Kirchner und Tochter
Durchflussmesstechnik seit 1951

Assembly and operating Instructions

Variable Area Flow Meters
SGA

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Contents

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1 Foreword

These Installation and Operating Instructions are applicable to devices of Series SGA. Please follow all instructions and information given for installation, operation, inspection and maintenance. The Instructions form a component part of the device and should be kept in an appropriate place accessible to the personnel in the vicinity of the location. Where various plant components are operated together, the operating instructions pertaining to the other devices should also be observed.

2 Safety

2.1 Symbol and meaning


Safety notice

This symbol is placed against all directions/information relating to occupational health and safety in these Installation and Operating Instructions and draws attention to danger to life and limb. Such notices should be strictly observed.

2.2 General safety directions and exemption from liability

This document contains basic instructions for the installation, operation, inspection and maintenance of the variable area flow meter. Non-observance of these directions can lead to hazardous situations for man and beast and also to damage to property, for which Kirchner und Tochter disclaims all liability.

The operator is required to rule out potentially hazardous situations through voltage and released media energy.

2.3 Intended use

The Series SGA device is a variable area flow meter designed for liquids and gases and for installation in vertical pipe runs. Installation in the pipeline should be carried out solely in accordance with these Instructions. The required version of variable area flow meter should be selected on the basis of the pipe diameter at the point of use of the device. The limit values pertaining to the device are given in section 9 and should not be exceeded. Modifications or other alterations to the flow meter may only be carried out by Kirchner und Tochter. Installation in horizontal pipe runs is possible using appropriate pipe bends. The direction of flow must always be from bottom to top. Details of the process product and the operating conditions are marked on the measuring glass.

2.4 Special safety instructions concerning glass devices

For safety reasons, we recommend fitting a protective shield in front of the measuring tube when starting up flow meters fitted with glass measuring tubes. The devices should not be operated where there is a risk of pressure surges (water hammer)!

To avoid glass breakage, all fitting work between measuring glass and heads inside the glass should be carried out by twisting and simultaneously pressing after having wetted the gaskets.

2.5 Information for Operator and operating personnel

Authorized installation, operating, inspection and maintenance personnel should be suitably qualified for the jobs assigned to them and should receive appropriate training and instruction. All persons charged with assembly, mounting, operation, inspection and maintenance duties must have read and understood the operating instructions. Gaskets in contact with the fluid product must be replaced after all maintenance and repair work.

2.6 Regulations and guidelines

In addition to the directions given in these Installation and Operating Instructions, observe the regulations, guidelines and standards, such as DIN EN, and for specific applications, the codes of practice issued by DVGW (gas and water) and VdS (underwriters) or the equivalent national codes and applicable national accident prevention regulations.

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2.7 Notice as required by the hazardous materials directive

In accordance with the law concerning handling of waste (critical waste) and the hazardous materials directive (general duty to protect), we would point out that all flow meters returned to Kirchner und Tochter for repair are required to be free from any and all hazardous substances (alkaline solutions, acids, solvents etc.).

Make sure that devices are thoroughly rinsed out to neutralize hazardous substances.

3 Transport and storage

Always use the original packing for transport, handling and storage. Protect the device against rough handling, coarse impact, jolts etc.

4 Installation

4.1 Work preparatory to installation

Preparation of the installation point:

- Check the pipe run at the point of installation. Variable area flow meters are only suitable for vertical installation and an upward flow direction (from bottom to top). For all other installation situations, appropriate pipe bends need to be fitted in the existing pipeline to ensure upward vertical flow through the device.
- The region of steady flow should be 4 to 6 x DN upstream and downstream of the location. Control equipment for gaseous media in particular should be installed downstream of the flow meter.
- If necessary, support the pipeline on both sides of the flow meter to prevent vibration from being transferred to the device.
- Before connecting, clean the pipelines leading to the device by blowing out or flushing.
- Prepare the installation point for the measuring device with appropriate flanges before beginning installation work. Pay attention to the correct spacing of the sealing faces and to exact alignment.
- Under no circumstances should the variable area flow meter be used to draw the pipe ends together (install free of stresses!).

4.2 Preparation of the measuring device

1. Remove the device from the transport packing.
2. Remove the transport protection stoppers from the ends of the device.
3. Pull the float securing rod out of the device (PVC red or grey).
4. Check that the float can move freely in the device.
5. Have ready: flat gaskets These are not included with the supply.

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4.3 Installation

1. Slide the device together with the flat gaskets (not included with supply) at both ends into the installation point.
2. Check that the flat gaskets are in alignment and do not project into the pipeline.
3. Fit the bolts and nuts of the flanged connection loosely.
4. Tighten the bolted connection between customer-supplied flange and in diagonally opposite sequence so that the device is fixed free of stresses in the pipeline.

5 Start-up

The device must be properly installed before it is started up.

1. Check all device connections.
2. To set the flow: pressurize the pipelines by slowly opening the shut-off valves. On liquid service: carefully vent the pipeline.
3. Check the leak-tightness of all components and if necessary, tighten down threaded joints or screw connections.

6 Readings in operation

The flow value is read off from the scale on the glass cone at the top edge of the float. The measured-value readings are only correct when the operating condition at the measuring point (flowing medium, operating pressure and temperature) corresponds to the values marked on the measuring glass. If operating conditions should differ, the measured value must be corrected with the aid of the general float equation.

Information on theoretical basics and an conversion program can be found on our website: www.kt-flow.de, section physics and calculations.

7 Maintenance and cleaning

The flow meter is maintenance-free. Should the glass cone become fouled, the meter can be removed from the pipeline as follows. Detach the bolts of the flanges for the inspection glasses uniformly to avoid spot loads on the glasses. Cleaning can now be carried out. Do not use aggressive cleansing agents (wire brush, abrasive cleaners, alkaline solutions, acids etc.).Before fitting the inspection glasses, check all gaskets and seals for signs of damage and replace as necessary. Tighten down the bolts of the flange uniformly and in diagonally opposite sequence (caution: risk of glass breakage). We recommend checking for leak tightness when plant operation is resumed!

8 Service

All devices with defects or deficiencies should be sent directly to our repair department. In the service area of the Kirchner und Tochter homepage (www.kt-flow.de) you will find the declaration of decontamination as download and more information about returns.
To avoid risks to our employees and the environment, we can only process devices, for which we get a declaration of decontamination certifying that they are safe due to legal regulations. For questions, please contact our sales department, Tel. +49 2065-96090.

9 Disposal

Please help to protect our environment and dispose workpieces in conformity with current regulations resp. continue using them.

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10 Technical data

Max. working pressure	10 bar
Temperature resistance of the armature	standard max. 150 °C rubberized max. 90 °C special design on request
max. ambient temperature	90 °C
Measuring range	1:10
Accuracy class Error limit (G) Linear limit (qG)	VDE/VDI 3513 page 2 (08/2008) 2,5 % 50 %
Connection	Flange PN 10, 25, 40 acc. to DIN EN 1092-1, other on request

[1] Do not let liquid product freeze.

10.1 Materials

Armature	grey cast iron EN-GJL-200
Corrosion protection of parts in contact with medium	epoxy paint, kiln-dried, traffic blue (RAL 5017), satin finished
Corrosion class	C2
Measuring cone	Borosilicate glass acc. to DIN ISO 3585
Sight glass	Borosilicate glass acc. to DIN ISO 7081
Gaskets	Sil C-4400, other on request
Float for liquids	1.4571
Float for gases	aluminium anodized
Guide rod	1.4571
Inserts	S355
Special designs	corrosion protection off all parts in contact with medium
Armature	Grey cast iron with natural rubber (NR) lining
Seals	SIL C-8200
Float	1.4571, PVC, PP, PVDF
Guide rod	1.4571, PVC, PP, PVDF
Inserts	1.4571, PVC, PP, PVDF

other materials on request

10.2 Measuring ranges

DN	measuring range H_2O				measuring range air i.N.[3]				max. operating pressure[2] in bar at 20 °C
15	12	–	120	l/h	0,15	–	1,5	m³/h	10
	0,12	–	1,2	m³/h	1,6	–	16	m³/h	
25	0,1	–	1	m³/h	1,3	–	13	m³/h	10
	0,3	–	3	m³/h	3,6	–	36	m³/h	
40	0,1	–	1	m³/h	1,3	–	13	m³/h	10
	0,8	–	8	m³/h	8	–	80	m³/h	
40 K	0,8	–	8	m³/h	8	–	80	m³/h	10
	1,5	–	15	m³/h	15	–	150	m³/h	
50	0,4	–	4	m³/h	3,5	–	35	m³/h	10
	1,6	–	16	m³/h	16	–	160	m³/h	
50 K	0,8	–	6	m³/h	9	–	90	m³/h	10
	2	–	20	m³/h	30	–	300	m³/h	
65	2	–	20	m³/h	14	–	140	m³/h	10
	3	–	35	m³/h	40	–	400	m³/h	
80	2,5	–	20	m³/h	15	–	150	m³/h	10
	6	–	60[1]	m³/h	50	–	500	m³/h	
100	2,5	–	20	m³/h	15	–	150	m³/h	10
	6	–	60[1]	m³/h	60	–	600	m³/h	
125	8	–	80	m³/h	47	–	470	m³/h	10
	12	–	120	m³/h	100	–	1000	m³/h	
150	8	–	80	m³/h	47	–	470	m³/h	10
	12	–	120	m³/h	100	–	1000	m³/h	

measuring ranges for other substances and operating conditions on reques

[1] max. value only for floats made of 1.4571

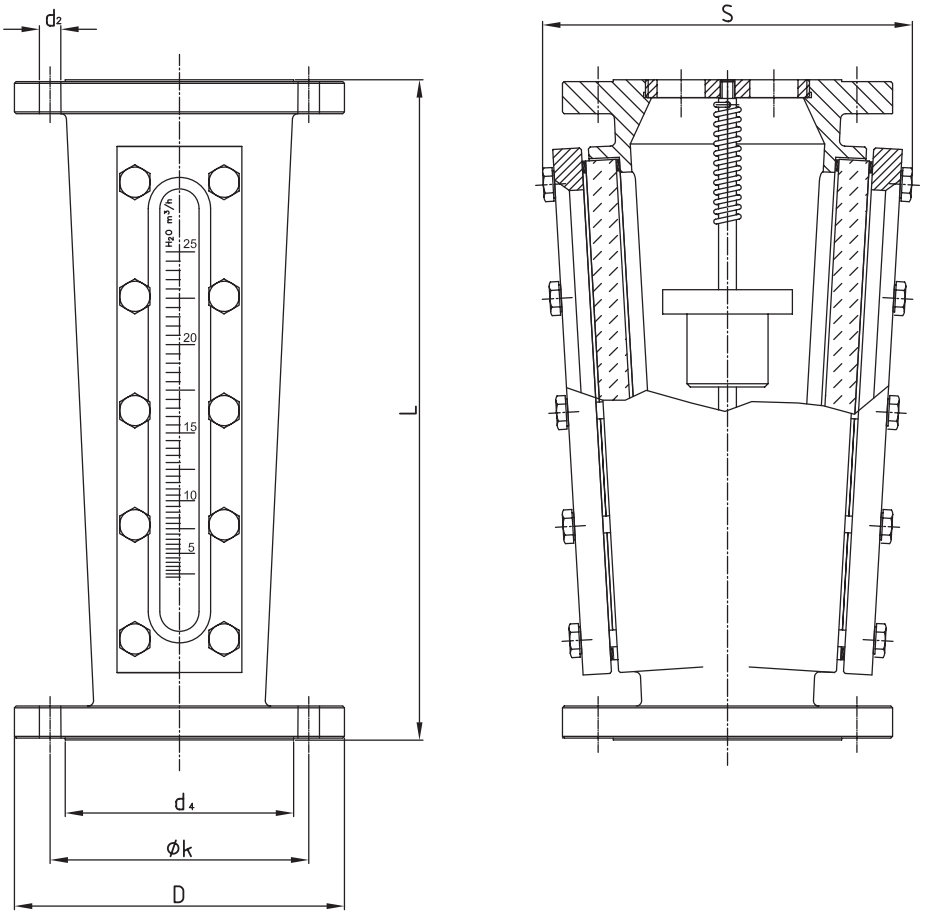
[2] refers to grey cast iron EN-GJL-200

[3] at STP: at standard conditions (0 °C and 1013 mbar)

10.3 Dimensions

SGA DN	S	L	d_2	d_4	D	ØK	Number of screws	Weight in kg
15	139	370	M 12	52	95	65	4	14
25	169	370	M 12	70	115	85	4	18
40	187	370	M 16	92	150	110	4	19
40 K	159	370	M 16	92	150	110	4	17
50	212	370	M 16	105	165	125	4	25
50 K	168	370	Ø 18	105	165	125	4	18
65	224	370	M 16	128	185	145	4	21
80	229	370	M 16	142	200	160	8	27
100	229	370	Ø 18	165	220	180	8	30
125	260	480	Ø 18	190	250	210	8	43
150	260	480	Ø 22	215	285	240	8	46

all dimensions in mm



The devices from **Kirchner und Tochter** have been tested in compliance with applicable EC/EU CE-regulations of the European Community.

The respective declaration of conformity is available on request. Subject to change without notice. The current valid version of our documents can be found at www.kt-flow.de.

The **Kirchner und Tochter** QM-System is certified in accordance with DIN EN ISO 9001:2015. The quality is systematically adapted to the continuously increasing demands.

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