

Flowmate Flowmeter

Description

The Sparling/OVAL Flowmate is a positive displacement flowmeter designed for the measurement of very small flow rates in applications requiring high accuracy. It is an ideal flow measurement device for various fuels like kerosene, diesel, fuel oil, etc. Units are available for remote registration and totalization using either a reed switch or pulse generator output.

Applications

The simple unique construction enables the Sparling/OVAL gear meter to measure various fuels with the highest accuracy for accountability and control.

Common Applications Include:

- Fuel oil monitoring, consumption and control (kerosene, fuel oil, diesel, ect.) to engines, boilers, test stands, R&D labs, etc.
- Chemical additions in process control
- Lubrication oil to turbines, pumps and other equipment.

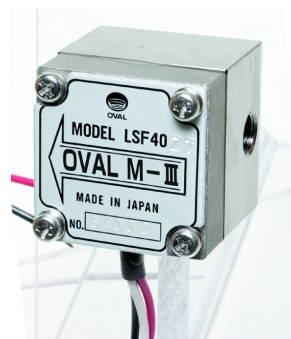
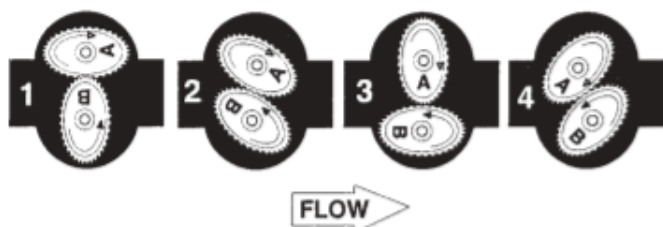
Features

- Sizes include: 0.125" and 0.25".
- Aluminum or SST Body Chambers.
- Accuracy is within $\pm 1\%$ Reading of actual flow for the specified meter range.
- Carbon Steel, Resin Coated Gears - can apply for most liquids
- Reed Switch or MR Sensor for remote registration or totalization.
- Scaled or Unscaled Pulse Output.
- NPT or Metric End Connections.
- Special SST body and rotors
- Low Pressure Drop
- Viscosity up to 1000cp

Principle of Operation

Each meter is equipped with two OVAL shaped gears which rotate when fluid passes through a fixed measuring chamber. Rotation of gears displaces a fixed volume of fluid. The sensor picks up gear rotation, which is proportional to fluid volume and flow rate.

The meter is designed to minimize the sippage between gears and measuring chamber body. As a result, the OVAL gear meter is less affected due to liquid viscosity and lubricity than other flowmeter designs.



Standard Specifications

Accuracy:	Standard $\pm 1\%$ Accuracy
Process Fluid:	Clean Liquid
Max. Working Pressure:	150 psi
Max. Working Temperature:	-4°F to 176°F
Flow Ranges:	See Table
Construction:	Housing: Aluminum or SST
Material:	Rotor: Carbon Steel or Resin
Process Connections:	NPT Threaded Adapters R 3/8 - 19..... 0.125" NPT Female R 1/2 - 14..... 0.25" NPT Female

Pulse Generator

Solid State Hall Effect Switch

Detection Method:	MR Sensor
Response Frequency:	1000Hz Max
Ambient Temp:	-4°F to 176°F
Output Pulse:	Voltage Pulse: 0/1 = 0.5V Less than/ 6.4V - 7.4V (at load resistance more than 10 kilohms) Wave form ratio (%):

$$40 \leq \frac{H}{H+L} \times 100 \leq 50$$

$$\begin{matrix} \text{High} & \text{Low} \\ \text{---} & \text{---} \\ | & | \\ \text{---} & \text{---} \end{matrix} \begin{matrix} = 6.4 - 7.4 \text{ VDC} \\ = 0.5 \text{ VDC} \end{matrix}$$

Power Supply:	12-24VDC, $\pm 10\%$
Power Consumption:	7mA (200 mW) Max
Reed Switch (Option)	
Max. Voltage:	100VAC; 100VDC
Contact Capacity:	10 W or 5000mA
Electric Durability:	250VDC RMS; 1 minute
Output Pulse:	Two wire contact pulse (unfactored)
Ambient Temp:	-4°F to 185°F*

Note: Application is limited by meter temperature standard of -4°F to 176°F.

Flow Range

Size	More than 0.3cp & less than 0.8cp	More than 0.8cp & less than 2cp	More than 2cp & less than 5cp	More than 5cp & less than 200cp	More than 5cp & less than 1000cp	Rotor Material
40	0.4 - 13.2	0.3 - 13.2	0.2 - 13.2	*	0.1 - 13.2	Special Resin
41	0.8 - 26.4	0.5 - 26.4	0.4 - 26.4	*	0.3 - 26.4	Special Resin
41	1.9 - 26.4	1.06 - 26.4	0.5 - 26.4	0.3 - 26.4	*	Stainless Steel
45	2.6 - 132.1	1.99 - 132.1	1.06 - 132.1	*	0.7 - 132.1	Special Resin
45	6.6 - 132.1	4 - 132.1	1.9 - 132.1	0.9 - 132.1	*	Stainless Steel

Meter Body

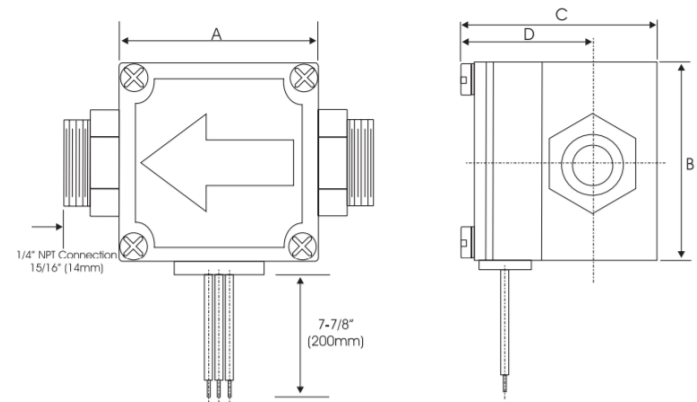
Item		Description							
Meter Size		40		41			45		
Parallel Internal Threads		0.125"		0.125"			0.25"		
Accuracy		±1% Reading							
Operating Temp.		-4°F to 176°F							
Max. Press.		150 psi							
Material	Body	L	C	L	C	C	L	C	C
	Rotor	K	K	K	K	C	K	K	C

C: Stainless Steel

L: Aluminum +Alumite treatment

K: Special Resin

Dimensions



Pulse Generator

MR Sensor - See specifications on front page

MR Sensor Output Pulse Unit

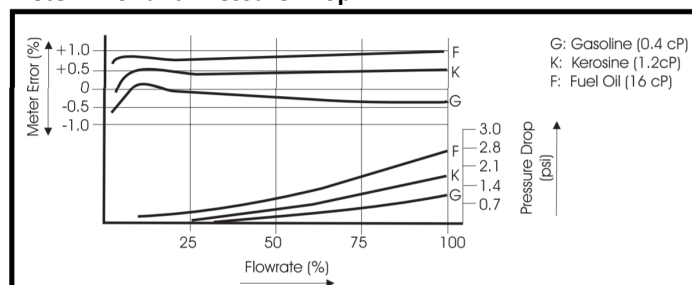
Size	Scaled Pulse		Unscaled Pulse		Max. Flow Rate (GPH)
	Pulse Unit (ml/pulse)	Freq @ Max Flow Rate (Hz)	Meter Factor (ml/pulse)	Freq @ Max Flow Rate (Hz)	
40	1	13.9	0.25	55.6	13.2
41	1	27.8	0.5	55.6	26.4
45	10	13.9	2.5	55.6	132

Reed Switch (Option) - See specifications on front page

Reed Switch Output Pulse Unit

Size	Unscaled Pulse		Max. Flow Rate (GPH)
	Meter Factor (ml/pulse)	Freq @ Max Flow Rate (Hz)	
40	0.25	55.6	13.2
41	0.5	55.6	26.4
45	2.5	55.6	132

Meter Error and Pressure Drop



How to Order a Flowmate

Table 1: Base Model Number

LSF - Sparling/Oval M-III

Table 2: Size

40 - 0.125" (N/A in all Stainless Steel-C Option)

41 - 0.125"

45 - 0.25"

Table 3: Material of Metering Elements

C - 316 SS Body & Rotor

L - Aluminum Body and Special Resin Rotor

P - Aluminum Body & Special Resin Rotor

Table 4: Connection

0 - None

8 - With Connector (Option)

Table 5: Generation

M - MR Sensor

R - Reed Switch

Table 6: Pulse Type

1 - Unscaled Pulse

2 - Pulse Output (MR Sensor Only)

Model LSF Size 40 Material C Conn. 0 Gen. M Pulse 1