.8	412.8	220	451	355.6	12.7	558.8	41.3	20	1 1/2"x315	1"x165	36
16	705	95.9	469.9	223	508	406.4	12.7	616	44.5	20	1 5/8"x330	1"x180	36
18	785	108.6	533.4	236	565	457	12.7	685.8	50.8	20	1 7/8"x375	1"x195	36
20	855	115	584.2	255	622	508	12.7	749.3	54	20	2"x390	1"x205	36
24	1040	146.7	692.2	299	749	610	12.7	901.7	66.7	20	2 1/2"x500	1"x250	36

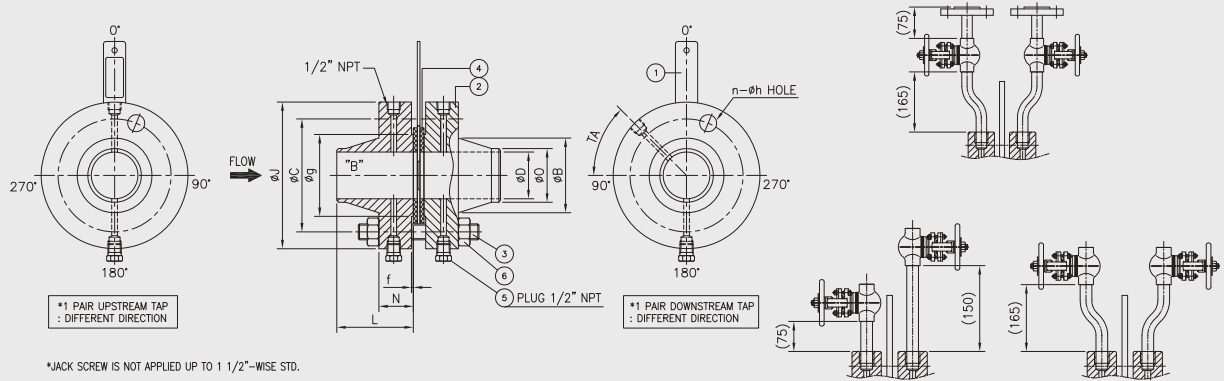
ORIFICE FLANGES CLASS 1500 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (1500Lb)

SIZE IN (INCH)	OUT-SIDE DIAM	THICK - NESS	RAISE. OF FACE	HUB LENG - TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR - CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH	JACK BOLT & LENGTH	TAP ANGLE (°)
J	N	g	L	B	O	X	C	h	n			TA	
2	215	45.1	92.1	109	105	60.3	6.4	165.1	25.4	8	7/8"x170	5/8"x100	45
2 1/2	245	48.3	104.8	112	124	73	6.4	190.5	28.6	8	1"x185	5/8"x105	45
3	265	54.7	127	124	133	88.9	9.5	203.2	31.8	8	1 1/8"x205	5/8"x115	45
4	310	61	157.2	131	162	114.3	12.7	241.3	35.1	8	1 1/4"x230	3/4"x125	45
6	395	89.6	215.9	178	229	168.3	12.7	317.5	38.1	12	1 3/8"x295	1"x160	30
8	485	99.1	269.9	220	292	219.1	12.7	393.7	44.5	12	1 5/8"x335	1"x180	30
10	585	115	323.8	261	368	273	12.7	482.6	50.8	12	1 7/8"x385	1"x200	30
12	675	130.9	381	290	451	323.8	12.7	571.6	53.8	16	2"x430	1"x220	45
14	750	140.4	412.8	305	495	355.6	12.7	635	60.5	16	2 1/4"x465	1"x230	45
16	825	153.1	469.9	318	552	406.4	12.7	704.8	66.5	16	2 1/2"x515	1"x255	45
18	915	169	533.4	330	597	457	12.7	774.7	73.2	16	2 3/4"x565	1"x275	45
20	985	184.8	584.2	363	641	508	12.7	831.8	79.2	16	3"x615	1 1/2"x300	45
24	1170	210.2	692.2	413	762	610	12.7	990.6	91.9	16	3 1/2"x705	1 1/2"x335	45

ORIFICE FLANGES CLASS 2500 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (2500Lb)

SIZE IN (INCH)	OUT-SIDE DIAM	THICK - NESS	RAISE. OF FACE	HUB LENG - TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR - CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH	JACK BOLT & LENGTH	TAP ANGLE (°)
J	N	g	L	B	O	X	C	h	n			TA	
2	235	57.8	92.1	134	95	60.3	6.4	171.4	28.6	8	1"x205	5/8"x115	45
2 1/2	265	64.2	104.8	150	114	73	6.4	196.8	31.8	8	1 1/8"x230	5/8"x125	45
3	305	73.7	127	175	133	88.9	9.5	228.6	34.9	8	1 1/4"x255	3/4"x130	45
4	355	83.2	157.2	197	165	114.3	12.7	273	41.3	8	1 1/2"x295	1"x160	45
6	485	115	215.9	280	235	168.3	12.7	368.3	54	8	2"x395	1"x200	45
8	550	134	269.9	325	305	219.1	12.7	438.2	54	12	2"x435	1"x220	30
10	675	172.1	323.8	426	375	273	12.7	539.8	66.7	12	2 1/2"x500	1"x275	30
12	760	191.2	381	451	441	323.8	12.7	619.1	73	12	2 3/4"x610	1"x300	30

# Dimension



ORIFICE FLANGES DIMENSIONS: ANSI B16.36 FORGED FLANGES. (300Lb) UNIT : mm

SIZE IN (INCH)	OUT-SIDE DIAM	THICK-NESS	RAISE-OF FACE	HUB LENG-TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR-CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH
	J	N	g	L	B	O	X	C	h	n	
1/2	95	38.6	35.1	77	38	21.3	6.4	66.7	15.9	4	1/2"x130
3/4	115	38.6	42.9	81	48	26.7	6.4	82.6	17.5	4	5/8"x140
1	125	38.6	50.8	83	54	33.5	6.4	88.9	17.5	4	5/8"x140
1 1/2	155	38.6	73	86	70	48.3	6.4	114.3	20.6	4	3/4"x145

ORIFICE FLANGES DIMENSIONS: ANSI B16.36 FORGED FLANGES. (600Lb) UNIT : mm

SIZE IN (INCH)	OUT-SIDE DIAM	THICK-NESS	RAISE-OF FACE	HUB LENG-TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR-CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH
	J	N	g	L	B	O	X	C	h	n	
1/2	95	38.6	35.1	77	38	21.3	6.4	66.7	15.9	4	1/2"x130
3/4	115	38.6	42.9	81	48	26.7	6.4	82.6	17.5	4	5/8"x140
1	125	38.6	50.8	83	54	33.5	6.4	88.9	17.5	4	5/8"x140
1 1/2	155	38.6	73	86	70	48.3	6.4	114.3	20.6	4	3/4"x145

ORIFICE FLANGES CLASS 900 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (900Lb) UNIT : mm

SIZE IN (INCH)	OUT-SIDE DIAM	THICK-NESS	RAISE-OF FACE	HUB LENG-TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR-CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH
	J	N	g	L	B	O	X	C	h	n	
1/2	120	45.1	35.1	83	38	21.3	6.4	82.6	22.3	4	3/4"x160
3/4	130	45.1	42.9	90	44	26.7	6.4	88.9	22.3	4	3/4"x160
1	150	45.1	50.8	90	52	33.5	6.4	101.6	25.4	4	7/8"x165
1 1/2	180	45.1	73	96	70	48.3	6.4	123.8	28.6	4	1"x175

ORIFICE FLANGES CLASS 1500 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (1500Lb) UNIT : mm

SIZE IN (INCH)	OUT-SIDE DIAM	THICK-NESS	RAISE-OF FACE	HUB LENG-TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR-CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH
	J	N	g	L	B	O	X	C	h	n	
1/2	120	45.1	35.1	83	38	21.3	6.4	82.6	22.3	4	3/4"x160
3/4	130	45.1	42.9	90	44	26.7	6.4	88.9	22.3	4	3/4"x160
1	150	45.1	50.8	90	52	33.5	6.4	101.6	25.4	4	7/8"x170
1 1/2	180	45.1	73	96	70	48.3	6.4	123.8	28.4	4	1"x175

ORIFICE FLANGES CLASS 2500 DIMENSIONS: ANSI B16.36 FORGED FLANGES. (2500Lb) UNIT : mm

SIZE IN (INCH)	OUT-SIDE DIAM	THICK-NESS	RAISE-OF FACE	HUB LENG-TH	HUB DIA. BASE	POINT OF WELD.	TAP HOLE SIZE	BOLT CIR-CLE	HOLE OF DIA.	HOLE OF NO.	BOLT SIZE & LENGTH
	J	N	g	L	B	O	X	C	h	n	
1/2	135	45.1	34.9	87.9	43	21.3	6.4	88.9	22.2	4	3/4"x160
3/4	140	45.1	42.9	92.3	51	26.7	6.4	95.2	22.2	4	3/4"x160
1	160	45.1	50.8	99	57	33.5	6.4	108	25.4	4	7/8"x170
1 1/2	205	51.5	73	118	79	48.3	6.4	146	31.8	4	1 1/8"x200

## Memo