

# **QUICKLUB<sup>®</sup>**

## ***Pump Model 203***



10011327

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**Fields of Applications of the QUICKLUB Progressive Central Lubrication Pumps**

Industry - Machines - Commercial Vehicles - Building Machinery - Agricultural Machines	Pump Type
	<p><b>Pump</b> QUICKLUB 203</p> <p><b>Reservoir</b> 2 l -2XN<sup>2</sup>, 2XNFL<sup>2</sup>, 2YN<sup>3</sup>, 2XNBO<sup>1</sup>, 2YNBO<sup>3</sup>                      4 l -4XNBO<sup>1</sup>, 4YNBO<sup>3</sup>                      8 l - 8XNBO<sup>1</sup>, 8YNBO<sup>3</sup>  <sup>1</sup>) Filling from the top or bottom  <sup>2</sup>) Filling only from the bottom  <sup>3</sup>) Filling only from the top                      4 l, 8 l with lockable reservoir lid (option)                      Low-level control (option) for all reservoir sizes available, on request</p> <p><b>Control</b> Without control unit for 12/24 VDC or 120, 230 VAC                      Integrated control units (V10-V13)<sup>4</sup>) for 12/24 VDC                      Integrated control units (V10-V13)<sup>4</sup>) for 120, 230 VAC                      Integrated control unit with metering device monitoring (M 00 - 23)<sup>4</sup>)                      External control units                      - PSG 01 (Commercial vehicles)                      - PSG 02 (Industry)</p>
	<p><b>Control</b> H<sup>4</sup>)</p>
	<p><b>Control</b> V10 - ADR<sup>4</sup>)</p>
	<p><b>Control</b> H - ADR<sup>4</sup>)</p>

<sup>4</sup>See the respective model designation on the pump nameplate e.g. P203 - 2XN - 1K6 - 24 - 1A1.10 - **V10**

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**Further information can be found in the following manuals:**

- Technical Description for “Electronic Control Units” of the pump model 203
- Technical Description Progressive Metering Devices for Grease and Oil, model SSV
- Printed Circuit Board 236-13862-1 - Model V10-V13
- Printed Circuit Board 236-13857-1 - Model H
- Printed Circuit Board 236-13870-1 - Model M 00 - M 15
- Printed Circuit Board 236-13870-1 - Models M 16 - M 23
- Control unit 236-13860-2 Model PSG02
- Installation Instructions
- Parts Catalog Pump 103 and 203

## Introduction

### Explanation of Symbols Used

The following description standards are used in this manual:

#### Safety Instructions

Structure of safety instructions:

- Pictogram
- Signal word
- Danger text
  - Danger note
  - How to avoid danger

The following pictograms are used in this manual and are combined with the corresponding signal words:



1013A94

- ATTENTION
- CAUTION
- WARNING



4273a00

- ATTENTION
- CAUTION
- WARNING



6001a02

- NOTE
- IMPORTANT

The signal words give the seriousness of danger if the following text will be not observed:

<b>ATTENTION</b>	refers to faults or damages on machines.
<b>CAUTION</b>	refers to bad damages and possible injuries.
<b>WARNING</b>	refers to possible dangerous injuries.
<b>NOTE</b>	refers to improvements in handling of systems.
<b>IMPORTANT</b>	refers to considerable disadvantages in handling of systems.

#### Example:



1013A94

#### ATTENTION!

*When making use of other than the original spare parts, serious damage may affect your device.*

*Therefore, for the operation of your device always use original spare parts made by Lincoln GmbH & Co. KG.*

Furthermore, you will find the following text symbols in this manual:

- Listing
  - Subpoint
- ➔ Procedural instruction

### User's Responsibility

To ensure the safe operation of the unit, the user is responsible for the following:

1. The pump / system shall be operated only for the intended use (see next chapter "Safety Instructions") and its design shall neither be modified nor transformed.
2. The pump / system shall be operated only if it is in a proper functioning condition and if it is operated in accordance with the maintenance requirements.
3. The operating personnel must be familiar with this Owner Manual and the safety instructions mentioned within and observe these carefully.

The correct installation and connection of tubes and hoses, if not specified by Lincoln GmbH & Co. KG, is the user's responsibility. Lincoln GmbH & Co. KG will gladly assist you with any questions pertaining to the installation.

### Environmental Protection

Waste (e.g. used oil, detergents, lubricants) must be disposed of in accordance with relevant environmental regulations.

### Service

The personnel responsible for the handling of the pump / system must be suitably qualified. If required, Lincoln GmbH & Co. KG offers you full service in the form of advice, on-site installation assistance, training, etc. We will be pleased to inform you about our possibilities to support you purposefully. In the event of inquiries pertaining to maintenance, repairs and spare parts, we require model specific data to enable us to clearly identify the components of your pump / system. Therefore, always indicate the part, model and series number of your pump / system.

## Safety Instructions

### Appropriate Use

- Use the 203 pump only for dispensing lubricants in centralized lubrication systems. The pump is designed for intermittent operation.

### General Safety Instructions

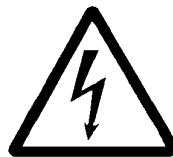
- Lincoln-QUICKLUB - centralized lubrication systems
  - are state of the art;
  - can be assembled for safe operation.
- Incorrect use may result in bearing damage caused by poor or over-lubrication.
- Unauthorized modifications or changes to an installed system are not admissible. Any modification must be subject to prior consultation with the manufacturer of the lubrication system.

### Regulations for Prevention of Accidents

- Adhere to the regulations for prevention of accidents which are effective in the country where the system is to be used.

### Operation, Maintenance and Repair

- Repair should only be performed by authorized and instructed personnel who are familiar with the regulations.
- Lincoln QUICKLUB central lubrication pumps must only be operated with a fitted safety valve.
- Lincoln QUICKLUB central lubrication pumps must be regularly refilled with clean lubricant.



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#### CAUTION!

##### *High Voltage!*

*In the case of pumps which are filled from the reservoir cover, switch off the power supply before filling in the lubricant..*



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#### ATTENTION!

##### *Risk of bursting if the reservoir is overfilled!*

*When filling the reservoir by means of pumps with a large delivery volume do not exceed the max. filling mark.*

- Lincoln QUICKLUB centralized lubrication systems operate automatically. However, a regular check (about every two weeks) should be made to ensure that lubricant is actually reaching all the lubrication points.
- Defective printed circuit boards shall be suitably packed and returned to the factory.
- Dispose of used or contaminated lubricants in accordance with the legislation concerning the environment.
- The manufacturer of the centralized lubrication system will not accept any liability
  - for damages due to the use of greases which are not or only conditionally pumpable in centralized lubrication systems
  - for damage caused by insufficient lubricant and irregular pump refilling;
  - for damage caused by the use of contaminated lubricants
  - for damage caused by an environmentally incompatible disposal of used or contaminated lubricants.

## Safety Instructions, continuation

### Installation

- Any safety equipment already fitted to the vehicle or the machine:
  - should not be modified or made ineffective;
  - should only be removed for the purpose of fitting the system;
  - must be replaced afterwards.
- Keep QUICKLUB centralized lubrication systems away from sources of heat. Adhere to the operating temperature.
- Use only original LINCOLN spare parts (see Parts Catalog) or parts approved by LINCOLN.
- Adhere to:
  - the installation instructions of the vehicle or machine manufacturer as regards all drilling and welding procedures.
  - the specified minimum distances between the bore holes and the upper/lower rim of the frame or between two bore holes.
- The manufacturer of the centralized lubrication system will not accept any liability for:
  - damage caused by unauthorized modification of the system components;
  - damage caused by the use of unapproved spare parts.



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#### IMPORTANT

*Only for use in commercial vehicles.*

1. The ADR QUICKLUB central lubrication pump complies with the design regulations of annex B of the act governing the road haulage of hazardous materials valid for Europe (ADR<sup>1</sup>) and that valid for the Federal Republic of Germany (GGVS<sup>2</sup>)
2. Moreover, the pump and its electrical equipment comply with the regulations of annex B.2 (ADR / GGVS regulations for electrical equipment) according to Rn 220000 in conjunction with the transport units mentioned in Rn 10251.
3. The ADR central lubrication pump is in conformity with the protection class IP 54.



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#### CAUTION!

*It is not allowed to use the pump in other potentially explosive fields.*

4. Install the ADR QUICKLUB 203 pump, the metering devices, lines and tube fittings as well as the electrical connection parts in accordance with the Installation Instructions. Use only original LINCOLN parts.
5. After completion of the proper installation and commissioning, **the installation of the system must be certified by means of a stamp and signature of the specialized workshop or expert.** For this purpose, use the form attached to the Operating Instructions (pump 203).
6. If the pump and the installation do not comply with the construction regulations of ADR and GGVS, the type approval is no longer valid.
7. The Operating Instructions along with the certificate duly filled in must be added to the vehicle papers. It is to be submitted at the inspection in accordance with § 6, clause 4 GGVS.

## Installation

### Specifications for the installation of electric equipment for ADR-application in commercial vehicles

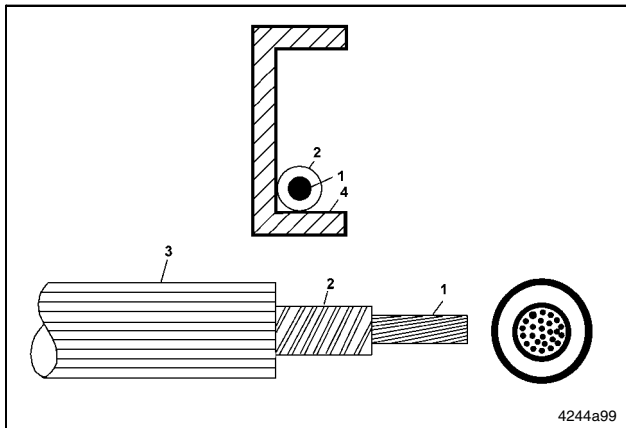


Fig. 1 Measures of protection for electric lines

- |                          |             |
|--------------------------|-------------|
| 1 - Conductor insulation | 3 - Frame   |
| 2 - Conductor            | 4 - Coating |

#### Lines

- must be fixed by means of clamps or strips to prevent them from rubbing, sagging or getting loose,
- must be protected from shocks, stone impact and heat,
- other than in a fixed installation, must be sufficiently flexible in spite of their covering.
- The electric circuits can optionally be interrupted by single- or double -pole disconnecting switches.
- In case of single-pole disconnecting switches, the negative conductor must be able to be interrupted.

#### For avoidance of short-circuits, please note the following:

- current return lines must be insulated
- they must be connected to the vehicle frame (MASS 31)
- below the driver's cab.
- housings and connectors must be of protection class IP 54
- according to DIN 40050
- plastic tubes must be of polyamide, tube coverings must be of polyurethane according to DIN VDE 0250 (only use original Lincoln ADR tubes).

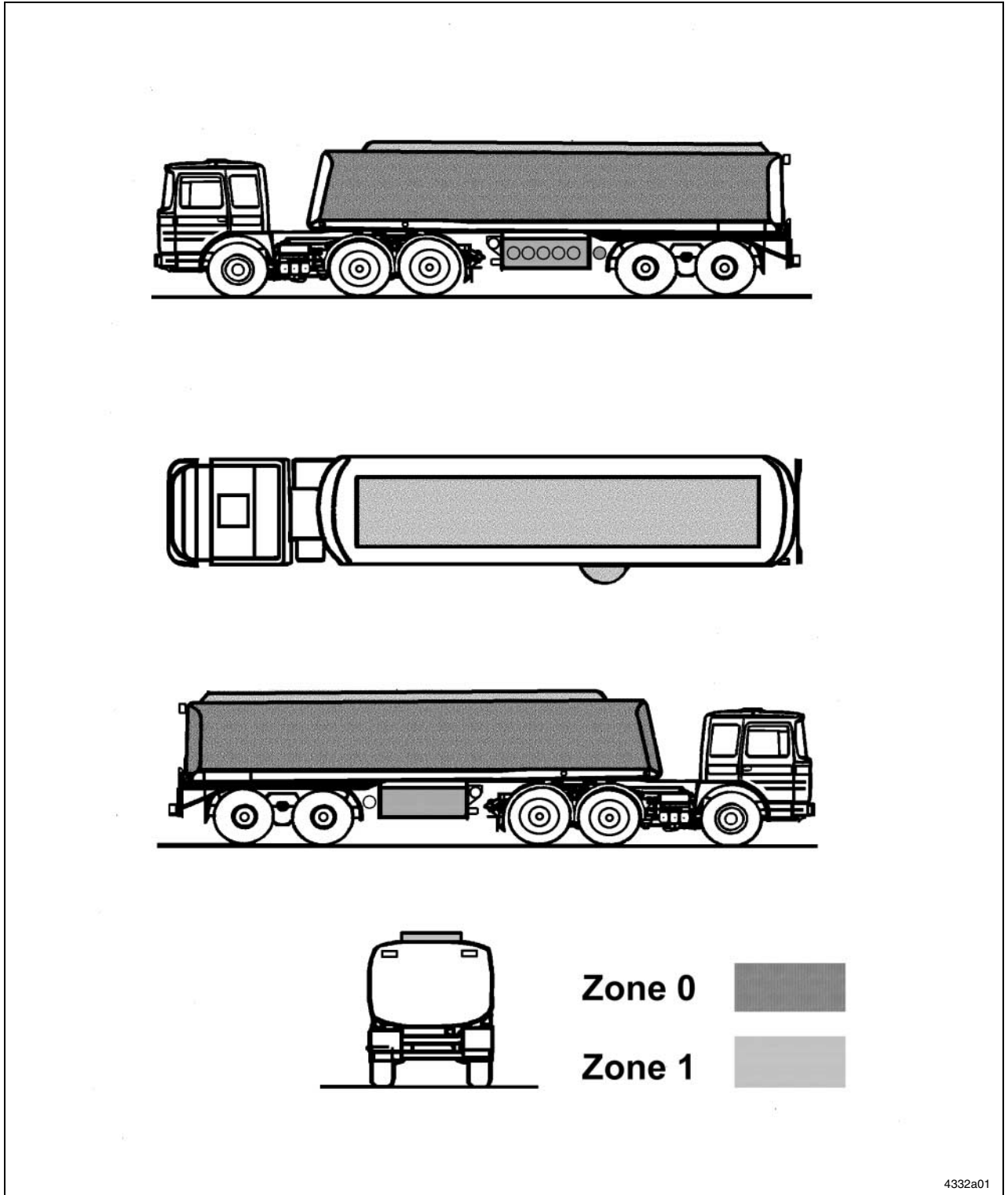
### Mounting of the Pump – Areas of Risk

- According to paragraph 9.7.8 of the ADR directive, vehicles with hazardous goods type FL are divided into zones, according to the EX prescriptions, see Fig. 26.
- These are the correspondences:
  - tank inside **zone 0**,
  - fitting cabinet **zone 1**
  - shut-off devices **zone 1**
  - venting devices **zone 1**
- Zone 2 is located around zones 0 and 1.
- The installation of the centralized lubrication system **is allowed outside of zones 0, 1 and 2, only**, whereby the extension is not determined in the ADR directive.



Installation, continuation

Mounting of the Pump – Areas of Risk, continuation



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Fig. 2 Areas of risk on vehicles with hazardous goods

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## Pump Types



Fig. 3 The different types of pump 203

### Pumps 203

The 203 pumps differ from each other only in the design and reservoir size as well as in the type of the electric connection (different plugs with or without electric cable).

#### Reservoir sizes:

- 2 l transparent plastic reservoir
- 4 l transparent plastic reservoir
- 8 l transparent plastic reservoir

#### Electric connection

For the **industrial applications**, the pumps are only equipped with plugs.  
The pumps model 203 used in **commercial vehicles** are equipped with a 10 m electric cable.

All other data such as:

- motor voltage
- version of the control unit
- remote control for triggering an additional lubrication cycle (2A1)
- design and number of pump elements
- design and number of safety valves
- filling type
- use of return line connections
- low - level control (option)

can be learnt from the pump type designation code.

### Control unit models 203

The following control units can be used for the 203 pumps: (refer to the respective Technical Description)

- a) external control units
  - PSG 01
  - PSG 02 (Industry)
- b) integrated control units
  - with adjustable pause and operating times, V10-V13<sup>1)</sup>
  - with adjustable pause and operating times, V10-V13<sup>1)</sup> for alternate current 120, 230 VAC, separate owner manual
  - with metering device monitoring (microprocessor control), **M 00 - M 23**<sup>1)</sup>
- c) integrated control unit (trailers)
  - with fixed time of availability (6 hours) and adjustable operating time, H<sup>1)</sup>

<sup>1)</sup> Refer to the designation on the pump nameplate.

Example: P203 -2XNBO - 1 K6 - 24 - 2A1.10 - V10

Also refer to the designation code on page 6.

## Identification Code - Pump Models 203

### Examples of model designations

#### NOTE

6001a02 *Any pumps combinations other the above standard pumps can be composed and ordered in accordance with the valid model identification code.*

P203 - 2 - X - N - 1 - K6 - 24 - 1A - 1. - 01 - V10  
 P203 - 4 - X - L - 1 - K7 - 24 - 2A - 1. - 10 - V12  
 P203 - 2 - X - N - 1 - K6 - 12 - 1A - 8. - 00  
 P203 - 2 - X - N - 1 - K6 - 24 - 2A - 1. - 11 - V10- ADR  
 P203 - 2 - Y - N - BO - 2 - K5 - 24 - 1A - 1. - 01  
 P203 - 4 - X - L - BO - 1 - K6 - 24 - 2A - 4. - 12 - M00

**Basic pump model for grease or oil**  
 with 1-3 outlets and 12 VDC or 24 VDC motor

#### Reservoir design

2 = 2 l transparent plastic reservoir  
 4 = 4 l transparent plastic reservoir  
 8 = 8 l transparent plastic reservoir

X = Reservoir for grease  
 Y = Reservoir for oil

N = Standard design  
 L = Low - level control

**without designation = Standard reservoir (2 Litre)**

BO = Filling from top  
 FL = Flat-type reservoir (2 Litre)

#### Pump elements

1-3 = Number of the use elements

K 5 = Piston diameter = 5 mm  
 K 6 = Piston diameter = 6 mm  
 K 7 = Piston diameter = 7 mm  
 KR = Pump element, adjustable, piston-Ø = 7 mm  
 C7 = Piston diameter = 7 mm<sup>3)</sup>

#### Motor

12 V DC oder 24 VDC (DC motor)  
 AC = 94 - 265 VAC (47 - 63 Hz) with 24 VDC direct current motor<sup>5)</sup>  
 (see documentation P203 with power supply unit for 94 - 265 VAC)

#### Number of electric connecting possibilities (on pump housing only)

- 1A = 1. connection for power supply, on the left  
 - 2A = 1A (on the left)  
 and  
 2. connection (2 A - on the right) for illuminated pushbutton  
 (external additional lubrication, not possible with variant AC) and/ or  
 external low-level control  
 (with or without control p.c.b. V10-V13, possible with variant AC)\*\*\*\*  
 or second connection (2 A – on the right) for piston detector (for M00-M23 control  
 p.c.b.) also see table on page 10

#### Type of connection

- 1 = cube-type plug, acc. to DIN 43650, type of construction A<sup>1)</sup>  
 - 4 = AMP - flanged plug (microprocessor M00 - M23)  
 - 8 = PG - cable gland  
 - 9 = AMP- plug, wire to wire

#### Connection outside the pump

- 00 = without socket-outlet, without cable  
 - 01 = with socket-outlet, without cable<sup>5)</sup>  
 - 10 = with 10 m cable  
 - 11 = with 10 m ADR cable  
 - 12 = with 10 m cable, 4 - wire (microprocessor M00 - M07)  
 - 13 = with 10 m cable, 5 - wire (microprocessor M08 - M23)

#### Control p. c. b. s. 12V / 24 V

V10 -V13 -with adjustable pause and operating time  
 V10 -V13 - ADR with adjustable pause and operating time<sup>2)</sup>  
 M 00 ...M 23\* - with microprocessor control (various  
 adjustments - see combinations of the jumper - positions)<sup>1)</sup>  
 H - for trailer or semitrailers  
 H - ADR for trailers and semitrailers<sup>2)</sup>  
 No designation: Pump without control p. c. b.

<sup>1)</sup> Not in conjunction with Hirschmann plugs (type of connection 1)

<sup>2)</sup> For transport of hazard materials

<sup>3)</sup> C 7 = Designation of pump elements for supplying of paste for chisel (C = chisel), C 5 or C 6 on request

<sup>4)</sup> Low-level control for oil; connection of the low-level control is not provided (only 1A; 2A only for illuminated push-button).

<sup>5)</sup> Pump with supply voltage 230 VAC only available with connection type 01, with or without control panel V 10 - V 13

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## Description: Electric connections for pump 203

for example P203-2XN-1K6-24-... ..-V10

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Printed circuit boards V10-V13, V20-V23, H	Connecting plug, on the left		Connecting plug, on the right		
possible connections	Power supply		Illuminated push button		External Lamp
Activity/display			Trigger additional lubrication	Operating time	Low-level control
Pump					
<b>without p. c. b. VDC</b>	1A1.01/1A1.10		----	----	2A1.01/2A1.10
<b>without p. c. b. VAC</b>	1A1.01		----	----	2A1.01
<b>with p. c. b. V... for grease, VDC</b>	1A1.01/1A1.10		2A1.01/2A1.10	2A1.01/2A1.10	2A1.01/2A1.10
<b>with p. c. b. V... for grease, VAC</b>	1A1.01		----1)	----1)	2A1.01
<b>with p. c. b. V... for oil, VDC</b>	1A1.01/1A1.10		2A1.01/2A1.10	2A1.01/2A1.10	2A1.01/2A1.10
<b>with p. c. b. V... for oil, VAC</b>	1A1.01		----1)	----1)	separate plug on lid of reservoir
<b>with p. c. b. H for grease, VDC</b>	1A1.10		----1)	----1)	----
Printed circuit boards M00-M23	Connecting plug, on the left				Connecting plug, on the right
possible connections	Power supply	Illuminated push button			Piston detector
Activity/display			Trigger additional lubrication	Operating time	Fault/low-level control/ readiness for service
Pump					
<b>with p. c. b. M00-M07 for grease or oil, VDC</b>	2A4/9.12	2A4/9.12	2A4/9.12	2A4/9.12	1 or 2 piston detector(s)
<b>with p. c. b. M08-M23 for grease or oil, VDC</b>	2A4/9.13	2A4/9.13	2A4/9.13	2A4/9.13	1 or 2 piston detector(s)

- 1A1.01-cube-type plug, left without cable
- 1A1.10-cube-type plug, left with cable
- 2A1.01-cube-type, right without cable
- 2A1.10-cube-type, right with cable

- 2A4.12-AMP-plug, 4-wires
- 2A4.13-AMP-plug, 5-wires
- 2A9.12-AMP-plug, wire to wire, 4-wires
- 2A9.13-AMP-plug, wire to wire, 5-wires

<sup>1)</sup> possible on the control p.c.b. only

- 1A8.00-PG- cable gland without cable
- 1A8.XX-PG- -cable gland with cable (option,OEM)

2-1A-30001-F03



Description, continuation

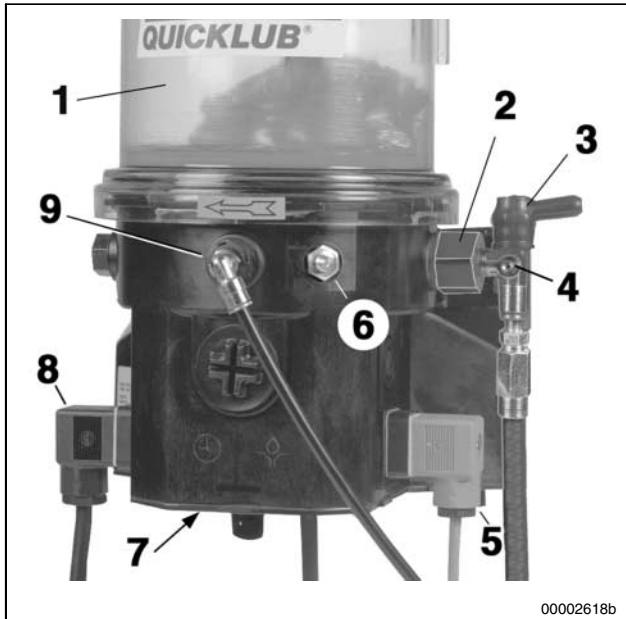


Fig. 4 Pump components

- |   |                            |
|---|----------------------------|
| 1 - Reservoir   | 5 - Plug 2A1               |
| 2 - Pump element  | 6 - Filling nipple, pump   |
| 3 - Safety valve  | 7 - Printed circuit board  |
| 4 - Filling nipple, system<br>Emergency lubrication<br>possible | 8 - Plug 1A1               |
|   | 9 - Return line connection |

**The QUICKLUB 203 central lubrication pump**

- is a compact multiline pump consisting of the following components:
  - Housing with integrated motor
  - Reservoir with stirring paddle
  - Printed circuit board
  - Pump element
  - Pressure relief valve
  - Filling nipple
  - Electrical connection parts
- can drive up to 3 pump elements
- operates according to lubrication cycles (pause and operating times)
- can be equipped with a low-level control
- can supply up to 300 lubrication points depending on the line lengths
- is designed for the automatic lubrication of the connected lubrication points
- is designed for the delivery of greases up to NLGI 2 at temperatures from - 25° C to 70° C or of mineral oils of at least 40 mm<sup>2</sup>/s (cST)
- can be used at low temperatures down to - 40° C.

During the operating time the pump dispenses lubricant to the connected lubrication points via one or several metering devices.

**Low-level control (optional)**

- The pump model 203 can be equipped with a low-level control.
- The following versions are available:
  - Low-level control in conjunction with printed circuit boards V10-V13 <sup>1)</sup>
  - Low-level control in conjunction with printed circuit board M00-M23 <sup>1)</sup>
  - Low-level control for pumps **without printed circuit board**.
- When the reservoir is empty, the signal lamp flashes, thus indicating the low level. Refer to the chapter Low-level control, page 19.

<sup>1)</sup> The designation indicates the version of the printed circuit board. It is part of the pump type designation code mentioned on the nameplate of each pump. Example: P203 - 2XN - 1K6 - 24 - 1A1.10 - V10



Fig. 5 QUICKLUB central lubrication pump, 2 l reservoir

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**Mode of Operation**

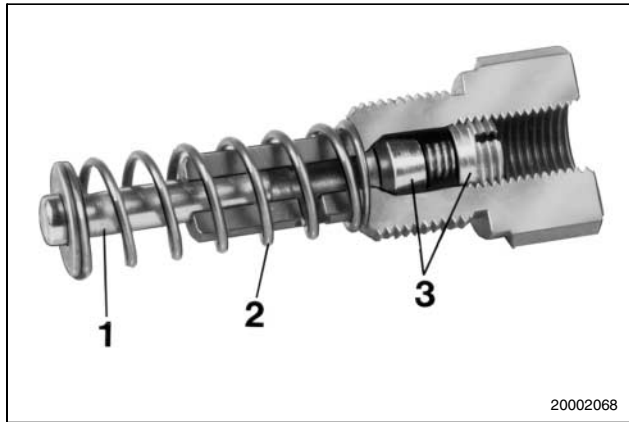


Fig. 6 Pump element

- 1 - Piston
- 2 - Return spring
- 3 - Check valve

**Pump elements with fixed lubricant output**

- The electric motor drives the eccentric 1 (Fig. 5, 6).
- During the operating time:
  - piston 2 sucks in lubricant from the reservoir. Refer to Fig. 5.
  - piston 2 dispenses the lubricant to the connected lubrication points via the metering device. Refer to Fig. 6.
- The following designs are available:
  - Piston diameter, K5 ..... 5 mm
  - Lubricant output ..... approx. 2 cm<sup>3</sup>/min
  - Piston diameter K6 (standard) ..... 6 mm
  - Lubricant output ..... approx. 2.8 cm<sup>3</sup>/min
  - Piston diameter, C7, K7 ..... 7 mm
  - Lubricant output ..... approx. 4 cm<sup>3</sup>/min



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**NOTE**

*Pump elements with piston diameter C 7 must be used for supplying of chisel paste. The design and the mode of operation are the same as those of the pump elements with piston diameter K 7.*

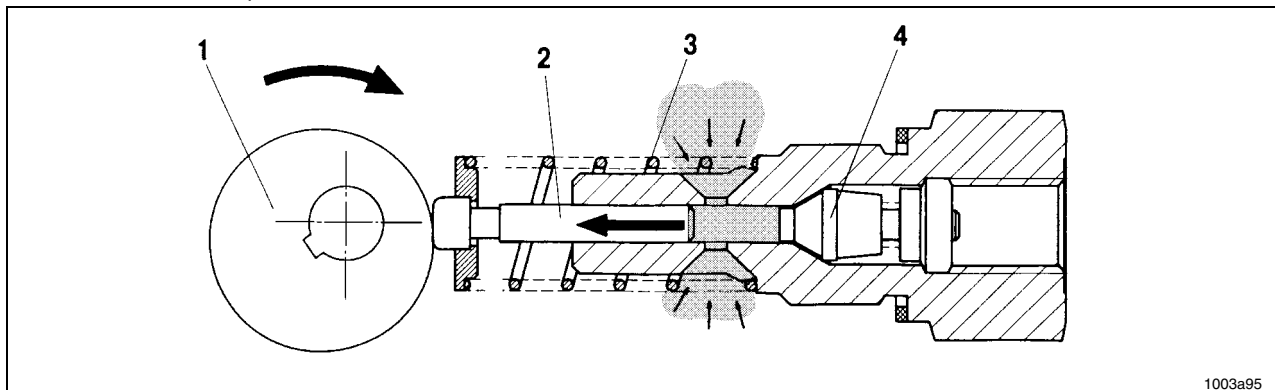


Fig. 7 The pump element sucks in lubricant

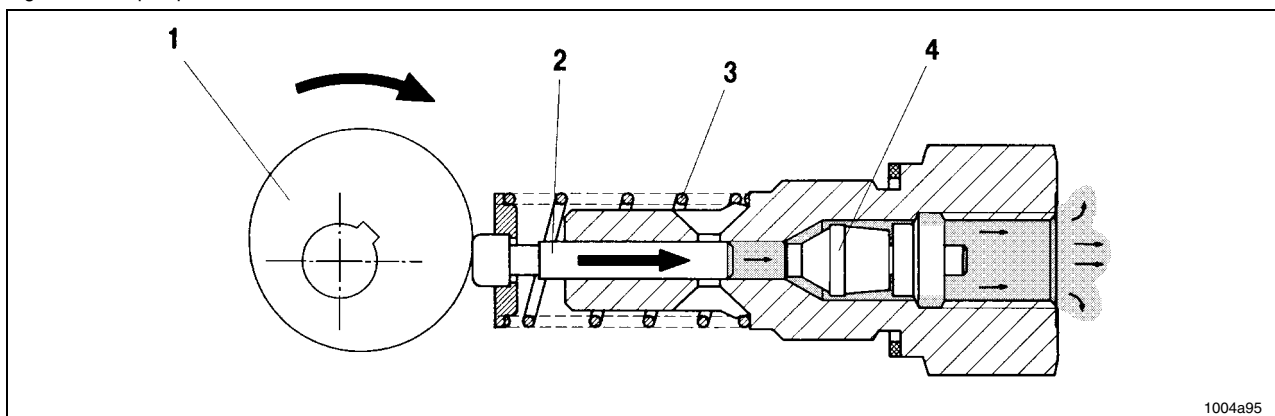


Fig. 8 The pump element dispenses lubricant

- 1 - Eccentric
- 2 - Piston
- 3 - Spring
- 4 - Check valve

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### Mode of Operation, continuation

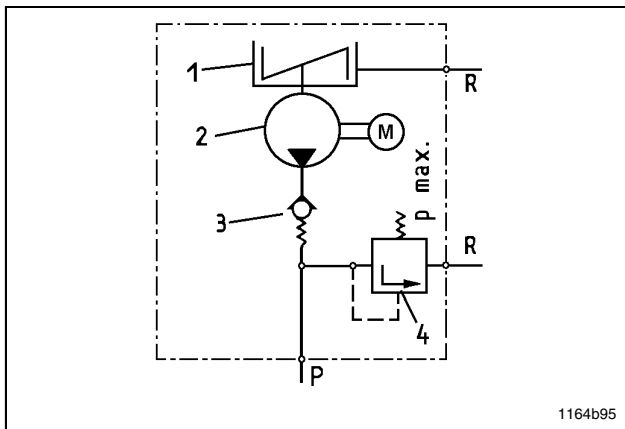


Fig. 9 Hydraulic diagram of the pump

#### Check valve

- The check valve:
    - closes the pressure line during suction stroke
    - prevents the lubricant from flowing back to the housing or reservoir
- 1 - Reservoir with stirring paddle  
 2 - Pump  
 3 - Check valve, spring-loaded  
 4 - Pressure relief valve  
 R - Return line  
 p - Pressure line

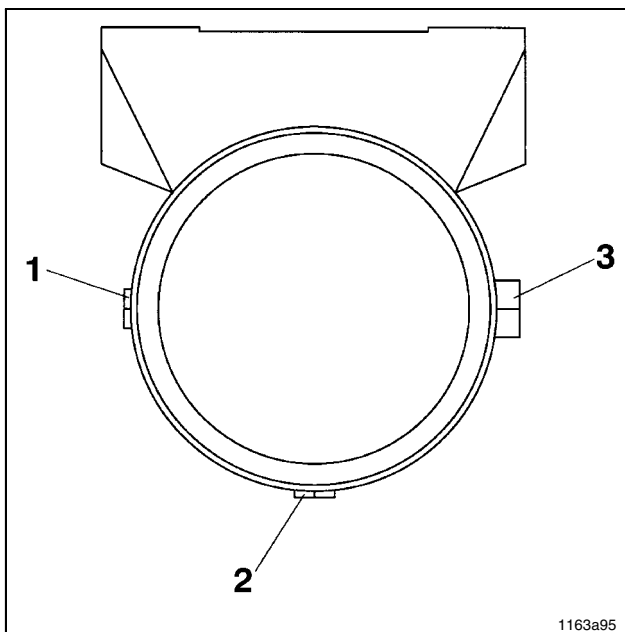


Fig. 10 Arrangement of the pump elements

#### Arrangement of the pump elements

- If several pump elements are to be installed, the installation arrangement shown in Fig. 8 must be adhered to.
- If there is only one pump element, it can be installed in any position. Standard position is no. 3.
- If there are two elements, install one in position 3 and the other in position 1.

#### Pump element with adjustable lubricant output



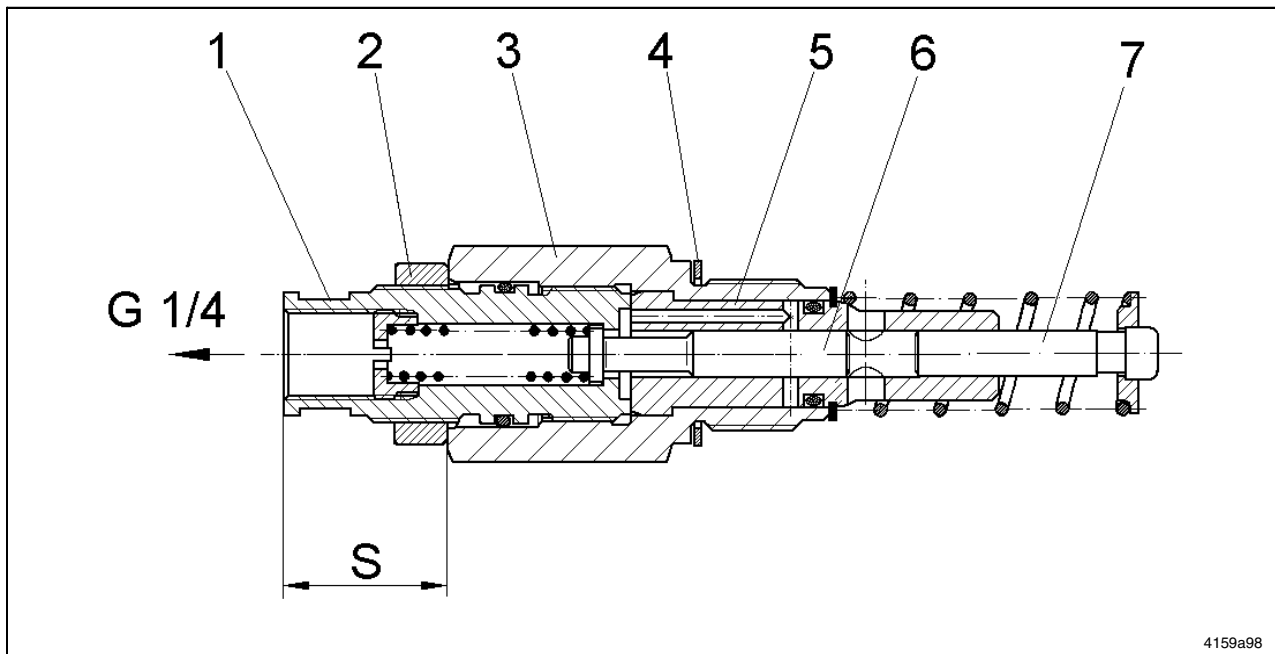
Fig. 11 Adjustable pumpelement

- The mode of operation (suction and supply phase) is the same as that of the pump elements with an invariable lubricant output.
- The lubricant outputs are adjustable from 0.04 to 0.18m<sup>3</sup>/stroke, or 0.7 to 3cm<sup>3</sup>/min.
- The pump elements are factory-adjusted to the maximum lubricant output; the adjusting dimensions "S" should be 29 ± 0.1 mm.

Subject to change without notice



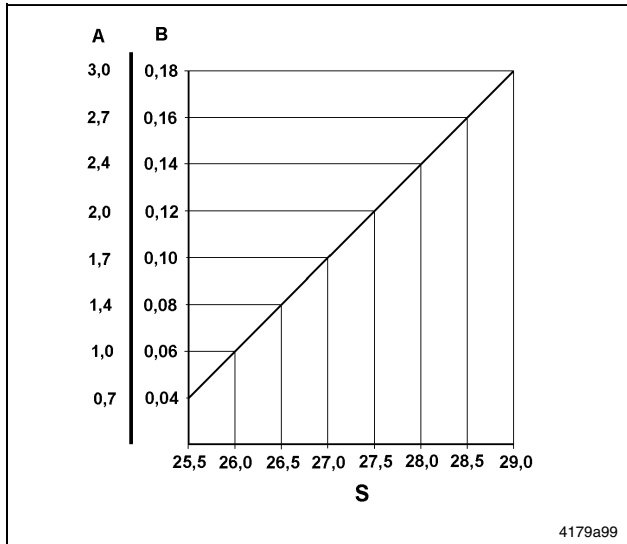
Mode of Operation, continuation



4159a98

Fig. 12 Sectional view: adjustable element

- |  |                       |                     |
|--|-----------------------|---------------------|
| 1 - adjusting spindle SW 16<br>(with over flats) | 3 - pump element body | 6 - control piston  |
| 2 - counternut SW 24                             | 4 - gasket            | 7 - delivery piston |
|  | 5 - pump cylinder     | S - dimension       |



4179a99

Fig. 13 Supply diagram

- A - Lubricant output cm<sup>3</sup>/min  
B - Lubricant output cm<sup>3</sup>/stroke  
S - Dimension

Setting of adjustable pump elements

- Unscrew the coupling nut for fixing the safety valve.
- Loosen counter nut (2, Fig. 10) while holding in position pump element body (3) by means of a second wrench.
- Change the position of the adjusting spindle (1) by means of a wrench.
- The dimension "S" (see Fig. 10) for the desired lubricant output can be ascertained by using the delivery diagram shown in Fig. 11.

Retrofit adjustment of max. lubricant output



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NOTE

*In order to ensure that the lubricant output setting will be as exact as possible, first the actual dimensions "S" of the max. lubricant output must be ascertained as follows. The measured difference from the nominal value 29 must be considered for all other settings values (e.g. ± 0.1).*

- Unscrew the adjusting spindle (1, Fig 10) from the pump element body (3) until "S" is approx. 30 mm.
- Screw counter nut (2) onto stop collar of the adjusting spindle (1)
- Screw adjusting spindle (1) with counter nut (2) into pump element body (3) until stop.

<sup>1)</sup> All indications of positions refer to Fig. 10.



## Mode of Operation, continuation

### Adjusting of small lubricant outputs

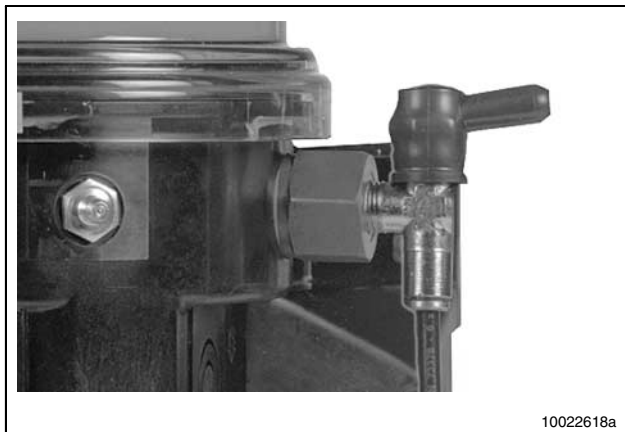
- Before the pump element can be adjusted to a small lubricant output, the dimension "S" for max lubricant output must be ascertained, and the difference from the nominal value 29 must be transferred to any desired settings between 25.5 ... 28,5.
- Dimension "S" must be adjusted to the desired value in accordance with the delivery diagramm (Fig. 11).



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#### NOTE

*At maximum steering "S" is 29 ±0.1 mm.*



10022618a

Fig. 14 Pressure relief valve

### Pressure Relief Valve



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#### IMPORTANT

*Each pump element must be secured with a pressure limiting valve.*

- The pressure relief valve
  - limits the pressure build-up in the system
  - opens at an overpressure of 250 or 350 bar depending on the safety valve design.
- If lubricant is leaking at the pressure relief valve, this indicates that the system is malfunctioning.



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#### NOTE

*Between a malfunction (blockage) and the following fault indication (lubricant leakage; monitoring intermittent LED display on the control p.c.b. M00-M15) there may be a longer time delay*

*The duration of the delay depends on the type and length of the lines, the type of lubricant, the ambient temperature and other influences.*

- Despite existing fault monitoring devices a regular visual and function control must be carried out on the lubrication system.



00002626a

Fig. 15 Pressure relief valve with grease return

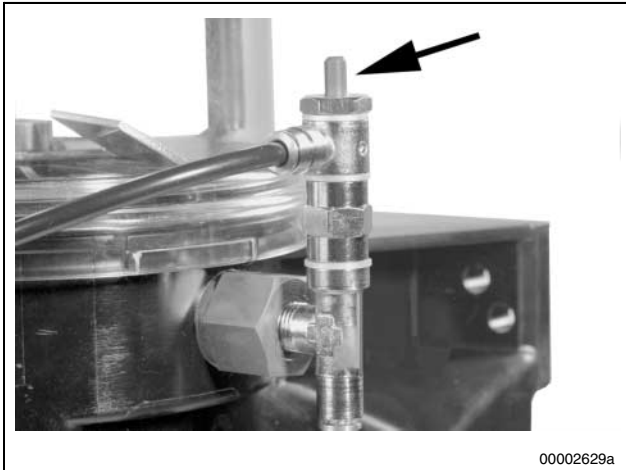
### Pressure relief valve with grease return (optional)

- If the system is blocked, grease will leak from the pressure relief valve. This grease quantity is returned to the reservoir.

Subject to change without notice

## Mode of Operation, continuation

### Pressure relief valve with grease return

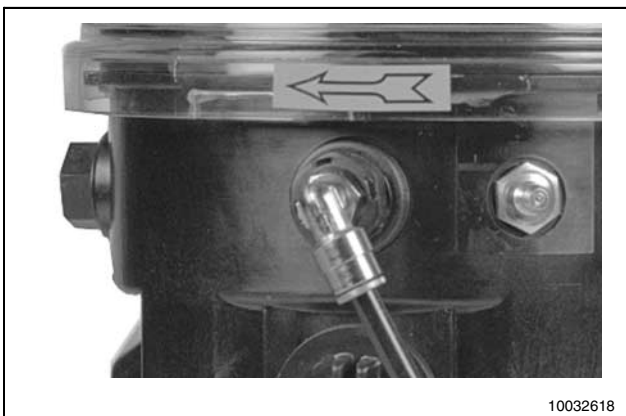


00002629a

Fig. 16 Fault indication in the case of a blockage

- In the case of a blockage in the system, the grease pushes out the red pin at the pressure relief valve, thus indicating that there is a fault.

### Return Line Connection

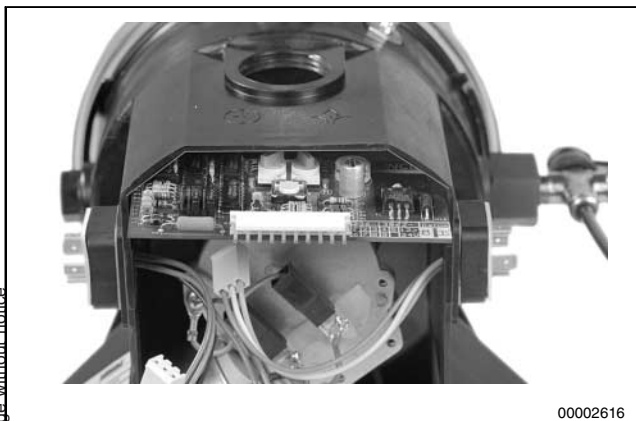


10032618

Fig. 17 Return line connection

- The lubricant quantities which cannot be dispensed by the metering device must be returned to the pump via the return line connection (Fig. 15).

### Control Unit



00002616

Fig. 18 Printed circuit board integrated in the housing



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#### NOTE

*The present Technical Description describes the "Pump model 203 without control unit". Information concerning the design and operation of the individual control units can be found in the respective Technical Descriptions.*

- If the pump is to be equipped with a control unit, it is possible to use an integrated printed circuit board or an external control unit.

## Low-Level Control (optional)

### Low-level control for grease

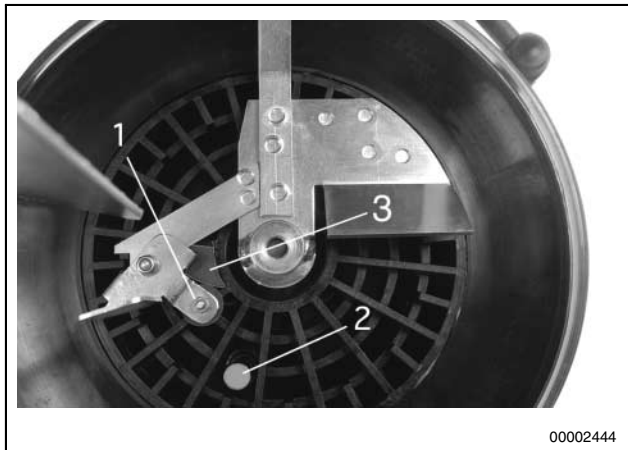


Fig. 19 Switching parts of the low-level control

- |                                       |   |
|---------------------------------------|---|
| 1 - Guiding plate with round solenoid | 2 - Electromagnetic switch (at stirring paddle) |
|                                       | 3 - Control cam                                 |



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#### NOTE

The above mentioned switching parts must not be used with fluid grease. In this case, use a float magnetic switch, see below low-level control for oil.



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#### NOTE

The flashing signal starts only after the solenoid has activated the electromagnetic switch 6 times contact-free.

#### When the reservoir is filled

- The stirring paddle rotates clockwise during the operating time.
- Due to the rotating motion of the stirring paddle in the lubricant the pivoting guiding plate with the round solenoid, item 1<sup>1)</sup>, is pressed backwards. The solenoid moves toward the center of rotation of the stirring paddle. The electromagnetic switch item 2<sup>1)</sup> cannot be activated.
- Control cam item 3<sup>1)</sup> guides the round solenoid with the pivoting guiding plate automatically outwards, in the direction of the reservoir wall. After the lubricant has left the control cam, it flows against the guiding plate, thus displacing the solenoid again onto the center of rotation of the stirring paddle.

<sup>1)</sup> All indications of positions refer to Fig. 17

#### When the reservoir is empty

- During the rotating motion of the stirring paddle there is no backpressure from the lubricant. The guiding plate with the round solenoid no longer moves towards the center of rotation of the stirring paddle. After control cam 3 has been overtravelled, the solenoid remains in the outer position and overruns electromagnetic switch 2. The solenoid activates the electromagnetic switch contact-free, thus triggering a low-level signal.
- The flashing frequency in the case of printed circuit boards 236-13856-1 (F) and 236-13862-1 (V00-V03) and in the case of pumps without control units depends on the motor speed.
- The flashing frequency in the case of printed circuit board 236-13870-1 (only M 00 - M 15) is:  
0.5 second "ON" - 0.5 second "OFF"

#### M16 - M 23

The external relay drops out and the LED is extinguished once the operating time has expired. The pump stops operating and no longer restarts automatically.

#### Magnetic switch

The electromagnetic switch is activated contact-free and with-out wear by the magnetic field of the magnetic fitted to the stirring paddle.



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#### NOTE

The life of the magnetic circuit breaker strongly depends on the conditions under which it is loaded. Since the data relative to the maximum switching capacity refer to strictly resistive loads, which cannot be always guaranteed in practice, it is necessary to take the corresponding contact protection measures in the case of deviating loads.

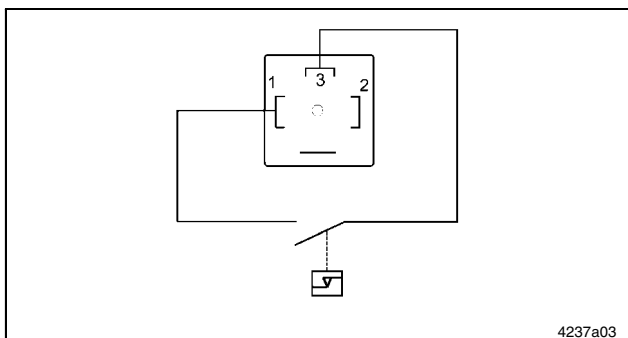


Fig. 20 Connection diagram

#### Technical data:

Maximum switching capacity: 60 VA  
 Maximum switching voltage: 230 V  
 Current switched: 3 A

## Low-Level Control (optional), continuation

### Low-level control for Oil

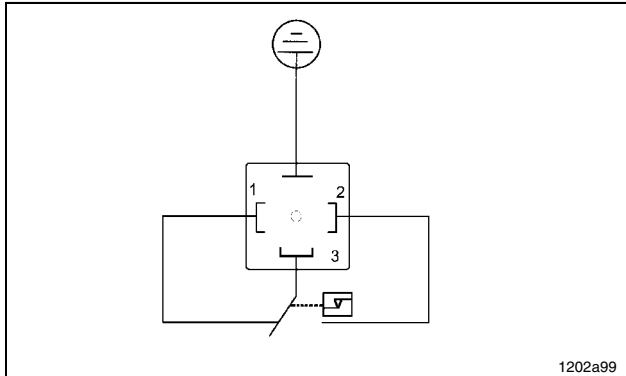


Fig. 21 Connection diagram

#### Float magnetic switch

The electromagnetic switch is activated contact-free and with-out wear by the magnetic field of the solenoid fitted to the float.



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#### NOTE

*The life of the magnetic circuit breaker strongly depends on the conditions under which it is loaded. Since the data relative to the maximum switching capacity refer to strictly resistive loads, which cannot be always guaranteed in practice, it is necessary to take the corresponding contact protection measures in the case of deviating loads.*

#### Technical data:

Maximum switching capacity: 60 VA  
 Maximum switching voltage: 230 V  
 Current switched: 3 A

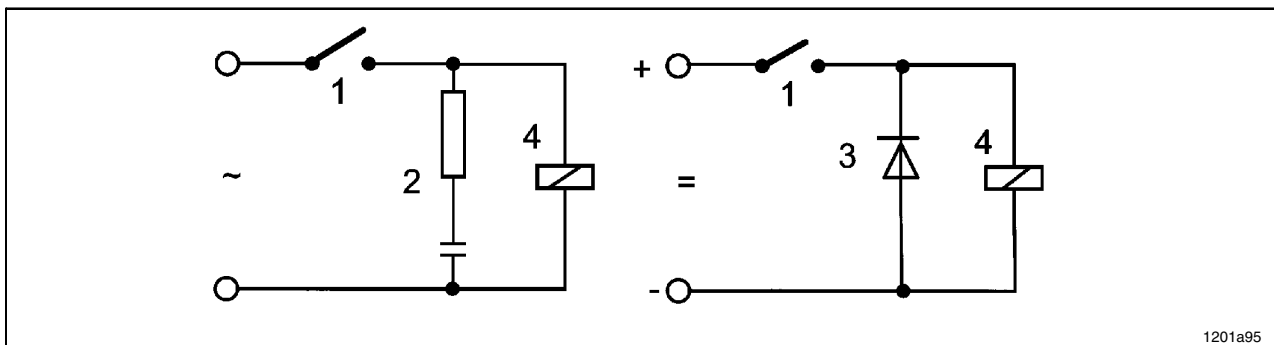


Fig. 22 Contact protection measures

- 1 - Electromagnetic switch
- 2 - RC element
- 3 - Diode
- 4 - Load

## Maintenance, Repair and Tests

### Maintenance

- The maintenance is essentially limited to refilling the reservoir with clean lubricant in good time. However, check regularly whether the lubricant is really dispensed to all the lubrication points.
- Also check the main lines and lubricant feed lines for damage and replace them, if necessary.



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#### NOTE

*Whenever work is done on the centralized lubrication system, particular attention should be paid to absolute cleanliness. Dirt in the system will cause problems.*

- For cleaning the system use benzine or petroleum. Do not use tri-, perchloroethylene or similar solvents. Also do not use polar organic solvents such as alcohol, methylacohol, acetone or similar

### Pump Filling



1011a93

Fig. 23 Fill pump reservoir

#### 2 l, 4 l, 8 l - reservoirs

Fill the reservoir up to the "Max." mark via the filling nipple, if any, or via the upper filling opening. It is possible to use greases up to penetration class NLGI 2 or mineral oils of at least 40 mm<sup>2</sup>/s (cST).



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#### IMPORTANT

*The grease or oil must be free from impurities and must not be liable to change its consistency in the course of time.*



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#### CAUTION!

*If the pump is filled via the upper filling opening, switch off the power supply before starting filling.*



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#### CAUTION!

*Risk of bursting if the reservoir is overfilled.*

*When filling the reservoir by means of pumps with a large delivery volume do not exceed the max. filling mark.*



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#### NOTE

*If the reservoir has been completely emptied, the pump may require until 10 minutes before it operates with its full output.*

### Repair

#### Pump

- Use only original Lincoln spare parts for repair on the pumps.
- The pump should be returned to the factory for warranty work or major repairs.
- Defective printed circuit boards should be suitably packed and returned to the factory.

Subject to change without notice

## Maintenance, Repair and Tests, continuation

### Replace pump element

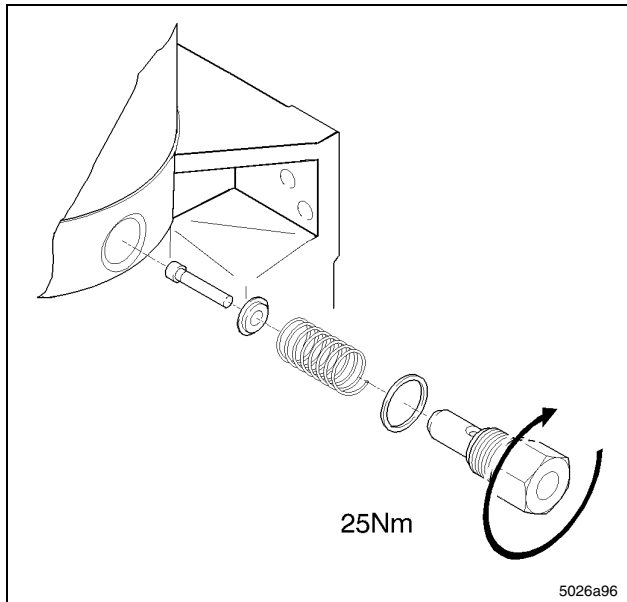


Fig. 24 Replacing the pump element

- Remove the pressure relief valve from the pump element
- Unscrew the pump element. Take care that the piston, the pull-back spring and the washer are not left lying in the grease, otherwise the reservoir must be disassembled in order to remove these pieces



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#### IMPORTANT

*Do not leave the piston, spring and washer in the housing because they may block the motor.*

- Install a new pump element and a new sealing ring.



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#### NOTE

*Pump element with adjustable lubricant output is set to the same output as the old pump element.*

## Tests

### Operational Test / Triggering an Additional Lubrication Cycle

- To check the pump operation it is possible to perform an additional test. Refer to the Technical Description of the respective printed circuit board.

### To Check the Safety Valve

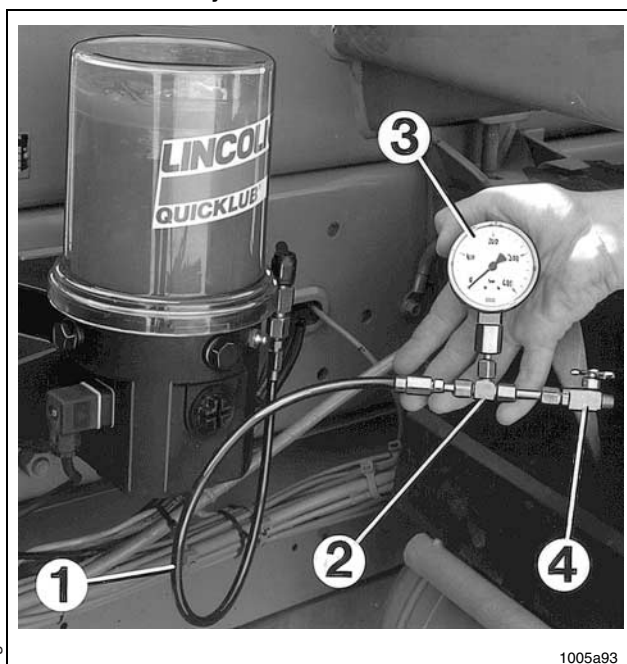


Fig. 25 To check the safety valve

#### 1st option

- Connect the pressure gauge (0-600 bar; 0-8708 psi) to the safety valve (Fig. 23).
- Trigger an additional lubrication cycle.

#### 2nd option

- Connect the manual pump of the pressure and checking set 604-36879-1 to the safety valve and check the opening pressure by means of the manual pump.
- The safety valve should open at a pressure of 250 or 350 bar depending on its design.



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#### IMPORTANT

*Do not connect the pressure gauge directly to the pump element. High pressure may exceed the above mentioned range, causing the motor to stall. The motor is designed in such a way that it can stall for about 30 minutes without being damaged.*

- 1 - Hose line, min.length 1m
- 2 - T-piece
- 3 - Pressure gauge
- 4 - Relief cock



## Troubleshooting



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**NOTE**

The pump operation can be checked from the outside by observing whether the stirring paddle is rotating (e.g. by triggering an additional lubrication).

For troubleshooting in the case of pumps with integrated control units, please refer to the respective **Technical Description** of the printed circuit board.

**Fault: The pump motor does not run**

**Cause :**

- Power supply interrupted
- Electric motor defective

**Remedy:**

- Check the power supply and fuses. If necessary rectify the fault and/or replace the fuses.
- Check the line leading from the fuses to the pump plug.
- Check the power supply to the motor. If necessary, replace the motor.

**Fault: The pump does not deliver the lubricant**

**Cause :**

- Reservoir empty
- Air bubbles in the lubricant

**Remedy:**



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**NOTE**

If a lubricant low-level is available, the low level is indicated by the flashing light of the signal lamp in the case of pumps without printed circuit board. The flashing frequency depends on the speed of the motor.

- Fill up the reservoir with clean grease or oil. Allow pump to run (trigger an additional lube cycle) until the lubricant issues from all the lubrication points.



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**NOTE**

Depending on the ambient temperature and/or sort of lubricant it may take 10 minutes of operation before the pump elements reach their full lubricant output.

- Trigger an additional lubrication cycle. Loosen the outlet fitting or the main line at the safety valve. The lubricant must issue without air bubbles.



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**NOTE**

When push-in type fittings are used, the high-pressure plastic hose which is under pressure cannot be easily disconnected from the safety valve. For this purpose, loosen the safety valve. For this purpose, filling nipple on the safety valve in order to relieve the high-pressure hose.

- Unsuitable lubricant has been used
  - Suction hole of the pump element clogged
  - Pump piston worn
  - Check valve in the pump element defective or clogged.
- Renew the lubricant. See the Lubricant List.
  - Remove the pump element. Check the suction hole for foreign particles. If there are any, remove them.
  - Replace the pump element.
  - Replace the pump element.

## Technical Data

### Pump

Admissible operating temperature .....-25° C to 70° C <sup>1)</sup>  
 Number of outlets.....1,2 or 3  
 Reservoir capacity ..... 2 l, 4 l, 8 l  
 Refilling .....via hydraulic lubrication fitting or from top  
 Lubricant .....greases up to NLGI grade 2  
 & mineral oils of at least 40mm<sup>2</sup>/s (cST) at 40° C  
 Class of protection .....IP6K 9K acc. to DIN 40050 T9



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#### <sup>1)</sup> NOTE

*The pump is designed for the above mentioned temperature range. The lubricants used must still be pumpable at the temperatures mentioned above. In case of doubt, consult the lubricant manufacturer.*

### Motor:

DC gear motor (interference-suppressed)  
 - Operating voltage .....12VDC or 24VDC  
 - Max. current input  
 12V ..... 6.5 A  
 24V ..... 3 A  
 Speed ..... approx.17 rpm

### Pump element with fixed lubricant output

Piston diameter, K5.....5 mm  
 - Lubricant output..... approx. 2 cm<sup>3</sup>/min  
 Piston diameter, (standard) K6 ..... 6 mm  
 - Lubricant output..... approx. 2.8cm<sup>3</sup>/min  
 Piston diameter, K7, C7 ..... 7 mm  
 - Lubricant output..... approx. 4 cm<sup>3</sup>/min  
 Max. operating pressure. ....350 bar  
 Connection thread..... G 1/4  
 - suitable for tube DIA..... 6 mm  
<sup>2)</sup> suitable for chisel paste; contact the manufacturer of the lubrication system

### Pump element with adjustable lubricant output

KR ..... 0.04 to 0.18 cm<sup>3</sup>/stroke  
 ..... 0.7 to 3 cm<sup>3</sup>/min  
 Connection thread..... G 1/4 in.  
 - suitable for tube DIA..... 6 mm  
 - suitable for tube DIA..... 8 mm



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#### IMPORTANT

*The lubricant output listed refers to grease of NLGI grade 2 measured at 20°C, backpressure 100 bar, nominal voltage 12/24 V. Any differing pressures or temperatures result in different lubricant outputs. Any system design must be based on the above values.compte.*

### Safety valve

SVETVT-350-G 1/4A-D6.....624-28894-1  
 SVETVT-350-G 1/4A-D8.....624-28774-1

### Torsion torques

Install pump .....18 Nm  
 Electric motor on housing .....12 Nm  
 Pump element in housing .....25 Nm  
 Closure plug in housing .....12 Nm  
 Return line connector in housing .....10 - 12 Nm

### Weights

The weights below include the following “**individual weights**”:

- Pump kit with **one** pump element, safety valve, grease filling (0.75 kg, 1.5 kg)
- Packing (cardboard box)
- Attaching parts
- Operating Instructions

#### 2 l reservoir, standard design (0.75 kg)

- Pump 203 without connection cable .....5.4 kg  
 - Pump 203, version E 1.....6.5 kg  
 - Pump 203, version E 2.....7.1 kg

#### 4 l reservoir, standard design (1.5 kg)

- Pump 203 without connection cable .....8.3 kg  
 - Pump 203, version E 1.....9.3 kg  
 - Pump 203, version E 2.....9.9 kg

#### 8 l reservoir, standard design (1.5 kg)

- Pump 203 without connection cable .....8.6 kg  
 - Pump 203, version 1A1.....9.6 kg  
 - Pump 203, version 2A1.....10.2 kg

In the case of pump versions deviating from those mentioned, add the weights of the following components to the mentioned weights:

- Per pump element..... +0.2 kg
- Per safety valve ..... +0.1 kg
- 10 m monitoring cable, 5-wire (microprocessor) E 4..... +1.1 kg
- 10 m monitoring cable, 4-wire (microprocessor) E 4..... +0.4 kg
- Connection cable with piston detector .....0.1 kg
- Reservoir version “Filling from top” (only 2 l) <sup>3)</sup> ... +0.15 kg
- 2 l flat-type reservoir ..... +0.5 kg



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#### <sup>3)</sup> NOTE

*The 4l and 8l reservoirs have the standard design “filling from top”.*



Technical Data, continuation

Connection Diagram - Pump without Control Unit

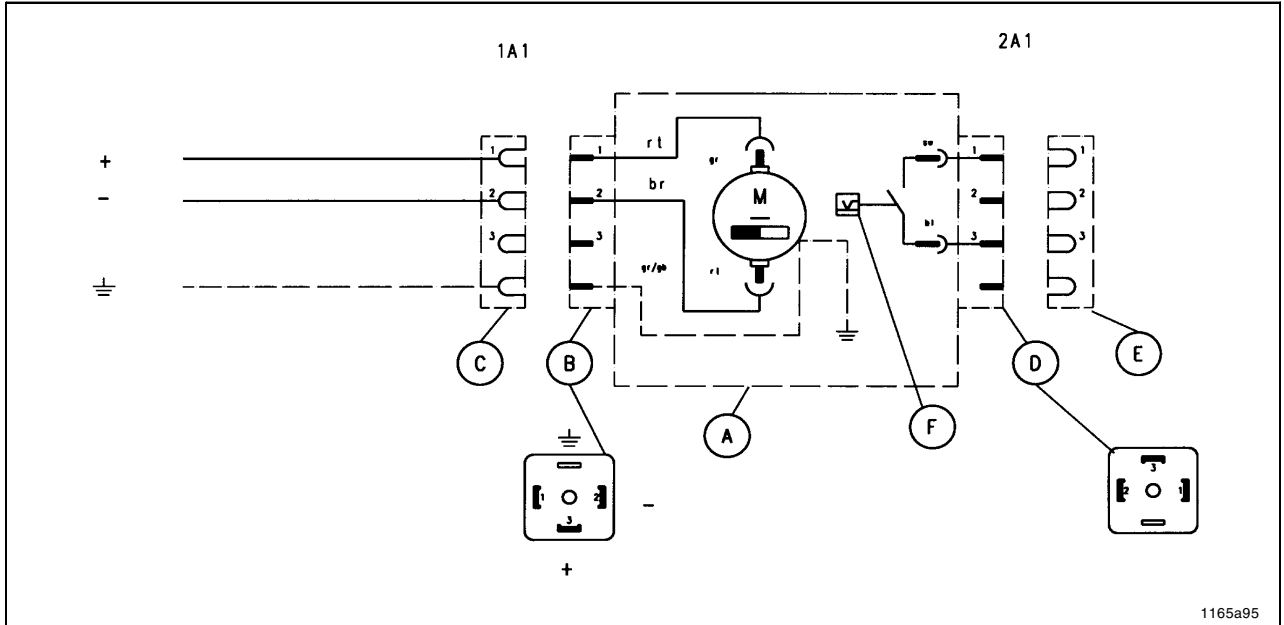


Fig. 26 Schéma Connection diagram QUICKLUB 203 without control unit, Connection via cube-type-in connectors DIN 43650-A

- |   |                                 |
|---|---------------------------------|
| A - Pump housing                                | F - Low-level control           |
| B - Connector 1                                 | Switching capacity max. 60 W/VA |
| C - Line socket 1 with connection cable, 3-wire | Switching voltage max. 230 VAC  |
| D - Connector 2 <sup>1)</sup>                   | Switched current max. 3 A       |
| E - Line socket 2 <sup>1)</sup>                 | M - Electric motor              |

<sup>1)</sup> Only with low-level control available



**NOTE**

All the other connection diagrams can be found in the respective Technical Description "Electronic Control Units for Central Lubrication Pump Model 203".

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Technical Data, continuation

Dimensions - 2 l Reservoir

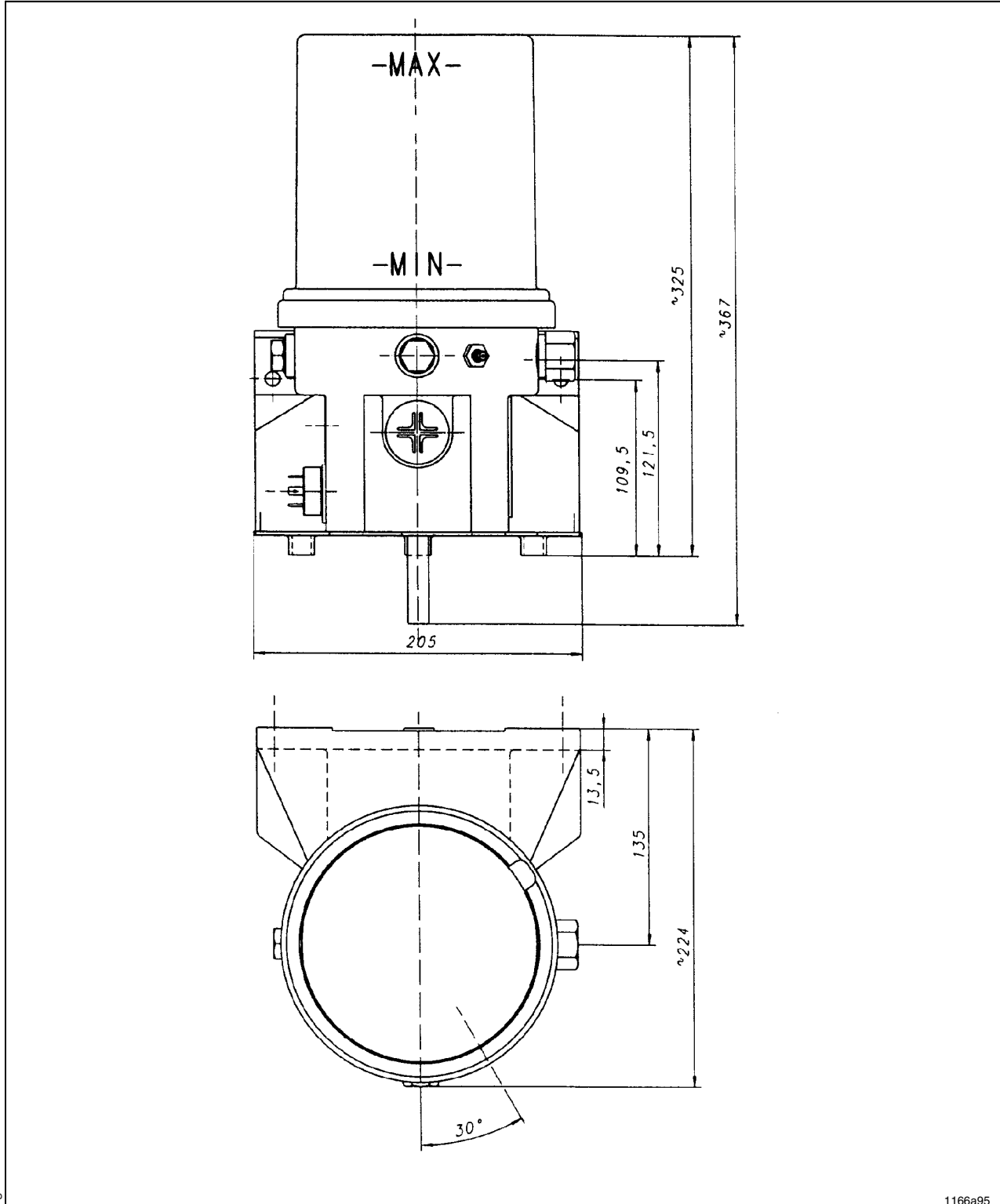
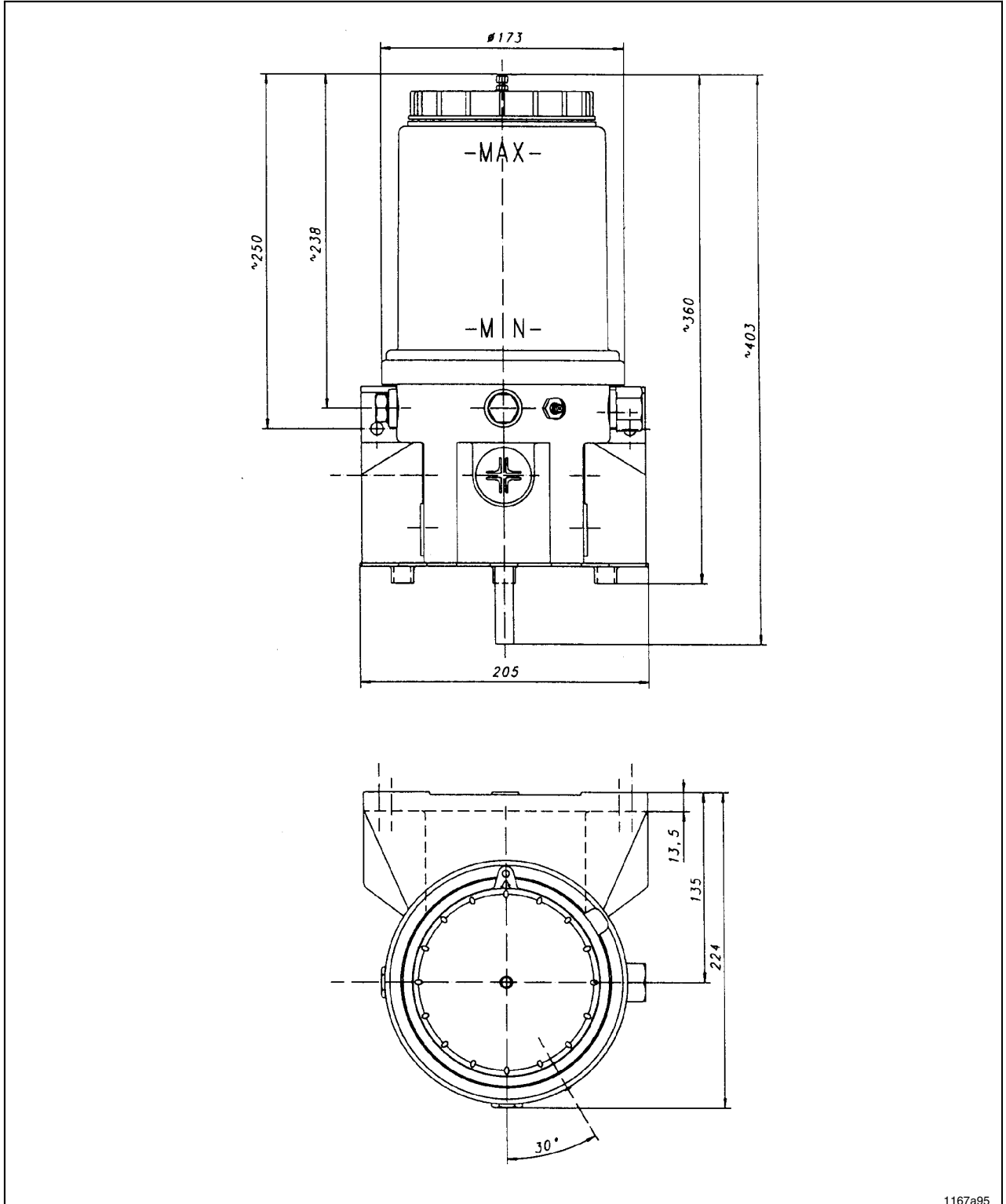


Fig. 27 Dimensions - 2 l Reservoir

Subject to change without notice

Technical Data, continuation

Dimensions - 2 l Reservoir with Filling from Top

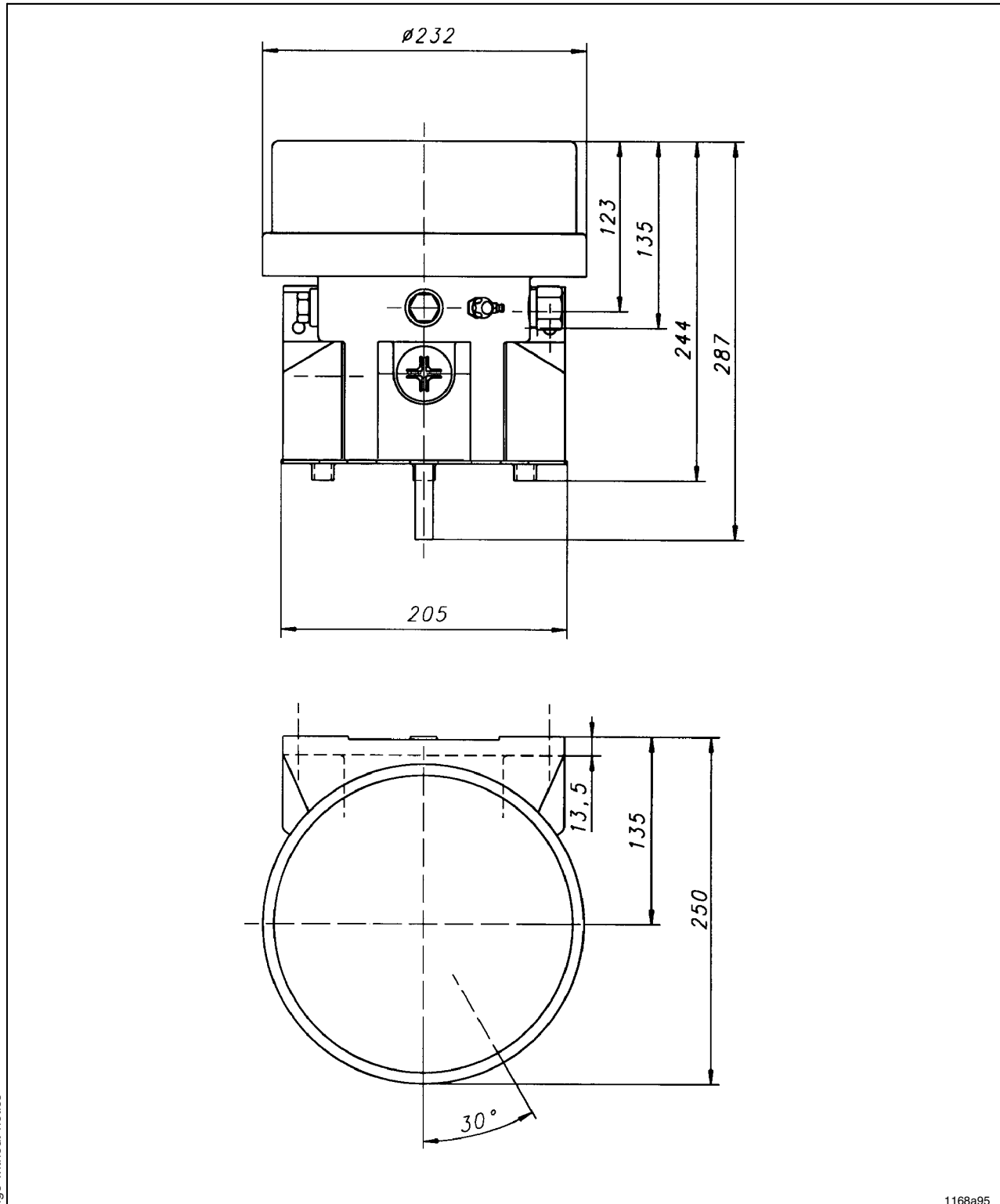


Subject to change without notice

Fig. 28 Dimensions - 2 l Reservoir with Filling from Top

Technical Data, continuation

Dimensions - 2 l Flat-Type Reservoir



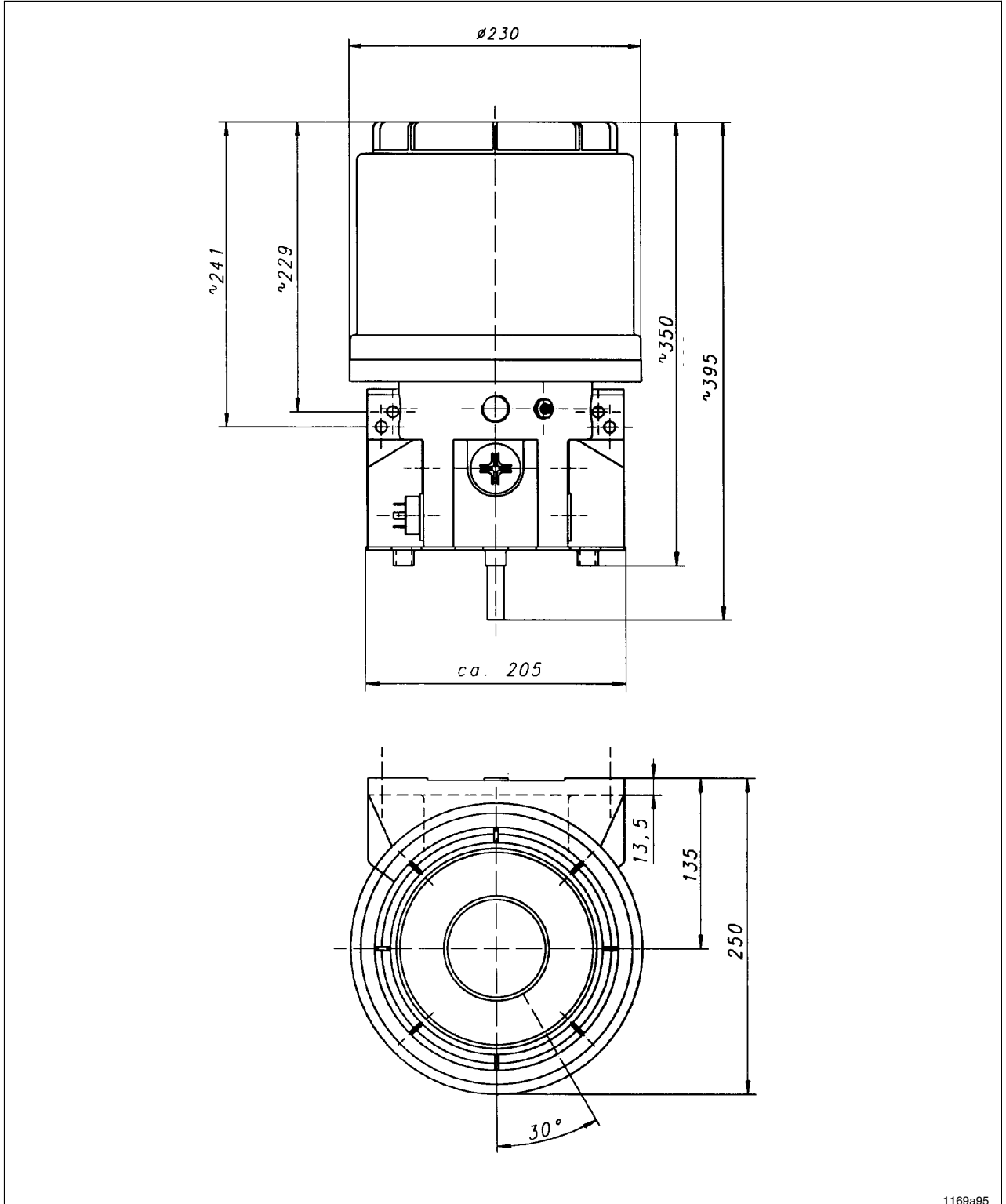
Subject to change without notice

Fig. 29 Dimensions - 2 l Flat-Type Reservoir

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Technical Data, continuation

Dimensions - 4 l Reservoir



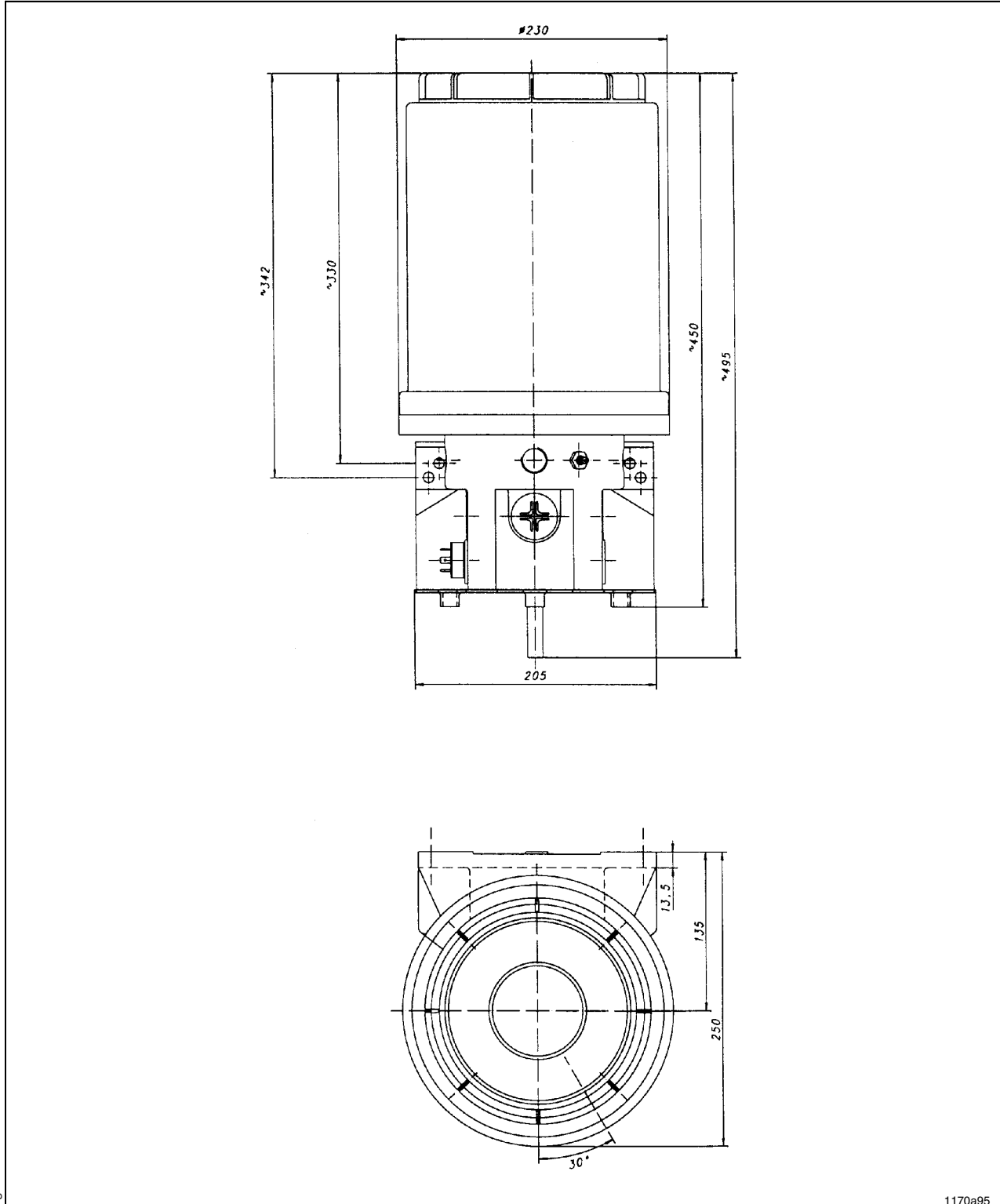
Subject to change without notice

Fig. 30 Dimensions - 4 l Reservoir

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Technical Data, continuation

Dimensions - 8 l Reservoir



Subject to change without notice

Fig. 31 Dimensions - 8 l Reservoir

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Technical Data, continuation

Attaching Boreholes of the 2 l, 4 l, 8 l Pump

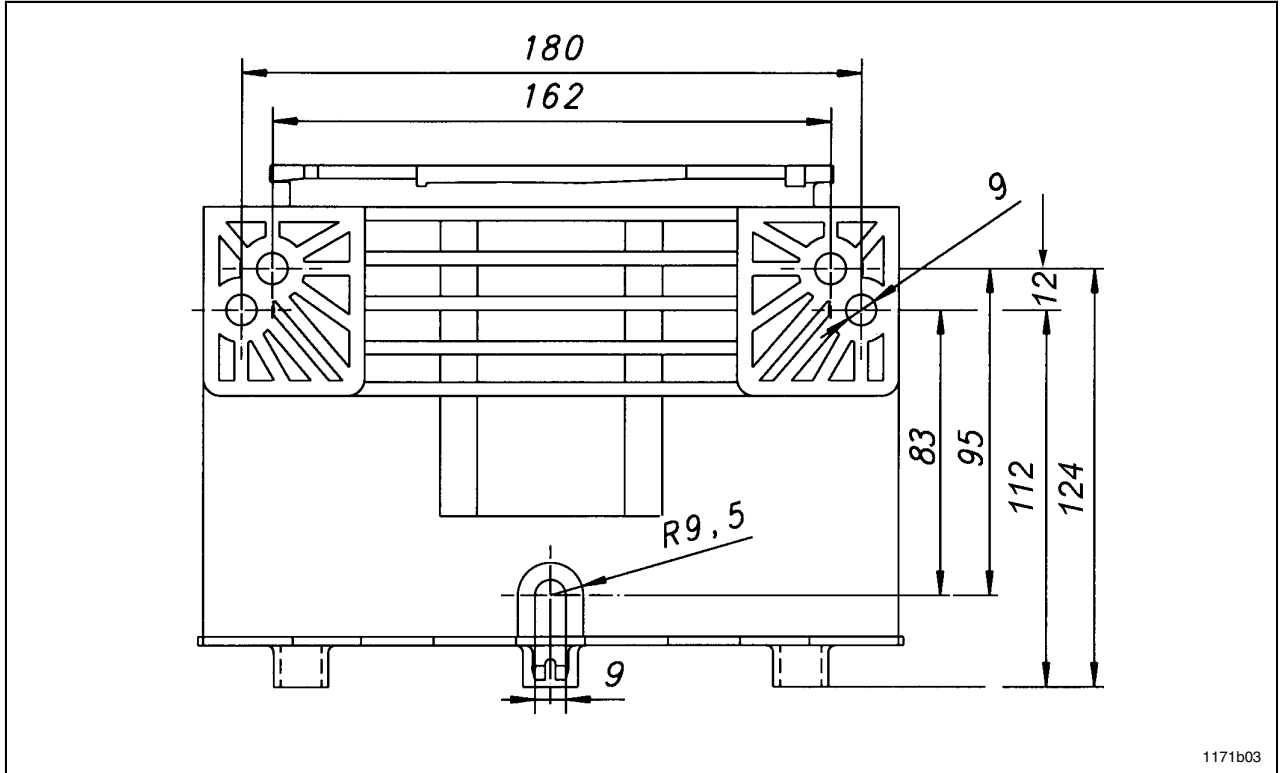


Fig. 32 Attaching Boreholes of the 2 l, 4 l, 8 l Pump



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**NOTE**

*Tighten pump models with 2 L- Flat, 4 L - and 8 L reservoir with three fastening screws ( see pt. 9,5).*

## Lubricants

The pump QUICKLUB 203 can dispense commercial greases up to NLGI grade 2 or mineral oils of at least 40 mm<sup>2</sup>/s (cSt) at 40° C.



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### IMPORTANT

*Absolute cleanliness is essential when handling lubricants. Impurities will remain suspended in the lubricant and cannot settle. This will result in damage to the lubrication system and thus to the bearings.*



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### IMPORTANT

*The manufacturer of the centralized lubrication system will not accept any liability for damages due to the use of greases which are not or only conditionally pumpable in centralized lubrication systems, for damage caused by insufficient lubricant and irregular pump refilling. In case of doubt ask the manufacturer of the central lubrication system.*

### Lubricating greases for QUICKLUB systems

Manufacturer	Designation	Base soap	Min. delivery temperature
AGIP	F1 Grease 24	Ca	
ARAL	Graisse multi-usages ZS 1/2	Ca/Li	-20° C
AUTOL	Top 2000	Ca	-10° C
AUTOL	Top 8000 W	Ca	-20° C
BP	Graisse lubrifiante	Ca	
BP	C1 Graisse lubrifiante	Ca	-20° C
CASTROL	CLS - Grease	Li/Ca	-20° C
ESSO	Cazar K2	Ca	
ESSO	Graisse haute pression	Ca	
FIAT LUBRIFICANTI	Comar 2	Li	-25° C
FINA	CERAN LT	Ca	-20° C
FINA	CERAN WR2	Ca	
FUCHS	FN 745	Ca	-25° C
FUCHS	Renocal FN3	Ca	-20° C
FUCHS	Renolit HLT 2	Li	-25° C
KLÜBER	Centoplex 2EP	Li	
MOBIL	Mobilgrease 28	Li	-30° C
MOLYKOTE	TTF 52	epaissant(s) organiques (epaissant)	-30° C
OPTIMOL	Longtime PD 2	Li	-20° C
OPTIMOL	OLIT CLS	Li/Ca	-15° C
SHELL	Retinax C	Ca	
WESTFALEN	Gresalit ZSA 2	Li	-15° C
ZELLER & GMELIN	ZG 450	Li	
ZELLER & GMELIN	ZG 736	Li	

### Bio-degradable greases

Manufacturer	Designation	Base soap	Min. delivery temperature
ARAL	BAB EP 2	Li/Ca	
AUTOL	Top Bio 2000	Ca	-25° C
AVIA	Biogrease 1	Li	up to 0° C
DEA	Dolon E 2	Li	-15° C
FUCHS	Plantogel S2	Li/Ca	
KLÜBER	Klüberbio M32-82	Ca	-20° C