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Operating manual

for the flow indicators - rotor, inline structure and turbine: PO, WR1, FR, RM, HV

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1 General safety notes, usage

This operating manual must be locally stored so that it can always be accessed.
All procedures described within this operating manual may only be performed by trained personnel authorised by the operator with corresponding protective gear.

1.1 Safety signs and symbols

Danger signs and symbols are marked as noted below for this operating manual:

	Warning! Symbol warns of ensuing danger, death, grave bodily injury and/or severe material damages due to carelessness.
	Attention! Symbol warns of possible dangers or harmful situations that arise due to not observing damage to the device and/or to the surroundings.
	Note! Symbol refers to procedures that have an indirect influence on operation due to carelessness, or which can trigger unforeseen reactions.

1.2 Safety notes

Read the product information before activating the device. Ensure that the product is indefinitely suitable for the usage in question.
The operator is responsible for the error-free operation of the device. He is obligated to determine and observe adherence to the required work and safety measures of the respectively valid stipulations during the full duration of application.

1.3 Product liability and warranty

This operating manual contains the instructions for assembling and operating the device safely in the stipulated manner. Should any difficulties arise that cannot be solved by using the operating manuals and product information, additional information must be retrieved from the manufacturer. The manufacturer reserves all rights to technical changes and improvements. Usage of this operating manual requires the appropriate qualification of the user. The operating personnel is also subject to the operating manual.

1.4 Standards and guidelines

- Dependent on: RoHS - Guideline 2002/95/EC

2 Product description

Oftentimes, with applications, the necessity arises to ensure minimal care, e.g. with lubrication or coolants. With the flow devices PO, WR1, FR, RM and HV a visual flow monitor of fluid media can be facilitated. The rotor/turbine rotation visualizes the volume flow.

2.1 Active principle

Rotor
The liquid medium enters into the housing and takes the visible arranged rotor in rotation. The frequency of the rotor allows a subjective evaluation of flow volume.
Turbine
The liquid medium enters into the housing and makes the turbine in rotation. The rotor turns in proportion to the flow volume.

2.2 Product contents

- Enclosed with the product are an operating manual and the corresponding product information.
- To avoid any transportation damages, the devices are equipped with threaded plugs or protective bags.

2.3 Appropriate usage

The flow indicator serves to visually monitor the flow of the medium. The device may only be employed for the medium stated in the product information.

This product is intended for application in machinery and facilities and for the application of media of the fluid group II as per Guideline 97/23/EC. The product does not fall under Guideline 97/23/EC and also receives no CE label in accordance with this guideline. The stated limit values may never be exceeded (the data can be found in the product information).

3 Structure of the devices

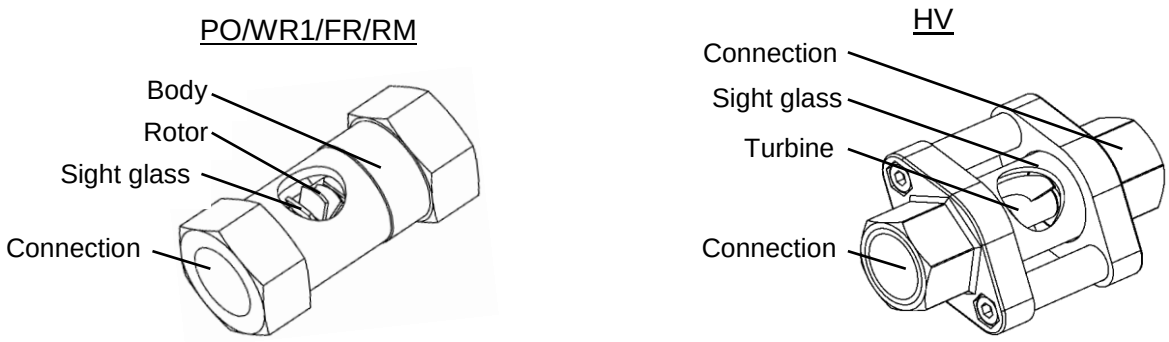

Figure 1: Schematic diagram of the devices PO/WR1/FR/RM und HV

4 Assembly and installation

To ensure flawless usage of our devices, the following points must be observed during assembly and installation:

4.1 Mechanical assembly

- Take the appropriate measures to prevent freezing of the medium. Should the device later be subjected to an ambient temperature <4°C, no operation with pure water may be performed. Frost damage may be caused by water remaining in the device.
- Note the permitted installation positions from the product information.
- The device may never serve as a fixed point.
- The connector flanges/threads must be compatible.
- A filter should be provided for heavily spoiled media.
- Take note of the stated operating pressure as well as the permissible temperature range.
- Thermal expansion of the pipework must be balanced out by compensators.
- The device can be aligned horizontally or vertically.
- The direction of flow is indicated on the device by an arrow. The arrow points in the direction of flow. With the HV device the flow in both directions is possible.
- When tightening the screw joint the connection must be locked so that no torque is transferred to the body.
- This equipment is designed for low-viscosity media. Highly viscous medium delays the start of rotor/turbine.

5 Activation, operation and maintenance

5.1 Activation

Before activation note the limit values stated in the product information, such as for pressure stage, temperature range or maximum permitted flow.

- If present, the transport lock must be removed.
- When operating with protective covers, remove them immediately before assembly.
- Rinse the pipe system before assembly to remove any spoiling.
- Observe the direction of flow. This is indicated on the device with an arrow and must run parallel to the pipe axis after assembly.
- Properly tighten the device during assembly.
- Endurance must be assessed with aggressive media.
- To avoid heavy pressure surges we recommend that you fill and ventilate the system before activation. Pressure surges may not exceed the value of PN/PS.
- Ensure that assembly is conducted properly.

[1] The device FH has no hatch/scaling.

5.2 Operation/maintenance

The devices operate with pure medium free of repairs. We recommend applying a filter for unclean medium. With the device WR1 there is the additional possibility to clean the sight glass with an internal wiper.

6 Technical information

The technical information can be found in the product information. This is included with the product or may be downloaded at http://www.ghm-messtechnik.de/en/products/b-sensors-and-instrumentation/b2-flow/rotor-inline-model.html#c4558.

7 Accessories[2]

- Filter TYPE ZV
- Filter TYPE ZE

8 Device transportation and storage[3]

Storage

- Please observe the storage temperature.
- A desiccant or heating against the formation of condensation is recommended in moist areas.

Transport

- Please observe the transportation temperature.
- Prevent environmental influences such as impacts, blows, dust and vibrations.

9 Return

The legal regulations for protecting the environment and our personnel require that returned devices which have come into contact with toxic and hazardous materials can be treated with no risks to personnel and the environment.
Should you return a device to us for evaluation, repair or disposal we ask that you strictly adhere to the following regulation:

A return form can be downloaded on our homepage at:
http://www.ghm-messtechnik.de/en/downloads/ghm-forms.html.
Acceptance from GHM-Honsberg can only occur if

1. a filled-out form is provided with each return,
2. packing is applied that prevents damage to the device,
3. the device is cleaned so that no dangers are present,
4. the filled-out form and, if necessary (hazardous materials), a safety data sheet of the measurement medium is applied to the outside of the packaging.

10 Disposal

During disposal, a material separation and recycling of the device components as well as the packaging must be observed. The legal stipulations and guidelines valid at this point in time must be adhered to.
The device may not be disposed of in a residual waste bin. Should a disposal of the device take place, send it directly to us with the return form filled out under point 9. We take over the appropriate and professional disposal.

11 Disclaimer

[2] More information on our accessories can be found in the product information.
[3] See product information: ambient/transportation temperature