

Oil lubrication pump

**AZUL**

Article-no. 2238 ...

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# Original operating- and assembly manual



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## 1. Technical data

### General:

Output rate:..... max. 0,06 cm<sup>3</sup> / stroke and outlet  
 Regulation of output rate: ..... up to 6 outlet individual  
 ..... from 7 outlets in pairs  
 Input speed:..... max. 200 r.p.m at 8,25:1  
 ..... max. 400 r.p.m at 16,66:1  
 ..... max. 600 r.p.m at 25:1  
 ..... max. 1300 r.p.m at 50:1  
 Operating pressure:.....max. 10 bar  
 Suction height:.....max. 500 mm  
 Lubricant:..... oil  
 Viscosity range: .....25 - 1500 mm<sup>2</sup>/s  
 Temperature range:..... lubricant 0°C up to +70°C  
 ..... ambient 0°C up to +40°C  
 No. of outlets: ..... max. 12  
 Outlet type: ..... see order key  
 Sense of rotation: ..... optional  
 Drive: ..... rotating  
 Weight: ..... 1,4 kg  
 Sound pressure level:.....<70dB(A)  
 Varnishing:.....black (RAL9005 pump body and housing)

The oil lubrication pump is consecutively called a **device**.

## 2. Applicable documents

		2238 02 24 1 000										
<b>Type number</b>	2238											
Code	2238											
<b>Reduction</b>	8,25:1	16,66:1	25:1	50:1								
Drive position	1	1	1	1								
Code	01	02	03	04								
<b>Pressure connection</b>	<b>No. of outlets</b>											
<b>Outlet type</b>	1	2	3	4	5	6	7	8	9	10	11	12
Internal thread G 1/8	01	02	03	04	05	06	07	08	09	10	11	12
Straight plug type for pipe Ø4 mm	21	22	23	24	25	26	27	28	29	30	31	32
Angled plug type for pipe Ø4 mm	41	42	43	44	45	46	47	48	49	50	51	52
Outlet type see special version	81	82	83	84	85	86	87	88	89	90	91	92
<b>Suction connection</b>	straight plug-type				angled plug-type							
	Pipe Ø8 mm		Pipe Ø10 mm		Pipe Ø8 mm		Pipe Ø10 mm					
Code	1		2		3		4					
<b>Special version</b>												

### 3. General safety instructions

All persons that are in charge with the assembly, start-up, maintenance and operation of the device must carefully read these instructions. Furthermore this manual must permanently be available at the site of operation!

Basic notes for setup, operation and maintenance can be found below.

#### 3.1 Safety instructions

Please observe the safety instructions within this main point as well as special safety instructions that are included in other parts of this documentation.



Warning of electrical voltage.



Safety instructions which in case of non-observance might cause hazards to persons are marked with the general danger symbol.



This symbol warns of hot surfaces.



Warning of suspended loads.



Warning of material damage due to electrostatic discharge! Marks potential risks which may result in material damage, if not avoided.

#### Caution!

This heading is used if the improper or general non-observance of the operating manual, specified work flow and the like might result in device damage.

#### Notice!

This term is used to point out particular details.

**Instructions which are directly attached to the device have to be strictly observed and kept in readable condition!**

#### 3.2 Qualification and training of staff



The staff in charge for operation, maintenance, inspection and assembly has to have the according qualification for these tasks. Competence, responsibility and supervision of staff must be clearly defined by the operator. In case the staff does not have the necessary knowledge it has to be instructed and trained accordingly. The operator is obliged to ensure that the staff fully understands the contents of this user information.

#### 3.3 Hazards in case of non-observance of the safety instructions



Results of **non-observance** of the **safety instructions** can be **hazards to persons**, the environment and for the device. Non-observance of the safety instructions may result in the loss of any liability claims. In detail the non-observance could entail the following hazards:

- Failure of important device functions.
- Failure of prescribed methods for maintenance and repair.
- Danger to persons by electrical, mechanical and chemical effects.
- Danger to the environment by leakage of hazardous substances.

### 3.4 Obligations of the operator / user



- If movable, rotating, hot or cold parts of the device bear risks, the customer must protect these parts against contact. This protection must not be removed.
- Any leakages of hazardous substances must be drained in a way that no risks for persons or the environment arise.
- Keep to all legal provisions.
- Hazards due to electricity are to be excluded.
- Examination of pipes and hoses regarding safe provision, use, proper assembly and function has to be carried out according to regionally applicable directives. Inspection intervals may not be exceeded.
- Defective pipes or hoses must be replaced immediately and professionally.
- Hydraulic hoses and polyamide pipes are subject to a natural aging-process and thus have to be exchanged in regular intervals according to the manufacturer's specifications.
- A safety data sheet of the currently used lubricant must be provided at the device.

### 3.5 Safety instructions for maintenance, inspection and assembly



All **maintenance, inspection and assembly work** may only be carried out by **qualified personnel** who is sufficiently informed by thorough reading of the user information.

**Generally any work** at the device may only be carried out at **complete standstill** and in **pressureless** as well as **disconnected condition**. Furthermore appropriate **personal protective equipment** (goggles among others) is necessary. The shutdown procedure of the device as described in the manual must be strictly followed.

Secure the device against intentional or unintentional recommissioning during maintenance or repair. All safety and protection arrangements have to be put back in place again immediately after finishing work.

Environmentally hazardous media must be disposed of professionally and in correspondence to relevant legal provisions. **Polluted** and **contaminated surfaces** have to be cleaned before maintenance. Please wear protective equipment to that purpose. See the lubricant manufacturers' safety data sheets hereto, respectively the data sheets provided by the manufacturers of auxiliaries and working materials.



Check the surface temperature of the device as a possible heat transfer bears the **risk of burns**. Wear heat resistant protective gloves!

**Open flame and fire are strictly forbidden** during maintenance, inspection and repair due to fire hazard.

### 3.6 Unauthorized modification and production of spare parts



Modification, repair and alterations of the device are only accepted after manufacturer feedback. **Original spare parts** and authorized accessories from the manufacturer contribute to **safety**. The use of other parts can result in the loss of any liabilities for the resulting consequences. Groeneveld-BEKA does not assume liability for parts that are retrofit by the operator.

### 3.7 Inadmissible modes of operation

The operational safety of the device is only guaranteed for appropriate application as indicated in the operating manual. Never exceed the limit values, as stated in the technical data.

### 3.8 Electrostatic discharge



Avoid electrostatic discharge! There are electronic components integrated into the devices which might be destroyed by electrostatic discharge. Observe the safety precautions against electrostatic discharge according to DIN EN 61340-5-1/-3. Ensure that the environment (persons, workplace and packing) is well grounded when handling these devices.

### 3.9 General hazard warning – residual risk



All components are designed according to valid regulations of the construction of technical systems in regards to operational safety and accident prevention. Independently from this the use can lead to hazards for the user or third parties as well as for other technical facilities. Therefore the device may only fulfill its intended use in a **technically acceptable and faultless condition**. This has to happen in adherence of the according safety regulations and under observance of the operating manual. **Inspect** the device and its attachment parts **regularly** and **check** them for possible **damage** or **leakages**. **Liquids** could **escape under high pressure** from pressurized components which become **leaky**.

## 4. Intended use

### Caution!

The device is **only** approved for the **industrial use**.

Only operate the device if it is installed in/to another machine and operated together with it.

Only lubricants which comply with the machine manufacturer's specifications may be conveyed.

The device must only be used according to the technical data (see chapter 1 „technical data“). Never exceed the mentioned values. Never operate the device without lubricant.

**Unauthorized alterations** of the device are **not permitted**. Groeneveld-BEKA is not liable for damage of machine or persons that results thereof.

Use according to the regulations means also:

- Observance of all chapters and notes in the operating manual.
- Carrying out all maintenance work.
- **Observance** of all regulations concerning **work safety and accident prevention** during all life cycles of the device.
- Having the necessary professional training and authorization of your company to operate the device and to carry out the necessary work.

### Caution!

**Another use or a use beyond this is deemed improper.**

## 5. Scope of warranty

Warranties regarding operational safety, reliability and performance will only be granted by the manufacturer if the device is used according to the regulations and under the following conditions:

- Assembly, connection and maintenance are carried out by authorized professional staff
- The device is only used according to the operating manual
- Never exceed the limit value indicated in the technical data.
- Modifications and repairs at the device may only be done by Groeneveld-BEKA

Guarantee and warranty for any damage at the device caused by improper lubricant (e.g. wear of piston, piston jamming, blockades, brittle sealings etc.) will expire.

### Caution!

Groeneveld-BEKA will generally not assume guaranty claims for any damage caused by lubricants, although those have been laboratory tested and released by Groeneveld-BEKA, as such damage (e.g. by over-stored or incorrectly stored lubricants, batch fluctuations, etc.) cannot be verified or reconstructed later.

## 6. Transport and storage

Use suitable lifting devices for transport.

Do not **throw** the device or impose it to **shocks**.

Secure the device against toppling down or slipping during transport.



Observe all valid safety and accident prevention regulations for the transport. Wear suitable **protective equipment** if necessary. **Keep adequate distance to suspended loads**. The transport help or the elevating device must have the **adequate carrying capacity**.

When storing the device pay attention that the storage area is cool and dry in order to avoid corrosion of the individual parts of the device.

## 7. Assembly instructions

Check the device for possible transport damage and for completeness before the assembly. Any installed equipment for transportation safety has to be removed.



Comply with the following conditions for assembly of the device in order to obtain a properly built together machine of all parts without compromise of safety or persons' health:

Assemble the device in balance on the installation location in order to ensure safe operation. Observe the information on the fastening holes given in the dimensional drawing. When selecting the set-up location, please mind that the device should be protected against ambiental and mechanic influences. Ensure full access, e.g. for filling with lubricant. Special measures concerning noise prevention or oscillation reduction do not have to be taken.

### Caution!

It needs to be ensured that oil can drain – without back pressure – out of the leakage bore!

### 7.1 Line assembly

- Professional layout!
- When using pipes, observe that they are clean, seamless and of precision steel!
- Assemble the pipes professionally and free from distortion!
- Pay attention to pressure tightness of fittings!
- All components must be approved for max. operating pressure (see technical data).

## 8. Start up

### 8.1 Filling with lubricant

- The device must be connected with an oil reservoir. Furthermore it always has to have the necessary lubricant quantity to prime!
- Observe the machine manufacturer's lubricant details! Only use lubricants according to machine manufacturer's specifications!
- Collect outcoming lubricant in a suitable receptacle and dispose it professionally!
- Observe the safety data sheet of the lubricant manufacturer!
- The lubricant viscosity changes with the operating temperature.
- Observe utmost cleanness when refilling the reservoir!

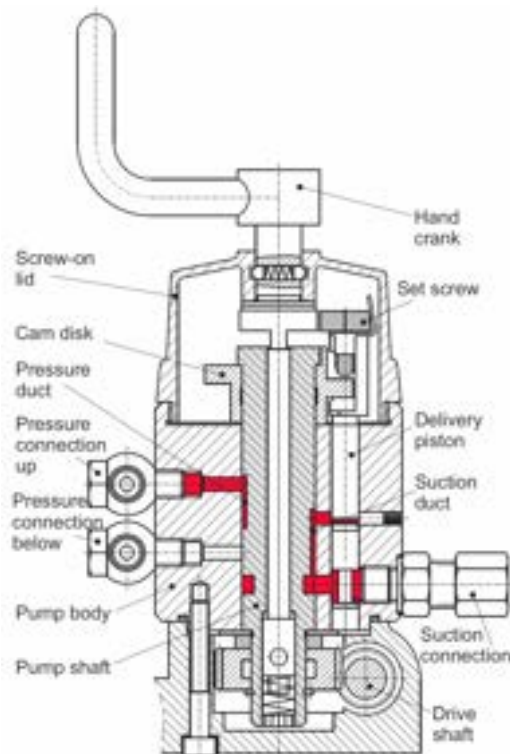
### 8.2 Ventilation of the lubrication system

- Ventilate the whole lubrication system with first start-up and after each lubricant change!
- Ventilation is done by operating the system in pressureless condition and with open system outlets!
- Operate the device until lubricant comes out of the pressure connection without air inclusions.

## 9. Functional description

### 9.1 General

The drive of the device occurs rotating. The drive shaft puts the centrally positioned pump shaft and the cam disk with a gear into a rotating movement. This carries out the strokes of the delivery pistons. Max. six delivery pistons are, circular arranged, in the pump body. They are controlled by the rotating movement of the pump shaft over a suction and pressure duct. During the suction stroke is the pressure duct closed and the delivery piston takes in oil from a connected reservoir. After the suction stroke has been finished, the pump shaft closes the suction duct with the mentioned rotating movement and releases the pressure duct so that the oil is under pressure supplied to the lube point with the now following piston stroke. For seven or more pressure connection there is one time the upper and the other time the lower pressure connection operated. The regulation of the output rate therefore is done in pairs.



### 9.2 Adjustment of the output rate

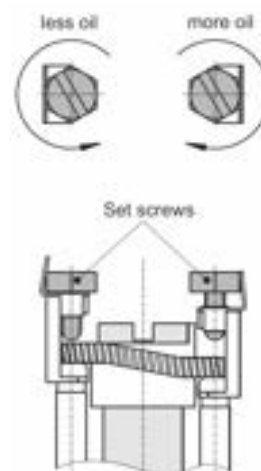
The piston stroke and with that the output rate are adjusted with the set screw in the delivery piston. Turning the set screw clockwise increases the output rate, turning counter clockwise reduces it.

To adjust the output rate, take off the screw-on lid, use the set screw to adjust the desired rate and after that fix the screw-on lid again.

The output rate can be reduced down by three complete rotations of the set screw as a maximum without affecting the function of the device.

One turn of the set screw reduces the output by  $\frac{1}{4}$  of the total delivery volume.

The device is adjusted to full stroke when being delivered. Please only adjust the output rate after putting into operation and a complete air discharge of the pressure connection.



### Caution!



While adjusting the output rate, always ensure best cleanliness!

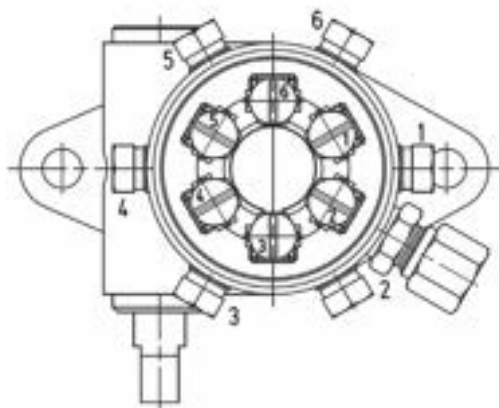
Tighten the set screws with a maximum torque of 4,5 Nm!

Non-used outlets can be reduced to zero delivery by screwing out the set screw. The appertaining outlet must not be closed tightly by a screw. Rather use plastic plugs to avoid dirt entering the device. Anyway in case of bad operating conditions the device can be damaged due to a lack of lubricant when zero delivery is set.

Do not touch the cam disk when setting the output rate – **risk of injuries!**



### 9.3 Classification of set screw for pressure connection



## 10. Maintenance



Disconnect the device from power supply before **maintenance or repair**.

**Maintenance and repair** may only be carried out at **complete standstill** and under **pressureless condition**.



Check the surface temperature of the device, as there is the **risk of burns** by radiant heat. Wear heat-resistant gloves and safety goggles! Soiled or contaminated surfaces have to be cleaned before maintenance, wear protective equipment to this purpose, if necessary! Protect the device against recommissioning during maintenance/repairs!

### 10.1 General maintenance

- Retighten all fittings 6 weeks after start up!
- Check all components for leakages and damage at least every four weeks!



If leakages are not repaired, lubricant **might come out there under high pressure**. Remove possible puddles of lubricant immediately.

### 10.2 Lubricant change

#### Caution!

Observe utmost **cleanness** when refilling lubricant!

- Check the level of the connected reservoir regularly and refill clean lubricant as necessary!
- Lubricant change has to be done according to the specifications of the lubricant manufacturer. Environmental influences like increased temperature or pollution may make it necessary to shorten these intervals!
- Please take care to only use lubricants that are suitable for the device as well as the lubricated machine and that comply with the requirements of the particular operating conditions.
- In case of **different lubricant manufacturers**, ensure that the lubricant **quality** corresponds to the quality of the previously used one! As precautionary measure, drain the lubricant reservoir professionally and clean it!

## 11. Shutdown

- Relieve the device from pressure!
- Remove all pipes and hoses from the device and loosen all fastenings for disassembly!

## 12. Disposal

#### Notice!

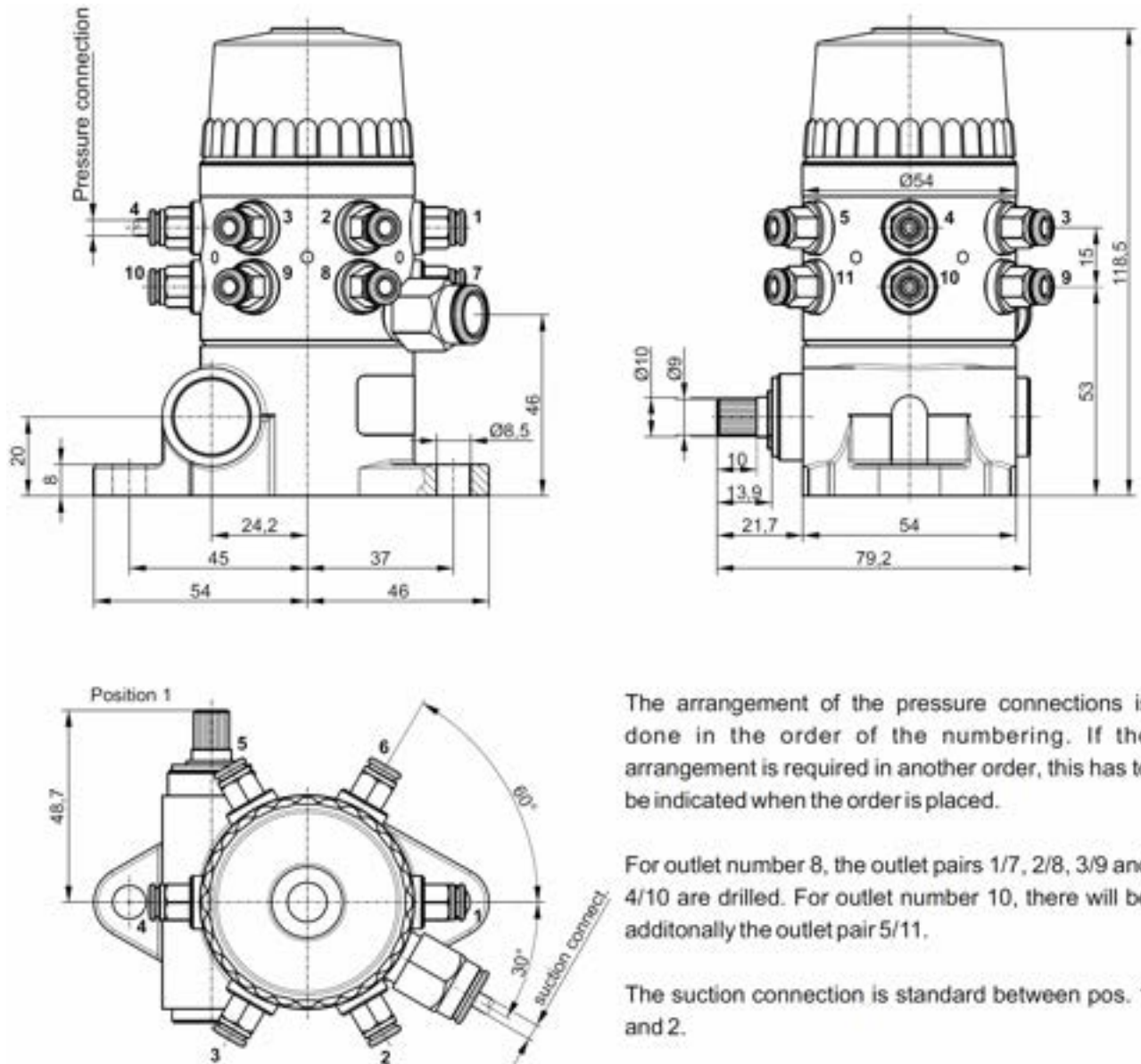
Observe the **disposal instructions of the lubricant manufacturer** when lubricant is changed! Lubricants or cloths contaminated with lubricant or similar must be collected in specially marked receptacles and disposed of accordingly.

**Disposal of the device must be done properly and professionally and according to the national and international laws and regulations.**

### 13. Troubleshooting

Malfunction	Possible cause	Possible remedy
<b>Device does not aspirate</b>	Suction line leaky	Retighten fitting; seal thread
	Level too low	Refill lubricant
	Lubricant cannot be conveyed	Fill in lubricant with correct viscosity
<b>Supply interrupts but drive is ok</b>	Coupling defective	Renew coupling
	Suction line leaky	Retighten fitting; seal thread
	Lack of lubricant in reservoir	Refill lubricant
<b>Device supplies without or with low pressure</b>	Burst pipe under reservoir cover	Repair damage
	Suction connection not tightened	Retighten fitting of suction line
	Heavy wear of the device	Renew device
	Suction line aspires air	Retighten fitting; seal thread
<b>Device is too noisy</b>	Device aspires air	Retighten fitting of suction line; seal thread
	Coupling defective	Renew coupling
	Device defective	Renew device
	Shaft sealing ring defective	Renew shaft sealing ring
	Cavitation in device	Seal suction line Check lubricant level, refill lubricant if necessary

## 14. Dimensional drawing



The arrangement of the pressure connections is done in the order of the numbering. If the arrangement is required in another order, this has to be indicated when the order is placed.

For outlet number 8, the outlet pairs 1/7, 2/8, 3/9 and 4/10 are drilled. For outlet number 10, there will be additionally the outlet pair 5/11.

The suction connection is standard between pos. 1 and 2.

## 15. Details of the manufacturer

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