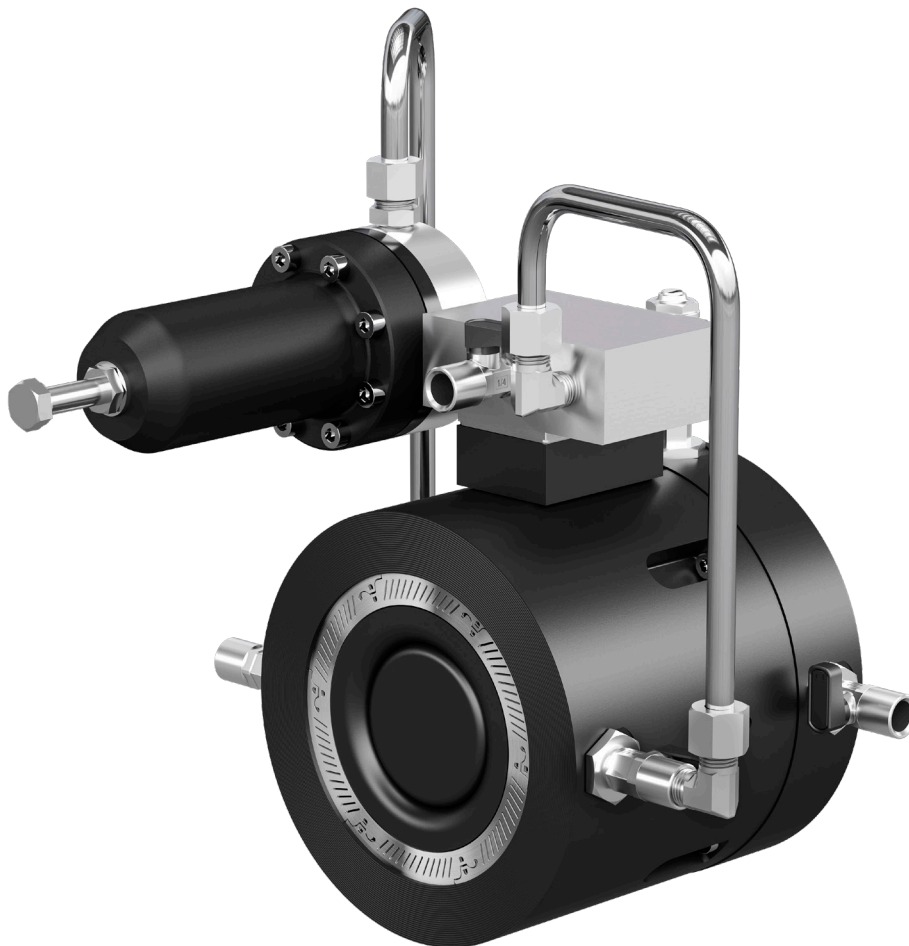


Operating instructions

NeoFlow Pressure Reducing Valve DN50-DN150



The NeoFlow Pressure Reducing Valve is Co-developed with OFUI

700278142

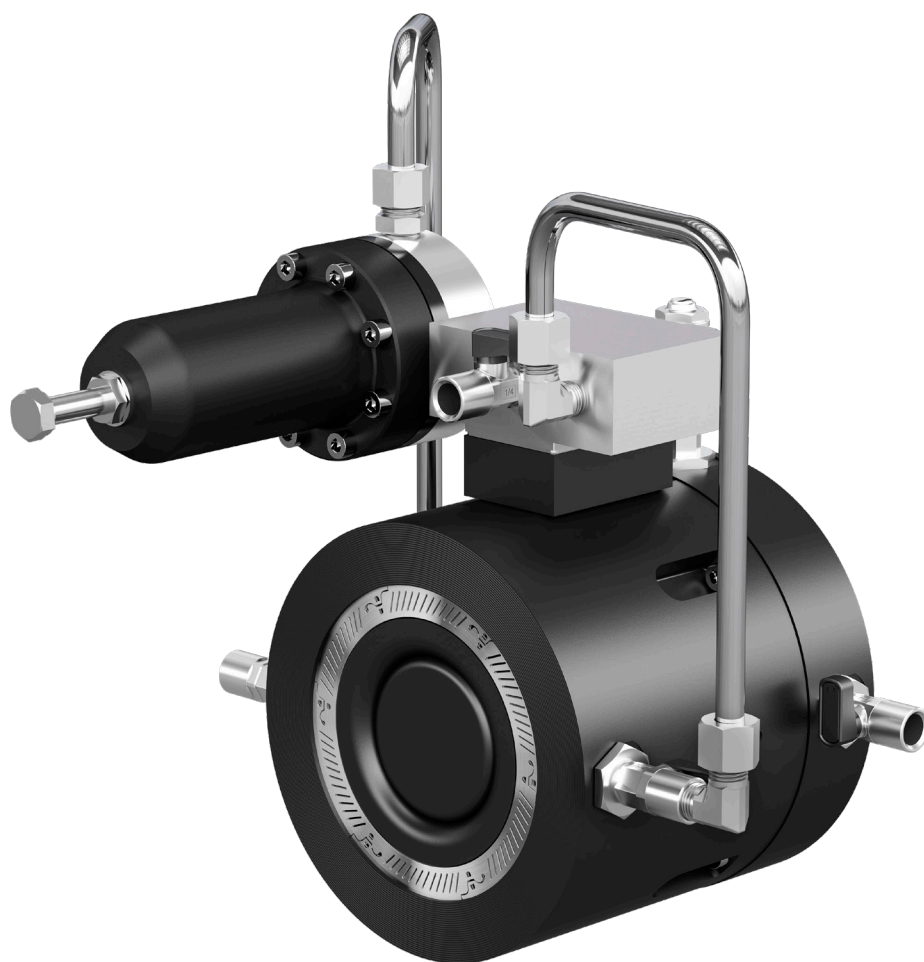
GFDO_MA_00049 / 02 (03.2023)

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8201 Schaffhausen/Schweiz

Instruction manual

NeoFlow pressure reducing valve
DN50-DN150



Translation of the original instruction manual

Disclaimer

The technical data within this document is not binding. It does not constitute expressly warranted characteristics, guaranteed properties or guaranteed durability. It is subject to modification. Our General Terms of Sale apply.

Observe instruction manual

The instruction manual is part of the product and an important element within the safety concept.

- ▶ Read and observe instruction manual.
- ▶ Always have instruction manual available by the product.
- ▶ Give instruction manual to all subsequent users of the product.

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1 Product description

1.1 Intended use

The pilot-controlled NeoFlow pressure reducing valve from Georg Fischer Piping Systems Ltd. was designed for the automatic pressure and flow control in networks for the supply and distribution of potable water.

The NeoFlow pressure reducing valve is designed to fit between standard PN10/PN16 flanges in a wafer-type arrangement. ANSI150 flange compatibility is also available (excl. DN80).

Foreseeable misuse

The NeoFlow pressure reducing valve may not be used as a pure shut-off valve. Media other than potable water as well as water containing an amount of disinfectant may only be used in consultation with a contact partner from Georg Fischer Piping Systems Ltd.. The use of solid matter in the medium can affect the function of the NeoFlow pressure reducing valve. For this reason, use is only recommended with an upstream strainer.

1.2 EC Manufacturer's declaration

The manufacturer Georg Fischer Piping Systems Ltd., 8201 Schaffhausen (Switzerland) explains that the NeoFlow pressure reducing valve fully complies with the standard "EN 1074-5 Valves for water supplies."

If the overall system does not comply with the requirements of an EC directive, then putting the NeoFlow pressure reducing valve is prohibited until the conformity of the overall system with the EC directive has been declared.

Fittings		Involved standards
NeoFlow	Pressure reducing valve	EN 1074-5

Changes to the fittings that could effect the stated technical data and the intended use, void this manufacturer's declaration. Additional information can be found in "GF planning fundamentals."

Schaffhausen, 08/12/2021

Bastian Lübke

Head of Global R&D

Georg Fischer Piping Systems Ltd.

CH-8201 Schaffhausen (Switzerland)



1.3 Technical data

1.3.1 Specifications

Specifications		
Pressure ratings and performance	Maximum inlet pressure P1	16 bar*
	Maximum outlet pressure P2	16 bar**
	Outlet pressure range	0.1 to 16 bar**
	Minimal pressure difference P1– P2	0.2 bar***
Materials	Casing	POM-C
	Piston	POM-C
	Elastomers	EPDM
	Fittings	Stainless Steel / Brass
	Pilot control	Stainless steel, POM-C, PTFE
Flanges	Metric: PN10/16 Imperial: ANSI 150	

*With medium temperature $\leq 20^{\circ}\text{C}$; $>20^{\circ}\text{C}$ on request **Depending on the pilot valve type ***Dependent on flow and size

1.3.2 Kv 100 values

DN (mm)	Inch (")	Kv 100 (m ³ /h)	Kv 100 (l/min)	Cv 100 (US gal./min)
DN50	2	30	500	35
DN80	-	73	1217	84
DN100	4	130	2167	150
DN150	6	266	4433	307

2 Safety Information

2.1 Observe instruction manual!

The instruction manual is part of the product and an important component within the safety concept. Non-observance may lead to severe injuries.

- Read and observe instruction manual.
- Always have instruction manual available by the product.
- Give instruction manual to all subsequent users of the product.

2.2 Commissioning and use by qualified personnel only

- Product and accessories should be exclusively put into operation by persons who have the necessary training, knowledge, or experience.
- Regularly instruct personnel on all questions regarding the local regulations applying to occupational safety and environmental protection, especially for pressurized pipes.

The following target groups are addressed in these operating instructions:

- **Operators:** Operators are instructed in the operation of the product and observe the safety guidelines.
- **Service staff:** The service staff have been professionally trained and carry out maintenance work.

2.3 Storage and transport

The product must be handled, transported and stored with care. Please note the following points:

- ▶ Transport and store the product in its unopened original packaging.
- ▶ Protect the product from harmful physical influences such as dust, heat, humidity and UV radiation.
- ▶ The product and its components must not be damaged either by mechanical or thermal influences.
- ▶ Check the product for general damage prior to installation.

2.4 Warning signals

In this instruction manual, warnings are used, which shall warn the user of death, injuries or material damage. Always read and observe these warnings!

DANGER!

Imminent danger!

Non-observance may result in major injuries or death.

- ▶ Measures to avoid the danger.

WARNING!

Possible danger!

Non-observance may result in serious injuries.

- ▶ Measures to avoid the danger.

CAUTION!

Dangerous situation!

Non-observance may result in minor injuries.

- ▶ Measures to avoid the danger.

ATTENTION!

Dangerous situation!

Non-observance may result in material losses.

2.5 Other applicable documents

Document	Code
GF Utility planning fundamentals	700671677
Quick start instructions NeoFlow pressure reducing valve DN50-DN150	700278143
NeoFlow pressure reducing valve DN50 - DN150 datasheet	

These documents are available through agents of GF Piping Systems or at www.gfps.com.

2.6 Pressure test of piping systems

The system test pressure (STP) must be determined for all pipes based on the system operating pressure (MDP). If the water surge pressure is not calculated (most frequent case), the following calculation applies with the assumed system operating pressure (MDPa):

$$\text{STP} = \text{MDPa} + 5.0\text{bar and STP} = 1.5 \cdot \text{MDPa}$$

The lesser value of these should be selected.

Based on the breaking points of the pipe material, the following maximum test pressures must be observed:

SDR17: $\text{STP}_{20^\circ\text{C}} \leq 12 \text{ bar}$

SDR11: $\text{STP}_{20^\circ\text{C}} \leq 21 \text{ bar}$

CAUTION!

Maximum permissible test pressure!

Danger of injury and/or material damage due to leaks in the piping system due to the wrong test pressure.

- ▶ Pressure test for piping systems with $\text{SDR11} \leq 21 \text{ bar}$ and $\text{SDR17} \leq 12 \text{ bar}$.
- ▶ The component of the piping system with the lowest PN determines the maximum allowable test pressure in the piping section.
- ▶ For detailed information see the GF Utility planning fundamentals.

3 Further symbols and abbreviations

3.1 Symbols

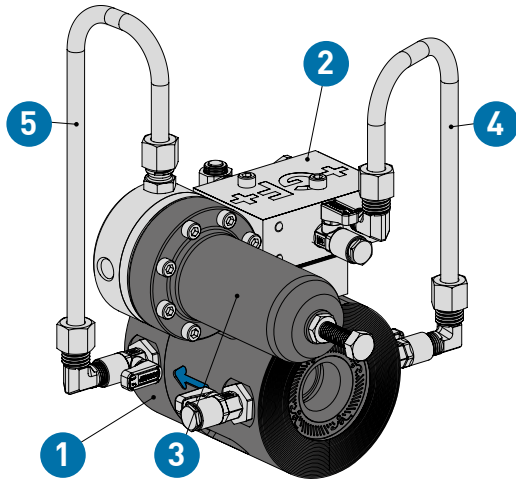
Symbol	Indication
•	Listed in no particular order.
▶	Call for action: Here, something must be done.
1.	Call for action in a certain order: Here, something has to be done in the specified order.

3.2 Abbreviations

Abbrevia- tion	Indication
AS	Adjusting screw pilot valve
Cv	Flow factor (US gal./min)
DN	Nominal diameter
DV	Damping valve
KH	Ball valve
Kv	Flow factor
PN	Nominal pressure
PRV	NeoFlow pressure reducing valve
P1	Inlet pressure
P2	Adjustable outlet pressure

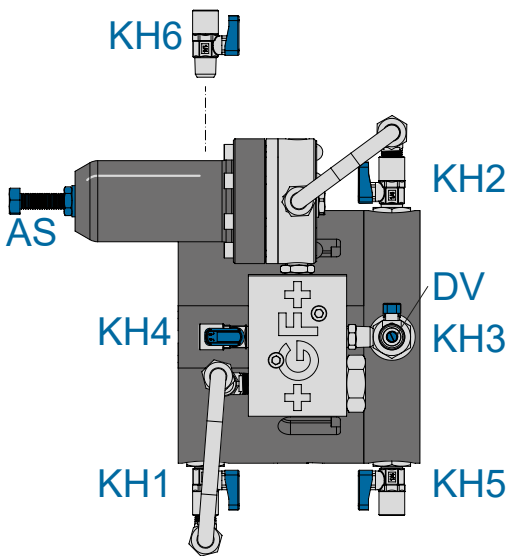
4 Design and function

4.1 Subassemblies



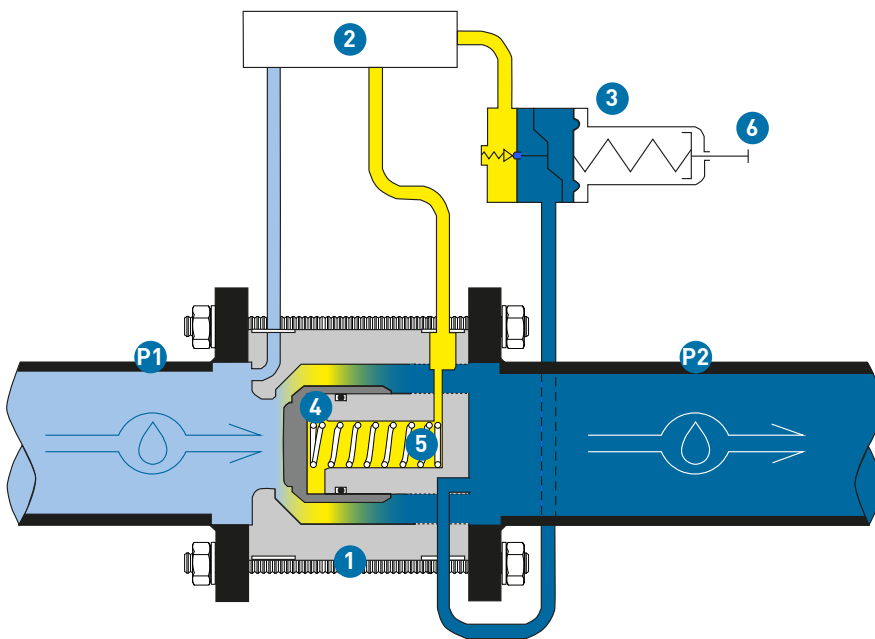
No.	Designation
1	Main body
2	Control block
3	Pilot valve
4	Inlet control line
5	Outlet control line
←	Direction of flow medium

4.2 Designations of the valves



Ball valve	Designation
KH1	Ball valve inlet
KH2	Ball valve outlet
KH3	Ball valve control chamber
KH4	Ball valve control block
KH5	Ball valve outlet side (manometer connection)
KH6	Ball valve inlet side (manometer connection)
DV	Damping valve
AS	Adjusting screw pilot valve

4.3 Mode of operation

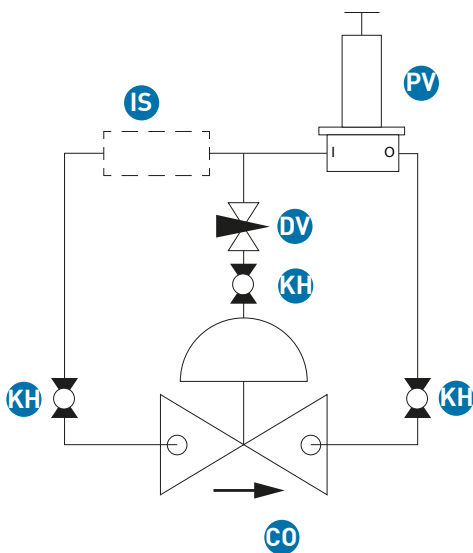


Number	Designation
1	Main body
2	Control block
3	Pilot valve
4	Valve piston
5	Control chamber
6	Adjusting screw pilot valve
P1	Inlet pressure
P2	Adjustable outlet pressure

The axial movement of the valve piston (4) in the main body (1) results in flow changes in the NeoFlow pressure reducing valve and thus regulates the existing outlet pressure (P2). The position of the valve piston (4) is regulated by the prevalent pressure of the control area (5).

Turning the adjusting screw (6) on the pilot valve (3) sets the desired outlet pressure (P2). Depending on the existing outlet pressure (P2), the media flow in the pilot valve is changed (3). This change of the medium flow results in the adjustment of the pressure in the control area (5) via the control block (2). To equalize the pressure, the valve piston (4) moves axially in the main body (1).

Block wiring diagram



Number	Designation
PV	Pilot valve
IS	Control block with integrated strainer
KH	Ball valve
DV	Damping valve
CO	Controller

5 Installation process

⚠ ATTENTION!

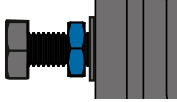
Danger of breaking by faulty lifting!

The NeoFlow pressure reducing valve may not be lifted or rested on the pilot valve or the control lines.

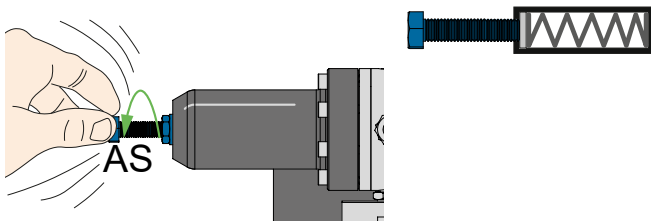
- ▶ For dimensions \leq DN150 lift the NeoFlow pressure reducing valve only at the main body.

5.1 Carrying out the basic setup

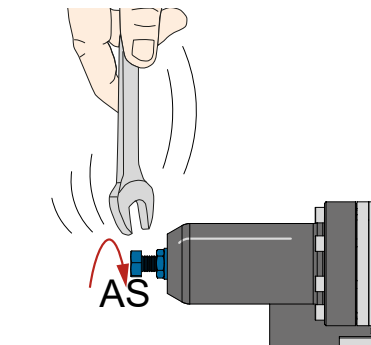
1. Loosen lock nut.



2. Fully open the adjusting screw pilot valve (AS) counterclockwise until the pilot spring is released ($P_2=0$ bar). Note: if the pilot spring is fully released, the adjusting screw pilot valve (AS) can be turned manually without resistance.



3. Slowly increase the spring tension of the pilot spring by turning the adjusting screw pilot valve (AS) clockwise (starting point: spring fully released, $P_2=0$ bar). Set the desired outlet pressure P_2 according to the following table. Example: black spring: desired outlet pressure 4 bar \approx 10 revolutions in clockwise direction.



Color coding of the pilot valve spring	Set pressure range (bar [g])	Sensitivity of the setting (bar/revolution)
Silver	0.0 - 3.0	0.18
Black	1.0 - 8.0*	0.43
Red	1.0 - 16.0	1.53

*Standard version

⚠ ATTENTION!

Default outlet pressure!

The outlet pressure is default on delivery.

- ▶ The default outlet pressure of the NeoFlow pressure reducing valve with black color coding of the pilot valve spring is 3 bar.

⚠ CAUTION!

Use of an incompatible NeoFlow pressure reducing valve type!

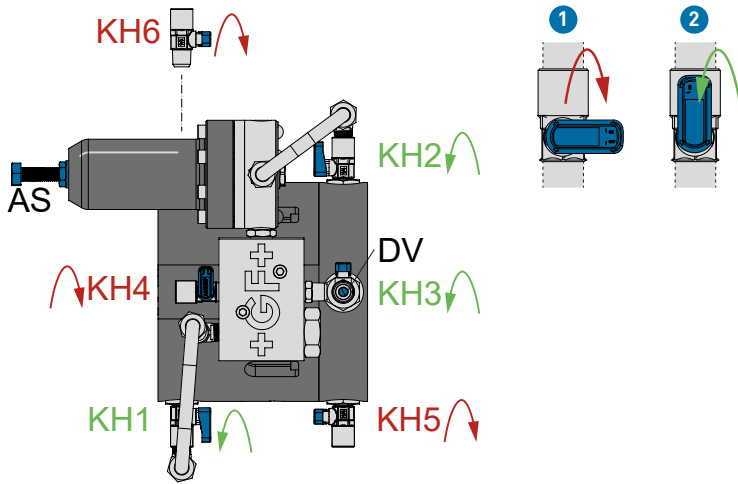
The manufacturer's specifications regarding the maximum pressure difference between the inlet pressure and the outlet pressure must be complied with.

- ▶ Non-compliance can result in injury as well as material damage to the valve and piping system.
- ▶ Only use the NeoFlow pressure reducing valve type that is matched to the pressure range.

4. Open ball valves KH1, KH2 and KH3 and make sure that KH4, KH5, and KH6 are closed.

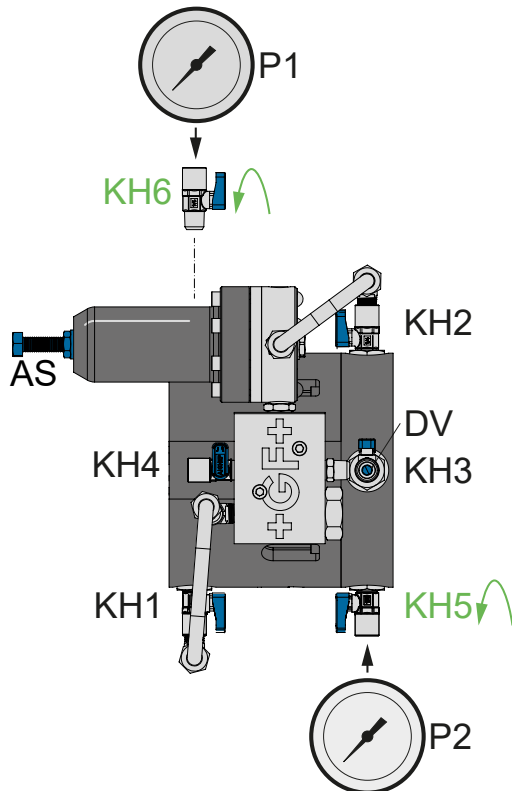
Position 1: Ball valve KH closed

Position 2: Ball valve KH open

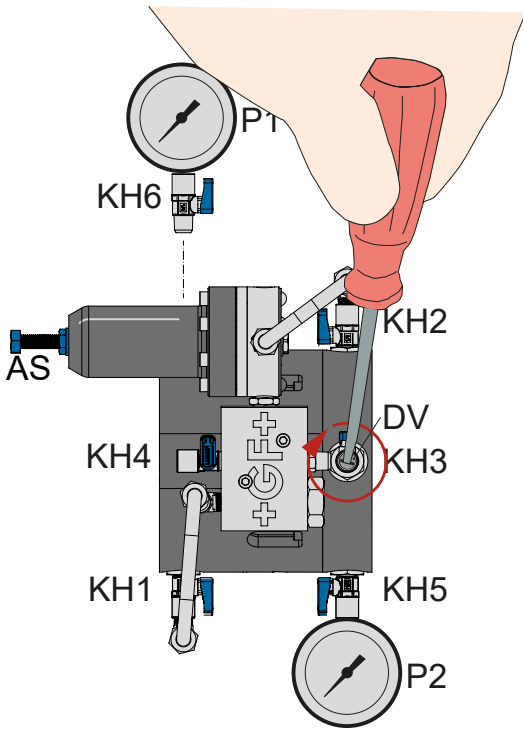


5. To allow monitoring of inlet pressure P1 and outlet pressure P2, it is recommended to connect a manometer to the ball valves KH6 (inlet pressure P1) and KH5 (outlet pressure P2).

- ▶ Connect the manometer and then open KH5 and KH6.
- ▶ If no manometers are connected, keep KH5 and KH6 in the closed position.



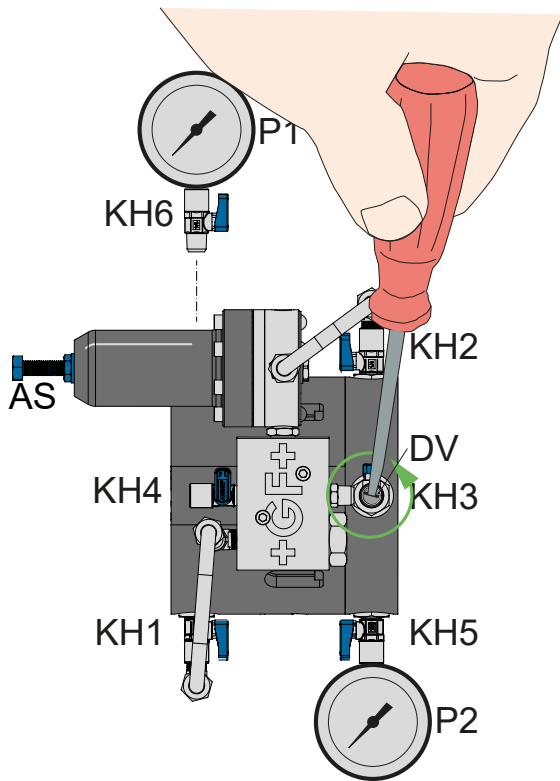
6. Fully close the damping valve (DV) with a slotted screwdriver clockwise until a resistance is felt.



The damping valve (DV) can be used to set the reaction time with which the stability of the control loop within the NeoFlow pressure reducing valve can be changed.

Reduction of the reaction time can improve the stability of the control loop. This makes the pressure cycle in the NeoFlow pressure reducing valve less susceptible to pressure fluctuations.

7. Open the damping valve (DV) counter clockwise according to the following table depending on the nominal diameter of the NeoFlow pressure reducing valve.



Nominal diameter (mm)	DV turns in the counter clockwise direction
DN50	2.5
DN80	2.5
DN100	3
DN150	3.5

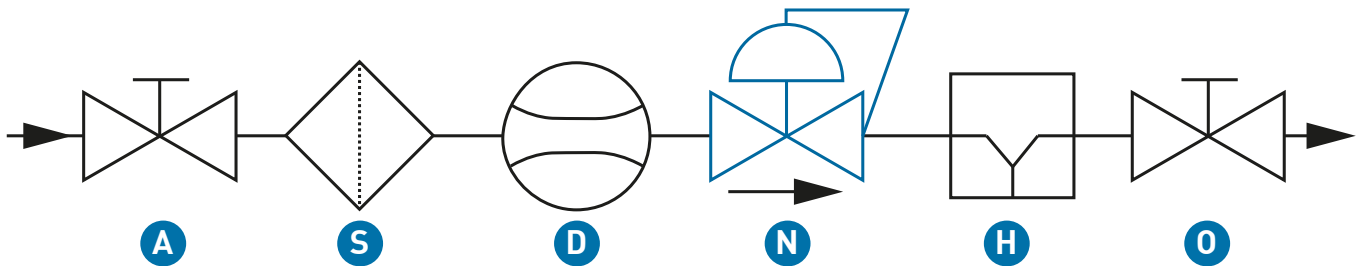
5.2 Installation area

5.2.1 Selection of the installation area

- ▶ Leave enough room for the installation, setting, and removal of the NeoFlow pressure reducing valve.
- ▶ If needed, additional measures must be made for the pilot regulator to protect it against frost, adverse effects of the weather, and floods.
- ▶ In case of unclear operating conditions, consult with a contact partner from GF Piping Systems.

5.2.2 Arrangement of the fittings

The following configuration is recommended for the installation.

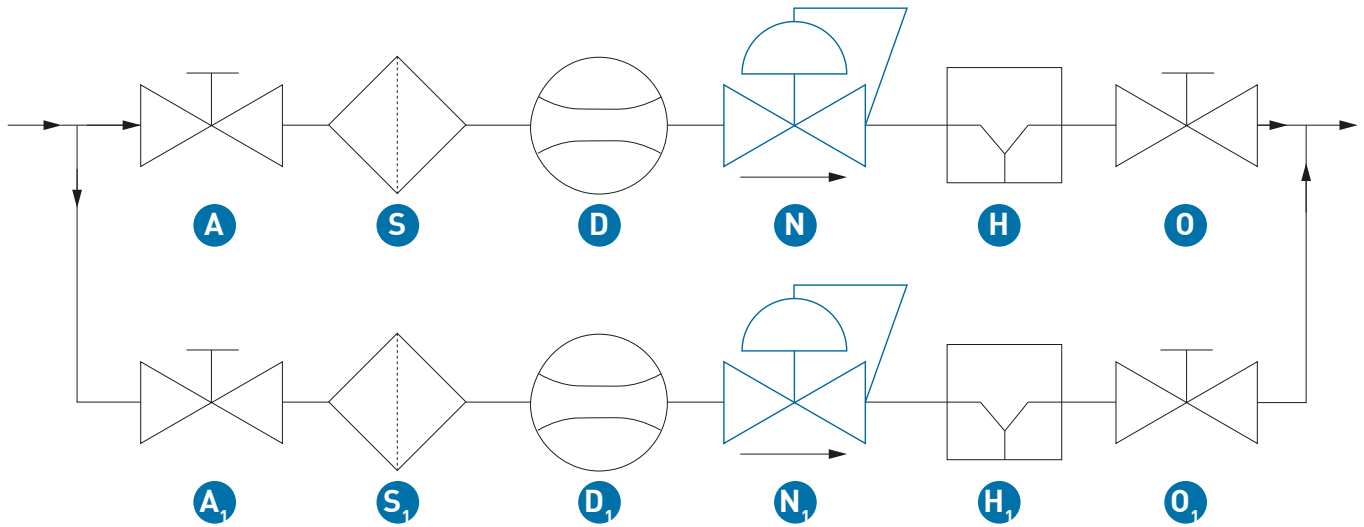


Letter	Fittings
A	Shut-off valve inlet
S	Strainer
D	Flow meter
N	NeoFlow pressure reducing valve
H	Hydrant/branch (recommended)
O	Shut-off valve, outlet side

5.2.3 Configuration of the fittings with bypass lines

For existing installations with bypass lines, the following configuration is recommended.

- The shut-off valves must be securely connected to the bypass line before the NeoFlow pressure reducing valve is put into operation.



Letter	Fittings
A	Shut-off valve inlet
S	Strainer
D	Flow meter
N	NeoFlow pressure reducing valve
H	Hydrant/branch (recommended)
O	Shut-off valve, outlet
A ₁	Bypass shut-off valve on the inlet (optional)
S ₁	Bypass strainer (optional)
D ₁	Bypass flow meter (optional)
N ₁	Bypass NeoFlow pressure reducing valve (optional)
H ₁	Bypass hydrant/branch (recommended) (optional)
O ₁	Bypass shut-off valve, outlet side (optional)

5.3 Installation

5.3.1 Preparations

- ▶ Make sure that all pipe parts are flushed prior to the installation. The pipes must be free of wood chips, scale, or other desposits.
- ▶ To prevent contamination, make sure that disinfection procedures are used on all connections.
- ▶ Ensure that the NeoFlow pressure reducing valve is suited for the operating conditions, see type plate. The use in unsuitable operating conditions can result in damage.
- ▶ Check the product for damage before installation. Do not use a damaged or defective product.

5.3.2 Installation within the piping system

Required tools

- Spanners/sockets (full set)
- Slotted screwdriver
- Torque wrenches
- Allen/hex keys (full set, ball-ended)

CAUTION!

Damage to the piping system through the effect of forces!

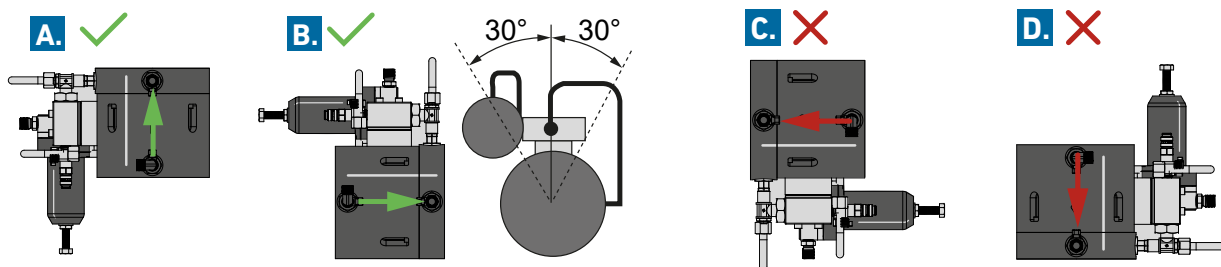
Danger of injury and/or material damage due to leaks in the piping system.

- ▶ Reduce the forces of thermal expansion of the piping system with the use of suitable fixed points.

Mounting position

Mounting positions A and B are recommended (green check). Mounting positions C and D are not recommended (red cross).

- ▶ Observe the flow direction, see arrow.



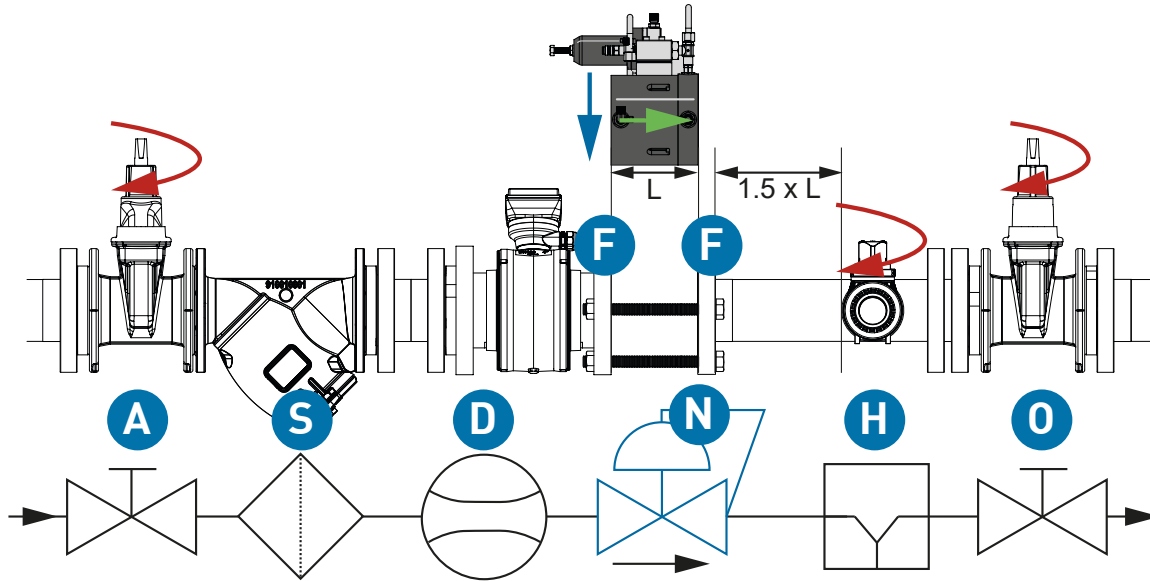
Mounting position 1

- ▶ With vertically mounted pipes, the flow may only take place upwards.

Mounting position 2

- ▶ With horizontally installed pipes, the pilot system must be on top (deviations with an angle of max. +/-30°).

Installation



Letter	Designation
A	Shut-off valve inlet
S	Strainer
D	Flow meter
N	NeoFlow pressure reducing valve
H	Hydrant/branch
O	Shut-off valve, outlet side
F	PP steel flange

- ▶ Make sure that the inlet and outlet shut-off valves (A + O) and the hydrant (H) are closed.
- ▶ We recommend use of a PP steel flange with a suitable profile seal.
- ▶ On one side of the NeoFlow pressure reducing valve, a space of at least 1.5 times the valve length must be maintained for access to the flange bolts. Ensuring that the bolts for the flange connection can be installed at least on one installation side.
- ▶ Take into account high temperature difference during installation – retighten flange connections.
- ▶ Installation of the flange connection according to the information in the GF planning fundamentals.

⚠ WARNING!

Danger of material damage due to excessive pressure!

If the NeoFlow pressure reducing valve (N) is put into operation without a hydrant (H), excessive outlet pressure P2 on the NeoFlow pressure reducing valve (N) can lead to damage in the piping system.

- ▶ Recommendation: use a hydrant (H).
- ▶ When putting into operation without a hydrant (H): open the outlet shut-off valve (O) only slightly to be able to control the pressure.

⚠ WARNING!

Leaking flange connection!

Danger of injury and/or damage to property due to leaking flange connections.

- ▶ Periodic check that no media escapes to the outside.
- ▶ If media is exiting at the flanged connectors, they have to be retightened.
- ▶ Include the flange and collar thickness when calculating the bolt lengths.
- ▶ Protect jointing faces and connection parts from damage and poisoning, especially from hard or sharp-edged particles.

5.4 Initial operation

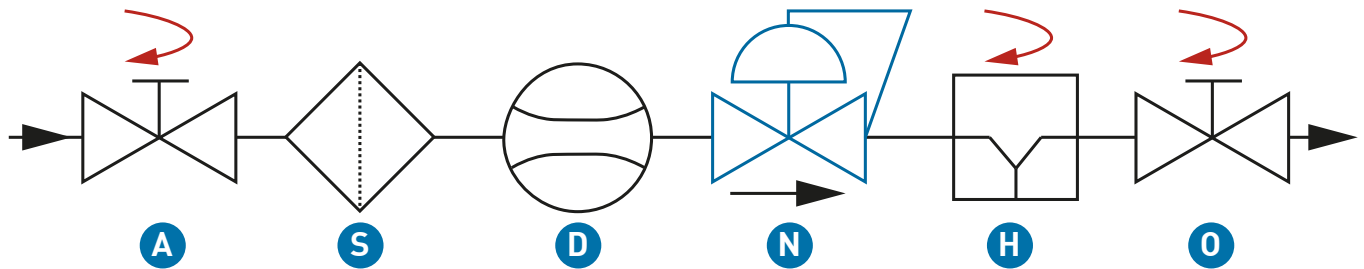
⚠ CAUTION!

Danger of material damage in the pipeline system.

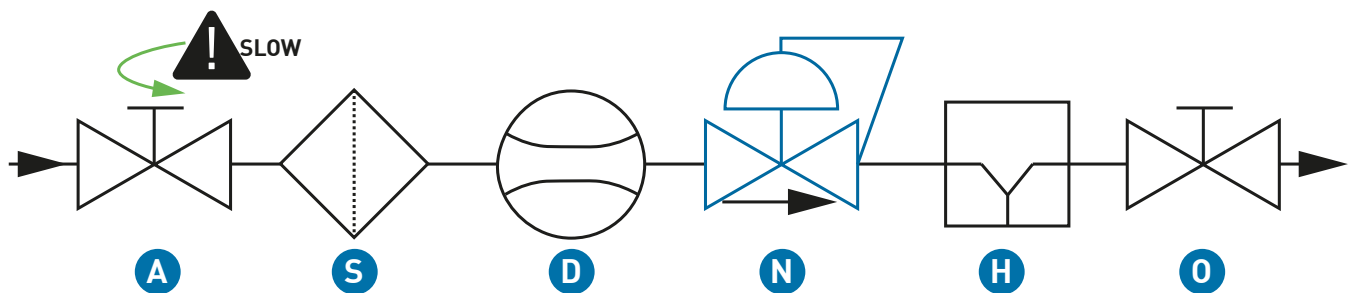
When commencing the initial operation via the main pipeline there is the danger that the initial pressure is too high and the pipeline system is damaged.

- ▶ Starting the initial operation with an outlet hydrant (H) is recommended.
- ▶ To protect the NeoFlow pressure reducing valve (N) from mechanical strain, all components of the pipeline system must be securely fastened to the ground or another solid object before commencing the operation of the system.

1. Make sure that the inlet and outlet shut-off valves (A and O) and the hydrant (H) are fully closed.



2. Open the inlet shut-off valve (A) slowly.



⚠ WARNING!

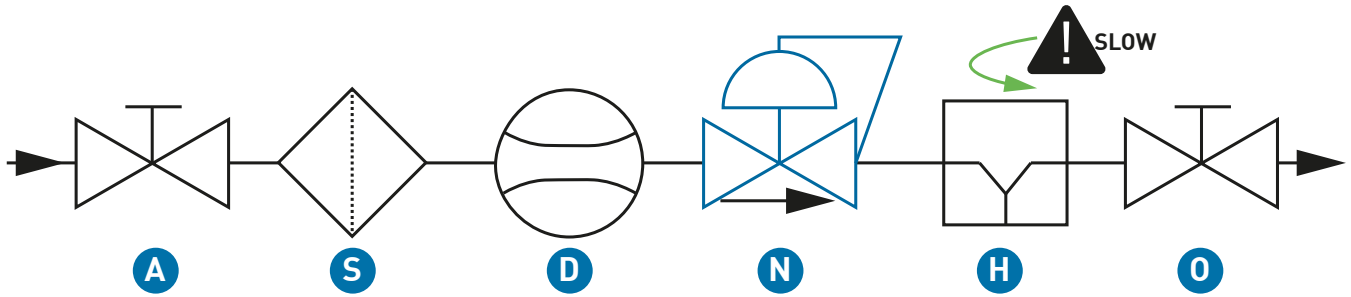
Risk of injury due to uncontrollable exit of the medium!

If the NeoFlow pressure reducing valve (N) is leaking or the ball valves KH 4-6 on the NeoFlow pressure reducing valve (N) are not closed, the medium may exit uncontrollably under high pressure.

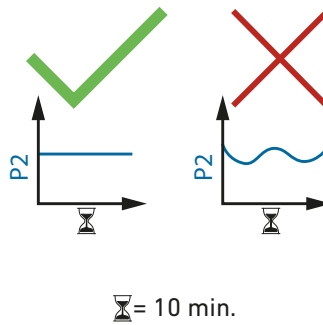
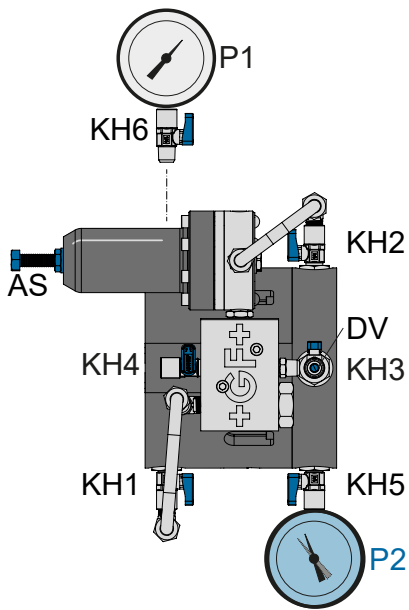
- ▶ Assume a protected working position.
- ▶ Wear protective clothing, if required.
- ▶ In case of leaks: close the inlet shut-off valve (A).
- ▶ Close the ball valves KH4-6 when not in use.

3. Carefully check the piping system for leaks.

- Open the hydrant (H) slowly. Allow a suitable flow rate to pass through the NeoFlow pressure reducing valve (N). Depending on the dimension: for example, DN100 5 l/s up to 10 l/s.



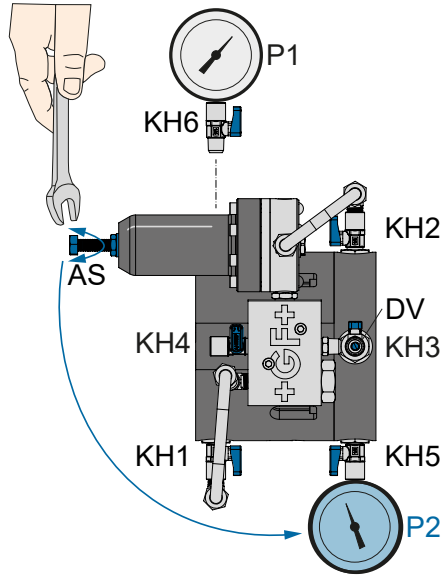
- With an outlet manometer KH5 check the outlet pressure P2 for stability after 10 minutes. The outlet pressure P2 is reached depending on the inlet pressure, the position of the adjustment bolt on the pilot valve, and the opening of the hydrant (H).



6 Operation

6.1 Setting outlet pressure P2

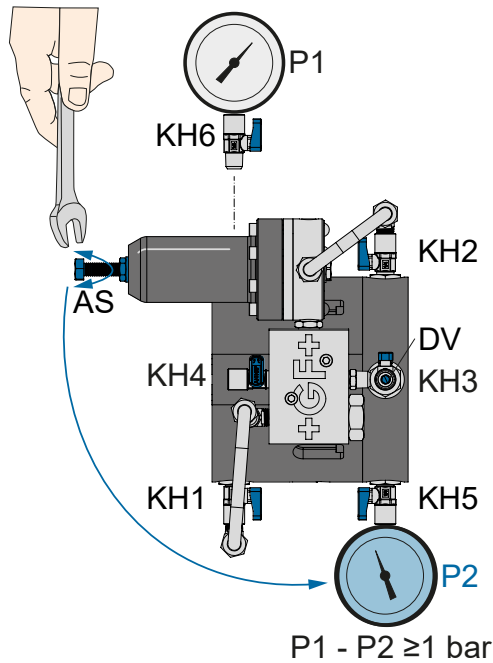
1. Slowly increase or decrease the spring tension of the pilot spring (AS) by turning the adjusting screw pilot valve to achieve the desired outlet pressure P2. The following table provides information for this purpose. Ensure a change in the outlet pressure P2 takes place via an outlet manometer at KH5.



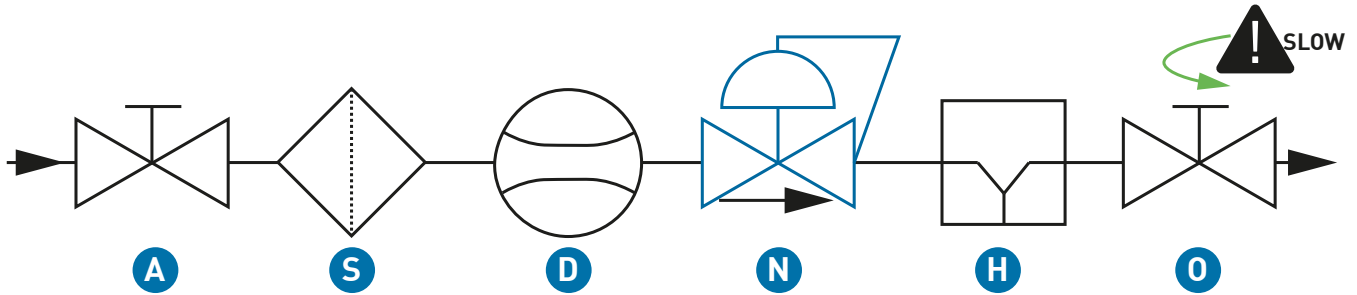
Color coding of the pilot valve spring	Set pressure range (bar [g])	Sensitivity of the setting (bar/revolution)
Silver	0.0 - 3.0	0.18
Black	1.0 - 8.0*	0.43
Red	1.0 - 16.0	1.53

*Standard version

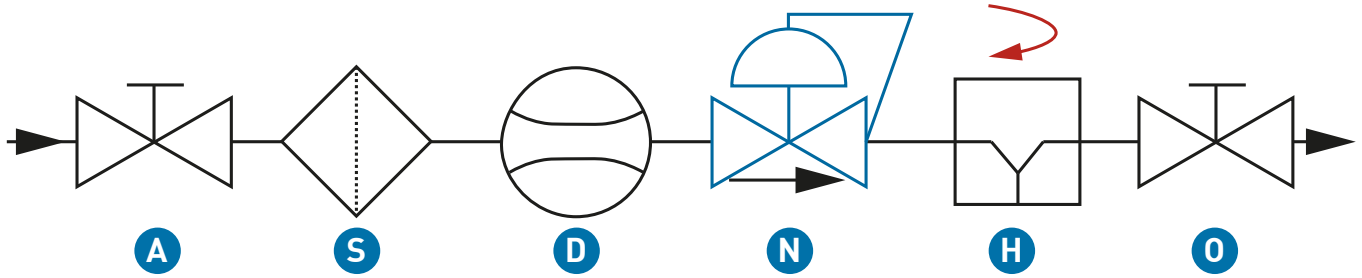
2. Make sure that the difference between the inlet pressure P1 with an inlet manometer KH6 and outlet pressure P2 with an outlet manometer KH5 is at least 1 bar.



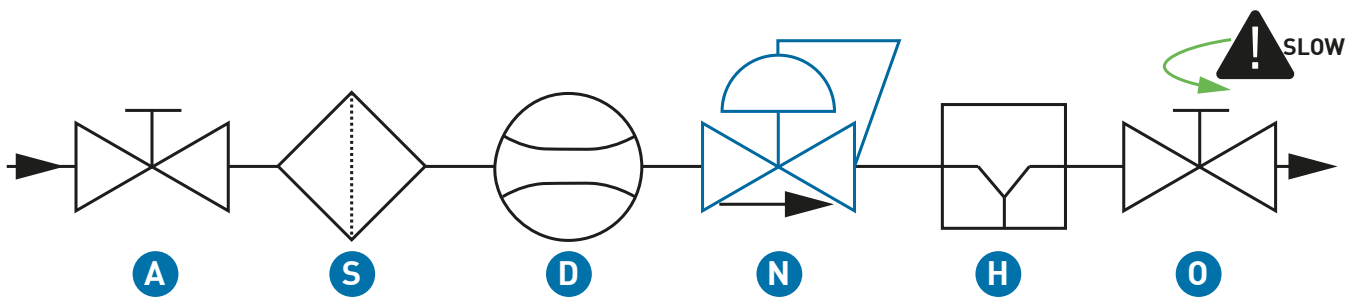
3. Slightly open the outlet shut-off valve (O) slowly.



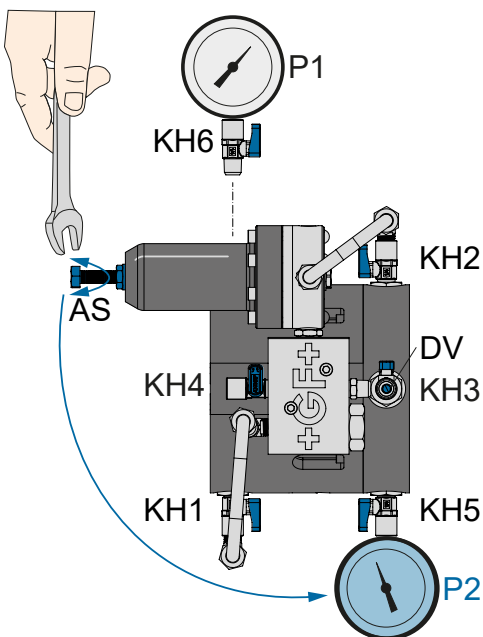
4. Fully close the hydrant (H) slowly.



5. Fully open the outlet shut-off valve (O).



6. Using the adjusting screw pilot valve (AS) to finalise the setting of the desired outlet pressure P2 (shown on the outlet manometer at KH5) and fix it with a locking nut.



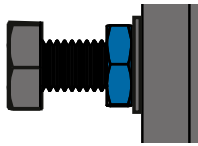
⚠ CAUTION!

Danger of displacement of the adjusting screw pilot valve (AS) during tightening of the locking nut!

Potential unintended change of the nominal pressure.

- ▶ Always fix the adjusting screw pilot valve (AS) during tightening of the locking nut.
- ▶ Check the nominal pressure of manometer KH5 after tightening the locking nut.

7. Tighten carefully.



CAUTION!

Loud noises!

Under extreme conditions, loud noises may appear.

- ▶ Use of appropriate hearing protection recommended.

7 Service

WARNING!

Maintenance by qualified personnel only!

Incorrect handling can damage the NeoFlow pressure reducing valve.

- ▶ Only allow maintenance by persons who have the required training, knowledge or experience.

WARNING!

Uncontrolled exit of the medium due to residual pressure!

Uncontrolled exit of the medium and/or flowing out of the medium from the open pipe and/or the valve.

- ▶ Do not use the NeoFlow pressure reducing valve as an end fitting.
- ▶ Completely relieve pressure from the pipe before dismantling.
- ▶ Open ball valves slowly!
- ▶ Do not stand in the outlet direction of the exiting medium.
- ▶ Use eye protection.
- ▶ Take suitable precautions to ensure that the outflowing medium is collected safely.
- ▶ Allow the valve to drain in a vertical position and collect the medium during the process.

CAUTION!

Leaking due to incompatible components!

Danger of injury and/or material damage due to exiting liquids due to incompatible components.

- ▶ Ensure the compatibility of the specifications of the valve and piping system prior to installation.

7.1 Regular valve inspection

The following maintenance tasks must be carried out as part of the regular valve inspection.

Maintenance interval*	Maintenance task
As required, no later than after one year	Clean/rinse the strainer and control system & functional test, see „7.2 Cleaning filter and control system“ on page 23.
As required, no later than every 5 years	Maintenance of the control system (pilot valve, control block), see „7.5 Maintenance of the control system“ on page 30.
As required, no later than every 5 years	Maintenance of the valve body (o-rings, strainer), see „7.5.3 Main body seals“ on page 34.

* Depending on the quality of the pipe and the water, other maintenance intervals may be necessary.

After finalizing the maintenance tasks, please make sure you follow the steps outlined in chapter „5 Installation process“ on page 11 and chapter „6 Operation“ on page 20.

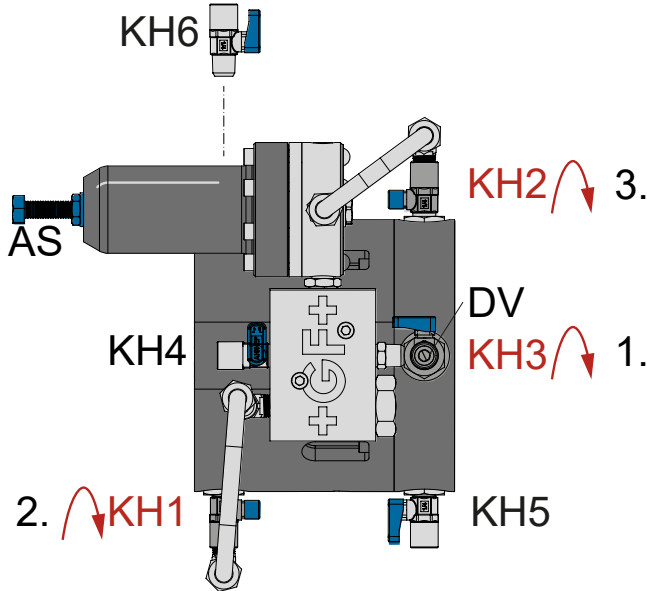
7.2 Cleaning filter and control system

⚠ ATTENTION!

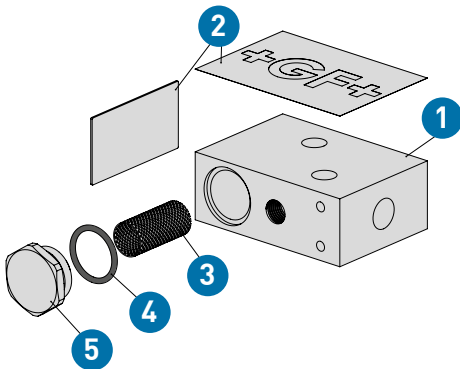
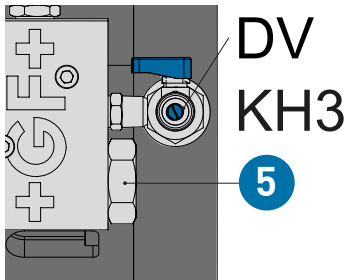
The filter and control system of the NeoFlow pressure reducing valve can be serviced and cleaned under pressure.

► For this purpose, the ball valves KH1-6 must be in the stated position.

1. Close the ball valves KH1-3 in in the following order: KH3, KH1, KH2



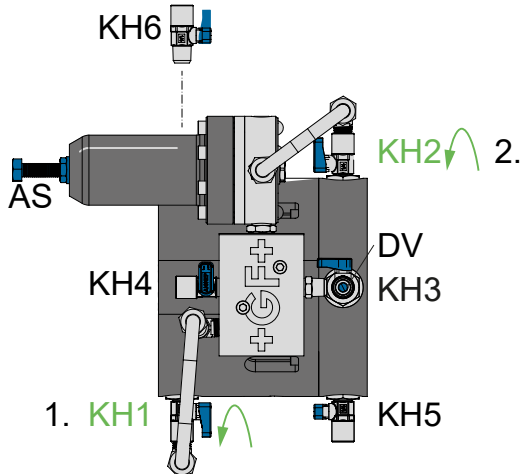
2. Carefully unscrew the filter sealing plug (5) and remove the filter (3).



No.	Designation
1	Control block main body
2	Label
3	Filter
4	O-ring sealing plug
5	Filter sealing plug

3. Clean the filter (3) with clear water.

4. Flush the control system with water by slowly opening KH1 and KH2 carefully after each other.



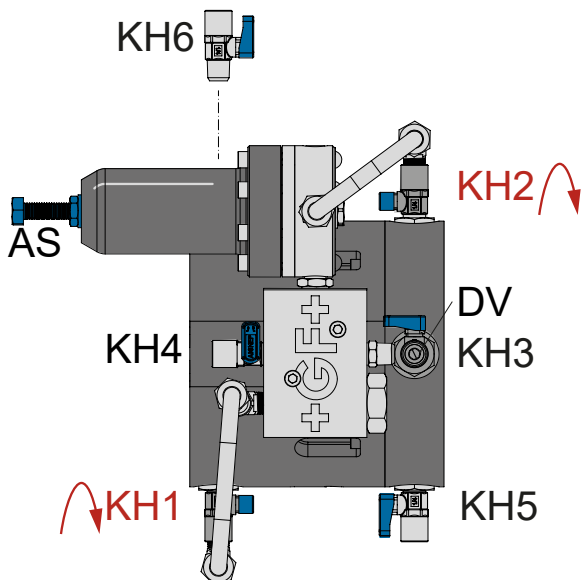
CAUTION!

Exiting medium!

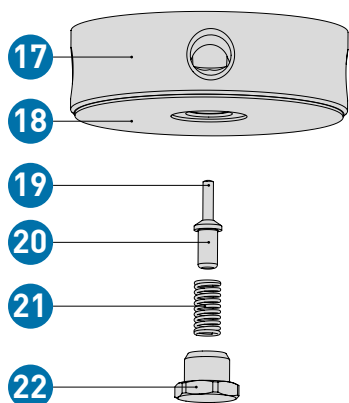
If the sealing plug is removed, the medium exits uncontrollably from the control block main body (1).

- ▶ Assume a protected position.
- ▶ Only open ball valves slowly.
- ▶ Securely collect the medium.

5. As soon as no more soiling is visible, close KH1 and KH2 again.



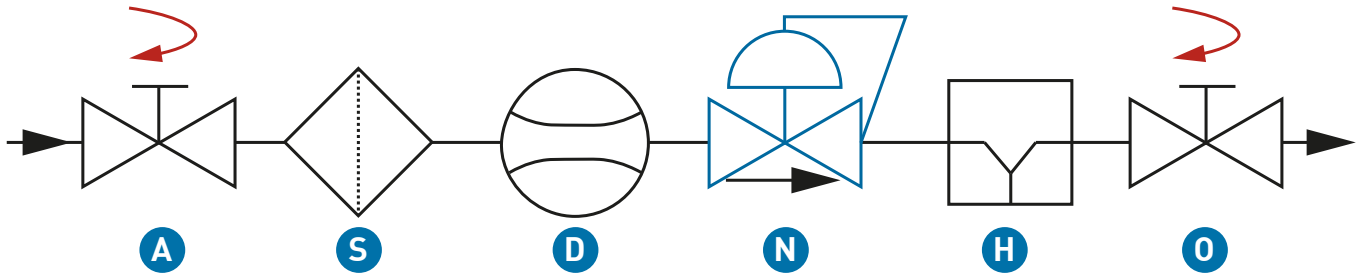
6. If possible, blow out the interior of the control block main body (1) using compressed air.
7. Check the sealing plug o-ring (4) and the filter (3) for wear and replace them, if required.
8. Reinsert the filter (3) into the control block (1).
9. Mount the filter sealing plug (5) with the o-ring sealing plug (4). Check the correct positioning of the o-ring sealing plug (4).



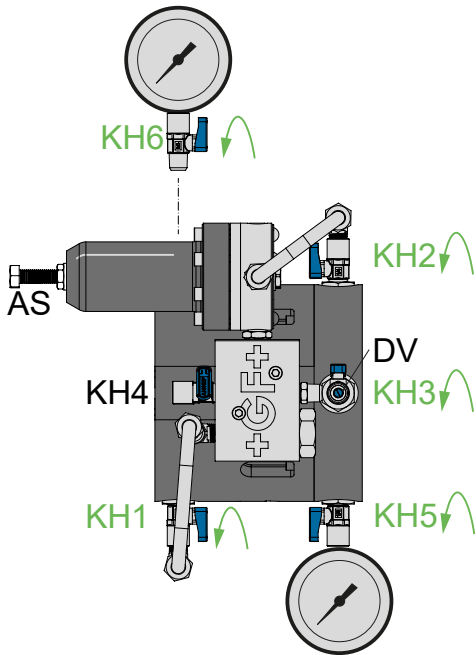
10. To clean the pilot valve, unscrew the sealing plug (22), remove the control spring (21) and control cylinder (20) with the actuator pin (19) and blow out using compressed air.
11. Clean the sealing plug (22) and reassemble, glue the sealing plug (22) with bolt retention. Notice: After opening, the threads must be thoroughly cleaned and coated with sealing drinking water-safe thread glue during assembly, e.g. Weiconlock AN 302-43, Loctite 577. Observe the instructions of the thread glue manufacturer.

7.3 Removal of the NeoFlow pressure reducing valve

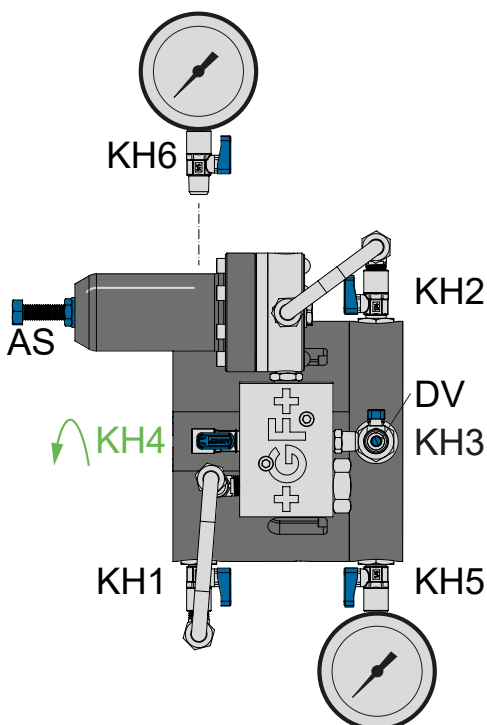
1. Shut off the NeoFlow pressure reducing valve with the two shut-off valves on the inlet and outlet (A and O).



2. Make sure that all KH1-3 and KH5-KH6 are open.



3. Carefully open KH4 to reduce the pipe pressure.



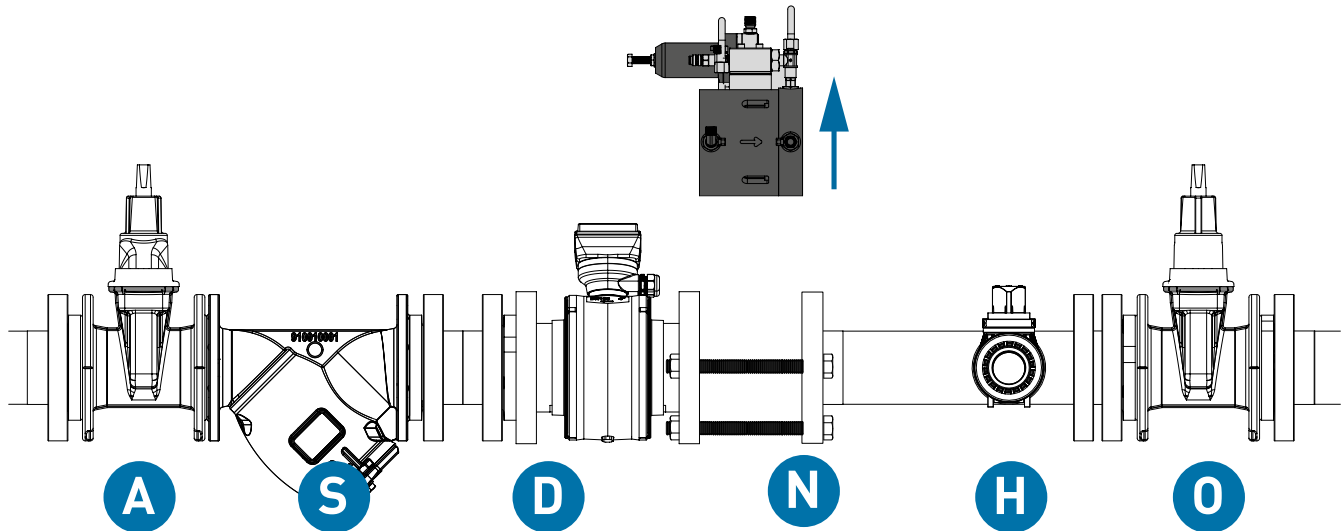
⚠ CAUTION!

Exiting medium!

If KH4 is open, the medium exits uncontrollably from the ball valve. This may lead to injury or material damage.

- ▶ Assume a protected position.
- ▶ Only open ball valves slowly.
- ▶ Securely collect the medium.

4. Remove the NeoFlow pressure reducing valve. Use tools suitable for the removal and make sure that there is no mechanical strain on the piping system.



⚠ ATTENTION!

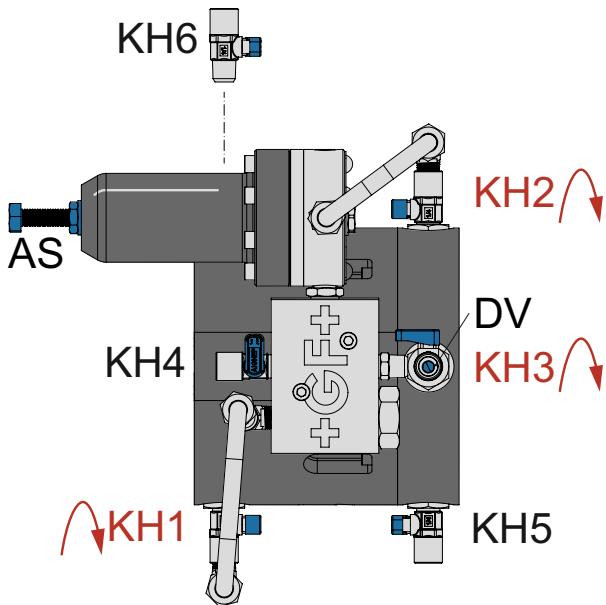
Exiting medium!

The remaining medium between the shut-off valves A and O in the piping system may exit uncontrollably from the piping system when removing the NeoFlow pressure reducing valve.

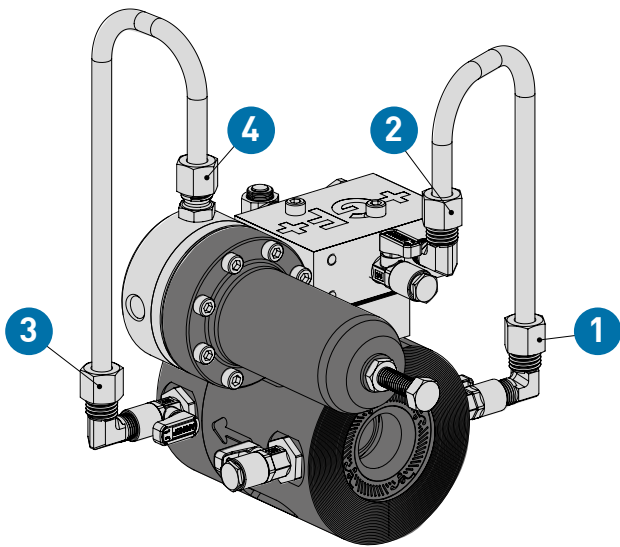
- ▶ Shut off the the shut-off valves on the inlet and outlet (A and O) in advance.
- ▶ Reduce the pipe pressure in advance.
- ▶ Assume a protected position.
- ▶ Securely collect the medium.

7.4 De-installation of the control system

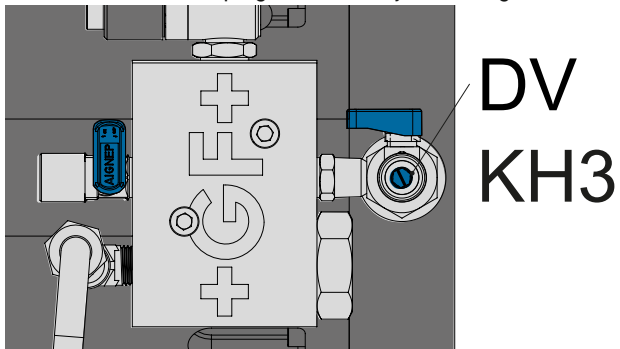
1. Remove the valve from the pipe network.
2. Bring the ball valves KH1-3 into the closed position.



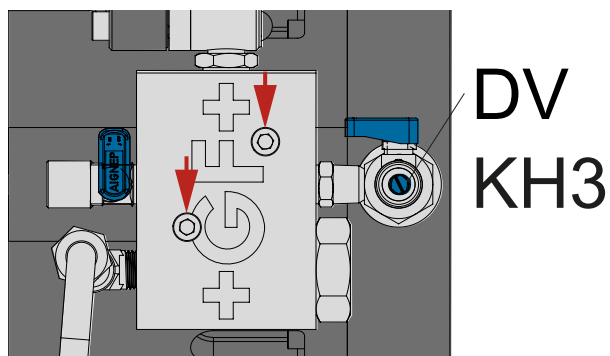
3. Completely loosen the nuts of the control lines (1-4) to remove the control lines on the inlet and outlets.



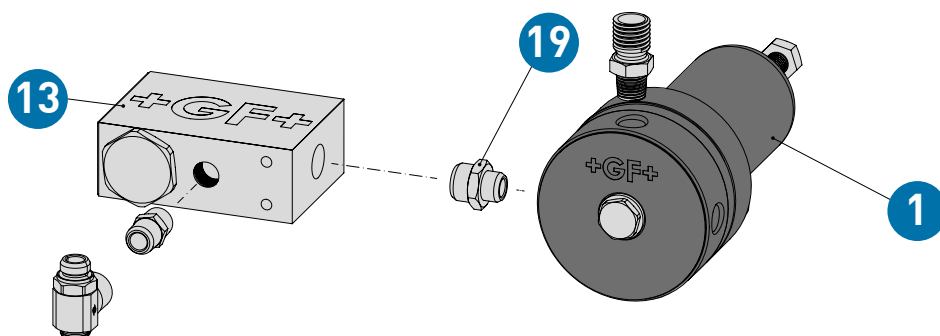
4. Release the damping valve (DV) by loosening the retaining ring.



- Remove both bolts from the control block and lift the control system off the main body. Notice: The bolts are located underneath the "+GF+" sticker. The film can be penetrated by a pointy object, e.g. a screwdriver.



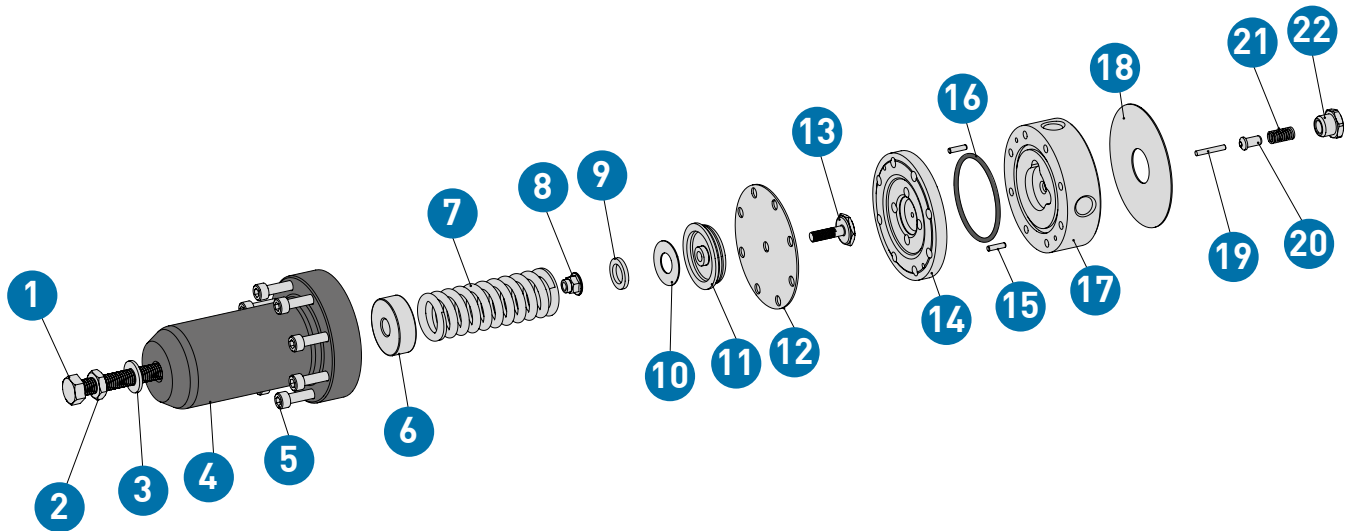
- Loosen the transition nipple (19) between the control block (13) and the pilot valve (1) to separate the two subassemblies. Notice: The transition nipples are glued in with sealing thread glue. After opening, the threads must be thoroughly cleaned and coated with sealing drinking water-safe thread glue during assembly, e.g. Weiconlock AN 302-43, Loctite 577. Observe the instructions of the thread glue manufacturer.



7.5 Maintenance of the control system

7.5.1 Pilot valve

Code	Designation
173021000	Pilot valve repair kit Contains: (12), (16), (19), (20) and (21)



No.	Designation
1	Adjusting screw pilot valve (AS)
2	Locking nut
3	Indication disc
4	Spring case
5	Screws (8) for the spring case
6	Upper Spring Guide
7	Pilot spring
8	Locknut
9	Internal spring guide
10	Protective pane
11	Diaphragm support
12	Diaphragm
13	Diaphragm bolt
14	Diaphragm casing
15	Assembly pin
16	O-ring pilot body
17	Pilot body
18	Sticker
19	Actuator pin
20	Control cylinder
21	Control spring
22	Pilot control sealing plug

Dismantling

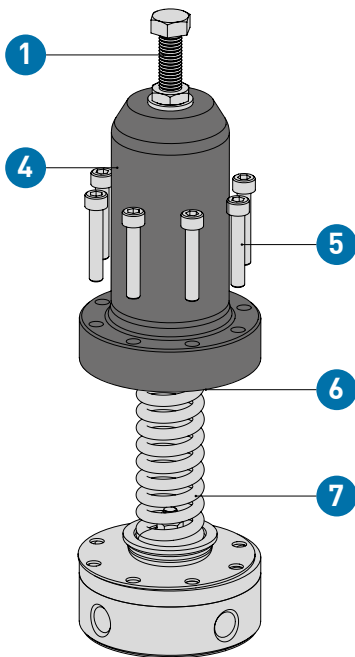
⚠ ATTENTION!

Exiting medium!

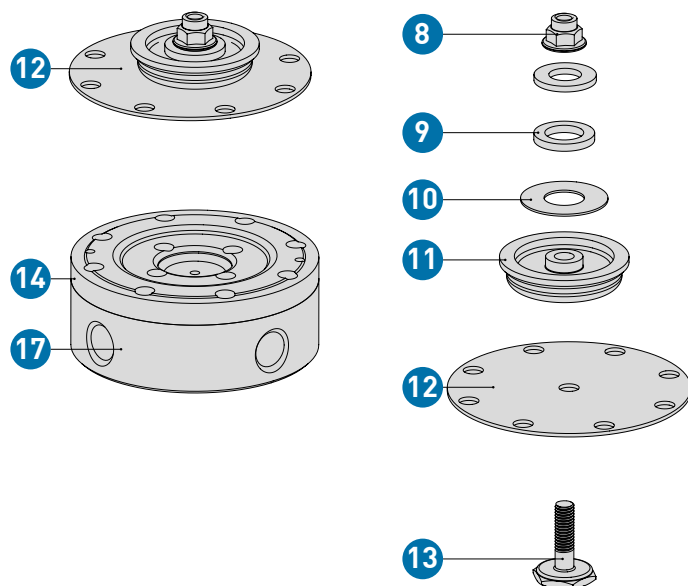
Injury or material damage due to exiting medium. The following requirements must be met for carrying out the next steps:

- ▶ The NeoFlow pressure reducing valve must be removed from the piping system, see section «7.3 Removal of the NeoFlow pressure reducing valve» on page 26.
- ▶ The control system must be dismantled, see section «7.4 De-installation of the control system» on page 28.

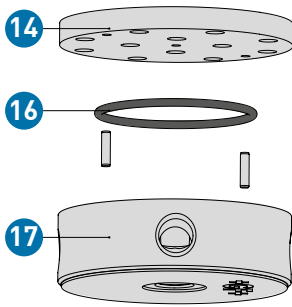
1. Fully open the adjusting screw pilot valve (1) counter clockwise until the pilot spring (7) is released. Note: if the pilot spring (7) is fully released, the adjusting screw pilot valve (1) can be turned manually without resistance.
2. Remove the 8 bolts (5) of the spring casing (4). Lift the spring case (4) off.



3. Remove the upper spring guide (6) and the pilot spring (7).
4. Unscrew the locknut (8) from the diaphragm bolt (13) and remove all other components from the diaphragm bolt (13). Visually check the diaphragm (12) for wear or damage and replace if needed. Reassemble the component.



5. Remove the diaphragm casing (14) from the pilot body (17) and check the o-ring (16) for wear or damage. Replace if required.



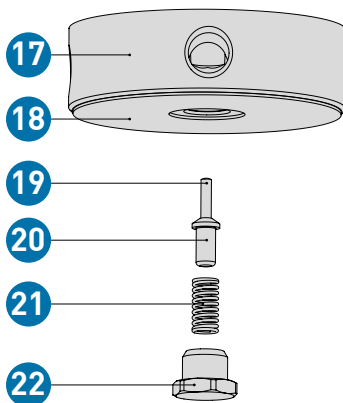
Cleaning

To clean the pilot valve, unscrew the sealing plug (22), remove the control spring (21) and control cylinder (20) with the actuator pin (19), check all components for wear and blow out using compressed air. Clean the sealing plug (22) and reassemble, glue the sealing plug (22) with bolt retention.

ATTENTION!

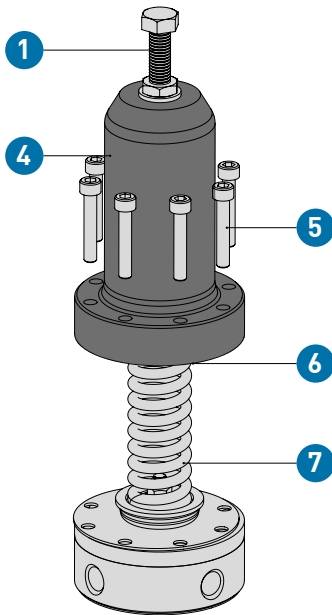
The threads must be cleaned after opening. During assembly, the threads must be thoroughly cleaned and coated with sealing drinking water-safe thread glue, (e.g. Weiconlock AN 302-43, Loctite 577).

- Observe the instructions of the thread glue manufacturer.



Assembly

1. Assembly is the reverse process. On reassembly, lightly lubricate all sliding components (spring guide) and seals with a drinking-water safe lubricant such as Molykote 111 or Klübersynth UH1 64-2403.
2. Tighten the 8 bolts for the spring case (4) crosswise to the torque value recommended on the nameplate using a torque wrench.



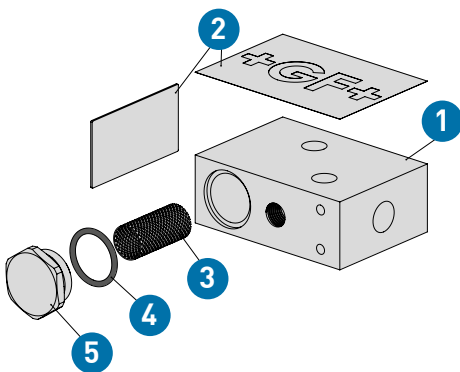
7.5.2 Control block

⚠ ATTENTION!

Damage during disassembly or assembly can impair the functionality of the NeoFlow pressure reducing valve.

- ▶ Handle components with care.

Code	Designation
173021001	NeoFlow Control Block Contains: (1), (2), (3), (4) and (5)



No.	Designation
1	Control block main body
2	Label
3	Filter
4	O-ring sealing plug
5	Filter sealing plug

Dismantling

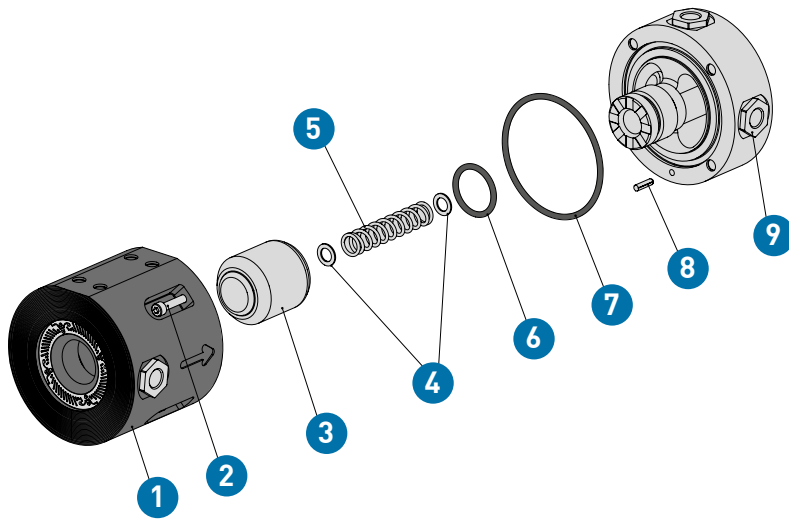
1. Unscrew the sealing plug (5) and remove the o-ring (4) and the filter (3).
2. Clean the filter (3) under clear water, check for wear, and replace if required.
3. Check the o-ring (4) for wear and replace, if required.

Assembly

1. Insert the filter (3) into the control block.
2. Lubricate the o-ring (4) with drinking-water safe lubricant such as Molykote 111 or Klübersynth UH1 64-2403 and mount with the sealing plug (5) to the control block main body (1). Ensure the correct positioning of the o-ring (4).

7.5.3 Main body seals

Code	Designation
173021004 -7	Dimension-based o-ring kit Contains: (6) and (7)

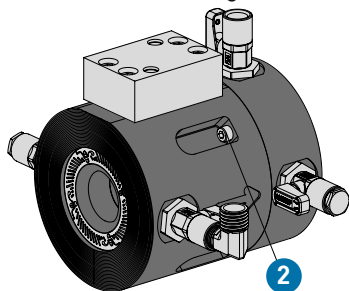


No.	Designation
1	Casing body
2	Casing bolt connection (4 bolts)
3	Valve piston
4	Spring seat
5	Main spring
6	O-ring
7	Casing body seal
8	Guide pin
9	Main body

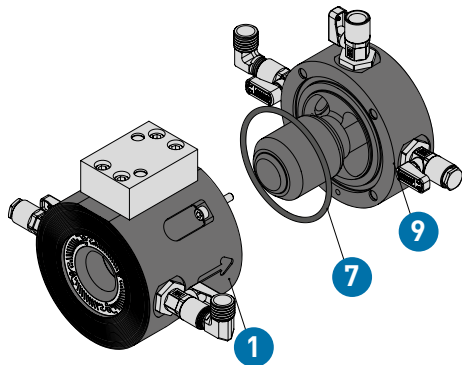
- Remove the NeoFlow pressure reducing valve according to section «7.3 Removal of the NeoFlow pressure reducing valve» on page 26.

Dismantling

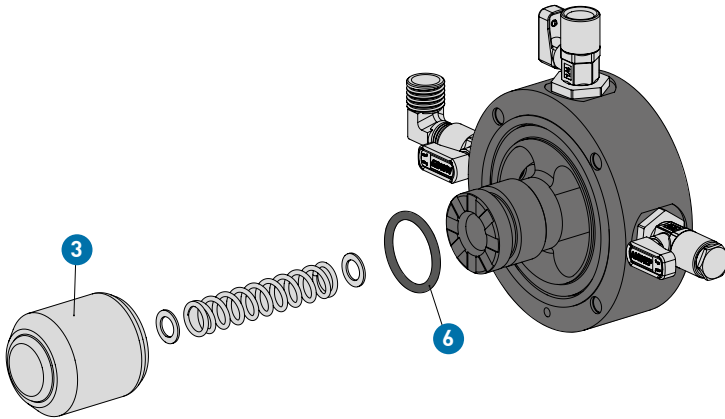
1. Loosen the casing bolts (2) all around to gain access to the internal o-rings.



2. Remove the casing body (1) from the main body (9). Check the casing body seal (7) for wear or damage and replace, if required.

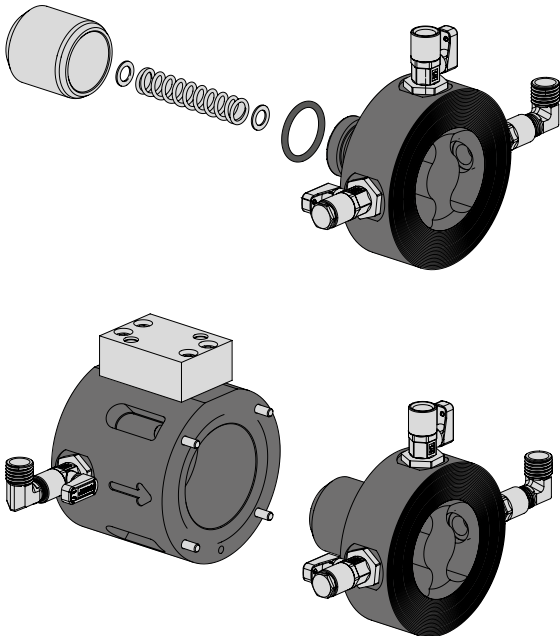


- Remove the valve piston (3). Check the o-ring (6) for wear or damage and replace, if required.

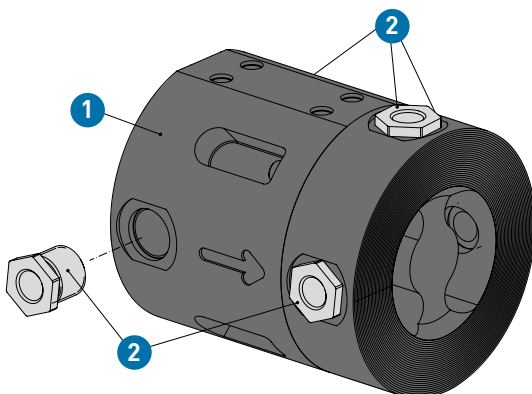


Assembly

- Assembly is the reverse process. On reassembly, lightly lubricate all seals with a drinking-water safe lubricant such as Molykote 111 or Klübersynth UH1 64-2403.



- If a metal threaded insert (2) is detached from the main body (1), fully remove it and fasten it again.



⚠ CAUTION!

Lubricate seals and sliding components with an approved lubricant!

Correct lubrication of the seals and sliding components is required for the correct functioning of the valve. Other lubricants may attack materials and seals and are not permissible.

- Lubricate seals only with a drinking-water safe lubricant such as Molykote 111 or Klübersynth UH1 64-2403.

8 Troubleshooting

Troubleshooting must be exclusively handled by authorised service personnel!

8.1 Reducing outlet pressure fluctuations

The damping valve (DV) can be used to set the reaction time, thus changing the stability of the control loop within the NeoFlow pressure reducing valve can be changed. Reduction of the reaction time can improve the stability of the control loop. This makes the pressure cycle in the NeoFlow pressure reducing valve less susceptible to pressure fluctuations.

⚠ ATTENTION!

Air in the piping system!

Prior to adjusting the dampening screw on the damping valve (DV) flush air out of the system.

- ▶ Allow medium to pass through the NeoFlow pressure reducing valve at a suitable flow rate for at least 10 minutes.

⚠ ATTENTION!

Oscillation due to low flow volumes!

The pressure fluctuations with low flow rates may cause the NeoFlow pressure reducing valve to oscillate.

- ▶ Especially with low flow rates, the damping valve should be correctly readjusted.

⚠ CAUTION!

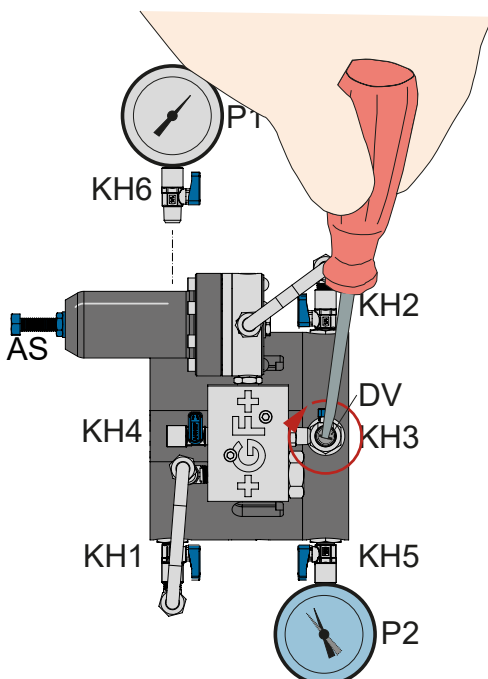
Decreasing the reaction time!

Turning the damping valve (DV) clockwise reduces the flow volume in the control area, which increases the reaction time of the NeoFlow pressure reducing valve.

- ▶ Observe the set reaction time.

8.1.1 Procedure in case of pressure fluctuations

1. In case of outlet pressure fluctuations (apparent at manometer KH5), turn the damping valve (DV) clockwise in increments of 0.5 revolutions until the manometer at KH5 shows a steady value (the reaction time is around 30 seconds). Attention: The damping valve (DV) may not be less than 2 turns from the closed position.



2. If stability cannot be reached, repeat the procedure for adjusting the damping valve (DV) «5.1 Carrying out the basic setup» on page 11.

ATTENTION!

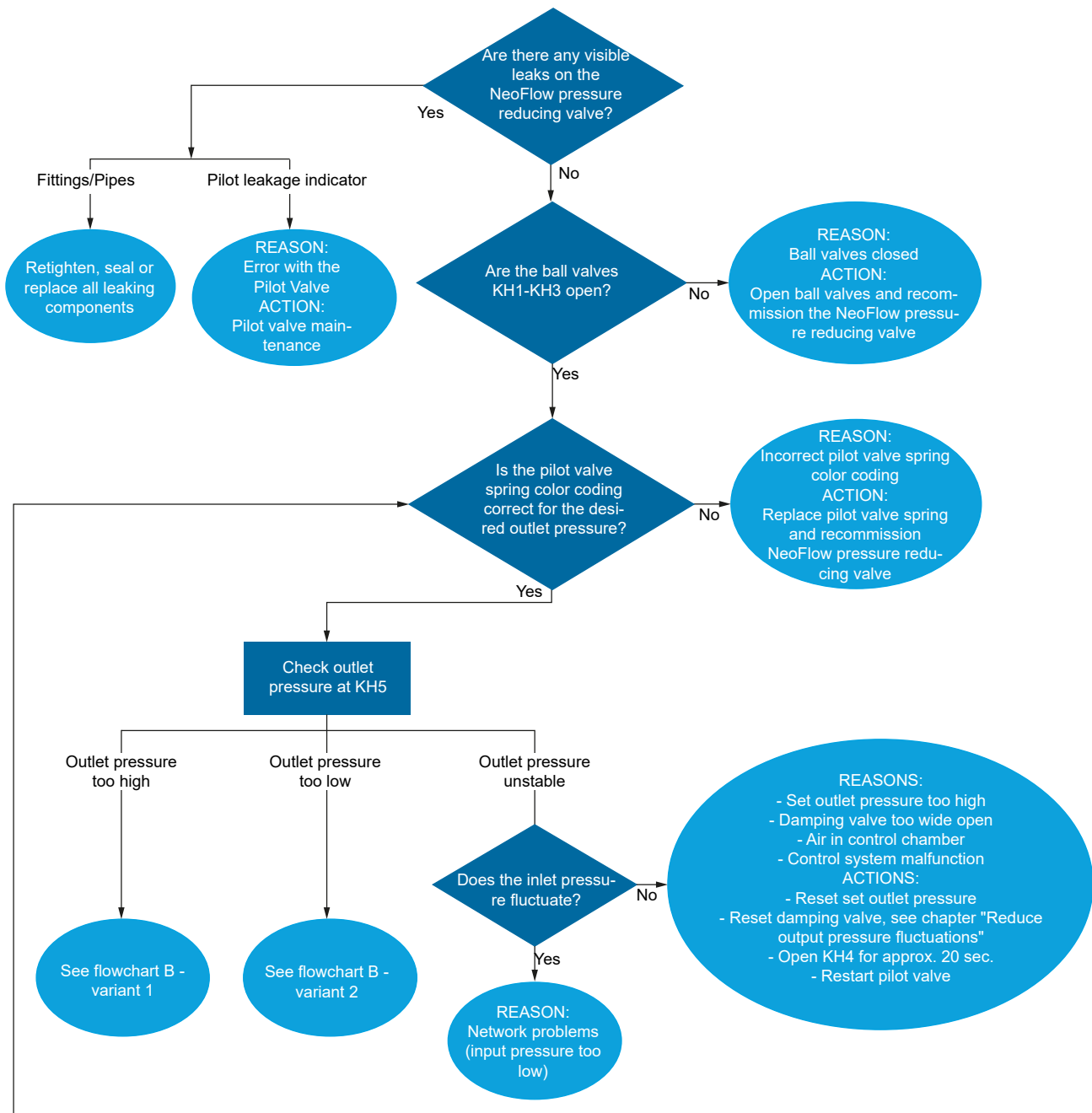
Pressure fluctuation despite adjustment of the damping valve!

If, despite adjustment of the damping valve (DV) there are pressure fluctuations at the outlet manometer KH5, proceed as follows.

- ▶ Follow section «7.2 Cleaning filter and control system» on page 23.
- ▶ If the problem persists, follow the trouble shooting in section «8.2 Flow chart A» on page 38.

8.2 Flow chart A

The NeoFlow pressure reducing valve is exhibiting a faulty function (e.g. leakage, desired outlet pressure cannot be reached, or outlet pressure cannot be maintained).

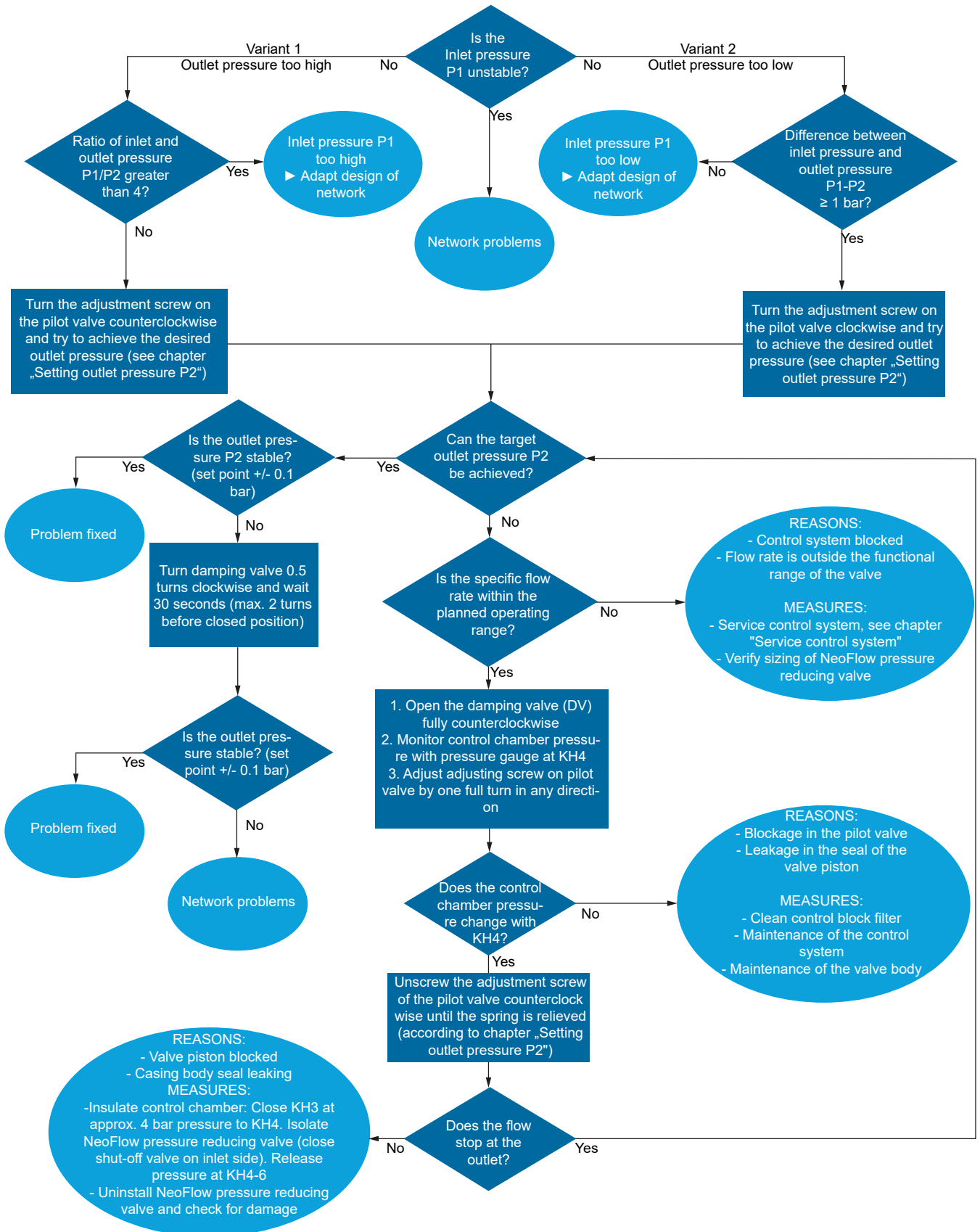


Color coding of the pilot valve spring	Set pressure range (bar [g])	Sensitivity of the setting (bar/revolution)
Silver	0.0 - 3.0	0.18
Black	1.0 - 8.0*	0.43
Red	1.0 - 16.0	1.53

*Standard version

8.3 Flow chart B

Outlet pressure too low or too high.



Address your GF Piping Systems contact partner if occurring errors cannot be fixed.

9 Disposal

- ▶ Before disposal, separate the individual materials into recyclable materials, normal waste and hazardous waste.
- ▶ When disposing of or recycling the product, individual components and packaging, comply with local laws and regulations.
- ▶ Observe country-specific regulations, standards and guidelines.

ATTENTION!

Correct disposal!

- ▶ Separate materials (plastics, metals, etc.) and dispose of them in accordance with local regulations.

If you have any questions regarding the disposal of the product, please contact your national GF Piping Systems representative.



10 Spare parts list

10.1 Spare parts kits

Code	Designation
173021000	Pilot valve repair kit
173021001	Control block component
173021002	Ball valve
173021003	Pilot valve (pressure reduction)
173021004	O-ring set DN50
173021005	O-ring set DN80
173021006	O-ring set DN100
173021007	O-ring set DN150
173021027	Restrictor kit
173021028	Filter kit

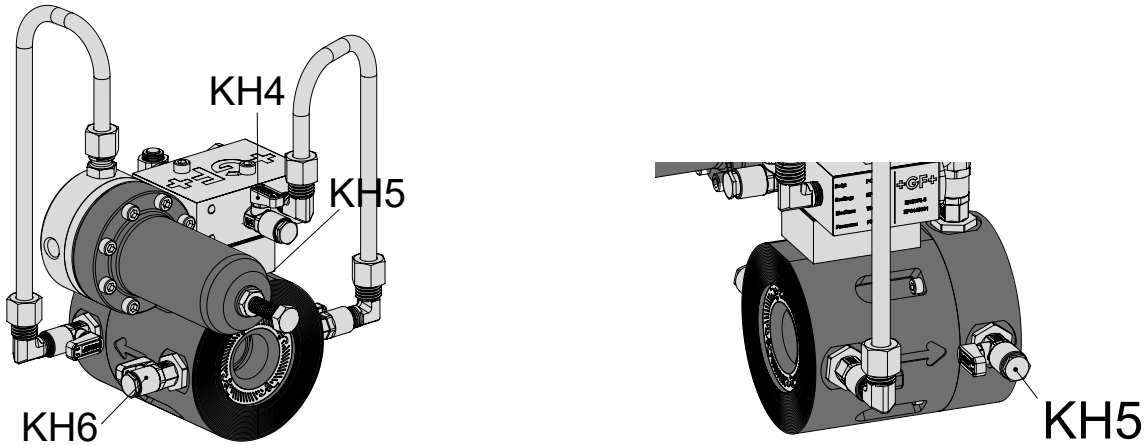
10.2 Pilot spring

Code	Color coding of the pilot valve spring	Set pressure range (bar [g])
173021022	Silver	0.0 - 3.0
173021023	Black	1.0 - 8.0
173021026	Red	1.0 - 16.0

11 Accessories

11.1 Manometer connections (optional)

Measuring devices such as manometers can be installed on the ball valves KH4-6. Sensors can be connected directly to the ball valves via the standard BSP 1/4" inch internal thread.



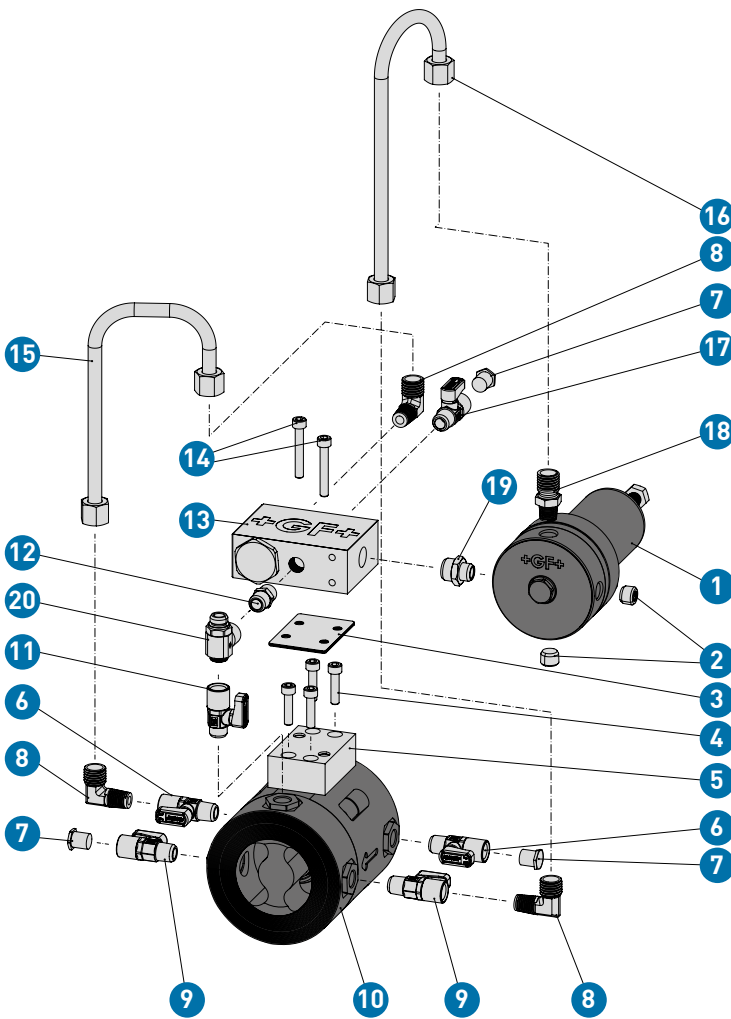
Ball valve	Designation
KH6	Manometer connection inlet side
KH5	Manometer connection outlet side
KH4	Manometer connection control area

11.2 Controller compatibility overview

Controller	Compatibility	Notes
I20	Yes	Replace pilot and control block with i20 system
GCR	Yes	Replace the adjusting screw pilot valve (AS) by an M10 controller bolt
HWM	Yes	Replace the adjusting screw pilot valve (AS) by an M10 controller bolt

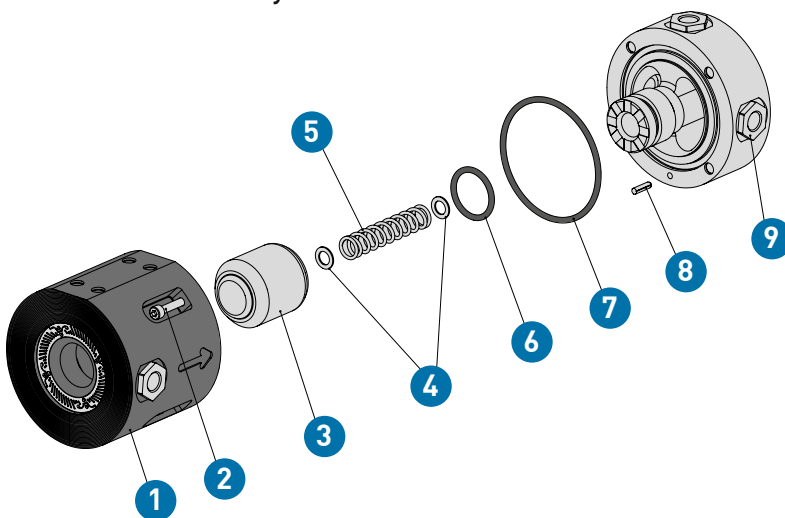
12 Components and subassemblies

12.1 General overview



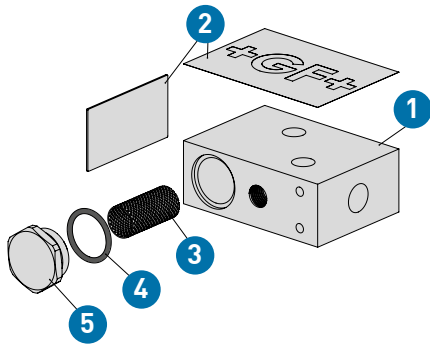
No.	Designation
1	Pilot valve
2	Hex plug
3	Spacer plate
4	Socket head bolt M6x25
5	Control block base
6	Inlet ball valve
7	Sealing plug
8	90° bolt connection
9	Ball valve outlet
10	Main body
11	Ball valve control chamber
12	Valve chamber transition nipple
13	Control block
14	Control block bolt connection
15	Inlet control line
16	Outlet control line
17	Ball valve control block
18	Screw-in connection, straight
19	Pilot transition nipple
20	Damping valve

12.2 Main Body



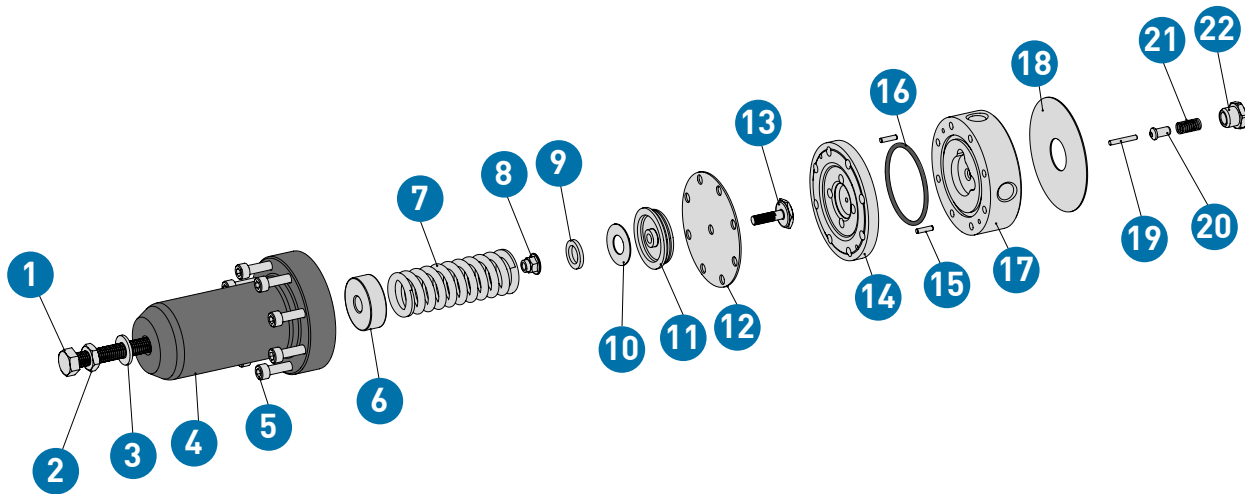
No.	Designation
1	Casing body
2	Casing bolt connection (4 bolts)
3	Valve piston
4	Spring seat
5	Main spring
6	O-ring
7	Casing body seal
8	Guide pin
9	Main body

12.3 Control block



No.	Designation
1	Control block main body
2	Label
3	Filter
4	O-ring sealing plug
5	Filter sealing plug

12.4 Pilot valve



No.	Designation
1	Adjusting screw pilot valve (AS)
2	Locking nut
3	Indication disc
4	Spring case
5	Screws (8) for the spring case
6	Upper Spring Guide
7	Pilot spring
8	Locknut
9	Internal spring guide
10	Protective pane
11	Diaphragm support
12	Diaphragm
13	Diaphragm bolt
14	Diaphragm casing
15	Assembly pin
16	O-ring pilot body
17	Pilot body
18	Sticker
19	Actuator pin
20	Control cylinder
21	Control spring
22	Pilot control sealing plug

Local support around the world

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www.gfps.com/our-locations



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