

Operating- and assembly manual

Grease lubrication pump-ABDB Multi-line pump

ABDB-05
ABDB-15
ABDB-30



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All information subject to technical changes.

Rev.	Change	Date / Author:	Date / Released:
00	First edition	04.12.2024 / HB	04.12.2024 / MK
01	CE Certificate added, updated	14.05.2025 / HB	14.05.2025 / MK
02	Spare pars drawings and -part lists added	21.01.2026 / HB	21.01.2026 / 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:

Type:	Grease lubrication pump
Part No.:	ABDB
	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 12100

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

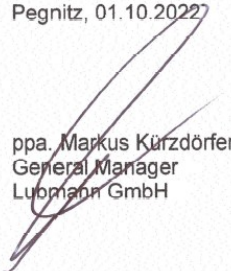
The protection targets of the directive for have been electric equipment 2014/35/EU observed according to the annex I, no. 1.5.1 of the machine directive.

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@lubmannmbh.de; obliges itself to pass on electronically the special documentation for partly completed machinery to individual national authorities upon request.

Pegnitz, 01.10.2022


ppa. Markus Kürzdörfer
General Manager
Lubmann GmbH

www.Lubmann-GmbH.de

Amtsgericht Bayreuth HRB-Nr. 7823 Steuernummer: DE316746274 Adresse: Kleiner Johannes 21, D-91257 Pegnitz Email: Info@lubmann.de

C E R T I F I C A T E



of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50529435 0001

Report No.: CN2109U2 001

Holder: Zhengzhou Autol Technology
CO., LTD.
No. 96 Hehuan Street
High-New Technic Development Zone
Zhengzhou City
450001 Henan
P.R. China

Product: Grease Pump
(ABDB Multipoint Pump)

Identification: Type Designation : ABDB-12 ABDB-24
ABDB-30 (AUTOL)
Serial No. : AT21020021BZ AT21030081BZ
AT21030091BZ
Remark: Refer to test report CN2109U2 001 for details.

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 10.01.2022

Certification Body



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

3 Impressum

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, operation, 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.



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 grease 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 grease 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.

Service address: 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 and commissioning. Moreover, the Operating Instructions must permanently be available on site.

Not only the safety instructions included under this item, but also the specific safety instructions appearing in other parts of this manual 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.

Use in conformity with the intended purpose:

The grease lubrication pumps of the series ABDB serve only for the supply of central lubrication systems at vehicles, industrial application 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, industrial applications and machines the valid local accident prevention regulations and safety instructions as well as the specifications for operation and maintenance.

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

All the safety and protective equipment must be replaced immediately after completing work.

Media that endangers the environment must be disposed in accordance with pertinent official specifications.

Secure the system during maintenance and repair works, against intentional or unintentional reoperation.

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



Safety information for operators/operating staff

If hot or cold machine parts 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 grease 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:

By installing hydraulic hose lines at the grease 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 grease lubrication pump has an IP65 (according to DIN EN 60529) protection class!

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

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

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

Lubricant

The system has been designed for commercially available multi-purpose greases of NLGI class 2 for operation in summer and winter.

Use greases with high-pressure additives (EP greases).

Only use greases of the same saponification type.

Lubricants containing solid contents must not be used (lubricants like graphite or MoS₂ on request).



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

After the system has been shut down, check the lubricant for physical and chemical signs of aging to see whether it is still suitable for use.

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.

Inadmissible methods of operation



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

7 Transport, returns and storage

Transport

The grease lubrication pumps of the series ABDB 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 (ozone)
- protect against environmental damage such as UV radiation
- 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

Storage conditions for parts filled with lubricant

The conditions mentioned in the following will have to be adhered to when storing products filled with lubricant.

Storage period of up to 6 months

The filled products can be used without having to take further measures.

Step for storage period from 6 to 18 months - Pump



1. Connect the pump electrically
2. Switch the grease lubrication pump on and let it run, e.g., by triggering an additional lubrication, until about 4 cc of lubricant will leak from each pump element.
3. Switch the pump off and disconnect it from the electrical grid.
4. Remove and dispose of leaked lubricant.

Storage period exceeding 18 months



To avoid dysfunctions, consult the manufacturer before commissioning.
The general procedure to remove the old grease filling corresponds to that of a storage period from 6 to 18 months

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 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

Technical data for ABDB-05

Motor:	Single-range 50Hz	Multi-range 50Hz	Multi-range 60Hz
Motor type:	T4A63		
Construction type:	B5		
Frame size:	63		
Flange:	140mm		
Shaft:	D11x23		
IP class:	IP55		
Rated voltage:	290/500 V AC	220-240/380-420V AC	250-275/440-480V AC
Rated power:	0.12 kw	0.12 kw	0.12 kw
Rated revolution:	1400 rpm	1400 rpm	1680 rpm

Gear box:	
Available transmission ratios:	70:1, 300:1
Construction type:	B5
Frame size:	63
Flange:	140mm

General:			
Working temperature:	-20°C~70°C	Mounting position:	Vertical
Max operating pressure:	IP55	Direction of rotation:	Clockwise
Sound pressure level:	≤55dB		
Level sensor as option:	Ultra sonic sensor (4 positions) Laser sensor (2 positions)		
Refilling:	Reservoir cover, quick coupling, grease nipple, hand press adapter		
Lubricant:	Lubrication greases from NLGI 000 up to and including NLGI 2. Lubrication oils with min. 40 mm ² /s at operating temperature		
Reservoir size:	4 / 8 / 20 Liter transparent PC		
Max. pump elements:	5		
Type of pump elements:	PE 1,5 / 2,5 / 4,5 M22x1,5, PR adjustable M22x1,5		

Technical data for ABDB-15, ABDB-30

Motor:	Single-range 50Hz	Multi-range 50Hz	Multi-range 60Hz
Motor type:	T4A71		
Construction type:	B14		
Frame size:	71		
Flange:	105mm		
Shaft:	D14x30		
IP class:	IP55		
Rated voltage:	290/500 V AC	220-240/380-420V AC	250-275/440-480V AC
Rated power:	0.25 kw	0.25 kw	0.25 kw
Rated revolution:	1400 rpm	1400 rpm	1680 rpm

Gear box:

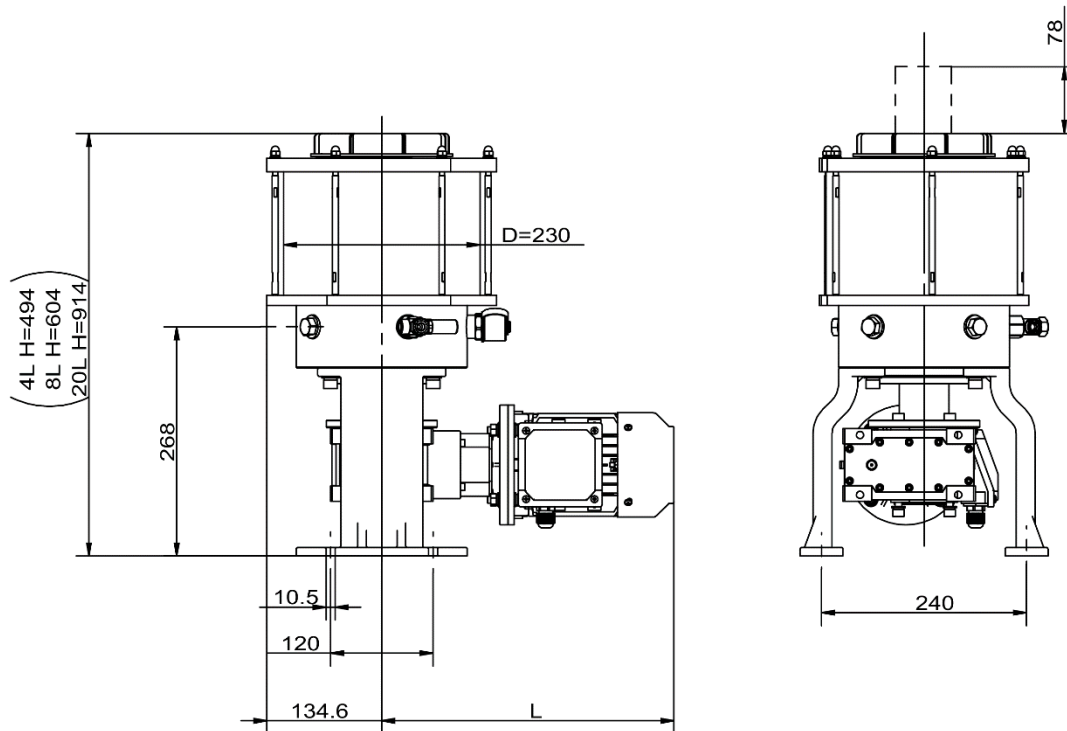
Available transmission ratios:	7:1 (free shaft), 50:1, 100:1, 500:1
Construction type:	B14
Frame size:	71
Flange:	105mm

General:

Working temperature:	-20°C~70°C	Mounting position:	Vertical
Max operating pressure:	IP55	Direction of rotation:	Clockwise
Sound pressure level:	≤55dB		
Level sensor as option:	Ultra sonic sensor (4 positions) Laser sensor (2 positions)		
Refilling:	Reservoir cover, quick coupling, grease nipple, hand press adapter		
Lubricant:	Lubrication greases from NLGI 000 up to and including NLGI 2. Lubrication oils with min. 40 mm2/s at operating temperature		
	ABDB-15		ABDB-30
Reservoir size:	8 / 20 Liter transparent PC, 30 / 60 / 100 Liter metal		30 / 60 / 100 Liter metal
Max. pump elements:	15		30
Type of pump elements:	K6 M22x1,5 G1/4 0,033-0,160cm3/cy K7 M22x1,5 G1/4 0,046-0,230cm3/cy		
Type fo safety valve:	G1/4 M10x1		

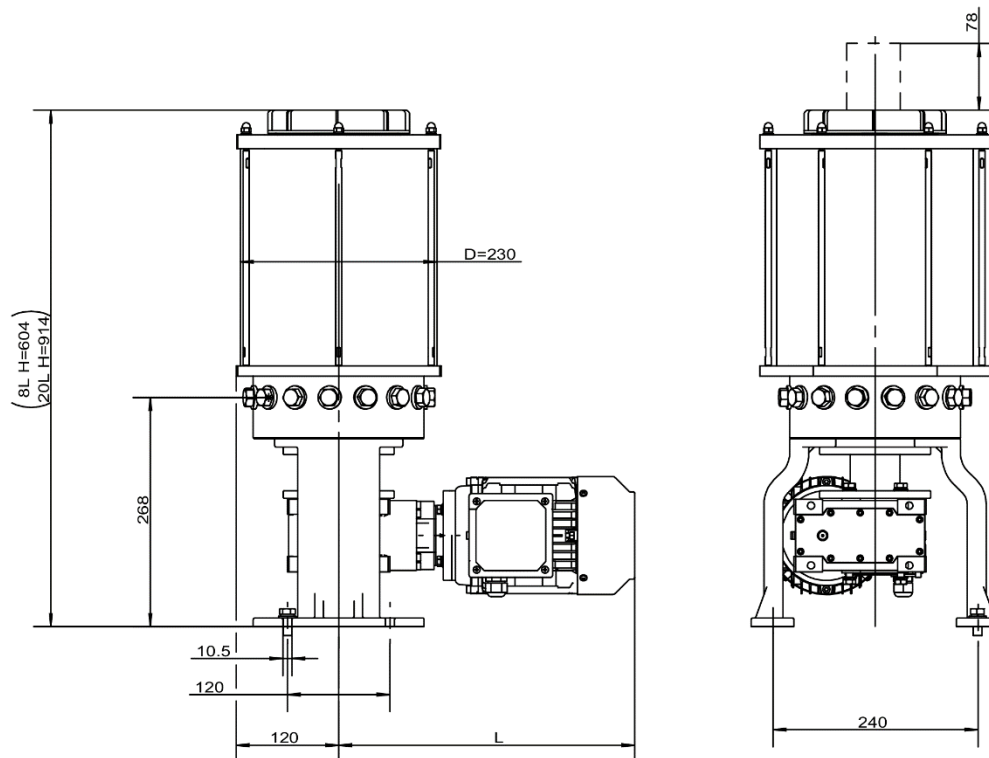
11 Installation dimensions

11.1 ABDB-05 with gearbox 70:1 with plastic PC reservoir size 4 / 8 / 20 Liter



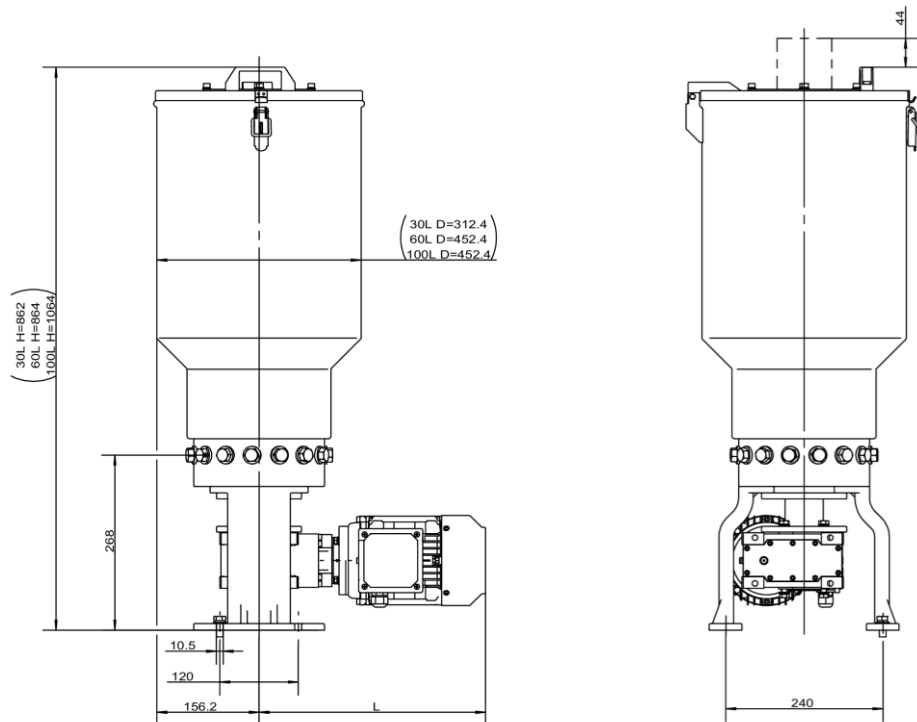
* For ABDB-05, when a 70:1 ratio gear box is used, $L = 342$. For ABDB-05 with plastic PC reservoir pump, when the order key has only difference by the ultrasonic grease level monitoring sensor, the pump with sensor is 78 mm higher than without sensor pump.

11.2 ABDB-15 with gearbox 70:1 with plastic PC reservoir size 8 / 20 Liter

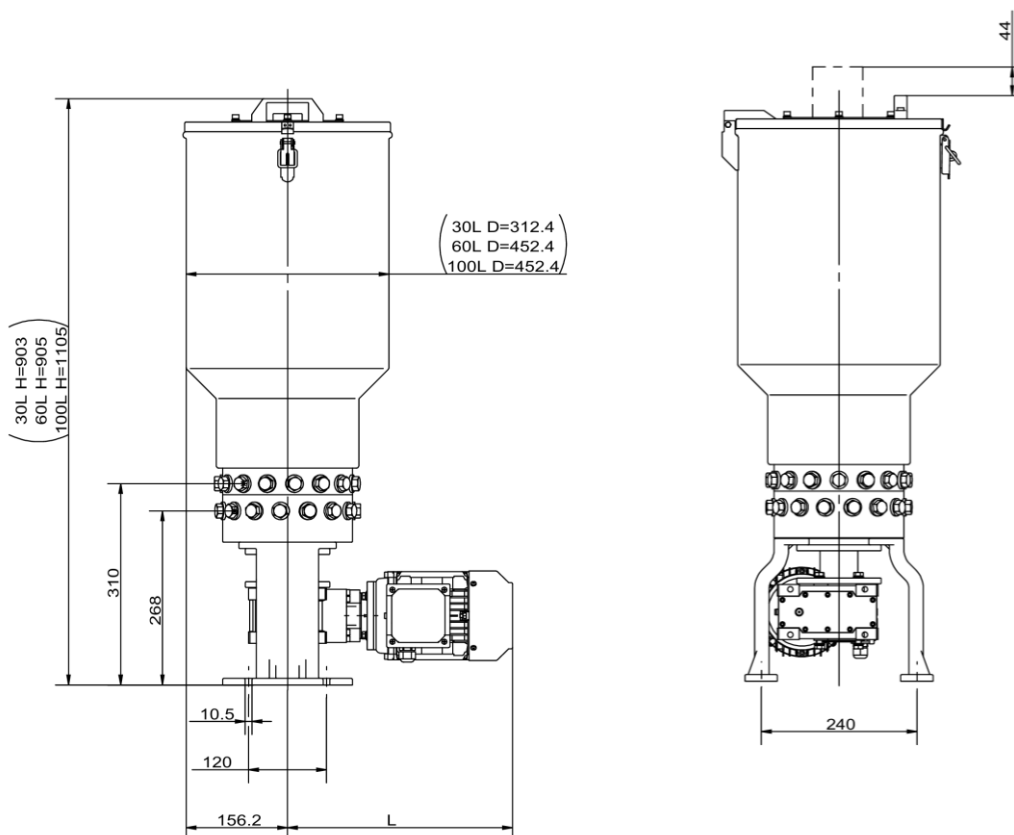


* For both ABDB-15 and ABDB-30, when a 50:1 ratio gear box is used, $L = 346.5$, when a 100:1 ratio gear box is used, $L = 383$. For both ABDB-15 and ABDB-30 with plastic PC reservoir pump, when the order key has only difference by the ultrasonic grease level monitoring sensor, the pump with sensor is 78 mm higher than without sensor pump.

11.3 ABDB-15 with gearbox 50:1 or 100:1 with metal reservoir size 30 / 60 / 100 Liter



11.4 ABDB-30 with gearbox 50:1 or 100:1 with metal reservoir size 30 / 60 / 100 Liter



* For both ABDB-15 and ABDB-30, when a 50:1 ratio gear box is used, L = 346.5, when a 100:1 ratio gear box is used, L = 383. For both ABDB-15 and ABDB-30 with metal reservoir pump, when the order key has only difference by the ultrasonic grease level monitoring sensor, the pump with sensor is 44 mm higher than without sensor pump.

12 Components

12.1 Pump element

Installation and removal of ABDB-05 pump element

1. Insert the pump element vertically into the pump outlet housing drilling (Dia. A).
2. Tighten the pump element clockwise.

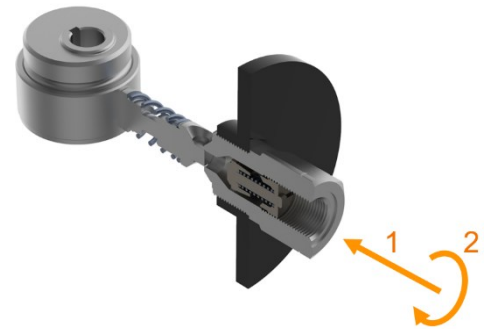


Install the pump element with a tightening torque of 43 ± 2 Nm

3. For removal, reverse above sequence.



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



Installation and removal of ABDB-15 and ABDB-30 pump element

1. Pull out the plunger of the pump element by around 28 mm (Dia. B-1).
2. Tilt the pump element upwards as shown in the figure and install the pump element into the corresponding mounting outlet of the pump (Dia. B-2).
3. Place the pump element in a horizontal position and ensure that the head of the pump element has fallen into the groove between the mounting ring and cam shaft, then tighten the pump element with a torque wrench SW24. the preset value of the torque wrench cannot be less than $32.5 \text{ Nm} \pm 2.5 \text{ Nm}^*$ (Dia. B-3).

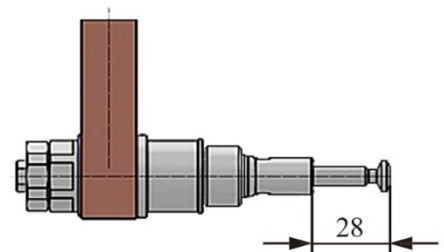


Install the pump element with a tightening torque of $32,5 \pm 2,5$ Nm.

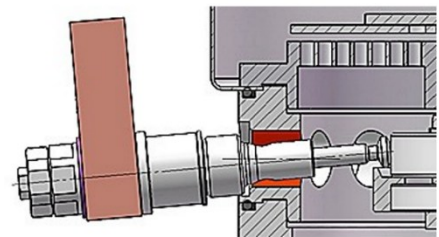
4. For removal, reverse above sequence.



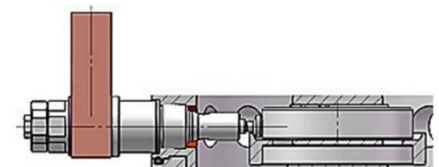
Only install or remove the pump element when pump power OFF!!!



Dia. B-1



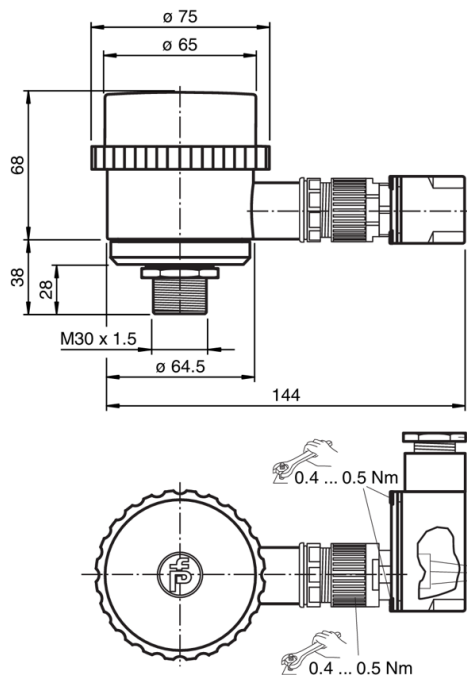
Dia. B-2



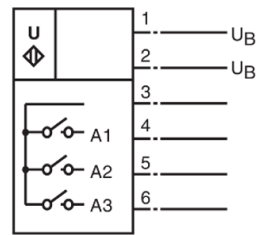
Dia. B-3

**Dia. B Pump Element
installation and removal for
ABDB-15, ABDB-30**

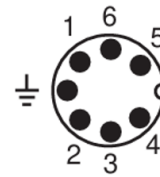
12.2 Ultrasonic level monitoring sensor



Dia. A Dimension for ultrasonic monitoring sensor



Dia. B Standard symbol / connection



Dia. C Connector V7

LED	S4 = OFF	S4 = ON
1 ⊗ (red)	full	full
2 ⊗ (green/yellow)	high	normal
3 ⊗ (green/yellow)	normal	low
4 ⊗ (red)	empty	empty

Dia. D Indicators

Technical data for ultrasonic level monitoring sensor

General specifications:

Sensing range:	6 to 550 mm
Dead band:	0 to 60mm
Standard target plate:	100mm x 100 mm
Transducer frequency:	Approx. 380 kHz
Response delay:	> 10 s, relay < 1 s, LEDs
Ambient temperature:	-20 to 60 °C
Storage temperature:	-40 to 85 °C
Degree of protection:	IP65

Indicators:

LED red:	LED 1: overfill indication	LED 4: underfill indication
LED green / yellow:	LED 2: overfill warning and normal operation	LED 3: normal operation and underfill warning
DIP switch:	setting of the switch points/operating modes	

Electrical specifications:

Operating voltage:	10 ... 253 V DC or 20 ... 253 V AC, 47 ... 63 Hz
Standard conformity:	EN IEC 60947-5-2:2020 / IEC 60947-5-2:2019

13 Functional description

Lubmann multi-line pump type – ABDB series have been widely used in industries such as mining, metallurgy, machine tools, textiles, food, ports, and heavy mechanical equipment, etc.

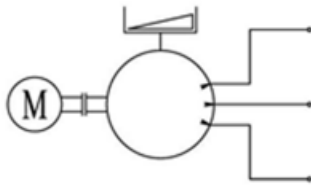
Our Lubmann automatic lubrication system lubricates all lube points as required through progressive lubrication system. It can reduce the friction resistance, reduce contact wear and decrease the friction surface temperature. Meanwhile, it plays a supporting role of anti-rust, shock absorption and sealing.

Areas of application

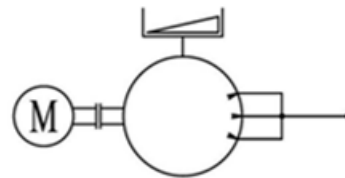
ABDB series multi-line pump serves as centralized lubrication pump in large-scale progressive lubrication system.

As a multi-line pump, ABDB can be connected directly to supply the lubricants to each lube point with hose or can supply to each lube by combining multiple pump elements (*Dia. A and B*).

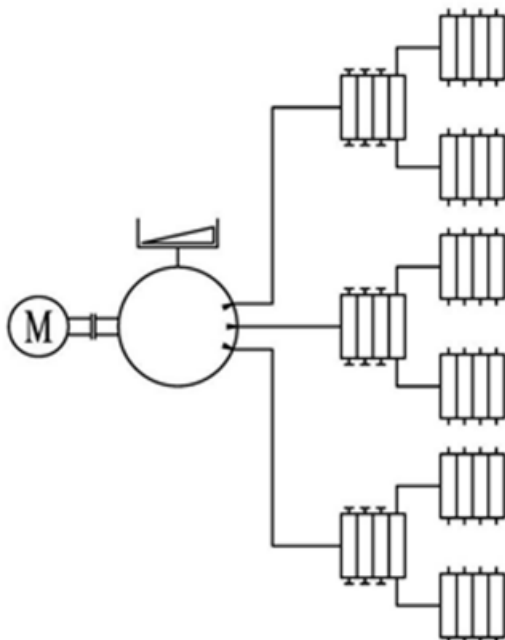
In the large-scale progressive lubrication system, ABDB series pump can supply the lubricant with a set or multiple sets of progressive dividers and at least 1 or multiple pump elements (*Dia. C and D*).



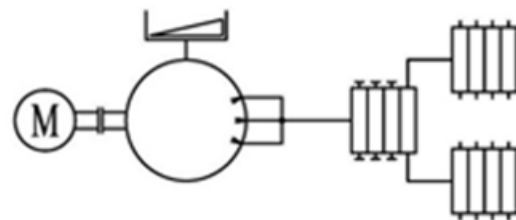
Dia. A



Dia. B



Dia. C



Dia. D

14 Start up / 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.

Mechanical connection



- Minimum assembly dimensions

Ensure sufficient space for maintenance work or for attachment of further components to build a centralized lubrication system to the 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 grease lubrication pump. Please contact the manufacturer and obtain approval for any welding work you wish to perform.

Electrical connection



Danger of electric shock.

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

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

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 that are still electrically active

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 central 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 central lubrication pump.

Connect the motor according to the terminal diagram in the terminal box.
Connect the level monitoring sensor according to the terminal diagram in these instructions or check the page of "Ultrasonic level monitoring sensor" in the manual.

Mount pump element and safety valve

Generally, a standard grease 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, that the grease lubrication pump has been disconnected from the power supply.



Tightening torque for pump element (ABDB-05) = 43 Nm +/- 2,0 Nm

Tightening torque for pump element (ABDB-15, ABDB-30) = 32.5 Nm +/- 2,5 Nm

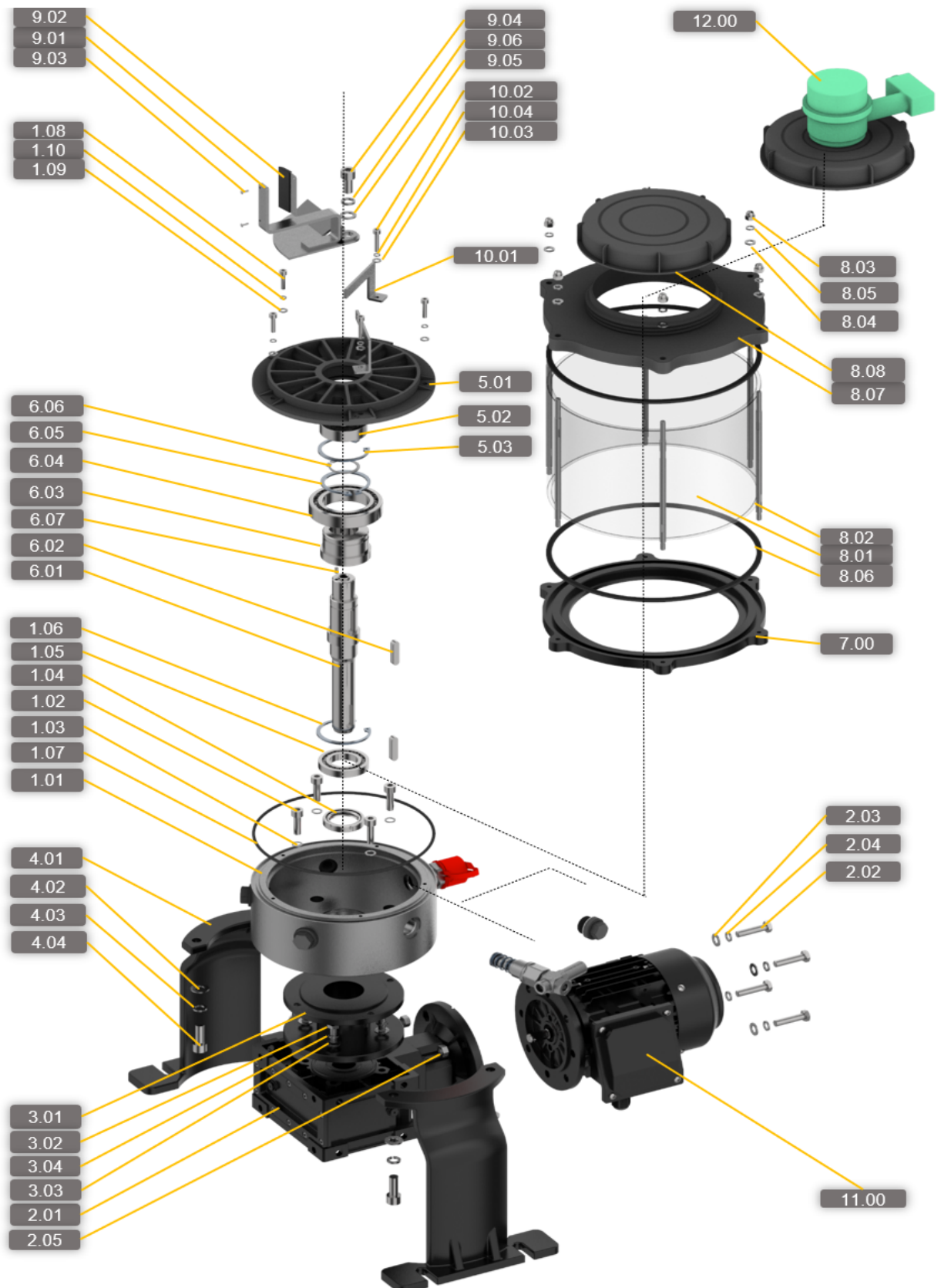
Tightening torque for safety valve = 36 Nm +/- 2,0 Nm

15 Trouble shooting

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

16 Ersatzteile

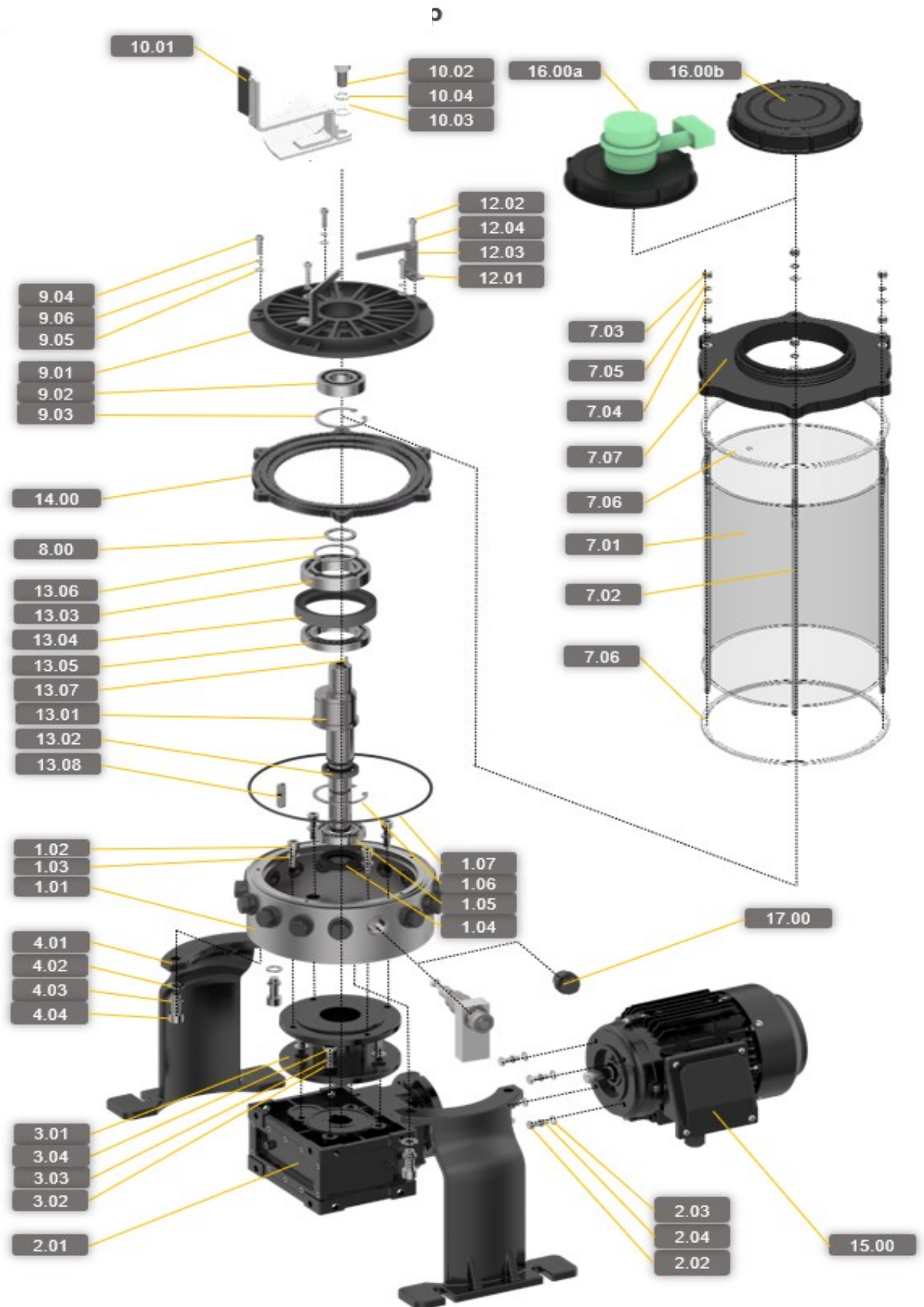
16.1 Sparte parts drawing ABDB-05



16.2 Spare part list ABDB-05

POS	Oty.	Article number	Description
1.01	1	15010933	Pump housing for lubrication pump-ABDB_05-D200-H85-T20-ST-ZnNi
1.02	4	15010935	Hexagon socket head cap screw-DIN_EN_ISO_4762-M8x25-A2-SS
1.03	4	15010936	Sealing ring-8x12x1-Cu
1.04	1	15010937	Rotary shaft seal-NOK_TC-D30x50xB8-black
1.05	1	15010938	Deep groove ball bearing-D30-55-B9
1.06	1	15010939	Retainer ring for borehole D55-DIN 472-D59,2x2-XX-XX
1.07	1	15010008	O-ring-190x3,5-SH70-NBR
1.08	3	15010940	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x20-A2-SS
1.09 + 10.03	5	15010941	Flat washer-DIN-EN-ISO 7089-D5,3x10x1,0-(M5)-A2-SS
1.10 + 10.04	5	15010942	Spring washer-DIN 127_B-9,2x1,8x1,2-(M5)-A2-SS
2.01	1	15010943	Gear box-ABDB 05-i_75:1-RAL9005-black
2.02	4	15011061	Hexagon head screw-DIN_EN_ISO_4014-M8x30-A2-SS
2.03 + 3.03	12	3040101170	Flat washer-D16,0x3,75x1,5-(M8)-A2-SS
2.04 + 3.04	12	15010947	Spring washer-DIN 127_B-14,8x8,1x2-(M8)-A2-SS
2.05	4	15010948	Hexagon nut-DIN_EN_ISO_4032-M8-A2-SS
3.01	1	15010949	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black
3.02	4	15010951	Hexagon head screw-DIN_EN_ISO_4014-M8x20-A2-SS
4.01	2	15010952	Foot for pump body housing for lubrication pump-ABDB-B200/150-H200-T99-GG-painted RAL9005 black
4.02 + 9.05	5	15010953	Flat washer-DIN-EN-ISO 7092-D10,5x18x1,6-(M10)-A2-SS
4.03 + 9.06	5	15010954	Spring washer-DIN 127_B-18,1x10,2x2,2-(M10)-A2-SS
4.,04	4	15010955	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x25-A2-SS
5.01	1	15010956	Perforated base plate-ABDB-D197x26-PA
5.02	1	15010957	Deep groove ball bearing-D25-52-B15
5.03	1	15010958	Retainer ring for groove D52-DIN 472-D56,2x2-XX-XX
6.01	1	15010959	Driving shift-ABDB 05-D36xL 185-ST
6.02	2	15010960	Parallel key-form A-ISO 773-8x7x32-XX-XX
6.03	1	15010961	Eccentric Unit-ABDB 05-D55x30-ST
6.04	1	15010963	Deep groove ball bearing-D50-80-B16
6.05	1	15010964	Retainer ring for shaft D50-DIN 471-D45,8-2-XX-XX
6.06	1	15010965	Retainer ring for shaft D30-DIN 471-D27,9-1,5-XX-XX
6.07	1	15010966	Cylinder pin-ABDB-D4x8-A2
7	1	15010967	Intermediate flange for grease reservoir-ABDB-D270-D230-H12-AI-painted RAL9005 black
8.01a	0-1	15010781	Grease reservoir-transparent-ALPB-D230-H150-4L
8.01b	0-1	15010983	Grease reservoir-transparent-ABDB-D230-H260-8L
8.01c	0-1	15010784	Grease reservoir-transparent-ALPB-D230-H570-20L
8.02a	0 or 6	15010929	Tie-rod for grease reservoir-ALPB-D230-4L-D7-M6-L176-ST-ZnNi
8.02b	0 or 6	15010984	Tie-rod for grease reservoir-ABDB-D230-8L-D7-M6-L285-ST-ZnNi
8.02c	0 or 6	3010403641	Tie-rod for grease reservoir-ALPB-D230-15L-D7-M6-L595-ST-ZnNi-for without top cover bracket
8.03	6	3040102200	Hexagon acorn nut-DIN_1587-M6-6-A2-SS
8.04	6	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
8.05	6	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
8.06	2	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
8.07	1	15010968	Top cover-ABDB-D250x42-PA GF-black
8.08	0-1	15010852	Screw cap for top cover-ABDB-without level monitoring-D166x27-PA GF-black
9.01	1	15010970	Kit-agitator blade-ABDB-for transparent reservoir D230
9.04	1	15010971	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x20-A2-SS
10.01	2	15010972	Scraper-ABDB-75x45x18-ST-ZnNi
10.02	2	15010973	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x25-A2-SS
11a	0-1	15010114	Motor-multi range-TA63-220-240/380-420VAC 50Hz_250-275/440-480VAC 60Hz-0,12KW-IE4-B5-IP55-MB
11b	0-1	15010115	Motor-single range-TA63-290/500VAC 50Hz-0,12KW-IE4-B5-IP55-MB
12	0-1	15010851	Kit-Screw cap for top cover-ABDB-with level monitoring-D166x27-PA GF-black
13	0-5	15010986	Screw plug with external hexagon M22x1.5-PA with PTFE sealing ring

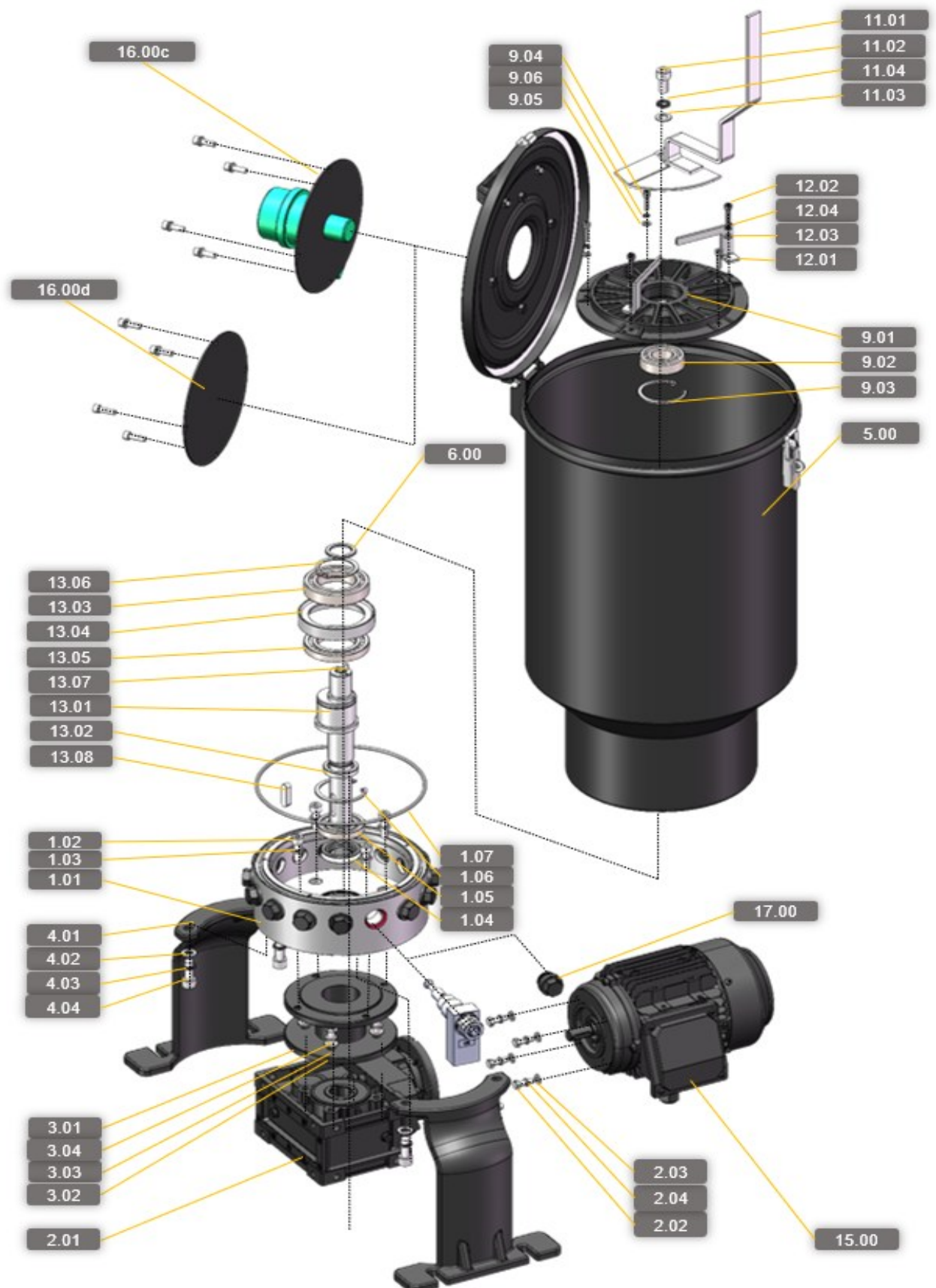
16.3 Spare part drawing ABDB-15 - Grease reservoir transparent



16.4 Spare part list ABDB-15 - Grease reservoir transparent

POS	Anz.	Artikelnummer	Description
1.01	1	15010934	Pump housing for lubrication pump-ABDB_15-D200-H85-T20-ST-ZnNi
1.02	4	15010935	Hexagon socket head cap screw-DIN_EN_ISO_4762-M8x25-A2-SS
1.03	4	15010936	Sealing ring-8x12x1-Cu
1.04	1	15010937	Rotary shaft seal-NOK_TC-D30x50xB8-black
1.05	1	15010938	Deep groove ball bearing-D30-55-B9
1.06	1	15010939	Retainer ring for borehole D55-DIN 472-D59,2x2-XX-XX
1.07	2	15010008	O-ring-190x3,5-SH70-NBR
2.01a	0 - 1	15010944	Gear box-ABDB 15/30-i_50:1-RAL9005-black
2.01b	0 - 1	15010945	Gear box-ABDB 15/30-i_100:1-RAL9005-black
2.02	4	3040102080	Hexagon head screw-DIN_EN_ISO_4017-M6x20-A2-SS
2.03	4	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
2.04	10	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
3.01a	0 - 1	15010949	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black l=50:1
3.01b	0 - 1	15010950	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black i=100:1
3.02	4	3040101170	Flat washer-D16,0x3,75x1,5-(M8)-A2-SS
3.03	4	15010947	Spring washer-DIN 127_B-14,8x8,1x2-(M8)-A2-SS
3.04	4	15010951	Hexagon head screw-DIN_EN_ISO_4014-M8x20-A2-SS
4.01	2	15010952	Foot for pump body housing for lubrication pump-ABDB-B200/150-H200-T99-GG-painted RAL9005 black
4.02 + 10.03	5	15010953	Flat washer-DIN-EN-ISO 7092-D10,5x18x1,6-(M10)-A2-SS
4.03 + 10.04	5	15010954	Spring washer-DIN 127_B-18,1x10,2x2,2-(M10)-A2-SS
4.04	4	15010955	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x25-A2-SS
7.01a	0-1	15010983	Grease reservoir-transparent-ABDB-D230-H260-8L
7.01b	0-1	15010784	Grease reservoir-transparent-ALPB-D230-H570-20L
7.02a	0 or 6	15010984	Tie-rod for grease reservoir-ABDB-D230-8L-D7-M6-L285-ST-ZnNi
7.02b	0 or 6	3010403641	Tie-rod for grease reservoir-ALPB-D230-15L-D7-M6-L595-ST-ZnNi-for without top cover bracket
7.03	6	3040102200	Hexagon acorn nut-DIN_1587-M6-6-A2-SS
7.04	6	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
7.05	6	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
7.06	2	3020200290	Sealing ring-grease reservoir top-ALPB-D230-232x220x3-NBR
8.00	1	15010977	Adapter ring for transparent reservoir-ABDB 15-D35-25,5-H7-ST-XXXX
9.01	1	15010956	Perforated base plate-ABDB-D197x26-PA
9.02	1	15010957	Deep groove ball bearing-D25-52-B15
9.03	1	15010958	Retainer ring for groove D52-DIN 472-D56,2x2-XX-XX
9.04	3	15010940	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x20-A2-SS
9.05 + 12.03	5	15010941	Flat washer-DIN-EN-ISO 7089-D5,3x10x1,0-(M5)-A2-SS
9.06 + 12.04	5	15010942	Spring washer-DIN 127_B-9,2x1,8x1,2-(M5)-A2-SS
10.01	1	15010970	Kit-agitator blade-ABDB-for transparent reservoir D230
10.02 or 11.02	1	15010971	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x20-A2-SS
12.01	2	15010972	Scraper-ABDB-75x45x18-ST-ZnNi
12.02	2	15010973	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x25-A2-SS
13.01	1	15010962	Driving shaft-ABDB 15-D50xL220-ST
13.02	1	15010979	Intermediate ring pump shaft-ABDB 15-D40-30,5-H7-ST-XXXX
13.03	1	15010980	Deep groove ball bearing-D45-75-B16
13.04	1	15010987	Mounting ring for pump elements-ABDB 15-D88-65-H16-ST-XXXX
13.05	1	15010981	Deep groove ball bearing-D45-75-B10
13.06	1	15010982	Retainer ring for shaft D45-DIN 471-D41,5x1,75-XX-XX
13.07	1	15010966	Cylinder pin-ABDB-D4x8-A2
13.08	1	15010960	Parallel key-form A-ISO 773-8x7x32-XX-XX
14.00	1	15010967	Intermediate flange for grease reservoir-ABDB-D270-D230-H12-Al-painted RAL9005 black
15.00a	0-1	15010116	Motor-multi range-TA71-220-240/380-420VAC 50Hz_250-275/440-480VAC 60Hz-0,25KW-IE4-B14-IP55-MB
15.00b	0-1	15010117	Motor-single range-TA71-290/500VAC 50Hz-0,25KW-IE4-B14-IP55-MB
16.00a	0-1	15010851	Kit-Screw cap for top cover-ABDB-with level monitoring-D166x27-PA GF-black
16.00b	0-1	15010852	Screw cap for top cover-ABDB-without level monitoring-D166x27-PA GF-black
17.00a	0-15	15010986	Screw plug with external hexagon M22x1.5-PA with PTFE sealing ring

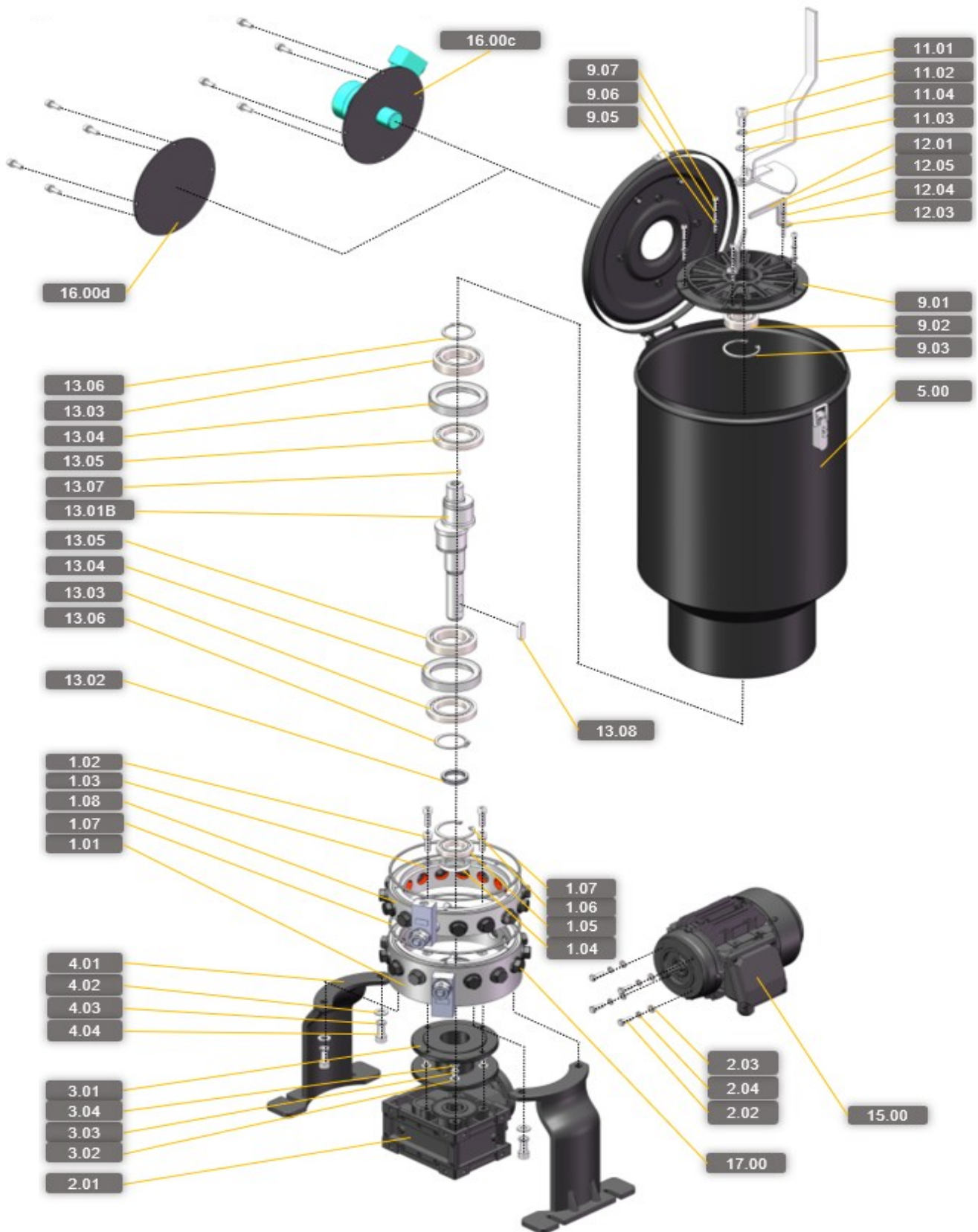
16.5 Spare part drawing ABDB-15 - Grease reservoir steel



16.6 Spare parte list ABDB-15 - Grease reservoir steel

POS	Qty.	Article number	Description
1.01	1	15010934	Pump housing for lubrication pump-ABDB_15-D200-H85-T20-ST-ZnNi
1.02	4	15010935	Hexagon socket head cap screw-DIN_EN_ISO_4762-M8x25-A2-SS
1.03	4	15010936	Sealing ring-8x12x1-Cu
1.04	1	15010937	Rotary shaft seal-NOK_TC-D30x50xB8-black
1.05	1	15010938	Deep groove ball bearing-D30-55-B9
1.06	1	15010939	Retainer ring for borehole D55-DIN 472-D59,2x2-XX-XX
1.07	2	15010008	O-ring-190x3,5-SH70-NBR
2.01a	0 - 1	15010944	Gear box-ABDB 15/30-i_50:1-RAL9005-black
2.01b	0 - 1	15010945	Gear box-ABDB 15/30-i_100:1-RAL9005-black
2.02	4	3040102080	Hexagon head screw-DIN_EN_ISO_4017-M6x20-A2-SS
2.03	4	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
2.04	10	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
3.01a	0 - 1	15010949	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black l=50:1
3.01b	0 - 1	15010950	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black i=100:1
3.02	4	3040101170	Flat washer-D16,0x3,75x1,5-(M8)-A2-SS
3.03	4	15010947	Spring washer-DIN 127_B-14,8x8,1x2-(M8)-A2-SS
3.04	4	15010951	Hexagon head screw-DIN_EN_ISO_4014-M8x20-A2-SS
4.01	2	15010952	Foot for pump body housing for lubrication pump-ABDB-B200/150-H200-T99-GG-painted RAL9005 black
4.02 + 11.03	5	15010953	Flat washer-DIN-EN-ISO 7092-D10,5x18x1,6-(M10)-A2-SS
4.03 + 11.04	5	15010954	Spring washer-DIN 127_B-18,1x10,2x2,2-(M10)-A2-SS
4.04	4	15010955	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x25-A2-SS
5.00	1	15010975	Grease reservoir-ABDB-D312-H533-30L-ST-painted RAL9005 black
	1	15010855	Sticker-ABDB15_ABDB30-grease reservoir (steel)-Lubmann logo-contact-lubricant-rotating direc.-180x95
	1	15010007	Sticker-ABDB-grease reservoir-description pump element installation-190x95
6.00	1	15010976	Adapter ring for steel reservoir-ABDB 15-D35-25,5-H3-ST-XXXX
9.01	1	15010956	Perforated base plate-ABDB-D197x26-PA
9.02	1	15010957	Deep groove ball bearing-D25-52-B15
9.03	1	15010958	Retainer ring for groove D52-DIN 472-D56,2x2-XX-XX
9.04	3	15010940	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x20-A2-SS
9.05 + 12.03	5	15010941	Flat washer-DIN-EN-ISO 7089-D5,3x10x1,0-(M5)-A2-SS
9.06 + 12.04	5	15010942	Spring washer-DIN 127_B-9,2x1,8x1,2-(M5)-A2-SS
10.02 or 11.02	1	15010971	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x20-A2-SS
11.01	1	15010978	Agitator blade-ABDB-ST-XXXX-for steel reservoir
12.01	2	15010972	Scraper-ABDB-75x45x18-ST-ZnNi
12.02	2	15010973	Hexagon socket head cap screw-DIN_EN_ISO_4762-M5x25-A2-SS
13.01	1	15010962	Driving shift-ABDB 15-D50xL220-ST
13.02	1	15010979	Intermediate ring pump shaft-ABDB 15-D40-30,5-H7-ST-XXXX
13.03	1	15010980	Deep groove ball bearing-D45-75-B16
13.04	1	15010987	Mounting ring for pump elements-ABDB 15-D88-65-H16-ST-XXXX
13.05	1	15010981	Deep groove ball bearing-D45-75-B10
13.06	1	15010982	Retainer ring for shaft D45-DIN 471-D41,5x1,75-XX-XX
13.07	1	15010966	Cylinder pin-ABDB-D4x8-A2
13.08	1	15010960	Parallel key-form A-ISO 773-8x7x32-XX-XX
15.00a	0-1	15010116	Motor-multi range-TA71-220-240/380-420VAC 50Hz_250-275/440-480VAC 60Hz-0,25KW-IE4-B14-IP55-MB
15.00b	0-1	15010117	Motor-single range-TA71-290/500VAC 50Hz-0,25KW-IE4-B14-IP55-MB
16.00c	0-1	15010988	KIT-Cover for reservoir top cover-ABDB-with level monitoring-D170x2-ST-painted RAL9005-black
16.00d	0-1	15010989	KIT-Cover for reservoir top cover-ABDB-without level monitoring-D170x2-ST-painted RAL9005-black
17.00a	0-15	15010986	Screw plug with external hexagon M22x1.5-PA with PTFE sealing ring

16.7 Spare part drawing ABDB-30



16.8 Spare part list ABDB-30

POS	Qty.	Article number	Description
1.01	1	15010934	Pump housing for lubrication pump-ABDB_15-D200-H85-T20-ST-ZnNi
1.02	4	15010935	Hexagon socket head cap screw-DIN_EN_ISO_4762-M8x25-A2-SS
1.03	4	15010936	Sealing ring-8x12x1-Cu
1.04	1	15010937	Rotary shaft seal-NOK_TC-D30x50xB8-black
1.05	1	15010938	Deep groove ball bearing-D30-55-B9
1.06	1	15010939	Retainer ring for borehole D55-DIN 472-D59,2x2-XX-XX
1.07	2	15010008	O-ring-190x3,5-SH70-NBR
1.08	1	15011056	ABDB30 Oberer Pumpenkörper Φ200*49.5 20 镀锌镍
2.01a	0 - 1	15010944	Gear box-ABDB 15/30-i_50:1-RAL9005-black
2.01b	0 - 1	15010945	Gear box-ABDB 15/30-i_100:1-RAL9005-black
2.02	4	3040102080	Hexagon head screw-DIN_EN_ISO_4017-M6x20-A2-SS
2.03	4	3040101080	Flat washer-D11,7x2,6x1,5-(M6)-A2-SS
2.04	4	3040101090	Spring washer-9,5x6,3x1,75-(M6)-A2-SS
3.01a	0 - 1	15010949	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black I=50:1
3.01b	0 - 1	15010950	Adapter flange gear box-ABDB-D130-L63-T20-ST-painted RAL9005 black i=100:1
3.02	4	3040101170	Flat washer-D16,0x3,75x1,5-(M8)-A2-SS
3.03	4	15010947	Spring washer-DIN 127_B-14,8x8,1x2-(M8)-A2-SS
3.04	4	15010951	Hexagon head screw-DIN_EN_ISO_4014-M8x20-A2-SS
4.01	2	15010952	Foot for pump body housing for lubrication pump-ABDB-B200/150-H200-T99-GG-painted RAL9005 black
4.02 + 11.03	5	15010953	Flat washer-DIN-EN-ISO 7092-D10,5x18x1,6-(M10)-A2-SS
4.03 + 11.04	5	15010954	Spring washer-DIN 127_B-18,1x10,2x2,2-(M10)-A2-SS
4.04	4	15010955	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x25-A2-SS
5.00	1	15010975	Grease reservoir-ABDB-D312-H533-30L-ST-painted RAL9005 black
9.01	1	15010956	Perforated base plate-ABDB-D197x26-PA
9.02	1	15010957	Deep groove ball bearing-D25-52-B15
9.03	1	15010958	Retainer ring for groove D52-DIN 472-D56,2x2-XX-XX
9.05 + 12.03	5	15010941	Flat washer-DIN-EN-ISO 7089-D5,3x10x1,0-(M5)-A2-SS
9.06 + 12.04	5	15010942	Spring washer-DIN 127_B-9,2x1,8x1,2-(M5)-A2-SS
9.07	3	15011054	Zylinderkopfschrauben mit Innensechskant M5*60-10.9-Ct.D3
11.01	1	15010978	Agitator blade-ABDB-ST-XXXX-for steel reservoir
11.02	1	15010971	Hexagon socket head cap screw-DIN_EN_ISO_4762-M10x20-A2-SS
12.01	2	15010972	Scraper-ABDB-75x45x18-ST-ZnNi
12.05	2	15011055	Zylinderkopfschrauben mit Innensechskant M5*65-10.9-Ct.D3
13.01b	1	15011053	Driving shift-ABDB 30-D64xL257-ST
13.02	1	15010979	Intermediate ring pump shaft-ABDB 15-D40-30,5-H7-ST-XXXX
13.03	2	15010980	Deep groove ball bearing-D45-75-B16
13.04	2	15010987	Mounting ring for pump elements-ABDB 15-D88-65-H16-ST-XXXX
13.05	2	15010981	Deep groove ball bearing-D45-75-B10
13.06	2	15010982	Retainer ring for shaft D45-DIN 471-D41,5x1,75-XX-XX
13.07	1	15010966	Cylinder pin-ABDB-D4x8-A2
13.08	1	15010960	Parallel key-form A-ISO 773-8x7x32-XX-XX
15.00a	0-1	15010116	Motor-multi range-TA71-220-240/380-420VAC 50Hz_250-275/440-480VAC 60Hz-0,25KW-IE4-B14-IP55-M
15.00b	0-1	15010117	Motor-single range-TA71-290/500VAC 50Hz-0,25KW-IE4-B14-IP55-MB
16.00b	0-1	15010988	KIT-Cover for reservoir top cover-ABDB-with level monitoring-D170x2-ST-painted RAL9005-black
16.00c	0-1	15010989	KIT-Cover for reservoir top cover-ABDB-without level monitoring-D170x2-ST-painted RAL9005-black
17.00a	0-15	15010986	Screw plug with external hexagon M22x1.5-PA with PTFE sealing ring

17 Order key

17.1 ABDB-05

ABDB	5	30	1	070	N	.PE	1.5C	-	PE R	-	0	-	0	-	0000
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Max. available pump elements	5
max. 05 PEs	

Reservoir size	
4	4 Liter PA reservoir
8	8 Liter PA reservoir
20	20 Liter PA reservoir

Motor type	
1	220-240/380-420V AC 50Hz, 250-275/440-480V AC 60Hz multi-phase motor
2	290/500V AC 50Hz single-phase motor
3	free shaft without motor
X	customized motor type

Ratios	
070	i=070:1
300	i=300:1

Level monitoring sensor	
N	without level monitoring sensor
U	with 4 positions ultrasonic level monitoring sensor
X	customized sensor type

Pump outlet configuration	
0	with blind plug M22x1.5
1.5C	PE 1.5 with SV-C
2.5C	PE 2.5 with SV-C
4.5C	PE 4.5 with SV-C
PE R	PE adjustable with SV-C
HP	with hand press adapter for refilling M22x1.5
X	customized pump outlet configuration

Special code	
0000	standard version
XXXX	customized version

17.2 ABDB-15, ABDB-30

ABDB	-	30	30	1	050	N	.PE	0	-	K6	0	-	K7	0	0000
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Max. available pump elements	
15	max. 15 PEs
30	max. 30 PEs

Reservoir size	
8	8 Liter PA reservoir
20	20 Liter PA reservoir
30	30 Liter steel reservoir
60	60 Liter steel reservoir
100	100 Liter steel reservoir

* PA reservoir can not be used for ABDB-30

Motor type	
1	220-240/380-420V AC 50Hz, 250-275/440-480V AC 60Hz multi-phase motor
2	290/500V AC 50Hz single-phase motor
3	free shaft without motor
X	customized motor type

Ratios	
007	i=007:1 (only for free shaft)
050	i=050:1
100	i=100:1
500	i=500:1

Level monitoring sensor	
N	without level monitoring sensor
U	with 4 positions ultrasonic level monitoring sensor
X	customized sensor type

Numbers of K6 pump elements pre-mounted	

Numbers of K7 pump elements pre-mounted	

Special code	
0000	standard version
XXXX	customized version