

GT-FluxFP

Orifice Plate Flowmeter

FM, LPCB Approved



IMPRINT

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1 SAFETY INSTRUCTIONS

1.1 Intended use

The orifice plate flowmeter GT-FluxFP is used to measure the volume of water in closed conduits. It is suitable for any point of installation, mounting position and flow direction (in compliance of the directional arrow).

The necessary FM and LPCB Approvals are available. (GT-FluxFP Digital is FM approved only).



Warning!

The operator of these measuring devices is solely responsible for the suitability, intended use and corrosion resistance of the selected materials. It must be particularly ensured that the materials selected for the wetted parts of the flowmeter are suitable for the process media to be measured.

The manufacturer is not liable for any damage resulting from improper or unintended use of these devices.

The device may only be used in the specified pressure and temperature limits displayed on the nameplate.

1.2 Certifications

- » FM Approval Class: 1046
- » LPCB Certificate No. 1385Ba - Approval LPS 1045



1.3 Safety instructions from the manufacturer

The manufacturer is not liable for damages of any kind caused by the use of the device, including, but not limited to direct, indirect, incidental, punitive and consequential damages.

For every product purchased from the manufacturer warranty applies, according to the relevant product documentation and the valid terms and conditions.

The manufacturer reserves the right to revise the content of the documents, including this disclaimer, without notice, and is not liable in any way for possible consequences of such changes.

The responsibility that the instruments are suitable for the particular application rests solely with the operator. Tornatech Inc. assumes no liability for the consequences of misuse, modifications or repairs that were carried out by the customer without prior consultation.

In case of a complaint the contested elements must be cleaned of hazardous substances and be returned to the manufacturer unless otherwise agreed upon.

To prevent injury to the user or damage to the unit, it is necessary that you read this operating instruction carefully before starting using the device.

The instruction is intended for the correct installation, operation and maintenance of the equipment.

Special designs for special applications and custom models are not covered by this documentation.

2 DEVICE DESCRIPTION

2.1 Scope of delivery

- ① GT-FluxFP Orifice plate flowmeter and analog indicator
- ② Operating instructions
- ③ Certificate (partially optional)
Replacement gaskets (not shown here)
- ④ GT-FluxFP Orifice plate flowmeter digital indicator (optional)



Fig. 1 Scope of delivery

2.2 Flow Ranges

② Nominal size/Pump rating

Model	Nominal size grooved ends	Pump rating USgpm	Flow range		Approval	
			USgpm	LPM	FM	LPCB
OEBO	2"/DN 50 (ø60.3)	50	20 - 100	75 - 375	X	X
OUCO	2½"/DN 65 (ø73.0)	100	40 - 200	150 - 750	X	X
OFCO	2½"/DN 65 (ø76.1)	100	40 - 200	150 - 750	X	X
OGDO	3"/DN 80 (ø88.9)	150	60 - 300	220 - 1 100	X	X
OGEO	3"/DN 80 (ø88.9)	200	80 - 400	300 - 1 500	X	X
OHFO	4"/DN 100 (ø114.3)	250	100 - 500	380 - 1 900	X	X
OHGO	4"/DN 100 (ø114.3)	300	120 - 600	460 - 2 300	X	X
OHHO	4"/DN 100 (ø114.3)	400	160 - 800	600 - 3 000	X	X
OHJO	4"/DN 100 (ø114.3)	450	180 - 900	680 - 3 400	X	X
OXKO	6"/DN 150 (ø165.1)	500	200 - 1 000	760 - 3 800	X	X
OXLO	6"/DN 150 (ø165.1)	750	300 - 1 500	1 130 - 5 650	X	X
OXMO	6"/DN 150 (ø165.1)	1 000	400 - 2 000	1 500 - 7 500	X	X
OXNO	6"/DN 150 (ø165.1)	1 250	500 - 2 500	1 900 - 9 500	X	X
OKKO	6"/DN 150 (ø168.3)	500	200 - 1 000	760 - 3 800	X	X
OKLO	6"/DN 150 (ø168.3)	750	300 - 1 500	1 130 - 5 650	X	X
OKMO	6"/DN 150 (ø168.3)	1 000	400 - 2 000	1 500 - 7 500	X	X
OKNO	6"/DN 150 (ø168.3)	1 250	500 - 2 500	1 900 - 9 500	X	X
OLPO	8"/DN 200 (ø219.1)	1 500	600 - 3 000	2 200 - 11 000	X	X
OLQO	8"/DN 200 (ø219.1)	2 000	800 - 4 000	3 000 - 15 000	X	X
OLRO	8"/DN 200 (ø219.1)	2 500	1 000 - 5 000	3 800 - 19 000	X	X
OLSO	8"/DN 200 (ø219.1)	3 000	1 200 - 6 000	4 500 - 22 500	X	X
OMTO	10"/DN 250 (ø273.0)	3 500	1 400 - 7 000	5 300 - 26 500	X	-
OMUO	10"/DN 250 (ø273.0)	4 000	1 600 - 8 000	6 000 - 30 000	X	-
OMVO	10"/DN 250 (ø273.0)	4 500	1 800 - 9 000	6 800 - 34 000	X	-
ONWO	12"/DN 300 (ø323.9)	5 000	2 000 - 10 000	7 600 - 38 000	X	-

3 INSTALLATION AND MODE OF OPERATION

3.1 Installation notes

The following document is valid for the analog and digital version of the GT-FluxFP flowmeter. Please note that for the digital version an additional operating manual must be consulted for commissioning.



Information!

All instruments are carefully checked for proper function before shipment. Check immediately on receipt, the outer packing carefully for damage or signs of improper handling.

Report damage to the carrier and your locale sale staff. In such cases, a description of the defect, the type and the serial number of the device is indicated.

Unpack the unit carefully to avoid damage.

Check the completeness of the delivery against the packing list. Use the nameplate data to check if the delivered flow meter is according to your order.

3.2 Installation instructions

Installation of the orifice plate

Before and after the orifice plate a straight calming section is provided as a function of the nominal diameter (D).

When the piping includes a 90° elbow fitting (regardless of the position) a calming distance of at least 5 x D before the measuring orifice and an outflow zone of 2 x D after it is required (see fig. 2). The pipes connected to the orifice plate flowmeter must have the same nominal diameter as the flowmeter.

- » An installation of a 90° elbow pipe fitting upstream requires a straight inlet path of $5 \times D$

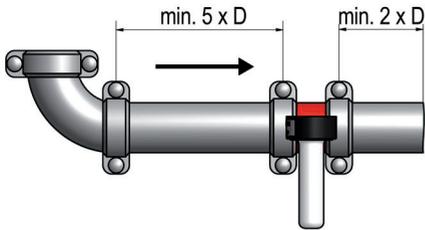


Fig. 2 Inlet path and outflow zone with an elbow pipe fitting.

When using valves, fittings, ... before the orifice plate, an inlet path of $\text{min. } 10 \times D$ is always required. The outflow zone has to be $\text{min. } 2 \times D$ (fig. 3).

- » An inlet path of $\text{min. } 10 \times D$ is required if a valve, fitting or T-piece pipe is mounted before, where at least $5 \times D$ must be available as a straight inlet section directly in front of the orifice plate (fig. 3).

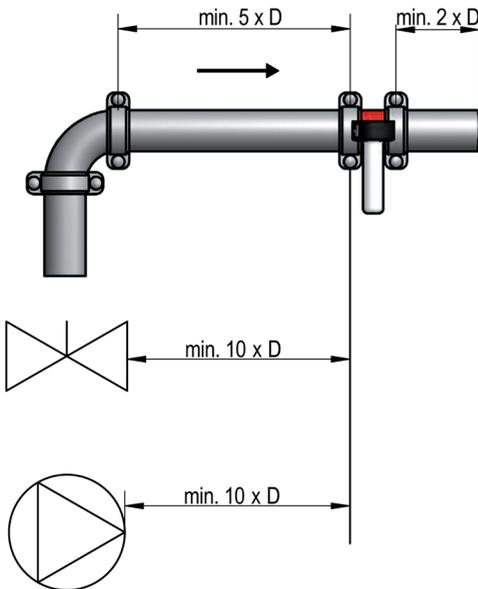


Fig. 3 Inlet path and outflow zone

The technical data of the respective measuring device can be taken from the current technical data sheet or nameplate.

The flowmeter can be installed in any position - horizontal to vertical (Fig. 4). However, care must be taken to ensure that the direction of flow corresponds to that indicated on the device (arrow on the label) and that the differential pressure measuring tube is in the vertical position.

For attachment of the bypass meter, sufficient clearance must be provided. Concentric mounting of the pipeline and the flowmeter is important for compliance with the measuring tolerance. The center offset must not exceed 0.5 mm.

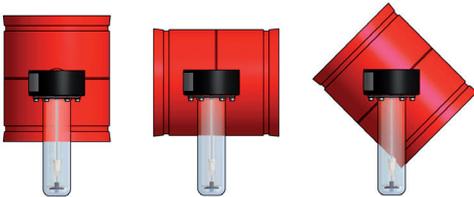


Fig. 4 Examples of installation

Mounting the bypass meter / digital indicator

The bypass meter is only compatible with the delivered orifice plate. Please make sure that the technical data, pump rate, diameter of the orifice plate and the bypass meter are similar before installation. Before loosening the cap, the pipeline must be emptied to prevent the escape of liquids. The meter is plugged and screwed with a nut.

It must always be mounted vertically so that the float (fig. 4) can move freely in the measuring tube. Foreign objects that have penetrated behind the filter screen must be removed. The tightening of the nut or the cap should be done by hand as far as possible. The threads must be able to slide (e.g. with grease). To avoid trapped air bubbles, the tube should be slowly filled with water. The digital indicator can be mounted on each orifice plate. See GT-FluxFP digital operating manual.

3.3 Mode of operation

The orifice plate flowmeter GT-FluxFP consists of a cylinder with an orifice plate for stationary installation and a portable bypass meter or digital indicator. The bypass meter contains a conical glass measuring tube with a float. The water flows vertically from bottom to top through the measuring tube, at the upper end of which, there is a bypass orifice. A sieve filter, at the inlet, largely prevents the ingress of foreign bodies. To use the digital indicator, see separate operating manual. The inlet and outlet openings for the bypass flow to be measured are arranged concentrically, so that an easy assembly with the cylinder is guaranteed.

4 START-UP

Read the exact value when a consistent flow has been attained and the float has reached a stable position. The pipeline must always be filled. Read the value at the greatest diameter (upper edge) of the float:

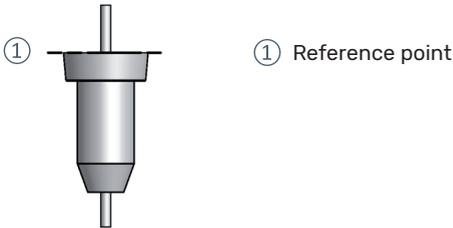


Fig. 7 Float

For the bypass meter it is important that when starting up the pump, the shut-off-/ control valve after the bypass flow meter is opened at least 30% to avoid hydraulic shocks or pressure surges that could damage the bypass meter.

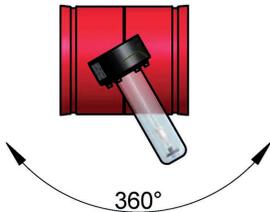


Fig. 8 Rotation bypass meter

When the bypass meter is commissioned or set into operation, bubbles of air will initially accumulate at the top part, which must be removed. For this purpose, the union nut must be somewhat loosened during operation and the device must be rotated by 360°, so that the air bubbles can escape. Then the bypass meter has to be positioned vertically and the union nut has to be tightened once again.



If the piping is subjected to a pressure test, the bypass flow measuring device must be dismantled beforehand and the connection to the orifice plate must be screwed pressure-tight with the sealing cap.

To use the digital indicator, see separate operating manual.

After device usage

After measurements have been taken it is recommended that the measuring tube is either drained by inverting it or removed from the flow meter body. If removed the measuring tube must be drained and stored in the supplied packaging. The open orifice on the flow meter body must be sealed pressure tight with the cap (incl. seal) supplied.

5 SERVICE

5.1 Storage

Store the emptied device in a dry and dust-free place. Keep away from direct and permanent sun and heat. The storage temperature range is -20 to +60 °C (-4 °F to +140 °F). Keep away from direct external load to the device.

5.2 Maintenance

If the filter is blocked by deposits the flowmeter must be returned to the manufacturer to be cleaned and tested. Ensure that the O-ring and the M 30 x 1.5 thread of the orifice plate are lubricated with grease.

5.3 Returning the device to the manufacturer

All flowmeters were manufactured in accordance with the highest quality standards and were thoroughly tested prior to shipment.

Should you nevertheless need to return a device to Tornatech Inc. please observe the following points:



Attention!

According to the latest waste disposal directives, the owner/customer is responsible for the waste management of hazardous and toxic waste. For reasons of environmental protection and safeguarding the health and safety of our personnel, all devices sent to Tornatech Inc. to be repaired must be free of toxic and hazardous substances. This also applies to cavities of the devices. If necessary, the customer is kindly requested to neutralize or rinse the devices before returning them to Tornatech Inc.

The customer has to confirm this by filling in an appropriate form and to be added to the device, which is available for download on the Tornatech Inc. website: www.tornatech.com/wp-content/uploads/2022/12/Declaration-of-Decontamination_Form_EN.pdf

5.4 Disposal



Warning!

The relevant regulations in your country must be observed when disposing of the devices.



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