Rexroth
Bosch Group

HANSA FLEX

General Assembly Instructions with Information on the Transport of the Hydraulic Power Units

RE 07009-MON/11.17

Assembly instructions

The data specified below only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

The cover shows a sample configuration. The product supplied may therefore differ from the photo shown.

The original assembly instructions were prepared in German.

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1 About this document

These instructions contain important information for the safe and appropriate transport and assembly of hydraulic power units.

These are general assembly instructions with information on the transport of hydraulic power units that are developed and produced in a customer-specific way.

Information on the commissioning (incl. the filling with operating media), the operation, maintenance and simple troubleshooting is contained in the general operating instructions for hydraulic power units and hydraulic assemblies.

2 General safety instructions

The hydraulic power unit was designed and manufactured considering the provisions of directives, standards and specifications relating to this technology. There is, however, still a risk of personal injury or damage to property if the following safety instructions and warnings contained in this document are not observed.

- You should read these instructions completely and thoroughly before working with the hydraulic power unit/hydraulic assembly.
- Always include the operating instructions and the product-specific documentation when passing the hydraulic power unit/hydraulic assembly on to a third party.

2.1 Intended use

For information on the intended use please refer to the supplied general operating instructions for hydraulic power units and hydraulic assemblies.

2.2 Qualification of personnel

Assembly requires a basic knowledge of mechanics, electrics and hydraulics, as well as familiarity with the associated technical terms. In order to ensure operational safety, these activities may only be carried out by qualified technical personnel or an instructed person under the direction and supervision of a qualified person.

Qualified personnel are those who can recognize potential hazards 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. Qualified personnel must observe the rules/laws relevant to the specific subject area.

2.3 Safety instructions in this document

In these assembly instructions, there are safety instructions before the steps whenever there is a risk of personal injury or damage to the equipment. The measures described for preventing these hazards must be observed.

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Safety instructions are set out as follows:

SIGNAL WORD! 	**Type of risk!** Consequences ▶ Precautions

Warning sign (warning triangle): Draws attention to the hazard
Signal word: Identifies the degree of hazard
Type of risk: Specifies the type or source of the hazard
Consequences: Describes the consequences of non-compliance
Precautions: Specifies how the hazard can be prevented

Table 1: Meaning signal words

DANGER! 	Indicates an **imminently** hazardous situation which, if not avoided, will certainly result in serious injury or even death.
WARNING! 	Indicates a **potentially** hazardous situation, which, if not avoided, could result in serious injury or even death.
CAUTION! 	Indicates a **potentially hazardous** situation which, if not avoided, could result in minor or moderate injury or damage to equipment.
	If this information is disregarded, it may result in machine malfunction or breakdown.

Warning signs	Meaning
	Warning of a danger spot

2.4 Adhere to the following instructions

General

- The regulations regarding accident prevention and environmental protection applicable in the country where the product is used and at the workplace must be observed.
- Only persons who have been authorized by the operator may be granted access to the immediate vicinity of operation. This also applies during machine standstill.
- Persons who assemble products supplied by Bosch Rexroth must not consume any alcohol, drugs or medication that may have a detrimental affect on their reactions.

Avoidance of hazards

- Before installation, check the hydraulic power unit for visible transport damage e.g. cracks, missing lead seals, screws, protective covers.
- Under no circumstances should the hydraulic power unit be subjected to inadmissible mechanical loads. Do not place any objects on top of the power unit.

- Provide for sufficient stability of the hydraulic power unit.
  - In this context, observe the maximum load-bearing capacity of the foundations or ground as well as that of the attachment devices and vehicles used for transport.
  - You should use only the designated attachment points.
- Avoid damage of any kind on the pressurized or functional components of the hydraulic power unit.

Protective measures

- If it does become necessary to work at height, entailing a fall hazard, suitable safety precautions must be taken (e.g. provision of gratings, handrails or harnesses).
- Suitable measures should be taken to prevent any slip hazard caused by oily surfaces that may e.g. result from maintenance work.

3 Scope of delivery

These assembly instructions have been prepared for hydraulic power units.

In addition to the actual product itself, the scope of delivery for hydraulic power units also includes both general and product-specific documentation.

These documents are listed in the following table:

	Document	Power unit
Product-specific documentation	Technical specification	x
	Hydraulic diagram	x
	Component list to hydraulic diagram	x
	Assembly drawing	x
	EC Declaration of Incorporation	x
General documentation	Operating Instructions	x
	Assembly instructions (this document)	x

4 Product description

Hydraulic power units are drive system for hydraulic machines. In this sense, they are considered partly completed machinery according to EC Machinery Directive 2006/42/EC.

The hydraulic power units, for which these assembly instructions have been prepared, are exclusively intended for installation into machinery. As a general rule, these are products that have been developed and manufactured to customer specifications. For the specific description of your product, please refer to the relevant product-specific documentation.

4.1 Product identification

The product is unambiguously identified by:

- The nameplate
- The product-specific documentation
- The delivery note and accompanying documents

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5 Transport and storage

- Observe the transport instructions, e.g. on the packaging.
- When storing and transporting the product, always observe the ambient conditions specified in Chapter 15 “Technical data”.
- If the package has to be opened e.g. for inspection purposes, you should reseal the packaging to the condition in which it was supplied.
- Wherever possible, the packaging should not be removed until directly before assembling the unit.

5.1 Transporting hydraulic power units

WARNING!

Danger to life due to tumbling, falling or uncontrolled movement of the hydraulic power unit!

If not transported appropriately, the hydraulic power unit may lose its stability and thus be knocked over, fall or move in an uncontrolled way.

- Check the weight and also the location of the center of gravity of the hydraulic power unit.
- Place the product on a suitable foundation / on suitable ground.
- By means of additional suitable measures (e.g. by securing holding down points or with the use of cranes) provide for sufficient stability before removing any packing/transit materials or fixtures.
- Only the intended locations and attachment points should be used for securing or lifting the hydraulic power unit.
- Hydraulic power units must never be attached to or lifted at the mounted components (piping, hoses, manifolds, electric motors, accumulators, etc.).
- Observe the maximum load-bearing capacity of the attachment devices.
- Observe the maximum load-bearing capacity of the floor conveyors.
- Ensure that no unauthorized persons are within the hazard zone.

WARNING!

Danger to life due to the ejection of high-pressure oil or machine malfunctions during operation!

In the case of improper transport of the hydraulic power unit, pressurized or functional components may become damaged.

- Ensure that these components do not come into contact with the attachment devices or lifting tools during transport.
- Ensure that hydraulic power units are not attached to or lifted at these components.

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5.1.1 Preparing the power unit for transport

The following preparations must be carried out before transporting the hydraulic power unit:

- Check the space required for the installation of the hydraulic power unit at the place of use.
- Check the transport route. Depending on the method of transport, allow for additional space around the hydraulic power unit.
- Check the maximum admissible load bearing capacity of the roads, bridges, crossings, etc.
- Prior to transportation of the hydraulic power unit, depressurize the installed accumulators on the oil side. If possible, reduce the pressure on the gas side to a value of 2 bar (200 kPa).

Bosch Rexroth always delivers hydraulic power units without first filling with oil. Any deviations from this rule are described explicitly in the product-specific documentation. From the factory inspection there may, however, still be oil residues in the product.

5.1.2 Determination of the center of gravity

Wherever possible, the location of the center of gravity is marked on the packaging by the following symbol.

Fig. 1: Symbol for marking the center of gravity

The location of the center of gravity is generally specified on the assembly drawing. The diagrams below demonstrate how to mark the center of gravity on drawings.

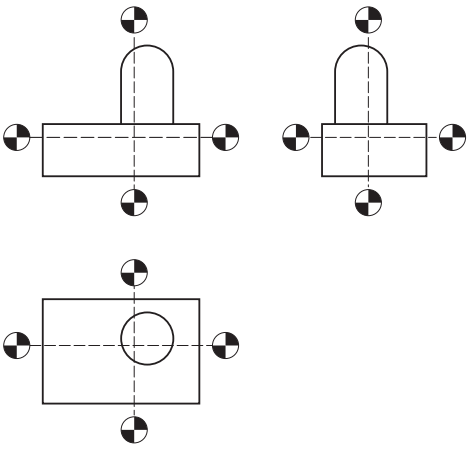

Fig. 2: Marking the center of gravity in drawings

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5.1.3 Use of attachment points

WARNING!

Danger to life due to tumbling, falling or uncontrolled movement of the hydraulic power unit when using unsuitable attachment points!

After a longer period of use, the attachment points may no longer be in place, be sufficiently stable or identifiable as such.

- Refer to the product-specific documentation for the intended attachment points and only use the ones mentioned there.
- Check the stability of the attachment points if you intend transporting the hydraulic power unit after dismantling.
- Replace missing and/or defective attachment points, if possible. This work should be carried out in a professional manner.
- Insert the screw-in attachment points into the tapped hole and hand-tighten fully.
- If necessary, mark the unrecognizable attachment points using easily visible color.

Attachment points are fixtures in the form of lugs, collars or shackles that are connected to the hydraulic power unit by means of welded or threaded attachment. They are designed for lifting or holding down the hydraulic power unit during transport.

Examples of attachment points of hydraulic power units are shown in Fig. 3:

1 2

Fig. 3: Examples of attachment points

1 Welded type

2 Screwed type

5.1.4 Manual transport

CAUTION!

Risk of injury to persons undertaking manual lifting/handling due to overloading and incorrect posture!

In the case of lifting/handling, there is the risk of damage to health due to overloading and incorrect posture.

- The limits of the respective persons involved in manual lifting/handling must be realistically assessed. Muscular strength and constitution differs considerably among human beings.
- Wherever possible, suitable lifting aids should be used such as e.g. carrying straps.
- Always use appropriate techniques when lifting, setting down and moving products.

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5.1.5 Transport using forklifts and similar floor conveyors

WARNING!

Danger to life due to falling or uncontrolled movement of the hydraulic power unit!

If not transported appropriately, the hydraulic power unit may be knocked, fall or move in an uncontrolled way.

- When using floor conveyors as a means of transport, ensure a stable center of gravity position.
- The hydraulic power unit must not deviate from its intended orientation.
- Secure the hydraulic power unit against any resulting acceleration forces as required.

When using floor conveyors, the hydraulic power unit may only be transported by personnel who can prove they hold the relevant qualifications, including safety training, for the respective device.

You should proceed as follows:

- Using suitable temporary protective devices e.g. wooden or plastic elements, protect the hydraulic power unit against the contact surface of the fork, so that the paintwork cannot be damaged during lifting and transport.
- Secure the hydraulic power unit at the forklift against tilting. To this purpose, fuse suitable attachment devices like e.g. tie downs.
- Carefully lift the hydraulic power unit, taking into consideration the stable center of gravity location and transport it to the desired position.
- Ensure that the built-on components of the hydraulic power unit do not come into contact with the attachment device or lifting tools during transport (see Fig. 4).
- Carefully set the hydraulic power unit down again and remove the holding down / lifting equipment and any temporary protective devices.

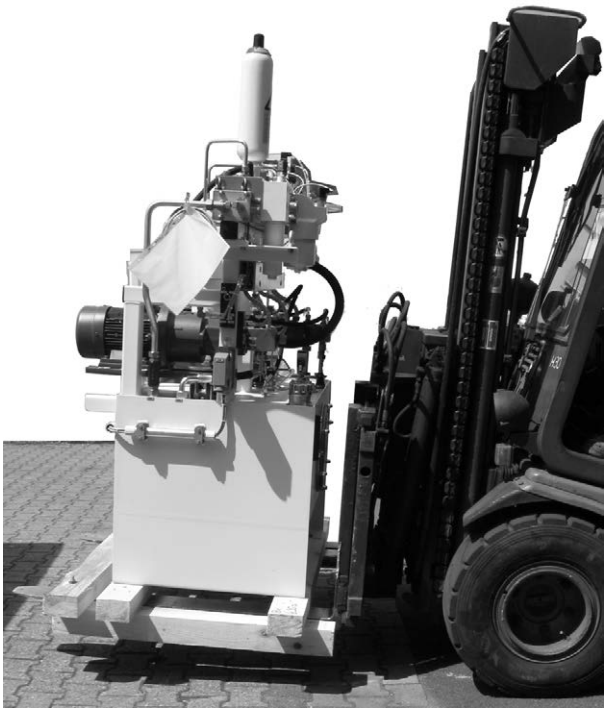

Fig. 4: Transport using forklifts

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5.1.6 Transport using cranes and similar lifting tools

WARNING!

Danger to life due to falling or uncontrolled movement of the hydraulic power unit!

If not transported appropriately, the hydraulic power unit may be knocked, fall or move in an uncontrolled way.

- When using lifting tools, ensure a stable center of gravity position.
- The hydraulic power unit must not deviate from its intended orientation. If necessary, attach suitable safety and/or catch devices.

If using cranes as a means of transport, attachment device e.g. lifting straps, harnesses or chains should be used.

- Use only the intended locations and attachment points when lifting (see Fig. 5 and 6).
- Ensure that the built-on components of the hydraulic power unit do not come into contact with the attachment device or lifting tools during transport.

The edges of the hydraulic power unit may cause damage to the fabric lifting straps or harnesses. An edge protector should therefore be used if necessary.

When using uncovered chains, scratches in the paintwork may result. If necessary, use suitable protection for these surfaces e.g. blankets.

- Lift and lower the hydraulic power unit slowly and carefully.
- Only lift the device as far off the floor as necessary.

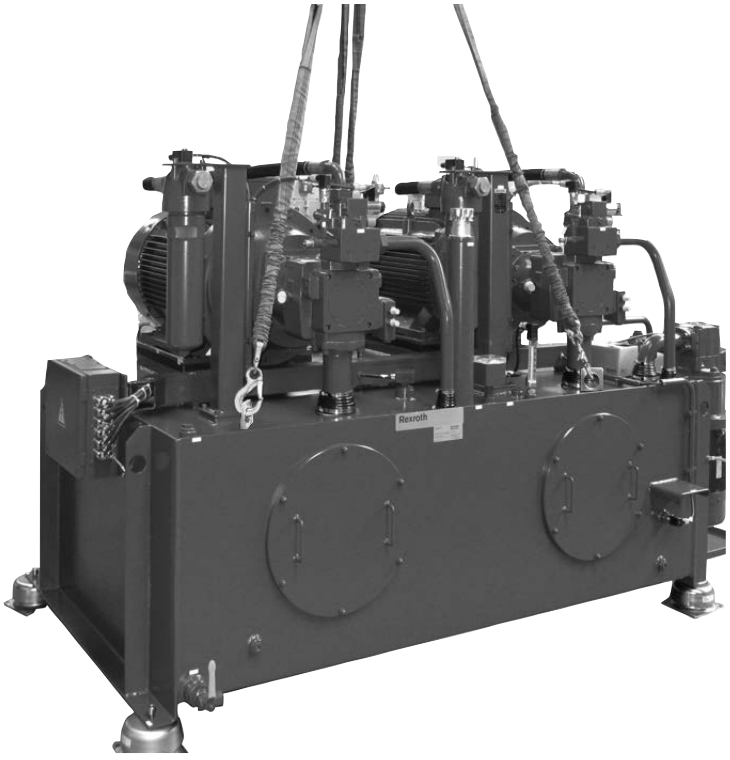
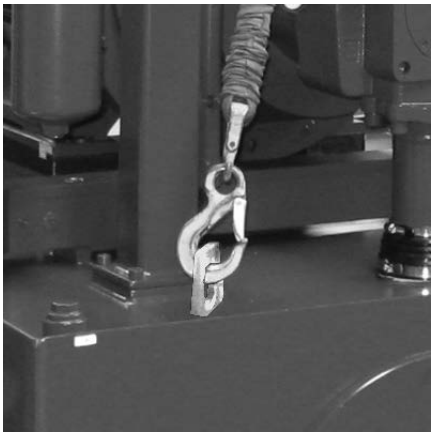


Fig. 5: Use of lifting straps and attachment points



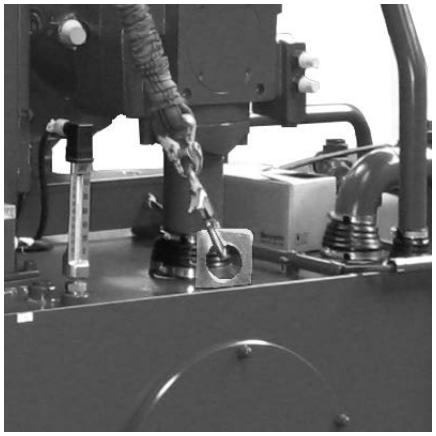


Fig. 6: Detailed view of Fig. 5

5.1.7 Freight transport

WARNING!

Danger to life due to tumbling, falling or uncontrolled movement of the hydraulic power unit!

If not transported appropriately, the hydraulic power unit may be knocked, fall or move in an uncontrolled way.

- Secure the hydraulic power unit against any resulting acceleration forces as required.

The various regulations of the assigned forwarding agents e.g. shipping companies, railway companies, forwarders, airlines must be observed.

- Secure the hydraulic power unit onto the transport vehicle, e.g. by the holding down points.
- Ensure that the built-on components of the hydraulic power unit do not come into contact with the attachment devices during transport.
- Some products need to be transported in a lying position e.g. accumulator stands. Use the intended attachment points for laying the products down and securing them.

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5.2 Storing the hydraulic power units

Observe the storage times specified in Table 2.

- If the storage time exceeds the values specified, flush the hydraulic power unit before commissioning using a suitable flushing fluid. The flushing procedure should be carried out as described in Chapter 7.1.9 “Flushing the hydraulic system” of the operating instructions.
- If necessary, replace the components for which a maximum storage time is specified e.g. hoses, compensators, accumulators.

Table 2: Storage times

Storage conditions	Packaging	Protective agent	Storage time in months	
			Test with the protective agent	Filling with the protective agent
Storage in dry rooms at constant temperature	For carriage overseas	A	12	24
		B	12	24
	Not for carriage overseas	A	9	24
		B	12	24
Outdoor storage (protect the product against damage and water ingress)	For carriage overseas	A	6	12
		B	9	24
	Not for carriage overseas	A	0	12
		B	6	24
Inspection with protective agent		A = Mineral oil		
Filling with protective agent		B = Corrosion protection oil		

6 Assembly and installation

This chapter describes the assembly of the product at its place of use as well as the connection of the product to the hydraulic system, the electrical systems and the water supply of the machine.

For information regarding the installation into the complete machine, particularly regarding its overall function and logic mode of operation, please refer to the instructions and/or the documentation for the complete machine.

CAUTION!

Risk of personal injury and damage to property!

A basic knowledge of hydraulics is required for assembling the hydraulic power unit.

- Only qualified personnel (see Chapter “2.3 Personnel qualifications”) are permitted to assemble the hydraulic power unit.

6.1 Unpacking

- Remove the product packaging.
- Dispose of the packaging material in accordance with the national regulations in your country and/or your company-internal specifications/procedures.

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6.2 Assembling the hydraulic power unit

WARNING!

Risk of injury due to tumbling, falling or uncontrolled movement of the hydraulic power unit!

You should ensure that the product is sufficiently stable.

- Observe the information on handling the product in Chapter 5 “Transport and storage”.
- Any packing/transit materials, straps, props or fixtures should only be removed if stability has been ensured by other means.
- Place the hydraulic power unit on a suitable foundation. Observe the specifications of the overall weight.

To assemble the hydraulic power unit you should proceed as follows:

- Position the hydraulic power unit or the assembly as specified in the product-specific documentation.
- Ensure that the footprint contact associated with mounting is consistent.
- Level the hydraulic power unit so that its longitudinal and transverse axes are horizontal.
- Prevent possible bouncing by suitable means (e.g. height adjustment of the feet, insertion of shims, packers).
- Securely fix the product at the mounting positions specified in the product-specific documentation.

6.3 Installing the hydraulic system

CAUTION!

Risk of injury when assembling under pressure!

If you fail to depressurize the product before starting the installation, you may suffer injury and also damage the unit or system components.

- Always depressurize the relevant part of the system before assembling the hydraulic power unit.

CAUTION!

Damaging the hydraulic power unit!

When assembling hydraulic lines and hoses under mechanical stress, they are exposed to additional mechanical forces during operation, which reduces the service life of the hydraulic power unit and the complete machine or system.

- Assemble the piping and hose assemblies without mechanical stress.

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CAUTION!

Wear, tear and malfunctions!

The cleanliness of the hydraulic fluid has a considerable impact on the cleanliness and service life of the hydraulic system as a whole. Any pollution/contamination of the hydraulic fluid will result in wear and malfunctions. In particular, foreign bodies e.g. welding beads or metal swarf in the hydraulic lines may damage the hydraulic power unit.

- Always ensure absolute cleanliness.
- Assemble the hydraulic power unit free from any pollution/contamination.
- Ensure that all connections, hydraulic lines and add-on units (e.g. measuring instruments) are clean.
- Ensure that no pollutants are able to penetrate when sealing the connections.
- Ensure that no detergents are able to penetrate the hydraulic system.
- Do not use cleaning rags/cotton waste or linty cloth for cleaning.
- Do not under any circumstances use hemp as a sealant.

WARNING!

Risk of injury from ejection of high-pressure oil!

If the nominal pressure is exceeded, the component may burst.

- The connection lines should be dimensioned in accordance with the performance data in the circuit diagram.
- You should only use components that are designed for the required pressures.

WARNING!

Risk of injury from ejection of high-pressure oil!

Fittings with metric or Whitworth threads may for certain sizes be mis-matched without this being immediately evident. Fittings with threads that are mis-matched will not withstand the specified nominal pressure.

- You should therefore ensure that there is no risk of confusion with respect to the correct screw fittings.

Preparation

Remove the blanking plugs and flange covers (colored plastic) and replace them with pressure-resistant fittings or flanges.

- You should observe the manufacturer's installation instructions for the screw fittings to ensure there is no external leakage. We recommend the use of fittings with elastic seals.

Cleaning the lines

- Before installing, clean the connection lines to the hydraulic system, ensuring they are free from dirt, scales, chippings, etc. Welded pipes must be blank on the inside and flushed.
- Do not use cleaning rags/cotton waste for cleaning.

Hose assemblies

The hose assemblies should be installed such that

- Kinking and tensile load of the hose is avoided during operation,
- The hose is not twisted or turned,
- The outer layer of the hose does not rub off through abrasion or impact,
- The weight of the hose assembly does not cause inadmissible loading.

If a hose assembly becomes detached and there is a risk of whipping, it is advisable to fit a hose safety catch. If the hose assemblies are equipped with loosening-resistant fittings, no safety catch is required.

6.4 Connecting to the water supply

- The fittings must be tightened according to manufacturer specifications!
- Lay the lines to the water connections provided and connect them according to the circuit diagram.

6.5 Installing the electrical system

CAUTION!

Risk of injury when assembling under voltage!

If you fail to switch off the power supply before assembling the product, you may suffer injury, destroy the product or damage system components.

- Always switch off the power supply to the relevant system component before assembling the product.

6.5.1 Earthing and potential equalization

Hydraulic power units from Bosch Rexroth are supplied with connection for the external earthing system. Potential equalization within the hydraulic power unit will only occur if the electrical wiring of the components is included in the scope of delivery. If this is not the case, potential equalization must be carried out by the machine manufacturer when wiring the hydraulic power unit to the machine.

The hydraulic power units must be earthed!

The earthing line and the lines for the potential equalization must have the minimum cross-section as per VDE regulations and a yellow-green sheath or labeling.

- Before connecting the cables, you should earth the devices that are to be connected and provide for potential equalization via a common equalizing bar.

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6.5.2 Laying the power supply and control cables and connecting the electricity supply

- The electrical installation must be performed in accordance with the currently applicable rules of electrical engineering.
- You must ensure that the power supply is disconnected and also safeguarded against being switched on unintentionally.
- You should prevent this by e.g. using a warning sign to draw attention to issues regarding working on the electrics.
- Carefully secure all cables to the electric motor with plastic cable clamps against unintended loosening (swinging).

6.5.3 Installing the electrical control and monitoring equipment

Connect the control and monitoring equipment (switching devices, open-loop or closed-loop equipment or frequency converters) according to the relevant instructions, taking into account the appropriate safety precautions.

CAUTION!

Penetrating dirt and liquids will cause faults!
Safe function of the hydraulic power unit/components is then no longer ensured.

- Always ensure absolute cleanliness when working on the hydraulic power unit.

CAUTION!

Damage to the surface from solvents and aggressive cleaning agents!
Aggressive detergents may damage the seals on the hydraulic power unit and make them age faster.

- Never use solvents or aggressive detergents.

7 Technical data

Please refer to the product-specific documentation for the technical data of the product.

8 Appendix

8.1 Address directory

Please refer to www.boschrexroth.com for addresses of foreign subsidiaries

9 Glossary

Attachment points
Attachment points are fixtures in the form of lugs that are connected to the load by means of welded or screw connections. They are used to lift or secure the load during transport.

Attachment devices
Attachment devices are separate devices used to bridge the connection between a crane and a load in order to lift the latter. Attachment devices are e.g. lifting straps, belts or chains.

Component
Any part with a (partial) function in the sense of the technical overall system. Components in the hydraulic system include e.g. valves, filters, cylinders, hydraulic connection elements.

Floor conveyors
Floor conveyors are means of transport for the horizontal transport that are mostly used within the company at ground level.

Line system
Any combination of lines (hoses, piping or bores) and hydraulic connection elements allowing for the intended flow of the oil between tanks, pumps, valves, accumulators, actuators, filters, etc.

Tank
The component in a hydraulic system that collects all the oil during operation and standstill. It is not used for storing hydraulic energy.