

TopFlow II – Electromagnetic flow meter

Operating and assembly instructions
(Order No. 095.009.00.15.14)

Order No.:

TopFlow II 1" B.MFM.100.CO.MO.00.0

TopFlow II 2" B.MFM.220.CO.MO.00.0

TopFlow II 3" B.MFM.300.CO.MO.00.0



Please read the operating and assembly instructions completely before installing and commissioning the flow meter and pay attention to the notes!

Product description

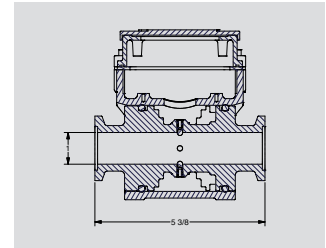
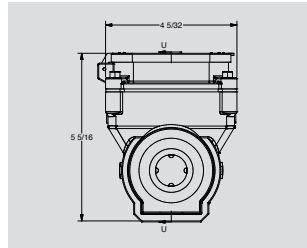
The TopFlow II magnetic inductive flowmeter measures the volume flow and shows it on the display. The measurement is performed magnetically inductively. Due to the measuring principle, the line pipe has a free passage without mechanically interfering parts (e.g. impeller).

Features

- Display of the total volume accumulated or the total volume of a single measurement.
- Display of current volume flow in l/min or gal/min
- Digital indication in display
- Measuring principle magnetic inductive
- Glass fiber reinforced polypropylene, stainless steel probes
- Temperature range from -15°C to +65°C
- Measurement accuracy 1% in the measuring range:
 - TopFlow II 1'': 8 bis 400 l/min
 - TopFlow II 2'': 25 bis 1100 l/min
 - TopFlow II 3'': 60 bis 2500 l/min
- Max. Pressure 10 bar at 20°C
- 1" FP and 2" FP (Full Port = nominal width DN 1" or 2")
- Connection father part FIXLOC 1" or 2" FP (Full Port)
- Power supply via six AA (Mignon) batteries
- Dimensions

Advantages

- Self-calibrating flowmeter
- Measurement independent of pressure, viscosity and density of the liquid
- Suitable for all conductive media such as water, liquid fertilizers and pesticide broths
- High measuring accuracy even under solids load
- High operational reliability due to free cross-section without impeller and interfering moving parts
- No moving parts, therefore no wear and tear
- Compact dimensions
- Easy handling
- Minimal maintenance and care requirements
- Robust design in glass-fiber reinforced polypropylene
- Easy replacement of the six AA (Mignon) batteries
- Allows manifold connection as well as FIXLOC connection
 - simple and fast mounting
 - 360° orientation of the flow meter



	Length [mm]	Wide [mm]	Height [mm]
TopFlow II 1" FP	137	106	135
TopFlow II 2" FP	140	106	152
TopFlow II 3" FP	185	125	180

Regulations for use

The flow meter is intended for use in the agricultural sector on e.g. field sprayers, mobile or stationary equipment (e.g. liquid fertilizer storage) for volumetric flow measurement of water, liquid fertilizers and pesticide broths.

Safety and hazard information

To ensure safe and efficient operation, the following instructions and precautions must be followed:



- Agricultural pesticides and liquid fertilizers flowing through the flow meter can cause a health risk. The use and disposal of these products are regulated by federal and state laws, good practice, and procedures. Follow the appropriate regulations and the manufacturer's instructions for use.
- Follow the manufacturer's instructions when using and cleaning the flow meter.
- Incorrect handling or installation of the flow meter can result in serious injury.
- Use for measuring explosive, oxidizing, explosive, highly flammable or highly flammable media (see regulation 67/548/EEC of 27/06/1997) must be excluded at all costs.
- Only start up the flow meter when it is securely installed in a liquid line, the FIXLOC quick couplings are locked and no leaks are expected.
- Before disconnecting the flow meter from the line, relieve the pressure and close the valve. Collect and properly dispose of any residual fluid that may leak.
- Securely install and fasten the flow meter and hose lines.
- Lay the hoses straight in the inlet and outlet area (see notes) and do not kink or crush them.
- Do not exceed the maximum working pressure of the flow meter of **10.0 bar**.
- Before maintenance and repair work, clean the flow meter with fresh water. Disconnect it from the lines during maintenance work.

There are three light sensors on the front of the flow meter. Attention : No push buttons!



Figure 1

Assembly instructions

- Installation of the flow meter possible in any position both horizontally and vertically. In the case of vertical arrangement, prevent air in the volume flow. In case of horizontal arrangement, rotation of the flow meter by 45° (axis of rotation of the pipe, see figure 2). This increases the measuring accuracy, e.g. if air is proportionally contained in the volumetric flow.
- Lay out the inlet and outlet straight at the flow meter (see Fig. 3). Avoid kinking the lines. This calms the flow of liquid in the line and ensures measurement accuracy.
 - Inlet straight min. 0.5 m
 - Outlet straight min. 0.5 m
- When installing the flow meter, pay attention to the direction of flow (see Figure 4); see arrow marking on the outside.
- The use of hoses or pipes (same nominal size DN as TopFlow II) with a smooth inner surface is recommended. Turbulent flows in the pipe can be caused, for example, by spiral hoses with a wavy inner surface. Larger deviations of the measuring result are possible with non-laminar flow!
- Check the function of the device after installation. Check the power supply (batteries) and perform a test run with water
- Display and lid can be rotated by 90° or 180° (see Figure 5).
 - 90° rotation: Loosen the four housing screws and carefully rotate the display to the desired position. Caution: Do not pull or pinch the cable!
 - 180° rotation: Loosen the four housing screws, remove the six AA (Mignon) batteries and the two battery holder screws. At the same time, turn the battery holder and display to the desired position. Caution: Do not pull or pinch the cable!



Figure 2

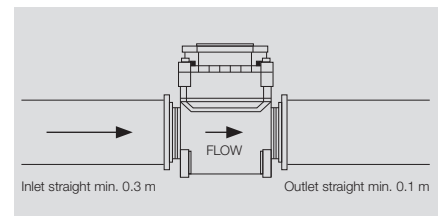


Figure 3



Figure 4



Figure 5

Operating instructions

Switching the flow meter on and off

Cover "On/Off" light sensor completely with finger for 2–4 seconds.



Reset display to zero

"Batch Reset" and "Batch Total" light sensors simultaneously with fingers for 2–4 seconds completely cover.



Changing the flow rate display liters ↔ gallons

Cover "On/Off" and "Batch Total" light sensors simultaneously and completely with fingers for 2–4 seconds.



Display „EP“

- Indication of inactivity of the flow meter, i.e. currently no flow and therefore no measurement.
- The accuracy of the flow meter depends on the flow rate and correct installation (see also installation instructions).

	Measurement inaccuracy 1 %
TopFlow II 1"	8–400 l/min
TopFlow II 2"	25–1100 l/min
TopFlow II 3"	60–2500 l/min

Attention: Stronger electromagnetic fields/radiation in the surrounding area of the flow meter can influence or disturb the measuring result!

Maintenance instructions

- There are six AA (Mignon) batteries in the flow meter. The batteries are replaced by loosening the four housing screws and carefully lifting off the displays. Reassemble in reverse order.
- Caution: Do not pull or pinch the cable during assembly!
- Recommendation: Change batteries annually, leakage of old and defective batteries destroys the electronics of the TopFlow II.
- Flush the flow meter regularly with clear water; at the latest after the end of use. Clean electrical probes in the pipe carefully with a soft plastic brush at least once a year.
- Only use original Lechler accessories and spare parts for repairs. See item Accessories and spare parts.
- Protect the flow meter from frost.
- For winterization, rinse the flow meter and empty it completely. At the beginning of the season, perform a test run with water, check batteries and function.
- After use, store the flow meter in a dry, frost-free place (do not leave outdoors).



Accessories and spare parts

Description		Order no.
Manifold 2" FP (Full Port = 2" Nominal size DN) Male adapter		BM220 A
Manifold 1" Male adapter		BM100A
Manifold 3" Male adapter		BM300A
Manifold clamp 2"		BFC220
Manifold clamp 1"		BFC100
Manifold clamp 3"		BFC300
Manifold gasket EPDM 2" FP (Full Port = 2" Nominal size DN)		B200G
Manifold gasket EPDM 1"		BM100G
Manifold gasket EPDM 3"		BM301G
Suitable FIXLOX quick couplings female part in 1", 2" and 3" design see Lechler "Agricultural Spray nozzles and accessories" Catalogue		

Malfunctions

Malfunctions	Action
No function of the flow meter when the light sensors are actuated.	<ul style="list-style-type: none"> • Cover light sensors completely with finger. • Caution: avoid diffuse radiation in direct sunlight! • Replace batteries • Check contacts of batteries • In total darkness, illuminate light sensors with light source and operate with finger.
Flow meter does not switch off	<ul style="list-style-type: none"> • Expose light sensors with light source in total darkness
Display not/poorly legible	<ul style="list-style-type: none"> • No backlighting of the display. Use additional light source in the dark. • Display at low temperatures (<-8°C) may be impaired if batteries do not warm up LCD display sufficiently.
Leakage at the flow meter	<ul style="list-style-type: none"> • Retightening the manifold clamp • Checking the FIXLOC quick coupling • Possibly replace the flat gasket of the manifold clamp (BM100G / B220G / B301G) or FIXLOC quick coupling (B100G / B200G / B300G). • B200G / B300G)
Inaccurate display of volume flow rate	<ul style="list-style-type: none"> • Installation of the flow meter according to the installation instructions • Remove air in the lines • Do not suck in air through pump etc. together with the medium to be pumped • Medium must be electrically conductive • Clean the probes (see maintenance instructions) • At low outside temperature or cold liquid, crystals may deposit on the probes Clean the probes (see maintenance instructions) • Exclude turbulent flow in the line - optimum is laminar flow. • Use the same nominal hose or pipe size DN as for the flow meter. • Replace batteries • Check contacts of batteries • Check environment for electromagnetic fields / radiation (e.g. large electric motor). Operate flow meter at a greater distance from the radiation source.
Display indication [-]	<ul style="list-style-type: none"> • Turbulent flow in the pipe - ensure laminar flow through straight inlet/outlet section and use hoses or pipes with smooth inner surface and same nominal size DN as TopFlow II (see also p. 4).



Note Battery Law

In relation to the sale of the device and the battery it contains, we are obliged to inform you of the following in accordance with the battery law:

- Batteries must not be disposed of with household waste.
- As the end user, you are legally responsible for the proper disposal of used batteries or rechargeable batteries.
- After use, you can return these products free of charge to municipal collection points or to any retailer where these products are also sold.



Batteries are marked with the symbol of a crossed-out trash can (see opposite). Batteries containing harmful substances are specially marked with chemical symbols. Batteries containing more than 0.0005% mercury by mass, more than 0.002% cadmium by mass or more than 0.004% lead by mass have the chemical designation of the respective pollutant under the dustbin symbol - "Cd" stands for cadmium, "Pb" for lead and "Hg" for mercury.

Product Warranty

The TopFlow II flowmeter is warranted in accordance with our General Terms and Conditions of Order, Delivery and Payment as amended (at printing A2009). We will be pleased to provide you with these on request or they can be downloaded from <http://www.lechler-agri.de/pdf/geschaeftsbedingungen.pdf>.

No warranty is given for:

- improper use,
- failure to observe the installation and operating instructions for the TopFlow II flow meter,
- use of non-original spare parts and
- unauthorized technical modifications must be reported immediately and in writing with full details. Flow meters received for reclamation will only be accepted in thoroughly cleaned condition
- Mängel sind sofort und schriftlich mit vollständigen Angaben zu melden. Zur Reklamation eingehende Durchflussmesser werden nur in gründlich gereinigtem Zustand angenommen.