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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!

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 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
- 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 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.



(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 consequential 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_X_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 16 lubrication points
- Maintenance-free
- Pressure range up to 160 bar
- Lubricant oil, grease, liquid grease
- Surface signal grey RAL 7004

A. PUMP TYPE ZP5000

B. NUMBER OF OUTLETS

- 5 outlets
- 8 outlets
- 10 (5 + 5) outlets
- 16 (8 + 8) outlets

C. INSPECTION

Stage A

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 300 : 1, three-phase A.C. motor 230/400V, 50 Hz, M
Step-down gear, gear ratio 420 : 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

E. POSITION OF DRIVE

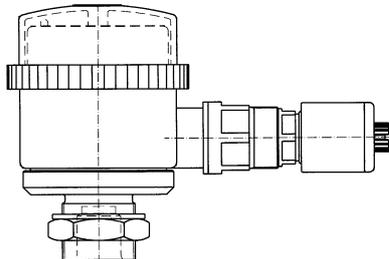
on the right
on the left (only for gear ratio 225 : 1)

F. RESERVOIR

5 liters metal
10 liters metal
20 liters metal
30 liters metal

G. ACCESSORIES

without



Level switch

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.

3. Application

The pump ZP5000 are used for direct lubrication in multi-line systems (one delivery element per lubricating point) or as delivery pump for lubricant in progressive systems

4. Principle of operation

Drive of central lubrication pump ZP5000 is effected by means of electromotor with step-down gearing flanged onto the housing and linked with the worm shaft via Woodruff key in form-fit connection.

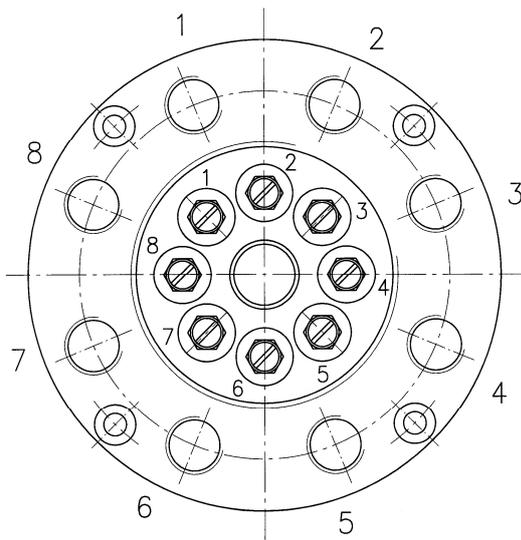
Each outlet (4) is equipped with a delivery piston (5) and a control piston (6). A rotary motion is imparted on the pump shaft (9) with cam disk (10) via drive (2), vertical shaft (7) and bevel-gear pair (8) the delivery piston (5) getting a stroke motion. The control gear (11) is to actuate the control piston (6). Due to the stroke motion of delivery pistons (5), lubricant intake is effected through the control ducts (12) of control pistons (6) and delivered into the pressure bore (13). The scraper plate (14) is delivering the lubricant to the suction bores (15). The stirrer blade (16) pressing the lubricant through the sieve plate (17) into the suction compartment (18) is arranged in the lubricant reservoir (3).

The central lubrication pump ZP5000 can be supplied with 1 or 2 pumping units (1) installed opposite to each other with a maximum of 8 outlets each. The rate of delivery can be set infinitely from 0...0,2 cm³/stroke. Upon dispatch of pumps, the rate of delivery has been set to maximum value.

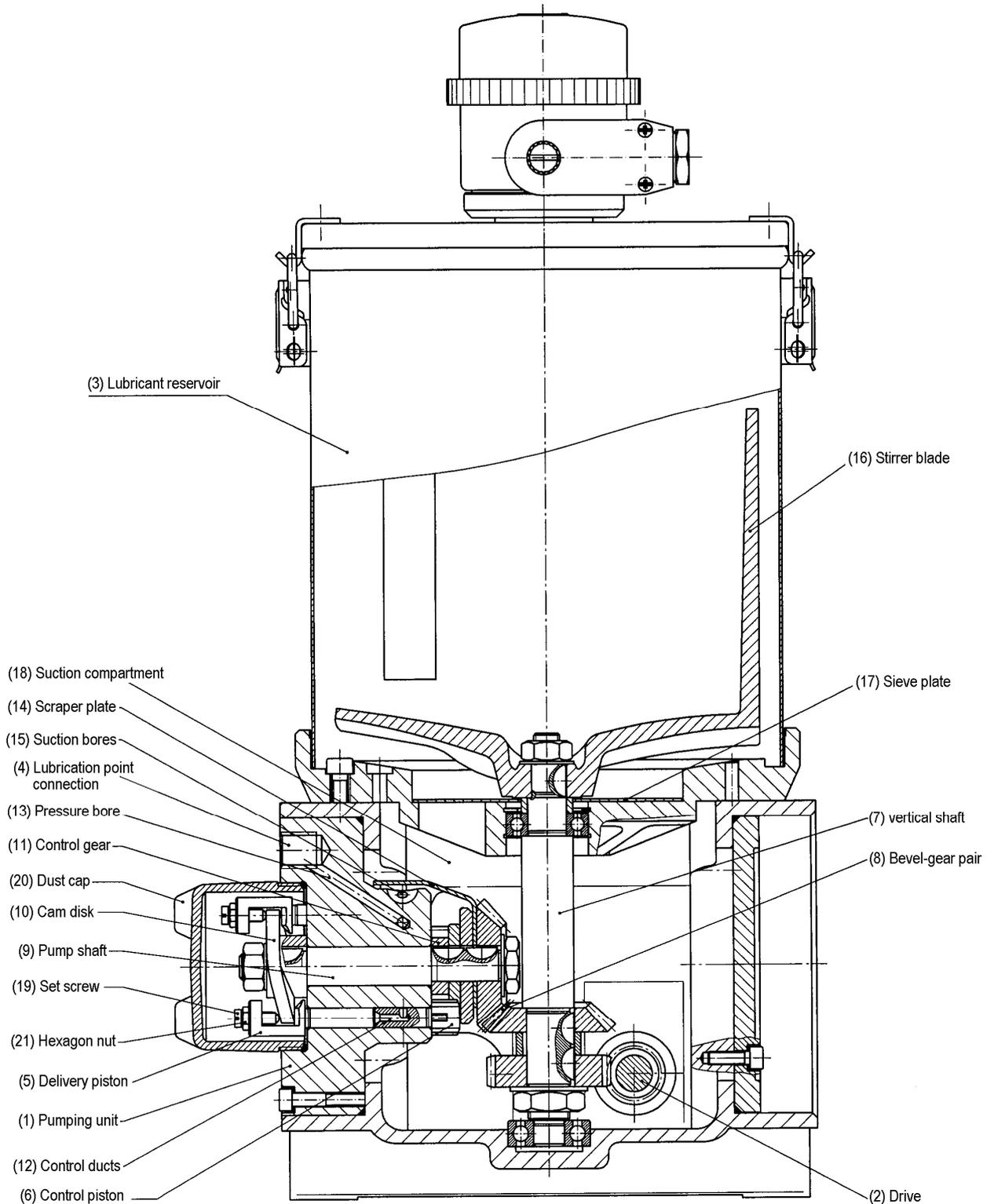
Closing of Outlets

If outlets are not yet or no longer required, these must be set to "Zero Flow Rate" and should not be closed, because this can lead to minimal pumping of lubricant. Ideally the surplus outlets should be externally joined and fed back into the tank.

Assignment of delivery pistons to the feed-line connections

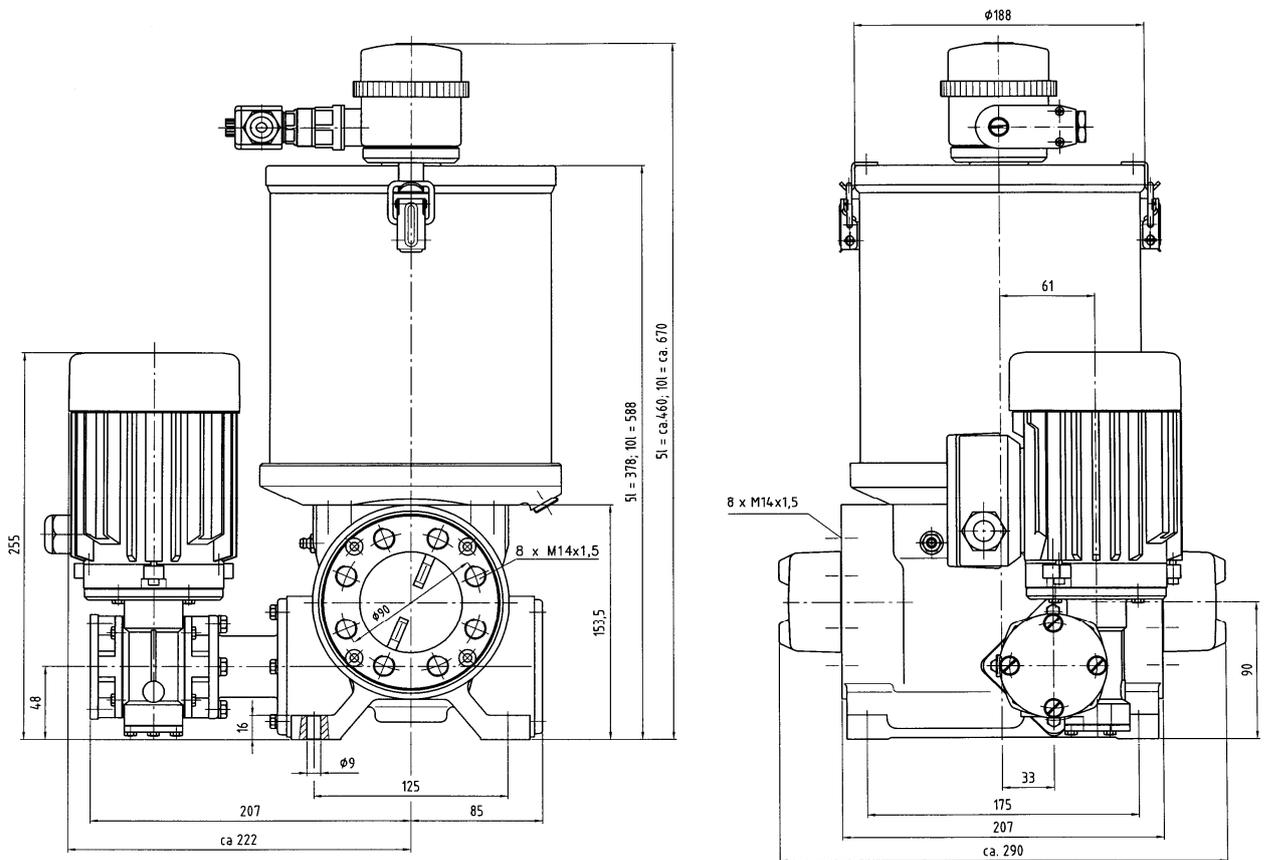


4. Principle of operation (continuation)

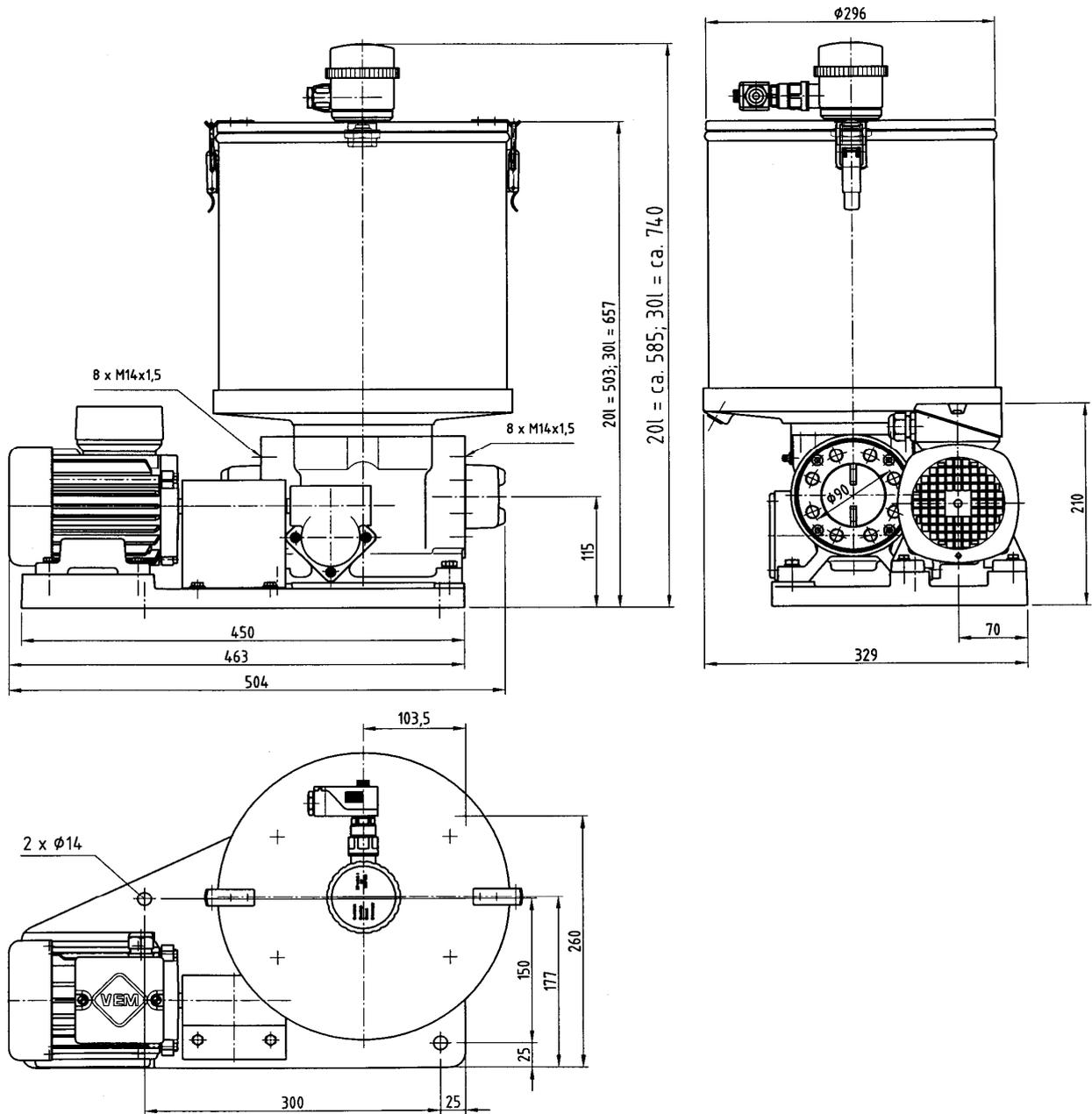


5. Specification

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 cm ³ /stroke
Pipe connection for feed line	M 14 x 1.5
Step-down ratio	150 : 1 300 : 1 420 : 1 225 : 1
Delivery rate	1,69 cm ³ /min, 0,84 cm ³ /min 0,6 cm ³ /min 1,12 cm ³ /min
Rated speed for pump shaft	max. 12 min ⁻¹
Rated speed	1360 min ⁻¹
Drive power	0.18 kW
NLGI-class	000...3
Temperature range	- 30 to + 60°C
Number of outlets	max. 16
Reservoir capacity:	5 ltr.; 10 ltr.; 20 ltr.; 30 ltr
Weight	21 and/or 24 kg



5. Specification (continuation)



6. Start-up

Prior to putting into operation, fill the lubricant reservoir. Filling can be effected manually or be means of a filler pump. A filler pump connection at the pump housing can be attached upon request. Pay particular attention to cleanliness of medium to be filled-in.

Prior to connecting the feed lines, the pump shall work in nonpressurized condition until lubricant is emerging from the outlets. The rate of delivery can be adjusted by means of set screws (19) at the individual delivery pistons. These setscrews become accessible after removing the dust cap (20). The setscrews to be adjusted have to be unscrewed up to "zero rate of delivery" and, then, to be screwed-in again until reaching the rate of delivery desired. Finally, lock all setscrews by means of hexagon nut (21) provided. After completion of setting work, screw-on the dust cap again.

Fastening of central lubrication pumps is ensured via four fastening bores at the housing.

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 having an outer diameter of 8 or 10 mm can be connected.

ATTENTION

For the first commissioning of the pumps, it is essential to fill in addition to the lubricant tank also the pump case with the lubricant to be delivered. The pump ZP5000 are provided with a conical head lubrication nipple A R1/8 DIN 71412 with the help of which this can be realized easily. The pump with pumping mechanism, one can also make filling by removing the blind flange. It is absolutely essential to take care of cleanliness. The pumping mechanisms are not self-priming. The higher is the consistency of the lubricant to be delivered, the more disturbing are air inclusions in the pump case during commissioning.

Prior to the connection of the lubrication point lines, the pump has to work without pressure until lubricant escapes at the outlets. Care has also to be taken that this process can take differently long periods of time, depending on the reduction of the pump.

To shorten the commissioning process, longer lines can be prefilled prior to their connection to the pump.

Should it be necessary, contrary to the operating conditions, to fuse outlets, non-return valves are to be provided in the outlets concerned.

This additional information refers to the arrangement of the outlets at the pumping mechanisms and the arrangement of the pumping mechanisms in the pump cases.

- Central lubrication pump ZP5000 can be equipped with one pumping mechanism (8 outlets) or 2 pumping mechanisms (per 8 outlets) according to requirements. The version with one pumping mechanism has the same on the right side of the pump.
- In the case of pumps the number of outlets of which exceeds that of a pumping mechanism, the even-numbered 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



		
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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