



## Operating Instruction RVP/U

The flow monitors type RVP/U operate on the float measuring principle

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### 1. Preface

The flow monitors type RVP/U prove themselves through reliability and simple handling. To use the advantages of the instrument to full extent, please take notice of the following:

**Every person in charge of commissioning and operating this instrument must have read and understand this operating instruction and specially the safety hints!**

### 2. Safety hints

#### 2.1. General hints

The instructions contained in the operating instructions must be followed to ensure a safe operation of the instrument. Further, the additional legal and safety regulations for the individual application must be observed. Accordingly, this applies for the use of accessories as well.

#### 2.2. Application as directed

The instruments type RVP/U serve as monitors for continuous flow of liquids. Any other use counts as non-directed. If not indicated otherwise, the scaling of the instruments refer to water. Special applications, where intermittent loads (e.g. cyclic operation) could occur, must be discussed and checked with our technical staff.

The instruments type RVP/U must not be used as single source to avoid dangerous situations on machinery and in plants.

Machinery and plants must be constructed in that way, that faulty conditions do not lead the operators into dangerous situations.

#### 2.3. Qualified personnel

The instruments type RVP/U must only be installed by qualified personnel, which is capable of using these instruments in a professional manner. Qualified personnel are such persons, which are familiar with the erection, installing, commissioning and operating of these instruments and which hold a corresponding qualification for this function.



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### 3. Principle of operation

The instruments type RVP/U operate on the principle of the float type flow indicator. Through the flowing medium a float is set in motion, whose integrated magnets create a magnetic field. The position of the float is detected with the switch contact. The float is reset to the starting point by means of a spring, which allows the installation in any position in a system. The instruments are adjusted for the installation with flow from bottom to top. The weight of the float influences the measuring result, therefore a different mounting position will show discrepancies to the actual flow.

### 4. Installation

#### 4.1. Process connection

Caution! To avoid the damage to the flow monitor or the installation the following requirements must be fulfilled under any circumstances:

- Suitable process connection has to be provided
- Connection size to be checked
- Thread depth to be checked
- Suitable sealing material to be used (liquid sealing material will damage the flow monitor, if it gets inside)
- Professional sealing

#### 4.2. Environment conditions

- The flow monitor must not be used as a supporting part in a pipe construction.
- The medium must not contain any solid particles. Magnetic particles will accumulate at the magnetic float and effect the function.
- Before employment of anti-freeze and anti-corrosive check compatibility.

Warning! The following requirements must be adhered to, otherwise the function of the flow monitor will be affected or the measuring results will be false:

- External magnetic fields will influence the switch contact. Keep sufficient distance to magnetic fields (e.g. electric motors).
- Piping, process connections or supports made from ferromagnetic material influence the magnetic field of the flow monitor. Keep a space of 100 mm to those materials (e.g. steel).
- The accuracy is influenced by cross-section changes, branches or elbows in the piping. Provide a straightening section of 10xDN upstream and 5xDN downstream of the instrument. Never reduce the pipe diameter directly ahead of the instrument!
- With liquids ensure though suitable steps the deaeration of the instrument!



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### 5. Electrical connection

The switch contacts are potential free and do not need any supply.

Attention! Switch contact and unit are matched. After the exchange of a switch contact a readjustment must be made. Kindly request the relevant instruction.

Switch position under No flow condition:

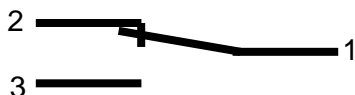
**Connection: normally open**  
DIN 43650



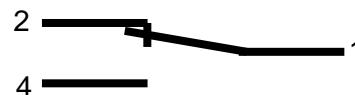
M 12x1



**Connection: change over**  
DIN 43650

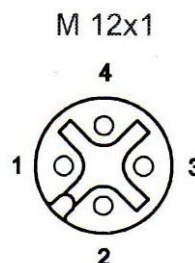
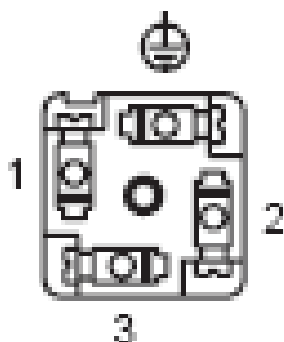


M 12x1



#### 5.1. Standard switch contact

Pin-allocation of the supplied socket (DIN 43650 Form C). The Ground-pin is not used.



**Important instruction:**

When using the socket DIN 43650, the ingress protection IP65 is only warranted in connection with a suitable cable diameter.

For information on this subject please refer to page 4.



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### 5.2. Switch contact with cable

The individual cores of the cable are marked according to the above connection diagram.

### 5.3. Special design

On request special designed switch contacts (socket, ready-made-cable) can be supplied..

### 5.4. Contact protection arrangement

Attention! The following requirements must be adhered to under any circumstances, otherwise the switch contact will be destroyed!

The reed-contacts employed in the switch contacts are, due to their construction, very fragile against over load. Non of the values voltage, current and wattage must be exceeded (not even for a fractional moment).

The danger of overloads exist by means of

- Inductive loads
- Capacitive loads
- Resistive loads

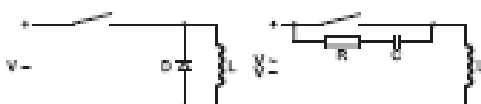
#### Inductive loads

This kind of loads will be caused by

- Contactors, relais
- Solenoid valves
- Electric motors

**Danger:** Voltage peaks during switch off (up to 10-times of the nominal voltage))

**Precautionary measure: (sample)**



#### Capacitive load

This kind of load will be caused by

- Extreme long leads
- Capacitive consumption



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**Danger:** High current peaks during switch on of the switch contact (exceeding the nominal current).

**Precautionary measure: (sample)**



Limiting the current by means of a resistor.

### Resistive load

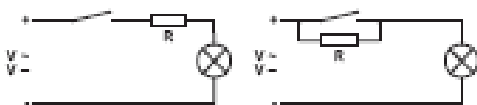
This kind of load will be caused by:

- Incandescent bulbs
- Motor start up

### Danger:

High current peaks during switch on of the switch contact, because the filament has low resistance at low temperatures.

**Precautionary measure: (sample)**



Limiting the current by means of a resistor or heating of the filament.

### Connection to SPS

For the connection to high resistance devices (like SPS) a protection circuit is not necessary.

## 6. Switch point adjustment

- Loosen the lock screw of the switch contact
- Shift the switch contact until the arrow on the switch contact is in coincidence with the desired switch point
- Tighten the locking screw of the switch contact



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Hints:

- The adjusted switch point corresponds to the switch off point of the switch contact with decreasing flow.
- The current switching status can be checked by means of an universal tester.
- The above description of the adjustment refers to the normally open contact.

### 7. Maintenance

Due to the few moving parts the instruments do not require much service.

A functional check and service on a regular base will not only increase the lifetime and reliability of the instrument, but of the entire plant.

The service intervals depend on

- The pollution of the media
- Environmental conditions (e.g. vibrations)

During maintenance at least the following points should be checked:

- Operation of the switch contact
- Leakage test of the instrument
- Free movement of the float

It is the obligation of the user to lay down appropriate service intervals depending on the application.

Hints:

- The free movement of the float and the operation of the switch contact can be checked by varying the flow and observing the switch contact status.
- In most cases a purification can be achieved by flushing the instrument with clean media. In obstinate cases (e.g. calcareous deposits) cleaning can be done with commercial purifier, as long as the purifier is not aggressive against the material of the instrument.



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### 8. Fault finding hints

The switch contact does not react.

- The switch contact is permanent in break position.
  1. No flow
    - ▶ Check for medium flow
  2. Flow too low or switch contact adjusted too high
    - ▶ Adjust switch point to a lower flow.
    - ▶ Use instrument with different range.
  3. Incorrect reduced (pipe diameter too small)
    - ▶ Reduce according to section 4.
  4. Float got stuck (polluted)
    - ▶ Clean the instrument and ensure free movement of the float.
  5. Switch contact faulty
    - ▶ Eliminate the reason for the fault (short circuit, overload)
    - ▶ Exchange switch contact, refer to section 5
- The switch contact is permanent in made position.
  1. Flow too high and switch contact adjusted too low
    - ▶ Reduce flow
    - ▶ Adjust switch contact to a higher flow
  2. Float got stuck (polluted)
    - ▶ Clean the instrument and ensure free movement of the float
  3. Switch contact faulty
    - ▶ Eliminate the reason for the fault (short circuit, overload)
    - ▶ Exchange switch contact, refer to section 5
- Switch point does not match with actual flow
  1. No medium specific scale
    - ▶ Request a correction table or medium specific scale
  2. Incorrect reduced
    - ▶ Reduce according to section 4
  3. Instrument polluted
    - ▶ Clean the instrument
  4. Instrument defect
    - ▶ Return instrument for repair and calibration to manufacturer





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### 9. Specifications

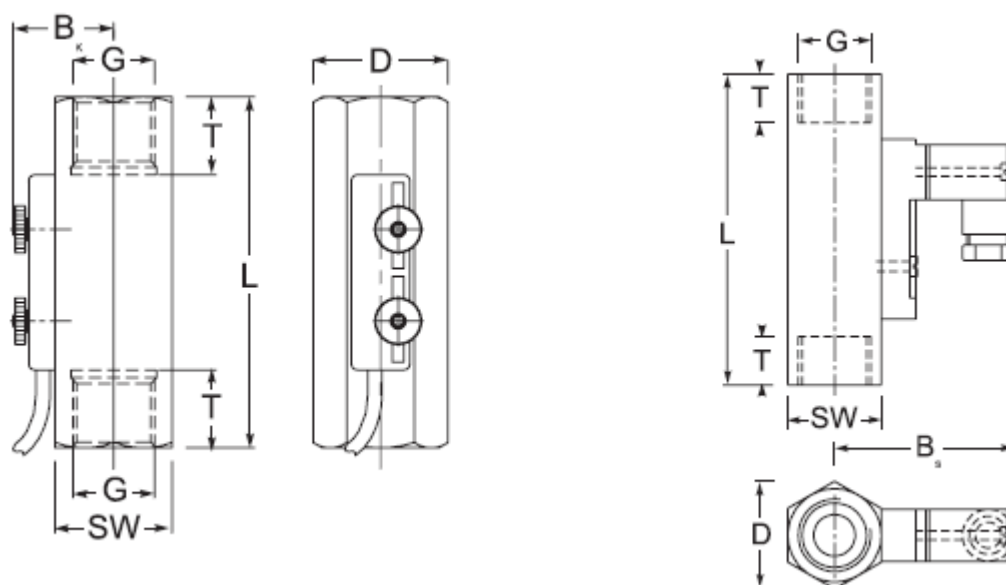
Operating data	RVP/U	
Pressure	PN 10 bar	
Pressure drop	0,02 – 0,3 bar	
Temperature max.	50°C	
Accuracy	±10% of final value	
Electrical data	Normally open contact	Change over contact
IP65 (plug connection DIN43650 or Form C)	Max. 230V • 3A • 60VA	Max. 250V • 1,5A • 50VA <sup>(1)</sup>
IP67 (with 1m sealed in cable)		
M 12x1 plug connection Temperature max. 85°C	Max. 125V • 3A • 60VA	Max. 125V • 1,5A • 50VA <sup>(1)</sup>
Output signal	The contact opens / changes when the flow decreases below the set point.	
Power supply	Not necessary (reed contacts)	
Cable diameter for IP65	4 – 6 mm (socket according to DIN 43650)	
Other plug types or cable lengths on request		
Materials (wetted parts)		
Housing	PVC-U (hard PVC)	
Float	1.4571	
Magnets	Hard ferrite	
Spring	1.4571	
Thread ring	1.4571	

(1) Minimum load 3VA



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	SW	D	B <sub>s</sub>	B <sub>K</sub>	G	DN	T	L
RVP/U-2/...	30	34	52	25,8	½"	15	13	90

Overall dimensions mm