

Owner's Operation Manual

Operation Manual - OGM-Q Series



Preset Module Oval Gear Flow Meter

Please read and retain this instruction manual to assist you in the operation and maintenance of this product.

This manual contains connection and operating instructions for the OGM-Q model

Models with a Liquid Crystal Display have an additional LCD instruction manual supplied. If you need further assistance, contact your local representative or distributor for advice.

This Flow Meter has incorporated the oval rotor principal into its design. This is proven to be a reliable and highly accurate method of measuring flow. Exceptional repeatability and high accuracy over a wide range of fluid viscosities and flow rates are features of the oval rotor design.

With a low pressure drop and high pressure rating oval rotor flow meters are suitable for both gravity and (in-line) pump applications.

Regulation Use

The oval gear meter is a precise positive displacement flow meter incorporating a pair of oval geared rotors. These meters are capable of measuring the flow of a broad range of clean liquids.

Aluminum meters are suitable for fuels, fuel oils, & lubricating liquids. It is important to ensure that the medium to be measured is compatible with the materials used in the instrument.

The flow meter is available as a measurement transducer with pulse output or with other forms of evaluation electronics. Details of how to operate the electronics are included in a separate instruction manual.

These flow meters **OGM-Q** can be installed within hazardous areas when ordered with optional Exd approval, or by using the reed switch pulse output in Intrinsically Safe loops or installing Intrinsically Safe certified Instruments.

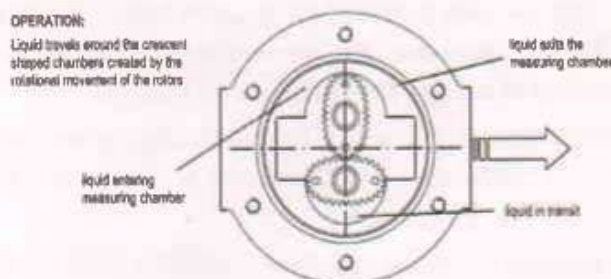
Any use of the oval gear flow meter model: **OGM-Q** which exceeds the manufacturer's specification, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

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Operation Principle –OGM

Oval gear flow meters are categorized as positive displacement flow technology. When liquid flows through this type of positive displacement flow meter, two oval geared rotors measure a constant volume per rotation within a precisely machined measuring chamber. With each rotation, a constant volume of liquid is measured. The rotation of the oval gears is sensed via magnets embedded within the rotors. These magnets transmit a high resolution pulse output. The output signal can be processed externally via a remote display controller or PLC or via a variety of output/display options available as accessories attached to the flow meters.

The positive displacement flow technology allows for precise flow measurement of most clean liquids regardless of the media conductivity. Other liquid properties also have a minimal effect on the performance of this type of meter. Flow profile conditioning is not required as with alternative flow technology options making oval gear installations simple to install in tight spaces and at an economical price.



What is OGM-Q ?

OGM-Q is an electronic system, integrated with wide range of pump system for refilling station, for controlling fluid dispensers.

The system provides

- To set the desired dispenser volume or value.
- Able to record first 100 dispensed record in memory
- For User, User-friendly dispensing operation.
- Economic Control Module to reduce over dispense volume

Operating Instruction

- 1) Press **L/P** to select **L = Liter**, **P = Price**
- 2) Key-in the **Volume or Value** (Press **CLEAR** for change the clear the digit)
- 3) Press **START** to start the pump for dispensing the fluid
- 4) Operation will be **STOP**, when the dispense reach the desired value on the LCD screen

For Non Preset Dispensing

- 1) Press **START**, Pump will operate and Press **STOP** to end the Operation
- 2) Round-Up Function, During the operation
 - A. press **7** for **Liter Rounding up**
 - B. Press **0** for **Price Rounding Up**

Operating Principle of Digital preset module

OGM-Q Digital preset module is the main power supply for the pump system. The computer board of the module will receive the pulses from the Oval Gear Rotor to calculate the volume flow through the meter.

OGM-Q computer board will calculate to show Price and Liter on the LCD Screen. When reach the preset value or volume, OGM-DPS will stop the pump.



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Calibration & Price Setting

Field Calibration /By Dispensing

CALIBRATION by dispensing calibrates the flow meter by dispensing fuel or fluid into a GRADUATED Container of know capacity.

This is the quickest and easiest way of calibrating the flow meter and requires no calculations

Calibration by dispensing can be suspended and restarted at will, and is considered complete when the fuel level can be seen in the container's graduated section.

Calibration Instruction

Liter

- 1) Press **STOP**, then press **L/P** for 5 seconds with the **L** sign on the left screen till the Right Conner of LCD screen Blank
- 2) Key-in Passcode: **78787878** then press **L/P** to log in the Calibration Mode
- 3) LCD screen will show U -XXXX, Key in the Value to calibrate the flow volume (** The higher value is to reduce the flow count ; The lower value is to increase the flow count)
- 4) Press **STOP** to end the Calibration.



To Set Price value

- 1) Press **STOP**, then press **L/P** for 5 seconds with the **P** sign on the left screen till the Right Conner of LCD screen Blank
- 2) Key-in Passcode: **11223344** then press **L/P** to log in the Calibration Mode
- 3) LCD screen will show B-X.XX, Press **CLEAR** then Key in the value as the **PRICE**.
- 4) Press **STOP** to end the Calibration



WARNING

To calibrate the flow meter properly, you should use an accurately graduated container with a capacity of no less than 10 liters

In particular, you should :

- *Remove all air from the pump, hoses, tube and flow meter by pumping until the flow is full and regular.*
- *Stop the flow by switching off the nozzle but not the pump.*
- *Do not reduce flow when nearing the container's graduated section.*

The correct procedure is to start and stop dispensing at the constant rate until reaching the desired limit, if possible with no interruptions.

WARNING

A single dispensing is enough to calibrate the flow meter properly

After calibrating the flow meter, always check the result to make sure the instrument's accuracy has is within acceptable limits.

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System & Memory

To view Accumulative counter

To view Round up Accumulator.

- 1) Press **CLEAR** for 5 seconds, LCD screen will be Shown PC (Price Counter)
- 2) Press **L/P** to switch between PC (Price Counter) and LC (Liter Counter)
- 3) Press **STOP** to end.



To view Accumulator with decimal 0.01+/- .

- 1) Press " . " for 5 seconds, LCD screen will be Shown PC (Price Counter)
- 2) Press **L/P** to switch between PC (Price Counter) and LC (Liter Counter)
- 3) Press **STOP** to end.



To view last 100 Transaction Memory

- 1) Press **STOP** for 5 seconds, LCD screen will shown the last transaction record
- 2) Press **3/Δ** to scroll up and **1/∇** to scroll down for screech record
- 3) Press **STOP** to end.

Model Number	OGM-Q-25	OGM-Q-40	OGM-Q-50
Inlet Size	25mm	40mm	50mm
Flowrate	20-120 lpm	25-250 lpm	30-300 lpm
One-time Count	9 digits		
Accumulated Count	11 digits		
Max.Working Pressure	3.4 Mpa	1.8 Mpa	1.8Mpa
Application Media	kerosene, diesel, gasoline, Heavy Oil		
Accuracy /Repeatability	0.5% ≤ 0.17%	0.5% ≤ 0.17%	0.5% ≤ 0.17%
Carton Dimension	81.5x38.5x17.5 cm	82.5x43x17.5 cm	44x24x24 cm
G.W/N.W	20.5kgs/17.5kgs	36.5kgs/31.5kgs	16.5kgs/14.5kgs

Technical detail

Power Supply	12v DC, 24v DC, 220v AC
Body Material	Aluminum
Oval Gear Rotor	Aluminum
O-ring	Viton (Standard) -15°C minimum
Rotor Shaft	Aluminum (Standard)
Bearing Type	No Bearing



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Troubleshooting

Oval gear flow meters have two clearly distinct portions: one of which is mechanical, wetted areas with the oval gears surrounded by a housing, and the other is the electrical area, which includes the pulse output board.

Details of some key troubleshooting steps will now be provided. Please also refer to the instructions on troubleshooting errors contained on the following page.

Step 1 - Check application, installation and set-up. Carefully read the section on mechanical installation to ensure full knowledge of all relevant installation and application factors which may affect the operation of the counter. These include pulsation, trapped air or selecting the wrong counter, including incorrect flow rate, temperature or pressure, or material incompatibility. Refer to the section on electrical installation to ensure correct cabling.

Step 2 - Check for blockages. For new and modified systems in particular, the most frequent cause of error or sub-optimal counter operation is internal system or counter blockages due to foreign particles, such as beads of condensate, sealing tape residues or mixtures of deposits, rust, etc.

Step 3 - Guarantee flow rate. Flow stopping or a flow rate declining below the usual limit may be attributable to a blocked screen, flow meter rotors which are stuck or damaged, a defective pump, closed valves or an insufficient liquid level in the storage tank.

Step 4 - The oval gears in the counter must revolve. This rotation is audible: try holding a screw-driver blade against the counter housing and push the handle right against your earlobe. Test the counter as required with flow switched on and off, to ensure you are familiar with the audible sound of rotation.

Step 5 - Ensure that pulses are generated when liquids flow. Here, a multimeter is often not fast enough to capture the pulse sequence of the reed switch or the Hall Effect sensor. However, an oscilloscope will allow you to observe the output pulse sequence. When testing the reed switch pulse, a pull-up resistor must be installed between the single connection of the reed switch and the supply voltage, while the other connection must be connected to the reference potential of the measurement device (oscilloscope)

Step 6 - Confirm device operation. Check the functions by simulating a pulse input. A reed switch pulse input can be simulated by a swift and pulse-driven short-circuiting of the input terminals



Caution when operate.

- DO NOT modify or alter the meter.
- DO NOT leave the meter unattended while dispensing.
- Check the meter daily. Worn or damaged parts should be repaired or replaced immediately.
- DO NOT exceed the maximum working pressure level of the lowest rates system component.
- Use only extensions and nozzles that are compatible with this meter.
- Use only fluids and solvents that are compatible with the equipment. Notice the warnings for fluids and solvents.
- Tighten all fluid connections before operating the meter.
- Comply with all local, state, and federal fire, electrical and safety regulations.
- Use of the product in a manner other than specified in this manual may result in bodily injury or impaired operation or damage to the meter.

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Installation Guide

Orientation When installing the flow meter, orientation must be considered.

The rotor shafts must be in a horizontal plane. To verify that the rotor shafts are in a horizontal plane, electronic cover or optional digital display will be facing in a horizontal direction. For modification in the field, the electronic cover or digital display can be rotated in any 90 degree position. This accommodates access to the electrical entry and allows the electronic display orientation to best suit the installation.

Flow Conditioning and Location

It is highly recommended to **INSTALL** a filter immediately before (prior to) the meter. Filters are available and sold separately.

Recommended Filter:

OGM-Q-25: < 75 μm particle size (200 mesh)

OGM-Q-40: < 150 μm particle size (100 mesh)

OGM-Q-50: < 350 μm particle size (45 mesh)

Flow conditioning: Flow conditions is not required since the DON flow meter does not require any straight pipe runs before or after the flow meter.

Location: The recommended installation would be before of any flow control and/or shut off valves, this installation prevents complete emptying of the meter. This minimizes the risk of leakage and/or air entrapment which could result in damage to the flow meter or inaccurate initial readings.

A by-pass installation is recommended for process or safety critical meters. Isolation valves enable the meter to be isolated from the system and serviced as needed. System purging is also possible with a by-pass arrangement. Accommodate all meter ratings and locate the meter on the discharge side of the process pump.

For outdoor applications, be sure all electrical entries are sealed properly via the proper glands, mounting, sealing or containment. For humid environments, mount the instrument appropriately as to avoid condensation build up. Generally these installations have the conduit connection pointing downward as to drain any condensate away from the electronics.

Liquid State: Liquid within the flow meter must not freeze. If heat tracing is necessary, please be sure to adhere to the temperature limits of the flow meter. Ensure the liquid does not flash, do not exceed the max DP of the flow meter.

Hydraulic shock: Surge dampeners or pressure relief valves must be installed if hydraulic shock or pressure spikes are present. Highly pulsating flow can also damage the DON flow meter. Diaphragm pumps and specific application profiles can cause high frequency pulsating flow. Proper pulsating dampers are highly recommend