# SD14 Balanced Flow Meter



## 1. Product Features

■ High accuracy

Multi hole balanced flow sensor is actually a flow rectifier, can effectively eliminate swirl and distorted velocity distribution improvements, the ideal state of the flow field approximation, the conventional measure for level 0.5, high accuracy measurement for level 0.2.

■ High turn down ratio

Multi hole balanced flow sensor is a with multi holes, select the appropriate equivalent diameter ratio, favor the lower limit of the flow also give consideration to the upper limit flow ,making the conventional measure flow turndown ratio of 10:1, if appropriate parameter selection, turndown ratio can be raised to 20: 1 ~ 30:1

■ Low requirement for straight pipe

Balanced flow sensor can adjust the flow stable and pressure recovery 2 times faster than conventional orifice throttling device, greatly reducing the requirement for straight pipe. Lower straight pipe section can be as small in most cases 0.5D ~ 2D, a balanced flow meter can save a lot of straight pipe sections, in particular pipe with expensive special materials.

■ Low Pressure loss

Balanced flow meter multi hole symmetrical design reduces the formation of vortices and turbulence of friction, reducing the kinetic energy loss. In the same working condition without reducing the differential pressure, balance flow meter can reduce 1/2~1/3 permanent pressure loss comparing with the conventional throttle device to reduce the cost.

■ Good repeatability and long-term stability

Balanced flow sensor with stable flow to improved repeatability up 0.1%.

Balanced flow meter multiple circulation holes dispersed by force, no acute wear, its β value of long-term unchanged to maintain stability, the whole instrument with no moving parts , extend the service life of 5 to 10 times faster than conventional throttling device .

■ Not easy to block by dirty

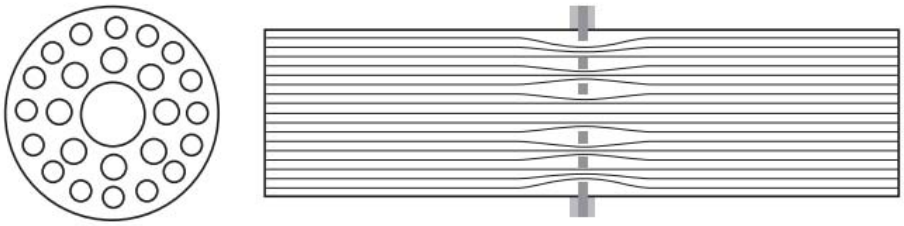
Porous symmetrical balanced design reduces the formation of vortex turbulent shear force fit , thereby greatly reducing the formation of dead zone residence , dirty media to ensure a plurality of holes pass , reducing the chance of fluid holes are blocked .

■ Wide application range

Working temperature and pressure of balanced flow sensor is decided by pipe and flange material, it can reach to 800 ℃, 42MPa or higher temperature, pressure medium. Suitable for cryogenic fluid LNG \ liquid air , liquid ammonia , liquid oxygen, liquid fluoride , liquefied ethylene, liquid hydrogen , chlorine , etc., can effectively prevent vaporization , measuring good effect.

## 2. Work principle

Balanced flow sensor is a porous flow restrictor disc rectifier mounted on the pipe cross-section , each hole size and distribution -based formula and unique custom test data , as a function of the hole . When the fluid passes through the hole of the disk function , fluid balance to be adjusted , the eddy current is minimized , the velocity distribution has a certain regularity is formed fully developed turbulent flow can be obtained by taking a stable differential pressure signal apparatus according to Bernoulli Lee volume flow equation , mass flow.

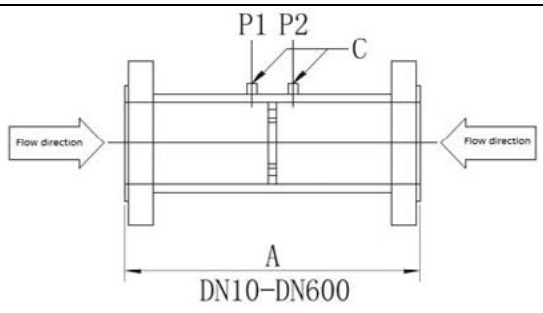


## 3. Parameters

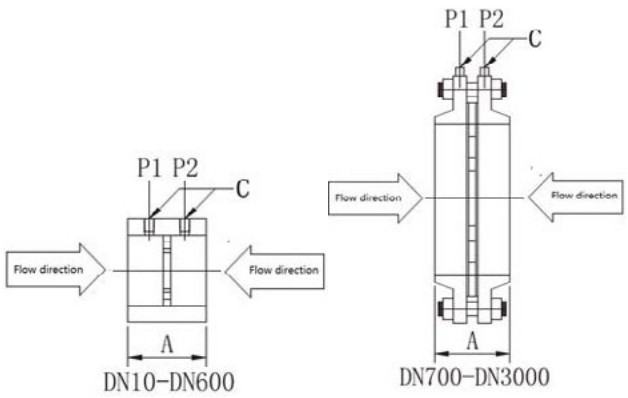
| | | |
|---|---|---|
| Medium | Gas, steam | Liquid |
| Accuracy | ±0.5%,±1.0% | ±0.3%,±0.5 % |
| Repeatability | 0.2% | 0.1% |
| Size | DN10~DN3000 | |
| Turn Down Ratio | ⩾ 10:1 | |
| Working Pressure | ⩽42Mpa | |
| Medium Temperature | ≤800 ℃ | |
| Straight Pipe Requirement | Upstream 2D, Downstream 2D | |

## 4. Balanced Flow meter size

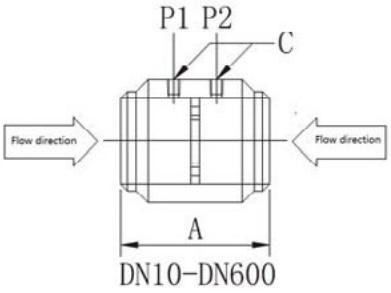
**Normal Tapping**




Flange Type




Wafer Type

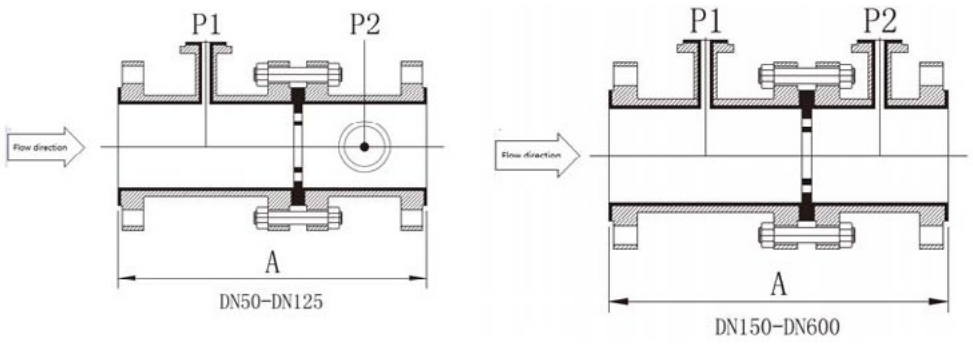



Direct Welding

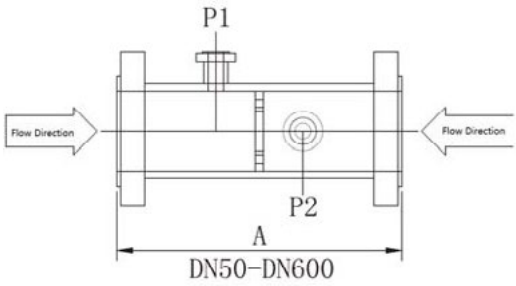
| Size | Flange | Wafer | Direct Welding | Pressure tapping c |
|---|---|---|---|---|
| DN (mm) | A (mm) | A (mm) | A (mm) | NPT(IN) |
| 10 | 226 | 100 | 150 | 1/4 |
| 15 | 226 | 100 | 150 | 1/4 |
| 20 | 226 | 100 | 150 | 1/4 |
| 25 | 226 | 100 | 150 | 1/4 |
| 32 | 226 | 100 | 150 | 1/4 |
| 40 | 226 | 100 | 150 | 1/4 |
| 50 | 226 | 100 | 150 | 1/2 |
| 65 | 290 | 100 | 150 | 1/2 |
| 80 | 290 | 100 | 150 | 1/2 |
| 100 | 290 | 120 | 180 | 1/2 |
| 125 | 310 | 120 | 180 | 1/2 |
| 150 | 310 | 120 | 180 | 1/2 |
| 200 | 314 | 120 | 180 | 1/2 |
| 250 | 354 | 120 | 180 | 1/2 |
| 300 | 394 | 120 | 180 | 1/2 |
| 350 | 394 | 120 | 210 | 1/2 |
| 400 | 428 | 120 | 210 | 1/2 |
| 450 | 458 | 120 | 210 | 1/2 |
| 500 | 488 | 120 | 210 | 1/2 |
| 600 | 558 | 120 | 210 | 1/2 |
| 700 | | 216 | | |
| 800 | | 226 | | |
| 900 | | 236 | | |

| | | | | |
|---|---|---|---|---|
| 1000 | | 256 | | |
| 1100 | | 246 | | |
| 1200 | | 246 | | |
| 1400 | | 266 | | |
| 1600 | | 276 | | |
| 1800 | | 296 | | |
| 2000 | | 236 | | |
| 2200 | | 246 | | |
| 2400 | | 266 | | |
| 2600 | | 276 | | |
| 2800 | | 286 | | |
| 3000 | | 296 | | |

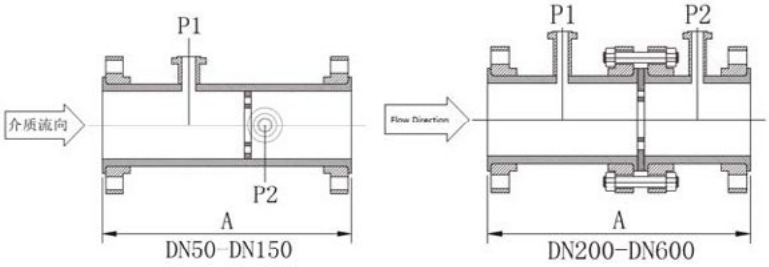
**1.2 Flange Tapping**




Note: Angle flange between two tapping flanges is 90°
Anti-corrosion Type



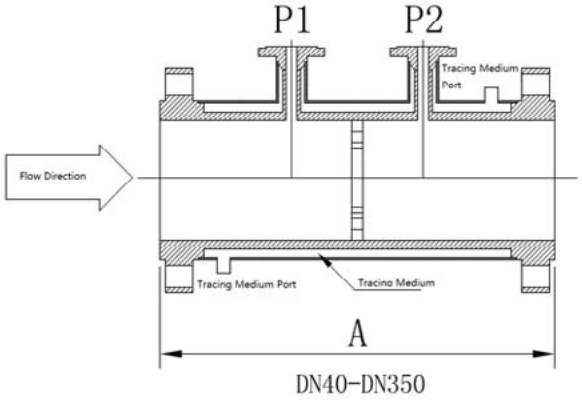

Note: Angle flange between two tapping flanges is 90°
Flange tapping




Note: Angle flange between two tapping flanges is 90°
Special Material of Double flange

| Size | Flange tapping | Special Material of Double flange | Anti-corrosion | Tapping Flange |
|---|---|---|---|---|
| DN(mm) | A (mm) | A (mm) | A (mm) | DN(IN) |
| 50 | 340 | 311 | 376 | 2 |
| 65 | 340 | 362 | 376 | 2 |
| 80 | 340 | 388 | 376 | 2 |
| 100 | 420 | 422 | 404 | 2 |
| 125 | 420 | 432 | 462 | 2 |
| 150 | 420 | 473 | 500 | 2 |
| 200 | 420 | 552 | 595 | 2 |
| 250 | 420 | 631 | 716 | 2 |
| 300 | 420 | 714 | 834 | 2 |
| 350 | 420 | 785 | 912 | 2 |
| 400 | 420 | 864 | 1020 | 2 |
| 450 | 450 | 945 | 1130 | 2 |
| 500 | 500 | 1026 | 1235 | 2 |
| 600 | 600 | 1184 | 1455 | 2 |
| 700 | | | 1360 | |
| 800 | | | 1510 | |
| 900 | | | 1660 | |
| 1000 | | | 1870 | |

**Heating Jacket**

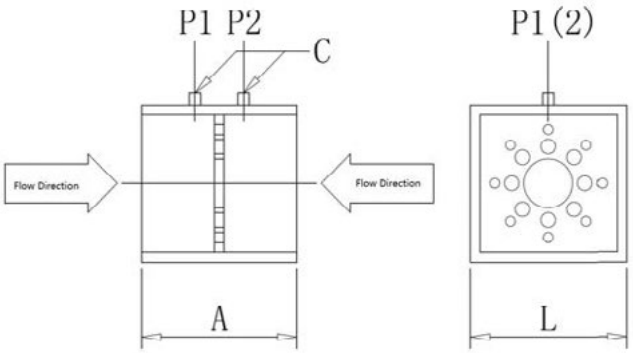



Heating Jacket Type

| Size | Heating Jacket | Tapping Flange |
|---|---|---|
| DN(mm) | A (mm) | DN(IN) |
| 40 | 336 | 1 |
| 50 | 366 | 1 |
| 80 | 484 | 2 |

| | | |
|---|---|---|
| 100 | 541 | 2 |
| 150 | 632 | 2 |
| 200 | 745 | 2 |
| 250 | 834 | 2 |
| 300 | 948 | 2 |
| 350 | 1034 | 2 |

**Square Tube Tapping**




| Side length of square tube | Length of square tube | Tapping point C |
|---|---|---|
| L(mm) | A (mm) | NPT (IN) |
| 200 | 254 | 1/2 |
| 250 | 254 | 1/2 |
| 300 | 254 | 1/2 |
| 350 | 254 | 1/2 |
| 400 | 254 | 1/2 |
| 450 | 254 | 1/2 |
| 500 | 254 | 1/2 |
| 550 | 254 | 1/2 |
| 600 | 254 | 1/2 |
| 700 | 254 | 1/2 |
| 800 | 254 | 1/2 |
| 900 | 254 | 1/2 |
| 1000 | 508 | 1/2 |
| 1200 | 508 | 1/2 |
| 1400 | 508 | 1/2 |
| 1600 | 508 | 1/2 |
| 1800 | 508 | 1/2 |

| | | |
|---|---|---|
| 2000 | 508 | 1/2 |
| 2200 | 508 | 1/2 |
| 2400 | 508 | 1/2 |
| 2600 | 508 | 1/2 |
| 2800 | 508 | 1/2 |
| 3000 | 508 | 1/2 |



## 5. Model Selection

| Item | Code | Description |
|---|---|---|
| Product | SD14 | Balanced Flow Meter |
| Mounting | W | Wafer type |
| | F | Flange type |
| | H | Direct Welding |
| | FF | Flange Taping |
| | FT | Special Material of Double flange |
| | FS | Anti-corrosion Type |
| | FV | Heating Jacket |
| | J | Square Tube Type |
| | S | Integral Installation Type |
| | Z | Others |
| Size | xxx | For example, 150 stands for DN150 |
| Housing Material | A | Carbon Steel |
| | B | 304 Stainless steel |
| | C | 316L stainless steel |
| | D | High temperature alloy |
| | E | PTFE lined carbon steel |
| | Z | Others |
| Sensor Material | A | 304 Stainless steel |
| | B | 316L stainless steel |
| | C | HC-276 |
| | D | Monel 400 |
| | E | Inconel635 |
| | Z | Others |
| Pressure Rating | 1 | PN0.6 |
| | 2 | PN1.0 |
| | 3 | PN1.6 |
| | 4 | PN2.5 |
| | 5 | PN4 |
| | 6 | PN6.4 |
| | 7 | PN10 |
| | 8 | PN16 |

| | | |
|---|---|---|
| | 9 | PN25 |
| | A1 | CL150(ANSI/ASME) |
| | A2 | CL300(ANSI/ASME) |
| | A3 | CL600(ANSI/ASME) |
| | A4 | CL900(ANSI/ASME) |
| | A5 | CL1500(ANSI/ASME) |
| | Z | Others |
| Tapping Type | A | NPT (Thread type) |
| | B | PSW (Direct Welding) |
| | C | 1” Flange |
| | D | 2” Flange |
| | Z | Others |
| Accessories | P | Differential Pressure Transmitter |
| | E | Companion Flanges (bolts, nuts, gasket included) |
| | F | Siphon |
| | G | 3-way manifold |

Note:

1. Wafer type with NPT thread tapping: DN10~DN40,C=1/4”,DN50~DN3000,C=1/2”
2. Only Flange tapping available for heating jack type, DN40~DN50 1” Flange, DN80~DN350 2” flange.