

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:

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

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

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

1. Transmitter and flow element integrated installation, saving installation and maintenance work.
2. 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.
3. High precision, after the actual flow calibration of integral orifice plate flow meter, the basic error of the flow coefficient can be up to $\pm 0.5\%$.
4. 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°C, separated type is less than 454°C.

Output Signal: 4 ~ 20mA+HART

Accuracy: $\pm 1.5 \sim 2.5\%$ (Up to $\pm 0.5\%$ 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

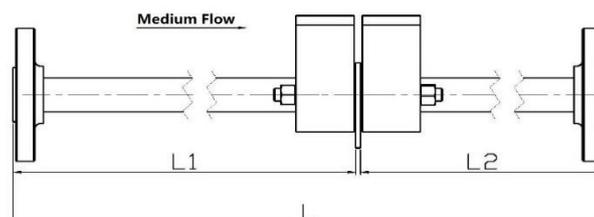
Serial Number	Code		Content
LGNC-			Integral orifice flow meter
	2	11	1/2" (DN15)
	3	12	3/4" (DN20)
	4	13	1" (DN25)

6	15	1-1/2" (DN40)	
		3	PN16
		4	PN20/CL150
		5	PN25
		6	PN40
		7	PN50/CL300
		8	PN63
		9	PN100
		10	PN110/CL600
		A	With straight pipe section and connection flange
B	With straight pipe section		
H	With transmitter-Integral type		
G	Without transmitter		
N	Other types		
P	Body Material: 304		
R	Body Material: 316L		
T	Body Material: 321		
M	Body Material: Other		
P	Flow Element Material: 304		
R	Flow Element Material: 316L		
T	Flow Element Material: 321		
M	Flow Element Material: Other		

Example

LGNC-47AHP, an integral orifice flow meter, nominal diameter is DN25, nominal pressure is CL300, with straight pipe section and connection flange, with transmitter-Integral type, body material is 304, flow element material is 316L.

Outline Drawing



Dimension Table

	1/2" (DN15)			3/4" (DN20)			1" (DN25)			1-1/2" (DN40)		
	L1	L2	L	L1	L2	L	L1	L2	L	L1	L2	L
CL150 RF	310	160	476	409	209	624	509	259	774	811	411	1228
CL300 RF	317	167	490	419	219	644	518	268	792	819	419	1244
CL600 RF	323	173	502	425	225	656	525	275	806	827	427	1260
CL150 RJ	315	165	486	414	214	634	514	264	784	816	416	1238
CL300 RJ	322	172	500	424	224	634	523	273	802	824	424	1254
CL600 RJ	323	173	502	425	225	656	525	275	806	827	427	1260
PN10/16/25/40 RF	316	166	488	419	219	644	519	269	794	820	420	1246
PN63/100 RF/RJ	322	172	500	423	223	652	523	273	802	822	422	1250

Order Requirements

Please refer to LG type flow element.