

## Oval Gear Flow Meter

### Overview

Oval gear flow meter is one of positive displacement flow meter and mainly composed of meter shell, oval gear rotor and converter. It is an instrument used for continuous or discontinuous metering and control of liquids in the pipeline. It has advantages of large metering range, excellent accuracy, small pressure loss and high viscosity adaptability etc; It has good performance on measuring high-temperature and high-viscosity liquids. It is applicable to the calibration and metering of crude oil, chemical, chemical fiber, traffic, commerce, food, medicine and health, scientific research and military etc.

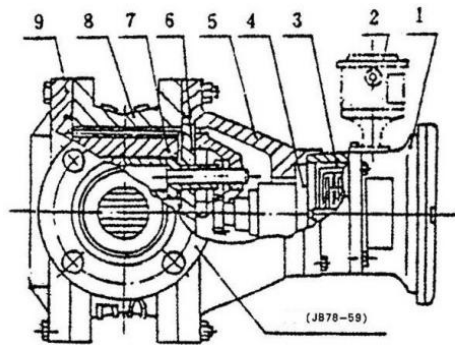


### Working Principle and Structure

Flow meter is installed in the metering tank and the measurement of a pair of oval box gear, with the upper and lower cover, an early Lunar sealed cavity (due to rotation of the gear, so sealing is not an absolute) as a unit of emissions. When measured by the pipe into the liquid flow meter, due to pressure generated by the Import and Export Department to promote a pair of differential gears for rotation, the constant measurement by cavity after the beginning of the Lunar liquid delivery to the exit, elliptical gear with each revolution time displacement is the product of four times the measured volume of liquid flow.



Flow meter is made by the shell, counter, oval gear and coupling (magnetic coupling and sub-axial coupling) and so on.



- |   |                         |               |
|---|-------------------------|---------------|
| 1. Counter                                      | 4. Sealing the coupling | 7. Oval gear  |
| 2. Signal output                                | 5. Front cover          | 8. Shell      |
| 3. Precision regulator<br>(DN50 and above only) | 6. Flat                 | 9. Rear cover |

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### Main Technical Parameters

Model	PHLC
Transmitter Type	Pointer Display; Pointer with zero returning; Pointer display with Output; LCD
Medium	Fuel Oil; Petroleum; Petroleum Products; Vegetable Oil; Food; Chemicals
Accuracy	± 0.2%; ± 0.5%
Nominal Diameter	DN8~DN200mm
Nominal Pressure	PN1.6~6.3MPa
Medium Temperature	-10 °C~280°C
Medium Viscosity	2~3000MPa · s
Power Supply	12V.DC; 24V.DC
Output Signal	Pulse; 4~20mA.DC; RS485
Display	Accumulative Flow, Single Measurement(Mechanical Dial); Remote transmission of total and instantaneous flow
Error Adjustment	Changing Gear Adjustment
Level Of Protection	IP65
Explosion Proof	Flame-proof Type, ExdIIBT4
Ambient Temperature	-20~55°C
Sensor Material	Cast Iron; Cast Steel; Stainless Steel
Sensor Connection	Flange, Screw, Sanitary tri-clamp

### Flow Range for Different Model:

Cast Iron type(A), Cast Steel type(E), Stainless Steel type (B)

Item	Model	LC-A Cast Iron	LC-E Cast Steel	LC-B Stainless Steel
Pressure (MPa)		1.0, 1.6	2.5, 4.0, 6.4	1.0, 1.6
Medium's Viscosity			2~200mPa.s	
Operating Temperature			-20~100deg C	

### Flow range m<sup>3</sup>/h

Nominal size	Model	LC-A Cast Iron		LC-E Cast Steel		LC-B Stainless Steel	
		0.5	0.2	0.5	0.2	0.5	0.2
10		0.08~0.4	0.1~0.4	0.08~0.4	0.1~0.4	0.1~0.5	0.1~0.5
15		0.25~1.5	0.5~1.5	0.25~1.5	0.3~1.5	0.3~1.5	0.3~1.5
20		0.5~3	0.6~3	0.5~3	0.6~3	0.6~3	0.6~3
25		1~6	1.2~6	1~6	1.2~6	1.2~6	1.2~6
40		2.5~15	3~15	2.5~15	3~15	3~15	3~15
50		4~24	4.8~24	4~24	4.8~24	4.8~24	4.8~24
80		10~60	12~60	10~60	12~60	12~60	12~60
100		16~100	20~100	16~100	20~100	20~100	20~100
150		32~190	38~190	32~190	38~190	38~190	38~190
200		34~340	68~340	34~340	68~340	68~340	68~340

### High temperature Cast Iron (TA), Cast Steel type (TE), Stainless Steel type (TB)

Item	Model	LC-TA Cast Iron	LC-TE Cast Steel	LC-TB Stainless Steel
Pressure (MPa)		1.0, 1.6	2.5, 4.0, 6.4	1.0, 1.6
Medium's Viscosity		2~200mPa.s		
Operating Temperature		100~280deg C		

### Flow range m<sup>3</sup>/h

Item	Model	LC-TA Cast Iron		LC-TE Cast Steel		LC-TB Stainless Steel	
		0.5	0.2	0.5	0.2	0.5	0.2
Pressure (MPa)		0.5	0.2	0.5	0.2	0.5	0.2
10		0.08~0.4	0.1~0.4	0.08~0.4	0.1~0.4	0.1~0.5	0.1~0.5
15		0.24~1.35	0.35~1.35	0.24~1.35	0.35~1.35	0.36~1.35	0.36~1.35
20		0.54~2.7	0.72~2.7	0.54~2.7	0.72~2.7	0.72~2.7	0.72~2.7
25		1.2~5.4	1.4~5.4	1.2~5.4	1.4~5.4	1.4~5.4	1.4~5.4
40		2.7~13.5	3.6~13.5	2.7~13.5	3.6~13.5	3.6~13.5	3.6~13.5
50		4.4~21.6	5.75~21.6	4.4~21.6	5.75~21.6	5.75~21.6	5.75~21.6
80		10.8~54	14.4~54	10.8~54	14.4~54	14.4~54	14.4~54
100		18~90	24~90	18~90	24~90	24~90	24~90
150		38~170	45.6~170	38~170	45.6~170	45.6~170	45.6~170
200		34~340	68~340	34~340	68~340	68~340	68~340

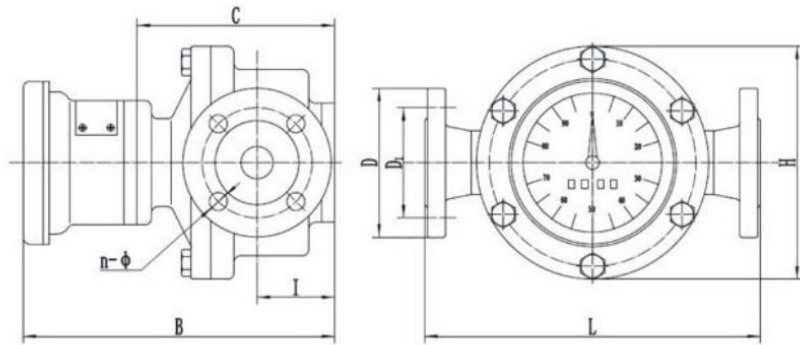
### High viscosity Cast Iron (NA), Cast Steel type (NE)

Item	Model	LC-NA Cast Iron	LC-NB Stainless Steel	LC-NE Cast Steel
Pressure (MPa)		1.6		2.5, 6.4
Medium's Viscosity		200~3000 mPa.s		
Operating Temperature		-10~100 deg C		
Accuracy		0.5		

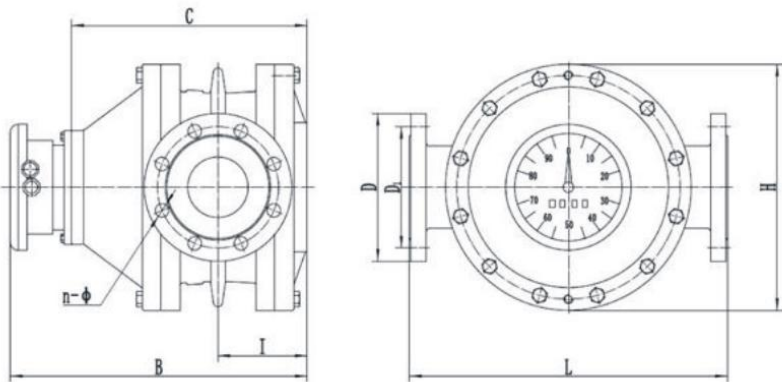
### Flow range m<sup>3</sup>/h

DN	10	15	20	25	40	50	80	100	150	200
Flow	0.04~0.2	0.15~0.75	0.3~1.5	0.6~3	1.5~7.5	2.4~12	6~30	10~50	38~100	34~300

### Oval Gear Flow Meter



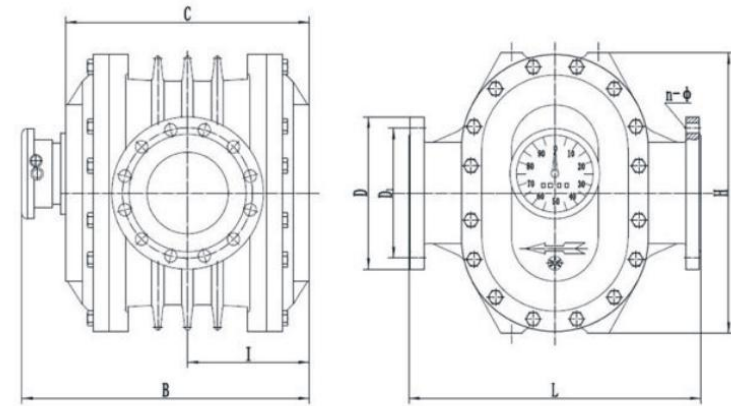
DN10-40



DN50-100

### Oval Gear Flow Meter

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DN150, 200

(A) Castiron Type; Cast iron high viscosity type; High temperature castiron type; Other castiron type

(Units: mm)

DN	L	H	A	B	D	D1	N	Φ
10	150	100	165	210	90	60	4	14
15	170	118	172	226	95	65	4	14
20	200	150	225	238	105	75	4	14
25	260	180	232	246	115	85	4	14
40	245	180	249	271	145	110	4	18
50	265	250	230	372	160	125	4	18
65	265	325	270	386	180	145	4	18
80	265	325	315	433	195	160	8	18
100	515	418	370	458	215	180	8	18
150	540	515	347	557	280	240	8	23
200	650	650	476	720	335	295	12	23

## Oval Gear Flow Meter

(B) Cast Steel Type, steel high viscosity type, high temperature steel type

(Units: mm)

DN	L	H	B	A	D	D1	N	Φ
15	200	138	232	180	105	75	4	14
20	250	164	220	160	125	90	4	18
25	300	202	252	185	135	100	4	18
40	300	202	293	208	165	125	4	23
50	384	262	394	312	175	135	4	23
80	450	337	452	332	210	170	8	23
100	555	442	478	310	250	200	8	25
150	540	510	557	347	300	250	8	26
200	650	650	720	476	360	310	12	26

Note: Cast iron, cast steel oval gear flow meters type high-temperature size: DN15 ~ DN25, A, B according to the table, data size plus 160mm extension tube heat: DN40 ~ DN80, A, B-size table size increases by thermal extension of 300mm pipe, rest size of the corresponding size table Ibid

(C) Stainless steel Type

(Units: mm)

DN	L	H	B	A	D	D1	N	Φ
15	208	120	228	172	95	65	4	14
20	236	150	238	225	105	75	4	14
25	287	195	246	232	115	85	4	14
40	265	178	349	265	145	110	4	18
50	265	178	349	265	160	125	4	18
65	365	260	436	319	180	145	4	18
80	420	305	459	324	200	160	8	18
100	515	400	554	373	220	180	8	18
150	540	515	607	397	280	240	8	23

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### Model Selection

Model	Special Mark	Special Function	Material (Body)	Material (Gear)	DN	Special Request	PN	Counter	Signal Output Box	Remark
1	2	3	4	5	6	7	8	9	10	12
PHLC-										
	U									with warm-keeping sleeve
	G									Thread Connection
		N								High Viscosity
		SP								Sanitary Type
		T1; 2								With Cooling Tube
			A							Cast Iron
			B/C							Stainless Steel
			E							Cast Steel
				A						Cast Iron
				B/C						Stainless Steel
				L						Aluminum
				Z						Engineering Material
					10					DN10mm
					.....					
					200					DN200mm
						S(K)				Flange Shrinkage
						II				Updated Model
							.2/			1.6MPa
							.3/			2.5MPa
							.4/			4.0MPa
							.6/			6.3MPa
								A; A1		Used for Below DN40
								A5; J1		Above DN50
								BELZ		Electronic Counter
								A6 Z		Counter with 0-Return
								FX		Used for Bottle Filling
								GF-I		12V 3-wire pulse output
								GF-II		24V 3-wire pulse output
								MF		4-20MA Analog
										Code J: High Accuracy

1. When the material of body and gear is the same, just need write one code.

2. Material: B-0Cr18Ni9Ti; C-0Cr18Ni12M02Ti

3. Example: PHLC-E80.3/A5GF-II (Cast Steel Material, DN80; PN2.5Mpa; A5 Counter; 24V Pulse Output)