



ALOVPD

POSITIVE DISPLACEMENT FLOWMETERS

SERIES ALOVPD meters

GENERAL

Oval Gear Positive Displacement Flowmeter (ALOVPD)

The SMC ALOVPD Oval gear flowmeter features two precisely machined rotating elliptical (oval) gears which rotate and mesh within the meter's interior housing in order to form a measuring chamber of known volume which may be used to accurately determine volumetric flow rate as a function of the gears' velocity. The design of the oval gear meter makes it an ideal choice data for high viscosity and high pressure applications as it provides superior accuracy while offering reduced pressure drop versus traditional circular-gear type PD meters. The ALOVPD meter comes with a rugged battery-powered display module that indicates flow rate and totalized flows in user-configurable engineering units.



FEATURES

- Superior accuracy - to 0.5% of reading with $\pm 0.03\%$ repeatability
- Elliptical gear design provides low pressure loss
- Meter body is available in CS (Std), 304SS or 316SS
- Bearings are available in CS (Std), 304SS or 316SS as well as Alnico
- Will accommodate pressures of up to 870 psig (60 bar)
- Will accommodate viscosities of up to 1000 cP



SPECIFICATIONS

- Flow range: up to 2300 GPM (530 m³/hr)
- Line size : 1/4"-10" (8-250mm)
- Operating pressure: up to 870 psig (60 bar)
- Process temperature: up to 750 °F (400 °C)
- Body Material: CS (Std), 304SS or 316SS (Opt)
- Viscosity: up to 1,000 cP
- Enclosure rating: NEMA 4X (IP 65)
- Accuracy: $\pm 0.5\%$ (Std), $\pm 0.2\%$ (Opt) of reading
- Repeatability: $\pm 0.03\%$ of reading
- Frequency range : 1 up to 30,000 Hz
- Working Humidity: <90% @ 75 °F
- Ambient temperature : -22 to 158 °F (-30 to +70 °C)
- Supply Voltage UB : +24 V_{DC}, regulated
- Output: pulse, 4-20 mA or RS485
- Display: rate, total, low flow cut-off, battery consumption,
- User parameters: K-factors, linear correction coefficient
flowrate input signal section points, temperature
- Housing : IP 68, aluminum AlMgSiPb, blue anodized
- Ex-protection : II 2 G EEx ia IIC T4, BVS 03 ATEX E 205

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Oval Gear Positive Displacement Flowmeter

ALOVPD Flow range in GPM

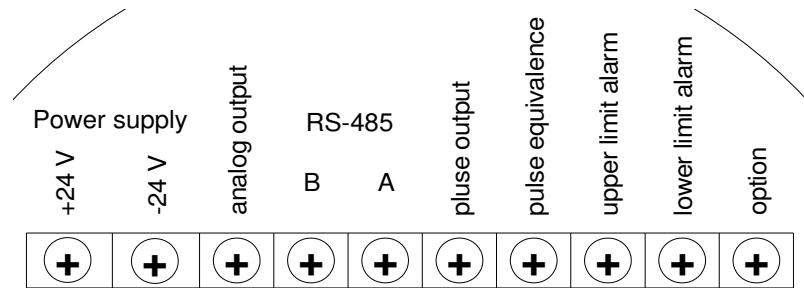
| Pipe Size | viscosity (in cP) | | | | | | | | | | Pluse (Gallons per Pluse) |
|-----------|-------------------|-----------|-----------|-----------|--------------|----------|-----------|-----------|-----------|-----------|---------------------------------|
| | 0.1-0.6 | | 0.6-2 | | 2-8 | | 8-200 | | 200-1000 | | |
| | Gasoline | | Kerosene | | Light diesel | | Crude oil | | Heavy oil | | |
| Accuracy | 0.50% | 0.20% | 0.50% | 0.20% | 0.50% | 0.20% | 0.50% | 0.20% | 0.50% | 0.20% | |
| ¼" | 0.04-0.44 | 0.13-0.44 | 0.22-0.44 | 0.13-0.44 | 0.08-0.8 | 0.3-0.8 | 0.04-0.8 | 0.16-0.8 | 0.04-0.8 | 0.16-0.8 | 0.00007 |
| ⅜" | 0.88-2.6 | 0.88-2.6 | 0.44-1.8 | 0.6-1.8 | 0.18-1.8 | 0.6-1.8 | 0.45-1.8 | 0.36-1.8 | 0.09-1.8 | 0.36-1.8 | 0.00026 |
| ½" | 1.8-8.8 | 2.9-8.8 | 1.7-6.6 | 2.2-6.6 | 0.66-6.6 | 2.2-6.6 | 0.44-6.6 | 1.32-6.6 | 0.44-6.6 | 1.32-6.6 | 0.00203 |
| ¾" | 3.5-13.2 | 4.4-13.2 | 3.3-13.2 | 4.4-13.2 | 1.3-13.2 | 4.4-13.2 | 0.88-13.2 | 2.64-13.2 | 0.66-13.2 | 2.64-13.2 | 0.00269 |
| 1" | 8.8-26.4 | 8.8-26.4 | 6.6-26.4 | 8.8-26.4 | 2.6-26.4 | 8.8-26.4 | 1.8-26.4 | 5.3-26.4 | 0.88-26.4 | 5.3-26.4 | 0.00449 |
| 1¼" | 13.2-44 | 13.2-44 | 8.8-44 | 14.5-44 | 8.8-44 | 13.2-44 | 2.2-44 | 8.8-44 | 1.32-44 | 8.8-44 | 0.00687 |
| 1½" | 22-66 | 22-66 | 13.2-66 | 22-66 | 6.6-66 | 22-66 | 4.4-66 | 13.2-66 | 2.2-66 | 13.2-66 | 0.00740 |
| 2" | 35-105 | 35-105 | 21-105 | 35-105 | 10.5-105 | 35-105 | 7-105 | 21-105 | 3.5-105 | 21-105 | 0.0182 |
| 3" | 66-264 | 275-264 | 53-264 | 275-264 | 26.4-264 | 88-264 | 18-264 | 53-264 | 9-264 | 53-264 | 0.0259 |
| 4" | 88-440 | 130-440 | 88-440 | 145-440 | 44-440 | 147-440 | 29-440 | 88-440 | 13.2-440 | 88-440 | 0.0262 |
| 6" | 176-836 | 277-836 | 167-836 | 277-836 | 83-836 | 277-836 | 55-836 | 167-836 | 44-836 | 167-836 | 0.0343 |
| 8" | 350-1500 | 484-1500 | 300-1500 | 484-1500 | 150-1500 | 484-1500 | 100-1500 | 300-1500 | 66-1500 | 300-1500 | 0.0819 |
| 10" | 475-1540 | 506-1540 | 475-1540 | 510-1540 | 233-2333 | 778-2333 | 154-2333 | 466-1540 | 132-1540 | 466-1540 | 0.0819 |

* For special flow range requirements, please contact the SMC factory

Output Options



Electronic transmitter (option D)- required for all outputs
Electronic Transmitter (Input/Output)



**Mechanical counter
(option J)**



**Smith meter Mechanical counter
(option M)**



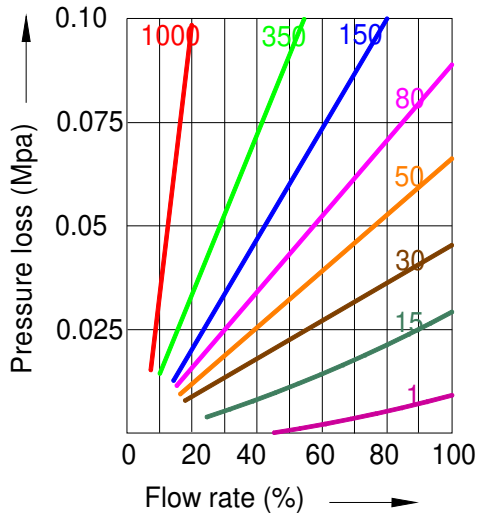
Analog output (pulse or 4-20mA) generator



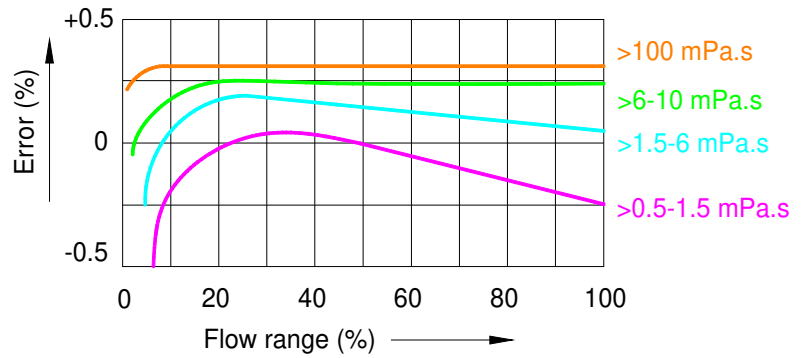
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Oval Gear Positive Displacement Flowmeter

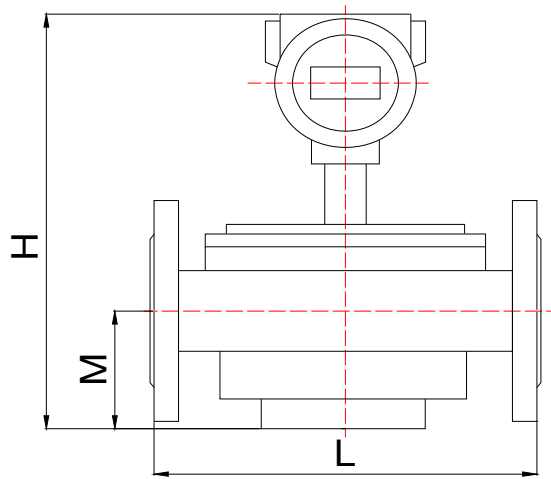
Pressure Drop



Accuracy Error



Installation Dimension



| Size Dia. In. | Flange space L | | Total height H | Center height M | Mass lbs |
|------------------|----------------|-----------|----------------|-----------------|-------------|
| | STD | Special | | | |
| ½" | 3.26 | 7.08/5.90 | 10.32 | 1.39 | 11 |
| ¾" | 7.15 | 7.94 | 11.12 | 2.78 | 22 |
| 1" | 9.50 | 9.93 | 13.90 | 3.18 | 33 |
| 1¼" | 9.93 | 11.91 | 19.85 | 3.18 | 88 |
| 2" | 9.93 | 15.00 | 19.85 | 3.18 | 154 |
| 3" | 15.09 | 15.88 | 27.79 | 6.11 | 308 |
| 4" | 15.09 | 17.87 | 29.38 | 7.54 | 396 |
| 6" | 22.25 | 25.81 | 33.35 | 8.73 | 704 |
| 6" | 27.80 | | 46.85 | 17.87 | 1232 |
| 8" | 39.70 | | 48.04 | 19.85 | 2200 |

* DN8mm is thread connection type,

* Nominal pressure is <6.4MPa.

* For DIN flange. Special dimension inquiry, please contact factory.

**** Please contact your local application engineer**

You also need to provide the following information:

| | |
|---------------------------------------|---|
| Fluid informations | We need the name of your fluid media, operating density, viscosity, pressure and temperature. |
| Full Scale Flow (Max/Min flow) | Indicate maximum and minimum flow rates, units must be Kg/hr, Lb/hr, LPM or gpm, etc.. |
| Line Size | We need to know your pipe size as well connection type (flange, threaded, etc..) |
| Allowable pressure drop | Allowable pressure drop (see graph below) that your process can withstand |
| Type of Electronics | Indicate if you want integral, remote panel or remote wall mounted |
| Power Requirements | Specify your power requirements such as 24 V _{DC} or 220 V _{AC} |

➤ Model Selection Guide

| ALOVPD | | | | | | | | | | |
|---|-----|-----|------|----|----|----|----|----|------------------|-------------------------|
| Example ALBRPD-015-D-1.6-316S-B | | | | | | | | | | |
| ALOVPD-T- | ** | ** | ** | ** | ** | ** | ** | | Description | |
| Nominal Dia: ¼" | 008 | | | | | | | | Line size | |
| Nominal Dia: ½" | 015 | | | | | | | | | |
| Nominal Dia: 1" | 025 | | | | | | | | | |
| Nominal Dia: 1 ½" | 040 | | | | | | | | | |
| Nominal Dia: 2" | 050 | | | | | | | | | |
| Nominal Dia: 3" | 080 | | | | | | | | | |
| Nominal Dia: 4" | 100 | | | | | | | | | |
| Nominal Dia: 6" | 150 | | | | | | | | | |
| Nominal Dia: 8" | 200 | | | | | | | | | |
| Nominal Dia: 10" | 250 | | | | | | | | | |
| Electronic transmitter with display and output | D | | | | | | | | Transmitter type | |
| Round mechanical counter | J | | | | | | | | | |
| Square mechanical counter | M | | | | | | | | | |
| Analog outputs Pulse or 4-20mA | T | | | | | | | | | |
| 1.6 Mpa | | 1.6 | | | | | | | | Operating Pressure |
| 2.5 Mpa | | 2.5 | | | | | | | | |
| 4.0 Mpa | | 4.0 | | | | | | | | |
| 6.4 Mpa | | 6.4 | | | | | | | | |
| Alnico gear & CS housing ≤ 1¼", CS gear and housing ≥ 1½" | | | G | | | | | | | Gear & casing material |
| 304SS gear and 304SS housing | | | S304 | | | | | | | |
| 316SS gear and 316SS housing | | | S316 | | | | | | | |
| Working temperature: -4 ~ +175 °F | | | | A | | | | | | Application temperature |
| Working temperature up to +300 °F | | | | B | | | | | | |
| Working temperature up to +480 °F | | | | C | | | | | | |
| Exd proof | | | | | | | | EX | Options | |
| Extra Analog output for mechanical counters - Pulse | | | | | | | | FP | | |
| Extra Analog output for mechanical counters - 4-20 mA | | | | | | | | FI | | |
| Special fluid: gasoline or liquid gas | | | | | | | | SF | | |
| warmer jacket for heat preservation (steam or oil) | | | | | | | | HJ | | |
| Filter | | | | | | | | FT | | |
| Other Options | | | | | | | | ** | | |