Datasheet

FLOW MEASUREMENT

FLANGE TAPS FLOWMETER (1"/1")

KEY DATA

- Pre-assembled complete set orifice plate mounted between orifice flanges or monoblock (orifice carrier) version
- Orifice plate design according to ISO5167-1 & ISO5167-2, ASME.MFC.3M or ISO/TR 15377 standards
- Recommended for gas, liquid or steam
- Accuracy : from 0,5% of the max flowrate
- Repeatability of measurement : 0,1%

Flange tap flowmeter :
orifice plate and orifice flanges

BENEFITS

- Cost-effective measurement system : low installation cost and maintenance-free
- Very long life-time product, no drift over time
- Standardized principle : reliability and accuracy of measurement, no need of calibration
- Easy and quick installation and commissioning
- Easily interchangeable measuring element
- Different types of orifices available depending on the applications
- Use for custody transfer metering

Deltafluid
MEASURING UP TO YOUR EXPECTATIONS

Flange pressure taps (1''/1'') integrated in the flanges (orifice flanges) are widely used for the design of 25/25 flowmeters. 1''/1'' flowmeters are also available in monoblock (orifice carrier) version.

STANDARDS

- ISO 5167-1 & ISO 5167-2
- ASME.MFC.3M
- ISO/TR 15377
- Pressure Equipment Directive PED 2014/68/UE

TECHNICAL CHARACTERISTICS

- Fluid temperature (1) : cryogenic to +800°C
- Fluid type : gas, steam, monophasic liquid
- Measuring element : simple plate (sharp-edge, quarter circle, segmental, conditioning) or monoblock (orifice carrier) - see on page 3

  According to the standard, conical entrance and eccentric orifice plate cannot be mounted with flange pressure taps.
- Plate materials (2) : carbon steel, stainless steel, monel, hastelloy, inconel, duplex, super duplex, titanium, tantalum, PVC, PTFE...
- Face types : RF, RTJ, large male/female face, tongue/groove face
- Flange materials : carbon steel (ASTM A105, A350LF2 or other to be specified), stainless steel, monel, hastelloy, duplex, super-duplex...

  » The flange material can be different from the orifice plate material «
- Flange types : orifice flanges according to ASME B16.36 standard (welding-neck, slip-on) or others according to ASME B16.5, B16.47, MSS SP-44, API6B or NF EN 1092-1, NF EN 1759-1 standards
- Gasket types : flat gasket (spiral wound, graphite, PTFE) or RTJ (soft iron, inox, monel...)
- Maximum operating pressure : limited by the flange rating (3)
- Accuracy : from 0,5% of the max flowrate

(1) No temperature restriction with remote-mounted transmitter, otherwise +125°C max

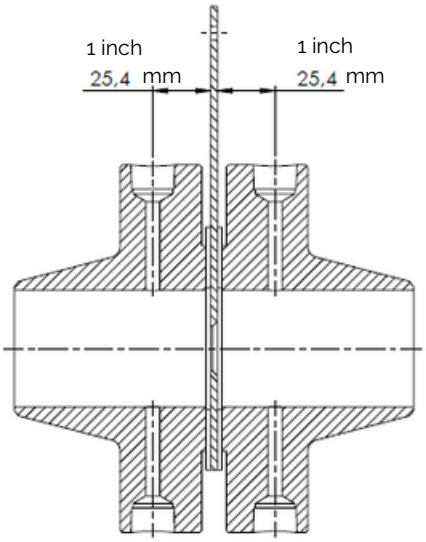
(2) For an agressive fluid, applying a specific coating on the edge can increase the product lifetime

(3) ASME standard, orifice flanges only from 300#

PRESSURE TAPS TYPES

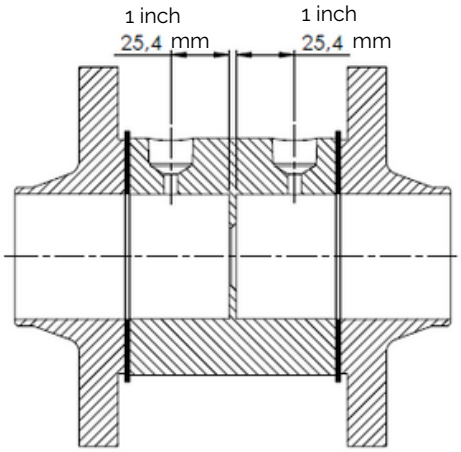
> The measurement is executed at 25,4 mm (1 inch) from the upstream and downstream plate face

- Flange pressure taps (or 1''/1'') with orifice flanges



- Easily interchangeable measuring element
- Plate / flange materials can be different

- 1''/1'' in monoblock version



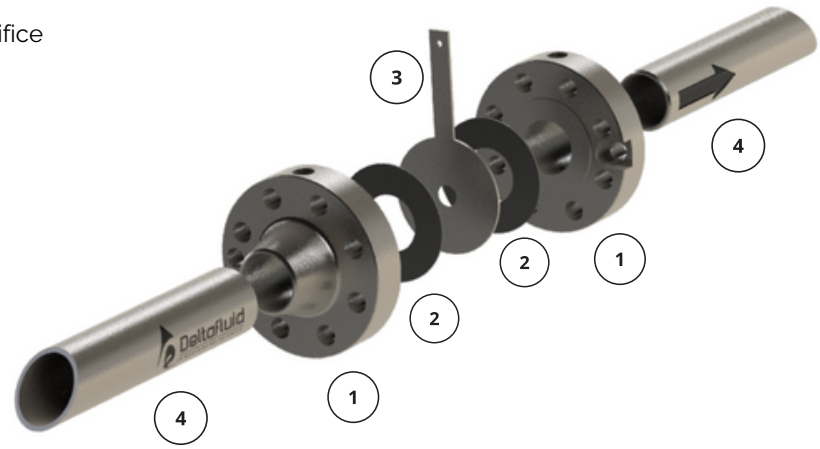
- Measuring element machined from a single block, seamless
- Pressure taps directly machined in the monoblock
- Mounting between simple flanges

- illustrations with a RF orifice plate - the same types of pressure taps also exist in RTJ-M (orifice plate and monoblock) and RTJ-F (monobloc only)

-

ASSEMBLY

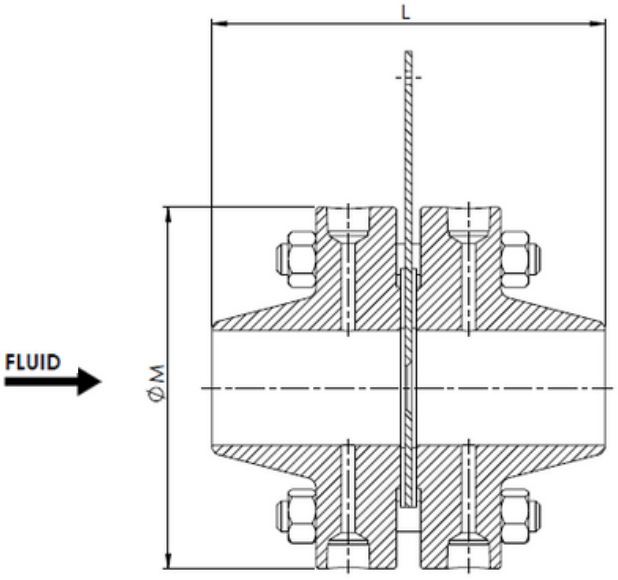
Orifice plate with orifice flanges



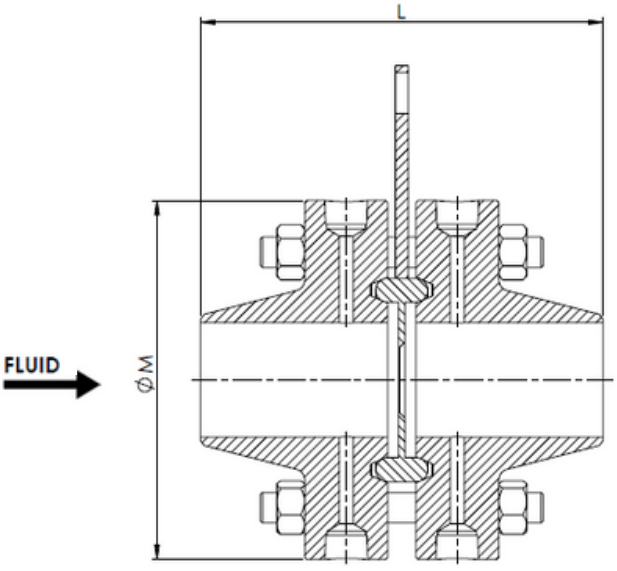
1. Orifice flanges
2. Gaskets
3. Orifice plate
4. Straight lengths

DIMENSIONS

- Flange taps flowmeter drawings with welding neck orifice flanges



RF flange tap flowmeter



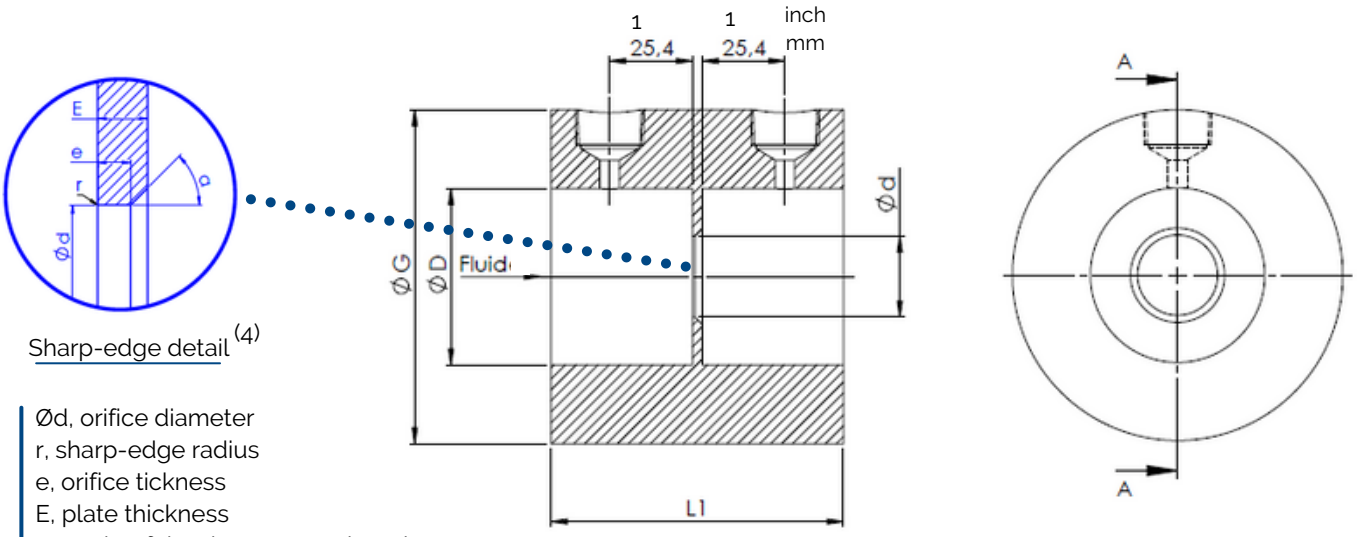
RTJ-M flange tap flowmeter

- Dimensional information (values in mm)

DN	DN	300# RF		600# RF		600# RTJ-M		900# RTJ-M		1500# RTJ-M	2500# RTJ-M
		ØM	L	ØM	L	ØM	L	ØM	L		
1"	25	125	173	125	173	125	183,13	125	195,83		
1" 1/2	40	155	179	155	179	155	189,13	155	207,83		
2"	50	165	179	165	179	165	188,25	165	236,09		
2"1/2	65	190	185	190	185	190	195,25	190	242,09		
3"	80	210	185	210	185	210	195,25	210	236,09		
4"	100	255	191	275	225	255	234,25	275	260,09	Consult us	
6"	150	320	207	355	255	320	264,25	355	312,09		
8"	200	380	231	420	287	380	296,25	420	356,09		
10"	250	445	246	510	328	445	334,25	510	400,09		
12"	300	520	272	560	336	520	342,25	560	432,09		
14"	350	585	296	605	354	585	360,25	605	467,10		
18"	450	710	330	745	394	710	401,45	745	505,99		
20"	500	775	336	815	406	775	413,82	815	543,99		
24"	600	915	350	940	432	915	442,04	940	639,43		

DIMENSIONS

1''/1'' flowmeter RF monoblock version drawing



Sharp-edge detail (4)

Ød, orifice diameter
r, sharp-edge radius
e, orifice tickness
E, plate thickness
α, angle of the downstream bevel
ØD, inside pipe diameter

A-A section

Dimensional information (values in mm)

					ØG, orifice plate outside diameter in mm					
DN	DN	E (mm)	e (mm)	L1 (mm)	150# RF PN20 RF	300# RF PN50 RF	600# RF PN100 RF	900# RF PN150 RF	1500# RF PN250 RF	2500# RF PN420 RF
1''	25	3	0,4	83	65	71	71	77	77	84
1'' 1/2	40	3	0,6	83	84	93	93	96	96	115
2''	50	3	0,8	83	103	109	109	141	141	144
2''1/2	65	3	1	83	122	128	128	163	163	166
3''	80	3	1,2	83	135	147	147	166	173	195
4''	100	3	1,5	83	173	179	192	204	208	233
6''	150	3	2	83	220	249	265	267	281	315
8''	200	6	3	86	277	306	319	357	350	385
10''	250	6	3	86	338	360	398	433	433	474
12''	300	6	3	86	408	420	455	496	519	547

Beyond 12'', contact us

(4) for detailed characteristics of sharp-edge orifice plate, see corresponding datasheet

STRAIGHT LENGTHS

- Required straight lengths between **conditioning orifice plate** (or orifices in the monoblock) and fittings - 2D upstream / 2D downstream

- Required straight lengths between single hole orifice plate (or single orifice in the monoblock) and fittings - without flow conditioner

Values expressed as multiple of pipe internal diameter, D

	UPSTREAM SIDE OF ORIFICE PLATE													Downstream side of orifice plate	
d/D	Single 90° bend or two 90° bends in any plane S>30S		Two 90° bends in the same plane 30D≥S≥10D		Two 90° bends in the same plane 10D≥S		Two 90° bends in perpendicular planes 30D≥S≥5D		Two 90° bends in perpendicular planes 5D>S		Single 90° tee with or without extension		Single 45° bend or two 45° bends in the same plane S≥22D		Concentric reducer 2D to D over a length of 1,5D to 3D		Concentric expander 0,5D to D over a length of D to 2D		Full bore ball valve or gate valve fully open		Abrupt symmetric reduction		Thermometer pocket or well of diameter ≤ 0,03D		Fittings (columns 2 to 11) and densitometer pocket	
1	2		3		4		5		6		7		8		9		10		11		12		13			
<0,2	6	3	10		10		19	18	34	17	3		7		5		6		12	6	30	15	5	3	4	2
0,40	16	3	10		10		44	18	50	25	9	3	30	9	5		12	8	12	6	30	15	5	3	6	3
0,50	22	9	18	10	22	10	44	18	75	34	19	9	30	18	8	5	20	9	12	6	30	15	5	3	6	3
0,60	42	13	30	18	42	18	44	18	65	25	29	18	30	18	9	5	26	11	14	7	30	15	5	3	7	3,5
0,67	44	20	44	18	44	20	44	20	60	18	36	18	44	18	12	6	28	14	18	9	30	15	5	3	7	3,5
0,75	44	20	44	18	44	22	44	20	75	18	44	18	44	18	13	8	36	18	24	12	30	15	5	3	8	4

Nota :
The minimum straight lengths required are the lengths between various fittings located upstream or downstream of the orifice plate and the orifice plate itself.
Straight lengths shall be measured from the downstream end of the curved / conical portion of the nearest bend or tee or reducer or expander to the upstream face of the orifice plate.
In the columns, left values give lengths corresponding to zero additional uncertainty (see ISO 5167-1 standard)
Right values give lengths corresponding to 0,5% additional uncertainty (see ISO 5167-1 standard). Empty cells when no available data.
S is the distance between two fittings..

ACCESSORIES

For flow measurement, we offer a full range of accessories for assembly with flange taps flowmeter.

- Transmitter

Differential pressure transmitter, multivariable transmitter

- Manifold

2-way / 3-way / 5-way manifold with or without direct mounting

- Condensation pot

- Valve

- Siphon

- Fittings

- Flow straightener or conditioner

ADDITIONAL INFORMATION

All information on the mounting of orifice plates (and their accessories) such as :

- pressure taps orientation
- mounting of the differential pressure transmitter
- flange tightening

can be found on the IOM notice "User guide - Installation, operation and maintenance manual".

ITEM CODES

- 1''/1'' flowmeter with orifice flanges : D25-ND-NP-Face type-Flange+plate materials

D25	ND	NP	Face types	Flange + plate materials
Nominal diameter - ASME	1/2'' to 24''	150# to 2500#	RF RTJ SEM (5) SEF (5) DEM (5) DEF (5)	Carbon steel 304L 316L Others
OR				
Nominal diameter - ISO	DN15 to 600	PN2,5 to 400		

- Monoblock 1''/1'' flowmeter : DM25-ND-NP-Face type-Material-Thickness

DM25	ND	NP	Face types	Flange + plate materials
Nominal diameter - ASME	1/2'' to 24''	150# to 2500#	RF RTJ SEM (5) SEF (5) DEM (5) DEF (5)	Acier Carbone 304L 316L Autres
OR				
Nominal diameter - ISO	DN15 to 600	PN2,5 to 400		

(5) Specify large or small tongue/groove face if flanges according to ASME B16-5 standard.

- Examples 1''/1'' flowmeter codes :
  - D25-2-300-RF-AC+316
  - D25-DN100-PN64-RF-AC+304
  - DM25-DN32-PN64-RF-AC+316

Deltafluid
MEASURING UP TO YOUR EXPECTATIONS

Chemin Les Augas – RD817
64170 LACQ
FRANCE

delta64@deltafluid.fr

+33 (0)5 59 30 85 20

www.deltafluid.fr

DELTAFLUID