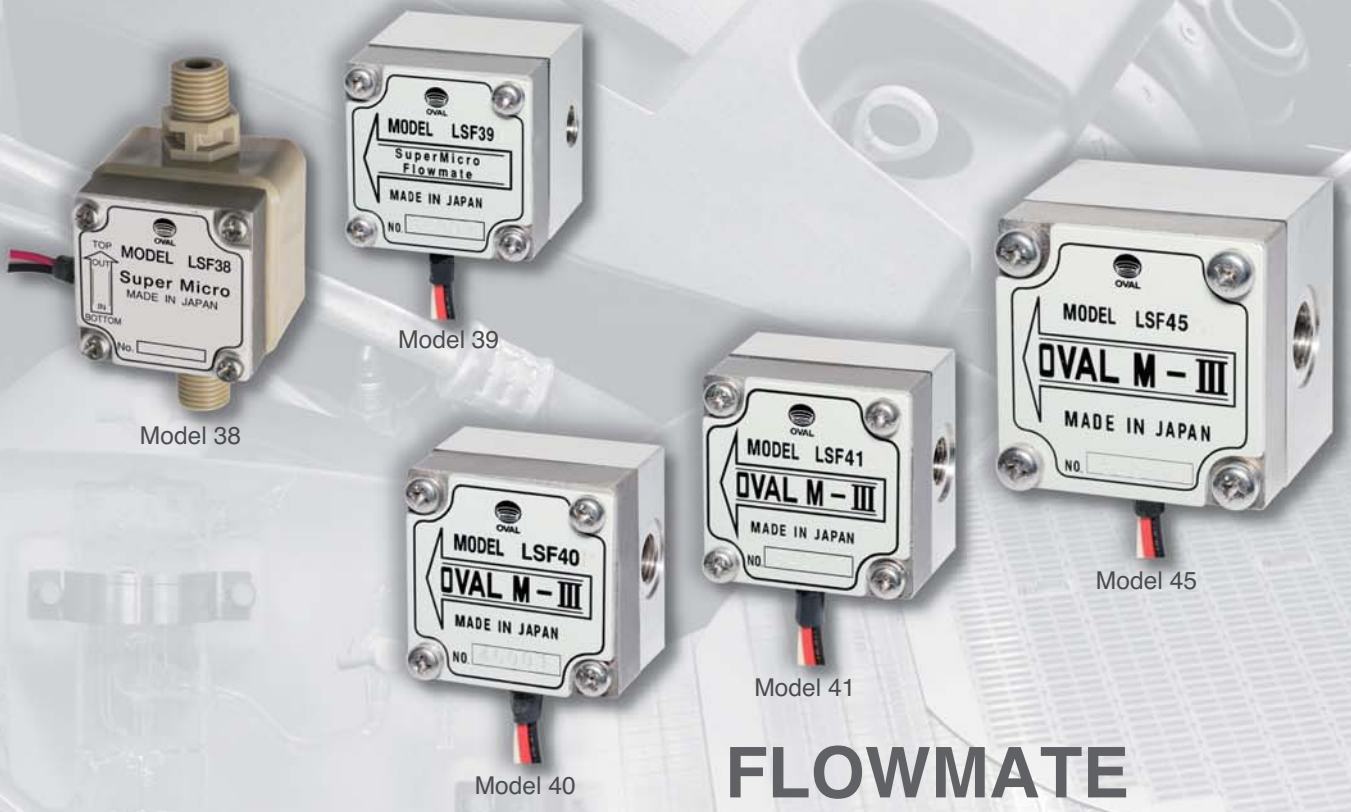
OVAL FLOWMATE Series

Super Micro Flowmate

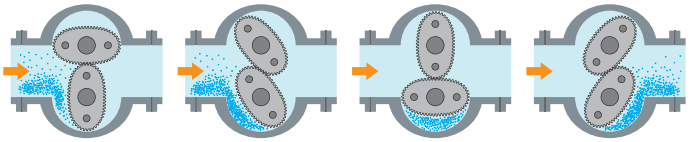


Model 38 Model 39 Model 40 Model 41 Model 45

FLOWMATE

- **High reliability!** Highly reliable oval gear flowmeter of excellent accuracy, repeatability and responsiveness.
- **Selectable materials!** Inexpensive aluminum body for oils, and highly durable stainless steel types for water and chemical liquids.
- **The most suitable for flow totalizing of extreme low flow regions !** Many deliveries for fuel measurement of burners and heaters.
- **Simple structure, robust and inexpensive!** Easy-to-fasten metal connection of high durability.
- **Most suitable for installation on equipment!** Easy to handle, small and regular square shape.
- **Can be combined with pumps and valves!** Many deliveries for proportional injection of chemicals and foods, and flow control.
- **Can accommodate to designated specifications by customer!** In response to the installation condition, the specification can be altered.

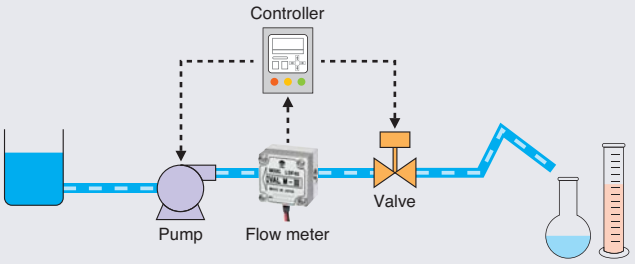
Principle of Operation



When the liquid flows, a pair of oval gears rotates, measuring a certain capacity (the part of crescent).
When the oval gear rotates one time, the liquid of 4 times of a certain capacity is discharged. Therefore, we can measure the volume of the liquid by measuring the number of rotation of the oval gear.

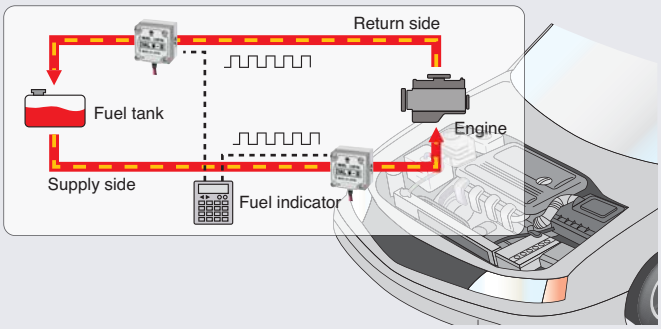
As a flow meter for the filling apparatus of various liquid…

Using valves and pumps, injections of various liquids are common in almost all of industries. FLOWMATE has been successfully used for apparatuses that need the correct filling amount. The aluminum type is used for oils and stainless type is used for water and chemical liquid. In addition, as FLOWMATE covers a broad flow range with the size from size 38 to 45, they are being used in variety of industries.



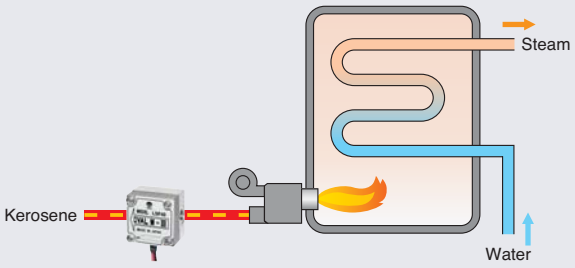
As a flow meter to measure fuel efficiency mounted on cars…

FLOWMATE can be mounted in the engine room of a car to measure the fuel efficiency because of its high accuracy, easy to handle compact design, and tolerance to the vibration of a moving car as main reasons. The meter can be used for gasoline, as well as to measure supply and return flows of diesel engines.



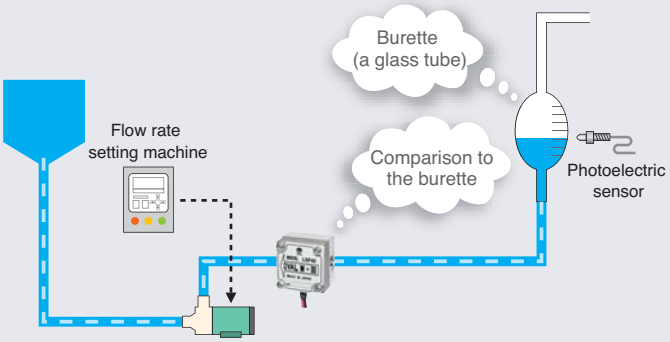
As a flow meter to control a combustion equipment…

FLOWMATE is a small, inexpensive and unique made in Japan flowmeter, being widely used in the world to control oil flows for combustion equipment and energy saving.
The meter can be used to monitor a small boiler, the indication of fuel flow rate of a small fuel system and centralized control systems.



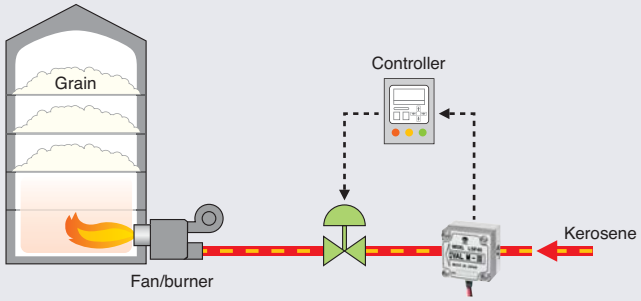
As a standard flow meter for the testing of flow of a small pump…

Conventionally burette has been used in the flow test of small pumps. By adopting FLOWMATE with output signal function as the standard for an automatic setting device of discharge flow, more reliable inspection and flow rate setting method are achieved. As small pumps are intended to inspect many units simultaneously, a flow meter to save space and is reliable, but inexpensive model is required.



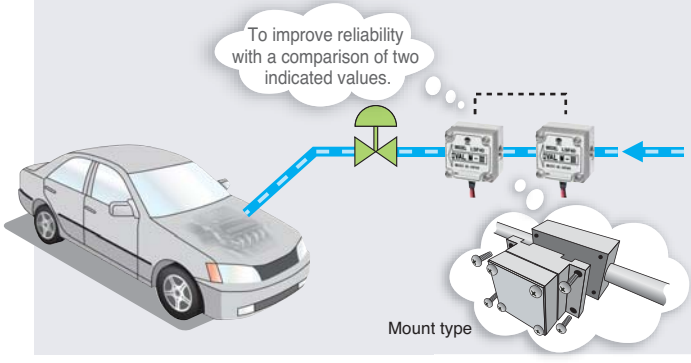
As a flow meter to control the combustion of a burner…

Flow meter manages fuel efficiency of a burner in a grain drier. As FLOWMATE has five sizes, enabling themselves to match with proper flow range of each customer. As a specialized FLOWMATE for a burner, size 39 (flow range: 1 to 15L/h) of robust aluminum body is available.



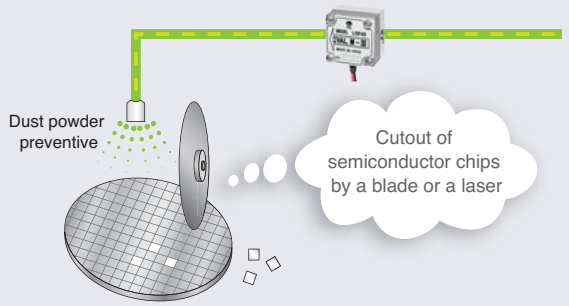
As a flow meter to fill various liquid for completed cars…

At final process of car factory, various liquids such as engine oil, washer fluid, break oil and gasoline need to be filled into a completed car. With its compactness and high reliability as advantages, FLOWMATE makes a precise filling process, enabling to record each filling and change of the filling amount with a one-touch operation.
A mount type for quick installation and disinstallation for examination and replacement is available. Size 45 and bigger are also available.



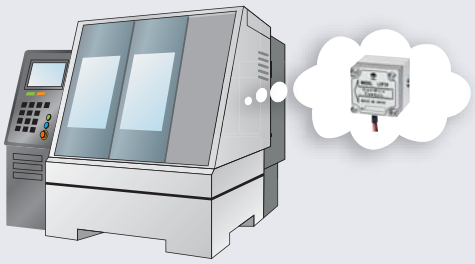
As dust powder preventive method in the case of cutting out semiconductor chips…

There is a process to apply dust powder preventive to curb the dust caused by cutting out semiconductor chips.
FLOWMATE is widely used to adjust and control the applied flow rate, because of its excellent repeatability in flow rate measurement.



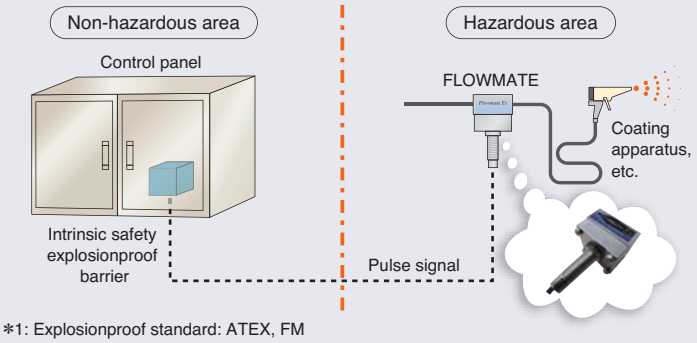
As a flow meter to control the applied quantity in metal processing…

In precise processing of aluminum, there is a process predetermined curve has to be made, by applying extremely small amount of oils.
FLOWMATE is incorporated into the processing machine and makes stable production by taking advantage of its extremely low flow rate.



As an inexpensive explosionproof flow meter…

By using the explosionproof sensor, FLOWMATE can be used in hazardous area. It can be used as an inexpensive explosionproof flow meter*1 in a painting booth.
The applicable sizes are 39 and bigger.



*1: Explosionproof standard: ATEX, FM

■ FLOW RANGE (Unit: L/h)

Meter size \ Viscosity	Water	0.3mPa•s to lower than 0.8mPa•s	0.8mPa•s to lower than 2.0mPa•s	2.0mPa•s to lower than 5.0mPa•s	5.0mPa•s to lower than 200mPa•s	5.0mPa•s to lower than 1000mPa•s	Rotor Material
Super Micro 38	0.09 to 3	—	—	—	—	—	PEEK resin
Super Micro 39	—	—	0.12 to 6	0.12 to 6	—	—	PPS resin
40	—	1.5 to 50	1.0 to 50	0.7 to 50	0.5 to 50		Special resin
41	—	3.0 to 100	2.0 to 100	1.5 to 100	1.0 to 100		Special resin
	—	7.0 to 100	4.0 to 100	2.0 to 100	1.0 to 100	—	Stainless Steel
45	—	10.0 to 500	7.0 to 500	4.0 to 500	2.5 to 500		Special resin
	—	25.0 to 500	15.0 to 500	7.0 to 500	3.5 to 500	—	Stainless Steel

■ GENERAL SPECIFICATIONS (Meter Body)

Item		Description									
Meter size		Super Micro 38 (※1)	Super Micro 39	40		41			45		
Nominal size		R 1/4	Rc1/4 (With the fitting furnished.)	Rp 1/8 (6mm)		Rp 1/8 (6mm)			Rp 1/4 (8mm)		
Accuracy		0.09 to lower than 0.18 L/h ±10% RD 0.18 to 3 L/h ±3% of RD	0.12 to lower than 0.3 L/h ±8% RD 0.3 to 6 L/h ±3% of RD	±1% of RD							
Operating temp. range		−10 to +60°C	−20 to +80°C								
Max. operating press.		0.3MPa	0.49MPa	0.98MPa							
Material (※2)	Body	P	C	L	C	L	C	C	L	C	C
	Rotors	P	P	K	K	K	K	C	K	K	C

※1 Mounting orientation of size 38 is only from bottom to top.

※2 Material C : Stainless steel (Body: SUS316, Rotor: Sintered SUS316L)
L : Aluminum + Alumite treatment
K : Special resin
P : PPS resin for only size 39
(For measurement of other than water, pure water and oils, consult us.)
P : PEEK resin for only size 38
(For measurement of only water, pure water)

NOTE: Body material with code "L" is not applicable for water and corrosive liquids.

■ APPLICABLE EN DIRECTIVES

Applicable EU Directive	Electromagnetic Compatibility Directive：2014/30/EU
Applicable EN standards, etc.	For Electromagnetic Compatibility Directive EN61326-1：2013 Class A

Provision of a lightning arrestor (M-SYSTEM : MDP-SP or equivalent) is prerequisite.

■ GENERAL SPECIFICATIONS (Pulse Generator)

Item		Description				
		Model 38	Model 39	Model 40	Model 41	Model 45
Detection method		Magnetic sensor				
Response frequency		Max.1000Hz				
Ambient temp. range		−20 to +80°C				
Output pulse (MR sensor)		Voltage pulse 0/1＝Max. 1VDC/[Supply voltage]-Min. 2VDC (at load resistance Min.10kΩ) — [Supply voltage]-Min. 2VDC — Max. 1VDC; L H	Voltage pulse : 0/1＝Max. 0.5VDC/6.2 to 7.6VDC (at load resistance Min.10kΩ) — 6.2 to 7.6VDC — Max. 0.5VDC; L H			
		Wave form ratio (%) $4.0 \leqq \frac{H}{H+L} \times 100 \leqq 65.0$				
Output Pluse Unit (mL/P)	MR sensor (Scaled)	—	—	1	1	10
	MR sensor (Unscaled)	0.0550	0.161	0.25	0.5	2.5
	Reed Switch*2 (Option)	—	—	0.5	1.0	5.0
Transmission distance		Max. 1km (Cable : CVVS 1.25 to 2sq.)				
Power supply		12 to 24VDC±10%				
Power consumption		Max.10mA (Max.0.3W)				

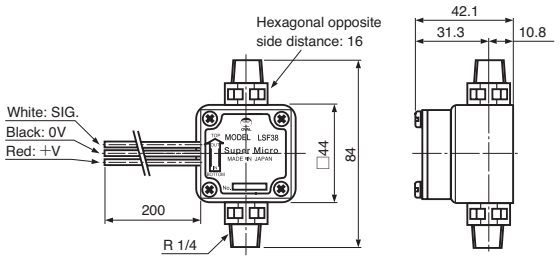
*2 Reed Switch (Option)

Item	Description
Max. operating voltage	AC : 45V, DC : 45V
Contact capacity	10W or 0.5A (Resistance load)
Withstand voltage between contacts	DC : 250V RMS 1min.
Output pulse	Contact pulse (Unscaled only)
Ambient temperature	−20 to +85°C (at 90%RH and lower)

■ OUTLINE DIMENSIONS

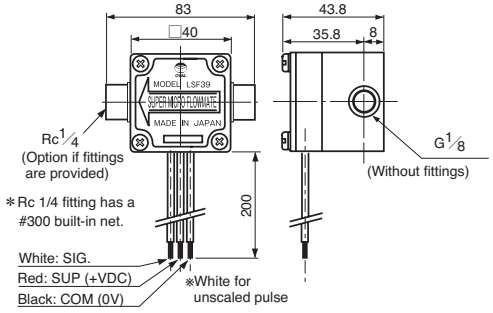
Unit in mm

●Super Micro Flowmate (size 38)



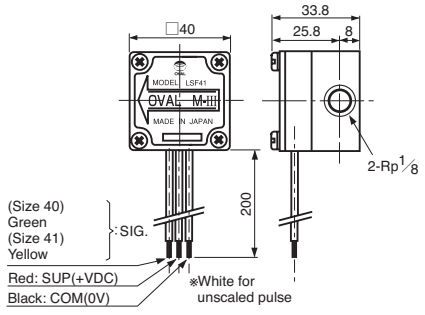
NOTE: For meter size 38, furnish with a strainer (mesh #300).

●Super Micro Flowmate (size 39)

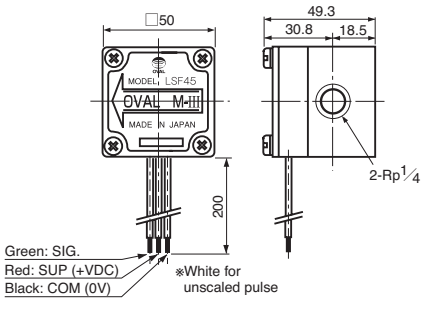


NOTE: Meter size 39 requires a strainer if fittings are not provided.

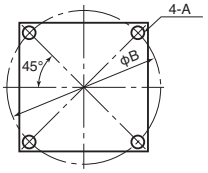
●Meter size 40, 41



●Meter size 45



●Dimensions



MODEL	A	B	Screw depth
39	M4	45	6
40	M4	45	6
41	M4	45	6
45	M5	56	15

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