Piston Flow Meter
STAN

STAN-V

STAN-K

STAN-P

USER MANUAL

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SUMMARY

1. INTRODUCTION

These installation and operating instructions apply to piston flow meters of the STAN-V, STAN-K and STAN-P series, also referred to below as the device.
All instructions regarding installation, operation, maintenance and servicing must be observed and complied with. The instructions are an integral part of the device. It must be kept in a suitable location near the place of use where it is accessible to personnel. When different system components interact, the operating instructions for the other components must also be observed.

2. SAFETY

2.1 Symbol and explanatory note

This symbol is found on all work safety instructions in these installation and operating instructions that refer to danger to life and limb. These instructions must be strictly observed.

2.2 General safety instructions and disclaimer

This document contains basic instructions for the installation, operation, maintenance and servicing of the piston flow monitor. Failure to observe these instructions may result in danger to people and animals as well as damage to property and assets, for which Kirchner und Tochter accepts no liability.
The operator must prevent hazards due to electrical voltage or released media energy.

2.3 Intended use

The devices in the STAN-V, STAN-K und STAN-P series are piston flow monitors for liquids. They are designed for installation in vertical or horizontal pipes. Installation in the pipeline must be carried out in accordance with these instructions. The design of the piston flow monitor must be selected based on the pipe diameter at the installation site of the device. The limits of the devices must be observed. Only Kirchner und Tochter is permitted to modify or alter the flow monitor.

Technical data, measuring ranges and information on the various materials are listed in data sheets D-726.01, D-726.02 and D-726.03.

2.4 Special safety instructions for glassware

For safety reasons, we recommend operating flowmeters with glass measuring tubes only with a protective shield in front of the measuring tube. The devices must not be operated under pressure surges!

To prevent glass breakage, all assembly procedures between the measuring glass and the heads contained therein should be performed by simultaneously rotating and pushing, after first moistening the seals.

2.5 Safety instructions for operators and operating personnel

The personnel assigned to installation, operation, maintenance and servicing must have the appropriate qualifications for the tasks assigned and be appropriately trained and instructed. Every person responsible for installation, operation, maintenance and servicing must have read and understood the operating instructions. Any gaskets in contact with the medium must be replaced after maintenance and repair.

2.6 Regulations and guidelines

In addition to the instructions given in these installation and operating instructions, regulations, directives and standards such as DIN EN and, in the case of industry-specific applications, the DVGW and VdS directives and the accident prevention regulations UVV applicable in the country of use must also be observed.

2.7 Information in accordance with the Hazardous Substances Ordinance

In accordance with the Waste Act AbfG (hazardous waste) and the Hazardous Substances Ordinance GefStoffV (general duty to protect), we would like to point out that all flowmeters supplied to Kirchner und Tochter for repair must be free of any hazardous substances (alkalis, acids, solvents, etc.).

Ensure that the appliances are rinsed so that hazardous substances are neutralised.

3. TRANSPORT AND STORAGE

Only transport and store the device in its original packaging. Protect the device from rough impact!
Protect the appliance from strong magnetic fields and prevent iron filings or iron dust from entering the appliance.

4. ASSEMBLY AND DELIVERY

STAN-V piston flowmeters, STAN-K flow monitors and STAN-P flow indicators provide orientation-independent measurement and monitoring of water, oils, and other liquids.

The devices in the STAN series can be installed in horizontal and vertical pipelines. The devices are equipped with a spring-loaded piston located in a cylindrical measuring tube.

The measuring system consists of the piston with an orifice bore and the spring. When flow passes through the device, the piston changes its position in proportion to the flow rate.

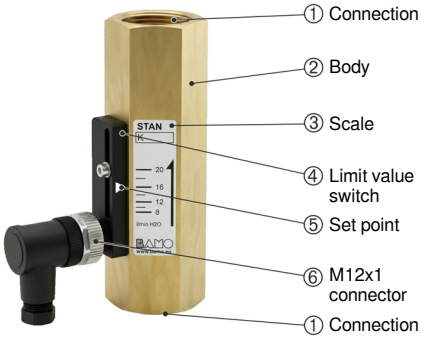
STAN-V Piston flow meter:

The flow rate is read directly at the top edge of the spring-loaded piston (5). The piston is located inside a cylindrical borosilicate glass tube featuring a printed scale (4).

An optional limit switch is available for the STAN-V-K series and can be set to any point within the entire measuring range.

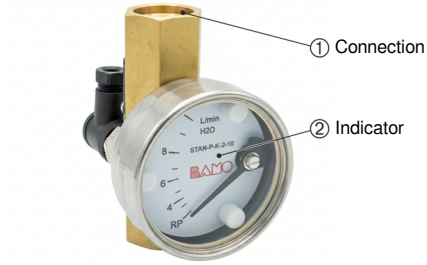
STAN-K Piston Flow Monitor:

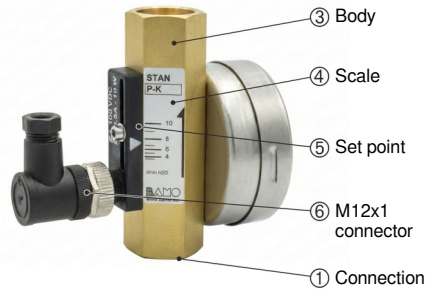
The flow switch features a rugged hex or square body (2) with integral connection threads (1).
Magnets built into the piston trigger an externally mounted limit switch (4) without physical contact. You can continuously adjust the monitored flow rate by sliding this setpoint (5) along an external scale (3).
The limit switch (4) connects via the included field-attachable M12x1 connector (6).



STAN-P Piston Flow Indicator:

The housing design is identical to the STAN-K. The movement of the piston is transmitted contact-free to a mechanical indicator (2) mounted on the outside of the body (3).
The flow rate can be read directly from the scale.
Optionally available with a limit switch (STAN-P-K).





5. INSTALLATION

5.1 Setting up the installation

- Check the pipe run at the installation site for damage and parts that could interfere with the pipe run.
- The pipelines to the Gerät must be cleaned by blowing out or flushing before connection.
- If necessary, the pipelines must be supported to prevent the transmission of vibrations to the measuring device.
- Ensure that the device is protected against damage and mechanical force.
- Under no circumstances should the pipe be pulled together with the aid of the piston flow monitor (stress-free installation!).
- Ensure sufficient distance between the limit value switch and sources of magnetic interference (e.g. electric motors).
- Process connections, fittings, and pipes made of ferromagnetic materials (e.g., steel, iron) will affect the device's magnetic field. Ensure a minimum distance of 100 mm (150 mm for STAN-P/STAN-P-K).
- Ensure that control devices are installed downstream of the flow monitor.
- The straight pipe length upstream and downstream of the installation point must be 4 to 6 x DN.

5.2 Preparation of the measuring device

- Remove the device from the transport packaging.
- Ensure that there are no remnants of the packaging material in the device.
- Check if the piston can move freely within the device.
- Keep gasket materials, such as Teflon tape, on hand. These are not included in the scope of delivery.
- The device must be prepared with the appropriate screw-in fittings before installation begins.
- Only use fittings and screw connections made of non-ferromagnetic material (brass, stainless steel, plastic).

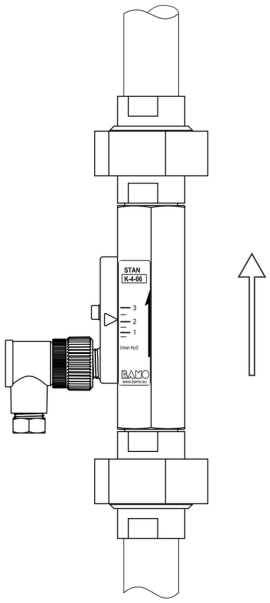
5.3 Installation

5.3.1 Setting up the screw connection

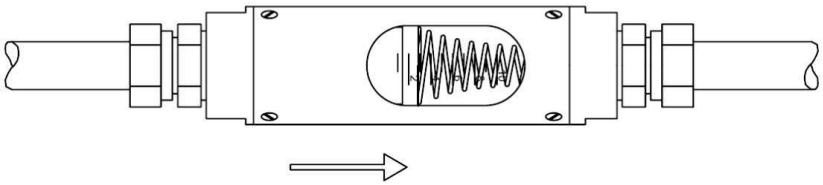
- Seal the screw-in thread of the pipe fitting with Teflon tape, thread sealing cord or comparable materials. Follow the sealant manufacturer's instructions!
- Fasten the pipe fitting into the internal thread of the device and tighten on the device using a suitable spanner, taking care not to damage the limit value switch!
- Repeat the process on the other side of the device.

5.3.2 Installation in the pipeline

- Insert the device together with the screw connections into your pipeline and check that the distance between the pipe ends matches the overall length of the device. - Stress-free installation! -
- Tighten the union nut of the pipe fitting on both sides of the device.



Vertical flow installation



Horizontal flow installation

6. START-UP

Correct installation is a requirement for start-up.

- Check the device connections.
- Adjusting the flow rate: Pressure the pipes by slowly opening the shut-off valves.
- Ensure that the pipeline is properly vented.
- Check the leak tightness of all components and retighten screw connections or screw joints if necessary.

Vibrations, pressure surges and pulsating flow can damage the device and should be avoided!

7. LIMIT VALUE SWITCH

To fulfil the basic function of the STAN-K flow monitor - monitoring a flow value - it is equipped with a limit value switch. The STAN-P and STAN-V can be optionally equipped with a limit switch.

The limit value switch consists of a reed switch (inert gas switch) which is triggered by the magnet integrated in the measuring piston. The scale size and detection range are dimensioned in such a way that bistable switching behaviour is achieved.

Guided in two guide grooves, the limit value switch can be fully adjusted over the entire measuring range.

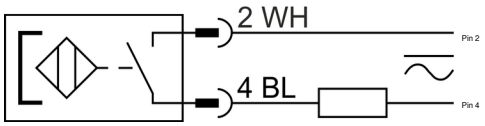
Note:
Uncontrollable current and voltage peaks can occur with inductive or capacitive loads, e.g. from contactors or solenoid valves. Such peaks also occur in cables of a certain length, depending on the geometry of the cables.
We therefore recommend using the additionally available MSR contact protection relay. This increases the switching capacity and prevents the occurrence of inductive and capacitive peaks. This ensures a long service life for the limit value switch.

The electrical connection data and limits must be observed.

7.1 Connection

The electrical connection of the device must be carried out in accordance with the relevant VDE regulations and the regulations of the local power supply company.

- Disconnect the system from the power supply before connecting the limit value switch.
- Provide a protective circuit for the limit value switch according to its rating.
- Appropriate fuses must be connected upstream.
- The connection is made on the 4-pin plug connector, M12x1 with a pre-assembled cable with M12x1 coupling or using the 4-pin M12x1 angled plug supplied.



Normally open

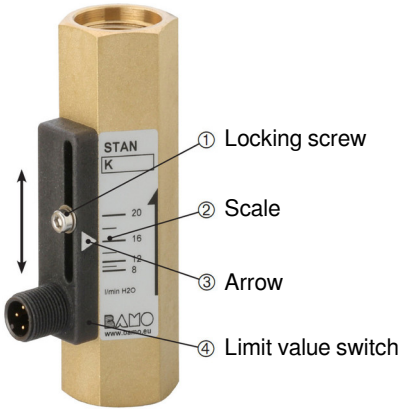
Technical data, measuring ranges and information on the various materials are listed in data sheets D-726.01, D-726.02 and D-726.03.

7.2 Adjusting the limit value switch

Tools required: Hexagon socket screwdriver SW 2.5

- Loosen the locking screw (1) (hexagon socket SW2.5, M3 x 0.5) until the limit value switch (4) can be moved.
- Move the limit value switch (4) until the arrow (3) points to the desired switching point on the scale (2).
- Carefully retighten the locking screw (1).

Attention!
The maximum allowable torque is 0.4 Nm!
The switching point may only be set within the scale range to ensure a reliable switching function.



8. Maintenance and cleaning

The device is maintenance-free. If dirt impairs the functionality, the device can be disassembled as described below after removing it from the pipeline.
Please make sure to have new replacement O-rings available for the STAN-V / STAN-V-K. Feel free to contact us if you need assistance.

8.1 Deinstallation of the flow monitor

Caution! Risk of injury!

- **Make sure that the pipeline is depressurised at the installation point and has been drained if possible.**
- **Wait until the device has cooled down to avoid burns.**
- **Wear the protective equipment specified in the safety data sheet of the measuring medium; in any case, wear protective gloves and safety goggles.**
- **Disconnect the limit value switch from any power supply.**

- First remove the device from the installation point by loosening the union screw connections.
- Remove the device from the installation site.
- Use a spanner to unscrew the threaded fittings from the flow monitor.
- Remove any possible sealing residue from the connection threads.

8.2 STAN-K / STAN-P

8.2.1 Disassembly

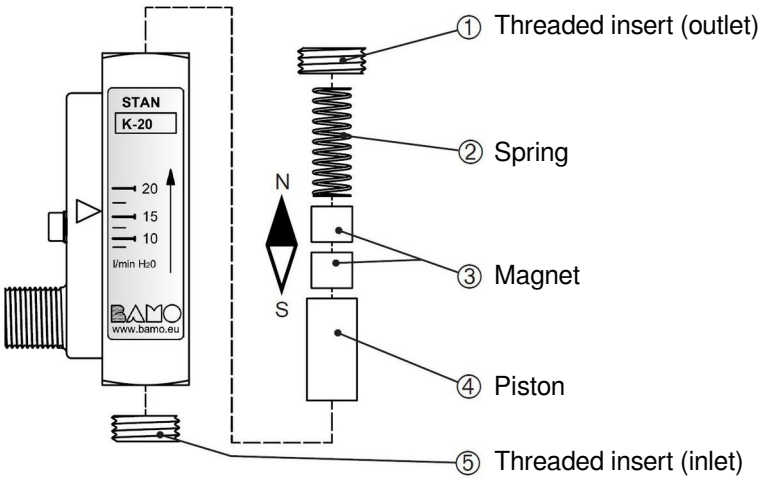
- Place the flow monitor upright on the work surface (flow arrow points from bottom to top).
- Loosen the threaded insert (1) on the top of the device.
- You can now remove the pressure spring (2), the measuring piston 4 and the switching magnets (3). Prevent the internal parts from being dropped or mechanically damaged!
- Finally, loosen the threaded insert (5) on the underside of the device.

8.2.2 Cleaning

- Do not use any aggressive cleaning agents (wire brush, abrasive cleaners, alkaline solutions, acids, etc.).
- The magnets are very hard and brittle. Do not allow them to collide as this can destroy them.
- Avoid damaging the spring and the measuring piston through mechanical forces or falls.
- Make sure that there are no fibres or rag residues on or in the individual parts after cleaning.

8.2.3 Assembly

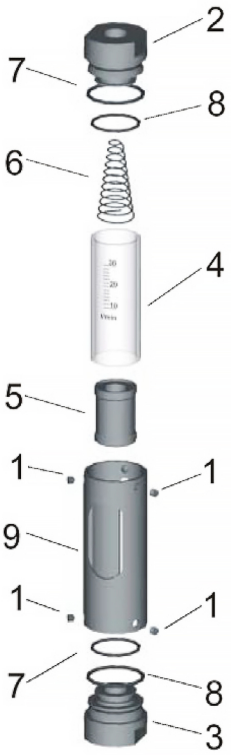
- Screw the threaded insert (5) into the input side of the device as far as it will go.
- Place the flow monitor upright on the work surface (flow arrow points from bottom to top).
- Place the measuring piston (4) on the work surface with the wide opening pointing upwards.
- Insert the magnets (3) into the measuring piston (4) so that the north pole points upwards (towards the device outlet).
- Insert the spring (2) into the measuring piston (4).
- Now insert the piston (4) together with the magnets (3) and spring (2) into the device.
- Screw the threaded insert (1) into the thread of the device outlet. Tightening torque for threaded insert max. 4 Nm.



8.3 STAN-V

8.3.1 Disassembly

- Place the flow meter upright on the work surface .
- Loosen the 6 grub screws (1) from the device sleeve (9).
- Remove the device heads (2 and 3) and the measuring glass (4) from the sleeve (9).
- Take care not to damage the piston (5) or the measuring glass (4).
- Remove the old O-rings (8) from the device heads (2+3).



8.3.2 Cleaning

- Clean dirty parts with a damp, lint-free cloth.
- Do not use any aggressive cleaning agents (wire brush, abrasive cleaners, alkaline solutions, acids, etc.).
- When cleaning the device, do not use any abrasive materials (avoid using sandpaper, scrapers or similar tools).
- STAN-V-K: The magnets are very hard and brittle. Do not allow them to collide as this can destroy them
- Avoid damaging the spring and the measuring piston through mechanical forces or falls.
- Make sure that there are no fibres or rag residues on or in the individual parts after cleaning.
- Damage to the scale caused by dismantling, cleaning or reassembly is not covered by the warranty.

8.3.3 Assembly

- Replace the O-rings on the device heads.
- STAN-V-K: When inserting the magnets, ensure that the polarity is correct. In the direction of flow: south to north, or south at the bottom and north at the top.
- Reassemble the STAN-V in reverse order. Ensure that the spring (6) is correctly seated in the head (2).
- When inserting the heads (2+3) into the sleeve (9) and measuring cylinder (4), press and turn.
- Wet the O-rings with a liquid suitable for the O-ring material and your process to make installation easier.

9. Service

All defective or faulty devices must 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 decontamination declaration as a download and further information on the subject of returns. In order to rule out any risk to our employees and the environment, we only process devices for which we have a certificate of non-hazardousness (declaration of decontamination) due to legal regulations.

If you have any questions, please contact our sales department on +49 2065-9609-0.

10. Disposal

Please help protect our environment by disposing of or reusing used parts in accordance with local regulations.

The devices of company Firma Kirchner und Tochter are tested in accordance with the relevant EC/EU CE directives.
A declaration of conformity is available on request.
We reserve the right to make changes without prior notice.
You can find the current version of our documentation at www.kt-flow.de.

The Kirchner und Tochter QM system is certified according to DIN EN ISO 9001:2015.
Systematic quality improvement is pursued in constant adaptation to the ever-increasing requirements.