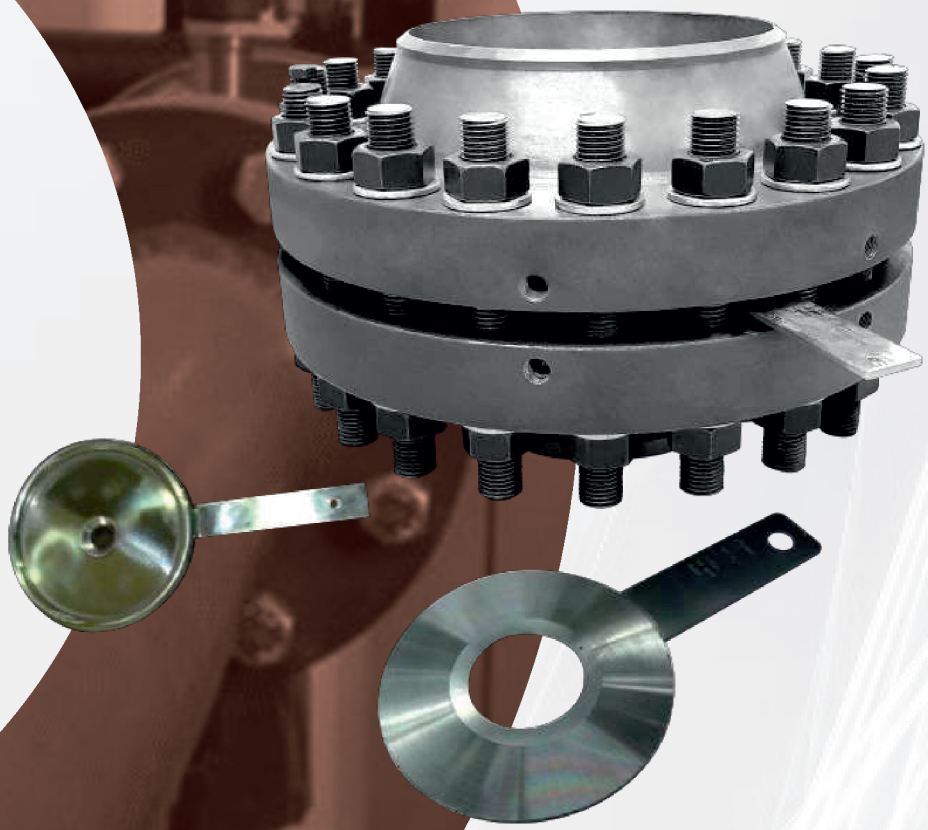
ORIFICE FLANGE ASSEMBLY



FLOWTECH

CE

IBR APPROVED

1. Product Description

Orifice flange assemblies are used for measuring flow of various Liquids, Gases & Steam from 2" to 32" line sizes. It gives an acceptable level of certainties at lowest cost and long life without regular maintenances. Orifice Plates are most commonly used as primary element for flow measurement in pipelines based upon the principle of measurement of 'Differential Pressure' created when an obstruction is placed in the fluid flow, due to increase in fluid velocity. The orifice plate dimension is based on BS/ISO- 5167 specification.

2. Operating Principle

When fluid is flowing from main pipeline. Orifice plate restricts the flow and develops the Differential Pressure which is proportional to the square root of the flow rate.

3. Design Specifications

The traditional orifice flange assembly consists of a pair of flanges, orifice plate, bolts, nuts, gaskets, jacking screws and plugs, (where requested). The flanges are generally in weld neck design, but other options are also available, such as slip-on and threaded.

1. Design: Confirming to ISA RP 3.2, DN 1952, BS 1042, ISO-5167
2. Orifice bore: Confirming to ISO 5167 / BS 1042
3. Accuracy: Within ± 1
4. Vent / drain: Vent OR Drain holes are provided as per customers' Requirement. Donot drilled for Orifice Bore smaller than 25.4 mm.

4. Technical Specifications

1. **Size for Flanged Design:** 50 mm to 800 mm
2. MOC of Flanges: CS A105 / SS304/ SS316 / SS316L / Polypropylene Other materials on request.
3. Flanges: ANSI B-16.36 / or Equivalent
4. Orifice Plate: SS-304, SS-316, SS-316L, Hastelloy C, PP, PTFE.
5. Gasket: CAF / SS Spiral Wound + CAF / PTFE / PVC / Rubber, Other materials as per special request.
6. Stud / Nut: ASTM A193 Gr.B7/ASTM A194 Class 2H
7. Bore Calculation: ISO 5167-2003
8. Types: Square Edge Concentric, Quadrant Edges, Conical entrance, Eccentric.
9. Pressure Tapings: For 2" to 16" - Flange Taps / Corner Taps. Above 16" - D x D/2

5. Orifice Flange Assembly Components

The orifice flange assembly consists of a mainline orifice plate and a set of orifice flanges. This plate is sandwiched between these two orifice flanges. Tag plate of orifice plate projects out from orifice flanges and it indicates the existence of the orifice plate. Details such as Tag NO /Orifice ID / Pipe ID / Plate Material are stamped on one side of the tag plate which faces upstream side of the pipe line.

(i) Pressure tapings: There are three types of Pressure Tapings are used.

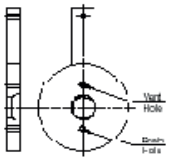
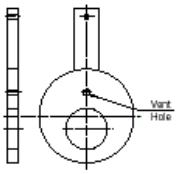
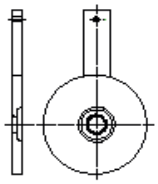
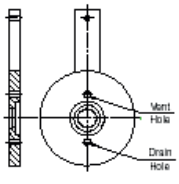
(a) Corner tapping: These are mainly used for line sizes from 1 ½" to 12"

(b) Flange tapping: These are mainly used for line sizes from 2" to 20"

(c) D & d/2 tapping: These are mainly used for line sizes from 20" to 24"

(ii) Gaskets, studs, nuts & jack screw: For details please refer the Material of Construction section.

Main line orifice plate: Following are the various types of Orifice Plates:

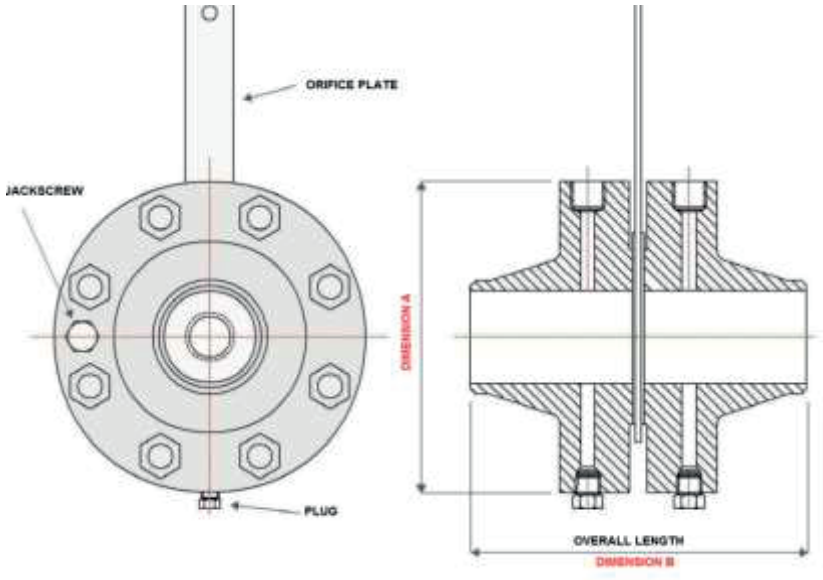
Square Edged Concentric	Eccentric
 SQUARE EDGED CONCENTRIC	 ECCENTRIC
These are commonly used for Flow Measurement. Its main features are simple structure, high accuracy & ease of installation & replacement. These are used for clean liquids, Gases & Steam applications when the Reynolds number ranges from 10,000 to 1, 00, 00,000.	These are commonly used for Liquids containing solid particles that are likely to sediment OR for vapours likely to deposit water condensate. This Orifice Plate is used with its eccentric bore bottom flush with the bottom of the piping inside surface so that the sedimentation of such inclusions can be avoided. Similarly, for Gases OR vapours it may be installed with its eccentric bore flush with the ID of the piping to avoid stay of gases OR vapor in its
Quadrant Edge	**Conical Edge**
 QUADRANT EDGED	 CONICAL ENTRANCE
These are principally used for measuring of low Reynolds number (i.e. between 2,000 to 10,000) as the inlet edge of the bore of this Orifice Plate is rounded to a quarter circle.	These are principally used for measuring of viscous fluids where the Reynolds number is very low (i.e. between 80 to 2,000)

6. Weld Neck Orifice Flange Assemblies

Weld neck orifice flanges are butt-welded into the pipeline. The inside diameter (or the schedule) of the pipe should be specified when ordering. Weld neck orifice flanges are available in classes 150, 300 and 600. Raised face (RF) and ring type joint (RTJ) versions can be supplied. Bolt sizes, weights and important dimensions of orifice flange assemblies are shown in the following tables.

7. Dimensional Details

7.1 Orifice Flange Assembly 300 # WNRF



Nominal Size		Weld neck Orifice Flanges – 300 lb RF				
		Bolts		Approx Weight (Kg)	Dimension (Approx)	
mm	In	No of Bolts	Bolt Size		B	A
50	2”	8	5/8”	14	181	165
65	2 ½”	8	¾”	18	187	191
80	3”	8	¾”	21	187	210
100	4”	8	¾”	31	193	254
150	6”	12	¾”	50	209	318
200	8”	12	7/8”	73	231	381
250	10”	16	1”	100	243	445
300	12”	16	1 1/8”	151	269	521
350	14”	20	1 1/8”	207	295	584
400	16”	20	1 ¼”	275	301	648
450	18”	24	1 ¼”	341	327	711
500	20”	24	1 ¼”	408	333	775
600	24”	24	1 ½”	604	345	914
700	28”	36	1 ¼”	-----	309	921

7.1 Orifice Flange Assembly 600 # WNRF

Nominal Size		Weld neck Orifice Flanges – 300 lb RF				
		Bolts		Approx Weight (Kg)	Dimension (Approx)	
mm	In	No of Bolts	Bolt Size		B	A
50	2”	8	5/8”	14	178	181
65	2 ½”	8	¾”	18	184	184
80	3”	8	¾”	21	184	184
100	4”	8	7/8”	41	193	212
150	6”	12	1”	82	209	244
200	8”	12	1 1/8”	124	231	275
250	10”	16	1”	208	243	314
300	12”	20	1 1/4”	250	269	320
350	14”	20	1 3/8”	---	295	339
400	16”	20	1 1/2”	---	301	365
450	18”	24	1 5/8”	---	327	377
500	20”	24	1 5/8”	---	333	390
600	24”	24	1 7/8”	---	345	415

PRODUCT ORDERING INFORMATION

FLOWTECH

Orifice Plate

FMIPL-RLG-		X	X	X	X
ORIFICE PLATE MOCE	SS 316	OM1			
	CUSTOMISED	CU			
ORIFICE PLATE TYPE	CONCENTRIC TYPE - DEFAULT		OP1		
	SQUARE EDGE		OP2		
ORIFICE PLATE THICKNESS	4 MM - DEFAULT			OT1	
	6 MM			OT2	
	8 MM			OT3	
	CUSTOMISED - MENTION			CU	
ORIFICE PLATE STD	150 CLASS				OS1
	300 CLASS - DEFAULT				OS2
	600 CLASS				OS3
	900 CLASS				OS4
	2500 CLASS				OS5

PRODUCT ORDERING INFORMATION

FLOWTECH

Orifice Plate & Flange Assembly

FMIPL-RLG-		X	X	X	X	X
FLANGE TYPE	WNRF	FT1				
	SLIP-ON	FT2				
	CUSTOMISED - MENTION	CU				
FLANGE MOC	CS 105 - DEFAULT		FM1			
	SS 304		FM2			
	SS 316		FM3			
	CUSTOMISED - MENTION		CU			
FLANGE STD	300 CLASS - DEFAULT			FS1		
	600 CLASS			FS2		
	1500 CLASS			FS3		
	CUSTOMISED			CU		
FLANGE TAP DEGREE	90 DEG. FOR GAS				FD1	
	180 DEG. FOR LIQUID				FD2	
STUD/NUT TYPE	ASTM A193GR.B7 & ASTM A194 CLASS 2H					ST1

FLOWTECH

Scan QR to Connect

Flowtech Measuring Instruments Pvt Ltd

sales@flowtech-instruments.com

flowtech-instruments.com

CE IBR APPROVED