

## Integrated electronic controller Type BEKA-troniX1

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### 1. General information:

The BEKA-troniX1 controller generation is a new design of units in an integrated mould for the EP family of pumps.

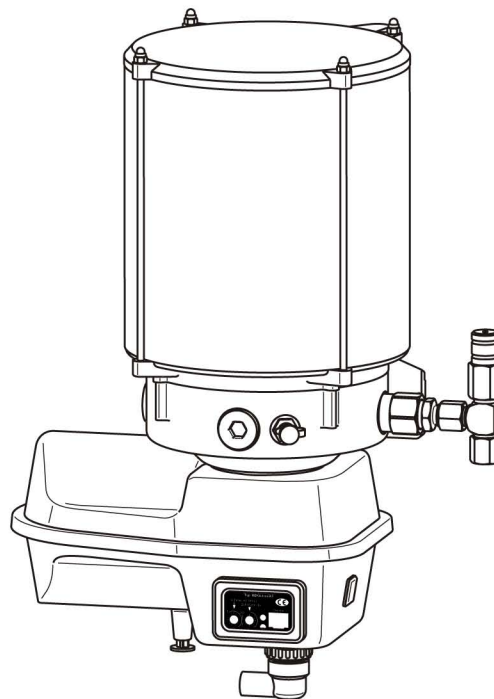
The controlling device is fitted with a database, which saves the following values:

- Controlling type
- Controller version
- Serial Number
- Manufacturing date
- Method of operation (controlling according to time or revolutions)
- Set values (adjusting ranges)

The following modes can be selected for the controller by means of the diagnostic software BEKA-DiSys:

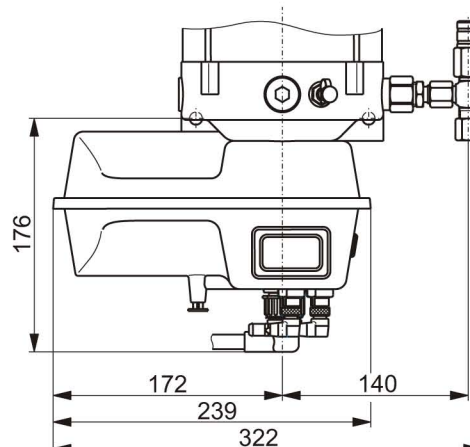
- A) Time controlling
- B) Revolution controlling

Electronic pump EP-1 with integrated controller BEKA-troniX1:



### Installation dimensions:

The electrical pump EP-1 with integrated controller BEKA-troniX1 can be equipped with various reservoir versions. For the installation dimensions of the reservoir versions, see the description EP-1.



## BEKA-troniX1

### 2. Function sequence

Whatever program is being used, once the ignition has been switched on the green and the red LED or the green and the red signal lamp (optional) lights up on the control panel for 1.5 sec. and shows that the controller is operational (activation control).

Every time the controller is activated for the first time, a lubrication process begins. The green LED in the control half shell is lit during the entire lubrication procedure.

The BEKA-troniX1 integrated electronic controlling device has memory at its disposal. This also serves to keep a record of time elapsed. Should the ignition be switched off during lubrication or operational pauses occur, then the time is stopped and recorded. Once the ignition is switched on again the remaining lubrication or pause time is read from the memory and the sequence will be resumed where it was interrupted.

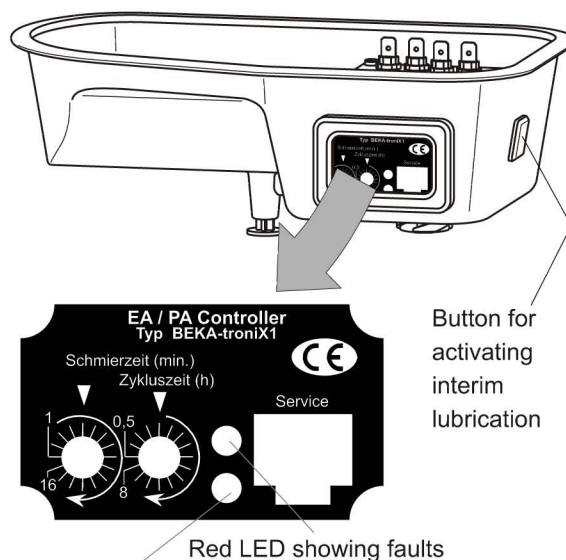
At any time when the ignition is on, an interim lubrication occurs when the button on the side of the pump motor housing or the illuminated button on the control panel is activated, this serves as a check of functionality. The pump then immediately starts its lubrication cycle, the lubrication or cycle duration recorded up to that point is reset and starts from the beginning.

An interim lubrication can also be triggered via an external button, and the indication of the red and green LEDs can also be displayed by a red and green signal lamp in the driver's cab.

A error can be reset by pressing the interim lubrication button and the pump starts the lubrication process anew.

The lamp on the illuminated button (green) shows the functionality of the controller and the current lubrication sequence.

BEKA-troniX1 integrated electronic controller:



Green LED showing function

#### **Technical data for the controller:**

Operating voltage:	10 to 60 V DC
Maximum current load:	I = 6,0 A
Fuse (not included in device):	F 6,3 A (5x20) medium slow-blow fuse
Signal lamp outlet:	I = 0,4 A
Temperature range:	-35°C to +75°C
Degree of protection:	IP 65

#### **Before the electrical connection:**

**Observe the voltage of the pump motor.**

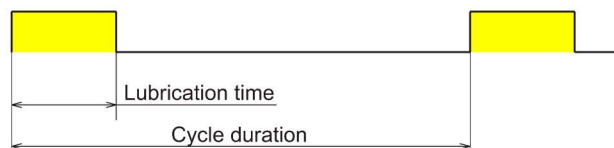
## BEKA-troniX1

### 3. Method of operation

#### A) Time controller:

When the central lubrication processor is time controlled, the cycle duration and the lubrication time can be adjusted. Cycle duration means the period from the beginning of one lubrication process to the beginning of another lubrication process.

Diagram of cycle sequence:



#### B) Revolution controller:

In the case of revolution fluctuations at lower temperatures or high torque, the lubrication duration for the BEKA-troniX1 integrated electronic controller is determined by the number of pump motor revolutions.

The pump motor is connected to the controller via sliding contacts. With every engine revolution a signal is sent to the controller, which counts the incoming signals.

If no signal is received from the pump motor for longer than the adjustable monitoring time (standard 30 sec.) after the lubricating process has begun, then the controller will indicate a fault.

The red LED in the pump's lower motor casing display or an externally attached signal lamp (optional) will start to flash.

## BEKA-troniX1

### 4. Adjusting the parameters

The cycle time or lubrication time and the number of revolutions can be set by means of graduating switches in the controller's sight glass.

To adjust the time setting, remove the red frame on the pump's motor housing using a flat screwdriver, loosen the four Phillips screws and remove the transparent protective cover.

The cycle during or lubrication time can be adjusted using a flat screwdriver.

If the cover plate is not replaced properly, water may enter the controller and damage it. In this case, the guarantee is no longer valid.

The modes and the adjusting ranges can be changed over by means of the diagnostic software BEKA-DiSys, even on site if the controller has already been operated before at the customer's.

All adjusting ranges for the lubrication period and all cycle time ranges can be combined at random.

#### Adjusting the parameters:

##### Lubrication times:

- 1 to 16 min. (16 grades every 1 min.)
- 2 to 32 min. (16 grades every 2 min.)
- 2 to 32 sec. (16 grades every 2 sec.)

##### Revolutions of pump:

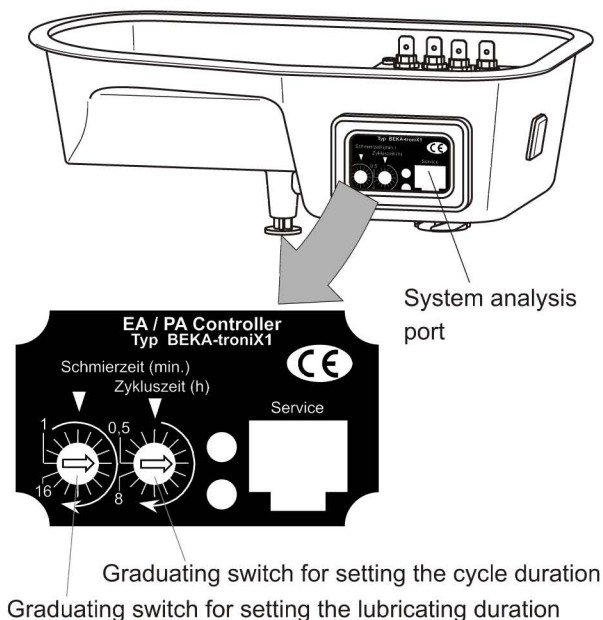
- 1 to 16 revolutions (16 grades every 1 revolution)
- 10 to 160 revolutions (16 grades every 10 revolutions)
- 170 to 320 revolutions (16 grades every 10 revolutions)

**When changing the activation modes and the adjusting ranges, the label in the controller window must be replaced.**

To this effect, a label kit consisting of 18 different label version is available; these can also be ordered individually afterwards.

Ref.-no. for label kit: 0490000342

BEKA-troniX1 integrated electronic controller:





## BEKA-troniX1 Additional equipment

The integrated electronic controller BEKA-troniX1 can be supplied with two additional functions:

- System excess pressure monitoring
- Grease level monitoring

The additional equipment can be attached to the BEKA-troniX1 controller with any selected program.

In case of a version with additional functions, besides the bayonet connector, two additional four-pole plug-and-socket connectors are located in the lower part of the motor casing.

These additional functions cannot be enabled subsequently in case controllers have been supplied without the as the plug-and-socket connectors at the lower part of the motor casing are missing.

The additional plug-and-socket connectors and the cables of the corresponding switches are marked by colors.

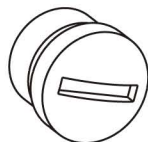
The plug-and-socket connector with the green ring serves to connect the system pressure monitoring system. The plug-and-socket connector with the red ring serves to connect the grease level monitoring system.

Plug-and-socket connectors which are not connected must be closed using a cover.

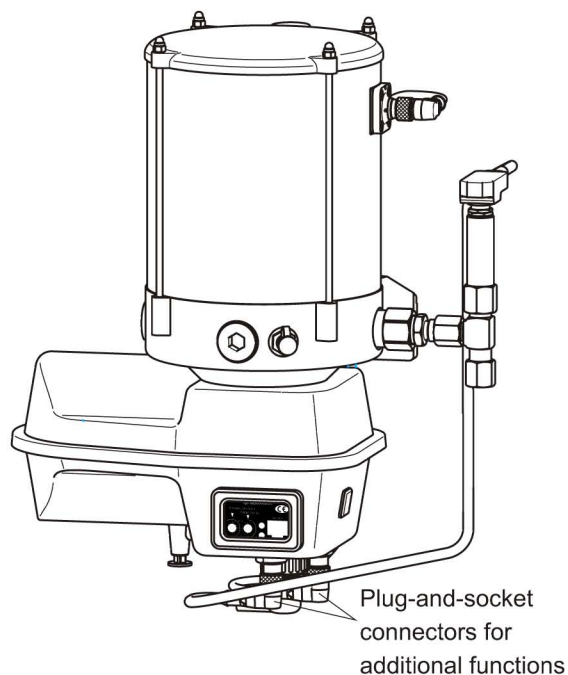
The additional functions to the controller can be specified in the order.

Cover to close an unused plug-and-socket connector for the supplementary functions of the integrated electronic controller BEKA-troniX1:

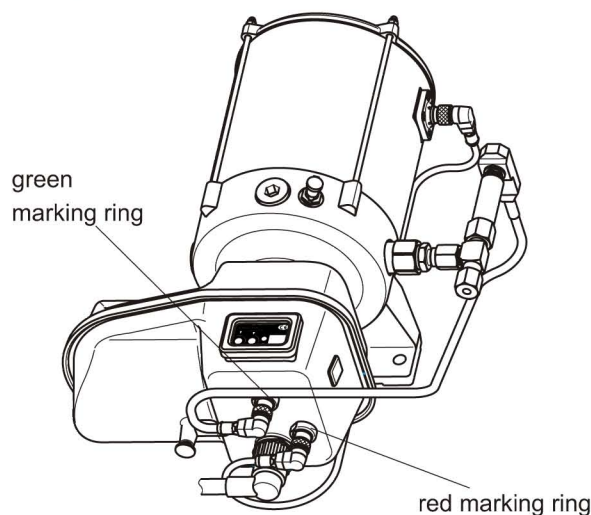
Order-no.: 1000913004



Excess pressure valve with micro switch on the pump element and grease level controller, built into electronic pump EP-1:



View of the integrated electronic controller BEKA-troniX1 from below:



## BEKA-troniX1

### 5. System excess pressure monitoring

With the BEKA-troniX1 integrated electronic controller, the maximum operating pressure of progressive lubrication system can be monitored.

For this purpose a micro switch has been attached to the excess pressure valve of pump element.

Should a fault occur in the system, e.g. a blockage at the point of lubrication, a pressure of more than 250 bar builds up. A micro switch in the excess pressure valve is activated and sends a signal to the controller. This switches the pump off and the fault is indicated by the flashing red LED and permanent illumination of the green LED or the externally attached signal lamps.

#### Technical data for the micro switch:

Operating voltage:	10 to 60 V DC
Maximum current load:	I = 1,7A
Contact type:	1 changer
Temperature range:	-25°C to +85°C
Degree of protection:	IP 67
Connection:	Cable, lenght Xm, heat-sealed with 4-pole right-angle plug

Specify in the order whether the micro-switch is to be delivered connected to the controller.

If the micro-switch is to be connected to another control unit, e. g. PLC, an additional cable can be ordered in different lengths (see description EP-1). It can be connected to the cable heat-sealed to the micro-switch.

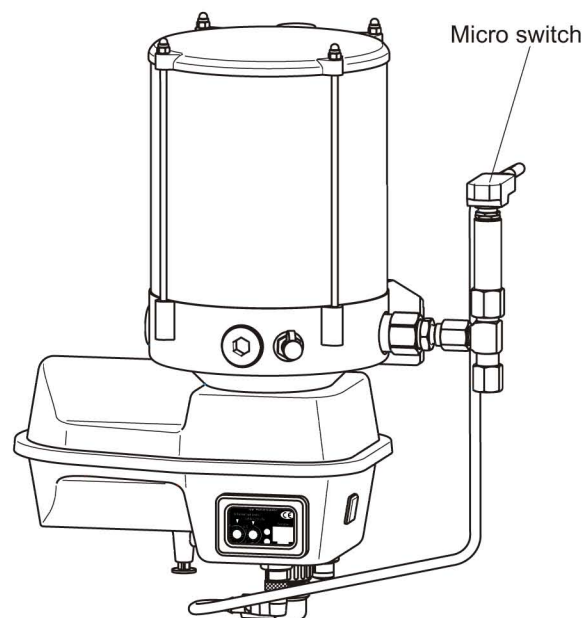
The pressure monitoring system can be attached to the BEKA-troniX1 controller with any selected program.

Pressure relief valves with micro switches can be retrofitted and connected to the controller if it has been ordered with additional features.

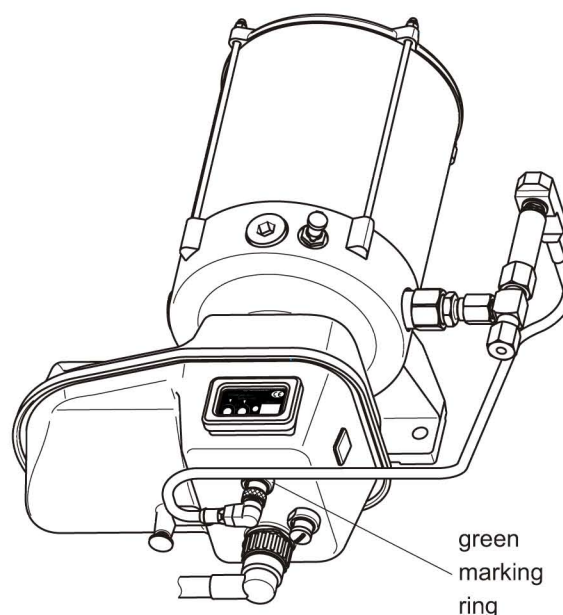
Connection to the controller is effected via the four-pole plug-and-socket connector marked with a green ring, to the pump motor's lower casing; to this effect, the contact plug cover must be removed.

Excess pressure valves with micro-switches required for replacement can be ordered individually (see description EP-1).

Excess pressure valve with micro switch on the pump element, built into electronic pump EP-1:



Connection to the controller:



## BEKA-troniX1

### 6. Grease level controller

The integrated electronic controller BEKA-troniX1 facilitates monitoring of the grease level in the storage tank. To this effect, a capacitive proximity switch has been installed in the pump's storage tank.

For purpose a capacitive proximity switch has been built in to the pump's reservoir.

As long as there is enough grease available in the reservoir, the proximity switch sends a signal to the controller. If the grease level sinks below minimum the proximity switch turns the signal off.

If the signal remain off for more than 10 sec. then the controller switches the pump off, so that no air is pumped into the system.

The red LED on the controller display, situated on the pump's motor housing or a built-in red signal lamp, if available, starts to illuminate.

Once the grease has been refilled, the controller restarts itself.

The grease level controller can be ordered connected to the controller; in this case, a connecting cable, length 0,6 mm, with a right-angle plug M12x1 for connection to the plug-and-socket connector and a right-angle plug M12x1 for connection to the controller is included in the scope of supplies. The grease level monitoring system is activated.

If the grease level controller is not ordered connected to the controller, a cable with a socket M12x1 for connection to the contact plug of the grease level controller must be ordered separately (see description EP-1).

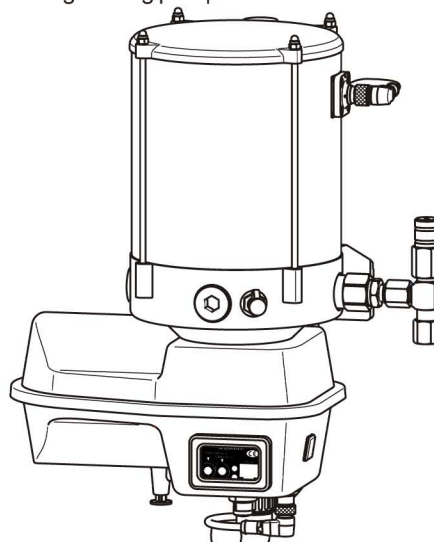
The grease level monitoring system can be retrofitted if the pump has been ordered with additional functions.

The grease level controller can also be retrofitted. In this case, the function must be activated by means of the software BEKA-DiSys. The function must not be activated if no grease level controller is connected, as this would produce a permanent error.

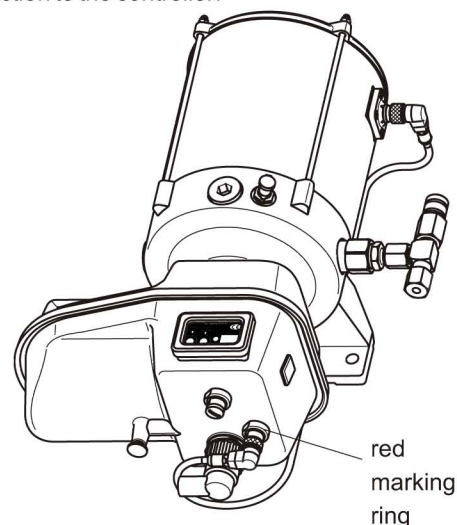
The cable must also be ordered separately if the grease level controller is to be retrofitted.

Connection to the controller is effected via the four-pole plug-and-socket connector marked with a red ring, to the pump motor's lower casing; to this effect, the contact plug cover must be removed.

Grease level controller built in to the 2,5 kg reservoir of an EP-1 central greasing pump:



Connection to the controller:



The grease level controller can be attached to the BEKA-troniX1 controller with any selected program.

#### **Technical data for the capacitive proximity switch:**

Operating voltage:	10 to 60 V DC
Switching type:	PNP-turnkey
Maximal current load:	250 mA
Degree of protection:	IP 67
Ambient temperature range:	-25°C to +70°C
Connection:	4-pole, M12x1 pluggable



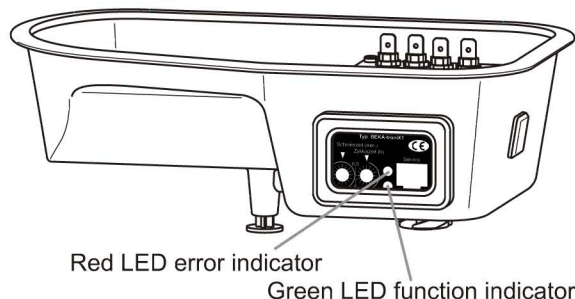
## BEKA-troniX1

### 7. Summary of Signal Indicators

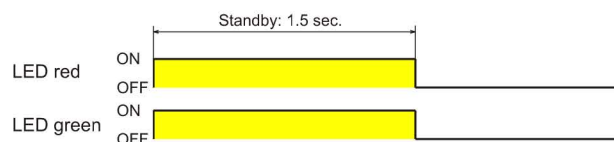
The pump's functions are indicated via two control LEDs (green/red) in the display on the pump's motor casing, where the red LED always indicates an error in the program sequence.

These control LED functions may be indicated in the driver's cap of the vehicle via built-in signal lamps. These must be specially ordered.

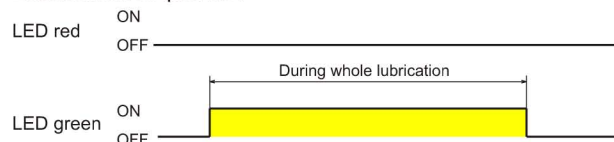
BEKA-troniX1 integrated electronic controller:



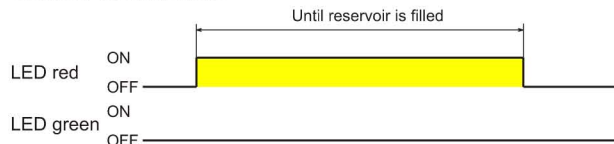
Standby indicator:



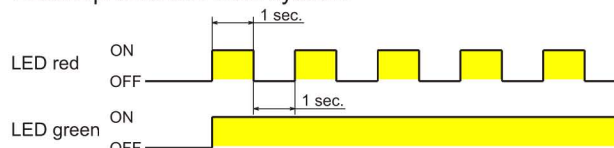
Lubrication sequence:



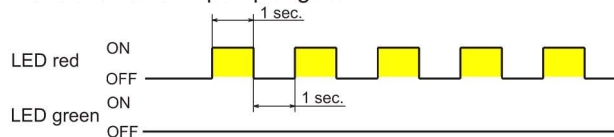
Grease level too low:



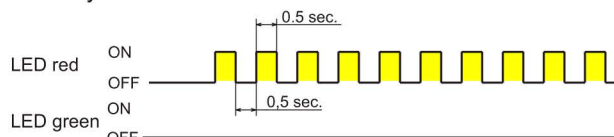
Excess pressure in main system:



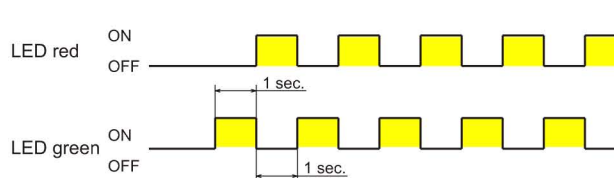
Revolution error in pump engine:



Memory error:



Test lubrication:



a) Standby

b) Lubrication activated

c) Grease level error

d) Excess pressure error

e) Revolution and engine driver error

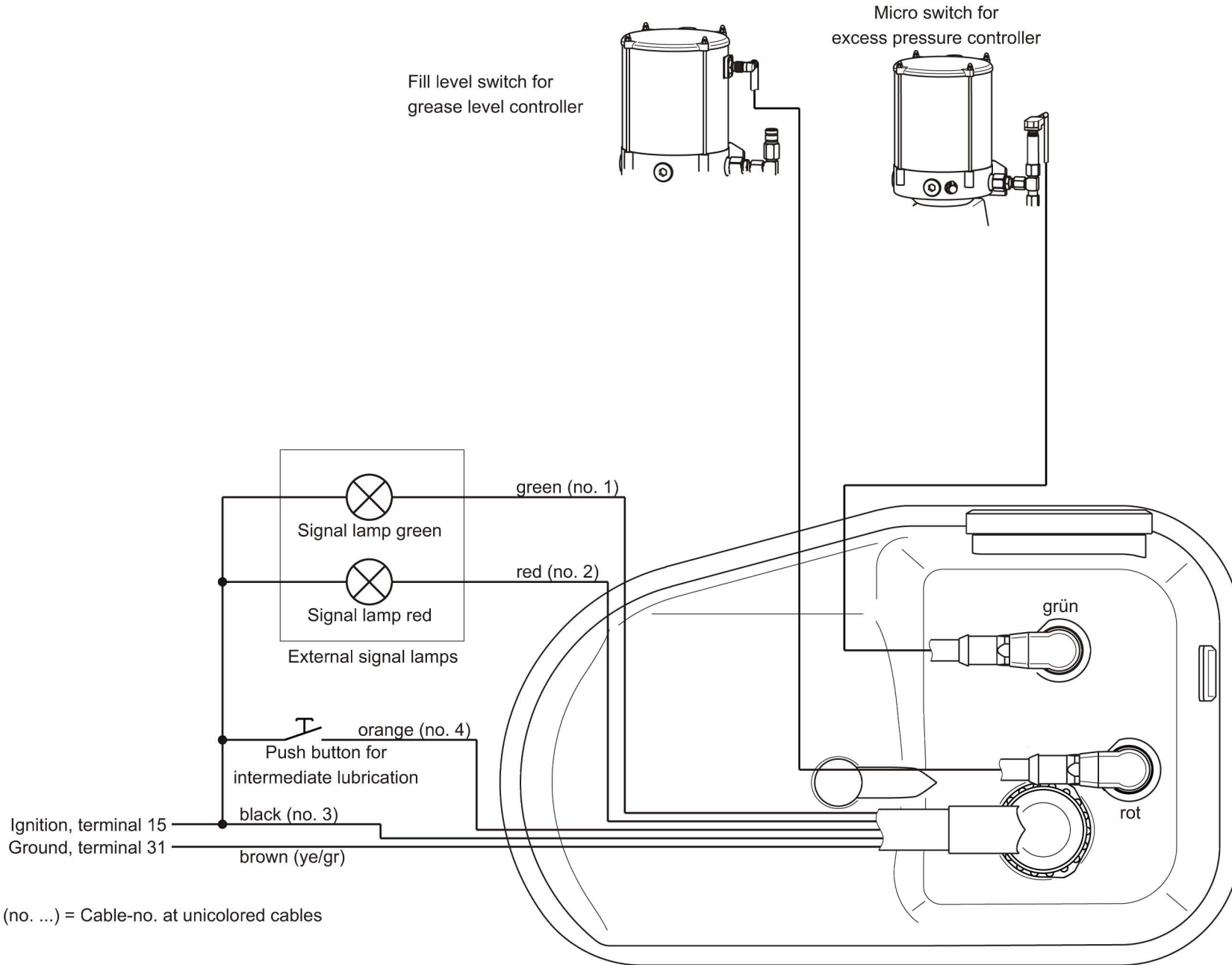
f) Memory error

g) Test lubrication (constant lubrication)

To adjust the time controlling to continual lubrication for servicing purposes, the lubrication time must be set to a higher value than the cycle duration.



## BEKA-tronix1 8. Terminal diagram of all connections



## BEKA-troniX1

### 9. Ordering key for EP-1 with integrated controller

<b>Construction type</b>		<b>2175 . 2 . 1 . E . 0 . 1 . 2 . 1 . 000</b>									
Motor voltage											
with bayonet connector											
12V	24V										
3	4										
Outlet type		without	PE-120	PE-120 V							
Pos. 1	without micro switch	0	1	2							
	with micro switch	0	D	M							
Pos. 2	without micro switch	0	3	4							
	with micro switch	0	E	N							
Pos. 3	without micro switch	0	5	6							
	with micro switch	0	F	P							

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

		2 Parts		1 Part	
Size of reservoir (kg)	1.9	4	8	2.5	8
Code	1	2	3	4	8
with grease level control		S	T	U	W

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

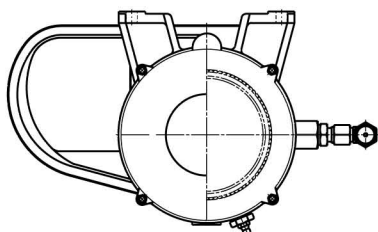
Parameter	Cycle duration		
Lubrication time	0.5 to 8 h	2 to 32 min.	2 to 32 h
I 1 to 16 min.	1	A	J
II 2 to 32 min.	2	B	K
III 2 to 32 sec.	3	C	L
Pump revolutions			
I 1 to 16	7	G	O
II 10 to 160	8	H	Q
III 170 to 320	9	I	R

Special models	000
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The operating modes and setting ranges, respectively, 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!

Subject to alterations!



## BEKA-troniX1

### 10. Retrofitting

The integrated controller BEKA-troniX1 can be retrofitted to the electric pump EP-1, i. e. to pumps which have been delivered without controller and to replace existing controllers.

However, retrofitting to pumps without controller is only possible after the year of construction 2004.

Controllers delivered for retrofitting or replacement are not provided with connection cable, as this is normally available. If the controller is to be installed in a pump which has not been equipped with a controller so far, or to be replaced by a controller with another connector, the connecting cable must be ordered separately.

The connecting cables for any supplementary features available must also be ordered separately.

To connect the micro-switch for pressure monitoring, see the description EP-1.

To connect the grease level controller, see description EP-1.

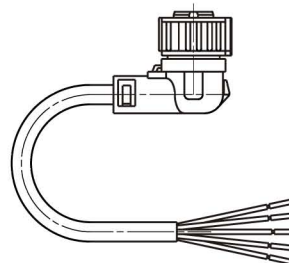
Plug-and-socket connectors which are not used must be closed using a cover.

Cover to close an unused plug-and-socket connector for the supplementary functions of the integrated electronic controller EP-tronic:



Order-no.: 1000913004

Connection cable, 5 wires, with bayonet connector:



Order-no.: FAZ02499-19

## BEKA-troniX1

### 11. Ordering key for integrated controller BEKA-tronix 1

Construction type				2175 . 90 . 10 . 0 . A . 000
Connector version				
with bayonet connector	10			
additional equipment				
without additional equipment	0			
with grease level monitoring	1			
with system excess pressure monitoring	2			
with grease level monitoring and system excess pressure monitoring	3			
with contact plugs (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	
Pump revolutions				
I 1 to 16	7	G	P	
II 10 to 160	8	H	Q	
III 170 to 320	9	I	R	

Special models	000
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The operating modes and setting ranges, respectively, 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.