

Grease lubrication pump

**F10**

Code 2510 ....

Issue 06-2020

# Original operating and assembly manual



BAL\_2510\_F10\_Grease\_lubrication\_pump\_0620EN

## Table of contents

1.	Technical data .....	3
1.1	Delivery volume .....	4
2.	Applicable documents.....	4
3.	Code .....	5
4.	General safety instructions .....	6
4.1	Safety instructions .....	6
4.2	Qualification and training of staff .....	6
4.3	Hazards in case of non-observance of the safety instructions .....	7
4.4	Obligations of the operator / user .....	7
4.5	Safety instructions for maintenance, inspection and assembly .....	7
4.6	Unauthorized modification and production of spare parts .....	7
4.7	Inadmissible modes of operation .....	8
4.8	Electrostatic discharge.....	8
4.9	General hazard warning – residual risk .....	8
5.	Intended use .....	9
6.	Scope of warranty.....	9
7.	Transport and storage .....	10
8.	Assembly instructions.....	11
8.1	Connection of lines .....	11
8.1.1	Line connection on the device .....	11
8.1.2	Line connection on the directional control valve SVE .....	11
8.2	Power connection .....	11
9.	Start up .....	12
9.1	Filling with lubricant .....	12
9.1.1	Filling via filling connection with maximum level switch or maximum-prewarning level switch .....	12
9.1.2	Filling via filling connection without maximum level switch or maximum-prewarning level switch .....	13
9.1.3	Filling via reservoir cover .....	13
9.2	Check of rotational direction .....	13
9.3	Ventilation of the lubrication system .....	14
9.4	Setting the pressure limiting valve .....	14
10.	Functional description.....	15
10.1	General .....	15
10.2	Function .....	16
10.3	Components .....	17
10.3.1	Ventilation valve .....	17
10.3.2	Cover lock .....	17
10.3.3	Level switch .....	17
10.3.4	Reservoir.....	17
10.3.5	Non-return valve .....	17
10.3.6	Pump elements .....	18
10.3.7	Terminal housing .....	18
10.3.8	Filling connection with filling filter .....	18
10.3.9	Pressure limiting valve .....	18
10.3.10	Pressure gauge.....	18
10.3.11	Pressure filter .....	18
11.	Operation .....	19
12.	Maintenance .....	19
12.1	General maintenance .....	19
12.2	Lubricant change .....	19
12.3	Exchange of pump elements .....	20
13.	Shutdown.....	22
14.	Disposal .....	22
15.	Dimensional drawing .....	22
16.	Spare part list and drawing .....	22
17.	Troubleshooting .....	23
18.	Details of the manufacturer.....	24

## 1. Technical data

### Pumpe:

Delivery rate: ..... 240 cm<sup>3</sup> per minute (14,4 l/h) or 480 cm<sup>3</sup> per minute (28,8 l/h)  
 Reservoir capacity: ..... 40 / 65 / 100 l  
 Reservoir material: ..... steel  
 Operating pressure max.: ..... 400 bar (5800 psi)  
 Adjustable pressure limiting valve : ..... from 0 bar (0 psi) up to 400 bar (5800 psi)  
 ..... set to 350 bar (5070 psi)  
 Pressure filter: ..... mesh size 300 µm, filter surface 81 cm<sup>2</sup>  
 Filling filter: ..... mesh size 500 µm, filter surface 89 cm<sup>2</sup>  
 Lubricant: ..... oil, fluid grease or greases up to NLGI cl. 3 (Grease with solids contents on request)  
 Operating temperature: ..... -25 up to +70 °C standard version (-13 °F to +158 °F)  
 ..... -40 up to +70 °C Cold climate version (-40 °F to +158 °F)  
 Outlet number: ..... 1  
 Pressure connection: ..... G1/2  
 Return connection: ..... G1/2  
 Installation position: ..... reservoir vertical, as shown  
 Weight of the dual-line version incl. control valves Dual-line (reservoir size): ..... from 115 to 125 kg (100 l) (without grease filling)

### Level monitoring incl. LED status indicator:

Operating voltage: ..... 10 - 65 V DC  
 Output function: ..... M12x1, coding A,  
 ..... NC / NO, PNP

### Motor

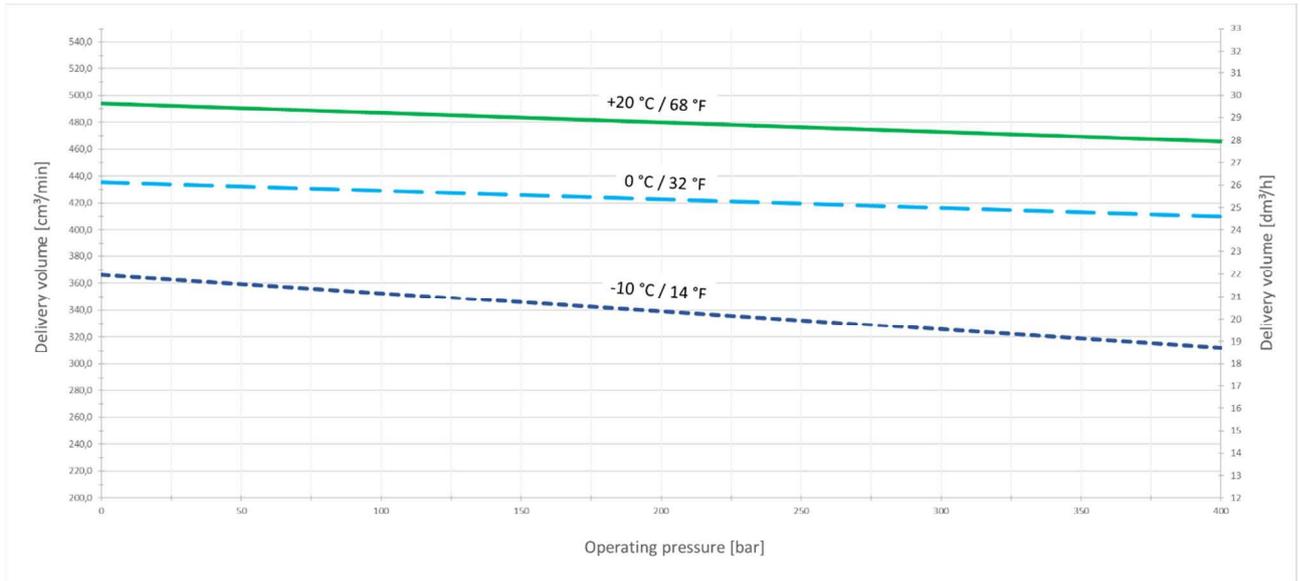
Drive: ..... Three-phase motor  
 Power: ..... 1.5 kW  
 Operating voltage (Frequency): ..... see code  
 Synchronous speed: ..... 1500 r.p.m. at 50 Hz  
 ..... 1800 r.p.m. at 60 Hz  
 Flange type: ..... B5, size 90, IEC standard flange  
 Efficiency class: ..... IE3  
 Insulation class: ..... F  
 Degree of protection: ..... IE55

**Notice!**

Please refer to the dimensional drawing for further technical data!

## 1.1 Delivery volume

The delivery volumes were determined with a grease of the NLGI class 2 (density 0.93 g/cm<sup>3</sup>). They refer to the version with two pump elements. If only one pump element is used, the delivery volume is halved accordingly.



## 2. Applicable documents

- Dimensional drawing AZ
- Connection diagram ES
- Declaration of incorporation
- Operating manual and data sheet of the directional control valve SVE if necessary

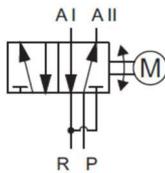
The **grease lubrication pump** is subsequently called a **device**.

### 3. Code

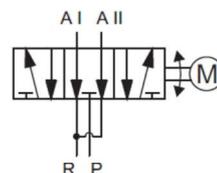
						2510 1 2 2 0 2 0 1 2 00			
<b>Type number</b>	2510								
Code number	2510								
<b>Reservoir size (liter)</b>	40	65	100						
Code number	1	2	3						
<b>Sealing cover</b>	with double pin lock				with security cylinder lock				
Code number	1				2				
<b>Pump element PE6800 (easy fit)</b>	240 cm <sup>3</sup> /min (14,4 l/h)				480 cm <sup>3</sup> /min (28,8 l/h)				
Code number	1				2				
<b>Level monitoring min.</b>	without	min.	prewarning	min. + prewarning					
Code number	0	1	2	3					
<b>Level monitoring max.</b>	without	max.	prewarning	max. + prewarning <sup>1)</sup>					
Code number	0	1	2	3					
<b>Motor version</b>	without motor	230/400V 50Hz 265/460V 60Hz standard version (-25 up to +70 °C)	290/500V 50Hz 333/575V 60Hz	230/400V 50Hz 265/460V 60Hz cold climate version (-40 up to +70 °C)	290/500V 50Hz 333/575V 60Hz				
Code number	0	1	2	3	4				
<b>Directional control valve for dual-line system</b>	without					electrical <sup>2)</sup> SVE-2 (only up to -30 °C) without pressure gauge with pressure gauge			
Code number	0					1 2			
<b>Directional control valve for dual-line system</b>					electrical <sup>3)</sup> SVE-3 (only up to -30 °C) without pressure gauge with pressure gauge				
Code number					3 4				
<b>Filling connection</b>	External thread and internal thread <sup>4)</sup>				Coupling plug <sup>5)</sup>				
	G 1/2 G 1/4								
Code number					1 2				
<b>Special version</b>									

1) only 65 liter and 100 liter reservoir,

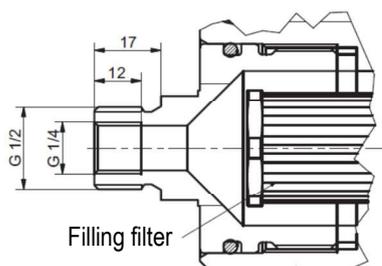
2) Circuit symbol: electrical 5/2 directional control valve SVE-2 without additional relief in middle position



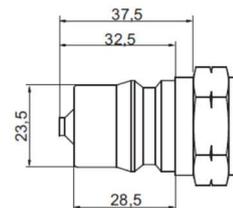
3) Circuit symbol: electrical 5/3- directional control valve SVE-3 with additional relief in middle position



4) Dimensional drawing filling connection: combination of external and internal thread



5) Dimensional drawing filling coupling: delivery without coupling match, (must be ordered separately, art. no. 10139314)



## 4. General safety instructions

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

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

### 4.1 Safety instructions

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



Warning of electrical voltage.



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



This symbol warns of hot surfaces.



Warning of suspended loads.



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

#### Caution!

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

#### Notice!

This term is used to point out particular details.

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

### 4.2 Qualification and training of staff



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

#### 4.3 Hazards in case of non-observance of the safety instructions



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

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

#### 4.4 Obligations of the operator / user



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

#### 4.5 Safety instructions for maintenance, inspection and assembly



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

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

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

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



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

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

#### 4.6 Unauthorized modification and production of spare parts



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

#### 4.7 Inadmissible modes of operation

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

#### 4.8 Electrostatic discharge



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

#### 4.9 General hazard warning – residual risk



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

## 5. Intended use

### Caution!

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

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

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

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

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

The intended use also includes:

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

### Caution!

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

## 6. Scope of warranty

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

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

### Caution!

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

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

## 7. Transport and storage

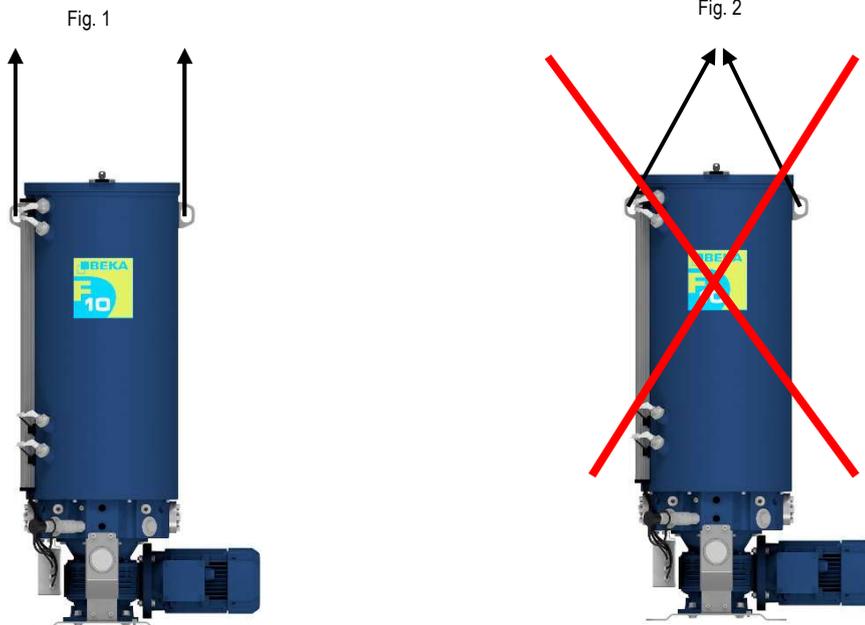
Use suitable lifting devices for transport.

Do not expose the device to **shocks**.

The device must only be lifted vertically at the corresponding transport eyelets (see figure 1).

### Caution!

Another pulling direction on the transport eyelets (see figure 2), can bend the reservoir!



Secure the device against toppling down, slipping or strong swiveling during transport.  
The device may only be transported completely empty.



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

### Notice!

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

Observe the storability of the contained lubricant for devices which are filled with lubricant. Exchange the lubricant when it is over-stored (separation of oil and soap).

## 8. Assembly instructions

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



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

Assemble the device in balance on the installation location in order to ensure safe operation. Also observe the data for the fastening holes indicated in figure 3:

The fastening material must be suitable for the ground/installation location.

When selecting the set-up location, please mind that the device should be protected against ambient and mechanic influences. Ensure full access, e.g. for filling with lubricant.

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

### 8.1 Connection of lines

- Professional layout!
- When using pipes, observe that they are clean, seamless and of precision steel!
- Assemble the pipes professionally and free from distortion!
- Pay attention to pressure tightness of fittings!
- If no pre-filled hose lines are used, the main line has to be preferably mounted rising to the lubrication point.
- All components must be approved for max. operating pressure (see technical data).

#### 8.1.1 Line connection on the device

- The pressure line must be connected to the connection P (G1/2 - fig. 4).
- The return line must be connected to the connection R (G1/2 - fig. 4).

#### 8.1.2 Line connection on the directional control valve SVE

If a directional control valve SVE is used (fig. 5 – only for dual-line systems), the device is already connected to it. Please refer to the enclosed operating manual of the directional control valve SVE for the connection of lines on the directional control valve SVE.

### 8.2 Power connection



- Power supply must be done by a professional electrician!
- Electrical device components must be wired professionally!
- Compare voltage details with the existing mains voltage!
- Equipotential bonding must be done professionally by the operator via an according ground connection (Fig. 3, PE)!
- The customer must use fuses or contactors.
- Wire the device according to the circuit diagram at the appendix!

Fig. 3

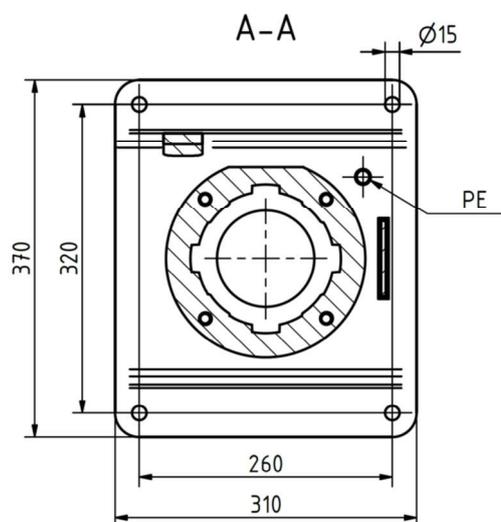
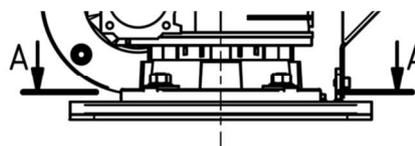


Fig. 4

Fig. 5



## 9. Start up

### 9.1 Filling with lubricant

#### Caution!

When filling the lubricant, pay attention to utmost cleanliness! The reservoir (fig. 6, pos. 5) should preferably be filled via the filling connection (fig. 6, pos. 6).

- Observe the machine manufacturer's lubricant details! Only use lubricants according to the machine manufacturer's specifications which do not attack the NBR seals!
- Collect leaking lubricant in a suitable reservoir and dispose of it professionally!
- Observe the safety data sheet of the lubricant manufacturer!
- The flow behavior of the lubricant changes with the operating temperature!

The device has a filling connection (G1/2 external thread, G1/4 internal thread or filling coupling – fig. 6, pos. 6). A lubricant sieve with filter mesh size 500µm is also installed after the filling connection.

#### 9.1.1 Filling via filling connection with maximum level switch or maximum-prewarning level switch

1. Remove the protective cap or screw plug (fig. 6, pos. 7) from the filling connection (fig. 6, pos. 6).
2. Use a filling device with a suitable connection and fill the reservoir (fig. 6, pos. 5) with lubricant until the maximum level switch (fig. 6, pos. 3) or the maximum-prewarning level switch (fig. 6, pos. 4) emits a signal.

#### Caution!

The signal of the corresponding level switch must be evaluated by a superordinate control. The filling process must be ended immediately when the maximum level is reached. Otherwise lubricant can escape uncontrollably from the cover edge. If the reservoir was overfilled accidentally, leakages must be removed. The ventilation filter (fig. 6, pos. 1) must also be exchanged because it becomes unusable due to lubricant wetting.

3. Mount the protective cap or the screw plug on the filling connection.

Fig. 6



### 9.1.2 Filling via filling connection without maximum level switch or maximum-prewarning level switch

1. Disconnect the device from the power supply.



The device must come to a complete standstill during the filling and the motor must be disconnected from the power supply. When the device is running and the cover is open, there is the risk of injury because of the rotation of the agitator blade.

2. Open the cover on the lock (fig. 6, pos. 2) with a key.
3. Use a filling device with a suitable connection.
4. Fill the reservoir (fig. 6, pos. 5) with lubricant up to approx. 5 cm below the upper reservoir edge.

#### Caution!

Make sure that the ventilation filter (fig. 6, pos. 1) in the cover is not wet with lubricant. A ventilation filter which is wet with lubricant must be exchanged because it becomes unusable.

5. Stop the filling process.
6. Close the cover and lock it again with the key.
7. Release the power supply.

### 9.1.3 Filling via reservoir cover

1. Disconnect the device from the power supply.



The device must come to a complete standstill during the filling and the motor must be disconnected from the power supply. When the device is running and the cover is open, there is the risk of injury because of the rotation of the agitator blade.

2. Open the cover on the lock (fig. 6, pos. 2) with a key.
3. Fill the reservoir (fig. 6, pos. 5) with lubricant up to approx. 5 cm below the upper reservoir edge.

#### Caution!

Make sure that the ventilation filter (fig. 6, pos. 1) in the cover is not wet with lubricant. A ventilation filter which is wet with lubricant must be exchanged because it becomes unusable.

4. Stop the filling process.
5. Close the cover and lock it again with the key.
6. Release the power supply.

### 9.2 Check of rotational direction

- Compare the direction of rotation of the fan with the direction arrow!
- If the direction of rotation is wrong, check the connection to the terminal box and change it, if necessary!

#### Caution!

The **motor** and the **pump** will be **damaged** when they are operated in the **wrong rotational direction** for a longer time!

Fig. 6



### 9.3 Ventilation of the lubrication system

- Ventilation can be achieved with a first filling of all hoses/pipes/lines prior to installation
- If no pre-filled lines are used, ventilate the whole lubrication system on first start-up and after each lubricant change!
- Ventilation is done at pressureless operation with open lubrication connection!
- Actuate the pump until lubricant without air inclusions comes out of the lubrication connection.
- Connected pipes or hoses need to be vented in the same way. Those lines are primarily to be prefilled with grease.
- Check if grease is supplied.

### 9.4 Setting the pressure limiting valve

1. Close the pressure connection (fig. 7, pos. P) of the device pressure-tight.
2. Open the counter nut (knurled nut) of the pressure limiting valve (fig. 8, pos. 2).
3. Switch on the device.
4. The current opening pressure of the pressure limiting valve (fig. 7, pos. 1) is displayed at the pressure gauge (fig. 7, pos. 4).
5. Turn the setscrew (fig. 8, pos 3) to set the pressure limiting valve. Use an open-ended wrench (AF27) for this.
  - Turn clockwise = increases opening pressure
  - Turn counterclockwise = reduces opening pressure

#### Notice!

The opening pressures are engraved on the pressure limiting valve (fig. 8, red rectangle). This is to help with the setting.

6. Check the opening pressure on the pressure limiting valve.
7. Switch off the device when the requested value has been reached.
8. Tighten the counter nut of the pressure limiting valve.
9. The lubrication line can be connected to the pressure connection.

1 = Pressure limiting valve      2 = Counter nut  
3 = Setscrew                      4 = Pressure gauge

Fig. 7

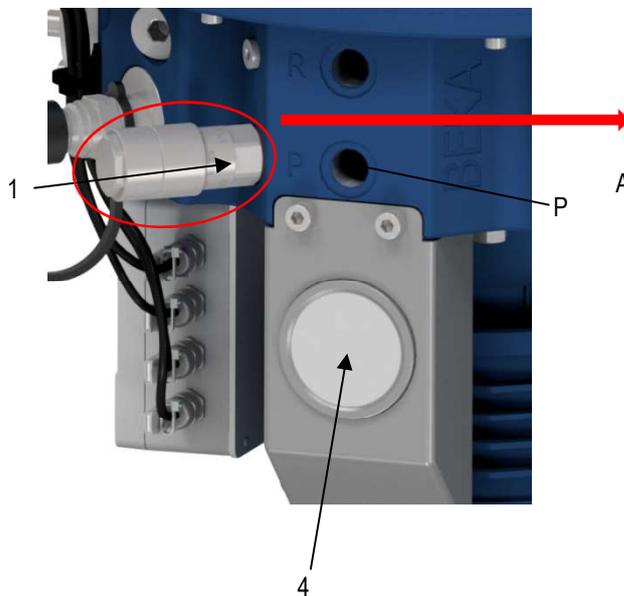
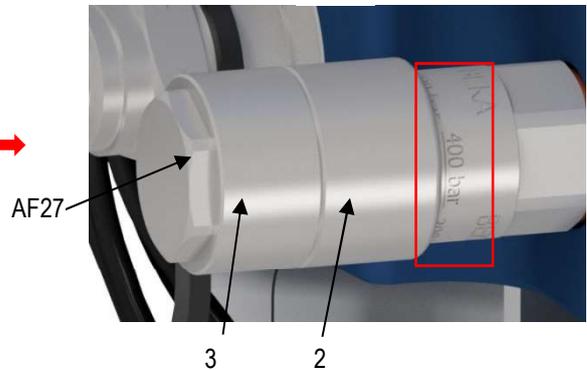


Fig. 8

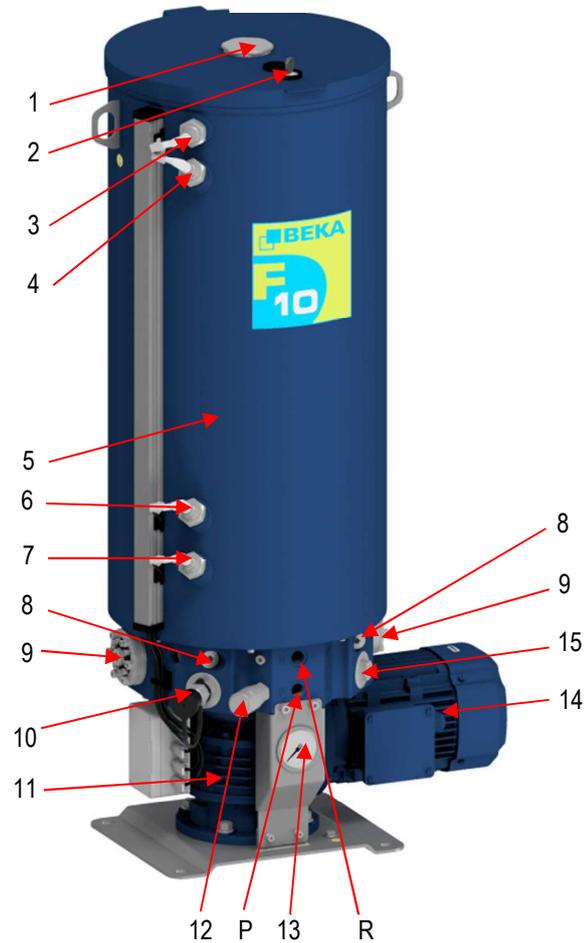


## 10. Functional description

### 10.1 General

The device can be used for the lubricant supply of dual line and sectional and progressive systems. It has a pressure connection and a return line. The delivery volume is defined by the pump elements. See chapter 1.1 "Delivery volume".

Fig. 9

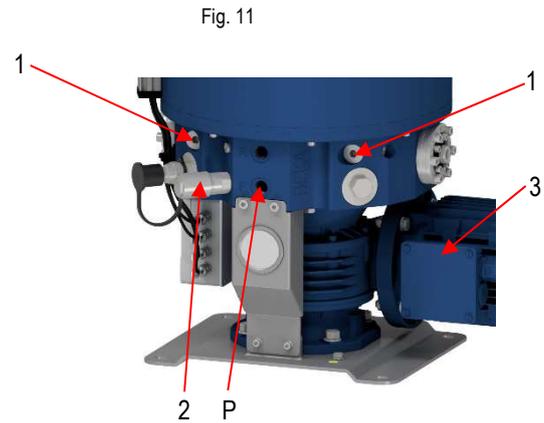
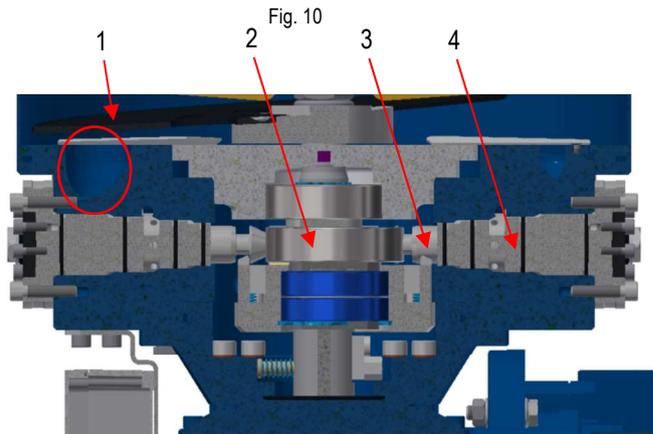


- |                                  |   |
|----------------------------------|---|
| 1 = Ventilation filter           | 10 = Filling connection with filling filter |
| 2 = Cover lock                   | 11 = Pump housing                           |
| 3 = Level switch max.            | 12 = Pressure limiting valve                |
| 4 = Level switch prewarning max. | 13 = Pressure gauge                         |
| 5 = Reservoir                    | 14 = Motor                                  |
| 6 = Level switch prewarning min. | 15 = Pressure filter                        |
| 7 = Level switch min.            | P = Pressure connection                     |
| 8 = Non-return valve             | R = Return connection                       |
| 9 = Pump element                 |   |

## 10.2 Function

The device is driven by a flanged gear motor (fig. 11, pos. 3). The rotary movement of the gear motor is transferred to the eccentric (fig. 10, pos. 2) and the agitator blade construction (fig. 10, pos. 1) via a gearbox which is located in the pump housing. The agitator blade rolls out any air traps in the lubricant and at the same time presses the lubricant into the suction chamber (fig. 10, red oval). The delivery pistons (fig. 10, pos. 3) of the pump elements (fig. 10, pos. 4) are hung in the circular groove of the eccentric whereby a suction and pressure stroke is forcedly performed. The pump elements (1 or 2 pieces) deliver the lubricant to the common pressure connection (fig. 11, pos. P).

A non-return valve (fig. 11, pos. 1) prevents that the lubricant is sucked back. A pressure limiting valve (fig. 11, pos. 2) protects the system against overload and is pre-set according to the order specifications.



Gearbox and eccentric each operate in oil baths which are independent from each other.

## 10.3 Components

### 10.3.1 Ventilation valve

The ventilation valve (fig. 12, pos. 1) in the reservoir cover is used to filter the incoming air during the pressure compensation by a fluctuating level. Depending on the ambient conditions, the ventilation filter element must be checked at regular intervals and must be replaced if it is visibly polluted.

### 10.3.2 Cover lock

The cover lock is designed as cam lock. It is available with different lock types (see chapter 3 "Code").



The cover must always be locked. When the device is in operation and the cover is open, there is a risk of injury because of the rotation of the agitator blade.

### 10.3.3 Level switch

The level in the reservoir is monitored by up to four level switches

Minimum (fig. 12, pos. 7)

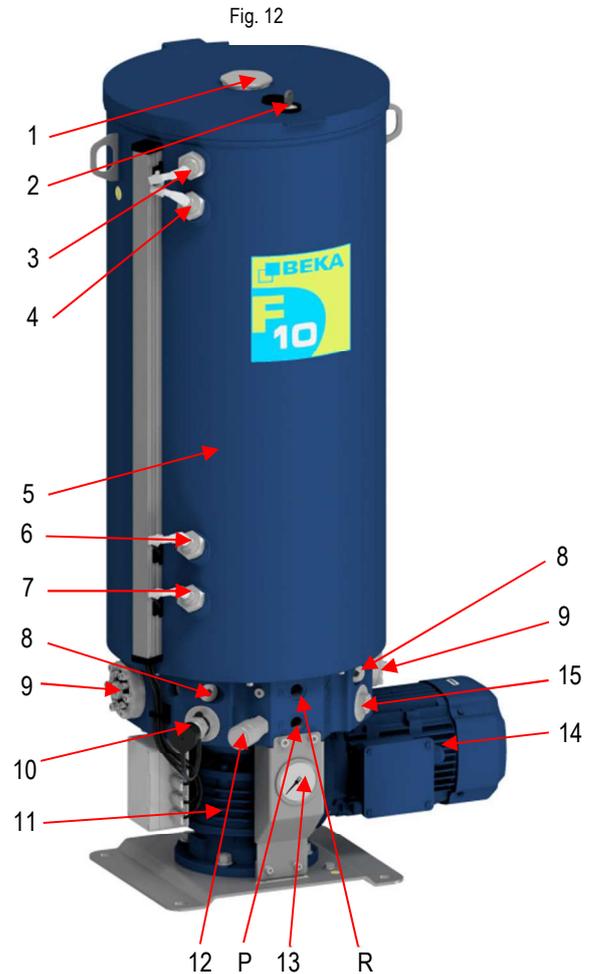
Prewarning minimum (fig. 12, pos. 6)

Prewarning maximum (fig. 12, pos. 4)

Maximum (fig. 12, pos. 3)

The level switches reliably prevent that the reservoir is accidentally emptied or overfilled. If the level falls below/exceeds the set value, an electric impulse is triggered by the capacitive proximity switch. This must be evaluated system-specifically.

LEDs are integrated in the plug of the connecting cable for each level switch. Those LEDs indicate the switching status:



Switching status	White LED	Green LED	Orange LED
No voltage applied	off	off	off
No lubricant in the area of the level switch	on	on	off
Lubricant in the area of the level switch	off	on	on

When the reservoir is completely filled, all green and orange LEDs light up. When the filling level drops, the level switches will successively shut off, depending on the level, and the green and the white LED will light up respectively.

### 10.3.4 Reservoir

Optionally the reservoir (fig. 12, pos. 5) has a capacity of 40 liters, 65 liters or 100 liters. It is made of steel.

### 10.3.5 Non-return valve

The non-return valves (fig. 12, pos. 8) prevent that the lubricant is sucked back from the pressure line. Even if only one pump element is used, two non-return valves must be installed.

### 10.3.6 Pump elements

The delivery volume predefined via the pump elements (fig. 12, pos. 9). Optionally one pump element (delivery volume 240 cm<sup>3</sup>/min) or two pump elements (delivery volume 480 cm<sup>3</sup>/min) can be installed. If only one pump element is used, one bore for the pump element is closed with a screw plug. The delivery volume cannot be regulated for the pump elements because they have a fixed delivery volume.

**Notice!**

If the pump element works faultlessly, the green control point (fig. 13, red arrow) moves forwards and backwards with a maximum stroke of approx. 4mm (depending on the viscosity and temperature of the lubricant). If the pump element is defective, the green control point moves only very weakly.

Fig. 13



### 10.3.7 Terminal housing

All electronic components are wired in the terminal box (fig. 12, pos. 11) except for the motor (fig. 12, pos. 14).

### 10.3.8 Filling connection with filling filter

The filling connection (fig. 12, pos. 10) is available in different versions (see chapter 3 “Code”). It has a filling filter with a mesh size of 500µm.

### 10.3.9 Pressure limiting valve

A pressure limiting valve (fig. 12, pos. 12) prevents that the system is damaged by overpressure. The opening pressure is set according to the specifications and can be adjusted (see chapter 9.4 “Setting the pressure limiting valve”).

### 10.3.10 Pressure gauge

The currently applied operating pressure can be read off the pressure gauge (fig. 12, pos. 9).

### 10.3.11 Pressure filter

The pressure filter filters the lubricant with a mesh size of 300 µm.

## 11. Operation

During the operation the signals of the level monitoring must always be evaluated. The lubricant must be exchanged in case of strong temperature changes during the operation. The device must always be able to suck in the amount of clean lubricant that is required for the operation. Lubricant, which is suitable for the operating temperature, must always be delivered. Otherwise the deliverability of the lubricant is not guaranteed.

If a clear reduction of the delivery volume is established during the operation, the pump elements must be checked (see chapter 12.4 Exchange of the pump elements).

## 12. Maintenance



Disconnect the device from power supply before **maintenance or repairs**.

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

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



### 12.1 General maintenance

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



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

### 12.2 Lubricant change

#### Caution!

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

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

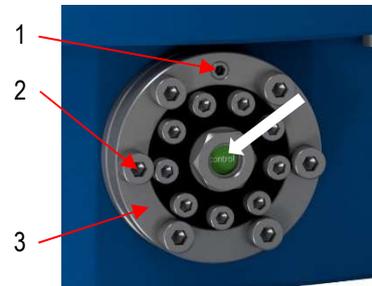
### 12.3 Exchange of pump elements

**Notice!**

If the pump element works faultlessly, the green control point (fig. 14, white arrow) moves forwards and backwards with a maximum stroke of approx. 4mm (depending on the viscosity and temperature of the lubricant). If the pump element is defective, the green control point moves only very weakly.

1. Disconnect the device from the power supply.
2. Loosen the six external hexagon socket head screws (fig. 16, pos. 2) with an Allen key AF 6 and remove them.
3. Screw the thread pin (fig. 16, pos. 1) completely in with an Allen key AF 4 and push the pump element (fig. 16, pos. 3) out of the pump housing.

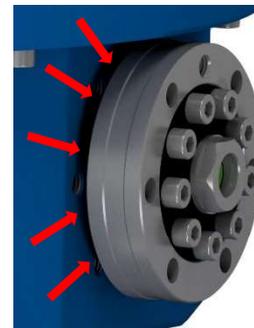
Fig. 16



A gap arises between the pump housing and the pump element.

4. Grasp the pump element in the area of the gap (fig. 17, red arrow).

Fig. 17



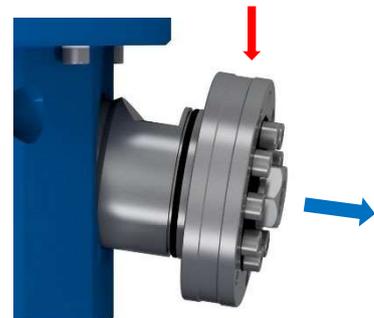
5. Pull it towards the front (fig. 18, blue arrow) until a clear resistance can be felt.

Fig. 18



6. Tilt the pump element down up to the stop (fig. 19, red arrow). By this the delivery piston is unlocked from the eccentric groove inside the pump.

Fig. 19



**Notice!**

If the pump element is insufficiently tilted, the delivery piston will remain in the annular groove of the eccentric inside the pump during the disassembly of the pump element. It must be removed separately in this case.

7. Pull the pump element diagonally towards the front (fig. 19, blue arrow) out of the pump body.

If the delivery piston has remained in the inside of the pump, remove it as follows:

Fig. 20



Pump element with delivery piston

Fig. 21



Pump element without delivery piston

8. Reach into the pump housing and push the delivery piston (fig. 22, pos. 1) towards the top (fig. 22 and 23, red arrow) to loosen it from the annular groove (fig. 22, red oval) of the eccentric. In order to make it easier, an Allen key can be inserted into the hexagonal socket AF 8 of the delivery piston.
9. Remove the delivery piston from the pump housing.

Fig. 22

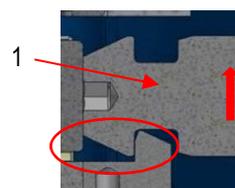
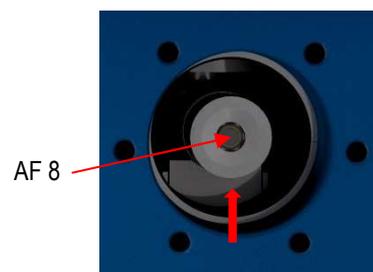


Fig. 23



10. Remove grease and dirt deposits from the housing bore.
11. Insert the new pump element up to the stop into the bore (fig. 24, blue arrow). Make sure that the thread pin (fig. 16, pos. 1) does not protrude from the inner collar (fig. 24, red arrow).

Fig. 24

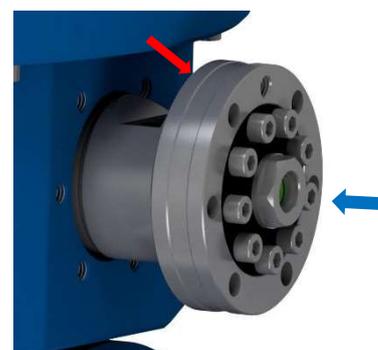


Fig. 25

12. Tighten the six external hexagon socket head screws (fig. 25, pos. 1) with an Allen key AF 6 (20 Nm). Always tighten the opposite screws first.

**Notice!**

After one pump revolution the delivery piston snaps automatically in the annular groove of the eccentric in the inside of the pump.



### 13. Shutdown

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

### 14. Disposal

**Notice!**

Observe the disposal instructions of the lubricant manufacturer when lubricant is changed! Lubricants or cloths contaminated with lubricant, etc. must be collected in specially marked reservoirs and disposed of accordingly.  
 Disposal of the device must be done properly and professionally and according to the national and international laws and regulations.

### 15. Dimensional drawing

See following pages in the attachment.

### 16. Spare part list and drawing

Designation	Article number
Level switch.....	10119471
Pump element.....	10145599
Sealing kit for pump element.....	on request
Pressure filter 300µm.....	10152773
Filling filter 500µm.....	10152776
Ventilation filter.....	10100197
Pressure limiting valve set to 300 bar opening pressure.....	10147201
Pressure gauge.....	10123963

More spare parts are available on request.  
 Please indicate the article number of your device for this.

## 17. Troubleshooting

Malfunction	Possible cause	Possible remedy
<b>Device does not deliver</b>	Motor does not run	Check motor or lines and replace it if necessary
	Level too low	Refill lubricant
	Lubricant cannot be conveyed	Fill in lubricant with correct viscosity
	Wrong direction of rotation of drive motor	Correct direction of rotation
	Agitator blade does not move	Repair or exchange agitator blade
	Device sucks air	Ventilate device, refill lubricant if necessary
	Pressure limiting valve does not close	Exchange pressure limiting valve
	Pump element worn	Exchange pump element
<b>Supply interrupts but drive is ok</b>	Air below pump element	Ventilate device
	Lack of lubricant in reservoir	Refill lubricant
	Pump element defective	Exchange pump element
<b>Device only supplies if there is no counter pressure</b>	Pressure limiting valve does not close	Exchange pressure limiting valve
	Sealing inside the device defective	Get device repaired by BEKA
	Heavy wear of device	Renew device
<b>Pump is too noisy</b>	Damage in the interior of the pump housing	Get device repaired by BEKA
	Device defective	Get device repaired by BEKA
	Gearbox defective	Get device repaired by BEKA
	Motor mount defective	Exchange motor

Repair works are limited to the exchange of above-mentioned parts or the complete pump. Other repair works need a special knowledge and tools.

## 18. Details of the manufacturer

# BEKA

## BAIER + KÖPPEL GmbH + Co. KG

Beethovenstraße 14  
91257 PEGNITZ / Bayern  
Germany

Tel. +49 9241 729-0  
FAX +49 9241 729-50

POSTFACH 1320  
91253 PEGNITZ / Bayern  
Germany

<http://www.beka-lube.de>  
E-Mail: [beka@beka-lube.de](mailto:beka@beka-lube.de)  
[beka@beka-max.de](mailto:beka@beka-max.de)

### Our range of supply:

- Gear pumps
- Multi-line oil pumps
- Multi-line grease pumps
- Single-line central lubrication systems
- Dual line central lubrication systems
- Oil circulation central lubrication systems
- Oil-air and spray lubrication
- Wheel flange central lubrication systems
- Rolling mill central lubrication systems
- Commercial vehicle lubrication
- Progressive distributors
- Control and monitoring units

Subject to alterations!

We do not accept liability for errors,  
technical mistakes and misprints!