



## Short-tube VA flow meter

# SGK 1 - 3

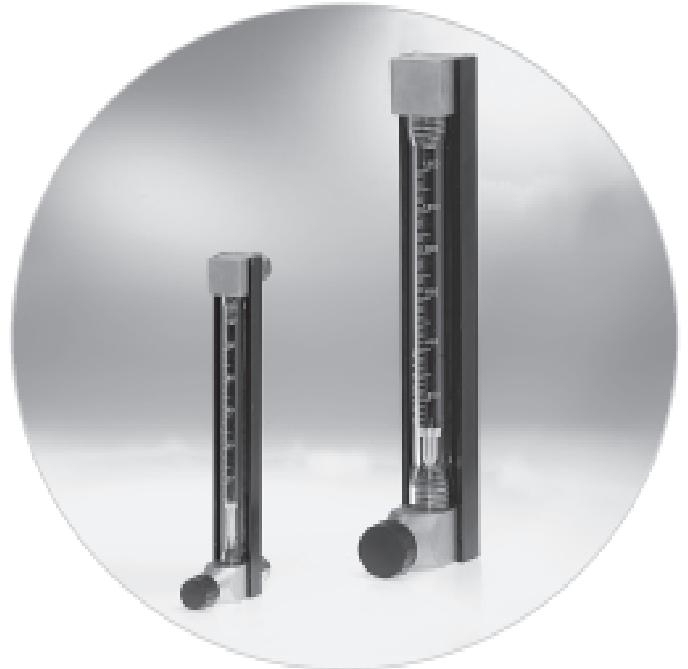
### Design and application

The SGK 1 - 3 flow meters operate on the variable-area principle. They consist of a combination of tapered glass measuring tube and float, with a flow scale specific to the process fluid and calibrated to customer requirements.

The SGKs can optionally be equipped with a valve and can then be used for batching small and minimum volumes of clear gases and liquids.

The devices are suitable for use on small furnace plants, in batching systems and for monitoring small volumes in cooling processes.

You will find an exact explanation of the function principle and the measuring principle of variable area flow meters in our technical documents.



- Direct-reading scale
- simple and reliable
- short-tube design
- for process flow measurement of gases and liquids
- for measurement of small and minimum volumes
- calibrated scale specific to the process fluid
- optionally with proportioning valve
- optionally with floating reed switch
- optionally with conductive contact



### Kirchner und Tochter

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### Series

Type series SGK-1 to SGK-3 are used for different measuring ranges. Model SGK-1 measures the smallest volume.

### Measuring ranges

	Measuring range m <sup>3</sup> /h air at NTP	Measuring range l/h H <sub>2</sub> O
SGK-1	0.0005 – 0.005 0.22 – 2.2	0.1 – 1 15 – 150
SGK-2	0.006 – 0.06 0.58 – 5.8	0.5 – 5 20 – 200
SGK-3	0.15 – 1.5 1.6 – 16	12 – 120 120 – 1200

Measuring ranges for other process fluids and operating conditions supplied on request. At NTP: at normal temperature and pressure (0°C and 1.013 bar abs.)

### Technical data

Device body	
Connection	external/internal thread to DIN ISO 228 Part 1, optionally tube grommet
Models	A – Do, see table on page 3
Thermal endurance	80 °C with NBR gaskets 100 °C with Viton gaskets
Operating pressure	max. 10 bar, no pressure surges
Valve	fine adjusting valve
Tapered measuring tube	
Scale	burnt-in scale
Length of scale SGK-1/-2	approx. 150 mm
Length of scale SGK-3	approx. 220 mm
Accuracy class	1.6 to VDI/VDE 3513
Calibration	customer-specific

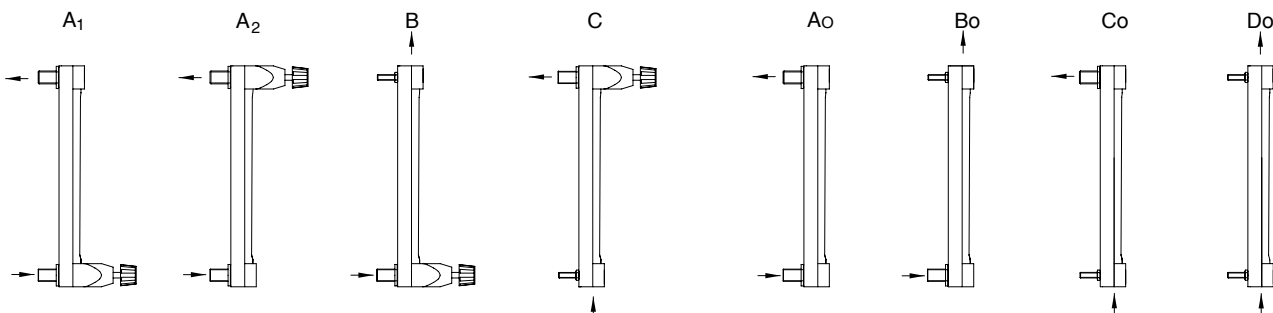
### Materials

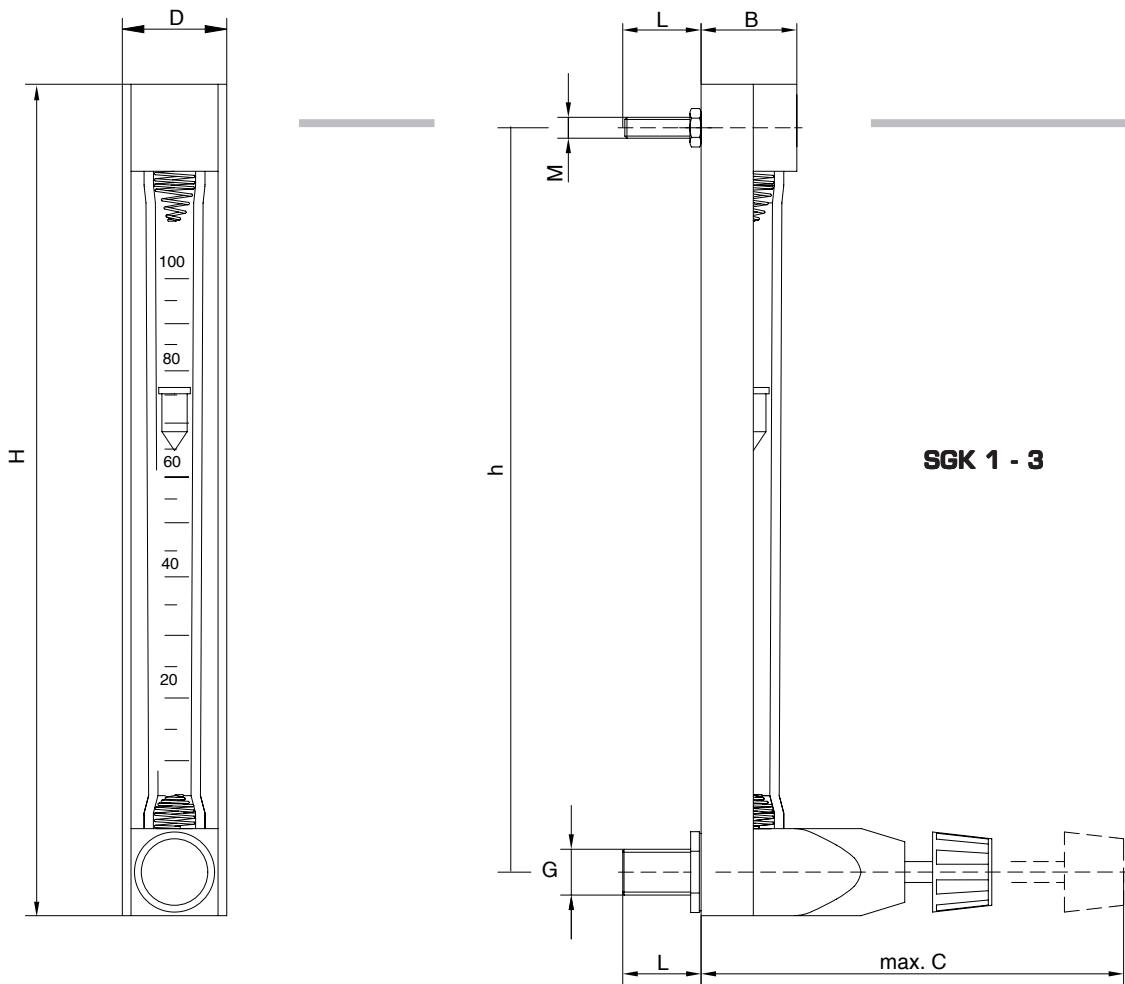
Bracket	aluminium, black anodized
Connections	standard: aluminium anodized or PVC, optionally: 1.4571 (stainless steel), PVDF information on others supplied on request
Gaskets	standard: NBR, optionally EPDM, Viton information on others supplied on request
Measuring tube	borosilicate glass
Float	aluminium, PVC, 1.4571 (stainless steel), optionally PP
Valve	1.4571 (stainless steel)

### Dimensions

	G in inches	Form	H in mm	h in mm	M	L in mm	B in mm	D in mm	C in mm
SGK-1	1/4	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	247	220	–	approx. 22.5	27.5	30	80 (only A <sub>1</sub> , A <sub>2</sub> )
SGK-2	1/4	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	238	213	–	approx. 22.5	27.5	30	80 (only A <sub>1</sub> , A <sub>2</sub> )
	1/4	B <sub>1</sub> , B <sub>0</sub> , C <sub>1</sub> , C <sub>0</sub>	242	211	M5	approx. 22.5	27.5	30	80 (only B, C)
	1/4 i	D <sub>0</sub>	246	209	M5	approx. 22.5	27.5	30	–
SGK-3	1/2	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	363	323	–	approx. 27	45	50	135 (only A <sub>1</sub> , A <sub>2</sub> )
	1/2	B <sub>1</sub> , B <sub>0</sub> , C <sub>1</sub> , C <sub>0</sub>	363	320	M8	approx. 27	45	50	135 (only B, C)
	1/2 i	D <sub>0</sub>	363	317	M8	approx. 27	45	50	–

### Design





### Limit contacts MSK-1/MSK-12/MSK Changer

In order to realize a local display with a monitoring function the flow meter can be equipped with limit contacts. The limit contact consists of a bistable reed contact which is actuated by the magnet integrated in the float. The contact is laterally guided and can be adjusted throughout the entire measuring range. In case of inductive or capacitive load applications, e.g. caused by contractors or solenoid valves, uncontrolled current or voltage peaks may occur. In dependence on their geometry such peaks also occur in lines if they exceed a certain length. It is therefore recommended to use an additionally available arc suppression relay "MSR". This increases the switching capacity and avoids the appearance of inductive and capacitive peaks. It thereby ensures a long lifetime of the contact.

### Limit contact RC

Up to a flow rate of 2 l/h H<sub>2</sub>O or 80 l/h air at NTP, the RC inductive contacts are available for monitoring limit values. They should be operated together with isolation switching amplifier KFA6-SR2-Ex1W. Please refer to our KFA6-SR2-Ex1W Data Sheet.

Reed switches of the MSK series are available for flow rates above these values.

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### Low voltage directive

Above 50 V AC/ 75 V DC, contacts are subject to the EU Low-Voltage Directive. The user is required to verify their use accordingly.

### Safety notice

For safety reasons we recommend to use the VA flow meters with glass measuring tubes only in combination with a protective shield in front of the measuring tube.

Avoid extreme pressure shocks.

The equipment from KIRCHNER has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

The KIRCHNER QM-System will be certified in accordance with DIN EN ISO 9001:2000. The quality is systematically adapted to the continuously increasing demands.

### Technical data of the limit contacts

Model	MSK-1	MSK-12	MSK-Changer
Switching voltage	50 V AC/75 V DC	50 V AC/75 V DC	50 V AC/75 V DC
Switching current	0.5 A	0.5 A	0.5 A
Switching capacity	10 W/VA	10 W/VA	5 W/VA
Dielectric strength	230V AC/400V DC	230V AC/400V DC	110V AC/200V DC
Temperature range <sup>1)</sup>	- 20 to + 90 °C	- 20 to + 90 °C	- 20 to + 90 °C
Switching function:			

<sup>1)</sup> Temperatur resistance of the flow meter is crucial.

Model	RC 10-14-N3	RC 15-14-N3
Rated voltage	8V DC	8V DC
Current consumption	1 mA/3 mA	1 mA/3 mA
Sweep rate	≤ 10 m/s	≤ 10 m/s
Self-inductance	≤ 120 µH	≤ 70 µH
Self-capacitance	≤ 90 nF	≤ 90 nF
Temperatur range	-20 bis +70°C	-20 bis +70°C
Switching function	NAMUR bistable	NAMUR bistable
Connection		



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