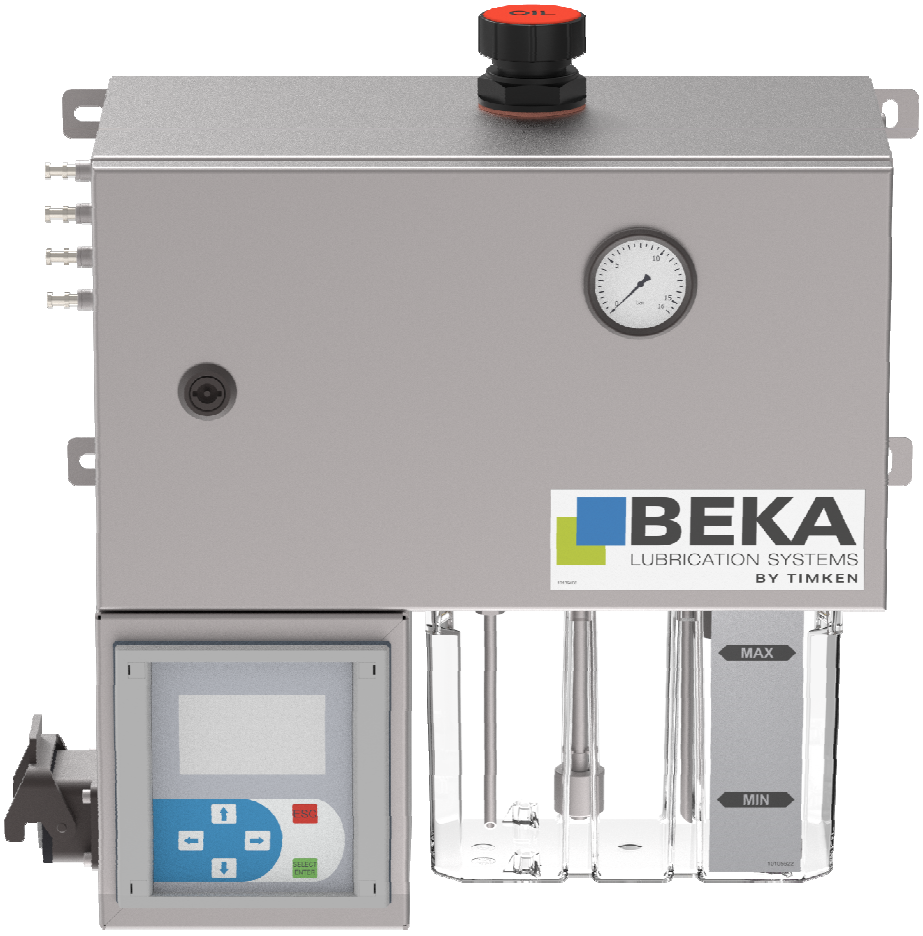
Oil-air lubrication

SprayLub

Revision 05-2025

Original operating- and assembly manual



00-1031546_BAL_SprayLub_R02EN

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1 Technical data

General information

Protection class unit ..... IP 55
Protection class motor ..... IP 44
Ambient temperature ..... +10° C to +40 ° C
Supply quantity ..... 0,4 l/min
Sound pressure level ..... < 70 db (A)
Complete capacity ..... approx. 2,7 liter
Consumption quantity up to signal for level alarm ..... approx. 1,2 liter
Viscosity range (lubricating oil) ..... 20 – 700 mm²/s
System pressure ..... min. 6 bar (or 4 bar)
Compressed air connection ..... G 1/4
Operating pressure ..... min. 5 bar (or 3,5 bar)
Pressure limiting valve: ..... adjusted to 30 bar

Dimensions with assembly

Breadth ..... approx. 484 mm
Height ..... approx. 432 mm
Depth ..... approx. 222 mm
Weight SprayLub 0 ..... approx. 17 kg
Weight SprayLub 2 ..... approx. 19 kg
Weight SprayLub 4 ..... approx. 21 kg

Electric supply

Nominal voltage ..... 90 - 260 V AC
Max. pre-fuse 6A
Apparent power ..... 200 VA
Frequency ..... 50 / 60 Hz
Connection type ..... HARTING-Stecker 10-pol.
Max. load relay for warning / malfunction ..... 250 V / 1 A AC/DC
Max. load output solenoid valve ..... 24 V / 2 A DC
Power Motor ..... 70 W
Nominal voltage motor ..... 24 V DC
Nominal current motor ..... 4,5 A
Number of revolutions motor 3000 min-1

2 Basic notes

Use in accordance with the regulations

Attention!

The oil-air-lubrication device is only allowed for industrial use.
The oil-air-lubrication device is for delivering the lubricating oil according to the specification.
The oil-air-lubrication device may only be put into operation if it is installed in or at another machine and if it is operated together with the machine.
The oil-air-lubrication device may only be used according to the technical data (see chapter „technical data“).
High-handed structural changes at the oil-air-lubrication device are not permitted.
For damages at machines and persons resulting from that, we do not assume liability.

This also belongs to a use in accordance with the regulations:

- Pay attention to all notes in the operating manual.
- Carry out all maintenance work.
- Follow all appropriate regulations for the **work safety** and **accident prevention** during all life cycles of the oil-air-lubrication device.
- Having the required professional education and authorization of your company to carry out the necessary works at the oil-air-lubricating device.

Attention!

Another use or a use beyond can not be considered to be in accordance with the regulations.

Obligation of the operator

The operator carries the responsibility for the correct installation, operation and maintenance of the oil-air-lubrication device by qualified and trained staff according to the manual's details.
In addition to this he is responsible to use the oil-air-lubrication device only in accordance with the regulations.

- If hot or cold machine parts lead to danger, the customer must secure them from being touched. The guards on "moving parts" must not be removed.
- Remove leakages of dangerous material to be conveyed such that people or the environment are not endangered
- Comply with legal regulations.
- Eliminate any danger due to electrical energy.
- A safety data sheet for the current used lubricating oil of oil-air-lubrication device must be provided.

Scope of guarantee

Guarantee regarding operational safety, reliability and capacity can only be granted by the manufacturer under the following conditions:

- Assembly, connection, construction, maintenance and repair are carried out by professional staff.
- The oil-air-lubrication device is used according to the manual's details especially to the use in accordance with the regulations.
- The limiting values, mentioned in the technical data, must not be exceeded in any case.
- Retrofitting and repair works at the oil-air-lubrication device, may only be done by Groeneveld-BEKA.

Attention!

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

Emphasises

Please pay attention, not only to the safety instructions under this main point, but also to those special security advices which are inserted on the other pages.

This symbol warns of electrical voltage.

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

Attention!

This heading is used if inaccurate compliance or non-compliance with the operating instructions or specified work procedures etc.may result in damage of the device or men.

Note!

Points out special information!

3 Safety information

Basic notes regarding the construction, operation and maintenance are listed as follows. This operating manual absolutely must be read before assembly and start-up, by the mechanics as well as by the specialist staff/operator.
In addition to this, it must be permanently available at the site.

Notes attached directly at the machine, must strictly be followed and held into completely readable condition!

Qualification and training of the personnel

The operating, maintenance, inspection and assembly personnel must have appropriate qualifications for this work. The operator must precisely regulate the personnel's areas of responsibility and monitor them. If the personnel do not have the necessary knowledge, they must be trained and instructed. The operator must ensure that the personnel have completely understood the contents of the user information.

Danger due to non-observance of the safety information

Not observing the safety information can lead to people, the environment and the machines being endangered.

Not observing the safety information can lead to the loss of any and all claims for damages. In individual cases, non-observance can, for

example, lead to the following dangers:

- Failure of important plant functions
- Failure of prescribed methods of maintenance and preventive maintenance
- Endangering people due to electrical, mechanical and chemical effects
- Endangering the environment due to leakages of dangerous materials

Safety information for maintenance, inspection and assembly work

All **maintenance, inspection and assembly work** may only be carried out **by trained specialists** who have been informed appropriately by studying the user information closely.
All work must only be carried out when the **plant is at a standstill** and pressure less and free from tension. Always wear appropriate **protective clothing** (e.g. safety goggles). Always comply with the procedures for bringing the plant to a standstill that are described in the operating manual.

All the safety and protective equipment must be replaced immediately after completing work. Media that are a threat to the environment must be disposed of 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.

Alterations and manufacture of spare parts without authority

Rebuilding and alterations to the plant are only allowed after consultation with the manufacturer. **Original manufacturer spares** and manufacturer/authorized accessories are for **safety** purposes. Using other parts may lead to liability for the consequences being invalidated. The manufacturer does not assume liability or claims for damages for assembly, retrofitted by the operator.

Inadmissible methods of operation

Operational security of the system 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.

General risk reference

All components of the oil-air-lubrication device are lent according to the prevailing regulations of the construction of technical machines in regards to the operational safety and accident prevention. Independently of this, the use can lead to dangers fort the user respectively third persons or other technical facilities. The oil-air-lubrication device therefore may fulfil only in **technically fault-free condition** its intended use. This may only be carried out under compliance of the safety regulations and the attention of the operating manual.
Therefore please **observe regularly** the unit and its assembly and check it for possible **damages or leakages**.

4 Mode of operation

Description

The oil-air-lubrication device is based on the fact that an exact metered oil drop is transported by air into the lubrication line and a lubricating film coats the complete lubricating line. With this procedure the lube point is supplied with oil continuously. The oil supply is done in time intervals by the single line unit. The exact oil measurement into the air stream of the individual outlet is done by the measuring valve. The air stream can be adjusted via the adjusting throttles for every outlet.

Function

The oil air lubrication device supplies lubricating oils according to the specification. As soon as the device control of the gear pump starts to operate it for a pump pulse, oil is supplied to the oil metering valves in the connected oil mixing distributor. The integrated pressure limiting valve limits the line pressure to 30 bar.
During this pressure build-up and the following pressure hold time lubricant is applied onto the connected lube points via the installed oil metering valves.
The metering oil reaches the non-return valve and flows into the mixing chamber. Then lubricant is supplied to the lube points by the connected lubrication line and via a regulated air stream. When switching off the pump, the integrated pressure relief valve opens so that oil pressure is reduced to a residual pressure in the connected main line network.
After the break time is processed a new lubrication cycle begins.

If the air throttle is completely closed, a pure oil lubrication is carried out.

Device version

The oil air lubrication device can be designed with or without installed oil-air mixing distributor:

- SprayLub 0: Without installed oil-air mixing distributor.
  In this case the oil air lubrication unit has one outlet for oil and one for air. You can connected external oil-air mixing distributors to this outlets.
- SprayLub 2: With installed oil-air mixing distributor, 2 lube point connections.
- SprayLub 4: With installed oil-air mixing distributor, 4 lube point connections

Operation with reduced air inlet pressure

The mentioned standard device versions are designed for an operation pressure of 6 bar. In special cases these devices can also be operated with a compressed air with lower pressure. The compressed air source must, in any case, offer a min. **pressure of 4 bar**.

Attention! **Prerequesite for the operation with reduced air inlet pressure is that the necessary lubricant pressure is definitely reached according to the operating manual for the machine /lubrication point!**

Further notes see chapter 7 „start-up“.

Attention! **General notes**

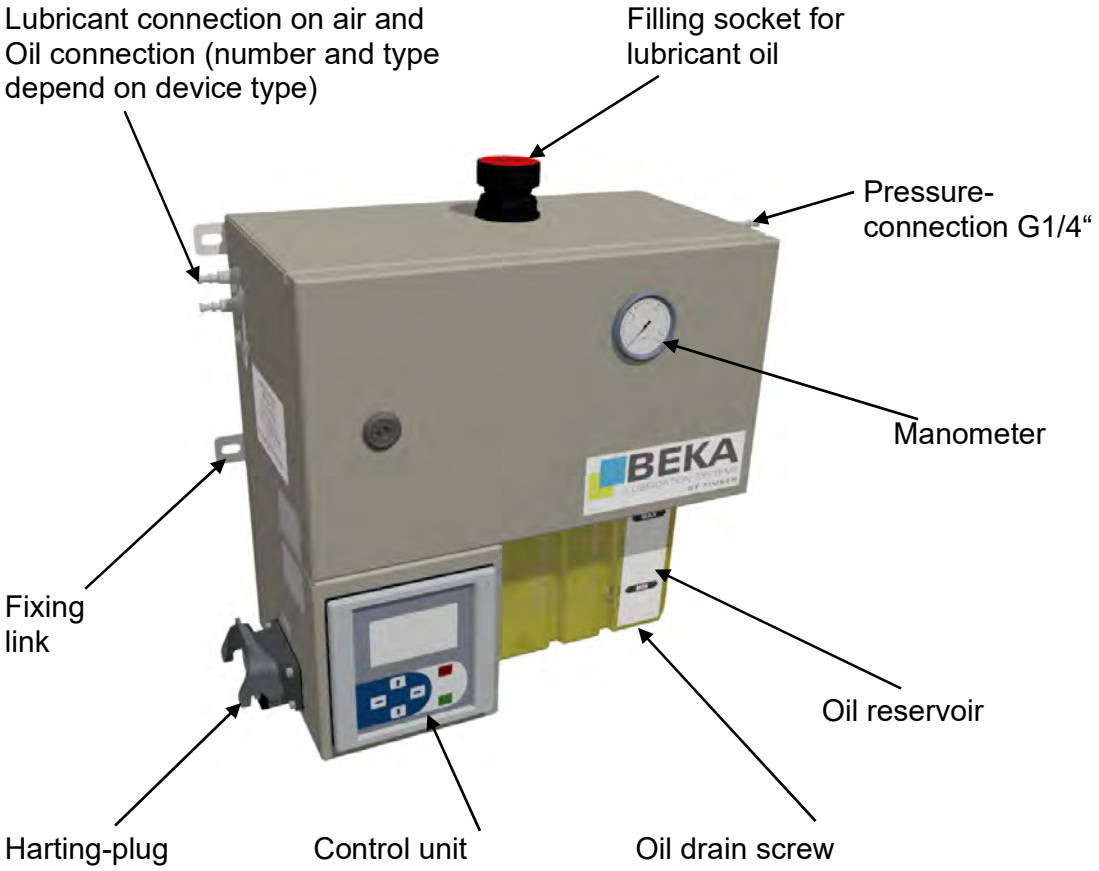
- The oil-air lubrication device sends an error signal in case of a malfunction (oil supply, compressed air supply). This must result in switching off the machine /lubrication point in order to avoid damages.
- The quantity of lubricating oil for the lube point must be calculated and applied according to the details of the /lubrication point manufacturer.
- When correcting the adjustment of the oil/air mixing distributor, the transporting air leaves the bearing point almost oil free.
- Check all lubricating points within short intervals for a correct lubrication during the first operating hours.
- If necessary correct the air consumption or pulsing of the oil-air lubrication device.

5 Transport and storage

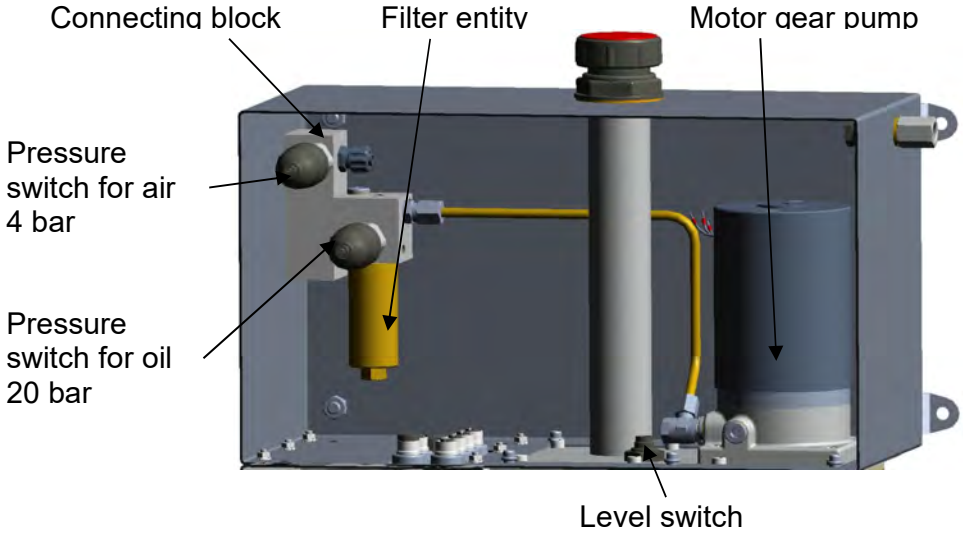
Use suitable lifting devices for the transport. Do not throw or shock the device. The storage place shall be cool and dry to avoid corrosion of the individual parts. Transport the oil-air lubrication device only when it is empty.

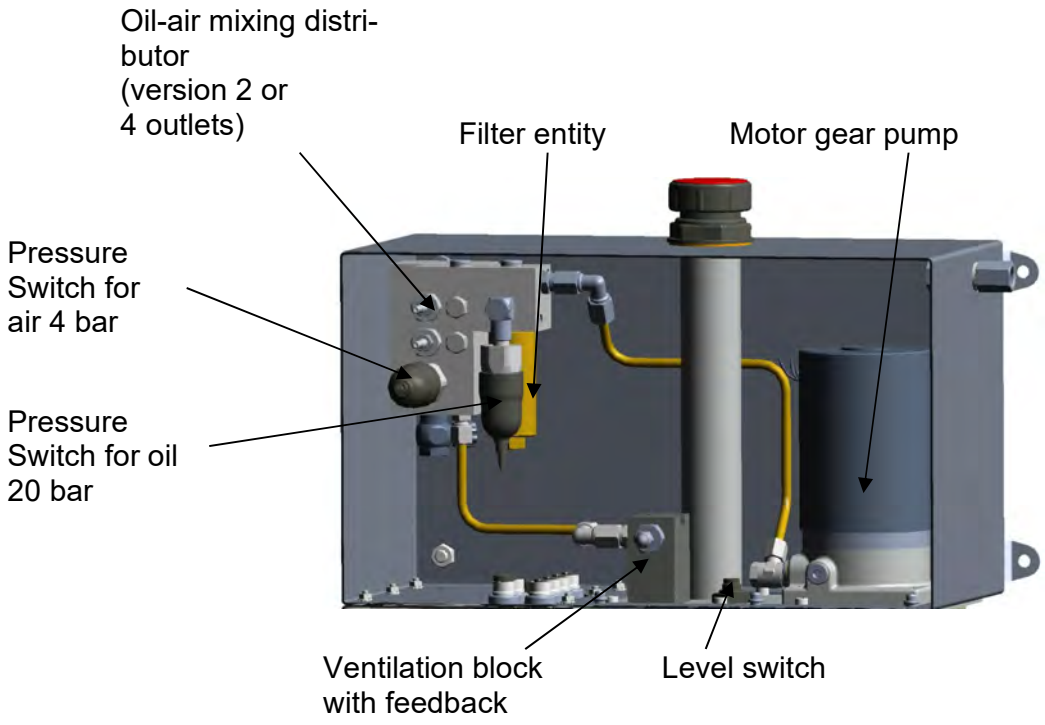
Observe the valid safety- and accident prevention regulations. Wear appropriate protection clothes. Keep distance to suspending loads.

6 Device description



Version 0





Gear pump

The gear pump is supplied with voltage in selectable time intervals and lubricating oil flows towards the oil-air mixing distributor.

Oil-air-mixing distributor

In the oil air mixing distributor the supplied lubricating oil is metered and conducted to the continuous air flow to get transported to the lubrication outlets of the oil-air mixing distributor.

The oil-air mixing distributor can be equipped with two (SprayLub 2) or four (SprayLub 4) lubrication outlets. Those are independently and individual adjustable.

The **oil metering volume** per lubrication outlet and the pump pulse depend on the installed oil-air mixing distributor a**pprox. 10 mm³ or 30 mm³**, compare the details with the type plate.

Closing the air throttle completely, a pure oil lubrication is done.

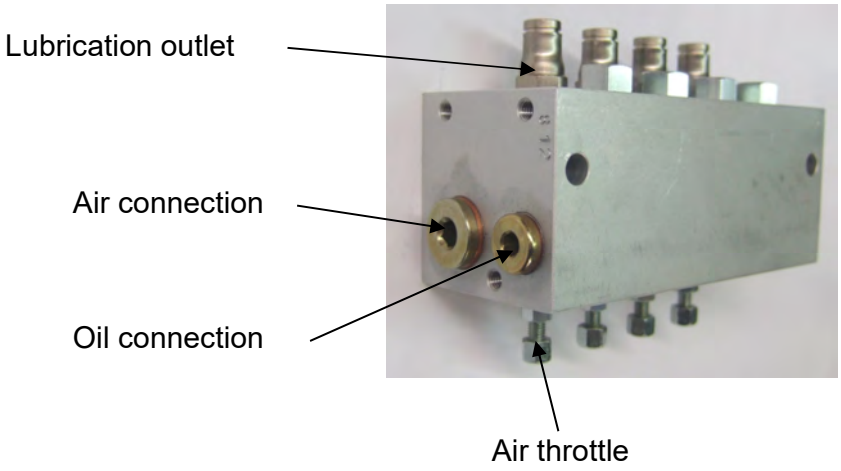
Attention! **Pay also attention** to chapter 7 „**adjustment of air supply“.**

External oil-air mixing distributor

The external oil-air mixing distributor is used together with the device version SprayLub 0.

The external oil-air mixing distributor is available with two or four outlets. They can be adjusted separate.

The oil-metering volume per lubrication outlet and pulse is approx.. **10 mm³ or 30 mm³**.



Closing the air throttle completely, a pure oil lubrication is done.

Attention!	**Pay also attention** to chapter 7 article „**adjustment of air supply“.**

Air and oil pressure switch

Pressure switch for monitoring the air pressure, respectively oil pressurization by the gear pump.

Note!	**The error signal of the air pressure switch will be buffered in the device control for 30 seconds.**

Filling level switch

The filling level switch is for monitoring the oil level in the reservoir and it protects the oil-air-lubrication device and the lubricated machine from damages resulting from lack of lubrication oil. As soon as the switch contact sends a signal (pre-warning) lubrication oil should be refilled to ensure the lubrication procedure.
After the switch contact sends a signal, up to 950 lubrication cycles can be carried out (adjustment via the control menu), until the oil-air-lubrication device signals a malfunction.

Ventilation block (only for SprayLub 2 and SprayLub 4)

The ventilation block serves for ventilation as described under chapter 8.1 “ventilation operation“.
The ventilation block is not installed in the oil-air lubrication device SprayLub 0.

Oil reservoir

The oil reservoir has a total capacity of approx. 2,7 liter.
In order to change the oil, use the oil drain screw.
When the level switch sends a signal (prewarning) approx. 1,2 liter of lubrication oil must be refilled.

Compressed air maintenance unit

The compressed air maintenance unit consists of the following components.

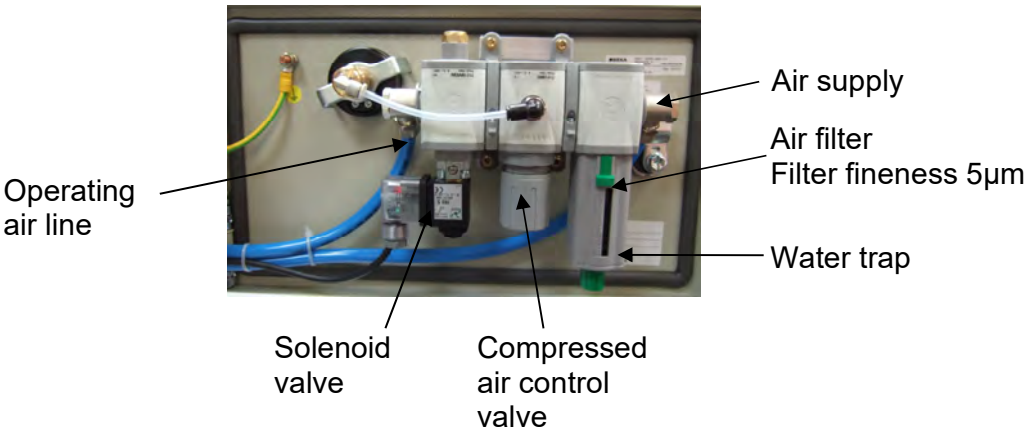
- Air filter, filter fineness 5 µm
- compressed air control valve
- manometer
- solenoid valve

The **air filter** cleans compressed air from dirt, pipe sinter, rust and condensed water. We recommend to filter the compressed air of the oil-air lubrication device with 25 to 50 µm to ensure a suitable stand time of the filter cartridge. Condensed water of the air filter is collected in the water separator. Drain it via the drain screw. For this purpose switch off voltage and compressed air.

The operating air pressure is controlled at the **compressed air control valve**. The pressure is necessary for the operation of the oil-air lubrication device.

The operating air pressure can be set at the compressed air control valve of the **manometer** (device front). It has to have **at least 5 bar** as otherwise the air pressure switch of the oil-air mixing distributor sends a fault message.
In certain cases the operating pressure may have a lower value (see chapter 6).

The **solenoid valve** closes when the device is switched off (voltage interrupted) and if an error message is send. Hence it can be avoid that the lubrication lines are blown dry due to the available air flow.

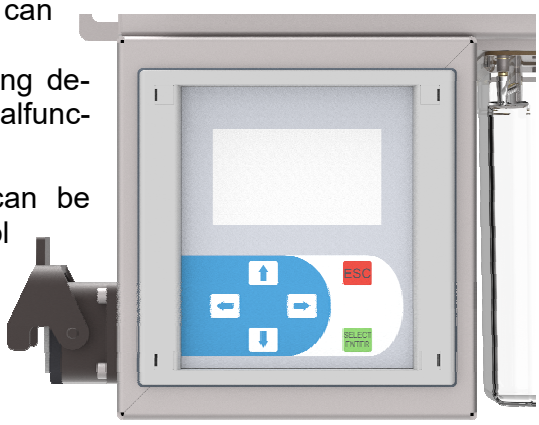


Lubricating oil filter

The lubricating oil filter filters the oil. If the filter is dirty, the oil pressure after the filter falls. The installed oil pressure switch sends a fault message. Exchange filter insert, see chapter 9 „maintenance“.

Control unit

With the control, unit the system operation can be monitored and controlled.
It has a keyboard and a display. Regarding details for remedy, please see item 8.2 “malfunctions”.



Adjustment of the several parameters can be done via the keyboards. With the control plan you can see how to get to the parameter which should be adjusted.
The buttons “up” and “down” are for selecting the menu items as well as for enter the values in the menu.
The buttons “left” and “right” are for the cursor’s movement. The button “select/enter” confirms an entry. With the button “ESC” the menu is left.

Parameter of the control unit

The following parameter can be adjusted at the control unit:

Parameter	Option	State of delivery
Language	Chinese traditional Chinese simplified German English French Italian Japanese Spanish	German
Level impuls counter	1 - 999	950
Lubrication time in sec.	5 - 9	5
Break time (hh.mm.ss)	00.00.03 – 09.59.59	00.03.00
Impuls Ventilation operation	1 - 99	1
Lubrication time Ventilation operation in sec.	not adjustable	20
Break time Ventilation operation in sec.	not adjustable	2
Pre-lubrication impulse	0 - 99	10
Lubrication time Pre-lubrication operation in sec.	5 - 9	5
Break time Pre-lubrication operation in sec.	2 - 9	8
Stand-by operation ON in sec.	0 - 59	30
Stand –by operation OFF in sec.	0 - 59	5
Monitoring time stand-by operation in hours	0 - 99	4

The individual parameters have to be coordinated with the lubricated machine/machine /lubrication point. In chapter 12.5 “control unit plan”, the pictures show how to get to the different parameter.

Some parameter can only be changed when entering a password. The authorized access of Groeneveld-BEKA differs from the user authorization.

Note!

In certain cases the parameter can be set for a specific machine / machine /lubrication point. In this case the details regarding the delivery condition of above mentioned table are not valid.

7 Assembly manual

The following conditions have to be satisfied during the assembly of the oil-air-lubrication device, thus it can be assembled with other parts to a complete machine without affect the safety and health of human:

- Set up the oil-air-lubrication device 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 dimensional drawing. (chapter 12.1).
- Use the already installed securing straps at the housing for the assembly.
- The installation location has to be free from vibrations and shocks.
- The oil-air-lubrication device must not be installed on movable machine parts.
- Das Öl-Luft-Schmiergerät darf sich nicht auf bewegten Maschinenteilen befinden.

Pneumatic (Compressed air supply)

- **The pressure in the compressed air system has to have min. 6 bar**.
  The device can be operated also with reduced air inlet pressure. The switch point of the air pressure switch must be changed for this purpose. Notes for the operation with reduced air pressure and the setting of the switch point can be found in chapter 7 “start-up”. Remove the sealing cap and assemble a suitable hose fitting.
- The compressed air connection of the oil-air-lubrication device has an internal thread G ¼. Remove the sealing cap and assemble a proper hose fitting.
- **Internal diameter of the connection hose: min. 8 mm**
- Commercial compressed air lines can be used for the compressed air supply!
- The filter fineness of the installed compressed air maintenance unit in the oil-air lubrication device has 5 µ. The compressed air that is lead into the oil-air lubrication unit shall be dry and prefiltered with 25 to 50 µm to ensure a proper stand time of the filter cartridge.
- Other requirements regarding the compressed air quality (oil concentration etc.) can be found in the assembly and operating manual of the machine /lubrication point or the lube point. The compressed air for the oil-air lubrication device must already there fulfil the requirements.
- Take care that the compressed air lines are clean!
- Assemble the compressed air lines professional and free from distortion!

Lubrication line assembly (SprayLub 2 and SprayLub 4)

The installed oil-air mixing distributor hast two and four outlets (depends on customer request) for polyamide pipe Ø6x1 mm or Ø4x0,85 mm, depends on metering volume of oil-air mixing distributor.

- Remove the sealing plug from the lubrication line connection and assemble the polyamide pipe. Retain the sealing plug.
- Use only transparent polyamide pipe acc. to DIN 73378 (plastic pipes with tolerated outside diameter, transparent plastic pipes enable a visual control of the oil transport)!
- The line length between oil-air mixing distributor and the lube point shall be between 0,5 m to 5 m. The minimum length is necessary that the lubrication oil that is fed into the air flow can build a constant oil flow. Lubrication lines with a length of over 5 m need a longer waiting time until a complete application with lubricating oil.
- In case the distance between the oil-air mixing distributor and the lubrication point is smaller than 0,5 m or larger than 3 m, Groeneveld-BEKA recommends to use coils (4 to 5 coils) near the lubrication point. The lubrication oil that is collected in the coil after the system is switched off, will immediately be available at the lube point (e.g. /lubrication point bearing) at the reactivation.
- Observe that all pipe lines are clean.
- Assemble the pipe line professional and free from distortion!
- If not all lubrication line connections are necessary at the oil-air mixing distributor the according lubricant outlets can be closed:
  - Close the air throttles of the outlets that need to be closed.
  - If necessary pull out lubrication lines from the outlet fittings.
  - Close lubricant outlets with supplied sealing plug respectively keep closed.

Assembly of external oil-air mixing distributor (SprayLub 0)

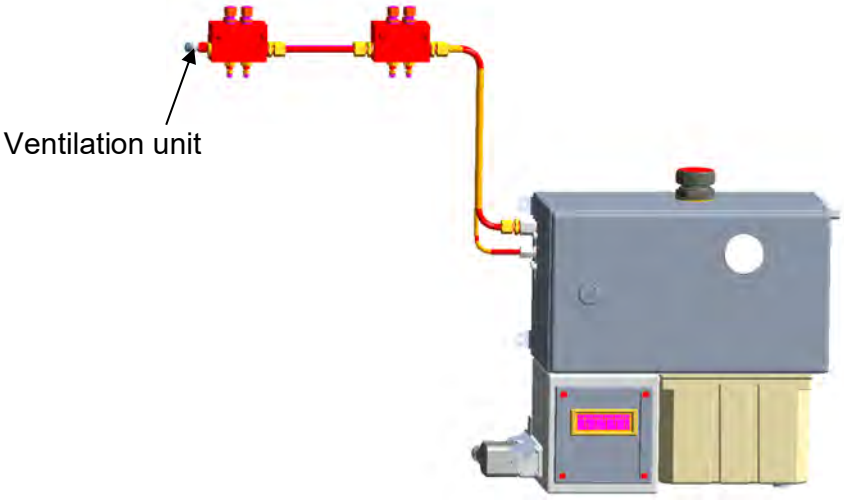
The device version SprayLub 2 and SprayLub 4 have the air ducts and the oil lines between lubrication pump and oil-air mixing distributor already assembled in the device cabinet.
The oil-air mixing distributor for the version SprayLub 0 (also various) are installed outside the device cabinet. The connections for the air and the oil lines towards the oil-air mixing distributor are on the left side of the device cabinet:

- Compressed air: Thread G1/4
- Oil: Hydraulic fitting for pipe outside ø 6 mm

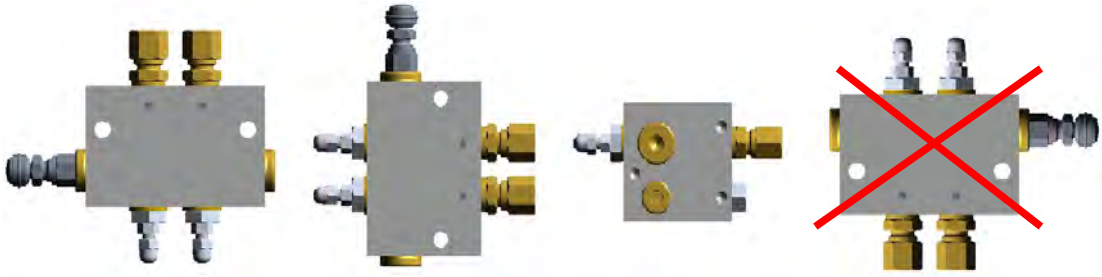
Lines between oil-air lubrication unit and external oil-air mixing distributor.

- Compressed air duct
  Internal diameter: min. 8 mm

- Oil pressure line
  Line quality: High pressure line (pump pressure 30 bar).
  Line length: max. 30 m.
- Pay also attention to the dimensional drawing at chapter 12.2.
- We recommend to assemble the oil air mixing distributor in a way that they are higher than the compressed air- or oil pressure connection of the oil-air lubrication unit. The last oil-air mixing distributor in the main line must be equipped with a ventilation unit and shall be installed at the highest point. This is for a better ventilation of the lubrication oil line. If the recommended assembly of the oil-air mixing distributor is not possible, the correct ventilation of the lubrication oil line must be ensured by more and/or longer pump cycls.



- The order of more oil-air mixing distributors is done in a row. **Never** connect **more than four lubrication outlets** to one oil-air lubrication device. (two duplex or one quadruple oil-air mixing distributors).
- When connecting the lubrication line to the hydraulic fitting of the external oil-air mixing distributor, use the delivered sleeves to support the polyamide pipe.
- The installation position of the oil-air mixing distributor shall be observed as shown on the pictures.



Correct **Correct** **Correct** **Wrong**

- Furthermore please observe the assembly notes regarding the lubrication lines or for closing non-used lubricant outlets regarding the versions SprayLub 2 and SprayLub 4 in above mentioned section “lubricant line assembly (SprayLub 2 und SprayLub 4)”.

Current supply

The electric connection should only be done by a professional electrician!
The oil-air lubrication unit is connected at the 10 pole Harting plug at the device box.

- Connect the oil-air lubrication device professional according to the enclosed connection plan.
- Attention! The existing mains voltage has to match with the necessary supply voltage (see type plate)!

8 Start-up

Filling with lubricating oil

- Fill up the lubricating oil reservoir with clean lubricating oil via the filling connection until the max. level is received! Receiving a signal by the level switch (Pre-warning), refill approx. 1.2 liter lubricating oil according to the specification.

Attention! **Do not overfill!**

- When selecting the lubricating oil also observe the operating manual of the lubricated machine / machine /lubrication point.
- The oil-air lubrication device is equipped with an oil fine filter. In order to enlarge the stand time of the installed filte cartridge we recommend to fill in cleaned lubrication oil
- Pay attention to the lubricating oil manufacturers safety data sheet!
- The lubricating oil viscosity range changes with the operating temperature!
- Check the oil level regularly during the first operating hours, and refill clean lubricant if necessary!

Note! If the parameter „prelubrication“ is set with 1 or higher, the oil-air lubrication unit always, starts after it is connected to **voltage**, with a **prelubrication**. Please also read therefore the paragraph in chapter 8.1 “pre-lubrication”.

Starting the oil-air-lubrication device

- Make sure that all supply lines are correctly connected.
- Set the operating pressure at the compressed air maintenance unit.
  Standard device: 5 bar
  At reduced operating pressure: 3,5 bar min.
- The oil-air lubrication device has no ON/OFF switch.
- The oil-air-lubrication device operates in the pre-lubrication mode.

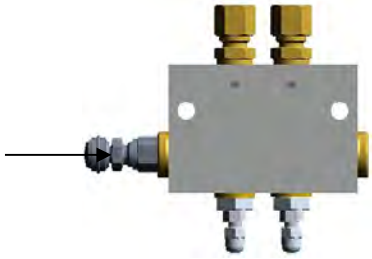
Ventilation of the oil-air-lubrication device (SprayLub 2 and SprayLub 4)

See chapter 8.1 „ventilation operation“ for the ventilation of the oil-air-lubrication device.

Ventilation of the external oil-air mixing distributor (SprayLub 0)

- The ventilation of the oil-air mixing distributor is done at the last oil-air mixing distributor of the row.
- Pull off rubber cap from the ventilation unit
- Open the ventilation unit with approx. 3 turns.
  In order to convey out coming oil during the ventilation we also recommend to put a hose line onto the ventilation unit of the socket.
- Actuate the oil-air lubrication device (Ventilation and pre-lubrication operation, compare chapter 8.1 „operating modes“) until oil comes out of the ventilation without air inclusions.
- Collect out coming oil at the ventilation unit with a suitable receptacle (work safety; environmental protection).
- Close the ventilation unit again.
- Check the complete system for possible air inclusions after approx. 30 min.
- If there are air inclusions repeat the ventilation.
- After the ventilation pull off the ventilation unit from the socket of the ventilation unit and put on the rubber cap again.
- Dispose collected medium and do not lead it back to the system.
- Check the ventilation unit for leakages and retighten it if necessary.
- Ensure, at any time, that the oil main line is free of air during the operation.

Ventilation unit



Operation with reduced air inlet pressure

The oil-air lubrication device is designed for an operation with compressed air of minimum 6 bar. In special cases the devices can also be operated with lower pressure. However the compressed air must have a **minimum pressure of 4 bar**.

Attention!

Conditions for the operation with reduced air inlet pressure is that the necessary lubricant pressure according to the operating manual of the machine /lubrication point is reached.

When supplying various machine /lubrication points with increased air demand, the supply via an oil-air lubrication device with reduced air inlet pressure could be a problem due to this reason. If necessary more oil-air lubrication devices with reduced air inlet pressure should be used. If the standard oil-air lubrication device with 6 bar pressure shall be operated with reduced air inlet pressure, the installed air pressure switch of oil-air lubrication device has to be set to a lower switch point. Please observe that the set operating pressure at the manometer shall be set min. 0,5 bar below the available network pressure so that the compressed air control valve can balance possible network fluctuations.
The switch point of the air pressure switch has to be set 0,5 bar lower than the operating pressure of the oil-air lubrication device.

Example:

Available network pressure:	4 bar
set operating pressure at manometer:	3,5 bar
switch point of air pressure switch:	3 bar

Set switch point of air pressure switch:

At the beginning of the following setting procedure the oil-air lubrication unit must be free from tension!
Reason: Due to the fact that the oil-air lubrication unit is designed for a compressed air supply of min. 6 bar, the operation with a lower compressed air would cause an error at the air pressure switch.
After the buffer time of 30 sec the air inlet valve is closed. The setting of the air pressure switch to a lower switch point according to the following described setting procedure is no more possible.

Set screw

- For position of the air pressure switch see chapter 5 „device description“.
- Pull off rubber cap for protection of electric connections
- Pull off the cable lugs from the electric connections of the air pressure switch.
- Bridge the endings (cable lugs) of the pulled off signal lines.
- Check both electric connections at the air pressure switch with the circuit indicator.
- When using a test lamp as circuit indicator take care that the maximum permitted switch point of the air pressure switch of 100 VA is not exceeded.
- Now switch on the voltage supply.
- Turn in completely the set screw for the switch point with a screwdriver (right hand thread).
- Set the air pressure at the control valve of the compressed air maintenance unit to the requested switch pressure (min. 3 bar). Observe the manometer.
- Turn out the set screw of the air pressure switch until the switch change over and the circuit indicator responds.
- Correct the switch point by turning the set screw if necessary.
- The new switch point of the air pressure switch is now set.
- Set the operating pressure of the compressed air maintenance unit 0,5 bar above the already set switch point of the air pressure switch. Observe the manometer.
- Switch off voltage supply
- Remove bridge between signal line endings (cable lugs) and put the cable lugs onto the electric connections of the air pressure switches.
- Put the rubber caps onto the connections for protection

Adjustment of the air supply:

a) Oil-air mixing distributor in oil-air lubrication unit (SprayLub 2 and SprayLub 4)

- Compressed air supply has to set separately for each lubrication line or lube point at start-up. Adjustment is realized by means of the air throttle at the oil/air mixing distributor.
- The required air demand depends on the specific characteristics of the lubrication point.
- The air mass flow of one lubrication point always affects the air mass flow of the other lubrication points of the oil-air-mixing distributors or all oil-air-mixing distributors.
- The compressed air in the lubrication line, metered near the lubrication point, serves as a proportion measuring for the air quantity what should be supplied.
- Install a control manometer into the lubrication line as near to the lubrication point as possible, in order to adjust the lubrication pressure.
- Loosen the counter nut to adjust the air supply.
- Adjust the air quantity and thus the lubrication pressure via the air throttle by turning the set screw. (use the enclosed tool).
- Turning the set screw clockwise reduces the air quantity/lubrication pressure.
- Turning the set screw counter-clockwise increases the air quantity/ lubrication pressure.
- After adjusting, remove the control manometer from the lubrication line and tighten the air throttle with the counter nut again, after the adjustment. (use the enclosed tool).

Attention! Use **exclusively** the **delivered**, below mentioned **tool** to **adjust** the **air stream**:

Tubular socket wrench AF10 (for counter nut)
Hexagon socket wrench AF3 (for air throttle)

b) External oil-air mixing distributor (SprayLub 0)

- The supply of compressed air must be set for each lubrication line or lube point via the air throttles at the oil-air mixing distributor.
- The necessary air consumption depends on the specific conditions of the lube point.
- The change of the air flow rate of a lube point always has an effect on the air flow rate of other lube points respectively on all of the oil-air mixing distributor.
- The air pressure of the lube points, measured near the lube point, is the value for the supplying air quantity.
- Install a control manometer into the lubrication line, if possible near the lube point, to set the lubrication pressure.
- In order to set the air supply, loosen the counter nut of the air throttle (flat spanner AF 8).
- Set the air quantity and hence the lubrication pressure via the air throttle by turning the air throttle pin (flat spanner AF 8).
- Turn the air throttle pin clockwise to reduce the air quantity / lubricant pressure.
- Turn the air throttle pin counter clockwise to increase the the air quantity / the air pressure.
- Remove the control manometer from the lube line and lock the air throttle with a counter nut.

9 Operation

9.1 Operational mode

Ventilation mode (only for SprayLub 2 and SprayLub 4)

Ventilation is necessary after maintenance and longer standstill of the oil-air-lubrication device. It removes air inclusions in the line system.

During the ventilation operation, a 20 second lasting pump pulse is initiated. The number of pump pulses is set to 1 factory-provided, but can also be chosen between 1 and 99 in the control menu (compare parameter list in chapter 5). Lubrication time and break time are set fix for the ventilation operation and hence cannot be changed.

- Choose „ventilation operation“ at the control menu (procedure under chapter 12.5) and confirm with the enter button.
- „Start“ is displayed. Confirm with Enter.
- Enter password, confirm with Enter.
- The oil air lubrication device is now pressure less.
- Open the ventilation block by unscrewing the counter nut with a ring wrench. Afterwards unscrew the set screw.
- Ventilation process starts, when actuating the „Enter-Button“.
- The pump delivers the lubricating oil with all air inclusions back to the lubricating oil reservoir. When the lubricating oil enters the reservoir, air bubbles come up.
- The ventilation operation should operate, until lubricant comes out of the reservoir without air inclusions.
- If air bubbles still can be seen after one cycle, repeat the procedure until the lubricating oil is without air inclusions.
- Screw in the set screw at the ventilation block and protect it with the counter nut.
- Stop the ventilation process with the ESC button.

Note!

The ventilation operation for **SprayLub 0** for ventilation of external oil-air mixing distributor can be started in the control menu. However, the ventilation block, as described above, is not installed here. For the ventilation of an external oil-air mixing distributor, see chapter 7 “start-up”.

Pre-lubrication operation

If the parameter „prelubrication“ is selected with 1 or higher (compare control plan in chapter 12.5) the prelubrication operation starts automatically when the voltage supply is interrupted and the oil-air lubrication device is activated again. It safely supplies the lube point with sufficient oil before the start of the machine /lubrication point. During the prelubrication time, the control unit of the machine /lubrication point sends a malfunction, i. e. the release signal for the operation of the machine /lubrication point is interrupted during the prelubrication time. The control unit display shows “prelubrication operation”. The duration of the prelubrication can be varied via the following parameter (parameter change see chapter 12.5 “control plan”):

- Number of prelubrication impuls
- Lubrication time of prelubrication
- Break time of prelubrication

A stop of the pre-lubrication operation is possible via the ESC button. Remaining lubrication cycles can be seen in the display.

Note!

After the prelubrication time is finished or interrupted the control starts the normal operation with a release signal at the control unit. Especially for the first start of the machine /lubrication point it could be necessary to repeat the prelubrication as the lubrication oil could not have reached the lube line connections or the waiting time for the first operation (compare assembly and operating manual of the machine /lubrication point) is not processed yet.

Due to these facts the release signal must not lead to an automatic start of the machine /lubrication point by the control when the prelubrication is processed.

Normal mode

The normal operation ensures a safe supply of the lubricated points with sufficient lubricating oil. The normal operation can be modified by changing the lubrication time and the break time, see control plan chapter 12.5 “control plan”.

Stand-by-operation

When activating the voltage supply the oil-air lubrication device start with a prelubrication during which lubrication is supplied in the lines in short time intervals. Switching on and off the device in short terms, e.g. when adjusting the tool machine, could led to an over lubrication of the lines. There is the danger of an “overlubrication” of the /lubrication point bearings.
Instead of switching off the oil-air lubrication device, a control signal for a stand-by mode could be activated. During the stand-by mode, no lubrication pulses are initiated, the solenoid valve locks the compressed air supply, the release signal for the /lubrication point operation is interrupted and shown on the display with “no release”.
When the control signal expires, the oil-air lubrication device immediately starts with the normal operation provided that the monitoring time (see below) is not exceeded. Hence the danger of an “overlubrication” is avoided.

The following options regarding the stand-by operation are for your disposal:

- **Stand-by-operation ON**

The control signal of the machine control must be available for a certain time until the oil-air lubrication device switches over to stand by operation. The time in which the control signal shall be available, can be chosen in the device control, compare parameter list in chapter 5 and control plan in chapter 12.5.

Afterwards the control signal must be available for the complete duration of the stand-by operation.

- **Stand-by-operation OFF**

The control signal of the machine control must be expired for a certain time to finish the Stand-by-operation. The time for the absence of the control signal can be choosen in the device control, see also parameter list in chapter 5 and control plan in chapter 12.5. If the control signal for finishing the stand-by operation expires be fore the monitoring time is processed (monitoring time see next point), the oil-air lubrication device starts with normal operation. If the monitoring time is exceed, the oil-air lubrication device starts again the prelubrication.

- **Monitoring time Stand-by**

The duration of the monitoring time can be selected in the device control, see also parameter list in chapter 5 and control plan in chapter 12.5. In case the stand still of the oil-air lubrication device exceed the monitoring time, a prelubrication is carried out after a new start. The ventilation can be carried out during the complete stand by operation.

9.2 Malfunctions

The following malfunctions are shown in the control unit's display. Eliminate the shown malfunction and confirm it with the ESC button. After this procedure the operation at the last chosen mode starts again.

Warning level

Cause:

If the filling level switch receives its shift point the warning signal for the filling level is send. Depending on the filling level impulse counter, 1 to 950 lubrication cycles are possible. Afterwards the oil-air-lubrication device indicates a malfunction.

Possible remedy:

- Fill up clean lubricating oil as soon as possible according to the specification via the filling connection.

Level error

Cause:

Depending on the adjusted filling level impulse counter, 1 to 950 lubrication cycles are reached when the warning signal is send.

Possible remedy:

- Fill up clean lubricating oil **immediately** according to specification via the filling connection.

Error no pressurization (filter)

Cause:

The oil pressure switch at the lubrication oil filter did not react, as not sufficient lubrication pressure increased.

Possible remedy:

- Check the lines for leakage and remove them if necessary.
- Always observe if enough lubricating oil is in the reservoir.
- Check if the gear pump does operate, replace a defective pump.
- SprayLub 0: Check if the ventilation unit at the external oil-air mixing distributor is tighten closely and seal it if necessary.
- SprayLub 2 and SprayLub 4: Check if the set screw at the ventilation block is tighten and countered with the nut. If necessary tighten the set screw and also the nut.
- Check the lubricating oil filter for soil and change it if necessary, as described in Chapter 9 „maintenance“ section „lubricant oil filter“.
- Check the pressure switch an renew it if necessary.

Error no depressurization (filter)

Cause:

The oil pressure switch at the lubricating oil filter does not open as oil pressure is not reduced.

Possible remedy:

- Check the lubricating oil filter for soil and change it if necessary, as described in Chapter 9 „maintenance“ section „lubricant oil filter“.
- Check the pressure relief valve for its function. Exchange the whole pump if it is necessary.
- Check the pressure switch an renew it if necessary.

Error air

Cause:

The air pressure switch at the oil/air mixing distributor does not emit any signal as air pressure is below 4 bar or below an even lower adjusted switching point for devices with reduced operating pressure.

Note!

The error signal of the air pressure switch will be buffered in the device control for 30 seconds. This prevents the enable signal from being interrupted just because of temporary air pressure
Fluctuations which are of no significance for a reliable oil supply to the connected machine /lubrication points!

Possible remedy:

Check the manometer at the device front if an air pressure of min. 5 bar or lower air pressure at devices with reduced operating pressure is available and if necessary correct it.

Check the external air supply for function and the necessary min. air pressure.

Wrong password entry

Cause:

Wrong password has been entered.

Possible remedy:

- Enter correct password.
- Check if password was changed.

9.3 Shut-down

Proceed as follows for a shut down:

- Switch off air supply
- Switch off electric voltage supply.

The supply lines (electric and pneumatic) may be connected to the lubrication unit.

10 Maintenance

Stop the voltage feed, before starting with **maintenance or repair.**
Maintenance and repair work may only be done at system's **standstill** and pressure less condition.
Check the surface temperature of the oil-air-lubrication device, due to danger of burning by radiant heat. Always wear heat-resistance gloves and protection goggles! Soiled or contaminated surfaces have to be cleaned before maintenance works, wear protective cloths if necessary. Protect the system from activation during maintenance and repair work!

General

- **Check** all fittings for **tightness regularly**.
- Check the used compressed air regularly for dryness and cleanness.
- Renew the lubricating oil filter if necessary. See chapter „lubricant oil filter“ in this chapter.
- Check the oil level regularly.
- Refill clean lubricating oil if necessary, but at the latest when the electric level monitoring sends a signal.

Attention! Always pay attention to **utmost cleanness** when **refilling lubricating oil**!

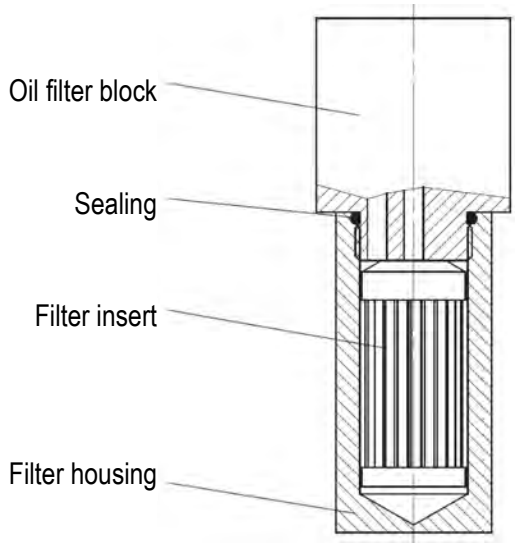
- Clean the oil reservoir if necessary or when using another lubricating oil.
- Empty the oil reservoir via the lubricating oil drain screw.
- Tighten the oil drain screw again!
- Wash the oil reservoir thoroughly with the new lubricating oil! Also activate the „ventilation operation“ in order to wash all lines with lubricating oil.
- Again, empty the oil reservoir via the lubricating oil drain screw!
- Dispose the residual lubricating oil professional!
- Fill up new lubricating oil until the maximum marking has been reached.
- Further procedure can be seen under chapter 7 “start-up”!

Note! **Observe the lubricating oil manufacturer's disposal information when renew oil!**

Lubrication oil filter

If the oil pressure switch sends an error signal, exchange the filter insert as described:

- Relief the oil-air-lubrication device from pressure
- Screw off the filter housing with suitable tools.
- Collect running out lubricant with a suitable receptacle.
- Remove the soiled filter.
- Clean the filter housing, the oil filter block and the assembly around with a lintfree cloth.
- Insert the new filter.
- Fasten the filter housing at the oil filter block. Renew defective sealings. Pay attention to the sealing position during assembly.
- Activate the systems ventilation operation (described under item 8.1 „ventilation operation”).
- Now the system can start to work.



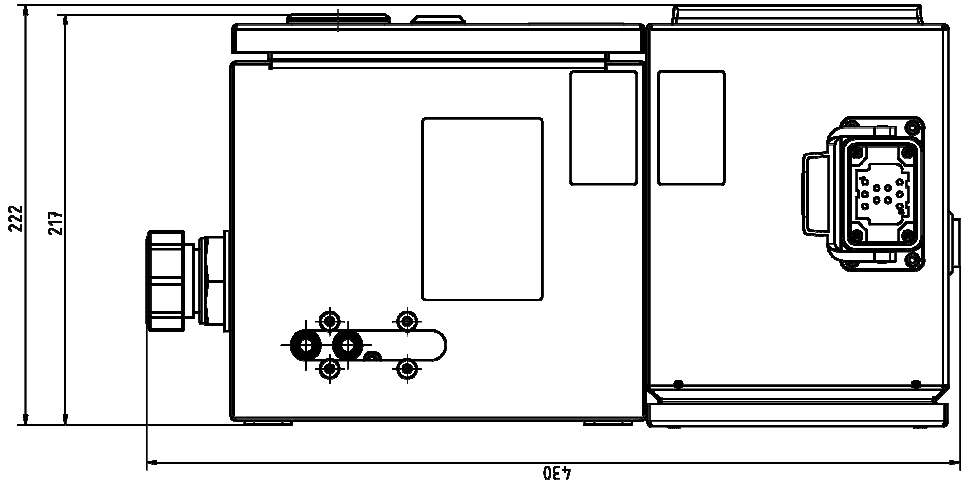
11 Disposal

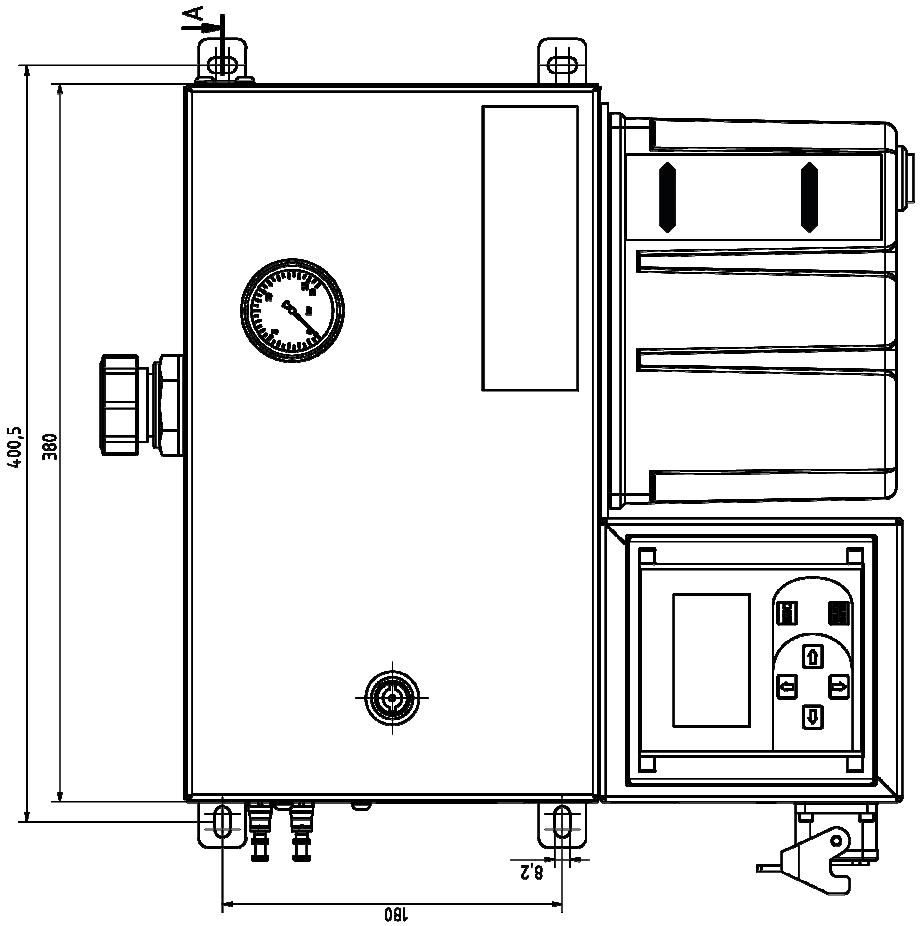
Note!

When changing lubrication oil, observe the disposal details of the lubrication oil manufacturer! Lubrication oil or cloths contaminated with lubrication oil or similar textiles must be collected in a specially marked receptacle and disposed accordingly.
The disposal of the oil-air-lubrication device must be done professional and according to the national and international laws and regulations.

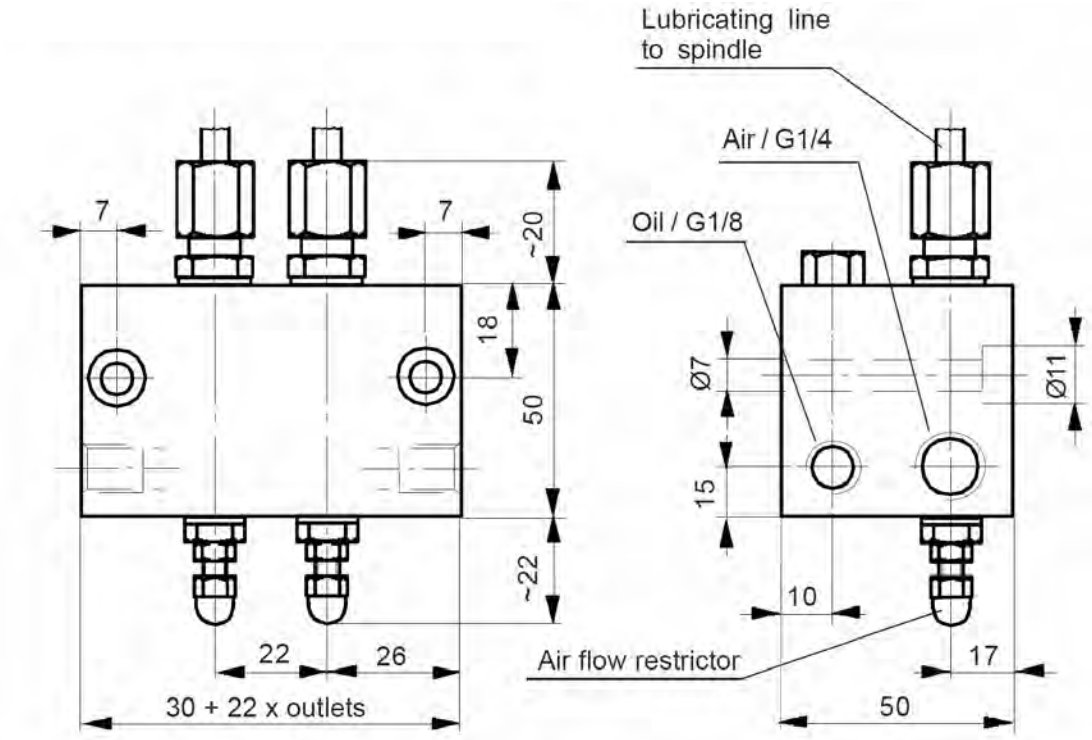
12 Enclosure

12.1 Dimensional drawing of oil-air-lubrication device

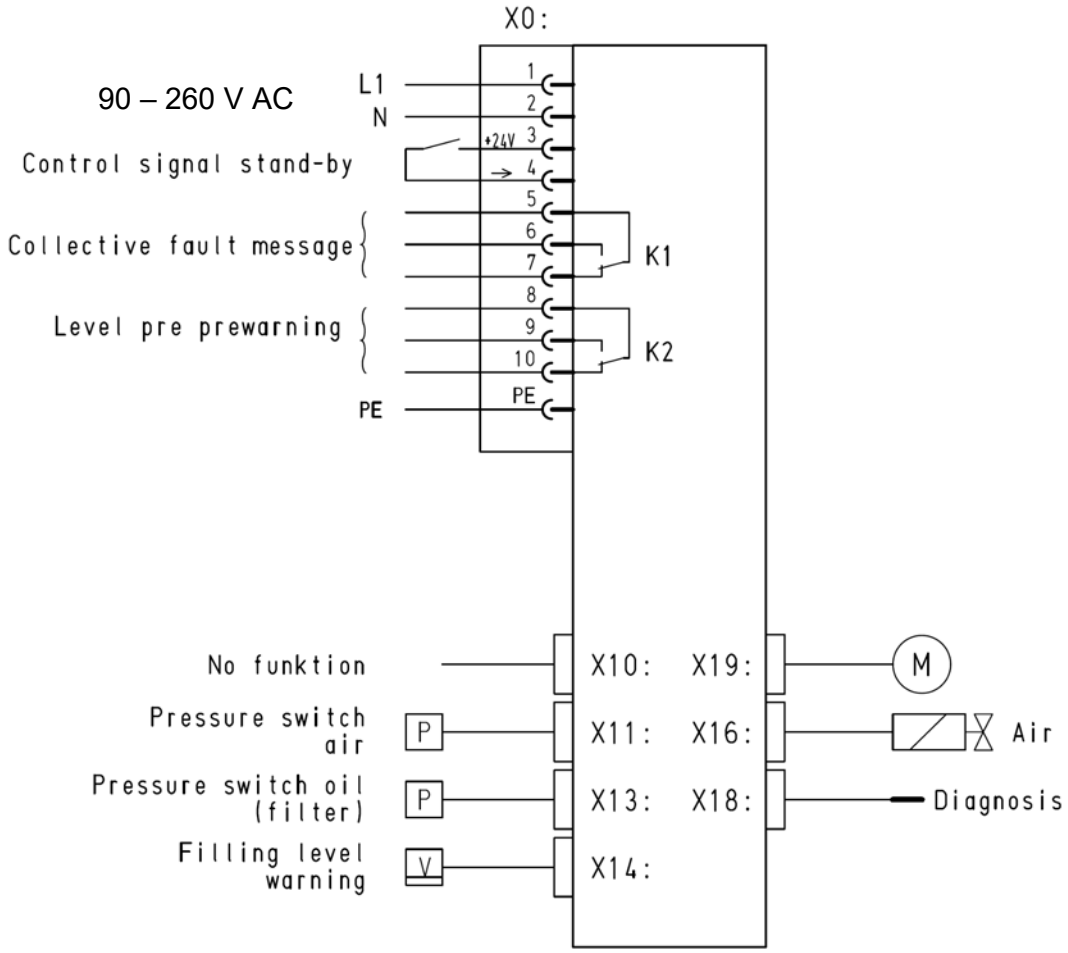




12.2 Dimensional drawing of external oil-air mixing distributors

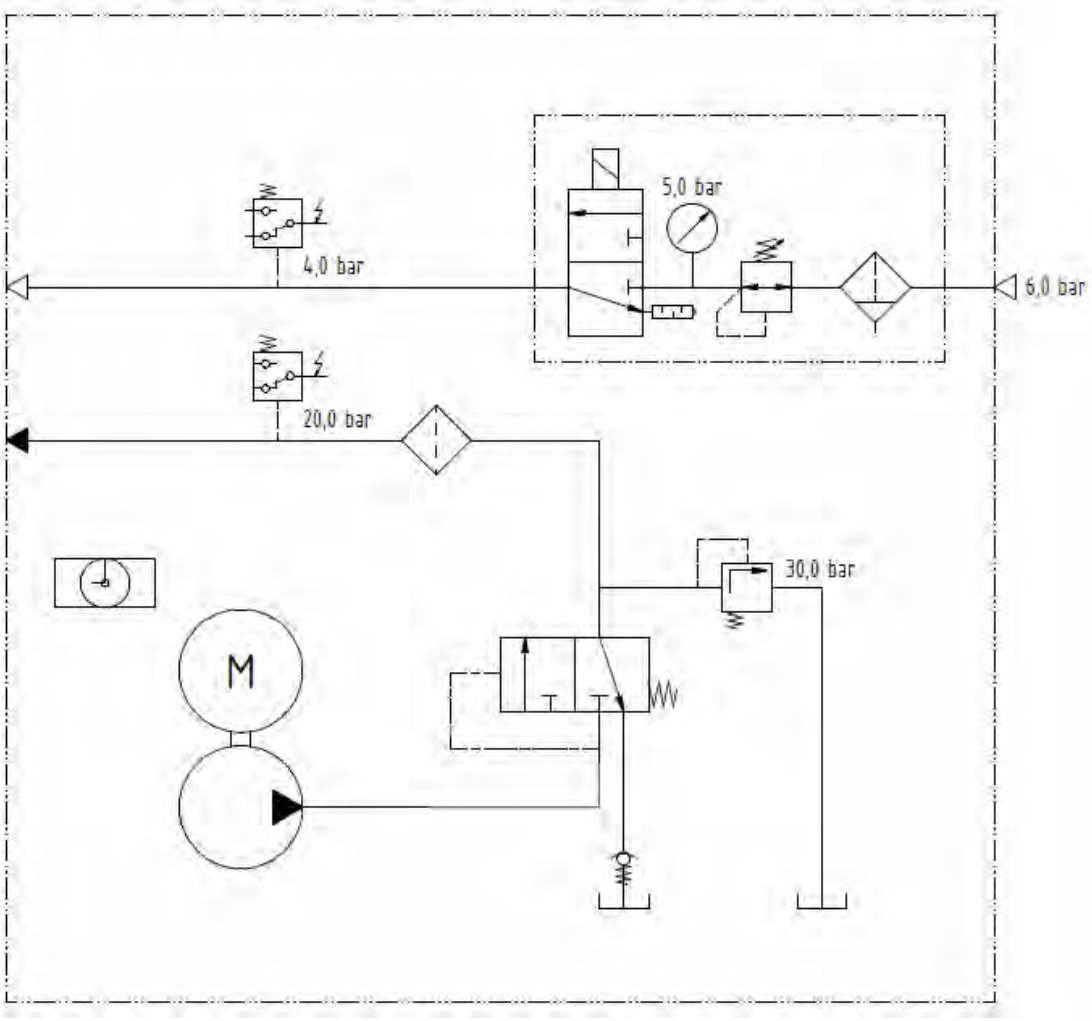


12.3 Electric connection

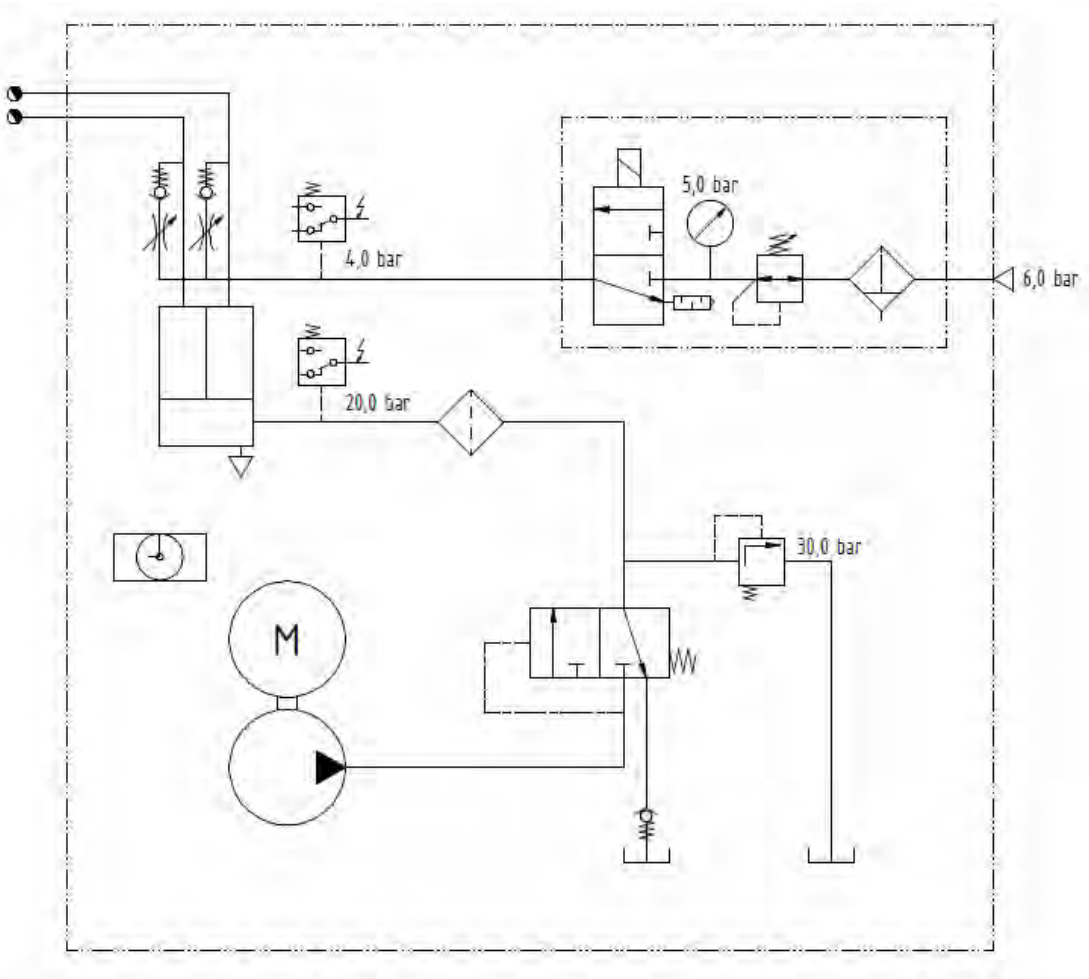


12.4 Lubrication scheme

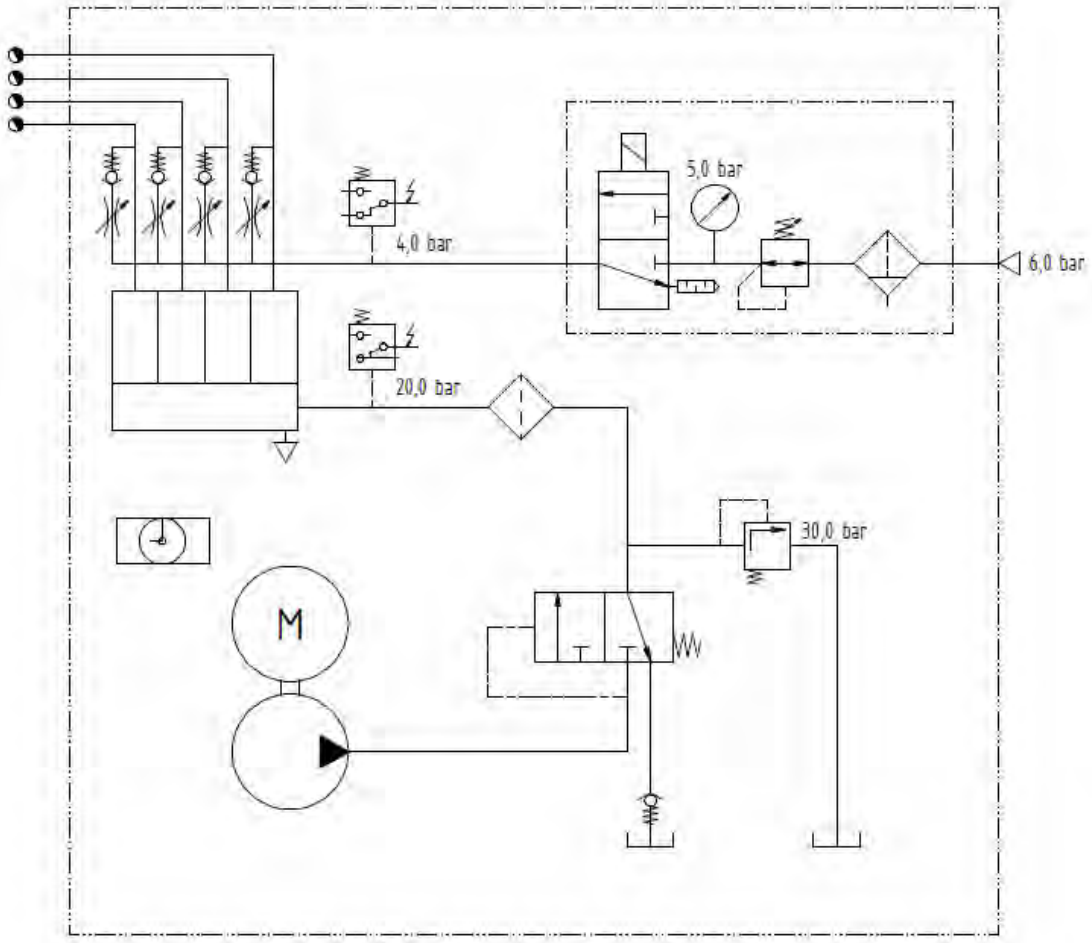
SprayLub 0



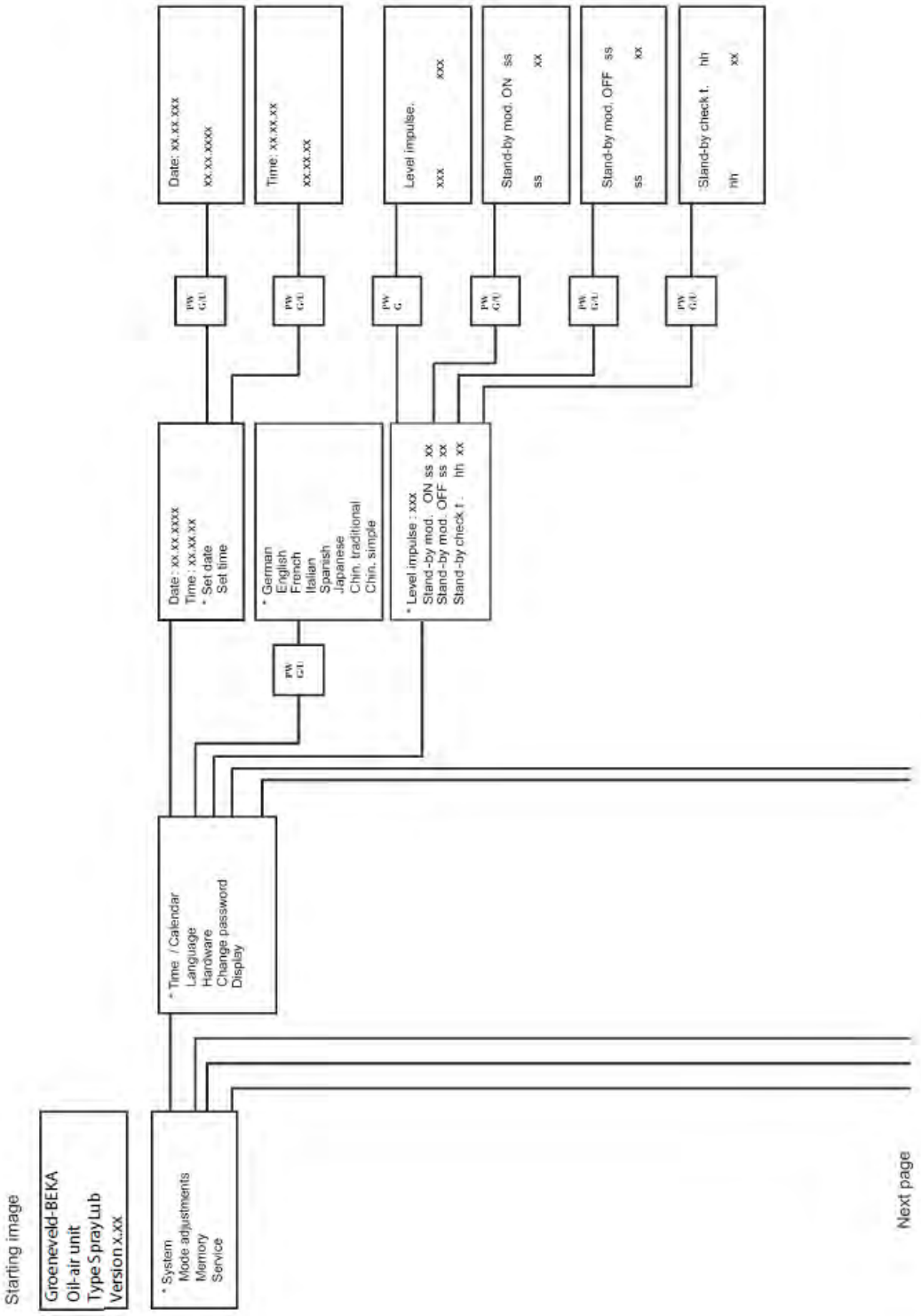
SprayLub 2

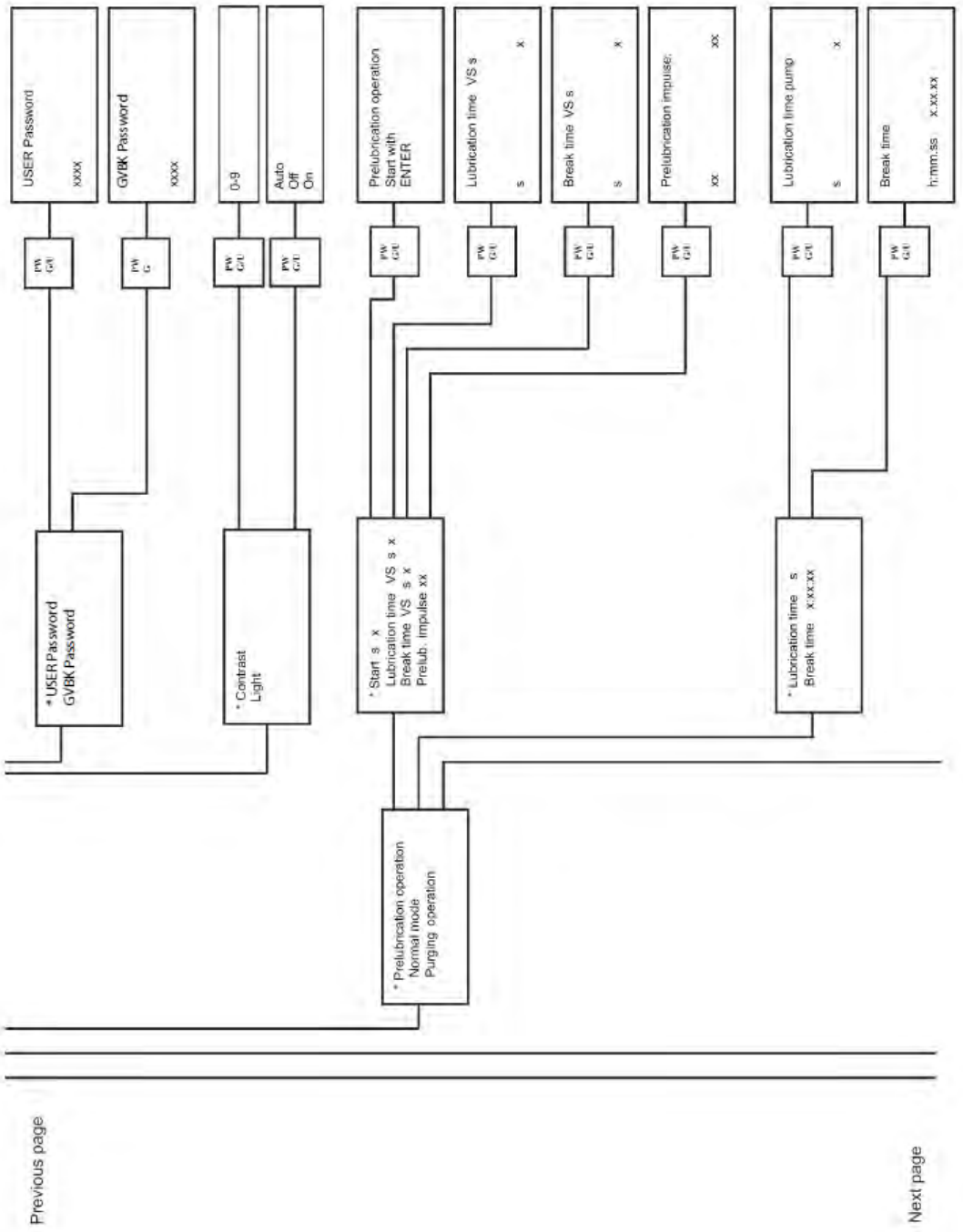


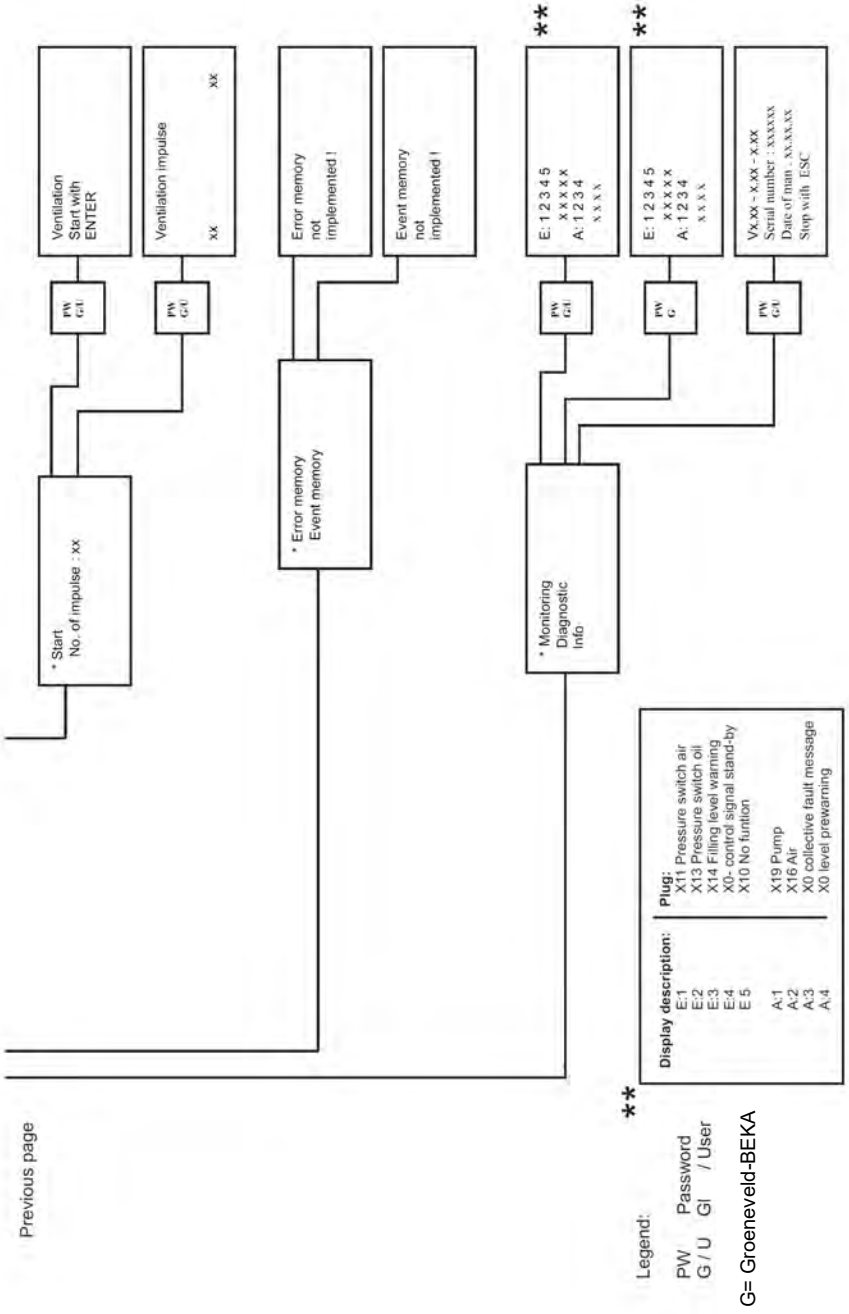
SprayLub 4



12.5 Control plan




USER Password
xxxx
GVBK Password
xxxx
0-9
Auto
Off
On
Prelubrication operation
Start with
ENTER
Lubrication time VS s
x
s
Break time VS s
x
s
Prelubrication impulse:
xx
xx
Lubrication time pump
x
s
Break time
h:mm:ss x:xx:xx
PW
C/U
* USER Password
GVBK Password
* Contrast
Light
* Start s x
Lubrication time VS s x
Break time VS s x
Prelub. impulse xx
* Lubrication time s
Break time x:xx:xx
* Prelubrication operation
Normal mode
Purging operation
Previous page
Next page


Previous page
* Start
No. of impulse : xx
Ventilation
Start with
ENTER
Ventilation impulse
xx
xx
* Error memory
Event memory
Error memory
not
implemented !
Event memory
not
implemented !
* Monitoring
Diagnostic
Info
E: 1 2 3 4 5
x x x x x
A: 1 2 3 4
x x x x
E: 1 2 3 4 5
x x x x x
A: 1 2 3 4
x x x x
Vx.xx - x.xx - x.xx
Serial number : xxxxxx
Date of man. : xx.xx.xx
Stop with ESC
**
**
**
Display description:
E:1
E:2
E:3
E:4
E 5
A:1
A:2
A:3
A:4
Plug:
X11 Pressure switch air
X13 Pressure switch oil
X14 Filling level warning
X0- control signal stand-by
X10 No funtion
X19 Pump
X16 Air
X0 collective fault message
X0 level prewarning
Legend:
PW Password
G / U GI / User
G= Groeneveld-BEKA

13 Details of the manufacturer

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Commercial vehicle central lubrication systems
Progressive distributors
Control and monitoring devices

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