LL-C
Roots Flow Meter for Light Oil

Model LL-C roots flow meter as a kind of volumetric flow measuring instrument, could be usable for continuous measurement of fluid volume flow in the pipe.

The accumulated flow could be displayed by two built-in counter sets. One counter could be reset at all times with 0～9999 as its display range, while the other could never be reset with its display range 0～999999.

By means of transmission output shaft, the flow meter could be coupled with photoelectron pulse converter as well as flow totalizers from this company, thus carrying out remote display and control.

This flow meter has features such as high measuring accuracy、compact structure、light weight、easy installation and maintenance. Therefore it can find wide application in petroleum products of low viscosity.

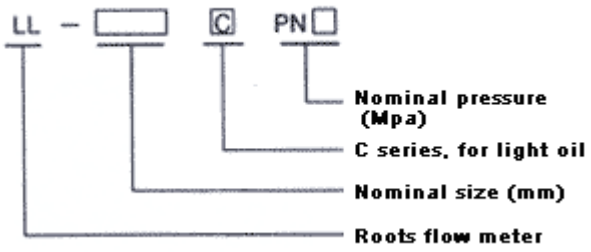
Standard for this flow meter is Q/YXBM 368-2000;

while the inspecting regulation thereof is JJG 667-97.

□Principal Specifications

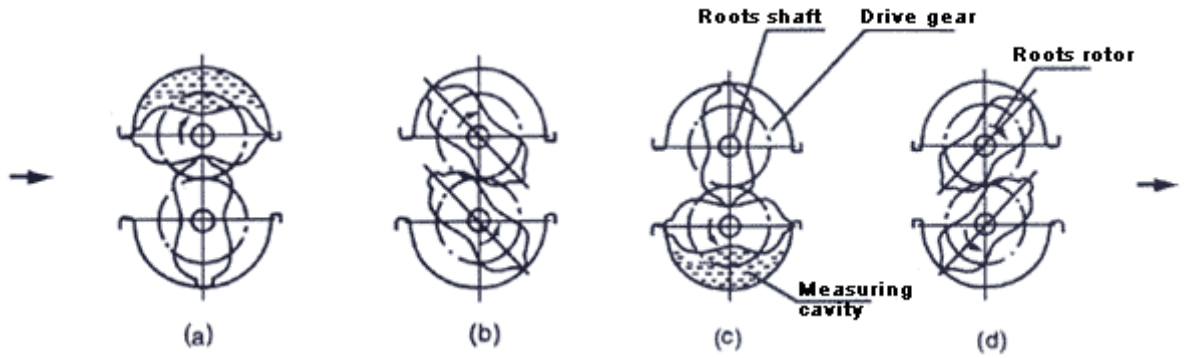
Nominal size DN(mm)	Maximum flow rate m^3/h	Elementary error limit (%)		Medium Temperature ℃	Nominal pressure MPa	Maximumpressure loss MPa	Viscosity range mPa·s
		Range ratio 10：1	Range ratio 5：1				
40	16	±0.5%	±0.2%	0～80	1.6	＜0.05	＜80
50	25						
80	60						
100	100						

☐Model designation



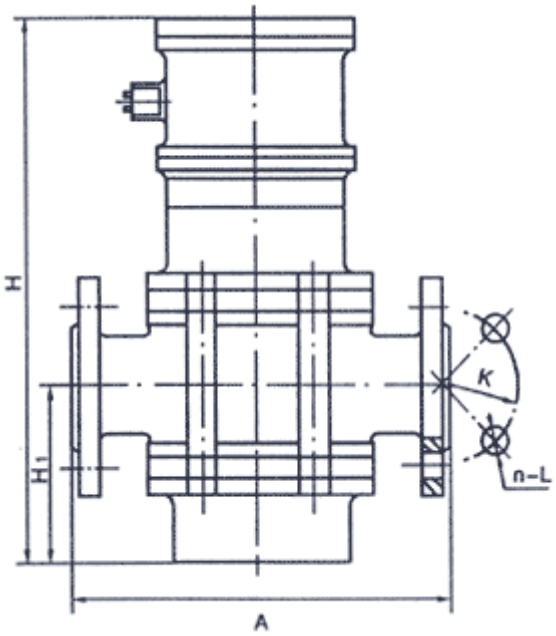
☐Operating Principle

When measured liquid flows through the measuring cavity, a differential pressure will take place between the inlet and outlet of the flow meter. This pressure will force the roots rotors to rotate (see figures a、b、c、d), while a pair of drive gears fixed on the shafts will enable both roots rotors to drive each other alternatively. As the volume of measuring cavity is a constant value, thus the total flow of measured liquid will be proportional to the turns of rotors rotation, and the latter will be simultaneously transferred to the counter through variable speed device with a certain drive ratio. Therefore the accumulative reading of counter should be considered as volume flow within a certain period.。



☐Overall dimensions for mounting

• LL-40C～100C

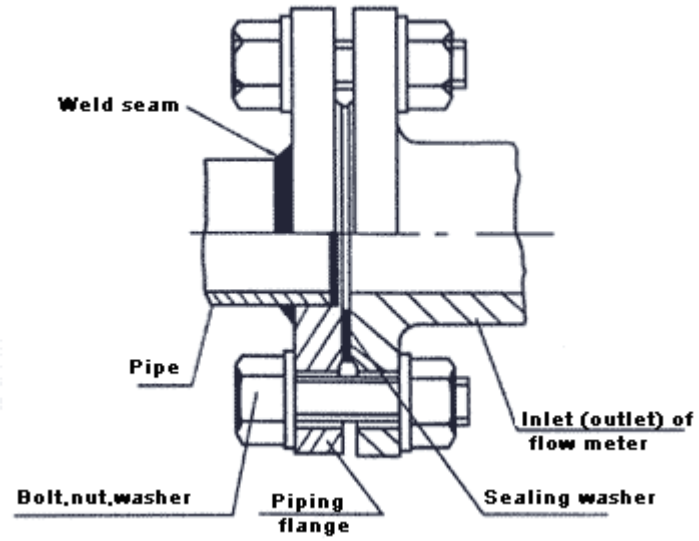


Unit：mm

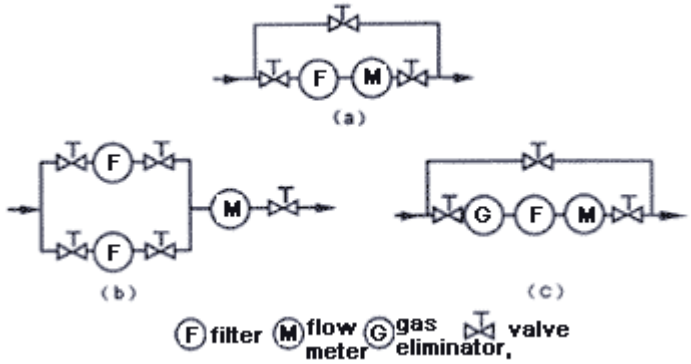
Model	Nominal sizes DN	A	H1	H	K	n-L
LL-40C	40	260	126	386	Φ110	4-Φ18
LL-50C	50	260	126	386	Φ125	4-Φ18
LL-80C	80	300	158	450	Φ160	8-M16
LL-100C	100	300	158	450	Φ180	8-M16

Note: Pipe flanges should be allocated according to Standard JB/T81-94.

• Connecting mode of LL-40～100C



□Modes of pipe installation (sketch)

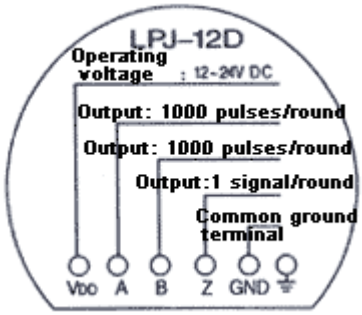


• Sketch (a) as a general mode is suitable for clean fluid.
• The mode of sketch (b) denotes the condition that filters need to be frequently washed with flow measurement not stopped.
• The mode of sketch (c) is suitable for the fluid containing gas which will influence accuracy of measurement.

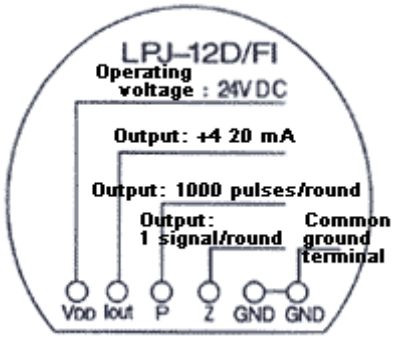
Notes: Requirements for mounting:
· Select mounting location with less vibration and free from high temperature and moisture.
· Mount the flow meter upright on a horizontal pipe.
· Before mounting flow meter, it is necessary to clear away all impurities as sludge and welding dregs out of the pipe.
· The flow meter should be located at a lower place so as to separate gas from the measured fluid at other higher places. If necessary, a gas eliminator should be mounted ahead of the flow meter.
· Filter and gas eliminator should be mounted on the upstream side of flow meter, while adjusting valve should be mounted on the downstream side.

☐ wiring terminal diagrams of photoelectron pulse converter

• LPJ-12D (explosion-proof type)



• LPJ-12D/FI (explosion-proof type)



☐Attachable Instruments

• Photoelectron pulse converter

Model	Function Description
LPJ-12D	Explosion isolation type, contact signal: 1 time/round,dual channel pulse signal: 1000 times/round with phase difference 90°.
LPJ-12D/FI	In addition to the functions of LPJ-12D, output of analogue signal 4～20mA could be provided.

• Digital flow totalizer

Model	Function Description
XSJ-39A(I、K)	Simultaneously displaying momentary flow rate and total flow; 4 to 20 mA output; flow control for fixed displacement is feasible.
XSJ-39B(I)	Total flow and flow rate display; 4 to 20 mA output; with error less than ±0.1%; compact structure; LED or LCD display selectable; power off protection durable over five years.
XSF-40A	Accumulating total flow and indicating instantaneous flow rate; 0～10 mA or 4～20 mA output.
SXP-3113	Modular design; compensating for temperature、pressure as desired; displaying total amount、momentary rate and its percentage of mass or volume flow; 0～10mA or 4～20 mA output, also usable for accumulating and indicating gas flow.
XSK-10B	Digital flow controller for fixed displacement, usable for proportional bottling; displaying flow rate and total flow of liquid.

☐Ordering Information