

# Flowmate Flowmeter

## Technical Specifications

### 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, etc.) to engines, boilers, test stands, R & D labs, etc.
- Chemical additions in process control
- Lubrication oil to turbines, pumps and other equipment

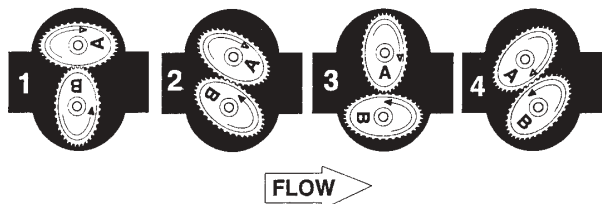
### STANDARD FEATURES

- Sizes include 1/8" and 1/4"
- Aluminum or SST body chambers
- ±1% of reading accuracy or better
- 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
- Metric or NPT end connections
- Special SST body and rotors
- Low pressure drop
- Viscosity up to 1000 cp

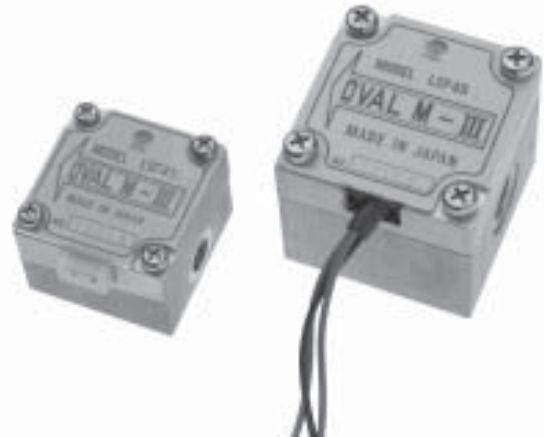
### PRINCIPLE OF OPERATION

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 slippage 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.



Sparling/Oval Flowmate is manufactured by Oval Corporation in Japan.



### GENERAL SPECIFICATIONS

#### METER:

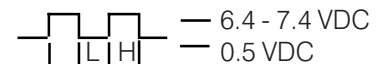
Accuracy:	±1% of reading
Process Fluid:	Clean liquid
Max. Working Temp:	-4°F to 176°F (-20°C to 80°C)
Max. Working Pressure:	150 psi
Flow Ranges:	See Table
Construction	Housing: Aluminum or stainless steel
Material:	Rotor: Special resin or SST (optional)
Connections:	NPT threaded adapters: R 3/8 - 19.....1/8" NPT female R 1/2 - 14.....1/4" NPT female

#### PULSE GENERATOR:

##### Solid State Hall Effect Switch

Detection Method:	MR sensor
Response Frequency:	1,000 Hz maximum
Ambient Temperature:	-4°F to 176°F (-20°C to 80°C)
Output Pulse:	Voltage pulse: 0/1 = 0.5V less than/ 6.4V to 7.4V (at load resistance more than 10 k ohm) Wave form ratio (%):

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



Power supply:	12 to 24 Vdc, ±10%
Power Consumption:	7mA (0.2W) max.
<u>Reed Switch (option)</u>	
Max. Voltage:	100 VAC; 100 VDC
Contact Capacity:	10W or 0.5A
Electric Durability:	250 VDC RMS; 1 min.
Output Pulse:	Two wire contact pulse (unfactored)
Ambient Temperature:	-4°F to 185°F (-20°C to 85°C)*

\*Note: Application is limited by meter temperature standard of -4°F to 176°F (-20°C to 80°C)

# SPARLING / OVAL

## FLOW RANGE ACCURACY ± 1%

Unit in Gallons per Hour

Meter Size	More than .3cp & less than .8cp	More than .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	.4 – 13.2	.3 – 13.2	.2 – 13.2	—	.1 – 13.2	Special Resin
41	.8 – 26.4	.5 – 26.4	.4 – 26.4	—	.3 – 26.4	Special Resin
	1.9 – 26.4	1.06 – 26.4	.5 – 26.4	.3 – 26.4	N/A	Stainless Steel
45	2.6 – 132.1	1.9 – 132.1	1.06 – 132.1	—	.7 – 132.1	Special Resin
	6.6 – 132.1	4 – 132.1	1.9 – 132.1	.9 – 132.1	N/A	Stainless Steel

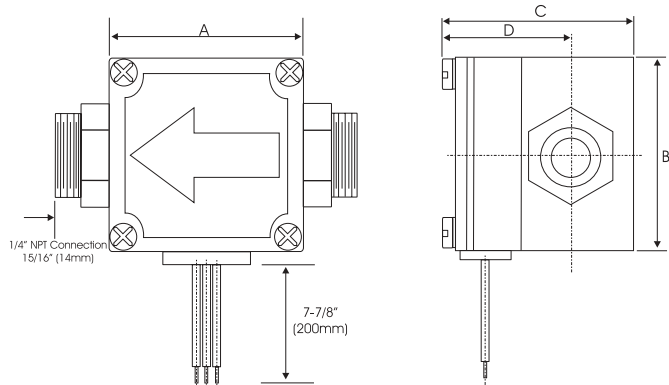
## METER BODY

Item	Description								
Meter Size	40			41			45		
Parallel internal threads	1/8"			1/8" (6mm)			1/4" (8mm)		
Accuracy	±1% RD								
Operating temp. range	-4°F – 176°F								
Max. operating press.	150 psi								
Mat'l.*	Body	L	C	L	C	C	L	C	C
	Rotors	K	K	K	K	C	K	K	C

\*Material

C: Stainless steel (Body:SUS316, Rotor:SUS316L(Sintered metal))  
 L: Aluminum + Alumite treatment  
 K: Special resin

## DIMENSION DRAWINGS



Dimension	Model LSN40, 41	Model LSN45
A	1-9/16" (40mm)	2" (50mm)
B	1-9/16" (40mm)	2" (50mm)
C	1-3/8" (35mm)	2" (50mm)
D	1-1/16" (27mm)	1-1/4" (32mm)

## PULSE GENERATOR

**MR Sensor** - See specifications on front page

### MR Sensor Output Pulse Unit

Size	Scaled Pulse		Unscaled Pulse		Max Flow rate GPH
	Pulse	Freq@Max	Meter Factor	Freq@Max	
	Unit mL/P	Flow rate Hz	mL/P	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

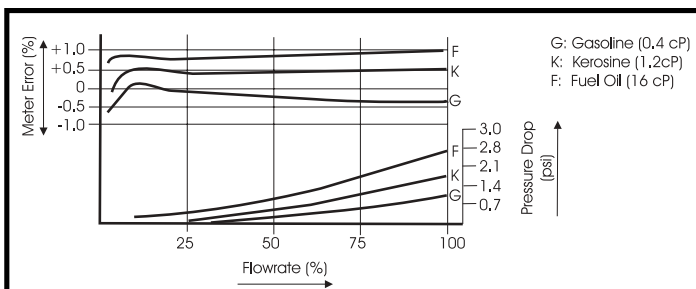
**Reed Switch (Option)** - See specifications on front page

### Reed Switch Output Pulse Unit

Size	Unscaled Pulse		Max Flow rate GPH
	Meter Factor mL/P	Freq.@Max Flow rate Hz	
40	0.5	27.8	13.2
41	1.0	27.8	26.4
45	5.0	27.8	132

mL/P = milli-liter/pulse

## METER ERROR AND PRESSURE DROP



## HOW TO ORDER FLOWMATE

### Base Model Number

LSF Sparling/Oval M-III

### Size

40 Rp 1/8" (6mm) – N/A in all Stainless Steel – C option  
 41 Rp 1/8" (6mm)  
 45 Rp 1/4" (8mm)

### Material of Metering elements

C 316 Stainless Steel Body & Rotor  
 L Aluminum Body & Special Resin Rotor  
 P 316 Stainless Steel Body & Special Resin Rotor

### Connection

0 No connector  
 8 w/connector (option)

### Generation

M MR sensor  
 R Read switch (option)

### Kind of Pulse

1 Unscaled pulse  
 2 Scaled pulse (MR sensor only)



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