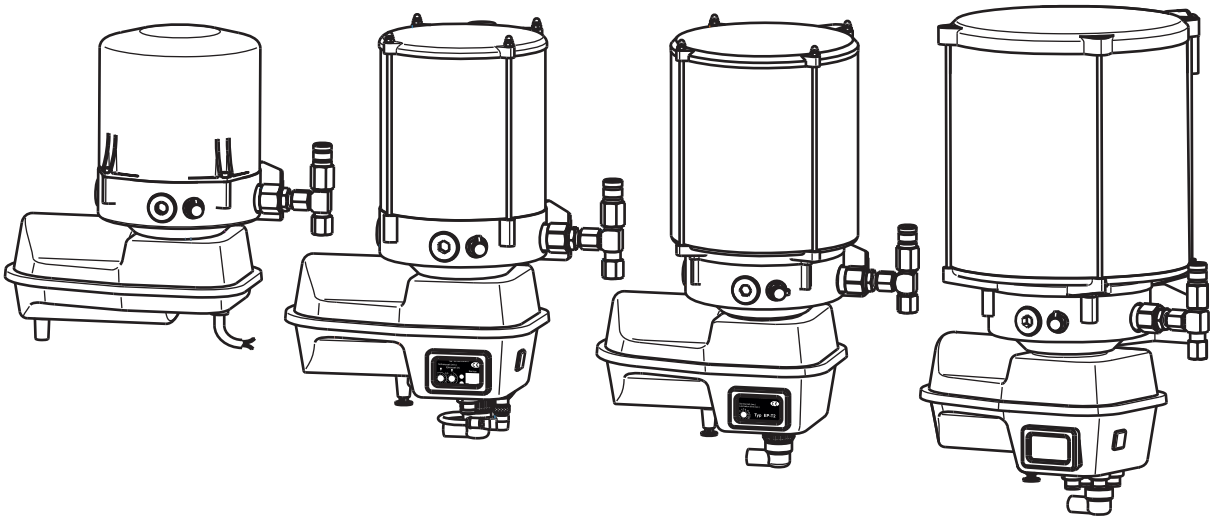
...a product of BEKA

BEKA-MAX

# Original operating and assembly manual for grease lubrication pump

## EP-1

with integrated control units:
BEKA-troniX1
EP-tronic



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BAL_2175_01_EP1_Central grease lubrication pump_0613_EN KBA

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2

# Contents

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# Declaration of incorporation for incomplete machinery

# (acc. to EC-directive 2006/42/EG)

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The manufacturer: BAIER + KÖPPEL GMBH+CO
Beethovenstrasse 14
91257 Pegnitz / Germany
Tel.: +49(0)9241 729 0

declares hereby, that the following partly completed machinery:

| | |
|---|---|
| Product description: | Fettschmierpumpe |
| Type designation: | EP-1, FKGGM-EP |
| Article number: | 2018...;2037...;2152...;2157...; 2175...;2183...;2184... |
| Serial number: | from 930000 to 999999 |

**is complying with all essential requirements of the above mentioned machinery directives (2006/42/EG):**
**Annex I, article 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4, and 1.5.1.**
The following coordinated standards have been used:

DIN EN 809
DIN EN ISO 12100

4 The following other specifications and standards have been used:

VDE 0530

ECE authorization
The following pump types have been tested by TÜV Süd Automotive GmbH and were approved for use by the Federal Office for Motor Vehicles (KBA).
EP-1 with EP-tronic 12 V 2157.3
EP-1 with EP-tronic 24 V 2157.4
EP-1 with BEKA-troniX1 12 V 2175.3
EP-1 with BEKA-troniX1 24 V 2175.4
The approval mark is (E1) 10R-036003

The protection targets of the directive for electric equipment **2006/95/EG** have been observed according to the annex I, no. 1.5.1 of the machine directive.

The incomplete machine may only be put into service as soon as there has been stated that the machine, into which the incomplete machine shall be installed, responds to the determinations of the machine directive (2006/42/EG).

The special documentation that responds to the machine, has been prepared according to annex VII part B.

The manufacturer (documentation department, phone +49(0)9241 729 779, email: tb3@beka-lube.de) obliges itself to pass on electronically the special documentation for party completed machinery to individual national authorities upon request.

Pegnitz, 04.05.2012

ppa. A. Zapf (sales manager)

# 1. Legend:

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol:

This heading is used if inaccurate compliance or non-compliance with the Operating Instructions or specified work procedures etc. may result in damage:

**Attention!**

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Points out special information:

**Note!**

# 2. Warranty and extent of warranty:

**Note!** Inappropriate intervention will rule out your warranty claim!

Warranty regarding operational safety, reliability and performance of the lubricating pump is only accepted by the manufacturer under the following conditions:

- Assembly, connection, setting, maintenance and repair are carried out by authorized and specialized staff.
- The limits stipulated in the technical data must never be exceeded.
- Only original components or components approved by the manufacturer may be used for repair and maintenance work.



**Attention!**

All guarantees and warranties expire for damages to central lubrication systems that are caused by operation with improper lubricants (e. g. piston wear, piston jamming, pluggings, embrittled sealings).
BEKA does not assume liability on damages caused by lubricants, even if these lubricants have been tested and released by laboratory tests, as damages caused by lubricants (e. g. by expired or improper stored lubricants, batch variations etc.) can not be retraced to their root cause in retrospect.

# 3. Safety information:

General information

Any safety-related faults must be eliminated without delay. Below, please find fundamental instructions to be complied with, regarding assembly, operation and maintenance. The mechanical and the competent specialists / staff or the operating company must read the Operating Instructions on all accounts prior to starting assembly and commissioning. Moreover, the Operating Instructions must permanently be available on site
Not only the safety instructions included under this item, but also the specific safety instructions appearing in other parts of this manual mut be complied with.

General risk reference

All system components have been designed in view of operational safety and accident prevention according to the applicable provisions for the design of the technical equipment.
Nevertheless, utilization thereof may result in risks for the user or third parties and/or technical equipment. Thus, the system may only be used in proper technical working within its intended fields of application and in compliance with the safety provisions and the Operating instructions.
Occurring errors which impact the general safety, need to be removed immediately.

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Personal:
The staff in charge of operation, maintenance, inspection and assembly must be qualified accordingly for this work. The operating company must stipulate competences, responsibilities and the supervision of staff precisely. If the staff does not dispose of the appropriate knowledge, they must be trained and instructed. The operating company must ensure that the staff understood the contents of the Operating instructions.

Danger due non-observance of the safety information:

Non-compliance with the safety information may put persons at risk and endanger the environment and/or the machine. Non-complinace with the safety instructions may rule out any claims for damages.

Non-compliance may lead, e. g. to the following dangers:

- Failure of important system functions.
- Failure of the specified maintenance and servicing methods.
- Endangering people due to electrical, mechanical and chemical effects.
- Endangering the environment due to leakages of dangerous materials.

Use in conformity with the intended purpose:
The pumps of the series EP serve only for the supply of central lubrication pumps at vehicles, systems and machines.
Any use beyond this scope is regarded as being not conformity with the intended purpose.



Disclaimer of liability:
BEKA is not liable for damage caused by:
- lack of lubricant
- contaminated or unsuitable lubricants
- any use which is not in conformity with the intended purpose
- inappropriate installation and filling
- wrong electrical connection
- wrong setting of the control unit
- improper reactions to malfunctions
- non-observance of the operating instructions

Assembly and maintenance works:
Observe for all assembly works at vehicles, systems and machines the valid local accident prevention regulations and safety instructions as well as the specifications for operation and maintenance.

All maintenance, inspection and assembly work may only be carried out by trained specialists. All work must only be carried out when the plant is at a standstill and while wearing appropriate protective clothing.

All the safety and protective equipment must be replaced immediately after completing work. Media that endangers the environment must be disposed in accordance with pertinent official specifications. Secure the system during maintenance and repair works, against intentional or unintentional reoperation.

Dispose of process materials in accordance with the safety data sheets of the lubricant manufacturer.

Safety information for operators/operating staff:

- If hot or cold machine parts lead to hazards, the customer must secure them from being touched. The guards on moving or rotating parts must not be removed.
- Drain leakages of dangerous materials in a way, that people or the environment are not endangered.
- Comply with legal regulations.
- Exclude any hazards by electric energy.



Unauthorized modification and spare part production:

Modifications and alterations of the system require the manufacturer‘s prior approval. Original spare parts and accessories authorized by the manufacturer serve for higher safety. The use of other parts may rule out liability for the consequences of such use. For components, which are retrofitted by the operator, BEKA does not assume liability nor claims for compensation.

Danger caused by the electrics:
The units may be connected to the power supply exclusively by appropriately trained qualified personal in conformity with the local connection conditions and regulation (e. g. DIN, VDE)!
Improperly connected equipment may lead to serious personal injury and damage to property!



Danger caused by system pressure:
The units might be under pressure.
Make them pressure less before you start with repairs, changes or extensions.

Use of hydraulic hose lines

Installing hydraulic hose lines at the pump, the operator has to observe respectively ensure the following items:

- Checks for proper assembly and function have to be carried out according to the regional valid guidelines.
- Checks for a safe provisioning and use have to be carried out according to the regional valid guidelines.
- The check deadlines must not be exceeded.
- Exchange defect hydraulic hose lines immediately and professional.
- Hydraulic hose lines subject to a wear process and have to be exchanged regularly and according to the manufacturer‘s details.

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Lubricant:
The system has been designed for commercially available multi-purpose greases of NLGI class 2 for operation in summer and winter.
- Use greases with high-pressure additives (EP-greases).
- Only use greases of the same saponification type.
- Lubricants containing solid contents must not be used (lubricants like graphite or $MoS_2$ on request).
- Observe the vehicle manufacturer‘s specifications, when you select the lubricant.

Hazards to environment cause by lubricants:
The lubricants which are recommended by the manufacturer of your vehicle, system or machine correspond in their composition to the common safety regulations. Mineral oils and greases are generally hazardous to ground water and their storage, processing and transport requires special precautions!

Inadmissible methods od operation:
Operational security of the plant is only guaranteed if it is operated in accordance with the operating instructions. The limit values stated in the technical data must not be exceeded under any circumstances.

Transport and storage the pump:
The pumps of the series EP are packed commercially, according to the regulations of the recipient country and to the wish of the customer.
There are no limitations with respect to land, air or sea transport.
Store in a dry place at a temperature of -40° C to +70°C.

Attention! **Handle with care!**

# 4. Technical data:

**Motor EP-1:**

| | | |
|---|---|---|
| Operating voltage: | | 12 V DC / 24 V DC |
| Speed: | | 15 rpm. |
| Current consumption: | | |
| Idle running at +20° C: | | 0.8 A / 0.4 A |
| Full load at +20° C: | | 2.2 A / 1.1 A |
| Fuse: | | 5 A / 3 A |

**Pumpe:**

| | | |
|---|---|---|
| max. operating pressure: | | 350 bar |
| Adjustment of overpressure valve: | | 280 bar |
| Operating temperature: | | -35° C to +80° C |
| Reservoir size: | | |
| Transparent reservoir: | | 1,9 kg, 2.5 kg, 4 kg, 8 kg or 16 kg |
| Steel reservoir: | | 2 kg or 4 kg |
| Direction of agitator blade: | | counter-clockwise |
| Installation position: | | Reservoir in vertical position |
| Output rate: | | depending on pump element |
| Protection type: | | IP5K9K at DIN 40050 |
| Weight: | EP-1: | approx. 5.1 kg |

**Control units BEKA-troniX1, EP-tronic:**

| | |
|---|---|
| Operating voltage: | 10 to 60 V DC |
| Max. current load: | I = 6 A |
| Fuse (not including in device): | F 6,3 A (5x20) medium |
| Signal lamp outlet: | $I_{max.}$ = 0.4 A |
| Operating temperature: | -35° C to +75° C |
| Sound pressure level: | < 70db(A) |

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# 5. Assembly manual:

The following conditions have to be satisfied during the assembly of this grease lubrication pump, thus it can be assembled, with other parts, to a complete machine without affect the safety and health of human.

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Set up the grease lubrication pump horizontally on both sides at the place where it has to be installed! Pay also attention to the mentioned data regarding the fastening bore in the dimensioned drawing.
Special measures for the noise prevention and for the vibration reduction of the grease lubrication pump during the installation don‘t have to be taken.

Pipeline and hydraulic hose line assembly

- Layout must be expert. Assemble free from distortion.
- Comply with the pressure seal tightness of the threaded joints.
- Please observe the permitted pressure range of the pipeline and the hydraulic hose line.

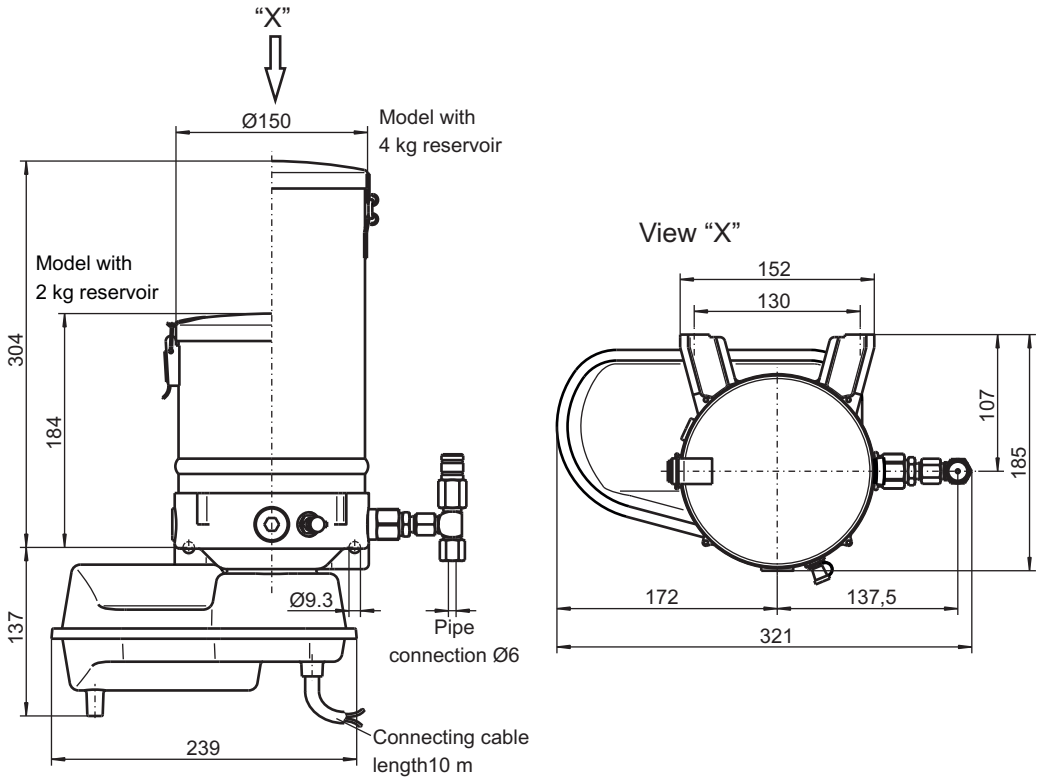
Electrical connection

- Current supply may only be made by professional electricians.
- The electrical components of the system must be wired expert.
- Compare the voltage details with the existing mains voltage.



# 6. Overview and installation dimensions:

## 6.1. Central lubrication pump EP-1 with steel reservoir:



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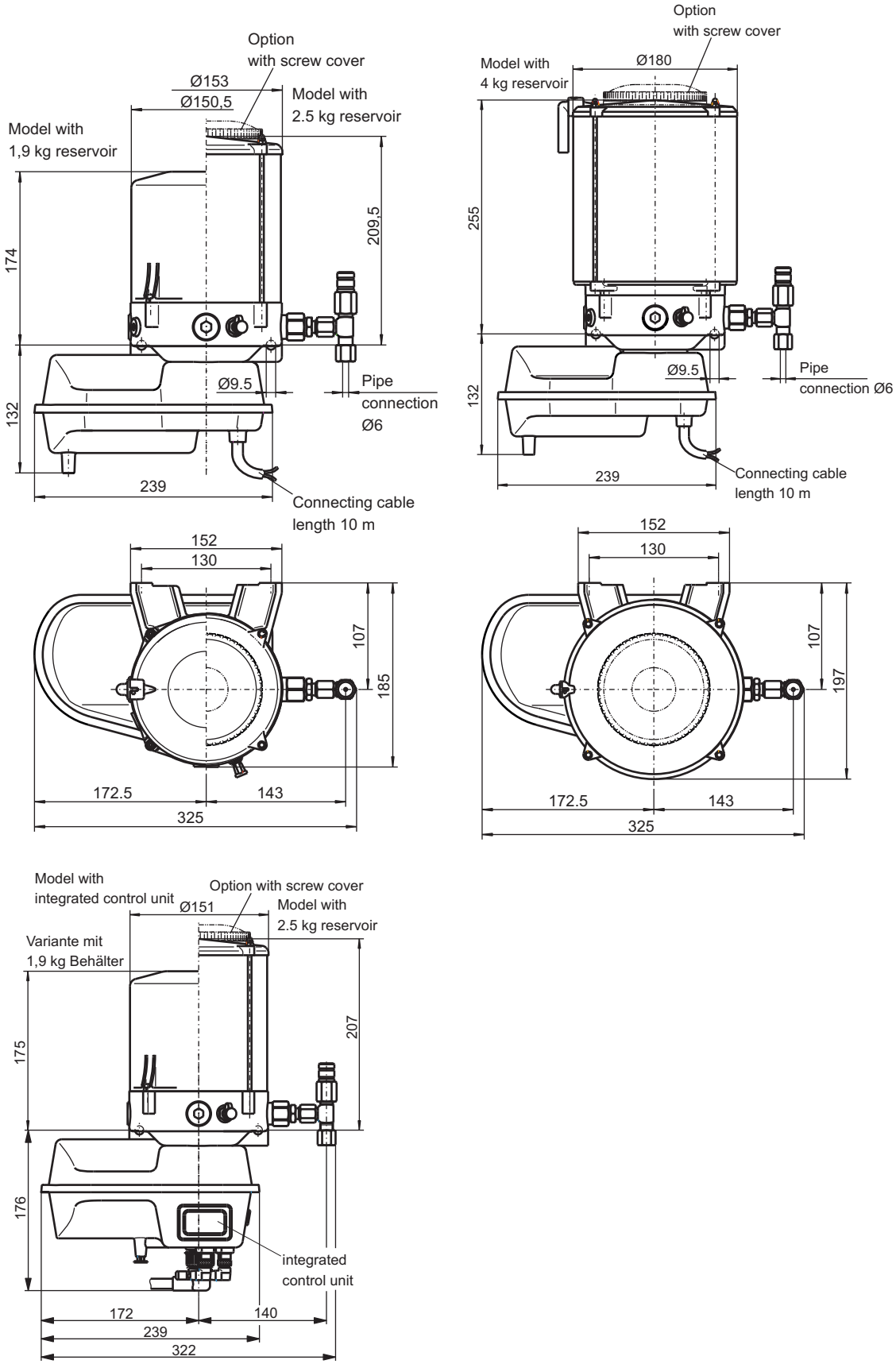
## 6.2. Central lubrication pump EP-1 with transparent reservoir:



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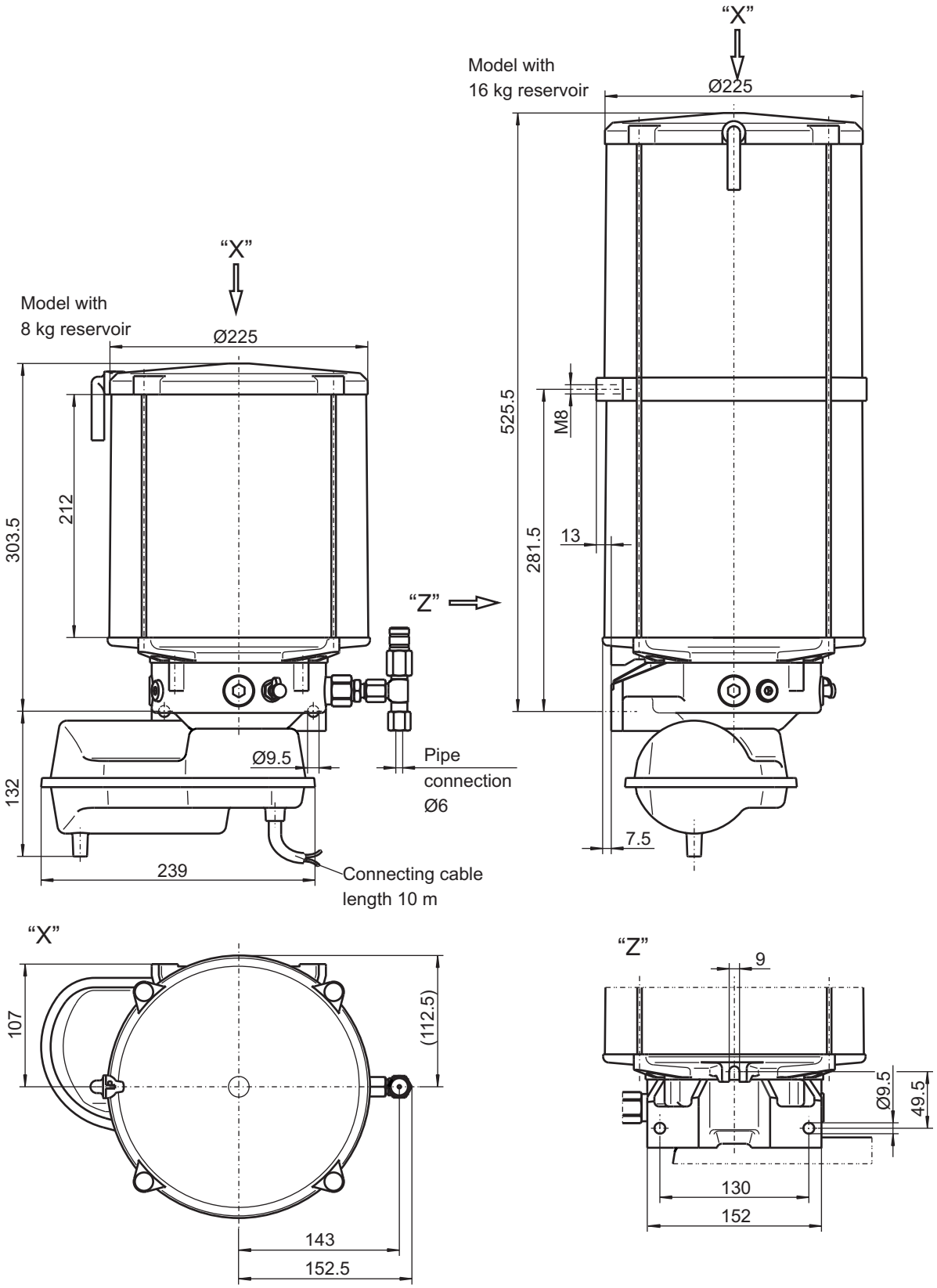
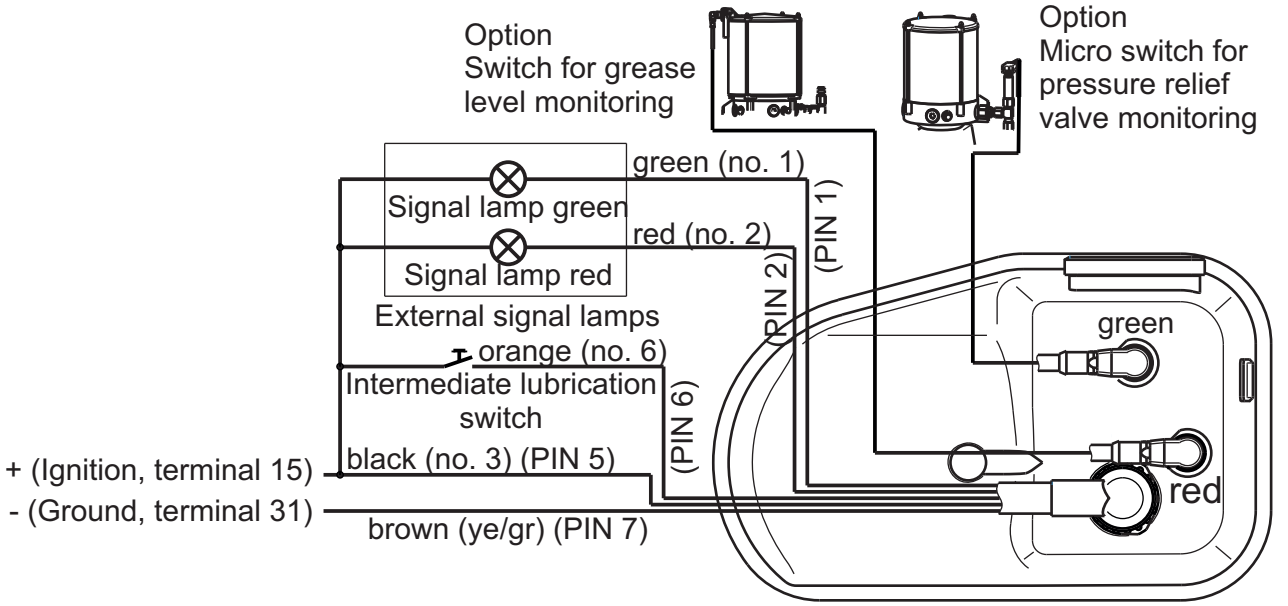


# 7. Terminal diagram:

## 7.1. Central lubrication pump EP-1 with integrated control unit BEKA-troniX1:




(no. ...) = Cable-no. at uni-colored cables
(PIN ...) = Assignment of the line socket

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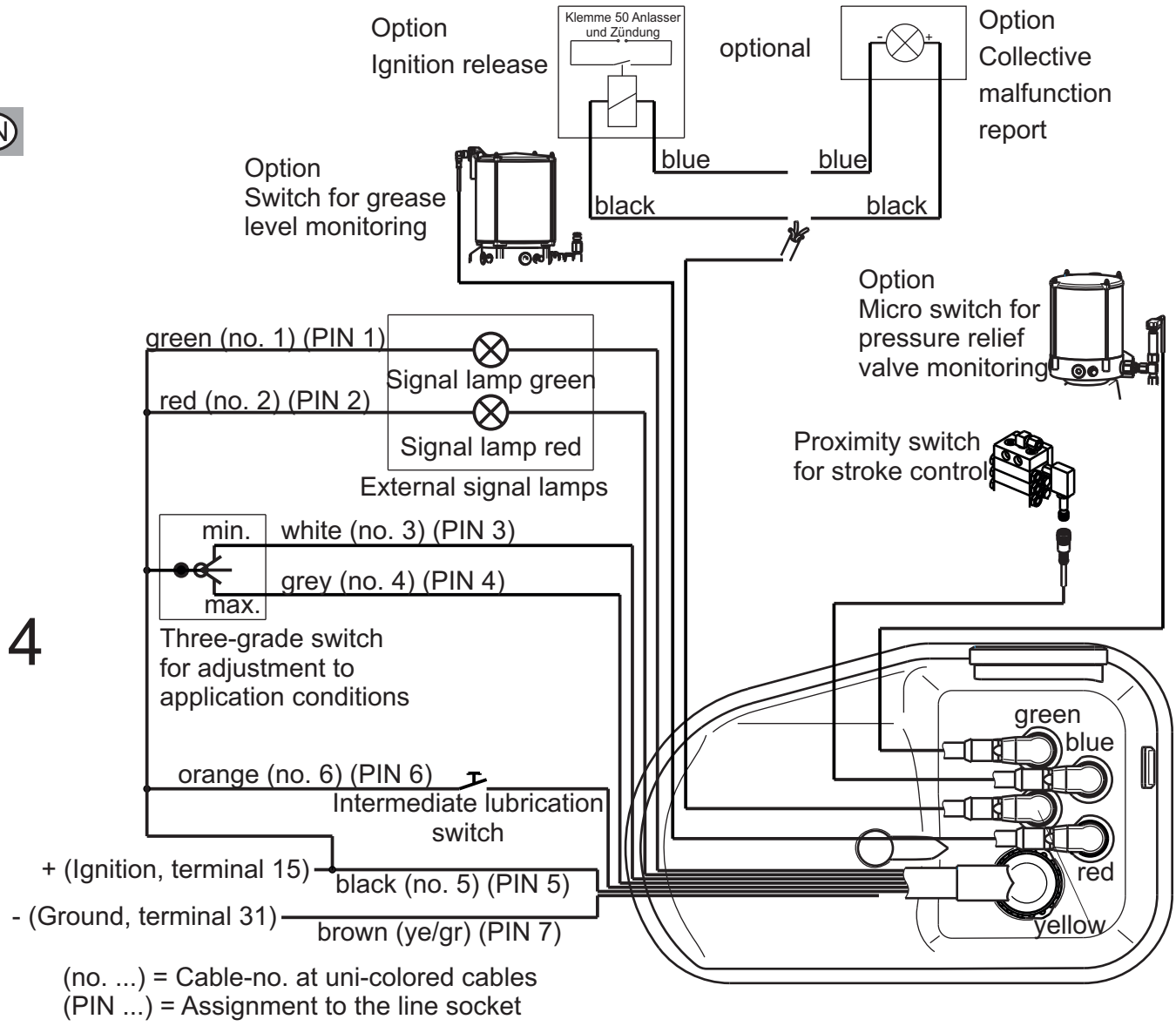
## 7.2. Central lubrication pump EP-1 with integrated control unit EP-tronic:

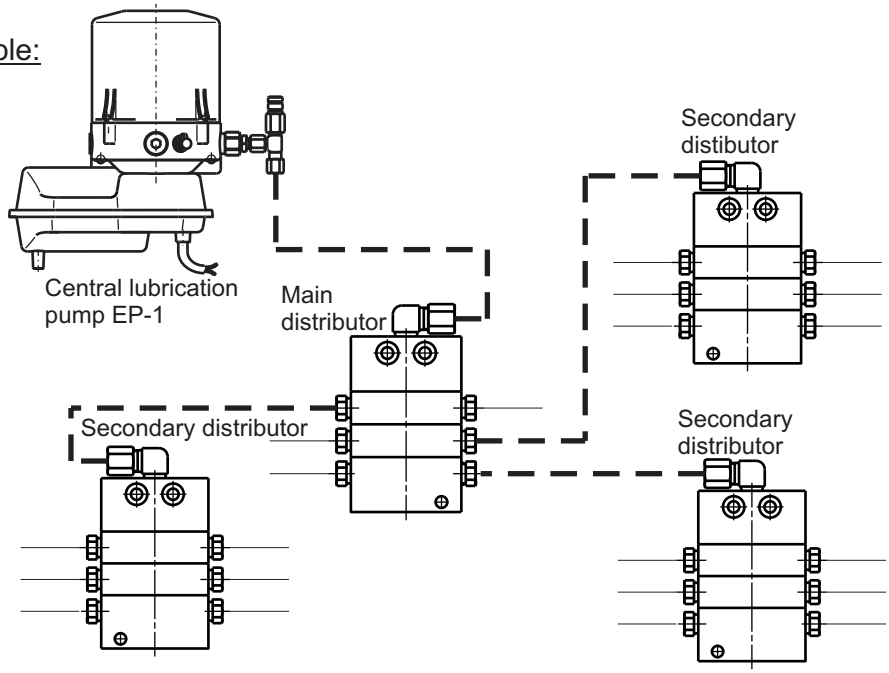



(no. ...) = Cable-no. at uni-colored cables
(PIN ...) = Assignment to the line socket

# 8. Function and design of the system:

The central lubrication system into which an electrical pump EP-1 is installed, is a progressive system. Progressive means thet the lubrication points are lubricated in sequence. The sequential lubrication means a pressure relief valve can easily monitor the progressive central lubrication system.
The central lubrication pump EP-1 delivers the lubricant to the main distributor. The main distributor‘s task is to distribute the lubricant to the secondary distributors In the right proportions. The secondary distributors then deliver the lubricant to the individual lubrication points.
Should a lubrication point do not receive lubricant from the distributor, the system would block and a pressure of up 280 bar is built up in the line system. Does the system block but is nevertheless operating properly, the lubricant out of the pressure relief valve of the pump. This serves for the system protection and monitoring.

Installation example:




# 9. Function of the central lubrication pump:

The central lubrication pump EP-1 is designed for delivering lubricant up to NLGI class 2. The agitator blade pushes the lubricant through a grease sieve to the intake section of the pump element. The pump element is positively driven by an eccentric so that function is also ensured at low temperatures.
The output rate depends on the installed pump element (see page 16).

## 9.1. With PE-120 V:

For trailers and semi-trailers, it is not possible to ensure a permanent current supply of the pump or the control unit. Therefore is a central lubrication pump without control and with adjustable pump elements installed into such vehicles. The pump gets its operating voltage via the brake light and thus pump always lubricates with each braking. The lubricant can be reduced with the adjustable pump element (see adjustment of the pump element on page 17).

# 10. Pump elements:

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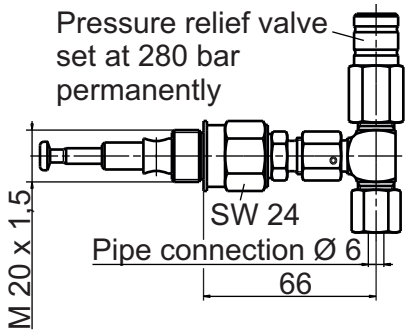
There are different pump elements available for the installation into a central lubrication pump EP-1. You cannot adjust the output rate at the pump elements PE-60, PE-120 and PE-170 but at the pump element PE-120 V this is possible.

PE-60, PE-120, PE-170:




## 10.1. PE-60, PE-120 and PE-170:

Technical data:

| | Output rate ($cm^3$ / stroke or rev.) | Order-no. (incl. pressure relief valve) | Order-no. Pressure relief valve |
|---|---|---|---|
| PE-60 | 0,06 | 2152 99067 0000 | 2152 0062 |
| PE-120 | 0,12 | 2152 99061 0000 | |
| PE-170 | 0,17 | 2152 99069 0000 | |

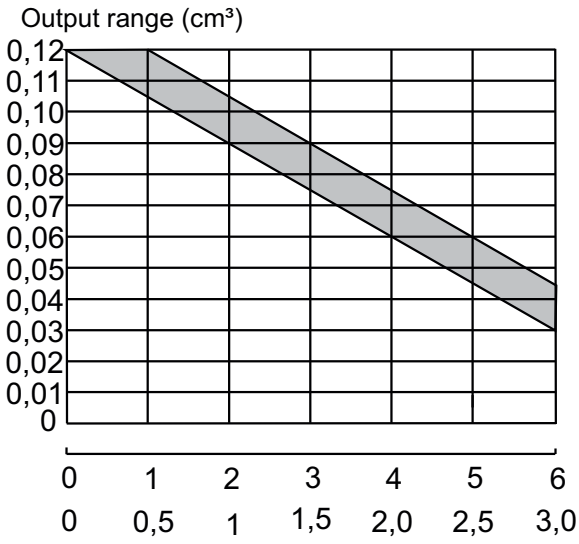
Delivery medium: Grease from NLGI-cl. 00/000 to NLGI-cl. 2
Piston return: positively controlled

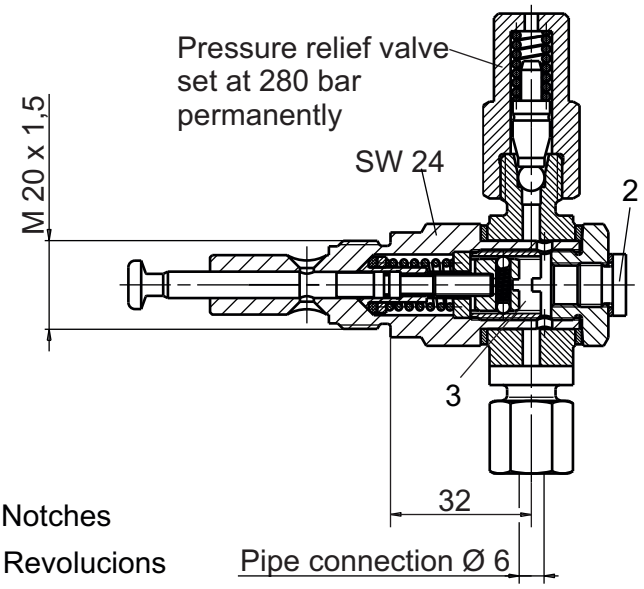


## 10.2. PE-120 V:

Technical data:

Output rate: . . . . . 0,04 to 0,12 $cm^3$/stroke
Output rate regulation: . . . . . 6 notches with 1/2 a revolucion each
Reduction: . . . . . 0,013 $cm^3$ per notch
Delivery medium: . . . . . Grease from NLGI-cl. 00/000 to NLGI-cl. 2
Piston return: . . . . . positively controlled
Order-no. (incl. pressure relief valve): . . . . . 2152.99063.0000
Order-no. pressure relief valve for PE-120 V: . . . . . 2152 0063



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Adjusting the delivery rate:

- All pump elements are set to full stroke by the manufacturer.
- Remove screw plug (2) with Allen key (A/F 5).
- Set screw (3) can be turned with a screwdriver.
- Turning clockwise reduces the output rate.
- Turning counter-clockwise increases the output rate.
- Maximum stroke of set screw is 2.4 mm = 6 notches.
- 1 turn of set screw is 0.8 mm = 2 notches.
- Tighten screw plug (2) incl. sealing ring.

10.3. Installation and removal of the pump elements:

- Only install / remove when pump is off.
- Install pump element with partially extended piston (4) and insert it at an angle into the housing drilling (see diagram A).
- When the piston head rests on pressure ring - move element into vertical position (see diagram B).
- Piston head must run in guide ring groove.
- Tighten the pump element.
- For removal, reserve above sequence.
- When removing the pump element, ensure that the piston (4) is not left behind in the pump housing.



Diagram A:

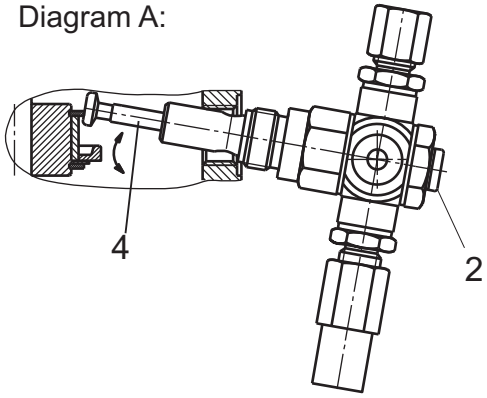
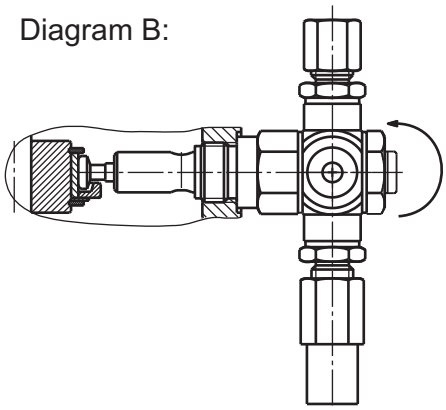



Diagram B:



**Attention!**

The pump element or the pump are destroyed at first operation, if the pump element has not been positioned correctly.

10.4. Ventilation of the pump:

- Remove screw plug (2) with Allen key (A/F 5).
- Screw the adjusting screw (3) by means of a screw driver until stop.
- Start the pump.
- Screw back the adjusting screw (3) by 1 notch per revolution of the agitator blade.
- Operate the pump until oil comes out of the screw plug thread.
- Assemble the screw plug (2) incl. sealing ring and tighten it.

10.5. Special accessory malfunction indicator at pressure relief valve:

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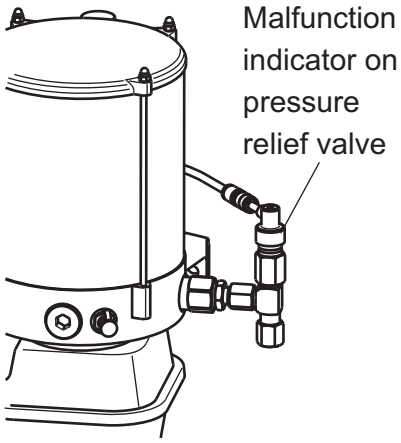
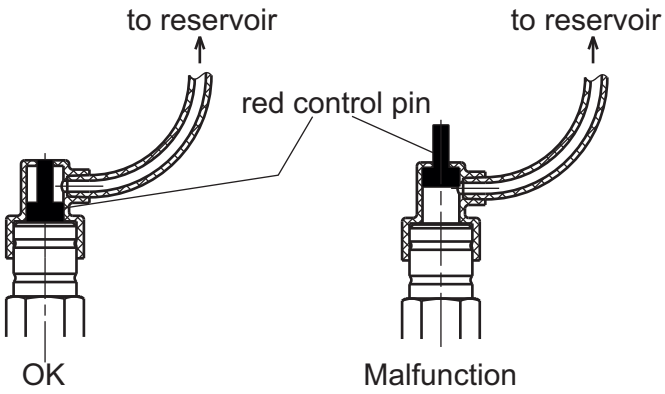
The pump elements for the electric pump EP-1 can be equipped with a visual malfunction indicator. If a malfunction occurs in the central lubrication system and the operating pressure increases above 280 bar, the red control pin becomes visible. The grease escaping through the pressure relief valve is returned into the reservoir. Once the malfunction is remedied, the red control pin must be pushed back.



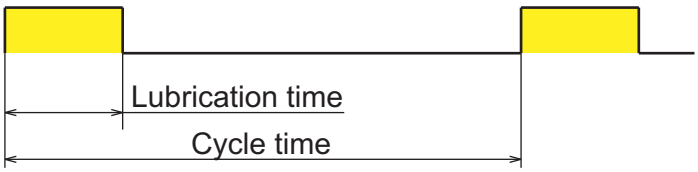



# 11. Function of the control units:

## 11.1. Control unit BEKA-troniX1 and EP-tronic:

### 11.1.1. Operating mode time control and rotary control:

The control unit BEKA-troniX1 and EP-tronic operate lubrication cycle dependant. The lubrication cycle is divided into lubrication time and cycle time.
Diagram of a lubrication cycle:




Independent on the adjusted program, the green and the red LED in the inspection window of the control unit glow for approx. 1.5 sec. after switching on the ignition, thus signaling the function of the control unit (turn-on check).
With each initial activation of the pump starts a lubrication process. The green LED in the inspection window of the control glows during the whole lubrication process.
The control unit has a data memory. It serves, among other things, for saving the run-down times. When the ignition is interrupted, the remaining lubrication- or cycle time is saved. Once the ignition is switched on again, are the times read in the memory and the procedure is continued where it has been interrupted before.

With switched on ignition an intermediate lubrication can any time be initiated by actuating the button at the side of the pump. The pump immediately starts with lubrication then. The remaining cycle time or lubrication time is reset and starts from the beginning again.
You can reset a malfunction by pressing the button for intermediate lubrication. The pump then tries to start a new lubrication progess again.

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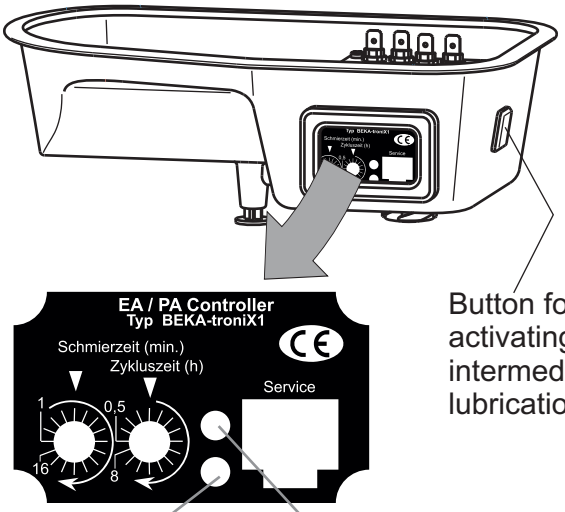


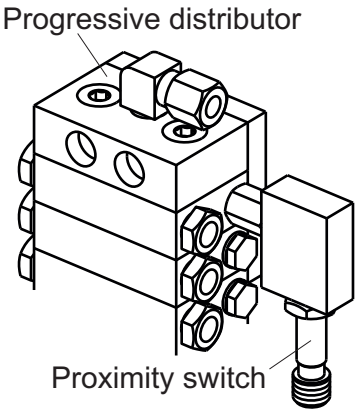



Control by time:
With the mode time control can lubrication time and cycle time be adjusted.

Control by revolutions:
With the control by revolutions is the lubrication duration determined by the number of revolutions of the pump motor.
The pump motor is connected to the control unit via sliding contacts. The control unit receives a signal with each motor revolution.

11.1.2. Operating mode cycle control:

At the sequential control is the number of piston strokes of the progressive distributor counted, in order to determine duration of the lubrication period.
To this purpose is a proximity switch mounted at the progressive distributor, which is connected to the control unit (see terminal diagram on page 14). A signal is sent to the control unit with each piston stroke.




Technical data of the proximity switch:

| | | | |
|---|---|---|---|
| Operating voltage: | 10 a 60 V DC | Function display: | LED yellow |
| Connection method: | PNP-NO (normally open contact) | Housing material: | Stainless steel |
| | | Protection class of switch: | IP 67 |
| Power rating: | 200 mA | Ambient temperature range: | -40° C to +85° C |
| Connection: | 4 poles, M12x1 pluggable | | |

11.1.3.Special equipment:

Internal memory:
The below listed values are saved at the control unit BEKA-troniX1. They can be read out or changed with the diagnosis software BEKA-DiSys:

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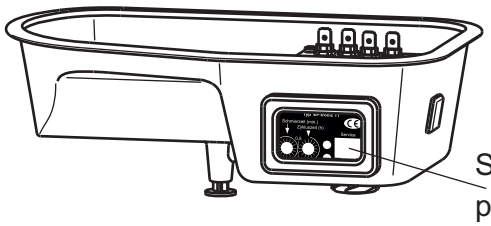
- Controlling type
- Version of control unit
- Serial numbers
- Manufacturing date
- Operating mode
- Set parameters (adjusting ranges)

The control unit EP-tronic additionally saves the following values:
- RTC (Real-Time-Clock) date and time, also adjustable for other time zones
- Operating hours
- Running time of the pump
- Number of intermediate lubrications
- Number of filling level errors
- Number of excess pressure errors
- Number of stroke monitoring errors
- Number of revolution monitoring errors
- Date and time of last diagnosis
- Number of total diagnosis
- List of the last 100 errors with error type, as well as indication of time and date
- List of the last 100 changes of the adjustment with time and date



For a modification of the above mentioned values is the diagnosis software BEKA-DiSys as well as a date cable necessary (see description BEKA-DiSys).

11.1.4.Adjustment of the operating mode and the adjustment ranges:
The modes and the adjusting ranges can be changed by means of the diagnosis software BEKA-DiSys.
All adjusting ranges for the lubrication time can be combined with all cycle time ranges.



System analysis port

Adjusting ranges BEKA-troniX1:

Lubrication times:
1 to 16 min. (16 notches every 1 min.)
2 to 32 min. (16 notches every 2 min.)
2 to 32 sec. (16 notches every 2 sec.)

Cycle times:
0,5 to 8 h (16 notches every 0,5 h)
2 to 32 min. (16 notches every 2 min.)
2 to 32 h (16 notches every 2 h)

Revolutions of the pump:
1 to 16 revolutions (16 notches every 1 revolution)
10 to 160 revolutions (16 notches every 10 revolutions)
170 to 320 revolutions (16 notches every 10 revolutions)

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Adjusting ranges EP-tronic:

Lubrication times:
1 to 16 min. (16 notches every 1 min.)
2 to 32 min. (16 notches every 2 min.)
2 to 32 sec. (16 notches every 2 sec.)

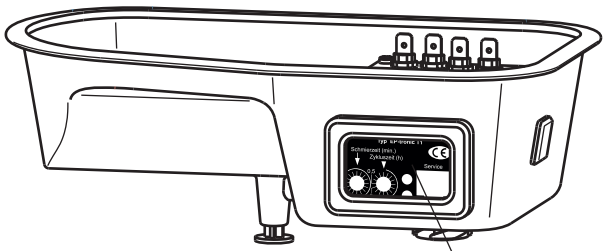
Cycle times:
0,5 to 8 h (16 notches every 0,5 h)
2 to 32 min. (16 notches every 2 min.)
2 to 32 h (16 notches every 2 h)

Strokes:
1 to 16 strokes (16 notches every 1 stroke)
17 to 32 strokes (16 notches every 1 stroke)
33 to 48 strokes (16 notches every 1 stroke)

Revolutions:
1 to 16 revolutions (16 notches every 1 revolution)
10 to 160 revolutions (16 notches every 10 revolutions)
170 to 320 revolutions (16 notches every 10 revolutions)

Exchange of the stickers:

After a change of the mode of operation or the adjusting range, the sticker in the inspection window of the control unit has to be exchanged.



Sticker in the inspection window of the control unit

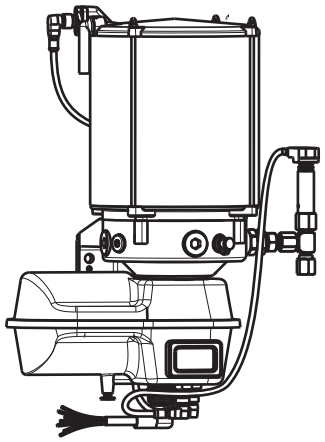
Sets of stickers can be ordered for this purpose, but the stickers can also be ordered individually.

Sticker set for BEKA-troniX1 in German
Order-no.: 0490000342
Sticker set for BEKA-troniX1 in English
Order-no.: 0490000343

Sticker set for EP-tronic in German/English
Order-no.: 0490000317

11.1.5. Optional equipment:

Grease level control at the BEKA-troniX1 and EP-tronic:
A capacitive proximity switch is installed into the resevoir for the electronic control of the grease level in this reservoir. It sends a signal as long as there in enough lubricant in the reservoir.



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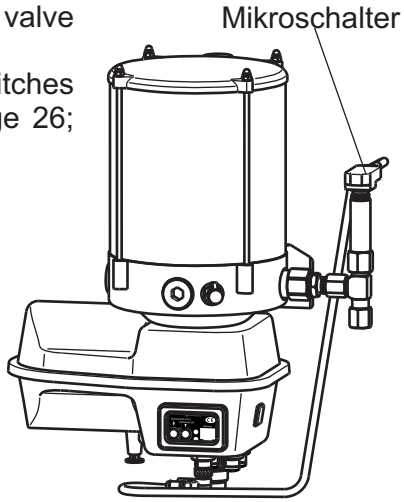
Technical data of the proximity switch:

| | |
|---|---|
| **Standard type:** | **20°C to +70°C** |
| Operating voltage: | 10 to 60 V DC |
| Connection method: | PNP-NO (normally open contact) |
| Max. current load: | 200 mA |
| Protection class of the switch: | IP 67 |
| Connection: | 4-poles, M12x1 pluggable |

The signal is evaluated by the control unit. When there is no signal for more than 10 sec., the control unit reports a malfunction (see signals on page 26) and switches the pump off.
The pump starts to operate again automatically with refilling of the reservoir.

Pressure relief valve monitoring at the BEKA-troniX1 and EP-tronic
With a micro switch, which is mounted at the pressure relief valve of the pump element, the operating pressure of he system can be monitored.
If the pressure in the lines exceeds 280 bar, the pressure relief valve reacts.
The micro switch sends a signal to the control unit, which then switches off the pump and indicates a malfunction (see signals on page 26; terminal diagrams on page 13 and 14)





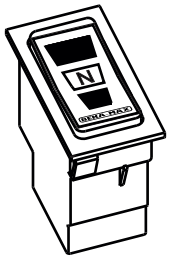

Technical data of the micro switch:

| | |
|---|---|
| Operating voltage: | 10 to 60 V DC |
| Contact type: | 1 changeover contact |
| Max. current load: | I = 1,7 A |
| Protection type of the switch: | IP 67 |
| Ambient temperature range: | 25° C to +85° C |
| Connection: | Cable 0.5 m, bonded, 4-poles, M12x1 pluggable |

After troubleshooting, you have to start the pump by pressing the button for intermediate lubrication.

Adaption to the application conditions at EP-tronic:

For the electronic control unit, there is the possibility to carry out an adaption to the application conditions. To this purpose is a switch with three notches installed into driver‘s cabin of the vehicle or into the machine. You can select between „normal, light or heavy duty“ adjustment

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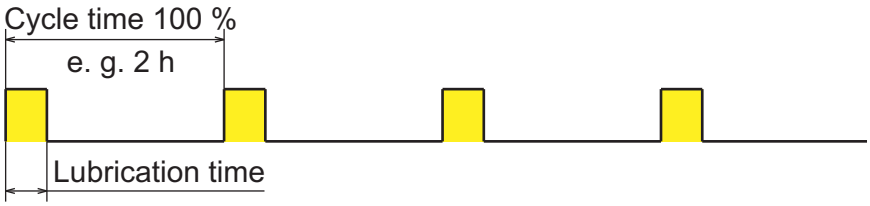
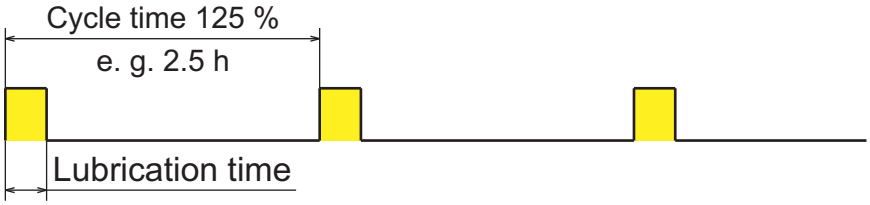
The adjustment „normal“ is the standard setting, cycle time is effected as adjusted.

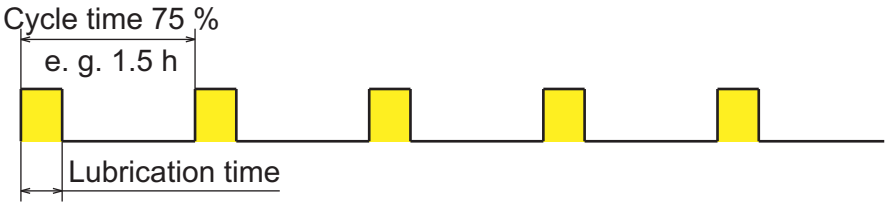



The adjustment „light“ is for light loaded, the cycle time is increased by 25%.






The adjustment „heavy duty“ is for heavy load, the cycle time is reduced down to 25%.




The setting has to be done during the first 30 sec. after switch on the ignition. After a change of the settings, eighter the ignition has to be switched off an on again or an intermediate lubrication has to be triggered.

# 12. Adjustment of the control units:

## 12.1. Adjustment of the parameters:

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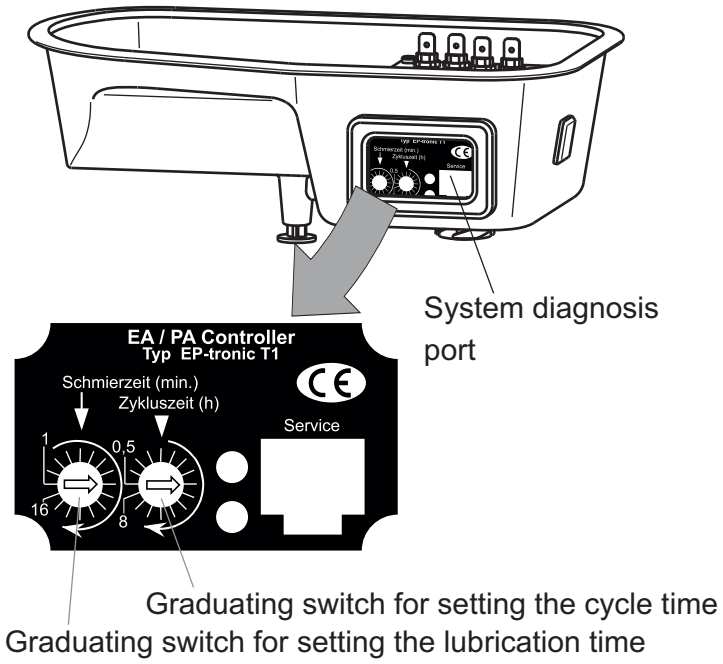
The cycle time and lubrication time, the number of strokes and the number of revolutions can be set by means of graduating switches in the inspection window of the control unit.

For the adjustment, remove the red frame at the pump‘s motor housing, using a flat screwdriver, loosen the four Philips screws and remove the transparent protection cover.
The cycle time and lubrication time can also be adjusted with a flat screwdriver.

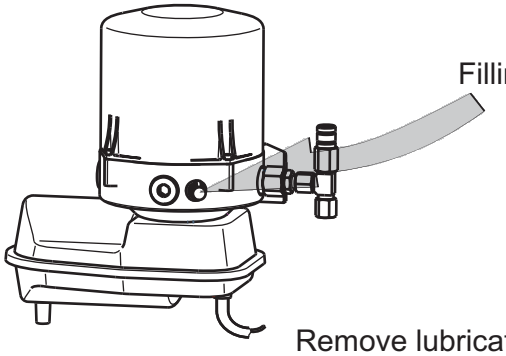
**Attention!**

If the cover plate is not replaced properly, water may enter the control unit and damage it. Your guarantee expires in this case.



# 13. Filling of the pump:

## 13.1. Standard filling via lubrication nipple with manual or pneumatic grease gun:



Filling lubrication nipple

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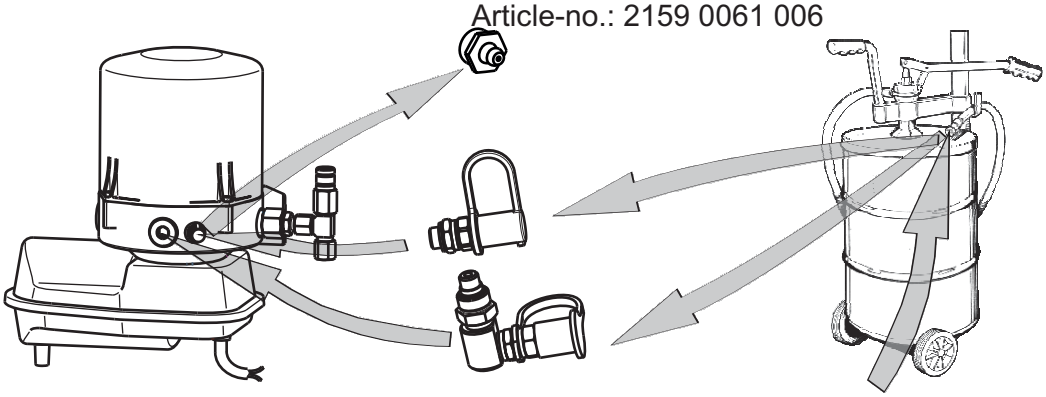
## 13.2. Filling via filler coupling:

Remove lubrication nipple
and replace it by a coupling
plug for grease
Article-no.: 2159 0061 006

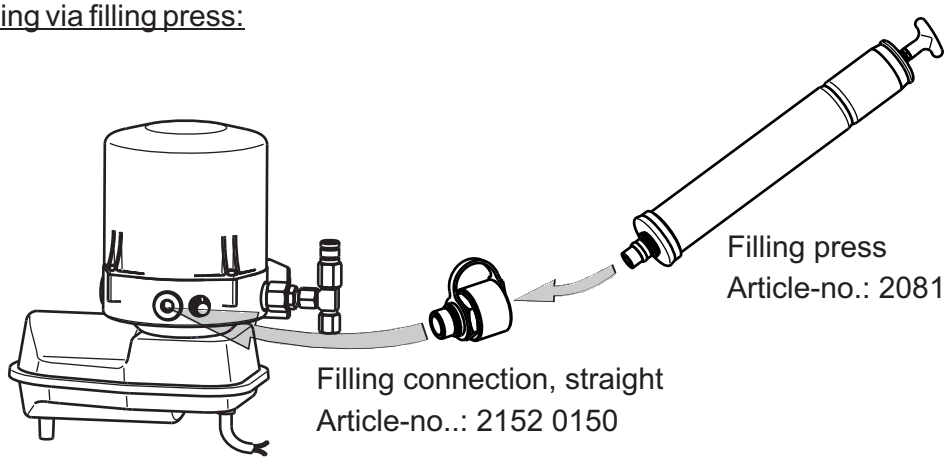


Filling plug grease
Article-no.: 2159 0063 009

Coupling sleeve grease
Article-no.: 2159 0062 009



## 13.3. Filling via filling press:



Filling press
Article-no.: 2081 030 26

Filling connection, straight
Article-no..: 2152 0150

**Attention!** Utmost cleanness is essential for this work!
Only fill in clean lubricant!

**Note!** The service life of the pump elements highly depends on the quality (impurities) of the used lubricant!

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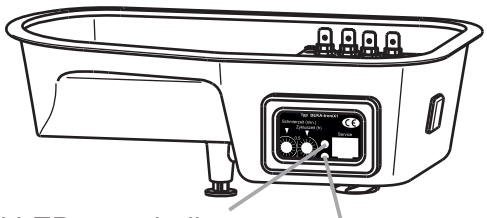
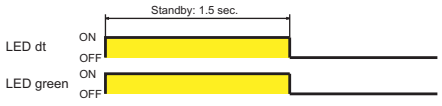
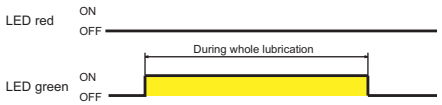
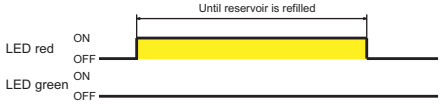
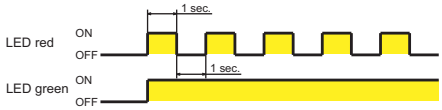
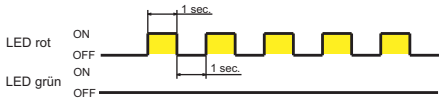
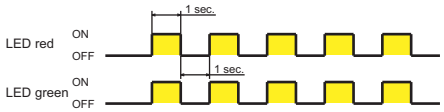
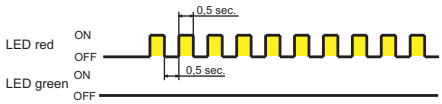
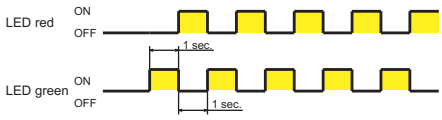
# 14. Signals:

The pump‘s functions are indicated by two LEDs (green/red) in the inspection window of the motor housing of the pump, whereas the red LED always indicates an error in the program sequence.




| Signals | Function | BEKA-troniX1 | EP-tronic |
|---|---|---|---|
|   | Standby indicator | X | X |
|   | Lubrication sequence | X | X |
|   | Grease level error | X | X |
|   | Excess pressure error | X | X |
|   | Revolution error | X | X |
|   | Stroke error | | X |
|   | Memory error | X | X |
|   | Test lubrication | X | X |

In order to activate permanent lubrication for service purposes in the mode „time control“, the lubrication time has to be set on a higher value than the cycle time.

## 15. Ventilation of the pump:

If the lubricant reservoir has been emptied completely by mistake, it may be necessary to ventilate the pump.
To do so, proceed al follow:

1. Unscrew main line from pump outlet.
2. Trigger additional lubrication pulse until lubricant comes out of the pump outlet without air inclusions.
3. Reconnect main line.
4. Trigger additional lubrication pulse.



## 16. Service and maintenance:

All components of the grease central lubrication pump are maintenance-free.
Cleaning in washing plants or with steam jet devices (minimum distance 40 cm) is permitted.

Ensure that the current supply is deactivated (ignition off) before doing maintenance works at the pump. Clean soiled or contaminated surfaces before the maintenance work and wear protective cloths if necessary.



Nevertheless should a visual inspection be carried out in regular intervals:

- Check the level.
- Check the condition of the electrical lines (electric main, connection cables to the progressive distributor, etc.).
- Check the electrical connections (connectors).
- Check the perfect function of the control unit by triggering an intermediate lubrication.
- Only replace defective fuses by equivalent ones.
- Check all components for leakage or damages every four weeks.

**Attention!**

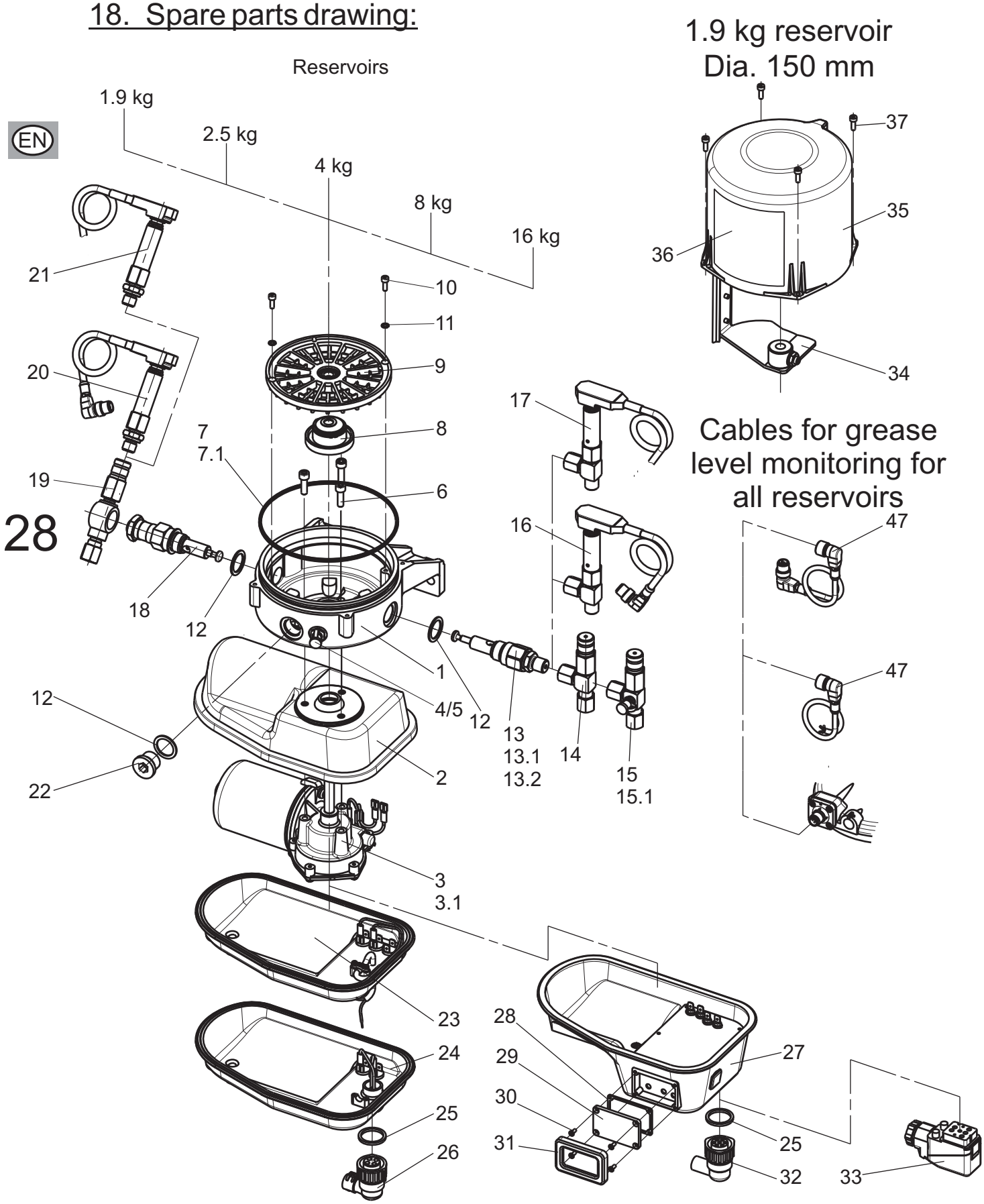
All further works may only be carried out by the staff of BEKA or by staff trained by BEKA.

## 17.Disposal:

**Note!**

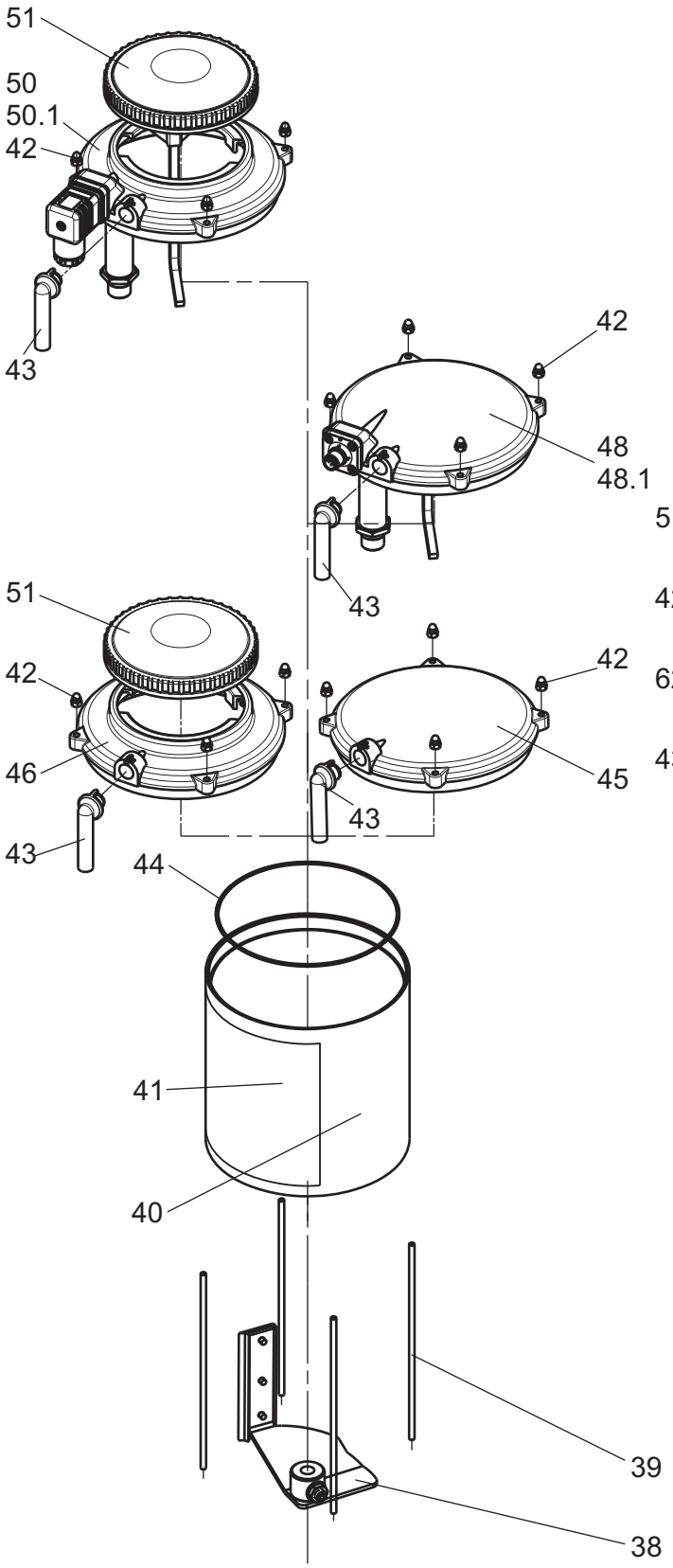
The waste disposal advice of the well fluid manufacturer must be heeded when changing lubricant!
Observe the regional valid regulations concerning the disposal of the grease lubrication pump.

# 18. Spare parts drawing:

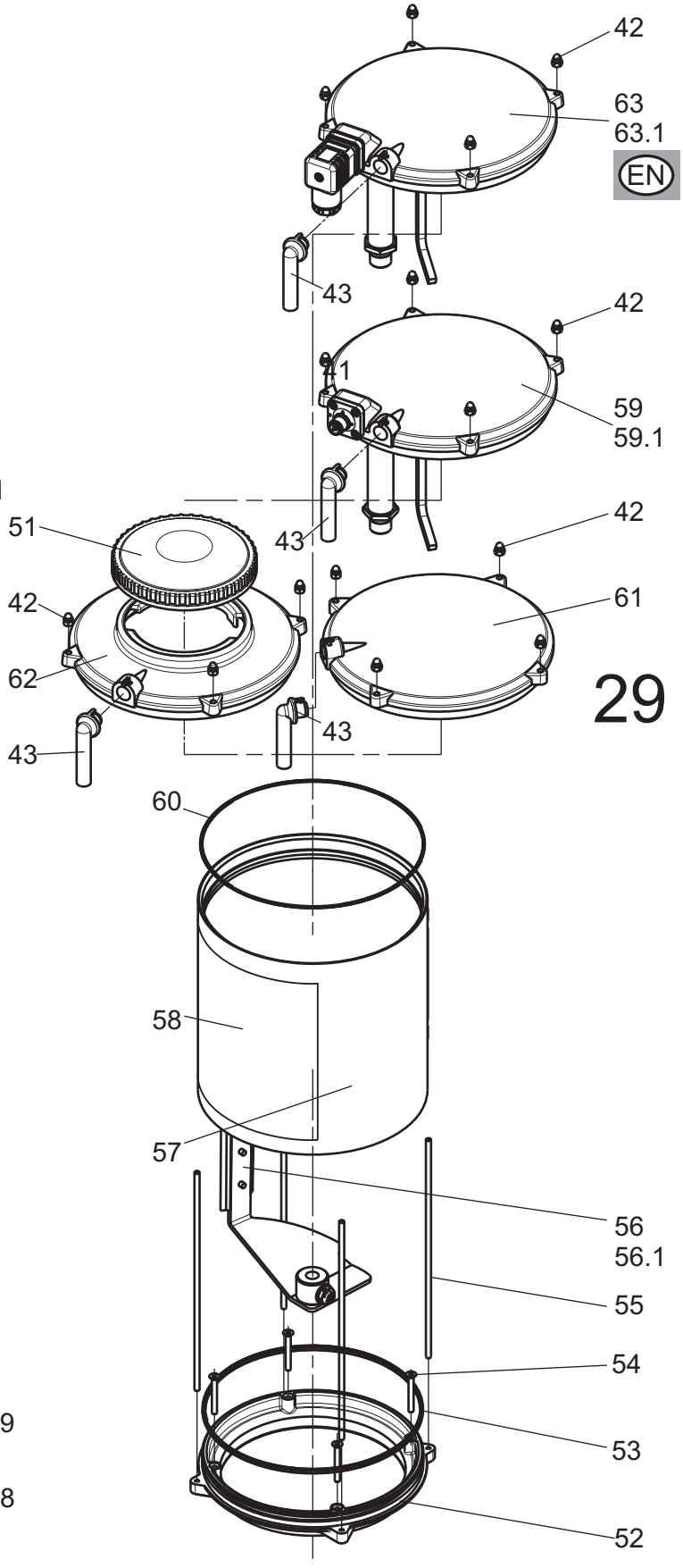



28

## 2.5 kg reservoir
## Dia. 150 mm




## Dia. 180 mm
## 4 kg reservoir

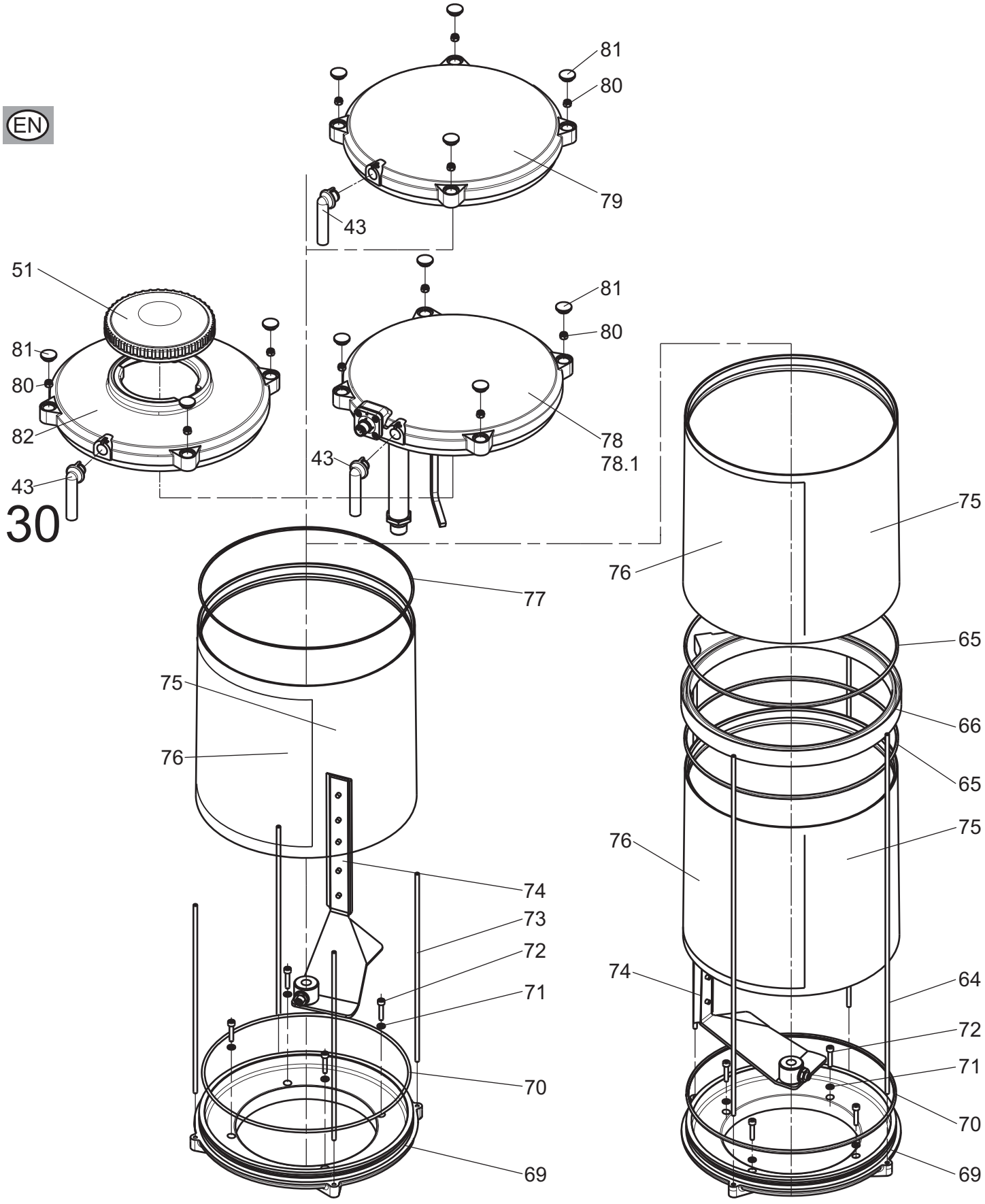



EN

EN

## 8 kg reservoir
Dia. 226 mm

## 16 kg reservoir
Dia. 226 mm




30

# 19. Spare parts list:

| Pos. | Qty. | Designation | Item number |
|---|---|---|---|
| 1 | 1 | Pump housing | 21520010 |
| 2 | 1 | Motor housing above | FMZ00437-00 |
| 3 | 1 | Direct current gear motor 12 V | 00503100000496 |
| 3.1 | 1 | Direct current gear motor 24 V | 00503100001169 |
| 4 | 1 | Hydraulic form grease nipple A1 G1/4” | 097141201111 |
| 5 | 1 | Cap for hydraulic form grease nipple | 1004010021 |
| 6 | 3 | Cylinder screw with internal hexagon M6x25 | 090091204021 |
| 7 | 1 | O-ring 135x3.5 for 1.9 kg reservoir | 09037710210141 |
| 7.1 | 1 | O-ring 135x3 for 2.5 to 8 kg reservoirs | 09037710152141 |
| 8 | 1 | Eccentric unit | 21520020 |
| 9 | 1 | Perforated base plate complet | 21520040 |
| 10 | 2 | Cylinder screw with internal hexagon M4x12 | 090091200321 |
| 11 | 2 | Spring ring B4 | 090012800411 |
| 12 | 0-3 | Cu-sealing ring 27x20x1.5 | 090760300811 |
| 13 | 0-3 | Pump element PE-60 without PRV incl. sealing ring | 2152990670003 |
| 13.1 | 0-3 | Pump element PE-120 without PRV incl. sealing ring | 2152990610103 |
| 13.2 | 0-3 | Pump element PE-170 without PRV incl. sealing ring | 2152990690100 |
| 14 | 0-3 | Pressure relief valve for PE-60, PE-120 a. PE-170 | 21520060 |
| 15 | 0-3 | Pressure relief valve right for PE-60 to PE-170 with lubrication nipple, without connecting piece | 21520076 |
| 15.1 | 0-3 | Pressure relief valve left for PE-60 to PE-170 with lubrication nipple, without connecting piece | 21520068 |
| 16 | 0-3 | Pressure relief valve for PE-60 to PE-170 with micro switch for BEKA-troniX1 and EP-tronic | 215299115 |
| 17 | 0-3 | Pressure relief valve for PE-60 to PE-170 with micro switch without plug M12x1 | 215299100 |
| 18 | 0-3 | Pump element PE-120 V with PRV incl. sealing ring | 2152990630014 |
| 19 | 0-3 | Pressure relief valve for PE-120 V | 21520063 |
| 20 | 0-3 | Pressure relief valve for PE-120 V with micro switch for BEKA-troniX1 and EP-tronic | 215299116 |
| 21 | 0-3 | Pressure relief valve for PE-120 V with micro switch without plug | 2152990610028 |
| 22 | 0-3 | Plug screw M20x1.5 | 090090800850 |
| 23 | 1 | Motor housing below with cable length 10 ml | 21520103 |
| 24 | 1 | Motor housing below with bayonet connector without connecting cable | 21520108 |
| 25 | 1 | Sealing for bayonet connector | 08100192 |
| 26 | 1 | Bayonet connector 4-poles without cable | 1000913356 |
| 27 | 1 | Motor housing below with integrated control unit BEKA-troniX1 or EP-tronic | see order key |
| 28 | 1 | Sealing for inspection window at motor housing below | 080100116 |
| 29 | 1 | Inspection window for motor housing below | FMZ00439-00 |
| 30 | 4 | Slotted countersunk head screw M3x8 for inspection window | 09i07046101121 |
| 31 | 1 | Frame for inspection window, red | FMZ00442-000 001 |
| 32 | 1 | Bayonet connector 7-poles for integrated control units | 1000912932 |

| Pos. | Qty. | Designation | Item number |
|---|---|---|---|
| 1.9 kg lubricant reservoir: | | | |
| 34 | 1 | Agitator blade f. 1.9 kg reservoir w. fastening material | 21520053 |
| 35 | 1 | Transparent reservoir 1.9 kg | FMZ00460-00 |
| 36 | 1 | Filling level sticker for 1.9 kg reservoir BEKA-MAX | 0490030103 |
| 37 | 4 | Socket head cap screw M4x12 | 090091200323 |
| 2.5 kg lubricant reservoir (outside dia. 150 mm): | | | |
| 38 | 1 | Agitator blade f. 2.5 kg reservoir w. fastening material | 21520050 |
| 39 | 4 | Connecting rod for 2.5 kg lubricant reservoir | 0802000345 |
| 40 | 1 | Transparent reservoir 2.5 kg (outside dia.150 mm) | F0396/03-00 |
| 41 | 1 | Filling level sticker f. 2.5 kg reservoir model for grease with BEKA-MAX-Logo | 0490030049 |
| 42 | 1 | Head nut M4, DIN 986 | 090098600113 |
| 43 | 1 | Ventilation tube | FMZ00486-00 |
| 44 | 1 | O-ring 160 x2.5 f. reservoir cover f. 2.5 kg reservoir | 09037710141141 |
| 45 | 1 | Reservoir cover 2.5 kg incl. o-ring, Head nut and ventilation tube | 21520380 |
| 46 | 1 | Reservoir cover 2.5 kg with filling cover, incl. o-ring, head nut and ventilation tube | 21520381 |
| 47 | 1 | Cable with angular connector M12x1 with a free end length 5 m, to connecting the grease level control | 1000912997 |
| 48 | 1 | Reservoir cover 2.5 kg with grease level control min. with connection M12x1, Standard model, with or without connecting cable, incl. o-ring, head nut a. ventilation tube | see order key |
| 48.1 | 1 | Reservoir cover 2.5 kg with grease level control min. with connection M12x1, low temperature version with or without connecting cable, incl. o-ring, head nut a. ventilation tube | see order key |
| 49 | 1 | Cable with connection M12x1 angular on both sides length 0.6 m, to connecting the grease level control to the integrated control units BEKA-troniX1 and EP-tronic | 1000912998 |
| 50 | 1 | Reservoir cover 2.5 kg with filling cover with grease level control min. w. cubic plug,10-60 V DC, with or without connecting cable., incl. o-ring, head nut. a. ventilation tube | see order key |
| 50.1 | 1 | Reservoir cover 2.5 kg w. filling cover, w. grease level control min. w. cubic plug, 90-250 V AC, w. NO, NC contact, with or without connecting plug, incl. o-ring, head nut and ventilation tube | see order key |
| 51 | 1 | Filling cover | 04500020 |
| 4 kg lubricant cover (outside dia. 180 mm): | | | |
| 52 | 1 | Intermediate flange 4 kg (model for grease) | FMZ00426-00 |
| 53 | 1 | O-ring 165x3 (model for grease) | 09037710062141 |
| 54 | 4 | Countersunk screw M4x35 (model for grease) | 090799100111 |
| 55 | 4 | Connecting rod for 4 kg lubricant reservoir | 0802000349 |
| 56 | 1 | Agitator blade for 4 kg reservoir incl. fastening mat. | 21520051 |
| 57 | 1 | Transparent reservoir 4 kg (outside dia. 180 mm) | F0395/17-00 |
| 58 | 1 | Filling level sticker for 4 kg reservoir model for grease with BEKA-MAX-Logo | 0490030219 |
| 59 | 1 | Reservoir cover 4 kg w. grease level control min. with connection M12x1, Standard model with or without connecting cable, incl. o-ring, head nut. a. ventilation tube | see order key |

| Pos. | Qty. | Designation | Item number |
|---|---|---|---|
| 59.1 | 1 | Reservoir cover 4 kg with grease level control min. with connection M12x1, low temperature version, with o. without connecting cable, incl. o-ring, head nut a. ventilation tube | see order key |
| 60 | 1 | O-ring 160x2.5 for 4 kg reservoir | 09037710141141 |
| 61 | 1 | Reservoir cover 4 kg, incl. o-ring, head nut and ventilation tube | 21520386 |
| 62 | | Reservoir cover 4 kg with filling cover, incl. o-ring, and ventilation tube | 21520387 |
| 63 | 1 | Reservoir cover 4 kg with grease level control with cubic plug 10-60 V DC, with or without connecting plug, incl. o-ring, head nut. and ventilation tube | see order key |
| 63.1 | 1 | Reservoir cover 4 kg with grease level controle with cubic plug 90-250 V AC, w. NO, NC contact, with or without connecting cable, incl. o-ring, head nut a. ventilation tube | see order key |
| 16 kg lubricant reservoir (outside dia. 226 mm) | | | |
| 64 | 4 | Connecting rod for 16 kg reservoir | 0802000713 |
| 65 | 1-2 | O-ring Ø215.49 x Ø3.53 | 09037710274141 |
| 66 | 1 | Intermediate flange 8 to 16 kg reservoir | FWZ05106-00 |
| 8 kg lubricant reservoir (outside dia. 226 mm) | | | |
| 69 | 1 | Intermediate flange for 8 kg reservoir | F0396/39-07 |
| 70 | 1 | O-Ring 209.14x3.53 | 09037710272141 |
| 71 | 4 | Cu-sealing ring 4x8x1 | 090760301211 |
| 72 | 4 | Socket head cap screw M4x20 | 090091201423 |
| 73 | 4 | Connecting rod for 8 kg reservoir | 0802000351 |
| 74 | 1 | Agitator blade for 8 kg reservoir incl. fastening mat. | 21520055 |
| 75 | 1 | Transparent reservoir 8 kg (outside dia. 226 mm) | FMZ00502-00 |
| 76 | 1 | Filling level sticker for 8 kg reservoir | 0490030389 |
| 77 | 1 | O-ring 180x3 | 09037710154141 |
| 78 | 1 | Reservoir cover 8 w. grease level control min. with connection M12x1, Standard model, with or without connecting cable., incl. o-ring, head nut a. ventilation tube | see order key |
| 78.1 | 1 | Reservoir cover 8 kg w. grease level control min. with connection M12x1, low temperature model, with or without connecting cable, incl. o-ring, head nut. a. ventilation tube | see order key |
| 79 | 1 | Reservoir cover for 8 kg reservoir, incl. o-ring, head nut and ventilation tube | 21520392 |
| 80 | 4 | Hex. nut M4, self locked | 090098500233 |
| 81 | 4 | Cover for connecting rods for 8 kg reservoir | 1004010166 |
| 82 | 1 | Reservoir cover for 8 kg reservoir with filling cover, incl. o-ring, head nut and ventilation tube | 21520394 |

# 20. Order key for EP-1 with integrated control unit BEKA-troniX1:

EN

**Construction type** — **2175 . 3 . ? . ? . ? . ? . ? . ? . 000**

| Motor voltage | |
|---|---|
| with bayonet connector | |
| 12V | 24V |
| 3 | 4 |

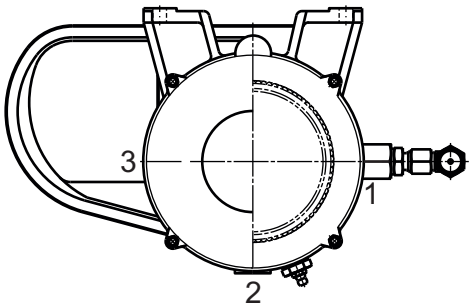
| Outlet | Pump element | without | PE-60 | PE-120 | PE-120 V | PE-120 |
|---|---|---|---|---|---|---|
| Pos. 1 | without micro switch | 0 | 7 | 1 | 2 | G |
| | with micro switch | 0 | A | D | N | H |
| Pos. 2 | without micro switch | 0 | 8 | 3 | 4 | J |
| | with micro switch | 0 | B | E | P | K |
| Pos. 3 | without micro switch | 0 | 9 | 5 | 6 | L |
| | with micro switch | 0 | C | F | Q | M |
| Special variants | | ZZZ | | | | |

Only one micro switch can be connected to the BEKA-troniX1 control unit!

| | Transparent reservoir | | | | | Steel reservoir | | |
|---|---|---|---|---|---|---|---|---|
| Size of reservoir (kg) | 1.9 | 4 | 2.5 | 8 | 16 | 2 | 4 | 8 |
| without grease level control | 1 | 2 | 4 | 8 | 9 | 6 | 7 | 5 |
| with LM min. plug connection M12x1 in reservoir cover | | B | A | C | | | | |

| Additional equipment | |
|---|---|
| Without connectors for additional equipment | 0 |
| Grease level control | 1 |
| System excess pressure monitoring | 2 |
| Grease level control and system excess pressure monitoring | 3 |
| Without connection to the controller (only connectors, not connected, not activated) | 4 |

Positions of outlets:




| Parameter | | Cycle during | | |
|---|---|---|---|---|
| Lubrication time | | 0,5 to 8 h | 2 to 32 min. | 2 to 32 h |
| I | 1 to 16 min. | 1 | A | J |
| II | 2 to 32 min. | 2 | B | K |
| III | 2 to 32 sec. | 3 | C | L |
| Pump revolutions | | | | |
| I | 1 to 16 | 7 | G | O |
| II | 10 to 160 | 8 | H | Q |
| III | 170 to 320 | 9 | I | R |

| Special variants | 000 |
|---|---|

The operating modes and setting ranges, resp., can be subsequently set in the PC by means of the diagnostic software BEKA-DiSys.

Additional functions can be activated or deactivated at any time if the controller was ordered with additional functions, i. e. if the additional plugs are available on the bottom motor housing!

# 21. Ordering key for EP-1 with integrated control unit EP-tronic:

**Construction type** — **2157 . 3 . ? . ? . ? . ? . ? . 0000**

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| Motor voltage | |
|---|---|
| with bayonet connector | |
| 12V | 24V |
| 3 | 4 |

| | Figure | | | | |
|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 0 |
| 2 | 1 | 2 | 3 | 4 | 0 |
| 3 | 1 | 2 | 3 | 4 | 0 |
| Outlet position | PE-120 | PE-120 V | PE-60 | PE-170 | without |

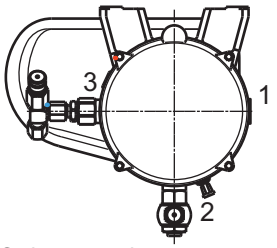
| Fig. | Code | Fig. | Code | Fig. | Code | Fig. | Code |
|---|---|---|---|---|---|---|---|
| 001 | G | 002 | K | 003 | N | 004 | R |
| 010 | H | 020 | L | 030 | P | 040 | S |
| 011 | J | 022 | M | 033 | Q | 044 | T |
| 100 | 1 | 200 | 4 | 300 | V | 400 | D |
| 110 | 2 | 220 | 5 | 330 | B | 440 | E |
| 111 | 3 | 222 | 6 | 333 | C | 444 | F |
| 120 | 7 | 021 | 9 | 112 | 8 | 123 | U |
| 102 | W | Special variants | | | | | Z |

| | Transparent reservoirs | | | | | Steel reservoirs | | |
|---|---|---|---|---|---|---|---|---|
| Size of reservoir (kg) | 1,9 | 4 | 2,5 | 8 | 16 | 2 | 4 | 8 |
| not attached to controller | 1 | 2 | 4 | 8 | K | A | B | C |
| with LM min. plug connection M12x1 in reservoir cover | | N | M | P | | | | |

| Additional equipment | |
|---|---|
| not attached to controller | 0 |
| Attached to controller | |
| System excess pressure monitoring | 1 |
| Grease level control | 2 |
| System excess pressure monitoring and grease level control | 3 |

| Parameter | | Cycle duration | | |
|---|---|---|---|---|
| Lubrication time | | 0,5 to 8 h | 2 to 32 min. | 2 to 32 h |
| I | 1 to 16 min. | 1 | A | J |
| II | 2 to 32 min. | 2 | B | K |
| III | 2 to 32 sec. | 3 | C | L |
| Strokes | | | | |
| I | 1 to 16 strokes | 4 | D | M |
| II | 17 to 32 strokes | 5 | E | N |
| III | 33 to 48 strokes | 6 | F | O |
| Pump revolutions | | | | |
| I | 1 to 16 | 7 | G | P |
| II | 10 to 160 | 8 | H | Q |
| III | 170 to 320 | 9 | I | R |

Positions of outlets:




Order example

| Outlet position: | 1 | 2 | 3 |
|---|---|---|---|
| Figure: | 0 | 2 | 1 |
| Code: | | 9 | |

| With collective error notification (stat. error) (standard) | 1 |
|---|---|
| With starter enabling device | 2 |

| Special variants | 0000 |
|---|---|

Other combinations of pump elements on demand!
All additional functions respectively time periods can be activated respectively set later with the system analysis software on PC.

# 22. Order key of level monitoring:

integrated in reservoir cover

| Construction type | 4458 . 1 . 1 . 1 . 1 . 00 |
|---|---|

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| Temperature range | Standard version up to -20°C | | | |
|---|---|---|---|---|
| Operating voltage | 10 - 60 V DC | | 90 - 250 V AC | |
| Version | min. | min. and max. | min. | min. and max. |
| Code | 1 | 2 | 3 | 4 |
| Temperature range | Low temperature version up to -40°C | | | |
| Operating voltage | 12 - 30 V DC | | | |
| Version | min. | | min. and max. | |
| Code | 5 | | 6 | |

| Reservoir size | 2 and 2.5 kg | 4 and 4.2 kg | 8 kg |
|---|---|---|---|
| Code | 1 | 2 | 3 |

| Connection type | M12x1 | | |
|---|---|---|---|
| Connection cable | without | M12x1 bush 90° M12x1 plug 90° length 0.6 m | M12x1 bush 90° free cable ending length 5 m |
| Code | 1 | 2* | 3 |
| Connection type | Cubic plug acc. DIN 43650 without cable | | |
| Cable connection | only plug socket | Socket with plug | only plug socket | Socket with plug |
| Switch type | NO contact | | NC contact | |
| Code | 4 | 5 | 6 | 7 |

| Filling cover | without | with |
|---|---|---|
| Code | 1 | 2 |

| Special version | without |
|---|---|
| Code | 00 |

* Version for connection at integrated control unit (only at min. 10-60 V DC).

# 23. Order key for the control units:

## 23.1. Control unit EP-tronic:

**Construction type** — **2157 . 90 . 10 . 0 . A . 1 . 00**

| Connector version | |
|---|---|
| with bayonet connector | 10 |

| Additional equipment | |
|---|---|
| not connectred to control unit | 0 |
| Connectred to control unit | |
| System excess pressure monitoring | 1 |
| Grease level control | 2 |
| System excess pressure monitoring and grease level control | 3 |

| Parameter | | Cycle during | | |
|---|---|---|---|---|
| Lubrication time | | 0,5 to 8 h | 2 to 32 min. | 2 to 32 h |
| I | 1 to 16 min. | 1 | A | J |
| II | 2 to 32 min. | 2 | B | K |
| III | 2 to 32 sec. | 3 | C | L |
| Strokes | | | | |
| I | 1 to 16 strokes | 4 | D | M |
| II | 17 to 32 strokes | 5 | E | N |
| III | 33 to 48 strokes | 6 | F | O |
| Pump revolutions | | | | |
| I | 1 to 16 | 7 | G | P |
| II | 10 to 160 | 8 | H | Q |
| III | 170 to 320 | 9 | I | R |

| | |
|---|---|
| with collective error notification (stat. error) (standard) | 1 |
| with starter enabling device | 2 |

| Special versions | 00 |
|---|---|

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23.2. Control units BEKA-troniX1:

**Construction type** — **2175 . 90 . 10 . 0 . A . 000**

| Connector version | |
|---|---|
| with bayonet connector | 10 |

| Additional equipment | |
|---|---|
| Without connectors for additional equipment | 0 |
| with grease level control | 1 |
| with system excess pressure monitoring | 2 |
| with grease level control and system excess pressure monitoring | 3 |
| with connectors for additional equipment (not activated) | 4 |

| Parameter | | Cycle duration | | |
|---|---|---|---|---|
| Lubrication time | | 0,5 to 8 h | 2 to 32 min. | 2 to 32 h |
| I | 1 to 16 min. | 1 | A | J |
| II | 2 to 32 min. | 2 | B | K |
| III | 2 to 32 sec. | 3 | C | L |
| Pumps revolutions | | | | |
| I | 1 to 16 | 7 | G | P |
| II | 10 to 160 | 8 | H | Q |
| III | 170 to 320 | 9 | I | R |

| Special versions | 000 |
|---|---|

# 24. Malfunction - Cause - Remedy:

| Malfunction | Cause | Remedy |
|---|---|---|
| – Pump does not operate | – Fuse of unit blown<br>– Integrated electronic control defective<br>– Electrical cable broken<br>– Pump defective<br>– Pump element not nested | – Replace fuse<br>– Replace integrated control<br>– Renew electrical cable<br>– Replace the pump<br>– Renew pump element |
| – Pump operates, but does not supply lubricant | – Air in the feed piston<br>– Filling level below minimum<br>– Defective pump element | – Ventilate the pump<br>– Refill the reservoir<br>– Renew pump element |
| – No grease collar at all lubrication points | – Pump does not work<br>– Cycle time too long<br>– Lubrication time too short<br>– Number of strokes too low<br>– Number of rotations too low<br>– Pump element PE-120 V adjusted too low<br>– System blocked | – See „Pump does not operate“<br>– Reduce cycle time<br>– Increase lubrication time<br>– Increase number of strokes<br>– Increase number of rotations<br>– Adjust pump element<br>– See „Leakage of grease at the pressure relief valve“ |
| – No grease collar at several lubrication points | – Feed pipes for secondary distributors burst or leaky<br>– Fitting leaky | – Renew the pipe<br>– Re-tighten or renew the fitting |
| – No grease collar at one lubrication point | – Appropriate lubrication line burst or leaky<br>– Fitting leaky | – Renew the pipe<br>– Re-tighten or renew the fitting |
| – Reduced pump speed | – High pressure in the system<br>– Low ambient temperature | – Check system / bearing points<br>– Not defectiveness (1 or 2 intermediate lubrication cycles might be useful) |

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| Malfunction | Cause | Remedy |
|---|---|---|
| – Leakage of grease at the pressure relief valve | – Excessive pressure in the system<br>– Progressive distributor blocked<br>– System blocked<br>– Defective valve spring | – Check the system<br>– Replace distributor<br>– Repair blocked bearing point<br>– Renew the pressure relief valve |
| – The red indicator pin at the malfunction indicator of the pump element is visible | – Excessive system pressure | – See „Leakage of grease at the pressure relief valve“ |
| – The LEDs in the inspection window of the control flash | – Pump lubricates<br>– Grease error level<br>– Excessive pressure error<br>– Rotation error<br>– Stroke error<br>– CPU / memory error | – No error (see signals)<br>– Fill reservoir<br>– Check the system and repair it, if necessary<br>– Check the system and repair it, if necessary<br>– If there is no defectiveness, activate intermediate lubrication once or twice<br>– Exchange the control unit |
| – Level error, although the reservoir is filled with lubricant | – Capacitive proximity switch in the reservoir defective<br>– Cable of the level monitoring defective | – Send the lubricant reservoir with level monitoring in for being repaired<br>– Exchange the cable |
| – Level error although there is no level monitoring in the pump | – Level monitoring activated in the control unit | – Deactivate level monitoring in the control unit with the system diagnosis software BEKA-DiSys |
| – The pump function (pump operating time or cycle time) does not correspond to the values adjusted in the inspection window of the control unit | – The operating mode or the adjustment range of the control has been changed, but the sticker in the inspection window not | – Make a diagnosis with the diagnosis software BEKA-DiSys<br>– Adapt the adjustment to the sticker in the inspection window or exchange the sticker |

## For your notes:

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## For your notes:

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## For your notes:

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