

Multiline Pump Model 205



Subject to change without notes

5017a97

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Preface to the Owner's Manual

- **The Owner's Manual**

- is intended to familiarize the user with the pump/lubrication system and to enable him/her to use it adequately.
- must always be available on the site where the pump/lubrication system is in operation.
- must be read and used by all persons who are charged with working with the pump/lubrication system, e.g.

- **Operation**, including adjustment, troubleshooting during operation, elimination of production waste, maintenance, disposal of process materials

- **Maintenance** (inspection, repairs) and/or

- **Transport**

- Persons who **do not have a good command of the English language** must be informed by the user of the pump/lubrication system on the **contents of the Owner's Manual, particularly the Safety Instructions, before they carry out the work.**

- **The Operating Instructions**

- contain important information for the safe, correct and economic operation of the pump/lubrication system. Their observance will help avoid hazards,
- reduce repair costs and downtime,
- increase the reliability and prolong the service life of the pump/lubrication system.
- must be supplemented by the respective national regulations concerning the prevention of accidents and protection of the environment.

Safety Instructions

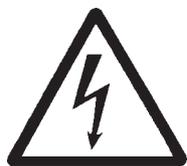
- The Operating Instructions include general instructions which must be followed when a pump/lubricating unit is installed, operated or serviced. Therefore, it is absolutely necessary for the fitter and specialist/user to read the Operating Instructions before a unit is installed and put into operation. The Operating Instructions must always be available on the site where the machine/system is installed.
- All general safety instructions contained in this main chapter on safety must be observed as well as all special safety instructions given in other main chapters.

Hazard Marking in the Operating Instructions



Safety symbol
acc. to DIN 4844-W9

- The notes referring to safety contained in the Operating Instructions whose failure to observe them may result in personal injury are marked by the symbol below.



Safety symbol
acc. to DIN 4844-W8

- This symbol warns of an electrical current.

CAUTION

- If ignoring the safety note might result in **machine damages** and malfunction, the word **CAUTION** is added.
- Warnings directly fixed to the machine must always be observed and must be kept in **completely legible condition**.

Staff Qualification and Training

- The staff responsible for operation, maintenance, inspection and installation must be adequately qualified for these jobs.
- The user must properly regulate the field of responsibility and supervision of the personnel.
- If the personnel is not in command of the necessary expertise, they must receive the appropriate training and instructions. If necessary, this can be done by the manufacturer/supplier on behalf of the machine user.
- Furthermore, the user must ensure that the contents of the Operating Instructions are fully understood by the personnel.

Hazards Resulting from Failure to Observe the Safety Instructions

- Failure to heed the safety warnings may result in damage to equipment and the environment and/or personal injury.
- Failure to observe the safety notes may result in the loss of all claims for damage.
- As an example, in the following we list some dangers which may result from failure to observe the warnings:
 - failure of machine/system to fulfill important functions
 - failure of specified methods for maintenance and repair
 - personal injury due to electrical, mechanical and chemical influences
 - danger to the environment due to leakage of harmful materials

Safety-Conscious Working

- Observe
 - the safety instructions given in the Operating Instructions,
 - the prevailing national regulations for the prevention of accidents
 - any working and shop regulations and accident prevention measures of the user

Safety Instructions for the User/Operator

- If warm or cold machine parts present hazards, the customer must protect them against accidental contact.
- Do not remove protection devices for moving parts while the machine is in operation.
- Leakages of harmful materials must be disposed of so as not to jeopardize neither persons nor the environment. The requirements of the law must be satisfied.
- Danger caused by electrical current must be excluded (for details refer to the applicable specifications of VDE and the local power supply companies).

- The operational safety of the supplied products is only granted if the product is operated according to the instructions given in the chapter "Appropriate use" of the Owner's Manual. The maximum ratings listed in the Technical Data must never be exceeded.
- The commissioning of the product (pump/pump unit) is forbidden within the EU until it has been stated that the machine concerned on which the product will be mounted is in conformity with the EU guidelines.

Safety Instructions for Maintenance, Inspection and Installation Work

- The user must make sure that all maintenance, inspection and installation work is executed by authorized and qualified experts who have thoroughly read the Operating Instructions.
- On no account may work be done on the machine while the machine is in operation. Follow all instructions for shutting down the machine as described in the Operating Instructions.
- Decontaminate pumps and pump units delivering harmful materials.
- Reassemble all safety and protection devices immediately after completion of the cleaning procedure.
- Dispose of material harmful to the environment in accordance with the applicable official regulations.
- Before putting the pump/pump unit into operation, ensure that all points given in the chapter "Commissioning" are fulfilled.

Appropriate Use

- The pump model 205 is exclusively designed for use in centralized lubrication systems for dispensing lubricants.
- The maximum ratings mentioned in the Technical Data, particularly the maximum operating pressure of 350 bar, must not be exceeded.
- The multiline pump model 205 is a central lubrication pump with 1 to 5 pump elements and thus 1 to 5 outlets. The high pump operating pressure of 350 bar allows the pump to be used as a multiline pump for the direct supply of lubrication points and also as a central lubrication pump in large-sized progressive systems.
- The great diversity of pump models allows the 205 multiline pump to be used for a wide range of applications, e.g.
 - machines in the beverage industry
 - machines in the conveying technology (cranes, drives for conveyors, conveyor worms)
 - machines in the construction industry
 - eccentric presses, forging machines, etc.
- Any other use is not in accordance with the instructions and will result in the loss of claims for guarantee and liability.

Unauthorized Modification and Spare Parts Production

- Alteration and modifications of the machine are only allowed if approved by the manufacturer.
- Original spare parts and accessories authorized by the manufacturer ensure safe operation.
- If other parts are used, the manufacturer may be released from its liability for the resulting consequences.

Inadmissible Operating Modes

Description

Identification Chart for Pump Model 205

The complete pump unit is defined by a type code on the nameplate.

Examples of types codes:

Examples:

P205 - M	070 -	4XYN -	5 K6 -	380-420/440-480
P205 - M	070 -	5XB -	1 K7 -	380-420/440-480
P205 - F	280 -	4XYBU -	1 K7	
P205 - M	700 -	8XYBU -	2 KR -	380-420/440-480

Basic type (housing assembly):

P205 : Housing assembly for all pump models

Drive assembly:

M : Three-phase flanged motor
 The motor designation with extension e.g. for voltages, frequencies, explosion-proof design is added to the type code

F : Free shaft end

280 : Gear ratio $i = 1 : 280$

700 : $i = 1 : 700$

070 : $i = 1 : 70$

Reservoir assembly:

4 : 4l plastic reservoir

5 : 5l sheet metal reservoir

8 : 8l plastic reservoir

XY: Reservoir for grease and oil

N : Reservoir without level control

BU: Reservoir with low and high level control (ultrasonic sensor)

Note: The ultrasonic sensor is equipped with 2 switching points. If only one low level control is desired, the corresponding contacts must be connected. A 24 VDC supply voltage is required for the sensor.

Pump element assembly:

1 to 5 : Number of the pump elements

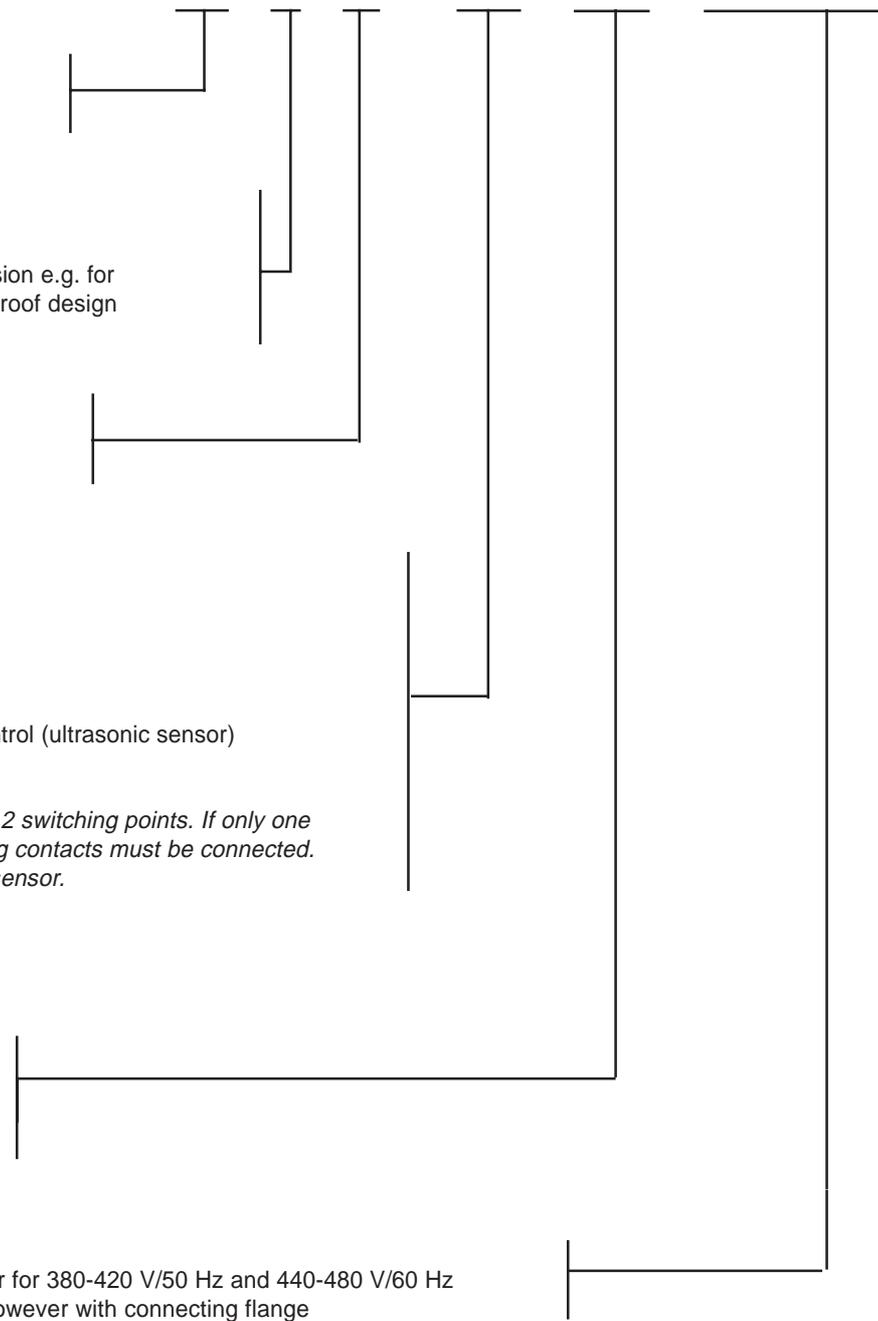
5, 6 or 7 : Piston diameter (mm)

KR : Pump element adjustable, piston dia. 7mm

Extensions for the motor designation:

380-420, 440-480: standard multi-range motor for 380-420 V/50 Hz and 440-480 V/60 Hz

000 : pump without motor, however with connecting flange



General

- This Owner's Manual only refers to the high-pressure multiline pumps of the 205 series.
- It is intended for the personnel charged with the erection, operation and maintenance of the pump.

- If you require more information than given in this Owner's Manual, please contact:

LINCOLN GMBH
Postfach 1263
D-69183 Walldorf
Phone : +49(0)6227 - 330
Fax : +49(0)6227- 33259

Operation

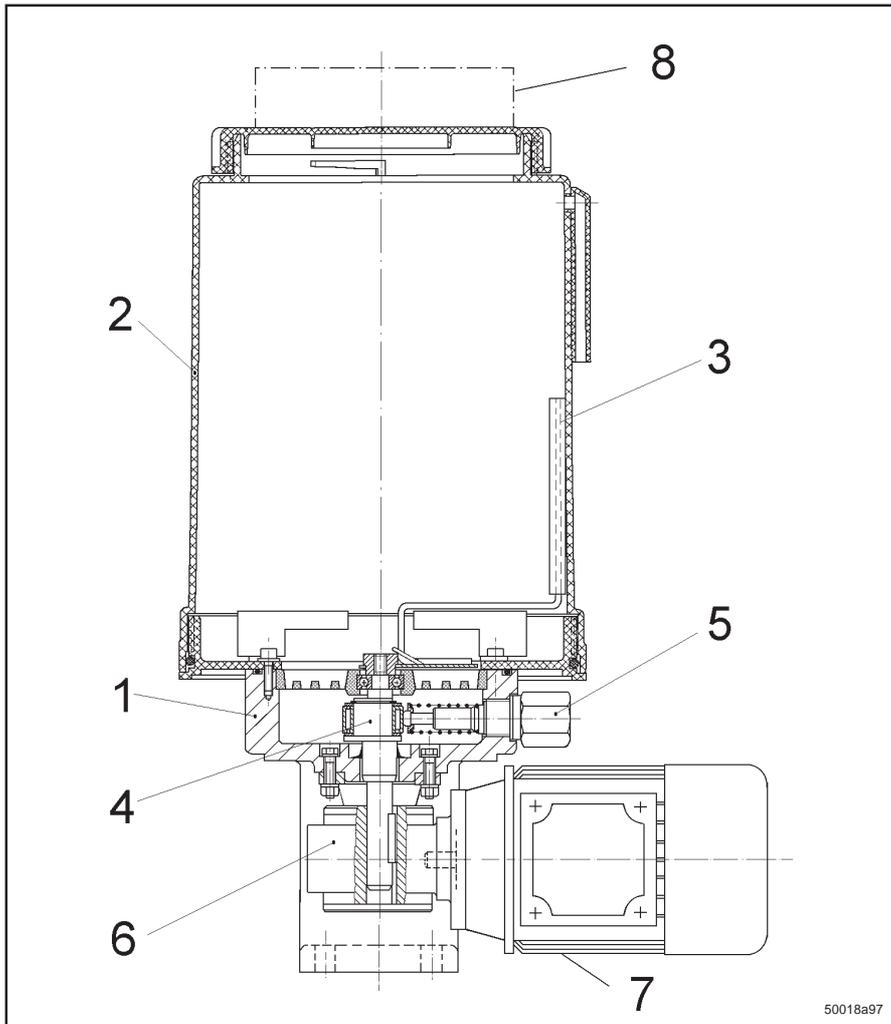


Fig. 1 - Sectional drawing of the pump 205

- | | |
|----------------------------------|-------------------|
| 1 - Housing | 5 - Pump element |
| 2 - Lubricant reservoir | 6 - Worm gear |
| 3 - Stirring paddle with scraper | 7 - Drive motor |
| 4 - Eccentric shaft | 8 - Level control |

- The pump essentially consists of the main components shown in Fig. 1.
- The worm gear (6) reduces the speed of the driver motor to the speed of the eccentric shaft.
- The eccentric shaft (4) causes the piston lodged in the pump element (5) to move to and fro, with the result that the lubricant is sucked and dispensed to the outlet via a check valve.
- The eccentric shaft simultaneously drives the stirring paddle (3). The rotating movement of the stirring paddle makes sure that the lubricant is homogenized and directed into the suction boreholes of the pump element.

Operation of the pump element

Suction phase

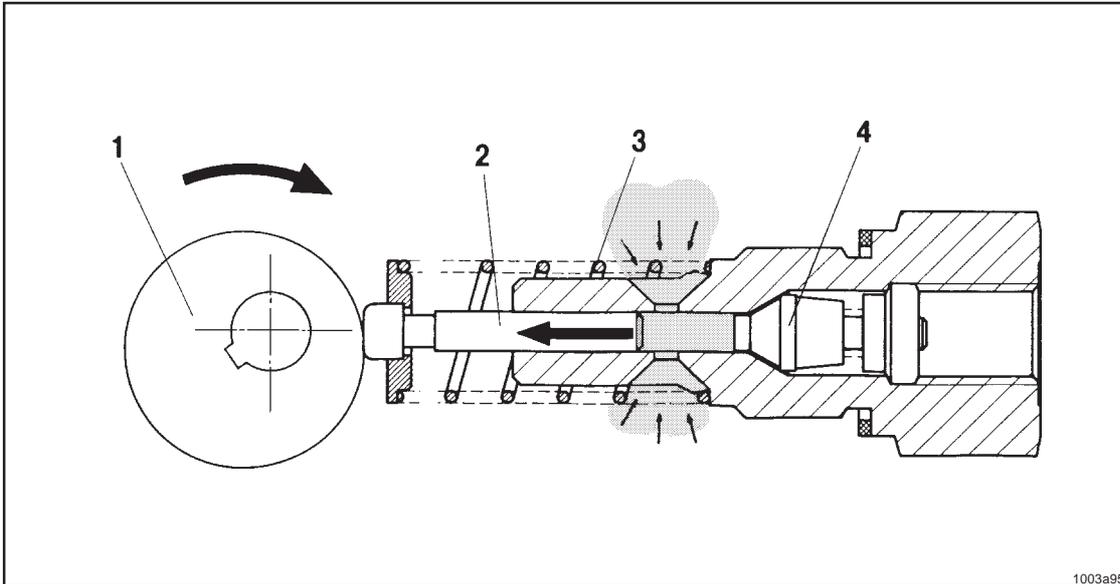


Fig. 2 - Operation: Suction phase

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

Supply phase

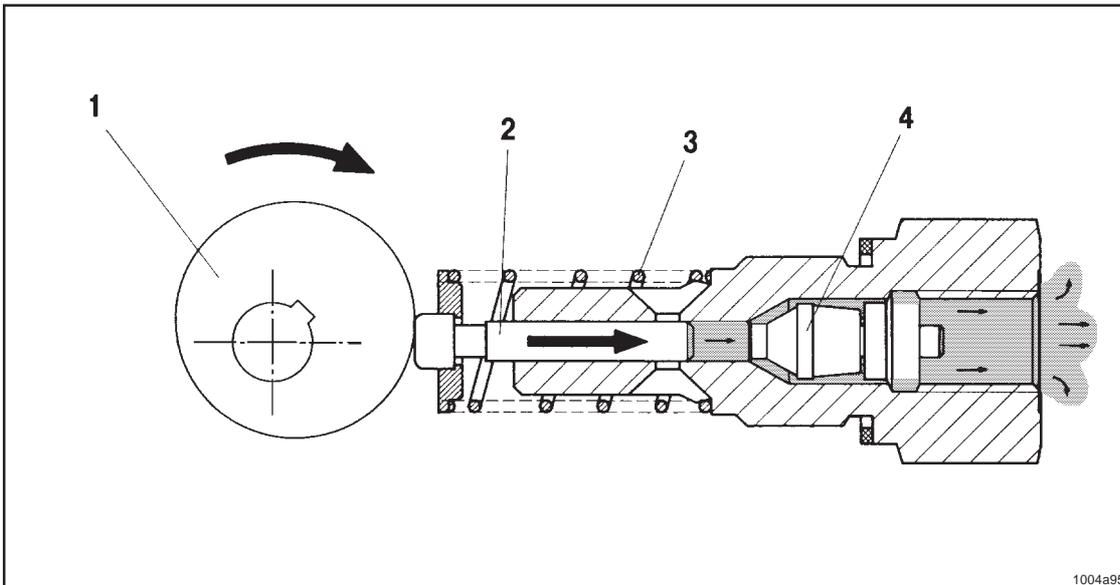


Fig. 3 - Operation : supply phase

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

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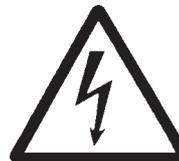
Erection and Installation

Erection of the pump

Requirements on the installation site:

- protected from dust and dirt
- safe against atmospheric influences (note the type of protection of the electric motor)
- enough space for opening the reservoir cover and executing the maintenance work (the required space depends on the pump size)
- even, solid and vibration-free installation site.
- Depending on the pump design, it may be necessary to connect the drive. The direction of rotation of the pump and thus that of the driving shaft is clockwise.
- In the case of pumps with a free shaft end or an oscillating drive take care that the max. admissible speed of the drive or number of strokes is adhered to (see Technical Data).

Electric connection



- All electrical works should be carried out only by qualified personnel.

Electric connection of the drive motor:

- Terminal wiring diagram under the cover of the terminal box.
- Fuse protection in accordance with the national regulations in force; rated current consumption: see motor data sheet in annex.

Electric connection of the level controls:

- Refer to the respective terminal diagrams in the annex and to "Data Sheets" and electrical wiring diagram.

Operating Instructions

Commissioning

Before commissioning the pump fill the reservoir with lubricant.

CAUTION



- When filling the reservoir pay attention that no dirt or foreign particles enter the reservoir.
- Always refill the reservoir in time.
- Avoid contamination in the pump area.

- Do not touch internal parts of the reservoir while the pump is in operation. Risk of injury due to the stirring paddle.
- All system components which are connected downstream of the pump and on which the hydraulic pump pressure has an influence (e.g. progressive plunger metering devices, tube lines, tube fittings, hoses) must be designed for maximum system pressure.
- Protect each pump element against overpressure by means of an adequate safety valve (max. opening pressure : 350 bar)

Commissioning when grease is dispensed

Pumps with low speed of the stirring paddle (< 10 rotations)

- In the case of pumps with a slow drive (speed of the stirring paddle up to approx. 10 rpm) fill so much oil for the first operation that the pump elements are entirely covered by oil. Then fill the grease which will be dispensed by the pump.
 - * Switch the pump on.
 - * Wait until the grease emerges from all outlet ports.
 - * Switch the pump off.
 - * Connect the tube lines which are filled with grease to the outlet ports.
 - * The system is ready for operation.

Pumps with speed of the stirring paddle > 10 rpm

- * Unscrew any closure plug or pump element (if the pump is equipped with the maximum number of pump elements) from the housing.
- * Switch the pump on.
- Wait until the grease emerges from all the outlet ports (this may take a longer time).
- * Retighten the pump element if the pump is equipped with the maximum number of pump elements.
- Wait until the grease emerges from all the outlet ports.
- * Switch the pump off.
- * Screw the closure plug in again.
- * Connect the tube lines which are filled with grease to the outlet ports.
- The system is ready for operation.
- The lubricant output of adjustable pump elements can be changed any time (see „Adjustments of the pump element“). The outlet tube fitting has to be removed before.

Commissioning when fluid lubricants are dispensed

- * Switch the pump on.
- * As soon as the lubricant emerges from the outlet ports switch the pump off and connect the lubricant feed lines.
- The system is ready for operation.

Setting of adjustable pump elements

- * Loosen counter nut (2, Fig.4) 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:

turning clockwise = decreasing delivery
turning counterclockwise = increasing delivery

- The dimension "S" (see Fig. 4) for the desired lubricant output can be ascertained by using the delivery diagram shown in Fig. 5.
- The pump elements are factory set to maximum lubricant output.

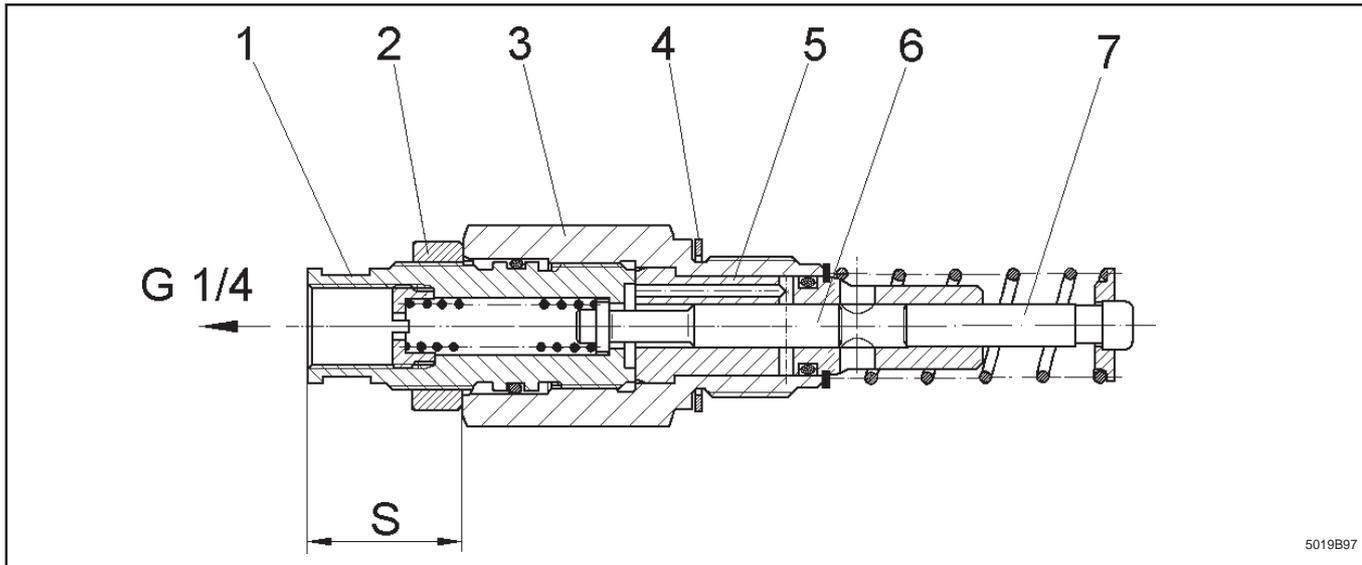


Fig. 4 - Sectional view: adjustable pump element

- | | | |
|---|-----------------------|---------------------|
| 1 - adjusting spindle SW 16
(width over flats) | 3 - pump element body | 6 - control piston |
| 2 - counternut SW 24 | 4 - gasket | 7 - delivery piston |
| | 5 - pump cylinder | |

Setting for the lubricant output on an adjustable pump element

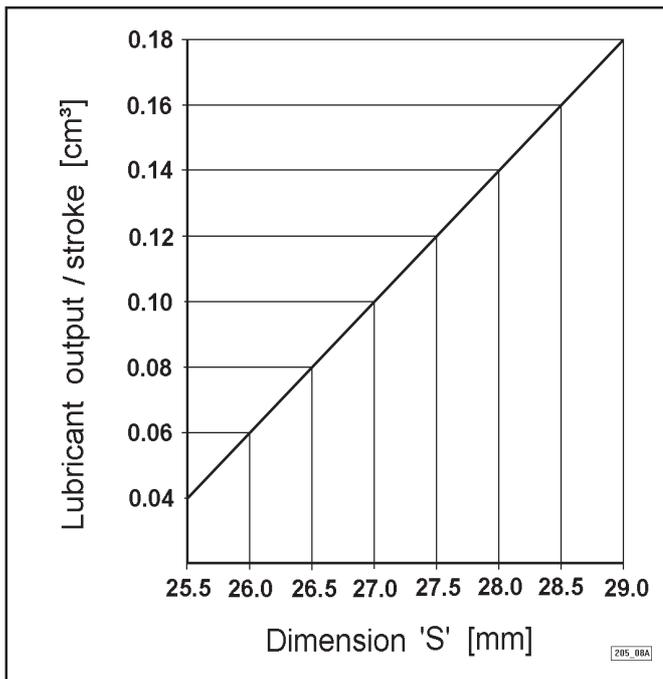


Fig. 5 - delivery diagram

Retrofit adjustment of maximum lubricant output:

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 setting values (e. g. ± 0,1).

- * Unscrew the adjusting spindle (1, Fig. 4) 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

Adjustment of small lubricant output:

- * Before the pump element can be adjusted to 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 übertragen.

- * Dimension „S“ must be adjusted to the desired value in accordance with the delivery diagram (Fig. 5).

Note: At maximum setting „S“ is 29 ± 0,1 mm

Maintenance and Repairs



Before undertaking any repair on the pump observe the following instructions:

- Switch the drive motor or mechanical drive off and protect it from inadvertent restart. Risk of injury by the stirring paddle.
- Slowly loosen the pressure connection fittings on the pump elements in order to decrease the pressure in the pump and in the system. Risk of injury due to lubricant splashing under high pressure.
- Repairs may only be carried out by qualified, skilled personnel using original LINCOLN INDUSTRIAL replacement parts.
- Provided that the pump dispenses only clean lubricant, it does not need any particular maintenance. Since the drive shaft and the pump elements are covered by the lubricant which is fed by the pump they are lubricated automatically. They are however subject to a natural wear which depends on the operating time and operating pressure and must therefore be replaced.

Assembly and disassembly of pump elements

Preliminary works:

- Switch the pump off and clean it on the outside.

Important: For cleaning reservoirs made of plastic do not use polar organic solvents such as alcohol, methyl alcohol, acetone or similar.

- If the pump is filled with grease, the grease can remain in the pump. Fluid lubricants must be drained (unscrew the closure plug or the pump element)
- If the stirring paddle stays ahead of a pump element which must be disassembled, turn it until it is on the opposite side.

Attention: The delivery pistons cannot be exchanged! When assembling or disassembling several pump elements take care that each delivery piston remains in the pump cylinder. The delivery pistons are adjusted in the pump cylinder with a tolerance of only few micrometers.

Assembly of pump elements

- Unscrew the closure plug.
- Screw the pump element into the housing by hand and then tighten it using a fork wrench (SW 27). Tightening torque: 30 - 35 Nm
- If fluid lubricants are dispensed, fill them into the reservoir.
- Put the pump into operation as described above.

Disassembly of pump elements

- Unscrew the tube line from the outlet port of the pump element.
- Apply the fork wrench at the threaded plug of the pump element and carefully unscrew the pump element.
- Screw in a closure plug or a new pump element.

Maintenance of the ultrasonic sensor for low or high level control (reservoir "XYBU")

- Take care that the surface of the sensor is clean.

Replacement of gears or drive motors

- Before assembling gears or drive motors apply a special paste (e.g. Klüber paste 46MR401) at the boreholes and shaft ends.

Troubleshooting

• Fault: The pump does not dispense the lubricant	
• Cause:	• Remedy:
• Reservoir empty	• Fill the reservoir with lubricant and vent the pump, if necessary. <i>Note: Depending on the ambient temperature and/or the lubricant it may be that the pump elements need about 10 minutes to be fully operative.</i>
• Air bubbles in the lubricant	• Loosen the threaded outlet fitting at the pump element and let the pump operate until the lubricant emerges without air bubbles.
• Suction borehole of the pump element clogged	• Disassemble the pump element and check whether foreign particles are lodged in the suction borehole. Remove them, if there are any.
• Check valve defective or clogged	• Replace the check valve.
• Delivery or control piston worn	• Replace the pump element.

• Fault: Blockage in the progressive system connected downstream of the pump	
• Cause:	• Remedy:
• Bearing, lines or progressive metering device clogged The fault can be identified as follows: a) grease leaking from the safety valve b) the indicator pins fitted to the metering device pistons are not moving	• Find out the cause of the blockage and eliminate it. If the blockage is due to a progressive metering device, disconnect all connecting lines one after another until the pump resumes delivery. The blockage is located in the tube line of the fitting which was the last to be unscrewed.

Important: All the repairs which are beyond the knowledge of the user's personnel must be carried out by LINCOLN experts. For this, return the defective pump to the repair department of the Walldorf works or call for a specialist who will carry out the repair on site.

Service address:

LINCOLN INDUSTRIAL GmbH
Abt. Zentraler Kundendienst
Postfach 1263
D-69183 Walldorf

Technical Data

Number of outlets:.....1 to 5
Note: If the pump is equipped with its maximum number of pump elements (i.e. 5) the thread hole G 1/4 of the filler fitting can be used as filling connection.

Threaded connection:.....G 1/4" f.
 Filling connection (accessory):
 (part no. 304-17571-1).....G 1/4" f.
 or
 (part no. 304-17574-1).....G 1/2" f.
 Maximum operating pressure:.....350 bar
 (protection required by means of an adequate overpressure valve)

Safety valves (with thread) for all types of reservoirs:
 SVEVT-350-G1/4AD6.....Part No. 624-28070-1
 SVEVT-350-G1/4AD8.....Part No. 624-27714-1

Suitable lubricants:

Lubricating grease up to NLGI grade 2,
 NLGI grade 3 on request
 Mineral oils with a viscosity of min. 20 mm²/s

Important: When changing the type of grease or refilling a different grease you have to check whether the greases are fully miscible

Lubricant output per piston stroke:

For pump element with piston DIA 5 mm: 0.11 cm³
 For pump element with piston DIA 6 mm: 0.16 cm³
 For pump element with piston DIA 7 mm: 0.23 cm³
 For adjustable pump elements.....0.04-0.18 cm³
 Lubricant output during continuous operation: See chart
 (depending on the ratio and drive speed)
Note: In the case of 60 Hz motors the lubricant output is increased by 20%.

The lubricant outputs listed above are valid for a lithium soap grease of NLGI grade 2 (basic oil viscosity mm²/s at 40°C) at room temperature. At lower temperatures (below 0°C), the lubricant output may decrease depending on the grease characteristics.

Lubricant outputs per hour (for motor-driven pumps, speed 1340 rpm)

Ratio	70:1	280:1	700:1
piston dia. 5 mm	115 cm ³	29 cm ³	11 cm ³
piston dia. 6 mm	172 cm ³	43 cm ³	17 cm ³
piston dia. 7 mm	253 cm ³	63 cm ³	25 cm ³
adjustable pump elements	46-200cm ³	11,5-52cm ³	5-22cm ³

Reservoir sizes: 4, 5 or 8 dm³
 (on request with electric level control)

Note: Plastic reservoirs are not fully resistant to glycol and polyglycol oils and greases

Kinds of drives:

With worm gear motors
 With worm gears and free shaft end
 With worm gear and flange for three-phase a.c. motor

Ratios: 700 : 1, 280 : 1, 70 : 1

Rated speed of drive
 1340 rpm at 50 Hz
 Min. speed of the stirring paddle: 2 rpm
 (lower speeds on request, depending on the lubricant and temperature)
 Max. speed of the stirring paddle: 30 rpm

Note: In the case of lubricating grease of NLGI grades 1 - 3 the speed of the eccentric shaft must not exceed 20 rpm.

Sound level: < 70 dB(A)

Operating temperature:..... -20° C to +80°C

Weights:
 Housing:2.66 kg
 Gear, single-stage (70 : 1)0.95 kg
 Gear, two-stage (280 : 1, 700 : 1)2.03 kg
 Three-phase a.c. motor3.02 kg
 Free shaft end0.61 kg
 Reservoir 4 XN1.45 kg
 Reservoir 5 XN2.19 kg
 Reservoir 8 XN1.72 kg
 Ultrasonic sensor0.20 kg
 Pump element K5, K6, K70.15 kg

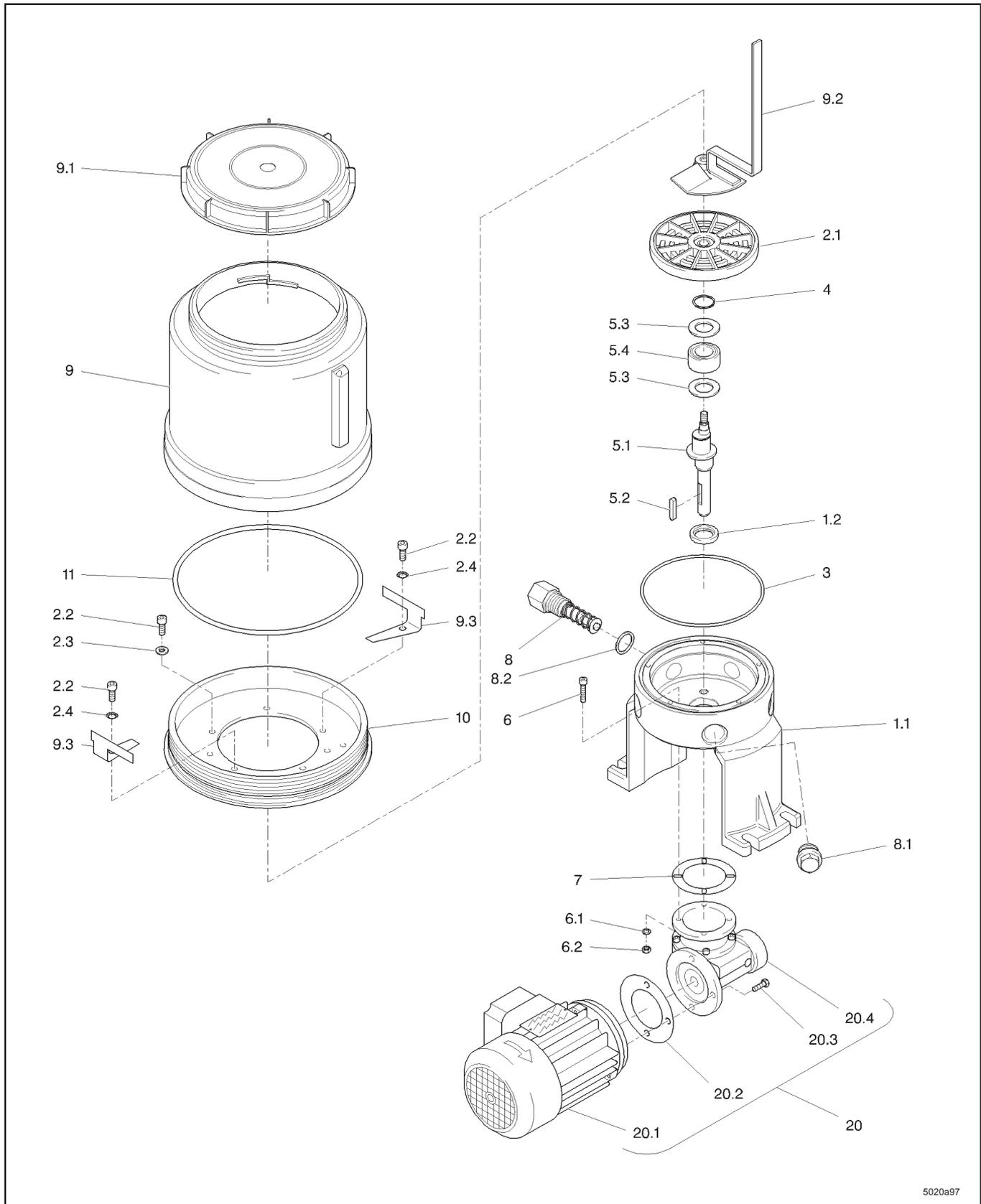
Electric equipment

Three-phase flanged motor: Technical data on enclosed motor data sheet (see annex)
 Accessories (depending on the grade of equipment of the pump)

Ultrasonic sensor for low and high level control for grease (reservoir "XYBU"): Technical data sheets for low level and high level control in annex

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Component Parts of the Pump Model P205



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Fig. 5 - Components parts of the pump model 205

Item	Designation	Qty.	Part number
1.1	Housing	1	313-19694-1
1.2	Rotary shaft seal 20x32x7	1	220-13059-1
	Housing assy.	1	555-32116-1
2.1	Intermediate bottom with grooved ball bearing	1	455-24460-1
2.2	Hexagon socket head screw M 6x16 C microencapsulated	5	201-13011-5
2.3	Tooth lock washer 6.4	3	210-12161-3
2.4	Tooth lock washer 6.4	2	210-12161-3
3	O-ring 137x3	1	219-13084-1
4	Retaining ring A 20x1.2	1	211-12164-5
5.1	Eccentric shaft	1	455-24458-1
5.2	Feather key	1	214-12174-3
5.3	Axial bearing washer	2	250-14175-1
5.4	Needle bearing with inner ring 20x35x17	1	250-14006-8
6	Hexagon socket head screw M 5x30	4	201-12594-3
6.1	Rubber -lined sealing 6.2x9.2x1.0	4	220-12238-7
6.2	Nut M5	4	207-14176-1
7	Sealing ring 40.4x70.0x0.5	1	306-19713-1
8	Pump element		
	with piston DIA 5 mm	-	600-26875-2
	with piston DIA 6 mm	-	600-26876-2
	with piston DIA 7 mm	-	600-26877-2
	Pump element adjustable	-	655-27716-1
8.1	Closure plug M 22x1.5	-	303-19285-1
8.2	Sealing ring DIA 22.2 x DIA 27 x 1.5	-	306-17813-1
9	Reservoir assy.		
	4XN (4 l plastic)	1	655-28734-1
	5XN (5 l sheet metal)	1	655-28735-1
	8XN (8 l plastic)	1	655-28736-1
9.1	Cover for 4 l and 8 l reservoir	1	444-24234-1
9.2	Stirring paddle assy. for 4 l and 8 l reservoir	1	555-32113-1
	Stirring paddde assy. for 5 l reservoir	1	555-32117-1
9.3	Fixed paddle	2	400-22983-1
10	Adapter ring	1	455-24459-1
11	O-ring 210x5	1	219-12730-9
20	Drive assy. consisting of:		
	Gear 70 : 1 and motor 0.09 kW, 380-420/440-480 V	1	245-13932-1
	Gear 70 : 1 and motor 0.09 kW 290/500 V	1	245-13935-1
20.1	Three-phase a.c. flanged motor 0.09 kW, 1500 rpm, 380-420/440-480 V	1	245-13504-5
	Three-phase a.c. flanged motor 0.09. kW, 1500 rpm, 290/500 V, 50 Hz	1	245-13510-2
20.2	Packing 50.0 x 80.0x 0.5	1	306-19714-1
20.3	Hexagon head screw M 5 x 16 C	3	200-13017-9
20.4	Gear i = 70 : 1	1	246-14174-1
	Hydraulic lubrication nipple	1	251-14045-9

Parts List for Drive "Free Shaft End"

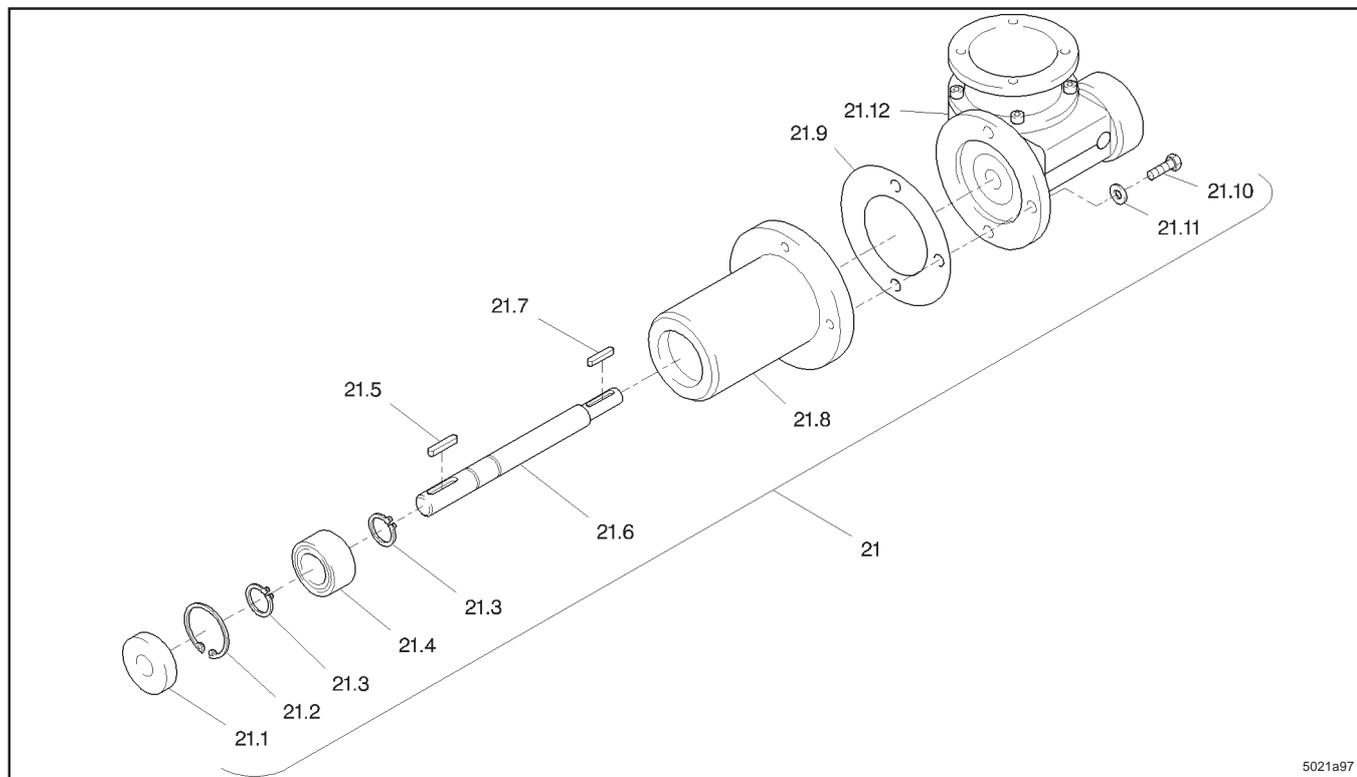


Fig. 6 - Parts for "Drive with free shaft end"

Item	Designation	Qty.	Part number
21	Drive for free shaft end with Gear 70 : 1 (205-F070) Gear 280 : 1 (205-F280) Gear 700 : 1 (205-F700)	1 1 1	655-28733-1 655-28740-1 655-28732-1
21.1	Radial seal 12 x 32 x 7	1	220-13087-3
21.2	Retaining ring I 32 x 1.2	1	211-12448-3
21.3	Retaining ring A 12 x 10	2	211-12164-2
21.4	Angular ball bearing	1	250-14003-3
21.5	Feather key 4 x 4 x 20	1	214-12173-6
21.6	Drive shaft	1	455-24462-1
21.7	Feather key 3 x 3 x 20	1	214-12173-7
21.8	Bearing flange	1	455-24461-1
21.9	Sealing ring 50.0 x 80.0 x0.5	1	306-19714-1
21.10	Hexagon head screw M 5 x 16	3	200-13017-9
21.11	Washer 5.3 C	3	209-13077-3
21.12	Reducing gear 70 : 1 Reducing gear 280 : 1 Reducing gear 700 : 1	1 1 1	246-14174-1 246-14174-2 246-14174-3

Component Parts for Drive "Double Gear and Motor"

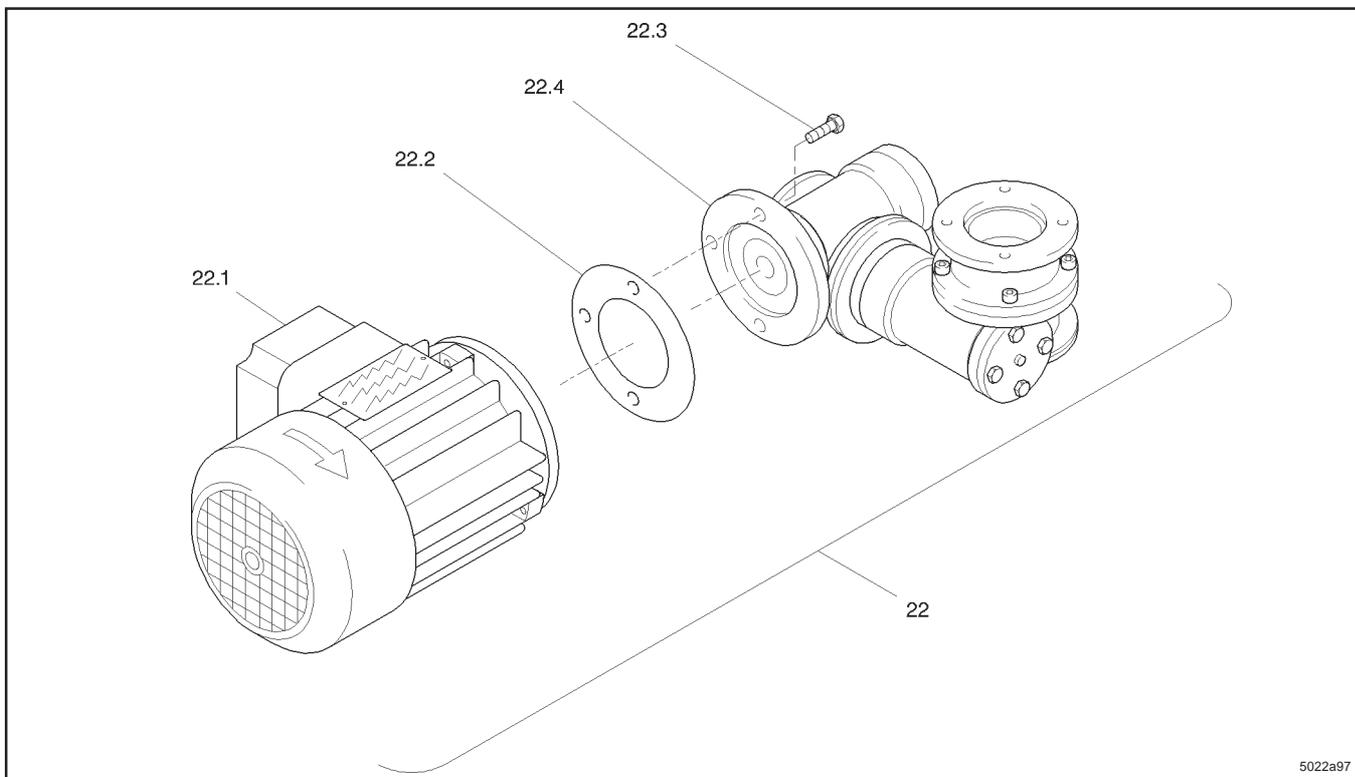


Fig.7 - Parts for "Drive with double gear and motor"

Item	Designation	Qty.	Part number
22	Drive assy., gear 280 : 1, motor 0.09 kW, 380-420/440-480 V	1	245-13933-1
	Drive assy., gear 280 : 1, motor 0.09 kW, 290/500 V	1	245-13936-1
	Drive assy., gear 700 : 1, motor 0.09 kW, 380-420/440-480 V	1	245-13934-1
	Drive assy. gear 700 : 1, motor 0.09 kW, 290/500 V	1	245-13937-1
22.1	Three-phase a.c. motor 0.09 kW, 380-420/440-480 V	1	245-13504-5
	Three-phase a.c. motor 0.09 kW, 290/500 V	1	245-13510-2
22.2	Sealing ring 50.0 x 80.0 x 0.5	1	306-19714-1
22.3	Hexagon head screw M 5 x 16	3	200-13017-9
22.4	Gear 280 : 1	1	246-14174-2
	Gear 700 : 1	1	246-14174-3

Annex : Dimensioned Drawings

Dimensioned drawing for Pump P 205, single-stage gear, 4/8 l plastic reservoir, motor drive

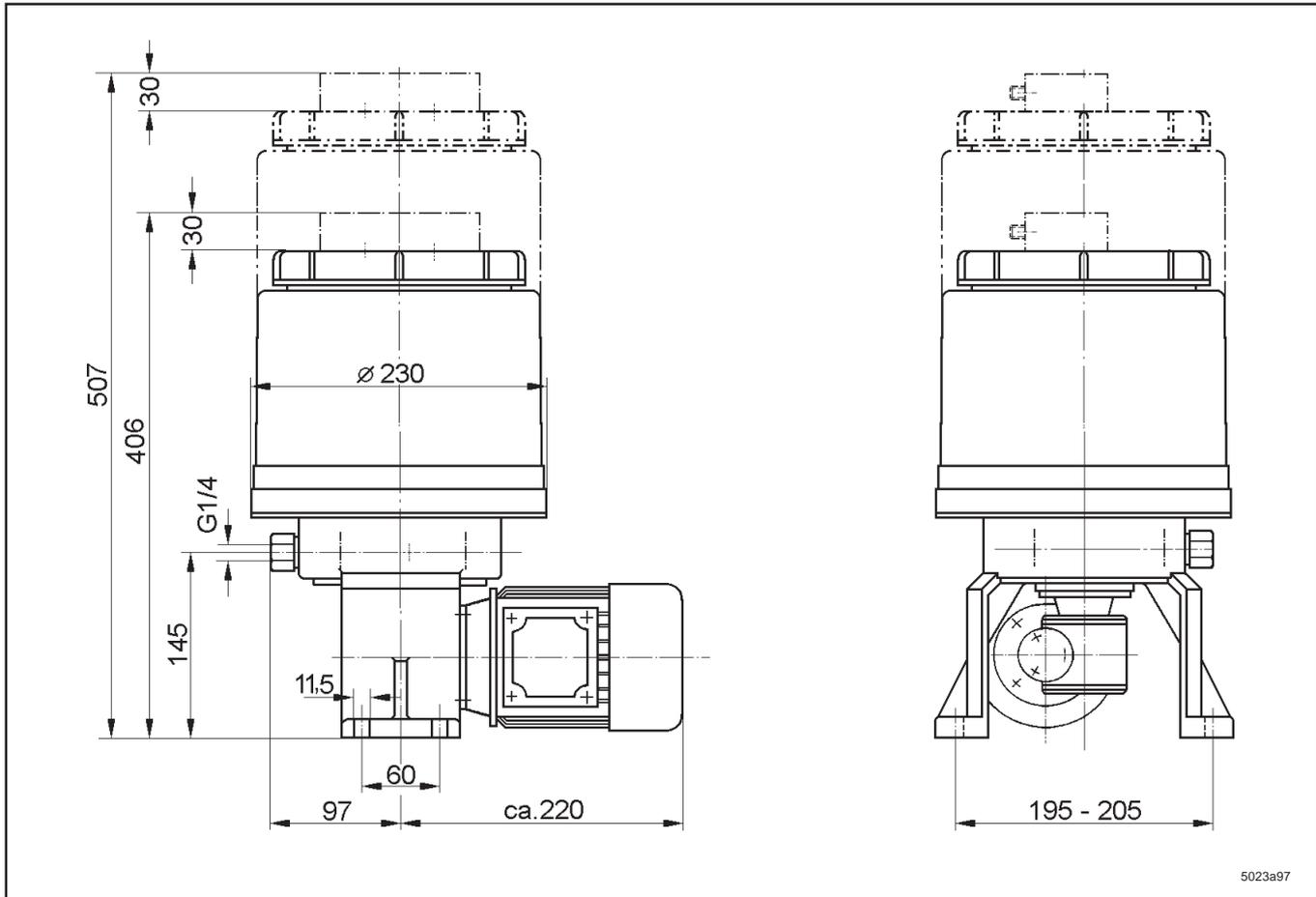


Fig. 8 - Dimensioned drawing of pump P 205, single-stage gear, 4/8 l plastic reservoir, motor drive

Dimensioned drawing of pump P 205, single-stage gear, 4/8 l plastic reservoir, free shaft end

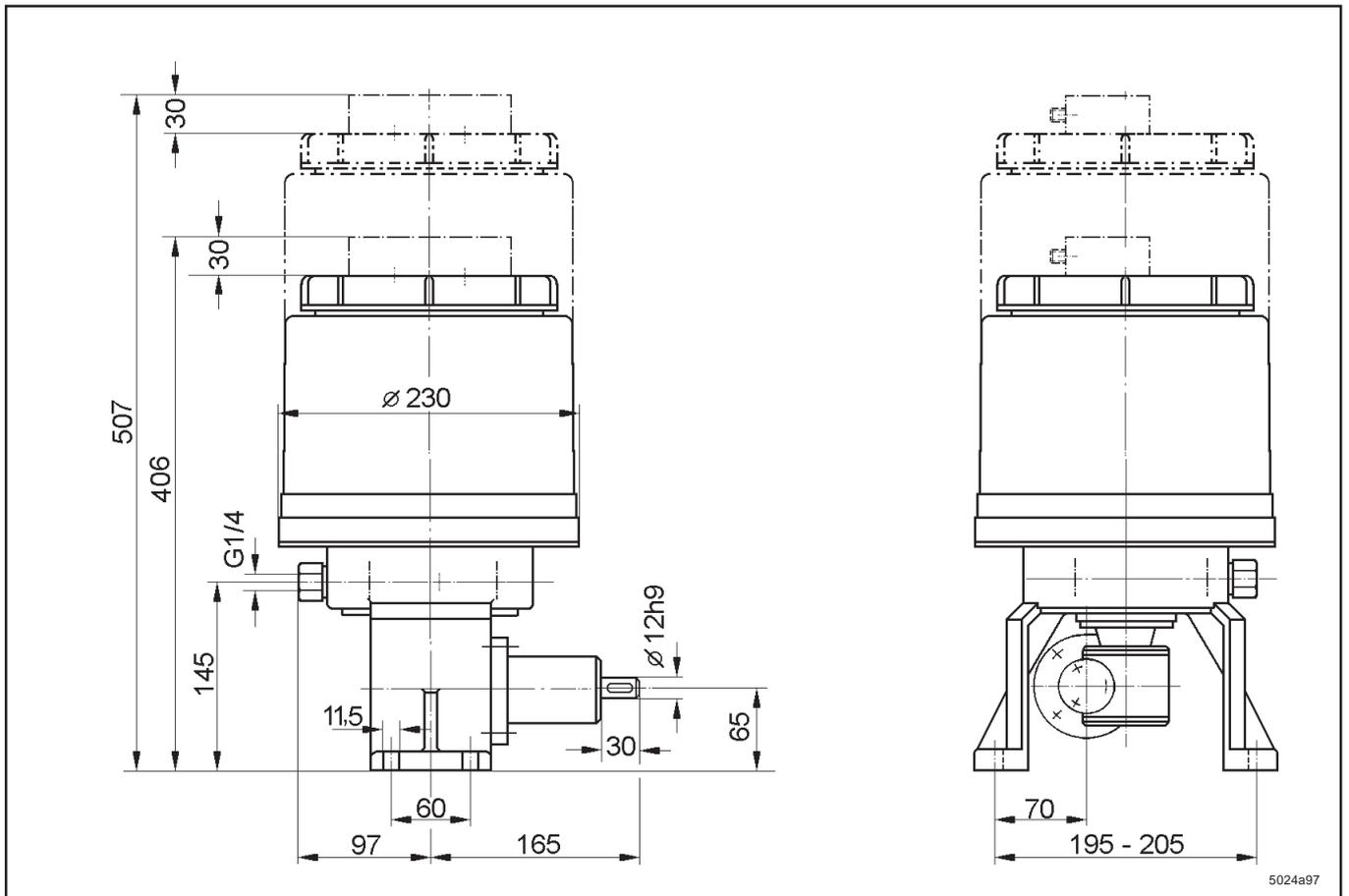


Fig. 9 - Dimensioned drawing of pump P 205, single-stage gear, 4/8 l plastic reservoir, free shaft end

Dimensioned drawing of pump P205, single-stage gear, 5 l sheet metal reservoir, motor drive

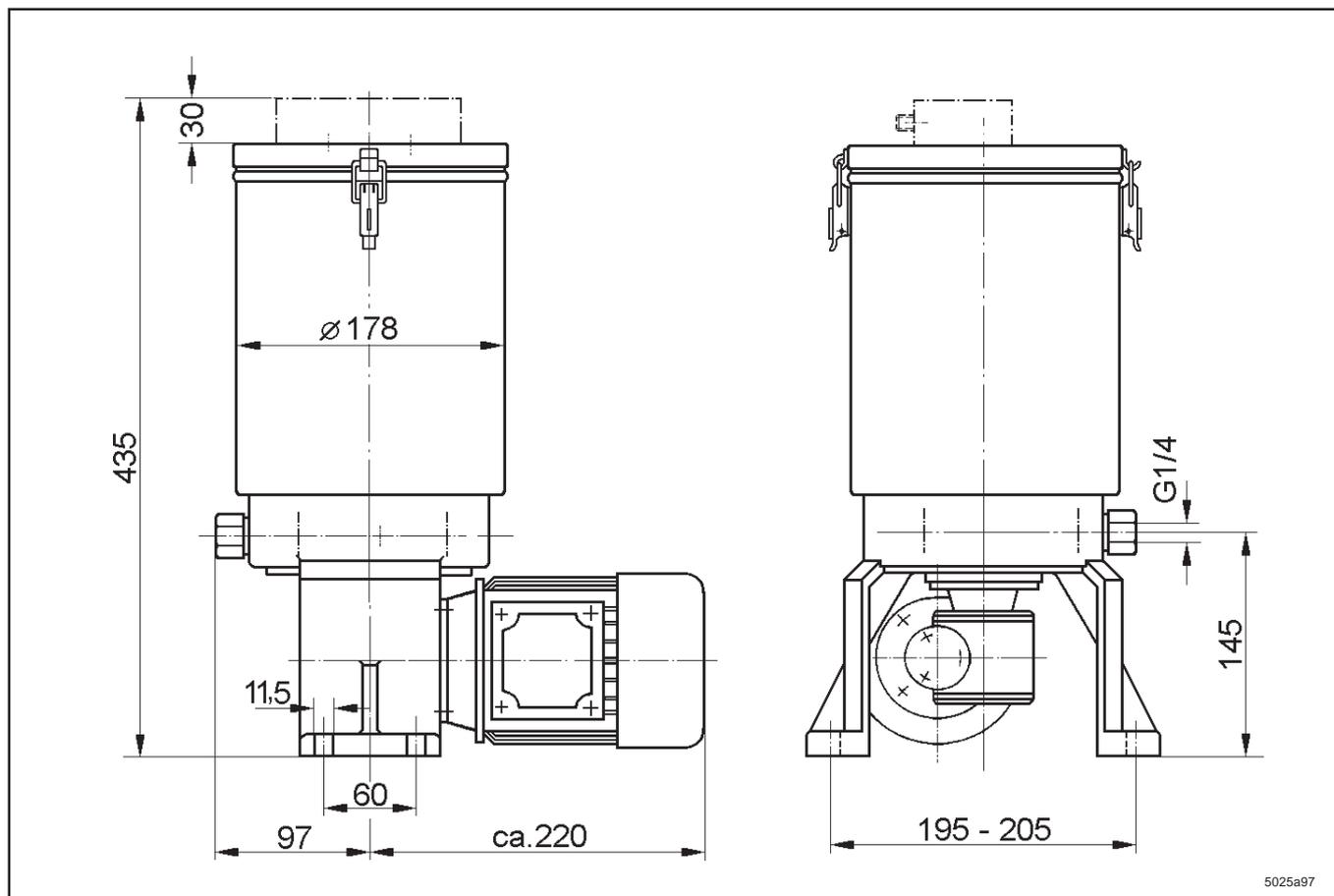


Fig. 10 - Dimensioned drawing of pump P 205, single-stage gear, 5 l sheet metal reservoir, motor drive

Dimensioned drawing of pump P205, single-stage gear, 5 l sheet metal reservoir, free shaft end

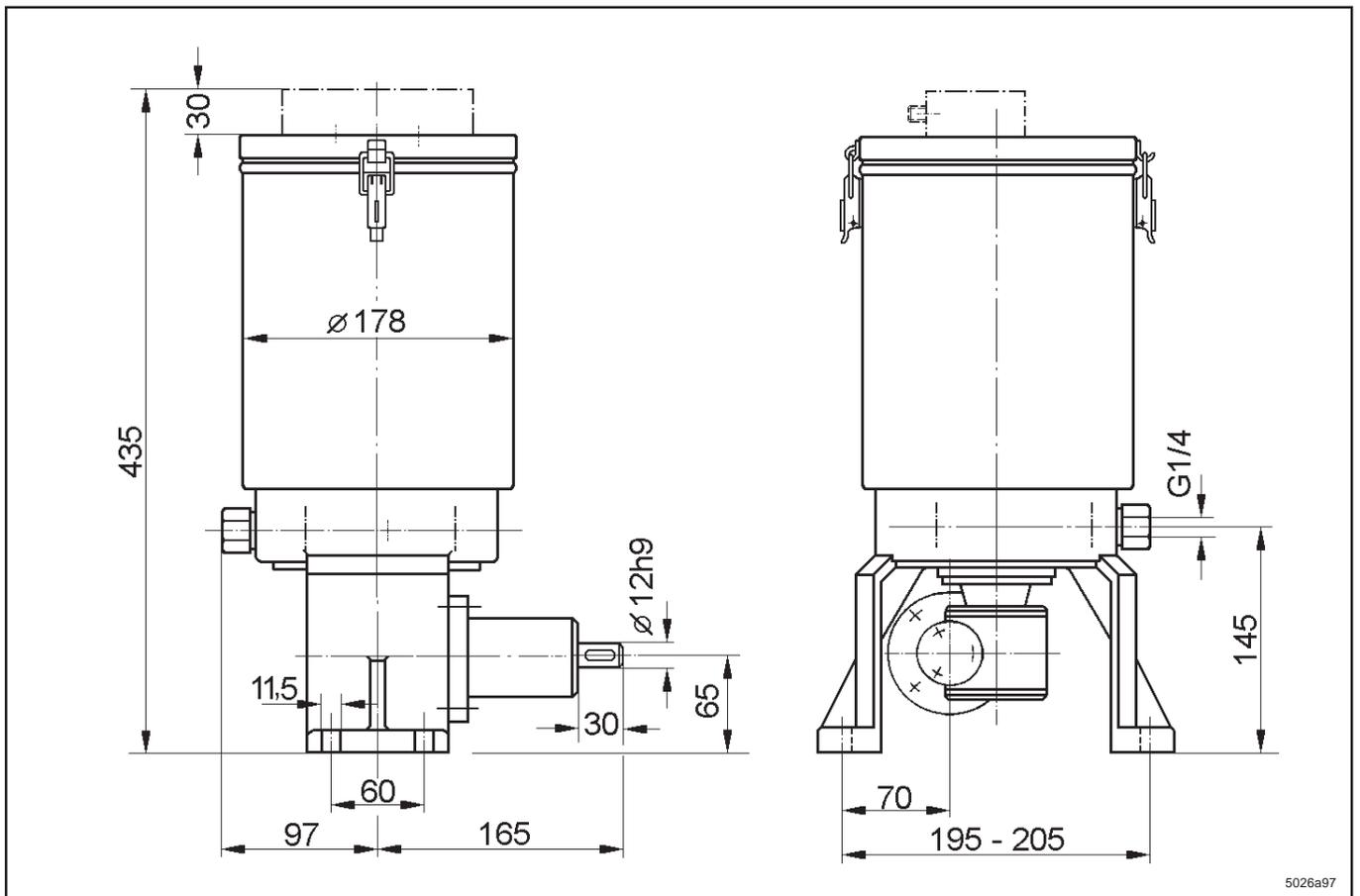


Fig. 11 - Dimensioned drawing of pump P 205, single-stage gear, 5 l sheet metal reservoir, free shaft end

Dimensioned drawing of pump P205, two-stage gear, 4/8 l plastic reservoir, motor drive

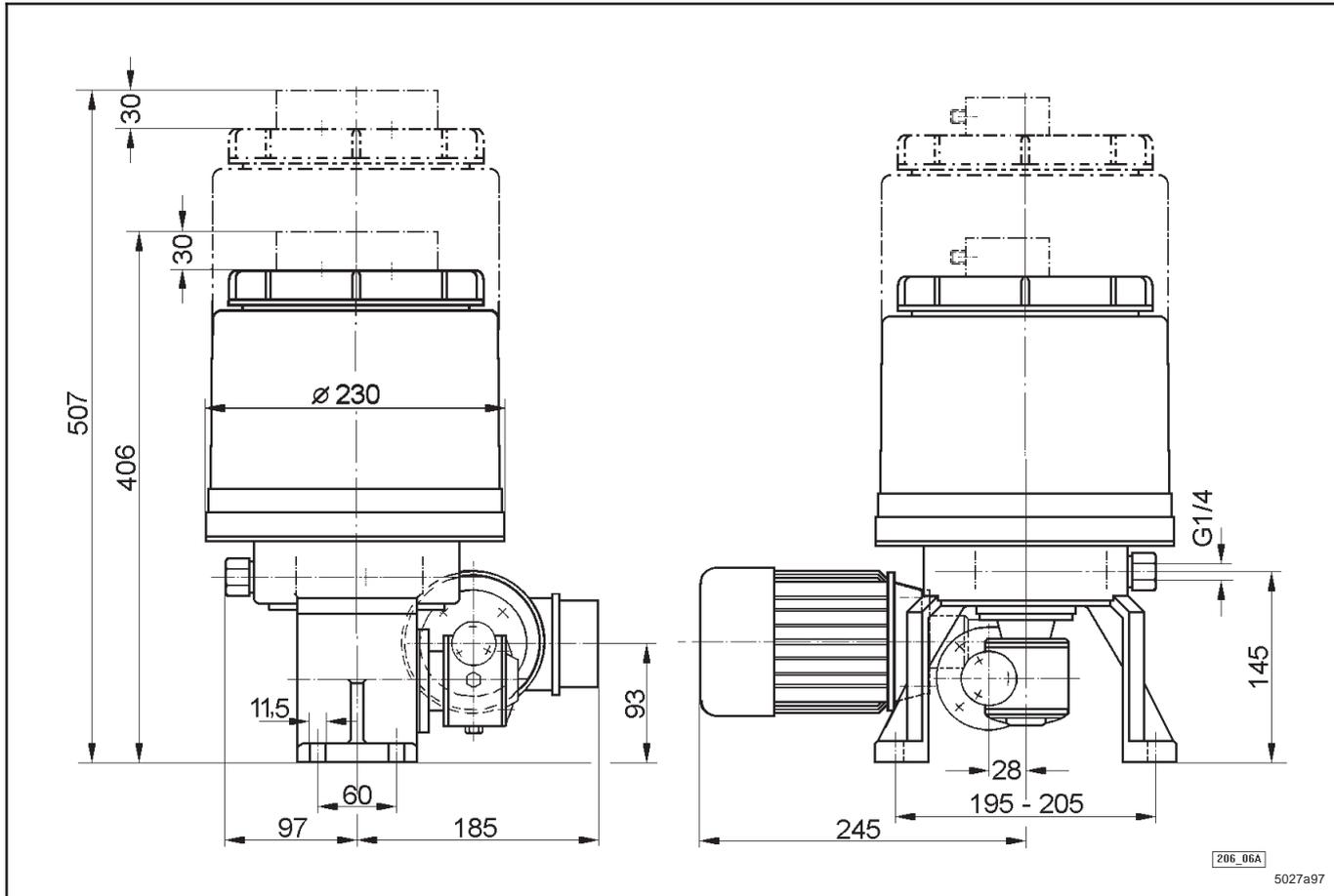


Fig. 12 - Dimensioned drawing of pump P 205, two-stage gear, 4/8 l plastic reservoir, motor drive

Dimensioned drawing of pump P205, two-stage gear, 4/8 l plastic reservoir, free shaft end

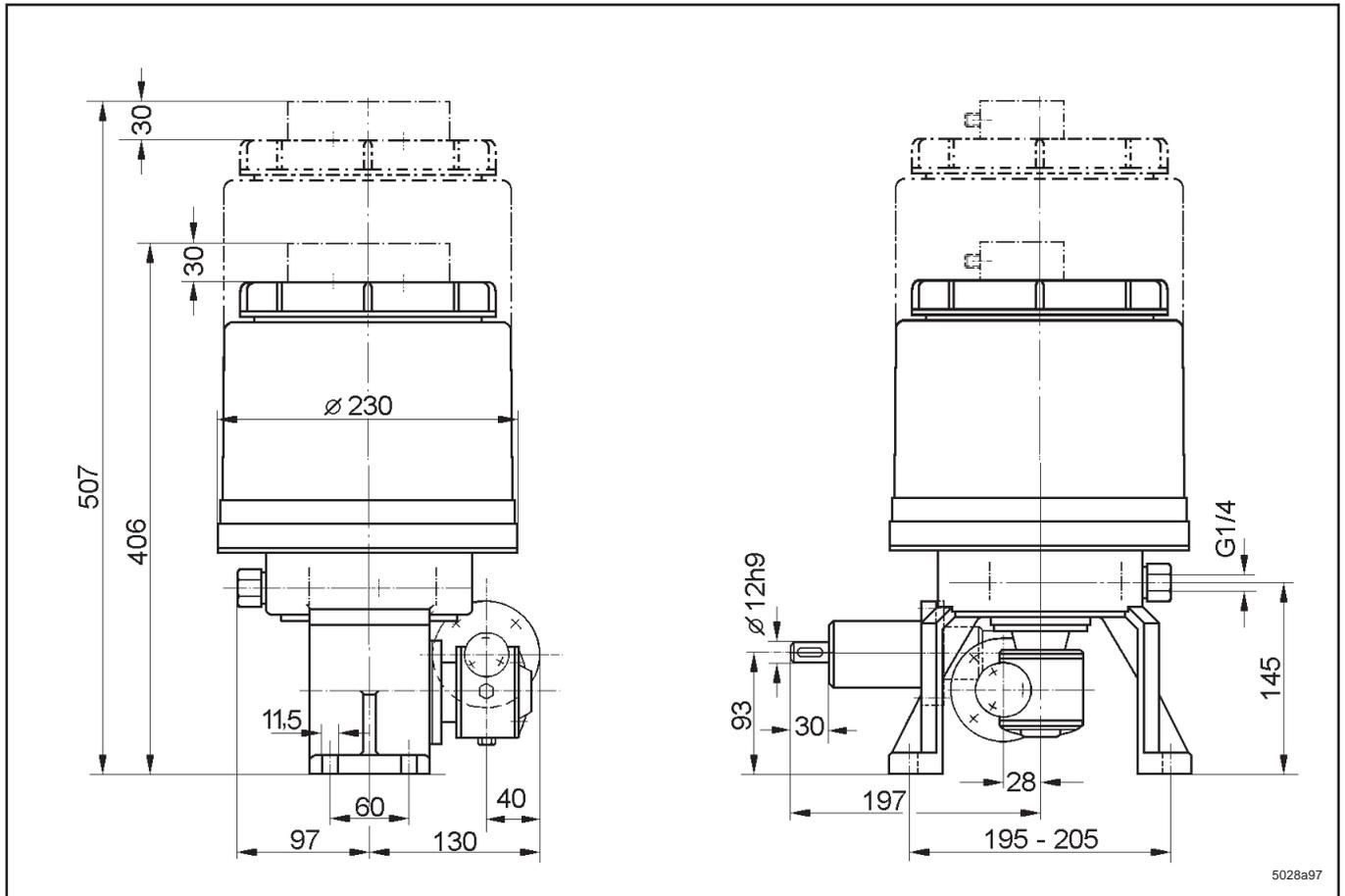
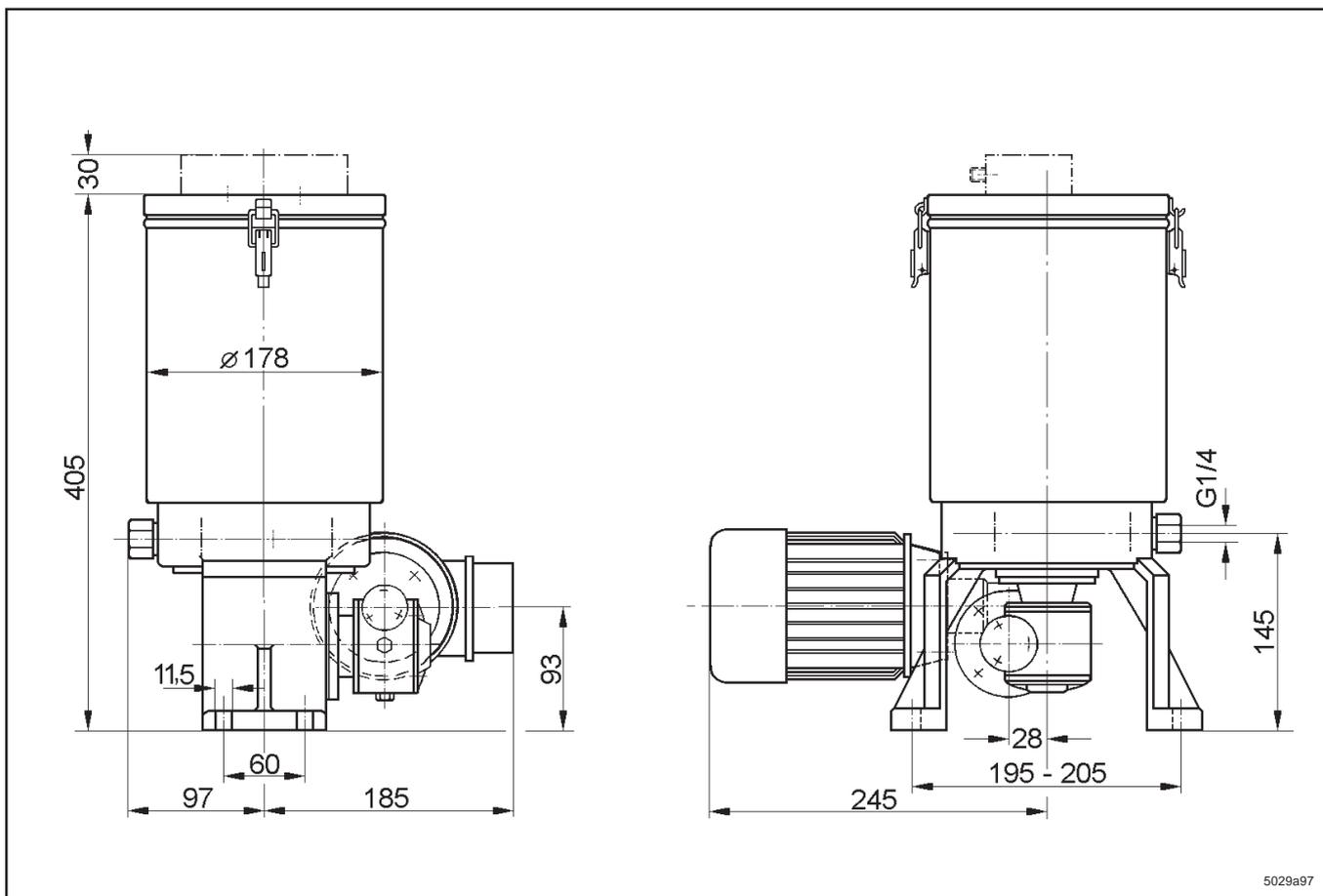


Fig. 13 - Dimensioned drawing of pump P 205, two-stage gear, 4/8 l plastic reservoir, free shaft end

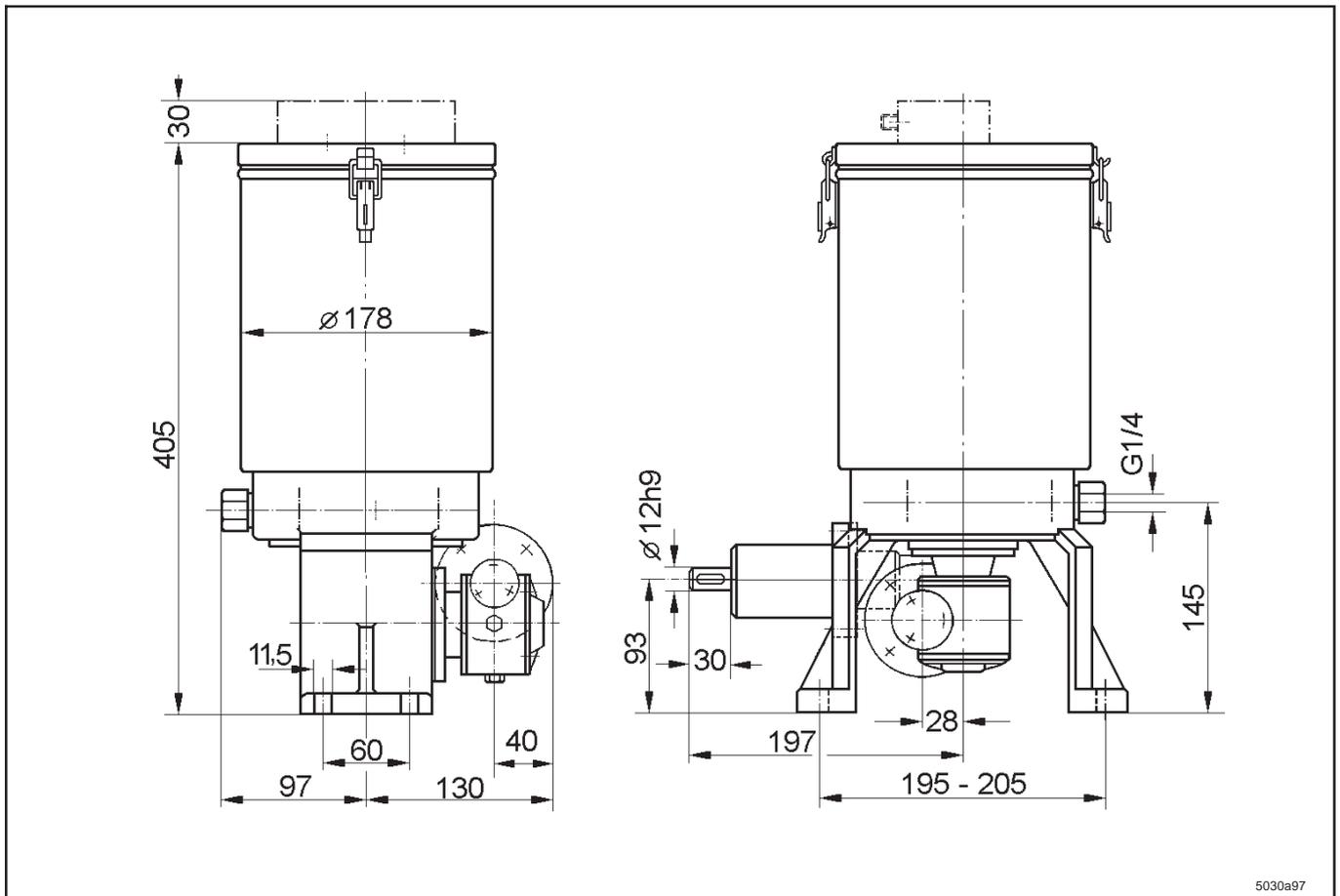
Dimensioned drawing of pump P205, two-stage gear, 5 l sheet metal reservoir, motor drive



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Fig. 14 - Dimensioned drawing of pump P 205, two-stage gear, 5 l sheet metal reservoir, motor drive

Dimensioned drawing of pump P205, two-stage gear, sheet metal reservoir, free shaft end



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Fig. 15 - Dimensioned drawing of pump P 205, two-stage gear, sheet metal reservoir, free shaft end

Data Sheet

Motor Data Sheet

Standard motors for pump model 205

Pump model	Multi range motors				Single range motor	
		205		Units	205	Units
Motor type		DIM 56B4			DIM 56B4	
Frequency	f	50	60	[Hz]	50	[Hz]
Nominal power	P	0,09	0,11	[kW]	0,09	[kW]
Nominal speed	n	1340	1610	[rpm]	1340	[rpm]
Rated torque	M	0,64	0,65	[Nm]	0,64	[Nm]
Nominal current	I _N	0,78	—	[A] at 220-240 V	0,62	[A] at 290 V
		0,45	—	[A] at 380-415 V		
		—	0,78	[A] at 243-277 V		
		—	0,45	[A] at 420-480 V	0,36	[A] at 500 V
Starting current ratio	I _A /I _N	2,6	2,6	[A]	2,9	[A]
Power factor	cos φ	0,67	0,67		0,62	
Efficiency	η	57	57	[%]	52	
Frame size		56			56	
Type of construction		B14/V18			B14/V18	
Type of protection	IP	55			56	
Insulation class		F			F	
Weight		approx. 2,9		[kg]	approx.2,9	[kg]
Flange		Ø80		[mm]	Ø80	[mm]
Shaft end		Ø9 x 20		[mm]	Ø9 x 20	[mm]

The multi range motors can be connected to the following networks:

220/380 V ± 5%, 50 Hz
 230/400 V ± 5% and ± 10%, 50 Hz
 240/415 V ± 5%, 50 Hz
 265/460 V ± 5%, 60 Hz
 254/440 V ± 5%, 60 Hz

Other voltages and/or special designs available on request.

The single range motor can be connected to the following networks:

290/500 V ± 10%, 50 Hz
 Motor without gear part no. 245-13510-2
 Motor with gear ratio 70 : 1 part no. 245-13935-1
 Motor with gear ratio 280 : 1 part no. 245-13936-1
 Motor with gear ratio 700 : 1 part no. 245-13937-1

Data Sheet for Ultrasonic Sensor

Reservoir size: **Part number:**
 4 l plastic reservoir.....664-36939-1
 5 l sheet metal reservoir.....664-36939-2
 8 l plastic reservoir.....664-36939-3

Description of operation

This remote sensor is a solid state proximity type for 24 VDC which uses the echo delay-time method for distance sensing . It senses a sound-reflecting object which enters the sound cone from any direction. The objects to be sensed may be solid or liquid.

Installation

Figure I (dimensions in mm)
 Any mounting position
 Keep a free space around the sound cone of a distance "x"
 (x = 60 mm) from reflecting objects (figure I).

Connection

By means of cable socket (figure III) part no. 237-13442-2

Pin		
1	L+	DC 20 ... 30 V
2	S	Switching output "High level" (NO)
3	L-	Ground (GND)
4	S2	Switching input "Low level" (NC)

The connections are polarized, short-circuit proof and overload-proof. In the case of electrical faults it is recommended to use shielded lines.

Operation

Switching range (figure IV)
 a Unusable blind zone
 b Sensing range
 c Overfill range
 HV Hysteresis „High level“
 HL Hysteresis „Low level“

The objects are sensed reliably in the set switching range within an opening angle of the sound cone of 5°. If the reflecting conditions are good, the objects can also be sensed outside the sound of cone. Keep the blind zone "a" free from objects. These would lead to undefined switching states. Take care that the surface of the transducer is clean.

Display:

Reservoir empty	H2 is lit
Filling level O.K.	H2 is not lit
Reservoir full	H1 is lit
Supply voltage	H3 is lit: green
Overfull signal	H3 is lit: red

Technical data

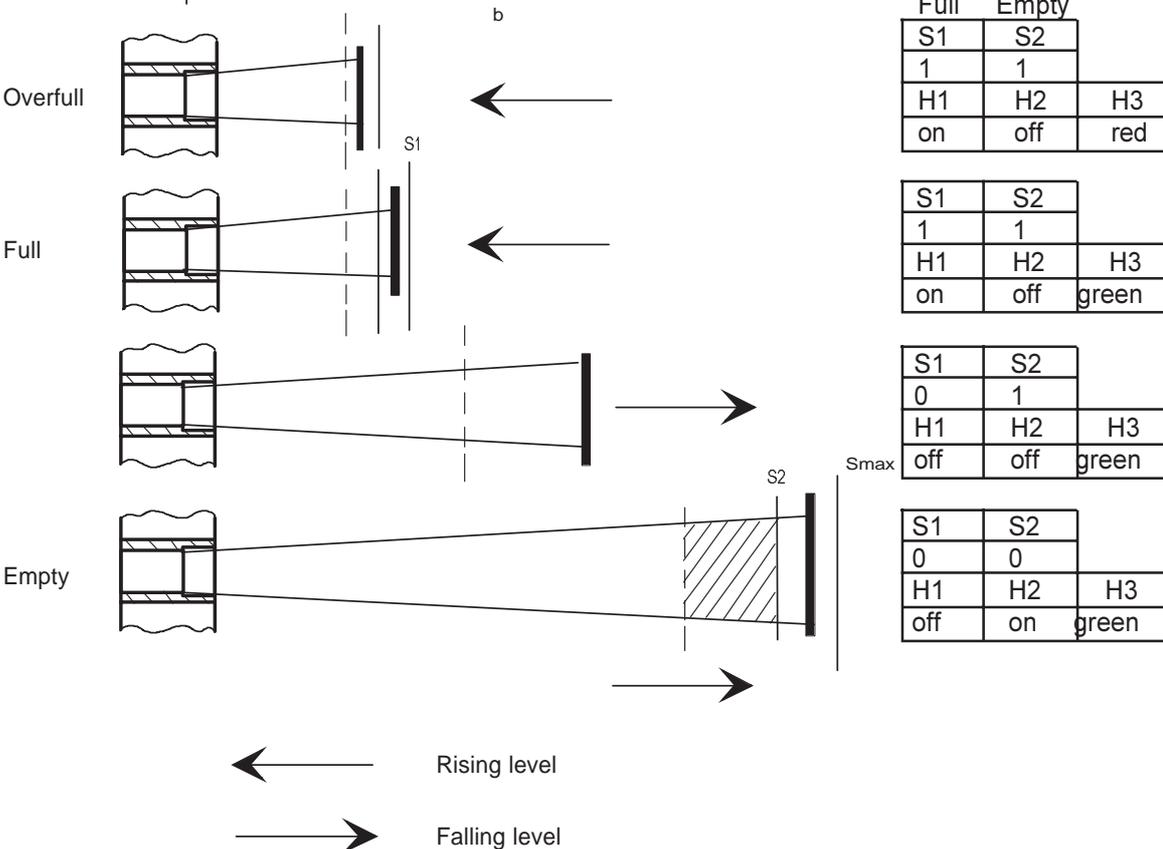
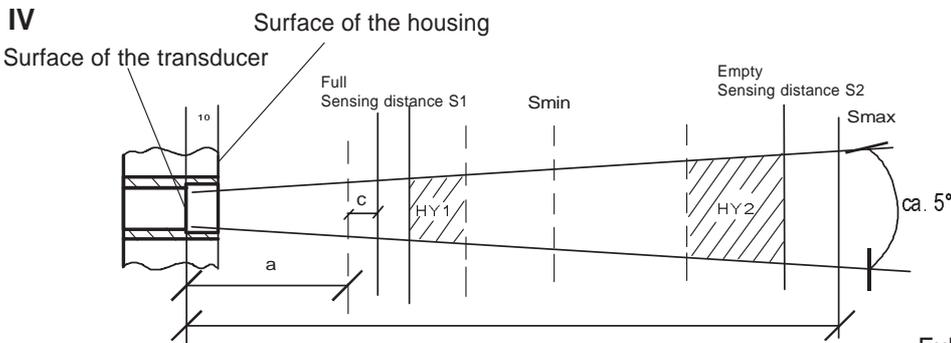
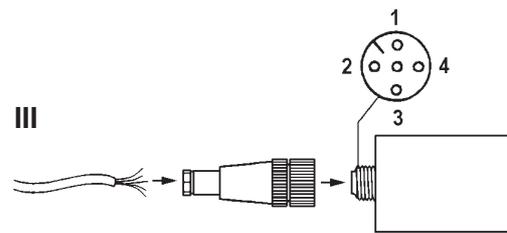
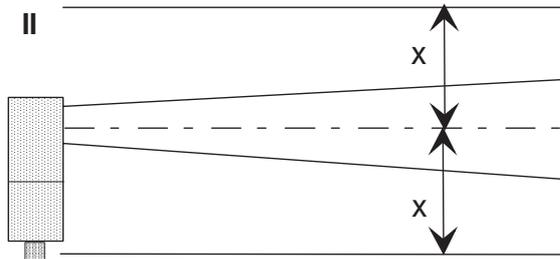
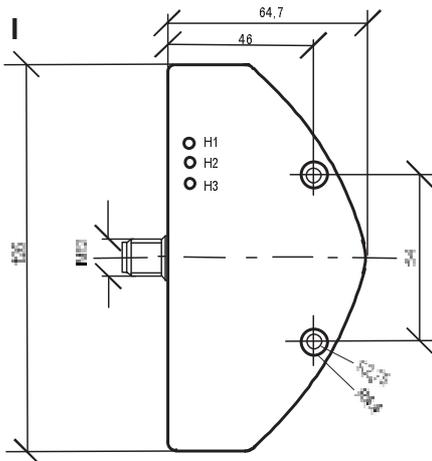
Ambient temperature: -25...70°C
 Sensing range: 50...500 mm*
 Sensing distance „High level“ S1: 60 mm*
 Sensing distance „Low level“ S2: depends on the reservoir size
 Hysteresis „High level“ HV: 20 mm
 Hysteresis „Low level“ HL: 50 mm
 Switching point fault : 0.17% / K
 * measured on the housing surface

Supply
 Rated operational voltage: U_E 24 V DC
 Operating voltage range: U_B 20...30VDC
 Admissible residual ripple : 10%
 Open-circuit power consumption: <60 mA

Switching output:
 Rated normal current: I_E <200 mA
 Voltage drop: U_D <3 V
 Spurious switch-on pulse: suppressed
 Switching function „High level“: NO contact switching on"plus"
 „Low level“: NC contact switching on"plus"

Typical values:
 Availability delay: 250 ms
 Reflection area: 10 x 10 mm²
 Ultrasonic frequency: 400 kHz
 Switching frequency : 8 Hz
 Resolution: 1 mm
 Protection: IP 65

Subject to change without notes



**Manufacturer's declaration in accordance with
the EC Machinery Directive 89/392/EEC
Annex II B**

We herewith declare that the

Multiline Pump Model 205

in the design supplied by us, is intended to be installed in any machine and that its commissioning is forbidden as long as it has not been stated that the machine into which the pump will be built is in conformity with the decisions of the EC Machinery Directive in the version of 91/368/EEC.

Applied harmonized standards in particular

EN 292 T1/T2

prEN 809

EN 563



Walldorf, Aug. 25, 1997, pp. Z. Paluncic