

2-way cartridge valve, actively controllable

Type LC2A016...125

Mounting instructions
RE 21040-MON/11.16

Replaces ---
English



The data specified only serve to describe the product. If information on the use of the product is given, it is only to be regarded as application examples and recommendations. Catalog information does not constitute warranted properties. The information given does not release the user from the obligation of own judgment and verification. Our products are subject to a natural process of wear and aging.

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The cover shows an example configuration. The product supplied may therefore differ from the figure shown.

The original operating instructions were prepared in German.

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1 About this documentation

1.1 Validity of the documentation

This documentation is valid for the following products:

- 2-way cartridge valve, actively controllable, type LC2A016...125

This documentation is intended for machine manufacturers, fitters, and plant operators.

This documentation contains important information on the safe and appropriate installation, transport, and removal of the product.

- You should read this documentation thoroughly and in particular the 2 "Safety instructions" chapter and the 3 chapter "General information on damage to property and damage to the product" before working with the product.

Scope of product

Tabelle 1: Main features of the product

Valve type	Size	Component series
LC2A	16	1X
	25	1X
	32	1X
	40	1X
	50	1X
	63	1X
	80	1X
	100	1X
	125	1X

1.2 Required and supplementary documentation






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

Tabelle 2: Required and supplementary documentation

Title	Document number	Document type
 Hydraulic valves for industrial applications	07600-B	Operating instructions
 2-way cartridge valve, directly controllable, type LC2A	21040	Data sheet
 2-way cartridge valves, directional functions	21010	Data sheet
 Mating connectors and cable sets for valves and sensors	08006	Data sheet

1.3 Representation of information

Uniform safety instructions, symbols, terms and abbreviations are used to ensure quick and safe working with the product using this documentation. For a better understanding, they are explained in the following sections.

1.3.1 Safety instructions




In this documentation, safety instructions are included in chapter 2.6 “Product-specific safety instructions” and in chapter 3 “General information on damage to property and damage to product” and whenever a sequence of actions or instructions is explained which bear the danger of personal injury or damage to property. The hazard avoidance measures described must be observed.

Safety instructions are structured as follows:

 SIGNAL WORD
Type and source of danger! Consequences in case of non-compliance <ul style="list-style-type: none"> ▶ Hazard avoidance measures ▶ <Enumeration>

- **Warning symbol:** draws attention to a hazard
- **Signal word:** identifies the degree of danger
- **Type and source of danger!:** specifies the type and source of danger
- **Consequences:** describes the consequences in case of non-observance
- **Precaution:** specifies how the danger can be prevented


Tabelle 3: Risk classes according to ANSI Z535.6-2006

Warning sign, signal word	Meaning
 DANGER	Indicates a hazardous situation which, if not avoided, will certainly result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Damage to property: The product or the environment could be damaged.

1.3.2 Symbols

The following symbols indicate notices which are not safety-relevant but increase the comprehensibility of the documentation.

Tabelle 4: Meaning of the symbols

Symbol	Meaning
	If this information is disregarded, the product cannot be used or operated in an optimum manner.
▶	Individual, independent action
1.	Numbered instruction:
2.	The numbers indicate that the actions must be carried out one after the other.
3.	

2 Safety instructions

2.1 About this chapter

2-way cartridge valves, actively controllable, from Bosch Rexroth are manufactured according to the generally accepted codes of practice. However, there is still a risk 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 component. It is intended for use in industrial systems and machines.

The product is intended exclusively for professional use and not for private usage.

You may use the valve as follows:

- while adhering to the operating and ambient conditions according to the data sheet
- while adhering to the given performance limits
- In the original condition, without damage
- Repairs by customers are not permitted

Intended use includes having read and understood this documentation completely, especially chapter 2 “Safety instructions”.

2.3 Improper use

Any use other than described in the section “Intended use” is considered as improper and is therefore not permitted.

Using the valve as safety component is not permitted, unless explicitly stated in the data sheet or additional operating instructions.

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

Improper use includes, but is not limited to the following, foreseeable misuse:

- Use in potentially explosive atmospheres
- Improper storing
- Incorrect transport
- Lack of cleanliness during storage and assembly
- Faulty installation
- Use of unsuitable/non-approved media
- Exceeding of the specified maximum pressures

- Operation outside the permissible temperature range
- Unsuitable applications

2.4 Qualification of personnel

The activities described in this documentation require basic knowledge of mechanics, electrics, hydraulics, as well as knowledge of the related technical terms. 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.

Experts are those who are able to recognize potential dangers and apply the appropriate safety measures due to their professional training, knowledge and experience, as well as their understanding of the relevant conditions pertaining to the work to be undertaken. An expert must observe the relevant specific professional rules and have the necessary expert knowledge.

Expert knowledge means for example for hydraulic products:

- Reading and completely understanding hydraulic circuit diagrams,
- in particular, completely understanding the correlations regarding safety equipment and
- knowledge of the function and structure of hydraulic components.



Bosch Rexroth offers measures that support your qualification in specific fields. You can find an overview of the training contents on the Internet at:

<http://www.boschrexroth.com>

2.5 General safety instructions

- Observe the valid regulations on accident prevention and environmental protection.
- Observe the safety regulations and provisions of the country in which the product is used/applied.
- Exclusively use Rexroth products in technically perfect condition.
- Observe all notices on the product.
- Persons who install, commission, operate, demount or maintain Rexroth products must not consume any alcohol, drugs or pharmaceuticals that may affect their ability to respond.
- Only use genuine Rexroth accessories and spare parts in order to exclude any hazard to persons due to unsuitable spare parts.
- Comply with the technical data and environmental conditions specified in the product documentation.
- The installation or use of inappropriate products in safety-relevant applications could result in unintended operating states in the application which in turn could cause personal injuries and/or damage to property. Therefore, only use a product for safety-relevant applications if this use is expressly specified and permitted in the documentation of the product, e.g. in explosion protection zones or in safety-related parts of control systems (functional safety).

- You may commission the product only when it has been established that the final product (for example, a machine or system), in which the Rexroth product is installed, complies with national regulations, safety regulations and standards relevant for the application.

2.6 Product-specific safety instructions

The following safety instructions apply to chapters 6 to 14.



WARNING

System parts under pressure and ejecting hydraulic fluid!

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

- ▶ Before working on the valve, ensure that the hydraulic system is depressurized and the electrical control is de-energized.
- ▶ Completely unload the pressure of machines and systems before working on valves.

Non-compliance with functional safety!

Hydraulic valves control 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, kicked away or bruised.

- ▶ When setting up your circuit, observe functional safety according to, for example, EN ISO 13849.

Improper mounting!

Mounting of the valve using valve mounting screws of reduced stability, insufficient mounting or fastening at blocks and plates with insufficient stability may cause the valve to become loose and fall down. Consequently, hydraulic fluid may leak and lead to personal injuries and/or damage to property. Valves with heavy weight may cause bruises or fatal injury. Particular caution applies to valves with suspended installation.

- ▶ Completely mount the valve according to the mounting specifications using suitable mounting aids.
- ▶ Only mount the valve to valve mounting faces, which are suitable for the weight of the valve.
- ▶ Observe the tightening torques and bolt strengths.

Easily inflammable hydraulic fluid!

In connection with fire or other heat sources, leaking hydraulic fluid mist may lead to fire or explosions due to defective or incompletely mounted valves and their connections.

- ▶ Do not use the valve in areas with open fire and only at a sufficient distance to hot heat sources.

! WARNING

Heavy weight and sharp edges of the valve!

The valve described here can be very heavy. In case of inappropriate handling, it may fall down and cause serious injuries and/or crush injuries as the valve may e.g. be sharp-edged, heavy, oily, loose or bulky.

- ▶ If necessary, transport the valve to its intended location using suitable lifting tools.
- ▶ Ensure a stable position while transporting the valve to the place of installation.
- ▶ Wear personal protective equipment when transporting and installing the valve.
- ▶ Observe national laws and regulations for accident prevention and safety and health at work during transport.

Hot surface!

Risk of burning!

- ▶ Provide for a suitable touch guard.
- ▶ During operation, touch the valve solenoid only using heat-resistant gloves. Allow the valve solenoid to cool down to room temperature before touching it directly with your hands during maintenance work.



Contact with salt water leads to increased corrosion at the valve. Thus, mounting screws and plug screws as well as moveable components may be chemically corroded and damaged. So take suitable corrosion protection measures.

2.7 Personal protective equipment

The machine end-user must provide personal protective equipment (such as gloves, working shoes, safety goggles, working clothes, etc.).

3 General information on damage to property and damage to product

The warranty only applies to the delivered configuration.

- Warranty claims will be rejected in the case of improper installation, commissioning and operation as well as in the case of use not in accordance with the intended purpose and/or improper handling.
- The following safety instructions apply to chapters 6 to 14.

NOTICE

Inadmissible mechanical movement!

Impact or shock forces on the valve may damage or even destroy it.

- ▶ Never use the valve as a handle or a step. Do not place/put any objects on top of it.

Dirt and foreign particles in hydraulic components!

Penetrating dirt and foreign particles lead to wear and malfunctions. Safe functioning of the valve is therefore no longer ensured.

- ▶ During assembly, ensure utmost cleanliness in order to prevent foreign particles such as welding beads or metal chips from getting into the hydraulic lines.

4 Scope of delivery

The scope of delivery includes:

2-way cartridge valve consisting of

- Intermediate cover
- Spool
- Bushing
- Spring (optional)
- Position switch (optional)

- ▶ Check the scope of delivery for completeness.
- ▶ Inspect the scope of delivery for any transport damage, see section 6 “Transport and storage”.



In case of complaints, please contact Bosch Rexroth AG, see chapter 11 “Annex”.

Valve mounting screws, cables and mating connectors for the inductive position switch are not included in the scope of supply, but can be ordered separately (see “*data sheet 21040*”)

5 About this product



For information on the performance and product description, please refer to the data sheet of your valve. The data sheet is available in the Media Directory at

www.boschrexroth.com/mediadirectory

6 Transport and storage

6.1 Transporting the valve



Bosch Rexroth hydraulic valves are high-quality products. To avoid damage to the valve, transport it in its original packaging.



CAUTION

Non-secured valves toppling over or falling down.

Unsecured valves can topple over or fall down and, in the case of heavy weight, bruise or strike persons dead.

- ▶ Use the original packaging for transport.
- ▶ Ensure a stable position while transporting the valve to the place of installation.
- ▶ Before it is completely installed, transport and secure the valve at the lifting eyes provided for this purposes, and not at parts of little stability.
- ▶ Use only suitable lifting gear for handling.
- ▶ Wear personal protective equipment.
- ▶ Comply with the national laws and regulations regarding occupational health and safety and transport.

Heavy components!

Lifting valves of heavy weight involves the risk of health damage.

- ▶ When carrying the valve, apply suitable techniques for lifting, lowering and relocating.
- ▶ Products >15 kg are usually fitted with lifting eyes for handling with lifting gear. Use these lifting eyes.
- ▶ Transport the valve by means of a fork lift truck or suitable lifting gear observing the safety instructions. Make sure that the load-carrying capacity of your lifting gear is sufficient.
- ▶ When handling the valve, take account of the weight and the center of gravity and use the mounting and suspension points provided.
- ▶ When handling the valve, secure it against falling over.
- ▶ Do not cant the valve.
- ▶ Put the valve carefully on the supporting surface in order that it is not damaged.

Sharp edges!

Danger of cut injuries!

- ▶ Wear suitable protective equipment when transporting the valve.
- ▶ Secure the lashing straps and the goods to be transported by taking suitable measures.

6.1.1 Transport using lifting tools

Please observe the following points for transporting:

- Properties of the load (e.g. weight, center of gravity, attachment and suspension points)
- Way of suspending or attaching the load.
- Make sure that the load carrying capacity of the lifting gear is sufficient for transporting the valve without any risks.
- Use textile slings according to DIN EN 1492-2.



More information regarding the transport is available from Bosch Rexroth. Further notes on handling by means of lifting gear can also be found in “*Operating instructions 07600-B*“, chapter 6 “*Transport and storage*“.



Notify your responsible sales contact person about any damage in transit within one week. The addresses of sales subsidiaries can be found on the Internet at: <http://www.boschrexroth.com/addresses>

6.2 Storing the valve

The valves are delivered in an unobjectionable state.



When transporting and storing the product, strictly adhere to the ambient conditions specified in the data sheet. Improper storage may damage the valve.

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

- ▶ Ensure a storage temperature range of +5...+40 °C.
- ▶ The relative air humidity may not exceed 65 %.
- ▶ The storage rooms must provide 100 % UV protection.
- ▶ No ozone formation may occur near the storage facility.
- ▶ The storage facilities must be free from etching substances and gases.
- ▶ Do not store the valve outdoors but in a well-ventilated room.
- ▶ Protect the valve against humidity, particularly ground humidity. Store the valve on a shelf or on a pallet.
- ▶ Store the valve protected against impacts and sliding and do not stack it.
- ▶ Valves can be very heavy. In this connection observe the admissible load-bearing capacities of your storage system.
- ▶ Store the valve in the original packaging or comparable packaging in order to protect it from dust and dirt.
- ▶ All connections at the valve must be closed with plug elements.

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

After expiry of the maximum storage time, we recommend having the valve checked by your competent Rexroth service. In case of questions regarding spare parts, please contact the Rexroth service responsible for your valve, see chapter 11 “Annex“.

7 Installation



CAUTION

High pressure!

Risk of injury due to parts being ejected during working on hydraulic accumulators which have not been unloaded.

- ▶ Carry out any work on the valve only after the system has been depressurized.
- ▶ Unload accumulators which may have been mounted on the system.
- ▶ Check the system with test pressure according to ISO 4413.
- ▶ Mounting work may only be carried out by specialists.

Leaking hydraulic fluid!

Risk of slipping.

- ▶ Remove protective caps only directly prior to the installation.
- ▶ Immediately remove spilled oil.

Insufficient installation space!

Risk of getting caught and crushing! Risk of damage to components! Insufficient installation space may lead to jamming or abrasions in case of actuation and adjustment work on the valve. Components cannot be properly mounted or might be damaged.

- ▶ Make sure that the installation space is sufficient.

7.1 Unpacking



CAUTION

Parts falling out!

Risk of injury! If the packaging is opened improperly, parts may fall out and cause injuries or damage to the parts.

- ▶ Put the packaging on level, bearing ground.
- ▶ Only open the packaging from the top.

Dispose of the packaging in accordance with the national regulations of your country.

7.2 Installation conditions

- ▶ When installing the product, strictly adhere to the ambient conditions specified in the data sheet.
- ▶ It is imperative to provide for absolute cleanliness. The valve must be protected from dirt during installation. Contamination of the hydraulic fluid may considerably reduce the service life of the valve.

7.2.1 Installation orientation

The installation orientation is optional; we recommend vertical installation.

7.3 Required tools

In order to install the valve, you need standard tools only. In addition, you require a torque wrench for tightening the valve mounting screws. The relevant tightening torques can be found in “*data sheet 21040*”.

7.4 Accessories

See “*data sheet 21040*”

7.5 Before installation

- ▶ Check the scope of delivery for completeness and damage in transit.
- ▶ Compare the material number and designation (type code) with the details on the order confirmation.



If the material number for the valve does not correspond to the one on the order confirmation, contact Rexroth Service for clarification; for address, see chapter 11 “Annex”.

- ▶ Drain the valve completely prior to installing it in order to prevent mixing with the fluid used in the machine.

7.6 Installing the valve

7.6.1 Installing the valve (NG 40...125) in the system

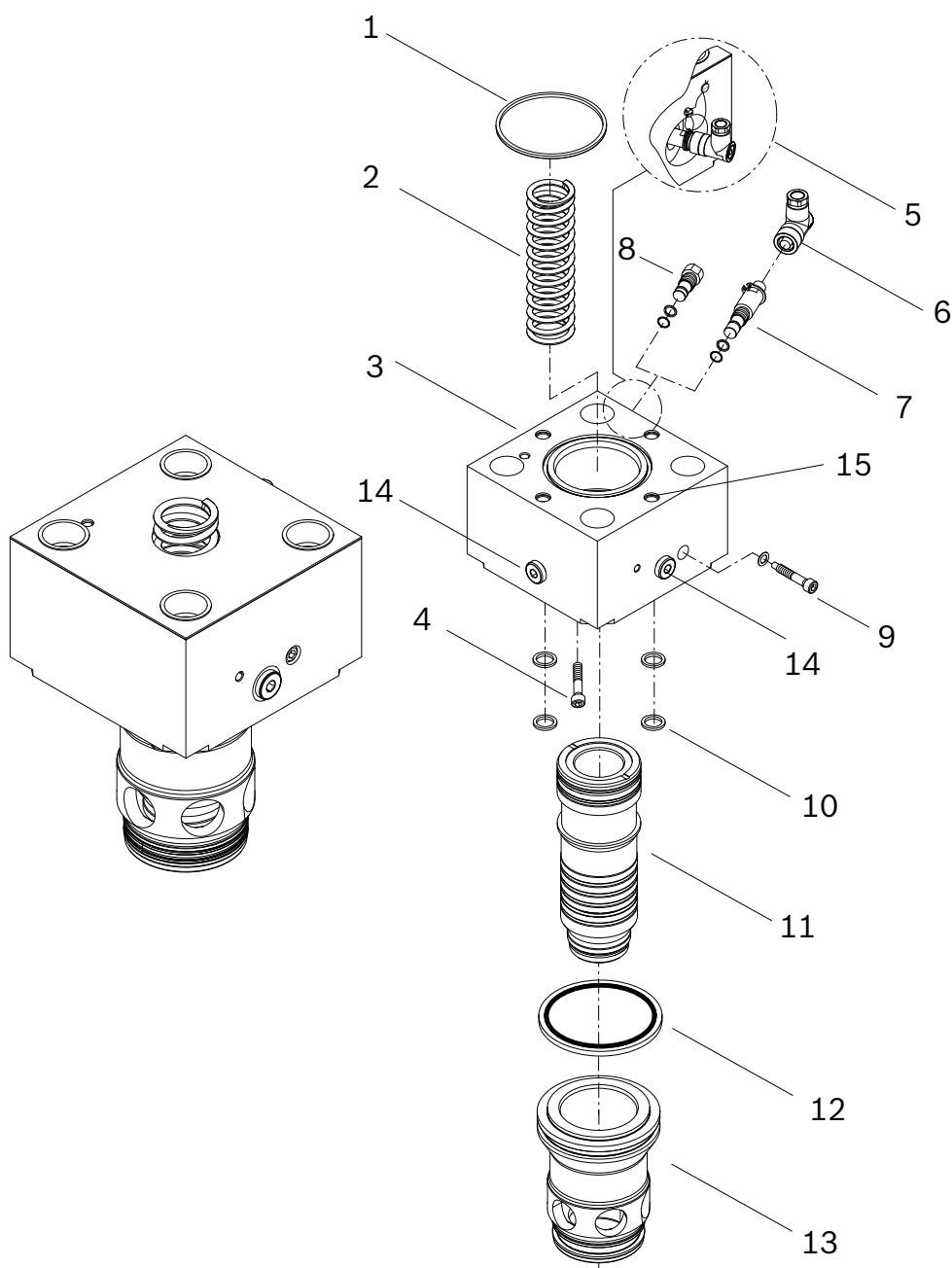


Fig. 1: Installation of LC2A016...063

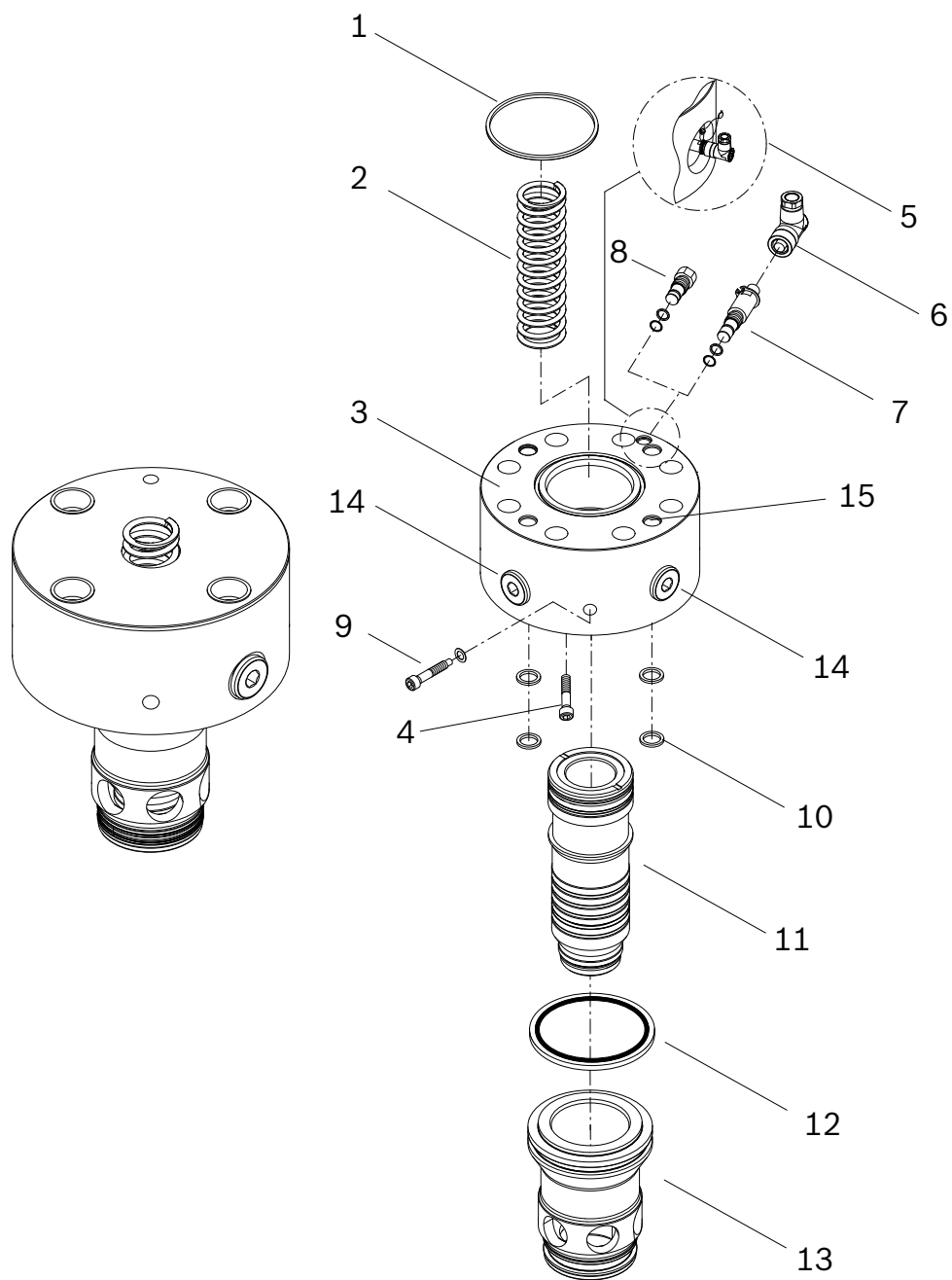


Fig. 2: Installation of LC2A080...125

- | | |
|--|---|
| 1 Seal on the intermediate cover | 2 Spring |
| 3 Intermediate cover | 4 Transportation lock of bushing |
| 5 Position switch in sealed condition | 6 Mating connector (can be ordered separately) |
| 7 Inductive position switch | 8 Plug screw (instead of item 7) |
| 9 Transportation lock of spool | 10 Seal of pilot oil channel |
| 11 Spool | 12 Axial seal ¹⁾ |
| 13 Bushing | 14 External pilot oil port |
| 15 Internal pilot oil channel (4x) | |

¹⁾ In the as-supplied condition, the two seal elements of the axial seal (plastic ring and O-ring) are fitted together.



WARNING

Faulty installation of valve mounting screws!

Improperly fastened valve mounting screws and lines may become loose during subsequent operation, fly around due to pressure and thus cause serious injury!

- ▶ Only pressurize your system after all valve mounting screws have been completely and properly mounted according to the instructions.



CAUTION

Leaking hydraulic fluid!

Hydraulic fluid may leak during mounting and demounting of valves. Consequently, persons may slip or fall.

- ▶ Immediately remove spilled hydraulic fluid.

Sharp edges!

Valves may have sharp edges at the valve openings. During transport or assembly/disassembly, cutting or abrasive injuries may result.

- ▶ Wear corresponding protective clothing during transport.
- ▶ Do not reach into valve openings!

NOTICE

Wear, tear and malfunction!

The cleanliness of the hydraulic fluid has a considerable impact on the cleanliness and service life of the valve. Any contamination of the hydraulic fluid will result in wear and malfunctions. Particularly foreign particles may damage the valve.

- ▶ Always ensure absolute cleanliness.
- ▶ Install the valve so that it is free from dirt.
- ▶ Make sure that all connections, hydraulic lines and attachment parts are clean.
- ▶ Take care that no detergents enter the hydraulic system.



Have sufficiently dimensioned collecting containers, non-linting cloth and medium-binding materials ready in order to collect or bind leaking hydraulic fluid.

1. Take the valve carefully out of the shipping package at the lifting eyes installed for this purpose (on sizes 63 or higher) using suitable lifting gear.
2. Remove any protective and packaging material.
3. Check that all seals are in place and intact.
4. Remove the transportation lock **(4)** of the bushing **(13)** and remove the bushing.

CAUTION! Parts falling out! Risk of injury! When the transportation lock **(4)** is removed incorrectly, the spool with spring and the bushing may fall out and cause personal injury or damage to the parts.

- ▶ Only open the transportation lock when the complete valve is placed on a suitable support.

5. Grease the seals on the bushing **(13)**.
6. Insert the bushing into the mounting cavity to the limit stop and press it carefully down to the bottom. When installing the bushing, observe the correct alignment of the bushing in relation to the mounting cavity. If necessary, use a soft-head hammer.

CAUTION! Damage to property! Improper installation of the bushing can cause damage to the bushing or to the mounting cavity.

- ▶ See to it that there is no axial offset between the bushing and the mounting cavity.
 - ▶ Take care not to damage or lose seals when inserting them.
 - ▶ Make sure that the bushing does not protrude. The permissible maximum axial play is 0.15 mm.
7. Insert the greased axial seal **(12)** in the **correction orientation** into the bushing.
 8. Grease the seal on the spool **(11)**.
 9. Grease the seals of the pilot oil channels **(10)**.
 10. Take care that the seals of the pilot oil channels are placed on the intermediate cover **(3)** in exactly the correct position.
 11. Insert the intermediate cover together with the spool **(11)** straight into the bushing **(13)** without applying any force while orienting the cover in the correct position (locating pin).

CAUTION! Damage to property! Improper installation of the spool **(11)** and the intermediate cover **(3)** can cause damage to the bushing **(13)** and to the spool **(11)**.

- ▶ While carrying out the installation work make sure that the spool is not tilted.
 - ▶ With horizontal installation, take care of a stable position of the spool **(11)** and the intermediate cover **(3)**. You can achieve this with the help of the lifting eyes provided and suitable lifting gear.
 - ▶ Take care not to damage seals when inserting them. Pay particular attention to the axial seal installed according to **section 7**.
12. Take care of the correct orientation of the intermediate cover **(3)**. Observe the porting pattern according to the symbol and connection labeling on the intermediate cover. A locating pin, which prevents the intermediate cover from being improperly placed on the mounting face, is provided on the connection face.



The connection face of the intermediate cover and the mounting face must be clean and free from hydraulic fluids. Use non-linting fabric for cleaning the mounting faces.

13. Insert spring **(2)**.
14. Take the control cover from the shipping packaging with the help of the lifting eyes and suitable lifting gear.



The control cover is not included in the scope of supply. Information on suitable control covers can be found in “*data sheet 21010*”.

When selecting the control cover, make sure that internal pilot oil channels, which are **not used (15)**, are hydraulically sealed.

15. Bring the control cover together with the intermediate cover **(3)**.



The connection faces of the intermediate cover and the control cover must be clean and free from hydraulic fluids. Use non-linting fabric for cleaning the mounting faces.

16. Take care of the correct orientation of the control cover. Observe the porting pattern according to the symbol and connection labeling on the control cover. A locating pin, which prevents the control cover from being improperly placed on the intermediate cover **(3)**, is provided on the connection face of the control cover.

CAUTION! Damage to property! Improper mounting of the control cover can lead to damage to the control cover and the intermediate cover.

- In the case of horizontal installation see to it that the spring is inserted in the spring centering feature of the control cover.
- Take care that all seals are present and not damaged when the control cover being inserted.

17. Use valve mounting screws according to the dimensions and strength classes specified in “*data sheet 21040*”.

18. Ensure that the valve mounting screws are tightened to the specified tightening torque. Tighten the screws alternately crosswise using a suitable torque wrench.

7.6.2 Installing the valve (NG 16...32) in the system



When installing valve LC2A016...032 observe the safety instructions given in chapter 7.6.1.

Basically, the installation of valve LC2A016...032 corresponds to the installation of valve LC2A040...125, see chapter 7.6.1.

However, valve LC2A016...032 is placed as complete unit (bushing with seals, spool with seals, intermediate cover with seals) into the mounting cavity and screwed to the mounting face. Take account of the deviating mounting steps from chapter 7.6.1.

7.6.3 Connecting the external pilot oil port hydraulically

NOTICE

Damage to the valve!

If you install hydraulic lines and hoses under stress, they generate additional mechanical forces during operation, which reduces the service life of the valve and of the complete machine or system.

- Install lines and hoses without stress.



It is **optionally** possible to hydraulically connect the pilot oil port **(14)** externally.

1. Depressurize the relevant system part.
2. Connect your line to the external pilot oil port **(14)** and while doing so observe the operating instructions of the system. The connection values can be found in "data sheet 21040".
3. Make sure that the line is properly tightened.

7.6.4 Connecting the inductive position switch electrically



The scope of supply of valves with inductive position switch **(7)** does not include cables and mating connectors.

You may use exclusively the mating connectors listed in "data sheet 21040" or mating connectors of the same type.

A lead seal **(5)** is provided between the inductive position switch **(7)** and the intermediate cover **(3)**.

On valves without inductive position switch, a screw **(8)** is provided instead of the inductive position switch to plug the bore.

! WARNING

High electrical voltage!

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

- The inductive position switch may only be connected by or under the supervision of a specialized electrician.
- De-energize the system before the installation, before pulling and connecting plug-in connectors and before carrying out any installation work. Secure the electrical equipment against restarting.
- Provide for proper, safe PE connection.
- Check before switch-on whether the protective earthing conductors at all electric devices are firmly connected according to the wiring diagram.

NOTICE

Uncontrolled disconnection and connection of plug-in connectors!

Device might be destroyed!

- ▶ Before carrying out any installation work, disconnect the valve from the mains or from the voltage source or de-energize it reliably.
- ▶ Do not plug in or pull the electric plug-in connector as long as the voltage supply is activated.

- ▶ The lines used have to be suitable for operating temperatures of -20 °C...+100 °C.
- ▶ Make sure that the voltage supply is switched off.
- ▶ Correctly connect the protective earthing conductor and the grounding.
- ▶ Ensure that there are no sharp bends in the connection cable and litz wires to avoid short-circuits and interruptions.
- ▶ Cable and line entry must always be mounted according to the assembly instructions.
- ▶ During the installation, ensure tightness between the cable, cable entry and line entry.
- ▶ Install connection cables with strain relief(s). The first mounting point must be within 15 cm of the cable and line entry.
- ▶ Use only cables which satisfy the requirements for the clamping ranges of the connection terminals according to the data sheet.



Protection class IP ... results from the mating connector used, see data sheet 08006.



Observe the mounting instructions as well as the tightening torques given on the packaging of the mating connector.

The sealing elements of the cable entry are provided for one-time use only.

8 Demounting and replacement

WARNING

Pressurized and energized system parts!

When working on pressurized or energized system parts there is a risk of injury by discharging hydraulic fluid or electric shock.

- ▶ Before demounting any component ensure that the hydraulic system is depressurized and the electrical control de-energized.

CAUTION

Incompletely mounted valve components falling down!

Incompletely demounted valve components may fall down and cause injuries.

- ▶ During demounting, secure the valve against falling.

Abrupt release of elastic springs!

Valves preloaded by elastic springs can be suddenly released during demounting and cause injuries by ejecting parts.

- ▶ When demounting valves with preloaded springs open the covers only slowly and, if required, with the help of a demounting fixture.



Have sufficiently dimensioned collecting containers, non-linting cloth and medium-binding materials ready in order to collect or bind leaking hydraulic fluid.

1. Before carrying out any demounting work, switch your system off, disconnect it from the power supply and secure the system against restarting.
2. Unload hydraulic accumulators, if provided.
3. Make sure that the surroundings are clean for demounting.
4. Prepare a container or a pan for collecting the leaking hydraulic fluid.
5. Remove the mating connector of the inductive position switch.
6. The mounting screws of the valve may only be loosened by means of suitable tools.

WARNING! Risk of injury due to improper demounting! Take account of the spring preload rate of the insert.

- ▶ Loosen the valve mounting screws alternately crosswise.

7. Remove the control cover.

WARNING! Heavy components! Lifting heavy valves or components involves the risk of health damage and damage to property.

- ▶ Please observe the safety instructions in chapter 6 “Transport and storage” and the notes from chapter 7.6.1 “Installing the valve (NG 40...125) in the system”.

8. Take spring **(2)** out.
9. Lift off intermediate cover **(3)** with the help of the demounting grooves and pull it together with the spool **(11)** out of the bushing **(13)**.

WARNING! Heavy components! Lifting heavy valves or components involves the risk of health damage and damage to property.

- Please observe the safety instructions in chapter 6 “Transport and storage” and the notes from chapter 7.6.1 “Installing the valve (NG 40...125) in the system”.

10. Take axial seal **(12)** out of the bushing **(13)**.

11. Withdraw bushing **(13)** from the mounting cavity using a suitable tool or the lifting eyes (in the case of NG 125 or larger).

12. Collect escaping hydraulic fluid in the provided container and dispose of it properly.

13. If the valve is to be returned to the manufacturer for repair, close the valve connection surface using the protective plate included in the scope of supply or protect it using equivalent packaging in order to avoid contamination and damage.



If necessary, return the valve to the manufacturer in the original packaging.

14. Close the mounting cavity of the mounting face to prevent contamination of the system.

In case of new installation and/or replacement of the hydraulic valve, please refer to chapter 7 “Installation”.

9 Extension and modification

The valve must **not** be modified.

10 Technical data

For the technical data of your valve please refer to “*data sheet 21040*”.

11 Annex

Contacts for transport damage, repair and spare parts

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