

FlowPak meter

For applications without straight upstream and downstream pipes

Model FLC-HHR-FP

WIKA data sheet FL 10.09

Applications

- Power generation
- Oil production and refining
- Water treatment and distribution
- Gas processing, transmission, LNG, FLNG
- Chemical and petrochemical

Special features

- Highest accuracy
- Energy efficient
- Installation versatility
- No upstream and downstream piping requirements
- Broad range of applications

Description

Innovative technology and design

The FlowPak flow meter is a combination of proven and innovative technologies for flow profile formation. The FlowPak flow meter sets new standards in terms of performance and surpasses other technologies by a long way, even in demanding and critical applications.

No need for straight upstream and downstream pipes

No straight upstream and downstream pipes are required, independent of the flow profile. Even installation following two 90° elbows does not represent any problem. Thus the FlowPak flow meter is the best differential pressure flow meter in the entire market for applications with limited mounting space.

Maximized performance

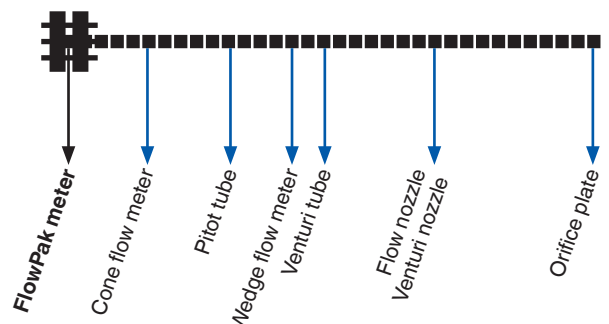
With no additional up and downstream piping necessary, the FlowPak meter has nearly no influence on the flow profile of the fluid. Thereby the desired flow profile remains. The pressure loss is reduced to a minimum, providing the highest energy efficiency of all flow measurement instruments outperforming even venturi tubes.



FlowPak meter, model FLC-HHR-FP

Fig. top: with flange connection

Fig. bottom: with butt weld connection



No need for straight upstream and downstream pipes

Proven performance

Consistently outperforms orifice measurement instruments

The FlowPak meter delivers proven performance certified by extensive laboratory and field testing.

Test results from Alden Research Laboratory show the coefficient of discharge of the FlowPak to be constant, independent of Reynolds Number and within +0.5 % of the predicted value, even when installed directly after two elbows out of plane. This eliminates the need for calibration testing to characterise the coefficient and accuracy of each individual meter. When a higher degree of accuracy is desired, the FlowPak can be calibrated at a laboratory whose data is NIST certifiable to an accuracy of $\pm 0.25\%$ or better.

Specifications	FlowPak meter	Annular chamber
Uncalibrated accuracy	$\pm 0.5\%$	Calibration required
Coefficient of discharge	0.985	0.75 ... 0.85
Permanent pressure loss	15 ... 20 %	Varies w/Beta and DP Typ. 25 ... 75 %
Repeatability	$\pm 0.1\%$	$\pm 0.1\%$
Upstream piping requirement	0	0 ... 3
Downstream piping requirement	0	0 ... 1
Flow rangeability	limited by lower boundary of Reynolds number	10:1
Line Sizes	3 ... 48"	$\frac{1}{2}$... 120"
Amount of tappings	4 + sets	1 set
Beta ratios	0.4 ... 0.75	0.45 ... 0.85
Connections	Welding neck flange Butt weld	Welding neck flange Butt weld wafer saddle

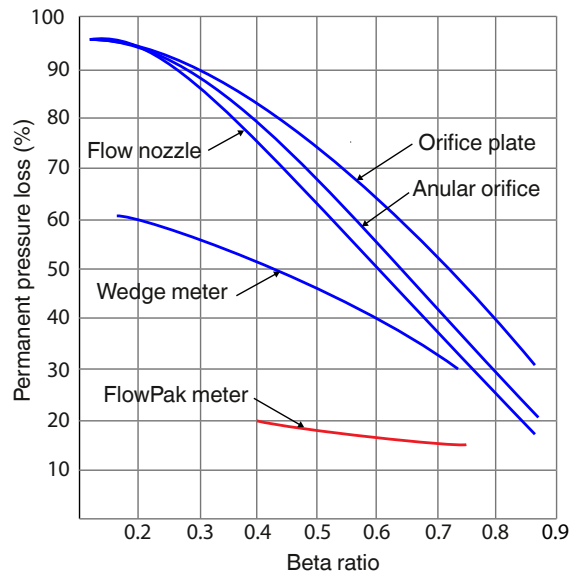
Energy efficiency

Superior energy efficiency reduce operating costs

Whenever a piece of equipment or pipe is added to a flow system, pressure is lost. This pressure loss makes the pump or compressor work harder to generate the same flow in an established system. If there is too much pressure loss due to piping configuration or other restrictions, the system can theoretically just stop flowing. This is of utmost concern for both high and low pressure systems. Every amount of pressure loss is equal to extra energy used whether it is electricity, steam, or natural gas to pump or compress a fluid. All of this translates to more money being spent to maintain normal operations.

Low permanent pressure loss (PPL) equates to energy efficiency and reduced operating cost. The FlowPak meter has the lowest permanent pressure loss of all orifice measuring instruments. Using an orifice plate, the flowing medium impacts with an abrupt surface. This impact typically results in a permanent pressure loss of 2 psig, based on a 100" water column differential.

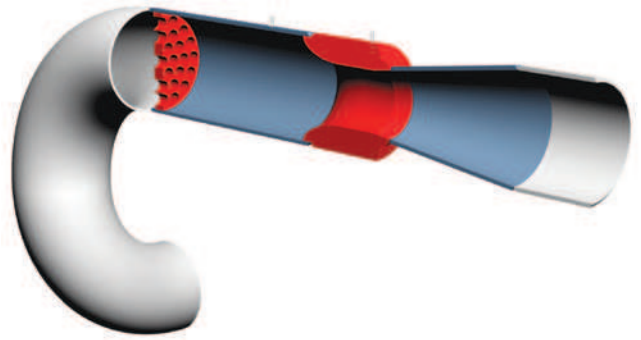
To minimise the permanent pressure loss the FlowPak has a smooth contoured and obstruction free entrance with a pressure recovery cone for enhanced pressure recovery. Permanent pressure loss is just one of the characteristics to consider when evaluating a flowmeter. Every characteristic of the flowmeter must be weighed according to the needs of the application. In many cases the recurring operating cost savings offered by the FlowPak can actually pay for itself in a very short period of time.



Installation versatility

Designed for challenging applications

The unique design ensures that a flow velocity profile is well developed and properly defined prior to measurement. Extensive performance testing conducted at Alden Research Laboratory on the FloPak utilizing two close coupled 90° out of plane elbows immediately before and after the meter shown persistent high accuracy and repeatability with no need for additional up and downstream straight runs. This key feature assures installation versatility in tight piping systems whether new construction or retrofit. This can result in significant cost savings in larger, more expensive line sizes.



General data

Nominal size and pipe schedule

All nominal sizes are available in accordance with the relevant standard. The pipe schedule must be specified by the customer.

Standards cover diameters from 3 ... 48" (80 ... 1,200 mm), larger diameters are available on request.

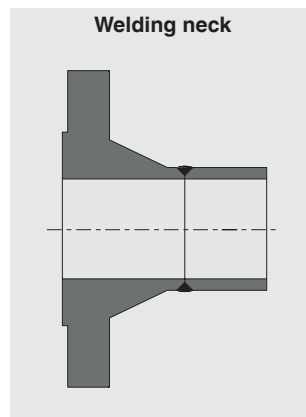
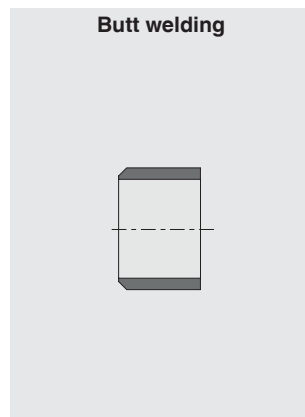
Nominal pressure rating

Available in accordance with all relevant standards.

Materials

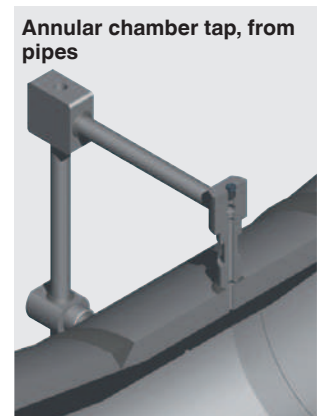
A wide range of materials is available.

Mounting options



Pressure tapings

NPT as standard, other options available on request

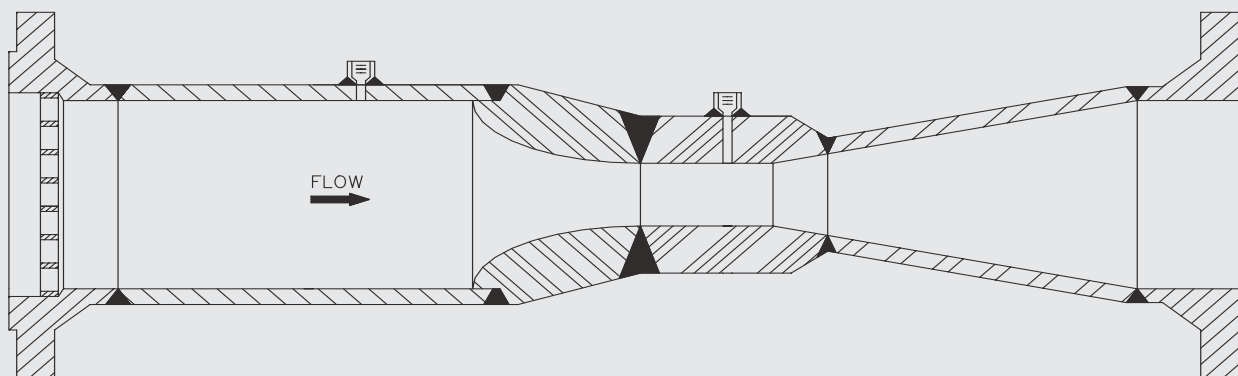


Dimensions [in]

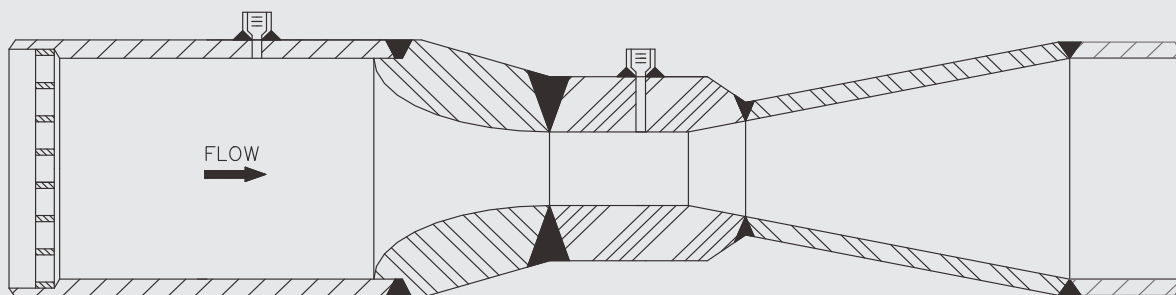
Nominal size	Inner diameter	Beta ratio	Overall Length ¹⁾	Total Weight (kg)	
				Butt weld connection	Welding neck flange
3	3.068	0.7	18.00	50	50
4	4.026	0.7	22.00	50	100
6	6.065	0.7	32.00	100	150
8	7.981	0.7	42.00	150	200
10	10.020	0.7	52.00	250	350
12	12.000	0.7	60.00	350	500
14	13.250	0.7	68.00	450	650
16	15.250	0.7	78.00	600	850
18	17.250	0.7	86.00	800	1,050
20	19.250	0.7	96.00	1,000	1,300
24	23.250	0.7	114.00	1,550	2,000

1) Shorter lengths on request

FlowPak meter with welding neck flange



FlowPak meter with butt weld connection



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