Orifice Plates

Orifice plates are most commonly used primary elements for flow measurement in pipelines based on the principle of measurement of ‘differential pressure’ created when an obstruction is placed in the fluid flow, due to increase in fluid velocity. Orifice Plates cover a wide range of applications of fluid and operating conditions. They give an acceptable level of uncertainties at lowest cost and long life without regular maintenance.

We manufacture orifice plates, restriction orifice plates, with or without carrier ring, meter run assemblies, integral orifice plates to suit customer’s requirements. We have fully equipped integrated designing, manufacturing and testing facilities which are among the best in country. Over the years we have manufactured and supplied orifice plate assemblies to many prestigious projects in the domestic as well as international market.

Specifications

Design : Conforms to ISA RP 3.2

Types : Square edge concentric, Quadrant edged, Conical entrance, Eccentric, Segmental

Plate material : SS304, SS316, SS316L as standard. Hastelloy-C, Monel, PP, PVC, PTFE coated, etc. can be given on request.

Orifice Bore : In accordance with ISO-5167, BS-1042, ASME MFC 3M, R.W.Miller, L.K.Spink, AGA-3

Tab Plate : In the same material as plate & is welded to orifice plate. Tab plate integral to the Orifice plate (i.e. without welding) can also be offered as a special case.

Vent / Drain : Vent or Drain holes are provided as per customer’s requirement. The diameter of the vent or drain holes are as per ISA RP 3.2

Flange Union : Weld neck, Slip on, Threaded, Socket welded with RF or RTJ facing Orifice flanges are in accordance with ANSI B16.36 with minimum flange rating of 300# for sizes up to 8” or male - female flanges in accordance with ANSI B16.5.

Pressure Tappings : Corner tappings are recommended for sizes upto 1.5; Flange taps from 2” to 16”; D – D/2 taps for higher sizes.

Gasket : SS spiral wound + Grafoil, SS spiral wound + PTFE are normally supplied as per process requirement. Other materials available on request.

For RTJ flanges, the plate is fixed on the plate holder. The plate holder material will be softer than flange material & acts as a gasket.

Studs / Nuts : ASTM A193 Gr.B7/A-194 Gr.2H as standard, Other material on request.

Jack Screw : ASTM A193 Gr.B7/A-194 Gr.2H as standard, Other material on request.
Types of Orifice Plates

Square Edged Concentric
These are most commonly used for flow measurement. This has special features such as simple structures, high accuracy, and ease of installation & replacement. The orifice plates are correctly finished to the dimensions, surface roughness, and flatness to the applicable standard. These plates are recommended for clean liquids, gases & steam flow, when the Reynolds number ranges from 10000 to 10^7.

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 inside surface so that the sedimentation of such inclusions are avoided. Likewise, for gases or vapors, it may be installed with its eccentric bore top flush with the ID of the piping to avoid stay of gas or vapor in its vicinity.

Segmental
Segmental orifice plates are most useful where there are substantial entrained water or air and also if there are suspension in the fluids. This avoids build up in front of the orifice plate. The orifice hole is placed at the bottom for gas service and top for liquids.

Quadrant Edge
The inlet edge of the bore of this orifice plate is rounded to a quarter circle. This orifice plate is usually used for viscous fluids & Reynolds number between 2000 to 10000.

Conical Entrance
These conical entrance orifice plates are used for low Reynolds number in the range of 80 to 2000 and give more constant or predictable discharge coefficient. At lower Reynolds numbers, the discharge coefficient of square edge orifice plate may change by as much as 30%. These are more usable for viscous service.