

**DIFFERENTIAL PRESSURE DEVICE**
**ORIFICE PLATE WITH CARRIER RINGS**
**DATA SHEET**
**FVA**

This orifice plate is widely used for measuring liquid, steam, and gas in low or medium pressure, lines. Tapping of differential pressure is done by corner tap method with differential pressure tapping rings having CARRIER RINGS. One set is composed of differential pressure tapping rings, an orifice plate, and a gasket. CARRIER RINGS are installed to average the differential pressure inside the rings.


**SPECIFICATIONS**

Type: Corner taps

Calculation standard:

According to JIS Z 8762-2:2007  
(ISO 5167-2:2003)

Nominal pipe size: 25A to 300A

These orifice plates with CARRIER RINGS can be supplied for nominal pipe sizes up to 1000A. Type FVB orifice plate is recommended for sizes 400A and above.

Materials of main elements:

Ring; SS400, SF440A, SUS304, SUS316 or PVC

Orifice plate; SUS304, SUS316 or PVC

Differential pressure tapping pipe;  
STPG370, SUS304 or  
SUS316

Differential pressure outlet flange;  
SS400, SF440A, SUS304 or  
SUS316

Gasket: Valqua (Refer to table 1)

Mount direction: Horizontal

Vertical (Down to up)

Vertical (Up to down)

Please specify in the specification sheet.

Connection method:

Connection flange;  
JIS 5, 10, 20, 30K  
ANSI 150, 300, 400Lb

Use single-part orifice plate (type FVE) for flange standard of JIS 40K, ANSI 600Lb or higher.

Operating conditions:

Max. pressure; 3Mpa {30.59kgf/cm<sup>2</sup>} or less

Temperature range; -10 to 300°C  
(depends on the kind of fluid)

Differential pressure outlet size:

R1/2

JIS 15A welded type

Flange standard; JIS 5K 15A RF

JIS 10K 15A RF

JIS 20K 15A RF

JIS 30K 15A RF

<Table 1 >

| Type                             | Application                  | Rating (about) |
|----------------------------------|------------------------------|----------------|
| No. 6500AC<br>(Non-asbestos)     | General use                  | 3MPa, 100°C    |
| No. 7020<br>(Teflon)             | For no oil treatment         | 1.5MPa, 200°C  |
| No. GF300<br>(Graphite compound) | For high temp. high press. * | 3MPa, 230°C    |
| No. 6590T<br>(Pure graphite)     | For high temp. high press. * | 20MPa, 400°C   |

\*Non-standard

## CODE SYMBOLS

Notes:

(1) Combination of orifice plates and rings

|      |   | Orifice plate |   |   |
|------|---|---------------|---|---|
|      |   | S             | W | V |
| Ring | E | ○             | ○ | × |
|      | F | ○             | ○ | × |
|      | S | ○             | ○ | × |
|      | W | ×             | ○ | × |
|      | V | ×             | ○ | ○ |

(2) With ring material SS400:

Pressure rating for (pipe) flange  $\leq 10K$ Working temperature  $\leq 300^{\circ}\text{C}$ 

(3) With ring material PVC:

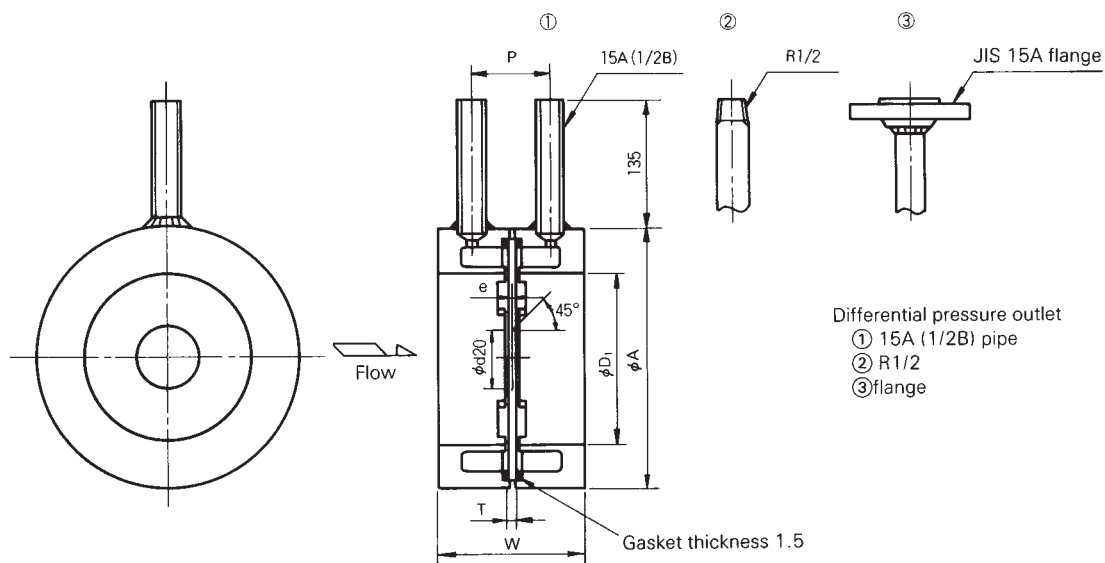
Working pressure  $\leq 2K$ Working temperature  $\leq 50^{\circ}\text{C}$ 

(4) Designate material SUS304 or SUS316  
(code S or W) for orifice plates and rings  
in case of "No oil treatment".

|                          |   |   |   |   |   |   |   |      |    |    |    |                  |                                          |                                                |
|--------------------------|---|---|---|---|---|---|---|------|----|----|----|------------------|------------------------------------------|------------------------------------------------|
| 1                        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9    | 10 | 11 | 12 | 13               | Description                              |                                                |
| F                        | V | A |   |   |   |   | 2 | 0    |    |    |    |                  | Nominal pipe diameter (A)                |                                                |
| 0 0 2 5<br>to<br>0 3 0 0 |   |   |   |   |   |   |   | }    |    |    |    |                  | Enter pipe diameter in 4th to 7th digits |                                                |
|                          |   |   |   |   |   |   |   | 0    |    |    |    |                  | Application<br>General use               |                                                |
|                          |   |   |   |   |   |   |   | S    |    |    |    |                  | Material of orifice plate<br>SUS304      |                                                |
|                          |   |   |   |   |   |   |   | W    |    |    |    |                  | SUS316                                   |                                                |
|                          |   |   |   |   |   |   |   | (3)V |    |    |    |                  | PVC                                      |                                                |
|                          |   |   |   |   |   |   |   |      |    |    |    | Material of ring |                                          | Material of differential pressure tapping pipe |
|                          |   |   |   |   |   |   |   | (2)E |    |    |    |                  | SS400                                    | STPG                                           |
|                          |   |   |   |   |   |   |   | F    |    |    |    |                  | SF440A                                   | STPG                                           |
|                          |   |   |   |   |   |   |   | S    |    |    |    |                  | SUS304                                   | SUS304                                         |
|                          |   |   |   |   |   |   |   | W    |    |    |    |                  | SUS316                                   | SUS316                                         |
|                          |   |   |   |   |   |   |   | (3)V |    |    |    |                  | PVC                                      | PVC                                            |
|                          |   |   |   |   |   |   |   |      |    |    |    | Flange standard  |                                          |                                                |
|                          |   |   |   |   |   |   |   | P    |    |    |    |                  | JIS 5K                                   |                                                |
|                          |   |   |   |   |   |   |   | J    |    |    |    |                  | JIS 10K                                  |                                                |
|                          |   |   |   |   |   |   |   | K    |    |    |    |                  | JIS 20K                                  |                                                |
|                          |   |   |   |   |   |   |   | L    |    |    |    |                  | JIS 30K                                  |                                                |
|                          |   |   |   |   |   |   |   | A    |    |    |    |                  | ANSI 150Lb                               |                                                |
|                          |   |   |   |   |   |   |   | B    |    |    |    |                  | ANSI 300Lb                               |                                                |
|                          |   |   |   |   |   |   |   | C    |    |    |    |                  | ANSI 400Lb                               |                                                |
|                          |   |   |   |   |   |   |   | Z    |    |    |    |                  | Other flange standard                    |                                                |
|                          |   |   |   |   |   |   |   |      |    |    |    | Treatment        |                                          | Differential pressure outlet size              |
|                          |   |   |   |   |   |   |   | Y    |    |    |    |                  | None                                     | R1/2                                           |
|                          |   |   |   |   |   |   |   | B    |    |    |    |                  | None                                     | φ21.7mm welded type                            |
|                          |   |   |   |   |   |   |   | D    |    |    |    |                  | None                                     | Flange JIS 5K (SS400)                          |
|                          |   |   |   |   |   |   |   | E    |    |    |    |                  | None                                     | Flange JIS 10K (SS400)                         |
|                          |   |   |   |   |   |   |   | F    |    |    |    |                  | None                                     | Flange JIS 20K (SS400)                         |
|                          |   |   |   |   |   |   |   | G    |    |    |    |                  | None                                     | Flange JIS 30K (SS400)                         |
|                          |   |   |   |   |   |   |   | H    |    |    |    |                  | None                                     | Flange JIS 5K (SF440A)                         |
|                          |   |   |   |   |   |   |   | J    |    |    |    |                  | None                                     | Flange JIS 10K (SF440A)                        |
|                          |   |   |   |   |   |   |   | K    |    |    |    |                  | None                                     | Flange JIS 20K (SF440A)                        |
|                          |   |   |   |   |   |   |   | L    |    |    |    |                  | None                                     | Flange JIS 30K (SF440A)                        |
|                          |   |   |   |   |   |   |   | M    |    |    |    |                  | None                                     | Flange JIS 5K (SUS304)                         |
|                          |   |   |   |   |   |   |   | N    |    |    |    |                  | None                                     | Flange JIS 10K (SUS304)                        |
|                          |   |   |   |   |   |   |   | P    |    |    |    |                  | None                                     | Flange JIS 20K (SUS304)                        |
|                          |   |   |   |   |   |   |   | Q    |    |    |    |                  | None                                     | Flange JIS 30K (SUS304)                        |
|                          |   |   |   |   |   |   |   | R    |    |    |    |                  | None                                     | Flange JIS 5K (SUS316)                         |
|                          |   |   |   |   |   |   |   | S    |    |    |    |                  | None                                     | Flange JIS 10K (SUS316)                        |
|                          |   |   |   |   |   |   |   | T    |    |    |    |                  | None                                     | Flange JIS 20K (SUS316)                        |
|                          |   |   |   |   |   |   |   | U    |    |    |    |                  | None                                     | Flange JIS 30K (SUS316)                        |
|                          |   |   |   |   |   |   |   | (4)A |    |    |    |                  | No oil treatment                         | R 1/2                                          |
|                          |   |   |   |   |   |   |   | V    |    |    |    |                  | No oil treatment                         | Flange JIS 5K (SUS304)                         |
|                          |   |   |   |   |   |   |   | W    |    |    |    |                  | No oil treatment                         | Flange JIS 10K (SUS304)                        |
|                          |   |   |   |   |   |   |   | X    |    |    |    |                  | No oil treatment                         | Flange JIS 20K (SUS304)                        |
|                          |   |   |   |   |   |   |   | C    |    |    |    |                  | No oil treatment                         | Flange JIS 30K (SUS304)                        |

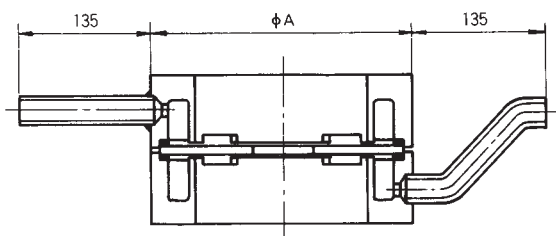
### OUTLINE DIAGRAM (Unit: mm)

Horizontal mount.



Notes\*: (1)  $\phi d_{20}$  is orifice diameter at 20°C.  
(refer to orifice calculation sheet for details.)  
(2)  $\phi D_1$  is inside diameter of ring.  
(3) Piping with nominal size of more than 250A is not chamfered.  
(4) When differential pressure outlet is flange type, it is necessary to make piping so that outlets are not in same direction.

Vertical mount.



| Nominal pipe diameter (A) | ΦA  |     |     |     | e       | W  | T | P  |
|---------------------------|-----|-----|-----|-----|---------|----|---|----|
|                           | 5K  | 10K | 20K | 30K |         |    |   |    |
| 25                        | 63  | 71  | 71  | 76  | 0.2~0.4 | 65 | 2 | 33 |
| 32                        | 75  | 81  | 81  | 86  | 0.3~0.5 | 65 | 2 | 33 |
| 40                        | 80  | 86  | 86  | 97  | 0.3~0.5 | 65 | 2 | 33 |
| 50                        | 90  | 101 | 101 | 111 | 0.5~0.8 | 65 | 2 | 33 |
| 65                        | 115 | 121 | 121 | 137 | 0.5~0.8 | 66 | 3 | 34 |
| 80                        | 126 | 131 | 137 | 147 | 0.5~0.8 | 66 | 3 | 34 |
| 90                        | 136 | 141 | 147 | 160 | 0.5~0.8 | 66 | 3 | 34 |
| 100                       | 146 | 156 | 162 | 170 | 0.8~1.2 | 66 | 3 | 34 |
| 125                       | 181 | 187 | 200 | 205 | 0.8~1.2 | 66 | 3 | 34 |
| 150                       | 211 | 217 | 235 | 248 | 0.8~1.2 | 66 | 3 | 34 |
| 200                       | 257 | 267 | 280 | 293 | 1.5~2.0 | 67 | 4 | 35 |
| 250                       | 322 | 330 | 353 | 357 | 4       | 67 | 4 | 35 |
| 300                       | 367 | 375 | 403 | 417 | 4       | 67 | 4 | 35 |

## ORDERING INFORMATION

1. Code symbols
2. Kind, composition and density of fluid
3. Temperature, pressure, relative humidity and viscosity (heat insulation index for gas) of fluid
4. Flow rate (maximum, normal, minimum)
5. Instrument scale
6. Inside diameter (measured value) and material of piping
7. Type and maximum differential pressure (for existing instrument) of transmitter to be connected
8. Size of pipe flange for insertion of orifice
9. Permanent pressure loss and other restricted items

(When ordering, please specify the above items in the specification sheet.)

⚠ Caution on Safety

\*Before using this product, be sure to read its instruction manual.

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