

LEADING IN
PRODUCTION
EFFICIENCY



EcoPump HP

Pneumatic Horizontal Piston Pump

Operation manual

MPU00020EN, V01

N24160008, N24160009, N24160010

www.durr.com




Information about the document

This document describes the correct handling of the product.

- Read the document prior to every activity.
- Prepare the document for the application.
- Pass on the product only together with the complete documentation.
- Always follow safety instructions, handling instructions and specifications of every kind.
- Illustrations can deviate from the technical construction.

Validity range of the document


This document describes the following product:

N24160008 EcoPump HP 400 21	
N24160009 EcoPump HP 800 21	
N24160010 EcoPump HP 1600 21	

Applicable documents

If you use accessories, follow the operating instructions for the accessories.

MCU00002 - **EcoPUC A**

 An asterisk (*) in the document number replaces the symbol of the language variant.

Hotline and Contact

If you have queries or would like technical information, please contact your dealer or sales partner.

TABLE OF CONTENTS

1	Product overview.....	5	9.4.1	Disassemble control unit.....	17
	1.1 Overview.....	5	9.4.2	Remove membrane.....	17
	1.2 Short description.....	5	9.4.3	Removing the valve.....	18
2	Safety.....	5	9.4.4	Install membrane.....	18
	2.1 Presentation of Notes.....	5	9.4.5	Assembling valve.....	19
	2.2 Intended Use.....	5	9.4.6	Assemble control unit.....	19
	2.3 Residual risks.....	6	9.5	Dismantling and assembling fluid parts..	20
	2.4 Conduct in the event of a hazardous situation.....	6	9.5.1	Disassemble outlet cylinder.....	20
	2.5 Staff qualification.....	6	9.5.2	Outlet cylinder assembly.....	20
	2.6 Personal protective equipment.....	7	9.5.3	Dismantling non-return valve in the outlet cylinder.....	21
3	Design and Function.....	7	9.5.4	Assembling non-return valve in the outlet cylinder.....	21
	3.1 Control Unit.....	7	9.5.5	Dismantle non-return valve in the piston.....	22
	3.2 Motor.....	8	9.5.6	Assemble non-return valve in the piston.....	22
	3.3 Fluid part.....	8	9.5.7	Dismantling inlet cylinder.....	23
4	Transport, scope of supply and storage.....	8	9.5.8	Inlet cylinder assembly.....	23
	4.1 Unpacking.....	8	9.6	Dismantle and assemble motor.....	24
	4.2 Transport.....	9	9.6.1	Dismantle motor.....	24
	4.3 Scope of delivery.....	9	9.6.2	Assemble motor.....	25
	4.4 Handling of packaging material.....	9	10	Faults.....	26
	4.5 Storage.....	9	10.1	Defects table.....	26
5	Assembly.....	9	10.2	Troubleshooting.....	28
	5.1 Safety recommendations.....	9	10.2.1	Replace switchover valve.....	28
	5.2 Requirements for the Installation point..	10	10.2.2	Assembling ice reduction.....	29
	5.3 Assembly.....	10	11	Disassembly and Disposal.....	33
	5.4 Connecting.....	11	11.1	Safety recommendations.....	33
6	Commissioning.....	11	11.2	Disassembly.....	34
	6.1 Safety recommendations.....	11	11.3	Disposal	35
	6.2 Commissioning.....	12	12	Technical data.....	36
	6.3 Setting operating parameters	13	12.1	Dimensions and weight.....	36
7	Operation.....	13	12.2	Connections.....	36
	7.1 General notes.....	13	12.3	Operating conditions.....	36
	7.2 Rinsing.....	13	12.4	Emissions.....	37
	7.2.1 Safety recommendations.....	13	12.5	Operating values.....	37
	7.2.2 Flush the pump.....	13	12.6	Compressed air quality.....	37
8	Cleaning.....	14	12.7	Type plate.....	37
	8.1 Safety recommendations	14	12.8	Materials used.....	37
	8.2 Cleaning.....	15	12.9	Operating and auxiliary materials.....	37
9	Maintenance.....	15	12.10	Characteristic curve of the outflow rate.....	38
	9.1 Safety notes.....	15	12.11	Material specification.....	39
	9.2 General notes.....	16	13	Replacement parts, tools and accessories.....	40
	9.3 Maintenance schedule.....	16	13.1	Replacement parts.....	40
	9.4 Dismantle and assemble control unit.....	17			

13.1.1	Control Unit.....	40
13.1.2	Fluid part.....	42
13.1.3	Motor.....	45
13.1.4	Manifolds.....	48
13.1.5	Repair kits.....	48
13.1.6	Seal sets.....	49
13.2	Tools.....	49
13.3	Accessories.....	49
13.4	Order.....	50
14	Index.....	51

1 Product overview

1.1 Overview

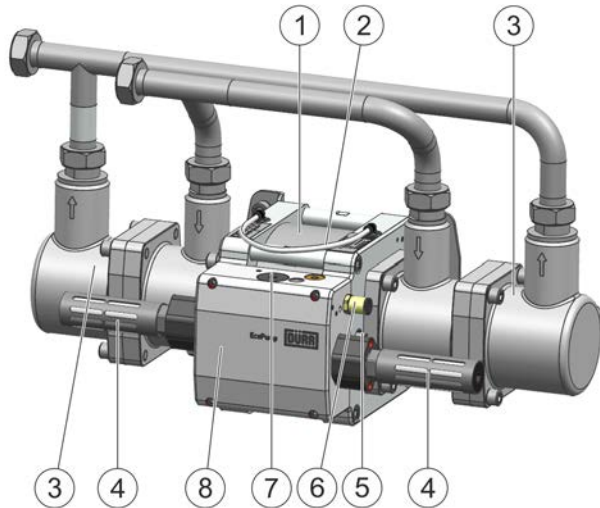


Fig. 1: Assemblies

- 1 Motor
- 2 Hose leakage indicator
- 3 Fluid parts
- 4 Sound muffler
- 5 Changeover valve
- 6 Compressed air connection
- 7 Control unit valve
- 8 Control unit

Upon delivery of the pump, the hose for the leakage indicator is fitted at the top. The hose for the leakage indicator may alternatively also be fitted at the bottom of the pump.

1.2 Short description

The horizontal piston pump (hereafter called “Pump”) with pneumatic drive conveys water-based and solvent-based flammable and non-flammable coating materials e.g. in automated paint mixing rooms.

2 Safety

2.1 Presentation of Notes

The following notes can appear in this instruction:

DANGER!

High risk situation that can lead to serious injuries or death.

WARNING!

Medium risk situation that can lead to serious injuries or death.

CAUTION!

Low risk situations that can lead to minor injuries.

NOTICE!

Situations that can lead to material damage.

ENVIRONMENT!

Situations that can lead to environmental damage.

Additional information and recommendations.

2.2 Intended Use

Use

The **EcoPump HP** is an auto-suction pneumatic horizontal piston pump.

The **EcoPump HP** may only be used for pumping water-based and solvent-based flammable and non-flammable coating materials and their detergents.

The pump is only intended for industrial use.

The pump may only be operated within the approved technical data ↪ 12 “Technical data”.

The pump is approved for use in explosive areas of Ex zones 1 and 2.

Misuse

If used improperly, it can cause serious injuries.

Examples of wrong use are:

- Use outside a closed process or a remotely controlled and automated process
- Installation of the pump in an area without forced ventilation
- Use of unapproved materials, see safety data sheets
- Making conversions or changes on your own
- Use of non-conductive fluids ↪ 12.11 “Material specification”
- Use in explosive areas Ex zone 0
- Use of components unapproved by Dürr Systems

Ex labeling

II 2G Ex h IIA T6 Gb X

- II - Device group II: all areas except mining
- 2G - Device category 2 for gaseous atmosphere
- Ex h - Mechanical explosion protection
- IIA - Explosion group IIA
- T6 - Temperature class
- Gb - Device protection level Gb
- X - The pump is configured for operation in an ambient temperature of 15°C to 40°C.

2.3 Residual risks

Danger of explosion due to sources of ignition in an explosive atmosphere.

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. Serious injury and death could be the consequence.

- Before carrying out any work, make sure that there is no explosive atmosphere.
- Do not use any sources of ignition and no open light in the work area.
- Do not smoke.
- Do not unpack Pump in Ex zone.
- Dispose of packaging according to regulation outside of Ex zone or store it.
- Use tools with Ex approval.
- Ground Pump.
- Wear suitable protective equipment.

Sparks due to electrostatic discharge

If the pump is not properly grounded or the potential equalization fails, components may get charged electrostatically. Electrostatic discharge can cause sparks that in explosive atmosphere can cause a fire or an explosion. Serious injury and death could be the consequence.

- Ground Pump as specified.
- Check connection of grounding cable during operation.
- Measure volume resistivity.

Escaping material

Material escaping under pressure can cause serious injuries.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Depressurize the lines.
- Secure the system against being switched on again.

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Pump Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the safety data sheet.
- Wear specified protective equipment.

2.4 Conduct in the event of a hazardous situation

Conduct in case of danger depends on the operator's installation situation.

Perform the following activities:

- Close lines.
- Secure against reconnection.
- Depressurize lines.

2.5 Staff qualification



WARNING!

Inadequate qualification

Wrong estimation of dangers can cause serious injury or death.

- Only sufficiently qualified persons may execute all work.
- Some work requires additional qualification. Additional qualifications of specialized personnel are marked with a "+".

This document is intended for qualified personnel in industry and craftsmanship.

Cleaning staff

The cleaning staff receives regular instructions from the operator about the following contents:

- Using the product
- Handling cleaning tools
- Handling cleaning agents
- Technical Measures for occupational safety and health

Electrician

Electricians assemble, install, service and repair electrical systems in a professional manner.

Furthermore, electrical engineers have the following knowledge:

- Guidelines, Standards and Rules of Engineering
- Local conditions
- Electrical Systems and Their Loading Limits
- Technical Measures for occupational safety and health

Mechanic

The mechanic is trained specifically for the field of work in which he works.

Furthermore, he has the following knowledge:

- Guidelines, Standards and Rules of Engineering
- Local conditions
- Technical Measures for occupational safety and health

The mechanic is responsible for the following activities on equipment and components:

- Assembly
- Waiting
- Maintenance
- Disassembly

+ Additional qualification high pressure

In addition, the mechanic has knowledge of regulations and safety measures for high pressure systems > 20 bar.

+ additional qualification explosion protection

In addition to the knowledge of the various specialist fields, the mechanic has knowledge of regulations and safety measures when working in potentially explosive areas.

Dürr Systems offers special product training for ↪ "Hotline and Contact".

2.6 Personal protective equipment

Wear the required personal protective equipment when working. Provide the following personal protective equipment:



Anti-Static Safety Boots

Protect feet from crushing, falling items and slipping on slippery ground.

Moreover, anti-static safety boots reduce electrostatic charge by discharging the electrostatic charges.



Eye protection

Protects eyes from dust, paint drops and particles.



Protective gloves

Protect the hands from:

- mechanical forces
- Thermal forces
- Chemical effects



Protective workwear

Tight fitting workwear with low tear strength, tight sleeves and no hanging parts.



Respirator mask

Protects from hazardous gases, vapors, dust and similar materials and media.



Use ear protection

Protects from auditory damage due to noise.

3 Design and Function

3.1 Control Unit

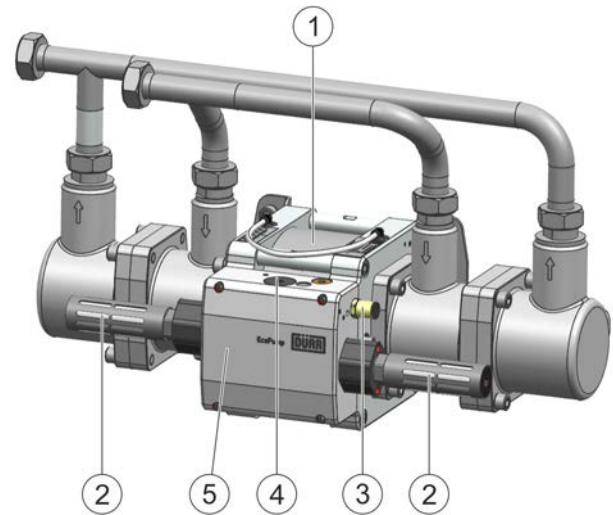


Fig. 2: Control Unit operation

- 1 Motor
- 2 Sound muffler
- 3 Compressed air connection
- 4 Valve
- 5 Distributor block

Air reaches into the distributor block of the control unit (5) via the compressed air connection (3). The valve (4) in the distributor block (5) controls the air intake to the motor (1). The air outlet is through the two sound mufflers (2).

3.2 Motor

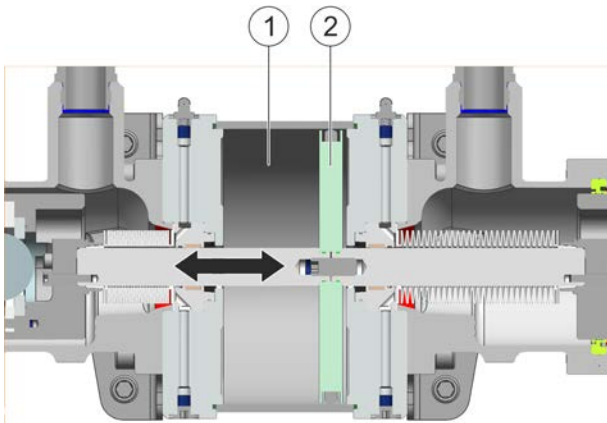


Fig. 3: Motor operation

- 1 Cylinder
- 2 Piston

The pneumatically operated motor drives the pump. The piston (2) of the pneumatic motor divides the cylinder (1) into two air chambers. Compressed air moves the piston (2) back and forth in the cylinder (1). When the piston (2) reaches one end of the cylinder (1), the piston switches the switch valve. The switch valve causes the control unit to change the supply of engine air from one side of the piston (2) to the other. The piston (2) then moves in the opposite direction.

3.3 Fluid part

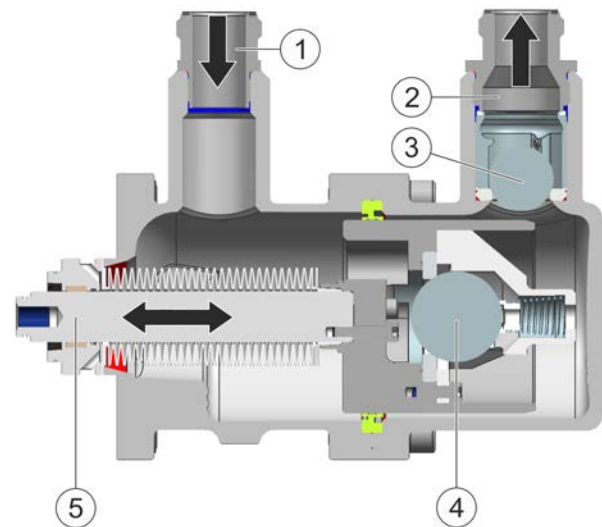


Fig. 4: Fluid part operation

- 1 Suction line
- 2 Pressure line
- 3 Non-return valve in the outlet cylinder
- 4 Non-return valve in the piston
- 5 Piston rod

The motor and the fluid parts are mutually linked through the piston rod (5). The movement of the piston rod causes suction of the material into a fluid part through the suction line (1). At the same time, material is pushed out through the pressure line (2) in the second Fluid part. Non-return valves (3) and (4) prevent material from flowing back.

4 Transport, scope of supply and storage

4.1 Unpacking

DANGER!

Electrostatically charged plastic films and foils in potentially explosive areas

The foil and the product can charge electrostatically at the time of the unpacking. Electrostatic discharge can cause sparks that in explosive atmosphere can cause a fire or an explosion. Serious injury and death could be the consequence.

- Unpack product outside Ex zones.
- Discharge the product.
- Dispose packaging outside of the Ex zone in accordance with the regulation or store properly for a later return.

4.2 Transport

! WARNING!

Lifting heavy loads

Lifting heavy loads could cause back injuries, crushing or compression. Serious injuries can be the consequence.

- Lift heavy loads only by using suitable hoists.

! NOTICE!

Incorrect Transport

Incorrect Transport can cause property damage.

- Protect Pump from moisture.
- Protect Pump from vibrations.
- Transport temperature: -30°C to 60°C

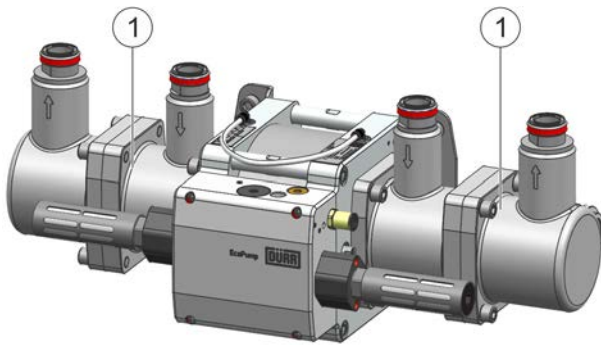


Fig. 5: Attaching the round slings

Requirements:

- Pump has been disassembled ↪ 11.2 “Disassembly”.
1. Place one round sling each around the fluid parts (1).
⇒ See that the round slings cannot slip.
 2. Transport pump using a crane.

4.3 Scope of delivery

The scope of supply only includes the pump.

Personnel:

- Mechanic

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Check the pump for integrity on receiving it.
2. Report defects immediately ↪ “Hotline and Contact”.

4.4 Handling of packaging material

🌿 ENVIRONMENT!

Incorrect disposal

Incorrectly disposed packaging material can damage environment.

- Dispose of material no longer required in an environment-friendly manner.
- Observe local disposal specifications.

4.5 Storage

Requirements for the warehouse:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Protect from solar radiation.
- Avoid mechanical vibrations.
- Close all openings when storing after disassembly.
- Temperature: 10°C to 40°C
- Relative humidity: 35% to 90%

5 Assembly

5.1 Safety recommendations

EX ! WARNING!

Unsuitable tools in explosive areas

Tools that do not have Ex approval can generate sparks and cause a fire or an explosion in Ex zones. It can cause serious injuries or death.

- If possible, carry out cleaning and maintenance work outside the Ex zones.
- For work within the Ex zone, use tools with the corresponding Ex labeling.

! WARNING!

Lifting heavy loads

Lifting heavy loads could cause back injuries, crushing or compression. Serious injuries can be the consequence.

- Lift heavy loads only by using suitable hoists.

5.2 Requirements for the Installation point.

- It should be possible to disconnect the control air supply and the material feed and prevent them from reconnecting.
- Lines, seals and screw connections must be designed to conform to the pump requirements ↪ 12.5 "Operating values".
- The workplace must have a ventilation.
- The pump must be protected from atmospheric influences at the installation point.
- The pump is finally connected to the interface (e.g. pipeline). Any docking is not permitted.
- The maintenance unit for supplying the pump with air must be equipped with an overpressure valve that triggers at 6bar drive air pressure.

5.3 Assembly

Assembling the pump

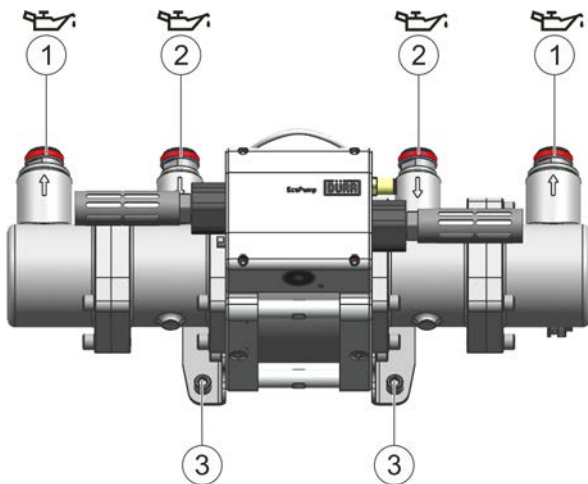


Fig. 6: Assemble pump

- Molykote TP-42 Paste
- 1 Pressure line connection
- 2 Suction line connection
- 3 Support bracket

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Anti-Static Safety Boots

1. Mount pump using support brackets (3) on the wall or a fixture designed for the pump. Mount pump such that connections (1) and (2) point upwards.

Assemble EcoPUC A (optional)

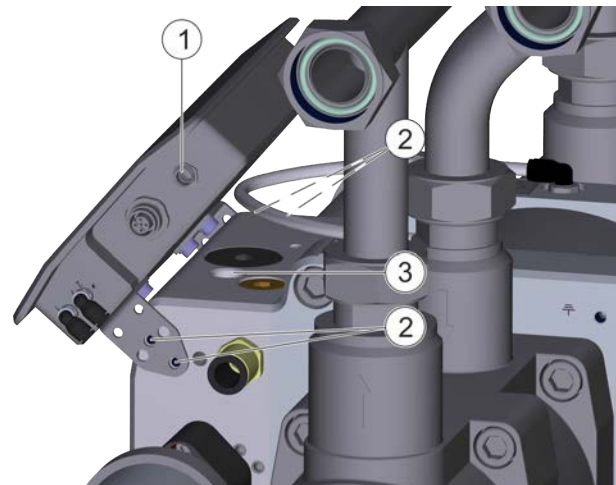


Fig. 7: Assemble **EcoPUC A**

- 1 Sensor connection
- 2 Screws
- 3 Opening for sensor

Personnel:

- Mechanic

Protective equipment:

- Protective gloves
- Anti-Static Safety Boots

1. Screw **EcoPUC A** with four screws (2) below on the control unit of the pump and tighten.
2. Connect sensor to **EcoPUC A**.

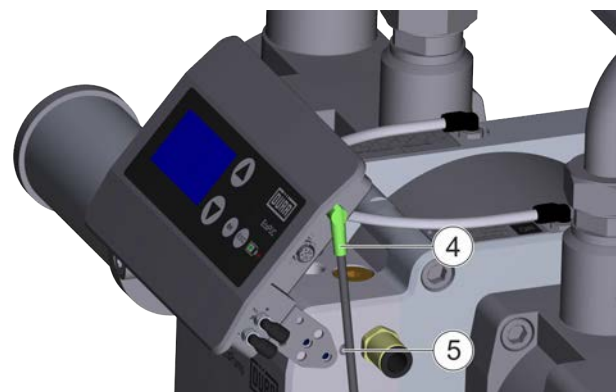


Fig. 8: Assemble sensor

3. Push sensor with insertion nipple (4) into the opening (3) of the control unit.
4. Secure insertion nipple (4) using the threaded pin (5).

The threaded pin is included in the scope of supply of **EcoPUC A**.

5.4 Connecting

Connect material supply

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

1. Unscrew the protective caps from the manifolds.
2. Grease all O-rings and threads of the pipelines.
3. Screw the tube from material feed into the suction pipe manifold ↪ 5.3 “Assembly”.
4. Screw the tube from material discharge into the pressure pipe manifold ↪ 5.3 “Assembly”.

Connect compressed air

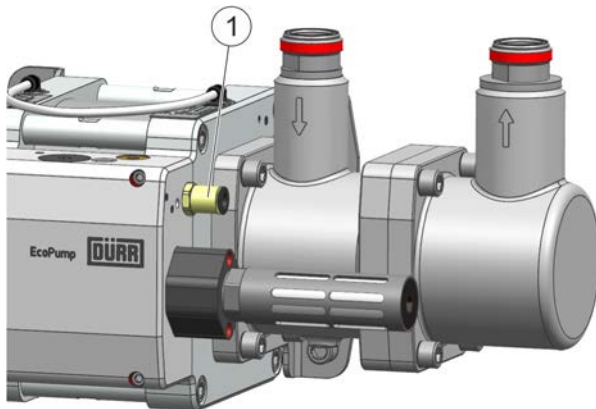


Fig. 9: Connect compressed air

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

1. Connect the compressed air hose to the connection (1).

Grounding the Pump

Movement of the piston and of the flowing material create the charge. The charge can only flow if the piston pump is grounded with all components. Connection of the suction pipe and pressure pipe are not sufficient for grounding.

The grounding holes are on both sides of the drive. The grounding holes are diagonally opposite.

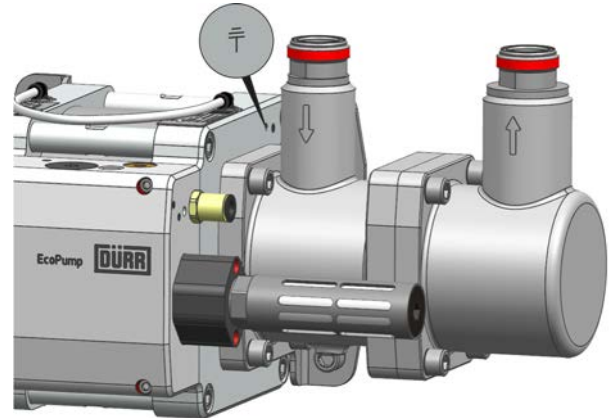


Fig. 10: Grounding the Pump

Personnel:

- Electrician
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Anti-Static Safety Boots

1. Connect the grounding cable to one of the two grounding bores.

6 Commissioning

6.1 Safety recommendations

WARNING!

Risk of injury due to noise

The sound pressure level during commissioning may cause severe hearing damage.

- Wear ear protection.
- Put the pump only with assembled sound muffler into operation.

! WARNING!

Risk of injury due to escaping material

Escaping material under pressure can cause serious injuries.

Before commissioning the pump:

- Ensure that the pump is assembled as specified.
- Ensure that all screw connections are tightened according to the specifications of the operation manual. Tightening torque of screws used to tighten the housing parts: 50Nm.
- Consider using a safety valve or another system suitable to prevent overpressure to ensure that the hydrostatic pressure in the pump does not exceed 24.5bar. Stop category 0 and PLr = b

! WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Pump Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the safety data sheet.
- Wear specified protective clothing.
- Avoid contact (e.g. with eyes, skin).

! WARNING!

Danger due to escaping compressed air

Compressed air escaping from the sound muffler can contain solid or liquid particles. Particles under pressure can injure the eyes or the skin.

- Wear specified protective equipment.

EX ! WARNING!

Unsuitable tools in explosive areas

Tools that do not have Ex approval can generate sparks and cause a fire or an explosion in Ex zones. It can cause serious injuries or death.

- If possible, carry out cleaning and maintenance work outside the Ex zones.
- For work within the Ex zone, use tools with the corresponding Ex labeling.

The operator must ensure that connected pipelines or hose lines are tested according to the specifications in force (e.g. pressure test).

6.2 Commissioning

Checks Before Commissioning

- Pump is grounded.
- The pump is properly assembled ↪ 5 “Assembly”.
- The maintenance unit for supplying the pump with air is equipped with an overpressure valve that triggers at 6bar drive air pressure.

Put pump into operation

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Protective gloves
- Eye protection
- Use ear protection
- Anti-Static Safety Boots

1. Purge pump before the initial commissioning ↪ 7.2 “Rinsing”.

Residues of the testing media might still be in the pump.

2. **! NOTICE!**

Hardening material

If the pump is used to convey hardener components, the hardener component may harden inside of the pump due to getting in contact with air and damage the pump.

- Bleed pump.

Bleed pump.

- Let the pump run with the minimum cycle rate.

3. During this time, check the tightness of the pump, connections and lines.

4. Watch out for unusual noises. Carry out checks if there are unusual noises ↪ 7.1 “General notes”.

6.3 Setting operating parameters

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Use ear protection
- Protective gloves
- Anti-Static Safety Boots

1. Set the operating parameters on the higher level control.
2. Check operating parameters ↪ 12.5 “Operating values”.

7 Operation

7.1 General notes

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Use ear protection
- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Check for unusual noises during operation. Perform visual inspections:

- Check tightness of the connections.
- If there are conspicuous noises, carry out further checks during down times.
- Check for steady delivery pressure.
- The maintenance unit for supplying the pump with air is equipped with an overpressure valve that triggers at 6bar connection air pressure.



If the pump is not in operating mode, the number of cycle of the pump can drop down to the minimum flow velocity of the medium.

- This reduces pump wear and operating costs.

7.2 Rinsing

7.2.1 Safety recommendations

! NOTICE!

Material damage due to unsuitable rinsing agent

If the rinsing agent reacts chemically with the components or the material, components get damaged.

- Use only the rinsing agents that are compatible with the components and the material.
- Refer to safety data sheet of material manufacturer.

7.2.2 Flush the pump

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective gloves
- Protective workwear
- Respirator mask
- Anti-Static Safety Boots

Complete the following steps if the pump is not in operation for a longish period:

- Purge pump with a suitable detergent ↪ 12.9 “Operating and auxiliary materials”.
- Disconnect compressed air supply to pump.

8 Cleaning

8.1 Safety recommendations

WARNING!

Danger of fire and explosion

Flammable coating materials and their detergents and cleaning agents can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean Pump at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.
- Only electrically conductive containers may be used for the cleaning fluid. Containers must be grounded.
- Note explosion group of the fluid.
- Follow the safety data sheet.
- Ensure that forced ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground Pump.

WARNING!

Unexpected motor start

If the pump is connected to the compressed air supply, the motor may start unexpectedly. This may cause a crushing hazard and injuries due to parts flying around.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.
- Ensure that the pump is unpressurized.
- Install appropriate pressure release device, e.g. valve or ball valve, to ensure safe depressurization.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Pump Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the safety data sheet.
- Wear specified protective clothing.
- Avoid contact (e.g. with eyes, skin).

WARNING!

Risk of injury due to escaping material

Escaping compressed material can cause serious injury.

Before working on the product:

- Disconnect the system with the product from power supply and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.

NOTICE!

Unsuitable cleaning agents

Unsuitable detergents can cause material damage.

- Only use cleaning agents approved by the material manufacturer.
- Follow safety data sheets.
- Use alcohols (isopropanol, n-butanol) for non-flammable coating materials.
- Remove dried paint residue with a thinner approved by the paint manufacturer.

NOTICE!

Unsuitable Cleaning Tools

Unsuitable cleaning tools can cause damage.

- Only use cloths, soft brushes and paintbrushes.
- Do not use abrasive cleaning tools.
- Do not use compressed air for cleaning.
- Do not use any thinner spray guns.
- Do not use high pressure for cleaning agents.

8.2 Cleaning

ENVIRONMENT!

Improper waste disposal

Improper waste disposal threatens the environment and prevents re-use and recycling.

- Clean components before their disposal.
- Always dispose of components in accordance with their characteristics.
 - ↳ 12.8 “Materials used”
- Collect leaked out utilities and auxiliaries completely.
- Dispose of work equipment soaked in coating materials or operating substances according to the disposal provisions in force.
- Dispose of utilities and auxiliaries according to the disposal provisions in force.
- In case of doubt, refer to the local disposal authorities.

Make sure that the Pump is completely free of media residues and other contamination.

Personnel:

- Cleaning staff

Protective equipment:

- Protective gloves
- Anti-Static Safety Boots
- Protective workwear
- Eye protection
- Respirator mask

1. Clean pump carefully using a moist cloth.

9 Maintenance

9.1 Safety notes

WARNING!

Unsuitable tools in explosive areas

Tools that do not have Ex approval can generate sparks and cause a fire or an explosion in Ex zones. It can cause serious injuries or death.

- If possible, carry out cleaning and maintenance work outside the Ex zones.
- For work within the Ex zone, use tools with the corresponding Ex labeling.

WARNING!

Unsuitable replacement parts in explosive areas

Replacement parts not compliant with the specifications of the ATEX guidelines can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original replacement parts.

WARNING!

Unexpected motor start

If the pump is connected to the compressed air supply, the motor may start unexpectedly. This may cause a crushing hazard and injuries due to parts flying around.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.
- Ensure that the pump is unpressurized.
- Install appropriate pressure release device, e.g. valve or ball valve, to ensure safe depressurization.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Pump Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the safety data sheet.
- Wear specified protective clothing.
- Avoid contact (e.g. with eyes, skin).

WARNING!

Risk of injury due to escaping material

Escaping compressed material can cause serious injury.

Before working on the product:

- Disconnect the system with the product from power supply and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.

9.2 General notes

Maintenance work on the pump may only be carried out by personnel with the qualifications and protective equipment listed below.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

9.3 Maintenance schedule



If a maintenance assistant is used in the system visualizer, the maintenance intervals of the maintenance assistant are valid.



The life cycle and the associated maintenance intervals depend heavily on the abrasiveness and temperature of the material to be pumped as well as the pumping pressure and the number of dual strokes of the pump. The present details are guide values and must be suitably adjusted according to the application.

Interval	Maintenance work
weekly	<p>Check cleanliness of the pump.</p> <p>Check tightness and state of the pump.</p> <p>Test the seal tightness and condition of the connections and lines.</p> <p>Check noise generation in the pump.</p> <p>Check for steady delivery pressure.</p> <ul style="list-style-type: none"> ▪ ↪ 10.1 “Defects table”
after 10 million cycles (corresponds to 20 dual strokes/min, for about 1 year)	<p>Replace bellows ↪ 9.5.7 “Dismantling inlet cylinder”.</p> <p>Replace rod seal of the air motor ↪ 9.5.7 “Dismantling inlet cylinder”.</p> <p>Replace piston seal of the air motor ↪ 9.6.1 “Dismantle motor”.</p> <p>Replace piston seal of the fluid part ↪ 9.5.7 “Dismantling inlet cylinder”.</p> <p>Replace piston guide belt ↪ 9.5.7 “Dismantling inlet cylinder”.</p> <p>Replace changeover valve ↪ 10.2.1 “Replace switchover valve”.</p> <p>Replace valve in the control unit. ↪ 9.4.3 “Removing the valve”</p>
every 5 years	<p>Replace non-return valves ↪ 9.5.3 “Dismantling non-return valve in the outlet cylinder”, ↪ 9.5.5 “Dismantle non-return valve in the piston”.</p>

9.4 Dismantle and assemble control unit

9.4.1 Disassemble control unit

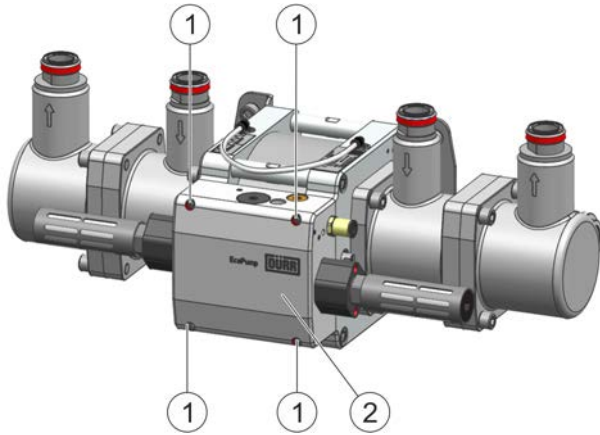


Fig. 11: Disassemble control unit

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

1. Unscrew sound muffler (4).
2. Thread off two screws (3).
3. Pull out adapter (5) together with O-ring from the housing (1).
4. Pull out membrane (2) from the housing (1) using a long nose pliers.

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

1. Thread off four screws (1).
2. Remove control unit (2) from the motor.
3. Remove O-rings between control unit and motor.

9.4.2 Remove membrane

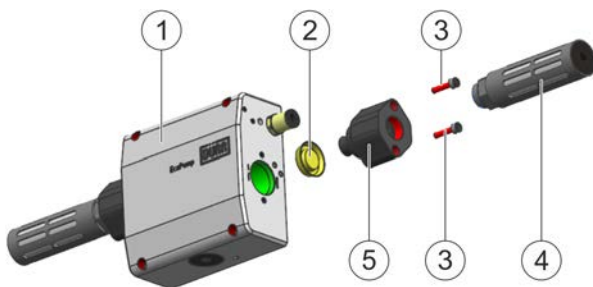


Fig. 12: Remove membrane

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

9.4.3 Removing the valve

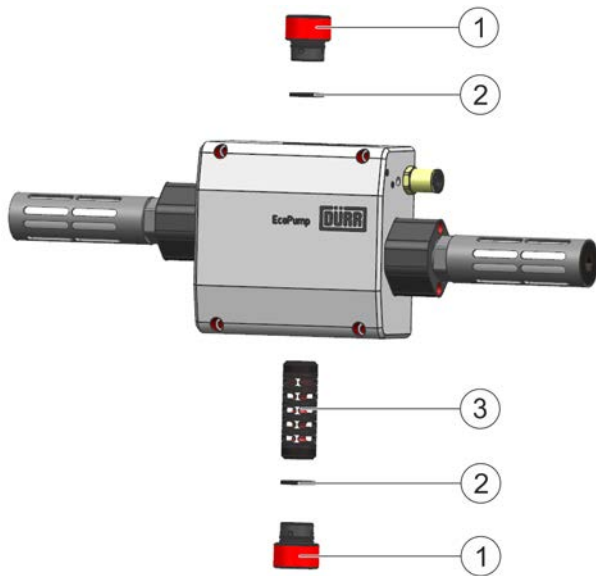


Fig. 13: Removing the valve

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

1. Unscrew sealing screw (1) with O-ring on both sides of the distributor block.
2. Remove spacers (2) on both sides of the distributor block.
3. Push out valve (3) from the distributor block using suitable tool (e.g. W02850031).
4. Check whether the piston can easily move in the valve (3).
 - ⇒ If the piston works properly and the control unit is leaking, the O-rings on the valve could be damaged.
5. Check O-rings on the valve for damage.
 - ⇒ Replace damaged O-rings.

9.4.4 Install membrane.

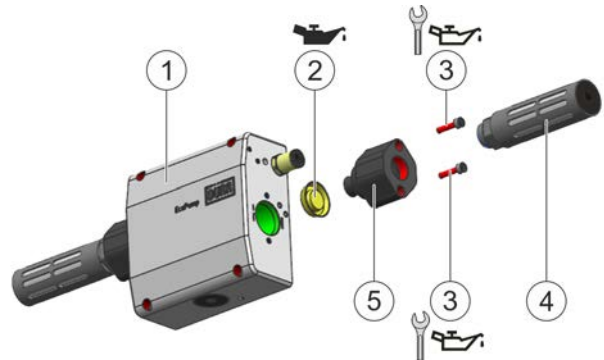


Fig. 14: Install membrane

- Klüber Syntheso GLEP 1
- Molykote TP-42 Paste
- N24160008, N24160009: 6Nm
- N24160010: 16Nm

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

1. Lightly grease bore for the membrane (2).
2. Push in membrane (2) into the housing (1) up to the stop with the closed side in front.
3. Push in adapter (5) with O-ring into the housing (1).
4. Grease screws (3).
5. Tighten adapter (5) with two screws (3).
 - ⇒ Respect tightening torque.
6. Screw-in and hand-tighten sound mufflers (4) in the adapter (5).

9.4.5 Assembling valve

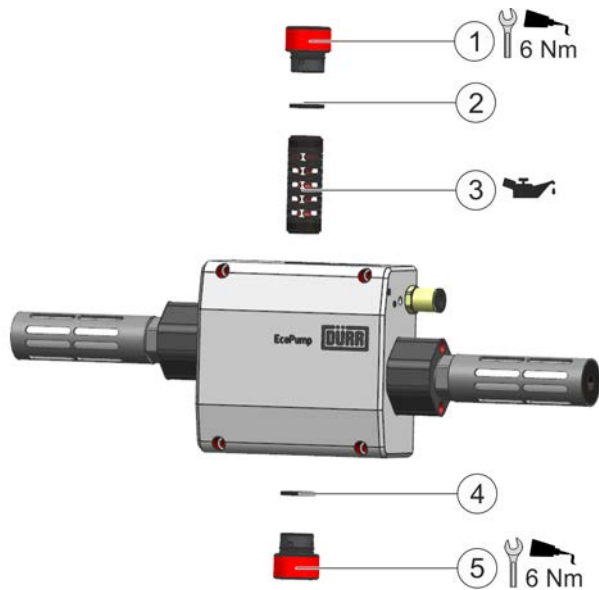


Fig. 15: Installing Valve

- Klüber Syntheso GLEP 1
- Loctite 222
- 6Nm

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

Piston and sleeve of the valve (3) are paired. Do not replace with other valves.

1. Apply Loctite to the thread of the screw plug (5).
2. Screw sealing screw (5) with washer (4) into the housing.
⇒ Observe tightening torque.
3. Grease valve (3).
4. Carefully push the valve (3) into the distributor block using a suitable tool (e.g. W02850031).
5. Place spacer (2) on the valve.

6. Apply Loctite on the threads of the sealing screw (1).
7. Screw sealing screw (1) into the distributor block.
⇒ Observe tightening torque.

9.4.6 Assemble control unit

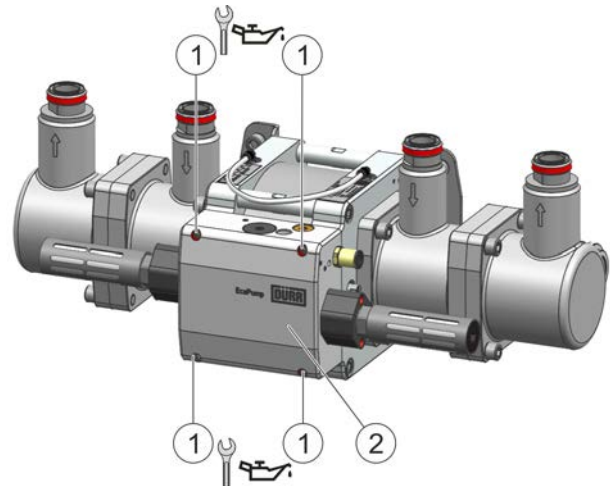


Fig. 16: Assemble control unit

- Molykote TP-42 Paste
- N24160008, N24160009: 6Nm
- N24160010: 16Nm

Personnel:

- Mechanic
- + additional qualification explosion protection
- + Additional qualification high pressure

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

1. Grease O-rings.
2. Insert O-rings between control unit and motor.
3. Grease screws (1).
4. Firmly attach control unit (2) with four screws (1).
⇒ Respect tightening torque.

9.5 Dismantling and assembling fluid parts

9.5.1 Disassemble outlet cylinder

! NOTICE!

Hardening material

If the pump is used to convey hardener components, residues of the hardener component may harden inside of the pump due to getting in contact with air and damage the pump.

- Purge pump thoroughly prior to conducting maintenance work or disassembly.
- Clean components in contact with material thoroughly.

Use with hardener components

If the pump is used to convey hardener components, replace the bellows as soon as the bellows is in contact with air → 9.5.7 “Dismantling inlet cylinder”.

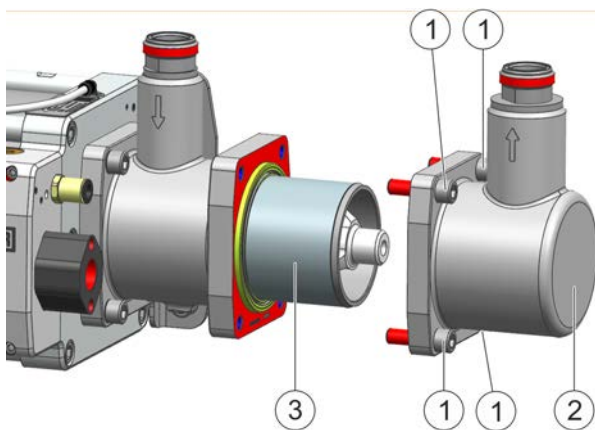


Fig. 17: Disassemble outlet cylinder.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Remove four screws (1).
2. Pull out housing (2) carefully from the piston (3).

9.5.2 Outlet cylinder assembly

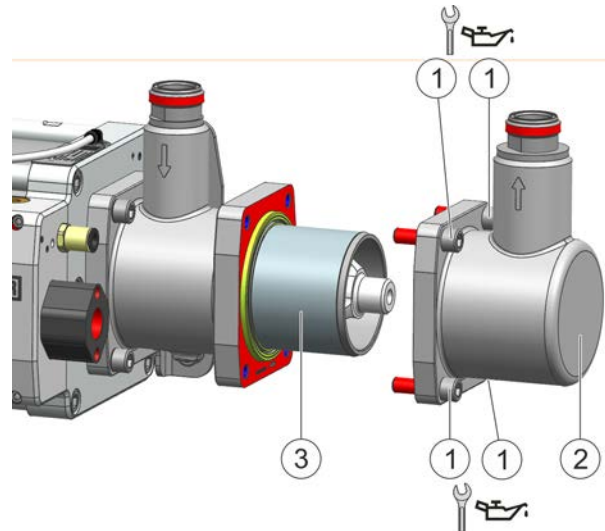


Fig. 18: Outlet cylinder assembly

Molykote TP-42 Paste

- N24160008: 1. Stage 12 Nm, 2. Stage 35 Nm
- N24160009, N24160010: 1. Stage 25 Nm, 2. Stage 50Nm

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Push the housing (2) onto the piston (3).
2. Tighten four screws (1). Respect tightening torque.

9.5.3 Dismantling non-return valve in the outlet cylinder

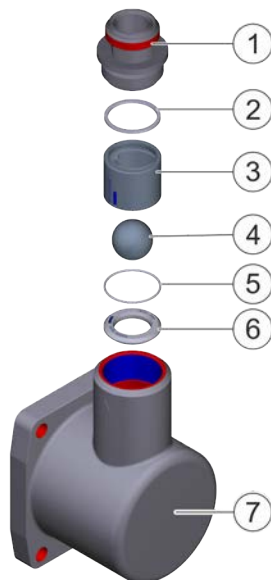


Fig. 19: Dismantling non-return valve in the outlet cylinder

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Requirements:

- Outlet cylinder has been disassembled ↪ 9.5.1 "Disassemble outlet cylinder".

1. Thread off screw-in socket (1).
2. Remove sealing ring (2).
3. Remove the valve ball guide (3) from the outlet cylinder housing (7).
4. Remove ball (4), O-ring (5) and gasket (6) from outlet cylinder housing (7).

9.5.4 Assembling non-return valve in the outlet cylinder.

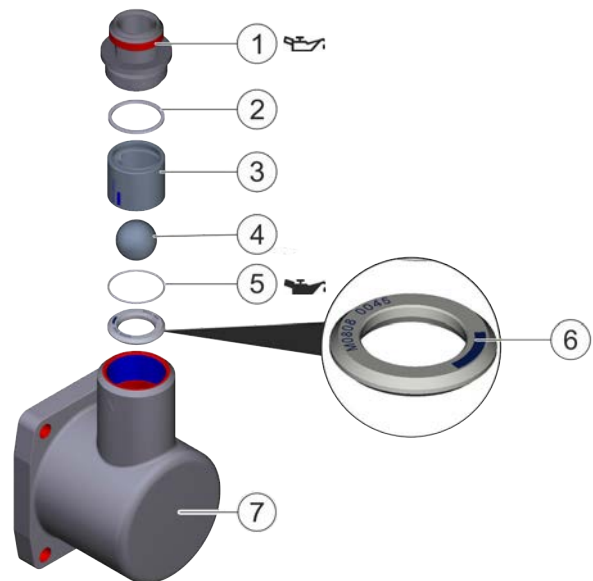


Fig. 20: Assembling non-return valve in the outlet cylinder.

Klüber Syntheso GLEP 1

Molykote TP-42 Paste

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Grease O-ring (5) and thread (1).
2. Place seal washer (6) in outlet cylinder housing (7).
Note orientation of the seal washer:
 - Engraving "Ball Side" in the direction of the ball
3. Place O-ring (5) in outlet cylinder housing (7).
4. Place ball (4) in the seal cone of the seal washer (6).
5. Insert the valve ball guide (3) into the outlet cylinder housing (7).
6. Place sealing ring (2) in outlet cylinder housing (7).
7. Thread-in the screw-in socket (1) in outlet cylinder housing (7).

9.5.5 Dismantle non-return valve in the piston

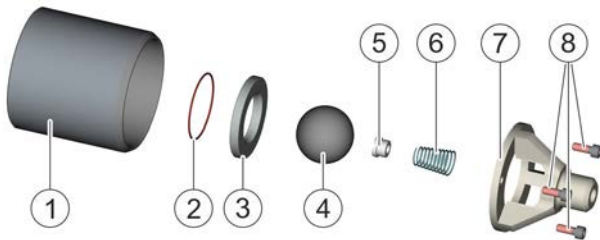


Fig. 21: Dismantle non-return valve in the piston.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Requirements:

- Outlet cylinder has been disassembled ↪ 9.5.1 "Disassemble outlet cylinder".

1. Remove three screws (8).
2. Pull out the valve ball guide (7) from piston (1).
3. Remove ball (4), compression spring bracket (5) and compression spring (6) from valve ball guide (7).
4. Remove gasket (3).
5. Remove O-Ring (2).

9.5.6 Assemble non-return valve in the piston



Fig. 22: Assemble non-return valve in the piston

- N24160008: 2Nm
- N24160009, N24160010: 6Nm
- Klüber Syntheso GLEP 1
- Loctite 222

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Grease O-ring (2).
2. Slide O-ring (2) into piston (1).
3. Slide seal washer (3) into piston (1).
Note orientation of the seal washer:
 - Engraving "Ball Side" in the direction of the ball
4. Place ball (4) in the seal cone of the seal washer (3).
5. Insert compression spring (6) and compression spring bracket (5) in valve ball guide (7).
6. Coat screws (8) to with Loctite.
7. Screw in and tighten valve ball guide (7) with three screws (8). Observe tightening torque.

9.5.7 Dismantling inlet cylinder

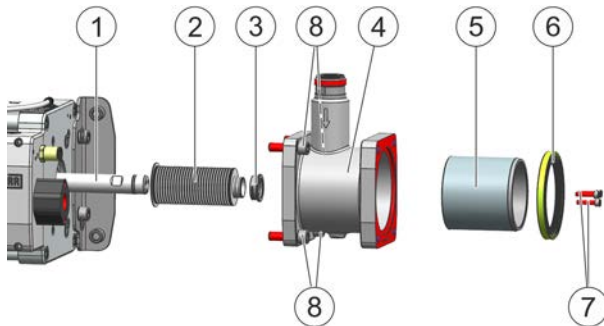


Fig. 23: Dismantling inlet cylinder

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Requirements:

- Outlet cylinder has been disassembled ↪ 9.5.1 “Disassemble outlet cylinder”.
 - Non-return valve in the piston is dismantled ↪ 9.5.5 “Dismantle non-return valve in the piston”.
1. Pull piston seal (6) from the piston (5) and remove.
 2. Remove three screws (7).
 3. Remove piston (5).
 4. Remove four screws (8) on the intake cylinder housing (4).
 5. Remove intake cylinder housing (4).
 6. Hold the bellows (2). Push down clamping ring (3) from the piston rod (1).
 7. Push down bellows (2) from piston rod (1).

9.5.8 Inlet cylinder assembly

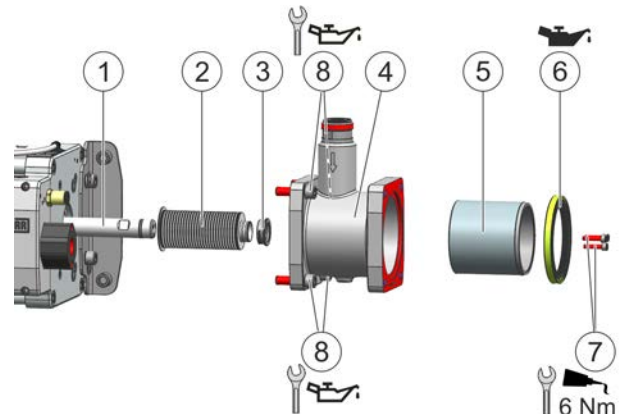


Fig. 24: Inlet cylinder assembly

- 🔑 N24160008: 1. Stage = 12 Nm, 2. Stage = 35 Nm
- 🔑 N24160009, N24160010: 1. Stage = 25 Nm, 2. Stage = 50 Nm
- 🛢️ Klüber Syntheso GLEP 1
- 🛢️ Molykote TP-42 Paste
- 🛢️ Loctite 222

Personnel:


- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

1. Push piston rod (1), on the side of which the bellows are mounted, into the air motor up to the mechanical stop.
2. Push in new bellows (2) onto piston rod (1) until the bellows latch in.
3. Hold the bellows (2). Slide clamping ring (3) on the folding bellows by hand as far as possible. In doing so, the clamping sleeve bulge must point towards the end of the piston rod. Observe direction of the arrow on the sleeve.
4. Carefully slide intake cylinder housing (4) over the bellows (2).
5. Secure intake cylinder housing (4) with four greased screws (8). Do not tighten screws (8) yet.
6. Slide piston (5) onto the piston rod (1).

7. Coat screws (7) to with Loctite. Insert three screws (7) in the piston rod (1).

 By mounting the piston (5), the clamping sleeve (3) is fully slid over the folding bellow (2).

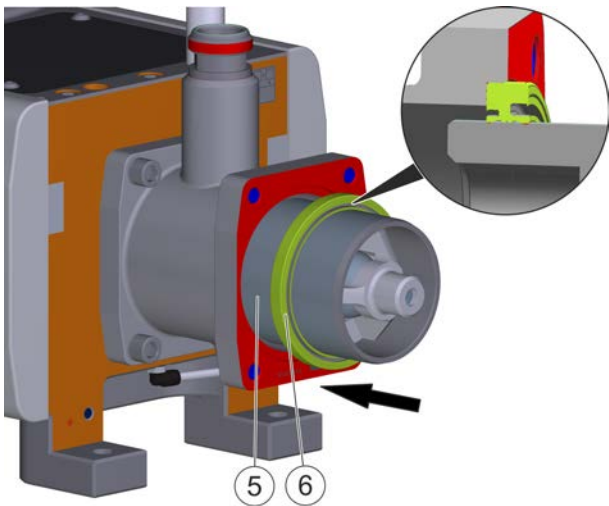


Fig. 25: Alignment of Piston Seal

8. Lightly grease piston (5). Push piston seal (6) on the piston (5).
Note orientation of the piston seal (6):
 - Align small slot of the seal (6) in the direction of the drive.
 - Align large slot of the seal (6) in the direction of the outlet cylinder housing.
9. Tighten screws (8) in a crosswise sequence. Respect tightening torque.

9.6 Dismantle and assemble motor

9.6.1 Dismantle motor

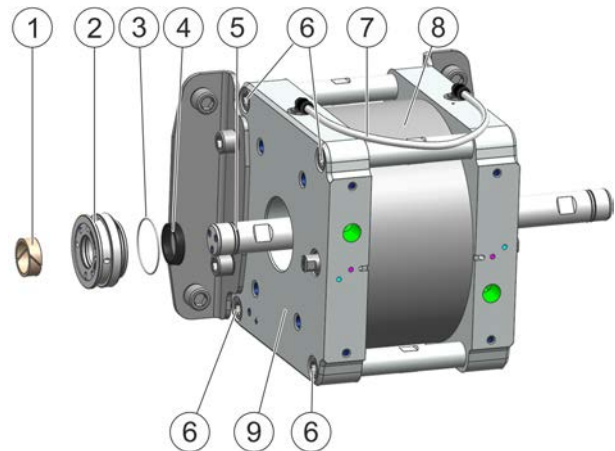


Fig. 26: Dismantle motor

Personnel:

- Electrician
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Requirements:

- Control unit is disassembled ↪ 9.4.1 “Disassemble control unit”.
- Both fluid parts are disassembled ↪ 9.5.1 “Disassemble outlet cylinder”, ↪ 9.5.7 “Dismantling inlet cylinder”.
- The bellows were removed on both sides of the drive of the piston rod ↪ 9.5.7 “Dismantling inlet cylinder”.

1. Disassemble leakage indicator hose (7).
2. Pull out seal housing (2) with piston guide belt (1), O-ring (3) and rod seal (4) from the piston rod (5).
3. Loosen and remove four screws (6) on one side of the motor.
4. Remove front plate (9) from the tube (8).

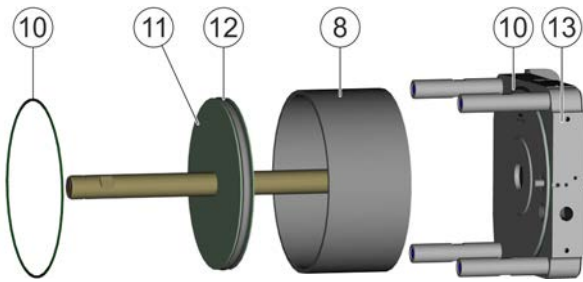


Fig. 27: Remove piston rod

5. Pull out piston with piston rod (11), sealing ring (12) and tube (8) from the second front plate (13).
6. Remove O-rings (10) from the front plates (9) and (13).

9.6.2 Assemble motor.

Personnel:

- Electrician
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

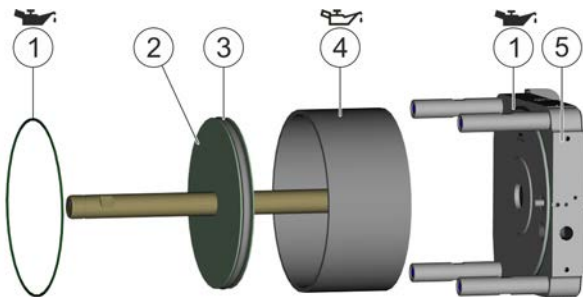


Fig. 28: Assemble piston rod

Klüber Syntheso GLEP 1

Lubricant for piston (included in the scope of supply)

1. Grease O-rings (1).
2. Coat the inside of the piston tube (4) with the grease supplied.
3. Insert piston with piston rod (2), sealing ring (3) and tube (4) into the front plate (5).

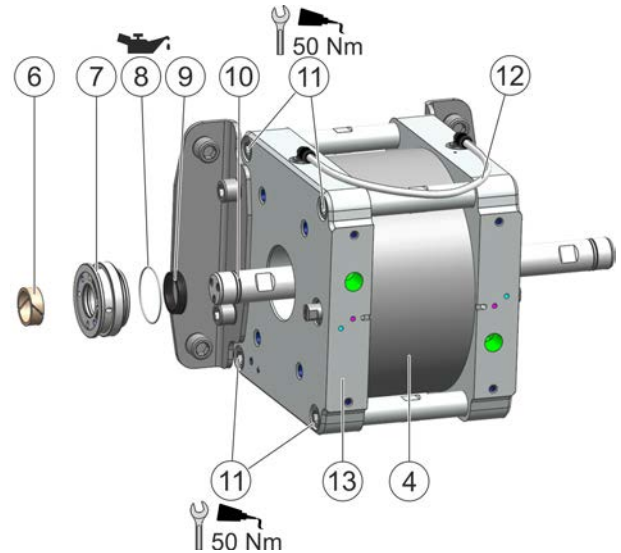


Fig. 29: Assemble motor

Klüber Syntheso GLEP 1

Loctite 222

50 Nm

4. Place the second front plate (13) even on the assembled front plate (5).
5. Apply Loctite to the threads of the screws (11).
6. Fasten the front plate (13) with four screws (11). Observe tightening torque.
7. Grease O-ring (8).
8. Push the rod seal (9), O-ring (8), seal housing (7) and piston guide band (6) onto the piston rod (10).
9. Assemble leakage indicator hose (12).

10 Faults

10.1 Defects table



Ensure that at no point does the pump exceed the allowable DH/min (e.g. during material suction, if the paint supply is interrupted or there is air in the system).

Fault description	Cause	Remedy
Pump does not run.	No or insufficient compressed air supply	Check compressed air supply.
	Changeover valve defective	Replace changeover valve.
	Valve in the control unit defective	Replace valve.
	One or more ball valves on the suction side or pressure side closed.	Open all ball valves.
Pump does not remain at rest.	Piston seal in the fluid part defective or installation position incorrect	Check the installation position of the piston seals in the fluid part. Replace if defective.
	Seal washer or balls of the non-return valves soiled or defective	Replace seal washers and balls.
Motor rattles at the end of a stroke and does not reverse.	One or both reversal valves are defective.	Check and replace changeover valves. ↳ 9.4.3 "Removing the valve"
Air streams continuously through the sound muffler.	Membrane in the control unit defective	Replace membrane of control unit.
	Piston seal of the motor defective	Replace piston seal of the motor.
Pump does not pump.	There is air in the suction line.	<ul style="list-style-type: none"> ▪ Check seals and pipe connections. ▪ Check material supply line. ▪ Vent the system.

Fault description	Cause	Remedy
		If hardener components had been conveyed, also ensure the following: <ul style="list-style-type: none"> ▪ Purge the pump thoroughly. ▪ Clean components in contact with material thoroughly. ▪ Replace bellows.
	Piston seal defective or incorrect installation position	Check the installation location; replace if the piston seal is defective ↪ 9.5.7 “Dismantling inlet cylinder”.
	Non-return valves in piston or outlet do not seal properly or are jammed.	Check non-return valves and replace if necessary. <ul style="list-style-type: none"> ▪ ↪ 9.5.3 “Dismantling non-return valve in the outlet cylinder” ▪ ↪ 9.5.5 “Dismantle non-return valve in the piston”
	Material supply interrupted	Check the connection and operation of the material supply system.
Operating pressure is not reached.	No or insufficient compressed air or medium supply	Check valves and hoses for compressed air supply and media supply for buckling or blockage due to dirt particles or foreign bodies. Check air pressure and flow rate of air.
	Piston seal defective	Replace piston seal ↪ 9.5.7 “Dismantling inlet cylinder”.
	Changeover valve is defective	Replace changeover valve ↪ 10.2.1 “Replace switchover valve”.
	Non-return valves in piston or outlet does not seal properly.	Clean, check balls and seal washers in the non-return valve and replace if necessary. <ul style="list-style-type: none"> ▪ ↪ 9.5.3 “Dismantling non-return valve in the outlet cylinder” ▪ ↪ 9.5.5 “Dismantle non-return valve in the piston”
	Bellows on piston rod is defective.	Replace bellows ↪ 9.5.7 “Dismantling inlet cylinder”.
	Piston seal of the air motor defective	Replace piston seal ↪ 9.6.1 “Dismantle motor”.
	Valve in the control unit defective	Replace valve in the control unit ↪ 9.6.1 “Dismantle motor”.
	Membrane in the control unit defective	Replace diaphragms in the control unit.
Paint on inside of piston drive	Bellows defective	Replace bellows ↪ 9.5.7 “Dismantling inlet cylinder”.
Air leak from the leakage bore	Air enters the slurry circuit.	Check the rod seal ↪ 9.6.1 “Dismantle motor”.
Paint leak from the leakage bore	Bellows defective	Replace bellows ↪ 9.5.7 “Dismantling inlet cylinder”. If in contact with solvent, replace rod seal of the air motor as well.

Fault description	Cause	Remedy
Bellows fails.	Rod seal is defective	Check rod seal, replace if defective ↪ 9.6.1 “Dismantle motor”.
Significant pressure fluctuations during normal operation	Air in material system	<ul style="list-style-type: none"> ▪ Check tightness of the connections on the suction side. ▪ Vent the system. ▪ Check material supply system. <p>If hardener components had been conveyed, also ensure the following:</p> <ul style="list-style-type: none"> ▪ Purge the pump thoroughly. ▪ Clean components in contact with material thoroughly. ▪ Replace bellows.
	Piston seal defective or incorrect installation position	Check installation position, replace piston seal if defective ↪ 9.5.7 “Dismantling inlet cylinder”.
	Changeover valve is defective	Replace changeover valve ↪ 10.2.1 “Replace switchover valve”.
	Valve in the control unit defective	Replace valve in the control unit ↪ 9.6.1 “Dismantle motor”.
	Seals defective	Check seals on the drive piston and on piston rod and replace if necessary ↪ 9.6.1 “Dismantle motor”.
Motor switches slowly.	Air venting restricted	<ul style="list-style-type: none"> ▪ Check membrane and valve in the control unit ↪ 9.4.2 “Remove membrane”. ▪ Check the exhaust outlet. ▪ Piston seal in the fluid part defective. <ul style="list-style-type: none"> – Replace piston seal ↪ 9.5.7 “Dismantling inlet cylinder”.
	Changeover valve is defective	Replace changeover valve ↪ 10.2.1 “Replace switchover valve”.
Motor switches slowly.	Valve in the control unit defective	Replace valve in the control unit ↪ 9.6.1 “Dismantle motor”.

10.2 Troubleshooting

10.2.1 Replace switchover valve



WARNING!

Unsuitable replacement parts in explosive areas

Replacement parts not compliant with the specifications of the ATEX guidelines can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original replacement parts.

There is one changeover valve each on both sides of the motor.

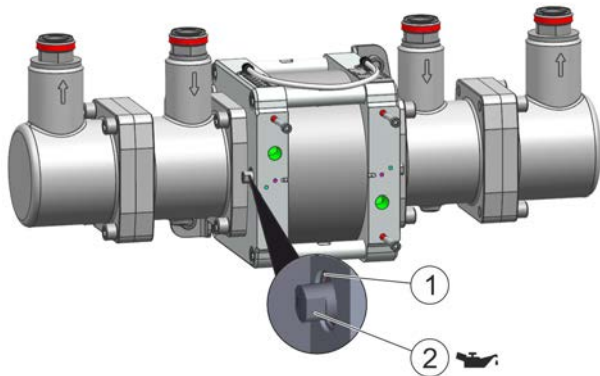


Fig. 30: Replace switchover valve

Klüber Syntheso GLEP 1

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Removal

1. Remove retainer ring (1).
2. Pull out changeover valve (2) from front plate of the motor using tongs.

Installing

1. Grease changeover valve (2) and O-rings on the changeover valve.
2. Push in changeover valve (2) with slight rotatory movements into the front plate of the drive.
3. Assemble the retainer ring (1) on the changeover valve (2).

10.2.2 Assembling ice reduction

10.2.2.1 EcoPump HP 400 and EcoPump HP 800

If the noise mufflers are frosted from inside during the operation of the pump, it is advisable to install the “frost-reducing” accessory ↪ 10.1 “Defects table”.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves

- Protective workwear
- Anti-Static Safety Boots

Requirements:

- **EcoPUC A** is disassembled.

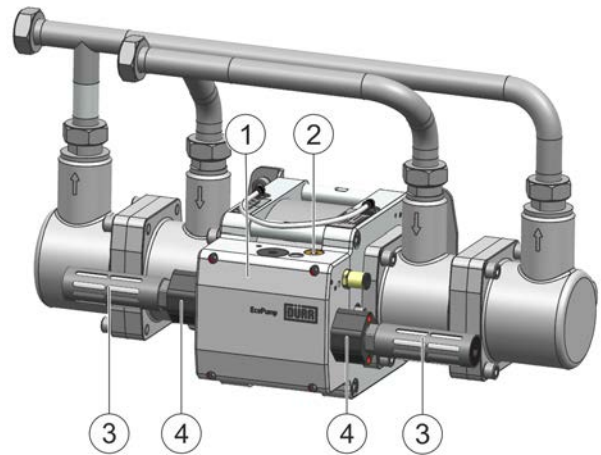


Fig. 31: Pump with control unit and silencer

1. Remove plug (2) from the control unit (1).
2. Remove two silencers (3) and two adapters (4) from the control unit (1).

O-rings (6) are mounted on the new adapters (5).

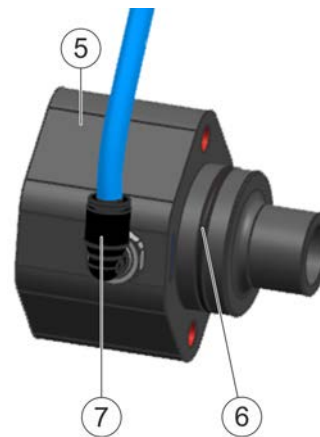


Fig. 32: Ice reduction kit

3. Screw the screw-in plug-in connections (7) into the adapter (5).

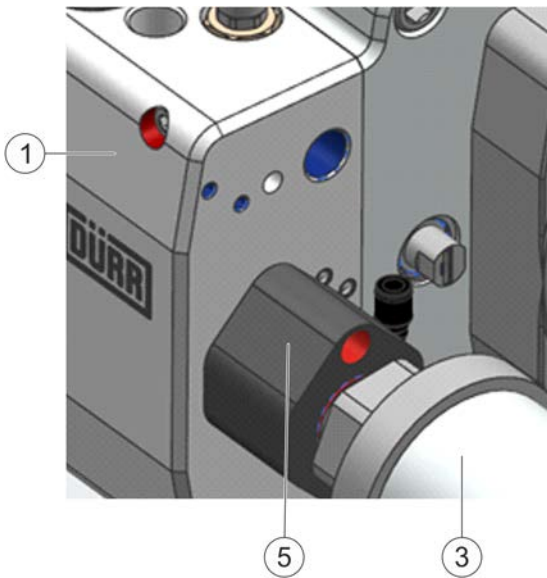


Fig. 33: Assemble the adapter

4. Insert the adapter (5) into both sides of the control unit (1) and screw tight.
5. Mount silencer (3) on adapter (5).

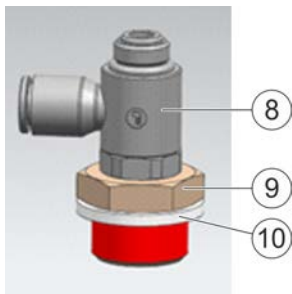


Fig. 34: Throttle valve

6. Screw the reducing nipple (9) into the throttle valve (8) hand-tight.
7. Screw in the throttle valve (8), reducing nipple (9) and sealing washer (10) in switch-over on the control unit.

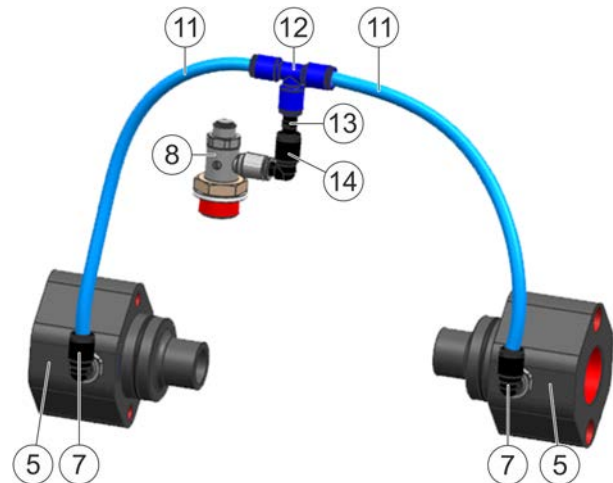


Fig. 35: Connect adapter with throttle valve

8. Insert the plug-in bracket (14) into the throttle valve (8).
9. Insert the double plug-in nipple (13) into the plug-in bracket (14).
10. Plug the T-connector (12) onto the double plug-in nipple (13).

11. Insert a hose (11) into both sides of the T-connector (12).

Both hoses (11) must be of equal length.

12. Connect the hoses (11) to the adapters (5).

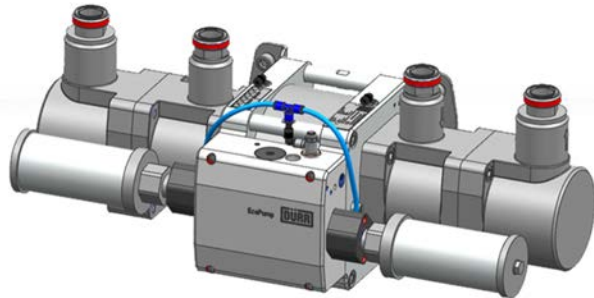


Fig. 36: Pump with ice reduction kit

⇒ Ice reduction kit is mounted.

Adjust throttle valve

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

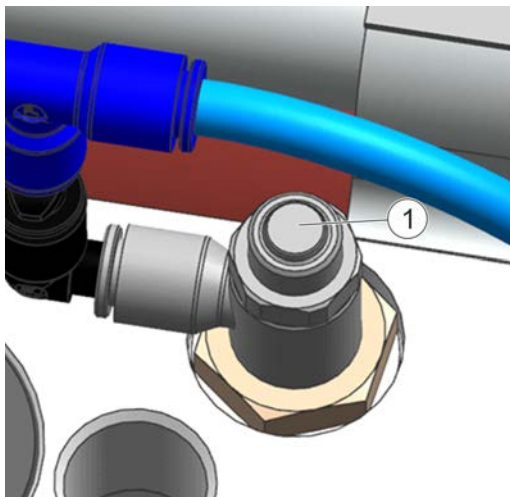


Fig. 37: Adjust throttle

1. Turn throttle valve (1) clockwise.

⇒ Throttle valve (1) will be closed.

2. Turn throttle valve (1) 2.5 turns counterclockwise. Turn with 50 NI/min at 6 bar.

⇒ Throttle valve (1) will be opened.

If no icing occurs, close the throttle valve. If icing occurs, open the throttle valve further.

10.2.2.2 EcoPump HP 1600

If the noise mufflers are frosted from inside during the operation of the pump, it is advisable to install the “frost-reducing” accessory ↪ 10.1 “Defects table”.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

Requirements:

- **EcoPUC A** is disassembled.

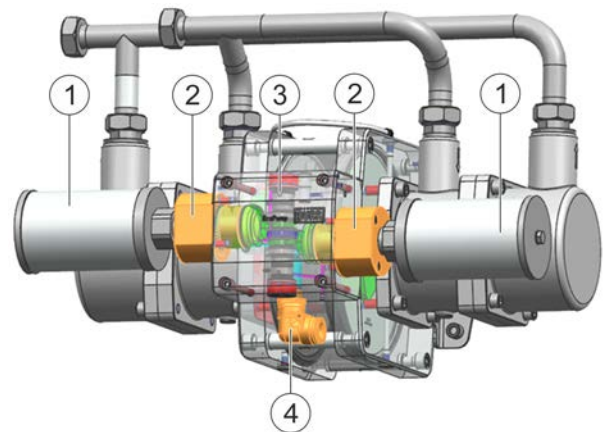
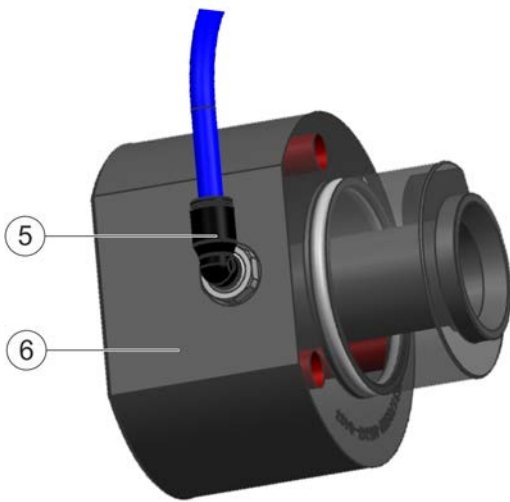


Fig. 38: Pump with control unit and silencer

1. Remove the pneumatic connection (4) from the control unit (3).

2. Remove two silencers (1) and two adapters (2) from the control unit (3).



9. Screw the pneumatic connection (4) into connection block (11).
10. Insert double plug-in nipple (9) into throttle valve (10).
11. Plug the T-connector (8) onto the double plug-in nipple (9).

Fig. 39: Ice reduction kit

3. Screw the screw-in plug-in connections (5) into new adapter (6).
4. Insert the adapter (6) into both sides of the control unit (3) and screw tight.
5. Mount silencer (1) on adapter (6).

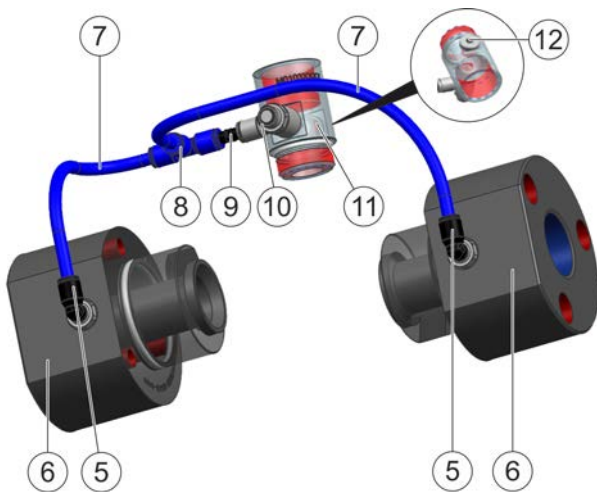


Fig. 40: Connect adapter with throttle valve

6. Screw the throttle valve (10) into the connection block (11).
7. Close the opposite side with the plug (12).
8. Screw the connection block (11) into the control unit (3).

12. Insert a hose (7) into both sides of the T-connector (8).

Both hoses (7) must be of equal length.

13. Connect the hoses (7) to the adapters (6).

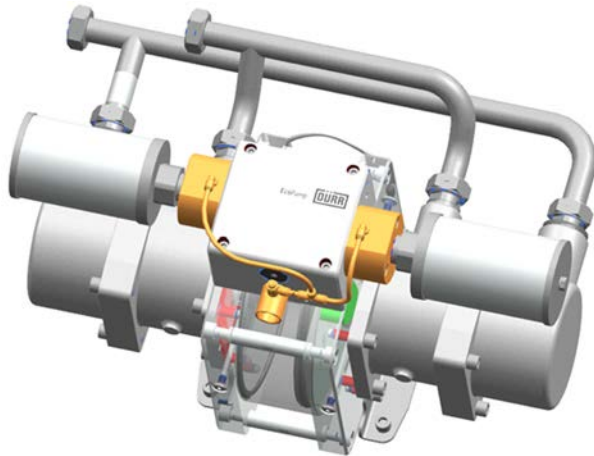


Fig. 41: Pump with ice reduction kit

⇒ Ice reduction kit is mounted.

Adjust throttle valve

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Protective workwear
- Anti-Static Safety Boots

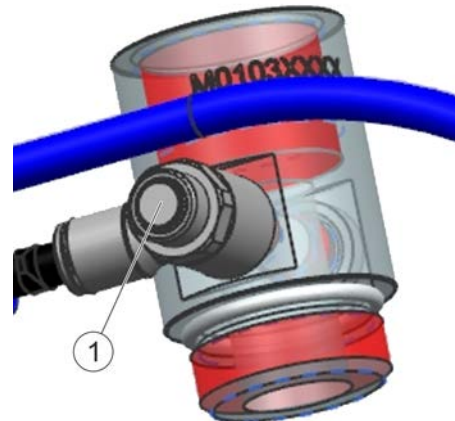


Fig. 42: Adjust throttle

1. Turn throttle valve (1) clockwise.
⇒ Throttle valve (1) will be closed.
2. Turn throttle valve (1) 2.5 turns counterclockwise.
Turn with 50 NI/min at 6 bar.
⇒ Throttle valve (1) will be opened.

If no icing occurs, close the throttle valve.
If icing occurs, open the throttle valve further.

11 Disassembly and Disposal

11.1 Safety recommendations

WARNING!

Unexpected motor start

If the pump is connected to the compressed air supply, the motor may start unexpectedly. This may cause a crushing hazard and injuries due to parts flying around.

Before working on the product:

- Disconnect the system, in which the product is installed, from compressed air and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.
- Ensure that the pump is unpressurized.
- Install appropriate pressure release device, e.g. valve or ball valve, to ensure safe depressurization.

WARNING!

Risk of injury due to escaping material and compressed air

Escaping compressed material can cause serious injury.

Before carrying out any work:

- Disconnect the system, in which the pump is installed, from compressed air and material supply.
- Secure the system against being switched on again.
- Depressurize the lines.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Pump Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the safety data sheet.
- Wear specified protective clothing.
- Avoid contact (e.g. with eyes, skin).

WARNING!

Raising heavy loads

Raising heavy loads without suitable hoist and stopper material can cause major injuries.

- Transport heavy loads only by using suitable hoists and stoppers.

WARNING!

Danger due to freezing

The noise mufflers on the motor can cool down drastically. Contact with it can result in frostbite.

- Before working on the motor, ensure that the noise muffler is at room temperature.

WARNING!

Unsuitable tools in explosive areas

Tools that do not have Ex approval can generate sparks and cause a fire or an explosion in Ex zones. It can cause serious injuries or death.

- If possible, carry out cleaning and maintenance work outside the Ex zones.
- For work within the Ex zone, use tools with the corresponding Ex labeling.

Even if the pump is purged, medium can still come out on loosening the pipe connections.

- Place suitable collecting trays below the pipe connections.

11.2 Disassembly

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective workwear
- Respirator mask
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Pump has been purged ↻ 7.2 “Rinsing”.
- Ball valves in the pressure line are closed.
- Ball valves in the suction line are closed.
- Lines are depressurized.
- Collection trays are below the outlet openings.

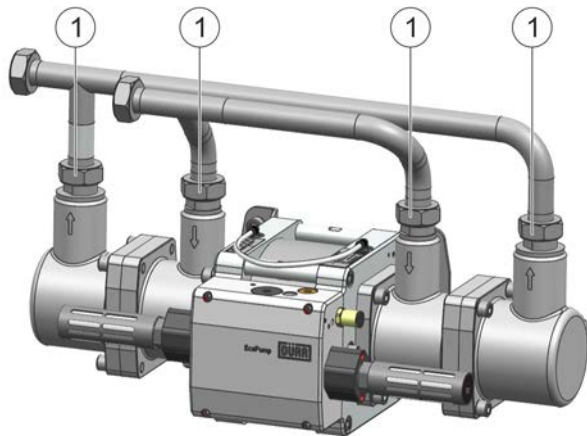


Fig. 43: Disassemble pump

! NOTICE!

Hardening material

If the pump is used to convey hardener components, residues of the hardener component may harden inside of the pump due to getting in contact with air and damage the pump.

- Purge pump thoroughly prior to conducting maintenance work or disassembly.
- Clean components in contact with material thoroughly.

1. Place a collector tray under the pipelines.
2. Loosen cap nuts (1) on the manifolds.
3. Separate pipelines from the pump.
⇒ Material flows out from the pipelines.
4. Separate grounding cable from the grounding hole
↳ 5.4 "Connecting".
5. Disassemble pump from the wall or the device.
6. Lay down or store the pump as specified.

11.3 Disposal

ENVIRONMENT!

Improper waste disposal

Improper waste disposal threatens the environment and prevents re-use and recycling.

- Clean components before their disposal.
- Always dispose of components in accordance with their characteristics.
↳ 12.8 "Materials used"
- Collect leaked out utilities and auxiliaries completely.
- Dispose of work equipment soaked in coating materials or operating substances according to the disposal provisions in force.
- Dispose of utilities and auxiliaries according to the disposal provisions in force.
- In case of doubt, refer to the local disposal authorities.

Requirements:

- Pump has been cleaned ↳ 8.2 "Cleaning" and purged ↳ 7.2 "Rinsing".
- Pump has been disassembled ↳ 11.2 "Disassembly".

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Protective gloves
- Eye protection
- Anti-Static Safety Boots

1. Dispose of material residue from pump professionally.
2. Remove the seals. Ensure professional disposal.
3. Dispose of individual parts of the pump professionally.

12 Technical data

12.1 Dimensions and weight

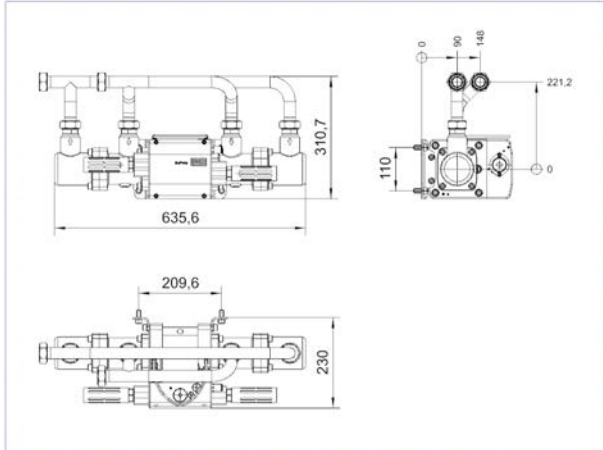


Fig. 44: Dimensions N24160008

N24160008	Value
Height	310.7mm
Width	635.6mm
Depth	230mm
Weight	41kg

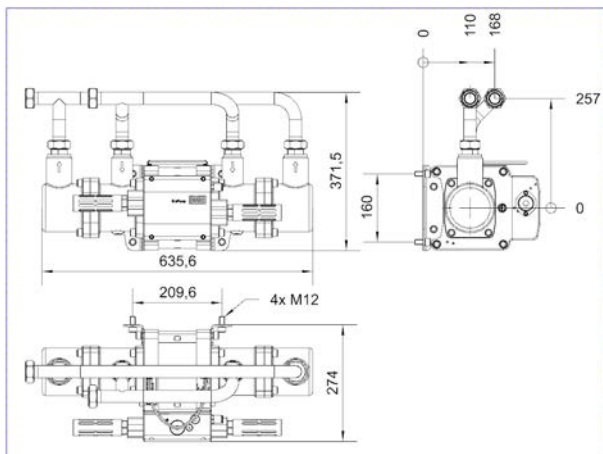


Fig. 45: Dimensions N24160009

N24160009	Value
Height	371.5mm
Width	635.6mm
Depth	274mm
Weight	56kg

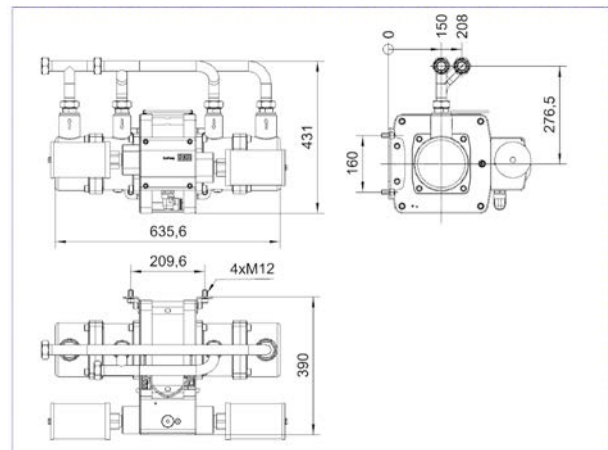


Fig. 46: Dimensions N24160010

N24160010	Value
Height	431mm
Width	635.6mm
Depth	390mm
Weight	84kg

12.2 Connections

Connection		Value
Material outlet connection		EcoTube DN25
Material inlet connection		EcoTube DN25
Air supply	HP 400/800	G3/8"
	HP 1600	G3/4"

12.3 Operating conditions

Detail	Value
Operating temperature, min.	10 °C
Operating temperature, max.	50 °C
Media temperature, min.	10°C
Media temperature, max.	50 °C
Ambient temperature, min.	15°C
Ambient temperature, max.	40°C
Relative humidity, min.	35%
Relative humidity, max.	90%

12.4 Emissions

Detail	Value
Sound pressure level, including sound muffler	<80dB(A)
Sound power level	85 db(A)

12.5 Operating values

i An increase in wear and, as a result, shorter life cycles of the seals and other pump components are to be expected if the number of cycles is permanently >20 cycles/min. Recommendation: If the number of cycles is >20 cycles/min, use the pump that is next in size.

Displacement volume and flow rate	
N24160001, N24160008	Value
Displacement volume	400cm ³ /cycle
Cycles per minute	0 to 40
Volume flow	0 to 16L/min
Translation ratio	3.5:1

Displacement volume and flow rate	
N24160002, N24160009	Value
Displacement volume	800cm ³ /cycle
Cycles per minute	0 to 40
Volume flow	0 to 32L/min
Translation ratio	3.5:1

Displacement volume and flow rate	
N24160003, N24160010	Value
Displacement volume	1600cm ³ /cycle
Cycles per minute	0 to 40
Volume flow	0 to 64L/min
Translation ratio	3.5:1

Material pressure and air pressure	
Detail	Value
Inlet material pressure, max.	2bar
Outlet material pressure, max.	21bar
Permissible air pressure, max.	6 bar

12.6 Compressed air quality

The quality of the compressed air complies with ISO 8573-1:2010 class 1:4 (≤ -3 °C):1

i If the mufflers ice up from the inside, use the optional ice reduction kit.

- ↪ 13.3 “Accessories”
- ↪ 10.2.2 “Assembling ice reduction”

12.7 Type plate

The type plate is on the drive housing of the pump. The type plate shows the following details:

- Product name
- Material number
- Year of manufacture
- Serial number
- Maximum air pressure
- Maximum material pressure
- CE labeling
- ATEX marking
- Manufacturer
- QR Code

12.8 Materials used

Detail	Material
Components in contact with material	Stainless steel
Motor	Aluminum
Ball	Stainless steel
Ball seat	Hard metal
Piston seal	PE
Bellows	PTFE

12.9 Operating and auxiliary materials

Material	Specification
Seal lubricant	Klüber Syntheso GLEP 1
Lubricant for screws	Molykote TP-42 Paste
Thread protection	Loctite® 222 Loctite® 243

Cleaning agents

Only use approved cleaning agents with the following properties:

- Suitable for use in explosive areas.
- Compatible with the materials used ↪ 12.11 “Material specification”

Detergent

Only use approved detergents with the following properties:

- Suitable for use in explosive areas.
- Compatible with the pumped material
- Compatible with the materials used ↪ 12.11 “Material specification”

12.10 Characteristic curve of the outflow blue

The power is in reference to water at ambient temperature.

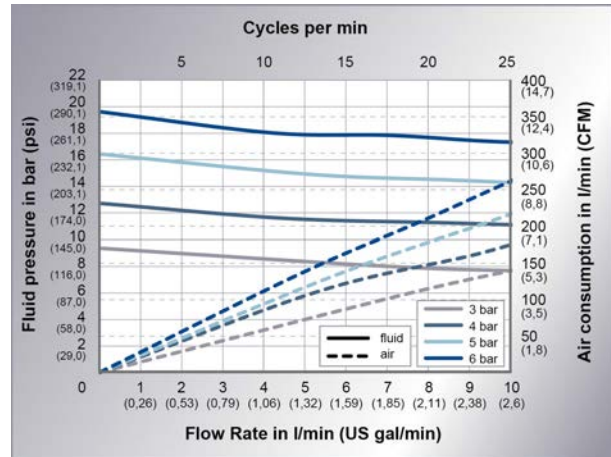


Fig. 47: Characteristic curve N24160001, N24160008

— Medium
 --- Air
 [bar (psi)] Pump head
 [1/min] Number of cycles
 [l/min (gal/min)] Volume flow

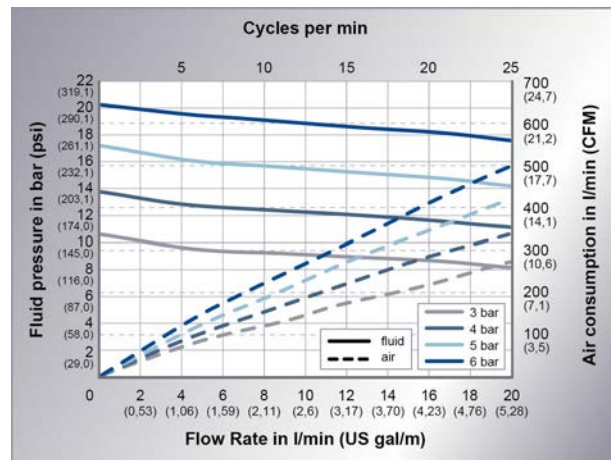


Fig. 48: Characteristic curve N24160002, N24160009

— Medium
 --- Air
 [bar (psi)] Pump head
 [1/min] Number of cycles
 [l/min (gal/min)] Volume flow

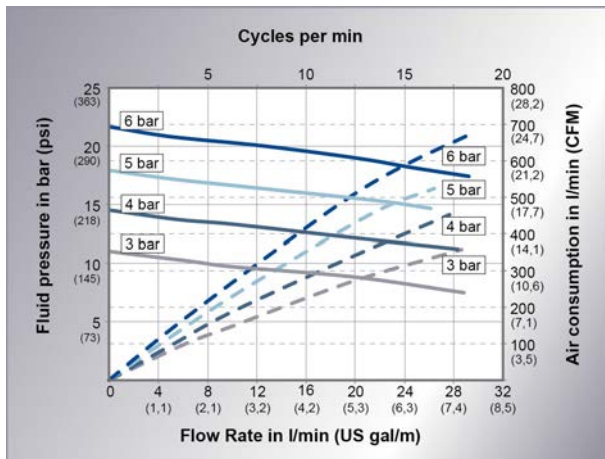


Fig. 49: Characteristic curve N24160003, N24160010

— Medium
 - - - Air
 [bar (psi)] Pump head
 [1/min] Number of cycles
 [l/min (gal/min)] Volume flow

12.11 Material specification

Requirements for delivered media	
Detail	Value
Viscosity, min.	40mPa s
Viscosity, max.	250mPa s
Diameter of the solids contained, max.	400µm
Conductivity, min.	1000pS/m

13 Replacement parts, tools and accessories

13.1 Replacement parts

13.1.1 Control Unit

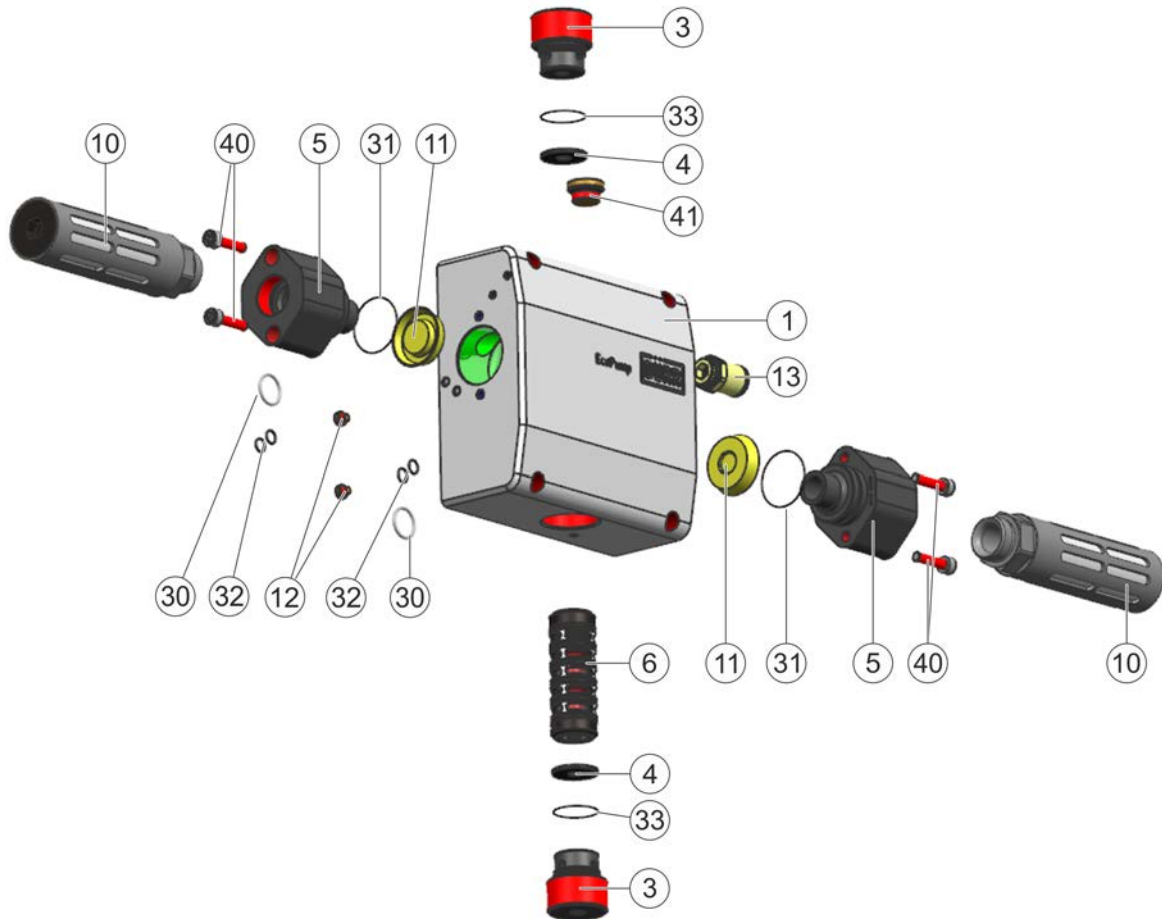


Fig. 50: Control unit replacement parts

N24160008 and N24160009

Position	Denomination	Quantity	Material number
1	Distributor block	1	
3	Locking screw	2	
4	Spacer	2	
5	Adapter	2	
6	5/2 Directional control valve	1	Included in Kit N24960020
10	Sound muffler	2	M54610066
11	Membrane DN35	2	Included in Kit N24960021
12	Sound muffler M5 with wire mesh	2	
13	Screw-in plug connector D12 G3/8"	1	
30	O-ring 16x2	2	Included in Kit N24960020
31	O-Ring 32x1.5	2	Included in Kit N24960021
32	O-ring 6x2	4	Included in Kit N24960020
33	O-ring 25x1.4	2	Included in Kit N24960020
40	Cylinder screw M6x25	4	
41	Locking screw G3/8"	1	

N24160010

Position	Denomination	Quantity	Material number
1	Distributor block	1	
3	Locking screw	2	
4	Spacer	2	
5	Adapter	2	
6	5/2 Directional control valve	1	Included in Kit N24960084
10	Sound muffler	2	M54610065
11	Membrane DN50	2	Included in Kit N24960083
12	Sound muffler M5 with wire mesh	2	
13	Screw-in plug connector D22 G3/4"	1	
30	O-ring 27x2	2	Included in Kit N24960084
31	O-ring 46x3	2	Included in Kit N24960083
32	O-ring 6x2	4	Included in Kit N24960084
33	O-ring 25x1.4	2	Included in Kit N24960084
40	Cylinder screw M8x55	4	
41	Locking screw G1/2"	1	

13.1.2 Fluid part

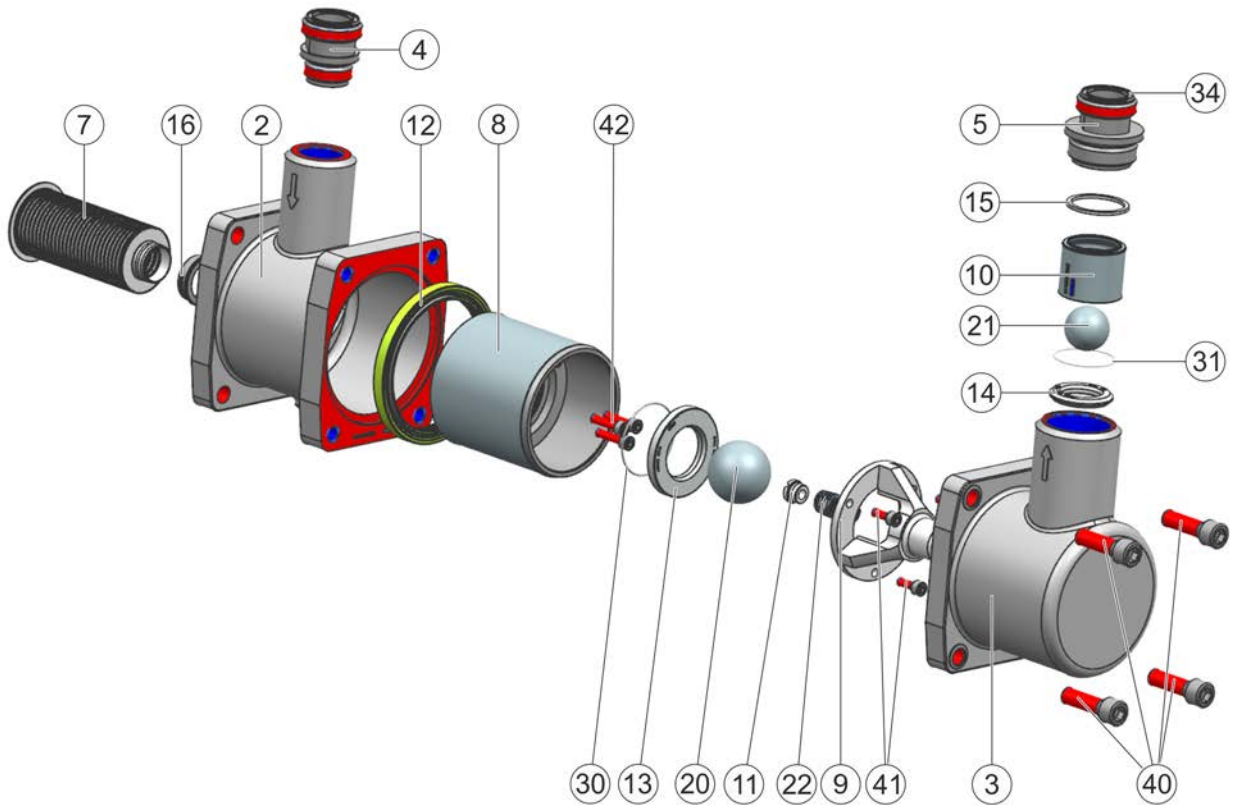


Fig. 51: Fluid part spare parts

N24160008			
Position	Denomination	Quantity	Repair set, seal set
2	Intake cylinder housing	2	
3	Outlet cylinder housing	2	
4	Screw-in socket DN25 G1"	2	
5	Screw-in socket DN25 G1"	2	
7	Bellows D25	2	M59040042, contained in N24960182
8	Piston	2	
9	Valve ball guide	2	
10	Valve ball guide pressure side G1"	2	
11	Compression spring fix bracket	2	
12	Piston seal DN65	2	M08050116, contained in N24960175
13	Gasket D44.5	2	Contained in N24960181
14	Gasket D30.2	2	Contained in N24960181
15	Sealing ring D29	2	Contained in N24960181
16	Clamping ring	2	
20	Ball D31.75	2	Contained in N24960181
21	Ball D19.05	2	Contained in N24960181
22	Compression spring	2	
30	O-Ring 35x1.5	2	Contained in N24960181
31	O-ring 25x2.5	2	Contained in N24960181
34	O-Ring DN25	4	
40	Cylinder screw M10x40 with Safety washer	8 8	
41	Cylinder screw M4x10	6	
42	Cylinder screw M6x25	6	

N24160009			
Position	Denomination	Quantity	Repair set, seal set
2	Intake cylinder housing	2	
3	Outlet cylinder housing	2	
4	Screw-in socket DN25 G1"	2	
5	Screw-in socket DN25 G1 1/2"	2	
7	Bellows D25	2	M59040042, contained in N24960182
8	Piston	2	
9	Valve ball guide	2	
10	Guide valve ball pressure side G1 1/2"	2	
11	Compression spring fix bracket	2	

Position	Denomination	Quantity	Repair set, seal set
12	Piston seal DN95	2	M08050117, contained in N24960179
13	Gasket D64	2	Contained in N24960180
14	Gasket D44.5	2	Contained in N24960180
15	Sealing ring D43.5	2	Contained in N24960180
16	Clamping ring	2	
20	Ball D44.45	2	Contained in N24960180
21	Ball D31.75	2	Contained in N24960180
22	Compression spring	2	
30	O-Ring 50x1.5	2	Contained in N24960180
31	O-Ring 41x1.78	2	Contained in N24960180
34	O-Ring DN25	4	
40	Cylinder screw M12x40 with Safety washer	8 8	
41	Cylinder screw M6x16	6	
42	Cylinder screw M6x25	6	

N24160010

Position	Denomination	Quantity	Repair set, seal set
2	Intake cylinder housing	2	
3	Outlet cylinder housing	2	
4	Screw-in socket DN25 G1"	2	
5	Screw-in socket DN25 G1 1/2"	2	
7	Bellows D25	2	M59040042, contained in N24960182
8	Piston	2	
9	Valve ball guide	2	
10	Guide valve ball pressure side G1 1/2"	2	
11	Compression spring fix bracket	2	
12	Piston seal DN135	2	M08050118, contained in N24960178
13	Gasket D64	2	Contained in N24960180
14	Gasket D44.5	2	Contained in N24960180
15	Sealing ring D43.5	2	Contained in N24960180
16	Clamping ring	2	
20	Ball D44.45	2	Contained in N24960180
21	Ball D31.75	2	Contained in N24960180
22	Compression spring	2	
30	O-Ring 50x1.5	2	Contained in N24960180
31	O-Ring 41x1.78	2	Contained in N24960180
34	O-Ring DN25	4	

Position	Denomination	Quantity	Repair set, seal set
40	Cylinder screw M12x40 with Safety washer	8	
41	Cylinder screw M6x16	6	
42	Cylinder screw M6x25	6	

13.1.3 Motor

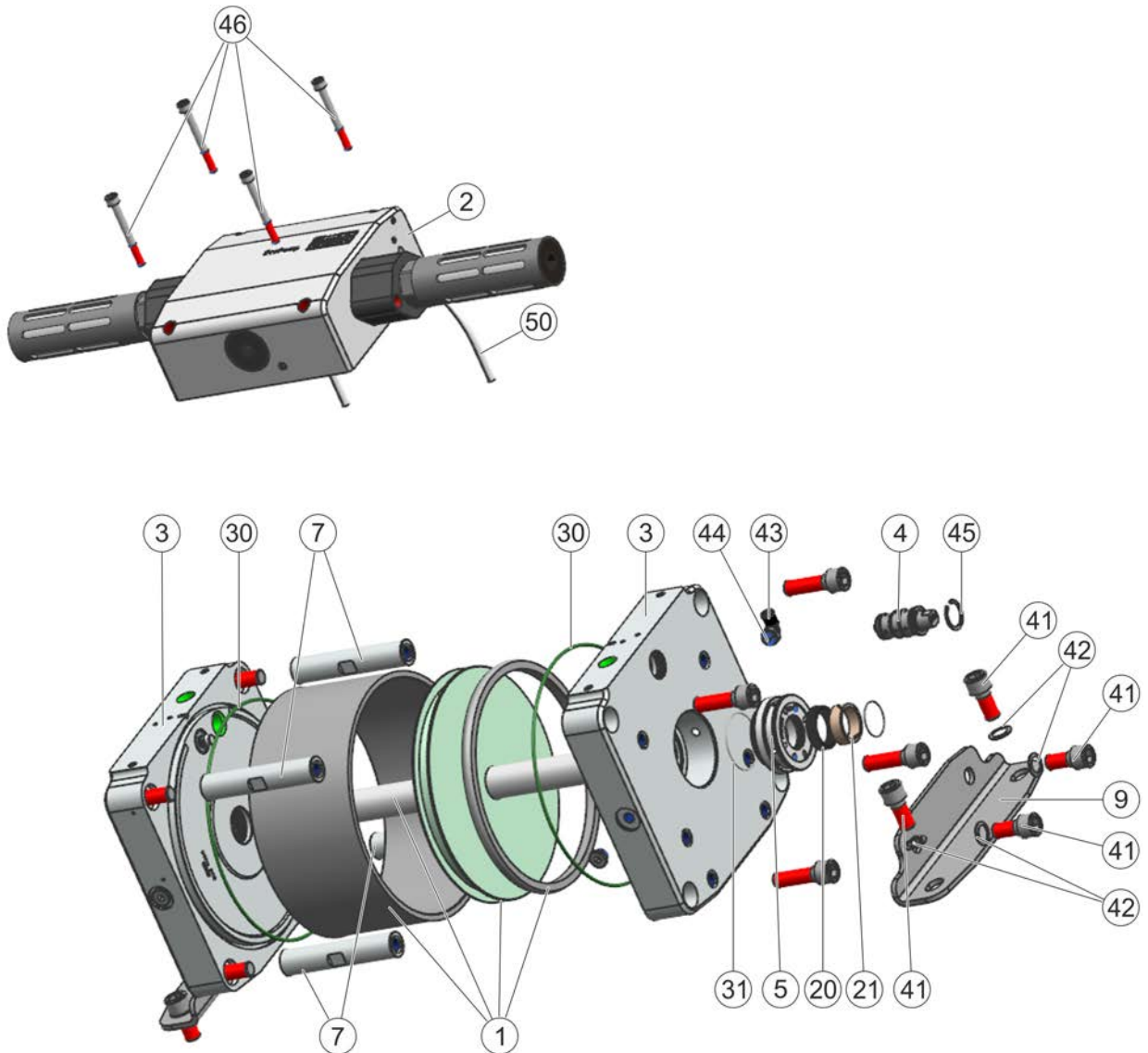


Fig. 52: Motor Replacement Parts

N24160008			
Position	Denomination	Quantity	Repair kit, seal kit
1	Piston with piston rod D125	1	
2	Control unit	1	
3	Front plate	2	
4	Valve unit changeover valve	2	Included in Kit N24960017
5	Seal housing	2	
7	Tie rod	4	
9	Bracket for pump	2	
20	Piston seal D125	2	Contained in N24960177
21	Piston guide belt	2	
30	O-ring 125x3	2	Contained in N24960177
31	O-ring 42x1.5	2	
40	Cylinder screws M10x40	8	
41	Cylinder screws M10x25	8	
42	Safety washer	8	
43	Sealing screw G1/8"	2	
44	Elbow plug-in connection G1/8"	2	
45	Retainer ring	2	
46	Cylinder screws M6x55	4	
50	Hose leakage indicator	1	

N24160009			
Position	Denomination	Quantity	Repair kit, seal kit
1	Piston with piston rod D180	1	
2	Control unit	1	
3	Valve unit changeover valve	2	Included in Kit N24960017
4	Front plate	2	
6	Seal housing	2	
7	Tie rod	4	
9	Bracket for pump	2	
20	Piston seal D180	2	Contained in N24960183
21	Piston guide belt	2	
30	O-ring 180x3	2	Contained in N24960183
31	O-ring 42x1.5	2	
40	Cylinder screws M12x40	8	
41	Cylinder screws M12x25	8	
42	Safety washer	8	
43	Locking screw G1/8"	2	
44	Elbow plug-in connection G1/8"	2	
45	Retainer ring	2	

Position	Denomination	Quantity	Repair kit, seal kit
46	Cylinder screws M6x55	4	
50	Hose leakage indicator	1	

N24160010

Position	Denomination	Quantity	Repair kit, seal kit
1	Piston with piston rod D260	1	
2	Control unit	1	
3	Valve unit changeover valve	2	Included in Kit N24960017
4	Front plate	2	
6	Seal housing	2	
7	Tie rod	4	
9	Bracket for pump	2	
20	Piston seal D260	2	Contained in N24960176
21	Piston guide belt	2	
30	O-Ring 260x3	2	Contained in N24960176
31	O-ring 42x1.5	2	
40	Cylinder screws M12x40	8	
41	Cylinder screws M12x25	8	
42	Safety washer	8	
43	Locking screw G1/8"	2	
44	Elbow plug-in connection G1/8"	2	
45	Retainer ring	2	
46	Cylinder screws M6x55	4	
50	Hose leakage indicator	1	

13.1.4 Manifolds

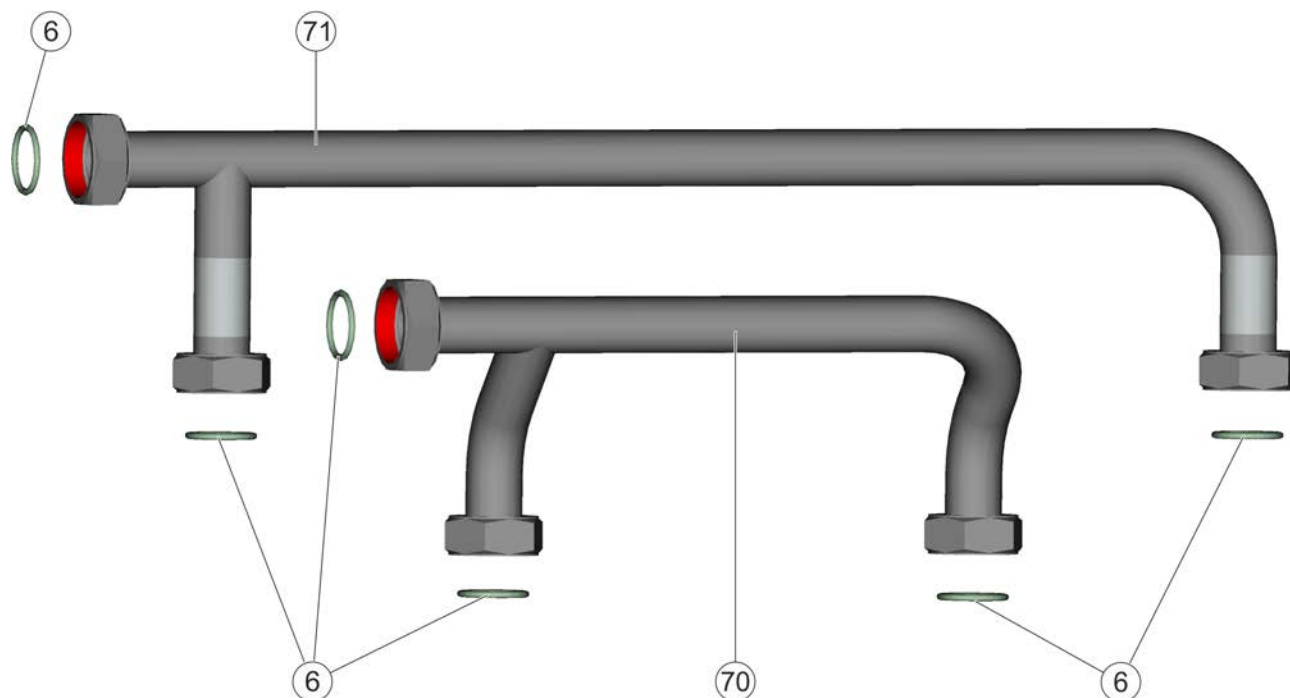


Fig. 53: Manifolds replacement parts

Position	Denomination	Quantity	N24160001	N24160002	N24160003
6	O-ring DN25	6	Included in: N24960013 N24960014	Included in: N24960015 N24960016	Included in: N24960015, N24960024
70	Manifold Material inflow with female union and cap nuts	1	M27050012	M27050012	M27050012
71	Manifold Material outlet with female union and cap nuts	1	M27050013	M27050013	M27050013

13.1.5 Repair kits

Fluid part

N24960181 for N24160008	
Determination	Quantity
Gasket D44.5	2
Gasket D30.2	2
Sealing ring D29	2
Ball D31.75	2
Ball D19.05	2
O-Ring 35x1.5	2
O-ring 25x2.5	2

N24960180 for N24160009 and N24160010

Determination	Quantity
Gasket D64	2
Gasket D44.5	2
Sealing ring D43.5	2
Ball D44.45	2
Ball D31.75	2
O-Ring 50x1.5	2
O-Ring 41x1.78	2

Bellows

N24960182 for N24160008, N24160009 and N24160010	
Determination	Quantity
Bellows	2
Rod seal d25 D33	2
Piston guide ring d25 D30	2
O-ring 42x1.5	2

Drive unit

N24960017	
Determination	Quantity
Valve unit changeover valve	2

Control unit

N24960020 for N24160008 and N24160009	
Determination	Quantity
5/2 Directional control valve	1
O-ring 16x2	2
O-ring 6x2	4
O-Ring 25x1.4	2

N24960084 for N24160010	
Determination	Quantity
5/2 Directional control valve	1
O-Ring 27x2	2
O-ring 6x2	4
O-Ring 25x1.4	2

13.1.6 Seal sets

Fluid part

N24960175 for N24160008	
Determination	Quantity
Piston seal DN65	2

N24960179 for N24160009	
Determination	Quantity
Piston seal DN95	2

N24960178 for N24160010	
Determination	Quantity
Piston seal DN135	2

Air motor

N24960177 for N24160008	
Determination	Quantity
O-ring 125x3 FKM	2
Piston seal air EcoPump D125	1

N24960183 for N24160009	
Determination	Quantity
O-ring 180x3 FKM	2
Piston seal air EcoPump D180	1

N24960176 for N24160010	
Determination	Quantity
O-ring 260x3 70Shore EPDM	2
Piston seal air EcoPump D260	1

13.2 Tools

There are no special tools available for this product.

13.3 Accessories

Adapter	
Denomination	Material number
EcoTube DN25 on G1 1/2"	M81120014
EcoTube DN25 on G1"	M81120015
EcoTube DN25 on G3/4"	M81120016

Valve for dry run protection	
Denomination	Material number
3/2 valve pneumatic	M54410033

Pneumatic valve for RA function

Denomination	Material number
3/2 valve pneumatic	M54410033 Only in connection with EcoPUC A RA/ EcoPUC A RA BUS

Maintenance unit (incl. RA valve)

Denomination	Material number
Maintenance unit 3/4"	N35070165

Paint regulator

Denomination	Material number
EcoFlow LPR P 16 15 DN25 SST	N26220001
EcoFlow LPR P 16 25 DN25 SST	N26220002
EcoFlow LPR M 14 15 DN25 SST	N26220004
EcoFlow LPR M 14 25 DN25 SST	N26220005

Pressure gage

Denomination	Material number
Pressure gage 0-25bar D63 G1/4" HI. VA	W07010242
Pressure gage 0-25bar DN25 EcoTube , horizontal	W07010238
Pressure gage 0-25bar DN25 EcoTube , vertical	W07010223
Pressure gage 0-25bar D63 G1/4" UN. VA	W07010198

Monitoring units

Denomination	Material number
EcoPUC A	F30300001
EcoPUC A RA	F30300002
EcoPUC A RA BUS	F30300003

Ice reducing

Designation	Material number
Ice reduction kit for EcoPump HP 400 / 800	N24970033
Ice reduction kit for EcoPump HP 1600	N24970019

13.4 Order

WARNING!
Unsuitable replacement parts in explosive areas

Replacement parts not compliant with the specifications of the ATEX guidelines can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original replacement parts.

WARNING!
Unsuitable replacement parts

Replacement parts of third-party suppliers may possibly not be able to hold the loads. Serious injury and death could be the consequence.

- Use exclusively original replacement parts.

Ordering replacement parts, tools and accessories as well as information on products that are listed without order number → "Hotline and Contact".

14 INDEX


A	
Accessories	49
Advanced training	7
Air motor	
Seal set	49
Ambient temperature	36
Assemblies	5
assembly	10
EcoPUC A	10
Motor	25
Assembly	
Installation point	10
Non-return valve in the outlet cylinder	21
Non-return valve in the piston	22
ATEX	5
Auxiliary materials	37
B	
Bellows	
Repair kit	49
replacement	23
C	
Characteristic curve	
Outflow rate	38
Check valve	
Outlet cylinder	21
clean	15
Cleaning	
Cleaning agents	37
Safety notes	14
Commissioning	
Operating parameters	13
connect	
Material feed	11
Pump	11
Connect	
Compressed air	11
Connect compressed air	11
Connections	36
Contact	2
Control unit	
assembly	19
disassembly	17
Function	7
Install membrane	18
Installing Valve	19
Remove membrane	17
Removing the valve	18
Repair kit	49
Replacement parts	40
Control unit valve	
installing	19
removal	18
D	
Depth	36
Detergent	38
Dimensions	36
disassembly	
Control unit	17
Pump	34
dismantling	
Motor	24
Dismantling	
Non-return valve in the outlet cylinder	21
Non-return valve in the piston	22
Displacement volume	37
Disposal	
Handling packaging material	9
Drive unit	
Repair kit	49
E	
EcoPUC A	
assembly	10
Emissions	37
EX labeling	5
F	
Faults	
Defects Table	26
Flow rate	37
Fluid part	
Function	8
Repair kit	48
Replacement parts	42
Seal set	49
Function	
Fluid part	8
G	
General notes	
Operation	13
Grounding	
Pump	11
H	
Height	36
Hotline	2
Humidity	36


I	
Ice reducing assembly	29, 31
Ice reduction kit	
EcoPump HP 400	29
EcoPump HP 800	29
EcoPump HP 1600	31
Information about the document	2
Inlet cylinder	
assembly	23
dismantling	23
Installation point	10
Requirements	10
Intended use	5
L	
Labeling	5
Loctite	37
Lubricant	37
M	
Maintenance	
Maintenance schedule	16
Safety notes	15
Manifolds	
Replacement parts	48
Material feed	
connect	11
Material number	2
Material pressure	37
Material specification	39
Materials	37
Membrane control unit	
installing	18
removal	17
Misuse	5
Motor	
assembly	25
dismantling	24
Function	8
Replacement parts	45
N	
Noise emission	37
Non-return valve in the piston	
dismantling	22
Notes	
Representation	5
O	
Operating materials	37
Operating parameters	
set	13
Operating pressure	37
Operating temperature	36
Operation	
General Notes	13
Order	50
Other relevant support documents	2
Outlet cylinder	
assembly	20
disassembly	20
Dismantle non-return valve	21
Non-return valve assembly	21
Overview	5
P	
Packaging	
Handling packaging material	9
Personal protective equipment	7
Piston	
Dismantle non-return valve	22
Non-return valve assembly	22
Power values	37
Pressure	37
Product overview	
Overview	5
Short description	5
Protective equipment	7
Pump	
assembly	10
connect	11
Connections	36
disassembly	34
grounding	11
Putting into operation	12
Purging	13
Q	
Qualification	6
Qualification of the personnel	6
R	
Repair kit	
Bellows	49
Control unit	49
Drive unit	49
Fluid part	48
Replacement parts	
Control unit	40
Fluid part	42
Manifolds	48

Motor	45	Emissions	37
Representation		Material specification	39
Notes	5	Materials	37
Residual risks	6	Operating materials	37
Grounding	6	Type plate	37
S		Technical Data	
Safety		Connections	36
Intended use	5	Temperature	
Notes	5	Operation	36
Residual risks	6	Surroundings	36
Scope of Supply	9	Tools	49
Scope of the document	2	Training	7
Screws		Transport inspection	8, 9
Lubricant	37	Transportation	9
Thread protection	37	Type plate	37
Seal		U	
Lubricant	37	Unpacking	8
Seal set		Usage	5
Air motor	49	Use	5
Fluid part	49	V	
Serial number	37	Viscosity	39
Service	2	W	
Short description	5	Weight	36
Sound power level	37	Width	36
Sound pressure level	37	Y	
Storage	9	Year of manufacture	37
T			
Technical data			
Compressed air quality	37		



LEADING IN
PRODUCTION
EFFICIENCY

 Dürr Systems AG
Application Technology
Carl-Benz-Str. 34
74321 Bietigheim-Bissingen
Germany

 Phone +49 7142 78-0

 www.durr.com

Translation of the original operation manual
MPU00020EN, V01

Transmission and duplication of this document, as well as use and sharing of its contents are not permitted without express written approval. Offenders will be liable for damages. All rights reserved in the event of the grant of a patent or utility model.

© Dürr Systems AG 2020