

Non-Return Valve

SRK 22A

EN
English

Original Installation Instructions
819238-03

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Foreword

This installation & operating manual will help you use the valve SRK 22A safely and efficiently for its intended purpose. This valve will be called equipment in this document.

This installation & operating manual is intended for anyone commissioning, using, operating, servicing, cleaning or disposing of this equipment and, in particular, for professional after-sales service technicians, qualified personnel and authorised and trained staff.

All of these persons must read and understand the content of this installation & operating manual.

Following the instructions given in this installation & operating manual helps avoiding danger and increases the reliability and service life of the equipment. Please note that in addition to the instructions given in this installation & operating manual you must also observe all locally applicable rules and regulations concerning the prevention of accidents as well as approved safety guidelines for good professional practice.

Availability

Keep this installation & operating manual together with the plant documentation for future reference. Make sure that this installation & operating manual is available to the operator.

The installation & operating manual is part of the equipment. Please hand over this installation & operating manual when selling the equipment or passing it on.

Formatting features in the document

Certain text elements of this installation & operating manual feature a specific typographic design. You can easily distinguish the following text elements:

Standard text

Cross-reference

- ▶ Listing
 - ▶ Sub-items in listings
- Steps for action.



Here you will find additional useful information and tips serving to assist you in using the equipment to its fullest potential.

Safety

Use for the intended purpose

The non-return valve SRK 22A ensures unidirectional flow in pipes by preventing a backflow of fluids.

The equipment must only be used within the allowable pressure and temperature limits and only if the chemical and corrosive influences on the equipment are taken into account.

Correct use includes compliance with the instructions given in this installation & operating manual, in particular obedience to all safety instructions.

Any other use of the equipment is considered to be improper.

Note that the equipment is also used incorrectly if the materials of the equipment are not suitable for the fluid.

Basic safety notes

Risk of severe injuries

- ▶ The equipment is under pressure during operation and may be hot. Before carrying out any work on the equipment make sure that the following requirements are met:
 - ▶ The pipes must be depressurized (0 bar).
 - ▶ The fluid must be completely removed from the pipes and the equipment.
 - ▶ During work on the equipment the installation must be switched off and protected against unauthorised or unintended activation.
 - ▶ The pipes and the equipment must have cooled down to room temperature (approx. 20 °C).
- ▶ If the equipment is used in contaminated areas there is a risk of severe injuries or death caused by harmful substances in or on the equipment. Before working on the equipment make sure that it is completely decontaminated. Always wear the protective clothing prescribed for contaminated areas when working on the equipment.
- ▶ The equipment must only be used with fluids that do not attack the material and the gaskets and sealings of the equipment. Otherwise leaks may occur and hot or toxic fluid could escape.
- ▶ The equipment and its component parts must only be mounted or removed by qualified personnel. A qualified person must be acquainted with and experienced in the following:
 - ▶ Making pipe connections.
 - ▶ Selecting suitable lifting gear and understanding the rules for its safe use.
 - ▶ Working with dangerous (contaminated, hot or pressurized) fluids.

Risk of minor injuries

- ▶ Sharp edges on internals present the danger of cuts to hands. Always wear industrial gloves when servicing the equipment.
- ▶ If the support of the equipment during installation is insufficient the equipment might fall down, thereby causing bruises or injuries. Make sure the equipment is safely held in place during installation and cannot fall down. Wear protective safety footwear.

Information on property damage or malfunctions

- ▶ Malfunctions will occur if the equipment is installed in a wrong position or with the flow arrow pointing in the opposite direction of the fluid flow. This may result in damage to the equipment or the installation. Make sure that the flow arrow on the equipment body matches the indicated direction of the fluid flow in the pipe.
- ▶ If the material is unsuitable for the fluid, increased wear may occur and fluid may escape. Make sure that the material is suitable for the fluid used in your installation.

Qualification of personnel

A qualified person must be acquainted with and experienced in the following:

- ▶ the pertinent on-site rules and regulations for preventing fire and explosions as well as industrial safety regulations
- ▶ working on pressure equipment
- ▶ making pipe connections
- ▶ working with dangerous (hot or pressurized) fluids
- ▶ lifting and transporting loads
- ▶ observing all notes and instructions in this installation & operating manual and the applicable documents

Protective gear

The required protective gear depends on the types of fluid used and the regulations on site. For more information on suitable safety clothing and safety gear refer to the safety data sheet of the fluid in question.

Protective gear comprises the following items:

- ▶ protective helmet
- ▶ work boots
- ▶ industrial leather gloves

Typographic features of warning notes



DANGER

Notes with the heading DANGER warn against imminent dangerous situations that can lead to death or serious injuries.



WARNING

Notes with the heading WARNING warn against possibly dangerous situations that could lead to death or serious injuries.



CAUTION

Notes with the heading CAUTION warn against dangerous situations that could lead to minor or moderate injuries.

Formatting features for warnings of property damage

Attention!

This information warns of a situation leading to property damage.

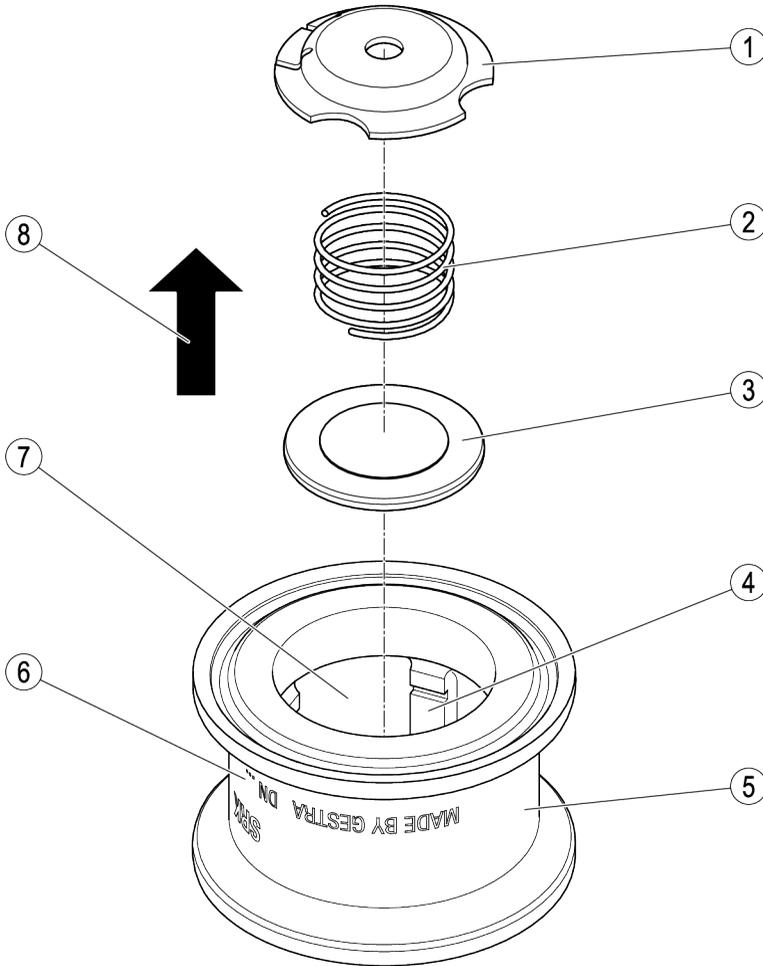
Description

Scope of supply and equipment specification

Scope of supply

Our equipment is delivered packed and ready for assembly.

Equipment specification



No.	Designation
1	Spring retainer
2	Spring to close
3	Valve disc
4	Guide ribs
5	Body

No.	Designation
6	Nameplate (lasered on the body)
7	Seat (not shown)
8	Direction of flow

End connections

The equipment is designed for clamp connections to DIN 32676.

Other end connections are not available.

Name plate/identification

The following items are indicated on the body:

- ▶ Manufacturer
- ▶ Type designation
- ▶ Nominal size
- ▶ Design temperature
- ▶ Design pressure
- ▶ Direction of flow
- ▶ Mark (if required), e. g. CE, UKCA, EAC
- ▶ Material
- ▶ Batch code
- ▶ Date of manufacturing

Application of European Directives

Fluids

The equipment is designed for the following fluids (in accordance with the EU Pressure Equipment Directive or Pressure Equipment (Safety) Regulations in the UK):

- ▶ Fluids of group 2

Due consideration must be given to chemical and corrosive influences.

Potentially explosive atmospheres

The equipment does not have its own potential source of ignition (as per ATEX Directive). Please pay attention to the following information:

When installed, static electricity may arise between the equipment and the connected system.

When used in potentially explosive atmospheres, the plant manufacturer or plant operator is responsible for discharging or preventing possible static charge.

If it is possible for medium to escape, e.g. through actuating mechanisms or leaks in threaded joints, the plant manufacturer or plant operator must take this into consideration when dividing the area into zones.

Task and function

The non-return valve SRK 22A ensures unidirectional flow in pipes by preventing a backflow of fluids.

The valve disc is pressed against the seating surface in the event of reverse flow. As a result, the closed valve prevents a backflow of fluid.

The guide ribs ensure correct alignment of the valve disc.

When fitted with springs, the equipment can be installed in any plane. Different types of springs with different strengths are available. The force of the spring ensures that the valve only opens when the fluid flows in the right flow direction.

Storing and transporting the equipment

Attention!

Equipment can be damaged if stored or transported improperly.

- Close all openings with the sealing plugs or covers supplied with the equipment or use similar sealing covers.
- Protect the equipment against moisture and corrosive atmospheres.
- Please contact the manufacturer if the specified transport and/or storage requirements cannot be met.

Storing the equipment

- Please observe the following items when storing the equipment:
 - ◆ Do not store the equipment for more than 12 months.
 - ◆ Use the supplied sealing plugs or other suitable seal caps in order to seal off all openings of the equipment.
 - ◆ Protect the sealing surfaces and contact areas against mechanical damage.
 - ◆ Protect the equipment and all components against hard shocks and impacts.
 - ◆ Store the equipment only in closed rooms that meet the following environmental conditions:
 - ◆ Air humidity below 50 %, not condensing
 - ◆ Indoor air: clean, salt-free and non-corrosive
 - ◆ Temperature 5–40 °C.
- Make sure that all these requirements are always met when storing the equipment.
- Please contact the manufacturer if you cannot comply with the recommended storage conditions.

Transporting the equipment

- Meet the requirements for storage also when transporting the equipment.
- Prior to transport seal off connections with sealing plugs.
 -  If you do not have the sealing plugs supplied with the equipment use appropriate seal caps to seal off the connections.
- For short distances (only a few metres) you can transport the equipment unpacked.
- When transporting the equipment over larger distances use the original packaging.
- If you do not have the original packaging use a box that protects the equipment adequately against corrosion and physical damage.
 -  For a short period of time the equipment may be transported even if the temperature is below 0 °C, provided that the equipment is completely empty and dry.

Mounting and connecting the equipment

Preparing installation

- Take the equipment out of the transport packaging.
- Check the equipment for transport damage.
- Contact the manufacturer if you detect any kind of shipping damage.

When supplied by the factory, the connections may be sealed off with sealing plugs.

- Remove sealing plugs before mounting the equipment.
- Keep the sealing plugs and the packing for further use.



DANGER

Personnel working on pipes are exposed to safety risks and may suffer severe injuries, poisoning or even loss of life.

- Make sure that no hot or hazardous fluid is in the equipment or the pipes.
- Make sure that the pipes upstream and downstream of the equipment are depressurised.
- Make sure that the installation is switched off and protected against unauthorised or unintended activation.
- Make sure that the equipment and the pipes have cooled down to room temperatures.
- Wear protective clothing that is suitable for the fluid and, if necessary, wear protective gear.

For more information on suitable protective clothing and safety gear refer to the safety data sheet of the fluid in question.

- Drain pipes until they are empty.

- Switch the installation off and protect it against unauthorised or unintended re-activation.

Connecting the equipment



DANGER

Incorrectly connected equipment can result in accidents with extremely severe injuries or death.

- Make sure that only specialist personnel connect the equipment to the pipe.
- Make sure that the direction of flow in the pipe matches the flow direction arrow on the equipment.
- Make sure that the connected pipe does not subject the body to any stress (forces or torques) during installation and operation.

Specialist personnel must have knowledge and experience of the type of pipe connection used.

Attention!

Equipment will be damaged if the end connections are undersized.

- Make sure that the connections are strong and rigid enough to support the weight of the equipment and to withstand the forces that occur during operation.

- Make sure that the pipe system of the plant is clean.

Note that equipment without spring can only be installed in vertical pipes with upward flow.

Equipment with springs can be installed in any position.

To ensure that the pipe is completely drained, the equipment must be installed in a vertical pipe with downward flow.

- Make sure that the flow arrow on the equipment body matches the desired flow direction.
- Make sure that the equipment is free from foreign matter.

- Install the equipment in the desired, permitted installation position.
- Observe 3 mm space required for servicing.

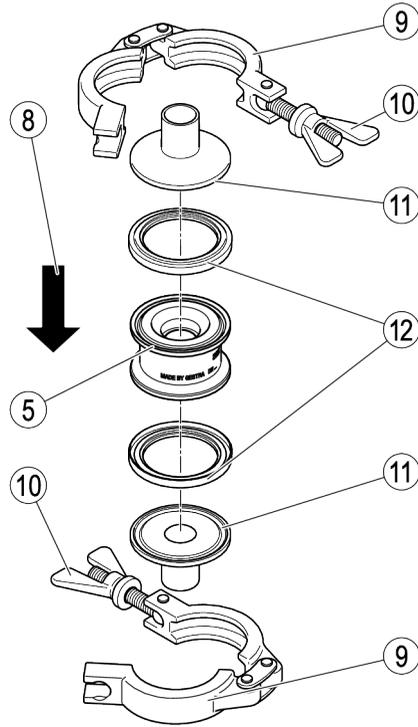
For the installation of the equipment you need clamps.

The following component parts to DIN 32676 are required:

- ▶ two clamps (9)
- ▶ two clamp sockets (11) welded to the pipes
- ▶ two suitable gaskets (12)

These parts can be obtained directly from the manufacturer.

- Make sure that both clamp sockets (11) are properly welded to the pipes.
- Put a gasket (12) between each socket clamp and the body (5).
- Put the two clamps (9) around the clamp socket and the body.
- Close the clamps.
- Tighten the (wing) nuts (10) hand tight.



- Make sure that the equipment is safely mounted and that all connections are made correctly.

Operation

During operation you cannot change the settings.

After operation



DANGER

If the equipment is used in contaminated areas there is a risk of severe injuries or death caused by harmful substances in or on the equipment.

- Only qualified personnel are allowed to perform work on contaminated equipment.
- Always wear the protective clothing prescribed for contaminated areas when working on the equipment.
- Make sure that the equipment is completely decontaminated before carrying out any service work.
- Follow the pertinent instructions for handling the hazardous substances in question.

Attention!

Frost damage may occur when the installation is shut down.

- Drain the equipment if ambient temperatures below 0 °C (frost) are to be expected.

Servicing and repairing the equipment and installing spare parts

The equipment does not require any particular maintenance.

- Examine the equipment at regular intervals and check it for correct operation.
- If necessary, clean the equipment.

No spare parts are available for the equipment.

- Replace a defective device with a new one.

To clean or replace the equipment you have to take it out of the pipeline.

- For this purpose proceed in reverse order of mounting the equipment.

Removing external dirt deposits

- To remove dirt deposits rinse the equipment with fresh water and wipe it with a clean, lint-free cloth.
- To remove any persistent residues use a cleaning agent that is suitable for the material and carefully wipe the equipment with a clean, lint-free cloth.

Troubleshooting

Problem	Cause	Remedy
Loud noise	The equipment is operating in the unstable range of the volume flow with the valve disc oscillating.	Raise the volume flow by increasing the pump capacity.
		In the case of upward flow remove the fitted spring.
		Install a valve of smaller nominal size.
Seat is leaking (equipment does not close properly)	<p>Dirty deposits on the seat/valve disc have accumulated.</p> <p>The spring is damaged or worn.</p> <p>The seat or valve disc is damaged.</p>	<p>Check the condition of the equipment.</p> <p>Clean the gasket faces of the equipment.</p> <p>Replace the equipment if it is damaged.</p>
Equipment is leaking fluid.	A gasket is worn or damaged.	Re-tighten the nuts on the clamps.
		<p>Check the condition of the gaskets.</p> <p>Replace any defective gasket.</p>

- If faults occur that are not listed above or cannot be corrected, please contact our Technical Service or authorized agency in your country.

Putting the equipment out of operation

- For the disposal of all residues observe the pertinent legal regulations concerning waste disposal.

Removing harmful substances



DANGER

If the equipment is used in contaminated areas there is a risk of severe injuries or death caused by harmful substances in or on the equipment.

- Only qualified personnel are allowed to perform work on contaminated equipment.
- Always wear the protective clothing prescribed for contaminated areas when working on the equipment.
- Make sure that the equipment is completely decontaminated before carrying out any service work.
- Follow the pertinent instructions for handling the hazardous substances in question.

Qualified personnel must have extensive experience with and a working knowledge of:

- ▶ pertinent rules and regulations concerning handling hazardous substances
- ▶ special regulations for handling the hazardous substances encountered on site
- ▶ using the required personal protective equipment (PPE) and clothing



CAUTION

Environmental damage may be caused by poisonous fluid residues.

- Before disposing of the equipment make sure that it is clean and free of fluid residues.
 - For the disposal of all materials observe the pertinent legal regulations concerning waste disposal.
-
- Remove all residues from the equipment.

Removing the equipment



DANGER

Personnel working on pipes are exposed to safety risks and may suffer severe injuries, poisoning or even loss of life.

- Make sure that no hot or hazardous fluid is in the equipment or the pipes.
- Make sure that the pipes upstream and downstream of the equipment are depressurised.
- Make sure that the installation is switched off and protected against unauthorised or unintended activation.
- Make sure that the equipment and the pipes have cooled down to room temperatures.
- Wear protective clothing that is suitable for the fluid and, if necessary, wear protective gear.

For more information on suitable protective clothing and safety gear refer to the safety data sheet of the fluid in question.



CAUTION

Risk of injuries if the equipment falls down.

- When removing the equipment make sure the it is safely held in place and cannot fall down.

Suitable measures are for instance:

- ▶ Equipment that is not too heavy may be supported by a second person.
- ▶ For heavy equipment use suitable lifting equipment of sufficient strength.
- Detach the end connections of the equipment from the pipes.
- Put the equipment onto a suitable base.
- Store the equipment as described on page 8.

Re-using equipment after storage

Observe the following instructions if you want to remove the equipment and use it again somewhere else:

- ▶ Make sure that the equipment is free of any fluid residues.
- ▶ Make sure that all connections are in good condition and leak-free.
- ▶ If necessary re-work welded connections in order to ensure that they are in good working condition.
- ▶ Use the equipment only for its intended purpose and the service conditions for which it was specified.

Disposing of the equipment



CAUTION

Environmental damage may be caused by poisonous fluid residues.

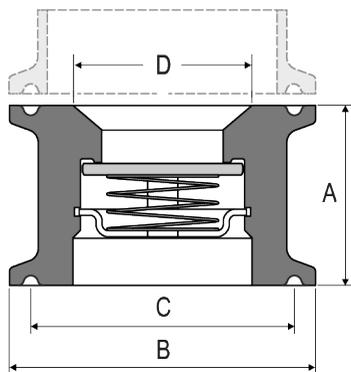
- ▶ Before disposing of the equipment make sure that it is clean and free of fluid residues.
- ▶ For the disposal of all materials observe the pertinent legal regulations concerning waste disposal.

The equipment is made from the following materials:

Component	DIN / EN	ASME
Body, seat and guide ribs	1.4408	A351CF8M
Valve disc, spring retainer, spring	1.4571	AISI 316Ti

Technical data

Dimensions and weights



Nominal size	[mm]	15	20	25	32	40	50
	["]	½	¾	1	1¼	1½	2
Overall length A	[mm]	23.0	29.5	33.5	38.0	43.0	54.0
Diameter of flange B	[mm]	50.5	50.5	64.0	77.5	91.0	106.0
Diameter of groove C	[mm]	43.5	43.5	56.5	70.5	83.5	97.0
Inside diameter D	[mm]	29.5	29.5	44.0	56.5	66.0	81.0
Weight	[kg]	0.2	0.4	0.6	0.75	1.4	2.0

Dimensions of pipe end connections

Nominal size	[mm]	15	20	25	32	40	50
	["]	½	¾	1	1¼	1½	2
Pipe dimensions to DIN 11850	DN25 ¹	29.0×1.5	–	–	–	–	–
	DN32 ¹	35.0×1.5	–	–	–	–	–
	DN40	41.0×1.5	–	–	–	–	–
	DN50	–	53.0×1.5	–	–	–	–
	DN65	–	–	–	–	70.0×2.0	–
	DN80	–	–	–	–	–	85.0×2.0
Pipe dimensions to ISO 1127	OD 21.3 ¹	21.3×1.6	–	–	–	–	–
	OD 26.9 ¹	26.9×1.6	–	–	–	–	–
	OD 33.7	33.7×2.0	–	–	–	–	–
	OD 42.4 ¹	–	42.4×2.0	–	–	–	–
	OD 48.3	–	48.3×2.0	–	–	–	–
	OD 60.3	–	–	60.3×2.0	–	–	–
	OD 76.1	–	–	–	–	76.1×2.0	–
	OD 88.9	–	–	–	–	–	88.9×2.0
Pipe dimensions to ASME BPE	NPS 1" ¹	25.4×1.65	–	–	–	–	–
	NPS 1,5"	38.1×1.65	–	–	–	–	–
	NPS 2"	–	50.8×1.65	–	–	–	–
	NPS 2,5"	–	–	63.5×1.65	–	–	–
	NPS 3"	–	–	–	–	76.2×1.65	–

1 To ensure a gap-free connection for these pipe diameters a special socket with transition piece (for inside diameter D) is required.

In this case a gasket with inside diameter D must be used.

Pressure & temperature ratings

T (inlet temperature) [°C]	-200	20	200
p (service pressure) [barg] DN 15–DN 50	10.0	10.0	6.0

Max. admissible service pressure (PMA): 10 bar

Application limits for valve disk gasket

	Metal-to-metal DN 15–DN 50	EPDM (FDA approved)	FPM (FDA approved)
T_{min} minimum temperature [°C]	-200	-40	-25
T_{max} maximum temperature [°C]	200	150	200
Application range	liquids, gases, steam	water, condensate, steam	mineral oils, gases, air

Opening pressures [mbar]

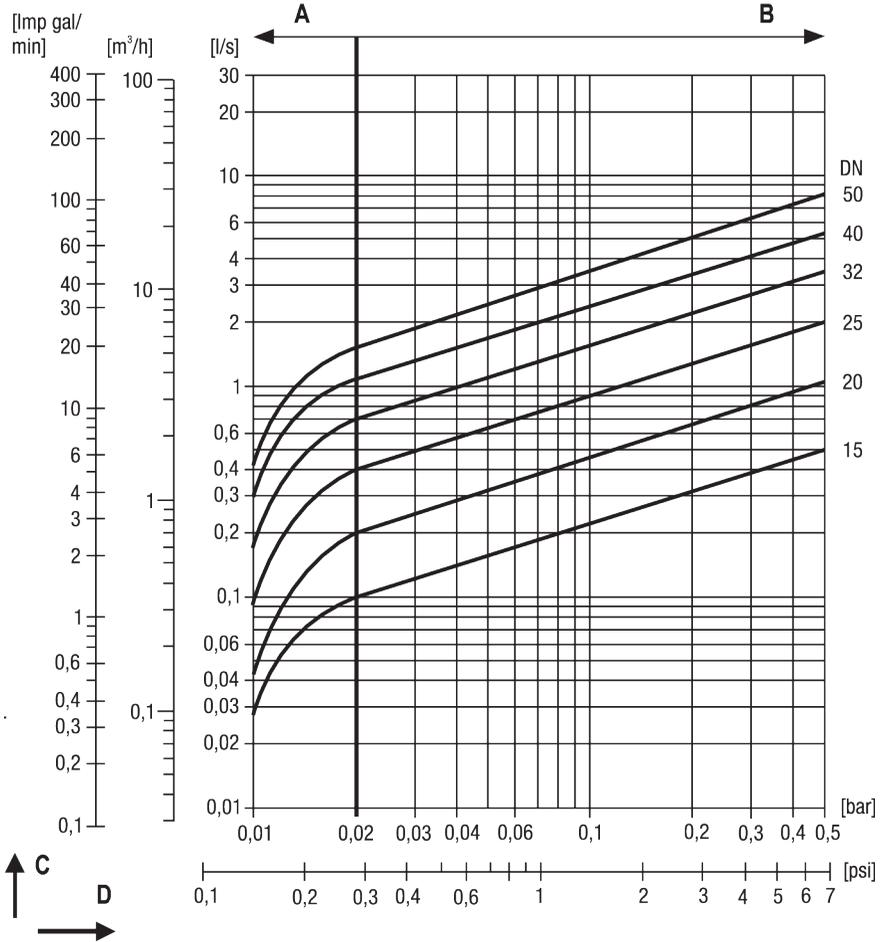
DN	Direction of flow			
	Without spring	With spring		
	Upwards	Upwards	Horizontal	Downwards
15	2.5	10.0	7.5	5.0
20	2.5	10.0	7.5	5.0
25	2.5	10.0	7.5	5.0
32	3.5	12.0	8.5	5.0
40	4.0	13.0	9.0	5.0
50	4.5	14.0	9.5	5.0

Pressure drop chart

The curves given in the chart are valid for water at 20 °C. To ascertain the pressure drop for other fluids, you have to calculate the equivalent water flowrate. The formula for this is given in the data sheet.

The values indicated in the chart are based on spring-loaded valves and horizontal flow. With vertical flow insignificant deviations occur only within the range of partial opening.

For more details please contact the manufacturer.



- A Partial opening / unstable range
- B Full opening / stable range
- C Equivalent water volume flow V_w
- D Pressure drop Δp

Declaration of Conformity – Standards and Directives

You can find details on the conformity of the equipment and the applicable standards and directives in the Declaration of Conformity and the relevant certificates.

You can download the latest Declaration of Conformity at www.gestra.com. You can request the relevant certificates by writing to the following address:

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28215 Bremen

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Phone +49 421 3503-0

Fax +49 421 3503-393

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Web www.gestra.com

Modifications to the equipment not approved by us will invalidate the Declaration of Conformity and the certificates.



You can find our authorized agents around the world at: www.gestra.com

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