

## OPERATING MANUAL

### Pump Model PICO Original Instructions





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# 1 General Safety Instructions

## 1.1 Importance of safety instructions

### DANGER



#### Importance of safety instructions

This operating manual contains important information on handling and safety.

Read the operating manual carefully before you start any work with the product.

Always have the operating manual available on site.

#### Residual risk

Despite the comprehensive safety measures considered for design and operation of our product, the product is not absolutely safe. There remain residual risks, which cannot be eliminated.

To mitigate the residual risks:

- Take all appropriate precautions as stated in the safety instructions and safety messages.
- Observe the operating instructions.
- Keep to regular check intervals and maintenance.
- Wear personal protective equipment where required.

#### Non-observance of the safety instructions

Failure to follow the safety instructions can result in:

- damage to persons, serious injuries or death.
- material damage.
- failure of the product.
- Danger to the environment.

## 1.2 Signal words and symbols used

You will find the following signal words and symbols throughout the whole operating manual:

Level	Meaning
 <b>DANGER</b>	Warns of dangers for persons with a high potential risk. Non-observance of this warning is highly likely to result in serious injury or even death.
 <b>WARNING</b>	Warns of dangers to persons with a medium potential risk. Non-observance of this warning could result in serious injury.
 <b>CAUTION</b>	Warns of dangers for persons with a low potential risk. Non-observance of this warning could result in minor injuries.
<b>NOTICE</b>	Indicates information considered important but not hazard related. Non-observance could lead to damage to property and the environment.

## Symbols used

	This symbol warns of electrical voltage.
	This symbol warns of danger to persons if not observed.
	This symbol warns of hot surfaces.
	This symbol warns of suspended loads.
	This symbol warns of possible material damage due to electrostatic discharge if not avoided.

## Information labels

	Notice
	Wear ear protection.
	Wear eye protection.
	Wear protective clothing.
	Wash your hands.
	Recycle properly.

## 1.3 Personnel qualification and training

This operating manual is intended for:

Any person entrusted with tasks involving the product throughout its life cycle.

### Qualified personnel

Only qualified personnel may handle the product. Qualified personnel can recognize and minimize possible hazards due to their skills and knowledge. They are qualified by training, certifications, the relevant degree and/or are instructed accordingly.

### Authorized persons

Operators	Operators work with the product. They are involved in operation, monitoring and basic maintenance.
Qualified electricians	Electricians install and maintain electrical components, wire the product, diagnose and repair electrical issues.
Service technician	Service technicians are involved with installation, maintenance and repair on site of operation.
Handling personnel	Handling personnel are involved in transport, storage and control of the product.

## 1.4 Safety instructions for assembly, inspection, maintenance

- Only carry out any installation, inspection or maintenance work at standstill of the product.
- Wear appropriate protective equipment.
- Depressurize and disconnect the product from power supply.
- Secure the product against intentional and unintentional restart during your work. Reinstall all safety and protective equipment after completion of the work.
- Clean soiled or contaminated surfaces before installation, inspection or maintenance.

### CAUTION



#### Hot surfaces

Hot surfaces of the product can lead to burns.

- a) Wear heat-resistant gloves.
- b) Check the surface temperature of the product.

- Naked light or fire are strictly forbidden.

## 1.5 Unauthorized modification / Production of spare parts

Modification and repair of the product are only permitted after consultation with the manufacturer.

Use only original spare parts and accessories.

Do not modify the product until you receive the written specific instructions by the manufacturer.

## 1.6 Intended use and improper use

The product is used to convey lubricants within an automatic lubrication system.

### Intended use

The product is intended for commercial use only.

The product is a machine according to Machinery Directive 2006/42/EC.

- Use the product only within the values as stated in the technical data.
- Mind the lubricant specifications of the manufacturer.
- Observe all relevant regulations for occupational safety and accident prevention during the whole life cycle of the product.

### Improper use

Any other use beyond the stated intended use is improper.

Improper use can be in particular, but not limited to:

- operating the product with improper lubricants.
- changing the product without authorization by the manufacturer.
- carrying out work at or with the product without having the necessary professional training and authorization.
- disregarding required maintenance and inspection intervals.
- exceeding or undergoing the limit values as stated in the technical data.

## 1.7 Electrostatic discharge

### NOTICE



Avoid Electrostatic discharge (ESD).

Electrostatic discharge on contact could destroy integrated electronic components.

- a) Keep to the safety precautions against Electrostatic discharge (according to EN 61340-5-1/-3).
- b) Ensure well grounding of the environment (people, workplace and packaging) when handling the products.

## 2 Scope of Warranty

Warranty is only granted by the manufacturer for the use as intended and under the following conditions:

- Authorized qualified personnel carries out installation, connection and maintenance.
- The product is used in accordance with the information in the operating manual.
- The limit values as stated in the technical data are not exceeded or gone below.
- Only Groeneveld-BEKA may carry out modification and repair of the product.

### NOTICE



#### **Damage caused by lubricants**

Damage caused by operation with an unsuitable lubricant will invalidate guarantee and warranty.

Groeneveld-BEKA will generally not assume liability for damage caused by lubricants, even if Groeneveld-BEKA has tested and approved the lubricants. Damage caused by lubricants (e.g. due to improper storage) cannot be retraced.

### 3 Manufacturer

**Company name and address of the manufacturer of the machine:**

Groeneveld-BEKA GmbH

Beethovenstraße 14

91257 Pegnitz, Bayern, Germany

Tel.: +49 9241729-0

Fax: +49 9241729-50

## 4 General Product Information

### 4.1 Product Description

The PICO is an electrically actuated pump for the use in progressive systems, multi-line systems, and mixed lubrication systems. Mixed lubrication system means you have a progressive system and a multi-line system connected to the product. The PICO is able to deliver lubricants up to NLGI-2 at a maximum operating pressure of 300 bar. The PICO delivers lubricant via one or more progressive distributors. In connection with a multi-line system, the PICO delivers lubricant up to 8 lubrication points directly. If required, you can further expand the system.

**PICO with paddle:**



1	<b>Reservoir</b> The PICO reservoir is made of transparent plastic. PICO is available with a 1,5 l reservoir.
2	<b>Pressure limiting valve</b>
3	<b>Pump element</b> One pump element is required for each outlet. Different types of pump elements are available: <ul style="list-style-type: none"> <li>• Different pump elements with fixed flow rates</li> <li>• Pump element with adjustable flow</li> </ul>
4	<b>Zerk</b> You can fill the pump with a standard filling press. You can replace the zerk with a filler coupling.
5	<b>Control unit</b> The PICO series differs in control type. You can control the PICO externally or with an integrated control unit that includes: <ul style="list-style-type: none"> <li>• Three control functions: time, clock-pulse, or revolutions</li> <li>• Selection of operating conditions: easy, medium, or heavy duty</li> <li>• Integrated data logger with diagnosis module DiSys</li> </ul>
6	<b>Paddle</b>

## PICO with follower plate:



1	<b>Reservoir</b> The PICO reservoir is made of transparent plastic. PICO is available with a 1,5 l reservoir.
2	<b>Follower plate</b> The follower plate ensures that all the lubricant in the reservoir is used up. The reservoir wall remains clean, which allows you to visually check the level.
3	<b>Pressure limiting valve</b>
4	<b>Pump element</b> One pump element is required for each outlet. Different types of pump elements are available: <ul style="list-style-type: none"> <li>• Different pump elements with fixed flow rates</li> <li>• Pump element with adjustable flow</li> </ul>
5	<b>Zerk</b> You can fill the pump with a standard filling press. You can replace the zerk with a filler coupling.
6	<b>Control unit</b> The PICO series differs in control type. You can control the PICO externally or with an integrated control unit that includes: <ul style="list-style-type: none"> <li>• Three control functions: time, clock-pulse, or revolutions</li> <li>• Electronic level monitoring</li> <li>• Selection of operating conditions: easy, medium, or heavy duty</li> <li>• Integrated data logger with diagnosis module DiSys</li> </ul>
7	<b>Level monitoring</b> The PICO is equipped with an electronic level monitoring.

## 4.2 Applicable documents

Dimensioned drawing

Connection diagram

Spare parts drawing

Certificates

## 4.3 CE Declaration of Conformity



DIRECTIVE 2006/42/EC - Annex II A

### Company name and address of the manufacturer of the machine:

Groeneveld-BEKA GmbH  
 Beethovenstraße 14  
 91257 Pegnitz, Bayern, Germany  
 Tel.: +49 9241729-0  
 Fax: +49 9241729-50

### Name and address of the company authorised to compile the technical file:

Groeneveld-BEKA Italia S.r.l.  
 Via Pertini, 1  
 23893 Cassago Brianza (LC), Italy  
 Tel./Fax: +39 039 9215611

### THIS DECLARATION OF CONFORMITY APPLIES TO THE FOLLOWING PRODUCT:

<b>Machine Designation</b>	AUTOMATIC LUBRICATION SYSTEM
<b>Type Designation</b>	PICO
<b>Brief Description</b>	THE MACHINE IS A PUMPING SYSTEM DESIGNED AND BUILT TO CARRY OUT AUTOMATIC LUBRICATION CYCLES OF MACHINES AND/OR SYSTEM PARTS.

### THE MANUFACTURER DECLARES UNDER ITS OWN RESPONSIBILITY THAT THE PRODUCT COMPLIES WITH THE FOLLOWING EU DIRECTIVES AND HARMONIZED STANDARDS

- Directive 2006/42/EC (Machinery Directive)
- Directive 2014/35/EU (Low Voltage Directive)
- Directive 2014/30/EU (Electromagnetic Compatibility Directive)
- EN ISO 12100:2010
- EN 809:2009

### THIS DECLARATION OF CONFORMITY APPLIES ALSO TO THE FOLLOWING PRODUCT:

<b>Machine Designation</b>	AUTOMATIC LUBRICATION SYSTEM
<b>Type Designation</b>	PICO (PICO-tronic, PICO-troniX1, PICO-tronic2)
<b>Brief Description</b>	THE MACHINE IS A PUMPING SYSTEM DESIGNED AND BUILT TO CARRY OUT AUTOMATIC LUBRICATION CYCLES OF MACHINES AND/OR SYSTEM PARTS.

### THE MANUFACTURER DECLARES UNDER ITS OWN RESPONSIBILITY THAT THE PRODUCT COMPLIES WITH THE FOLLOWING EU DIRECTIVES AND HARMONIZED STANDARDS

- Directive 2006/42/EC (Machinery Directive)
- Directive 2014/35/EU (Low Voltage Directive)
- Directive 2014/30/EU (Electromagnetic Compatibility Directive)

- **ECE-R10, rev.6** (Automotive directive of the United Nations) E1 10R-057978
- **EN ISO 12100:2010**
- **EN 809:2009**

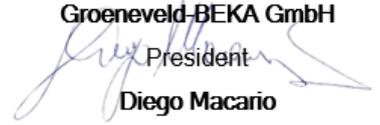
Via Pertini, 1, 23893 Cassago Brianza (LC), Italy

In witness whereof

**Groeneveld-BEKA GmbH**

President

**Diego Macario**



## 4.4 Conformity marking



This product is CE certified.



This product is E1 certified.

## 4.5 Shutdown and Disposal

### WARNING



#### Product under pressure and connected to power

You can get injured by:

- a) liquids which escape due to high pressure.
- b) electrical power due to high voltage.

Mind all relevant national and international laws and regulations for disposal.

1. Depressurize the product.
2. Switch off electrical power supply.
3. Have electrical components disconnected from the electrical power supply by a trained electrician.
4. Remove all pipes and hoses from the product and detach fittings.
5. When you change the lubricant, observe the disposal instructions of the lubricant manufacturer.
6. Collect lubricants or contaminated cloths in marked containers and dispose of them properly.

## 5 Transport and storage

### Transport

#### **WARNING**



#### **Suspended loads**

You might get injured if suspended loads fall down.

- a) Keep distance to suspended loads.
- b) Wear appropriate protective clothing.

- 
- Make sure that the means for transportation or the lifting device has sufficient carrying capacity.
  - Observe the applicable regulations on safety and accident prevention for transportation.
  - Do not throw the product or expose it to shocks.
  - Secure the product against slipping or falling over during transport.
  - Make sure the product is empty before moving it.

### Storage

- Store the product cool and dry to avoid corrosion.
- If the product contains lubricants, observe the storage conditions of the lubricants.
- If the lubricant is overstored, check if oil and soap are separated. In this case, replace the lubricant.
- Store the product in upright position.

## 6 Technical Data

### General

Delivery volume per stroke and outlet	depending on pump element
Number of outlets	max. 2 (for PE-60 F to PE-170 F) max. 8 (for PE-5 to PE-50)
Outlet connection thread	M10x1 (for multi-line systems) G1/4 (for progressive systems)
Lubricant	greases up to NLGI 2 (greases with solid content on request)
Operating pressure	max. 200 bar (for multi-line systems) max. 300 bar (progressive systems)
Pressure limiting valve	set to 290 bar (progressive system)
Operating temperature	-35° C to +70° C
Reservoir material	plastic
Reservoir size	1,5 L
Installation position	vertical (paddle) / rotating (follower plate)
Direction of rotation	clockwise
Degree of protection	IP 65

### Motor

Drive	motor
Current type of motor	direct current
Operational voltage	12 / 24 V DC
Current consumption	6,3 A at 12 V / 3,3 A at 24 V
Speed	15 rpm
Fuse protection (not included in the product)	10A (12 V) / 6 A (24 V)

### Control Unit

Supply voltage	10 to 60 V DC
Current consumption	6,0 A
Output for signal lamp	0,4 A
Fuse protection (not included in the product)	6,3 A

### Level Monitoring

Operational voltage	10 to 60 V DC (without control unit)
Switching current	max. 200 mA (10 to 60 V DC, without control unit)
Switching type	dry changeover contact (10 to 60 V DC, without control unit)
Connection	bayonet plug 7-pin

## 7 Installation Instructions

- 1) Check the product for transport damage and completeness before installation.
- 2) Remove transport protection.
- 3) Select the place of installation so that the product is protected against environmental and mechanical impacts.
- 4) Ensure unhindered access.
- 5) Observe the information on fastenings from the dimensional drawing.

### 7.1 Pump elements compatible

The product supports the following pump element types:

- Multi line system : PE-5, PE-10, PE-15, PE-25, PE-50
- Progressive system : PE-60 F, PE-120 F, PE-120 FV, PE-170 F

### 7.2 Level monitoring

#### Optical

Product with paddle / Product with follower plate:

You can optically check the level of both product versions.

#### Electrical

Product with paddle:

Installation of an electrical level monitoring is not possible for this product version.

Product with follower plate:

- The product version with follower plate is equipped with an electrical level monitoring by default.
- If the reservoir is empty, the follower plate contacts a probe, which then actuates a switch.
- The switch sends a signal to the integrated control unit. The control unit displays the error and stops the product. This prevents that air is gets into the lubrication system.
- The error resets automatically when you refill the product reservoir.

### 7.3 Electrical connection

#### WARNING

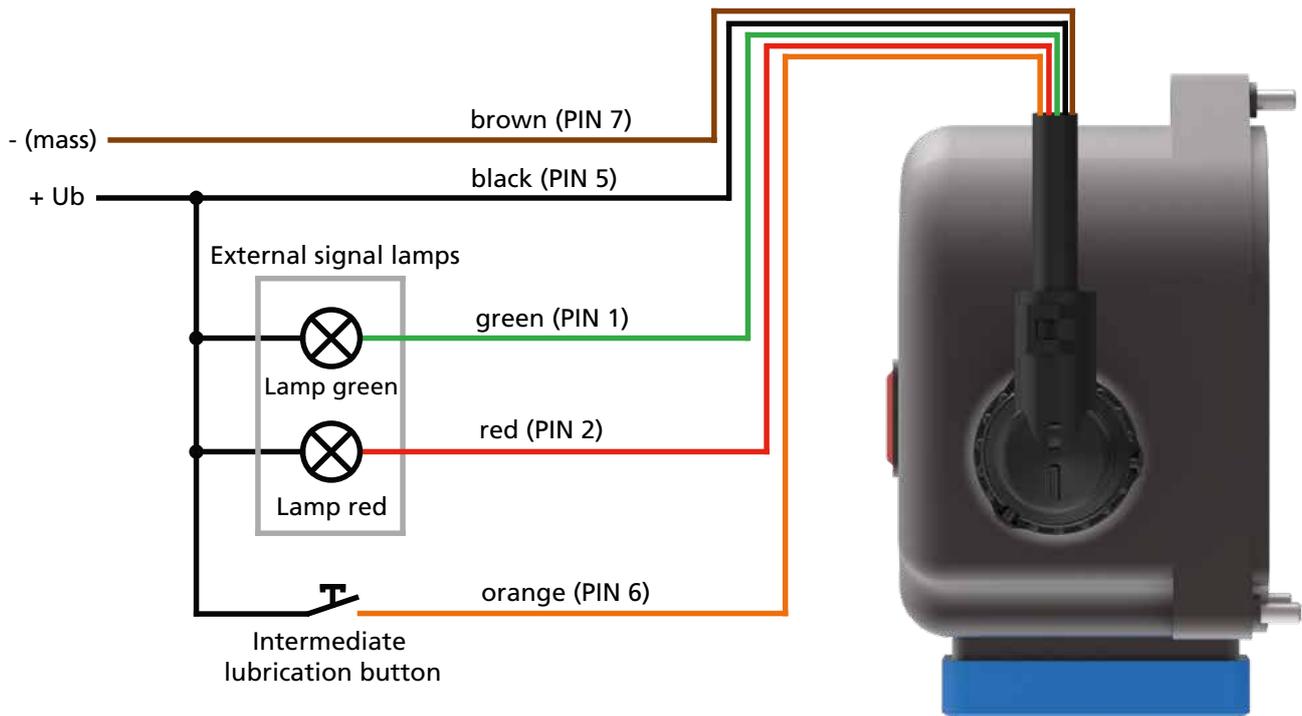


#### Risk of electric shock

- a) Have the electrical power supply installed by a qualified electrician.

- Mind all specifications of the electrical connection diagram.
- Compare the voltage specifications with the existing mains voltage.

### 7.3.1 PICO-troniX1 connection diagram



#### NOTICE



The bayonet connector and a 10m connection cable are included for products with PICO-troniX1 control with bayonet connection.

## 7.3.2 No control connection diagrams

### Product with paddle and bayonet connection

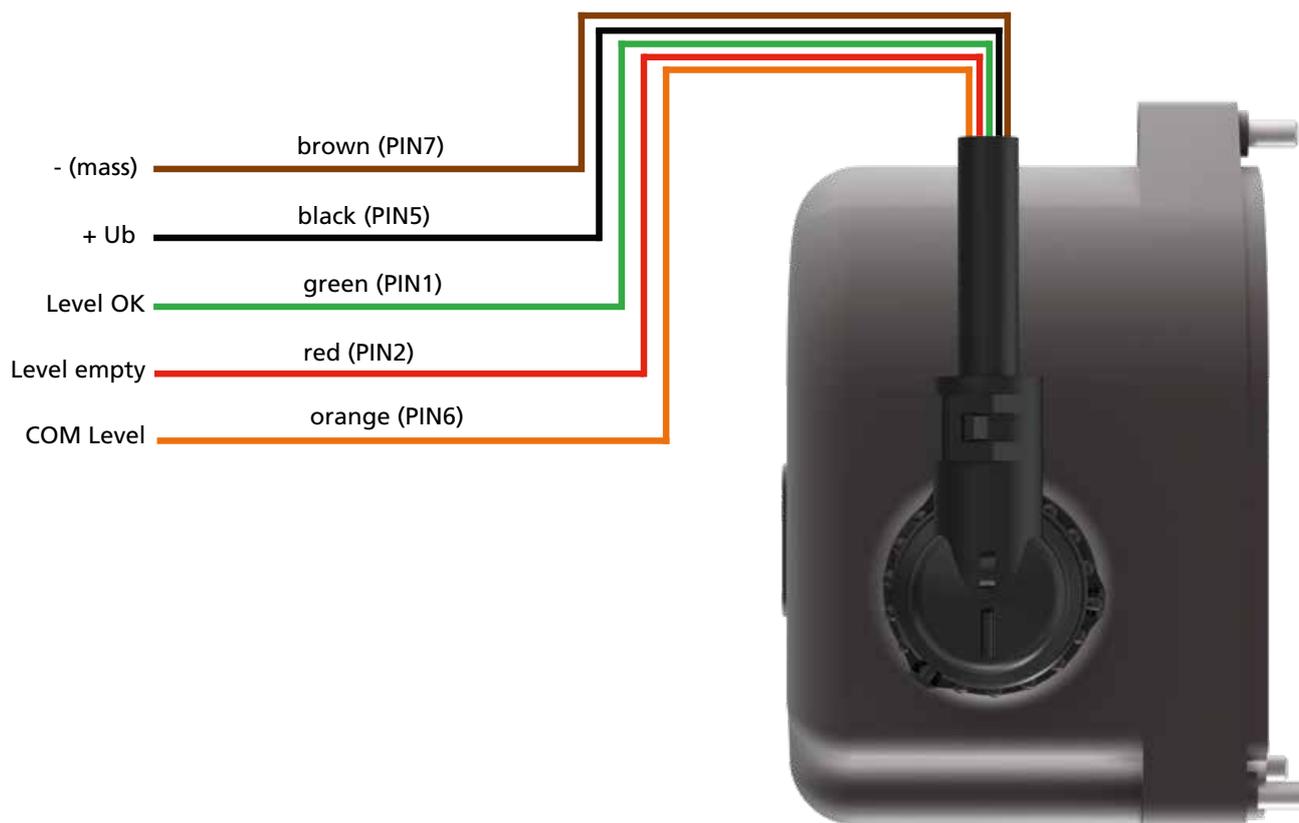


#### NOTICE



The bayonet connector and a 10m connection cable are included for products with paddle and bayonet connection.

## Product with follower plate and bayonet connection

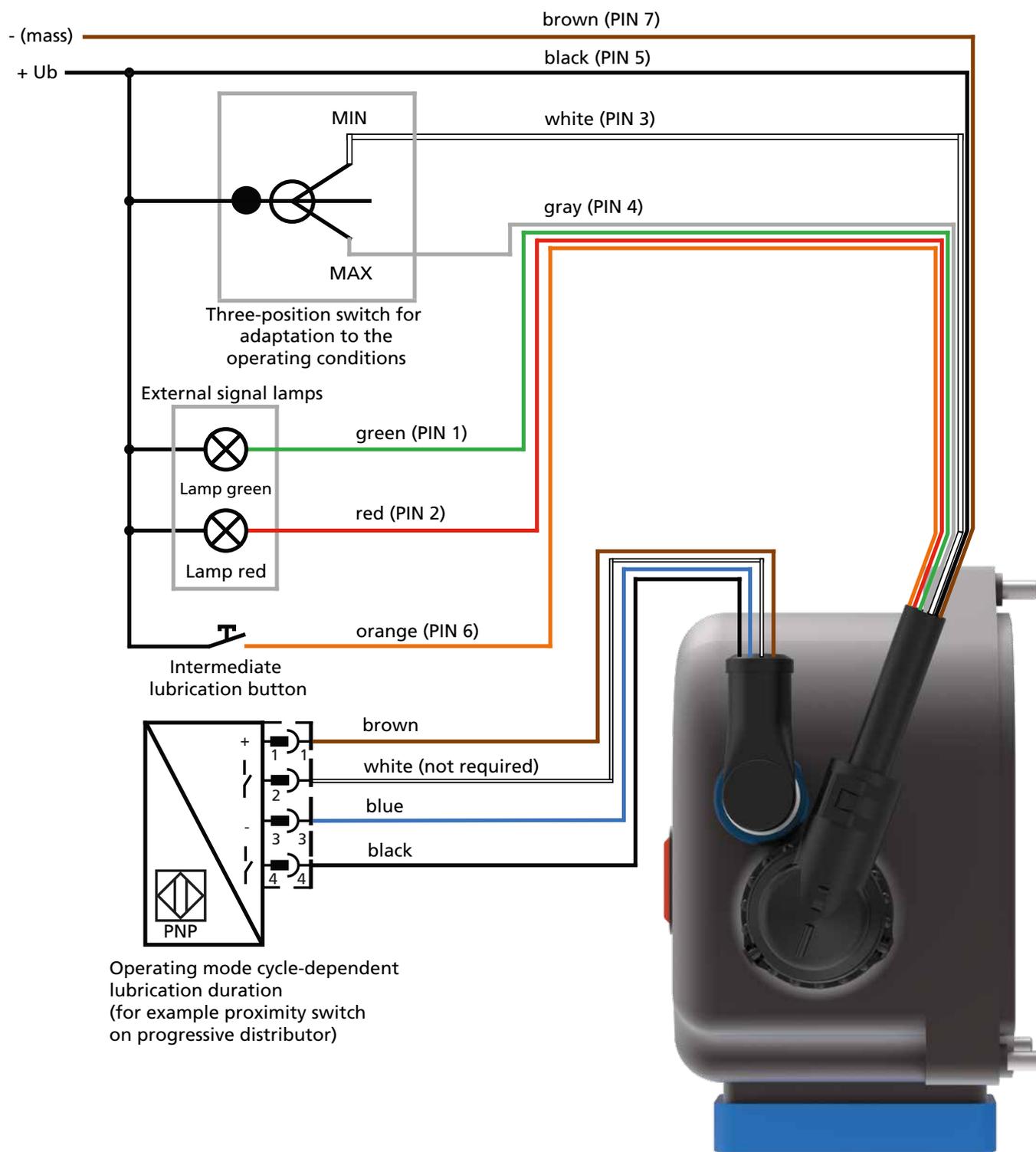


### NOTICE



The bayonet connector and a 10m connection cable are included for products with follower plate and bayonet connection.

### 7.3.3 PICO-tronic2 connection diagram



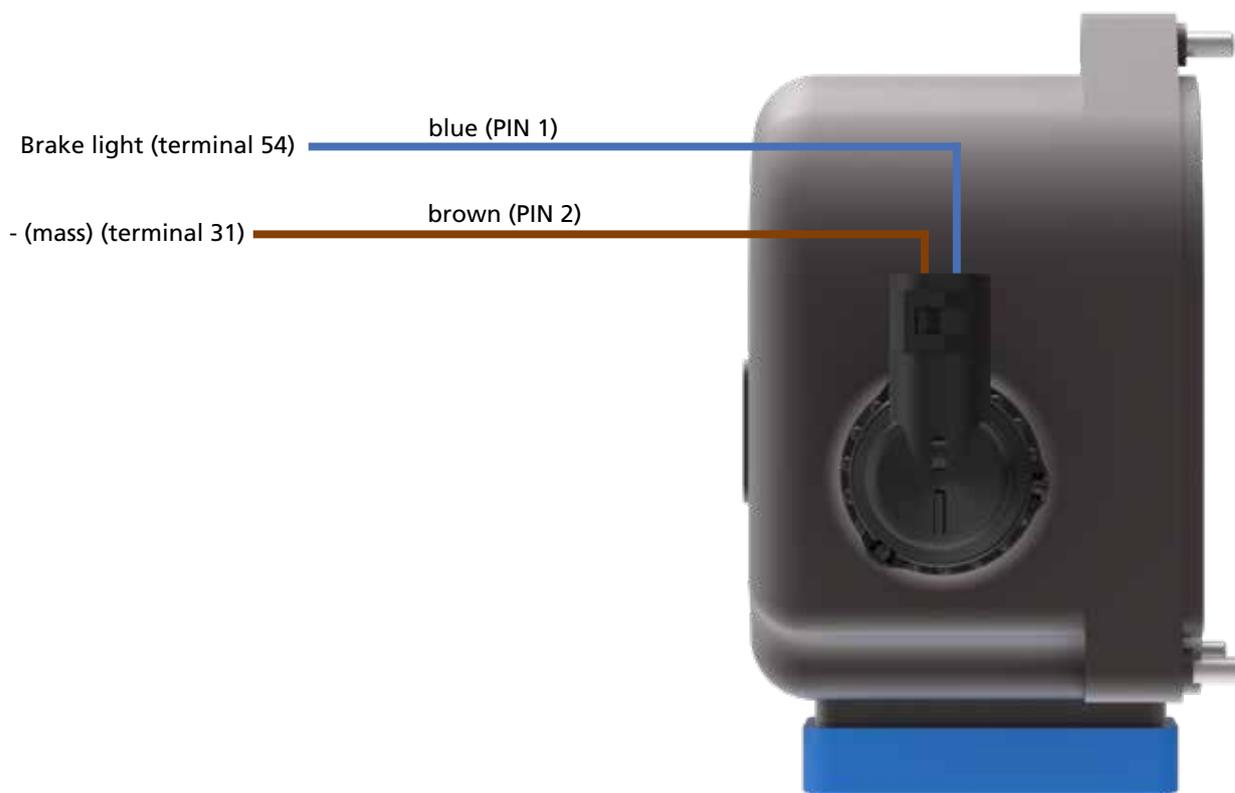
#### NOTICE



The bayonet connector and a 10m connection cable are included for products with PICO-tronic2 control with bayonet connection.

The M12x1 connection plug and a connection cable are not included and must be ordered separately.

### 7.3.4 PICO-T2 connection diagram



#### NOTICE



The bayonet connector and a 10m connection cable are included for products with PICO-T2 control with bayonet connection.

## 7.4 Lubricants

Lubricant	greases up to NLGI 2 (greases with solid content on request)
-----------	--

- Use lubricants with high-pressure additives.
- Use only lubricants of the same saponification type.
- Comply with the lubricant specifications of the machine manufacturer.
- Comply with the safety data sheet of the lubricant manufacturer. Keep the safety data sheet of the used lubricant on hand.

#### NOTICE



The lubricant flow changes with the operating temperature.

## 7.5 Lubricant filling

There are different possibilities to fill the reservoir. Refer to following paragraphs:

- [Filling at zerk with filling press \( 7.5.1: Filling at zerk with filling press\)](#) [▶ 26]
- [Filling at filling connection with filling coupling \( 7.5.2: Filling at filling connection with filling coupling\)](#) [▶ 27]
- [Filling with filling set PICO Fill \( 7.5.3: Filling with filling set PICO Fill\)](#) [▶ 27]

### Filling process

#### NOTICE



#### Contamination of the reservoir

Dirt particles that get into the reservoir can cause seizure of the pistons in the pump elements or clog lines and connected distributors.

- a) Ensure a clean environment for the filling process.
- b) Only fill with clean lubricant.

- 
- Operate the product during the filling process to avoid air inclusions in the lubricant.
  - Do not overfill the reservoir.
  - Collect leakages and dispose of them properly.
  - Check the level regularly at equal intervals during the first hours of operation. Refill clean lubricant if necessary.

## Initial filling for products with follower plate

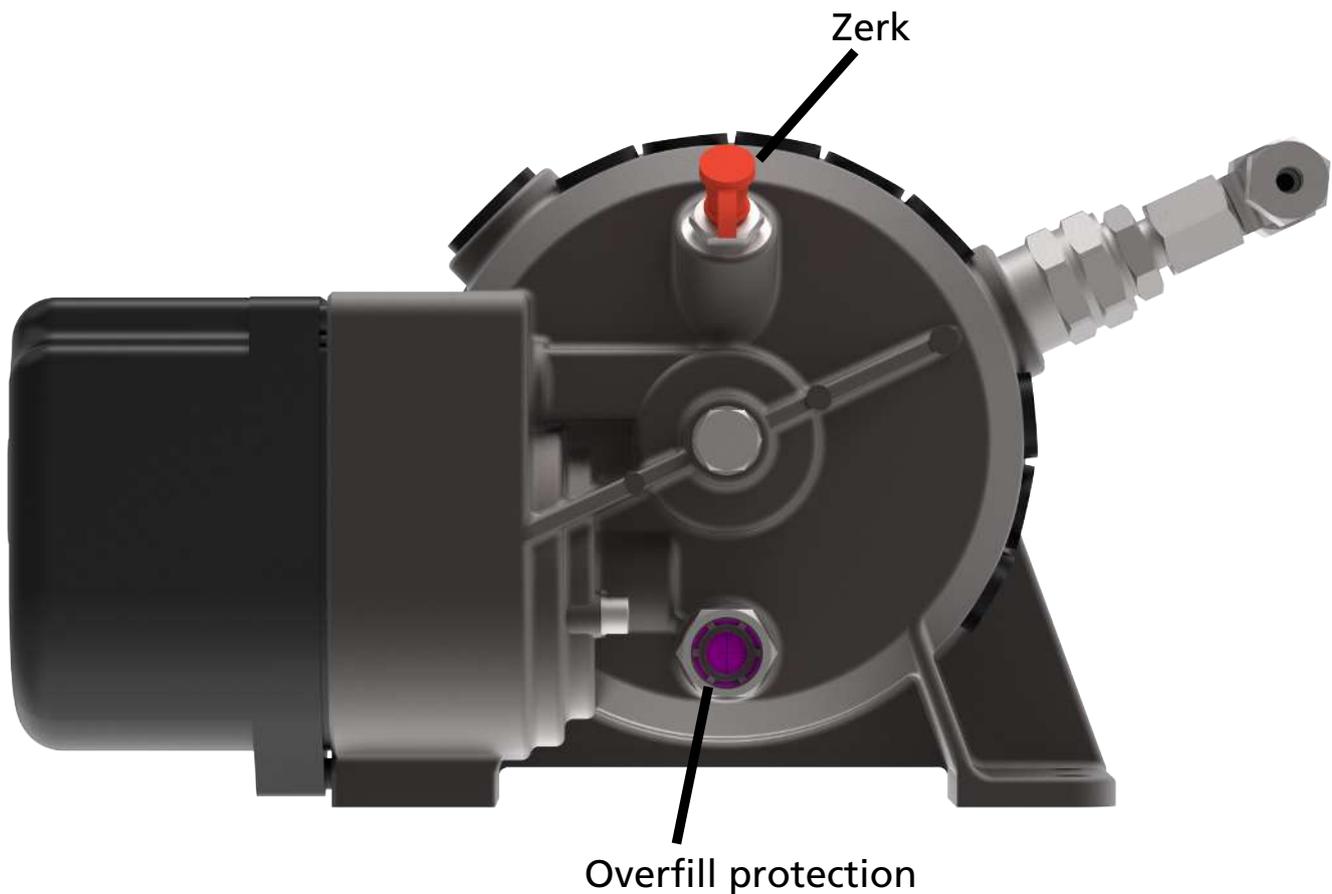
**NOTICE****Different procedure**

Products with follower plate require a different procedure for initial filling to remove the air inside the product.

a) Follow the procedure below for initial filling

Initial filling:

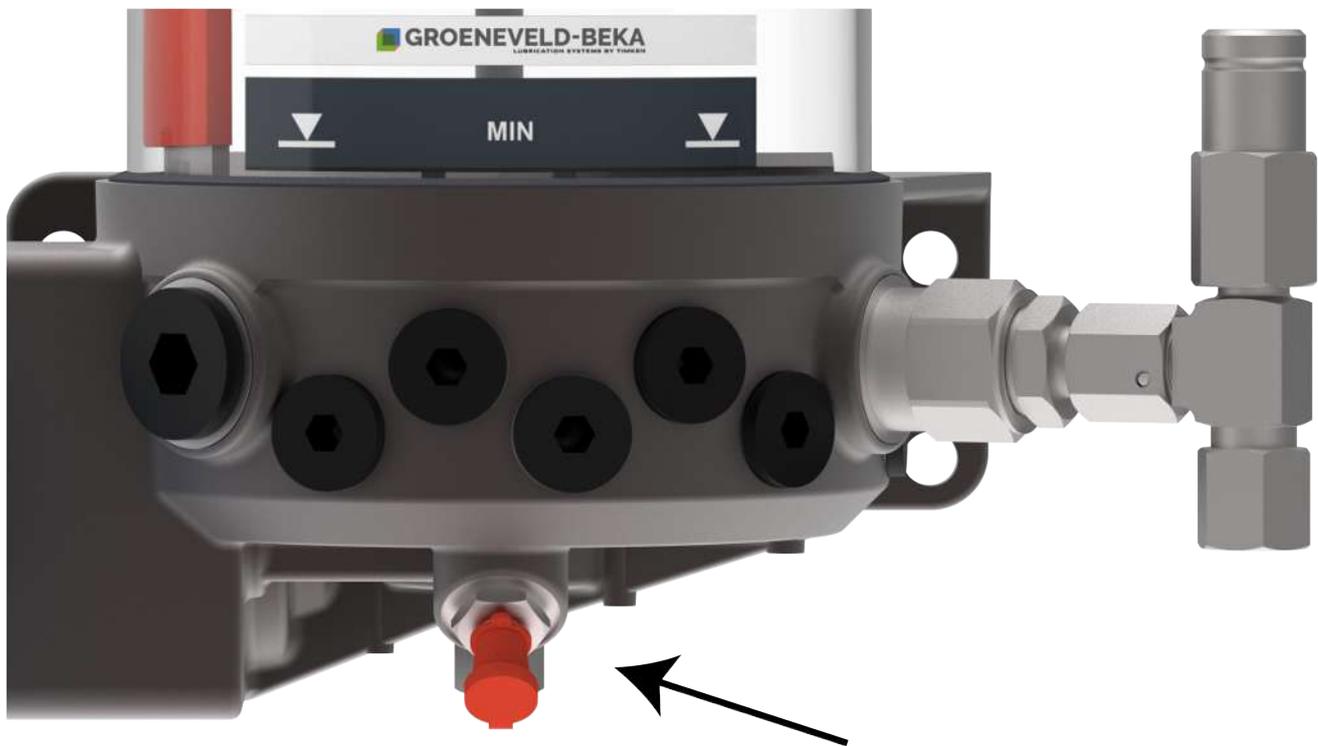
- 1) Connect the product to power supply.
- 2) Turn the product around, so that the reservoir cover is facing downwards.
- 3) Remove the overfill protection and the protective cap of the zerk.



- 4) Put the product into operation.
- 5) Operate the filling press until lubricant visibly comes out at the outlet.
- 6) Connect the filling press at the zerk.
- 7) Fill the product until lubricant comes out at the opening of the overfill protection.
- 8) Put the overfill protection back in place and tighten it with a torque of 15 Nm  $\pm$ 10%.
- 9) Turn the product around again and fill it up to the maximum level.
- 10) Put the protective cap back on the zerk.

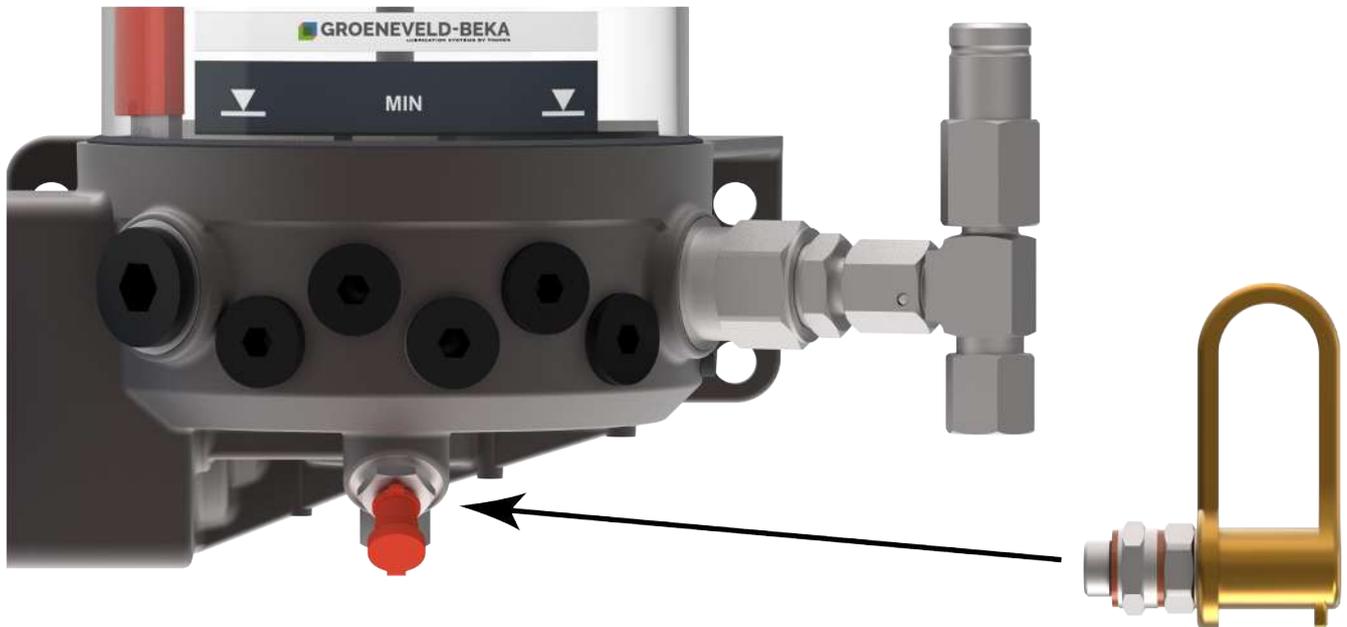
### 7.5.1 Filling at zerk with filling press

- 1) Remove the protective cap from the zerk.
- 2) Connect a suitable filling press (manually operated or pneumatic) at the zerk.
- 3) Fill up to maximum level.
- 4) Put the protective cap on the zerk again after filling.



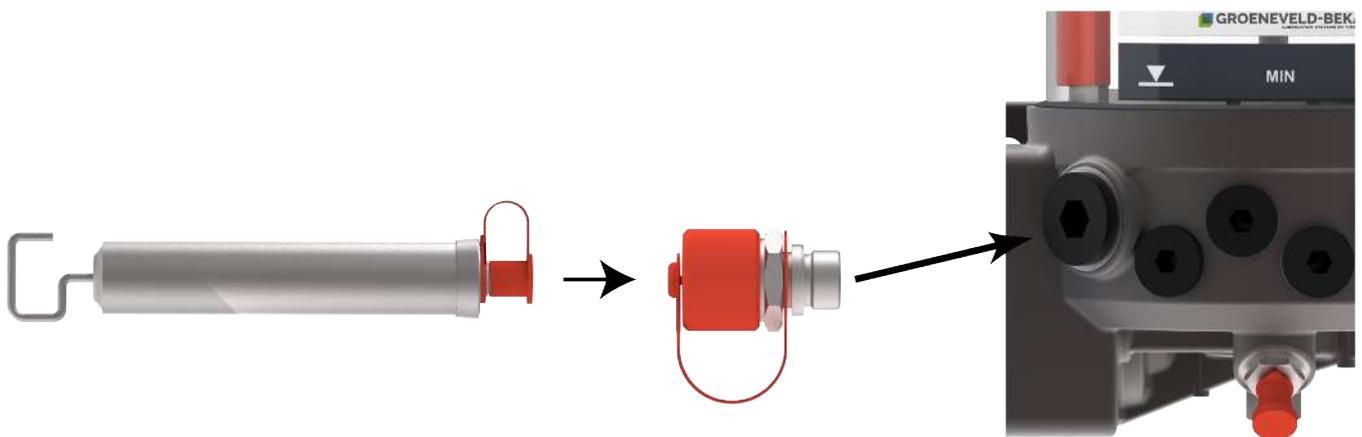
### 7.5.2 Filling at filling connection with filling coupling

- 1) Remove the screw plug or the zerk.
- 2) Connect a filling coupling G1/4.
- 3) Connect a suitable filling pump to the filling coupling.
- 4) Fill up to maximum level.
- 5) Disconnect the filling pump from the filling coupling.
- 6) Remove the filling coupling from the outlet.
- 7) Screw the screw plug back into the outlet.



### 7.5.3 Filling with filling set PICO Fill

- 1) Remove the M20x1,5 screw plug.
- 2) Screw the filling connection into the outlet.
- 3) Operate the filling press until the lubricant visibly comes out (approximately 10 mm).
- 4) Connect the filling press at the filling connection.
- 5) Fill up to maximum level.
- 6) Disconnect the filling press from the filling connection.
- 7) Remove the filling connection from the outlet.
- 8) Screw the screw plug back into the outlet.



## 7.6 Vent the lubrication system

- Vent the lubrication system with initial start-up and after each lubricant change.
- Only vent the lubrication system when depressurized and with open outlets.
- Operate the product until the lubricant comes out from the pressure connection free of air bubbles.

## 7.7 Line assembly

Please comply with the following for line assembly:

- Lay out the lines professionally.
- Ensure that fittings are tight against pressure.
- All components must be approved for the maximum operating pressure as stated in the technical data.

## 8 Control unit and Settings

### 8.1 General settings

You can control progressive lubrication systems, multi-line lubrication systems and mixed lubrication systems with an integrated control unit. The following integrated control units are available for the product:

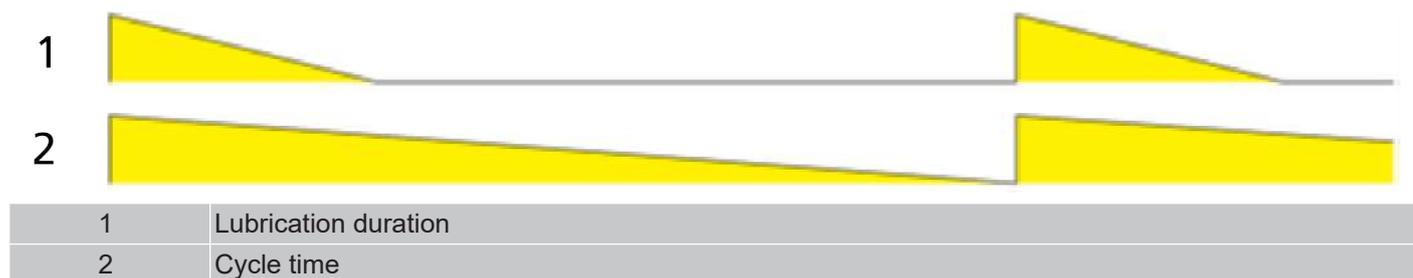
- PICO-troniX1
- PICO-tronic2
- PICO-T2

You can also retrofit an integrated control unit.

All the integrated control unit work with lubrication cycles.

Lubrication cycle = cycle time + lubrication duration (pump operating time)

Lubrication cycle:



#### NOTICE



For some actions you will need the diagnosis software BEKA-DiSys, like e.g. for changing the setting ranges or deactivation of a function. Find the current version under [www.groeneveld-beka.com](http://www.groeneveld-beka.com)

## 8.2 PICO-T2

The PICO-T2 is an integrated control unit.

You can set the lubrication duration time-dependent.

The PICO-T2 is especially suitable when the product is attached to a vehicle and has no continuous voltage available.

### Functional description

Sticker (example) in inspection window



Switch with detents to set the lubrication duration



Frame of inspection window

Inspection window

Voltage supply for the PICO-T2 comes from the brake lights of the vehicle. The product conveys lubricant when the vehicle brakes. With each brake operation starts a lubrication for the set duration.

## Setting the parameters

You can change the lubrication duration at the indexing switch in the inspection window.

- 1) Detach the frame of the inspection window with a flat screwdriver.
- 2) Detach the four recessed head screws and take off the transparent inspection window.

## NOTICE



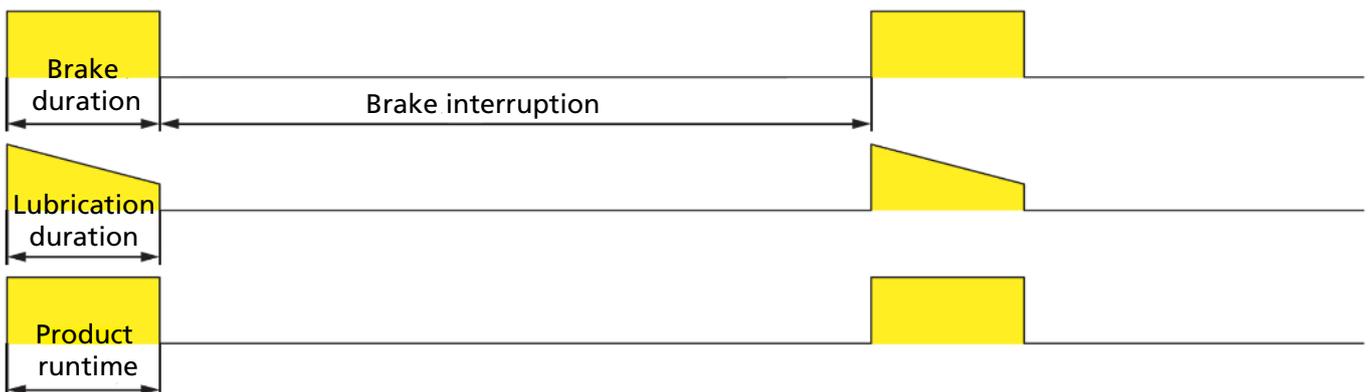
### Water in the control unit

If you do not reinstall inspection window and the frame properly after setting the parameters, water can get into the control unit and destroy it.

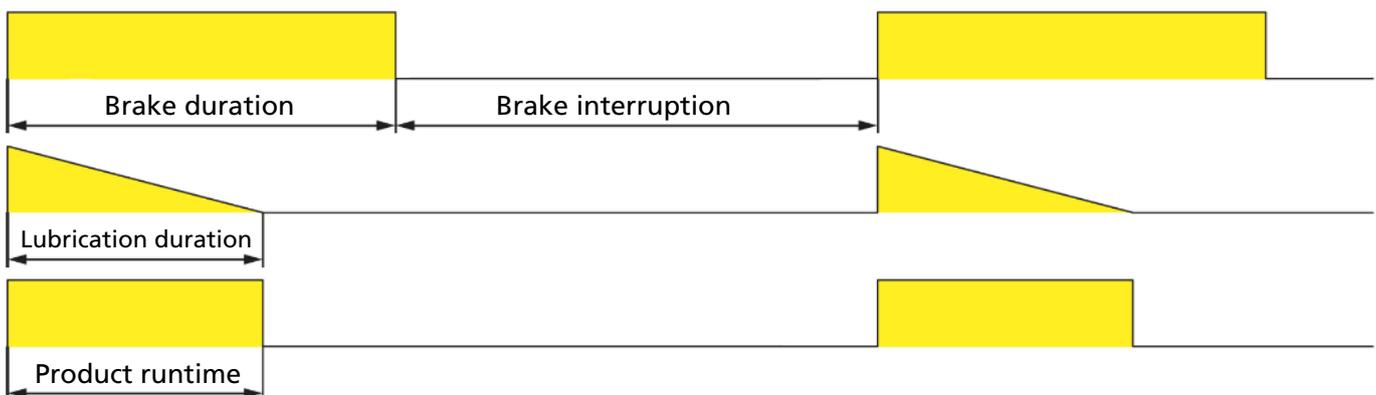
## Operational mode

### Lubrication duration time-dependent

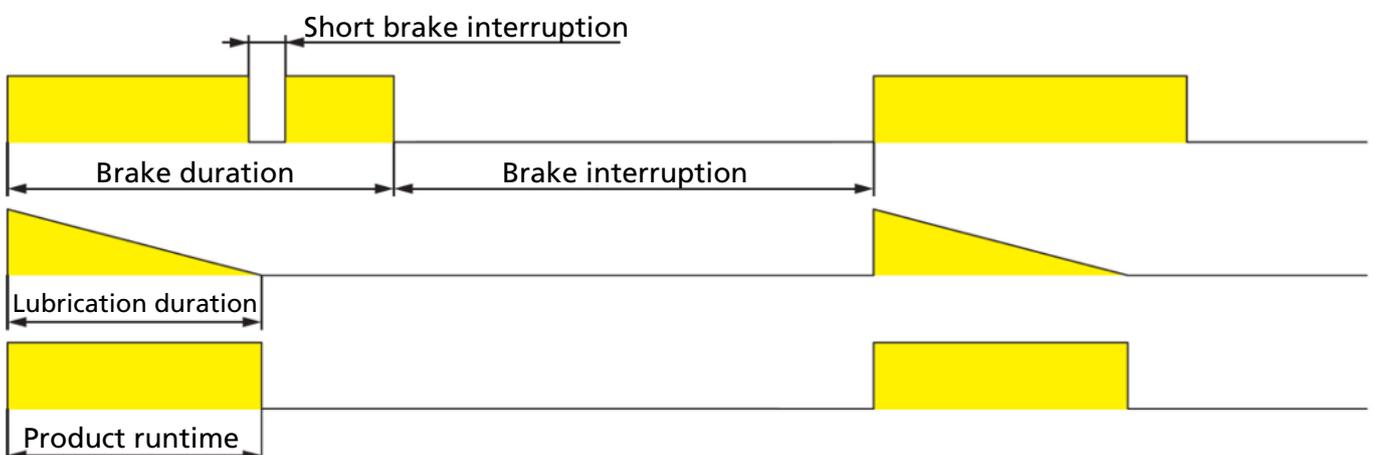
With this operational mode you can set the lubrication duration in seconds.



The product is switched off upon completion of the lubrication duration even if the brake application takes longer than the lubrication duration.



Just a short interruption of the brake operation (< 1 s) does not affect the process.



Possible setting values for the time-dependent lubrication duration:

- 1s, 2s
- 4 s, 6 s, 8 s, 10 s
- 14 s, 18 s, 22 s, 26 s, 30 s
- 36 s, 42 s, 48 s, 54 s, 60 s

## 8.3 PICO-tronic2

The PICO-tronic2 is an integrated control unit.

You can set the cycle to be time-dependent or clock pulse-dependent.

You can set the lubrication duration to be time-dependent, clock pulse-dependent, or revolution-dependent.

The PICO-tronic2 emits signals via a red and a green LED in the inspection window of the housing. Refer to [Signal indicators PICO-tronic2 \( 12.2: Signal indicators\) \[► 48\]](#) for the different signals.

### Operational database

The PICO-tronic2 features an operational database in which the following values are stored:

- Data on the control unit, such as type, version, serial number, and production date
- Current settings, such as cycle time, operational mode, cycle time, lubrication duration and monitoring times
- Statistical values, including operation hours, number of intermediate lubrications, number of different errors and diagnoses
- Date and time of the last diagnosis
- Error log of the last 100 errors with information on type, time, and date
- Event log of the last 100 settings with time and date

You can change the operational mode for lubrication duration, the setting ranges for cycle time and lubrication duration, and the monitoring time with the diagnosis software BEKA-DiSys.

## Functional description



A lubrication process will start with the first connection of the integrated control unit.

When the voltage is switched on (ignition on) the red and the green LED in the inspection window will glow for 1,5 seconds and signal function standby of the control unit.

If the voltage is interrupted (ignition off) during a cycle or the lubrication duration, the data will be stored in the operational database of the control unit. When voltage is applied again, the cycle will continue from that point where it has been interrupted.

You can actuate an intermediate lubrication at any time by pushing the button for intermediate lubrication when voltage is applied. The data from the current lubrication cycle will be deleted and a new cycle will start. Some errors require a reset after troubleshooting. Push the button for intermediate lubrication. The product will start a new lubrication cycle.

## Setting the parameters

### NOTICE



Order and exchange the sticker in the inspection window of the protective housing when you have changed the parameters.

You can change the lubrication duration and cycle time within a setting range at the indexing switches in the inspection window.

- 1) Detach the frame of the inspection window with a flat screwdriver.
- 2) Detach the four recessed head screws and remove the transparent inspection window.

### NOTICE



#### Water in the control unit

If you do not reinstall inspection window and the frame properly after setting the parameters, water can get into the control unit and destroy it.

### Cycle time

You can set the cycle time in hours or minutes, depending on the selected setting range. Set the cycle time with the right indexing switch.



1	Lubrication duration
2	Cycle time

Possible setting ranges for the cycle time:

- 0,5 to 8 h (16 notches, in increments of 0,5 h)
- 1 to 16 min (16 notches, in increments of 1 min)
- 2 to 32 min (16 notches, in increments of 2 min)
- 2 to 32 h (16 notches, in increments of 2 h)

## Operational modes

### Lubrication duration time-dependent

With this operational mode you can set the lubrication duration in minutes or seconds, depending on the selected setting range.



1	Lubrication duration time-dependent
2	Cycle time

Possible setting ranges for time-dependent lubrication duration:

- 1 to 16 min (16 notches, in increments of 1 min)
- 2 to 32 min (16 notches, in increments of 2 min)
- 2 to 32 s (16 notches, in increments of 2 s)

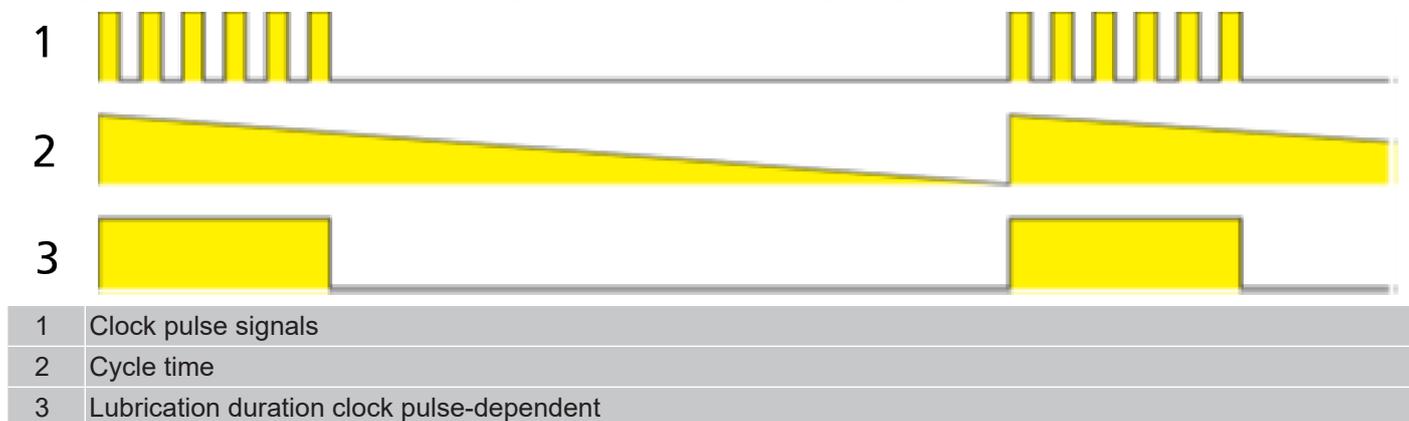
Set the lubrication duration within the selected setting range with the left indexing switch.

### Lubrication duration clock pulse-dependent

In this operational mode, you can determine the lubrication duration by the number of incoming clock pulses from a signaling device. The signaling device can be a proximity switch at a progressive distributor for example. The control unit signals error if it does not receive a clock pulse signal within an adjustable monitoring time (default setting 12 min). Refer to [Signal indicators PICO-tronic2 \( 12.2: Signal indicators\) \[▶ 48\]](#) for more information.

Push the button for intermediate lubrication to reset the error after troubleshooting.

The signaling device can be connected at the left connection M12x1 on the protective housing. You can change setting range and clock pulse monitoring time with the BEKA-DiSys diagnosis software.



Possible setting ranges for clock pulse-dependent lubrication duration:

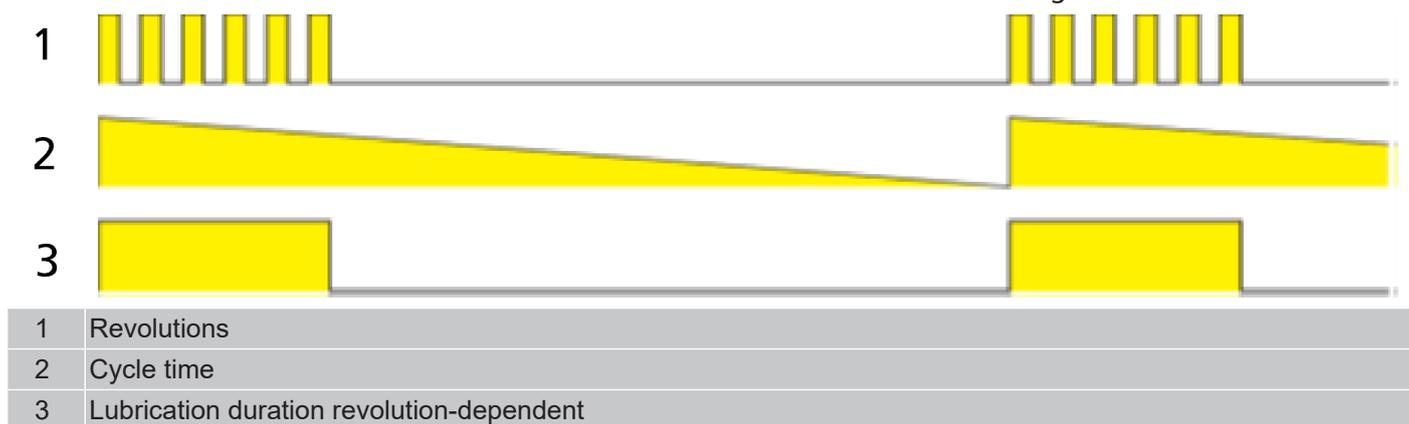
- 1 to 16 clock pulses (16 notches, in increments of 1 clock pulse)
- 17 to 32 clock pulses (16 notches, in increments of 1 clock pulse)
- 33 to 48 clock pulses (16 notches, in increments of 1 clock pulse)

Set the lubrication duration within the selected setting range with the left indexing switch.

### Lubrication duration revolution-dependent

In this operational mode you can set the lubrication duration by the number of counted pump revolutions. A sensor in the product emits a signal to the control unit with each pump revolution. The control signals error if it does not receive a signal within an adjustable monitoring time (default setting 30 s). Refer to [Signal indicators PICO-tronic2 \( 12.2: Signal indicators\) \[▶ 48\]](#) for more information.

Push the button for intermediate lubrication to reset the error after troubleshooting.



Possible setting ranges for revolution-dependent lubrication duration:

- 1 to 16 revolutions (16 notches, in increments of 1 revolution)
- 10 to 160 revolutions (16 notches, in increments of 10 revolutions)
- 170 to 320 revolutions (16 notches, in increments of 10 revolutions)

Set the lubrication duration within the selected setting range with the left indexing switch.

## NOTICE



### BEKA-DiSys diagnosis software

You can change setting ranges or the revolution monitoring time (where applicable) with the BEKA-DiSys diagnosis software.

## Special functions

### Adaption to the operating conditions

This function is available in all three operational modes.

Within 30 s after applying the voltage, you can customize the lubrication intervals with a 3-position rocker switch. You can order this switch separately.

Operating conditions:

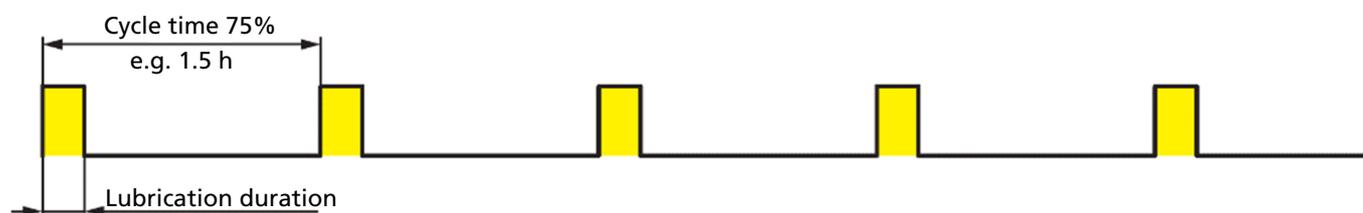
Light – Positioned on light load, the lubrication points receive the lubricant in longer intervals.



Medium – Positioned on medium load, the lubrication points receive the lubricant in the set interval.



Heavy duty – Positioned on heavy duty, the lubrication points receive the lubricant in shorter intervals.



Turn the voltage (ignition) off and on after you have selected your appropriate switch position or actuate an intermediate lubrication.

### Cycle locked

This function is available in all three operational modes.

The function is suitable for applications where machine parts or attachments only need lubrication when they are under operation.

## NOTICE



If you wish to use this function you cannot connect the rocker switch for adaption to the operating conditions at the same time.

If machines or vehicle parts are temporarily not in operation, the cycle is locked. The green LED in the inspection window starts flashing. Refer to [Signal indicators PICO-tronic2. \( 12.2: Signal indicators\) \[► 48\]](#)

If this happens during lubrication, the cycle will only be locked after completion of the lubrication duration. After the lock is released, the cycle is ended as normal.

If this happens outside lubrication duration, the cycle is simply stopped at that point. After the lock is released, the cycle will be continued where it has been interrupted.

### Insufficient lubrication

This function is available in the operational mode: clock pulse-dependent.

Insufficient lubrication occurs when the lubrication cannot be completed during one cycle. The product needs more time for processing the lubrication duration than available by the set cycle time.

The control unit signals error, but does not switch off the product. See [Signal indicators PICO-tronic2 \( 12.2: Signal indicators\) \[► 48\]](#) for more information.

The control unit resets this error automatically if one lubrication is completed during the next cycle.

## **8.4 PICO-troniX1**

The PICO-troniX1 is an integrated control unit.

You can set the cycle time to be time-dependent.

You can set the lubrication duration to be either time-dependent or revolution-dependent.

With the PICO-troniX1 you can evaluate the following:

- Level monitoring, only for product version with follower plate

The PICO-troniX1 emits signals via a red and a green LED in the inspection window of the housing. Refer to [Signal indicators PICO-troniX1 \( 12.2: Signal indicators\) \[► 47\]](#) for the different signals.

### **Operational database**

The PICO-troniX1 features an operational database in which the following values are stored:

- Data on the control unit, such as type, version, serial number, and production date
- Current settings, such as cycle time, operational mode for lubrication duration, lubrication duration and monitoring times
- Statistical values, including operation hours, number of intermediate lubrications, number of different errors and diagnoses
- Date and time of the last diagnosis

You can change the operational mode for lubrication duration, the setting ranges for cycle time and lubrication duration, and the monitoring time with the diagnosis software BEKA-DiSys.

## Functional description



A lubrication process will start with the first connection of the integrated control unit.

When voltage is switched on (ignition on), the red and the green LED in the inspection window will glow for 1,5 seconds and signal function standby of the control unit.

If the voltage is interrupted (ignition off) during a cycle or the lubrication duration, the data will be stored in the operational database of the control unit. When voltage is applied again, the cycle will continue from that point where it has been interrupted.

You can actuate an intermediate lubrication at any time by pushing the button for intermediate lubrication when voltage is applied. The data from the current lubrication cycle will be deleted and a new cycle will start.

Some errors require a reset after troubleshooting. Push the button for intermediate lubrication. The product will start a new lubrication cycle.

## Setting the parameters

### NOTICE



Order and exchange the sticker in the inspection window of the protective housing when you have changed the parameters.

You can change the lubrication duration and cycle time within a setting range at the indexing switches in the inspection window.

- 1) Detach the frame of the inspection window with a flat screwdriver.
- 2) Detach the four recessed head screws and remove the transparent inspection window.

### NOTICE



#### Water in the control unit

If you do not reinstall the inspection window and the frame properly after setting the parameters, water can get into the control unit and destroy it.

### Cycle time

You can set the cycle time in hours or minutes, depending on the selected setting range. Set the cycle time with the right indexing switch.



1	Lubrication duration
2	Cycle time

Possible setting ranges for time-dependent cycle time:

- 0,5 to 8 h (16 notches, in increments of 0,5 h)
- 1 to 16 min (16 notches, in increments of 1 min)
- 2 to 32 min (16 notches, in increments of 2 min)
- 2 to 32h (16 notches, in increments of 2 h)

## Operational modes

### Lubrication duration time-dependent

With this operational mode you can set the lubrication duration in minutes or seconds, depending on the selected setting range.



1	Lubrication duration time-dependent
2	Cycle time

Possible setting ranges for time-dependent lubrication duration:

- 1 to 16 min (16 notches, in increments of 1 min)
- 2 to 32 min (16 notches, in increments of 2 min)
- 2 to 32 s (16 notches, in increments of 2 s)

Set the lubrication duration within the selected setting range with the left indexing switch.

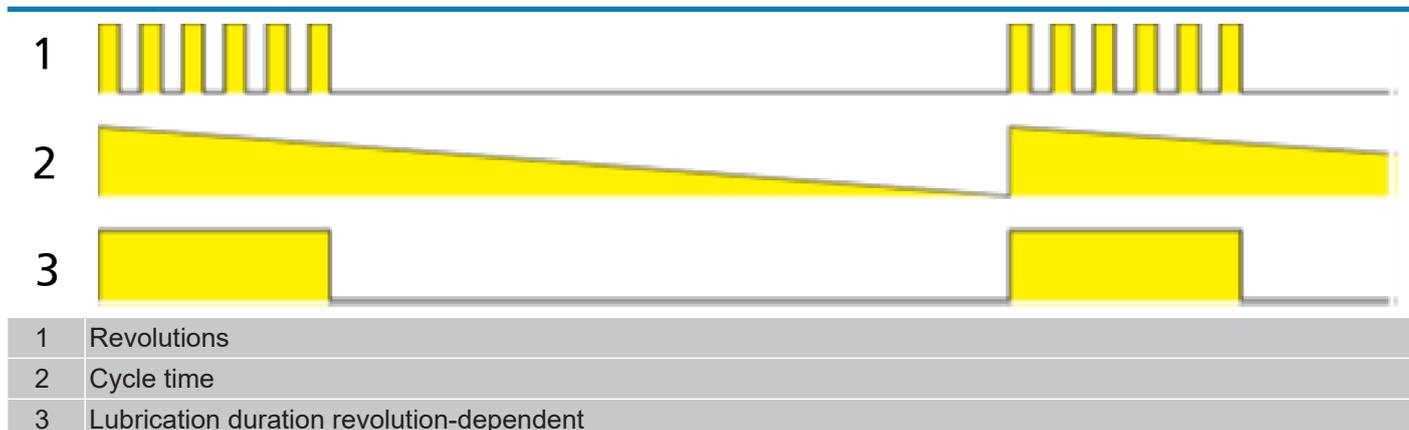
## Lubrication duration revolution-dependent

In this operational mode you can set the lubrication duration by the number of counted pump revolutions. A sensor in the product emits a signal to the control unit with each pump revolution. The control unit signals an error if it does not receive a signal within a monitoring time (default setting 30 s). Refer to [Signal indicators PICO-troniX1 \( 12.2: Signal indicators\) \[▶ 47\]](#) for more information.

### NOTICE



You can change setting ranges or the revolution monitoring time (where applicable) with the BEKA-DiSys diagnosis software.



Possible setting ranges for revolution-dependent lubrication duration:

- 1 to 16 revolutions (16 notches, in increments of 1 revolution)
- 10 to 160 revolutions (16 notches, in increments of 10 revolutions)
- 170 to 320 revolutions (16 notches, in increments of 10 revolutions)

Set the lubrication duration within the selected setting range with the left indexing switch.

### Special functions

#### Insufficient lubrication

This function is available in the operational modes: revolution-dependent, clock pulse-dependent.

Insufficient lubrication occurs when the lubrication cannot be completed during one cycle. The product needs more time for processing the lubrication duration than available by the set cycle time.

The control unit signals error, but does not switch off the product. See [Signal indicators PICO-troniX1 \( 12.2: Signal indicators\) \[▶ 47\]](#) for more information.

The control unit resets this error automatically if one lubrication is completed during the next cycle.

### Level monitoring

Please refer to [Level monitoring \( 7.2: Level monitoring\) \[▶ 18\]](#)

### Pressure monitoring

If you use the product in a progressive lubrication system and with one of the following pump elements:

- PE-60 F
- PE-120 F
- PE-170 F
- PE-120 FV

you can secure the individual lubrication circuits with a pressure limiting valve attached to the pump element.

With a micro switch attached to the pressure limiting valve you can monitor the operating pressure in the lubrication system.

The micro switch is triggered, if the pressure within the lubrication system exceeds the value set at the pressure limiting valve.

You can evaluate the micro switch signal customer-specific, like to have the product switched off.

## 9 Start-up and Operation

### WARNING



#### Movable, rotating, hot or cold parts

Movable, rotating, hot or cold parts of the product can cause serious injuries.

- a) Protect movable, rotating, hot or cold parts of the product against contact.

Please check the following before you start up the product:

- Clean environment
- Reservoir filled with suitable lubricant, refer to [Lubricants \( 7.4: Lubricants\) \[▶ 23\]](#). As standard, you have received the product with a basic filling. If not, please follow the procedure suitable for your product version. Refer to [Lubricant filling \( 7.5: Lubricant filling\) \[▶ 24\]](#).
- Lubrication system vented, refer to [Vent the lubrication system \( 7.6: Vent the lubrication system\) \[▶ 28\]](#).
- Direction of rotation check as follows:

#### Direction of rotation check

Compare the direction of rotation of the paddle with the directional arrow on the level sticker. If the direction of rotation is wrong, check the electrical connections and change them if necessary.

### NOTICE



#### Wrong direction of rotation

Operation with the wrong direction of rotation will result in damage of motor and the product.

## 10 Maintenance

### WARNING



#### Risk of burns due to hot surfaces

- a) Check the surface temperature of the product.
- b) Wear heat-resistant gloves.

Before any maintenance work or repair, do the following:

- 1) Disconnect the product from voltage.
- 2) Depressurize the product.
- 3) Put the product at standstill.
- 4) Make sure the product cannot be restarted during maintenance.
- 5) Clean soiled or contaminated surfaces. Wear protective equipment if necessary.

### 10.1 General Maintenance

#### Preventive Maintenance

Regular inspections and maintenance are essential to ensure optimal performance and longevity of the product.

- Keep to the inspection intervals. Groeneveld-BEKA recommends to replace wear parts as listed in the table.

### NOTICE



#### Maintenance intervals

Independent from the listed intervals for inspection and maintenance, define the specific intervals according to the operating conditions.

- a) Review the specified intervals regularly.
- b) Ensure that safety and function of the product are not affected if you adjust intervals.

- Read also the log files of errors and warnings as part of the maintenance work.

Operation	Interval					
	1 month	3 months	1 year	2 years	5 years	8-10 years
Check lubricant quantity and refill if necessary		X				
Check lubricant and compressed air lines		X				
Check visually the fastening of all parts of the lubrication system		X				
Function test		X				
Clean the lubricant lines with oil			X			
Pump element					X	
Replace the pump base body and according seals						X
Replace seals of reservoir cover						X
Replace hoses						X

#### Extraordinary Maintenance

Do not carry out any extraordinary maintenance task. Only qualified personnel of Groeneveld-BEKA is authorized to carry out extraordinary maintenance.

## 10.2 Lubricant change

### NOTICE



Pay attention to utmost cleanliness when filling lubricant.

- Carry out the lubricant change according to the specifications of the lubricant manufacturer.
- Ambient influences like temperature or pollution might effect the recommended intervals.
- Only use lubricants which are suitable for the product, the machine and the operational conditions.
- Ensure that the lubricant quality is the same as of the previously used lubricant.
- Drain and clean the reservoir even with good compatibility of the lubricants.

# 11 Cleaning

## Basics

Clean the product regularly to ensure proper function.

Only use cleaning detergents that do not damage the product.

## Interior cleaning

You need to clean the inside of the product only if incorrect or contaminated lubricants accidentally enters the product. Please contact Groeneveld-BEKA for assistance.

## Exterior cleaning

### **WARNING**



#### **Risk of electric shock**

- a) Switch off electrical power supply.

---

Make sure no cleaning fluid enters the interior of the product during cleaning.

Mind the IP rating of the product when cleaning.

## 12 Troubleshooting

### 12.1 General Troubleshooting

Error	Possible cause	Possible troubleshooting
Product does not operate	Fuse defective	Replace fuse
	Electrical line interrupted	Replace electrical line
	Product defective	Replace product
	Integrated control unit defective	Replace integrated control unit
Product operates, but does not deliver	Air bubbles in the delivery piston	Vent the product
	Air bubbles in the reservoir	Vent the product
	Reservoir empty	Fill reservoir
	Pump element defective	Replace pump element
	Integrated control unit defective	Replace integrated control unit
No lubricant collar at all lubrication points	Product does not operate	See error "Product does not operate"
	Lubrication system blocked	See error "Lubricant leakage at the pressure limiting valve"
	Lubrication time (product operation time) too short	Extend lubrication time
	Cycle time too long	Reduce cycle time
	Error "Insufficient lubrication"	Trigger intermediate lubrication 1 to 2 times and correct settings
No lubricant collar at some lubrication points	Supply lines to secondary distributors burst or leaky	Replace lines
	Screw connections leaky	Retighten or replace screw connections
Speed of the product reduced	High system pressure	Check lubrication system / lubrication points (no damage)
	Supply voltage too low	Check supply voltage
Lubricant leakage at the pressure limiting valve	System pressure too high	Check lubrication system
	Progressive distributor blocked	Replaced progressive distributor
	Lubrication system blocked	Repair blocked / fixed lubrication point
	Valve spring broken	Replace pressure limiting valve
Level monitoring sends a signal although the reservoir is full	Level monitoring defective	Send the product to Groeneveld-BEKA to repair
	Integrated control unit defective	Replace integrated control unit
Product does not switch off although the reservoir is empty	Level monitoring defective	Send the product to Groeneveld-BEKA to repair
	No level monitoring installed (devices with paddle)	Fill reservoir, ventilate product
	Integrated control unit defective	Replace integrated control unit
LEDs in the inspection window of the integrated control unit flash (see <a href="#">Signal indicators ( 12.2: Signal indicators [▶ 47])</a> )	Product operates	No error
	Cycle locked	Product is temporarily out of order
	Pulse error in operating mode clock pulse-dependent lubrication duration	Check and possibly renew the external sensor and connected cable
	Error "Insufficient lubrication"	Trigger intermediate lubrication 1 to 2 times and correct settings
	Error "line break"	Replace affected lines, retighten or replace fittings
	Error "level too low"	Fill reservoir

	Error "system pressure too high"	Check lubrication system, repair if necessary Reset error with intermediate lubrication
	Revolution error in operating mode revolution – dependent lubrication duration	Check lubrication system or product, repair if necessary Reset error with intermediate lubrication
Product functions (operating mode, cycle time or lubrication duration) do not match with the values set at the control unit	Operating mode or setting range of the integrated control unit have been changed, but the sticker in the inspection window of the protective housing not	Use diagnostic software BEKA-DiSys and adjust the settings accordingly or exchange the sticker in the inspection window

Error	Possible cause	Possible troubleshooting
Product does not operate	Fuse defective	Replace fuse
	Electrical line interrupted	Replace electrical line
	Product defective	Replace product
Product operates, but does not deliver	Air bubbles in the delivery piston	Vent the product
	Air bubbles in the reservoir	Vent the product
	Reservoir empty	Fill reservoir
	Pump element defective	Replace pump element
No lubricant collar at all lubrication points	Product does not operate	See error "Product does not operate"
	Lubrication system blocked	See error "Lubricant leakage at the pressure limiting valve"
	Lubrication time (product operation time) too short	Extend lubrication time
	Cycle time too long	Reduce cycle time
No lubricant collar at some lubrication points	Supply lines to secondary distributors burst or leaky	Replace lines
	Screw connections leaky	Retighten or replace screw connections
Speed of the product reduced	High system pressure	Check lubrication system / lubrication points (no damage)
	Supply voltage too low	Check supply voltage
Lubricant leakage at the pressure limiting valve	System pressure too high	Check lubrication system
	Progressive distributor blocked	Replaced progressive distributor
	Lubrication system blocked	Repair blocked / fixed lubrication point
	Valve spring broken	Replace pressure limiting valve
Level monitoring sends a signal although the reservoir is full	Level monitoring defective	Send the product to Groeneveld-BEKA to repair
Product does not switch off although the reservoir is empty	Level monitoring defective	Send the product to Groeneveld-BEKA to repair
	No level monitoring installed (devices with paddle)	Fill reservoir, ventilate product

## 12.2 Signal indicators

With the integrated control unit the functions of the device are displayed via two LEDs (green and red) in the viewing window of the protective housing, whereby the red LED always indicates an error in the program sequence.

The functions of the device can also be displayed via externally installed signal lamps, but these must be ordered separately.

If several errors occur simultaneously, they are displayed one after the other with a pause of approx. 2 seconds.

### Signal indicators PICO-troniX1:

Signal indicators		Function
LED red	<p>Ready for operation 1,5 s</p> <p>LED red: ON (red bar), OFF</p> <p>LED green: ON (green bar), OFF</p>	Shows function standby when voltage is switched on for the first time
LED red	<p>Lubrication cycle</p> <p>LED red: ON, OFF</p> <p>LED green: ON (green bar), OFF</p> <p>During the entire lubrication</p>	Lubrication cycle
LED red	<p>Until lubricant is refilled</p> <p>LED red: ON (red bar), OFF</p> <p>LED green: ON, OFF</p>	Error "low level" (only for products with follower plate)
LED red	<p>Error "Insufficient lubrication"</p> <p>LED red: ON (pulsed), OFF</p> <p>LED green: ON (pulsed), OFF</p> <p>1 s 1 s</p>	Error "Insufficient lubrication"
LED red	<p>Revolution error in operating mode revolution-dependent lubrication duration</p> <p>LED red: ON (pulsed), OFF</p> <p>LED green: ON, OFF</p> <p>1 s 1 s</p>	Revolution error in operating mode revolution-dependent lubrication duration
LED red	<p>Test lubrication (permanent lubrication)</p> <p>To initiate permanent lubrication for service purposes in the operating mode time-dependent lubrication duration, the lubrication duration must be set higher than the cycle duration.</p> <p>LED red: ON (pulsed), OFF</p> <p>LED green: ON (pulsed), OFF</p> <p>1 s 1 s</p>	Test lubrication (permanent lubrication) To initiate permanent lubrication for service purposes in the operating mode time-dependent lubrication duration, the lubrication duration must be set higher than the cycle duration.

## Signal indicators PICO-tronic2:

Signal indicators	Function
<p>Ready for operation 1,5 s</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	Shows function standby when voltage is switched on for the first time
<p>Lubrication cycle</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p> <p>During the entire lubrication</p>	Lubrication cycle
<p>Cycle locked (is not displayed via the special function "External status signal")</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	Cycle locked (is not displayed via the special function "External status signal")
<p>Cycle error in operating mode time-dependent lubrication duration</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	Cycle error in operating mode time-dependent lubrication duration
<p>Error "low level" (only for products with follower plate)</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p> <p>Until lubricant is refilled</p>	Error "low level" (only for products with follower plate)
<p>Error "Insufficient lubrication"</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	Error "Insufficient lubrication"
<p>Revolution error in operating mode revolution-dependent lubrication duration</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	Revolution error in operating mode revolution-dependent lubrication duration
<p>Test lubrication (permanent lubrication)</p> <p>LED red ON OFF</p> <p>LED green ON OFF</p>	<p>Test lubrication (permanent lubrication)</p> <p>To initiate permanent lubrication for service purposes in the operating mode time-dependent lubrication duration, the lubrication duration must be set higher than the cycle duration.</p>

## 13 Annex

### 13.1 Pump element PE-50

#### 13.1.1 Product description

This pump element is used in piston pumps without eccentric ring. The pump element is spring-operated. It is used in multi-line lubrication systems and is intended to convey clean mineral oil and greases up to NLGI-2 without solids content. This pump element supplies the lubrication points directly. The spring return actuates the intake stroke.

The PE-50 flow rate is set to 50 mm<sup>3</sup>/stroke and cannot be adjusted.

#### Overview

Straight plug-type connection Ø6



Thread connection M10x1



Plug-type connection 90° for pipe Ø6



Pipe connection Ø4



Pipe connection Ø6



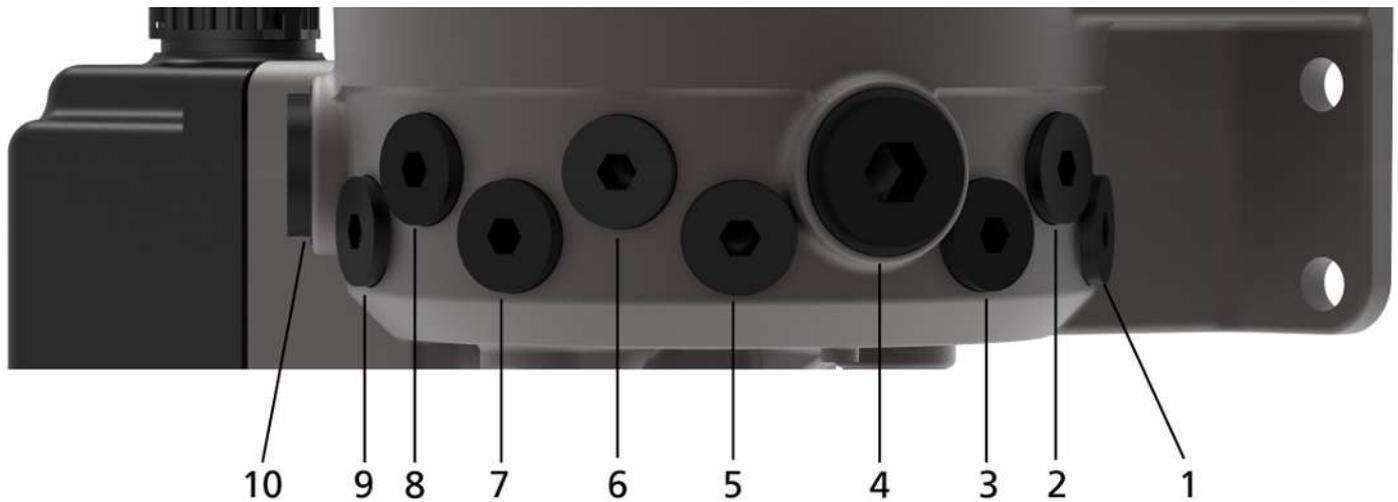
#### 13.1.2 Technical Data

Metering volume	0,05 cm <sup>3</sup> / stroke
Pressure max.	200 bar
Pressure limiting valve	without
Lubricant	Grease: up to NLGI - 2 Oil: Mineral from 40mm <sup>2</sup> /s (cSt)
Pressure outlets	pipe outlet Ø4, Ø6, M10x1
Surface	ZnNi – DIN EN ISO 9227 >700h

### 13.1.3 Pump element installation

#### Before installation

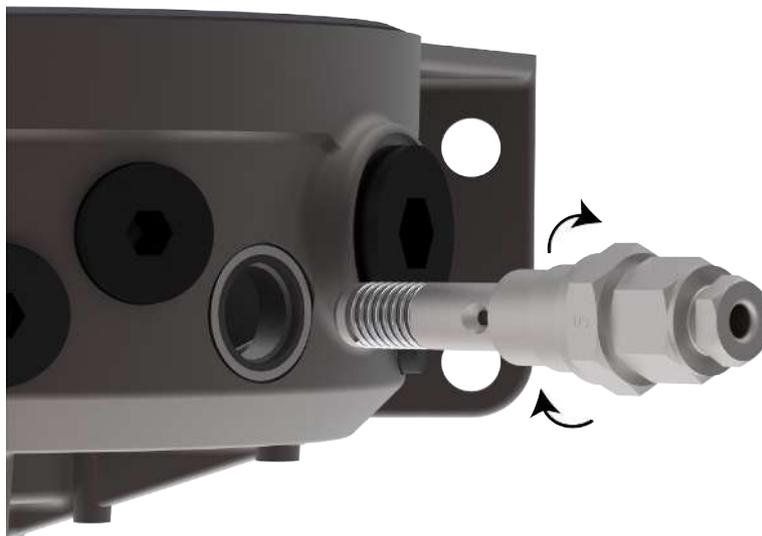
You can install this pump element into the outlets 1 to 3 and 5 to 9.



Remove the screw plug from the selected outlet. Use an Allen key with AF 6.  
If you replace a pump element, ensure to replace the seal also.

#### Installation

- 1) Disconnect the product from power supply and secure it against recommissioning.
- 2) Screw in the pump element.
- 3) Align the pump element to the desired position.
- 4) Tighten the pump element with a torque of 20 Nm  $\pm$ 10%.



- 5) Connect the product to power supply again.
- 6) Start a test run. Operate the product with open outlets until lubricant comes out without air bubbles.

#### Removal

- 1) Disconnect the product from power supply and secure it against recommissioning.
- 2) Unscrew the pump element.

### 13.1.4 Lubricants

Lubricant

Grease: up to NLGI - 2 Oil: Mineral from 40mm<sup>2</sup>/s (cSt)

- Use lubricants with high-pressure additives.
- Use only lubricants of the same saponification type.
- Comply with the lubricant specifications of the machine manufacturer.
- Comply with the safety data sheet of the lubricant manufacturer. Keep the safety data sheet of the used lubricant on hand.

#### NOTICE



The lubricant flow changes with the operating temperature.

### 13.1.5 Start-up and operation

Before starting up the product, please make sure of the following:

- the environment is clean
- pump elements are fitted correctly
- pump elements are vented

#### WARNING



##### High-pressure

If your pump element is equipped with a pressure limiting valve, lubricant might flow out at the pressure limiting valve under high pressure.

- Wear safety goggles.
- Relief the system from pressure before any work.
- Do not stay in the area of the pressure limiting valve if there is an error signalled.

### 13.1.6 General Maintenance

The product lifespan depends on the lubricant used and the environment.

If the pump loses pressure and the piston is worn out, you need to replace the pump element.

## 13.2 Pump element PE-120 F

### 13.2.1 Product description

#### PE-120 F without pressure limiting valve

This pump element is used in piston pumps without eccentric ring. The pump element is spring-operated. It is used in progressive lubrication systems and is intended to convey clean mineral oil and greases up to NLGI-2 without solids content. This pump element supplies the lubrication points either directly or delivers metered lubricant to distributors. The spring return actuates the intake stroke.

The PE-120 F flow rate is set to 0,12 cm<sup>3</sup>/stroke and cannot be adjusted.

#### DANGER



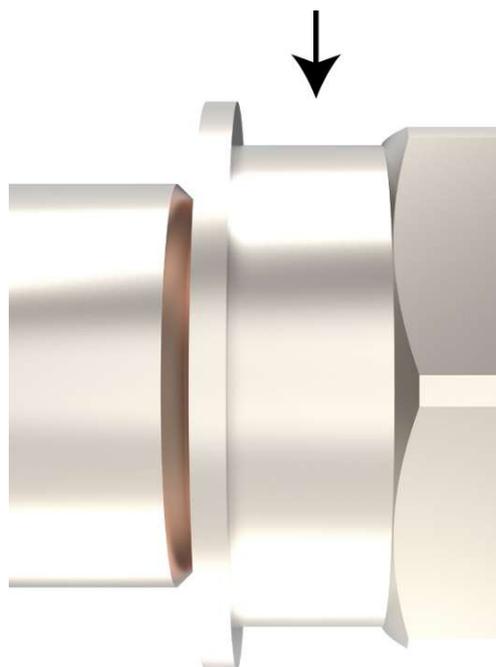
#### Unsecured lubrication circuit

System parts under high pressure

For the PE-120 F without pressure limiting valve you must secure the connected lubrication circuit by an external pressure limiting valve with an opening pressure of 290 bar as a maximum.



The PE-120 F is part of a series of pump elements PE-60 F, PE-120 F, and PE-170 F. As a marking, the PE-120F is without an additional groove.



### PE-120 F with pressure limiting valve

This pump element provides an integrated pressure limiting valve.

Maximum pressure is set to 290 bar.

The PE-120 F with pressure limiting valve flow rate is set to 0,12 cm<sup>3</sup>/stroke and cannot be adjusted.



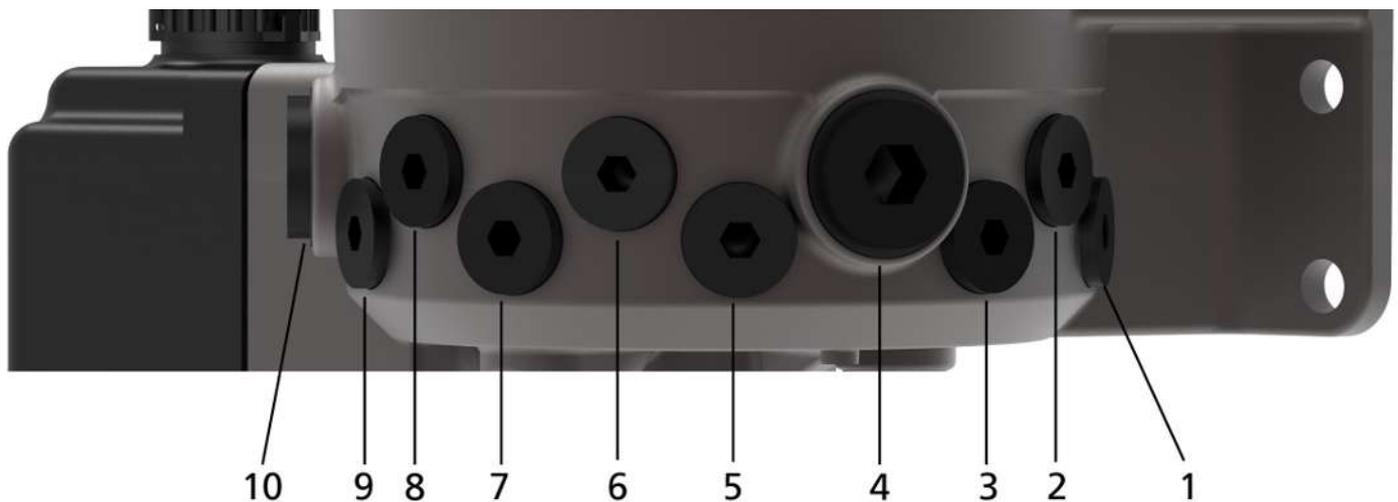
### 13.2.2 Technical Data

Metering volume	0,12 cm <sup>3</sup> / stroke
Pressure max.	350 bar
Pressure limiting valve	with or without
Pressure limiting valve adjusted to	290 bar
Lubricant	Grease: up to NLGI - 2 Oil: Mineral from 40mm <sup>2</sup> /s (cSt)
Pressure outlets	pipe outlet Ø6, Ø8, Ø10, G 1/4
Surface	ZnNi – DIN EN ISO 9227 >700h

### 13.2.3 Pump element installation

#### Before installation

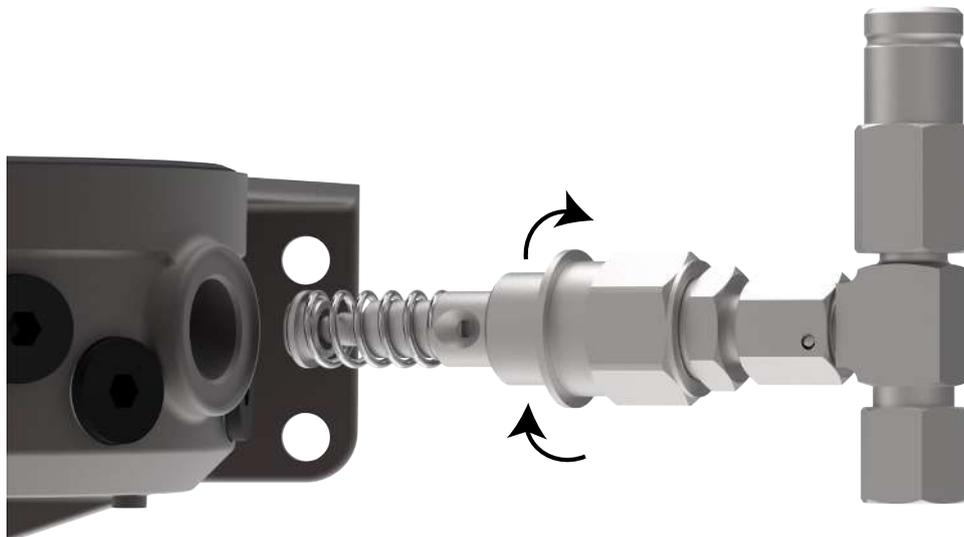
You can install this pump element into the outlets 4 and 10.



Remove the screw plug from the selected outlet. Use an Allen key with AF 10. If you replace a pump element, ensure to replace the seal also.

#### Installation

- 1) Disconnect the product from power supply and secure it against recommissioning.
- 2) Screw in the pump element.
- 3) Align the pump element to the desired position.
- 4) Tighten the pump element with a torque of  $45 \text{ Nm} \pm 10\%$ .



- 5) Connect the product to power supply again.
- 6) Start a test run. Operate the product with open outlets until lubricant comes out without air bubbles.

#### Removal

- 1) Disconnect the product from power supply and secure it against recommissioning.
- 2) Unscrew the pump element.

#### NOTICE



Make sure that the pump element piston does not remain in the pump housing.  
Make sure that the sealing ring is removed also. Do not reuse this sealing ring.

## Installation and removal of a PE-120 F with pressure limiting valve

In case you have the pump element PE-120 F equipped with a pressure limiting valve:

If necessary, remove the pressure limiting valve before installation of the pump element. Then follow the steps as described and attach it to the pump element after installation again with a torque of  $30\text{Nm} \pm 10\%$ .

The same goes for the removal of a pump element with pressure limiting valve. Unscrew the pressure limiting valve and then follow the steps for removal.

### 13.2.4 Pressure limiting valve

- By default, the pressure limiting valve is set to a pressure of 290 bar.
- If you need to attach the pressure limiting valve to the pump element, use AF 17 and tighten it with a torque of  $30\text{Nm} \pm 10\%$ .
- By default connection for the line is  $\varnothing 6$ .

Other pressures or connection variants are possible on request.



### 13.2.5 Micro switch

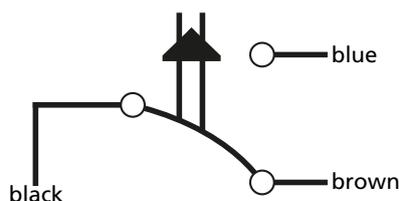
Monitoring with the micro switch is the electrical solution. It is only possible for the operation with grease.

Operate the micro switch as NC or NO contact according to the connection diagram.

The pressure limiting valve will open at a pressure of 290 bar. The switch is actuated in the case of overpressure. This can happen due to a blocked lubrication point, for instance. You can evaluate the signal with e.g. an already available machine control. You have to evaluate the signal in a way that recommissioning is only possible after malfunction remedy.

You can connect the pressure limiting valve with micro switch wither with a loose cable on one side or with a cable and angle connector M12x1.

Connection diagram for loose cable



Connection diagram for angled plug M12x1

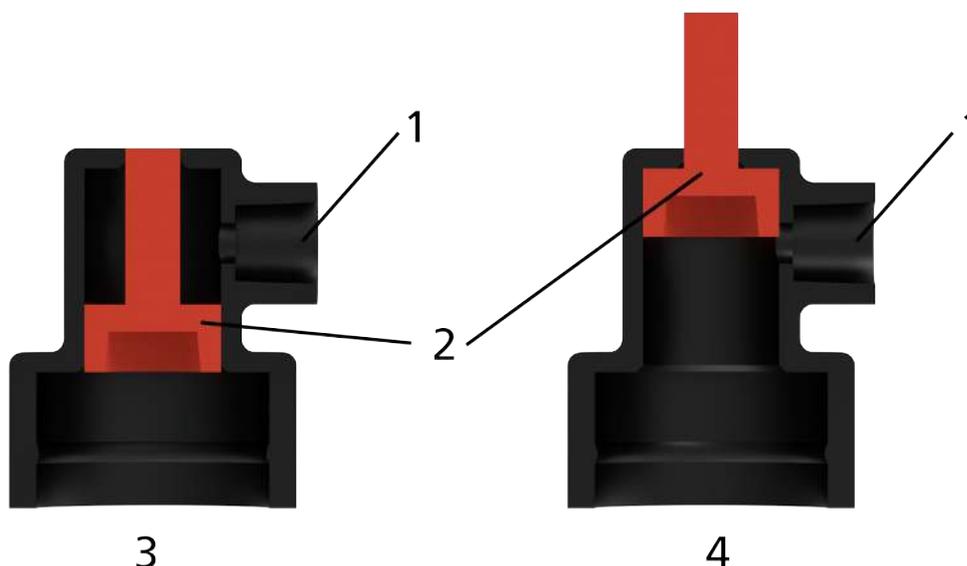


### 13.2.6 Indicator pin

Monitoring with the indicator pin is the mechanical solution. It is only possible for the operation with grease. The pressure limiting valve will open at a pressure of 290 bar and the indicator pin in the cap will be extracted by the escaping grease. You have to push back the pin manually after troubleshooting.

You have received the indicator pin either already attached to the pump element or you can easily put it on the pressure limiting valve.

Simply install a return connection to the pump reservoir in order to return the grease flowing out.



1	Return connection
2	Indicator pin
3	Function OK
4	Error

### 13.2.7 Lubricants

Lubricant	Grease: up to NLGI - 2 Oil: Mineral from 40mm <sup>2</sup> /s (cSt)
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- Use lubricants with high-pressure additives.
- Use only lubricants of the same saponification type.
- Comply with the lubricant specifications of the machine manufacturer.
- Comply with the safety data sheet of the lubricant manufacturer. Keep the safety data sheet of the used lubricant on hand.

#### NOTICE



The lubricant flow changes with the operating temperature.

### 13.2.8 Start-up and operation

Before starting up the product, please make sure of the following:

- the environment is clean
- pump elements are fitted correctly
- pump elements are vented

#### **WARNING**



##### **High-pressure**

If your pump element is equipped with a pressure limiting valve, lubricant might flow out at the pressure limiting valve under high pressure.

- a) Wear safety goggles.
- b) Relief the system from pressure before any work.
- c) Do not stay in the area of the pressure limiting valve if there is an error signalled.

### 13.2.9 General Maintenance

The product lifespan depends on the lubricant used and the environment.

If the pump loses pressure and the piston is worn out, you need to replace the pump element.



WEBSITE



CONTACT



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