

**Operating Instructions  
for  
All Metal Flow Switch**

**Model: SMN**



## 1. Note

---

Please read and take note of these operating instructions before unpacking and setting the unit for operation, and follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and with the prevailing regulation applying to procedural safety and the prevention of accidents.

When used in machines according to machine guideline EWG, commissioning is prohibited until it is established that the machine meets the general requirements of the guideline.

### **PED 97/23/EG**

In acc. with Article 3 Paragraph (3), "Sound Engineering Practice", of the PED 97/23/EC no CE mark.

Table 8, Pipe, Group 1 dangerous fluids

## 2. Maintenance and Care

---

The instrument needs no maintenance when the measured medium is not polluted. Lime and other deposits should be removed regularly from the inside of the device by flushing. The instrument cannot be taken apart.

### **Manufactured and sold by:**

Kobold Instruments Inc.  
1801 Parkway View Drive  
Pittsburgh, PA 15205  
Tel.: 412-788-2830  
Fax: 412-788-4890  
E-Mail: [info@koboldusa.com](mailto:info@koboldusa.com)  
Internet: [www.koboldusa.com](http://www.koboldusa.com)

### **3. Specific Application**

---

Model SMN instruments monitor liquid flows. Only clean homogeneous liquids of low viscosity - against which the instrument materials are resistant - should be monitored. Large operating-point inaccuracies can occur with highly viscous media.

Large dirt particles can block the float and thus cause faulty signals. Pieces of ferrite deposited on the float (with embedded magnet) can lead to the same effect (we recommend magnetic filters).

### **4. Principle of Operation**

---

The flow switch operates on the well-known float principle. A float with its integrated circular magnet moves within a cylindrical flow tube in the direction of flow and against the magnetic field of an opposing magnet mounted in the top of the instrument.

The magnetic field of the float activates a reed contact which is mounted on the outside of the instrument in a sliding protective casing. The special construction of the float and flow tube means that only a low flow is required to raise the float and hence activate the reed contact. If the flow rate increases further and the float reaches the top of its travel an additional flow path opens allowing high flow rates without a significant increase in pressure loss.

### **5. Instrument Inspection**

---

These devices are checked before dispatch and sent away in perfect condition. Should the damage to a device be visible, we recommend a thorough inspection of the delivery packing. In case of damage, please inform your parcel service/ forwarding agent immediately, since they are responsible for damages during transit.

**Scope of supply:**

- Flow monitor
- Operating instructions

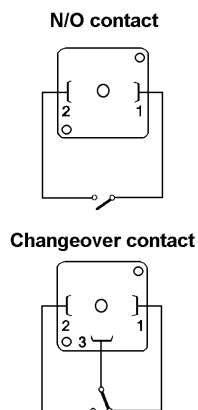
## 6. Mechanical connection

---

- Make sure that allowed max. operating pressure and service temperature are not exceeded.
- The instrument can be installed vertically or horizontally in the pipework. Flow is in the direction of the arrow from bottom to top, from left to right or from right to left
- Remove all transport restraints and make sure that none of the packing remains in the instrument.
- Use Teflon tape or appropriate sealant to seal the fitting connections.
- The instruments should not be installed in a magnetic or induction field.
- If possible, check after mechanical installation, that the threaded joint/pipe connection is tight and leak free.

## 7. Electrical connection

---



- Make sure that the electrical supply lines are dead.
- Undo the locking screw on the plug cap and remove the cap from the base.
- Mount supply line in the plug cap as shown in wiring diagram.
- If the contact has not been adjusted, adjust it now (see section Commissioning).
- Insert the plug connector on the contact stem and secure it with the retaining screw.

---

**Caution! The specified electrical values for the sealed contact should not be exceeded even for short periods. We recommend contact protection relays or other contact protection measures for higher switching values.**

---

When the external devices have been connected to the limit contact and the switching point has been set, the electrical connection is complete. The instrument can now be put into operation.

## 8. Commissioning

When used in machines according to guideline 89/392/EWG commissioning is prohibited until it is established that the machine meets the general requirements of the guideline.

### Setting limit values

- Loosen both retaining screws at the contact stem with a screwdriver.
  - Push down the switch housing.
  - Remove the plug cap from the contact stem after undoing the retaining screw.
  - Connect a continuity tester to PIN 1 + 2 (changeover contact PIN 2 + 3).
- 
- **Case 1: By built-in instrument**  
Open feed line, allow medium to enter slowly until the needle indication points to the flow rate at which the device should switch with falling flow rate (the value for increasing flow rate is obtained by adding the hysteresis value).
  - **Case 2: By unmounted instrment**  
You can raise the Float with a suitable tool.
- 
- Push switch housing upwards until the reed contact just about opens (no electrical continuity).
  - Secure in this position by tightening retaining screws. Fit plug cap. The instrument is now ready for operation.
  - When the limit contact is set correctly it acts as a bistable switch; that is, even when the set limit value is passed the contact remains closed (PIN 1+2, or PIN 2+3 for changeover contact option)

The instruments are set at the factory to the minimum switching point from bottom to top.

**Caution! For horizontal installation the switching point drifts up slightly.**

