



captor 432x.1x Inline Flow Switch Instruction Manual

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captor 432x.1x Inline Flow Switch



Product Information

Specifications

- **Type:** Inline flow-captor Type 432x.1x
- Metering flow switch with analog display (Inline)
- **Pipe Material:** Stainless steel WN 1.4571 (V4A, 316 Ti)
- **Housing Surface:** Aluminium
- **Display:** 9 LED's

Product Usage Instructions

Mounting Position

To obtain the highest accuracy and consistency of the switching signal, the flow-captor should be mounted in a position of minimum turbulence. The preferred position is either in a vertical pipe with upward flow or in a horizontal pipe. It is recommended to mount the flow-captor at least 100 mm upstream or downstream of bends, valves, T-pieces, etc. Any other fitting position may not guarantee secure operation of the Inline flow-captor. The flow direction through the pipe of the flow-captor does not have to be specified.

Mechanical Installation

The Inline flow-captors should be installed in line with the pipe using appropriate connectors. In hose pipe installations, push the hose over the joining pipe and secure it with a hose clamp. In pipework installations, ensure that the dimension of the pipework and the pipe of the Inline flow-captor are the same.

Cable Connection

The 4321.1x model is calibrated specifically for use with oil. The scale is equally divided between zero flow and the maximum flow range. Absolute values are not shown as they may vary with different types of oil.

Measurement of Flow Velocity (only for 4320.1x)

To measure the flow velocity, follow these steps:

1. Turn the range potentiometer clockwise to maximum (3 m/s).
2. Based on the flow rate, a number of LED's will be lit.
3. To read the correct flow rate, turn the range potentiometer slowly and stepwise counter-clockwise. This allows for re-adjustment of the range until all LED's are lit.
4. The actual flow speed is indicated by an arrow on the range pot.

Response Time

The response time is shortened the closer the set-point is to the normal flow rate. At a flow speed of approximately 65%, which is equivalent to 1.3 m/s, the response time is optimized.

Frequently Asked Questions (FAQ)

- **What should I do to avoid loss of adhesion?**

To avoid loss of adhesion, ensure that the inside surface of the captor is kept free from dirt and oil.

- **Can I install the flow-captor in any position?**

No, for the highest accuracy and consistent switching signal, it is recommended to mount the flow-captor in a position of minimum turbulence. The preferred positions are either in a vertical pipe with upward flow or in a horizontal pipe.

- **Can I use the flow-captor with different types of oil?**

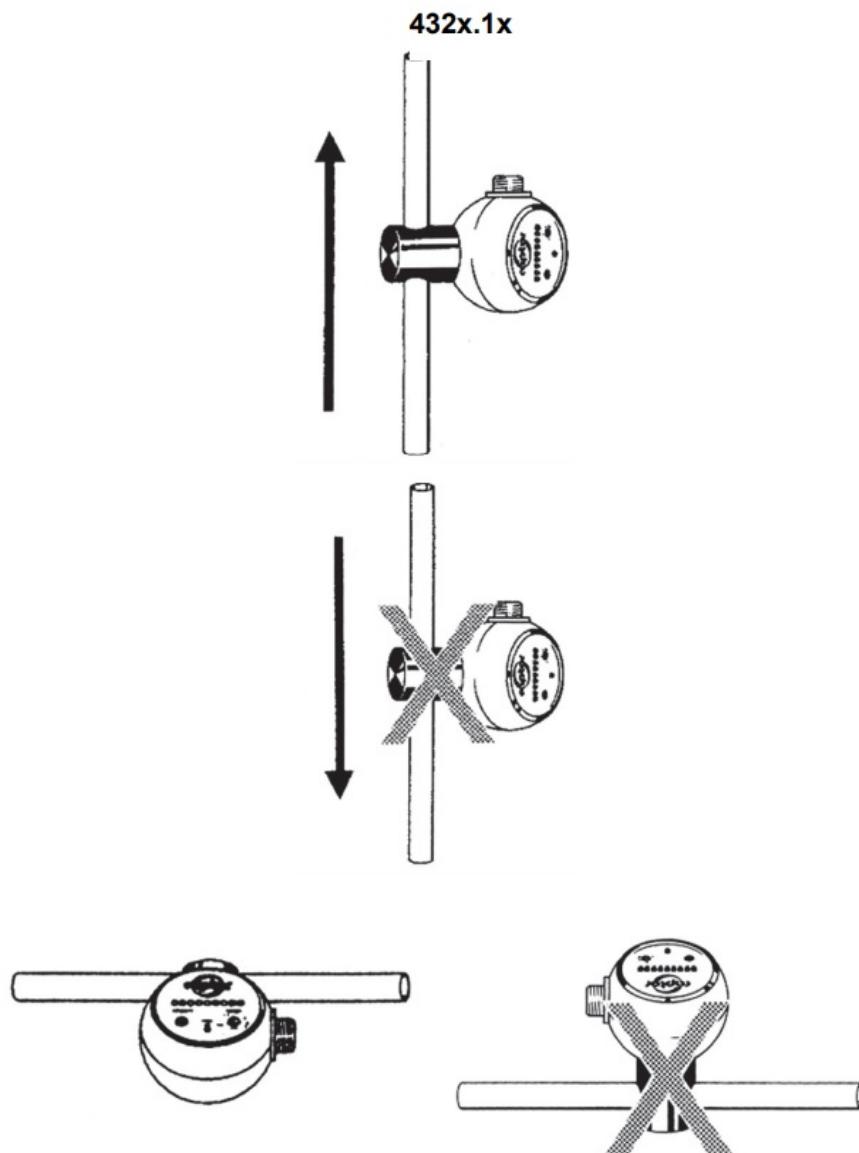
Yes, the flow-captor can be used with different types of oil. However, please note that the absolute values may vary depending on the type of oil.

Operating Instructions

Please read carefully! No liability can be accepted for damage caused by improper use of the captor!

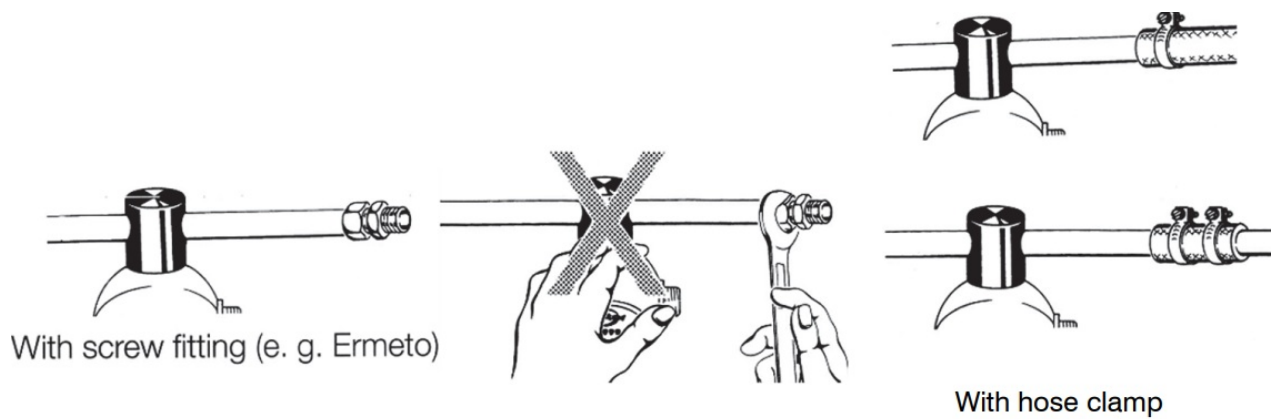
1. Mounting Position

- To obtain highest accuracy and consistency of switching signal, the flow-captor should be mounted in a position of minimum turbulence. The position should be at least 100 mm upstream or downstream of bends, valves, T-pieces etc.
- Preferred position is in a vertical pipe with upward flow or in a horizontal pipe.
- Any other fitting position does not guaranty a secure operation of Inline flow-captor.
- The flow direction through pipe of flow-captor does not have to be specified.



2. Mechanical Installation

- Inline flow-captors should be installed in line with the pipe by appropriate connectors.
- In hose pipe: Push hose over joining pipe and secure with hose clamp.
- In pipework: Dimension of pipework and pipe of Inline flow-captor should be the same.

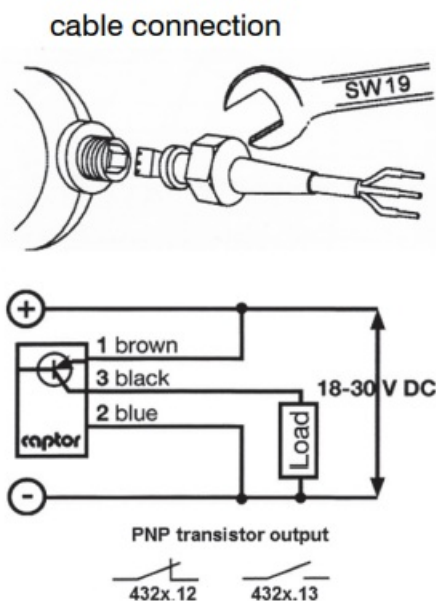


CAUTION:

Do not twist the sensor body around the pipe or use any torsion of that nature! Any resulting damage from such action will render the unit irreparable!

3. Electrical Connection:

- Push the plug of the connecting cable into the opening of the flow-captor with light pressure (note the shape of the plug!). It is essential to ensure that the connection contacts in the sensor (Pins) do not bend in order to ensure a fault-free connection and therefore perfect function of the sensor. Then tighten the PG-9 cable gland with a 19 mm spanner, holding it firmly to prevent the cable from turning.
- Connect cable according to connection diagram: Supply voltage: – brown wire to + (positive)
– blue wire to – (negative)
- The voltage must be kept within the specified range at all times (18 to 30 VDC incl. residual ripple). Single rectification, i.e. half-wave voltage, is not allowed.
- Load i.e. a relay between black (output) and blue (-) the first LED is lit.
- When power supply is switched on, the flow-captor will indicate flow for approx. 10 s (entire LED chain is lit, the green “Flow OK” LED is on and one of the 9 LED’s is flashing – indicating adjusted set-point).
- After a time of 8 seconds the flow-captor is fully operational.
- At no flow, first LED is lit – green LED is off – one of the nine LED’s is flashing.



4. Medium

- Scale of range on 4320.1 x is related to water. Depending on viscosity and thermal conductivity, other

media require a multiplier (> 1) i.e. 3 to 5 x for oil.

- 4321.1x is calibrated specifically for use with oil. The scale is equally divided between zero flow and max. flow range. Absolute values are not shown as these will vary with different types of oil.

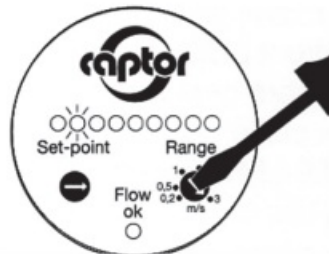
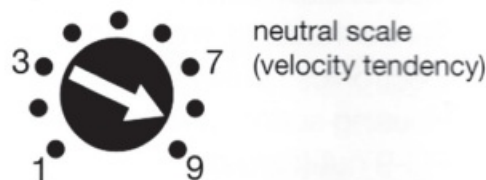
5. Measurement of Flow Velocity (only 4320.1x)

- Turn range potentiometer clockwise to maximum (3 m/s)
- According to the flow rate a number of LED's will be lit.
- In order to read the correct flow rate, turn the range potentiometer slowly, stepwise, counter-clockwise – this allows for re-adjustment of the range – until all LED's are lit.
- Actual flow speed is indicated by an arrow on the range pot.

Scale of 4320.1x - (water)



Scale of 4321.1x - (oil)



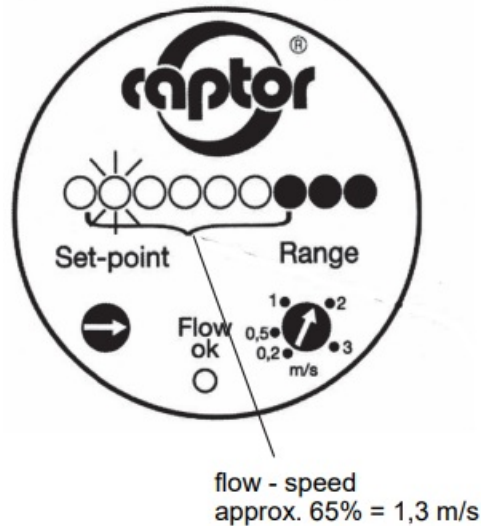
6. Range Adjustment

- With the range potentiometer it is possible to define any measuring range between 0-20 cm/s up to 0-300 cm/s for water (approx. 0-30 cm/s up to 0-300 cm/s for oil, 4321.1x).
- At the maximum flow rate, adjust the range potentiometer until all nine LED's are just lit; each LED that is lit then represents approx. 10% of the maximum flow rate.
- The resolution of the set-point depends on the range adjustment, e.g. with a range of 0-2 m/s the resolution is approx. 20 cm/s per LED step, with 0-30 cm/s the resolution is approx. 3 cm/s per LED step.

 LED flashing

 LED shining

 LED off

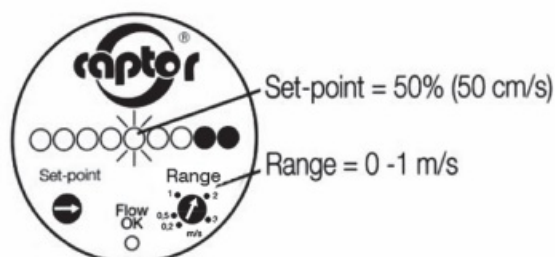
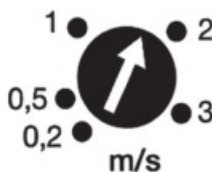


7. Set-point Adjustment

- The set-point can be adjusted to anywhere within 15% of the absolute minimum range and 90% of the absolute maximum range.
- The set-point value is indicated by a flash LED, and is shown relative to the adjusted range. When the velocity passes the flow set-point, the green "Flow OK" LED changes state (the green LED is lit when the velocity is above the set-point).
- Resolution is shown in steps of approx. 10 % but with care, it is possible to achieve a much finer adjustment. If the flowrate is higher than 10 % of the calibrated range, the 9. LED will flash with the double frequency of the set-point LED.

8. Response time

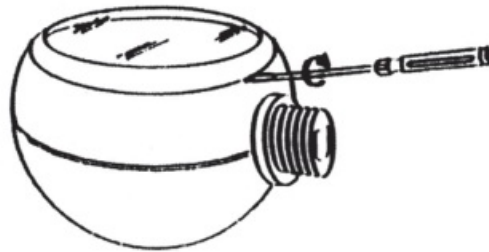
The response time is shortened, the closer the set-point is to the normal flow rate.



9. Cover

To protect the flow-captor against pollution and unauthorized adjustment, it is supplied with a plastic cover.

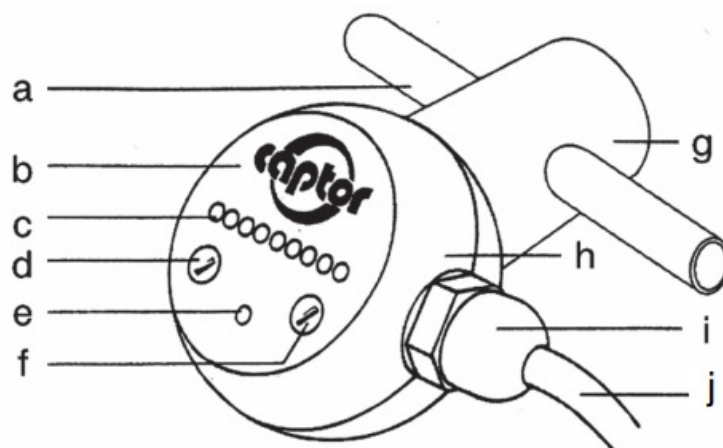
Before use this cover should first be removed. This is carried out by turning the enclosed screwdriver through 90° as illustrated in the sketch below. After finishing all adjustments remove the protective pull-off sheet which covers an adhesive layer on the flow-captor face plate and press the protective cover onto the flow-captor.



CAUTION:

To avoid loss of adhesion the inside surface of there should be kept free from dirt and oil!

Inline flow-captor 4320.12/.13, 4321.12/.13



Metering flow switch with analog display (Inline)

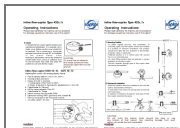
- a. Pipe of stainless steel WN 1.4571 (V4A, 316 Ti)
- b. Housing surface, aluminium
- c. Display of 9 LED`s; functions:
 - 1. Analog display of flow from 0 to 100 %
 - 2. Display of set-point by flashing LED, adjustable from 1. to 8. LED
- d. Potentiometer for 'Set-point'
- e. LED for output indication "Flow-OK"
- f. Potentiometer for "Range"
- g. Sensor housing, mat. polyacetal (POM)
- h. Electronics housing, PBTP, glass fibre, reinf. (Ultradur ®)
- i. PG-9 nut (cord grip) for SW 19 spanner (wrench)
- j. 2 m oilflex cable 3 x 0.5 mm²

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Documents / Resources



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4320.12-.13, 4321.12-.13, 432x.1x, 432x.1x Inline Flow Switch, 432x.1x, Inline Flow Switch, Flow Switch, Switch

References

- [🌐 Weber Sensors GmbH](#)
- [User Manual](#)

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