2.2 Application as directed

The instruments, type DKG, serve as monitors for continuous flow of viscous liquids. Any other use counts as non-directed. If not indicated otherwise, the scaling of the instruments refer to mineral oil. Special applications, where intermittent loads (e.g. cyclic operation) could occur, should be discussed and checked with our technical Staff. The instruments, type DKG, 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 DKG, 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, installation, commissioning and operation of these instruments and who hold a corresponding qualification.

3 Principle of operation

The instruments type DKG 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. The instruments are viscosity compensated for a range from 30 to 600 cSt, this means, that occurring differences within this range, due to viscosity changes, will remain within the stated measuring tolerance.
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

5.1 Standard switch contact

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

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 EEx-proof switch contacts

Attention!

For the connection of EEx-proof switch units special instructions apply, which must be followed! Pay attention to the hints in the separate operating instruction for EEx-proof switch contacts!

5.5 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 load

This kind of load will be caused by:
- contactors, relais
- solenoid valves
- electricmotors

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:
- extrem long leads
- capacitive consumption

Danger:

High current peaks during switch on of the switch contact (exceeding the nominal current)

Precautionary measure: (sample)

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

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.a. 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.a. calcareous deposits) cleaning can be done with commercial purifier, as long as the purifier is not aggressive against the material of the instrument.

Operating instruction FWS-DKG

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Connection to SPS

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

6 Switchpoint adjustment

- Loosen the lock screw of the switch contact and shift the switch contact against flow direction to the stop.
- The switch contact should be closed.
- Adjust the desired flow rate. In case the flow monitor is not installed, use a non magnetic rod (e.a. pencil) to shift the float in flow direction to achieve a congruence with the graduation of the desired flow rate on the scale (upper edge of float = reference point).
- Shift the switch contact in flow direction until the contact opens.
- Tighten the lock screw of the switch contact.

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

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
- Adjust switch point to a lower flow
- Use instrument with different range

2. Flow to low or switch contact adjusted to high
- Eliminate the reason for the fault (short circuit, overload)
- Exchange switch contact, refer section 4

3. Float got stuck (polluted)
- Clean the instrument and ensure free movement of the float

4. Float got stuck (polluted)
- Eliminate the reason for the fault (short circuit, overload)
- Exchange switch contact, refer section 5

5. Switch contact faulty

- The switch contact is permanent in make position

1. Flow to high and switch contact adjusted to 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 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