



Short-tube VA Flow Meters

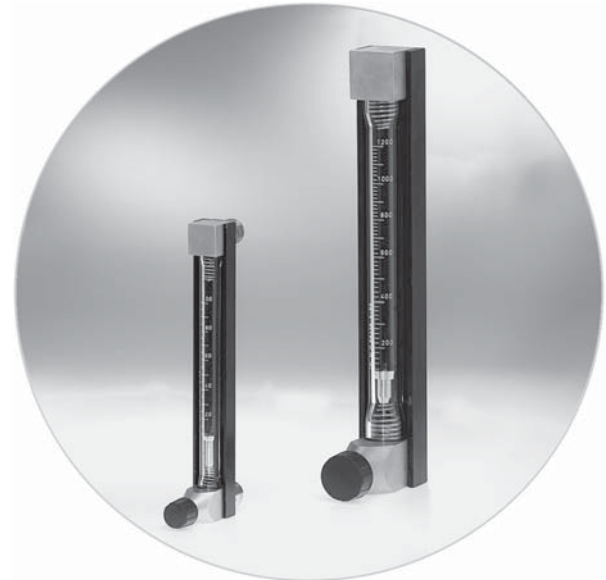
SGK 1 - 3

Design and applications

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
- optionally explosion-protected design



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Short-tube VA Flow Meters



SGK 1 - 3

Types

Design	Description
SGK-1	measures smallest air- and water volumes
SGK-2	measures medium small air- and water volumes
SGK-3	measures small air- and water volumes

Materials

Bracket	aluminium, black anodized
Connections	standard aluminium anodized or PVC, optionally sst, PVDF others on request
Gaskets	standard NBR, optionally EPDM, FPM, others on request
Measuring glass	borosilicate glass
Float	aluminium, PVC, sst, optionally PP
Valve	1.4571

Technical data

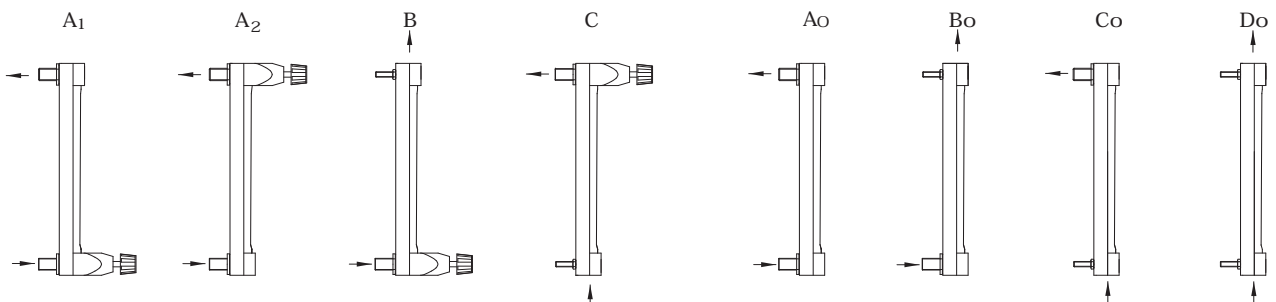
Device body	
Connection	external-/internal thread to DIN ISO 228 T1, optionally tube grommet
Designs	A-Do, see table on page 3
Thermal endurance	80 °C with NBR gaskets 100 °C with FPM gaskets
Operating pressure	max. 10 bar, no pressure surges
Tapered measuring glass	
Scale	burnt-in scale
Length of scale SGK 1-2	approx. 150 mm
Length of scale SGK 3	approx. 220 mm
Accuracy class	VDE/VDI 3513 page 2 (08/2008)
Error limit (G)	1,6 %
Linear limit (qG)	50 %
Calibration	customer-specific

Dimensions

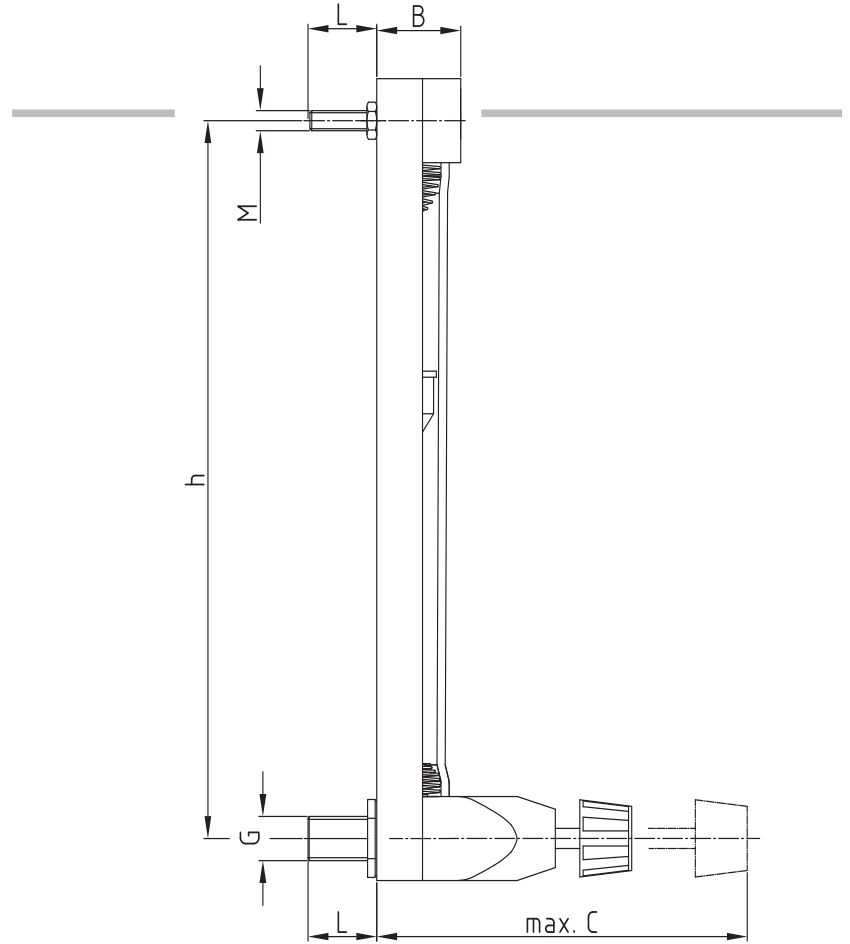
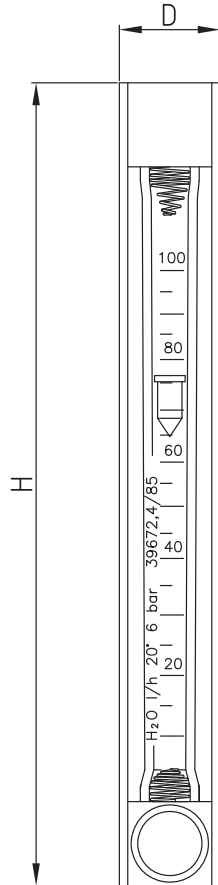
	G in inches	Form	H in mm	h in mm	M	L in mm	B in mm	D in mm	C in mm
SGK-1	¼	A ₁ , A ₂ , A ₀	238	220	-	approx. 22,5	27,5	30	80 (only A ₁ , A ₂)
SGK-2	¼	A ₁ , A ₂ , A ₀	238	213	-	approx. 22,5	27,5	30	80 (only A ₁ , A ₂)
	¼	B ₁ , B ₀ , C ₁ , C ₀	242	211	M5	approx. 22,5	27,5	30	80 (only B, C)
	¼ i	D ₀	246	209	M5	approx. 22,5	27,5	30	-
SGK-3	½	A ₁ , A ₂ , A ₀	363	323	-	approx. 27	45	50	135 (only A ₁ , A ₂)
	½	B ₁ , B ₀ , C ₁ , C ₀	363	320	M8	approx. 27	45	50	135 (only B, C)
	½ i	D ₀	363	317	M8	approx. 27	45	50	-

see also dimensional drawing on next page

Design



SGK 1-3



Measuring range

	Measuring range m ³ /h air at STP ¹⁾	Measuring range l/h H ₂ 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 substances and operating conditions on request
¹⁾ at STP: at standard conditions (0 °C and 1,013 bar abs.)

Options:

Limit switches RC

Up to a flow rate of 2 l/h H₂O or 80 l/h air at STP, 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.

Limit switches

MSK1/MSK12/MSKW

In order to realize a local display with a monitoring function the flowmeter can be equipped with limit switches. The limit switch consists of a connector housing and a bistable reed contact.

A magnet integrated in the float switches this reed contact. The limit switch is guided in a guide slot on the back of the protective tube and can be adjusted throughout the entire measuring range. In case of inductive or capacitive load applications, e.g. caused by contactors or solenoid valves, uncontrolled current and 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.

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Technical data of the limit switches

Design	MSK1	MSK12
Switching voltage	50V AC/75V DC	50V AC/75V DC
Switched current	0,5 A	0,5 A
Switching capacity	10 W/VA	10 W/VA
Dielectric strength	230V AC/400V DC	230V AC/400V DC
Temperature range ¹⁾	-20 to +90°C	-20 to +90°C
Switching function	Normally closed	Normally open
Connection		

Design	MSKW
Switching voltage	50V AC/75V DC
Switched current	0,5 A
Switching capacity	5 W/VA
Dielectric strength	110V AC/200V DC
Temperature range ¹⁾	-20 to +90°C
Switching function	change over
Connection	

¹⁾ the deciding factor is the thermal endurance of the flow meter

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

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.

Proper use

The user is responsible for assessing the suitability of the flow meters for his case of application, for use as prescribed, and for material compatibility as regards the liquid product used in his process.

The manufacturer shall not be liable for any damage arising from incorrect or improper use of the devices.

Pressure surges can cause glass breakage, and should therefore generally be avoided. The limit values given in the data sheet should be observed.

In all other respects we advise following the installation recommendations specified in Code VDI/VDE 3513, Sheet 3.

The equipment from **Kirchner und Tochter** has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

Technical data supplied without liability. The current valid version of our documents can be found under this URL: www.kt-web.de

The **Kirchner und Tochter** QM-System is certified in accordance with DIN-EN-ISO 9001:2008. The quality is systematically adapted to the continuously increasing demands.



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