

Operating- and assembly manual

Oil lubrication pump ALPBO 12-24 VDC



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All information subject to technical changes.

Rev.	Change	Date / Author:	Date / Released:
00	New creation	14.05.2025 / HB	14.05.2025 / VH

1 Declaration of incorporation



Declaration of incorporation for incomplete machinery (acc. To EC-directive 2006/42/EG)

The manufacturer: Lubmann GmbH, Kleiner Johannes 21, 91257, Pegnitz, Germany
declares hereby, that the following partly completed machinery:

Oil lubrication pump
Type: ALPBO
Part No.: 20xxxxxxx / 99xxxxx / 15xxxxxx

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 12000

The following other specifications and standards have been used:
VDE 0530

The protection targets of the directive for have been electric equipment 2006/95/EG 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 9241 80 89 87 00,
email: info@lubmann-gmbh.de; obliges itself to pass on electronically the special documentation for
partly completed machinery to individual national authorities upon request.

LUBMANN
Pegnitz 01.06.2024
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D-91257 Pegnitz
www.lubmann-gmbh.de

ppa. Markus Kürzdörfer
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2 CE Certificate

Page 1 of 3

TÜV Rheinland (China) Ltd.
Member of TÜV Rheinland Group



Lubmann GmbH
Markus Kürzdörfer

Date : 11.06.2021
Our ref. : WYH 01
Your ref.: M.K.

Dr.-Alfred-Herrhausen-Allee 16
47228 Duisburg
Germany

Ref : AM Certificate of Conformity (Module A)

Type of Equipment : Centralized Lubrication System
Model Designation : See Certificate
Certificate No. : AM 50507162 0001
Report No. : 17705122 003

Dear Markus Kürzdörfer,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body

Huajian Dong

Enclosure

证书的详细信息请登陆www.certipedia.com查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询

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莱茵检测认证服务(中国)有限公司

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C E R T I F I C A T E



of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50507162 0001

Report No.: 17705122 003

Holder: Lubmann GmbH
Dr.-Alfred-Herrhausen-Allee 16
47228 Duisburg
Germany

Product: Grease Pump
(Centralized Lubrication System)

Identification: Type Designation : ALP8xy (x=1, 2, 3. y=2)
ALP10xy (x=1, 2, 3. y=2, 4, 6, 8)
(LUBMANN)
Serial No. : Engineering sample

Remark: Refer to test report 17705122 003 for details.
See more module type designations in attachment 1.1

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

Date 11.06.2021



TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. **CE**



1.1

TÜV Rheinland
LGA Products GmbH
Tillystraße 2, 90431 Nürnberg

Attachment to
Registration No.: AM 50507162 0001
Report No.: 17705122 003

Manufacturer: Lubmann GmbH
Dr.-Alfred-Herrhausen-Allee 16
47228 Duisburg
Germany

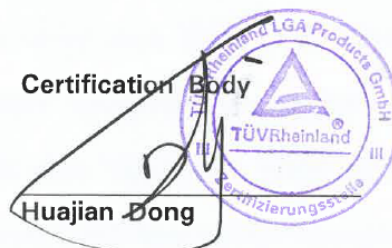
Scope: Type Designation:
ALPA8xy (x=1, y=1, 2)
ALPA10xy (x=1, 2, y=2, 4, 6)
ALPA12xy (x=1, 2, y=4, 8, 10, 15, 20, 30)
ALPB10xy (x=1, 2, y=2, 4, 6)
ALPB12xy (x=1, 2, y=4, 8, 10, 15, 20, 30)
ALPB13xy (x=1, 2, y=15, 20, 30)
(LUBMANN)
Serial No.: Engineering sample

Remark: Refer to test report 17705122 003 for details.

Date: 2021-06-11

Certification Body

Huajian Dong



3 Imprint

Manufacturer

Lubmann GmbH

Add: Kleiner Johannes 21, 91257 Pegnitz, Germany

E-Mail: info@lubmann-gmbh.de

Website: www.lubmann-gmbh.de

Training courses

In order to provide a maximum of safety and economic viability, Lubmann GmbH carries out detailed training courses. It is recommended that the training courses are attended. For more information, please contact Lubmann GmbH.

Copyright

© Copyright Lubmann GmbH All rights reserved

Disclaimer

The manufacturer shall not be held responsible for damages caused by:

- Non appropriate use faulty assembly, operating, setting, maintenance, repair or accidents
- Use of inappropriate lubricants
- Improper or late response to malfunctions
- Unauthorized modifications of the product
- Intent or negligence
- Use of non-original Lubmann spare parts
- Faulty planning or layout of the centralized lubrication system

Liability for loss or damage resulting from the use of our products is limited to the maximum purchase price. Liability for consequential damages of whatever kind is excluded.

4 Explanation of symbols



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.



General commandment!
Points out Special Information!

5 Warranty and extent of warranty

Inappropriate intervention will rule out your warranty claim!

Warranty regarding operational safety, reliability and performance of the oil lubrication 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.

All guarantees and warranties expire for damages to the oil lubrication pump that are caused by operation with improper lubricants (e.g., piston wear, piston jamming, plugins, embrittled sealings).

Lubmann 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.

Contact: Lubmann GmbH, Kleiner Johannes 21, 91257 Pegnitz, Germany

6 Safety instructions

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 of the operating company must read the Operating Instructions on all accounts prior to starting assembly, commissioning and maintenance. 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 must 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 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.

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 have understood the contents of the Operating Instructions.

Danger due to 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 compliance 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.

Intended purpose

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

Assembly and maintenance



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 and 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 led 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 on the oil lubrication pump require the manufacturer's prior approval.

The use of non-original parts excludes liability for the resulting consequences.

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 oil lubrication pump, the operator must observe respectively ensure the following items:



Checks for proper assembly and function must be carried out according to the regional valid guidelines.

Checks for a safe provisioning and use must be carried out according to the regional valid guidelines.

The check deadline must not be exceeded.

Exchange defect hydraulic hose lines immediately and professional.

Hydraulic hose lines subject to a wear process and must be exchanged regularly and according to the manufacturer's details.

Cleaning



The oil lubrication pump has an IP65 (according to DIN EN 60529) protection class!

It is not allowed to clean the Lubmann oil lubrication pumps of serie ALPBO with a high-pressure cleaner.

The high-pressure jets can allow water to penetrate the seals into the oil lubrication pump.

We do not provide a warranty when high-pressure cleaner are used!

Lubricant

The system is designed for pressure-stable mineral oils and bio-oils with viscosities ISO VG22 to ISO VG1500.

Food oils must not be used.



Observe the vehicle manufacturer's specifications, when you select the lubricant.

Mixing oils with different properties is not permitted. If a different oil is used, the tanks must be cleaned and flushed with the new oil.

Observe the safety data sheet for the lubricant used.

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.

Unzulässige Arbeitsmethoden



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.

7 Delivery, Returns and Storage

Transport

The Oil lubrication pumps of the series ALPBO 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 -5° C to +35°C.

After receipt of the shipment, check the shipment for damage and completeness according to the shipping documents. Immediately report any transport damages to the forwarding agent. Keep the packaging material until any discrepancies are resolved. During in-house transport ensure safe handling.

Returns

Clean all parts and pack them properly (i.e., following the regulations of the recipient country) before returning them.

Protect the product against mechanical influences such as impacts.

There are no restrictions for land, sea or air transport.

Storage

Lubmann products are subject to the following storage conditions:

- dry, dust- and vibration-free in closed premises
- no corrosive, aggressive materials at the place of storage (e. g. UV rays, ozone)
- protect from environmental influences such as UV rays
- protected against pests and animals (insects, rodents, etc.)
- possibly in the original product packaging
- shielded from nearby sources of heat and coldness
- in case of high temperature fluctuations or high humidity take adequate measures (e. g. heater) to prevent the formation of condensation water

8 Shutdown and disposal

Temporary shutdown

Temporarily shut the system down by:

- Switching off the superior machine.
- Disconnecting the product from the power supply.

Final shutdown and disassembly

The final shutdown and disassembly of the product must be planned and carried out by the operator in a professional manner and in compliance with all regulations to be observed.

Disposal

- for Countries within the European Union

Disposal should be avoided or minimized wherever possible. Disposal of products contaminated with lubricant must be affected via licensed waste disposal contractor in accordance with environmental requirements and waste disposal regulations as well as local authority requirements.



The specific classification of the waste is in the waste producer's responsibility, as the European Waste Catalogue provides different waste disposal codes for the same type of waste but of different origin.

Electrical components have to be disposed of or recycled following WEEE directive 2012/19/EU.

Plastic or metal parts can be disposed of with the commercial waste.

- for Countries outside the European Union



The disposal must be done according to the valid national regulations and laws of the country where the product is used.

9 Accompanying documents

In addition to this manual, the following documents must be considered by the respective target audience:

- Operational instructions and release regulations for the oil lubrication pump used
- Safety data sheet for the lubricant used
- Project documentation
- Operating instructions for components installed during assembly of the central lubrication system
- Release regulations and regulations in the company

10 Technical data

Motor DC:

Operating voltage:	12V DC $\pm 10\%$	24V DC $\pm 10\%$
Revolutions [rpm]:	20 $\pm$ 2	23 $\pm$ 2
Duty cycle ED:	30% ED S3 30 minutes	
Current consumption at +20°C:		
Idling:	1 A	0.6 A
Full load:	5 A	3 A
Fuse:	10 A	6 A



The oil lubrication pump must be protected by a back-up fuse in front of the pump to avoid overvoltage damage!

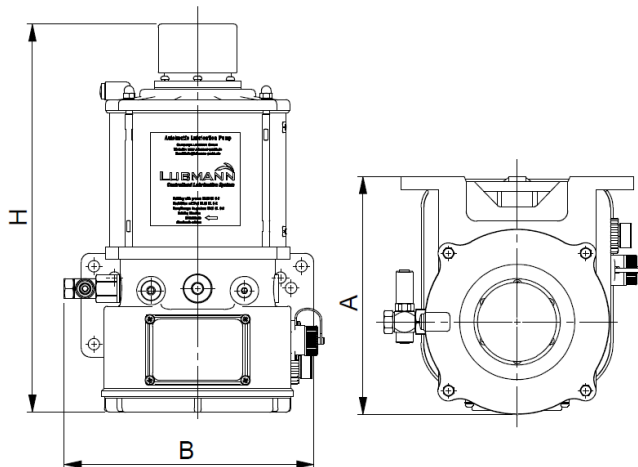
Oil lubrication pump:

Max. number of pump elements PE:	4
Max. operating pressure:	350 bar
Adjusting of pressure relief valve:	300 bar
Permissible operating temperature	-35°C bis +70°C
Sound pressure level:	<70 dB
Reservoir size:	2 / 4 / 6 / 8 / 15 / 20 liter
Installation position:	Reservoir vertical
Protection type:	IP65
Lubricant:	pressure-stable mineral oils and bio-oils with viscosities ISO VG22 to ISO VG1500

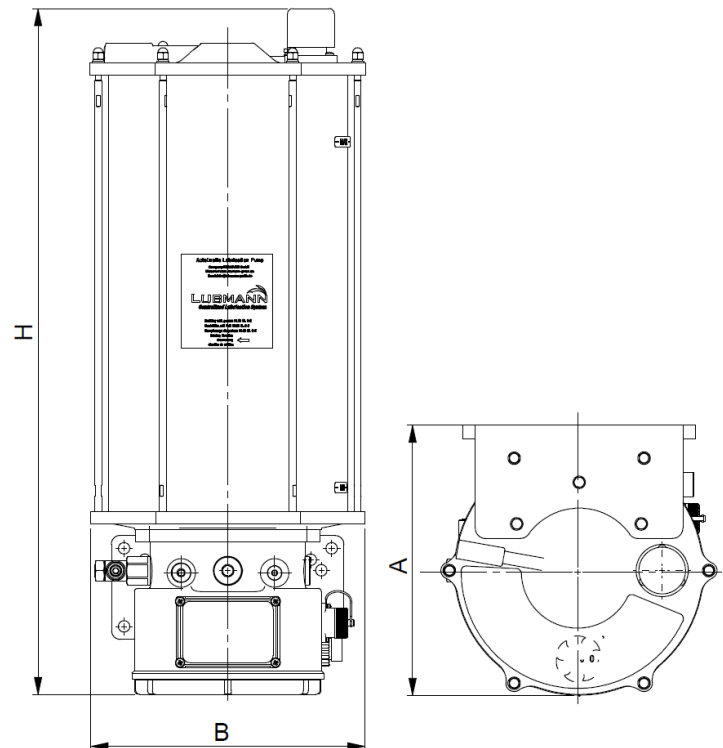


11 Installation dimensions

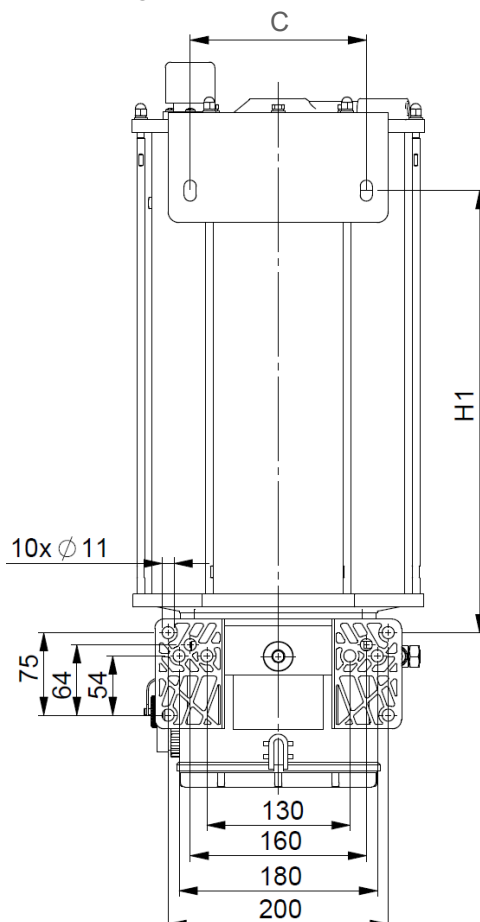
Reservoir size D170



Reservoir size D230



Mounting hole pattern:



Reservoir size [mm]

	D170	D170	D230	D170	D230	D230	D230	D230
	2 L	4 L	4 L	6 L	6 L	8 L	15 L	20 L
A	242	242	259	242	259	259	259	259
B	235	235	265	235	265	265	265	265
C	-	-	-	-	-	-	160	160
H	377	522	383	622	449	554	669	802
H1 ±3	-	-	-	-	-	-	402	545



For 15L and 20L reservoir sizes, the pump must also be attached to the top of the lid using the bracket.
(See dimensions C and H1 in the table).

12 Overview and function

12.1 General

The Lubmann oil lubrication pump ALPBO has been widely used in industries like wind power, mining, metallurgy, machine tools, textiles, food, ports, commercial vehicles, construction machinery, and heavy mechanical equipment, etc.

Our Lubmann automatic lubrication system lubricates all lube points as required through progressive lubrication system. It can reduce the friction resistance, reduce contact wear and decrease the friction surface temperature. Meanwhile, it plays a supporting role of anti-rust

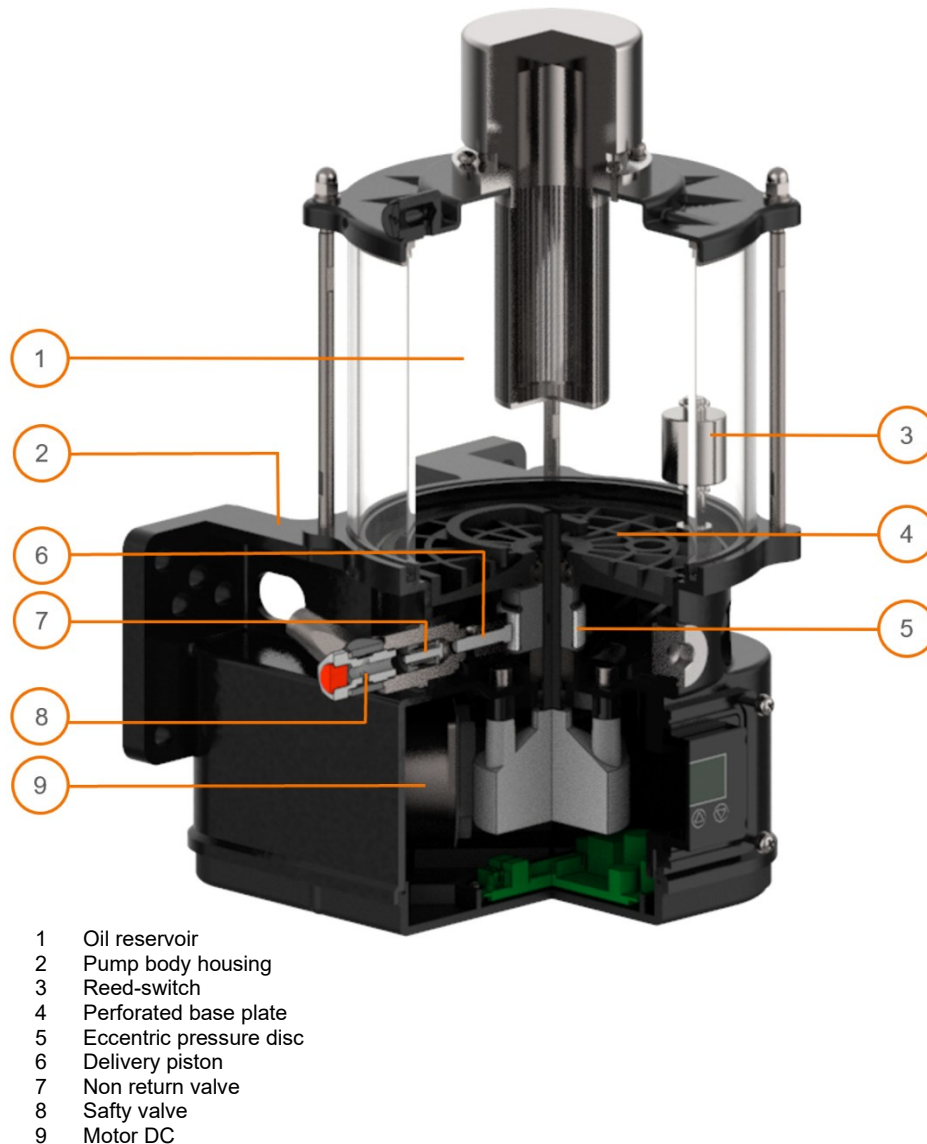


12.2 Functional description

The Lubmann oil lubrication pump ALPBO is electrically operated and has up to a max. 4 independently operating lubricant outlets, which can be engaged by bypasses. A separate pump element PE is required for each outlet. Three different delivery rates are available. This allows the oil quantity to be metered precisely for the requirements of the individual progressive distributor layouts.

These pumps enable the delivery of oils up to ISO VG1500 at a operating pressure of maximum 300 bar (adjusting of safety valve SV).

The oil lubrication pumps ALPBO differ in reservoir size and control type. It can be controlled by the serial controller with and LED display, or externally by PLC, board computer or external controller from Lubmann.



A motor DC (9) continually operates eccentric pressure disc (5). This eccentricity effects the suction and pressure strokes of the delivery piston (6), whereby the integrated non-return valve (7) prevents the delivery media from being sucked back out of the main line.

The lubricating oil from the oil reservoir (1) flows through the intermediate grease perforated base plate (4) into the intake area in the pump housing. The fill level in the reservoir is monitored by a reed switch (3).

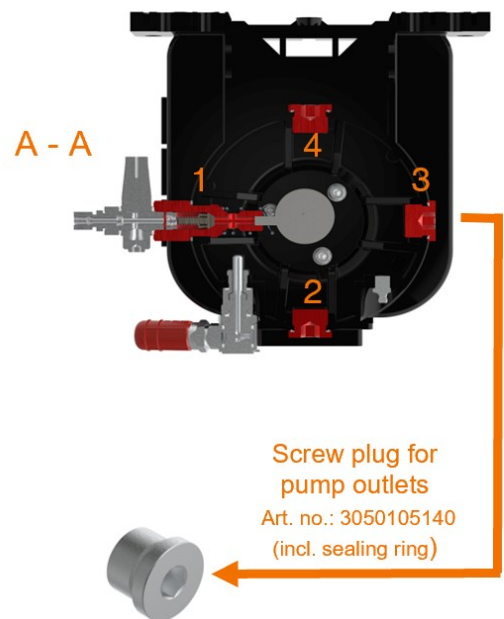
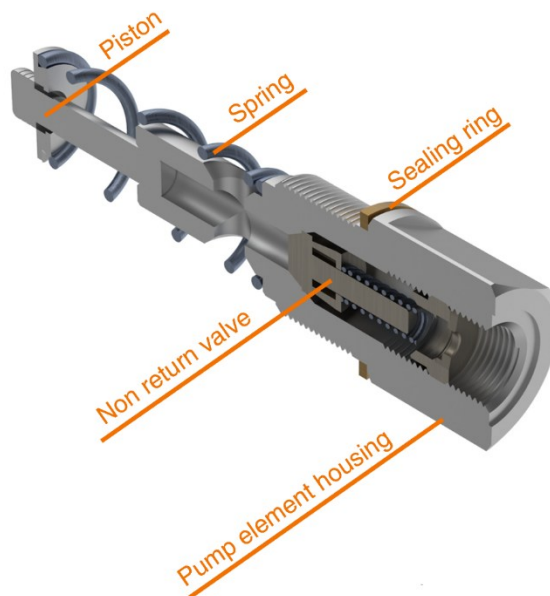
The safety valve (8) is pre-set to 300 bar.

12.3 Pumpenelement

In Oil lubrication pumps serie ALPBO can be installed -max. 4 pump elements with safety valve type SV-C on the pump outlet position 1/2/3/4

or
max. 2 pump elements with type SV-A safety valve with bypass on the pump outlet position 1 and 3.

Pump elements can deliver the lubricant single with the flow rate range between 0,075 - 0,225 cm³/stroke or bridged with each other to achieve a higher flow rate till 0,675 cm³/stroke with SV-A safety valve or till 0,9 cm³/stroke with SV-C safety valve.



Technical data pump element PE (without DBV):

	Delivery rate (cm ³ / stroke)	Article number*	Screw-in thread	Connection thread
PE 1.5	0,075	2070011689*	M22x1.5	G 1/4
PE 2.5	0,125	2070011690*	M22x1.5	G 1/4
PE 4.5	0,225	2070011691*	M22x1.5	G 1/4

* Article number includes sealing ring, without safety valve

Functional description

On the vertical shaft of the geared DC motor an eccentric pressure disc (EPD) with eccentric hole in the centre is mounted.

When the pump starts running the eccentric pressure disc will make a back-and-forth movement (X1, X2, X3). The piston of the pump element, which is mounted in the pump body, runs against the eccentric pressure disc.

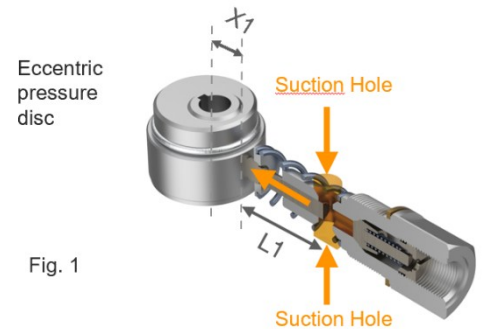


Fig. 1

When the EPD is moving away from the piston (Fig. 1) the spring on the pump element will push the piston against the EPD. In this suction stroke oil is sucked into the pump element through the 2 suction holes.

See the 2 arrows in (Fig. 1). The vertical shaft will continue rotating and the EPD will push the piston into the other direction (Fig. 2).

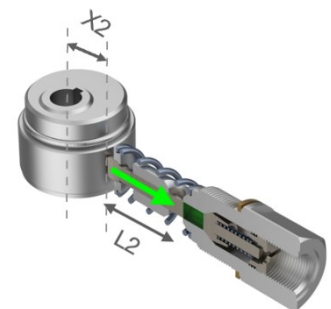


Fig. 2

In this pump stroke the piston will close the 2 suction holes and pushes the suctioned lubricant to the non-return valve (Fig. 3).

The pressure created by the piston and lubricant will open the non-return valve (Dia. 15.1-3) and the lubricant flows to the outlet of the pump element further into the lubrication system (Fig. 3).

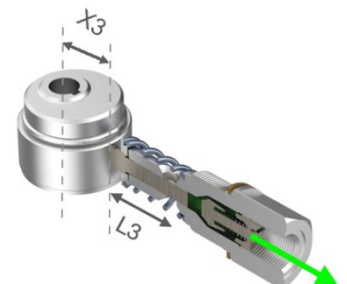


Fig. 3

Pump element installation and removal



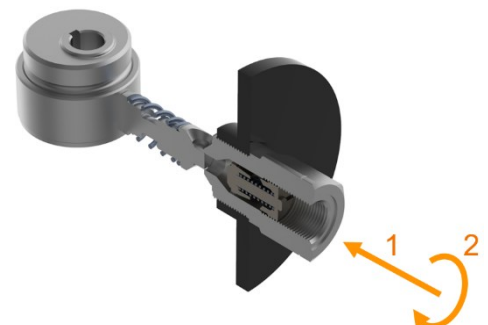
Only install or remove the pump element when pump power OFF!!!

1. Insert the pump element vertically into the pump outlet housing drilling.
2. Tighten the pump element clockwise.



Montieren Sie das Pumpenelement mit einem Anzugsdrehmoment von 43 ± 2 Nm.

3. To remove, reverse order description above.



12.4 Safety valves

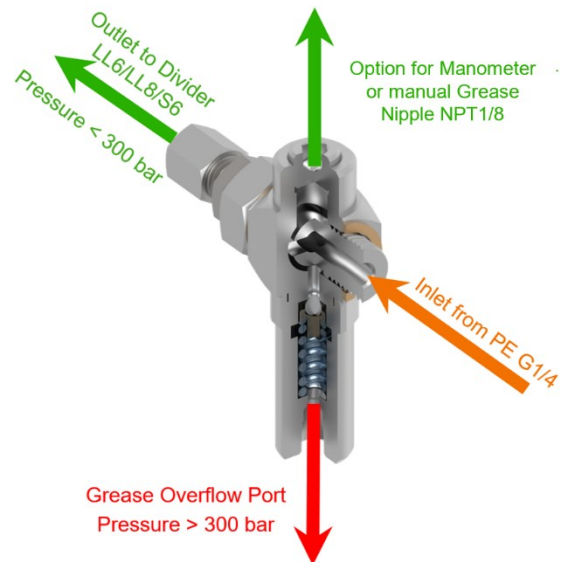
12.4.1 Safety valve SV-C

The safety valve SV-C is pre-set to 300 bar.

When the system pressure is higher than the pre-set valve (300 bar), the safety valve opens, lubricant flows from the safety valve overflow port out.

Please observe the applicable environmental regulations.

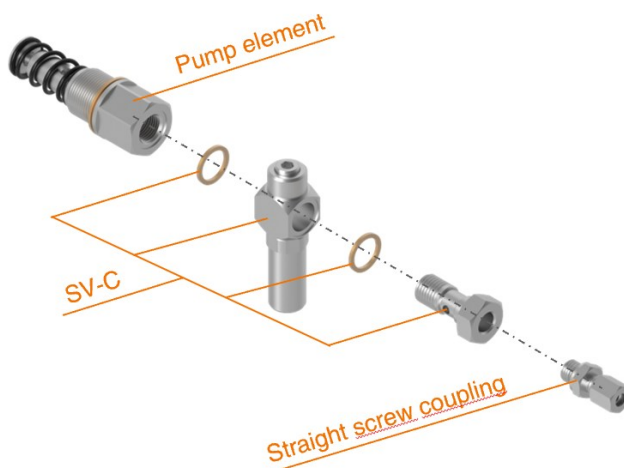
	Version	Article number
Safety valve SV-C- pre-set to 300 bar- G1/4-M10x1 (incl. flat washer)	/	2070011684
Straight screw coupling GE	D6LL	3050100890
	D8LL	3050104830
	D6S	9901900



You can find further screw connections in our accessories catalogue.

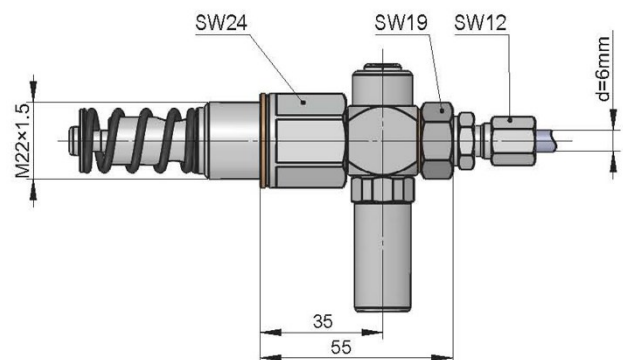


Install the safety valve with a tightening torque of 36 ± 2 Nm.



Exploded view

Pump element with SV-C safety valve
and straight screw coupling



Dimensions

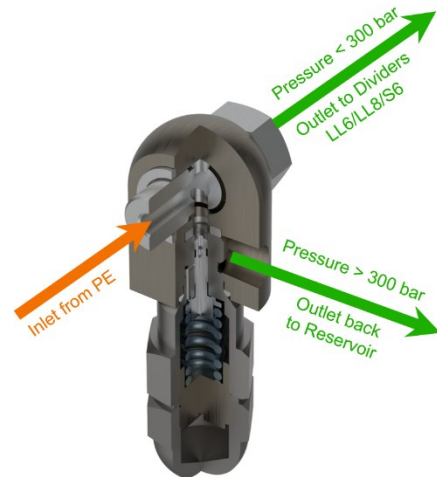
Safety valve with pump element

12.4.2 Safety valve SV-A – for bypass

The safety valve SV-A is pre-set to 300 bar.

When the system pressure is higher than the pre-set valve (300 bar), the safety valve opens, oil flows from the bypass of the safety valve and back to pump oil reservoir.

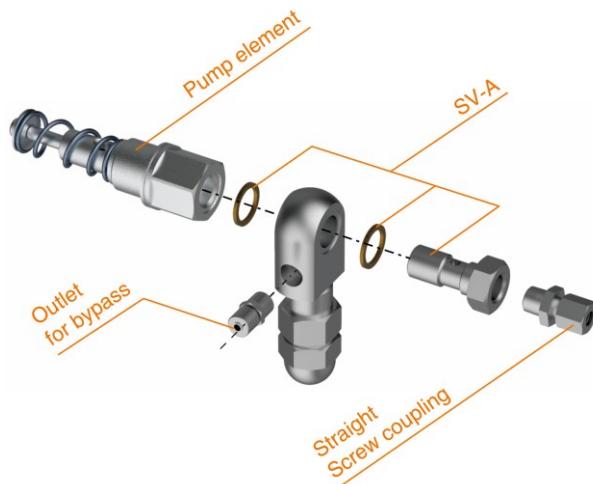
	Version	Article number
Safety valve SV-A-for bypass- pre-set to 300 bar- G1/4-M10x1 (incl. flat washer)	/	2011221370
Bypass	Single bypass	2011026280
	Dual bypass	2011026510
Straight screw coupling GE	D6LL	3050100890
	D8LL	3050104830
	D6S	9901900



You can find further screw connections in our accessories catalogue.

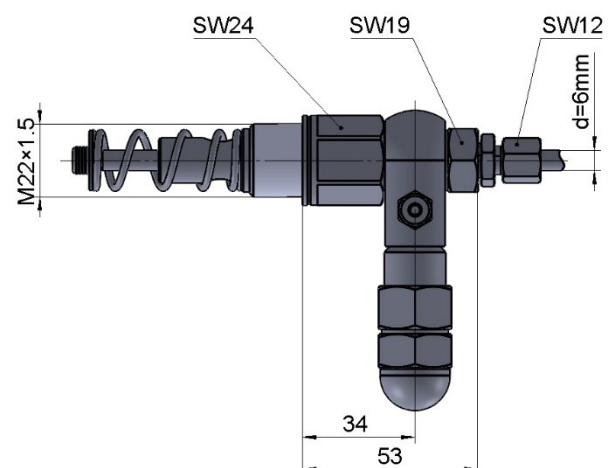


Install the safety valve with a tightening torque of 36 ± 2 Nm



Exploded view

Pump element with safety valve SV-A
and straight screw coupling



Dimensions

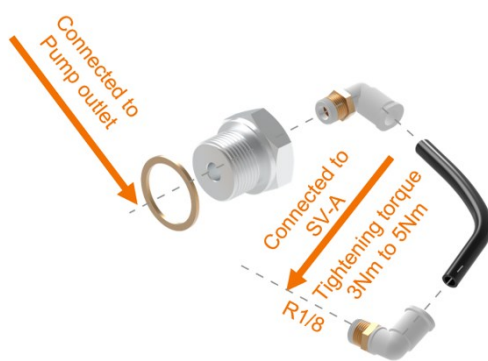
Safety valve with pump element

12.4.3 Bypass for safety valve SV-A

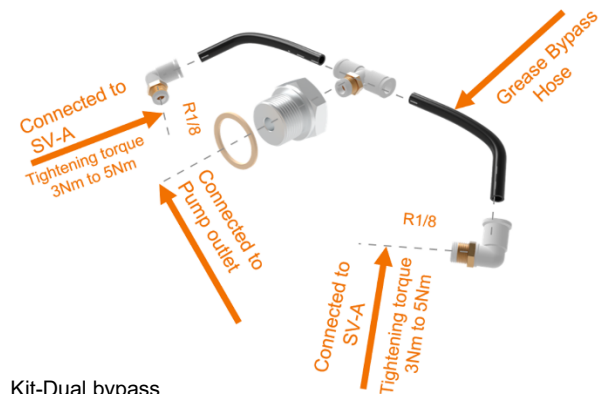
When the system pressure is higher than the pre-set 300 bar of the safety valve, the lubricant from the pump element can be returned to the oil reservoir via a bypass.

Two versions are available as complete kit sets.

	Article number	Remark
Kit-Single bypass for safety valve SV-A-M22x1,5	2011026280	Lubricant from a pump element is returned to the oil reservoir in case of overpressure.
Kit-Dual bypass for safety valve SV-A-M22x1,5	2011026510	Lubricant from two pump elements is returned to the oil reservoir in case of overpressure.

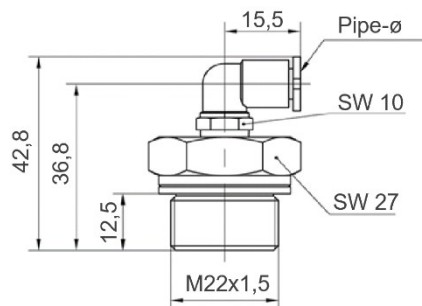


Kit-Single bypass

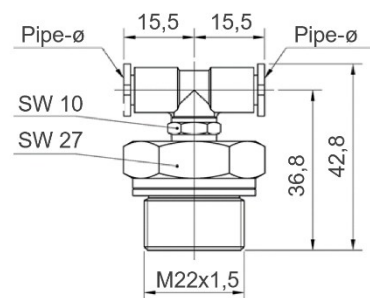


Kit-Dual bypass

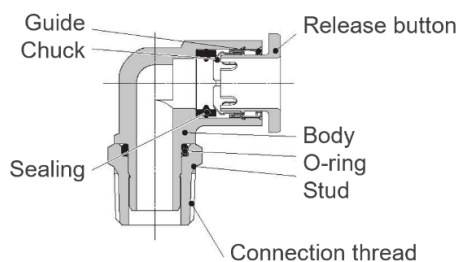
Dimensions of the connection fittings:



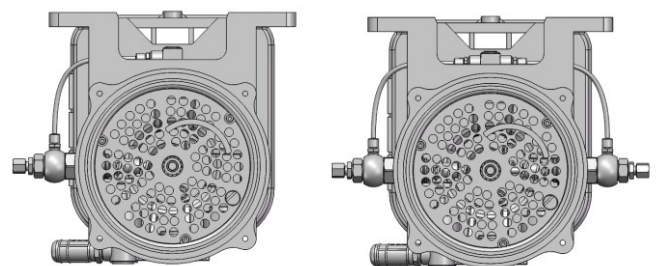
Connection fitting from kit – single bypass



Connection fitting from kit – dual bypass



Structure Elbow screw coupling-push in



Installations example:

Oil lubrication pump with monted single bypass and dual bypass

12.5 Level monitoring min.

A reed switch for level monitoring is installed as standard in the reservoir of the ALPBO oil lubrication pump.

A float A, which moves with the current level of the lubricating oil, contains a magnet. This magnet activates the reed switch located inside a sliding tube.

Level OK:

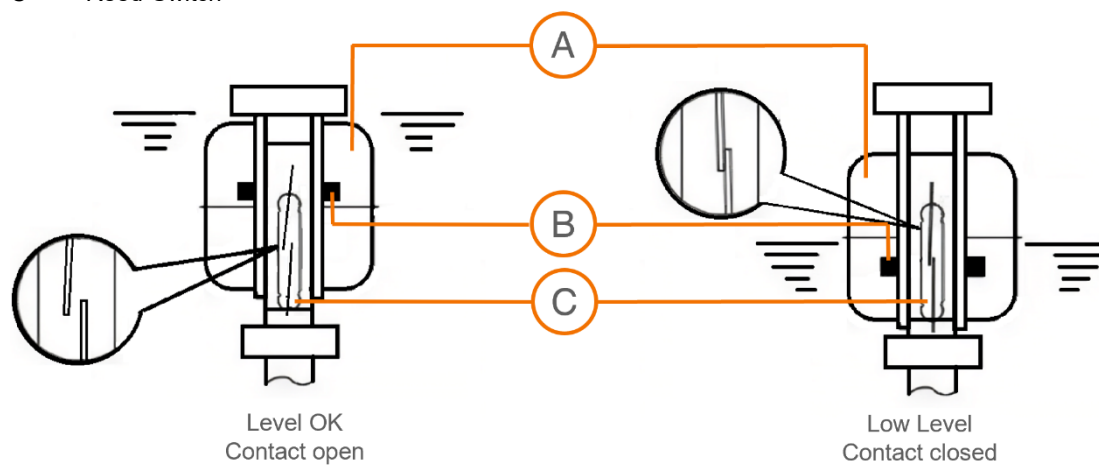
When the reservoir is full or sufficiently filled with lubricating oil, float A rises with the lubricating oil. The magnetic ring B in the float makes no contact with the reed switch C, so the switch remains open and no signal is sent.

Low Level:

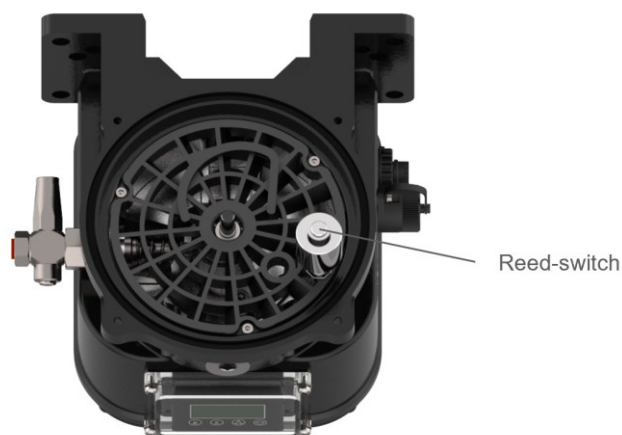
When the oil level drops, float A moves downwards. As soon as the position of magnetic ring B is next to the reed switch C and the magnetic force of magnetic ring B attracts the reed switch (contact closed), the minimum level signal is sent.

Reed-Schalter:

- A Float
- B Magnetic ring
- C Reed-Switch



Position level monitoring



13 Assembly

General information

Only qualified technical personnel may install the products described in these Instructions. During assembly pay attention to the following:



- Other units must not be damaged by the assembly
- The product must not be installed within the range of moving parts
- The product must be installed at an adequate distance from sources of heat and coldness
- Observe the product's IP degree of protection
- Adhere to safety distances and legal prescriptions on assembly and prevention of accidents
- Possible existing visual monitoring devices, e.g. pressure gauges, MIN/MAX markings or piston detectors, must be clearly visible
- Observe prescriptions in chapter Technical data regarding the installation position

Place of installation

Protect the product against humidity, dust and vibrations and install it in an easily accessible position to facilitate other installation and maintenance works.

Minimum assembly dimensions



Ensure sufficient space for maintenance work or for attachment of further components to build a centralized lubrication system to the oil lubrication pump by leaving a free space of at least 100 mm into each direction in addition to the stated dimensions.

**All the installation dimensions can be found in chapter "installations dimensions"*

Installation bores



Drill the mounting bores on non-loadbearing parts of the superior machine only. Fastening must not be done on two parts moving against one another. Please speak to the manufacturer and obtain approval for drilling.

Welding work



There is a risk of damage to the main machine and the oil lubrication pump. Please contact the manufacturer and obtain approval for any welding work you wish to perform.

Mount pump element and safety valve

Generally, a standard oil lubrication pump has a set of pump element and safety valve (SV-C) on the left side of the pump outlet.

To mounting an extra set of pump element and safety valve, please make sure the pump has been disconnected from the power supply.



Tightening torque for pump element = 43 Nm $\pm$ 2 Nm

Tightening torque for safety valve = 36 Nm $\pm$ 2 Nm

14 Filling the oil reservoir

The oil pump is refilled via the filler and ventilation filter on the oil pump top cover.

Unscrew the cap and pour the lubricating oil directly into the filler and breather filter until the desired fill level is reached. It is important to maintain cleanliness.

Ensure that the area around the filler and breather filter is clean to avoid contaminants in the lubricating oil. The oil pump must be positioned vertical, and the "Max" mark must not be exceeded.



The service life of the pump elements highly depends on the quality of the used lubricants.



15 Electrical connection and control unit



Danger of electric shock!

Make sure to disconnect the oil lubrication pump from the power supply before carrying out any works on electrical components.

Carry out the electrical connection according to the connection type of the oil lubrication pump.

Use the power cable according to the respective connection diagram as described in this manual. A back-up fuse must be used. See description on page 12.

If you don't require divider monitoring, screw the protective cap 3030502160 into the socket. This is the only way to maintain the protection class (IP class).

Work on electrical components may be performed only by qualified electricians. At a minimum, the following safety measures must be taken before any work on electrical components is done:



1. Disconnect
2. Secure against reconnection
3. Verify absence of voltage
4. Ground and short-circuit
5. Cover or barricade adjacent live parts

The electrical connection must be implemented in accordance with the specifications of the standards of the DIN VDE 0100 series or of the standards of the IEC 60364 series, respectively.



Connect the electrical cables or wirings without mechanical forces are transferred to the products. Connect plugs with the corresponding bushes and secure them against becoming loose.

The oil lubrication pump must be secured with a suitable external fuse.

The electrical connection is established in accordance with the type of connection of the specific oil lubrication pump.

15.1 Wiring connection – without controller

Oil lubrication pump ALPBO with 7-pin BYN connector – with level monitoring via an external indication light

The oil lubrication pump is supplied with 12/24V DC via the BYN 7-pin plug via Pos. A. versorgt. Lube time and pause time are not programmable.

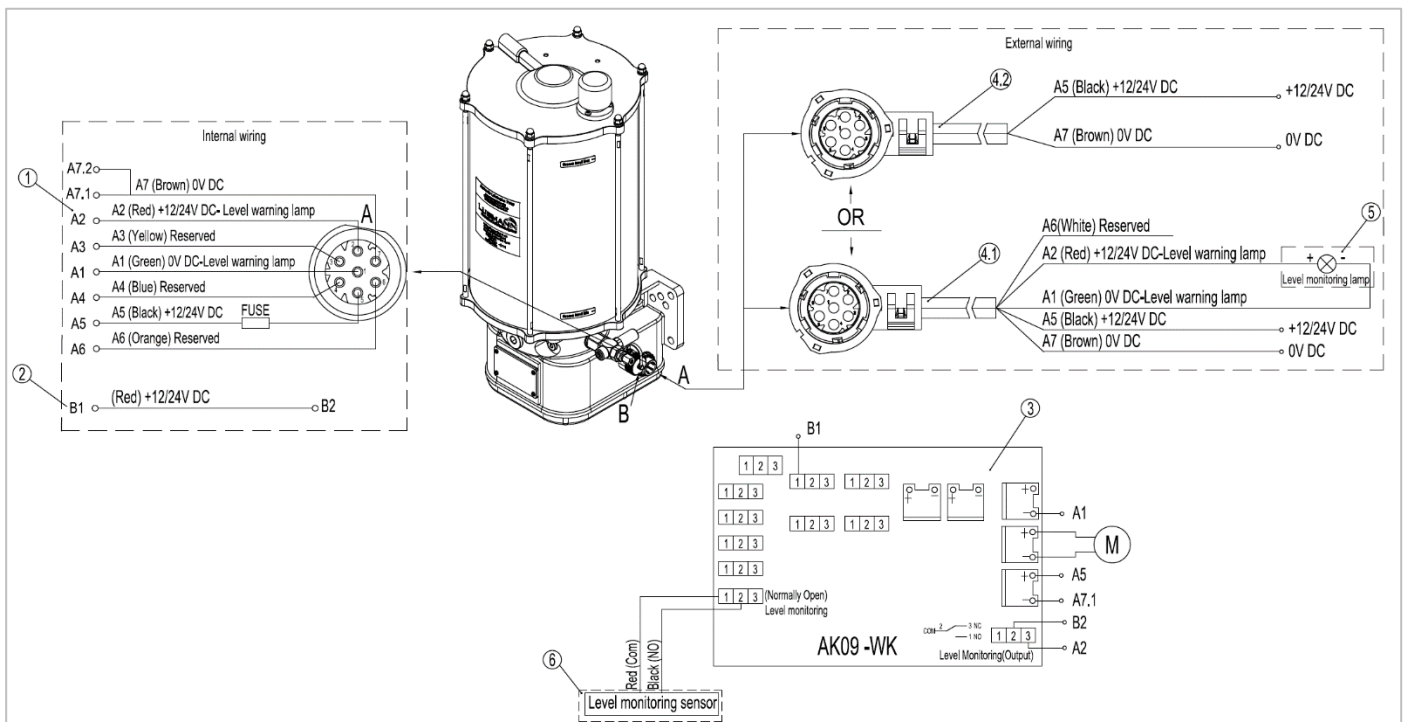
The lubricant level indication light turns on “red” when the pump gets an error signal for the oil level.



For the non-controller version ALPBP oil lubrication pump, it is NOT possible to monitor the divider status!

For more information about other solutions please contact us.

Wiring diagram LE10001002



Pos.	Oty.	Description	Article number
1A	1	Wire Kit-power supply-ALPB-ALP81_BYN-12VDC-Int.-0,3m-BYN_M_7P-5xP_JSTxH_F-2xP_JSTvH_F-7x0,5	2040120780
1B	1	Wire Kit-power supply-ALPB-ALP81_BYN-24VDC-Int.-0,3m-BYN_M_7P-5xP_JSTxH_F-2xP_JSTvH_F-7x0,5	2040120760
2	1	Single wire-internal bridge-0,2 m-int.-P_JSTxH_F-P_JSTxH_F-1x0,2-red	15010009
3A	1	Controller-ALPB0-AK09-WK-12VDC-not programmable (print board)-program code P-11	15010767
3B	1	Controller-ALPB0-AK09-WK-24VDC-not programmable (print board)-program code P-11	15010768
4.1A	1	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-5x1,0	2110012451
4.1B	1	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-5x1,0	2110012452
4.2A	1	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-2x1,0	2110012722
4.2B	1	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-2x1,0	2110012723
5A	1	Indication light-12VDC-red-M16	3030102940
5B	1	Indication light-24VDC-red-M16	3030102930
6	1	Sensor-min. level-ALPBO-12/24VDC-Reed_switch-M14x1,5-L138_Leiter-AL	15010769

15.2 Wiring connection – with controller

Oil lubrication pump-ALPBO with 7-pin BYN-connector – System monitoring via an external illuminated push button

The oil lubrication pump is supplied with 12/24V DC via the 7-pin BYN connector at position A.

This connection ist standard.

An intermediate lubrication reset function is triggered by pressing an illuminated pushbutton, which is installed, for example, in the cabin.

During the lubrication time (oil lubrication pump in operation) – 3P, the optional illuminated pushbutton lights up green.

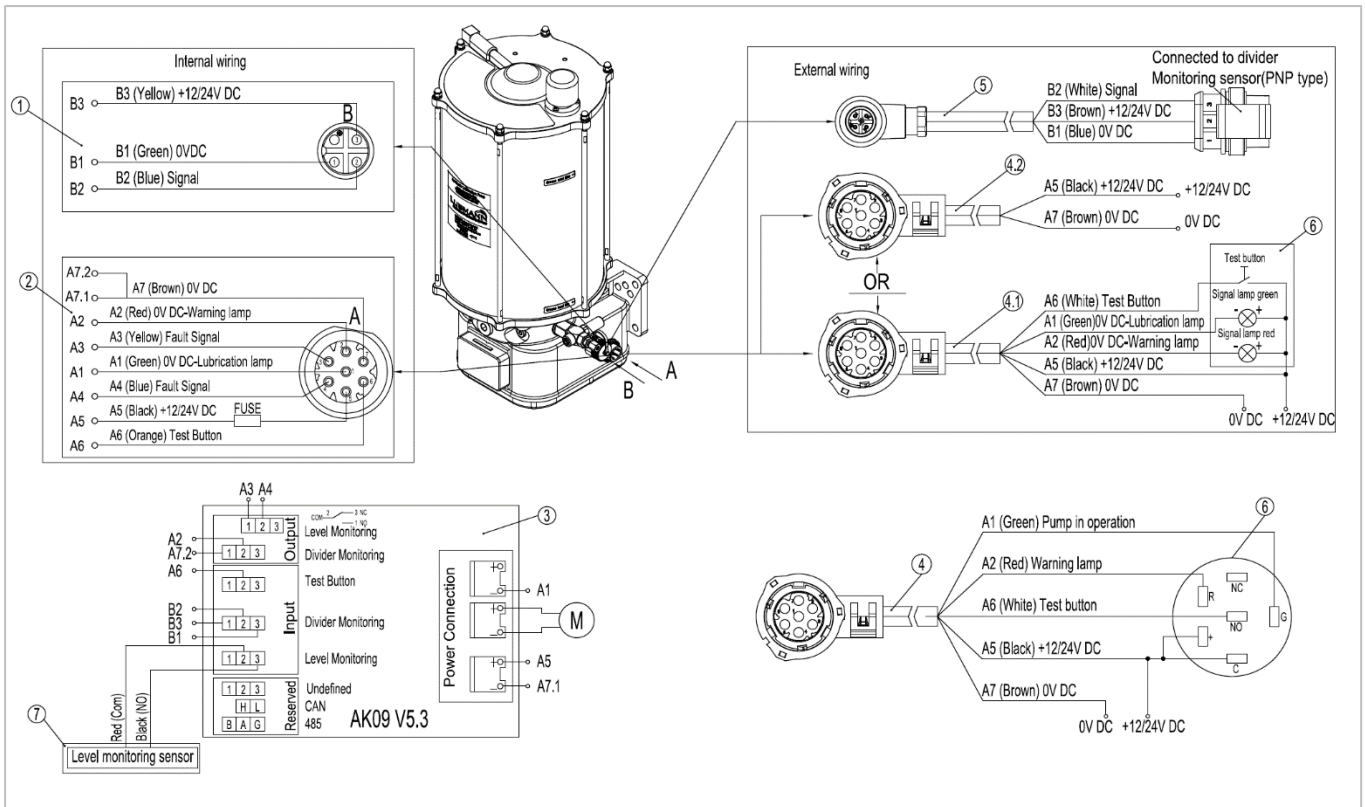
If the button lights up “red”, this indicates an error message EE.

The button lights up “yellow” if an error message is being reset but is still pending.

Via Pos. B the distributor monitoring 2P (proximity switch) is connected to the oil lubrication pump.

For more information about other solutions please contact us.

Wiring diagram LE10001009



Pos.	Oty.	Description	Article number
1	1	Wire Kit-divider monitoring-12/24VDC-Int.-0,3m-BD_F-4P-3xP_JSTxH_F-3x0,5	2010821300
2A	1	Wire Kit-power supply-ALPB-ALP81_BYN-12VDC-Int.-0,3m-BYN_M_7P-5xP_JSTxH_F-2xP_JSTvH_F-7x0,5	2040120780
2B	1	Wire Kit-power supply-ALPB-ALP81_BYN-24VDC-Int.-0,3m-BYN_M_7P-5xP_JSTxH_F-2xP_JSTvH_F-7x0,5	2040120760
3	1	Controller-ALPBO-AK09-V5.3-12/24VDC-programmable (print board)-program code d-01	15010178
4.1A	1	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-5x1,0	2110012451
4.1B	1	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-5x1,0	2110012452
4.2A	1	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-2x1,0	2110012722
4.2B	1	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-2x1,0	2110012723
5A	1	Cable kit-divider monitoring-12/24VDC-Ext.-7,5m-BD_M_90_4P-AMP_F_3P-3x0,5	2110012409
5B	1	Cable kit-divider monitoring-12/24VDC-Ext.-5,0m-BD_M_90_4P-AMP_F_3P-3x0,5	2110012410
6A	1	Illuminated push button-24VDC-red_green_yellow-M16	3030600350
6B	1	Illuminated push button-12VDC-red_green_yellow-M16	3030600340
7	1	Sensor-min. level-ALPBO-12/24VDC-Reed_switch-M14x1,5-L138_Leiter-AL	15010769

15.3 Controller AK09 with LED Display AK06

The controller AK09 V5.3 is the integrated setting adjustable controller for oil lubrication pump ALPBO BYN series.

The AK06 LED – Monitor / Display Universal works only in combination with the AK09 Setting adjustable controller which can be programmed with different program codes depending on the version (d-61).

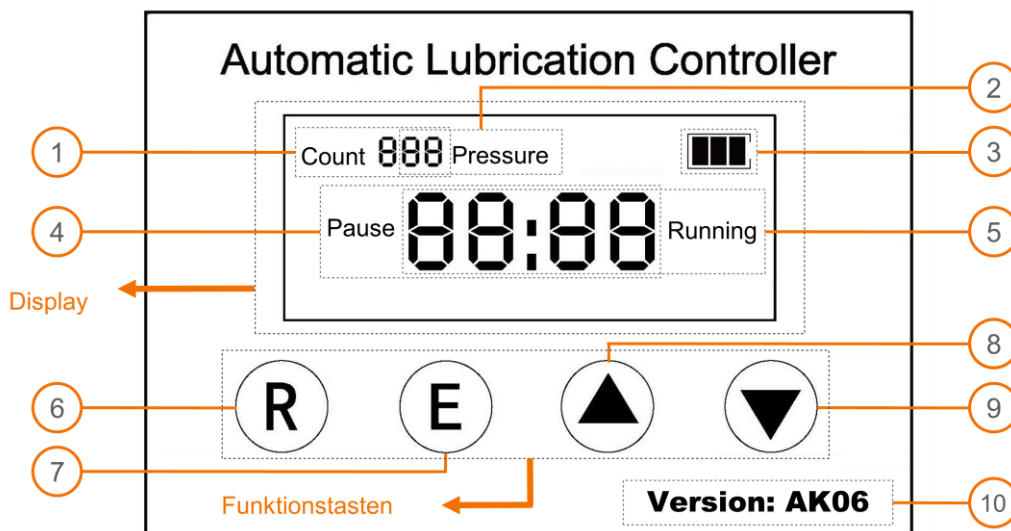
Main display shows system status like the number of finished lubrication cycles ①, (one complete lubrication cycle = 1 full pause time + 1 full lubrication time), divider monitoring status ②, oil level status ③, counting down pause time ④ and counting upwards lube time ⑤. If a failure is detected by the controller, the display shows the Error Code instead of pause time or lube time in main display area.

Error-Code:	Definition
EE-1	Low oil level or no oil in pump reservoir, pump is under risk of empty running.
EE-2	Divider monitoring - "failure," e.g., blocked lubrication point, overpressure between oil lubrication pump and main divider. Pressure relief valve opens at a pressure above 300 bar!



The AK09 has Fault Tolerance Program; the error code only starts during the second cycle after the controller gets a failure signal. After the failure has been fixed, the controller needs 2 cycles as well to reset the failure signal automatically!

15.3.1 Display and function keys - Overview



15.3.2 Display und Function keys - Description

Pos.	Symbol	Description
1	Count 888	Cycles Counting: During the pause time 1P, POS. 1 shows the number of finished lubrication cycles. The value of Count adds 1 after a full lube time. E.g., Count 168 means the system finished 168 lubrication cycles.
2	88 Pressure	Divider Monitoring: During the running time 3P, 2 shows the impulse of the divider monitoring. OFF Pressure means controller is counting the detected impulse cycles from the divider monitoring. The Sign turns into ON Pressure after the preset value of impulse cycles from the divider has been detected. Main display turns into EE-2 , and you can hear an alarm for 30 seconds, if the controller has not detected the preset value of impulse cycles during the lube time.
	Grease level	Lubricant level – OK. There is sufficient lubricant in the grease reservoir. Grease level - warning. Pump works under the risk of low grease level. An immediate grease refilling is recommended here.

		Grease level – low. Pump detected low grease level status. During the automatic cycle, the pump stops immediately no matter it reaches the preset running time or not. Error EE-1 will appear on the monitor until the pump is refilled. Push  to clear the warning alarm. Special conditions: If after the initial alarm, the pump is manually started by pressing the R button from the display, then the pump will do a complete greasing cycle according to the value set at 3P setting. The alarm for EE-1 will engage after the cycle finishes. If the pump is manually restarted using the test button, the consequence will be followed same as automatic cycle.
4		Pause Time: Special conditions: If after the initial alarm, the pump is manually started by pressing the R button from the display, then the pump will do a complete greasing cycle according to
5		Lube Time / Schmierzeit: During the system lube time, the main display shows e.g., 01:28 Running for the actual finished lube time – 1 minute and 28 seconds and the time continue counting
6		Reset button (Test button): Push  during the pause time, main display stops counting down the remained pause time immediately and starts a new cycle with preset lube time. Push  during the lube time, main display stops counting lube time immediately and starts a new cycle with preset pause time.
7		Enter button: For „Enter“ function, please check the details in parameter setting. Push  during the system warning or error alarm (EE-1 or EE-2) to clear the alarm.
8		Parameter setting “+”: In the menu up. Please check the details in parameter setting
9		Parameter setting “-”: Please check the details in parameter setting. Click Down Arrow no matter during the pause time or lube time, can enter the status checking interface to check the following data: D-XX: Program Code of the pump (for ALPBO Pump regular program, XX=61) EE-X: Error Code in the last cycle X (X= 0, 1, 2) t XX: Environment Temperature is XX°C -XX: Total Cycles is XX
10	Version: AK06	Version LED- Displays: AK06 is the current version of our display. <i>*For further information on other Lubmann control units or external control units, please contact us.</i>

15.3.3 Parameter – Description

Parameter	Description	Setting areas	Factory setting
1P	Pause time	0 to 99 hrs and 0 to 59 mins Min. 1 min / Max. 99 hrs and 59 mins	2 h
2P	Divider monitoring Impulse cycles	0 to 99 impulses cycles 0 means system does not detect the	00
3P	Lube time	0 to 99 mins and 0 to 59 secs Min. 1 sec / Max. 99 mins and 59 secs	6 min
4P	Low temperatur setup	from -50 to 0 Celsius Degrees adjustable	-15

15.3.4 Parameter Setting after first connecting to power

For first time connecting the power on the pump, the display shows the program code “d-61” up like (Fig. 1) or other pump pre-set program code, depends on pump and software type.

The program code can NOT be changed! The controller has pre-set parameters which can be changed under needs by following the setup steps. Otherwise, the pump runs with the default pre-set parameter.

After program code “d-61” the controller shows 1P Pause Time and is counting down, system cycle is 0 (Fig. 2).



Fig. 1 Controller program code



Fig. 2 Pause time display after first power connection

15.3.5 Reset parameters using the control buttons

15.3.5.1 Setting Pause time (hours and minutes)

Press the Δ and ∇ buttons with two fingers for 4 seconds at the same time. After releasing the Δ and ∇ buttons (you will hear a tone), press Ⓢ to enter parameter setting mode and begin setting 1P (pause time hourly parameter, Fig. 3).

Press Δ or ∇ button to adjust the 1P Pause Time value for hour (Fig. 3). Then press Ⓢ button again to enter -1 (Pause Time minute parameter) setting. Press Δ or ∇ button to adjust the -1 value for minutes (Fig. 4).



Fig. 3 Setting 1P Pause time in hour



Fig. 4 Setting 1P Pause time in minute



1P and -1 can not set as 00 in the same time. If 1P is set as 00, -1 starts with 01.

15.3.5.2 Setting divider monitoring:

After completing the P1 setting, press the Ⓢ button again to switch to the 2P divider monitoring setting until 2P is successfully set. Press the Ⓢ button to save and exit the setting status (Fig. 5).



For system without divider monitoring sensor, set 2P always as 0.



Fig. 5 Setting 2P divider monitoring cycles

15.3.5.3 Setting lube time:

3P in minutes and -3 in seconds (the same way of setting the parameters we describe for 1P Pause Time and -1 setting) (Fig. 6 and Fig.7).



3P and -3 can not set as 00 at the same time. If 3P is set as 00, -3 starts with 01.



Fig. 6 Setting 3P Lube time in minute



Fig. 7 Setting 3P Lube time in second

15.3.5.4 Setting low temperature:

Press **⏻** button to switch to 4P Low temperature setting.
With this parameter you can stop the pump working at low temperatures.
Pre-set temperature is – 15° C. Press **Δ** or **▽** button to adjust the 4P low temperature setup.
Press **⏻** button to confirm your new low temperature setting (Fig. 1).



System has a temperature sensor. In case the real temperature is under the pre-set value, the pump stops automatically to avoid the damage of motor.

Press **⏻** to exit the edit mode!

15.3.5.5 Display of controller during lubrication cycles

The control unit will automatically start with the 1P pause time!
The display will now show the newly set 1P pause time, e.g., Pause 10:28, i.e., the pause time is 10 hours and 28 minutes. The pause time will count down in hours and minutes until 00:00 (Fig. 2).

After the 1P pause time has ended, the 3P lubrication time begins counting up in minutes and seconds. For example, 01:28 Running indicates that you have set 1 minute and 28 seconds as the lubrication time. It counts up from 0 seconds to 1 minute and 28 seconds (Fig. 3).



Fig. 1 Setting 4P Low temperature



Fig. 2 Display pause time 1P counting down



Fig. 3 Display Lube time 3P counting up

15.3.5.6 Reset button - Start an intermediate lubrication

Push **R** during the pause time, main display stops counting down the remained pause time immediately and starts a new cycle with pre-set lube time (Fig. 1).

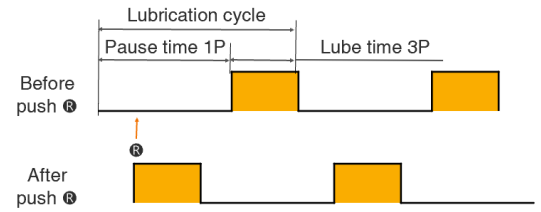


Fig. 1 Cycle changing when push **R** during pause time

Push **R** during the lube time, main display stops counting lube time immediately and starts a new cycle with pre-set pause time. (Fig. 2)

Push **R** always means skipping the current pause/lube time and enter into a new lube/pause time.



Fig. 2 Cycle changing when push **R** during lube time

15.3.6 Restart the controller after switching off the machine

In case power/machine is switched off during a lube time P1 or pause time P3 following happens:

Switching machine on during 1P Pause Time, the 1P Pause time is counting down from the rest pause time where the machine was switched off (Fig. 3).

In case power / machine is switched off during a 3P Lubrication Time, the Lubrication time starts the full new Lubrication time which you setup (Fig. 4).

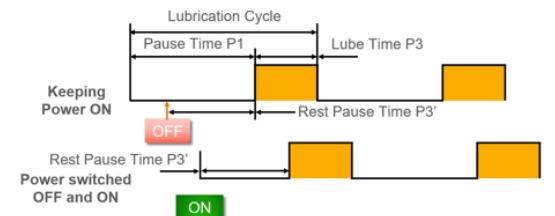


Fig. 3 Cycle changing when power switch ON and OFF during pause time

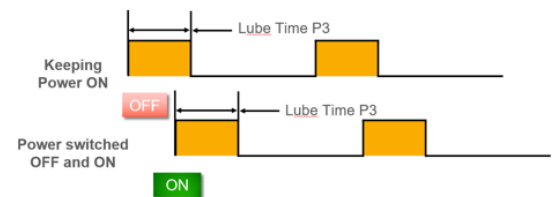


Fig. 4 Cycle changing when power switch ON and OFF during lube time

Divider monitoring 2P – Impulse cycles and monitoring

2P divider monitoring, must **NOT** be set as 0.

In case, the Detecting time T1, which is needed to detect the pre-set value of impulse cycles, is shorter than pre-set lube time 3P, Display turns from "OFF Pressure" to "ON Pressure" at the end of T1, Controller continues the rest lube time. After the lube time is finished, count of lubrication cycles +1. (Fig. 5).

In case the theoretical Detecting time T1, which is needed to detect the pre-set value of impulse cycles, is longer than pre-set lube time 3P, Display remains "OFF Pressure", and shows EE-2 error message in the end of 3P and lasts for 30 secs. Lubrication cycles will not be counted. (Fig. 6).

For preset value of 3P - lube time less than 5 mins, the preset value of 2P less than 3 is recommended.



For preset value of 3P - lube time less than 10 mins, the preset value of 2P less than 5 is recommended.

The volume of grease for each greasing point only decided by 3P - lube time, not by 2P - impulse cycles..

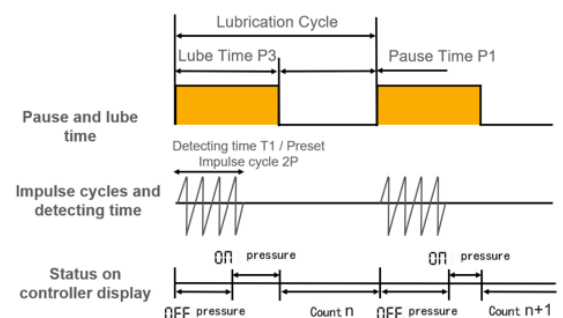


Fig. 5 $T1 < 3P$

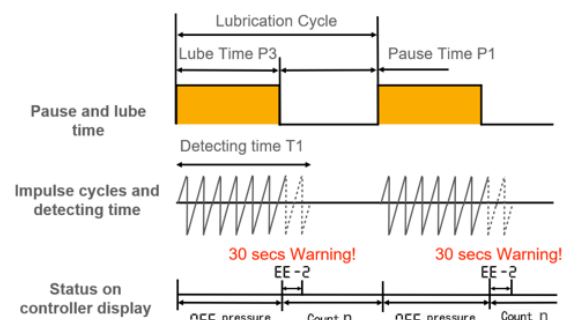


Fig. 6 $T1 > 3P$

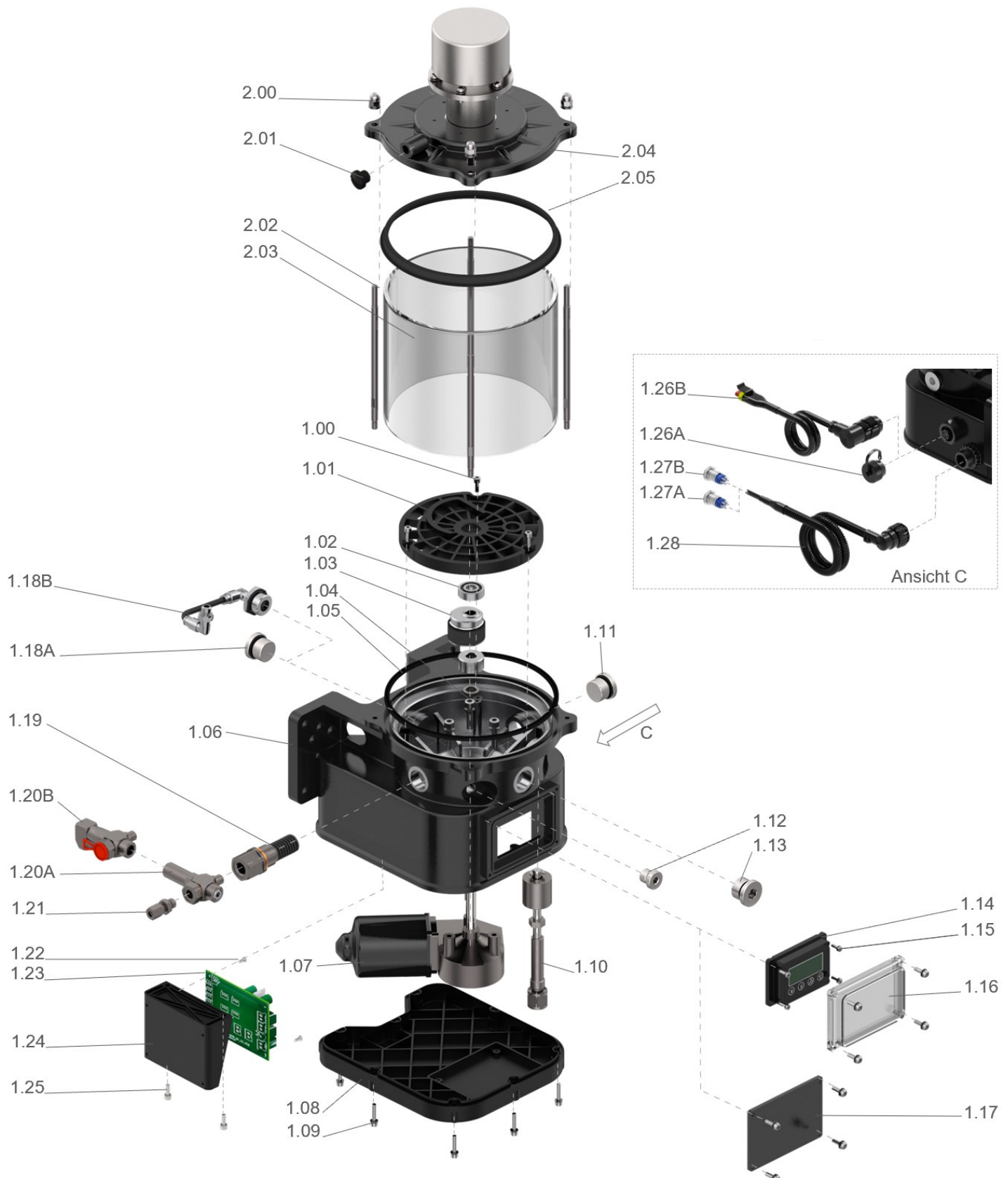
16 Trouble shooting

Fault	Possible cause	Solution
Oil lubrication pump not running / blocked	Power supply interrupted. Oil lubrication pump interrupted. Connection cable interrupted/defective. Motor/oil lubrication pump defective. Fuse defective. Internal control unit defective.	Check and restore power supply Replace connection cable. Replace motor or oil lubrication pump Replace fuse. Replace control unit.
Oil lubrication pump is running but does not deliver or delivers too little lubricant	Oil lubrication pump is empty Clogged or crushed lubricant line Leaking screw connection Pause time setting too high or lubrication time too low Pump element flow rate too low Pump element clogged/defective Unsuitable lubricant Check valve defective Pressure relief valve defective Air trapped in the lubricant/pump body	Refill lubricant Replace lubrication line Tighten or replace screw connection Adjust control parameters Adjust pump element size Replace pump element Use a suitable lubricant for the oil lubrication pump and operating temperature Replace check valve in the outlet screw connection Replace pressure relief valve Start the oil lubrication pump until lubricant flows out of the pump outlet without bubbles

17 Spare parts

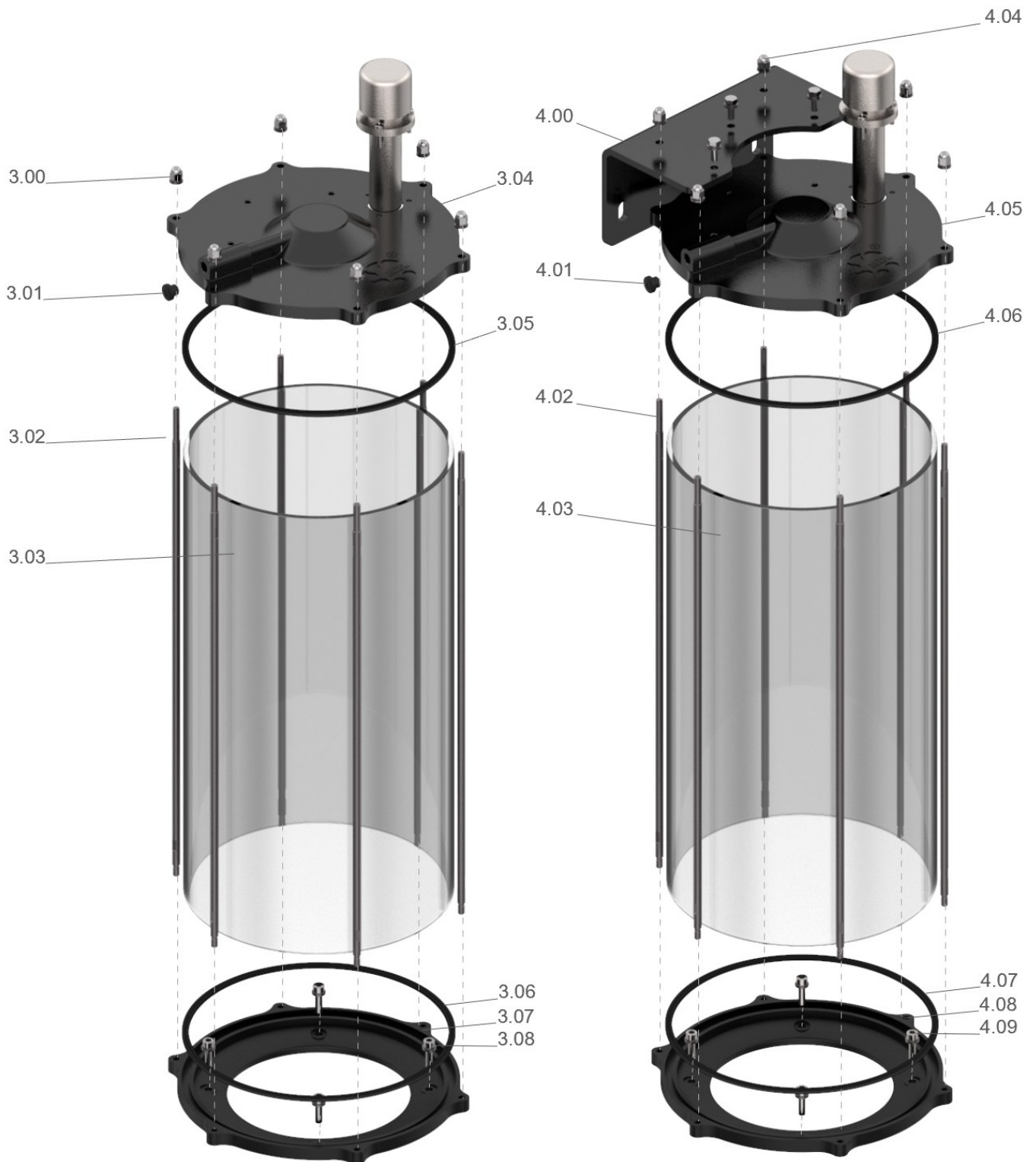
17.1 Spare parts drawing

Reservoir: 2, 4 and 6 liter – D170



Reservoir: 4, 6 and 8 liter – D230

Reservoir: 15 and 20 liter – D230



17.2 Spare part list

POS	Qty.	Article number	Description
1.00	3	15010778	Hexagon socket head cap screw-M4x14-8.8-black-incl. spring washer
1.01	1	15010423	Perforated base plate-ALPB-D142x12-PA
1.02	1	3049000630	Deep groove ball bearing-D10-26-H8
1.03	1	2031001570	Eccentric pressure disc-EDS-D37
1.04-4	3	3040102100	Hexagon socket head cap screw-DIN_EN_ISO_4762-M6x25-A2-SS
1.04-2	3	3040200830	Flat washer with rubber sealing lip D6
1.05	1	3020200220	Sealing ring-grease reservoir bottom-ALPB-D170x160x3-NBR
1.06	1	2011031830	Pump body housing for grease lubrication pump-ALPB_BYN-230x225x145-Al-black painted
1.07A	0-1	3010404000	Direct current motor-12V/DC-CNLW
1.07B	0-1	3010404170	Direct current motor-24V/DC-CNLW
1.08-1	1	15010777	Kit-pump body cover-ALPB-201x180x23,5-with sealing, screws and washers
1.08-2	1	3020200420	Sealing ring-pump body cover bottom-ALPB-201x180x2-NBR
1.09	8	3040104370	Hexagon socket head cap screw-M4x20-A2-SS-with flat washer and spring washer
1.10A	0-1	15010769	Sensor-min. level-ALPBO-12/24VDC-Reed_switch-M14x1,5-L138_Leiter-AL
1.11	1	3050105140	Screw plug-M22x1,5-(ED)-ST-ZnNi
1.12	0-1	3050105820	Screw plug-M14x1,5-(ED)-ST-ZnNi
1.13	0-1	3050105140	Screw plug-M22x1,5-(ED)-ST-ZnNi
1.14	0-1	2011223180	LED-Display-AK06-(only display without controller)
1.15	4	3040103720	Cross recessed cheese head screw-M3x10-A2-SS-with flat washer and spring washer
1.16-1	1	15010721	LED-Display-AK06-transparent protective cover-100x68x15
1.16-2	1	15010722	Sealing ring-AK06-85x57x1,8-NBR
1.16-3	1	15010723	Cross recessed cheese head screw-M4x14-A2-SS-with flat washer and spring washer
1.17	0-1	2090100780	Kit-blind plate with screws and gasket-for without LED-Display-AK06
1.18A	0-1	3050105140	Screw plug-M22x1,5-(ED)-ST-ZnNi
1.18B	0-1	2011026280	Kit-Single bypass for safety valve SV-A-M22x1,5
1.19A	0-1	2070011689	Pump element-PE-1,5-0,075 cm3/stroke-M22x1,5-G1/4
1.19B	0-1	2070011690	Pump element-PE-2,5-0,125 cm3/stroke-M22x1,5-G1/4
1.19C	0-1	2070011691	Pump element-PE-4,5-0,225 cm3/stroke-M22x1,5-G1/4
1.20A	0-1	2070011684	Safety valve SV-C-preset to 300 bar-G1/4-M10x1
1.20B	0-1	2011221370	Safety valve SV-A-for bypass-preset to 300 bar-G1/4-M10x1
1.21	1	3050100890	Straight screw coupling-GE-D6LL-M10x1 (SW14-ED)-ST-ZnNi
1.22	4	3040101630	Cross recessed cheese head screw-M3x6-A2-SS
1.23A	0-1	15010178	Controller-ALPBO-AK09-V5.3-12/24VDC-programmable (print board)-program code d-01
1.23B	0-1	15010768	Controller-ALPB0-AK09-WK-24VDC-not programmable (print board)-program code P-11
1.23C	0-1	15010767	Controller-ALPB0-AK09-WK-12VDC-not programmable (print board)-program code P-11
1.24	1	3020101210	Fixing bracket (internal) for controller-AK09-95x72x33
1.25	2	3040102910	Hexagon socket head cap screw-M4x14-A2-SS-with flat washer and spring washer
1.26A	0-1	3030502160	Protective cap divider monitoring at pump body-BD-4 pin-IP67-black
1.26B-A	0-1	2110012409	Cable kit-divider monitoring-12/24VDC-Ext.-7,5m-BD_M_90_4P-AMP_F_3P-3x0,5
1.26B-B	0-1	2110012410	Cable kit-divider monitoring-12/24VDC-Ext.-5,0m-BD_M_90_4P-AMP_F_3P-3x0,5
0-1.27A	0-1	3030600200	Illuminated push button-24VDC-green-M16
0-1.27A	0-1	3030600220	Illuminated push button-12VDC-green-M16
0-1.27B	0-1	3030102930	Indication light-24VDC-red-M16
0-1.27B	0-1	3030102940	Indication light-12VDC-red-M16
0-1.27C	0-1	3030600350	Illuminated push button-24VDC-red_green_yellow-M16
0-1.27C	0-1	3030600340	Illuminated push button-12VDC-red_green_yellow-M16
1.28-A	0-1	2110012451	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-5x1,0
1.28-B	0-1	2110012452	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-5x1,0
1.28C	0-1	2110012722	Cable kit-power supply-12/24VDC-Ext.-7,5m-BYN_F_90_7P-2x1,0
1.28D	0-1	2110012723	Cable kit-power supply-12/24VDC-Ext.-5,0m-BYN_F_90_7P-2x1,0

POS	Qty.	Article number	Description
2.00-1	4	3040102200	Hexagon acorn nut-DIN_1587-M6-6-A2-SS
2.00-2	4	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
2.00-3	4	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
2.01-1	1	3010401940	Screw plug-DIN908-M10x1-ST-ZnNi
2.01-2	1	3010401930	Sealing ring-DR-DIN7603 A-10x14x1-Cu
2.02A	0 or 4	3010403060	Tie-rod for grease reservoir-ALPB-D170-2L-D7-M6-L161-ST-ZnNi
2.02B	0 or 4	3010403780	Tie-rod for grease reservoir-ALPB-D170-4L-D7-M6-L306-ST-ZnNi
2.02C	0 or 4	3010404020	Tie-rod for grease reservoir-ALPB-D170-6L-D7-M6-L406-ST-ZnNi
2.03A	0-1	2011025120	Grease reservoir-transparent-ALPB-D170-H140-2L
2.03B	0-1	2011025110	Grease reservoir-transparent-ALPB-D170-H285-4L
2.03C	0-1	2011025100	Grease reservoir-transparent-ALPB-D170-H385-6L
2.04	1	15010185	Kit-top cover oil-ALPBO-D170-(incl. filter, level sensor 12/24 VDC)
2.04-1	1	15010771	Filling and ventilation filter-ALPBO_D170
2.05	1	3020200730	Z-sealing ring-grease reservoir top-ALPB-D170-160x176,6x10-NBR

3.00-1	6	3040102200	Hexagon acorn nut-DIN_1587-M6-6-A2-SS
3.00-2	6	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
3.00-3	6	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
3.01-1	1	3010401940	Screw plug-DIN908-M10x1-ST-ZnNi
3.01-2	1	3010401930	Sealing ring-DR-DIN7603 A-10x14x1-Cu
3.02	6	3010403711	Tie-rod for grease reservoir-ALPB-D230-8L-D7-M6-L348-ST-ZnNi
3.03A	1	15010779	Grease reservoir-transparent-ALPB-D230-H322-8L
3.03B	1	15010781	Grease reservoir-transparent-ALPB-D230-H150-4L
3.03C	1	15010782	Grease reservoir-transparent-ALPB-D230-H217-6L
3.04	1	15010006	Kit-top cover oil-ALPBO-D230-(incl. filter, level sensor 12/24 VDC)
3.04-1	1	15010773	Filling and ventilation filter-ALPBO_D230
3.05	1	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
3.06	1	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
3.07	1	2011230510	Intermediate flange for grease reservoir-ALPB-D170-D230-H22-Al-black painted
3.08-1	4	3040102080	Hexagon socket head cap screw-DIN_EN_ISO_4762-M6x20-A2-SS
3.08-2	4	3040200830	Flat washer with rubber sealing lip D6

4.00-1	6	3040102200	Hexagon acorn nut-DIN_1587-M6-6-A2-SS
4.00-2	6	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
4.00-3	6	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
4.01-1	1	3010401940	Screw plug-DIN908-M10x1-ST-ZnNi
4.01-2	1	3010401930	Sealing ring-DR-DIN7603 A-10x14x1-Cu
4.02A	0 or 4	3010403641	Tie-rod for grease reservoir-ALPB-D230-15L-D7-M6-L595-ST-ZnNi-for without top cover bracket
4.02B	0 or 4	3010404580	Tie-rod for grease reservoir-ALPB-D230-20L-D7-M6-L805-ST-ZnNi-for without top cover bracket
4.02C	0 or 2	3010403651	Tie-rod for grease reservoir-ALPB-D230-15L-D7-M6-L601-ST-ZnNi-for with top cover bracket
4.02D	0 or 2	3010404590	Tie-rod for grease reservoir-ALPB-D230-20L-D7-M6-L811-ST-ZnNi-for with top cover bracket
4.03A	0-1	15010783	Grease reservoir-transparent-ALPB-D230-H427-15L
4.03B	0-1	15010784	Grease reservoir-transparent-ALPB-D230-H570-20L
4.04-1	3	15010785	Hexagon head screw-DIN_EN_ISO_4017-M6x15-A2-SS
4.04-2	3	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
4.04-3	3	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
4.05	1	15010005	Kit-top cover oil-ALPBO-D230-(incl. filter, level sensor 12/24 VDC-for with controller)
4.05-1	1	15010773	Filling and ventilation filter-ALPBO_D230
4.06	1	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
4.07	1	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
4.08	1	2011230510	Intermediate flange for grease reservoir-ALPB-D170-D230-H22-Al-black painted
4.09-1	4	3040102080	Hexagon socket head cap screw-DIN_EN_ISO_4762-M6x20-A2-SS
4.09-2	4	3040200830	Flat washer with rubber sealing lip D6

19 Order key

ALPBO - 2 . 2 . PE 2.5C - 0 - 0 - 0 . 2 . 0 . 1 . 0000

Power supply	
12V	1
24V	2

Size of grease reservoir (liter)	
2L D170	2
4L D170	4
4L D230	4W
6L D170	6
6L D230	6W
8L D230	8
15L D230	15
20L D230	20

Pump outlet M22x1.5 configuration - Pos. 1/2/3/4				
	Pos. 1	Pos. 2	Pos. 3	Pos. 4
Screw plug	0	0	0	0
PE 1.5 without bypass	1.5C	1.5C	1.5C	1.5C
PE 1.5 with bypass	1.5A	1.5A	1.5A	1.5A
PE 2.5 without bypass	2.5C	2.5C	2.5C	2.5C
PE 2.5 with bypass	2.5A	2.5A	2.5A	2.5A
PE 4.5 without bypass	4.5C	4.5C	4.5C	4.5C
PE 4.5 with bypass	4.5A	4.5A	4.5A	4.5A
Bypass inlet *	BP	BP	BP	BP
Customised setting	X	X	X	X

Standard: PE at position 1

* For pump elements with a safety valve with bypass, a bypass inlet must be provided at the nearest outlet.

Pos. A - power connector	
without power cable	0
with cable kit-power supply BYN 5/7 Pin, 7,5 m	2
Customized version	X

Pos. B - Divider monitoring (Signal input)	
with protective cap divider monitoring	0
Customized version	X

Controller	
without controller	0
with standard integrated Controller AK06	1
Customized version	X

Special Models	
Standard Version	0000
Customized Version	XXXX

