

Hydraulic valves ...XD...

Type of protection "Structural safety c, EX h"

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1 About this documentation

1.1 Validity of the documentation


This documentation contains important information on the safe and proper transport, assembly, commissioning, operation, maintenance, disassembly and simple troubleshooting of the product.




- Read this documentation completely before working with the product.



The documentation version with which the product was supplied is valid.

1.2 Required and amending documentation

The product must not be commissioned until you have been provided with the marked applicable documentation is available marked with the book symbol  and you have understood and observed it.

| | Title | Document number | Document type |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
|  | Directional seat valves, direct operated, with solenoid actuation, type SE6 ..6X/...XD... | 22047-XD | Data sheet |
|  | Directional spool valves, direct operated, with solenoid actuation, type WE6..6X/...XD... | 23178-XD | Data sheet |
|  | 4/2 and 4/3 directional control valves, internally pilot-operated, externally pilot-operated type H-4WEH...XD... | 24751-XD | Data sheet |
| | General product information on hydraulic products | 07008 | Data sheet |

1.3 Representation of information

This documentation uses common safety instructions as explained in the following section.

1.3.1 Safety instructions

Safety instructions

The measures described for hazard avoidance must be observed.

Safety instructions are set out as follows:

| | |
|------------------|----------------------------------------|
| ⚠ WARNING | Type and source of danger! |
| | Consequences in case of non-compliance |
| | – Hazard avoidance measures |

- **Warning sign:** draws attention to the danger
- **Signal word:** identifies the degree of danger
- **Type and source of danger:** specifies the type and source of danger
- **Consequences:** describes the consequences of non-compliance
- **Precautions:** specifies how the danger can be prevented

| | |
|------------------|---------------------------------------------------------------------------------------------------|
| ▲ DANGER | Indicates a dangerous situation which will cause death or severe injury if not avoided. |
| ▲ WARNING | Indicates a dangerous situation which may cause death or severe personal injuries if not avoided. |
| ▲ CAUTION | Indicates a dangerous situation which may cause minor or medium personal injuries if not avoided. |
| NOTICE | Damage to property: The product or the environment could be damaged. |

2 Safety instructions

2.1 About this chapter

The product has been manufactured according to the generally accepted codes of practice. However, there is still the danger of personal injury and damage to property if you do not observe this chapter and the safety instructions in this documentation.

- Read this documentation completely and thoroughly before working with the product.
- Keep this documentation in a location where it is accessible to all users at all times.
- Always include the required documentation when you pass the product on to third parties.

2.2 Intended use

The product is a hydraulic valve for intended use in an explosive atmosphere.

The product is only intended for professional use and not for private use.

Intended use includes having read and understood this documentation.

Information on the admissible areas of application can be found in the "data sheet".

The hydraulic valve may only be operated in a technically perfect condition and used as described in these operating instructions. The connection conditions, application conditions and performance data defined in these operating instructions must not be changed.

2.3 Improper use

Any use deviating from the intended use is improper and thus inadmissible.

Bosch Rexroth AG does not assume any liability for damage caused by improper use. The user assumes responsibility for all risks surrounding improper use.

2.4 Qualification of personnel

The activities described in this documentation require basic knowledge of mechanics, electrics, hydraulics and pneumatics as well as knowledge of explosion protection. For transporting and handling the product, additional knowledge of how to handle lifting gear and the necessary attachment devices is required. In order to ensure safe use, these activities may only be carried out by an expert in the respective field or an instructed person under the direction and supervision of an expert.

2.5 Product-specific safety instructions

The following safety instructions apply to chapters 6 to 14.

| | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⚠ WARNING | <p>Explosion hazard due to ignitable atmosphere during all work on the hydraulic valve!</p> <p>During all work on the hydraulic valve (assembly, disassembly, etc.), there must not be an explosive atmosphere. Otherwise, an ignition may be triggered which may lead to an explosion.</p> <ul style="list-style-type: none"> – Before working with the hydraulic valve, ensure that no explosive atmosphere can occur during the work. |
| ⚠ WARNING | <p>Easily inflammable liquid!</p> <p>In connection with an explosive atmosphere or other heat sources, the use of liquids (e.g. hydraulic fluids, coolants, cleaning agents) may lead to explosions.</p> <ul style="list-style-type: none"> – Only use the hydraulic valve in the intended explosion protection area. – The ignition temperature of the liquid used must be 50 K higher than the maximum surface temperature of the hydraulic valve. |
| ⚠ WARNING | <p>Exceeding of maximum temperatures!</p> <p>Use of the hydraulic valve outside the approved temperature ranges may lead to functional failures like overheating of the of the valve solenoid. Explosion protection is therefore no longer ensured.</p> <ul style="list-style-type: none"> – Only use the hydraulic valve within the intended environmental and hydraulic fluid temperature range. |
| ⚠ WARNING | <p>Hot hydraulic valve surface!</p> <p>Risk of burning!</p> <ul style="list-style-type: none"> – Provide a suitable touch guard. – During operation, only touch the hydraulic valve with heat-protective gloves. Allow the hydraulic valve to cool down to room temperature before touching it directly with your hands during maintenance works. |
| ⚠ WARNING | <p>Modifications at the gaps of the pressure-resistant enclosure will create an explosion hazard!</p> <p>The terminal box forms a pressure-resistant gap with the cover (range A) and with the cable and line entry (range B) respectively, see also ➔ “Gap of the pressure-resistant enclosure” on page 20.</p> <ul style="list-style-type: none"> – No damage, dirt or any other alteration is admissible on the surfaces forming the pressure-resistant gaps. – The mounting screws of the cover and the cable and line entry must be assembled as specified. |

▲ WARNING**Explosion hazard caused by electrical voltage!**

- Explosion hazard by opening the cover while the valve is applied to electrical voltage. The cover of the terminal box closes the flameproof enclosure.
- Do not open the cover of the terminal box until the valve is de-energized and depressurized and there is no explosive atmosphere.

▲ WARNING**Pressurized system parts and leaking hydraulic fluid!**

When working at hydraulic systems with stored energy (accumulator or cylinders working under gravity), the hydraulic valve may even be pressurized after the pressure supply has been switched off. During assembly and disassembly works, the hydraulic valve or parts may fly around and cause personal injuries and/or damage to property. There is moreover the danger of serious injury caused by a leaking hydraulic fluid jet.

- Ensure before working at the hydraulic valve that the hydraulic system is depressurized and the electrical control de-energized.
- Completely unload the pressure at machines and systems before working at the hydraulic valve.

▲ WARNING**Non-compliance with functional safety!**

The hydraulic valve controls movements in machines or systems. In case of mechanical and electric faults, e.g. failure of the energy supply, persons may be caught by the system, slung away or bruised.

- During set-up of your circuit, observe functional safety e.g. according to EN ISO 13849.

▲ WARNING**Penetrating water and humidity!**

In case of use in humid or wet environments, water or humidity may penetrate electrical connections or the valve electronics. In this case, malfunctions may occur at the hydraulic valve.

- Only use the hydraulic valve within the intended IP protection class or lower.
- Ensure before the assembly that all seals and caps of the plug-in connections are tight and intact.

▲ CAUTION**Contaminated hydraulic fluid!**

Contamination in the hydraulic fluid may cause functional failures e.g. jamming or blocking of nozzles of the hydraulic valve. In the worst case, this can result in unexpected hydraulic functions.

- Ensure adequate hydraulic fluid cleanliness according to the specifications in the "data sheet" over the entire operating range.

▲ CAUTION**Leakage in case of incorrect working temperatures!**

Use of the hydraulic valve outside the approved temperature range may lead to permanent leakage.

- Only use the hydraulic valve within the intended environmental and hydraulic fluid temperature range.
- In case of leakage of hydraulic fluid, immediately exchange damaged seal rings or the hydraulic valve.

▲ CAUTION**Corrosion!**

The hydraulic valve has a surface protection, see "data sheet". Use of the hydraulic valve in humid environments still holds the danger of corrosion on the hydraulic valve and on the valve mounting screws and thus a reduction of the preload force of the screw connection. To avoid loosening of the hydraulic valve and mitigate the associated risk:

- Replace hydraulic valves with corrosion damage early.
- Check the surface protection on the hydraulic valve and the valve mounting screws at regular intervals.



Contact with salt water leads to increased corrosion at the hydraulic valve. This can lead to chemical corrosion of individual components of the hydraulic valve. Take suitable corrosion protection measures.

2.6 Notes on the valve use

The hydraulic valve must always be filled with hydraulic fluid.

2.7 Obligations of the machine end-user

The machine end-user of the Bosch Rexroth product is responsible for ensuring that the applicable provisions, rules and directives for explosion protection are observed.

IT security

The operation of installations, systems and machines basically requires the implementation of a holistic IT security concept which is state-of-the-art in terms of technology. Accordingly, Bosch Rexroth products and their properties have to be considered as components of installations, systems and machines for their holistic IT security concept. Unless otherwise documented, Bosch Rexroth products are designed for operation in local, physically and logically secured networks with access restrictions for authorized persons, and they are not classified according to IEC 62443-4-2.

3 General information on damage to property and damage to product

The warranty only applies to the delivered configuration.

- The claim to warranty expires if the product is assembled, commissioned and operated incorrectly, not used as intended and/or handled improperly.
- The following safety instructions apply to chapters 6 to 14.

NOTICE**Inadmissible mechanical load!**

- Impact or shock forces on the hydraulic valve may damage or even destroy it.
- Never use the hydraulic valve as handle or step. Do not place/put any objects on top of it.

NOTICE**Dirt and foreign particles in the hydraulic valve!**

- Penetrating dirt and foreign particles in the hydraulic valve lead to wear and malfunctions. Safe function of the hydraulic valve can no longer be ensured.
- During installation, ensure utmost cleanliness.
 - Before commissioning, ensure that all hydraulic connections are tight and that all seals and caps of the plug-in connections are correctly installed and undamaged.
 - Do not use linting fabric for cleaning.
 - Ensure that no cleaning agents are able to penetrate the hydraulic system.

NOTICE**Environmentally harmful hydraulic fluid!**

- Leaking hydraulic fluid leads to environmental pollution.
- Immediately remedy possible leakage.
 - Dispose of the hydraulic fluid in accordance with the currently applicable national regulations in your country.

4 Scope of delivery

The scope of delivery includes:

- Hydraulic valve
- Product documentation

1. ➞ Check the scope of delivery for completeness.

2. ➞ Check the scope of delivery for possible transport damage and report it to your responsible contact person in the sales department within one week.



In case of complaints, please contact Bosch Rexroth AG, see ➞ Chapter 16.1 “List of addresses” on page 29.




5 About this product



For information on the performance and product description please refer to the "data sheet".

5.1 Identification of the hydraulic valve

Some important name plate information are listed in the following table:

| | |
|-------------------------------------------|-----------------------------------------------------------------------------------------|
| Trade mark | Rexroth |
| Name of the manufacturer | Bosch Rexroth AG |
| Address of the manufacturer | 97816 Lohr am Main, Germany |
| Mark |  |
| Valve type | see "data sheet" |
| Date of production (year and week) | e.g. 23W01 = 1st calendar week 2023 |
| EX marking |  I M2 |
| |  II 2G |

5.2 Explosion protection marking

Zones, device groups and categories

The product must only be used in the areas corresponding to the device group and category. During use, also observe the other information on explosion protection in the "data sheet".

Table 1: Device groups and categories

| Device group and Area of application, properties (excerpt from the directives) category according to 2014/34/EU | |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I M1 | Firedamp areas (= device group I), i.e. underground parts of mines and their over-ground systems. In case of an explosive atmosphere, further operation is possible. Very high safety level. |
| I M2 | Firedamp areas (= device group I), i.e. underground parts of mines and their over-ground systems. In case of an explosive atmosphere, the device must be deactivated. High safety level. |
| II 1G | Potentially explosive areas where explosive gases, mists or vapors (= device group II) are continually, long-term or often present. Very high safety level. |
| II 2G | Potentially explosive areas where explosive gases, mists or vapors (= device group II) are occasionally present. High safety level. |
| II 3G | Potentially explosive areas where explosive gases, mists or vapors (= device group II) are normally not present or occur only rarely or short-time. Normal safety level. |
| II 1D | Potentially explosive areas where explosive dust/air mixtures (= device group II) are continually, long-term or often present. Very high safety level. |
| II 2D | Potentially explosive areas where explosive dust/air mixtures (= device group II) are occasionally present. High safety level. |
| II 3D | Potentially explosive areas where an explosive atmosphere due to stirred dust (= device group II) is normally not present or occurs only rarely or short-time. Normal safety level. |

6 Transport and storage

6.1 Transporting the hydraulic valve

⚠ CAUTION

Danger of damage to property and personal injuries!

The hydraulic valve can fall down during improper transportation and lead to damage and/or injuries.

- Use personal protective equipment (such as gloves, working shoes, safety goggles, working clothes, etc.).
- Comply with the national laws and regulations regarding occupational health and safety and transport.
- Do not transport the hydraulic valve using components with low stability, e.g. valve solenoids, connectors or cables.

⚠ CAUTION

Sharp edges!

Danger of cut injuries!

- Wear suitable protective equipment for the transport of the hydraulic valve.



Further information regarding the transport is available from Bosch Rexroth, see ➔ Chapter 16.1 "List of addresses" on page 29.

6.2 Storing the hydraulic valve

Hydraulic valves can be stored for up to 12 months under the following conditions:

- Hold the storage temperature range as specified in the "data sheet".
- The relative air humidity must not exceed 65%.
- The storage rooms must provide 100% UV protection.
- The hydraulic valve must not be exposed to ozone.
- The storage facilities must be free from etching substances and gases.
- Do not store the hydraulic valve outdoors but in a well-ventilated room.
- Protect the hydraulic valve against humidity.
- Store the hydraulic valve protected against impacts and sliding and do not stack it.
- Protect the hydraulic valve from dust and dirt.
- All connections at the hydraulic valve must be closed with cap elements.

Procedure after the expiration of the maximum storage time of 12 months

1. ➔ Check the complete hydraulic valve for damage and corrosion prior to installation.

2. ➔ In a test run, check the hydraulic valve for correct function and leak-tightness.



After expiry of the maximum storage time, we recommend having the hydraulic valve checked by your competent Bosch Rexroth service. In case of questions regarding spare parts, please contact local Bosch Rexroth service responsible for your hydraulic valve.

After disassembly

If a dismantled hydraulic valve is to be stored, it has to be preserved for protection against corrosion for the duration of storage.

Bosch Rexroth recommends the following procedure:

1. ➤ Proceed as described in chapter 10.1 "Cleaning and care".

2. ➤ Pack the hydraulic valve with a desiccant air-tightly in corrosion protection film.



In each case, please observe any applicable provisions and laws regarding the handling of substances hazardous to water or to health.

7 Assembly

7.1 Changes at the surface protection of the hydraulic valve

⚠ WARNING

Explosion hazard due to modifications on the hydraulic valve!

In the event of changes to the surface protection of the hydraulic valve, the following points must be observed:

- The valve solenoid must not be painted or otherwise coated with non-conductive substances. This leads to a loss of the explosion protection.
- Painting of the hydraulic valve housing may only be applied according to the provisions of EN 80079-36, section 6.7; otherwise, explosion protection can no longer be ensured.

7.2 Before the assembly

⚠ CAUTION

High pressure!

Risk of injury!

- Carry out any work at the hydraulic valve only after the system has been depressurized.

⚠ WARNING

Explosion hazard due to wrong area of application!

A hydraulic valve which is not approved for the area of application can cause explosions!

- Please check if you have the right valve type by means of the type designation on the name plate of the hydraulic valve.
- Transport protection elements (e.g. cover plates, protective plugs) must be removed prior to use in an explosive atmosphere.

7.3 Required accessories

Valve mounting screws



The information regarding the valve mounting screws can be found in the "data sheet".

Subplates



The information regarding the subplates can be found in the "data sheet".

Ordering address for accessories and hydraulic valves

The address of our responsible sales organizations can be found on the Internet at www.boschrex-roth.com and in the ➔ Chapter 16.1 "List of addresses" on page 29.

7.4 Assembling the valve

7.4.1 Installing the hydraulic valve in the system

1. ➔ Check the seal rings on all sealing surfaces for completeness and intactness. Other sealants are not admissible.
2. ➔ Place the hydraulic valve on the mounting surface.
3. ➔ Tighten all valve mounting screws. The following tightening torques apply to installation on cast iron or steel.

| Type | Size | Tightening torque with admissible tolerance | Number of valve mounting screws |
|-------------------|---------------|---------------------------------------------|---------------------------------|
| SE6 ..6X/...XD... | NG6 | 7 Nm \pm 10% | 4 |
| WE6..6X/...XD... | NG6 | 7 Nm \pm 10% | 4 |
| H-4WEH...XD... | NG10 | 12.5 Nm \pm 10% | 4 |
| | NG16 (M10x60) | 58.0 Nm \pm 10% | 4 |
| | NG16 (M6x60) | 12.5 Nm \pm 10% | 2 |
| | NG25 | 100.0 Nm \pm 10% | 6 |
| | NG32 | 340.0 Nm \pm 10% | 6 |

ⓘ If the hydraulic valve is to be mounted on mounting surfaces of a different material, it might be necessary to use a lower tightening torque in order to exclude any damage.

7.4.2 Establishing the electrical connection

⚠ WARNING

High electrical voltage!

Danger to life, risk of injury caused by electric shock due to incorrect connection and faulty pin assignment.

- Provide for proper, safe PE connection.
- Before switching on, check whether the protective grounding conductors at all electric devices are firmly connected according to the connection diagram.
- Close the terminal box according to the guidelines in these operating instructions.
- Do not operate the valve solenoid with AC voltage.

⚠ WARNING

Explosion hazard due to missing equipotential bonding!

Electrostatic processes, an incorrect grounding concept or missing equipotential bonding may lead to an explosion. Moreover, this can cause hydraulic malfunctions!

- Provide for correct grounding and provide for proper equipotential bonding.
- The base plate and/or subplate on which the valve is fitted must be electrically conductive and included in the equipotential bonding according to EN 60079-14 and IEC 60364-4-41.

⚠ WARNING

Explosion hazard caused by overheating!

A wrongly dimensioned fuse protection may lead to overheating and thus explosion!

- Technical design of the fuse protection, see "data sheet"
- This fuse or a protective motor switch may only be fitted outside the potentially explosive area or must be of an explosion-proof design.

⚠ WARNING

Explosion hazard due to improper installation!

No precautions are taken for safe connection of the shielding or sheathing in the terminal box of the valve solenoid and on the cable and line entry. The use of connection lines with shielding or sheathing can lead to potential backfeeding and is thus an explosion hazard!

- Only use connection lines without shielding or sheathing.



For information on the prescribed pre-fuse, see "data sheet".

⚠ CAUTION

Danger of damage to property and personal injuries!

A faulty energy supply can lead to uncontrolled switching processes. These could result in possible malfunctions or failure of the hydraulic valve.

- Only use a power supply unit with safe separation.
- Always comply with the country-specific regulations.

⚠ CAUTION**Danger of short circuit due to missing seals and caps!**

Fluids may enter the valve and cause a short-circuit.

- Before commissioning, ensure that all seals and caps of the plug-in connections are leak-proof.

NOTICE**Risk of short-circuit!**

Condensed water can build up in the terminal box and cause a short-circuit!

- Allow the hydraulic valve to acclimatize for a few hours before establishing the electrical connection.

- Only the cable and line entry installed in the scope of delivery may be used.
- When selecting the connection line, please observe the requirements regarding the temperature rating and avoid contact of the connection line with the of the valve solenoid surface. For selection and installation, observe the requirements of EN 60079-14.
- Only a properly installed connection line will ensure the type of protection "flameproof enclosure".
- Ensure that there are no bends in the connection line and braided wires to avoid short-circuits and interruptions.
- Only assemble the cable and line entries according to the assembly instructions. Before assembly, check whether the individual components of the cable and line entry are complete and that the sealing elements are undamaged.
- The sealing elements of the cable and line entry are only intended for single use.
- Use finely stranded conductors only if they have pressed-on wire end ferrules.
- Use only lines satisfying the requirements on the terminal areas of the connection terminals and the cable and line entry, refer to "data sheet".
- During installation, ensure that the sealing elements are correctly seated to warrant the leak-tightness of terminal box and cable and line entry.
- Route the connection line in a strain-relieved form. The first mounting point must be within 15 cm of the cable and line entry.
- The wires of the connection line are connected to the 2-pole operating voltage connection and to the connection for protective grounding conductor. Connect the separate equipotential bonding conductor to the connection for potential equalization conductor. The position of the ports can be seen in the following figure.



Connection of the valve solenoid is polarity-independent.

Gap of the pressure-resistant enclosure

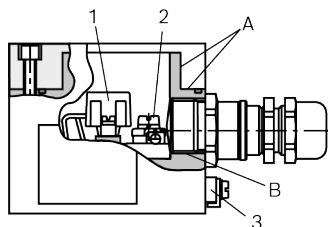


Fig. 1: View of valve solenoid

- 1 Operating voltage connection
- 2 Connection for protective grounding conductor
- 3 Connection for potential equalization conductor
- A, B Pressure-resistant gap

Connecting connection lines to valve solenoids with terminal box

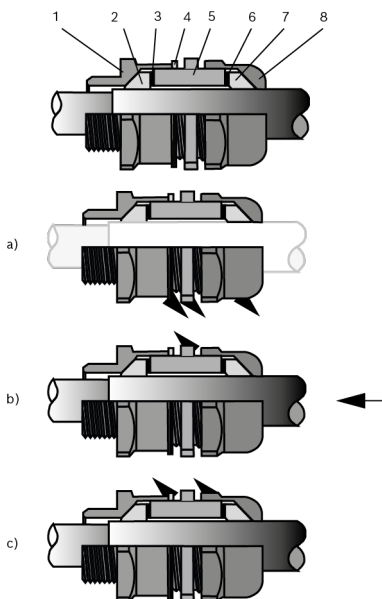


Fig. 2: Cable and line entry

- 1 Adapter with O-ring
- 2 Seal ring
- 3 Pressure ring
- 4 Locking ring
- 5 Main section
- 6 Pressure ring

- 7 Seal ring
- 8 Sealing nut

1. ➤ De-energize and depressurize the relevant system part.
2. ➤ Open the terminal box (internal hexagon, SW 4)
3. ➤ Remove the outer sheath of the connection line and the insulation of the individual conductors. When selecting the connection line, observe the information in the "data sheet".
 - ⓘ The stripping lengths can be taken from ➔ ["Stripping lengths" on page 22](#).
4. ➤ Assemble the cable and line entry as shown in the fig. "Cable and line entry".
 - ⓘ If you need to replace the cable and line entry during maintenance, screw the adapter **(1)** into the terminal box with a tightening torque of 24...26 Nm (SW 27). The release and tightening torque must not be discharged via the valve; it must be absorbed by exerting counterpressure on the terminal box.
 - **a)** Ensure that the seal rings **(2, 7)** are in a depressurized state. If necessary, loosen the locking ring **(4)**, the main part **(5)** and the external sealing nut **(8)**. If you have disassembled the cable and line entry completely, the installation must ensure that the seal rings **(2, 7)** are in the correct position.
 - **b)** Move the connection line through the cable and line entry to the desired position. The outer sheath of the connection line must be inserted so that it is sealed by both seal rings **(2, 7)**. Otherwise, the explosion protection and the IP protection are not ensured. Screw the main part **(5)** into the adapter **(1)** until the inner seal ring **(2)** has noticeably come into contact with the connection line. Now tighten the main part with another rotation using a wrench (SW 24). When tightening the main part **(5)**, the adapter **(1)** must be held against using an open-end wrench (SW 27).
 - **c)** Tighten the external sealing nut **(8)** (SW 24) until the external seal ring **(7)** has noticeably come into contact with the connection line. Then tighten the sealing nut with another rotation using a wrench (SW 24). When tightening the sealing nut **(8)**, the adapter **(1)** must be held against using an open-end wrench (SW 27). Finally, turn the locking ring **(4)** with your hand against the adapter **(1)**.
5. ➤ Screw in the clamping screws to fix the line ends.
Tightening torques for the clamping screws:
Table 2: Tightening torques

| | |
|-----------------------------------------------------------|--------------|
| Operating voltage connection | 0.4...0.5 Nm |
| Connection for protective grounding conductor | 1.0...1.2 Nm |
| Connection for potential equalization conductor (outside) | 2.0...2.4 Nm |
6. ➤ Place the O-ring into the groove of the terminal box and assemble the cover.
Tighten the mounting screws with the spring washers diagonally, one after the other. Tightening torque of the cover screws: 2...2.2 Nm.
 - ⓘ When replacing the cover mounting screws, only the screws supplied in the spare parts kit (seal kit terminal box) may be used, see chapter "Spare parts".

Stripping lengths

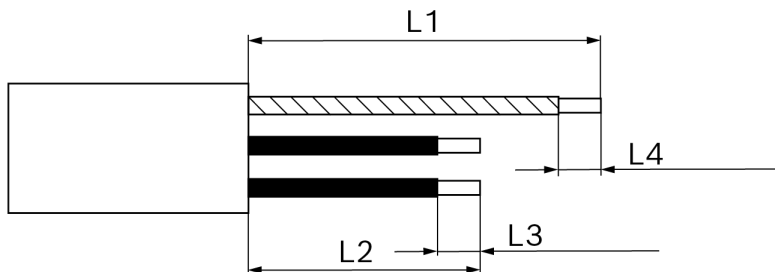


Fig. 3: Stripping lengths

L1 Stripping length of outer sheath of the connection line ≥ 55 mm

L2 Stripping length of outer sheath for operating voltage connection 30 mm

L3 Stripping length individual conductors for operating voltage connection 6...8 mm

L4 Stripping length individual conductor protective grounding conductor (inside) 5...6 mm

Stripping length connection for potential equalization conductor (outside) 9...10 mm

8 Commissioning

⚠ WARNING

Faulty assembly!

If the hydraulic valve is not correctly mounted, persons might be injured and the hydraulic valve or system could be damaged when commissioning the hydraulic valve.

- The valve solenoid must only be started with connected protective grounding conductor and connection for potential equalization conductor.

In order to commission the hydraulic valve, proceed as described in the sections below:

Check electrical connections

- Check the inside of the terminal box for corrosion. In case of visible corrosion, do not install the hydraulic valve.
- The electrical connections in the terminal box must be checked for proper condition before re-commissioning or initial operation.
- Seals are subject to a natural process of aging and for this reason, check seals for damages every time the terminal box is opened and replace them if required.

Bleeding the hydraulic system



Observe the operating instructions of the device and/or system into which the hydraulic valve is installed.

- Before the actual operation, switch the hydraulic valve several times with reduced pressure. As a result, residual air is forced out of the hydraulic valve.
- You can also achieve the switching movement of the valve control spool necessary for the bleeding procedure by manually actuating the manual override.

Set switching time (only relevant for type H-4WEH...XD...)



With hydraulic valves, which have been equipped with a twin throttle check valve ex factory (**type ...S... or ...S2...**), see "data sheet", you can adjust the switching time yourself.

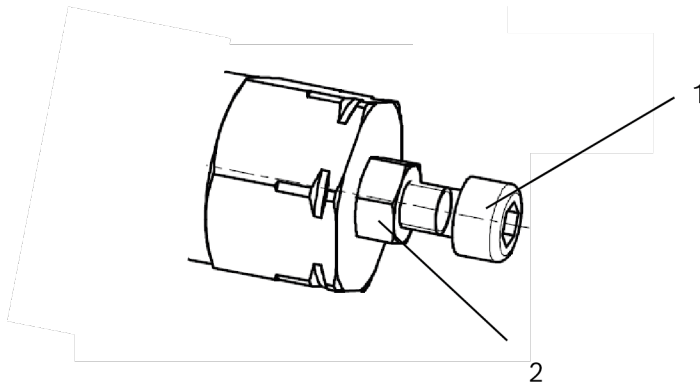


Fig. 4: Adjustment unit for switching time adjustment

1. ➔ Loosen the lock nut (2) (SW 10).
2. ➔ Change the switching time by rotating the set screw (1) (internal hexagon, SW 5).
 ⚙ **Clockwise** rotation extends the switching time.
Counterclockwise rotation shortens the switching time.
3. ➔ Hold the set screw (1) in position with the hexagon socket wrench and tighten the lock nut (2) with a tightening torque of 8 Nm \pm 25%.

9 Operation

9.1 General information

▲ WARNING

Explosion hazard caused by overheating!

Loss of explosion protection due to overheating!

- In case of hydraulic valve with two solenoids, maximally one of the valve solenoids may be energized at a time.

Only valid for type WE6...6X/...XD... and SE6...6X/...XD...:

- In case of bank assembly, only one solenoid of all hydraulic valves may be energized at a time.

9.2 Operating the manual override

The valves are equipped with a manual override. Using this manual override, the switching function of the hydraulic valve can also be triggered if the solenoid is not electrically energized.

NOTICE

Incorrect operation of the manual override!

There is a danger of damage to the manual override as well as the sealing surfaces on the valve solenoid.

- Press the manual override manually.

The manual override is only intended for short-time manual operation and must not be brought into a certain spool position by means of mechanical devices. The manual override is located on the side of the valve solenoid facing away from the valve.



With hydraulic valves, the manual override is only useful if the pressure in the tank channel of the hydraulic valve does not exceed 50 bar. Above this pressure value, the actuating force to be applied is relatively large.

10 Maintenance and repair

10.1 Cleaning and care

NOTICE

Solvents and aggressive, highly inflammable cleaning agents!

Aggressive cleaning agents may damage the seals and the surface of the hydraulic components and let the product age faster.

- Do not use solvents or aggressive, easily inflammable cleaning agents.

NOTICE

Water jet!

A high-pressure washer's water pressure could damage the hydraulic system and the seals of hydraulic components.

- Do not use a high-pressure washer for cleaning.

- Close all openings with appropriate protective caps.
- Only clean hydraulic components using a damp, non-linting cloth. Only use water and, if necessary, a mild cleaning agent.
- Remove dust and dirt accumulations on the hydraulic valve at regular intervals.

10.2 Inspection and maintenance

The following inspection, testing and maintenance works are to be carried out regularly. The intervals for the same have to be selected in a way – also dependent on the operating conditions – that deficiencies that have to be anticipated are identified timely. The check must, however, at least be carried out every **three years from the date of manufacture of the hydraulic valve**. The date of manufacture of the hydraulic valve can be seen from the name plate.

1. ➤ De-energize and depressurize the relevant system part.
2. ➤ Check all external fittings for completeness and tight seat.
3. ➤ Check cable and line entry, external grounding connection and connection line for tight seat.
4. ➤ Check hydraulic valve for external leakage and replace seals, if required, see ➔ [Chapter 10.3 "Repair" on page 25](#).
5. ➤ Open the terminal box and replace any damaged seals.
6. ➤ Check the inside of the terminal box for corrosion. Corrosion is an indication of leakage. In case of visible corrosion, remove the hydraulic valve and have it repaired.
7. ➤ Check all screws and connections for tight seat.
8. ➤ Check all connection lines for damage. Replace the connection line if there is any visible damage.
9. ➤ The sealing elements of the cable and line entry are only intended for single use only use. Renew the cable and line entry and blind plug after each loosening; for spare parts, see ➔ [Chapter 10.4 "Spare parts" on page 26](#).
10. ➤ Re-assemble the cover of the terminal box with the seal beneath it. Tighten the mounting screws with the spring washers diagonally, one after the other. Tightening torque of the cover screws: 2...2.2 Nm.



When replacing the cover mounting screws, only the screws supplied in the spare parts kit (seal kit terminal box) may be used, see ➔ [Chapter 10.4 "Spare parts" on page 26](#).

10.3 Repair

▲ WARNING

Explosion hazard due to improper repair!

Improper repair will void the explosion protection!

- Defective seals may only be replaced by new interchangeable seals in original equipment quality.



The machine end-user can repair external leakage of the valve connection surface.
Other repair work must be carried out by Bosch Rexroth.

Rectifying leakage at the valve connection surface

1. ➤ Remove the hydraulic valve, see ➡ Chapter 11 “Disassembly and replacement” on page 27.
2. ➤ Replace the seals.
3. ➤ Assemble the hydraulic valve back to the mounting surface.

10.4 Spare parts

Seal kit for the valve connection surface

Table 3: Seal kit for the valve connection surface

| Type | Spare part | Material number |
|-------------------|--------------|-----------------|
| SE6 ..6X/...XD... | FKM seal kit | R900075700 |
| WE6..6X/...XD... | NBR seal kit | R961000837 |
| | FKM seal kit | R961000838 |
| H-4WEH10...XD... | NBR seal kit | R961001132 |
| | FKM seal kit | R961001131 |
| H-4WEH16...XD... | NBR seal kit | R961001255 |
| | FKM seal kit | R961001256 |
| H-4WEH25...XD... | NBR seal kit | R961001257 |
| | FKM seal kit | R961001258 |
| H-4WEH32...XD... | NBR seal kit | R961001259 |
| | FKM seal kit | R961001260 |



Ensure the suitability of the sealing materials for the hydraulic fluid used! See "data sheet".

Terminal box spare part kit

Table 4: Terminal box spare part kit

| Spare part | Material number |
|----------------------------------------|---------------------|
| Spare parts kit terminal box contains: | upon request |

- 1 x O-ring for terminal box
- 1 x cable and line entry
- 4 x spring washers for terminal box
- 4 x Hexagon socket head cap screws for cover fastening



The spare parts can be obtained at the address given in ➡ Chapter 16 “Appendix” on page 29.

11 Disassembly and replacement

▲ CAUTION

Falling of an incompletely disassembled hydraulic valve!

An incompletely disassembled hydraulic valve may fall and cause injuries.

- During disassembly, secure the hydraulic valve against falling.

Have sufficiently dimensioned collecting containers, sufficient cleaning cloths and medium-binding materials ready in order to collect or bind leaking hydraulic fluid.

1. ➤ De-energize and depressurize the relevant system part.
2. ➤ Disconnect the electrical connections professionally.
3. ➤ Remove the hydraulic valve mounting screws and remove the valve from the mounting surface.
4. ➤ Close the valve connection surface.

When replacing the hydraulic valve, all further steps are analogous to the assembly.

12 Disposal

12.1 Environmental protection

Careless disposal of the product and the hydraulic fluid could lead to environmental pollution.

- Thus, dispose of the product and the hydraulic fluid in accordance with the currently applicable national regulations in your country.
- Dispose of hydraulic fluid residues according to the applicable safety data sheets for these hydraulic fluids.

12.2 Recycling

Due to the high metal share, hydraulic products can mostly be recycled.

13 Extension and modification

▲ WARNING

Explosion hazard due to impermissible extension or modification!

Every non-permitted extension or modification will void the explosion protection.

- No extensions or modifications may be made which are not described in these operating instructions.

14 Troubleshooting

14.1 Fault table

The hydraulic valve is usually not sensitive to faults if the prescribed application conditions and hydraulic fluid quality are complied with.

Table 5: Fault table

| Error | Possible cause(s) | Remedy |
|-------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product does not switch | Electrical connection interrupted, no current continuity | |
| | • Cable break | Replace connection line |
| | • Electrical defect in valve solenoid | Remove product and have it repaired |
| | • No pressure at P | Check and/or reapply pressure at port P |
| | • Control spool is jammed due to contamination | If possible, try to release the control spool by manually actuating the manual override, see ➔ Chapter 9.2 "Operating the manual override" on page 24. In case of failure: Remove product and replace with new product. |
| | • Only relevant for type H-4WEH...XD...: Required minimum pilot pressure is not achieved | Check whether the pressure at port X with external pilot oil supply or at port P with internal pilot oil supply achieves the value for the minimum pilot pressure specified in the "data sheet, technical data, hydraulic". Restoring/establishing the minimum pilot pressure. |
| External leakage | • Only relevant for type H-4WEH...XD...: Pilot pressure too high | Reduce the pilot pressure or use a product with a pressure reducing valve already installed. |
| | • Contact problems on the connection terminals | Check the mounting screws of the connection terminals and tighten using a manual torque wrench. Observe ➔ Chapter 7.4.2 "Establishing the electrical connection" on page 18. |
| | Seal defective | |
| | • Seal at the connection surface is defective | Removing the product and replacing the seals |

Following faults due to contamination, it is – in addition to the repair – essential to check the oil quality and improve it, if necessary, by suitable measures such as flushing or the additional installation of filters.

15 Technical data

For the technical data of your product please refer to the "data sheet".

16 Appendix

16.1 List of addresses

Contacts for service and spare parts

Bosch Rexroth AG
Bürgermeister-Dr.-Nebel-Straße 8
97816 Lohr am Main, Germany
Phone +49 (0) 9352/40 50 60
Email: service@boschrexroth.de

Headquarters

Bosch Rexroth AG
Zum Eisengiesser 1
97816 Lohr am Main, Germany
Phone +49 (0) 9352/18-0

For questions about the product

Phone +49 (0) 9352/40 30 20
Email my.support@boschrexroth.de



The addresses of our sales and service network and sales organizations can be found at www.boschrexroth.com/adressen

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