BIJUR DELIMON INTERNATIONAL

Operating instructions

Pump ZP6000

INDEX

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 problems or issues which result from the non-observance of these operating instructions!
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.

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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 machine 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 (continuation)

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 machine. The nonobservance 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 machine/system
- Failure of prescribed methods for maintenance and repair
- Harzard 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 preventation 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 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 ovserved. .
- Hazards caused by electrial 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.

(DIN 4844 – Use breathing mask)

Before recommissioning, observe the points stated in section “initial start-up“.

2.7 Unauthorized conversion and manufacture of spare parts

Conversion or modifications to the machine 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 consequencial losses null and void.

2. Safety (continuation)

2.8 Unacceptable modes of operation

The operational reliability of the machine supplied is only guaranteed if the machine 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_1_GB)

3.0 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 AltölV (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
- up to 32 lubrication points
- Maintenance-free
- Pressure range up to 160 bar
- Lubricant: oil, grease, liquid grease
- Surface signal grey RAL 7004

A. PUMP TYPE ZP6000

B. NUMBER OF OUTLETS

6 outlets
16 outlets
1R 16 outlets with internal return ports
32 (16 + 16) outlets
3R 16 + 16 outlets with internal return ports

C. REVISION

Status B

D. KINDS OF DRIVE

Step-down gear, gear ratio 150 : 1, three-phase A.C. motor 230/400V, 50 Hz, M
Step-down gear, gear ratio 225 : 1, three-phase A.C. motor 230/400V, 50 Hz, VM, on a base plate
Step-down gear, gear ratio 225 : 1, three-phase A.C. motor 290/500V, 50 Hz, VM, on a base plate
Step-down gear, gear ratio 450 : 1, three-phase A.C. motor 230/400V, 50 Hz, VM, on a base plate
Step-down gear, gear ratio 450 : 1, three-phase A.C. motor 290/500V, 50 Hz, VM, on a base plate

E. POSITION OF DRIVE

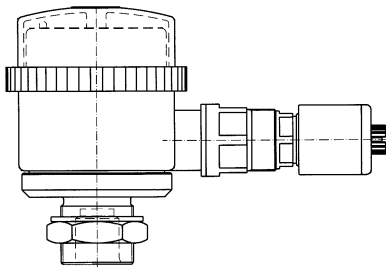
on the right
on the left (only for gear ratio 225 : 1 and 450 : 1)

F. RESERVOIR

10 litres with hinge, lock and removable
20 litres with hinge, lock and removable
30 litres with hinge, lock and removable
60 litres with hinge, lock and removable

G. ACCESSORIES

without



Level switch

An ultrasonic level switch is available for the indication and monitoring of the lubricant level in the reservoir, with a maximum of 3 factory set, but adjustable switching points. Each switch point provides a signal for local and remote monitoring as required. The local monitoring is in the form of coloured LED lamps for showing the contents of the reservoir are healthy, the maximum level, and minimum level. The switching facility can also be utilised by a local and remote controller, providing an alarm function and/or for the control of an automatic filling facility. If the switch is ordered, the operating instructions for the level switch, code: BA_2005_1_GB_76951_6011, will be supplied with the equipment.

3. Application

The ZP6000 type pumps are typically used for direct lubrication in multi-line systems (one delivery element per lubrication point), or progressive systems.

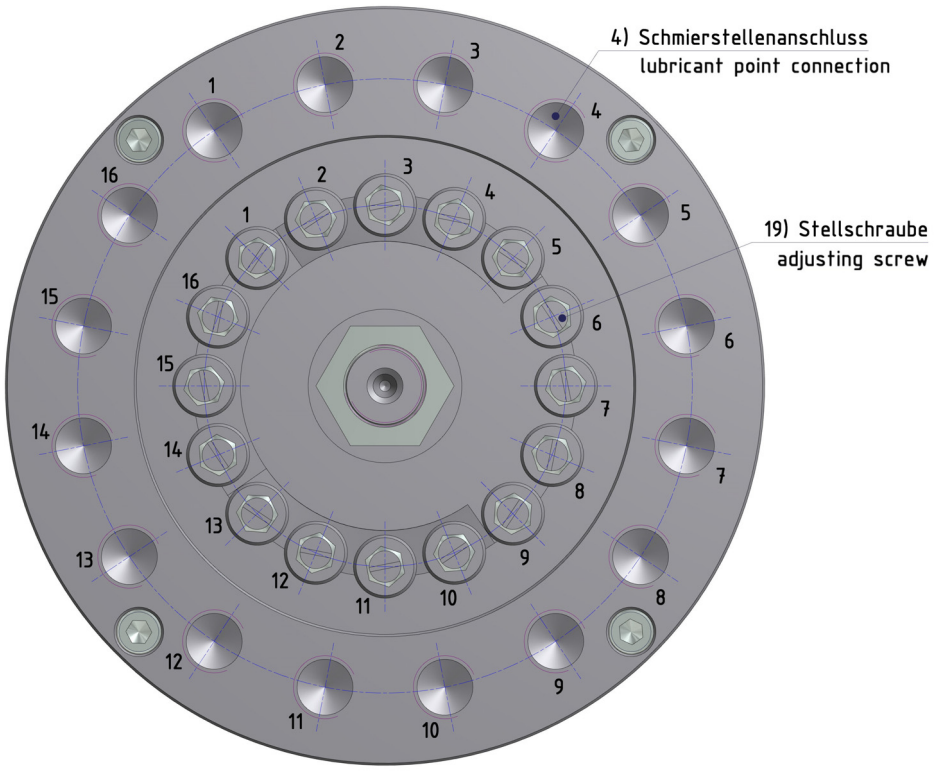
4. Principle of operation

The ZP6000 pump is driven by a flanged, step-down geared electric motor, assembled to the pump housing and connected to the worm shaft using a flexible coupling and Woodruff key.
Each feed-line connection (4) comprises a delivery piston (5) and a control piston (6). The internal reduction gears and drives (10,2,7,8) turn the pump shaft (9) and cam disc, to sequentially stroke the delivery pistons. The control gear (11) actuates the control piston (6). The reciprocating action of the delivery pistons (5), draws lubricant into the control ducts (12) of the control pistons (6) and into the pressure chamber (13). As the cam plate and control gear continue to turn, the suction port is closed and the lubricant is delivered under piston pressure to the outlet.
The rotating, angled scraper plate (14) directs the lubricant into the suction bores (15). The feed screw (16) forces the lubricant from the reservoir (3) through the screen plate (17) and into the suction chamber (18).
The ZP6000 pump can be supplied with 1 or 2 pumping heads (1), installed horizontally opposite to each other with a maximum of 16 feed-line connections per head. The rate of delivery can be set infinitely from 0...0,2 cm³/stroke. The deliveries are factory set to maximum output.

Closing of Outlets

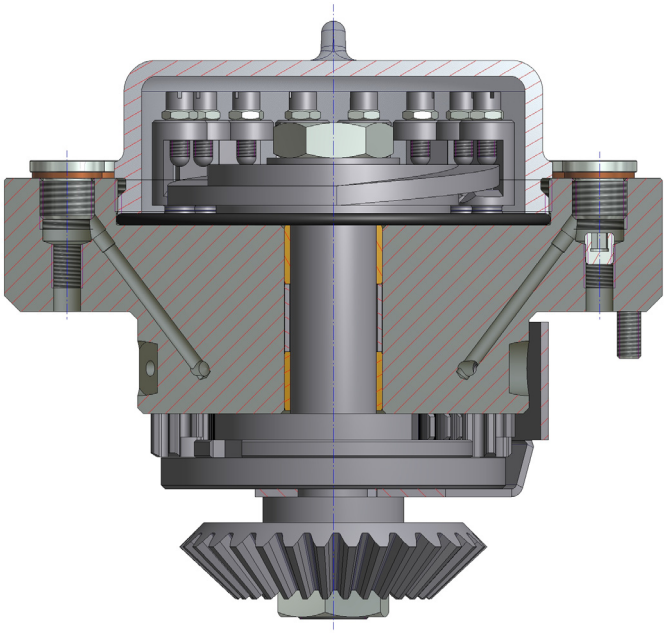
If outlets are not required, or no longer required due to a change in the lubrication requirements, they must be adjusted to “Zero Flow Rate“. Although set at zero, these outlets are still mechanically operational, and will deliver a minute quantity of lubricant, and therefore should not be totally closed or blanked off. Ideally the surplus outlets should be externally connected, and fed back into the reservoir.

This is not applicable to the versions ZP61RB… and ZP63RB… which have plugged internal return ports for normal operation. When an outlet is not required these plugs can be removed, and the outlet closed using plug (74106-1174) and sealing ring (72712-1214). The lubricant is now diverted, or re-circulated, back to the pump housing via the open, internal return port.

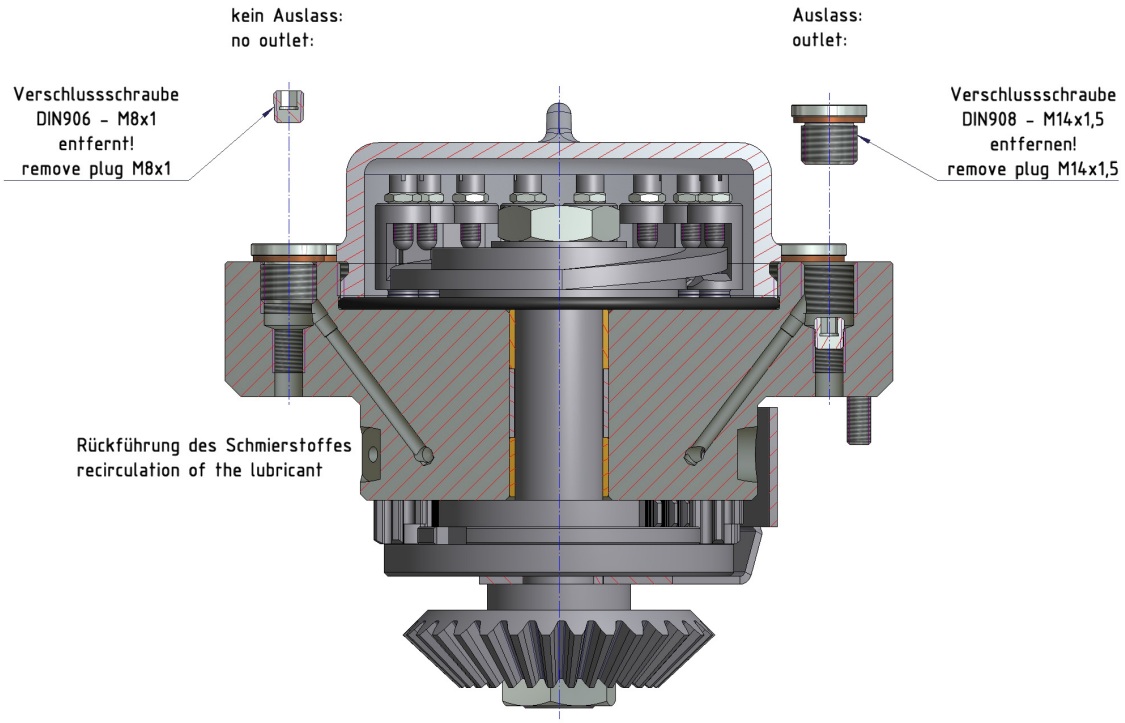


Assignment of delivery pistons to the feed-line connections.

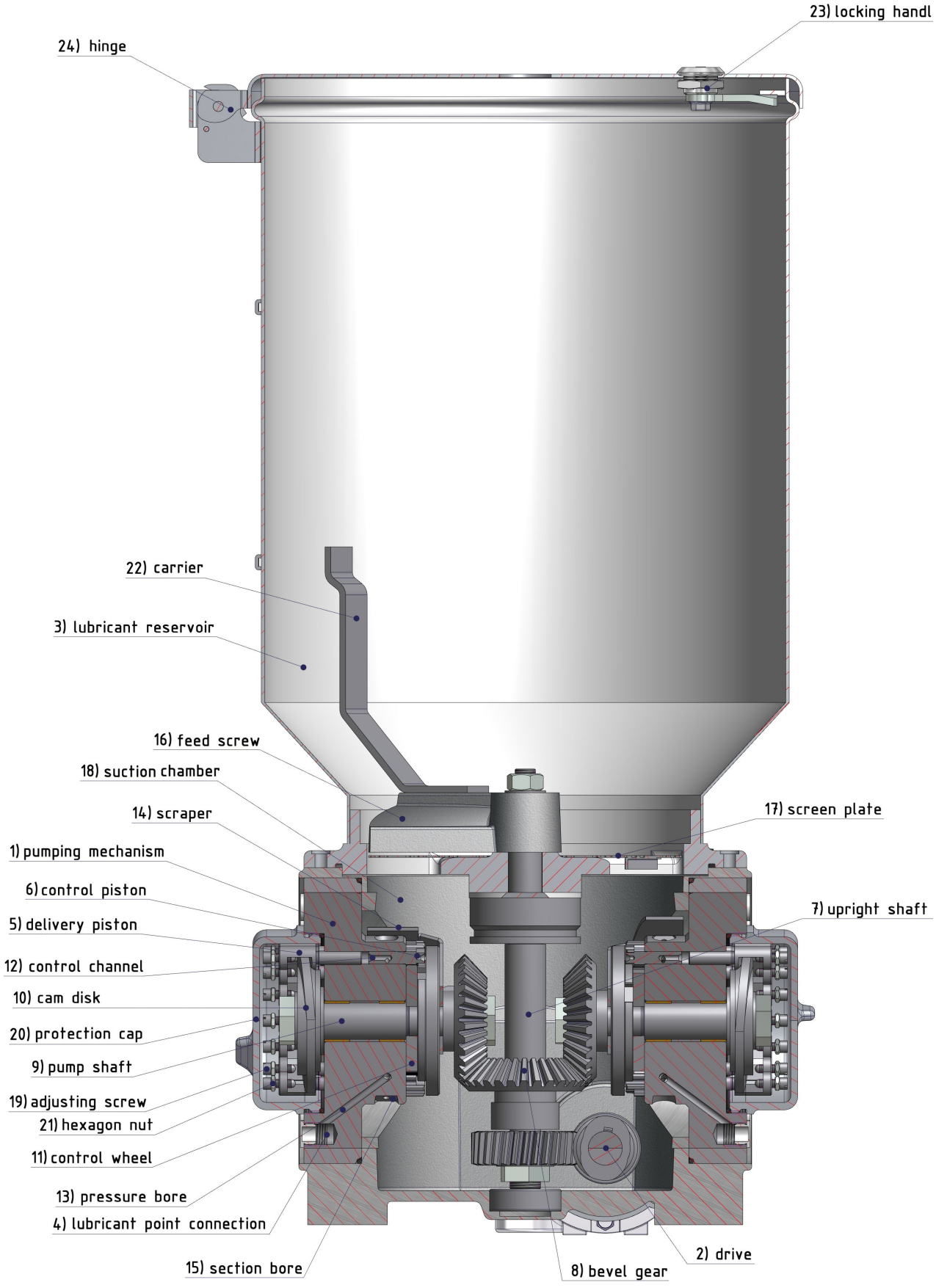
4. Principle of operation (continuation)



Factory delivery of a pump head of the version ZP616R… and ZP63RB… The return ports are closed by a M8 x1 plug, and the outlets are sealed prior to installation by a ‘hand tight’ M14 x1.5 plug .
If the outlet is required – the M14 x1.5 plug is removed and connected to the system.
If the outlet is not required – the M8 x1 plug is removed, and the outlet is closed with the M14 x1.5 plug (and the copper sealing ring). To gain access to the M8 x 1 plug, it is necessary to remove the M14 x 1.5 plug.

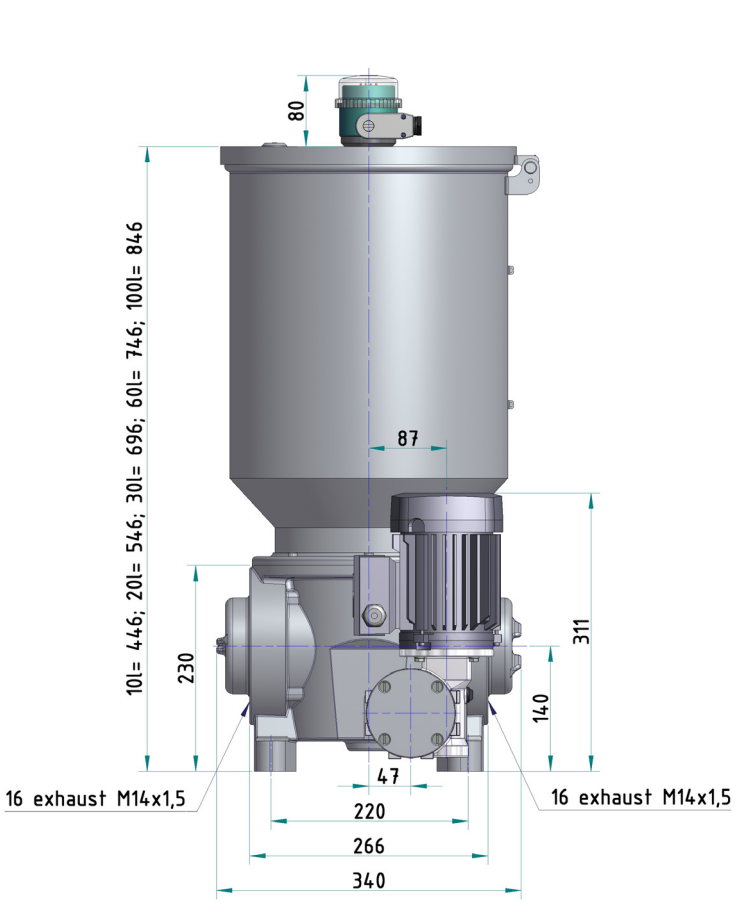


4. Principle of operation (continuation)

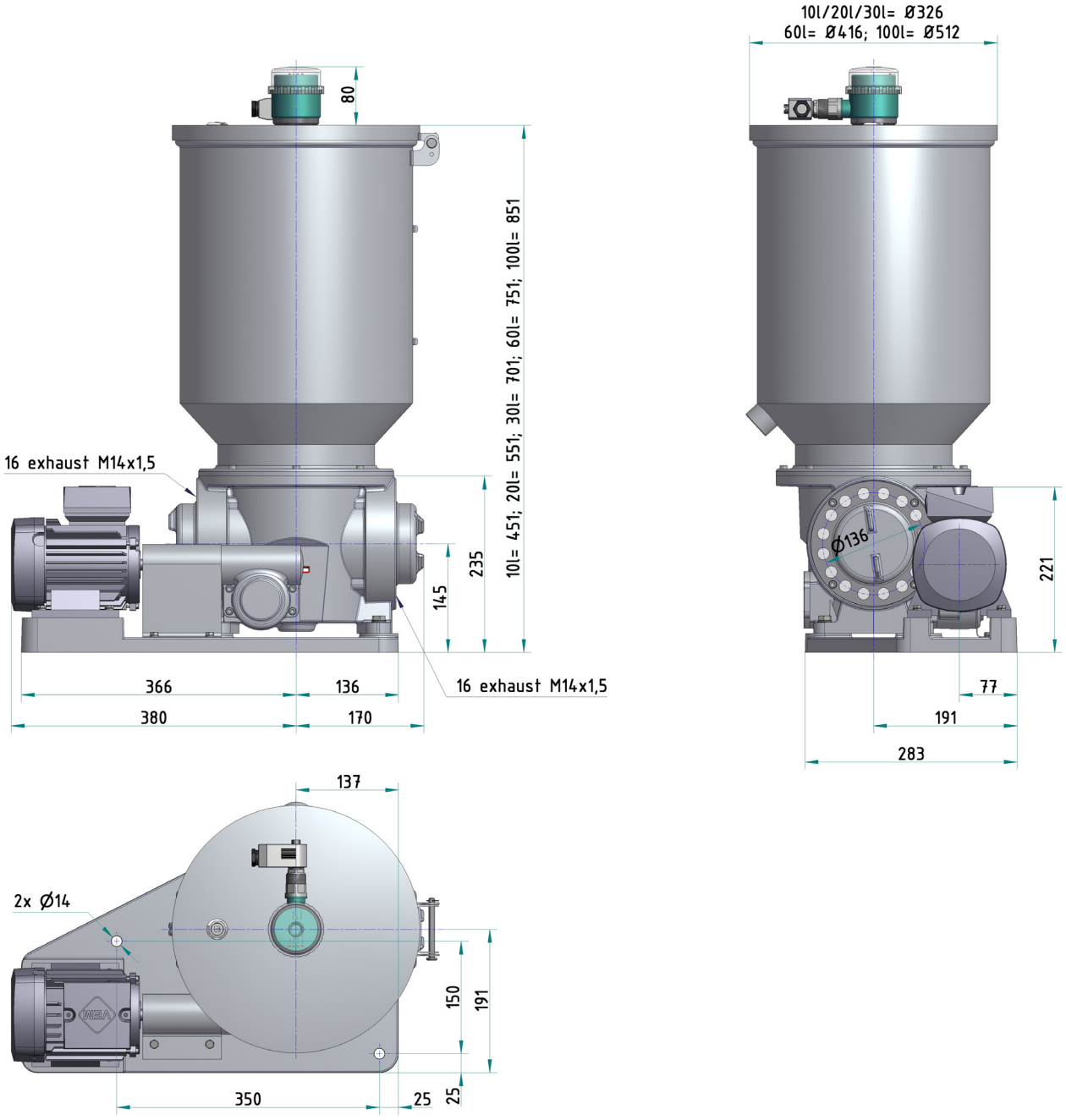


5. Specification

Rated pressure ..... 160 bar
Max operating pressure : ..... in dependence on operating mode and operating conditions (to be agreed upon with the manufacturer)
Rate of delivery per outlet ..... 0 ... 0.2 cm³/stroke
Pipe connection for feed line ..... M 14 x 1.5
Step-down ratio ..... 150 : 1 300 : 1 450 : 1 225 : 1
Delivery rate ..... 1,69 cm³/min, 0,84 cm³/min 0,6 cm³/min 1,12 cm³/mi n
Rated speed for pump shaft ..... max. 12 min^{-1}
Rated speed ..... 1360 min^{-1}
Drive power ..... 0.37 kW
NLGI-class ..... 000...3
Temperature range ..... - 30 to + 60°C
Number of outlets ..... max. 32
Reservoir capacity: ..... 10 ltr.; 20 ltr.; 30 ltr.; 60 ltr.
Weight ..... 40 and/or 50 kg



5. Specification (continuation)



6. Start-up

Prior to start up, fill the reservoir with the required lubricant. Filling can be manually carried out, or by means of a filler pump. If required, a reservoir filler pump connection can be fitted at the factory. It is essential that particular attention is paid to the cleanliness of the medium to be used.
Before connecting the feed lines, the pump should be operated until clean and non aerated lubricant is detected at the outlet connections. The rate of delivery can be adjusted by removing the dust cap (20) and adjusting the set screws (19) at the individual delivery pistons. The lock nuts (21) of the set screws to be adjusted should be slackened, the adjusters unscrewed to *"zero rate of delivery",* and then screwed in again until the required output is achieved. On completion, lock all setscrews by means of hexagon nut (21) provided, before re-fitting and securing the dust cap. The feed pipe/tubes can now be fitted.
Central lubrication pumps are supplied with four fastening bores at the housing base. This enables the pump to be secured to a base or floor with a suitably sized fastener. The pipelines are connected via screwed fittings according to DIN 2353. The thread in the pumping units for connecting the feed lines is M 14 x 1.5.
Feed lines with an outer diameter of 8mm or 10 mm can be connected.

ATTENTION

For the initial commissioning of the pumps, it is essential to also the pump housing with the required lubricant, and not just the reservoir.
With the type ZP6000 pumping mechanism, this is achieved by removing the blind flange. It is essential to ensure the lubricant and the pump housing is clean throughout the filling process. The pumping mechanisms are not self-priming. The higher the consistency of the lubricant being used, the greater the possibility of air pockets in the pump case during commissioning. To overcome this issue, it may be necessary to add a small quantity of gear oil into the housing.
Before connecting the feed lines, the pump should be operated until clean and non aerated lubricant is witnessed at the outlets. The time frame for this will vary, dependent on the gear reduction of the pump being commissioned.
To shorten the commissioning process, we recommend that all lines are manually prefilled prior to their connection to the pump.
Should it be necessary, contrary to the operating conditions, to join outlets to increase the lubricant supply to a particular lubrication point, then non-return valves should be installed at the outlets being joined.

- The pumps ZP6000 can be fitted with one pumping mechanism (16 outlets) or 2 pumping mechanisms (32 outlets) according to the requirements. The one pumping mechanism version has the pump element fitted on the right side of the pump as standard.
- In applications where 2 pumping mechanisms are fitted but the total number of outlets is greater than 16 but less than 32, then an even-number number of outlets is apportioned in equal parts to both pumping mechanisms. When it deals with an uneven number of outlets, the right pumping mechanism has always one outlet more.

7. Plates

Name plate

Type plate