

LGNC INTEGRAL ORIFICE FLOW METER

Summary

Differential pressure flow meter is the most widely used in recent industrial field of a class of flow meters, its simple structure, stable accuracy and high reliability features are very popular. Standard orifice plate flow element is the most widely used class, but the standard orifice plate in small pipeline applications due to their own installation and mechanic accuracy error, resulting in less than ideal measurement results, and then should be used in the built-in orifice plate flow meter. Orifice plate flow meter is a kind of non-standard differential pressure flow meter used in small-diameter pipelines, which ensures stable and accurate flow measurement due to its highly integrated structure, front and rear straight pipe sections with sufficient length, precision processing and inspection by standard flow devices. It is widely used in small and medium-sized pipelines in oil refining, chemical, electric power, natural gas and other industrial fields.



Operating Principle

Integral orifice flow meter and standard orifice plate are based on the principle of fluid continuity and Bernoulli's equation of conservation of energy, putting a piece of integral orifice plate into a full tube of medium in the process pipeline, when the fluid flows through the integral orifice plate flow meter, the flow beam will be in the flow element to form a local contraction, thereby increasing the flow rate, low static pressure, so the flow element will produce a pressure drop before and after the pressure drop, that is, the pressure difference, the greater the flow of the medium, the greater the pressure difference generated before and after the flow element, through the differential pressure transmitter can output and the measured fluid flow value as a square relationship between the standard signal, can be converted into flow value.

Basic Calculation Formula:

$$\text{Mass Flow Rate: } q_m = \frac{C_\epsilon}{\sqrt{1-\beta^2}} \frac{\pi d^2}{4} \sqrt{2\Delta P \rho}$$

$$\text{Volume Flow Rate: } q_v = \frac{C_\epsilon}{\sqrt{1-\beta^2}} \frac{\pi d^2}{4} \sqrt{\frac{2\Delta P}{\rho}}$$

- C--Infinite outflow coefficient
- ϵ --Coefficient of expansion
- β --Throttle diameter ratio
- d—Throttle orifice diameter mm
- ΔP --Differential pressure Pa
- ρ --Density of measured medium kg/m³

Product Performance Features

- Transmitter and flow element integrated installation, saving installation and maintenance work.
- Integral orifice plate has an internally polished straight pipe section with 20 times the pipe diameter upstream and 10 times the pipe diameter downstream, which achieves a good rectification effect and reduces uncertainty.
- High precision, after the actual flow calibration of integral orifice plate flow meter, the basic error of the flow coefficient can be up to $\pm 0.5\%$.
- The tapping body is machined from stainless steel forgings to ensure overall strength and to minimize possible leakage points.

Main Technical Parameters

- Nominal Diameter: 1/2" (DN15) , 3/4" (DN20) , 1" (DN25) , 1-1/2" (DN40)
- Nominal Pressure: 10.0MPa、CL600
- Medium Temperature: Integrated type is less than 150℃, separated type is less than 454℃.
- Output Signal: 4~20mA+HART
- Accuracy: ±1.5~2.5% (Up to ±0.5% for real flow calibration)
- Repeatability: 0.2%
- Range Ratio: 10:1
- Explosion Proof Type: Intrinsic Safe Ex ia II CT4; Explosion proof Ex d II CT6
- IP Rating: IP67

Application Scope

It is suitable for measuring the small flow measurement of clean gas, liquid and vapor without suspended matter.
It is suitable for pipes with nominal diameter less than DN50.

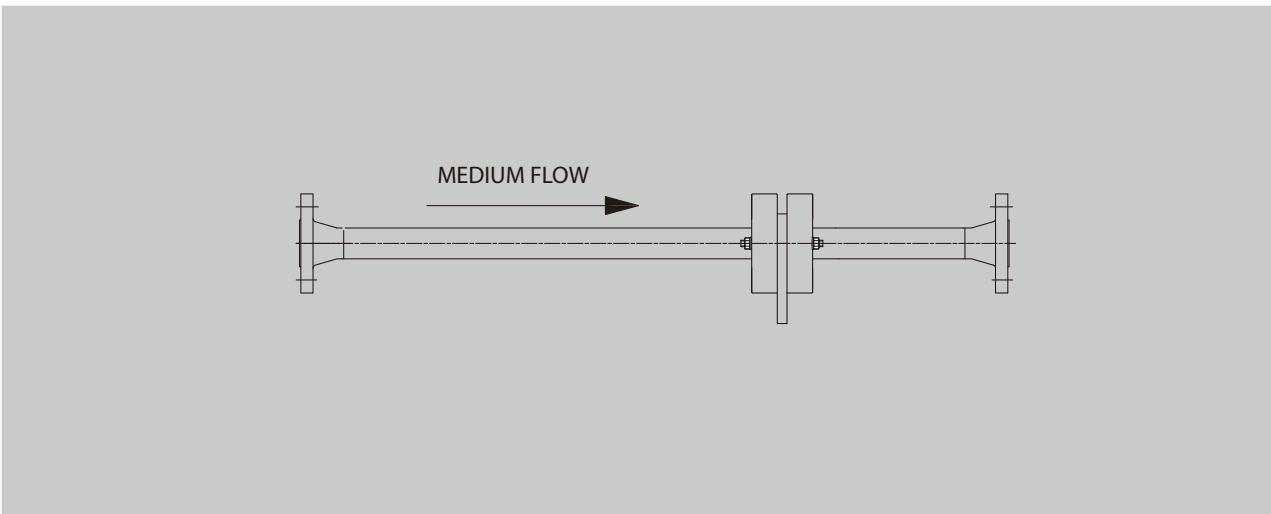
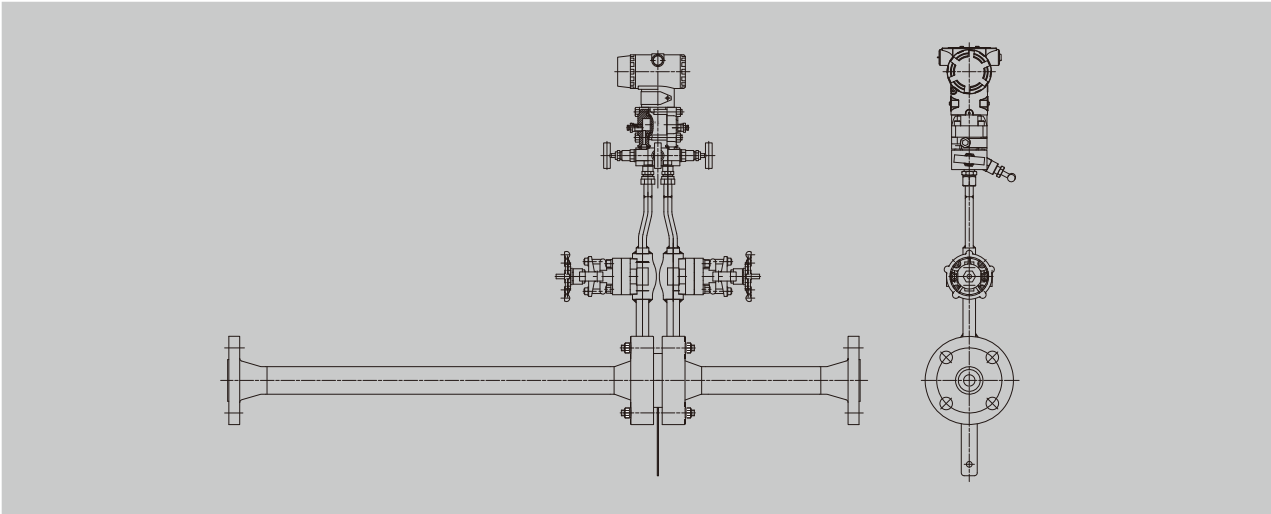
Model Selection Table

Serial Number	Code		Content	
LGNC-			Integral orifice flow meter	
	016		1/2" (DN15)	
	02		3/4" (DN20)	
	026		1 " (DN25)	
	04		1-1/2" (DN40)	
		01		PN16
		02		PN20/CL150
		03		PN25
		04		PN40
		05		PN50/CL300
		06		PN63
		10		PN100
		11		PN110/CL600
			A	With transmitter
			B	Without transmitter

Example

LGNC-02605A, an integral orifice flow meter, nominal diameter is DN25, nominal pressure is CL300, with transmitter.

Outline Drawing



Order Requirements

Please refer to LG type flow element.