

# 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 and 900 Lb RF

### Flange material

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

### Materials of bolts and nuts

Stud bolts : SNB7, A193-B7 and A194-B8  
Nuts : S45C, A194-2H and A194-8  
Jack bolts and nuts : S25C and A307

### Gasket

Thickness : 4.5 mm  
Material : Spiral wound gaskets

### Piping connection method

ANSI 150 Lb : Insertion welding type (Slip-on type)  
ANSI 300, 600 Lb : Butt welding type (Welding neck)  
ANSI 900 Lb : Butt welding neck (Ring-joint WN)

### 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)  
L.K. Spink  
JIS Z 8762

### Plate thickness

3,6,9 and 12 mm

### Tab handle

Welded to orifice plate

### Plate material

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

### Drain and vent hole

Per ASME 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. Type**

**W** Welding neck  
**O** Socket-weld  
**S** Slip on  
**J** RTJ  
**K** Other

**3. Line size**

JIS	mm	ANSI	inch	DIN	mm
<b>J015</b>	15A	<b>A001</b>	½B	<b>D015</b>	15A
<b>J020</b>	20A	<b>A002</b>	¾B	<b>D020</b>	20A
<b>J025</b>	25A	<b>A003</b>	1B	<b>D025</b>	25A
<b>J040</b>	40A	<b>A004</b>	1½B	<b>D040</b>	40A
<b>J050</b>	50A	<b>A005</b>	2B	<b>D050</b>	50A
<b>J065</b>	65A	<b>A006</b>	2½B	<b>D065</b>	65A
<b>J080</b>	80A	<b>A007</b>	3B	<b>D080</b>	80A
<b>J100</b>	100A	<b>A008</b>	4B	<b>D100</b>	100A
<b>J125</b>	125A	<b>A009</b>	5B	<b>D125</b>	125A
<b>J150</b>	150A	<b>A010</b>	6B	<b>D150</b>	150A
<b>J200</b>	200A	<b>A011</b>	8B	<b>D200</b>	200A
<b>J250</b>	250A	<b>A012</b>	10B	<b>D250</b>	250A
<b>J300</b>	300A	<b>A013</b>	12B	<b>D300</b>	300A
<b>J350</b>	350A	<b>A014</b>	14B	<b>D350</b>	350A
<b>J400</b>	400A	<b>A015</b>	16B	<b>D400</b>	400A
<b>J450</b>	450A	<b>A016</b>	18B	<b>D450</b>	450A
<b>J500</b>	500A	<b>A017</b>	20B	<b>D500</b>	500A
<b>J600</b>	600A	<b>A018</b>	24B	<b>D600</b>	600A
<b>J700</b>	700A	<b>A019</b>	28B	<b>D700</b>	700A
<b>J800</b>	800A	<b>A020</b>	32B	<b>D800</b>	800A
<b>J000</b>	1,000A	<b>A021</b>	40B	<b>D000</b>	1,000A
<b>XXXX</b>	Other				

**4. Tap nipple**

**A** ½" NPT(M) / 75L and 150L  
**B** ½" NPT(M) / 150L and 150L  
**O** Other  
**N** None

**5. Flange rating**

JIS	ANSI	DIN	
<b>J010</b>	JIS 10K	<b>A010</b> ANSI 150 Lb	<b>P010</b> PN 10
<b>J016</b>	JIS 16K	<b>A020</b> ANSI 300 Lb	<b>P016</b> PN 16
<b>J020</b>	JIS 20K	<b>A030</b> ANSI 600 Lb	<b>P025</b> PN 25
<b>J030</b>	JIS 30K	<b>A040</b> ANSI 900 Lb	<b>P040</b> PN 40
<b>J040</b>	JIS 40K	<b>A050</b> ANSI 1,500 Lb	
<b>J063</b>	JIS 63K	<b>A060</b> ANSI 2,500 Lb	

**6. Material**

**C** A105  
**4** A182 F304  
**Z** Other

**7. Bolt / Nuts material**

**1** B7 / 2H  
**2** B8 / 8  
**O** Other

**8. Gaskets material**

**N** Non Asbestos 1.5T  
**T** Teflon 1.5T  
**S** Spiral wounded 4.5T  
**O** Other

**9. Options 1 (Meter run)**

**1** Flanged  
**2** Welded  
**3** None

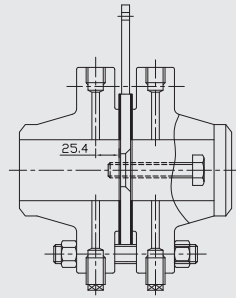
**10. Options 2 (Tab valve)**

**1** Yes  
**2** No

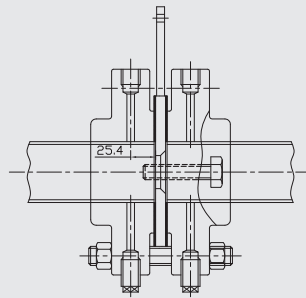
1	2	3	4	5	6	7	8	9	10
F500	W	A011	N	A020	C	1	N	1	1

Sample ordering code

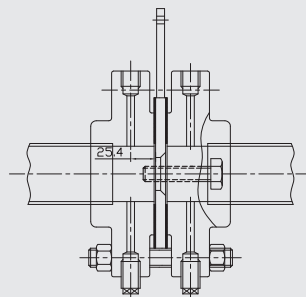
## Dimension



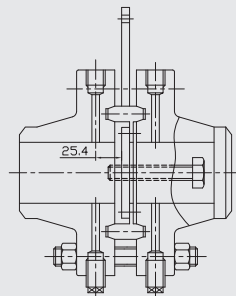
Model : F500-W



Model : F500-S



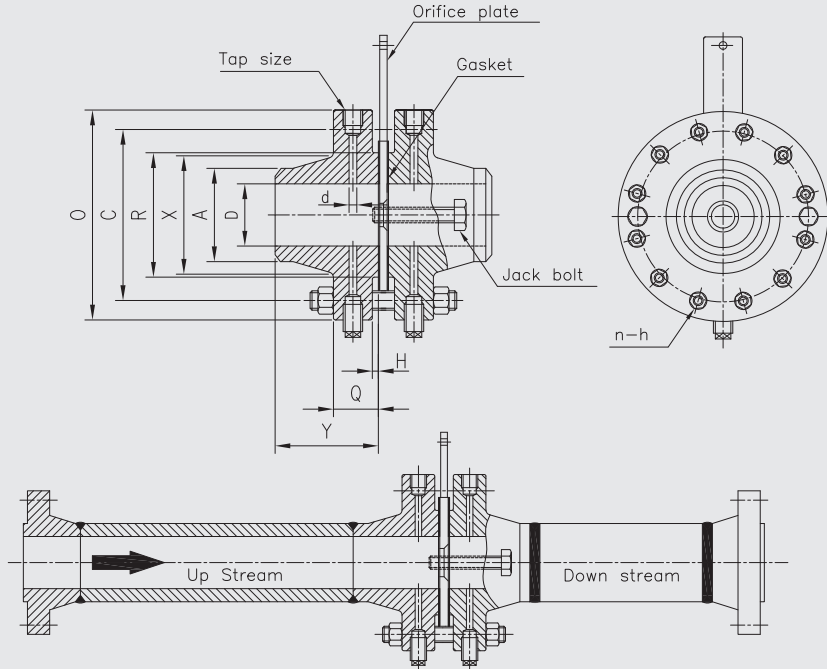
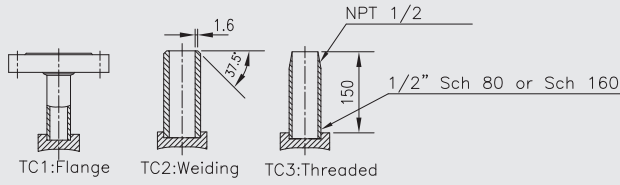
Model : F500-O



Model : F500-J

# Dimension

Option : Tap Connection



For ANSI 300 Flanges

Nominal Pipe Size	Diam of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diam of Hub X	Length Through Hub Y	Pitch Diam of Groove	Depth of Groove E	Diam of Top Holes d	Diam of Bolts Circle C	Number of Bolt	Bolt Size
1-1/2	155	38.1	48.3	69.9	85.9	68.3	6.4	6.4	114.3	4	3/4
2	165	38.1	60.5	84.1	85.9	82.6	7.9	6.4	127.0	8	5/8
2-1/2	191	38.1	73.2	100.1	88.9	101.6	7.9	6.4	149.4	8	3/4
3	210	38.1	88.9	117.3	88.9	123.8	7.9	9.5	168.1	8	3/4
4	254	38.1	114.3	146.1	91.9	149.2	7.9	12.7	200.2	8	3/4
5	279	38.1	141.2	177.8	101.6	181.0	7.9	12.7	235.0	8	3/4
6	318	38.1	168.4	206.2	100.1	211.1	7.9	12.7	269.7	12	3/4
8	381	41.1	219.2	260.4	111.3	269.9	7.9	12.7	330.2	12	8/7
10	445	47.8	273.1	320.5	117.3	323.9	7.9	12.7	387.4	12	1
12	521	50.8	323.9	374.7	130	381.0	7.9	12.7	450.9	16	1-1/8
14	584	53.8	355.6	425.5	142.7	419.1	7.9	12.7	514.4	16	1-1/8

For ANSI 900 Flanges

Nominal Pipe Size	Diam of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diam of Hub X	Length Through Hub Y	Pitch Diam of Groove	Depth of Groove E	Diam of Top Holes d	Diam of Bolts Circle C	Number of Bolt	Bolt Size
1-1/2	178	44.5	48.3	69.9	95.3	68.3	6.4	6.4	124.0	4	1
2	216	44.5	60.5	104.6	108.0	95.3	7.9	6.4	165.1	8	7/8
2-1/2	244	47.5	73.2	124.0	111.1	108.0	7.9	6.4	190.5	8	1
3	241	44.5	88.9	127.0	108.0	123.8	7.9	9.5	190.5	8	7/8
4	292	50.9	114.3	158.8	120.7	149.2	7.9	12.7	235.0	8	1-1/8
5	349	57.2	141.2	190.5	133.4	181.0	7.9	12.7	279.4	8	1-1/4
6	381	62.0	168.4	235.0	146.1	211.1	7.9	12.7	317.5	12	1-1/8
8	470	69.9	219.2	298.5	168.5	269.9	7.9	12.7	393.7	12	1-3/8
10	546	76.3	273.1	368.3	190.6	323.9	7.9	12.7	469.9	16	1-3/8
12	610	85.6	323.9	419.1	206.6	381.0	7.9	12.7	533.4	20	1-3/8
14	641	92.3	355.6	450.9	219.3	419.1	11.1	12.7	568.8	20	1-1/2

For ANSI 600 Flanges

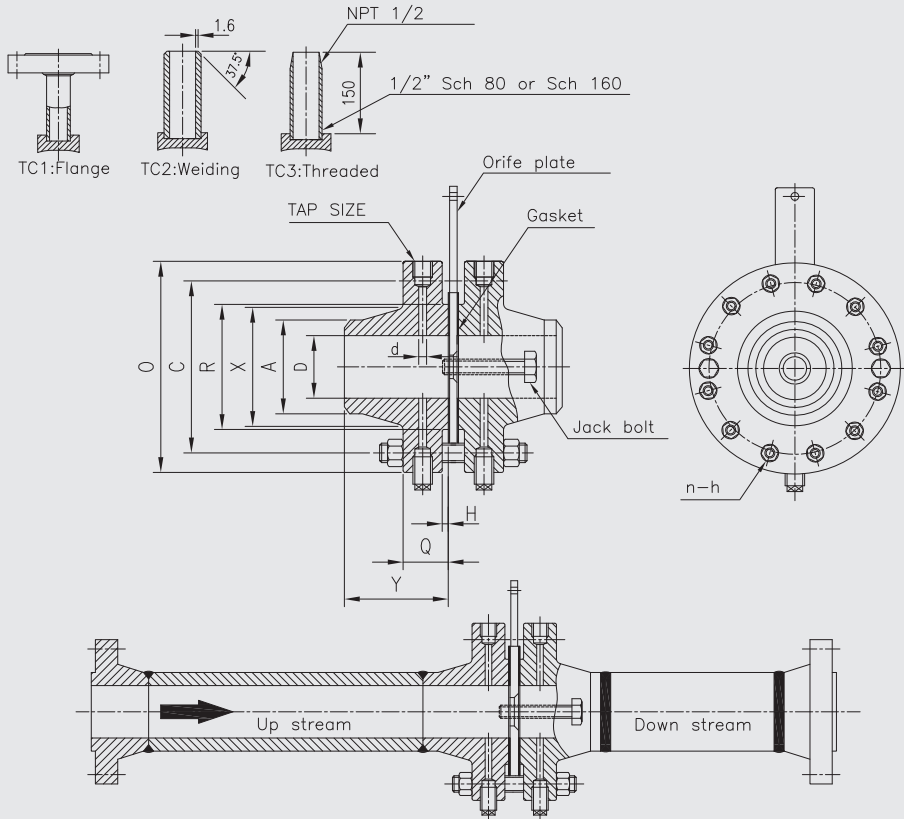
Nominal Pipe Size	Diam of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diam of Hub X	Length Through Hub Y	Pitch Diam of Groove	Depth of Groove E	Diam of Top Holes d	Diam of Bolts Circle C	Number of Bolt	Bolt Size
1-1/2	155	38.1	48.3	69.9	85.9	68.3	6.4	6.4	114.3	4	3/4
2	165	38.1	60.5	84.1	85.9	82.6	7.9	6.4	127.0	8	5/8
2-1/2	191	38.1	73.2	100.1	88.9	101.6	7.9	6.4	149.4	8	3/4
3	210	38.1	88.9	117.3	88.9	123.8	7.9	9.5	168.1	8	3/4
4	273	44.5	114.3	152.4	108.0	149.2	7.9	12.7	215.9	8	7/8
5	330	50.9	141.2	189.0	120.7	181.0	7.9	12.7	266.7	8	1
6	356	54.2	168.4	222.3	123.7	211.1	7.9	12.7	292.1	12	1
8	419	62	219.2	273.1	139.8	269.9	7.9	12.7	349.3	12	1-1/8
10	508	69.9	273.1	342.9	158.8	323.9	7.9	12.7	431.8	16	1-1/4
12	569	72.9	323.9	400.1	161.8	381.0	7.9	12.7	489.0	20	1-1/4
14	603	76.3	355.6	431.8	171.5	419.1	7.9	12.7	527.1	20	1-3/8

For ANSI 1,500 Flanges

Nominal Pipe Size	Diam of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diam of Hub X	Length Through Hub Y	Pitch Diam of Groove	Depth of Groove E	Diam of Top Holes d	Diam of Bolts Circle C	Number of Bolt	Bolt Size
1-1/2	178	44.5	48.3	69.9	95.3	68.3	6.4	6.4	124.0	4	1
2	216	44.5	60.5	104.6	108.0	95.3	7.9	6.4	165.1	8	7/8
2-1/2	244	47.5	73.2	124.0	111.1	108.0	7.9	6.4	190.5	8	1
3	267	54.2	88.9	133.4	123.7	136.5	7.9	9.5	203.2	8	1-1/8
4	311	60.2	114.3	162.1	130.4	161.9	7.9	12.7	241.3	8	1-1/4
5	375	79.6	141.2	196.9	161.8	193.7	7.9	12.7	292.1	8	1-1/2
6	394	89.0	168.4	228.6	177.9	211.1	9.5	12.7	317.5	12	1-3/8
8	483	98.4	219.2	292.1	219.3	269.9	11.1	12.7	393.7	12	1-5/8
10	584	114.4	273.1	368.3	260.4	323.9	11.1	12.7	482.6	12	1-7/8
12	673	130.4	323.9	450.9	288.8	381.0	14.3	12.7	571.5	16	2
14	749	139.8	355.6	495.3	304.9	419.1	15.9	12.7	635.0	16	2-1/4

# Dimension

Option : Tap Connection



For JIS 10K Flanges

For JIS 30K Flanges

Nominal Pipe Size inch/mm	Diom of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diom of Hub X	Length Through Hub Y	Diom of Raised Face F	Height of Raised Face E	Diom of Top Holes d	Diom of Bolt Circle C	Number of Bolt	Bolt Size
1 25	125	38.1	34.0	50	80	70	1	6.4	70	4	M16
1/4 32	135	38.1	42.7	60	80	80	2	6.4	100	4	M16
1/4 40	140	38.1	48.6	66	83	85	2	6.4	105	4	M16
2 50	155	38.1	60.5	80	83	100	2	6.4	120	4	M16
2 65	175	38.1	76.3	98	86	120	2	6.4	140	4	M16
3 80	185	38.1	89.1	112	86	130	2	9.5	150	8	M16
3 90	195	38.1	101.6	122	86	140	2	9.5	160	8	M16
4 100	200	38.1	114.3	132	90	155	2	12.7	175	8	M16
5 125	250	38.1	139.8	160	95	185	2	12.7	210	8	M20
6 150	280	38.1	165.2	190	100	215	2	12.7	240	8	M20
8 200	330	38.1	216.3	238	110	265	2	12.7	290	12	M20
10 250	350	38.1	241.8	264	110	285	2	12.7	310	12	M20
12 300	445	38.1	318.5	346	120	370	3	12.7	400	16	M22
14 350	490	38.1	355.6	386	130	415	3	12.7	445	16	M22
16 400	560	38.1	406.4	442	130	475	3	12.7	510	16	M24

Nominal Pipe Size inch/mm	Diom of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diom of Hub X	Length Through Hub Y	Diom of Raised Face F	Height of Raised Face E	Diom of Top Holes d	Diom of Bolt Circle C	Number of Bolt	Bolt Size
1 25	130	38.1	34.0	54	83	70	1	6.4	95	4	M16
1/4 32	140	38.1	43.1	64	84	80	2	6.4	105	4	M16
1/4 40	160	38.1	49.1	70	86	90	2	6.4	120	4	M20
2 50	165	38.1	61.0	86	86	105	2	6.4	130	8	M16
2 65	200	38.1	76.9	104	90	130	2	6.4	160	8	M20
3 80	210	38.1	89.7	118	90	140	2	9.5	170	8	M20
3 90	230	38.1	102.3	130	90	150	2	9.5	185	8	M22
4 100	240	38.1	115.1	142	92	160	2	12.7	195	8	M22
5 125	275	38.1	140.7	172	102	195	2	12.7	230	8	M22
6 150	325	38.1	166.2	204	102	235	2	12.7	275	12	M24
8 200	370	42	217.5	256	112	280	2	12.7	320	12	M24
10 250	450	48	268.7	314	118	345	2	12.7	390	12	M30
12 300	515	52	320.0	370	130	405	3	12.7	450	16	M30
14 350	560	54	357.2	412	144	450	3	12.7	495	16	M30
16 400	630	60	408.3	468	150	510	3	12.7	560	16	M36

For JIS 16/20K Flanges

For JIS 40K Flanges

Nominal Pipe Size inch/mm	Diom of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diom of Hub X	Length Through Hub Y	Diom of Raised Face F	Height of Raised Face E	Diom of Top Holes d	Diom of Bolt Circle C	Number of Bolt	Bolt Size
1 25	125	38.1	34.0	50	80	70	1	6.4	90	4	M16
1/4 32	135	38.1	42.7	60	80	80	2	6.4	100	4	M16
1/4 40	140	38.1	48.6	66	83	85	2	6.4	105	4	M16
2 50	155	38.1	60.5	80	83	100	2	6.4	120	8	M16
2 65	175	38.1	76.3	98	86	120	2	6.4	140	8	M16
3 80	200	38.1	89.1	112	86	135	2	9.5	160	8	M20
3 90	210	38.1	101.6	124	86	145	2	9.5	170	8	M20
4 100	225	38.1	114.3	138	90	160	2	12.7	185	8	M20
5 125	270	38.1	139.8	170	95	195	2	12.7	225	8	M22
6 150	365	38.1	165.2	202	100	230	2	12.7	260	12	M22
8 200	430	38.1	216.3	252	110	275	2	12.7	305	12	M22
10 250	450	38.1	241.8	312	115	345	2	12.7	380	12	M24
12 300	540	38.1	318.5	364	120	395	3	12.7	430	16	M24
14 350	480	40	355.6	408	132	440	3	12.7	480	16	M30
16 400	605	46	406.4	456	138	495	3	12.7	540	16	M30

Nominal Pipe Size inch/mm	Diom of Flange O	Thickness of Flange Q	D.of Hub of Wedge A	Diom of Hub X	Length Through Hub Y	Diom of Raised Face F	Height of Raised Face E	Diom of Top Holes d	Diom of Bolt Circle C	Number of Bolt	Bolt Size
1 25	130	38.1	34.4	54	83	70	1	6.4	95	4	M16
1/4 32	140	38.1	43.1	64	84	80	2	6.4	105	4	M16
1/4 40	160	38.1	49.1	70	86	90	2	6.4	120	4	M20
2 50	165	38.1	61.0	86	86	105	2	6.4	130	8	M16
2 65	200	38.1	76.9	104	90	130	2	6.4	160	8	M20
3 80	210	38.1	89.7	118	90	140	2	9.5	170	8	M20
3 90	230	38.1	102.3	130	90	150	2	9.5	185	8	M22
4 100	250	38.1	115.1	142	92	160	2	12.7	205	8	M22
5 125	300	40	140.7	192	104	200	2	12.7	250	8	M22
6 150	355	44	166.2	220	108	240	2	12.7	285	12	M30
8 200	405	50	217.5	270	120	290	2	12.7	345	12	M30
10 250	475	56	268.7	330	126	355	2	12.7	410	12	M30
12 300	540	60	320.0	380	138	410	3	12.7	470	16	M36
14 350	585	64	357.2	426	154	455	3	12.7	515	16	M36
16 400	645	70	408.3	476	160	515	3	12.7	570	16	M36

Large empty rectangular box for writing.