Cone flow meter
For high performance in applications with limited mounting space
Model FLC-FC

Applications

- Oil and gas processing
- Petrochemical industry
- Water and wastewater
- Mining and basic materials industry
- Power generation

Special features

- Suitable for liquids, gases and steam
- Wide turndown of 10:1
- Low requirements for straight upstream and downstream pipes
- Low costs and low maintenance effort

Cone flow meter, model FLC-FC

Description

The FLC-FC cone flow meter is an advanced application of differential pressure technology. Its characterization of the flow profile enables reliable measurement even under the most difficult conditions.

Thanks to its design, the cone flow meter is ideally suited for applications with limited mounting space. It offers a wide and stable turndown and, at the same time, a high accuracy and repeatability.

The FLC-FC cone flow meter is produced in accordance with the ISO 5167 reference standard. Part 5 of this standard covers the topics of installation and operating conditions and gives further information for calculating the flow rate and its uncertainties.

Low maintenance effort
The conical primary element has been designed so that its edges are protected from particles in the medium. Therefore, the cone flow meter has a very long service life, even in applications with abrasive media.

Short upstream and downstream pipes possible
The optimised flow profile prevents asymmetric flow effects and enables operation with very short upstream and downstream pipes.

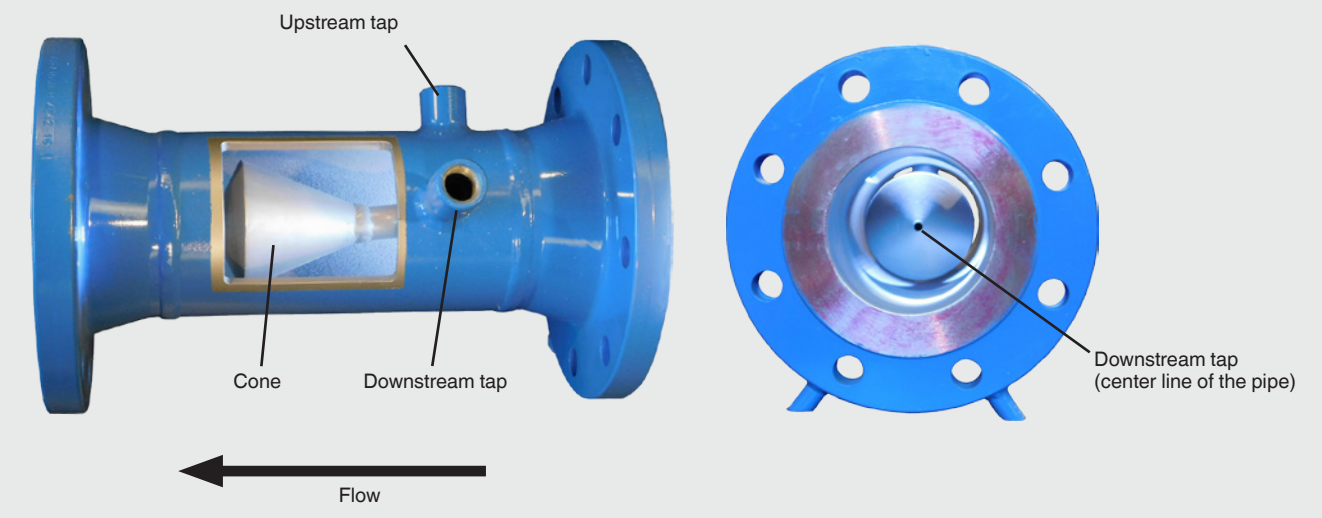
High quality
Only high-quality and traceable materials are used for the cone flow meter. During the manufacturing process, only highly qualified welding techniques are used.
Each flow meter is subjected to strict controls and non-destructive tests before delivery to ensure the WIKA quality standard.

Functional principle

The cone flow meter belongs to the differential pressure flow meters. The flow rate is determined according to the laws of mass and energy conservation.

Conventional differential pressure flow meters force the medium to accelerate through a reduced opening in the middle of the pipeline. The conical flow meter, on the other hand, has a cone on the center line, which accelerates the medium to the inner wall of the pipe.

The upstream tap is located directly on the pipe wall and allows tapping of the inlet pressure. The downstream tap is connected to the rear side of the cone via an internal pressure channel. The pressure is tapped on the pipe centre line. The medium is linearized in an area defined by the cone and the inner pipe wall, while the velocity profile is flattened in the neck area.



Specifications

Specifications	
Nominal size	DN 50 ... 900 (2 ... 36") Other nominal sizes up to DN 1600 (64") on request.
Accuracy	±5.0 % of measured value (uncalibrated) (Option: ±0.5 % of measured value (calibrated)) WIKA recommends a calibration of every cone flow meter. Optimal accuracy is only achieved when a calibration of the full measuring range is performed.
Repeatability	±0.1 %
Turndown	10:1
Beta ratio	0.45 0.60 0.75 Others on request
Max. operating pressure	The max. operating pressure depends on the pipe class, the flange and the end connection.
Materials	
Main body	Carbon steel Low-temperature carbon steel Stainless steel Other materials on request (e.g. Duplex SS, Hastelloy, Monel, ...)
Primary element (cone)	Stainless steel 316/316L Other materials on request

Options

- Direct mounting of a differential pressure transmitter for an even more space-saving installation.
- Integrated temperature sensor for mass flow measurement.

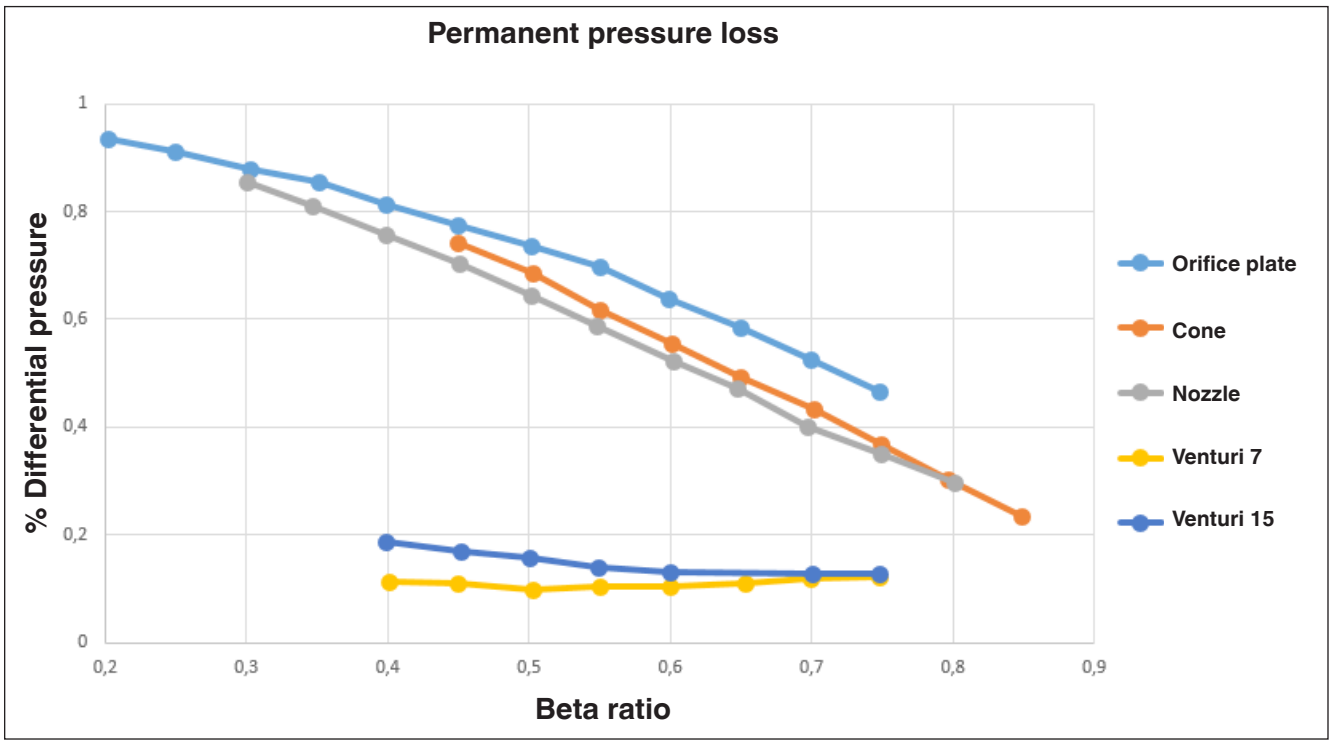
Installation requirements

The length of the upstream pipe is measured from the downstream side of the nearest fitting to the centre of the first pressure tapping of the flow meter. The length of the downstream pipe is measured from the beta edge of the primary element to the upstream side of the nearest fitting. Fittings which are located within 2 D at the downstream side of the flow meter introduce no additional errors.

Fitting	ß ≤ 0.45 ... < 0.60	ß ≥ 0.60 ... < 0.75
Single 90° bend	0 ... 3 D	6 D
Two 90° bends (perpendicular)	0 ... 3 D	6 D
Partially closed valve	10 D	10 D
Shut-off ball valve	0 ... 3 D	3 ... 5 D
T-piece	0 ... 1 D	3 D

D = Diameter

Permanent pressure loss comparison



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