

# Orifice plate with ring

## Model : F200

Spec. sheet no. FD02-01

### Description

Orifice ring assemblies are used for flow measurement of smaller or medium sized pipes at lower pressure. Each assembly consists of one orifice plate and two orifice rings. Differential pressure is taken out in a corner tap system. Orifice block, which are of a unit-construction type and provide higher pressure ratings than the orifice ring assemblies, also are available.



### Specification

#### Orifice bore type

Concentric square edged orifice  
Quadrant edged orifice  
Minimum quadrant edged orifice diameter 4.5 mm  
Minimum quadrant edged radius 0.5 mm

#### Flow calculation standards

ISO 5167-1 and 2 2003  
AGA-3  
ASME MFC-3M and 14M  
JIS Z 8762  
BS 1042

#### Flange ratings

JIS 5, 10, 16, and 20K  
ANSI (or JPI) 150 and 300 Lb  
(Note: ANSI and JPI ring dimensions are identical)

#### Pressure taps

Corner taps

#### Plate thickness

3, 6, 9 and 12 mm

#### Tab handle

Welded to orifice plate

#### Pressure tab nipples

Pipe size : 15 mm ( $\frac{1}{2}$  inch), Sch 40 and 80  
Length : 75 and 150 mm  
Tap connections :  $\frac{1}{2}$  PT and  $\frac{1}{2}$  NPT male  
socket welding and butt welding  
flange connection

#### 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 requirements

#### Materials

Ring and pressure tap nipple : 304SS and 316SS  
Plate : 304SS, 316L SS, Monel and other  
Tab handle : 304SS and 316L SS

#### Gaskets

Material : Non-Asbestos and Teflon  
Thickness : 1.5, 2.0 and 3.0 mm

**1. Base model****F200** Orifice plate with ring**2. Type****P2** Orifice plate with ring**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. Bore type**

**C** Concentric edge  
**E** Eccentric  
**Q** Quadrant edge  
**S** Segmental

**5. Flange rating**

JIS	ANSI	DIN
<b>J010</b>	JIS 10K <b>A010</b>	ANSI 150 Lb <b>P010</b>
<b>J016</b>	JIS 16K <b>A020</b>	ANSI 300 Lb <b>P016</b>
<b>J020</b>	JIS 20K <b>A030</b>	ANSI 600 Lb <b>P025</b>
<b>J030</b>	JIS 30K <b>A040</b>	ANSI 900 Lb <b>P040</b>
<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. Plate material**

**4** 304SS  
**6** 316L SS  
**H** Hastelloy-C  
**M** Monel  
**O** Other

**7. Ring material**

**4** 304SS  
**6** 316L SS  
**0** Option

**8. Drain / vent**

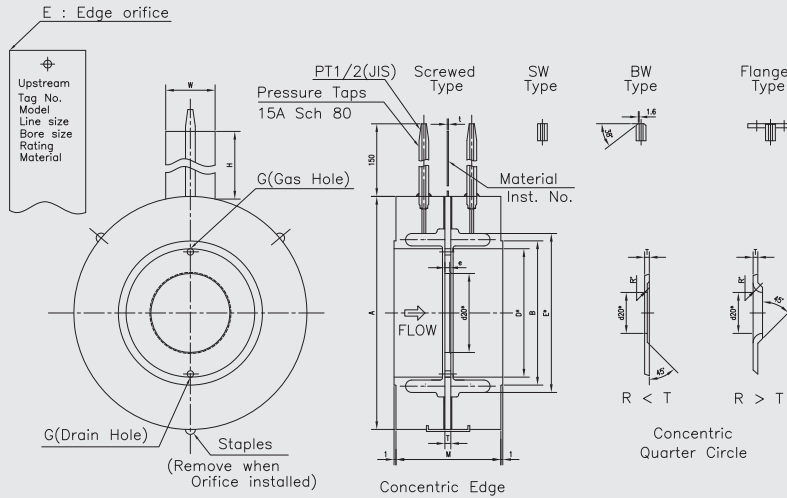
**D** Drain (Not drilled for orifice bores smaller than 25.4 mm)  
**V** Vent (Not drilled for orifice bores smaller than 25.4 mm)  
**N** None

**9. Options**

**1** Nipple (75L + 150L)  
**2** Nipple (150L + 150L)  
**3** Tap valve  
**N** None

1	2	3	4	5	6	7	8	9	Sample ordering code
F200	P2	A005	C	A020	6	4	V	2	

# Dimension



\* d20 : Orifice Dia. AT 20°C : Refer to orifice calculated sheet

D : Inside dia. of ring

E : Inside dia. of gasket

Ring orifices for FOR JIS 5K Flange

UNIT : mm

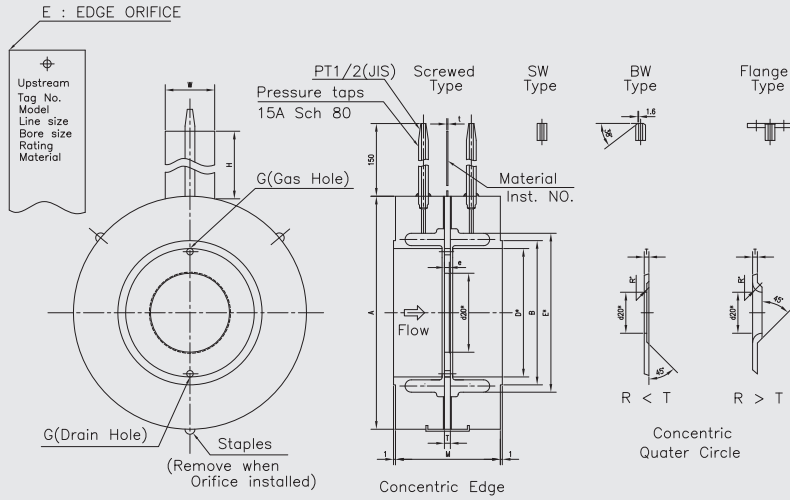
NOMINAL PIPE SIZE	OUTSIDE DIAM. OF RINGS AND PLATE A	DIAM OF GASKET STAY B	THICKNE -SS OF EDGES e	DIAM OF HOLE G	FACE TO FACE M	THICKNE -SS OF PLATE	WIDTH OF TAB HANDLE W	HIGHT OF TAB HANDLE H	THICKNE -SS OF TAB HANDLE t
15	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-
25	65	33	0.2~0.4	-	75	2	25	100	3
32	78	42	0.3~0.5	1.6	75	2	25	100	3
40	83	48	0.3~0.5	1.6	75	2	25	100	3
50	93	60	0.5~0.8	1.6	75	2	25	100	3
65	118	73	0.5~0.8	1.6	75	3	25	100	3
80	129	88	0.5~0.8	1.6	75	3	25	100	3
90	139	101	0.5~0.8	1.6	75	3	25	100	3
100	149	114	0.8~1.2	1.6	75	3	38	100	3
125	184	141	0.8~1.2	1.6	75	3	38	130	3
150	214	168	0.8~1.2	1.6	75	3	38	130	3
175	240	196	1.5~2.0	1.6	76	4	38	130	3
200	260	219	1.5~2.0	1.6	76	4	38	130	3
225	285	246	1.5~2.0	1.6	76	4	38	160	6
250	325	273	e = T	2.0	76	4	38	160	6
300	370	323	e = T	2.5	76	4	38	160	6

Ring orifices for JIS 10K Flange

UNIT : mm

NOMINAL PIPE SIZE	OUTSIDE DIAM. OF RINGS AND PLATE A	DIAM OF GASKET STAY B	THICKNE -SS OF EDGES e	DIAM OF HOLE G	FACE TO FACE M	THICKNE -SS OF PLATE	WIDTH OF TAB HANDLE W	HIGHT OF TAB HANDLE H	THICKNE -SS OF TAB HANDLE t
15	58	21	0.2~0.3	-	75	2	25	100	3
20	63	27	0.2~0.4	-	75	2	25	100	3
25	74	33	0.2~0.4	-	75	2	25	100	3
32	84	42	0.3~0.5	1.6	75	2	25	100	3
40	89	48	0.3~0.5	1.6	75	2	25	100	3
50	104	60	0.5~0.8	1.6	75	2	25	100	3
65	124	73	0.5~0.8	1.6	75	3	25	100	3
80	134	88	0.5~0.8	1.6	75	3	25	100	3
90	144	101	0.5~0.8	1.6	75	3	25	100	3
100	159	114	0.8~1.2	1.6	75	3	38	100	3
125	190	141	0.8~1.2	1.6	75	3	38	130	3
150	220	168	0.8~1.2	1.6	75	3	38	130	3
175	245	196	1.5~2.0	1.6	76	4	38	130	3
200	270	219	1.5~2.0	1.6	76	4	38	130	3
225	290	246	1.5~2.0	1.6	76	4	38	160	6
250	333	273	e = T	2.0	76	4	38	160	6
300	378	323	e = T	2.5	76	4	38	160	6

# Dimension



\* d20 : Orifice Dia.AT 20°C : Refer to orifice calculated sheet

D : Inside dia. of ring

E : Inside dia. of gasket

Ring orifices for JIS 16K 20K Flange

UNIT : mm

Nominal Pipe Size	Outside Dia. of Ring and Plate A	Dia. of Gasket Slay B	Thickness of Edges e	Dia. of Hole G	Face to Face M	Thickness of Flange t	Width of Tab Handle W	Height of Tab Handle H	Thickness of Tab Handle t
15	58	21	0.2~0.3	—	75	2	25	100	3
20	63	27	0.2~0.4	—	75	2	25	100	3
25	74	33	0.2~0.4	—	75	2	25	100	3
32	84	42	0.3~0.5	1.6	75	2	25	100	3
40	89	48	0.3~0.5	1.6	75	2	25	100	3
50	104	60	0.5~0.8	1.6	75	2	25	100	3
65	124	73	0.5~0.8	1.6	75	3	25	100	3
80	140	88	0.5~0.8	1.6	75	3	25	100	3
90	150	101	0.5~0.8	1.6	75	3	25	100	3
100	165	114	0.8~1.2	1.6	75	3	38	100	3
125	203	141	0.8~1.2	1.6	75	3	38	130	3
150	238	168	0.8~1.2	1.6	75	3	38	130	3
200	283	219	1.5~2.0	1.6	76	4	38	130	3
250	356	273	e = T	2.0	76	4	38	130	3
300	406	323	e = T	2.5	76	4	38	160	6

Ring orifices JIS ANSI 150 Lb Flange

UNIT : mm

Nominal Pipe Size	Outside Dia. of Ring and Plate A	Dia. of Gasket Slay B	Thickness of Edge e	Dia. of Hole G	Face to Face M	Thickness of Flange t	Width of Tab Handle W	Height of Tab Handle H	Thickness of Tab Handle t
1/2	—	—	—	—	—	—	—	—	—
3/4	—	—	—	—	—	—	—	—	—
1	66.7	33	0.2~0.4	—	75	2	25	100	3
1 1/4	76.2	42	0.3~0.5	1.6	75	2	25	100	3
1 1/2	85.7	48	0.3~0.5	1.6	75	2	25	100	3
2	104.8	60	0.5~0.8	1.6	75	2	25	100	3
2 1/2	123.8	73	0.5~0.8	1.6	75	3	25	100	3
3	136.5	88	0.5~0.8	1.6	75	3	25	100	3
3 1/2	161.9	101	0.5~0.8	1.6	75	3	25	100	3
4	174.6	114	0.8~1.2	1.6	75	3	38	100	3
5	196.9	141	0.8~1.2	1.6	75	3	38	130	3
6	222.3	168	0.8~1.2	1.6	75	3	38	130	3
8	279.4	219	1.5~2.0	1.6	76	4	38	130	3
10	339.7	273	e = T	2.0	76	4	38	130	3
12	409.6	323	e = T	2.5	76	4	38	160	6