

Operating Instructions
Pump Autolub M

BA_2018_1_GB_Autolub-M



INDEX

1. General	2
2. Safety	2 - 3
A. Pump type	4
B. Number of outlets	4
C. Revision	5
D. Kinds of drive	5
E. Position of drive	5
F. Reservoir	6
G. Accessories	7 - 8
H. Example of order	9
3. Design	10
4. Principle of operation	10
5. Specifications	11
6. Pump installation	11
7. Start-up	12
8. Maintenance	13 - 14
9. Fault finding	15
10. Lubricants	15
11. Plates	15

1. GENERAL

Prior to start up, we recommend to read these operating instructions carefully as we do not assume any liability for damages and operating troubles which result from the nonobservance of these operating instructions!

The below described pump is designed for use in centralized lubrication systems or to supply downstream lubrication systems. Any use beyond the applications described in these operating instructions is considered to be not in accordance with the product's intended purposes. The manufacturer is not to be held responsible for any damages resulting from this: the user alone bears the corresponding risk.

As to figures and indications in these operating instructions we reserve the right to make technical changes which might become necessary for improvements.

The copyright on these operating instructions is kept reserved to the company DELIMON. These operating instructions are intended for the erecting, the operating and supervising personnel. They contain regulations and drawings of technical nature which must not - completely or partially - be distributed nor used nor communicated to others without authorization for competition purposes.

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2. SAFETY

These operating instructions contain fundamental instructions which are to be observed during erection, operation and maintenance. Therefore it is absolutely necessary for the fitter and the competent qualified staff/user to read these operating instructions before installation and start-up. The operating instructions must be available at all times at the place of use of the machine/system.

Not only the general safety instructions stated under this main point "safety" are to be observed, but also the other specific safety instructions stated under the other main points.

2.1 Identification of safety warnings in the operating instructions

The safety warnings contained in these operating instructions which, if not observed, may cause dangers to people, are specially marked with general danger symbols



safety sign according to DIN 4844, warning about a danger spot, in case of warning about electric voltage with



safety sign according to DIN 4844, warning about dangerous electric voltage.

In case of safety instructions which, if not observed, may cause damage to the product and its function, the word

ATTENTION

is inserted.

Instructions that are directly attached to the machine, as for example

- rotational direction arrow
- identifications for fluid connections must be observed at all events and maintained in a fully legible condition.
- Note: There is an increased skid risk in case of spilled/leaked out lubricants. They are to be removed at once properly.



Safety sign according to DIN 4844, warning about skid risk.

2. SAFETY

2.2 Personnel qualification and training

The operating, maintaining, inspecting and erecting personnel must have the appropriate qualification for such work. Area of responsibility, competence and supervision of the personnel have to be regulated by the user. If the personnel do not have the necessary knowledge, they have to be trained and given instructions. This can be effected, if necessary, by the manufacturer/supplier on behalf of the user of the machine. Furthermore, the user has to make sure that the contents of the operating instructions are fully understood by the personnel.

2.3 Dangers in case of nonobservance of the safety instructions

The nonobservance of the safety instructions may result in hazards to persons, to the environment and to the product. The non-observance of the safety instructions may lead to the loss of any claims for damages.

In detail, the nonobservance may for instance lead to the following hazards:

- Failure of important functions of the product/system/machine
- Failure of prescribed methods for maintenance and repair
- Hazard to persons by electrical, mechanical and chemical influences
- Hazard to the environment by the leakage of dangerous substances

2.4 Safety conscious working

The safety instructions stated in these operating instructions, the existing national regulations as to the accident prevention as well as possible internal working, operating and safety rules of the user are to be observed.

2.5 Safety instructions for the user/operator

- If hot or cold product or machine parts lead to dangers, these parts have to be protected against touch.
- Protection against touch for moving parts (e. g. coupling) must not be removed when the machine is in operation.
- Leakages (e. g. from the shaft seal) of hazardous goods to be delivered (e. g. explosive, toxic, hot) are to be removed in such a way that there is no danger to persons and environment. Legal rules are to be observed.

- Hazards caused by electrical power are to be excluded (for details please refer for instance to the rules of the VDE and the local power supply companies).

2.6 Safety instructions for maintenance, inspection and installation work

The user has to take care that all the maintenance, inspection and installation work is executed by authorized and qualified skilled personnel who have informed themselves adequately by thoroughly studying the operating instructions. Basically, work on the machine is only to be carried out during shut-down. It is obligatory to observe the shut-down procedure described in the operating instructions .

Pumps or pump aggregates that deliver media being hazardous to health have to be decontaminated. Immediately after completion of the work, all safety and protective equipments have to be reinstalled and/or reactivated.

- Advice: When working with compressed air, do wear glasses.



(DIN 4844 – Use breathing mask)

- Advice: Observe EC-Safety Data Sheet for materials of consumption and additives used and use personal protective equipment.

2.7 Unauthorized conversion and manufacture of spare parts

Conversion or modifications to the product are only permitted when agreed with the manufacturer. Original spare parts and accessories authorized by the manufacturer serve to ensure safety. The use of other parts may render the liability for consequential losses null and void.

2.8 Unacceptable modes of operation

The operational reliability of the product supplied is only guaranteed if the product is used in accordance with its intended purposes as per section 1 - General - of the operating instructions. The limiting values specified in the data sheet must on no account be exceeded.

2.9 Guidelines & standards

1., 2. and 3. guideline (see data sheet: R&N_2009_X_GB)

2.10 Notes on environmental protection and waste disposal

In correct operation with lubricants, the components are subject to the special requirements set by environmental legislation.

The general requirements for lubricants are specified in the respective safety data sheets.

Used lubricants are hazardous forms of waste and therefore require special supervision in the sense of § 41 paragraph 1 sentence 1 and paragraph 3 no. 1 of KrW-/AbfG (Closed-Loop Waste Management Act).

Used oils must be handled in compliance with AltöIV (Waste Oil Ordinance).

The devices or components contaminated with lubricant must be disposed of by a certified waste management company. Records of proper waste management must be filed in conformance to NachwV (Ordinance on Waste Recovery and Disposal Records).

GENERAL PRODUCT CHARACTERISTICS

- Multi-line pump
- Drive: three-phase A.C. motor
- Output volume: at choice
- Lubricant: oil, grease, liquid grease
- Surface signal grey RAL 7004

A. PUMP TYPE AUTOLUB-M

Code

ALM

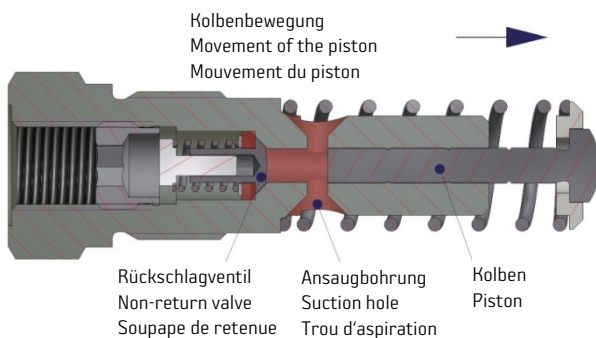
B. NUMBER OF OUTLETS

Code

1 x Pump element each 0.1 cm ³	01
2 x Pump element each 0.1 cm ³	02
3 x Pump element each 0.1 cm ³	03
4 x Pump element each 0.1 cm ³	04
5 x Pump element each 0.1 cm ³	05
1 x Pump element each 0.15 cm ³	06
2 x Pump element each 0.15 cm ³	07
3 x Pump element each 0.15 cm ³	08
4 x Pump element each 0.15 cm ³	09
5 x Pump element each 0.15 cm ³	10
1 x Pump element each 0.2 cm ³	11
2 x Pump element each 0.2 cm ³	12
3 x Pump element each 0.2 cm ³	13
4 x Pump element each 0.2 cm ³	14
5 x Pump element each 0.2 cm ³	15

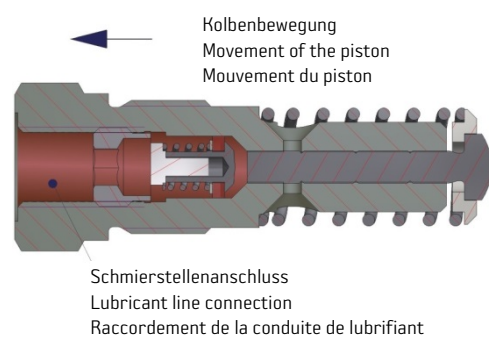
1 – 5 pump elements can be inserted.

Intake stroke



According to the eccentric position, the piston is pushed to the right by springiness so that a diminished pressure is created in the space between the non-return valve and the piston. In the course of the next intake stroke, the piston unblocks the section holes. Now the space between the non-return valve and the piston fills with lubricant.

Pressure stroke



The eccentric pushes the piston to the left and closes the suction holes. In the course of the next pressure stroke of the piston, the lubricant pushes the non-return valve to the left, and the lubricant is pushed to the lubricant line connection.

C. REVISION

Code

Status A

A

D. KINDS OF DRIVE

Code

without motor

00

Drive with motor 230/400V; 50 Hz - 260/460V; 60 Hz (item no. 3)

01



E. POSITION OF DRIVE

Code

Position 1 on the right

A

Position 2 on the left

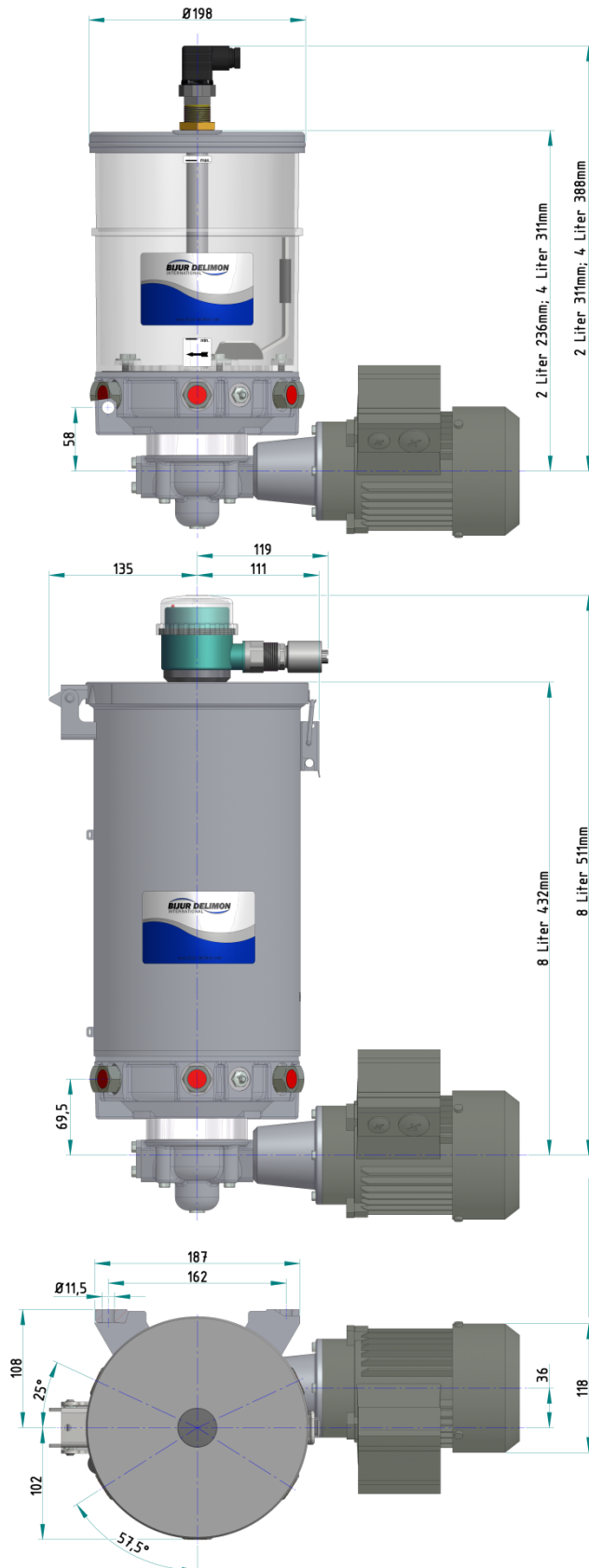
B

F. RESERVOIR

Code

2 litres, plastic
4 litres, plastic
8 litres, metal

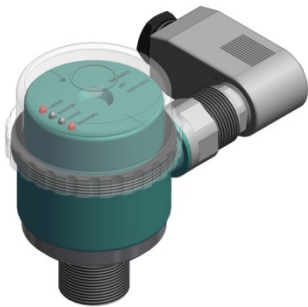
A
B
C



G. ACCESSORIES

Code

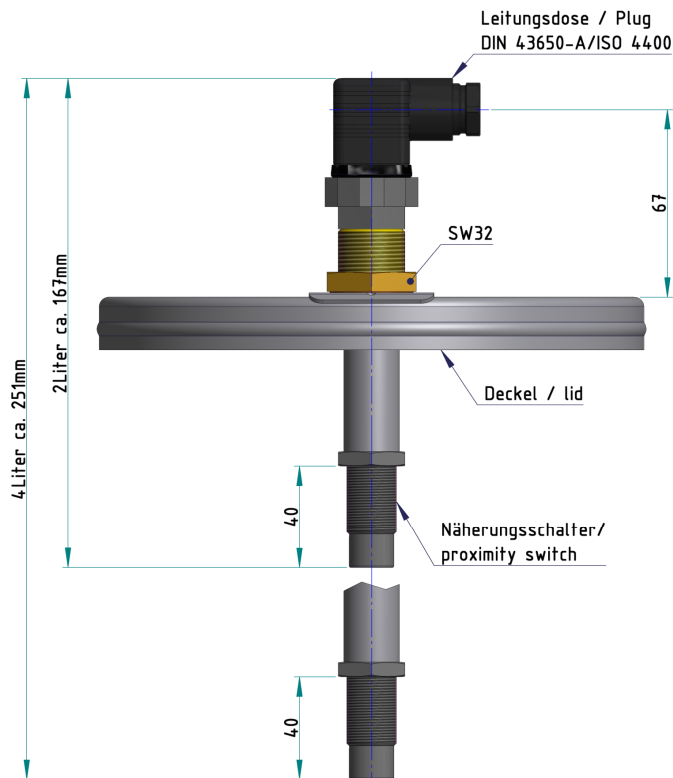
without	00
Low level switch min 2 and 4 Liter	01
Level switch for 8 liter metal reservoir	11
Filling valve with coupler plug	02
1 x Pressure control 160 bar, d = 10 mm	20
2 x Pressure control 160 bar, d = 10 mm	21
3 x Pressure control 160 bar, d = 10 mm	22
4 x Pressure control 160 bar, d = 10 mm	23
5 x Pressure control 160 bar, d = 10 mm	03
1 x Pressure control 200 bar, d = 10 mm	24
2 x Pressure control 200 bar, d = 10 mm	25
3 x Pressure control 200 bar, d = 10 mm	26
4 x Pressure control 200 bar, d = 10 mm	27
5 x Pressure control 200 bar, d = 10 mm	04
1 x straight fitting GE 8 - S - G1/4 - St. galv.	28
2 x straight fitting GE 8 - S - G1/4 - St. galv.	29
3 x straight fitting GE 8 - S - G1/4 - St. galv.	30
4 x straight fitting GE 8 - S - G1/4 - St. galv.	31
5 x straight fitting GE 8 - S - G1/4 - St. galv.	06



Level switch for 8 liter metal reservoir

A level switch is available for the indication of the filling level in the reservoir. As sensor serves an ultrasonic sensor. As soon as the min. or max. level allowed has been obtained, a signal is released. With the help of a signal lamp at the reservoir, this signal can be used for the visual warning or for the control of an automatic filling facility. In case of receiving the order, we will attach particular operating instructions to the level switch with the following code: BA_20XX_X_GB_76951_6011

G. ACCESSORIES (continued)



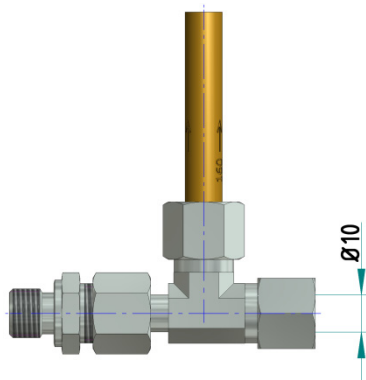
Low level switch min for 2 and 4 liters plastic tank

The level switch for the pump Autolub-M with plastic tank consists of a proximity switch with housing, a mounted lid and a plug according to DIN 43650-A / ISO 4400.

If required, the level switch is mounted on the tank (item no. 8) instead of the lid (item no. 6). When the level switch is ordered, the technical data as well as the pin connections can be taken from an operating instruction (code BA_20XX_X_GB_65121) which is supplied with the level switch. In case, this operating instruction will be part of the present operating instructions.

Filling valve with coupler plug

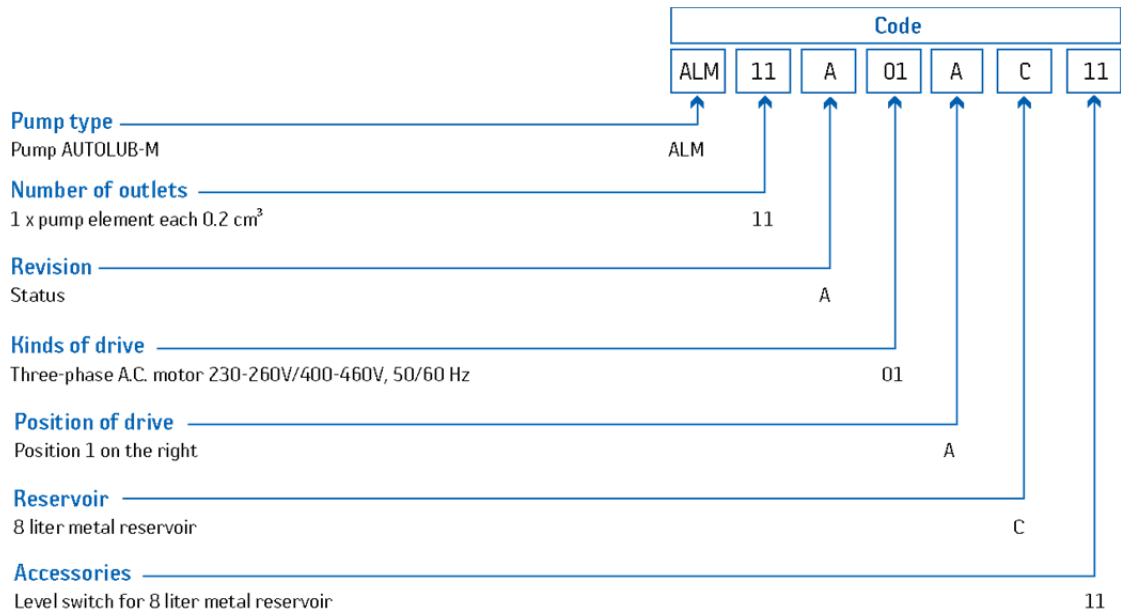
The filling valve (item no. 2) consists of a coupler plug G 1/4, a nipple G 1/4 as well as a dust cap, and in case of need it is screwed in instead of the conical head lubrication nipple (item no. 2).



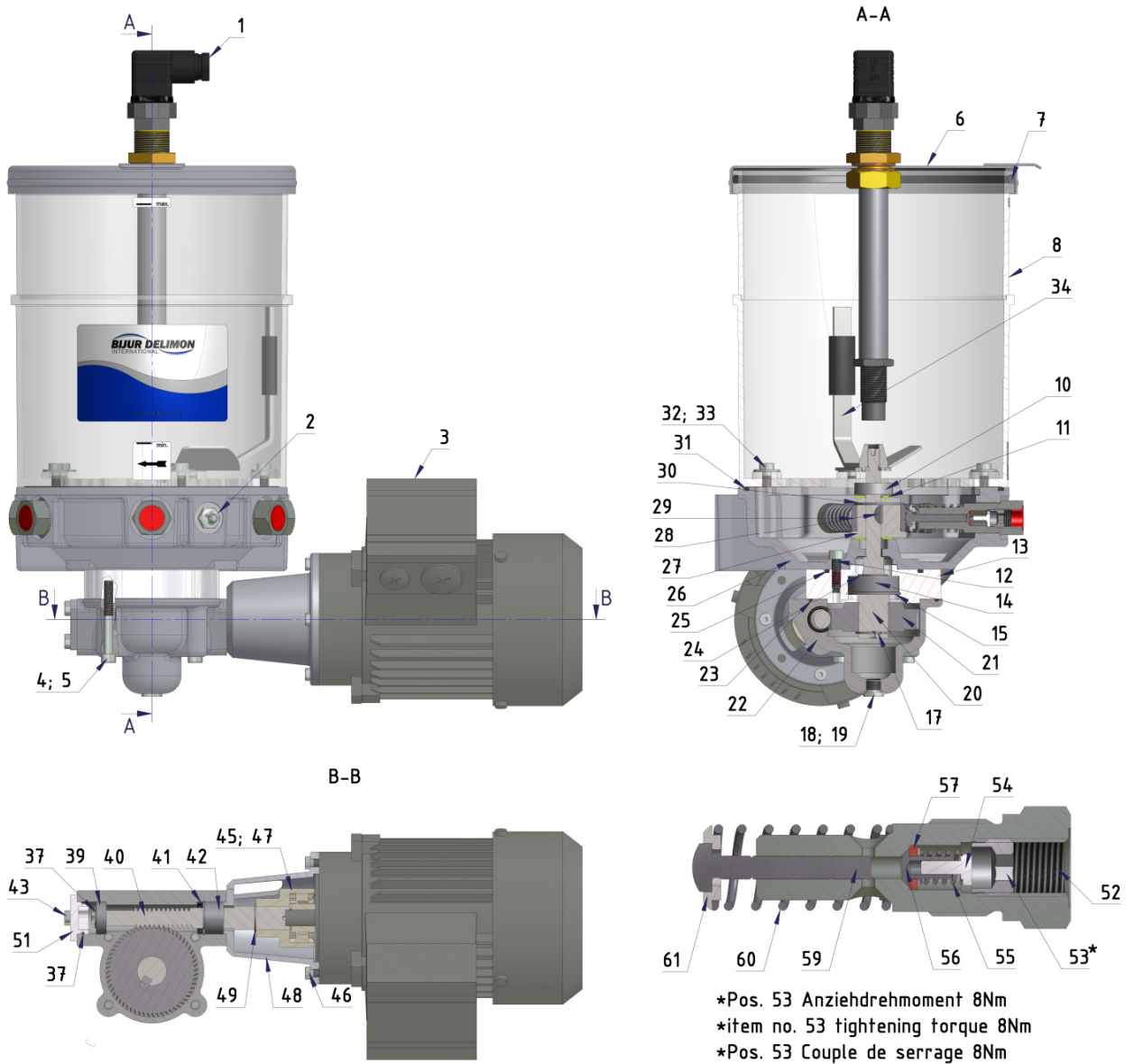
Pressure control

In case of receiving the order, we will attach particular operating instructions to the pressure control: PB_20XX_X_GB_38132.

G. EXAMPLE OF ORDER



3. DESIGN



4. PRINCIPLE OF OPERATION

The motor shaft of the motor (item no. 3) drives a screw gear (item no. 21 and 40) via a coupling (item no. 45 and 47). The shaft (item no. 20) is firmly connected to the worm wheel (item no. 21) of the screw gear, to the eccentric (item no. 27) and the agitator (item no. 34). The screw gear causes the shaft to rotate. The eccentric (item no. 27) actuates the pump element (item no. 52 to 61) and the agitator.

Due to its rotational motion, the agitator delivers lubricant from the tank (item no. 8) into the housing (item no. 26). The lubricant that has been forced into the housing, is sucked in by the pump element and carried to the consumers via the connected lubricant line.

5. SPECIFICATIONS

Discharge pressure :	max. 250 bar
Output volume per pump element :	at choice 0.1 (2.2); 0.15 (3.3); or 0.2 (4.4) cm ³ /stroke (cm ³ /min)
Number of pump elements :	1 to 5 pieces
Gear reduction :	60 : 1
Operating temperature :	- 20° C up to + 40° C
Usable lubricants :	greases based on mineral oil NLGI-class 000 to 2 DIN 51818 (51825) mineral oils with viscosity over 68 mm ² /s at operating temperature synthetic and biodegradable lubricants on request
Usable reservoir capacity :	metal reservoir 8 litres plastic reservoir 2 or 4 litres
Filling :	via conical head lubrication nipple DIN 71412, filling valve with coupler or top cover of housing
Mode of driving :	motor IMB 14-C90-63-0, 18 kW-230/400V-50Hz-1500min ⁻¹ and 260/460V- 60Hz -1800min ⁻¹ - DIN 42677
Protective system :	IP 54
Installation position :	vertical

6. PUMP INSTALLATION

ATTENTION

Install the pump AUTOLUB-M in vertical position only! Fix the pump by means of 2 screws M 10.

A central and easily accessible position of the pump AUTOLUB-M at the machine or the plant has the following advantages:

- optimal line lengths to the friction points
- for the lubricant filling via a filling valve or top cover
- for an easy reassembly and assembly of pump elements



Consider pressure load capacity for piping material and olive screw joints.
Do not use fittings!



The pump AUTOLUB-M is adapted to be used only for the max. feed pressure. When the pressure limit is exceeded; there is the hazard inherent to lead to destruction of pump or pump elements. Care should be taken by installation the entire system adequately (pipework, components, pressure relief valve) in order to prevent that the max. admissible discharge pressure be exceeded.

Electric connection



The electric connection of the motor is to be made by specialists only.
The electric instructions must be observed.

ATTENTION

The motor is to be connected in such a way that the agitator turns clockwise (right).

7. START-UP

Filling

Fill pump AUTOLUB-M with clean lubricant only, namely via the filling valve or from the top with the hinged lid being opened (metal bowl) or with lid being removed (plastic bowl). Air bubbles that might be enclosed in the grease will escape during operation of the pump. The pump deaerates automatically.

ATTENTION

While refilling the pump AUTOLUB-M make sure to protect it to avoid accidental starting.

In order to ensure that deaeration is effected rather quickly fill up the reservoir of the pump AUTOLUB-M from the top, during first start-up and squeeze the grease into the suction chamber by using an adequate device such as a scraper or smoother.

While doing this, take care to avoid air bubbles, then top up the reservoir with the required lubricant quantity.

The pump AUTOLUB-M must not run without lubricant!

Should the agitator inside the pump AUTOLUB-M become visible, proceed as described above.

Always use clean lubricant and proceed with painstaking cleanliness to avoid any kind of contamination. Dirt particles are the most frequent reasons for failures and damages.

Deaeration

Start the pump AUTOLUB-M and keep it running unconnected (for abt. 20 min) until lubricant with no air bubbles emerges.

Connection of pipe lines

Before installing the pipes, clean them all thoroughly by tapping and blowing them through with compressed air and fill them with unpolluted lubricant by means of grease gun.

Then connect the pipe lines.



Check the pre-determined opening pressure of the pressure relief valves located downflow in the pipe lines.

Observe max. operating pressure of pump AUTOLUB-M and that of the components of the system.

The pressure outlet ports of the pump elements must not be closed. In case of non-observance there is the risk of destroying both pump and pump elements.

8. MAINTENANCE

Replacing or refitting of pump element



- Disconnect motor and level switch by qualified staff, and/or protect pump against unintended switching on.
- Loosen lubricant line carefully from pump element. Unscrew pump element by using a wrench (wrench size across flats 24), but do not remove entirely from reservoir.

To prevent the piston of pump element from getting clung in the lubricant, rotate the element (by spinning movements) in order to create a cavitation. When removing the element take care that the piston is showing diagonally, to the top.

ATTENTION

Refill the suction or piston channels of new pump element of those which have been repaired with grease.

- Push element into the housing bore with pistons showing diagonally to the top, then screwing it into the pump and tightened it firmly with a torque of 35 to 40 N.
- Motor and level switch have to be connected to the mains by qualified staff only, and the protection against accidental switching-on to be removed.



- Pay attention to correct rotary direction of the agitator, sense of rotation = right-hand/clockwise.

ATTENTION

- Deaerate pump (see Start-up)

Disassembly and assembly of the pump element

- Pull piston (item no. 59) out of the housing (item no. 52).
- Unscrew screw (item no. 53) by means of a wrench (wrench size across flats 6).
- Remove non-return valve.
- Clean parts in naphtha or petroleum ether.
- Check parts of damages.
- Replace damaged parts.
- Assemble pump element in reverse order.

ATTENTION

- Tighten screw (item no. 53) with a torque 8 Nm.

8. MAINTENANCE (continued)

Disassembly and assembly of the pump AUTOLUB-M



- Disconnect motor by qualified staff.
- Remove pump from the machine and/or from the system.
- Dismantle pump element.
- Remove screws (item no. 46) and take off motor (item no. 3).

ATTENTION

- Unscrew agitator (item no. 34). Attention - lefthanded thread!
- Remove screws (item no. 33) and take off housing (item no. 8).
- Remove eccentric (item no. 27) and woodruff key (item no. 28).
- Remove screws (item no. 12) and take off gear from the housing (item no. 26).
- Remove screws (item no. 4) and take off flange (item no. 13) from the housing (item no. 22).
- Remove screws (item no. 43) and take off top cover (item no. 51).
- Remove circlip (item no. 37).
- Push drive shaft (item no. 40) out of the housing (item no. 22) with the help of a drift.
- Clean parts in naphtha or petroleum ether.
- Check parts of damages.
- Replace all seals by new ones.
- Assemble pump AUTOLUB-M in reverse order.
- Install pump element.

ATTENTION

Before putting the pump AUTOLUB-M into operation again, fill gear with gear lubricant via the plug (item no. 19).

New pumps AUTOLUB-M are filled with gear lubricant by the manufacturer.

- Mount pump to the machine and/or into the system.



- Connect motor by qualified staff.



- Pay attention to correct rotational sense of the agitator; sense of rotation = right-hand/clockwise.
- Deaerate pump (see Start-up)



- Dispose of old oil and grease remnants according to rule.

9. FAULT FINDING

Failure	Possible reasons	Repair
Pump does not deliver lubricant	Filling level is lower than min. value (reservoir empty) Electric connection of geared motor has been polarized in the wrong way. Voltage incorrect	Fill up lubricant and deaerate as described under Star-up Check pin connection Check voltage
Pump does not run	Voltage supply is interrupted Lubrication point is blocked	Check voltage at the battery To find out which lubrication points and/or which lubrication point group is blocked, loosen pipe connections at pump elements one after the other. When the blocked bundle has been loosened, the pump must start running again. Localize the lubrication points concerned by loosening the connection lines. The failure may have been caused by dirt accumulation in the lubrication point, blocked up lubrication points or squeezed lubricant lines.
Pump element does not deliver lubricant	Pump element is defective	By loosening the pipe connections at the pump elements you will find the pump element which does not deliver lubricant after the pump has been switched on. Dirt accumulation within the piston or heavy mechanical damages to the pump element are possible reasons for the failure. If removal and purification of the pump element do not result in an improvement, the pump element has to be replaced by a new one ATTENTION When assembling the cleaned pump element, the screw (item no. 53) must be tightened with a torque of 8 Nm only.

10. LUBRICANTS

Recommended lubricants :
grease Gearmaster LX00 (Lubritech)
or something comparable

11. PLATES (examples)



BIJUR DELIMON INTERNATIONAL		
Artikel-Nr. Code no.		
Fabrik-Nr. Serial no.	Betriebsdruck max. Operating pressure	
Baujahr Year of manufacture	Fördervolumen Feed volume	
Übersetzung Ratio		
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