

**Variable area  
flow meter**



**SGA**



## **Assembly and operating instructions**

**Variable area flow meter  
SGA**



**Kirchner und Tochter**



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## 1. General

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 packing rings/gaskets.

## 2.5. Safety 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.

## 2.6. Regulations and guidelines

Apart from the information contained in these assembly and operating instructions, the regulations, guidelines and standards such as DIN EN, as well as the DVGW and VdS guidelines in case of branch-oriented applications must be observed; the same is true for the regulations on the prevention of accidents valid in the destination country.

## 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 monitors 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, impact, jolts, etc.

### **4. Installation**

Check the pipe run at the installation location. VA flow meters are only suitable for vertical installation with the direction of flow being from bottom to top. For all other installation situations appropriate pipe bends need to be fitted in the existing pipeline to ensure vertical flow through the device from below.

Before installing, remove all protective caps, transport locks and any foreign bodies found. Pay regard to the correct spacing and exact alignment of the pipes at the point of installation.

The region of steady flow should be 4 - 6x DN upstream and downstream of the installation location. Particularly in the case of gaseous media, locate control equipment downstream of the measuring device.

The type SGA measuring device is sealed off against the pipe by flat gaskets. Pay regard to the correct spacing and exact alignment of the pipes at the point of installation.

#### **4.1. Installation in the pipeline**

Slide the device together with the flat gaskets (not included with the supply) at both ends into the installation point.

Check that the gaskets are properly aligned and make sure they do not project into the pipeline.

Loosely attach the bolts and nuts to the flange connection.

Tighten bolts on the flange connection in diagonally opposite sequence so that the device is fastened in the pipeline without stresses.

### **5. Start-up**

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

- Check all device connections.
- To set the flow: pressurize the pipelines by slowly opening the shut-off valves (risk of glass breakage!). On liquid service: carefully evacuate the pipeline.
- 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 cylinder. If operating conditions should differ, the measured value must be corrected with the aid of the general float equation, which you will find in our technical documents.

You can also do the recalculation with the help of our conversion program given on our home page: [www.kt-web.de](http://www.kt-web.de), Section "Physical Basics".

## 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.

1. Detach the bolts of the flanges for the inspection glasses uniformly to avoid spot loads on the glasses.
2. Cleaning can now be carried out. Do not use aggressive cleansing agents (wire brush, abrasive cleaners, alkaline solutions, acids, etc.).
3. 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 direct to our repair department.

To enable our customer service facility to deal with complaints and repairs as quickly as possible, you are kindly requested to coordinate the return of devices with our sales department, Tel. +49 2065 9 60 90.

### 8.1. Disposal

For a better environment:

Please help us protect our environment by disposing of the parts used in accordance with the relevant legislation or by recycling same.



## 9. Technical data

Nominal pressure rating	PN 10, optionally cast steel PN 25 - PN 40
Thermal endurance of the armature <sup>1)</sup>	Standard max. 150°C with rubber lining max. 90°C Special version on request
Measuring range	1:10
Accuracy class	2,5 acc. VDI/VDE 3513
Connection	DN15 - 125, optionally DN 150 acc. DIN 2501
<sup>1)</sup> Do not let liquid product freeze	

### 9.1. Materials

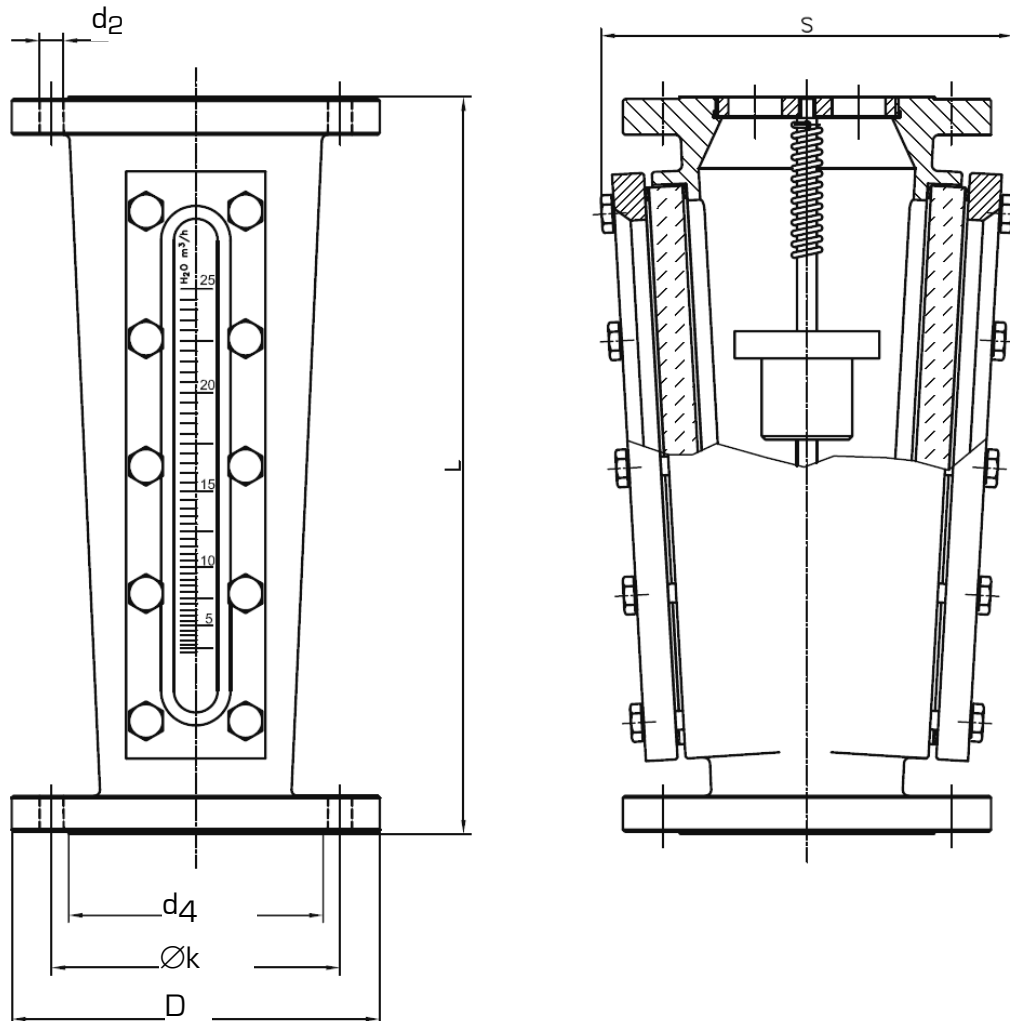
Armature	Cast iron GG 20
Corrosion protection for all wetted parts	Epoxy resin stove-enamelled blue RAL 5017
Measuring cone	Borosilicate glass to DIN ISO 3585
Inspection windows	Borosilicate glass to DIN ISO 7081
Gaskets	Sil - C4400, others on request
Float for liquids	1.4301
Floater for gases	Aluminium
Guide rod	1.4571
Inserts	Steel
<b>Special version: Corrosion protection for all wetted parts</b>	
Device, grey cast iron rubberized	NR (natural rubber)
Gaskets	SIL-C8200
Float	1.4571, PVC, PP, PVDF
Guide rod	1.4571, PVC, PP, PVDF
Inserts	1.4571, PVC, PP, PVDF
Other materials on request	



## 9.2. Dimensions

DN	S	L	d <sub>2</sub>	d <sub>4</sub>	D	Øk	number of screws	weight [kg]
15	139	370	M12	52	95	65	4	14
25	169	370	M12	70	115	85	4	18
40	187	370	M16	92	150	110	4	19
40k	159	370	M16	92	150	110	4	17
50	212	370	M16	105	165	125	4	25
50k	168	370	Ø18	105	165	125	4	18
65	223	370	M16	128	185	145	4	21
80	229	370	M16	142	200	160	8	27
100	229	370	Ø18	165	220	180	8	30
125	260	480	Ø18	190	250	210	8	43

Dimensions in mm





The Kirchner equipment has been tested in compliance with the 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. An appropriate declaration of conformity will be provided on request.

