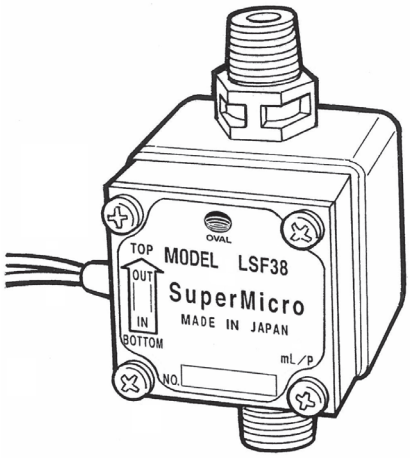
OVAL INSTRUCTIONS

Ins. No. S-176-10-E

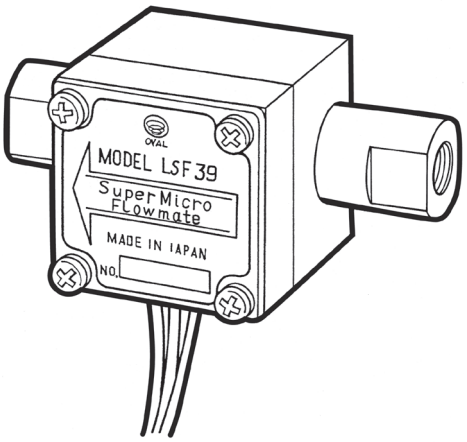
CE UK CA

Super Micro Flowmate
FLOWMATE (OVAL M-Ⅲ)

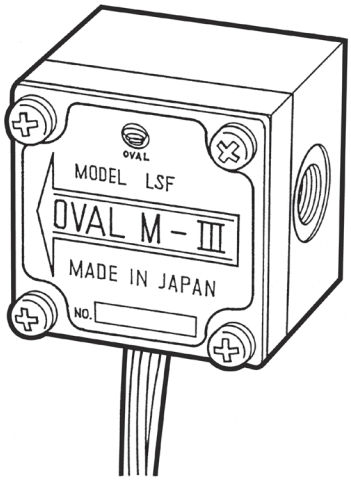
38
39
MODEL LSF 40□□-□□
41
45



Super Micro 38



Super Micro 39
Fittings provided (option)



Meter Sizes 40, 41, and 45

Every OVAL flowmeter is fabricated and shipped from factory under stringent quality control. In order to maintain its design performance throughout its life, this manual offers the operator the necessary installation, operation and maintenance information. Be well familiar with these instructions before you place the meter in service and keep this manual at the field location for ready reference.

CONTENTS

The indications **NOTE**, **CAUTION**, and **WARNING** shown throughout this manual are to draw your attention to specific items:

➡ NOTE

Notes are separated from the general text to bring user's attention to important information.

⚠ **CAUTION**

Caution statements call attention to user about hazards or unsafe practices that could result in minor personal injury or property damage.

⚠ **WARNING**

Warning statements call attention to user about hazards or unsafe practices that could result in serious personal injury or death.

1.BEFORE YOU BEGIN

The OVAL Flowmeter has been fully inspected at the factory before shipment. When this device is delivered, please make sure to check the appearance of the device to confirm that it is free from damage. Please read this section carefully, as this section contains necessary precautions for handling. For matters other than those described in this section, please find relevant items from the Contents on page 2 to refer to them.
For any inquiries, call the sales office from which you purchased the product, or contact the nearest OVAL representative in our customer service network.

⚠ CAUTION

When inquiring, please inform us of the product name, code (MODEL) and serial number, rated specifications, and other relevant information.

1.1 Transportation Precautions

(1) To prevent unexpected problems,transport the flowmeter to the installation site using the original manufacturer's packing for shipment.
(2) FLOWMATE (OVAL M-Ⅲ) is adjusted and inspected as an assembly consisting of the meter body, sensor and pulse generator. It should therefore be handled as an integral assembly.

1.2 Storage Precautions

Storing FLOWMATE (OVAL M-Ⅲ) for long term before installation can result in unexpected and undesirable conditions.
When long-term storage is anticipated, take the following precautions:
(1) Your FLOWMATE (OVAL M-Ⅲ) can best be stored in the manufacturer's original packing used for shipping if possible.
(2) Place of storage should conform to the following requirements:
★ Location free from rain and water.
★ Location free from vibration and impact shocks.
★ At room temperature with minimal temperature and humidity variation (around 25°C and 65% R.H.).
(3) Purge FLOWMATE (OVAL M-Ⅲ) that has once been placed in service with clean air, N_2 gas, etc. to prevent the metered fluid from adhering to the meter, connection parts, piping inner walls, housing, etc. before storage.

➡ NOTE: Wash clean with suitable detergent if necessary. Do not allow the meter to spin too fast during the purging or washing process.

(4) **⚠ CAUTION**

Super Micro Flowmate (Meter size 38) has resin connecting parts.
Overtightening or repeatedly installing/removing may cause a broken joint or loss of airtightness by a deformed taper screw.

(5) In case of storage for extended periods of time, good practice is to keep stored in the same containers used for shipment from the factory.

1.3 Structural Precautions

FLOWMATE (OVAL M-Ⅲ) is intended for indoor use. Do not expose it to rain and water.

2. OPERATING CONDITIONS

To maintain high accuracy and long service life of FLOWMATE (OVAL M - Ⅲ), it should be used under the conditions designated for its flow rate, pressure, temperature and viscosity.
These operating conditions are stated in Sections “9. GENERAL SPECIFICATIONS” on page 15. Make sure to confirm them before operation.

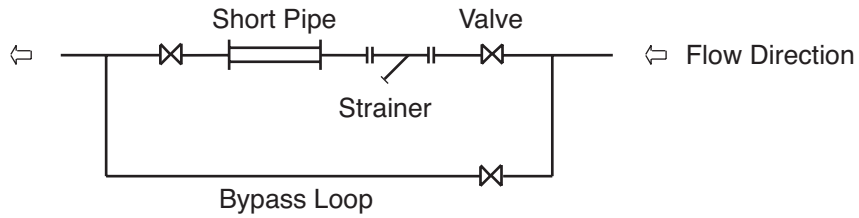
⚠ CAUTION

If the body material is anodized aluminum, do not use for water or corrosive liquids.

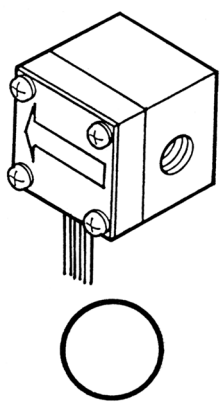
3. PIPING PROCEDURE

3.1 Piping Precautions

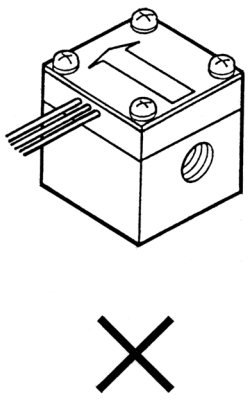
(1) Perform pipe flushing.
Be sure to flush the pipes before installing the meter.
At this time, connect a short pipe instead of the meter. (See below figure)



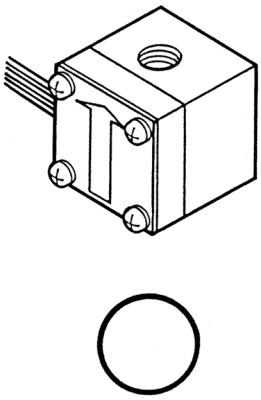
(2) After the pipe flushing is completed, install the meter while being careful for pipe distortions.
(3) When screwing in the fittings, be very careful not to allow metal chips and seal tape protrusions to get into the meter.
(4) Install the meter downstream of the pump.
(5) Flow direction must conform to the arrow mark indicated on the meter body.
(6) Install the strainer upstream of the flow meter and as close to the meter as possible.
(7) Meter installation is correct if the nameplate is facing vertical.
(8) When installing Super Micro Flowmate (Meter size 38) in the piping assembly, screwing torque at the fitting should be held within 10N•m.



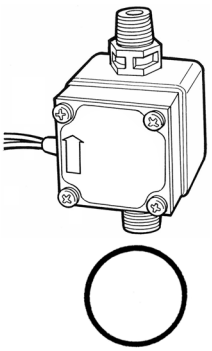
※ Measures flow in either direction (from left to right or from right to left).



※ Do not install the meter in an orientation with nameplate facing at the top or at the bottom.



※ Measures flow in either direction (from top to bottom or from bottom to top).



➡ NOTE: Super Micro Flow mate (Meter size 38) makes measurements only in this physical orientation (flow direction is from bottom to top).

4. WIRING PROCEDURE

➡NOTE : Also see the topic "WIRING PROCEDURE" in the instruction manual of the receiving instrument used.

4.1 Wiring Methods

(1) Cables for field wiring

Unless otherwise specified, use the following wiring cables.
Class 2 shielded chloroprene cabtyre cables (JIS C 3327) or shielded vinyl cabtyre cables (JIS C 3312) with a conductor area of 1.25mm².
3-conductor cables may be used to suit your specific application. Shielded end should be grounded at the ground terminal of the receiving instrument.

(2) Transmission length

The standard transmission distance is 1 km or less when using a transmission cable (JIS C3327 or JIS C 3312 conductor cross-sectional area 1.25 mm²).

➡NOTE: If transmission length exceeds 1km, contact OVAL.

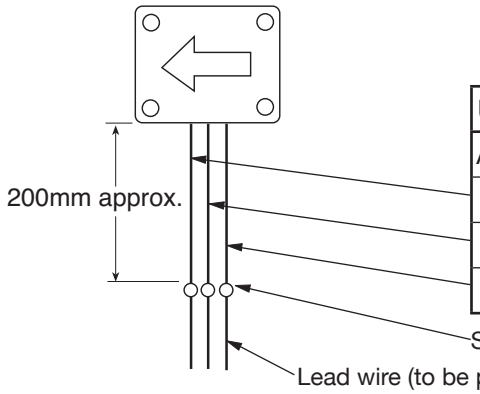
(3) Prevention of inductive interference

Careful attention should be paid to wire away from other high-power cables or high-power circuits to avoid inductive interference.

⚠ **CAUTION: Verify the validity of flowmeter (pulse generator) to receiving instrument combination by their product No., instrument No., etc. before making wiring connections.**

4.2 Wire Connection Methods

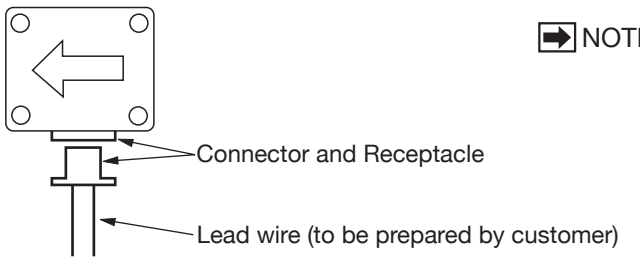
◆ 3-wire connection (MR sensor): Meter sizes 38, 39, 40, 41, and 45



➡NOTE ※ : Unfactored pulses only with Meter sizes 38 and 39 .

Unfactored pulse	Factored pulse		
All models ※	Size 40 (1mL/p)	Size 41 (1mL/p)	Size 45 (10mL/p)
WHT: SIG	GRN: SIG	YEL: SIG	GRN: SIG
RED: +V	RED: +V	RED: +V	RED: +V
BLK: 0V	BLK: 0V	BLK: 0V	BLK: 0V

◆ 2-wire connection (reed switch): Meter sizes 40, 41, and 45 (unfactored pulses only)



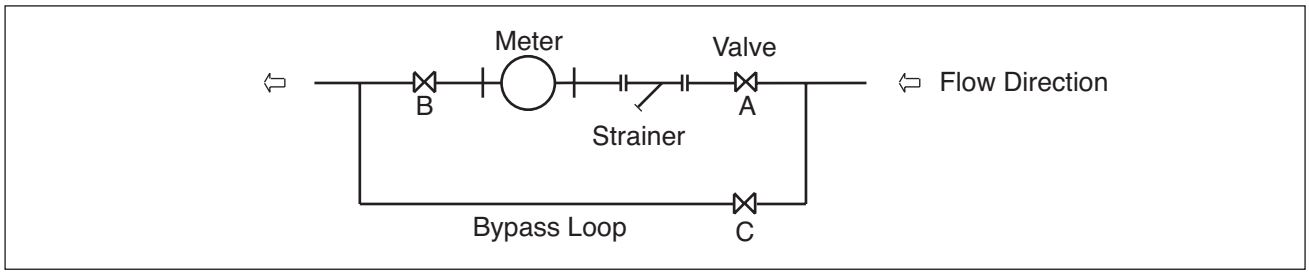
➡NOTE: 1. Remove the terminal from the connector, and crimp the lead wire to the terminal. Afterward, reassemble the terminal to the connector.
2. The sensor is of reed switch type. Polarity consideration is not required.

5. OPERATING INSTRUCTIONS

5.1 Operation

At the start up, carefully start operation by following procedures and use well within the specified flow rate range.

➡ NOTE: See the piping diagram below.



(1) Close valve (A) of the inlet side of the meter and valve (B) of the outlet side of the meter, and open valve (C) of the bypass line and let the liquid flow through the bypass line to remove welding debris and scale in the piping.

⚠ **CAUTION: Take extra care when operating in newly assembled pipings.**

(2) Gradually open valve (A) very little by little, and then valve (B) gradually very little by little.

(3) Gradually close the bypass line valve (C) and check that the counter is working. Since the air bubbles interfere with the measurement if there are air bubbles in the measuring chamber. Make sure to vent air thoroughly when installing the equipment in your piping.
For Meter size 38, it is recommended to run the liquid at about 50 ml/min for 1 minute or more to eliminate air.
For models other than Meter size 38, run 10 to 20% of the maximum flow rate for 15 minutes or more and confirm that air in the pipe has been eliminated.
In particular, when using at a temperature of 60℃ or higher, operate for at least 30 minutes to ensure the heat distribution in the measuring chamber is even.

(4) After the startup operation (preheating) has been completed, close valve (C) completely, gradually open valve (A), and slowly open valve (B) to adjust to the specified flow rate.

(5) Adjust the flow rate with valve (B) and keep within the rated flow rate.

(6) Inspect and clean the strainer net regularly.
Especially in a new piping assembly, inspect once a day in the beginning to observe the clogging condition, and then gradually reduce the inspection frequency to once a week.

⚠ **CAUTION: Take extra care to avoid running the meter too fast.**

5.2 Operating Precautions

(1) Changing the flow rate

When changing the flow rate or opening and closing the valve in batch operation, do not subject the meter to sudden flow fluctuations. Accuracy will not be guaranteed if the operation exceeds the maximum allowable flow rate.

Service life can be shortened and may cause malfunctions such as the bushing seizure or collision between the rotor and the measuring chamber.

(2) Temperature change of measuring liquid

Do not expose the flow meter to sudden temperature changes.

The temperature change of the measuring liquid to the flow meter section should be 3℃ / min or less.

In particular, be careful when measuring liquids with a temperature different from the atmospheric temperature in the batch operation of piping without heat insulation or cold insulation.

Heat trace the piping and meter if sudden temperature changes are expected.

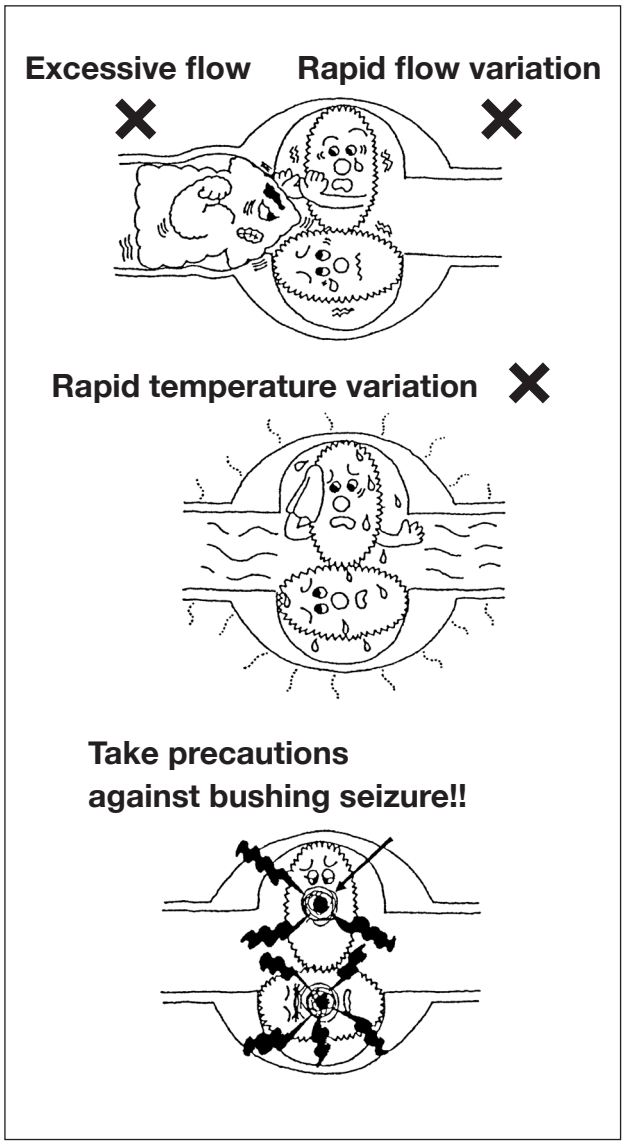
(3) Liquid with low vapor pressure

Liquids with low viscosity and low vapor pressure, such as LPG and vinyl chloride monomer, are easy to vaporize, so be sure to control the temperature and pressure sufficiently. In particular, the temperature of the bushing is higher than the temperature of the measuring liquid during operation. Vaporization at the bushing part may cause malfunctions such as abnormal noise and seizure of the bushing.

(4) Highly corrosive liquid

When measuring highly corrosive liquids, use appropriate materials for tanks, pipes, etc.

If foreign matter is mixed in the measuring liquid from the beginning or corrosive eluate from tanks or pipes made of inappropriate material flows into the measuring chamber, it may cause malfunction such as rotation stop.



⚠ CAUTION

5.3 Precautions at Stopping Operation

(1) Close valve gradually.

Depending on the piping conditions, sudden closing of valve may cause sudden increase in pressure due to water hammer. This may damage the meter.

(2) Precautions on pressure at complete valve closure

When the valves located upstream and downstream of the meter are completely closed, the piping between valves becomes an airtight container.

Unexpected pressure may be applied to the sealed part with temperature rise, causing damage to the meter.

(3) Liquid that may Stick or Gelate

Run a cleaning liquid and thoroughly clean the inside of the meter before stopping operation if the accumulated fluid may stick or become gel. The meter cannot be restarted if being left unattended.

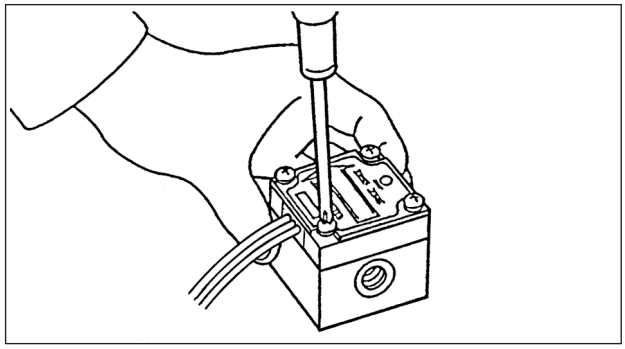
6. OVERHAUL INSPECTION

◎Although it depends on the usage conditions, perform an overhaul inspection once a year.
◎Refer to "EXPLODED VIEWS" on pages 12-14.

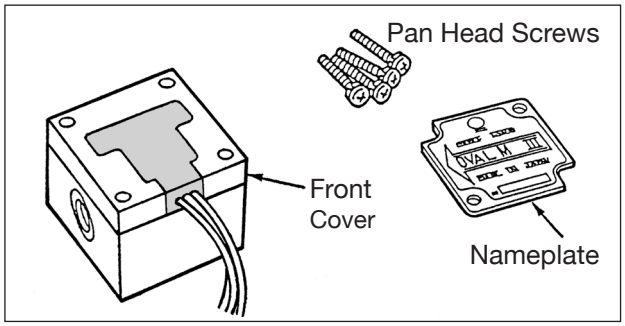
6.1 Overhaul inspection for meter body

When fluid does not flow.
It may be suspected that the rotors do not rotate with scale becomes jammed between the rotors. Therefore the measuring liquid does not flow.

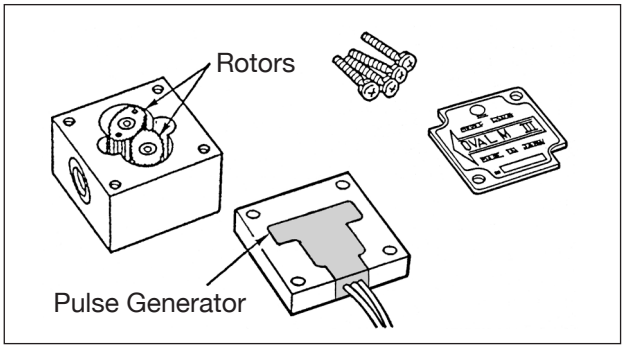
⚠ CAUTION: Be sure to turn off power before you start servicing.



① Remove all 4 screws with a philips screwdriver.



② After removing the screws, the front cover and pulse generator will separate from the main body. Be careful not to drop the main body.



③ Take off the front cover and the measuring chamber and rotors will be accessible.

④ Remove the oval rotors from the measuring chamber and inspect individual component parts for condition.

➡NOTE: The rotors must be drawn out straightly.

(a) Are oval rotors jammed by foreign matters?
(b) Are rotors, shafts and other components worn?
(c) Are the inner walls of measuring chamber and front cover damaged?
(d) Are signal generating magnets rusted?

After completing these inspections, clean the rotors, rotor shafts, measuring chamber, and the front cover with clean water or cleaning oil.

⚠ CAUTION

1. For scratches and swelling of dents, use an oil stone to flatten the surface.
2. FLOWMATE (OVAL M-Ⅲ) is a precision instrument. In general, perform these overhauls inspections indoors. If the overhaul inspection is performed while remained installed in a piping, make sure to release the pressure from the pipe completely, close the inlet and outlet valves of the flow meter, drain the fluid from the piping, and place a liquid receiver directly below the meter. Be careful not to let dust or sand adhere to each disassembled part.

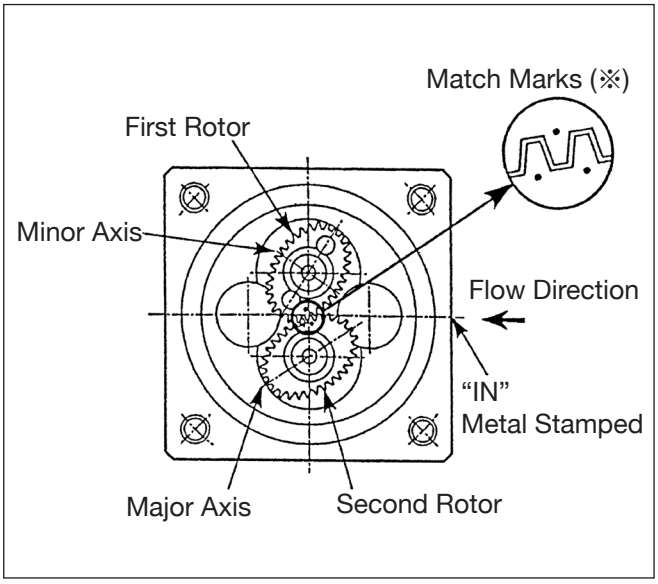
6.2 Meter Body Assembly

⚠ **Precautions For Assembly:**

Clean rotors, inner walls of bushings, measuring chamber, and inlet/outlet ports thoroughly to completely remove dirt, sand, or other foreign matters.

(1) Rotor installation

The side of the rotor with embedded signal generating magnets shall face the front cover side. If the flow direction is from right to left, install the first rotor (Match Mark " ・ ") into the upper shaft and the second rotor (Match Mark " ・ ・ ") into the lower shaft slowly to allow the rotors bite together at the major axis and the minor axis of each rotor.



➡NOTES

1. (※): Match marks are stamped only on product code "LSF□□C□－□□"(metal rotors).
2. Match marks do not appear on rotors of material K (special resin) or P (PPS resin, PEEK resin). Refer to (2) below for conforming the rotor engagement.

(2) Confirming the rotor engagement

Turn the rotor once or more turns by hand and check that the engagement is normal.

(3) Front cover installation

Install an O-ring into the meter body. If the O-ring is damaged or swollen by the measuring fluid, it may not fit the groove of the front cover. Replace the O-ring with a new one if it does not fit. Tighten the four screws evenly until the front cover is perfectly matched with the main body.

(4) Checking smooth rotation

Check smooth rotation of the rotors and proper output pulse counting with the connected receiving instrument by allowing air or water into the meter.

⚠ **CAUTION**

Rotation check should be conducted within a range of slow rotor rotation.
Allowing the rotors to spin too fast may lead to burn or other damage to the components.

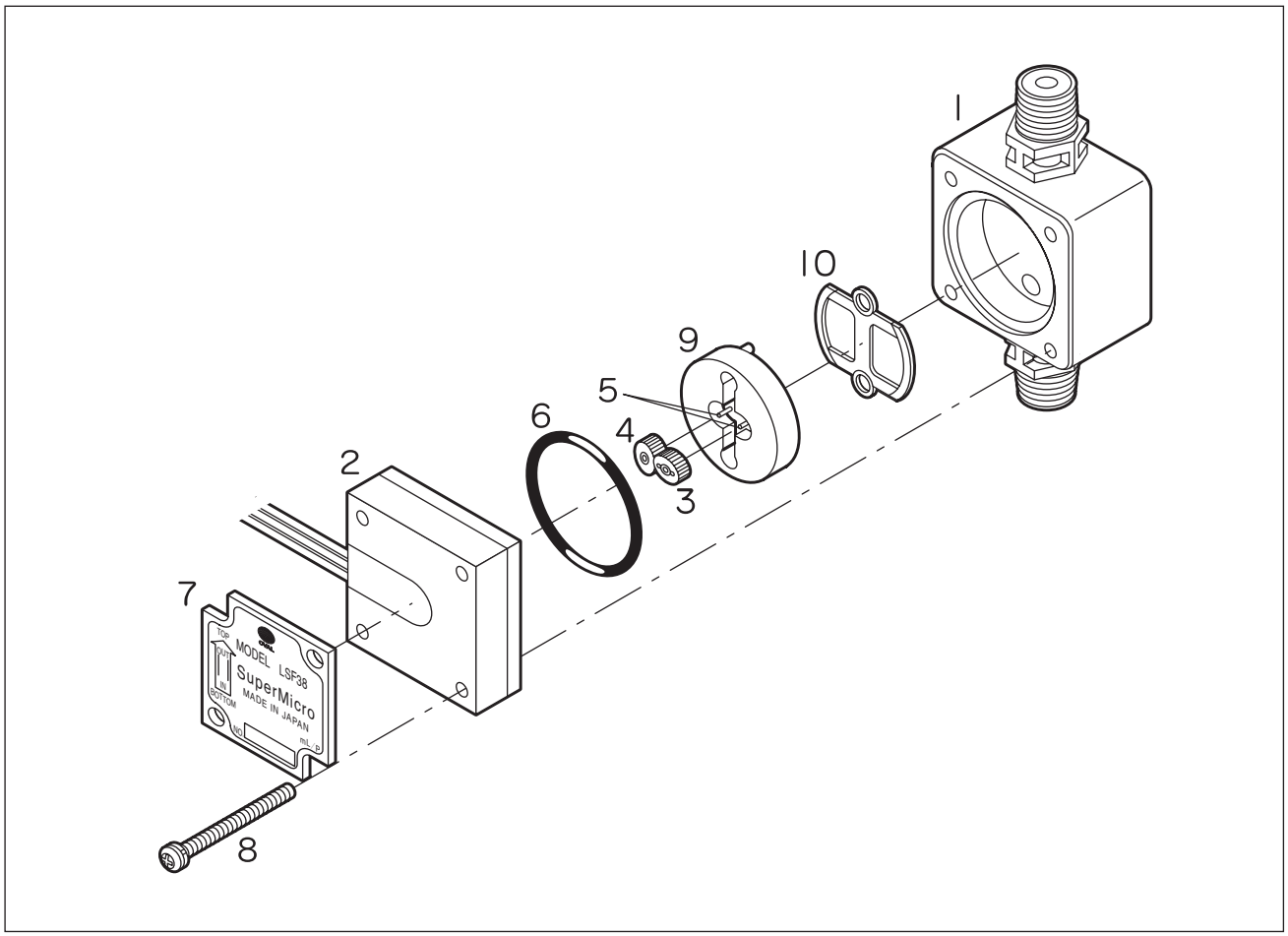
7. TROUBLESHOOTING

Trouble	Source of trouble	Countermeasure
1. Totalizer is not counting	1. Insufficient flow rate.	1. Open valves progressively.
	2. Insufficient pump pressure or head pressure.	2. Taking pressure loss of the entire piping system into account, select a proper pump pressure or head pressure.
	3. Power supply voltage is outside the specification range.	3. Supply 12 to 24 VDC power to the pulse generator.
	4. Rotors are jammed by a foreign object, and measuring liquid does not flow.	4. Disassemble the meter body by referring to the meter body disassembly and inspection procedure in Section 6. Wash clean the rotors and related components.
	5. The oval rotors are installed the wrong way.	5. Install the rotors correctly, referring to the meter body assembly and inspection procedure in Section 6.2.
2. Liquid is leaking.	1. Piping seal incomplete.	1. Tighten up the pipe connections or replace gaskets.
	2. Seal of the front cover part is incomplete.	2. Check front cover fitting bolts for tightness and replace O-ring with new one.
3. The flow rate is accumulated even while closing the valve.	1. Liquid leaks from valves or piping.	1. Inspect valves and piping condition.
	2. Rotors are moved by the pressure of the pump because of an air pool between the valve and the meter.	2. Vent the air. Install a check valve and accumulator.
4. The accumulated value is too high.	1. Rotors are moved by pulsating flow.	1. Install a check valve and accumulator.
	2. Influenced by external magnetism. (The sensor detects the external magnetism. it is affected by motors, generators, etc.)	2. Protect the meter from external magnetic fields.
	3. Air gets mixed with the measurement fluid.	3. Install an air vent.
5. The accumulated value is too low.	1. Influenced by external magnetic fields.	1. Protect the meter from external magnetic fields.

8. EXPLODED VIEWS AND PARTS LISTS

8.1 Meter Size 38

◇**Exploded View**◇



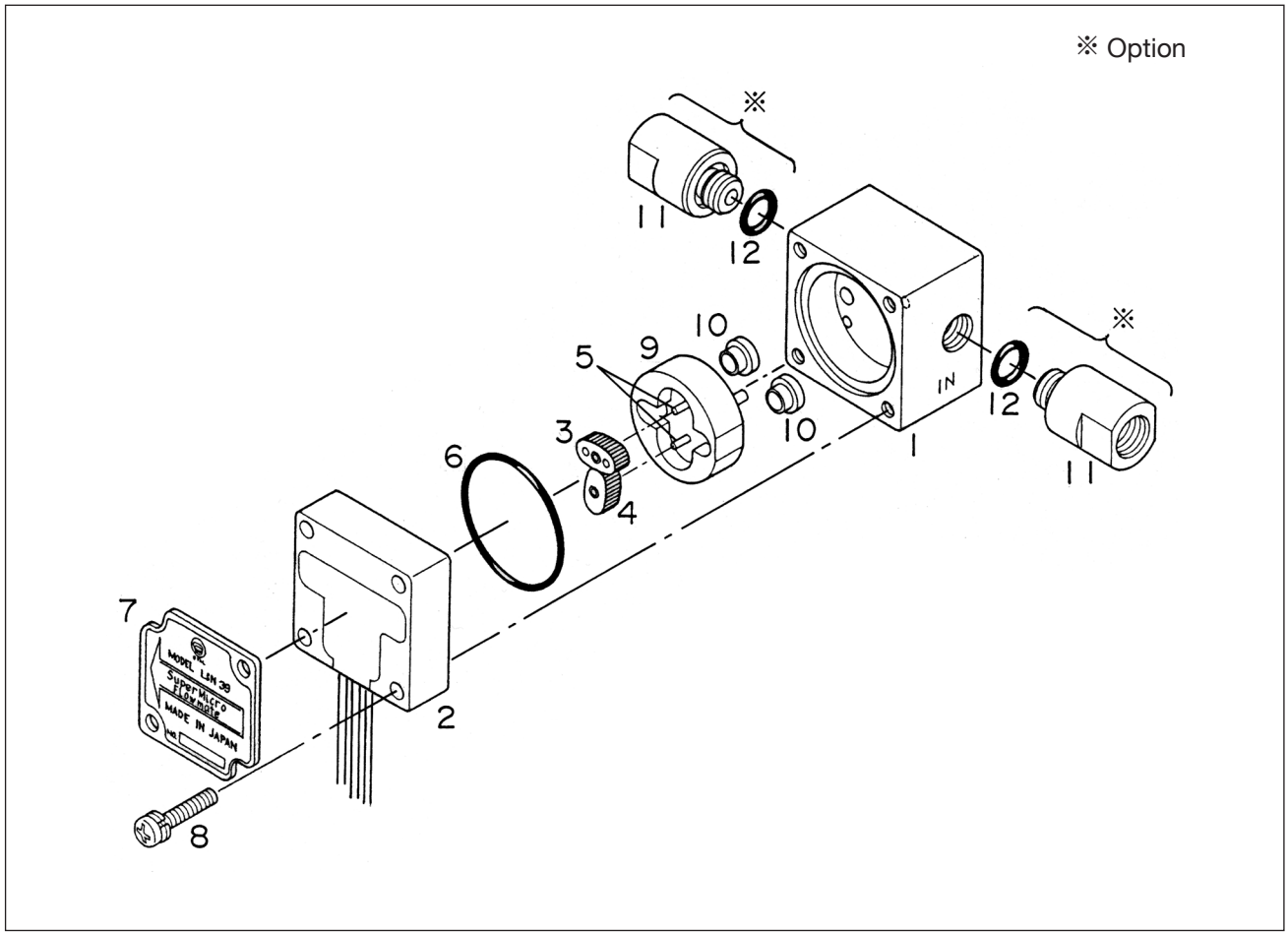
◇**Parts List**◇

Symbol No.	Part Name	Q'ty	Remarks
1	Meter Body	1	
2	Front Cover with MR Sensor	1	Molded MR sensor built in (lead wires 200mm)
3	First Rotor	1	Signal generating magnet embedded
4	Second Rotor	1	
5	Rotor Shaft	2	Press fit into the inner case
6	O-Ring	1	S-32
7	Nameplate	1	
8	Screw	4	M4×35 washer, hex nut provided
9	Inner Case	1	
10	Inner Case Retaining Gasket	1	

- **Make sure to specify the meter model, serial number, instruction number, parts name, and quantity when ordering replacement parts.**

8.2 Meter Size 39

◇**Exploded View**◇



◇**Parts List**◇

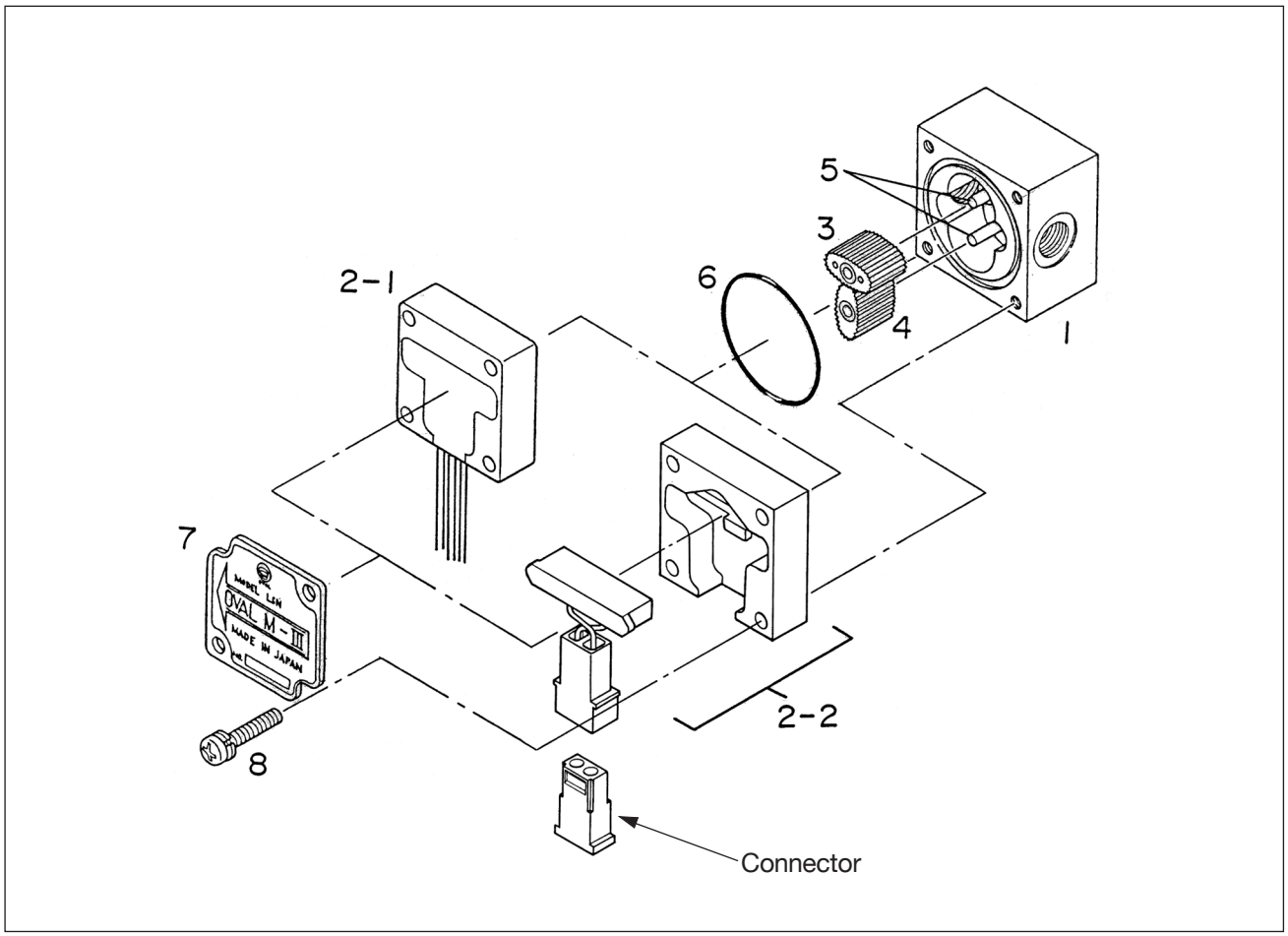
Symbol No.	Part Name	Q'ty	Remarks
1	Meter Body	1	
2	Front Cover with MR Sensor	1	Molded MR sensor built in (lead wires 200mm)
3	First Rotor	1	Signal generating magnet embedded
4	Second Rotor	1	
5	Rotor Shaft	2	Press fit into the inner case
6	O-Ring	1	S-32
7	Nameplate	1	
8	Screw	4	Washer provided (M4×20)
9	Inner Case	1	
10	Seal Cap	2	
※11	Fitting	2	300 mesh net incorporated
※12	O-Ring for Fitting	2	S-10

➡ NOTE: ※ Option

● **Make sure to specify the meter model, serial number, instruction number, parts name, and quantity when ordering replacement parts.**

8.3 Meter Sizes 40, 41 and 45

◇Exploded View◇



◇Parts List◇

Symbol No.	Part Name	Q'ty	Remarks
1	Meter Body	1	
2-1	Front Cover with MR Sensor	1	Molded MR sensor built in (lead wires 200mm)
2-2	Front Cover with Reed Switch	1	Connector provided
3	First Rotor	1	With bushing and signal generating magnet (Meter size 40 without bushing)
4	Second Rotor	1	With bushing (Meter size 40 without bushing)
5	Rotor Shaft	2	Press fit into the meter body with built-in O-ring
6	O-Ring	1	Meter sizes 40, 41: S-32 ; Meter size 45 : S-42
7	Nameplate	1	
8	Screw	4	Washer provided (Meter sizes 40, 41: M4×20 ; Meter size 45 : M5×25)

- **Make sure to specify the meter model, serial number, instruction number, parts name, and quantity when ordering replacement parts.**

9. GENERAL SPECIFICATIONS

(1) Flow Ranges

Unit in L/h

Viscosity / Meter Size	Water	0.3mPa·s to less than 0.8mPa·s	0.8mPa·s to less than 2.0mPa·s	2.0mPa·s to less than 5.0mPa·s	5.0mPa·s to less than 200mPa·s	5.0mPa·s to less 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

(2) Meter Body

Item		Description									
Meter Size		Super Micro 38 (※1)	Super Micro 39	40		41			45		
Connections/Nominal Dia		R1/4 male	G1/8(w / fitting: Rc1/4 (※3))	Rp1/8 (6mm)		Rp1/8 (6mm)			Rp1/4 (8mm)		
Accuracy		0.09 to less than 0.18L/h ±10% RD 0.18 to 3L/h ±3%RD	0.12 to less than 0.3L/h ±8% RD 0.3 to 6L/h ±3% RD	±1% of reading							
Operating Temp. Range		–10 to +60℃	–20 to +80℃								
Max. Operating Pressure		0.3MPa	0.49MPa	0.98MPa							
Material (※ 2)	Meter Body	P	C	L	C	L	C	C	L	C	C
	Rotors	P	P	K	K	K	K	C	K	K	C

➡NOTES: ※1. Acceptable physical orientation of Meter Size 38 is bottom to top only.

※2. C: Stainless steel (basic body SUS316; rotors SUS316 sintered)

L: Aluminum with anodic oxide coatings (Meter material “L” cannot be used for water or corrosive liquids.)

K: Special resin

P: PPS resin (For measuring fluids other than water, pure water, or oil, contact OVAL.)

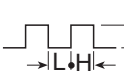
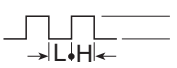
P: PEEK resin (Measurement for water and pure water only) Available only for Meter Size 38

※3. Fittings furnished with Meter Size 39 have a built-in 300 mesh net.

(3) Pulse Generator

1. MR Sensor (standard)

Unit in L/h

Item		Description	
		Meter Size 38	Meter Sizes 39, 40, 41 and 45
Method of Detection		A magnetoresistive (MR) sensor converts alternating magnetic fields to a voltage output.	
Speed of Response		1000Hz max. (MR sensor alone)	
Ambient Temp. Range		–20 to +80℃	
Output Pulse ※	Voltage pulse	Voltage pulse "0" / "1" = 1VDC max. / [supply volt.] – 2VDC min. (resistive load 10kΩ min.)  	Voltage pulse "0" / "1" = 0.5VDC max. / 6.2 to 7.6VDC (resistive load 10kΩ min.) 
	Duty ratio(%)	$4.0 \leqq \frac{H}{H+L} \times 100 \leqq 65.0$	
Transmission Length		1 kilometer max. (cable used is CVVS 1.25 to 2.00mm^2)	
Power Source		12 to 24VDC ±10%	
Current Drain (power consumption)		10mA max. (0.3W max.)	

※ Measurement units of output pulses (MR sensor models)

Meter Size	Factored Pulse		Unfactored Pulse		Max. Flowrate L/h
	Pulse unit mL/P	Freq. at max. flowrate Hz	Nominal meter factor mL/P	Freq. at max. flowrate Hz	
Super Micro 38	———	———	0.0550	15.2	3
Super Micro 39	———	———	0.161	10.4	6
40	1	13.9	0.25	55.6	50
41	1	27.8	0.5	55.6	100
45	10	13.9	2.5	55.6	500

2. Reed Switch (excluding options / Meter Sizes 38, 39)

Item	Description
Max. operating voltage	AC: 45V; DC: 45V
Contact current capacity	10W or 0.5A (resistive load)
Contact withstanding voltage	DC: 250V R.M.S. for one min.
Output pulse ※	Contact-closure pulse (unfactored pulse only)
Operating ambient temp.	–20 to +85℃ (relative humidity 90% max.)

※ Measurement units of output pulses (reed switch)

Meter size	Unfactored Pulse		Max. flowrate L/h
	Nom. meter factor mL/P	Freq. at max. flowrate Hz	
40	0.5	27.8	50
41	1.0	27.8	100
45	5.0	27.8	500

(4) Applicable Standards

Pulse Generator Type	MR Sensor	Reed Switch
Applicable Standards	EN IEC63000 EN61326-1	EN IEC63000

➡ NOTE: To meet compliance requirements of EMC for the MR sensor type only, a lightning protector (M SYSTEM: MDP-SP or equiv.) must be used.

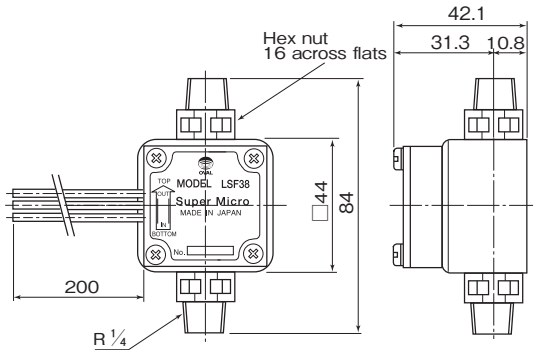
10. OUTLINE DIMENSIONS

■ MR sensor generator equipped

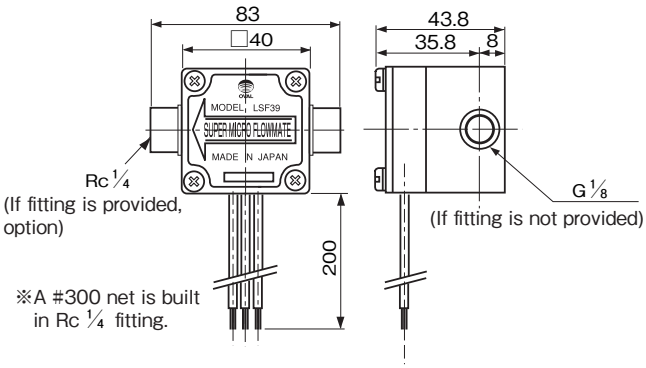
➡NOTE: For lead wire connections, refer to Section 4.2 on page 5.

Dimensions in millimeters

● Super Micro 38

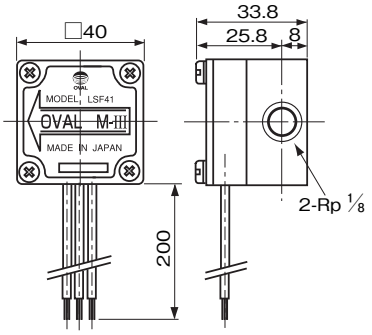


● Super Micro 39

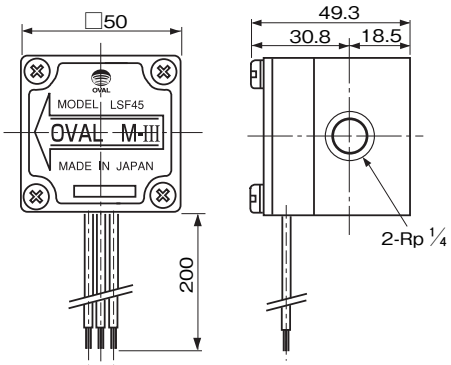


➡NOTES: 1. For Meter Size 38, prepare a strainer (mesh #300). Meter Size 39 without fitting requires a strainer (mesh #300).
2. For lead wire connections, refer to Section 4.2 on page 5.

● Meter sizes 40 and 41

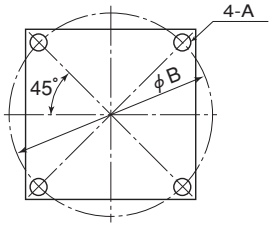


● Meter size 45



➡NOTE: For lead wire connections, refer to Section 4.2 on page 5.

● Mounting dimensions



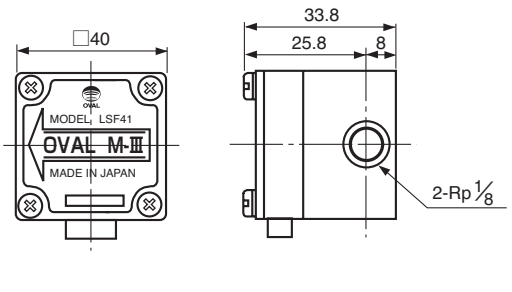
Meter size	A	B	Scr. depth
39	M4	45	6
40	M4	45	6
41	M4	45	6
45	M5	56	15

Fig. 10.1

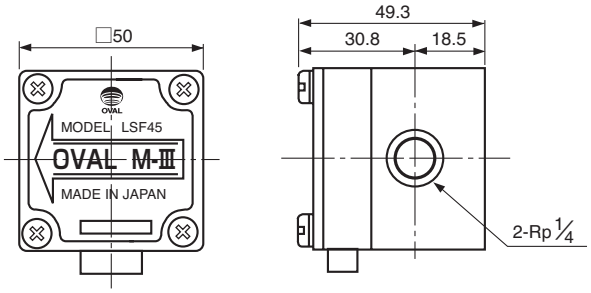
■ Reed Switch Generator Provided

Dimensions in millimeters

● Meter sizes 40 and 41



● Meter sizes 45



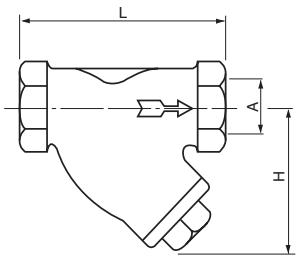
➡ NOTE: Refer to Section 4.2 (page 5) for lead-wire connections.

Fig. 10.2

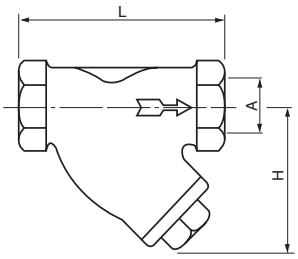
■ Strainers (YS12 and 13)

Applicable meter sizes: 40, 41 and 45
Max. operating pressure: 1.96MPa
Body material: FCD450 (ductile cast iron) ※Material: H
SCS14A (stainless steel) ※Material: C
Net material : SUS304 (stainless steel) ※Material: H
SUS316 (stainless steel) ※Material: C

● Outline (Material H)



● Outline (Material C)



● **Length Table**

Dimensions in millimeters

Category	Nominal size A	Material	L	H (approx.)	Net Mesh No.
YS12 (for Meter Sizes 40 and 41)	Rc1/8 (6mm) ※1	H	110 ※2	60	200
		C	95 ※2	50	200
YS13 (for Meter Size 45)	Rc1/4 (8mm)	H	80	60	200
		C	65	50	200

➡ NOTES
※ 1: It depends on R1/4 × Rc1/8 bushings for Meter Size 40 and 41.
(Bushings are included in the package of the strainer.)
※ 2: Dimensions with bushing installed (for reference purpose).

Fig. 10.3

11. PRODUCT CODE EXPLANATION

● Flowmate

Item	Product Code										Description	Combination				
	①	②	③	④	⑤	⑥	⑦	—	⑧	⑨		38	39	40	41	45
Model	L	S	F								FLOWMATE (OVAL M-Ⅲ)	○	○	○	○	○
Meter Size				3	8						R1/4 (Male)	○				
				3	9						G1/8 (Rc1/4 depending on optional fittings. A 300-mesh net is built in.)		○			
				4	0						Rp1/8 (6mm)			○		
				4	1						Rp1/8 (6mm)				○	
				4	5						Rp1/4 (8mm)					○
Major Parts Materials						P					Meter body (C) + Rotors (P: PEEK resin) Only for Meter size 38	○	×	×	×	×
						P					Meter body (C) + Rotors (P: PPS resin) Only for Meter size 39	×	○	×	×	×
						C					Meter body (C) + Rotors (C)	×	×	×	○	○
						L					Meter body (L) + Rotors (K)	×	×	○	○	○
						P					Meter body (C) + Rotors (K)	×	×	○	○	○
Process Connection (fittings)							0	–			Less fittings	○	○	○	○	○
							8	–			Fittings provided (option)	×	○	○	○	○
Pulse Generator									M		MR sensor	○	○	○	○	○
									R		Reed switch (option)	×	×	○	○	○
Pulse Type										1	Unfactored	○	○	○	○	○
										2	Factored (Available for MR sensor only)	×	×	○	○	○

NOTE: ○: Available
×: Unavailable

● Strainer

Item	Product Code					Description
	①	②	③	④	⑤	
Model	Y	S				M-Ⅲ Strainer
Nominal Dia.			1	2		Rc1/8 (For Meter sizes 40 and 41.)
			2	3		Rc1/4 (For Meter size 45.)
Material					H	FCD450
					C	SCS14A

All specifications are subject to change whitout notice for improvement.

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