2 Orifice plate, type: BLS-100-RF

2.1 Description

Orifice plates have a disadvantage of permitting a greater pressure loss than other throttle elements (flow nozzles, venturi tubes, ITABAR, etc.) but are most popularly used because of their simpler shape, easier manufacturability, lower cost and higher reliability.
The types of orifice plates include concentric, eccentric, segmental, quarter-circle and square orifice plate, etc..

2.2 Specification

- ***orifice bore type:***
  concentric square edged orifices
  quadrant edged orifices
  eccentric orifices
  segmental orifices
  minimum quadrant edged orifice diameter 4.5 mm
- ***flow calculation standards:***
  concentric square edged orifices:
  ISO-5167-1991; ASME-1991; JIS Z 8762-1988
  1D-1/2D (radius) tap and 2.5D-8D (pipe) tape are per "ASME Fluid Meters, Their Theory and Application, 5th Edition, 1959"
  eccentric orifices/ segmental orifices:
  ASME Fluid Meters, Their Theory and Application, 5th Edition, 1959
  Note: ASME-1991, JIS Z 8762-1988 flow data used to calculate orifice bore is identical to that of ISO-5167-1991
- ***flange ratings:***
  ANSI Class 150: 300, 600 and 900 (RF)
  DIN PN16, 40, 63
- ***pressure taps:***
  flange tap
  corner tap
  1D and 1/2D (Radius) tap
- ***plate thickness:***
  3, 6, 9, 12mm, etc.
- ***tab handle:***
  welded to orifice plate
- ***materials:***
  plate DIN 1.4571, 1.5415, etc.
  ASTM 304, 316SS, 316Ti, etc.
- ***drain and vent hole :***
  per ISA-RP3.2 recommendations. Not drilled for orifice bore smaller than 25.4 mm
- ***markings:***
  Upstream side of tab handle stamped "+" and with bore type and size, line size, TAG no., quadrant edge radius and flange rating, orifice material and serial number.
  Downstream side of tab handle stamped with "-".
- ***Special markings:***
  special marking may be furnished to meet specific requirements

2.3 Types

- ***concentric***
  This has special features such as simple structure, high accuracy, easy mounting and dismounting. The orifice plates are correctly finished to the dimensions, surface roughness and flatness to the applicable standard.
  Differential pressure is measured through flange, vena contracta, radius or corner taps.
- ***Eccentric***
- For liquids containing solid particles that are likely to sediment or for vapors likely to deposit water condensate, this orifice plate is used with its eccentric bore bottom flush with the bottom of the piping surface 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 with the bore top of the piping to avoid the stay of gas or vapor in its vicinty. Flange taps or vena contracta taps are used for the orifice plate.
- ***Segmental***
  The bore of the orifice plate is a semicircle to perform the same function as the eccentric orifice plate. This is used for similar purposes.
  Flange taps or vena contracta taps are employed to take out fluid pressures.
- ***Quarterant***
  The inlet edge of the bore of this orifice plate is rounded to a quarter circle. This orifice plate is principally used for measuring flow rates of low Reynolds numbers.
  Flange taps or corner taps are used.

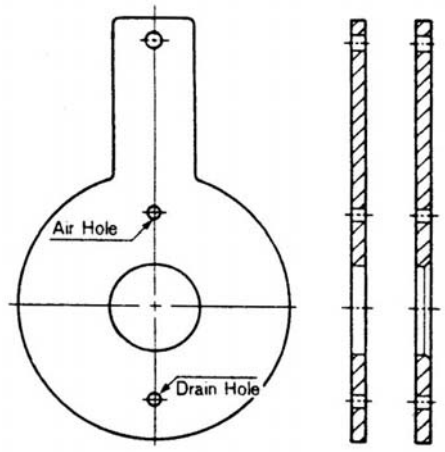

Fig 3

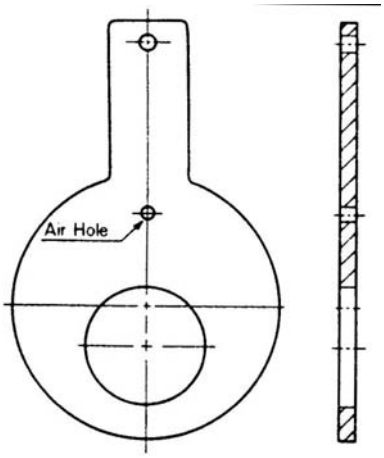

Fig 4

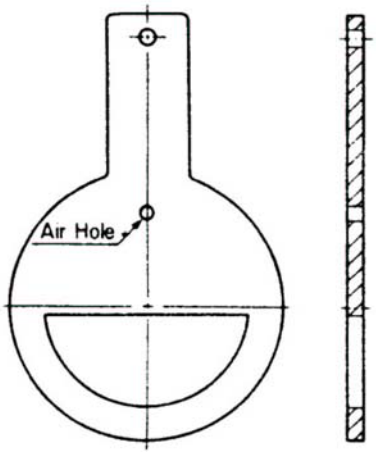

Fig 5

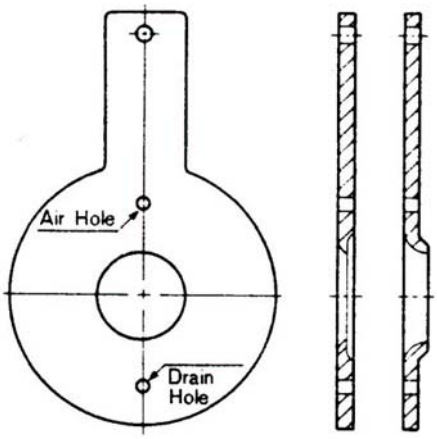

Fig 6

2.4 Ordering codes

Code	Description						
BLS	Orifice plate acc. EN ISO 5167-1						
	1. Installation between DIN / ANSI flanges Form C/RF/RTJ						
	100	Standard					
		2. Flanges					
		DC	acc. to DIN with flange facing form C				
		AF	acc. to ANSI with flange facing RF				
		AJ	acc. to ANSI with flange facing RTJ				
			3. Orifice calculation by Intra				
			0	without			
			M	with			
				4. Documentation			
				0	without		
				1	Material certificates acc. DIN EN 10204-2.2		
				2	Material certificates acc. DIN EN 10204-3.1		
					5. Connection dimension		
					PN10-16/150 lbs, mat. 316L	PN10-16/150 lbs, mat. 316Ti	
					A1 DN50 / 2”	B1 DN50 / 2”	
					A2 DN65 / 2 ½”	B2 DN65 / 2 ½”	
					A3 DN80 / 3”	B3 DN80 / 3”	
					A4 DN100 / 4”	B4 DN100 / 4”	
					A5 DN125 / 5”	B5 DN125 / 5”	
					A6 DN150 / 6”	B6 DN150 / 6”	
					A7 DN200 / 8”	B7 DN200 / 8”	
					A8 DN250 / 10”	B8 DN250 / 10”	
					A9 DN300 / 12”	B9 DN300 / 12”	
					A10 DN350 / 14”	B10 DN350 / 14”	
					A11 DN400 / 16”	B11 DN400 / 16”	
					A12 DN500 / 20”	B12 DN500 / 20”	
					A13 DN600 / 24”	B13 DN600 / 24”	
					A14 DN700 / -	B14 DN700 / -	
					A15 DN800 / -	B15 DN800 / -	
					PN40/300 lbs, mat. 316L	PN40/300 lbs, mat. 316Ti	
					C1 DN50 / 2”	D1 DN50 / 2”	
					C2 DN65 / 2 ½”	D2 DN65 / 2 ½”	
					C3 DN80 / 3”	D3 DN80 / 3”	
					C4 DN100 / 4”	D4 DN100 / 4”	
					C5 DN125 / 5”	D5 DN125 / 5”	
					C6 DN150 / 6”	D6 DN150 / 6”	
					C7 DN200 / 8”	D7 DN200 / 8”	
					C8 DN250 / 10”	D8 DN250 / 10”	
					C9 DN300 / 12”	D9 DN300 / 12”	
					C10 DN350 / 14”	D10 DN350 / 14”	
					C11 DN400 / 16”	D11 DN400 / 16”	
					C12 DN500 / 20”	D12 DN500 / 20”	
					C13 - / 24”	D13 - / 24”	
					PN64-100/600 lbs, mat. 316L	PN64-100/600 lbs, mat. 316Ti	
					E1 DN50 / 2”	F1 DN50 / 2”	
					E2 DN65 / 2 ½”	F2 DN65 / 2 ½”	
					E3 DN80 / 3”	F3 DN80 / 3”	
					E4 DN100 / 4”	F4 DN100 / 4”	
					E5 DN125 / 5”	F5 DN125 / 5”	
					E6 DN150 / 6”	F6 DN150 / 6”	
					E7 DN200 / 8”	F7 DN200 / 8”	
					E8 DN250 / 10”	F8 DN250 / 10”	
					E9 DN300 / 12”	F9 DN300 / 12”	
					E10 DN350 / 14”	F10 DN350 / 14”	
					E11 DN400 / 16”	F11 DN400 / 16”	
					E12 - / 20”	F12 - / 20”	
					E13 - / 24”	F13 - / 24”	
					Special materials		
					G1-G.. Hastelloy		
					H1-H.. Other special materials		

BLS	100					
BLS	100	A	M	2	D8	example