

**Operating Instructions
for
Plastic Flow Meter**

Model: KSK



1. Contents

1. Contents.....	2
2. Note	3
3. Instrument Inspection.....	3
4. Regulation Use.....	3
5. Operating Principle.....	4
6. Mechanical Connection	4
7. Electrical Connection	5
7.1. Reed Contact, bistable (option)	5
7.2. Electronic Contact (option).....	6
8. Operation	7
9. Maintenance	7
10. Technical Information.....	8
11. Order Codes	10
12. Dimensions	11
13. Declaration of Conformance	12

Manufactured and sold by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim
Tel.: +49(0)6192-2990
Fax: +49(0)6192-23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

2. Note

Please read these operating instructions before unpacking and putting the unit into operation. 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 in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EWG-machine guidelines.

as per PED 97/23/EG

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

Diagram 6, Pipe, Group 1 dangerous fluids

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Plastic Flow Meter model: KSK
- Operating Instructions

4. Regulation Use

Any use of the Plastic Flow Meter, model: KSK, which exceeds the manufacturers specification, may invalidate its warranty. Therefore any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

Kobold Plastic Flow Meters and Switches, model KSK, are based on the well known suspended float principle.

They are used for measuring and monitoring flows in closed pipes.

The media flows, from below, through a conical plastic measuring tube. This raises the float and the flow rate can be read off against scale. The instruments can be fitted with bistable switches.

The use of high-quality material PVDF (model KSK 3...) means that this type is very suited for service with corrosive media.

Special advantages

- Shock resistant and corrosion-resistant
- May be inserted/removed radially
- Special scales available
- Short installation length
- Plastic float and fitting generally made of PVDF

6. Mechanical Connection

Before Installation:

- Remove all transportation safety locks and ensure that no packing material remains within the unit.
- Be sure that the maximum allowable operating pressure and temperature is not exceeded (see Technical Data).
- Install the flow meter in the piping system, ensure the instrument is under no mechanical stress/tension (install support bracing if necessary).
- Protect the measuring tube from external damage.
- Avoid pressure peaks in the measuring tube, e.g. from sudden surges or stoppage of flow.
- The units with bistable reed switch may not be installed within an inductive field.
- If possible, immediately after making mechanical connections, check whether the connections are properly sealed with no evidence of leakage (see section 8 Operation).



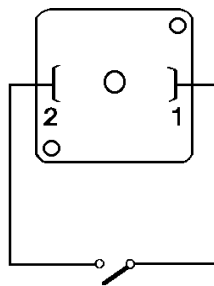
Detailed information regarding installation of float flow meters is available in VDI/VDE guidelines 3513.

7. Electrical Connection

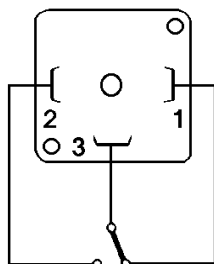
7.1. Reed Contact, bistable (option)

- Make sure that the supply wires are de-energized.
- Loosen the plug-cap holding screw and remove the cap from the switch housing.
- Connect the supply lines inside the plug in accordance with the connection diagram opposite.

N/O contact



Changeover contact



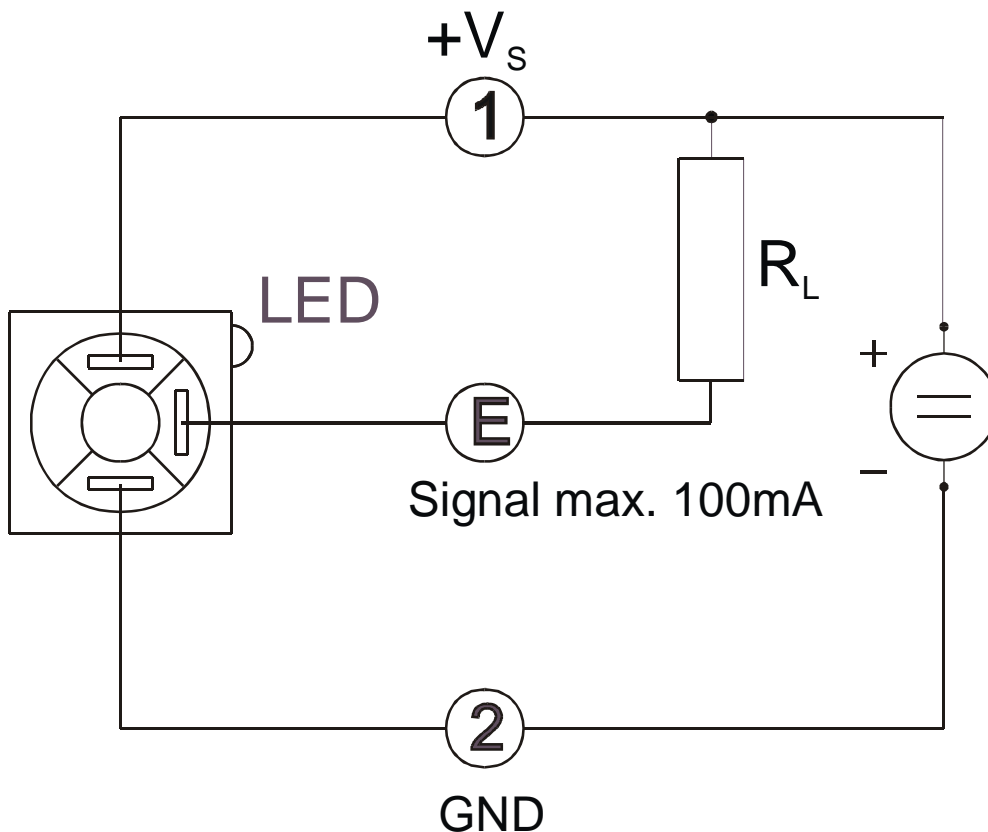
- If the set point has not yet been adjusted, it may be done at this point. (see section 8. Operation).
- Set the plug to the socket and fix it with the safety screws.



Attention! The stated electrical parameters of the contact may not be exceeded, even for a short period of time. For inductive or capacitive loads, we recommend the use of contact protection measures respectively the application of a contact protection relay.

7.2. Electronic Contact (option)

- Make sure that the supply wires are de-energized.
- Loosen the plug-cap holding screw and remove the cap from the switch housing.
- Connect the supply lines inside the plug in accordance with the connection diagram opposite.



- If the set point has not yet been adjusted, it may be done at this point. (see section 8. Operation).
- Set the plug to the socket and fix it with the safety screws.



Attention! The stated electrical parameters of the contact may not be exceeded. For inductive or capacitive loads, we recommend the use of contact protection measures respectively the application of a contact protection relay.

After connecting the external devices, and adjusting the switch housing to the desired switch points, all the connection work is completed. The unit is ready for operation.

8. Operation



In order to initialise the bistable switching function, it is essential that the float activates the contact once in each direction.

Adjustment of limit-values

The switch-point can be adjusted to the desired levels by using both red sliders as reference points.

Reference edge for falling flow: bottom-edge, switch housing

Reference edge for rising flow: approx. 5 mm above the bottom-edge of switch housing.

Slide the switch housing up or down until the reference edge coincides with the desired switch-point scale reading.

Hysteresis

Hysteresis is the difference between the level at which “switch-on” occurs during rising flow and the level at which “switch-off” occurs during decreasing flow. The hysteresis is approximately 5 mm on the float range.

Overranging

With non-pulsating flow, the maximum flow rate can be exceeded. Only an increase in pressure loss will result (max. permissible operating pressure must not be exceeded!)

9. Maintenance

If the medium to be measured is clean, the series KSK is virtually maintenance-free. If deposits form on the inner housing or parts, periodic cleaning of the unit is recommended. Remove the units from the piping with a suitable tool; clean the flow meter with a suitable cleaning agent or make use of an ultrasonic bath.

10. Technical Information

Materials

Measuring tube:	Trogamide T (KSK 1..) or polysulfone (KSK 2..) or PVDF (KSK 3..) not transparent, but opaque translucent
Float:	PVDF
O-rings:	EPDM (KSK-1../KSK-2..) FPM (KSK-3..)
Max. operating pressure:	PN 10
Max. operating temp.:	KSK 1... max. 60 °C (0...60 °C) KSK 2... max. 100 °C (0...100 °C) (60 °C with PVC screwed fitting) max. 85 °C (with contact) KSK 3... max. 140°C
Accuracy class:	4 (according to VDE / VDI 3513, sheet 2)

Connection (standard)

KSK 1.. and KSK 2..:	PVC glue-in connection
KSK 3...:	Welding sleeve

Connection (optional) for KSK 1... and KSK 2... only

KSK- ..080../..150../..200..:	Brass or stainless steel union nut with G 1/2 female or male or G 3/4 male
KSK- ..300../..500../..999..:	PVC union nut with G 1/2; G 3/4, G 1 internal thread or G1 female cast iron
KSK- ..015../..025../..050....100..:	PVC G 1/4 female

Contacts (optional)

The flow meter can be fitted with either reed contacts or electronic contacts.

Reed contacts (bistable)

Switching voltage*:	max. 130 V _{AC}
Breaking capacity*:	max. 10 W / 10 VA
Switching current*:	max. 0.5 A
Contact resistance:	< 150 m Ohm
Insulation resistance:	> 10 ⁵ Ohm
Allowed ambient temperature:	0...+ 55 °C
Protection:	IP 65
Contact hysteresis:	approximately 5 - 7 mm floater distance

* Short-time overshoot is not allowed. The use of a contact protection relay is therefore recommended (see Accessories Z2 brochure).

Electronic contacts (bistable)

The contact operates electronically with no mechanical parts that are subject to wear and tear.

Operating voltage:	9 - 24 V _{DC}
Switching output:	NPN max. 100 mA
Ambient temperature:	0...+ 55°C
Protection:	IP 65
Contact hysteresis:	< 6 mm
Dimensions:	33 x 18 x 40 mm
Weight with plug:	16 g
Output signal (with LED at the top)	
Float above contact across PIN 1 and PIN E:	0 V
Float below contact across PIN 1 and PIN E:	9 - 24 V LED out

11. Order Codes

Measuring range water L/h	Order no. Trogamide	Order no. Polysulfone	Order No. PVDF*	Scale measuring range see table	Thread fitting option	Contact option
1.5 - 11	KSK - 1015...	KSK - 2015...	-	Standard H = L/h Water	K16 = PVC-glue-in connection Ø 16 V16 = PVDF-Welding sleeve Ø 16* P08 = PVC G 1/4 female	O0 = without contact S0 = 1 N/O contact SS = 2 N/O contacts SC = 1 N/O contact/ 1 NC contact C0 = 1 NC contact CC = 2 NC contacts E0 = 1 electr. cont. EE = 2 electr. cont.
2.5 - 30	KSK - 1025...	KSK - 2025...	KSK - 3025...*			
5 - 50	KSK - 1050...	KSK - 2050...	KSK - 3050...*			
10 - 100	KSK - 1100...	KSK - 2100...	KSK - 3100...*			
8 - 80	KSK - 1080...	KSK - 2080...	KSK - 3080...*	Special scale A= air; 0 bar gauge B= air; 1 bar gauge C= air; 2 bar gauge D= air; 3 bar gauge E= air; 4 bar gauge F= air; 5 bar gauge G= air; 6 bar gauge I= air; 7 bar gauge K= air; 8 bar gauge L= air; 9 bar gauge M= air; 10 bar gauge Y= other	K20 = PVC-glue-in connection Ø 20 V20 = PVDF-Welding sleeve Ø 20* IG1 = brass G 1/2 female AG1 = brass G 1/2 male AG3 = brass G 3/4 male IG2 = stainless steel G 1/2 female AG2 = stainless steel G 1/2 male AG4 = stainless steel G 3/4 male	O0 = without contact S0 = 1 N/O contact SS = 2 N/O contacts SC = 1 N/O contact/ 1 NC contact C0 = 1 NC contact CC = 2 NC contacts E0 = 1 electr. cont. EE = 2 electr. cont..
20 - 150	KSK - 1150...	KSK - 2150...	KSK - 3150...*			
30 - 200	KSK - 1200...	KSK - 2200...	KSK - 3200...*			
30 - 300	KSK - 1300...	KSK - 2300...	KSK - 3300...*			
50 - 500	KSK - 1500...	KSK - 2500...	KSK - 3500...*		K32 = PVC-glue-in connection Ø 32 V32 = PVDF –Welding sleeve Ø 32* P15 = PVC G 1/2 female P20 = PVC G 3/4 female P25 = PVC G 1 female T25 = Cast iron G 1 female	O0 = without contact S0 = 1 N/O contact SS = 2 N/O contacts SC = 1 N/O contact/ 1 NC contact C0 = 1 NC contact CC = 2 NC contacts E0 = 1 electr. cont. EE = 2 electr. cont..
100 - 1000	KSK - 1999...	KSK - 2999...	KSK - 3999...*			

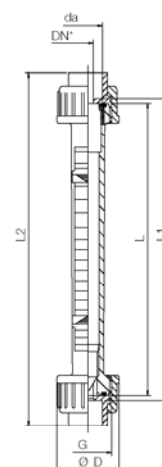
*KSK-3... for PVDF-Welding sleeve and without air scale only

12. Dimensions

Dimensions (with standard glue-in conn. PVC, PVC G 1/4 female or PVDF welding sleeve)

Model	DN	da	L	L1	L2	D	G**	Press. loss mm WC*
KSK-..015..	10	16	165	171	199	35	G 3/4	46
KSK-..025..	10	16	165	171	199	35	G 3/4	46
KSK-..050..	10	16	165	171	199	35	G 3/4	46
KSK-..080..	15	20	185	191	223	43	G 1	45
KSK-..100..	10	16	165	171	199	35	G 3/4	46
KSK-..150..	15	20	185	191	223	43	G 1	45
KSK-..200..	15	20	185	191	223	43	G 1	45
KSK-..300..	25	32	200	206	250	60	G 1 1/2	83
KSK-..500..	25	32	200	206	250	60	G 1 1/2	83
KSK-..990..	25	32	200	206	250	60	G 1 1/2	83

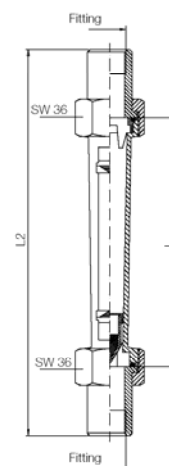
*Medium water **without auxiliary thread fitting



Dimensions (with special thread fittings in brass or stainless steel) female or male

Model	L	L2	Special thread fitting			G**	Press. loss mm WS*
			Female	Male	SW		
KSK-..015..	165	-	-	-	-	G 3/4	46
KSK-..025..	165	-	-	-	-	G 3/4	46
KSK-..050..	165	-	-	-	-	G 3/4	46
KSK-..080..	185	245	G 1/2	G 1/2 or G 3/4	36	G 1	45
KSK-..100..	165	-	-	-	-	G 3/4	46
KSK-..150..	185	245	G 1/2	G 1/2 or G 3/4	36	G 1	45
KSK-..200..	185	245	G 1/2	G 1/2 or G 3/4	36	G 1	45
KSK-..300..	200	-	-	-	-	G 1 1/2	83
KSK-..500..	200	-	-	-	-	G 1 1/2	83
KSK-..990..	200	-	-	-	-	G 1 1/2	83

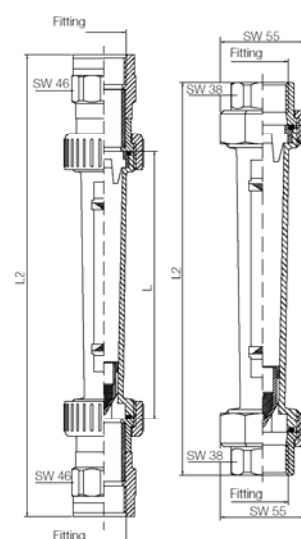
*Medium water **without auxiliary thread fitting



Dimensions (with special thread fittings made of PVC or Cast iron) female

Model	L	L2	Special thread fitting	SW / D	Male**	Press. loss mm WC*
KSK-..300..	200	295	PVC, G 1/2 female	Ø 60	G 1 1/2	83
KSK-..300..	200	303	PVC, G 3/4 female	Ø 60	G 1 1/2	83
KSK-..300..	200	346	PVC, G 1 female	Ø 60	G 1 1/2	83
KSK-..500..	200	255	Cast iron G 1 female	SW 55	G 1 1/2	83
KSK-..500..	200	295	PVC, G 1/2 female	Ø 60	G 1 1/2	83
KSK-..500..	200	303	PVC, G 3/4 female	Ø 60	G 1 1/2	83
KSK-..500..	200	346	PVC, G 1 female	Ø 60	G 1 1/2	83
KSK-..999..	200	255	Cast iron G 1 female	SW 55	G 1 1/2	83
KSK-..999..	200	295	PVC, G 1/2 female	Ø 60	G 1 1/2	83
KSK-..999..	200	303	PVC, G 3/4 female	Ø 60	G 1 1/2	83
KSK-..999..	200	346	PVC, G 1 female	Ø 60	G 1 1/2	83

*Medium water **without auxiliary thread fitting



13. Declaration of Conformance

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

Plastic Flow Meter Model: KSK-...

to which this declaration relates is in conformity with the standards noted below:

EN 61000-6-3 2011-09
Electromagnetic compatibility, Interference emission living quarters

DIN EN 61010-1 2011-07
Safety regulations for electrical measurement, control, regulation and Laboratory equipment

EN 60529, DIN 2000-09
Protection through housing (IP-Code)

2004/108/EC EMC Directive
2006/95/EC Low Voltage Directive

Hofheim, 15. Feb. 2012



H. Peters
General Manager



M. Wenzel
Proxy Holder