

The Growco LS Series PD BiRotary Flow Meters are designed in double case construction and are typically used as standalone flow meters or used together with batch controllers or PLC for loading of products used in trucks loading terminals, barge loading terminals, rail cars, or related processing installations.

➤ **TYPICAL FEATURES OF LS SERIES:**

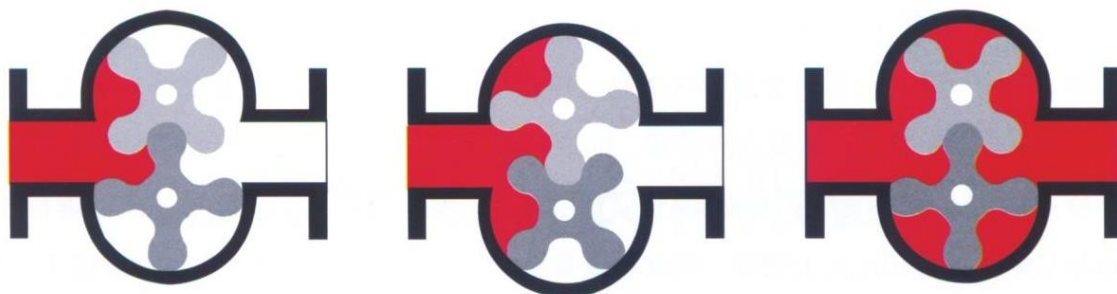
- Stable and reliable operations.
- Straight through flow design.
- Simple structure and easy maintenance.
- BiRotary design rotors allow high accuracy and stable repeatability.
- Options for horizontal or vertical installation.
- Optional with pulse transmitter for remote pulses output.



**Typical Vertical LS Series
Double Case PD Meter**

➤ **PRINCIPLE OF OPERATIONS**

When the fluid flows through the casing, its pressure push the two BiRotary rotors to rotate, the fluid is then displaced out of the measuring chamber. The volume of the measuring chamber is constant with the rotation of the BiRotary rotors and the fluid volume flowing through the rotors can be calculated. See the below schematic sketches of the rotors rotation with the fluid flows.



The BiRotary rotation of the rotors is transmitted to the adjusting unit by the sealed shaft connected to the mechanical counter. There is an option of installing a pulse transmitter to provide pulses output for remote indication or batch controller.

➤ **GENERAL SPECIFICATIONS**

Table 1 – Typical Capabilities

Nominal Diameter Range (mm)*	DN 8 ~ 400	
Working Fluid	Petroleum products such as diesel, gasoline, kerosene & crude oil; water or consult factory for other fluids	
Accuracy*	0.2%	0.5%
Nominal Pressure Type*	1.6 ; 2.5 ; 4.0 ; 6.4 MPa	
Temperature ranges*	-20°C ~ +80°C ; 0°C ~ +150°C ; 0°C ~ 250°C	
Fluid Viscosity*	0 ~ 20,000 mPa.s	
Ambient temperature	-30°C ~ +70°C	
Material of Construction	Standard : Cast Steel Option : 304 SS & 316 SS	
Power Supply (For pulse transmitter, if provided)	+ 12 VDC or +24 VDC	
Output Signal, if provided	Pulse	
Classification	Exd II CT6	
Enclosure	IP65	

* **Note:** Please provide the information during inquiry.

Table 2 – Typical Flow Range Data

Liquid Name	Gasoline / LPG		Kerosene (Water)		Diesel Oil		Crude / Heavy Oil		High Viscosity Liquid		Extreme Viscosity Liquid	
	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%
Viscosity (mPa.s)	0.32 – 0.8		0.8 – 2		2 – 5		5 – 400		400 – 2,000		2,000 – 20,000	
DN(mm)	Flow Range (m³/h)											
15 (0.5")	0.6-3		0.4-4		0.4-4		0.4-4		0.3-2.4		0.3-2.4	
25 (1")	3-8		1.5-10		1-10		1-10		1-8		1-6	
40 (1.5")	8-20	8-20	2.7-22	5.5-22	2.5-25	4.4-22	2.5-25	4.4-22	2.1-18	4.2-18	1.5-12	3-12
50 (2")	9-36	15-36	4.5-36	9-36	4-40	7.2-36	4-40	7.2-36	2.8-24	6-24	2.2-18	4.5-18
80 (3")	20-80	32-80	10-80	20-80	9-90	16-80	9-90	16-80	6.5-56	14-56	5-40	10-40
80A (3")	25-100	30-90	10-90	20-90	10-100	20-100	10-100	20-100	10-60	12-60	5-50	10-50
100 (4")	25-100	40-100	13-100	25-100	12-120	20-100	12-120	20-100	8.5-72	18-72	6.5-54	14-54
100A (4")	30-120	40-120	15-120	25-120	15-150	35-150	15-150	35-150	10-90	20-90	8-70	15-60
150 (6")	55-225	88-220	31-250	57-225	25-250	44-220	25-250	44-220	18-150	38-150	12-100	25-100
200 (8")	90-360	150-360	50-400	90-360	40-400	72-360	40-400	72-360	28-240	53-210	20-160	40-160
250 (10")	135-540	180-540	68-540	135-540	60-600	108-540	60-600	108-540	42-360	90-360	30-240	60-240
300 (12")	220-900	300-900	112-900	225-900	100-1000	180-900	100-1000	180-900	70-600	150-600	54-450	113-450
400 (16")	400-1600	550-1600	200-1600	400-1600	180-1800	320-1600	180-1800	320-1600	130-1100	275-1100	90-750	180-750

* **Note:** The flow meter can also run at the upper limit flow rate for the intermittent rating during truck or small ship Loading/ Unloading. The stated max. flow rate in the catalog is about 20% less than the the upper limit flow rate. And for the gasoline and kerosene, the stated max flow rate is about 30% less than the upper limit flow rate.

Table 3 – Typical Flow Range Data For Electronic Counter Type

Liquid Name	Gasoline/ LPG		Kerosene		Diesel Oil		Crude Oil/ Heavy Oil		High Viscosity Liquid	Extreme Viscosity Liquid		
	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%
Accuracy	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%
Viscosity (mPa.s)	0.32 – 0.8		0.8 – 2		2 – 5		5 – 400		400 – 2,000		2,000 – 20,000	
DN(mm)	Flow Range (m ³ /h)											
8	0.06-0.3	0.10-0.3	0.05-0.3	0.07-0.3	0.03-0.3	0.06-0.3	0.03-0.3	0.06-0.3	0.03-0.27	0.06-0.27	0.03-0.24	0.06-0.24
15A	0.2-0.8	0.27-0.8	0.1-1	0.2-1	0.1-1.5	0.1-1	0.1-1.5	0.1-1	0.1-0.8	0.16-0.8	0.08-0.7	0.15-0.7
15B	0.25-1.5	0.33-1	0.25-1.5	0.25-1	0.25-3	0.3-3	0.3-3	0.4-3	0.1-1.5	0.2-1.5	0.1-1.2	0.2-1.2
25	1.5-6	2-6	1.2-6	1.5-6	0.6-10	1.2-10	0.6-10	1.2-10	0.6-6	1.2-6	0.6-5	1.2-5

Table 4 – Approx. Outline Dimensions And Weights of Vertical Small size meter (DN15 & DN25)

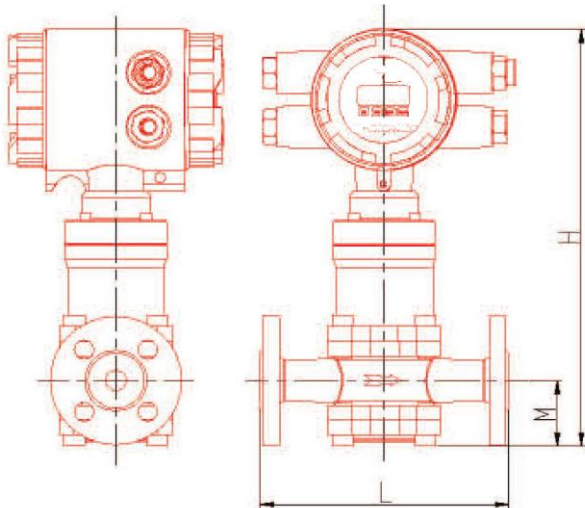


Table 4A for electronic counter

DN (mm)	Flange Distant (L)	Total Height (H)	Centre Height (M)	Weight Kg
15	180	305	53	8
25	200	350	75	14

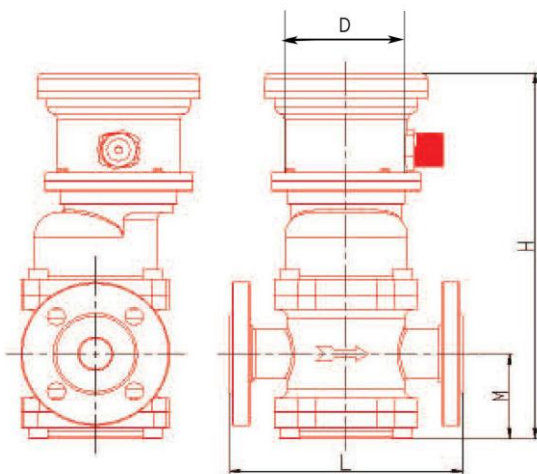
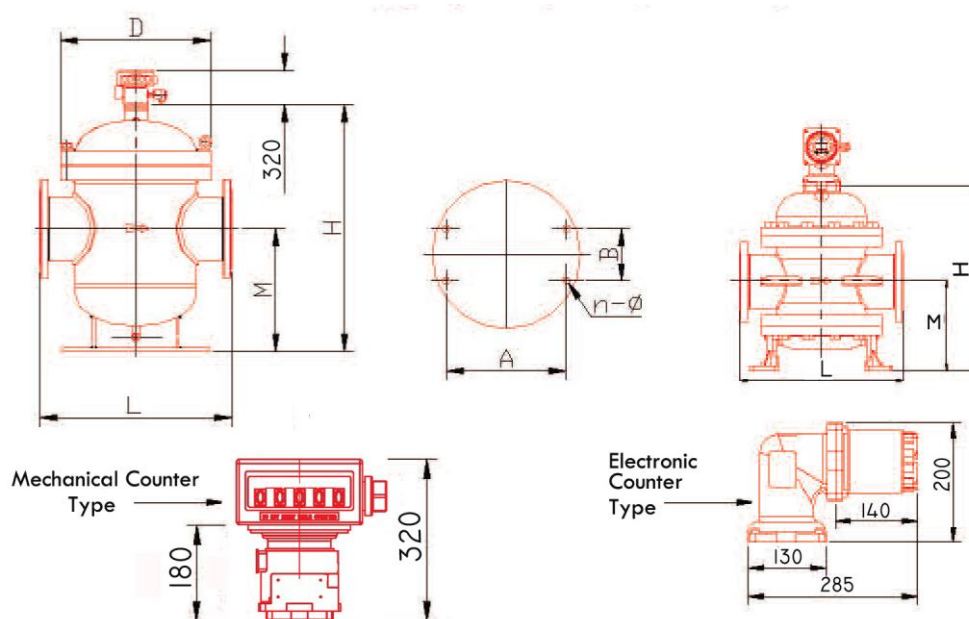


Table 4B for mechanical Round Type Counter

DN (mm)	Flange Distant (L)	Total Height (H)	Centre Height (M)	Upper Dia (D)	Weight Kg
15	180	270	53	108	8
25	200	300	75	150	15

Table 5 – Approx. Outline Dimensions And Weights of Vertical Type Design (DN40 to DN400)

DN(mm)	Flange Distance (L)	Total Height (H)	Center Height (M)	Upper Dia (D)	Install Dim. A x B	Bolt hole size n-Φ	Weight (Kg)
40	250	335	126	185			40
50	360	410	150	235			60
80	400	535	222	305			115
80A	400	540	226	310			115
100	450	580	270	325	340 x 215	4-Φ23	150
100A	450	580	270	310	235 x 170	4-Φ23	150
150	560	675	318	415	450 x 240	4-Φ23	315
150A	560	675	318	415	190 x 190	4-Φ23	315
200	700	945	450	530	445 x 200	4-Φ23	560
250	1000	1029	500	620	524 x 250	4-Φ25	1000
300	1000	1295	640	780	645 x 300	4-Φ25	1460
400	1200	1584	750	980	Φ700	6-Φ25	2000



Vertical Type

- Notes:**
- 1) All dimensions and weights shown in table 4 and 5 are approximate for reference only. We can make the "L" flange to flange length to suit clients' requirements. Consult us if in doubt
 - 2) We are able to make either smaller flange size or larger flange size irrespective of the flow range of the meter's nominal diameter. Please consult us with your flange size requirements.
 - 3) DN 8mm meter come with the Electronic counter only. See table 3 for more details.
 - 4) DN 15mm and DN 25mm meter come with the Round type mechanical counter only or come with the Electronic counter.
 - 5) DN - Nominal Diameter based on flange connection. Consult us when necessary.
 - 6) DN 40mm and below are available in single case only.
 - 7) DN 50mm and above are available in double case only.

➤ **CAUTIONS FOR THE INSTALLATION:**

- ❑ Welding slug, foreign particles, etc. in the pipe must be cleared up before the Flow meter is installed.
- ❑ Install the Flow meter correctly (eg. Horizontally or Vertically based on purchased requirement)
- ❑ The strainer must be installed at the upstream of the Flow meter.
- ❑ Please also follow any required local standard recommendations of pipelines installations to ensure compliance to local safety requirements.

➤ **NOTICE WHEN ORDERING:**

- Describe its application
- Specify accuracy type
- Specify its model/series or size
- Specify working & maximum pressures
- Specify product & maximum viscosity
- Specify voltage if pulse transmitter is required
- Specify horizontal or vertical installation
- Other useful details or contact us

TOTAL MEASUREMENT SOLUTIONS PROVIDER
Member of Singapore Manufacturing Federation (Since 1932)



Distributed by:

GROWCO INTERNATIONAL

International Business Office :

271 Bukit Timah Road, #03-04 Balmoral Plaza Singapore 259708

Tel : (65) 6842 1170

Email: sales@growco.biz

Fax : (65) 6842 1182

Web : www.growco.biz

Growco International reserves the rights, without notice, to alter or improve the designs or specifications of the products described herein.

Origin of Singapore.