

Orifice plate

Model : F100

Spec. sheet no. **FD01-01**

Description

Orifice plates are widely used for flow measurement as they provide the simplest and the most economical means of flow detection. Orifice plates are available in the concentric type that the round opening (Bore) of the orifice plate is positioned concentrically with the center of the pipe and the opening edge (Bore edge) is available either in the concentric square edge type (Sharp, square edge type) or in the quadrant edge type (Round edge type). Orifice plates are also available in the eccentric type that the opening of the orifice is shifted from the center of the pipe. They also are available in the segmental type that the opening is a circular segment and the orifice is comparable to a partially opened gate valve.



Specification

Orifice bore type

Concentric square edged orifice
Quadrant edged orifice
Eccentric orifice
Segmental orifice

Plate thickness

3, 6, 9 and 12 mm

Tab handle

Welded to orifice plate

Flow calculation standards

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

Plate material

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

Drain and vent hole

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

Flange ratings

JIS 10, 16, 20, 30, 40, and 63K
ANSI class 150, 300, 600, 900, 1,500 and 2,500 Lb

Markings

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

Pressure taps

Flange taps
Corner taps
Vena contract taps
1D and ½D (Radius) taps
Pipe taps (2½D and 8D)

Special markings

Special marking may be furnished to meet special requirement

Orifice plate application summary

| Orifice type | Fluid type | | | | | Nominal line size normally used | |
|----------------------------|---------------|-------|--------|-------|---------|---------------------------------|-------------|
| | Gas and vapor | | Liquid | | | | |
| | Clean | Dirty | Clean | Dirty | Viscous | JIS (mm) | ANSI (inch) |
| Concentric - Square edge | E | X | E | O | X | 40 ~ 1,500 | 1½ ~ 60 |
| Concentric - Quadrant edge | X | X | E | O | E | 40 ~ 250 | 1½ ~ 10 |
| Eccentric - Square edge | O | O | O | E | X | 100 ~ 350 | 4 ~ 14 |
| Segmental - Square edge | O | O | O | E | X | 100 ~ 350 | 4 ~ 14 |

Main order

Ordering information

1. Base model

F100 Orifice plate

2. Type

P1 Orifice plate

3. Line size

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

4. Bore type

C Concentric edge
E Eccentric
Q Quadrant edge
S Segmental

5. Flange rating

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

6. Material

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

7. 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

8. Options

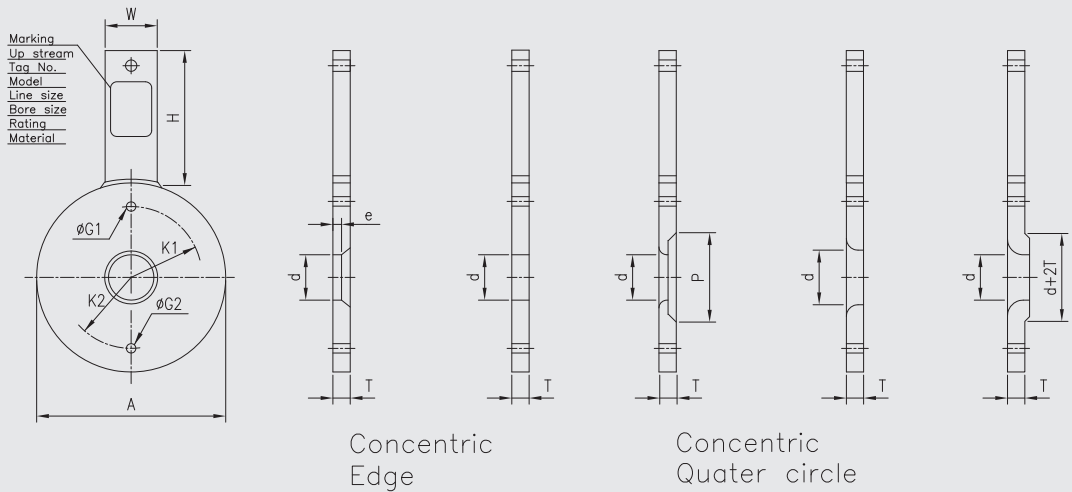
O Other
N None

| | | | | | | | | |
|-------------|-----------|-------------|----------|-------------|----------|----------|----------|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Sample ordering code |
| F100 | P1 | J150 | C | J020 | 6 | D | O | |



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Dimension



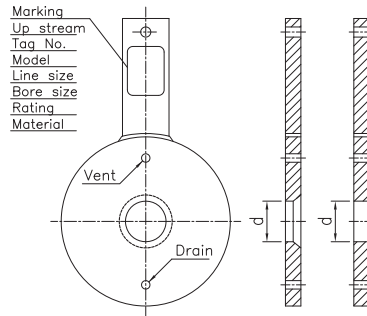
* d, K1, K2, G1, G2 : Refer to Specification Sheet

unit : mm

| Nominal Dia | Plate O.D.A | | | | | | Plate THK' T | Edge e | Tap Handle | |
|-------------|-------------|-------|-------|-------|-------|-------|--------------|--------|------------|-----|
| | 150# | 300# | 600# | 900# | 1500# | 2500# | | | W | H |
| 1/2B | 47.8 | 53.8 | 53.8 | 63.6 | 63.6 | 69.9 | 3.0 | — | 25 | 95 |
| 3/4B | 57.3 | 66.7 | 66.7 | 69.9 | 69.9 | 76.3 | 3.0 | — | 25 | 95 |
| 1B | 66.5 | 73.0 | 73.0 | 79.4 | 79.4 | 85.8 | 3.0 | 0.5 | 25 | 95 |
| 1-1/2B | 85.8 | 95.3 | 95.3 | 98.6 | 98.6 | 117.5 | 3.0 | 0.5 | 25 | 95 |
| 2B | 104.6 | 111.1 | 111.1 | 142.8 | 142.8 | 146.1 | 3.0 | 0.5 | 25 | 95 |
| 2-1/2B | 123.6 | 130.4 | 130.4 | 165.1 | 165.1 | 168.3 | 3.0 | 0.5 | 25 | 95 |
| 3B | 136.6 | 149.1 | 149.1 | 168.3 | 174.6 | 196.9 | 3.0 | 1.0 | 25 | 95 |
| 4B | 174.6 | 181.0 | 193.7 | 206.4 | 209.6 | 235.0 | 3.0 | 1.0 | 38 | 120 |
| 5B | 197.0 | 216.0 | 241.5 | 247.7 | 260.4 | 279.5 | 3.0 | 1.5 | 38 | 120 |
| 6B | 222.5 | 250.7 | 266.7 | 288.9 | 282.6 | 317.5 | 3.0 | 1.5 | 38 | 120 |
| 8B | 279.5 | 308.0 | 320.7 | 358.8 | 352.4 | 387.4 | 3.0 | 1.5 | 38 | 120 |
| 10B | 339.8 | 361.9 | 400.1 | 435.0 | 435.0 | 476.5 | 6.0 | — | 38 | 140 |
| 12B | 409.8 | 422.3 | 457.3 | 498.5 | 520.7 | 549.5 | 6.0 | — | 38 | 140 |
| 14B | 450.6 | 485.8 | 492.2 | 520.0 | 577.9 | — | 6.0 | — | 38 | 140 |
| 16B | 514.1 | 539.8 | 565.2 | 574.7 | 641.4 | — | 6.0 | — | 38 | 160 |
| 18B | 549.4 | 597.0 | 612.8 | 637.9 | 704.9 | — | 9.0 | — | 38 | 160 |
| 20B | 606.4 | 654.1 | 682.6 | 698.5 | 755.7 | — | 9.0 | — | 38 | 190 |
| 22B | 660.5 | 704.9 | 733.5 | — | — | — | 9.0 | — | 38 | 190 |
| 24B | 617.8 | 774.7 | 790.6 | 838.2 | 901.7 | — | 9.0 | — | 38 | 190 |

Concentric orifice plate

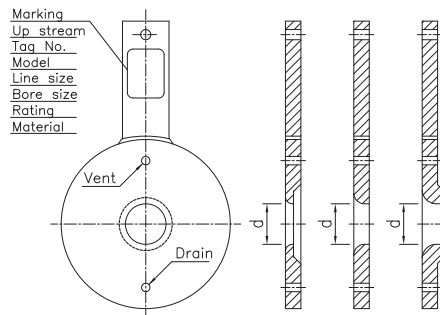
Simple-structured with high precision, this orifice plate can be easily mounted and dismantled. In strict conformance with applicable standards, it is precisely finished to have required shape, size, surface, roughness and flatness. For differential pressure measurement, it is combined with flange taps, vena contract taps or corner taps.



Quadrant edge orifice plate

The inlet edge of the bore of this orifice plate is rounded with a radius of a quarter circle. This orifice plate is principally used for measuring flow rates of low Reynolds numbers.

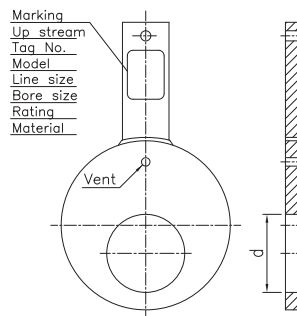
Flange taps or corner taps are used.



Eccentric orifice plate

For liquids containing solid particles that are liable to settle, or for vapors liable to deposit water condensate, this orifice plate is installed with its eccentric bore bottom flush with the bore bottom of the piping, so that the sedimentation of such inclusions is avoided. Likewise, for gases or vapors, it may be installed with its eccentric bore top flush with the bore top of the piping to avoid the stay of gas or vapor in its vicinity.

Flange taps or vena contract taps are used with.



Segmental orifice plate

The vertical section of the bore of this orifice plate is a semicircle to perform the same function as the eccentric orifice plate. Used for the similar purposes. Flange taps or vena contract taps are employed to take out fluid pressures.

