

OPERATING MANUAL

*Flow meter FMT 40
FMT 50
FMT 80
FMT 120*



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Before using this unit it, is absolutely necessary to read the operation manual. In case of mal functions and damages of the unit caused by insufficient knowledge of the operation manual, the warranty claim will be void.

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1. Safety precautions

1.1 Description of symbols and precautions

Operating safety symbol



This symbol is to be found at all safety instructions in this operating manual, where a danger of life and health of individuals exist. Please follow these instructions and behave especially careful in these cases. Pass on these instructions to other users. Besides the instructions of this operating manual the general safety and accident preventive rules must be observed.

Caution symbols

caution!

The “caution” symbol is found in this operating manual where special attention should be given so that existing regulations, laws, precautions and the correct operating process can be followed in order to avoid damages to the product and/or other parts of the unit.

1.2 Working safety instructions

The electronically operating flow meter FMT is developed and built under relevant, fundamental health- and safety requirements and the important EC-regulations. Nevertheless, this product can cause damage if it is not used as advised. Every person who is dealing with assembly, line up, maintenance and operation of the meter must read and understand the whole operating manual.



The electronically operating flow meter FMT is only to be used for delivery of thin-fluid media of danger class AIII (flashpoint 55°C - 100°C).

Any other use as well as any modifications of the product have to be considered as improper use. The manufacturer will not be held responsible for any damages resulting from such improper use, the risk lies solely with the user.



Electrical parts are non explosion-proof. Operation in an explosion-proof area and with liquids of danger class AI, All and B (flashpoint below 55°C) may cause explosions.

A proper use of the product also implies the observance of the conditions specified by the manufacturer regarding assembly, line-up, operation and maintenance.

For the operation of the electronically operating flow meter FMT the local safety and accident preventative measures are binding in any case.

1.3 Requirements to operation site

Since fuel and Diesel oil are water-polluting liquids all regulations regarding protection of ground water and environment must be observed.

2. General informations

2.1 Manufacturer

Horn GmbH & Co. KG, D-Flensburg

Type: FMT 40, FMT 50, FMT 80, FMT 120

2.2 Range of use



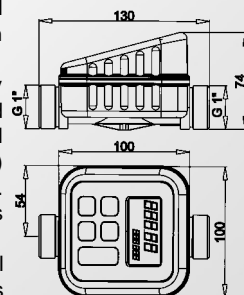
The electronically operating flow meter FMT is only to be used for the delivery of thin-fluid media of danger class AIII (flash point above 55°C).

caution!

Operable temperature range of the electronic: -10°C to + 40°C.

2.3 Description

- The electronically operating flow meter FMT is for the simple measuring of liquid volumes due to uncalibrated requirement.
- The detection of the measured values is done by the FMT mechanically to the flow, following the principle of the radial turbine wheel meter. The measured values are transmitted without sealing and contact, electronically processed and indicated on display.
- The flow meter FMT has a two-digit display which is switched on automatically at operation by button press. The first line is for indicating of the dispensed quantity. At the same time is at the second line the indication of the total dispensed quantity (at total 1) or rather a user's partial sum (total 2-5) possible. The sum memory device is not cleared in case of battery change.
- The keyboard is simple to handle and to be used for input of the user's parameter.
- The flow meter FMT is precalibrated for the dispensing of fuel oil and Diesel oil. The measurement of other thin-fluid media is also possible. For this purpose a calibration by the user is possible.
- The top part of the FMT casing can be twisted about 90° which offers a convenient reading of the display at different handling positions.



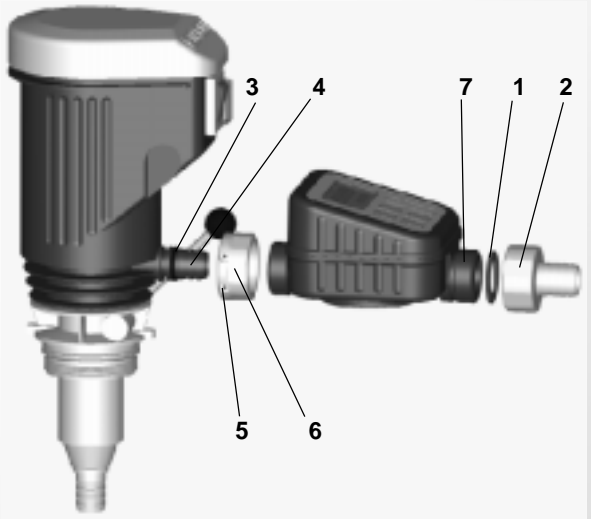
2.4 Technical data

type		FMT 40	FMT 50	FMT 80	FMT 120
principle of measurement		radial turbine wheel meter			
material (contacted by medium)		all: POM, Niro 1.4571, NBR			FMT 50: steel
range of measurement	l/min	5-45	10-55	20-85	20-125
	gpm	1.3-11.9	2.6-14.5	5.3-22.5	5.3-33
operation pressure (max.)	bar (psi)	2 (29)			
bursting pressure	bar (psi)	10 (143)			
accuracy of measurement	%	+/- 1			
(calibrated) accuracy of repeating	%	+/- 0.8			
display 1. line		5-digit, 12 mm high			
display 2. line		6-digit, 6 mm high			
dissolution	Liter	approx. 0.03			
	gallons	approx. 0.008			
connecting thread		G 1" (external thread)			
weight	kg	0.32			
temperature range of evaluation electronic	°C	-10 to + 40			

3. Assembly instruction

3.1 Assembly instruction FMT at HORNET 40

1. Before assembly all parts have to be checked for particles of packing material.
2. Set O-ring (3) on the first groove of the hose nozzle (4).
3. Screw 3 screws M 4 x 8 (5) with a number of threads into the pump adapter (6).
4. Screw the pump adapter on the meter. Please notice that the arrow on the bottom part of the meter must direct away from the pump.
5. Set pump adapter with meter on the hose nozzle of the pump (adapter must have contact to the pump body). Tight the set screws (5) with the delivered pin key.
6. Press seal ring (red) (1) right down into the thread of the hose nozzle (2).
7. Mount hose nozzle into the discharge hose plug and on the discharge G1" thread (7) of the meter tightly.
8. After assembly, check all connections for leakage.



3.2 Assembly instructions for subsequent attachment of FMT at HORNET 50 II, 80 and 120

1. Before assembly all parts have to be checked for particles of packing material.
2. Back off discharge hose **(1)** from 90° elbow **(2)**.
3. Unscrew the G1" elbow **(2)** from the pump **(3)** (warm the endings, e.g. with a hot air sprayer).
4. Push each of both delivered O-rings D.29x3 on the upper and underside on the threads of the meter **(5)**.
5. Screw the provided extension **(4)** into the pump.
6. Screw the meter into the extension and line up to the correct position. If it is not possible to adjust the correct position with the above mentioned O-rings, please use the other O-rings (D.29x2,5 or D. 29x3,5). The arrow on the bottom part of the meter must direct away from the pump.
7. Screw the second extension to the meter and then connect the provided G1" elbow **(6)** (please notice the correct position).
8. Tighten discharge hose to the elbow .
9. After assembly, check all connections for leakage.



Illustration: HORNET W50 II

4. Operation

4.1 Switch on of display:

Automatic switch on of display at beginning of dispensing.
Manual switch on by pushing button START / STOP.

4.2 Counting operation:

Indication of dispensed rate on top line, total quantity (TOTAL 1, 2,3,4 or 5) is indicated on bottom line.
Sum up of total quantity TOTAL 1 as well as partial quantity (if activated).

4.3 Reset of quantity indication:

Press button START / STOP means quantity indication = 0.00.

4.4 Indication / activation of a total quantity:

Use of button **TOTAL** means changing between the five total quantities. TOTAL 1 is always, TOTAL 2,3,4 and 5 are only indicated if activated.

4.5 Reset of total quantity:

The quantity TOTAL 2,3,4 or 5 is activated. The button **TOTAL** has to be pressed at the same time with button ▼. The corresponding quantity is set to 000000. A reset of quantity TOTAL 1 is not possible.

4.6 Switch off display:

In case that the flow rate is not recorded within 90 seconds and no button is pressed, the display will be switched off automatically (modus of saving energy). The indicated values are saved and will be shown on display again after switch on of the FMT.

4.7. Directions of measuring accuracy:

The flow meter FMT is for recording the dispensed liquid quantity. By manufacturing it is precalibrated for the dispensing of fuel oil and Diesel oil. The highest measuring accuracy will be reached at a dispensing with a constant flow rate.

Different causes can influence the intended measuring accuracy.

1. Viscosity of dispensed liquid
2. Kind of dispensed liquid
3. High pulsation and flow rate of the dispensing pump
4. Mounting conditions

In case of an inaccurate measuring the FMT can be recalibrated (as described under point 4.8).

A recalibration is also necessary in case that the FMT has to be dismantled or if other liquids as fuel oil and Diesel oil are dispensed.

4.8 Calibration:

Press button PRESET for approx. five second means starting calibration process. Indicated is on top line 0.00 as well as on bottom line the activated calibration factor (CAL 1 or 2).

The calibration factor CAL 1 is fixed on 1000 and is not changeable. The calibration factor 2 is fixed by manufacturer on 1000 and can be changed.

The calibration mode can be switched over between CAL 1 and 2 by pressing button PRESET: Press button START for approx. one second means activation of the indicated calibration factor.

The calibration process can be interrupted at any time by pressing button TOTAL.



In order to carry out an own calibration of the meter following steps are necessary:

1. Activation of CAL 2 (as mentioned above).
2. Dispensing of a chosen quantity (e.g. 20 Liter/ 5 gallons) into a measuring vessel.
3. After dispensing the calibration has to be changed with buttons ▲ and ▼ as long as the indicated quantity is conforming with the measured quantity in the vessel.
4. Press button START for approx. one second.

Notice: A modification of CAL 2 is also possible without previous dispensing quantity.

5. Maintenance

- The meter just requires very little maintenance.
- Nevertheless, due to existing regulations the casing must regularly be checked for damage.
- When the battery has to be changed the battery symbol is shown in the display. Carefully open meter housing and remove battery from the lower part of the housing. Set in new battery and fix with provided cable. Close meter housing.

(Battery kit: spare parts list pos.-no. 130)

6. Service

The meter was developed for operation with a minimum of maintenance. Therefore, please use this FMT as described in the operation manual. In case you need service, please contact our after-sales service: (0049) 461 - 869627.



7. Spare parts list for meter FMT:

Pos.-no.	Description	amount	FMT 40	FMT 50	FMT 80/120
10	Upperside housing	1	512870002	512870002	512870002
20	Underside housing	1	512870001	512870001	512870001
30	Cover of measurement chamber	1	512870003	512870003	512870003
40	Measuring wheel cpl.	1	612870004	612870004	612870004
50	Gasket cord D.2,5	1	404902400	404902400	404902400
60	O-ring D.47x3,5	1	404107860	404107860	404107860
70	EJOT screw 3,5x12	10	403310060	403310060	403310060
80	EJOT screw 2,5x6	5	403310055	403310055	403310055
90	Keyboard foil	1	512870005	512870005	512870005
100	Electronic parts meter FMT	1	812878005	812878006	812870007
110	Nozzle	1	612870003	612870003	612870008
120	Disc D. 3,2	1	403200100	403200100	403200100
130	Battery kit	1	812878008	812878008	812878008
140	Wire gauze	2	-	612870010	-
150	Guard ring	1	-	403222170	-
-	Attachments meter FMT connectable to Hornet 40	1	912870002	-	-

Notes:



Notes:



**EC-Declaration of conformity
as defined by machinery directive 89/392/EEC, Annex II A**

Herewith we declare that the below mentioned equipment in it's conception and design and in the execution was manufactured by us in conformity with the provisions of the EC directive. Any modification to the equipment made without our consent will render this declaration invalid.

Description: Flow meter FMT40, FMT 50, FMT 80, FMT 120

Type: radial turbine wheel meter

Year of construction: see equipment

**Applied
EC-directives:** EC-directive electromagnetic compability
(89/336/EWG) version 93/31/EEC

**Applied
harmonized standards:** EN 55 014

**Applied national standards
and technical specifications:** VDE 0843 T1

Date / signature 02.01.2001 
Dipl.-Ing. Klaus-R. Jacobsen
Chief Desinger

