VatturkarIndustrial

Product	FloCounter
Sr. No.	
Line Size:	

WARRANTY CERTIFICATE

We certify that the instrument mentioned above has been tested by us and has a limited warranty of 6 months from the date of dispatch. We undertake to make good by replacement or repair defects arising due to faulty design, material and or workmanship within the above mentioned period. Provided that the part in respect to which the complaint is made, is sent at the purchaser`s expense.

The warrantee is valid subject to :

The meter or part there of not being subject to alteration, accident abuse or misuse. The installation having been done as per guide lines in the manual. The unit is weather-proof, but if the glands are tempered with for the sake of extension, & if the meter & sensors are separated, leakages may happen - if water enters the meter, warranty stands null & void.

Client: _____

Date of Dispatch _____ For Vatturkar Industrial

VatturkarIndustrial

www.vatsmeter.com

Flocoünter

WORLD WATER METER

OPERATION MANUAL

Serving the Industry since 1993

Dear Customer,

Thanks & congratulations on your purchase of the VATS product. The FloCounter has a unique patented design which is a landmark in a new level of convenience. The FloCounter offers flexibility of mounting. The same module can be mounted in panel or onsite, in a vertical or horizontal manner. For the care & maintenance of your product, please read this manual thoroughly. We wish you a long & trouble free life of our product.

Vatturkar Industrial.

Precautions: STOP! read this carefully before you proceed

- Vats FloCounter has a limited warranty of 6 months from the date of dispatch.
- The FloCounter is a combined unit of flow sensor and meter, do not separate them.
- Before use of the product, please check for Chemical compatibility, temperature, pressure parameters of the liquid.
- Before installation or removal of the unit - depressurize & vent the system. Sensor Cap to be tightened only with hands, do not use any tools.
- Follow safety measures - Use Helmet, gloves, goggles during installation.
- VATS sensors may not work properly for downstream liquid flow from a certain height because of gravity.
- Ensure proper connection of mains, wrong connection may spoil the meter. While extending the cable, use recommended type only, with proper insulation.
- Avoid noise interference, do not pass the sensor cable parallel to power cable. If this is unavoidable - pass the sensor cable through noise protected tray.
- Extension of wire possible on your own risk. The warranty stands null & void in case, any part of the unit is modified / altered / taken out & / or reassembled.

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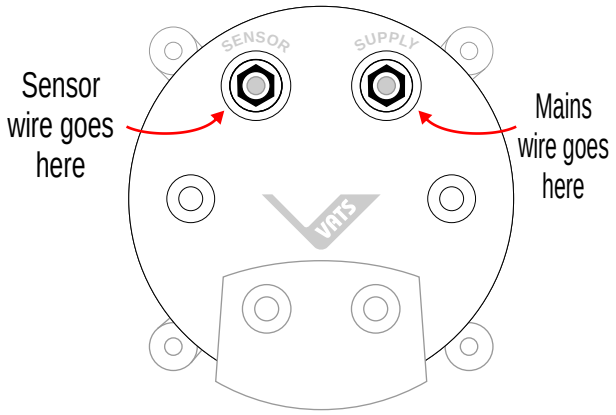
Technical Specifications

Flow-rate range	:	0.5m/sec to 5m/sec.
Accuracy	:	+/- 2.5% of full scale deflection refer Fig.2
Power Supply	:	90 - 270 VAC, ± 10 %, 50 Hz(Optional 24 VDC)
Function	:	Rate Indication + Totalizer
Protection	:	Weather proof enclosure *
Operating Temp.	:	55^0 C max
Operating Pressure	:	5 Kg max
Panel cutout size	:	92mm X 92mm
Installation Fitting	:	ABS 'T' :- 15, 25, 40
		P.P. Clamp on saddle:- 50, 65,80,100
Material of const.	:	Housing:- P.P.
		Bearing :- High Grade Polymer & Paddle:- P.P.
Mounting	:	Vertical, Horizontal, Field, Panel.
Display	:	Custom numeric 7 digit LCD

* The enclosure is not sealed, hence the user has to make sure that no water enters the meter

Wiring



Back view of the FloCounter

Fig. 1

1. Line Size Selection Chart

Pipe Size (NB)	15	25	40	50	65	80
Min Flow M^3 / Hr	0.2	0.8	1.9	3.5	5.8	7.5
Max Flow M^3 / Hr	2.1	8.0	19	35	58	75
Pipe Size (NB)	**100**	**125**	**150**	**200**	**250**	**300**
Min Flow M^3 / Hr	14	22	31	56	87	126
Max Flow M^3 / Hr	140	220	310	560	870	1260

To get the exact output from the sensor, minimum flow velocity will be required is 0.2m/s. And for best results **Reynolds number(R)** is greater than 5000 especially for high viscous liquids. To calculate **R** use following formula:

$$R = \frac{F}{0.047 \times D \times Vis}$$

D = Pipe inner diameter in m.
F = Flow Rate in LPM.
Vis = Kinematic Viscosity in m2 / s.
(Dynamic viscosity / density).

2. Placement of the fitting

A. Straight Run Requirement

Because of the obstructions like T, Bend, reducer etc. the flow pattern varies a lot. In Fluid Dynamics - it's called turbulence. In turbulent flow it's not possible to get precise reading. To nullify the turbulence - the only method is to have a straight run.

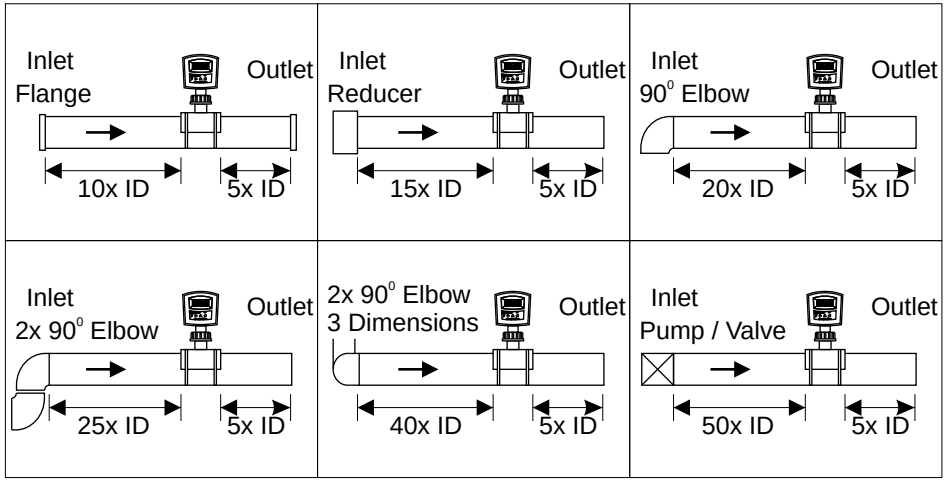


Fig. 2 Straight run guidelines in various conditions

Installation of Fitting in your Pipeline:

- Remove the unit from the fitting, by unscrewing the cap.
- For 15, 25 & 40 NB lines insert ABS T fittings in your PVC pipe line, do not forget to use ABS solvent.
- For line size 50, 65, 80 & 100 NB you have to drill a hole of 35 mm diameter in your PVC pipes. At this point please measure the physical inner diameter of the pipe. Be sure to smooth out any burr at the drilled hole. Put the saddle on the hole, tighten the clamps to fix the saddle in place. Do not forget to check the sealing 'O' ring in place. Now insert the unit in to the fitting.
- Ensure that the arrow on the meter points in the direction of flow & that the display becomes parallel to the pipe line. Tighten the cap manually, without using any pipe wrenches. Do not over tighten the cap.
- Now you are ready to use the meter - just calibrate if necessary as explained in programming & it's ready to use.

C. Mounting Positions of the Unit

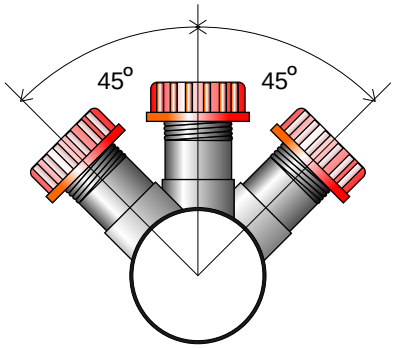


Fig. 3

- In Horizontal pipes with sediment-free fluids, the best position is at 90°
- If sediment is present the sensor can be mounted at an angle of +/- 45° for better performance.
- In vertical pipes, the mounting position can be freely chosen.

All VATS electronic flow monitors are high speed micro- controller based units with a high resolution liquid crystal display (LCD). By using front panel tactile keys, one can view / program different parameters. It is very important to read the manual before installation to make better use of VATS Flow Meters.
Before you start using VATS 'FloCounter' understand the function of front panel / keyboard in detail.

Key1 is used to enter program and move the cursor left to right

Key3 is the ENTER key, used to confirm & go to next step.

Key2 is for scrolling the numbers from 0 to 9

Using these keys we can program following:

1. Toggle between flow rate and total indication
2. Engg. Unit selection (for Rate or Total) & Reset total
3. Onsite Calibration

Programming

1. To Display Flow Rate / Total :

By pressing KEY3 for one second one can toggle between Flow Rate and Total indication.

2. To Select Display Unit :

This is password protected function. (Unit for flow rate, unit for Total & Reset Total)
You must enter password as 0012 by pressing KEY2 for 5 seconds.
Pressing KEY1 twice you come to digit 3, here you press KEY2 once, to enter 1
Then press KEY1 once again, to come to digit 4, press KEY2 twice to enter 2
Press enter (KEY3).

A. Flow Rate Unit :

LPM, LPH, M3/Hr, GPM, GPH
By pressing KEY2 you can toggle between these units.
By pressing KEY3 you can select/confirm one of the desired unit.
This moves you on to the next mode. (Select Unit for Flow Total)

B. Flow total unit :

LITERS, M3, GALLON
By pressing KEY2 you can toggle between these units.
By pressing KEY3 you can select/confirm one of the desired unit.
This moves you on to select 'Reset Total'

C. To Reset Total:

By pressing KEY1 you can RESET the total
By pressing KEY3 you can confirm no change & exit.

This is not a factory calibrated unit so you must calibrate this unit onsite. You will get the precise reading provided you have followed the installation guidelines, if not you will have to physically calibrate onsite.

4. Recalibration of the Meter :

This is password protected function. You must enter password as 0031 by pressing KEY2 for 5 seconds.
Re-calibration:
If there is an error in the reading, you may have to RE-CALIBRATE physically. i.e. if the total or flow rate being displayed is more than actual, then reduce the calibration factor proportionately.

In case of total / flowrate calibration. This is done by changing the scale factor. This is nothing but site calibration.
e.g. - If total quantity is set say 100 lit and by physical measurement the quantity is not matching to the displayed one then one needs to recalibrate as follows by the simple formula below.

$$\text{New scale Factor} = \frac{\text{MEASURED Qty./Flow rate}}{\text{DISPLAYED Qty./ Flowrate}} \times \text{Old scale factor}$$

By doing this - one will get exact reading.

Important: The product comes to you pre-calibrated,
Do not alter Scale factor without proper technical knowledge.
This may result in unreliable readings.

That finishes the preliminary installation guidelines & tips towards proper care & maintenance your flow meter. If you face any problems during & after installation, refer to the trouble-shooting section.

Trouble Shooting

Trouble	Probable Cause	Action Required
Display remains zero even when the actual flow is present.	Flow less than the minimum sensing value	Check if any downstream valve is closed. Open valve, remove the sensor from the fitting and check change in reading by physically rotating the paddle. If meter shows reading check the actual flow. Change the fitting if the normal flow is lower than the minimum sensing velocity.
	Sensor not inserted in the correct plane	Ensure that the arrow on the sensor is in the same direction as the flow.
	Paddle not moving freely	Remove the sensor, clean the pin & paddle and ensure free movement of the paddle
	Wrong sensor wiring. (mainly applicable to meters with extended sensor wire)	Connect the sensor wires as per wiring connection details on the meter.
	Meter and sensor are not matching. (for panel mounted meters)	Ensure that the meters are connected to its corresponding sensor and fitting only.
Reading getting displayed but not correct.	Adequate straight run is not provided on either side of sensor. Presence of a pressure reducing valve before the sensor can result in error.	Provide straight run as per guide lines. OR adjust the scale factor to match the actual flow. Provide a bend between the valve and the sensor. Try to use fittings with strengtheners wherever possible. Refer p. 4 (fig. 2) for proper placement of sensor
	Scale factor disturbed	Check factor. Correct factor as mentioned on meter or sensor.
No display	No supply	Checks input supply and make proper connections.
	Micro-Controller hanged	Switch off supply for 1 minute and then switch On the supply again

Check sheet

VATS
VatturkarIndustrial

This Check Sheet is provided for you, in case you are not able to solve the problem your self. You can fill up the check sheet & fax it to us. Or you can download the check sheet from our website, fill it in word & save & send it by email. Or take a printout & mail it to us at our address.

General Information:

Name of Client / Dealer: _____ Date: _____

Sr. No.: _____

Select Model: **Select from drop-down list** write here if not in the list: _____

Application: **Select from drop-down list** write here if not in the list: _____

Installation location ☐ Open field Line Pressure _____ Kg/cm2,
☐ In-doors

Define your Problem – check whichever is applicable

☐ No Display
☐ Reading remains zero
☐ Steady but wrong Reading
☐ Reading different than Actual flow
☐ Gradual Fading of Display
☐ Fluctuating Reading
☐ Breakgae
☐ meter shows reading at no flow.
☐ Other – pl. define _____

No Display :

1. Have you checked power supply with multimeter? ☐ YES ☐ NO reading - _____
2. Is there water / moisture inside the meter? ☐ YES ☐ NO
3. Does the back light turn on? ☐ YES ☐ NO

Reading Remains ZERO:

1. Is the flowrate within the min & max flowrate limit of the meter? ☐ YES ☐ NO
2. Have you checked the sensor for free movement of Paddle? ☐ YES ☐ NO
3. Does the meter show reading when paddle rotated by hand? ☐ YES ☐ NO
4. Have you checked sensor wiring for proper connections? ☐ YES ☐ NO
5. If you connect other sensor to the meter, does it show reading? ☐ YES ☐ NO

Check sheet

Fluctuating reading:

1. Is the sensor located just after any valve/reducer? ☐ YES ☐ NO
2. Have you checked the sensor for free movement of Paddle? ☐ YES ☐ NO
3. Are there any air bubbles in the line ☐ YES ☐ NO
4. Have you checked sensor wiring for proper connections? ☐ YES ☐ NO
5. Is the sensor wiring extended? ☐ YES ☐ NO Is there shorting in wires? ☐ YES ☐ NO

Steady but wrong reading:

1. Mention the actual flowrate _____; Mention the Displayed flowrate _____
2. The Serial no of Sensor, Meter & Fitting are matching - ☐ YES ☐ NO
3. Line size mentioned on the indicator same as the fitting - ☐ YES ☐ NO
4. Scale factor of the meter same as that mentioned on the sticker ☐ YES ☐ NO
5. Is There is an adequate straight run for the inlet/ outlet - ☐ YES ☐ NO
6. If straight run is inadequate – Did you adjust scale factor? - ☐ YES ☐ NO
7. After adjusting the scale factor Is the reading found OK? - ☐ YES ☐ NO

Breakage: Specify the components broken & likely cause for the same.

_____

Gradual fading of display:

Is the unit is exposed to direct sunlight? ☐ YES ☐ NO

Meter shows reading even at no flow:

1. Is there an induction motor/coil very close to meter/sensor ☐ YES ☐ NO
2. Is the extra sensor cable kept looped near to sensor? ☐ YES ☐ NO
3. Is the plant piping properly grounded? ☐ YES ☐ NO
4. If the sensor removed from the fitting, reading becomes zero ☐ YES ☐ NO
5. If sensor wire disconnected from meter reading becomes zero ☐ YES ☐ NO

Any Other Comments / your Feedback / Suggestions:

_____

_____

Check Sheet filled by:

_____

Company Name

_____

Notes