

GB

Operating instructions
Diaphragm pump MP-520

T-Dok-397-GB-Rev.2

Article No. 200-0216, 200-0330
Translation of the original operating instructions

Krautzberger 

Thank you for selecting a Krautzberger product.

This product has been manufactured following state-of-the-art manufacturing procedures and extensive quality assurance measures. We promise you a product of the highest quality.

If you have questions, requests or suggestions, please contact us. We are always glad to assist you.

Information about the operating manual

This manual provides important information on how to work with the device safely and efficiently. The manual is part of the device and must always be kept in the immediate proximity of the device so that it is accessible to the personnel at all times.

The personnel must have read and understood this manual before starting any work. Compliance with all specified safety information and instructions is a basic requirement for safe working conditions.

In addition, the local occupational safety regulations and general safety rules apply for the area of application of the device.

Due to optional finishing variants, it is possible that the figures shown in this operating manual deviate from your device.

Information about explosion protection

Many of our competitors have been marking their products with the Ex symbol as a matter of principle for some time now.

At Krautzberger we do not do that.

We engineer and manufacture our products in line with currently applicable directives.

If the labelling on the product is required, it is affixed to the product as the result of the necessary analysis of ignition sources. If no labelling is affixed, the analysis of ignition sources and previous experience with the assessment of the suitability of products for use in a potentially explosive area have shown that the product described in this operating manual does not represent a potential source of ignition, with the exception of an electrostatic charge.

Taking into account the potential equalisation (provided by proper earth connection), the use in an area at risk for explosions is permitted in accordance with the currently valid directives.

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1 Function and identification

1.1 Function

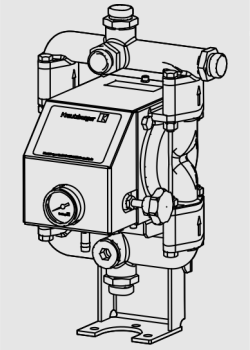

The MP-520 is an air-operated diaphragm pump.

By changing the pressure in the air supply, the conveying capacity of the diaphragm pump can be seamlessly regulated.

As soon as the set material pressure has been reached, the diaphragm pump switches off automatically. The material pressure is maintained until material is extracted at the extraction point. The diaphragm pump switches on automatically and keeps the set material pressure constant.

It is optimally suited for conveying paints, oils, etc.

1.2 Identification

Scope of delivery	Model	Product number
	Diaphragm pump MP-520	200-0216
	Diaphragm pump MP-520 - PTFE-coated	200-0330
	Operating instructions	T-Dok-397

Serial number

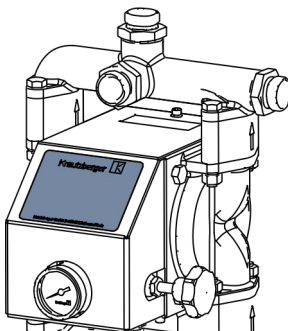


Fig. 1: Serial number

The serial number (Fig. 1) of the diaphragm pump is located on the front. It serves as a unique identifier.

2 Safety and responsibility

2.1 Symbols in this manual

Safety information

This manual uses symbols to identify safety information. The safety information is preceded by signal words that indicate the severity of the hazard.



DANGER!

This combination of symbol and signal word indicates an immediate dangerous situation, which will cause death or severe injuries if it is not averted.



WARNING!

This combination of symbol and signal word indicates a possibly dangerous situation which can cause death or severe injuries if it is not averted.



CAUTION!

This combination of symbol and signal word indicates a possibly dangerous situation which can cause slight injuries if it is not averted.



NOTICE!

This combination of symbol and signal word indicates a possibly dangerous situation which can cause property and environmental damage if it is not averted.




ENVIRONMENT!

This combination of symbol and signal word indicates potential environmental hazards.

Safety information in operating instructions

Safety information can refer to specific, individual operating instructions. Such safety information is embedded in the operating instructions so that it does not disrupt the reading flow during the execution of the action. The signal words described above are used.

Example:


1.  Loosen screw.

2. 





CAUTION!
Pinching hazard at the cover!

Carefully close cover.


3.  Tighten screw.

Special safety instructions

The following symbols are used in safety instructions to draw the attention to special hazards:

Warning signs	Type of danger
	Warning – hot surface.
	Warning – danger zone.





Tips and recommendations



This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

Additional identifications

The following symbols are used in this manual to highlight operating instructions, results, lists, references, and other elements:

Identification	Explanation
	Step-by-step operating instructions
	Results of procedural steps
	References to sections in this manual and other applicable documents
	Lists without specified sequence
[Pushbutton]	Operating elements (e.g. buttons, switches), display elements (e.g. signal lights)
‘Display’	Screen elements (e.g. buttons, assignment of function keys)

2.2 Personnel requirements

This manual identifies the qualifications of the personnel for the different scopes of work as listed below:

Qualified personnel

Due to their specialised professional training, knowledge, and experience as well as knowledge of the industry-specific standards and regulations, qualified personnel are in a position to perform assigned tasks and to identify and avert potential risks on their own.

Specialised personnel

Due to their specialised professional training, knowledge, and experience as well as knowledge of the industry-specific standards and regulations, qualified personnel are in a position to perform assigned tasks and to identify and avert potential hazards on their own.

Trained electrician

Due to specialised professional training, knowledge and experience as well as knowledge of the industry specific standards and regulations, a trained electrician is able to carry out work on the electrical systems and to identified and avert potential risks on his/her own.

The trained electrician has completed specialised training for the specific work environment where he/she works and knows the relevant standards and regulations.

User

The user is familiar with the basic regulations on occupational safety and accident prevention.

2.3 Personal protective equipment

Personal protective equipment is used to protect persons from impacts on their occupational health and safety.

The personnel must wear personal protective equipment while carrying out the different tasks and while working with the device.



The selection of the protective equipment depends on the coating material that is used. To ensure the proper selection of personal protective equipment, the information provided by the spray material manufacturer indicated on the safety data sheet must be adhered to.

Description of the personal safety equipment recommended by Krautzberger

The personal safety equipment and clothing is described below:

Protective equipment:

- Protective clothing
- Ear protection
- Light respiratory protection
- Safety goggles
- Protective gloves
- Safety shoes
- Safety helmet

2.4 Responsibility of the owner

Owner

The owner is the person, who directly operates the machine for commercial or economical purposes or who allows a third-party to use/apply it and who is responsible for the legal product stewardship for the protection of the user, the personnel or third parties.

Owner responsibilities

The machine is used in an industrial environment. The owner of the machine is therefore subject to the obligations as stipulated by the Occupational Health and Safety Act.

In addition to the safety information in this manual, the country-specific safety, accident prevention guidelines and environmental protection regulations, applicable at the site of implementation of the machine must be adhered to.

Furthermore, the owner is responsible for making sure that the machine is always in perfect technical condition. Therefore, the following applies:

- The owner must ensure that the maintenance intervals described in this operating manual are adhered to.
- The owner must have all safety equipment checked regularly for functionality and completeness.

2.5 Intended use

The MP-520 diaphragm pump is a pump operated with compressed air and is used exclusively:

- for the conveying of liquid and low-viscosity coatings from non-pressurised storage containers.
- for the supply of material to spray guns, automatic spray guns, metering devices and similar.


It is mainly used for painting and coating procedures.

The intended use also includes the compliance with all the information in this manual.

2.6 Predictable misuse

Any use beyond the intended use or any other use constitutes misuse.

- Only carry out the installation and start-up in accordance with the steps described in these operating instructions.
- Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations for the area of use for the diaphragm pump.

- Ensure that the utilised hose lines fulfil the requirements with respect to pressure, chemical, and mechanical loads.
- The chemical resistance of the materials which we use cannot always be assessed with authority due to the large number of fluids, concentrations, temperatures and impurities used. For this reason, please test the suitability because we cannot extend any respective guarantees.
- Adhere to the safety data sheets of the spray medium manufacturer.
- Only use the manufacturer's OEM parts.
- Only operate the diaphragm pump after fastening it properly to a suitable supporting structure.
- Only operate the diaphragm pump in compliance with the values specified in ( *Chapter 12 'Technical data' on page 44*).
- Make sure that the connected compressed air is oil-free and free from solid matter.
- Operate the diaphragm pump with processed, dried compressed air (air quality pursuant to DIN ISO 8573-1: quality class 4).
- Never point the compressed air at living beings.
- The conformity of the product is voided in case of structural modifications of the diaphragm pump.
- Do not use the diaphragm pump in the food or pharmaceutical sectors.

**WARNING!**

Improper use of the diaphragm pump can lead to hazardous situations.

No claims of any kind can be asserted due to damage resulting from misuse!

2.7 General safety instructions

**WARNING!****Risk of death, risk of injury or property damage due to hazardous media!**

Potential consequences: The application of hazardous media can lead to death, severe injuries or property damage.

When handling hazardous substances, ensure that the current safety data sheets of the hazardous substance manufacturer are available. The necessary measures can be derived from the content of the safety data sheet. Since the hazardous potential of a material can be reassessed at any time due to new lessons learned, the safety data sheet must be checked regularly and replaced if necessary.

The system owner is responsible for the presence and the up-to-date status of the safety data sheet and the associated generation of the risk assessment of the effected workstations.

**WARNING!****Hazardous media / contamination of persons and equipment**

Possible consequences: Fatality or serious injuries, property damage

- Ensure the resistance of the device against the medium that is to be conveyed
- Always adhere to the safety data sheet of the medium that is to be conveyed. The system owner is responsible that the safety data sheet is present and up-to-date
- The safety data sheet of the conveyed medium is always authoritative for the initiation of countermeasures in case of a leak of the conveyed medium
- Adhere to the general limitations with respect to viscosity limits, chemical stability and density

**WARNING!****Risk of injury due to hot surfaces!**

The surfaces of components can become very hot during operation. Direct contact with hot surfaces causes severe skin burns.

Note:

- Always wear protective clothing and protective gloves for all work in the vicinity of hot parts.
- Ensure that all surfaces have sufficiently cooled down prior to starting any work.

**CAUTION!****Risk of injury caused by compressed air!**

Uncontrolled leaks of compressed air can lead to serious injuries.

Note:

- Prior to any work on the device/machine, all compressed-air lines must be closed and disconnected.
- Never point compressed air at living beings.

2.8 Residual risks

Devices, machines or systems made by Krautzberger GmbH have been manufactured based on state-of-the-art technology and in compliance with technical safety regulations.

Nonetheless, their use may pose a threat to the life or health of users or third parties, or harm the device, the machine, the system or other material assets.

- Mechanical hazards (crushing, shearing, cutting, jamming, burning, etc.) are possible at any time during the installation, during operation as well as during maintenance work and servicing.

2.9 Course of action in an emergency



In principle, the applicable national, regional and internal company regulations concerning the course of action in case of an emergency must be adhered to and if necessary respective safety measures must be taken on the system owner's side.

3 Transport, storage, and packaging

3.1 Transport

- The diaphragm pump is protected by cardboard packaging.
- The cardboard packaging can be reused for storage.

3.2 Storage

Store packaged units subject to following conditions:

- Do not store outside.
- Store in a dry and dust-free environment.
- Keep away from any aggressive media.
- Protect from UV radiation.
- Avoid mechanical shocks.
- Storage temperature: 15 to 40 °C.
- Relative atmospheric humidity: max. 60%.

3.3 Packaging

The diaphragm pump is packaged in accordance with the anticipated transport conditions and the packaging needs to protect it against transport damage, corrosion, and other damage.

- Remove packaging material.
- Remove potentially present transport safety restraints.

4 Menu

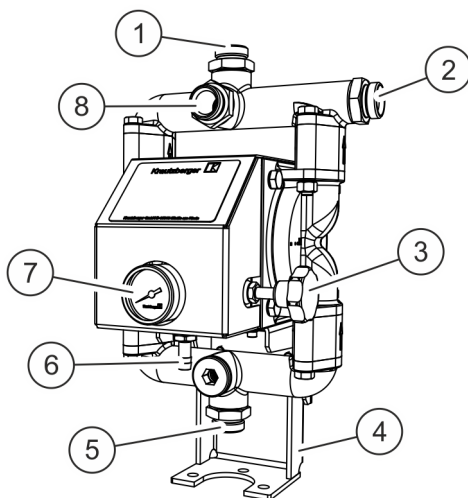


Fig. 2: Menu

- 1 Surge tank connection
- 2 Material pressure connection 2 (material outlet)
- 3 Compressed air controller
- 4 Drum cover mount (optional)
- 5 Fluid intake connection (fluid inlet)
- 6 Compressed-air connection
- 7 Pressure gauge
- 8 Fluid pressure connection (fluid outlet)

5 Installation and disassembly

5.1 Safety

Personnel:

- Specialised personnel
- Trained electrician

Protective equipment:

The selection of the protective equipment depends on the installation conditions on site. Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations for the proper selection of the protective equipment.



WARNING!

Risk of injury due to improper installation!

Improper installation may cause serious personal injury or material damage.

Note:

- Ensure ample of space for the installation prior to starting any work.
- Carefully handle open, sharp-edged components.
- Maintain order and cleanliness at the installation site. Components that are loosely stacked or are scattered around can cause accidents.
- Assemble components properly. Adhere to specified screw tightening torque.
- Secure components against tipping or falling.
- Ensure that the utilised hose lines meet the requirements for pressure, chemical and mechanical loads. At the same time, adhere to the spray media manufacturer's specifications in the safety data sheet.



CAUTION!

Risk of injury through compressed air!

Uncontrolled leaks of compressed air can lead to serious injuries!

- Prior to any work on the device, all compressed-air lines must be closed and bleed if necessary.

**CAUTION!****Risk of injury due to sharp edges!**

Sharp edges and pointed corners can cause abrasions and cuts on the skin.

Note:

- Proceed cautiously when working on or near sharp edges and pointed corners.
- Wear protective gloves, if in doubt.

5.2 General installation information

Adhere to the following general information for the installation:

- Only carry out the installation and start-up in accordance with the steps described in these operating instructions.
- Ensure that the utilised hose lines meet the requirements for pressure, chemical and mechanical loads.
- Only operate the diaphragm pump after fastening it properly to a suitable supporting structure.
- Install the diaphragm pump vertically and with the fluid intake connection pointing down.
- Vibrations may occur on the diaphragm pump during operation. Ensure sufficient fastening.
- Make sure that the connected compressed air is oil-free and free of solid matter.
- Operate the diaphragm pump with processed, dried compressed air (air quality pursuant to DIN ISO 8573-1: quality class 4).
- Never point the compressed air at living beings.

5.3 Installing the diaphragm pump

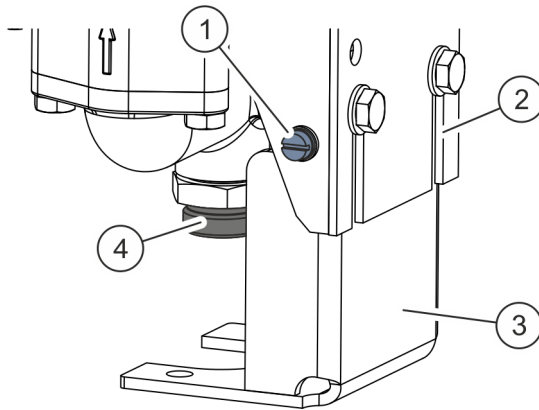


Fig. 3: Installation

1. ➔ Install the pump directly on a wall or supporting structure using the elongated holes (Fig. 3/2) with suitable fastening screws. In the process, make sure that the material suction connection (Fig. 3/4) points vertically downwards after installation.



The diaphragm pump can be fitted directly to a barrel cover using the optional barrel cover mount (Fig. 3/3).

2. ➔ Connect the earthing with the earthing screw (Fig. 3/1).



WARNING!

Risk of fatal injury from electrostatic charge!

Electrostatic charges can cause shocks and sparks and thus lead to explosions.

- Ensure proper earthing.
- Use conductive hose line (< 1 MΩ).

5.4 Connecting the diaphragm pump

Connection scheme - Air and material supply

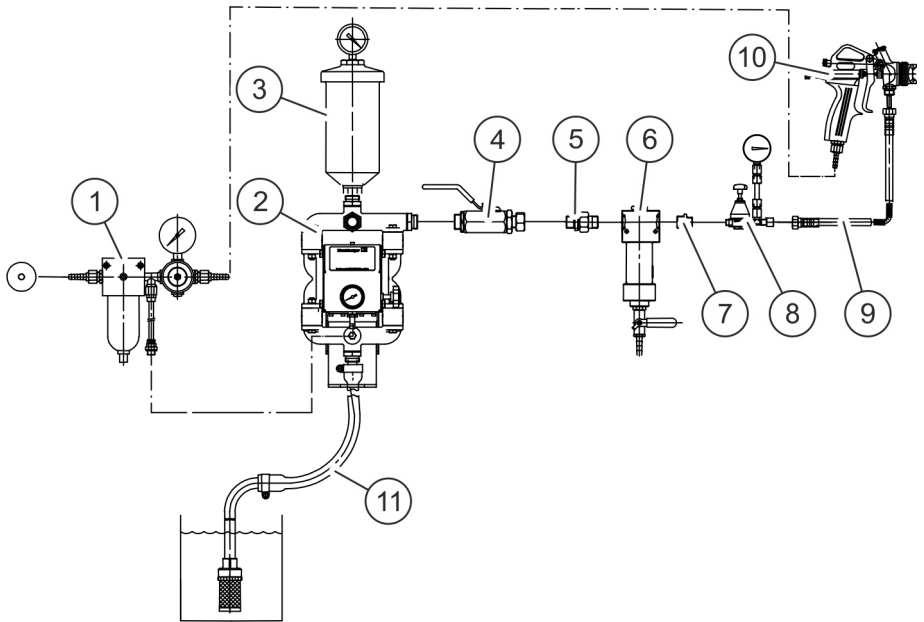


Fig. 4: Connection example

- 1 Air controller unit with filter
- 2 Diaphragm pump
- 3 Surge tank
- 4 Ball cock
- 5 Screw connection
- 6 Material filter
- 7 Reducer
- 8 Material controller
- 9 Low-pressure material hose with fittings
- 10 Spray gun
- 11 Intake hose with suction cage

Connection

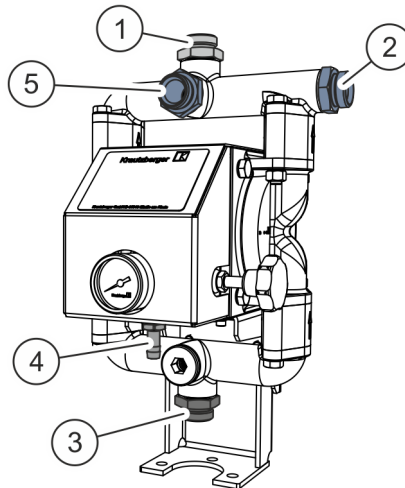


Fig. 5: Connection

1. ➔ Connect the material intake hose to the material intake connection (Fig. 5/3).
2. ➔ Connect the compressed-air supply to the compressed-air connection point (Fig. 5/4).



The compressed air supply must be dry, free of oil and secured by a pressure relief valve.

3. ➔ Connect the material pressure hose to the material pressure connection (material outlet) (Fig. 5/2 or 5).

! NOTICE!

If necessary, properly close the fluid pressure connection that is not needed.

4. ➔ If necessary, connect the surge tank to the connection (Fig. 5/1).
5. ➔ Check all connections for a tight fit.

5.5 Dismantling the diaphragm pump







WARNING!

Risk of injury through a pressurized diaphragm pump!

Uncontrollably leaking pressurized fluids or compressed air can cause serious injuries.

Note:

- Prior to any work on the device, all compressed-air lines must be closed and secured against a restart.
- Never point compressed air at living beings.
- Activate the extraction point to depressurize the diaphragm pump.

1.  Clean diaphragm pump ( Chapter 7.4 'Clean the diaphragm pump' on page 30).
2.  Make sure that the compressed air supply is switched off and secured against a restart.
3.  Reduce the material pressure by activating the extraction point.

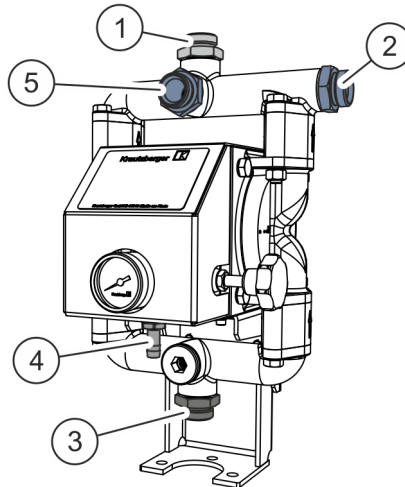






Fig. 6: Disassembly

4.  Disconnect the compressed-air supply from the compressed-air connection point (Fig. 6/4).
5.  Disconnect the material intake hose from the material intake connection (material intake) (Fig. 6/3).
6.  If necessary, disconnect the surge tank from the connection (Fig. 6/1).
7.  Disconnect the material pressure hose at the material pressure connection (material outlet) (Fig. 6/2 or 5).

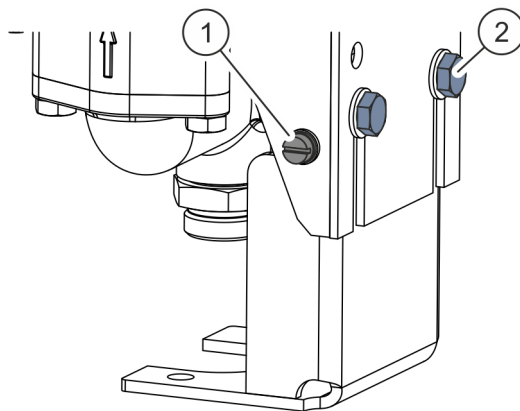


Fig. 7: Disassembly

- 8.** ➤ Disconnect the grounding with the grounding screw (Fig. 7/2).
- 9.** ➤ Disconnect the diaphragm pump by unscrewing the fastening screws (Fig. 7/1) from the wall or supporting structure.

6 Operation

6.1 Safety

Personnel:

- User
- Specialised personnel

Protective equipment:

The selection of the personal protective equipment depends on the utilised medium of the system owner. The information provided by the medium manufacturer indicated on the safety data sheet must be adhered to in order to ensure the proper selection of personal protective equipment.



WARNING!

Risk of injury due to improper operation!

Improper operation can lead to serious personal injuries or property damage.

Note:

- Never point compressed air at people.
- Check the material and compressed air hose lines before each use for damage and tight fit.
- Adhere to the spray media manufacturer's specifications in the safety data sheet.
- Make sure that the connected compressed air is oil-free and free of solid matter.



WARNING!

Risk of death, risk of injury or property damage due to hazardous media!

Potential consequences: The application of hazardous media can lead to death, severe injuries or property damage.

When handling hazardous substances, ensure that the current safety data sheets of the hazardous substance manufacturer are available. The necessary measures can be derived from the content of the safety data sheet. Since the hazardous potential of a material can be reassessed at any time due to lessons learned, the safety data sheet must be checked regularly and replaced if necessary.

The system owner is responsible for the presence and the up-to-date status of the safety data sheet and the associated generation of the risk assessment of the effected workstations.

**WARNING!****Hazardous media / contamination of persons and equipment**

Possible consequences: Fatality or serious injuries, property damage

- Ensure the resistance of the device against the medium that is to be conveyed
- Always adhere to the safety data sheet of the medium that is to be conveyed. The system owner is responsible that the safety data sheet is present and up-to-date
- The safety data sheet of the conveyed medium is always authoritative for the initiation of countermeasures in case of a leak of the conveyed medium
- Adhere to the general limitations with respect to viscosity limits, chemical stability and density

**WARNING!****Risk of fatal injury, risk of injury or property damage due to damaged or disconnected lines!**

Damaged or disconnected lines can cause death, serious injuries or property damage due to whip-like movements and the spraying of fluids.

Note:

- Check the fluid and compressed air lines for damage and a tight fit prior to every work process.

**WARNING!****Risk of injury due to hot surfaces!**

The surfaces of components can become very hot during operation. Direct contact with hot surfaces causes severe skin burns.

- Do not touch hot surfaces during operation, wear protective gloves if necessary.
- Ensure that all surfaces have sufficiently cooled down prior to starting any work.

**WARNING!****Hearing damage due to excessive noise exposure!**

Depending on the operating conditions, the sound pressure of the device/machine may cause hearing damage.

Note:

- Take suitable action to reduce the impact of the existing sound pressure level. The owner is responsible for the type and implementation of suitable measures, which may depend on the local conditions.


6.2 General information about the start-up

Adhere to the following general information for the start-up:




- Carry out the start-up of the diaphragm pump only in compliance to the steps described in this operating manual.
- Always observe the applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations for the area of use for the diaphragm pump.
- Check the material and compressed air hose lines for damage and tight fit before each use.
- The chemical consistency of the materials used by us cannot always be reliably assessed due to the large variety of utilised fluids, concentrations, temperatures, and impurities. For this reason, please test the suitability because we cannot extend any respective guarantees.
- Adhere to the spray media manufacturer's safety data sheets.
- Only operate the diaphragm pump in compliance with the values specified in (↗ *Chapter 12 'Technical data' on page 44*).
- Only operate the diaphragm pump after fastening it properly to a suitable supporting structure.
- Do not hold the diaphragm pump in your hand during operation.
- It is recommended to flush the diaphragm pump prior to initial start-up using a suitable cleaning agent.
- Make sure that the connected compressed air is oil-free and free of solid matter.

6.3 Shut-down

6.3.1 Temporary shut-down

1.  Interrupt the compressed air supply in a suitable location (e.g. shut-off device).

6.3.2 Long-term shut-down

1.  Interrupt the compressed air supply in a suitable location (e.g. shut-off device).
2.  Clean diaphragm pump (↗ *Chapter 7.4 'Clean the diaphragm pump' on page 30*).
3.  Interrupt the compressed air supply at a suitable location (e.g. shut-off device) and secure it against a restart.

6.4 Start-up



Adhere to the operating instructions for the respective components.

1. Check the material and compressed air lines to make sure they are undamaged and have a secure fit.
2. Switch on compressed-air supply provided by the system owner.
3. Make sure that there is air pressure of 4 to 8 bar.
4. Make sure that the material intake hose is dipped into the material.

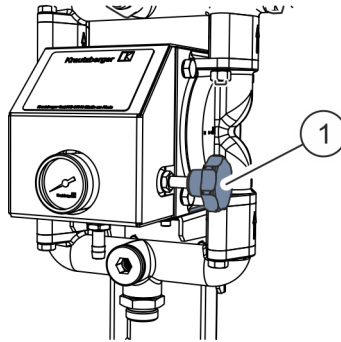


Fig. 8: Compressed air controller

5.



NOTICE!

Risk of increased wear in idle mode!

During initial commissioning there is still air in the diaphragm pump and the supply lines. In idle mode the diaphragm pump is subject to particularly high levels of wear.

To bleed the pressure controller (Fig. 8/1), first set a low air pressure.

6. Activate the extraction point (e.g. manual spray gun) until material escapes.
7. After successful bleeding, set the desired material pressure with the pressure controller.

7 Maintenance

7.1 Safety

Personnel:

- Specialised personnel

Protective equipment:

The selection of the protective equipment depends on the maintenance conditions on site and the medium utilized by the operating company. The applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations must be adhered to for the proper selection of the protective equipment and the information given by the spray media manufacturer on the safety data sheet must be taken into consideration.



WARNING!

Risk of injury through the use of incorrect spare parts!

The use of incorrect or defective spare parts can cause risks for the personnel as well as damage, malfunctions or complete failure.

- Only use original spare parts from Krautzberger or spare parts that have been approved by Krautzberger.
- In case of questions, always contact our service department.



WARNING!

Risk of injury through a pressurized diaphragm pump!

Uncontrollably leaking pressurized fluids or compressed air can cause serious injuries.

Note:

- Prior to any work on the device, all compressed-air lines must be closed and secured against a restart.
- Never point compressed air at living beings.
- Activate the extraction point to depressurize the diaphragm pump.



CAUTION!

Risk of injury through compressed air!

Uncontrolled leaks of compressed air can lead to serious injuries!

- Prior to any work on the device, all compressed-air lines must be closed and bleed if necessary.

**CAUTION!****Risk of injury due to sharp edges!**

Sharp edges and pointed corners can cause abrasions and cuts on the skin.

Note:

- Proceed cautiously when working on or near sharp edges and pointed corners.
- Wear protective gloves, if in doubt.

**Hose and pipelines**

Even with intended use by environmental influences, the service life of hose lines and pipelines is limited. For the sake of prevention, all hose and pipelines should be replaced regularly according to their load.

7.2 General maintenance information

The following sections describe the maintenance work that is required for optimal and fault-free operation of the device.

Check wearing parts such as seals at regular intervals. The level of wear depends on the abrasiveness of the spray fluid used. Escaping air and spray fluid are signs that parts are worn. In case of questions about maintenance work and intervals, contact the manufacturer; see contact information on the last page.

7.3 Maintenance schedule

Interval	Maintenance work
Prior to each work process	Check the material or compressed air lines to make sure they are undamaged and have a secure fit
Before performing any maintenance work	Clean diaphragm pump (↗ Chapter 7.4 'Clean the diaphragm pump' on page 30)
Prior to every long-term shutdown	
When necessary	Clean diaphragm pump (↗ Chapter 7.4 'Clean the diaphragm pump' on page 30)
	Replace valve parts (↗ Chapter 7.5 'Replace valve parts' on page 31)
	Replace diaphragms (↗ Chapter 7.6 'Replace the diaphragm' on page 33)

7.4 Clean the diaphragm pump











WARNING!

Risk of injury due to improper cleaning!

Detergents may be harmful to one's health and be easily flammable. Furthermore, seals of the diaphragm pump can be destroyed.

Note:

- Adhere to the safety data sheets of the cleaning product manufacturer.
- Do not fully immerse the diaphragm pump in a cleaning product.
- Do not use any high-pressure cleaning devices.

1.  Interrupt the compressed air supply in a suitable location (e.g. shut-off device).
2.  Dip the material intake hose into a suitable detergent.
3.  Switch on the compressed air supply.
4.  Rinse out the diaphragm pump by activating the extraction point until only detergent liquid escapes.
5.  Disrupt the compressed air supply and secure it against restart.
6.  Activate the extraction point again to depressurize the diaphragm pump.
7.  Leave detergent liquid in the diaphragm pump.
8.  Clean the outside of the device with a cloth dipped in cleaning solution.

7.5 Replace valve parts

1. ➤ Clean diaphragm pump ([↗ Chapter 7.4 'Clean the diaphragm pump' on page 30](#)).
2. ➤ Make sure that the compressed air supply is switched off and secured against a restart.
3. ➤ Reduce the material pressure by activating the extraction point.

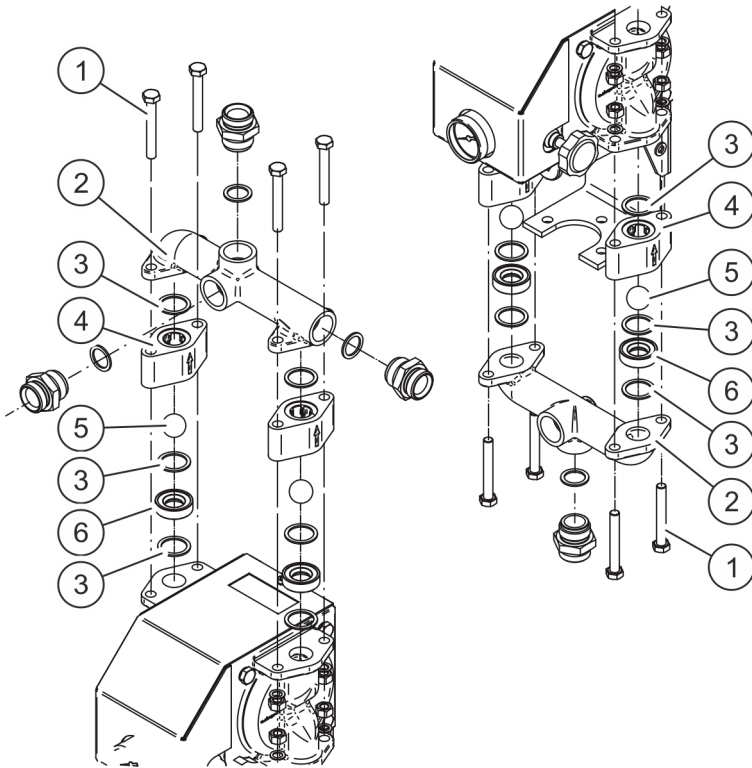


Fig. 9: Valve parts








4. ➤ Unscrew the hexagon screws (Fig. 9/1).
5. ➤ Remove the bridge (Fig. 9/2).
6. ➤ Remove the flat seals (Fig. 9/3), ball cages (Fig. 9/4), valve balls (Fig. 9/5) and the valve seat (Fig. 9/6).
7. ➤ Check all parts for damage and wear and replace them as necessary.
8. ➤ Replace diaphragms ([↗ Chapter 7.6 'Replace the diaphragm' on page 33](#)).

**WARNING!****Risk of injury due to improper cleaning!**

Detergents may be harmful to one's health and be easily flammable. Furthermore, seals of the diaphragm pump can be destroyed.

Note:

- Adhere to the safety data sheets of the cleaning product manufacturer.
- Do not fully immerse the valve housing in cleaning product.
- Do not use any high-pressure cleaning devices.

- 9.**  Clean the outside of the valve housing with a cloth soaked in cleaning product.
- 10.**  Install all valve parts (Fig. 9/3 to 6) in the sequence shown.
- 11.**  Attach the bridge (Fig. 9/2).
- 12.**  Screw the hexagon screws (Fig. 9/1) tight.
- 13.**  Clean the diaphragm pump ( Chapter 7.4 'Clean the diaphragm pump' on page 30) and perform a test run ( Chapter 6.4 'Start-up' on page 27).

7.6 Replace the diaphragm



The following is a description of how to replace diaphragm using the example of the left-hand side of the diaphragm pump.

1. ➤ Clean diaphragm pump (↪ Chapter 7.4 'Clean the diaphragm pump' on page 30).
2. ➤ Make sure that the compressed air supply is switched off and secured against a restart.
3. ➤ Reduce the material pressure by activating the extraction point.
4. ➤ Remove the bridges and valve parts (↪ Chapter 7.5 'Replace valve parts' on page 31).

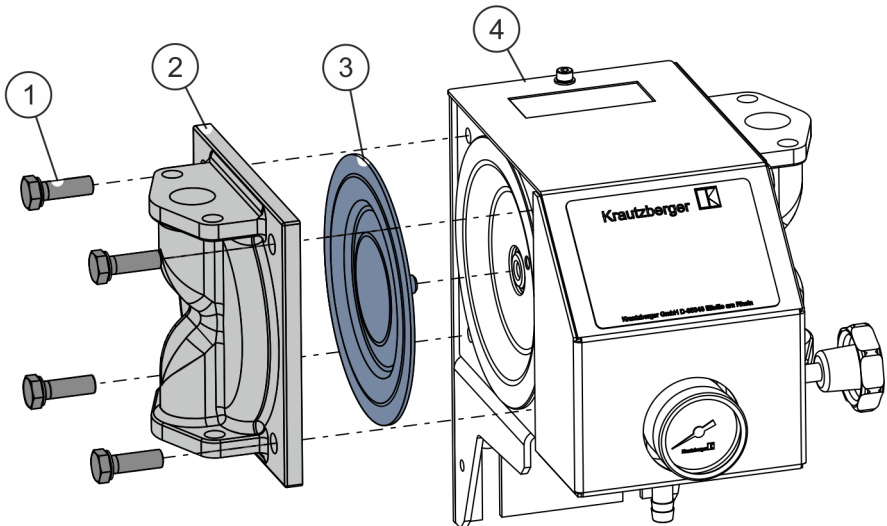


Fig. 10: Unscrew the cover









5. ➤ Unfasten all 4 screws (Fig. 10/1) and remove the diaphragm cover (Fig. 10/2).
6. ➤ Unscrew the diaphragm (Fig. 10/3) from the control pin (Fig. 10/4).

**WARNING!****Risk of injury due to improper cleaning!**

Detergents may be harmful to one's health and be easily flammable. Furthermore, seals of the diaphragm pump can be destroyed.

Note:

- Adhere to the safety data sheets of the cleaning product manufacturer.
- Do not use any high-pressure cleaning devices.

7.  Clean contact surfaces of the diaphragm cover.
8.  Screw the new diaphragm (Fig. 10/3) firmly into the control pin (Fig. 10/4).
9.  Attach the diaphragm cover (Fig. 10/2).
10.  Lightly grease all 4 screws (Fig. 10/1) and screw tight (**Tightening torque: 20 Nm**).
11.  Install the bridges and valve parts ( *Chapter 7.5 'Replace valve parts' on page 31*).
12.  Perform test run ( *Chapter 6.4 'Start-up' on page 27*).

8 Troubleshooting

Personnel:






- Qualified personnel

Protective equipment:

The selection of the personal protective equipment depends on the utilised medium of the system owner. The information provided by the medium manufacturer indicated on the safety data sheet must be adhered to in order to ensure the proper selection of personal protective equipment.

How to act in case of dangerous faults

In principle, the following applies:

1.  In the event of malfunctions that present an immediate risk for persons or property values, immediately switch off the system.
2.  Determine cause for malfunction.
3.  Inform responsible party at the operating site about the malfunction.
4.  In the event that the troubleshooting requires work in the hazard zone, switch off the system and secure it against a restart.
5.  Depending on the type of malfunction, eliminate the malfunction or have it eliminated by an authorized specialist.



If the fault is not included in the following table or if it cannot be eliminated with the measures described, contact Customer Care.

8.1 Customer Care



Krautzberger GmbH

Customer service

Stockbornstr. 13

65343 Eltville am Rhein

+49 6123 - 698151

customercare@krautzberger.com

8.2 Troubleshooting table

Error	Cause	Remedy
Air in the pressure line	Suction line loose/leaking	Check intake line, tighten if necessary
	Seals faulty/worn	Replace seal (↪ <i>Chapter 7.5 'Replace valve parts' on page 31</i>)
	Diaphragm faulty	Replace diaphragm (↪ <i>Chapter 7.6 'Replace the diaphragm' on page 33</i>)
Diaphragm pump runs unevenly	Foreign bodies sucked in	Remove the valve parts and check for damage, replace any parts as necessary (↪ <i>Chapter 7.5 'Replace valve parts' on page 31</i>)
	Air is sucked in	Check suction direction
	Suction line blocked	Check intake line, clean if necessary
	Valve balls/valve seat soiled/leaking	Clean/replace valve balls/valve seat (↪ <i>Chapter 7.5 'Replace valve parts' on page 31</i>)
The diaphragm pump runs unevenly after removing the control valve	The control valve has been installed positioned slightly to the side after removal / replacement	Check the position of the control valve and adjust it as necessary (↪ <i>Chapter 8.3.1 'Replacing the pressure controller' on page 37</i>)
The diaphragm pump does not start up	No compressed air available	Switch on and check compressed air supply
	Pressure controller/control valve faulty	Replace the pressure controller/control valve (↪ <i>Chapter 8.3.1 'Replacing the pressure controller' on page 37</i>)
Pump works but no pressure builds up or no suction	Intake screen soiled	Clean intake screen
	Suction hose is kinked/leaking	Check suction hose
	Valve parts soiled/worn	Clean or replace the valve parts (↪ <i>Chapter 7.5 'Replace valve parts' on page 31</i>)
	Seals faulty/worn	Replace seals (↪ <i>Chapter 7.5 'Replace valve parts' on page 31</i>)
Pressure fluctuations during operation or unusual running noises	Diaphragm worn	Replace diaphragm (↪ <i>Chapter 7.6 'Replace the diaphragm' on page 33</i>)

8.3 Work for clearing faults

8.3.1 Replacing the pressure controller

Disassembly

1. ➤ Make sure that the compressed air supply is switched off and secured against a restart.
2. ➤ Reduce the material pressure by activating the extraction point.
3. ➤ Disconnect the compressed air hose from the diaphragm pump.

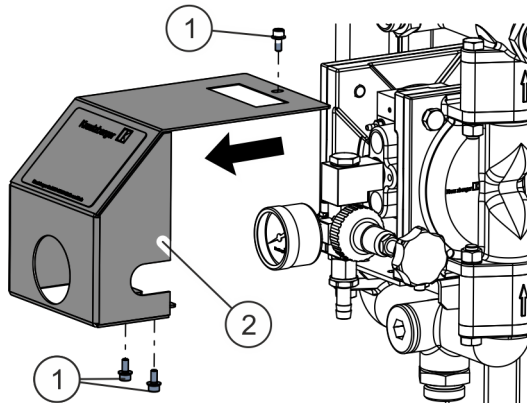


Fig. 11: Panelling

4. ➤ Unscrew the screws (Fig. 11/1) and remove the panelling (Fig. 11/2).

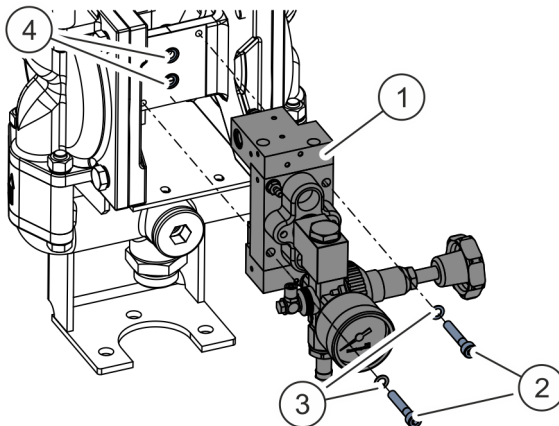



Fig. 12: Pressure controller

5. ➤ Unscrew the screws (Fig. 12/2) and remove locking washers (Fig. 12/3).
6. ➤ Remove the complete unit from the pump with the pressure controller (Fig. 12/1).

7.  Remove the seals (Fig. 12/4).

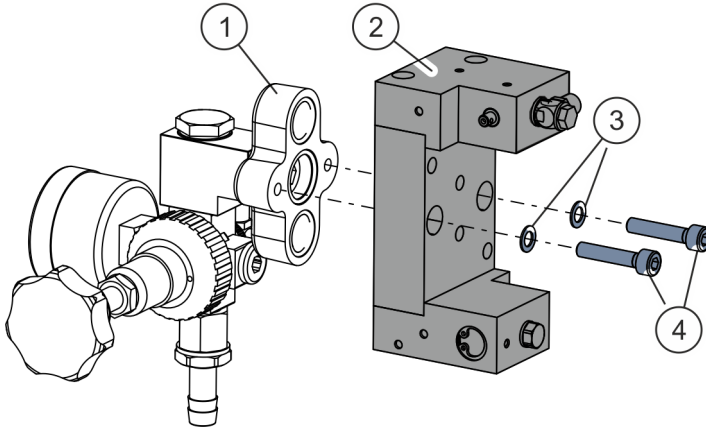



Fig. 13: Pressure controller

8.  Unscrew the screws (Fig. 13/4) and remove locking washers (Fig. 13/3).
Remove control valve (Fig. 13/2) from valve adapter (Fig. 13/1).

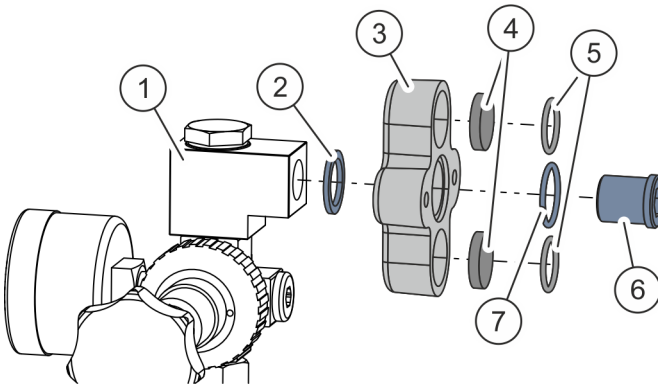







Fig. 14: Pressure controller

9.  Unscrew the fastening nipple (Fig. 14/6).
10.  Replace the seals (Fig. 14/2, 5 and 7).
11.  Remove the sound absorber (Fig. 14/4) from the valve adapter (Fig. 14/3) and check for wear. Replace it as necessary.
12.  Screw the new pressure controller (Fig. 14/1) in place with the fastening nipple (Fig. 14/6) as shown.
13.  Screw the control valve to the valve adapter with the screws and locking washers.

- 14.** ▶ Insert new seals.
- 15.** ▶ Insert the complete unit into the pump and screw it to the pump with the screws and the locking washers.
- 16.** ▶ Put on the panelling and fasten it in place with the screws.

9 Spare parts



- Only use OEM parts from Krautzberger or Krautzberger-approved spare parts.
- In case of questions, always contact our Customer Care department.



Spare parts order – General

To make spare part ordering easier, please provide the following information:

- Serial number
- Model / product name
- Designation
- Item number according to spare parts list
- Quantity
- Desired shipping method (post, freight, sea, air, express)
- Delivery address

9.1 Spare parts



A complete spare part overview is available on the website of Krautzberger GmbH:

www.krautzberger.de

10 Accessories

There are a wide range of accessories available for the diaphragm pumps. For further information, visit us on the Internet (www.krautzberger.com) or contact your Krautzberger specialist dealer, consultant or our office staff. Here are a few examples:

- Pressure compensation tank with removable cleaning cover and pressure gauge for balancing out the pulsation and displaying the set material pressure
- Suction devices in various designs, with filter basket
- Pressure pipe with pressure gauge for displaying the set material pressure
- Material filter with drain valve
- Material pressure controller for absolutely constant material pressure, even in very low pressure ranges
- Pneumatic pump stroke devices
- Carriage with depositing surface
- Wall bracket
- Stand to hold wall console
- Container lids for diaphragm pump build-up
- Mount for lid installation
- Material drain valve
- ... and other accessories

11 Disassembly and disposal

11.1 Safety

Personnel:

- Qualified personnel

Protective equipment:

The selection of the protective equipment depends on the installation conditions on site and the medium utilized by the operating company. The applicable country-specific safety, accident prevention, occupational safety, and environmental protection regulations must be adhered to for the proper selection of the protective equipment and the information given by the spray media manufacturer on the safety data sheet must be taken into consideration.



WARNING!

Risk of injury due to improper disassembly!

Residual stored energies, component edges, points and corners on or in the device or on the required tools may cause injuries.

- Make sure you have sufficient space before starting the work.
- Carefully handle open, sharp edged components.
- Keep the workplace orderly and clean! Loosely stacked or scattered components and tools are sources for accidents.
- Properly dismantle components. Pay attention to very high individual weight of some of the components. If necessary, use hoisting equipment.
- Secure components so that they cannot fall or tip over.
- If questions arise, consult with the customer service from Krautzberger.

11.2 Disassembly

Prior to starting the disassembly:

- Switch off the device and secure it against restart.
- Physically disconnect the entire power supply from the device, and discharge any energy stored in the machine.
- Remove and dispose of operating and auxiliary material as well as remaining processing materials in an environmentally friendly manner.

Afterwards, properly clean components and modules and take them apart in compliance with applicable local occupational health & safety regulations as well as environmental protection regulations.

11.3 Disposal

If no return or disposal agreement has been made, recycle the dismantled parts:

- Scrap metals.
- Recycle plastic components.

- Sort remaining components based on the respective material and dispose of them accordingly.
- Properly dispose of potential spray fluid residue separately from the device.

If in doubt, obtain information about environmentally-appropriate disposal with the local municipalities or specialised disposal companies.

12 Technical data

12.1 General specifications

Specification	Value	Unit
Delivery rate (with reference to water, free flow)	15	l/min
Fluid connection (outlet)	3/4" external thread	Inches
Max. temperature of the coating material used	0 ... +50	°C
Maximum pressure	8 (116)	bar (psi)
Max. permitted operating pressure	8 (116)	bar (psi)
Compressed air connection (hose sleeve)	8 / 9	mm
Min. air intake pressure	4 (58)	bar (psi)
Max. air intake pressure	8 (116)	bar (psi)
Max. stroke (double strokes)	120	DS/min
Recommended number of strokes (double strokes)	100	DS/min
Weight	9.0	kg
Noise pressure level (at 8 bar and 100 DS)	80	dB(A)
Transmission ratio	1:1	
Compressed air supply	oil-free, filtered	

12.2 Material delivery properties

Material	Suitability
Paint (with solvent)	good
Water-based paint, dispersions, wood preservatives	good
Water	good
Oils, heating oils, diesel fuel	good
Emulsions, soap, detergents	good
Alcohol, glazes, latex	limited
Lime sludge	limited
Cell and fibre materials	unsuitable
Sludge, mash, pastes	unsuitable



If in doubt, contact Krautzberger Customer Care about the suitability of materials that are not listed. In special cases we will determine the suitability in a trial.

12.3 Dimensions

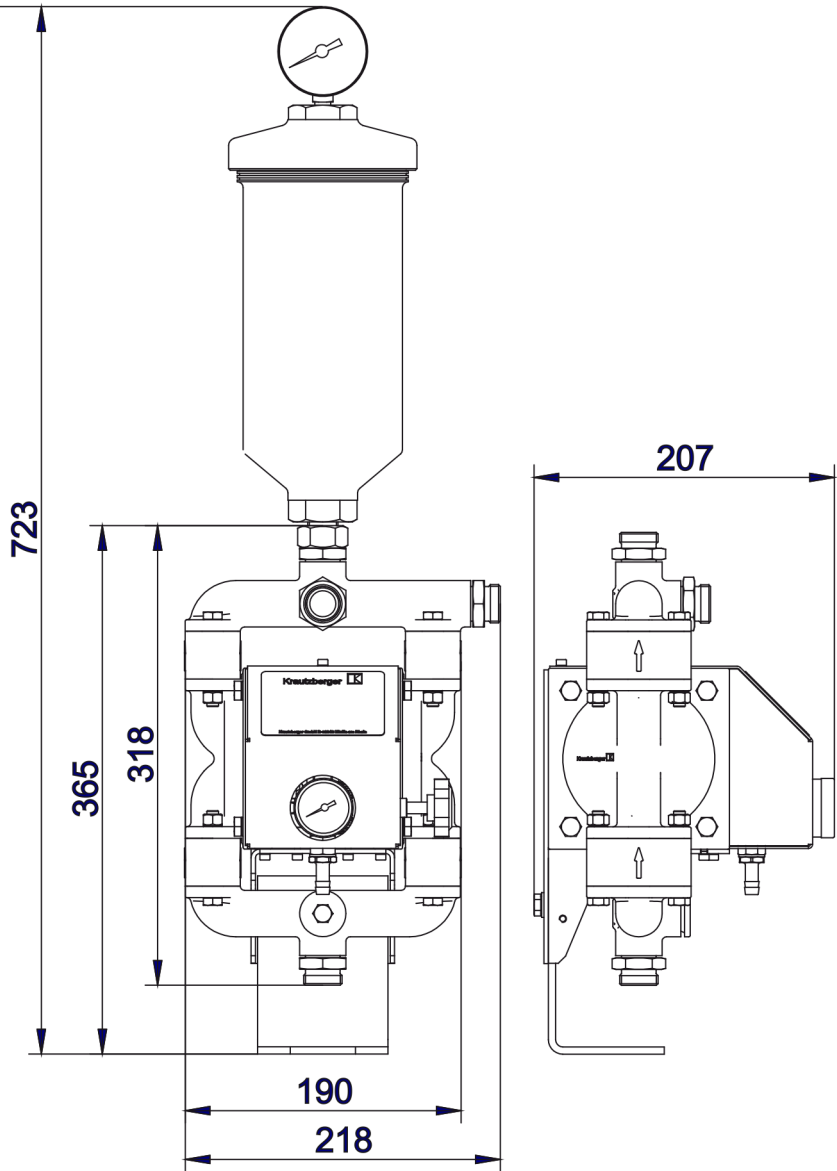


Fig. 15: Dimensions

13 Declaration of conformity



EC/EU- Declaration of Conformity under the EC-Treaty / EU Constitution

The manufacturer
 Krautzberger GmbH, Stockbornstr. 13, 65343 Eitville, Deutschland

hereby declares that the following product

Product name: Membran pump
 Fabrikat: MP-520
 Article number:: 200-0216, 200-0330

Marking to Atex:  II 2 G c

The notified body: IBExU (Identifikations-Nr.:0637)

IBExU Institut für Sicherheitstechnik GmbH, Fuchsmühlenweg 7, D - 09599 Freiberg

has been engaged for the Retention of documents the relevant harmonisation legislation of the Union until 19 April 2016, as applicable and regulations applicable from April 20, 2016 and the other applied directives / standards (following) - including their changes applying at the time of the explanation – corresponds.

Following guidelines were applied:

ATEX-Guideline 2014/34/EU

The following national and international standards and specifications have been applied:

- EN 1127-1:2007
- EN 13463-1:2001
- EN 809:1998
- EN ISO 12100-1:2003
- EN ISO 12100-2:2003
- EN ISO 13849-1
- DIN EN 12639
- DIN EN 292-1 ; DIN EN 292-2
- DIN 24289

Name and address of the person who is authorised to put together the technical documents

Andreas Lotz
 c/o Krautzberger GmbH
 Stockbornstr. 13
 65343 Eitville
 Deutschland



Jörg Blumrich(Head of Design/Development)

Place: Eitville
 Date: 01.07.2016

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Fig. 16: Declaration of conformity

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Weight 44

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