

Pneumatic pump

P5 / P8

Code 2565 ...

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Original operating and assembly manual

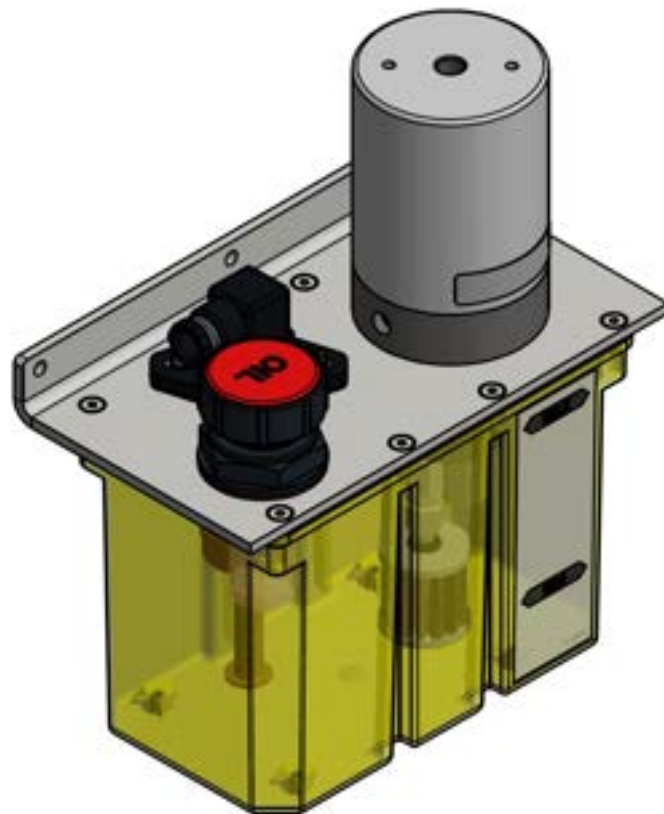


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1. Technical data

Reservoir capacity: 6 liter
 Lubricant: oil, 20 – 700 mm²/s
 Delivery rate: 10 or 15 cm³/stroke
 Purity class of the lubricant to be filled in: ISO 4406: ≤ 17/15/12
 Operating pressure: depending on flow pressure
 Flow pressure: 4 – 8 bar
 Drive volume: 133 cm³ / stroke
 Ratio at delivery rate 10 cm³/stroke: 1:11
 Ratio at delivery rate 15 cm³/stroke: 1:8
 Sound pressure level: <70dB(A)

For further details and technical data, see the attached data sheet or dimensional drawing.

The **pneumatic pump P** is subsequently called a **device**.

2. Applicable documents

Data sheet or dimensional drawing AZ
 Connection diagram ES
 Declaration of incorporation

Caution!

Please pay attention to these documents for any work on and with the device!

3. General safety instructions

Everybody who is in charge of the assembly, start-up, maintenance and operation of the device must read these instructions carefully prior to assembly and start-up of the device at the machine! Furthermore, this manual must always be available at the site of operation!

Basic instructions for setup, operation and maintenance can be found below.

3.1 Safety instructions

Observe the general safety instructions within this key chapter as well as the special safety instructions in other chapters of this operating and assembly manual.



Warning of electrical voltage.



Safety instructions, which might cause hazards to persons in case of non-observance, are marked with the general danger symbol.



This symbol warns of hot surfaces.



Warning of suspended loads.



Warning of material damage due to electrostatic discharge! Marks potential risks which may result in material damage, if not avoided.

Caution!

This heading is used if improper or general non-observance of the operating and assembly manual, instructions, specified workflow and the like might result in damage.

Notice!

This term is used to point out particular details.

Instructions and notes directly attached to the device have to be strictly observed and kept in readable condition!

3.2 Qualification and training of staff



The staff in charge of operation, maintenance, inspection and assembly have to be qualified accordingly. Competence, responsibilities and supervision of staff must be clearly defined by the operator. In case the staff does not have the necessary knowledge, it has to be instructed and trained accordingly. The operator is obliged to ensure that the staff fully understands the contents of this user information.

3.3 Hazards in case of non-observance of the safety instructions



Results of **non-observance** of the **safety instructions** can be **hazards to persons**, for the environment and the device. Non-observance of the safety instructions may result in the loss of any liability claims. The non-observance could more specifically result in the following hazards (for example):

- Failure of important device functions.
- Failure of prescribed methods regarding maintenance and repair.
- Danger to persons by electrical, mechanical and chemical effects.
- Danger to the environment by leakage of hazardous substances.

3.4 Obligations of the operator / user



- If movable, rotating, hot or cold parts of the device bear risks, the customer must protect these parts against contact. This protection must not be removed.
- Any leakages of hazardous substances must be drained in a way that no risks for persons or the environment arise. Please also refer to the data or safety data sheets of the respective manufacturers.
- Observe all legal provisions.
- Hazards due to electricity are to be excluded.
- Examination of pipes and hoses regarding safe provision, use, proper assembly and function has to be carried out according to regionally applicable directives. Inspection intervals may not be exceeded.
- Defective pipes or hoses must be replaced immediately and professionally.
- Hydraulic hoses and polyamide pipes are subject to natural aging and have to be exchanged in regular intervals according to the manufacturer's specifications.
- A safety data sheet of the currently used lubricant must be provided at the device.
- Observe the universally valid Ordinance on Hazardous Substances in its latest version.

3.5 Safety instructions for maintenance, inspection and assembly



All **maintenance, inspection and assembly work** may only be carried out by **qualified personnel** who is sufficiently informed by thorough reading of the user information.

Any work at the device may generally only be carried out at **complete standstill** and in **pressureless** as well as **disconnected condition**. Furthermore, appropriate **personal protective equipment** (goggles among others) is necessary. The shutdown procedure of the device as described in the manual must be strictly followed.

Secure the device against intentional or unintentional recommissioning during maintenance or repair. All safety and protection arrangements have to be put back in place again immediately after completion of the work.

Environmentally hazardous media must be disposed of professionally and according to the relevant legal provisions. **Polluted and contaminated surfaces** have to be cleaned before maintenance. Please wear protective equipment to that purpose. See the lubricant manufacturers' safety data sheets hereto, respectively the data sheets provided by the manufacturers of auxiliaries and working materials.



Check the surface temperature of the device as a possible heat transfer bears the **risk of burns**. Wear heat resistant protective gloves!

Open flame and fire are strictly forbidden during maintenance, inspection and repair due to fire hazard.

3.6 Unauthorized modification and production of spare parts



Modification, repair and alterations of the device are only accepted after manufacturer feedback. **Original spare parts** and authorized accessories from the manufacturer contribute to **safety**. The use of other parts can result in the loss of any liabilities for the resulting consequences. BEKA does not assume liability for parts that are retrofit by the operator.

3.7 Inadmissible modes of operation

Operational safety of the device is only guaranteed when it is appropriately applied as indicated in the operating and assembly manual. Never exceed or fall below the limit values, as stated in the technical data.

3.8 Electrostatic discharge



Avoid electrostatic discharge! There are electronic components integrated into the devices which might be destroyed by electrostatic discharge. Observe the safety precautions against electrostatic discharge according to DIN EN 61340-5-1/-3. Ensure that the environment (persons, workplace and packing) is well grounded when handling these devices.

3.9 General hazard warning – residual risk



All components are designed according to valid regulations for the construction of technical systems with regard to operational safety and accident prevention. Nevertheless, their use can lead to hazards for the user or third parties as well as other technical facilities. Therefore, the device may only fulfill its intended purpose in a **technically perfect and faultless condition**. This has to happen in adherence to the relevant safety regulations as well as the operating and assembly manual. **Inspect** the device and its attachment parts **regularly** and **check** them for possible **damage** or **leakages**. **Liquids** could **escape under high pressure** from pressurized components which become **leaky**.

4. Intended use

Caution!

The device is **only** approved for the **industrial use**.

Only operate the device if it is installed in/at another machine and operated together with it.

Only lubricants which comply with the machine manufacturer's specifications may be conveyed.

The device must only be used according to the technical data (see chapter 1 „Technical data“). The values may never exceed or fall below the values mentioned in the technical data. Never operate the device without lubricant.

Unauthorized modifications of the device are **not permitted**. BEKA is not liable for personal injury or damage of machine resulting thereof.

The intended use also includes:

- paying attention to all chapters and notes in the operating and assembly manual.
- carrying out all maintenance work.
- **observing** all relevant instructions for **work safety** and **accident prevention** during all life cycles of the device.
- having the necessary professional training and authorization of your company to operate the device and to carry out the necessary work on the device.

Caution!

Another use or a use beyond this scope is deemed improper.

5. Scope of warranty

Warranties regarding operational safety, reliability and performance will only be granted by the manufacturer if the device is used according to the regulations and under the following conditions:

- Assembly, connection and maintenance are only carried out by authorized and qualified staff.
- The device is only used according to the operating and assembly manual.
- Never exceed or fall below the limit values as defined in the technical data.
- Modifications and repairs at the device may only be done by BEKA.

Caution!

Guaranty and warranty will expire for any damage of the device caused by improper lubricant (e.g. wear of piston, piston jamming, blockades, brittled sealings etc.).

BEKA will generally not accept guaranty claims for any damage caused by lubricants, even though those have been laboratory tested and released by BEKA, as such damage (e.g. by over-stored or incorrectly stored lubricants, batch fluctuations, etc.) cannot be verified or reconstructed later.

6. Transport and storage

Use suitable lifting devices for transport.

Do not **throw** the device or expose it to **shocks**.

Secure the device against toppling down or slipping during transport.

The device may only be transported completely empty.



Observe all valid safety and accident prevention regulations for the transport. Wear suitable **protective equipment** if necessary. **Keep adequate distance to suspended loads**. The transport help or the elevating device must have the **adequate carrying capacity**.

Notice!

When storing the device pay attention that the storage area is cool and dry in order to avoid corrosion of the individual parts of the device.

Observe the storability of the contained lubricant for devices which are filled with lubricant. Exchange the lubricant when it is over-stored.

7. Assembly instructions

Check the device for possible transport damage and for completeness before the assembly. Any installed equipment for transportation safety has to be removed.



Comply with the following conditions when assembling a complete machine from this device and other components. Mind a proper and eco-friendly assembly without impairment of persons' health and safety:

Assemble the device in balance on the installation location in order to ensure safe operation. Observe the information on the fastening holes given in the dimensional drawing. When selecting the set-up location, please mind that the device should be protected against ambient and mechanic influences. Ensure full access, e.g. for filling with lubricant.

Special measures concerning noise prevention or oscillation reduction do not have to be taken.

7.1 Connection of lines

- Professional layout!
- When using pipes, observe that they are clean, seamless and of precision steel!
- Assemble the pipes professionally and free from distortion!
- Pay attention to pressure tightness of fittings!
- All components must be approved for max. operating pressure (see technical data).

7.2 Pipe line assembly (for air)

- The device has a connection thread G1/4.
- Use commercial compressed air lines for the compressed air supply.
- The used compressed air must be clean and filtered (filter fineness < 5 µm)!
- Install a compressed air maintenance unit for the necessary compressed air quality.
- Fittings must be leakage free.
- Pipe lines must be free from pollutions.
- Assemble the pipe line professional and free from distortion.
- The drive air of the pump is controlled via the 3/2 way valve.

7.3 Power connection



- Electrical energy supply must be done by a professional electrician!
- Electrical device components must be wired professionally!
- Compare voltage details with the existing mains voltage!
- Equipotential bonding must be done professionally by the operator via an according ground connection!
- Wire the device according to the connection diagram!

8. Start up

8.1 Filling with lubricant

- Fill the reservoir with clean lubricant at the filling and ventilation filter!
- Observe the machine manufacturer's lubricant details! Only use lubricants according to machine manufacturer's specifications!
- Collect leaking lubricant in a suitable reservoir and dispose it professionally!
- Observe the safety data sheet of the lubricant manufacturer!
- The lubricant viscosity changes with the operating temperature.
- Check the level several times in equal intervals during the first hours of operation and refill lubricant, if necessary.
- Pay attention to utmost cleanness when refilling the reservoir!

8.2 Setting air supply

- Air pressure must have between 4 and 8 bar.
- The compressed air has to be adjusted in a way that the pressure relief valve only opens when all metering valves have lubricated. This ensures that all metering valves supply enough lubricant to the lub points.

8.3 Ventilation of the lubrication system

- Ventilate the whole lubrication system on first start-up and after each lubricant change!
- Ventilation is done by operating the system in pressureless condition and with open system outlets!
- Operate the pump until lubricant escapes from the pressure connection without air inclusions.
- Collect out coming oil at the ventilation screw with a suitable receptacle (work safety, environmental protection)!
- The collected lubricant must be disposed environmental friendly. Do not lead it back to the system!

9. Functional description

9.1 General

The device supplies the lubrication points via metering equipment for single line lubrication systems.

9.2 Operating mode

Pneumatic actuation via 3/2-way solenoid valve. Repositioning of the pump by spring force.

9.3 Method of operation

Lubrication starts when the piston is pressurized. The metering valves lubricate and then the pressure relief valve only opens. When the 3/2-way solenoid valve switches, the piston is pushed into its original position. The main line is relieved down to < 1 bar by the relief valve and the metering valves restack the lubricant for the next lubrication pulse. At the same time, the lubricant is sucked out of the reservoir for the next stroke. The metering valves' total dosage should not exceed 60% of the pump's delivery quantity.

10. Maintenance



Disconnect the device from electrical energy supply before **maintenance or repairs**.

Only carry out **maintenance and repair** in **complete device standstill** and **pressureless condition**.

Check the surface temperature of the device to avoid the **risk of burns** by radiant heat. Wear heat-resistant gloves and safety goggles! Clean soiled or contaminated surfaces before maintenance, wearing protective equipment if necessary! Secure the device against recommissioning during maintenance and repair work!



10.1 General maintenance

- Retighten all fittings 6 weeks after start up!
- Check all components for leakages and damage at least every four weeks!



If leakages are not repaired, lubricant **might escape under high pressure**. Remove possible puddles of lubricant immediately.

10.2 Lubricant change

Caution!

Pay attention to utmost **cleanness** when refilling lubricant!

- Check the level regularly and refill clean lubricant as necessary, see chapter start up.
- Change the lubricant according to the specifications of the lubricant manufacturer. Environmental influences like increased temperature or pollution may shorten these intervals!
- Please make sure to only use lubricants that are suitable for the device as well as the lubricated machine and that comply with the requirements of the particular operating conditions.
- In case of **different lubricant manufacturers**, ensure that the lubricant **quality** corresponds to the quality of the previously used one! As precautionary measure, drain the lubricant reservoir properly and clean it!

11. Shutdown

- Relieve the device from pressure!
- Turn off electrical energy supply!
- A qualified electrician has to disconnect electrical components from the electrical energy supply!
- Remove all pipes and hoses from the device and loosen all fastenings for disassembly!

12. Disposal

Notice!

Observe the disposal instructions of the lubricant manufacturer when lubricant is changed! Lubricants or cloths contaminated with lubricant, etc. must be collected in specially marked reservoirs and disposed of accordingly.

Disposal of the device must be done properly and professionally and according to the national and international laws and regulations.



Moreover, BEKA devices could contain batteries. Professionally and properly disposed batteries will be recycled. They contain important raw materials.

13. Troubleshooting

Malfunction	Possible cause	Possible remedy
Pump does not work	Pump defective	Exchange pump
	3/2-way valve defective	Exchange 3/2-way valve
	Pneumatic supply defective	Renew pneumatic supply
Pump operates but does not supply	Lubricant cannot be conveyed	Fill in lubricant with correct viscosity
	Suction line leaky	Retighten fitting; seal thread
	Lack of lubricant in reservoir	Refill lubricant
	Air inclusions in the delivery piston	Ventilate the pump
	Spring of piston broken	Repair damage

14. Spare part list and drawing

Spare part lists and drawings are available on request.
 Please indicate the article number of your device for this.

15. Dimensional drawing or data sheet

See following pages in the attachment.

16. Details of the manufacturer

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