

OVAL GEAR ELECTRONIC FLOW METER






MODI FLOW MINI

The electronic oval-wheel flow meter ModiFlow MINI is suitable for measuring the flow of a wide range of fluid viscosities with exceptional levels of repeatability and durability, applying in the petroleum, chemical, food industry, etc.

Thanks to the use of an aluminum body of the device and high-quality components in the electronic system, a high durability and lifetime of the flowmeter have been achieved.



MAIN FEATURES:

-  The oval rotor flowmeter measures fluids with a wide range of viscosities.
-  The body withstands high pressure and is made of aluminum
-  The flowmeter has LCD display mounted on the top of the flowmeter.
-  The rotors are either ryton (PPS) or stainless steel making it suitable for a wide range of fuels, oils and chemicals.
-  You can mount the flowmeter vertically and can be used in either pumped or gravity feed applications. An upstream filter is recommended to prevent particles damaging of the flowmeter.

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I. TECHNICAL SPECIFICATION:

Model	ModiFlow MINI
Inlet/Outlet	25 mm
Min. flow rate	1 l/min.
Max flow rate	70 l/min.
Accuracy	± 0,5%
Repeatability	≤0,3%
Max viscosity	2000 cP
Maximum working pressure	70 bar
Operating temperature range	-10°C to +50°C
Weight	0,5 kg
Power supply	2 x 1.5V AAA batteries

The manufacturer guarantees the accuracy and repeatability of the measurement of the device, with a continuous flow of at least 20 L.

II. WORKING PRINCIPLE

The oval gear flow meter measurement part is mainly composed of two pitch elliptical gears and its housing component. Two oval rotors rotate on a shaft and sweep around the measuring chamber. Each revolution of the rotors measures the exact volume of fluid flowing through the meter. Volume does not depend on the viscosity or density of the fluid.

III. BUTTON DESCRIPTION

Button CLEAR: starting the display, deleting the last measurement, changing the measurement, total value.

Button TOTAL: flow, change of displayed information, calibration setting, calibration coefficient, change of the unit.

IV. OPERATION MANUAL OF ELECTRONIC MODI FLOW METER

1. Start: Pressing the „SETUP” button.
2. The flowmeter will turn off if there is no activity for 2 minutes.
3. Clear Date: Press „CLEAR” button when the flow meter works, the current data can be deleted.
4. Check total: When the display is active, press the “TOTAL” button. The word “total” will appear on the second line of the screen, the number next to the word “total” is the total value. The total value cannot be reset.
5. Current flow: When the display is active, press the “TOTAL” button, then the inscription: “FLOW RATE” will appear next to the lower column of numbers. While the flowmeter is operating, the lower column of numbers will indicate the current flow.
6. The ModiFlow flowmeter has the function of completely resetting the partial sum.

V. PARAMETER SETTING - CALIBRATION

Before starting calibration, it is recommended to check the coefficient setting: When the display is not active, press CLEAR once and then press the “TOTAL” key for longer (more than 3 seconds) to display the coefficient setting interface. The “CLEAR” key is used to increase the numerical value, the “TOTAL” key is used to change the digit column. Pressing the “TOTAL” button for a longer time or waiting about 15 seconds will allow you to exit the coefficient setting and save the setting value. The standard setting of the coefficient should be in the range: 0.910-0.970. If the coefficient value is not within the specified limits, or we want to increase the accuracy, we proceed to the calibration process. Pour 20 l of liquid into the measuring vessel (flask, graduated bulb) WITHOUT deleting the indication, press the “TOTAL” button for 3 seconds to enter the coefficient change mode. Pressing the “CLEAR” button increases the value of the flashing digit, pressing the “TOTAL” button moves to the next column of digits. The measurement result decreases when the parameter decreases and vice versa.

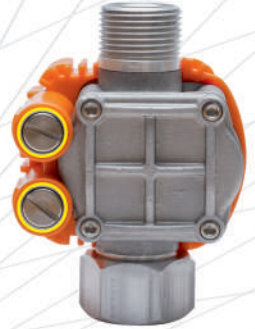
To exit the calibration/coefficient setting mode, wait 15 seconds. After setting the parameter and exiting the calibration, the applied changes will be immediately visible in the displayed value on the display.

VI. THE UNIT SETTING

When the display is not active, press CLEAR once and then press the "TOTAL" key for longer (more than 3 seconds) to display the coefficient settings interface - the digit in the first column will start flashing. Pressing the "TOTAL" key again will take you to the units column. When the unit is flashing, short press the "CLEAR" key to change the unit. Pressing the "TOTAL" button for a longer time or waiting about 15 seconds will allow you to exit the coefficient setting and save the selected unit.

VII. MAINTENANCE

When low battery, the battery sign will appear on the LCD display. Change old battery to avoid damage to the flow meter. The battery can be used for 2 years, but we suggest user to change the battery once a year. When changing the battery, check the contacts in the battery socket and, if necessary, clean them with contact cleaner. If the flow meter is not used for long time, it is suggested to remove the battery. It is recommended to use Alkaline batteries

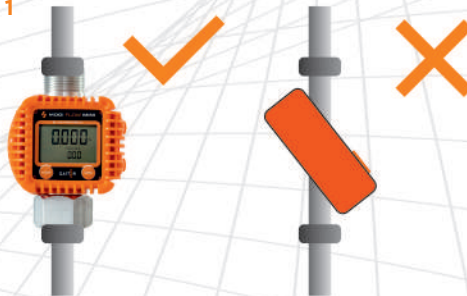


VIII. INSTALL AND USE

1. The flowmeter can be mounted vertically.

During installation, the axis of rotation of the flowmeter should be set vertically (**Picture 1**).

Picture 1



2. The direction of fluid flow should be vertical, i.e. inlet from the bottom of the meter and outlet from the top of the flowmeter.
3. The flowmeter should be installed on the output end of the pump.
4. The filter should be installed at the front of the flow meter, to prevent greater than 0.2 mm tiny particles blocking the flow meter, and the filter should be easy to clean.
5. The flowmeter is preferably mounted in front of the one-way valve, only unidirectional flow of the liquid within the pipe, to prevent the reverse rotation of the counting gear.
6. If the liquid being measured is mixed with gas, please fill the interior with liquid (prime the flowmeter) to prevent the measurement accuracy from decreasing. We recommend installing a gas separator.
7. Each flowmeter is factory calibrated with diesel fuel at room temperature. Due to temperature changes, the viscosity of the oil changes and amounts to approximately 13 Pa.s at room temperature. The theoretical volumetric flow meter measuring the viscosity of the fluid changes does not affect the accuracy of the measurement because the flow rate measurement is generated in the gap that exists between the inner wall and the oval gear. Even though it is subject to changes due to changes in viscosity, its effect on measurement accuracy is minimal.

8. For high-density fluids, remember that heating the fluid will reduce its viscosity allowing flow through the device. When using the flowmeter outdoors, ensure optimal working conditions. Slime build-up (e.g. from low temperatures) on components measuring instruments may damage the device.
9. The temperature of the measured fluid must not be higher than the maximum value given in the data table technical. Exceeding this will block the device. Changing the temperature of the fluid causes an error liquid measurement related to viscosity change. An increase in temperature will cause an increase in volume in the measuring chamber space, so the flow will be slower.
10. Pressure loss proportional to the square of the liquid flow, the liquid viscosity increases, the pressure loss is also increased.



VIII. INSPECTION & ELIMINATION OF THE FAULT

SYMPTOMS		REASON	REPAIR	REMARKS
No rotation of measuring elements		Installation is jammed. Impurities have entered the flowmeter.	Disassemble, clean and reinstall it.	
		The measured fluid is dirty, the filter is clogged by impurities.	Clean the filter.	
		The measured pressure of the liquid is too small.	Increase the pressure.	
The rotation of the measuring elements causes excessive noise		Excessive flow rate.	Adjust the flow rate to the specified value.	
Measuring elements rotate in the wrong direction		The direction of fluid flow is opposite to the arrow on the flowmeter housing.	Reinstall the flowmeter in accordance with the arrow.	
The error is too large	Negative difference	The flow is too small and below the specified value.	Increasing the diameter of the flowmeter connection or verifying patency.	
		Leakage in the system.	Check connections.	
		The counter has been used for too long, significant wear of the oval gear wheel.	Replace the worn element or buy a new device.	
	Positive difference	Liquid is containing gas.	Install a gas separator before the flowmeter or eliminate the leak in the system.	
		The liquid viscosity has a large difference with the testing liquid viscosity.	Checking the viscosity of the measured liquid.	Consult with the manufacturer.

The company GAITER sp. z o.o. is constantly working on improving the parameters of its equipment. We reserve the right make changes. Specifications may differ from those described in this document.