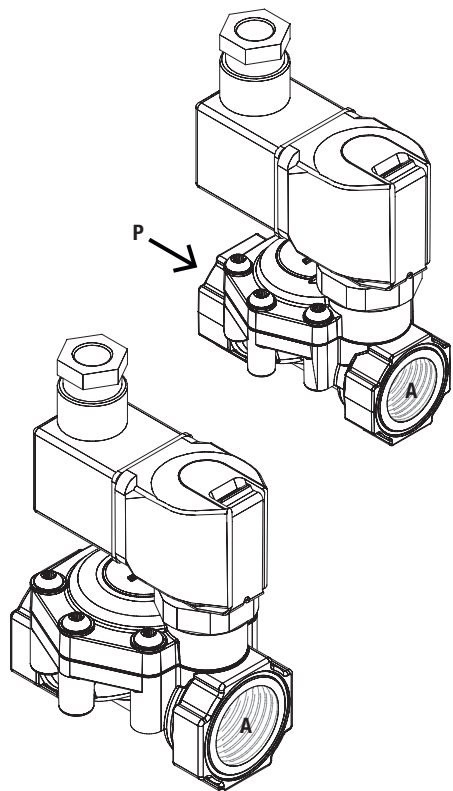


Operation manual for indirect controlled diaphragm valves

Document No. EN1377027BA Revision: 5

Keep documentation for future use!



Series

Click-on®

84070 84080^N ^N NPT thread

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Translation of the original operating manual
Status as of October 2018

1 About this documentation

This operation manual guides you to guides you to mount, operate and maintain indirect controlled diaphragm valves safely.

1.1 Documentation validity

These mounting instructions applies to indirect controlled diaphragm valves of series

- 84070 (G thread)
- 84080 (NPT thread)

in combination with these solenoid:

| Series | 9101 | 9104 |
|--------------------|------|------|
| 84070 | • | • |
| 84080 ^N | • | • |

This operation manual is intended for:
plant operators, installers, maintenance and service technicians.

1.2 Structure of safety instructions

Safety instructions warn against dangerous situations and must be observed in particular. Safety instructions are structured as follows:

SIGNAL WORD

Type of hazard

Consequences of non-observance

→ Precautions necessary to avoid the hazard

1.3 Hazard classes (ANSI Z535.6)

⚠ DANGER

Safety information indicates a hazardous situation with high risk which, if not avoided, will certainly result in death or (serious) injury.

⚠ WARNING

Safety information indicates a hazardous situation with moderate risk which, if not avoided, can cause death or severe injury.

⚠ CAUTION

Safety information indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Information indicates a hazardous situation which, if not avoided, could result damage to property.

1.4 Styles and symbols

This documentation uses the following styles and symbols:

| | |
|----------|--------------------------------------|
| • | list |
| → | instruction |
| 1. | preset order of instructions |
| 2. | |
| 1 | part number (according to part list) |
| 1 | flexible part number (section) |
| X | replace spare part |

⚠ + DANGER / WARNING / CAUTION;
NOTICE: embedded safety message

given limits or fixed value

1.5 Intended use

The valve is solely intended to control or stop a fluid flow within approved operating limits. The fluid must only flow through the valve in the determined flow direction.

You may only operate the valve with fluids that will not cause any chemical reaction with the valve's materials or lead to abrasive effects.

1.6 Improper use

Only operate the valve within approved operating limits.

In the following cases it is prohibited to operate the valve:

- The valve is not used for the designated purpose.
- The valve is used beyond the permitted operating limits. The permitted temperature and pressure ranges are exceeded.
- Damages to the valve – e.g. cracks, deformation – were detected but the valve remains in operation.
- Malfunctions were detected but the valve remains in operation.

We do not accept any liability for damages caused by improper use.

Our guarantee expires in the following cases:

- Undue intervention and altering are done to the valve.
- This documentation or the operating limits as shown in the data sheet are not observed.

1.7 Obligations of operator

Product

- Over the entire life cycle of the valve all applicable regulations must be observed. The instructions of this operation manual must be observed and followed.
- Initiate a risk assessment of the overall installation, to detect potential dangers that may occur in combination of the valve with other components.

Persons


- Initiate the instruction of each person who is working with the valve. Applicable regulations about occupational safety and safety engineering must be known and applied.

Documentation

- This documentation must be fully read and understood.
- The instructions given in this operation manual must be put into practice.
- This documentation must be available at any time.

Markings at the operating site

- Ensure adequate warning of the risks linked to the valve. Use in the area of the installed valve the following warning and prohibition signs in compliance with EN ISO 7010 and BGV A8 (VBG125):

| | |
|---|--|
|  | Warning sign to indicate risk of burns at the solenoid |
|  | Warning sign to indicate electrical hazards at the solenoid |
|  | Prohibition sign to prevent people from entering hazardous areas |

1.8 Personnel qualification

- Ensure as operator that persons who work on or with the valve are sufficiently qualified for this job.
- Comprehensively train the operating personnel in terms of safety.
- Only allow trained specialists to perform electric connections, commissioning, maintenance and trouble shooting

Demands

Operating personnel must be instructed on operational sequences and procedures.

Operating personnel must know its responsibilities regarding the work to be performed.

Trained specialists must possess profound knowledge in mechanical engineering, electrical engineering, hydraulic and pneumatic.

Trained specialists must be authorized to commission, ground and designate devices,

systems and power circuits according to the standards of safety technology.

Trained specialists must possess profound knowledge about design and principle of operation of the valves and the plant.

1.9 Personal protection equipment

- Wear appropriate protection equipment. Observe the personal protection equipment as requested in “residual risks” (refer to chapter 2).

| | |
|---|--|
|  | Protective eye glasses to protect from escaping fluids or exhausting compressed air |
|  | Protective gloves Resistance to cutting to protect from sharp edges or ridges; resistance to acids to protect from hazardous fluids |
|  | Protective footwear to protect from parts or tools falling down |

2 General safety instructions

These safety instructions are only related to the single valve. In combination with other plant components there may be other potential dangers, which must be taken into account by carrying out a risk analysis for the system.

- Compare the details on the rating plate and data sheet to the operating data. The particular application must not exceed the given limits (e.g. pressure, temperatures).
- You must depressurize the pipe system and de-energize the solenoid prior to perform mounting and maintenance works.
- Prime the valve slowly when commissioning. Fast pressurizing will cause the valve to open briefly.
- Strength tests with the valve seat open are permitted maximum up to 1.5 times of the nominal pressure rating (PN) at room temperature. Do not operate valve during test.

⚠ DANGER



Hazardous electrical voltage (>25V AC; >60V DC)

There are risks from electrical voltage during assembly and maintenance.

- The electrical connection of the solenoid must be carried out only by a qualified electrician.
- You may only plug the device socket in de-energized state.
- Disconnect the power supply off the solenoid prior to assembly or dismantling.

⚠ WARNING



Danger from pressurized pipelines

Pressurized pipelines may burst resulting in injuries.

- Depressurize pipe system and block the fluid stream prior to opening or unmounting the valve.

⚠ CAUTION




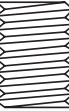
Risk of burns at the solenoid

Solenoid is heating up during operation. Touching the solenoid leads to risk of burns.

- Leave the solenoid to cool down before working at the valve.

Residual risks

| | |
|---|---|
|  | Weight of the valve Phases: transport, storage, assembly, maintenance, disposal Risk: falling off, tipping over Personal protection equipment (PPE): Protective footwear |
|  | Potentially explosive atmosphere Risk: danger of explosion ⚠ WARNING: Use solenoids and device sockets with Ex-protection. |

| | |
|---|---|
|  | Hazardous fluids Phases: assembly, operation, maintenance, disposal Risk: skin contact, eye contact, breathing vapors PPE: protective gloves, protective eye glasses, breathing protection |
|  | Sharp threads and edges Phases: transport, assembly, maintenance, disposal Risk: risk of cuts PPE: protective gloves |

3 Avoid damage to property

NOTICE

Deposits and dirt lead to malfunctions

If the control bores are clogged or the core is blocked by soil the valve no longer closes or opens.

→ Install a strainer (mesh size $\leq 0,25$ mm) in front of the valve inlet if necessary.



Damages through accumulation of heat

The solenoid will overheat during continuous duty if the heat can not be radiated. This may shorten the solenoid coil's product life cycle.

→ You must not cover the solenoid with paint.

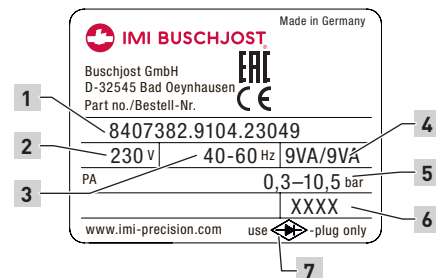
→ You must not encase the solenoid in a tight housing or in a thermal insulation.

Residual risks

| | |
|---|---|
|  | Pressure against valve outlet Valve only firmly closes in flow direction. |
|  | Fluid freezing The valve is not designed to withstand the fluid freezing. |

4 Identifying the valve

The rating plate is situated on the solenoid body.



Rating plate (example)

- 1 Order number
- 2 Operating voltage
- 3 Frequency of voltage
- 4 Power consumption inrush/hold
- 5 Operating pressure range
- 6 Date of manufacture (week/year)
- 7 if this marking is shown on the rating plate: use device socket with rectifier

5 Transport and storage

NOTICE

Damage of the valve

Valve may be damaged if foreign particles get into the valve.

→ Only transport and store valve in its delivery packaging.

→ Take valve out of the packaging immediately prior to assembly.

prolonged storage at -10°C to $+20^{\circ}\text{C}$

Avoid during transport:

mechanical loads: falling off, tipping over
damages to the electrical terminal elements

Avoid during storage:

thermal stress: permanently increased storage temperatures; distance to heating devices < 1 m

chemical load: at the storing site through solvents, chemicals, acids, fuels and similar

Weather conditions: at construction sites strong, watertight containers are necessary

Unfavourable storing conditions may reduce the service life of the sealing materials

6 Function

Design

Through-way valve as seat valve with diaphragm as sealing device.

Operation

The valve is electromagnetic indirectly-controlled. The switching function needs a pressure difference between valve inlet **P** and valve outlet **A**.

Normal position: closed

Due to the effect of the compression spring **7** inside the core the pilot seat **6** is closed. A compression spring presses **4** the diaphragm sealingly to the main valve seat. The operating fluid flows through the control bore **2** in the diaphragm to the chamber **3** above the diaphragm and increases the closing force.

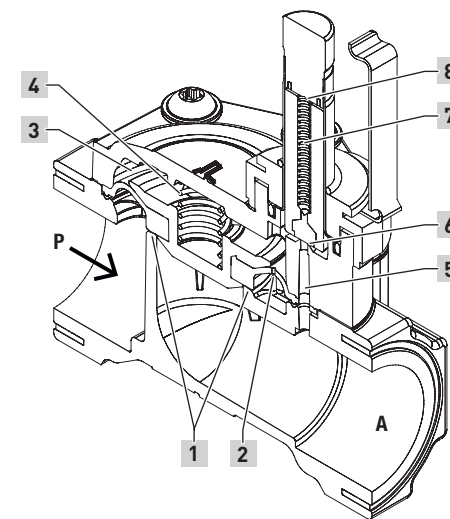
Switching position: open

The magnetic force lifts the core towards the magnet face of core tube **8** when the solenoid is energized.

Since the pilot seat **6** is open the fluid pressure is reducing from chamber **3** towards valve outlet.

More fluid is flowing off via the pilot seat to the chamber than the amount flowing in via the control bore **4** in the diaphragm.

The differential pressure lifts up the diaphragm **1** and opens the main valve seat.



Sectional view without solenoid

- 1 Main valve seat
- 2 Control bore of diaphragm (pressure build-up)
- 3 Control space
- 4 Compression spring above diaphragm
- 5 Control bore in valve (pressure reduction)
- 6 Pilot seat
- 7 Compression spring inside core
- 8 Magnet face of core tube

7 Mounting

NOTICE

Damage of the valve

The valve may be damaged through inappropriate installation.

- Only trained and authorized specialists may install the valve.
- Only use appropriate tools and suitable sealing materials.
- Make sure that the valve is mounted in flow direction.
- Make sure not to distort the valve body, particularly in case of a misaligned pipe-work.

There must be no mechanical loads applied to the solenoid.

- Do not use solenoid as a lever during mounting.

Valve only firmly closes in flow direction. Inflow against the valve's flow direction may lead to the destruction of components.

- Implement adequate measures if back flow is to expect. Examples:
- By providing a safety shutdown and a relief of the compressed air systems on the valve's inlet side.
- By adding check valves to the pipe system.

The valve subassembly may get damaged by external loads at the operating site.

- Protect valve from objects falling down.
- Protect valve from direct weather influences.

Dimensions

of valve body with valve cover in mm

L = length of the valve body

B = diameter of the valve cover

84070, 84080

| Housing type 1 | | |
|----------------|----|----|
| ND | L | B |
| 12 | 67 | 51 |

| Housing type 2 | | |
|----------------|----|----|
| ND | L | B |
| 20 | 74 | 62 |

Meaning of ND in G thread and NPT thread

| ND | 12 | 20 |
|-----|---------|---------|
| G | G 1/2 | G 3/4 |
| NPT | 1/2 NPT | 3/4 NPT |

7.1 Conditions of installation

Compliance with operating limits

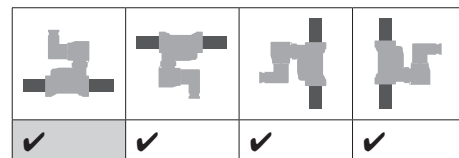
Ensure to comply with the operating limits prior to mounting the valve. Observe the valve's data sheet.

Planning of the pipe system

Buschjost recommends to include manual stop valves and drain valves in the plant so that the pipe system may be depressurized and drained prior to working on the valve.

Mounting position of the valve

The mounting position is not determined, preferably: solenoid vertical on top



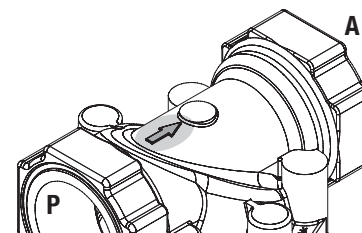
7.2 Preparation

- Check the valve for externally visible damages.
- Leave the valve in its protective package prior to mounting.
- Make sure that there is enough free space for dismantling the valve in case of maintenance.

- Clean the pipe system prior to mounting the valve.

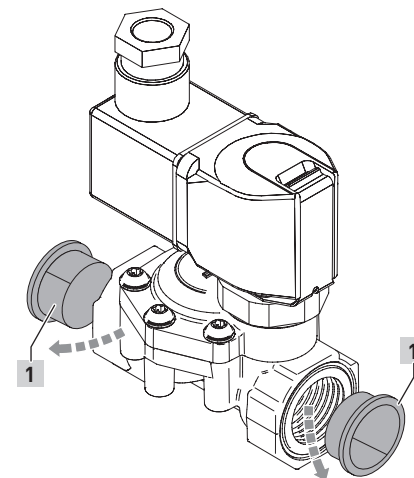
7.3 Mount valve to pipe line

- Mount the valve to the designated pipeline. Comply with existing connections.
- Arrange the valve according to the pipeline's flow direction. An arrow on the valve's body marks the flow direction.



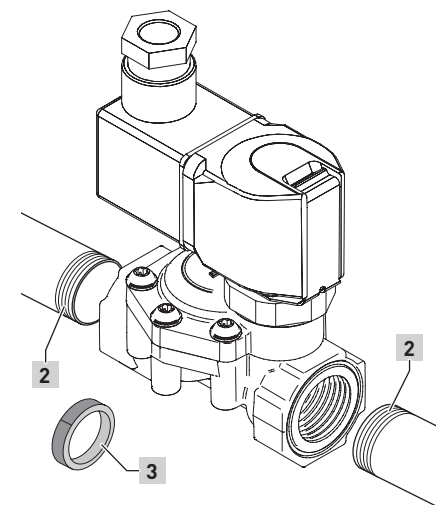
Arrow shows flow direction

1. Take valve out of the packaging immediately prior to mounting.
2. Take out the blanking plugs **1** from valve inlet and valve outlet.



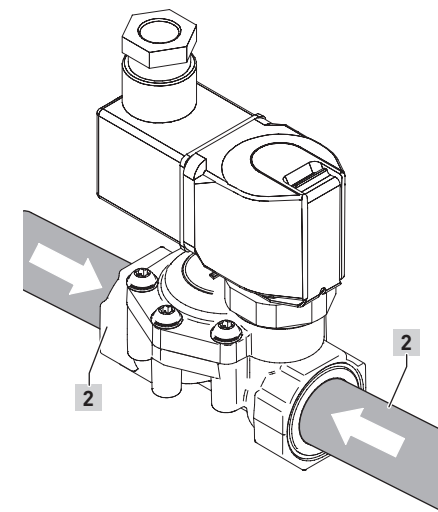
Take out blanking plugs

3. Install a strainer in front of the valve inlet **P** if necessary.
4. Firmly seal the threads of the pipeline **2** with an appropriate sealing material (e.g. PTFE sealing tape **3**).



Firmly seal pipeline's thread

5. Attach the pipelines to the valve. **NOTICE** Make sure not to distort the valve body.
6. Attach pipelines threads **2** to the connection threads of the valve.



Connect valve with pipe line

8 Connect solenoid electrically

→ Always connect the device socket which was delivered by Buschjost.

⚠ DANGER



Hazardous electrical voltage (>25V AC; >60V DC)

There are high risks from electrical voltage during assembly works.

→ Work on electrical installations may be carried out by a qualified and authorized electrician only (refer to section 1.8).

→ You must connect the earth wire to the terminal marked with the grounding symbol ⊕.

→ You may only plug the device socket in de-energized state.

→ Ensure correct polarity while connecting live wires to terminals marked + and −.

→ Take care that the insulation is not trapped in the terminals.

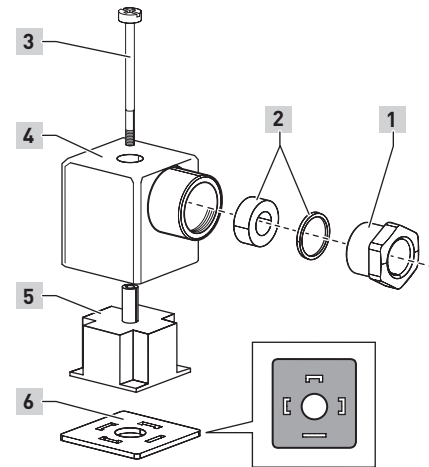
Faulty connection causes risks.

→ After connecting the solenoid carefully close the terminal compartment to restore protection.

→ To secure IP65 protection after connecting: Carefully close the device socket. Check whether the flat seal between solenoid and device socket is properly seated. Check whether cable gland is properly sealed.

→ Connect solenoid in accordance with the electrical regulations.

→ Use a **round** cable with diameters from 5 mm to 10 mm. The wire cross section must not exceed 1.5 mm².

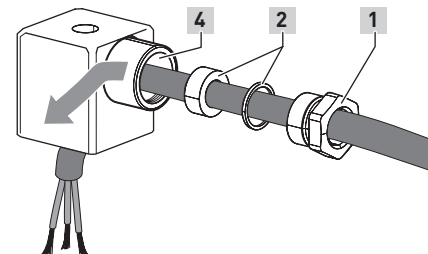


Overview: device socket

- 1 Pressure screw
- 2 Washers
- 3 Middle screw
- 4 Housing of the device socket
- 5 Socket insert
- 6 Flat gasket

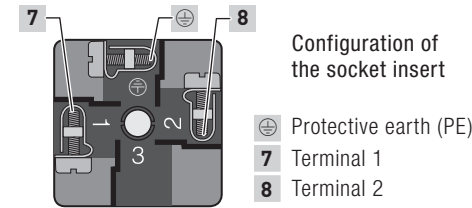
→ Make sure that the flat gasket **6** and socket insert **5** are mounted congruently with the connecting lugs of the solenoid.

1. Slide pressure screw **1**, washers **2** and device socket's housing **4** on the cable.



Feed cable through device socket

2. Attach the protective conductor at first (insulation: yellow/green) to the terminal marked with the grounding symbol ⊕.



Configuration of the socket insert

- ⊕ Protective earth (PE)
- 7 Terminal 1
- 8 Terminal 2

3. Attach the other wires to the terminals **7** and **8** of the socket insert **5**.

⚠ **DANGER** Ensure correct polarity while connecting live wires to terminals marked + and −.

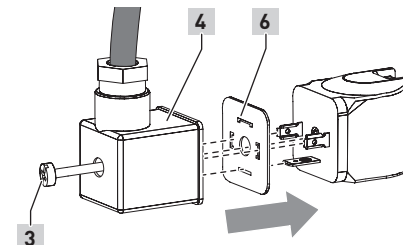
4. Put the housing of the device socket **4** in the chosen position (9 o'clock, 12 o'clock, 3 o'clock) onto socket insert **5**.

5. Tighten pressure screw **1** to cable gland. **NOTICE** Cable gland must firmly seal.

6. Pull protective cap from the plug contacts of the solenoid.

7. Attach flat gasket **6** and housing **4** with socket insert to the connection lugs of the solenoid.

⚠ **DANGER** Make sure that the seal is evenly positioned on the entire surface between solenoid and device socket.



Place mounted device socket

8. Tighten middle screw **3** with 40 Ncm.

NOTICE The housing must not show signs of deformation.

tightening torque: 40 Ncm ±10 Ncm

9 Operating conditions

→ Ensure that all operating limits of the valve are considered during the configuration of the overall system.

Operating limits of series

| | |
|--------------------|---------------------|
| P ₀ | Operating pressure |
| T _F | Fluid temperature |
| T _A | Ambient temperature |
| permissible Fluids | |

84070 / 84080 NPT

| | |
|-----------------------------------|----------------------|
| P ₀ | from 0.3 to 10.5 bar |
| T _F | +5 °C to +50 °C |
| T _A | from 0 °C to +50 °C |
| neutral gaseous and liquid fluids | |

10 Commissioning

→ Ensure compliance with the operating conditions specified in chapter **9**.

10.1 Checking the switching function

→ Check the switching function of the valve without fluid prior to flooding the valve and exposing valve to the operating pressure. The metallic clicking sound must be heard during the electrical actuation of the valve.

10.2 Flooding the valve

1. Check whether all connections to pipe lines are firmly sealed.

2. Slowly increase the pressure to flood the valve. Thus to prevent pressure hammers.

⚠ **WARNING** To fast flooding of the valve may lead fluid to escape. **NOTICE** Do not exceed the maximum operating pressure.

11 Operation

NOTICE

Thermal destruction of AC solenoids

Operating AC solenoids in unmounted state will cause them to burn out.

- Do not operate AC voltage solenoids without being mounted above core tube with core.

Actuate valve periodically

- **NOTICE** Actuate the valve at least **once a month** to prevent functional parts getting blocked.

12 Maintenance

Maintenance work must only be carried out by qualified personnel (refer to section 1.8).

info Deposits of the medium, dirt particles, aged or worn out seals may lead to malfunctions.

- Individually determine as the operator application specific maintenance intervals.

12.1 Cleaning and visual inspection

- Periodically clean the valve and perform a visual inspection at the same time.

1. **⚠ DANGER** Disconnect the solenoid from power supply.
2. **⚠ CAUTION** Leave the solenoid to cool down.
3. Clean the outside of the valve and check for:
 - tightness of cover screws
 - firmly sealing of cable gland,
 - Damages and leakages.

12.2 Checking for tightness and strength

NOTICE

Risk of damaging the valve

Invalid test conditions may lead to damage of the valve.

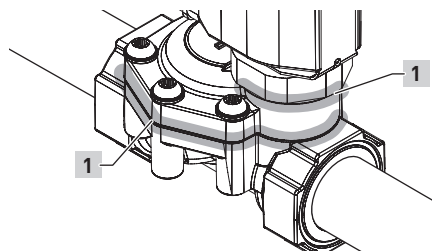
- Do not exceed the maximum operating pressure during the test for internal tightness (valve seat closed).
- The test for strength and external leakage (valve seat opened) according to EN12266 is permitted with maximum 1.5 times of the nominal pressure rating (PN) at room temperature.
- The valve must not be operated during these tests.
- Ensure to increase the pressure slowly.
- After each test, depressurize the valve outlet first.

Test for internal tightness

1. Close the valve (solenoid of NC valves de-energized; NO valves energized).
2. Flood the valve.
3. Gradually pressurize up to the maximum operating pressure. There must no fluid escape.

Test for strength and external leakage

1. Open the valve (solenoid of NC valves energized; NO valves de-energized).
2. Flood the valve.
3. Gradually pressurize maximum up to 1.5 times of the nominal pressure rating (PN) at room temperature.
4. Apply soap sud to the outer sealing edges and check for the formation of bubbles. There must no bubbles appear.

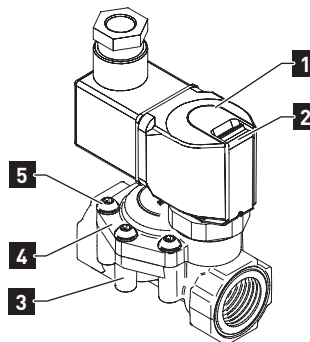


Check sealing edges

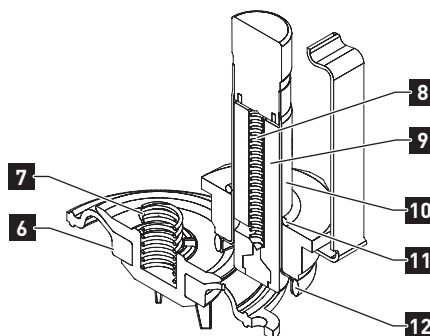
12.3 Preparing maintenance

1. **⚠ DANGER** Disconnect the solenoid from power supply.
2. **⚠ WARNING** Depressurize the pipe system.
3. **⚠ CAUTION** Leave the solenoid to cool down.

Component overview



External components



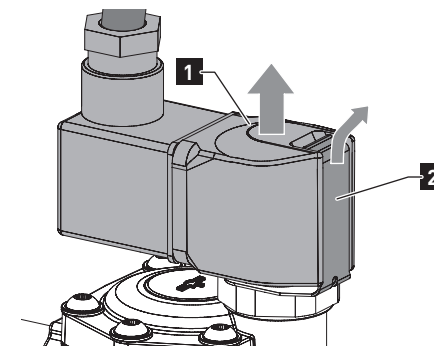
Internal components

- 1 Solenoid with device socket
- 2 Fixing clamp
- 3 Valve cover
- 4 Valve body
- 5 Fixing screws
- 6 Diaphragm*
- 7 Compression spring*
- 8 Compression spring inside core*
- 9 Core*
- 10 Core tube
- 11 O-ring
- 12 O-ring

12.4 Dismantling valve

Unmount solenoid

- Slightly bend back spring clip **2** and pull Click-on® solenoid **1** upwards.

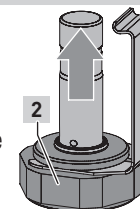


Unmount solenoid 9101

Dismantle core tube

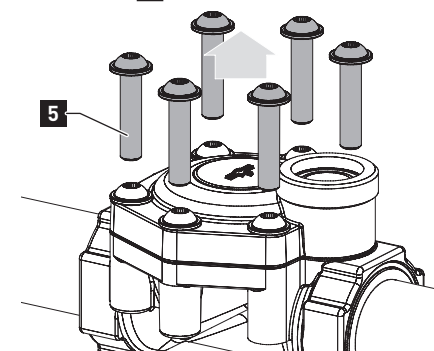
Tool: wrench size 27 for 1502

1. Loosen the core tube at its screw piece **2**.
2. Take off core tube together with spring clip. Take care for the loose core **9** and the compression spring **8**.



Dismantle valve cover

1. Loosen fixing screws **5** (Torx M4) at the valve cover **4**.



Loosen fixing screws

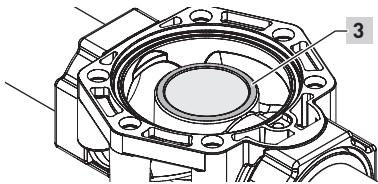
2. Take off valve cover **4**.
3. Take off compression spring **7** and diaphragm **6** from valve seat.

12.5 Checking dismantled valve parts

- Check dismantled valve parts for damages and aging phenomena.
- Replace diaphragm in case of cracks or fractures.
- Replace seals if they are brittle, fissured or strongly deformed.

12.6 Cleaning parts, checking valve seat

1. Clean the diaphragm **6**.
2. Clean all surfaces that are in contact to seals or diaphragm.
3. Remove dirt inside control bores, control spaces and on threads.
4. Clean the core **9**.
5. Remove dirt inside control bores, control spaces and on threads.
6. Check whether the valve seat **3** is intact. Valve seat must not have any damages.



Valve seat in valve body

7. If the valve seat is **damaged** you must replace the valve body.

12.7 Replacing spare parts

⚠ CAUTION

Risk of injury caused through the installation of wrong parts

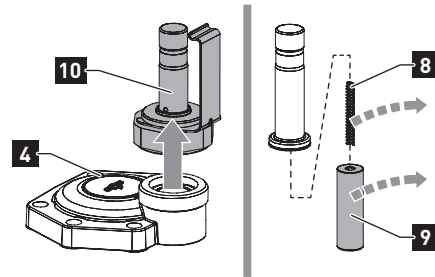
Installation of wrong components may lead to early wear or early failure of the component and more risk of injury.

- Only install original spare parts.
- Specify the valve number when ordering a spare part kit.

Buschjost recommends to replace all spare parts included in the kit at the same time.

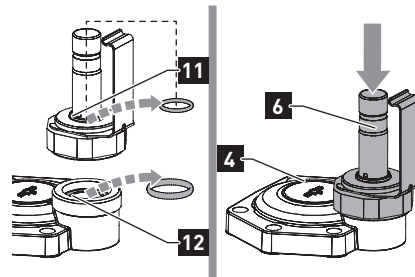
Spare parts related to the core tube assembly

1. Replace the used core **8** and the compression spring **9** inside core.



Replace core and compression spring

2. Replace o-ring **11** that is situated on the core tube **10**. Replace the o-ring **12** that is situated in the valve cover.

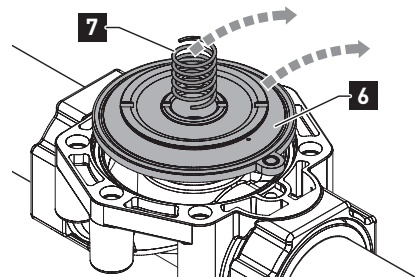


Replace o-rings

3. Screw the core tube **10** on valve cover **4** – tighten only hand tight.

Spare parts related to the valve body

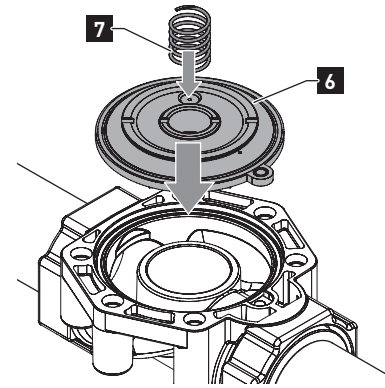
- Replace the used diaphragm **6** and the compression spring **7** above diaphragm.



Replace diaphragm and compression spring

12.8 Reassembling valve

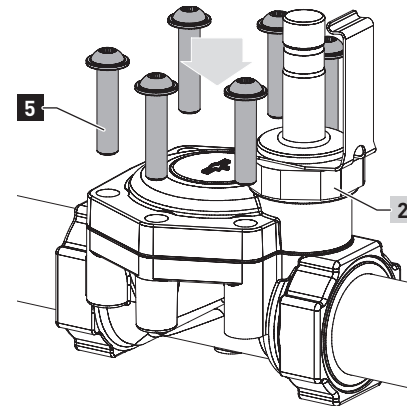
1. Put diaphragm **6** centered on the valve seat and fit compression spring **7** into diaphragm.



Put diaphragm and compression spring

2. Put the valve cover **4** on valve body.
3. Fix the valve with six fixing screws **5** (Torx M4 x 16 mm). Tighten screws with 2 Nm.

tightening torque: 2 Nm \pm 10%



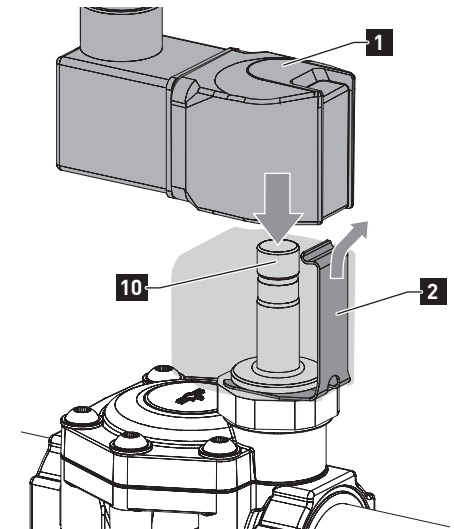
Insert and tighten fixing screws

4. Tighten the core tube **10** at its screw piece **2** with 20 Nm.

wrench size 27; tightening torque 20 Nm \pm 2

12.9 Mounting solenoid

1. Push the Click-on® solenoid **1** onto core tube **10**.
2. Slightly bend back fixing clamp **2** and snap solenoid to spring fixing clamp.



Mount solenoid 9101

info Solenoid and fixing clamp may be rotated 360°. Choose an appropriate angle.

13 Re-commissioning

1. Check valve's switching function without fluid (refer to section 10.1).
2. Prime the valve slowly (refer to section 10.2).
3. Perform a leak and strength tests (refer to section 12.2).

14 Decommissioning

1. ⚠ **DANGER** Disconnect the solenoid from power supply.
2. ⚠ **WARNING** Depressurize the pipe system. Completely drain the pipework. Deal with water-endangering fluids according to legal regulations.
3. Loosen fixing screws from valve cover.
4. Unmount the valve.
5. Drain and dry the valve.

15 Replacing complete valve

1. Unmount the valve as described in chapter **14** "Decommissioning".
2. Mount the new valve as described in chapter **7** "Assembly".
3. Connect solenoid as described in chapter **8** "Connect solenoid electrically".

16 Trouble shooting

→ Observe safety information and instructions in chapter **12** "Maintenance".

Error table

| not working |
|--|
| Possible cause: The control voltage must be >90% of its nominal value. Remedy: Measure the control voltage directly in front of the solenoid. If the operating voltage is lower or a long cable is used, a heavier conductor must be chosen to keep the voltage drop small. |
| possible cause: Solenoid coil defective, no continuity Remedy: Replace solenoid |
| impaired function |
| Possible cause: Diaphragm soiled Remedy: Control bore in the diaphragm |
| Possible cause: Core jammed Remedy: Clean core and core tube |
| Possible cause: Valve seat leaking Remedy: Clean control bores |
| inadmissible operating conditions |
| Possible cause: Operating pressure excessive Remedy: Check maximum operating pressure and reduce pressure accordingly. |

17 Return

1. Unmount the valve as described in chapter **14** "Decommissioning".
2. Save the "goods return declaration" form – PDF file available online at:
<http://www.buschjost.com/service/other-documents/goods-return-declaration/>
3. Fill out the goods return declaration and fulfill the requirements.
4. **CAUTION** Consider the weight of the valve in the choice of packaging.
5. Enclose the printed goods return declaration in the parcel.

18 Disposal

1. Unmount the valve as described in chapter **14** "Decommissioning".
2. Dismantle valve parts to enable reusable materials to be recycled.
3. Dispose of valve parts as appropriate for their materials:

| Material | Way of disposal |
|---|--|
| Valve body, valve cover, diaphragm, o-rings | similar category to domestic refuse industrial waste |
| Solenoid (copper wire) | Electrical waste |

19 Directives and certificates

Note to Pressure Equipment Directive (PED)

The valves of series 84070 and 84080 correspond to Article 4 § 3 of the Pressure Equipment Directive 2014/68/EU (PED). This means that these valves are designed and manufactured in line to the good engineering practice.

The CE-sign at the valve refers not to the PED. Thus the declaration of conformity is not longer applicable for this directive.

Notes on EEC Directive

The valves shall be provided with an electrical circuit which ensures the limits of the harmonized standards EN 61000-6-3 and EN 61000-6-1 are observed, and hence the requirements of the Electromagnetic Compatibility Guideline 2014/30/EU satisfied. The CE-marking is related to this EU-requirements.

NSF certificate



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