ELECTRONIC FLOW METER

MODI FLOW 2

The electronic oval-wheel flow meter ModiFlow 2 is suitable for measuring the flow of a wide range of fluid viscosities with exceptional leels 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 liquids with high or changing viscosity.
- The body withstand high pressure and is made of aluminum.
- **The flowmeter has a backlit 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.
- The flowmeter operates on the oval rotor principle. Two oval rotors rotate on stainless steel shafts and sweep the measuring chamber. Each revolution of the rotors measures a precise volume of liquid through the meter. This volume is independent of the viscosity and density of your liquid.
- You can mount the flow meter either horizontally or vertically and can be used in either pumped or gravity feed applications. An upstream filter is recommended to prevent particles damaging of the flow meter.

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I. TECHNICAL SPECIFICATION

Model	ModiFlow 2
Inlet/Outlet	25 mm
Min. flow rate	10 l/min.
Max flow rate	120 l/min.
Accuracy	± 0,5%
Repeatability	≤0,03%
Max viscosity	1000 cP
Operating temperature range	-15°C do +50°C
Working pressure	0,3 MPa
Power supply	2 x 1.5V AA batteries
Weight	2 kg

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. According to the amount of gears turned laps the flow meter calculates the volume of the liquid flow.

III. OPERATION MANUAL OF ELECTRONIC MODI FLOW METER

1. Start: Pressing the „SETUP" button.
2. The flow meter will close without any operation within 2 minutes.
3. Clear Date: Press „CLEAR" button when the flow meter works, the current data can be deleted.
4. Check total: Press „TOTAL" button, on the second row of the screen will appear the letter of „TOTAL" the number under the „TOTAL" letter is totalize. The totalize can not be reset.
5. Clearing the partial sum: Exit the TOTAL value view: Press the "TOTAL" button briefly, the displayed value will blink. Briefly press the "CLEAR" button.
6. The machinery ModiFlow meter has a total reset function
7. To read historical indications of the last five operations: Press the "MEMORY" button three times so that the message "C-01" appears in the lower left corner of the display - this is the last measurement performed. Use the up / down arrows to select the next stored measurements.

IV. PARAMETER SETTING - CALIBRATION

Pour 20 l of liquid into the measuring vessel (flask, graduated container) DO NOT delete the indication.
Press the "SETUP" button for 10 seconds, the action causes the appearance of a five-digit number on the screen with the last digit flashing. Press „SETUP" button, to move to the next flashes number in the row, Press „CLEAR" button, means „+", Press „TOTAL" button means „-" the output decrease while the parameter decrease, and vice versa.
Wait 60 seconds to exit calibration mode. After setting the parameter and exiting the calibration mode, the applied changes will be immediately visible in the indication of the displayed value on the display. The parameter should be in the range of 2450 - 3000.

V. THE UNIT SETTING

By pressing „SETUP" buton for 10 seconds while the flow meter is in standby, Five-digit number will be shown on the screen, the last number flashes, than press „SETUP" button 9 times, then one of the symbols "US - GA - L - KG" of the unit that is currently set will flash in the upper right corner of the display. Press "CLEAR" or "TOTAL" to set the correct unit: " US - GA - L - KG ". Pressing the "SETUP" button once or no operation for 60 seconds will exit the unit setting mode.

VI. MAINTENANCE

When low battery, the battery sign will appar 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. Check the electrode and clear the cross ion. If the flow meter is not used for long time.
It is suggested to remove the battery. AA battery type used.

VII. INSTALL AND USE

1. No specific requirements on the front and back of the flow meter pipeline, it can be installed horizontally or vertically. During the installation, this flow meter axis of rotation should be parallel to the ground.
Please stick to **picture 1**.

Picture. 1

Picture. 2

2. The direction of the flow meter installation should be the same as shown in the direction of the arrow with the liquid flow to the meter shell: While choosing the position of installation you should pay attention to the ease of reading.

3. The flow meter should be installed on the output end of the pump, if installed in the suction side, the pressure loss of the flow meter filter will lead to the increase of the pump negative suction pressure, the liquid at the outflow of the pump shaft also causes the flow meter error increases, the flange of the pump suction side should be designed to prevent leakage, otherwise, it can also cause the error increases to the flow meter.

4. A 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 flow meter 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. The flow meter recommendations shown in Picture 2, the bypass valve can be installed in the vertical or the other direction of the pipeline, from the top down, from bottom to top, right to left, from left to right.

7. When using the flow meter, make sure the internal is filled with liquid, if the liquid is mix with a gas, the measuring is a mix of gas and liquid volume, this will cause an error accuracy off the measurement. If the liquid is mixed with gas, an oil and gas separator must be installed.

8. When the flow rate exceeds the specified maximum flow, the speed of the oval gear increases and wear oft he gears increases, and the pressure loss increased dramatically, so it should be avoided, although it is still measured below the minimum flow, the error increases, the viscosity of the liquid flow meter 10 Pa.s starts the flow at about 1 % of the maximum flow rate.

9. Each flow meter 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.

10. For high-density fluids, remember that heating the fluid will reduce its viscosity allowing flow through the device. When using the meter outdoors, ensure optimal working conditions. Slime build-up (e.g. from low temperatures) on components measuring instruments may damage the device.

11. 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..

12. 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
The failure of the oval gear rotation		Installation is jammed. Gear impurities are in the flow meter.	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 oval gear rotates but is partially blocked		The drive wheel stuck.	Remove impurities, if cause gear damage, replace the gear.	
Gear turns, abnormal noise		Exceeding the specified value due to the over run of the flow rate.	Adjust the flow rate to the specified value.	
The error is too large	Negative difference	The flow is too small and below the specified value.	Changing the diameter of the flow meter	
		Leak in the system.	Check the leak.	
		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.	Montaż separatora oleju i gazu przed przepływomierzem, lub usunięcie nieszczelności w układzie.	
		The Liquid viscosity has a large difference with the testing liquid viscosity.	Check measured liquid.	Consult with the manufacturer.