

Orifice plate, model FLC-OP

Orifice flange, model FLC-FL

Annular chamber, model FLC-AC

WIKA data sheet FL 10.01

Applications

- Power generation
- Oil production and refining
- Water treatment and distribution
- Gas processing and transmission
- Chemical and petrochemical industry



Special features

- Maximum operating temperature up to 800 °C
- Maximum operating pressure up to 400 bar
- Suitable for liquid, gas and steam flow measurement
- Accuracy $\leq \pm 0.5\%$ of actual flow rate
- Repeatability of measurement of 0.1 %

Orifice plate, model FLC-OP

Description

Differential pressure flow meters are used in many industrial applications. As primary flow elements, orifice plates represent the most common solution. This instrument is notable for its easy installation and management.

The differential pressure generated by the primary flow element is normally transformed into an electrical signal proportional to the flow rate by a differential pressure transmitter.



Orifice flange, model FLC-FL



Annular chamber, model FLC-AC

Orifice plates, model FLC-OP

Description

Orifice plates are the simplest type of primary flow elements. Their bore diameter is calculated to generate the specified differential pressure at full scale flow rate. Suitable orifice plates are available for a wide range of different media.

Materials

- Stainless steel (standard)
 - Hastelloy C276
 - Monel 400
 - Duplex
 - Super Duplex
- Others on request



Fig. right: Eccentric orifice plate
Fig. left: Quarter circle orifice plate

Overview

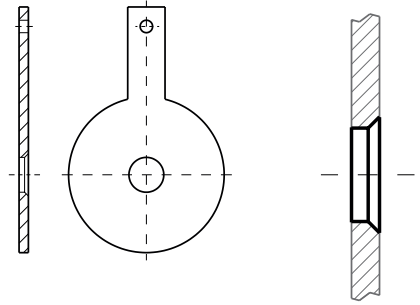
Media		Square edge orifice plate	Quarter circle or conical entrance orifice plate	Eccentric orifice plate	Segmental orifice plate
Gas	clean	++	-	+	+
	dirty	-	-	++	++
Liquid	clean	++	++	+	+
	viscous	-	++	-	-
	dirty	+	+	++	++
	corrosive	+	+	+	+
Steam		+	+	+	-

++ preferred + suitable - not suitable

Square edge orifice plate

This design is intended for general applications in clean media and gases.

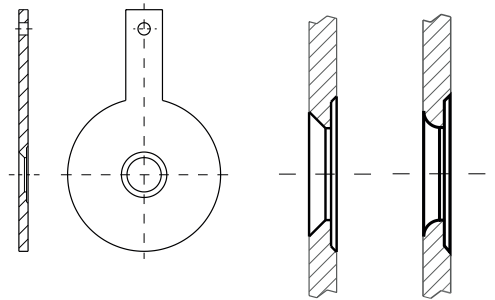
Design:	per ISO 5167-2/ ASME MFC3M
Nominal size:	$\geq 1\frac{1}{2}$ " (40 mm)
Nominal pressure rating:	as per customer requirements
β -ratio:	0.20 ... 0.75
Accuracy:	$\leq \pm 0.5$ % of full scale flow rate
Repeatability:	0.1 % of flow rate



Quarter circle and conical entrance orifice plate

They are the best choice for the measurement of liquids with a low Reynolds number.

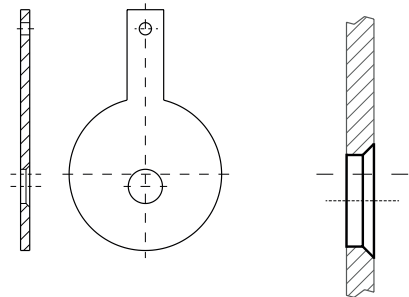
Design:	per ISO/TR 15377
Nominal size:	$\geq 1\frac{1}{2}$ " (40 mm)
Nominal pressure rating:	as per customer requirements
β -ratio:	0.100 ... 0.316 (conical entrance) 0.245 ... 0.600 (quarter circle)
Accuracy:	$\leq \pm 2$ % of full scale flow rate
Repeatability:	0.1 % of flow rate



Eccentric orifice plate

For measurements with two-phase, dirty and particle-laden media. However, for small pipe diameters an eccentric orifice plate is a better solution than a segmental orifice plate.

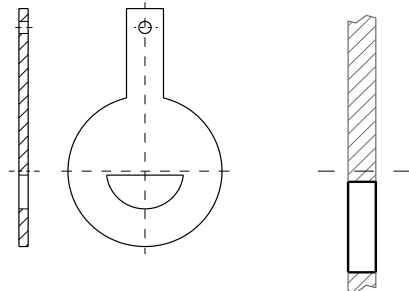
Design:	per ISO/TR 15377
Nominal size:	> 4 " (100 mm)
Nominal pressure rating:	as per customer requirements
β -ratio:	0.46 ... 0.84
Accuracy:	$\leq \pm 2$ % of full scale flow rate
Repeatability:	0.1 % of flow rate



Segmental orifice plate

For measurements with two-phase, dirty and particle-laden media.

Design:	per ASME MFC
Nominal size:	≥ 4 " (100 mm)
Nominal pressure rating:	as per customer requirements
β -ratio:	0.35 ... 0.80
Accuracy:	$\leq \pm 2$ % of full scale flow rate
Repeatability:	0.1 % of flow rate



Sealing face for flanges with raised face

Description

Raised face is the most common sealing and can be used under uncritical pressure and temperature conditions.

Surface finishing

125 ... 250 AARH

The ANSI accredited ASME standard B 16.5 requires that the flange face and the sealing face of the orifice plate have a specified roughness to ensure the compatibility of the surface with the gasket and a high quality seal.



Ring joint gasket (option)

Description

This solution is used under high temperature and pressure conditions

Designs

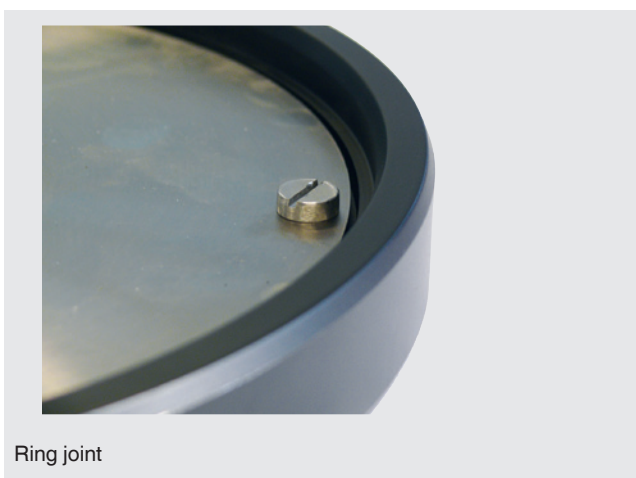
- Octagonal
- Oval

Surface finishing and ring dimensions

The ring joint gasket can be manufactured in accordance with all relevant standards to suit the following flange standards:

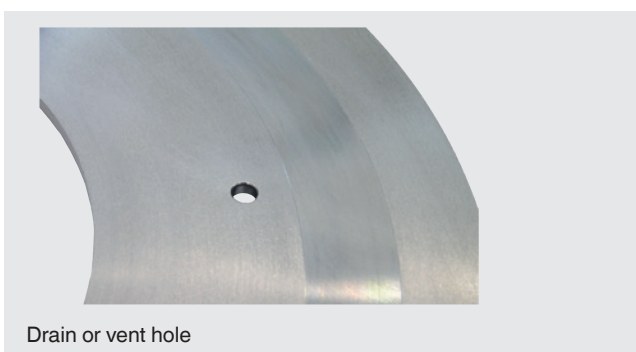
- API 6A
- ASME/ANSI B16.5
- MSS SP44 (ASME B16.47 series A)
- BS 1560

The surface finishing of the ring joint gasket (< 63 AARH) complies with these flange standards.



Drain or vent hole (option)

Depending on the medium a drain or vent hole may be required. The hole is manufactured in accordance with ISA RP 3.2, unless otherwise specified.



Dimensions of orifice plates for flanges with raised face

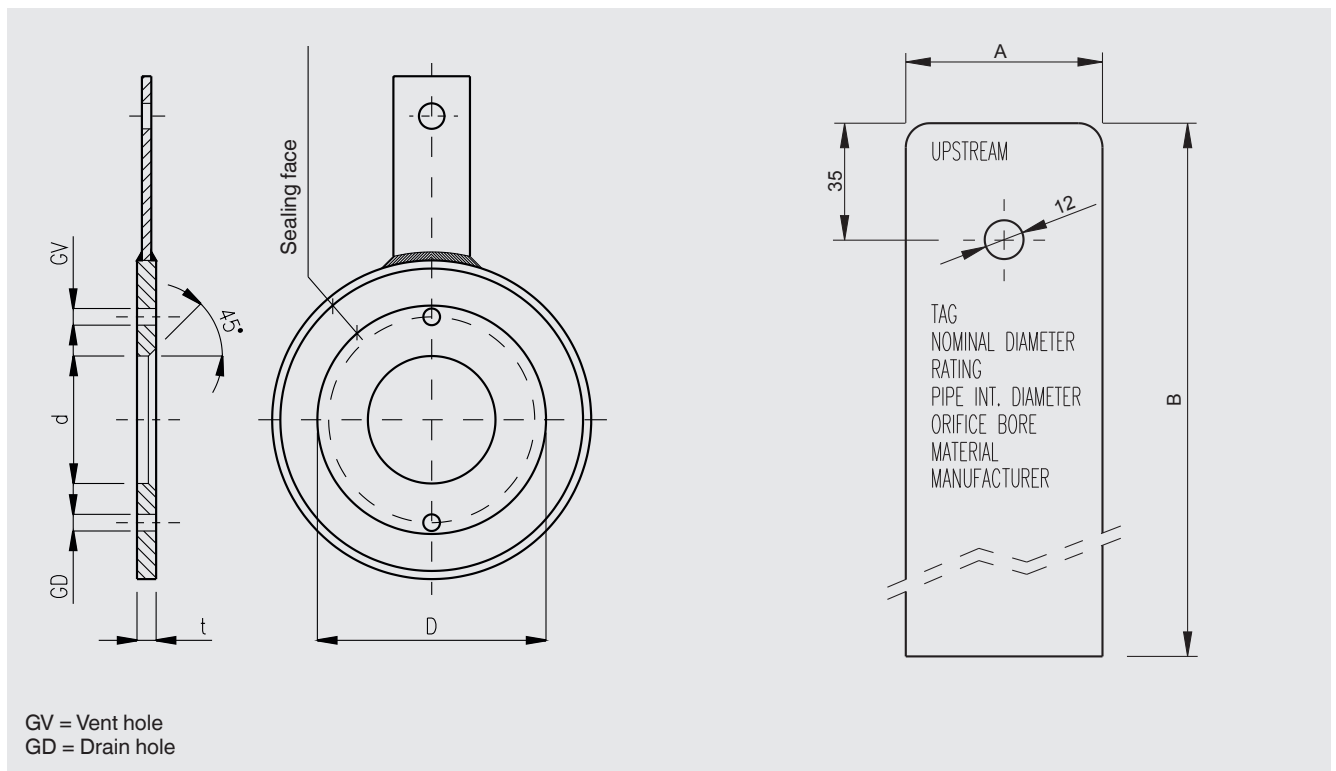
Thickness of the orifice plate

Nominal size [D]	Plate thickness (standard) [t]
½ ... 6"	3 mm
8 ... 16"	6 mm
18 ... 26"	10 mm
> 26"	16 mm

The listed values are suitable for a differential pressure of max. 1,000 mbar.

Dimensions of the handle

Nominal size [D]	A	B
½ ... 5"	30 mm	120 mm
6 ... 12"	40 mm	150 mm
14 ... 18"	40 mm	180 mm
> 18"	50 mm	200 mm



Dimensions of orifice plates with ring joint gasket

Thickness of the orifice plate

Nominal size [D]	Plate thickness (standard) [t]
1/2 ... 6"	3 mm
8 ... 16"	6 mm
18 ... 26"	10 mm
> 26"	16 mm

The listed values are suitable for a differential pressure of max. 1,000 mbar.

Dimensions of the handle

Nominal size [D]	A	B
4 ... 10"	40 mm	150 mm
12 ... 16"	40 mm	180 mm
> 16"	50 mm	200 mm

The listed values apply to orifice plates with a diameter of > 4". Dimensions for a diameter of < 3", see drawing below.

