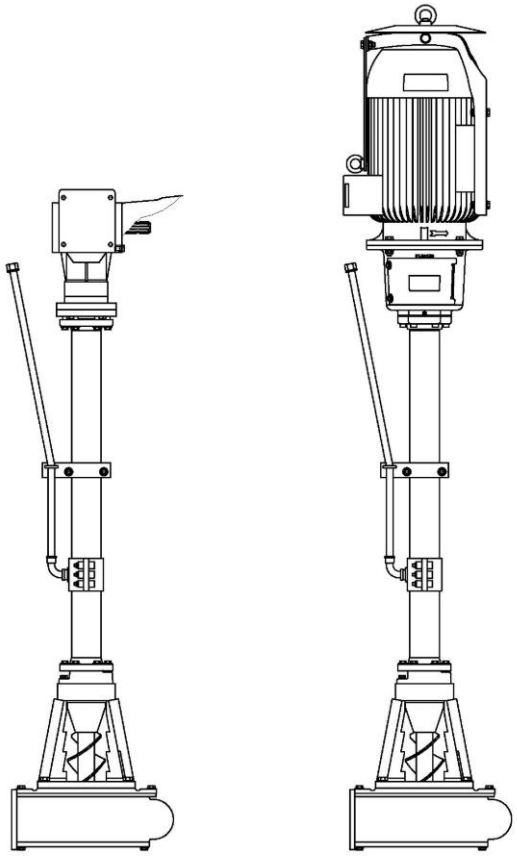
Stallkamp

OPERATING MANUAL

Long-shaft high pressure pump LHP-M1307

LHP-E 11 to 22.0 kW
LHP-T



Type T drive tractor

Type E drive electrical motor

We reserve the right to alter the technical information

Drg. no.: 0-24-0010/14

Document no.: 8120453 Version: July 2013

Space for notes:

General Notices

- **The technical specifications, weights and dimensions are to be considered approximate and not binding.**
- **Pictures are for illustration purposes and may deviate from the actual product.**

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2 DECLARATION OF CONFORMITY PURSUANT TO MACHINERY DIRECTIVE 2006/42/EC (TRANSLATION OF THE ORIGINAL GERMAN VERSION)

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Authorised representative for the composition of the technical documentation:

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Product name: Long-shaft high-pressure pump LHP-M1307

Type: LHP-E 11.0 kW; 15.0 kW; 18.5 kW; 22.0 kW and LHP-T

We hereby declare that the products listed above conform to the pertinent regulations of the EC Directive:

Machinery Directive 2006/42/EC

including all amendments and are compliant with the pertinent regulations of the directive on electro-magnetic compatibility:

EMC Directive 2004/108/EC

The following harmonised standards have been applied:

EN ISO 12100-1:2003, Safety of machinery – General principles for design – Part 1: Basic terminology, methodology

EN ISO 12100-2:2003, Safety of machinery – General principles for design – Part 2: Technical principles

EN 60204-1:2007-06, Safety of machinery – Electrical equipment of machines – Part 1: General requirements

EN 61000-6-1:2007, Electromagnetic compatibility (EMC) Part 6-1: Generic standards – Immunity for commercial environments

EN 61000-6-2:2005, Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments

Dinklage, dated 17. March 2023

Stallkamp
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In der Bahler Heide 4, Industriegeb. West

Erich Stallkamp ESTA GmbH, Dipl.-Ing. (FH) H. Ansorge (AL-TPR, authorised management board representative)

This declaration is not an assurance of properties pursuant to the German Product Liability Act. The safety notices provided in the product documentation must be observed. If any conversions or modifications are made to the product, this declaration shall lose its validity with immediate effect.

3 GENERAL INFORMATION

Our state-of-the-art devices are developed and manufactured with great care and subject to continuous quality control. This operating manual should help you to become familiar with the device and to make use of its intended applications.

The operating manual contains important notices on how to operate the device safely, appropriately and cost-effectively. It is necessary to observe the operating manual to ensure the reliability and long lifespan of the device and to avoid hazards.

The operating manual does not take local regulations into consideration; the owner is solely responsible for complying with those regulations and ensuring that any assembly personnel employed do so too.

3.1 Designation of notices in the operating manual

In the operating manual, safety notices indicating dangers to people are identified with the general hazard symbol as per DIN 4844-W9.

In the operating manual, warnings about electrical voltage are identified with the safety signs as per DIN 4844-W8.

All other notices whose disregard might restrict the functional reliability of the device or represent a danger for the machine are highlighted with the word:

ATTENTION!

This machine unit may not be operated beyond the values defined in the technical documentation with respect to pumped liquid, delivery flow rate, rotational speed, density, pressure, temperature and motor power, or outside the scope of any other instructions contained in the operating manual or contract documentation. If you have any queries, please consult the manufacturer.

The rating plate displays the most important operating data and the machine serial number. We request that this always be specified in the event of enquiries, subsequent orders and when ordering spare parts.

If additional information or notices are required or in case of damage, please contact your local field sales employee or contact us directly.

3.2 Unauthorised conversion and manufacture of spare parts

Conversions and modifications to the devices and their machine units are only permissible with the explicit approval of the manufacturer. The use of non-"genuine spare parts" voids any liability.

4 SAFETY

This operating manual contains fundamental notices which must be observed during installation and operation as well as when performing maintenance work on the device.

It is therefore imperative that the installer as well as the responsible specialist personnel and owner read this manual before assembly and commissioning, and that it is continually available at the location where the machine is operated.

In addition to the safety notices in this operating manual, all warning signs and regulations of the respective professional association in the latest version must be observed.

4.1 Qualifications of the personnel

The personnel responsible for operation, maintenance, inspection and assembly must be appropriately qualified for this work.

The area of responsibility, competence and monitoring of personnel must be closely regulated by the owner. If the personnel do not possess the necessary knowledge, they should be trained and instructed accordingly.

Furthermore, the owner must ensure that personnel fully understand the contents of the operating manual.

4.2 Danger if the safety notices are not observed

Failure to observe the safety notices can endanger people as well as the environment and the machine. Failure to observe the safety notices results in the forfeiture of all claims for damages.

Non-observance may, for example, result in the following specific dangers:

- Failure of important functions of the device or system.
- Endangerment of people due to electrical, mechanical, chemical and other exposure.
- Endangerment of the environment due to leakage of hazardous materials.

WARNING SIGNS

All notice and warning signs must be observed. Dangerous gases can escape when agitating the liquid manure.

DANGER OF POISONING!

If the liquid manure is stored below slatted floors, the presence of people in buildings when agitating is only permissible with sufficient ventilation. Therefore, windows and doors must be open and the fan set to full power.

4.3 Safety-conscious work

Observe the safety notices presented in this operating manual, the existing national regulations for accident prevention as well as any internal work, operation and safety regulations of the company at all times.

Safety notices for the owner and operator:

- ✓ If hot or cold machine parts are potentially dangerous, these parts must be protected on site to prevent contact.
- ✓ Contact protection for moving parts must not be removed while the machine is in operation.
- ✓ Any leakage of dangerous materials must be conducted away so that there is no endangerment to people and the environment. Statutory provisions must be observed.

4.4 Safety notices for maintenance, inspection and assembly work

The owner must ensure that all maintenance, inspection and assembly work is carried out by authorised and qualified specialist personnel.

Work on the machine must strictly only be carried out when the machine is at a standstill.

Directly after completion of the work, all safety and protection equipment must be reattached or put back into operation.

5 WARRANTY

This section contains the general specifications for the warranty. Contractual agreements shall always take precedence and are not nullified by it. The warranty period is a component of Stallkamp's general terms and conditions. Agreements deviating from this must be specified in writing in the order confirmation.

5.1 General

Stallkamp is obligated to repair every defect to products sold by Stallkamp under the condition:

- ✓ that it is a quality-related defect of the material, manufacture or design;
- ✓ that the defect is reported in writing to Stallkamp or the Stallkamp representative within the period of the warranty;
- ✓ that the product is used exclusively in line with the operating conditions specified in the operating manual and used for the intended purpose;
- ✓ that the monitoring device integrated in the product is correctly connected (temperature protection);
- ✓ that genuine Stallkamp parts are used.

5.2 Exclusion of liability

No warranty is honoured nor liability assumed for damage to the device if one or several of the following points are applicable:

- A faulty configuration of the device on our part because of inadequate or incorrect information from the ordering party or owner.
- Failure to observe the safety notices, regulations or the necessary requirements in this operating manual which apply according to German law.
- Assembly, disassembly or repair of the device not in keeping with the regulations.
- Inadequate maintenance.
- Possible chemical, electrical or electrochemical influences.
- Wear.

Since maintenance has an influence on the safety and functional capability of the device, it is an integral component of the warranty. The owner of the device undertakes to have the manufacturer itself or a service provider approved by the manufacturer perform maintenance work according to the regulations of the manufacturer, including the necessary changing of oil and the repair and replacement of wearing parts. The owner is thus obligated to maintain a maintenance and revision list, which facilitates monitoring of the mandatory inspection and maintenance work **(see section 16 "Maintenance and revision list").**

We expressly emphasise that this device is a fluid flow machine in which the protective coating is exposed to constant wear from the abrasive contents of the pumping medium being pumped and should consequently be classed as a wearing part. Wear, damage and consequential damage due to external influences on the protective coating are expressly excluded from the warranty. The use of the device and/or the field of application and reliability for the application must be verified by the owner and is not covered by the warranty.

The liability of Stallkamp thereby excludes any liability for personal damage, material damage or financial losses.

The manufacturer reserves the right to modify the performance, specification or configuration data without prior notice.

6 PRODUCT DESCRIPTION OF LHP-M1307

6.1 General description

This operating manual applies to the standard model of the Stallkamp long-shaft high pressure pumps.

The pump must not be operated in explosive atmospheres.

Long-shaft high pressure pump LHP-M1307 composed of:

- Cast iron motor housing coated with 2-component plastic lacquer
- Thermo-control with bimetallic switch per phase for overheating protection
- Elastic coupling between motor and pump shaft
- Cast iron pump housing coated with 2-component plastic lacquer
- Oil filling in shaft protection tube with hydraulic oil
- Pump impeller speed of 1,450 rpm
- Shaft protection tube made of stainless steel with dipstick
- Maximum submersion depth depending on the pump layout for the respective pit depth
- Temperature of the pumping medium up to max. 70°C -> pumping without restrictions as long as motor is not running in overload range.
- Depending on the solid contents and the viscosity of the pumping medium, in isolated cases the cooling of the pump may not be sufficient. The motor is then switched off by the thermal protection switch. In this case, a pump impeller with a smaller exterior diameter is required.

6.2 Proper use of LHP-M1307

The pump is intended for the following applications:

- Pumping of liquid manure in final storage sites, reception pits and manure canals;
- Pumping of bio-mass in biogas plants;
- Pumping of municipal sludge in treatment plants;
- Pumping of industrial waste water in industrial plants.

The pump has been designed with a wide variety of fields of application in mind in which a high flow rate is required proportional to the power consumption.

The flow rate (volume flow rate in m^3/h) is dependent on the density and viscosity of the liquid, the type and the DM content of the liquid manure (animal feed), the support height and distance and the diameter of the pipeline.

6.3 Technical data for LHP-M1307

Long-shaft high pressure pump LHP-M1307 composed of:

- Pump type: LHP-M1307
- Three phase motor: 400 V, 50 Hz, 3 Ph, 1,450 rpm
- Protection category: IP54
- Insulating category: F = 155°C
- Motor power: 11.0; 15.0; 18.5 and 22.0 kW
- Pump seal: 2 radial shaft seal rings
- Shaft protection tube: Stainless steel, 1.4301 with dipstick
- Impeller: Plated, coated steel

6.4 Type plate for LHP-M1307

The type plate displays the most important power and specification data:

Fig. 1

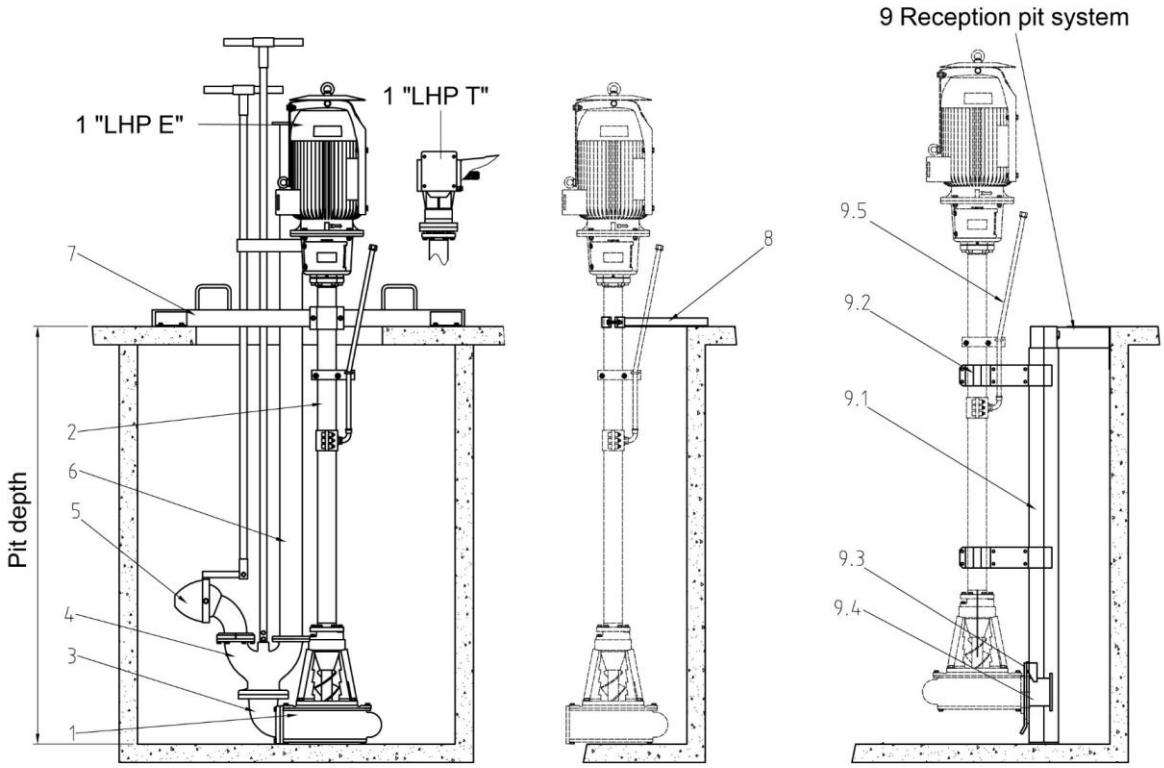
Classification: (e.g. LHP 110)

Motor/serial number: (e.g. 0201/000009)

Year of manufacture: (e.g. 2014)

In case of technical queries about the device, the above type plate data must be specified!

7 PERFORMANCE DATA AND INSTALLATION DIMENSIONS OF LHP-M1307



Description of attachment parts for long-shaft high pressure pump	
1	Pump with drive electrical motor or angular gear
2	Casing tube with hollow drive shaft with length depending on pit depth
3	PU bend 90°
4	Distributor casing with rotary slide
5	Agitating nozzle can be moved horizontally and vertically
6	Pressure pipe with length depending on pit depth
7	Fastening rail for reception pit
8	Wall mount for reception pit
9	"Reception pit system" guide rail
9.1	Guide rail with floor support and head piece
9.2	Slide bearing for LKP
9.3	Pump absorb flange
9.4	Floor support with coupling foot piece
9.5	Dipstick

Performance data of long-shaft high pressure pump

Type	Motor power in kW	Start-up	Nominal current in A	Req. fuse	Rotational speed (rpm)	Max. pressure in bar	Flow rate in m³/h	Ball passage	Noise level in dB (A)
LHP 110	11.0	Y / △	20.44	32 A slow-blow	1465	2.0	200	ø48	67
LHP 150	15.0	Y / △	27.33	50 A slow-blow	1465	2.5	250	ø48	67
LHP 185	18.5	Y / △	33.53	50 A slow-blow	1470	3.2	300	ø48	67
LHP 220	22.0	Y / △	39.70	63 A slow-blow	1470	4.0	350	ø48	67
LHP-T	Angular gear, PTO shaft 540 rpm				1620	4.4	400	ø48	---

All performance data are based on clean water!
Operating voltage 400 V / 50 Hz, protection category IP 54
Noise level measured at 1 m distance

We reserve the right to alter the technical information

Drg. no.: 0-24-0010/14

8 CONSTRUCTION TYPE OF LHP-M1307

8.1 Cable connection

The motor's cable connection compartment is splashproof according to IP 54.

8.2 Motor

Three phase asynchronous motor as short circuit rotor at 50 Hz.

Continuous operation or intermittent operation with max. 6 evenly distributed activations per hour. The stator is insulated to class F (155 °C). The motor has been designed in such a way that in the case of nominal voltage deviations up to +/- 5% it can still attain an unchanged nominal output. With regard to the danger of overheating, +/- 10% deviations in the nominal voltage are allowed, provided that the motor is not running at full load the whole time. The difference between the individual phases must not exceed 2%.

8.3 Monitoring device of motor

Three series-connected temperature sensors are installed in the stator winding. The temperature sensors will start reacting at 150°C.

ATTENTION! The thermal sensors must always be connected.

8.4 Hexaflex coupling

The elastic coupling between the motor and pump shaft is used for cushioning and must be replaced if it becomes damaged or destroyed.

8.5 Drive shaft and casing tube with oil filling

The device is equipped with an oil-filled casing tube with drive shaft between the motor and pump impeller. The oil filling must be checked with the dipstick once a week when the pump is in daily operation. When the pump is used periodically, the oil level must be checked before every use.

8.6 Pump impeller

The devices are equipped with tungsten carbide-plated steel impellers. The size of the impeller depends on the construction size and the power consumption of the motors. In special cases when a pump is continuously running in the overload range, a smaller impeller is required.

9 TRANSPORT AND STORAGE REGULATIONS OF LHP-M1307

The device must be transported in a lying position. Ensure that the machine is not able to roll.

If the device is not used for a long period of time, it must be protected against moisture and heat. The impeller should be turned from time to time (approx. every two months) to ensure that the sealing surfaces do not adhere to each other. This is absolutely essential when the device is not in use.

The device must be inspected before commissioning following a long period of standstill. It is particularly important to verify that the cable entry points and seals are not damaged in any way.

The directions under **section 4 "Safety"** must be observed.

10 ASSEMBLY OF LHP-M1307

10.1 Prior to commissioning: Safety notices

The following rules should always be observed to prevent accidents during service and assembly work:

(1) Never work alone. The danger of drowning and suffocation must not be underestimated.

(2) Check whether sufficient oxygen is available and that no poisonous gases exist.

(3) Before performing welding work or using electrical tools, check whether there is a danger of explosion.

(4) Be aware of the danger of electrical accidents.

(5) Examine brackets to ensure its fully satisfactory condition.

(6) Ensure an adequate fencing off at the place of work, e.g. by means of a cordoning trellis.

(7) Wear a hardhat, safety glasses and safety footwear.

(8) Keep a first-aid kit ready.

The health and safety regulations and the applicable regulatory requirements must also be observed.

10.2 Measures for using the LHP-M1307 with an angle rail

- Measure the pit depth up to the top edge of the pit cover (minimum pit opening).
- Attach angle rail on the drive tube so that the dimension from the lower edge of the pump foot to the lower side of the angle rail equals the measured dimension of the pit depth.
- Place the pump in the pit opening with a front loader.
- Align the pump and reaffix the angle rail height-wise if necessary.
- Bolt the angle rail tightly on the concrete floor.
- In cases of multiple pits, the angle rail is loosened from the small angles. An extra 2 angles can then be bolted on for every additional pit.

- The pit opening near the pump must be covered with wood planks or another material that can be walked on.
- If present, a barrel fill line must be protected against surges when pumping at the liquid manure barrel.

10.3 Commissioning the LHP-M1307

(1) The device can only be operated with a suitable bracket (see: pump brackets from the Stallkamp range). Lower the device into the liquid manure, ensuring that the drive unit (motor or gear) and the vent opening in the shaft protection tube are not submerged.

(2) Remove the ventilation screw at the top of the shaft protection tube so that no overpressure builds up in the pumping tube during operation and causes damage to the pump seal.

(3) Check the oil level with the dipstick!

(4) If the distributor has a manual lever, set it to "Agitate".

(5) Connect up the barrel fill line, irrigation line and siphoning line up to the pressure discharge tightly so that no pressure is lost.

(6) Protect the pit opening with suitable means (covers or barriers) to prevent persons from falling in and commission the device using the delta-wye motor protection switch. Attention: Turn through to "Delta"!

The impeller turns anticlockwise when viewed from the pump inlet (from above). (see 11.2 "Direction test")

(7) As standard, the device is protected by an overload protection in the switch box, an overheating protection in the motor and an overload coupling.

In case of an overload or of overheating, the device is switched off by a motor protection switch. If the device was switched off as a result of overheating, under no circumstances should you try to restart it by pressing the switch repeatedly.

A cooling phase of approx. half an hour must be maintained in order to avoid damage occurring to the motor winding. In some cases, it may be possible to restart the device after approx. 5 minutes, although the motor winding is still partly hot. Even in these cases, it is still important to maintain the cooling phase of approx. half an hour.

ATTENTION: The ventilation cover of the motor must never be covered, so that there is always sufficient cooling available.

(8) In the LHP-T the pump is driven by a PTO shaft from the tractor. To ensure that no damage occurs or the gear overheats in cases of malfunctions (e.g., entangled cords), only PTO shafts with an overload coupling or shearing pin (M6 8.8 = 90 DaNm) may be used (e.g., Walterscheid W2300 with overload coupling KB 61/20) and PTO shaft speed of 540 rpm.

10.4 Agitating with the LHP-M1307

1) Set the manual level of the distributor rods to "Agitate" and clamp it tightly with the T-screw.
2) Set the nozzle horizontally using the nozzle rods and clamp it tightly with the T-screw.
3) The agitating nozzle can be adjusted horizontally and vertically with the nozzle rods.
4) Liquid manure can be agitated homogeneously by swaying the nozzle in different directions.
5) If the liquid manure is too thick, add liquid such as thin manure or water.

10.5 Pumping with the LHP-M1307

If the liquid manure is homogeneous, you can start pumping in a liquid manure barrel or in a liquid manure tank. You can change the rotary slide in the distributor from "Pump" to "Agitate" and back when the pump is in operation.

Connect the respective pipe to the pump pressure discharge, then set the manual lever of the distributor to "Pump" and clamp it tightly with the T-screw.

10.6 Pulling and cleaning the LHP-M1307

Before the pump is pulled, all its electrical machine units must be disconnected from the mains supply. Screw in the ventilation screw on the shaft protection tube. The pump can then be pulled if it is secured (front loader/crane) and has been unscrewed from all the fixed parts in the pit.

Pressure washers must not be used to clean the device.

10.7 Storing the LHP-M1307

Clean the pump thoroughly before storing it.

The stability of the pump cannot be guaranteed when stored vertically. It must be stored horizontally on a suitable palette. The motor should be approx. 15 cm higher than the volute casing. The pump must be protected against lateral rolling.

10.8 Winter operation of LHP-M1307

If the pump is used when there is a danger of frost, the free running of the pump must be guaranteed every time it is turned on.

If there is a risk that the pump might freeze over when not in operation, it must be disassembled and protected against freezing over using suitable measures.

11 ELECTRICAL CONNECTION OF LHP-M1307

11.1 Electrical connection and protection of the electrical motor

Electrical connection may only be established by a certified electrician. The VDE regulations (German Association for Electrical, Electronic & Information Technologies) must be observed. Compare the existing voltage with the specifications on the manufacturer's plate of the motor and select the appropriate circuit.

The pump, the manual switch box and the plastic housing of the automatic delta-wye start-up are splash-proof according to IP54.

The technical connection conditions of the local energy supply company must be observed during connection.

The use of a motor protection device is a prerequisite.

The device must be properly connected to the mains supply (pay attention to serviceable protective conductors) and check whether the feed cable is properly protected. The respective power consumption of the motor in amperes is shown on the motor's type plate. See section **7 "Performance data and** installation dimensions **of the LHP"**

ATTENTION!

The switch box must be protected from moisture at all times!

11.2 Direction test for LHP-M1307

The impeller turns anticlockwise when viewed from the pump inlet and from the motor (from above).

The direction must be checked by turning the device on and off again rapidly.

If the direction is incorrect, swap any two of the phases L1, L2 and L3 of the feeder in the switch box!

The electrical installation may only be carried out by a certified electrician.

(in accordance with the VDE regulation or national regulations)

IMPORTANT!!

The electric cable must ***never*** be subjected to tensile loads, as this can cause damage to the device or cause it to leak.

When removing the device from the pit, the electric cable must be clamped off as it could otherwise be damaged.

12 MAINTENANCE OF LHP-M1307

The specified maintenance and inspection work must be performed regularly. This work may only be carried out by trained, qualified and authorised people. The owner of the device undertakes to have the manufacturer itself or a service provider approved by the manufacturer perform maintenance work according to the regulations of the manufacturer, including the necessary changing of oil and the repair and replacement of wearing parts. The owner is thus obligated to maintain a maintenance and revision list, which facilitates monitoring of the mandatory inspection and maintenance work (see section **16 "Maintenance and revision list"**).

12.1 Maintenance intervals

The device must be inspected for damage and the oil level checked before every commissioning. In particular the pump impeller and the cable must be proven to be free of damage. It is also important to check that all screws and other fastening devices are fitted securely.

12.1.1 Recommendation: once a week

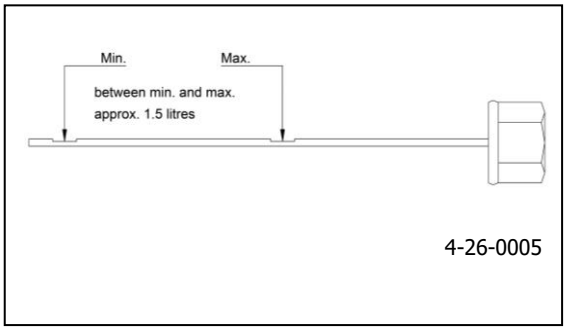
12.1.1.1 Check the oil filling in the shaft protection tube

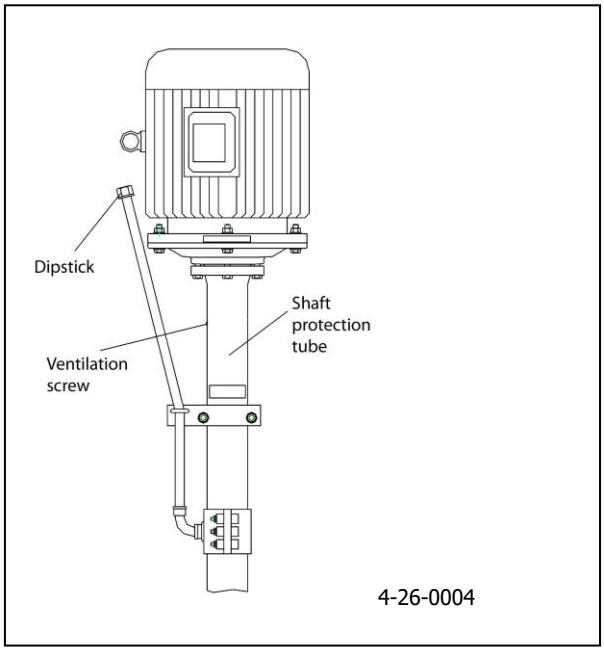
The oil filling in the shaft protection tube must be checked at least once a week in the installed state (vertical) using the oil level indicator.

- The ventilation plug (or ventilation screw) on the shaft protection tube must be removed. (see 10.3 "Commissioning", point (2))

Only check the oil level while the pump is switched off

- Unscrew the dipstick, wipe it clean, screw it back in, unscrew it again and read off the oil level.
- The oil level must be between the minimum (lower marking) and maximum (upper marking). (Drg. 4-26-0005)
- If the oil level has fallen below the minimum marking, approx. 1.5 litres (Wibohyd EHF 46) should be topped up via the dipstick tube. (Drg. 4-26-0004)
- The first time the pump is used, the oil level must be allowed to settle first. Oil level differences may arise between cold (before pumping) and warm (after pumping) operating statuses.





Only use biodegradable oil!
(e.g., Wibohyd EHF 46)

- If you note large oil losses, see section "Malfunctions". If oil is missing or contaminated with water or other media, the device must be taken out of operation immediately. In this case, the oil must be changed immediately and the lower bearing must be exchanged. (see section **12.2 "Changing the lower bearing incl. sliding bearing on the LHP-M1307")**

12.1.2 Recommendation: every 3 months

12.1.2.1 Check the power consumption with an amperemeter

Power consumption is constant during normal operation. Occasional current fluctuations are caused by the consistency of the medium being agitated and/or the pumping medium. If a constantly increased power consumption is measured, a smaller pump impeller is required or contact our sales representative.

12.1.3 Recommendation: every 6 months in continuous operation

12.1.3.1 Checking the shaft seal

The shaft seal in the lower bearing is a wearing part and must be replaced at the latest every 4,500 operating hours when the device is in continuous operation. The lower bearing is available as a complete sub-assembly. Please contact us or one of our sales representatives. Similarly, the plain bearing Pos. 545.1 and Pos. 545.2 must be exchanged in the scope of this maintenance interval.

12.1.4 Recommendation: every 6 months

12.1.4.1 Functional tests on the monitoring devices

Every 4,500 operating hours or at least once annually, we recommend checking the monitoring devices in the scope of maintenance work. For these functional tests, the device must be cooled down to ambient temperature. The electrical power cords of the monitoring devices must be disconnected in the switch box. Temperature protection should be checked by taking a continuity measurement. If you identify any defects, please contact our sales representative.

12.1.5 Recommendation: every 12 months

12.1.5.1 Checking the tightening torque of all screw connections

Every 9,000 operating hours or at least once annually, we recommend checking the secure positioning of the screw connections in the scope of maintenance work. The tightening torques for VA stainless steel screws in Nm for different thread sizes are shown below:

(M8 = 18 Nm, M10 = 33 Nm, M12 = 57 Nm, M16 = 135 Nm, M20 = 150 Nm)

12.1.5.2 Visual inspection and cleaning of the pump, connection cable and brackets

Every 9,000 operating hours or at least once annually, we recommend checking the pump, connection cable and brackets for damage and soiling in the scope of maintenance work. Deposits, blockages and adhering fibrous materials must be removed. In addition, the insulation on the connection cable must be inspected for damage, such as scratches, tears, blistering or crushed areas. Damaged components must be exchanged immediately. Please contact our sales representative.

12.1.6 Recommendation after the end of lifespan is reached

At the end of its lifespan, the pump can be disposed of normally as scrap. The oils should be drained carefully in advance and disposed of as waste oil. The pump is composed of various metals: steel, aluminium, copper and stainless steel. Dismantling it and sorting the components considerably increases returns.

12.2 Changing the lower bearing incl. sliding bearing on the LHP-M1307

The following assembly instructions refer to drg. no.: 0-24-0010-10 and -1 (see 15.3 and 15.4).

Before carrying out assembly work on the pump, the power supply or voltage in the feed cable to the long-shaft high pressure pump's switch box must be disconnected and the ventilation screw must be screwed into the shaft protection tube. Lift the pump out of the pit, clean it and position it horizontally on a suitable support.

Disassembly:

(1) Remove the dipstick no. 643 and O-ring no. 412.6 (drain the oil);
(2) Remove lower lid no. 162 with 8 screws, remove sliding bearing no. 545.2 from the lid;
(3) Untighten the nut in the impeller no. 922 (we recommend inserting a piece of wood between the impeller and the bearing lantern in order to block the impeller when untightening the nut), this pulls the sliding bearing no. 545.1 off the shaft end;
(4) Pull off impeller no.: 233 incl. shaft protection tube no. 524.1 downwards;
(5) Remove the feather key no. 940;
(6) Release the clamp ring on the shaft protection tube with 6 screws no. 901.7 and push it back;
(7) Pull the pump housing no. 102 with bearing lantern no. 146 and bearing block no. 331 approx. 500 mm out of the shaft protection tube;
(8) Attention: hold tight if the hollow drive shaft travels;
(9) Pull the bearing shaft no. 211 with bearing support no. 331 out of the hollow drive shaft no. 216;
(10) Remove the bearing support no. 331 from the bearing lantern no. 146.

Assembly:

If pump medium has entered the oil compartment, all parts of the drive shaft must be cleaned. Otherwise when the next oil is filled in, dirt will be flushed into the new layers of the lower bearing, which can lead to quicker wearing of the ball bearings and the shaft seals.

(1) Install the bearing lantern no. 146 with housing no. 102 onto the bearing housing no. 331 of the lower bearing; attention, insert spacer discs no. 551 between if present;
(2) Place pump impeller no. 233 incl. shaft protection tube no.: 524.1 in the bearing shaft;
(3) Push on disc no. 554.2 and spring ring no.: 930.4;
(4) Screw on new nut no. 922, press new sliding bearing no. 545.1 onto the shaft end;
(5) Check that the gap between the impeller no. 233 and the split ring no. 502 is 1–2 mm; if necessary, additionally mount or remove the distancers no. 551 as of point 1;
(6) Press new sliding bearing no. 545.2 into the lid and install the lower lid no. 162 with 8 screws, grease sliding bearing in advance;
(7) Push the O-ring no. 412.2 onto the neck of the bearing housing no. 331;
(8) Push the bearing shaft no. 211 with the new lower bearing and the affixed spacer bushing no. 527 into the hollow drive shaft no. 216;
(9) Push the bearing housing no. 331 into the shaft protection tube no. 714;
(10) Push on the clamping ring with 6 screws no. 901.7 and install;
(11) Fill with Wibohyd EHF 46 oil (amount depends on the shaft length / pit depth);
(12) Install the dipstick no. 643 with 2 O-rings no. 412.6;
(13) Carry out functional test.

12.3 Changing the pump impeller in the LHP-M1307

If power consumption is too high when operating the pump, a smaller impeller must be installed.

Disassembly: see 12.2: Disassembly, Point 2 to 4

Assembly: see 12.2: Assembly, Point 2 to 6

Then perform a functional test!

12.4 Changing the Hardy coupling disc on the LHP-E-M1307

If foreign bodies cause disruptions when operating the pump, there is a risk of the Hexaflex coupling disc breaking. In this case, urgent replacement of the coupling disc is required. For this, see Drawing 27-0121.

Disassembly:

1. Switch the pump off and take measures to prevent it from being switched on again accidentally;
2. Open the pit opening and place barriers to prevent persons from falling in, see safety regulations;
3. Remove 8 winged screws Pos. 916 and 2 covers Pos. 853;
4. Remove 4 fastening screws for the motor Pos. 901.3;
5. Lift the motor Pos. 820 by approx. 40 mm with suitable lifting gear; or
6. Push the motor upwards with 4 screws M12x100 DIN933 through the 4 threaded holes in the coupling housing Pos. 724. When doing so, protect the motor against toppling over using 2 screws M12x120 DIN931 through the fastening holes;
7. Remove the coupling disc (Hexaflex disc) Pos. 852 and any fragments of the coupling disc if applicable;
8. Check the bearing clearance of the motor shaft and pump shaft manually with radial movements on both coupling halves Pos. 850 and Pos. 851. If bearing clearances are identified, these bearings must be replaced;
9. Check that the pump impeller can turn freely by turning the coupling half on the shaft side Pos. 851. If there is a blockage, the pump must be lifted out of the pit in order to free the pump housing and pump impeller from foreign bodies.

Assembly:

1. Insert the new coupling disc Pos. 852 and turn the motor shaft to the position (pin – hole);
2. Lower the motor again, ensuring that the pins Pos. 905 of the coupling half on the motor side Pos. 850 slide exactly into the holes on the coupling disc Pos. 852;
3. Install the motor Pos. 820 with the coupling housing Pos. 724;
4. If necessary, readjust the coupling half on the motor side Pos. 850 to zero clearance to the coupling disc. This is done by loosening the screw Pos. 901.8, pushing the coupling half Pos. 850 downwards and then screwing the screw Pos. 901.8 tight again;
5. Regrease the bearing and seal in the motor flange Pos. 724 with a grease gun via the grease nipple Pos. 915;
6. Reinstall 2 covers Pos. 853 and 8 winged screws Pos. 916;
7. Reconnect the electrical connections and perform a test run; the pump is now ready to use again.

13 MALFUNCTIONING OF LHP-M1307

13.1 General malfunctions and malfunctions of the pumps with electrical motor LHP-E

Fault	Troubleshooting	Possible cause	Solution
Motor turns, but pump doesn't pump	Check the coupling disc	Coupling disc is destroyed due to overloading (e.g., foreign bodies in the impeller)	• Install new coupling disc • Remove foreign bodies
Pump turns off after running for short period of time	Power consumption too high (see ampere specification on type plate)	Foreign body in pump housing	• Lift pump machine unit out of pit • Dismantle volute casing (see 12.3 "Disassembly") • Remove foreign body
		Foreign bodies have become entwined around the tearing device	• Remove foreign body
		Foreign bodies have become entwined around the pump blade	• Dismantle pump blade and remove foreign body (see 12.3 "Disassembly")
		Flow pressure too high, depending on system	• Exchange impeller for smaller version
As above	Power consumption correct according to type plate	Motor protection set too low	• Set motor protection according to type plate
Circuit breaker activates	Ground fault	Moisture in switch box	• Protect switch box against moisture
		Cable sheathing defect	• Shorten electrical cable to damaged point or renew • Affix cable clamps according to plan
Pump not working	Check pump direction	Pump turning wrong way. Electrical cable relaid	• Swap phases L1, L2 or L2, L3
As above	Check liquid manure status	Too little fluid in liquid manure	• Add water or thin liquid manure • Homogenise liquid manure
Pump output diminishes after short time	Check liquid manure status	The liquid manure is not sufficiently homogenised so that now the liquid has been pumped off and the solid components have been left behind.	• Add water or thin liquid manure • Homogenise liquid manure
Pump output diminishes after some months	Check gap between impeller and split ring	Gap between impeller and split ring too big	• Reduce gap between impeller and split ring to max. 1–2 mm by adding spacer discs between the bearing support and the bearing lantern

Fault	Troubleshooting	Possible cause	Solution
Pump doesn't start, motor just hums	Check electricity supply and whether all three phases L1, L2 and L3 are carrying electricity	Electrical fuse defect Mains supply overloaded	• Renew or switch on fuse • Check mains supply for loads
	Measure motor cable for current U1-U2, V1-V2, W1-W2	Broken cable	• Renew electrical cable
	Check volute casing	Foreign body in volute casing	• Remove foreign body
Increasing oil loss in shaft protection tube	Check seals in bearing support	Seal defect	• Construct new bearing support

13.2 Addition for pumping with tractor engine LHP-T

Fault	Troubleshooting	Possible cause	Solution
Gear becomes very hot	Check volute casing for foreign bodies	Wrong shearing pin used; this can mean gear is overloaded by foreign bodies in the volute casing	• Remove foreign body • Insert correct shearing pin (see 10.3)
Shearing pin breaks	Check volute casing for foreign bodies	Foreign body in volute casing	• Remove foreign body • Insert shearing pin

ATTENTION!

For all tests and works on the pump machine unit or on the switching devices, the electrical lines and devices must be disconnected from the power supply.

The electrical reconnection may only be carried out by a certified electrician.

Observe the VDE regulations!

14 NOTICES

14.1 Provisions of the professional association

The accident prevention regulations of the German Agricultural Professional Association stipulate the following in Paragraph 2.8 under "Special provisions for pits and canals":

Paragraph 2.8

§ 1 Protection against falling in

(14) Pits, ditches, canals, wells and other similar cavities in indoor and outdoor areas must be made safe with fences or coverings to prevent people from falling in. If these are not deeper than 100 cm, other safety precautions will suffice.

§ 2 Openings

(1) If removal and entry openings and the like are opened, it must be ensured that people and objects cannot fall in.

(2) Pits and canals that are regularly entered must have facilities which permit entry without danger of accidents. The openings of these pits and canals must be dimensioned in such a way to allow the rescue of any casualties.

§ 3 Entry

(1) Before entering and while in pits and canals, ensure that sufficient breathing air is present and that operational equipment is reliably protected against being switched on. The handling of naked flames is not permitted.

(2) Climbing in to rescue casualties is only admissible if the person climbing in is held by two additional people using a rope that is firmly anchored outside the tank.

§ 4 Tanks and canals for animal faeces

(1) For tanks and canals in the open air, suitable measures must be implemented to ensure that fermentation gas cannot flow into the building.

(2) Sealed tanks in the open air must have vent openings on opposite sides.

(3) If tanks and canals are located in buildings – also under slatted floors – it must be ensured that fermentation gas is discharged out of the buildings.

(4) If tanks and canals in buildings are fitted with agitators and pumping/flushing equipment, there must be facilities for the discharge of fermentation gases, which automatically switch on when the agitators and pumping/flushing equipment are started up. They may only be switched off when the work process is concluded. The extracted gases must not endanger people.

(5) Canals are to be designed in such way as to avoid any unnecessary whirling up of the faeces.

(6) However, operating stations for agitators, pumping and flushing equipment etc. must be positioned above the ground.

(7) Closed rooms in which there are operating stations must not have openings to the tanks and canals.

(8) Operating instructions must be permanently attached to the operating stations.

§ 5 Removal of animal faeces from tanks and canals

(1) No smoking and no naked flames are allowed in the immediate proximity of removal openings during agitating and removal of faeces.

(2) In buildings in which there are open tanks and canals, the presence of people and animals during agitating and removal is only permissible if there is sufficient ventilation.

§ 6 Warning signs

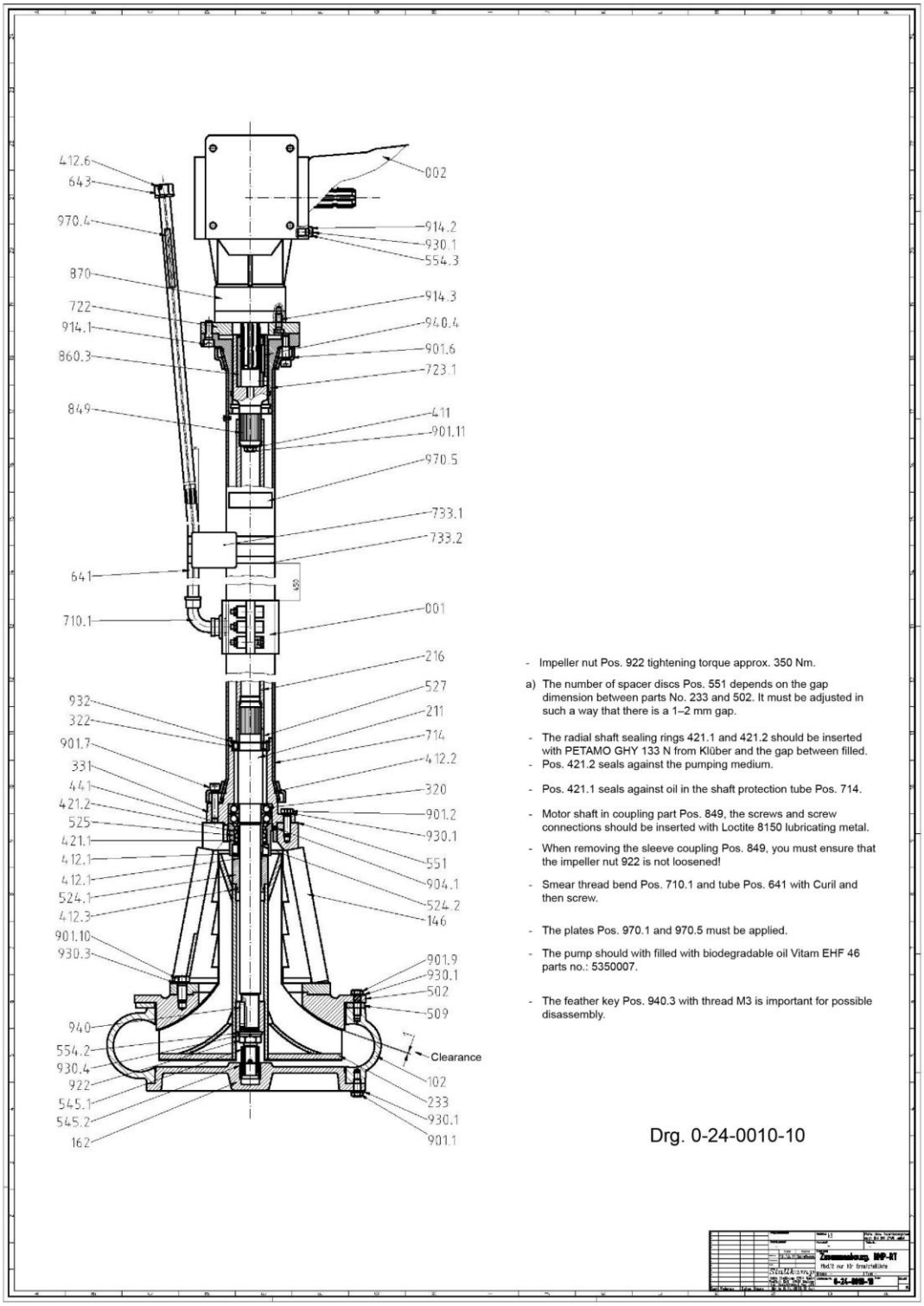
(1) Warning signs indicating gas hazards must be placed in a clearly visible position at openings in tanks and canals.

(2) Refer to the "Information Sheet with Notice, Warning, Mandatory, Prohibition and Rescue Signs" of the German Federal Association of Agricultural Professional Associations.

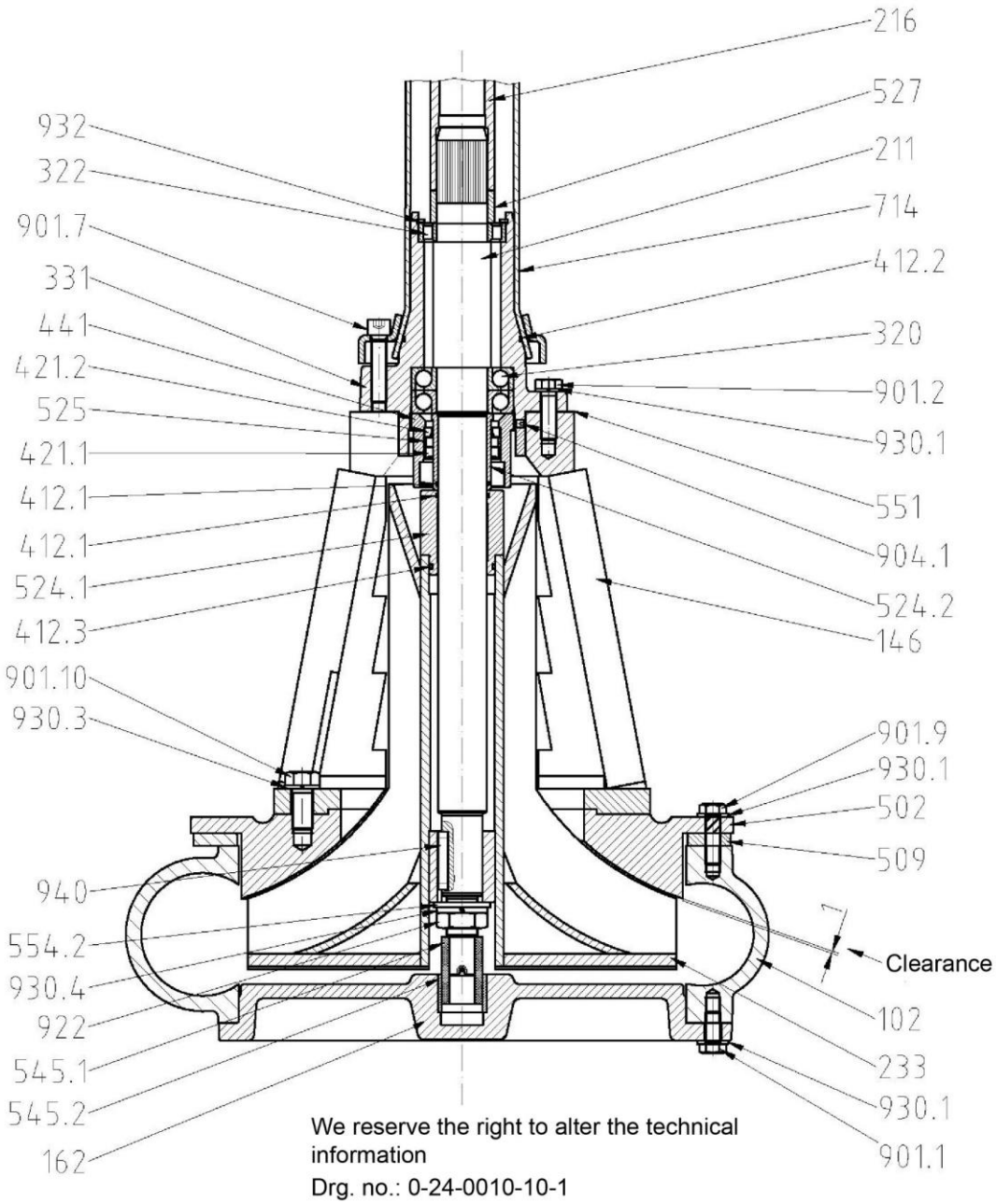
15 SPARE PARTS LIST AND DRAWINGS OF LHP-M1307

Stallkamp devices may only be repaired by specialists that have been trained by the manufacturer of this device (Erich Stallkamp ESTA GmbH). To access our spare parts price lists, please contact your sales representative.

15.1 Assembly drawing LHP-M1307, drg.: 0-24-0010-10

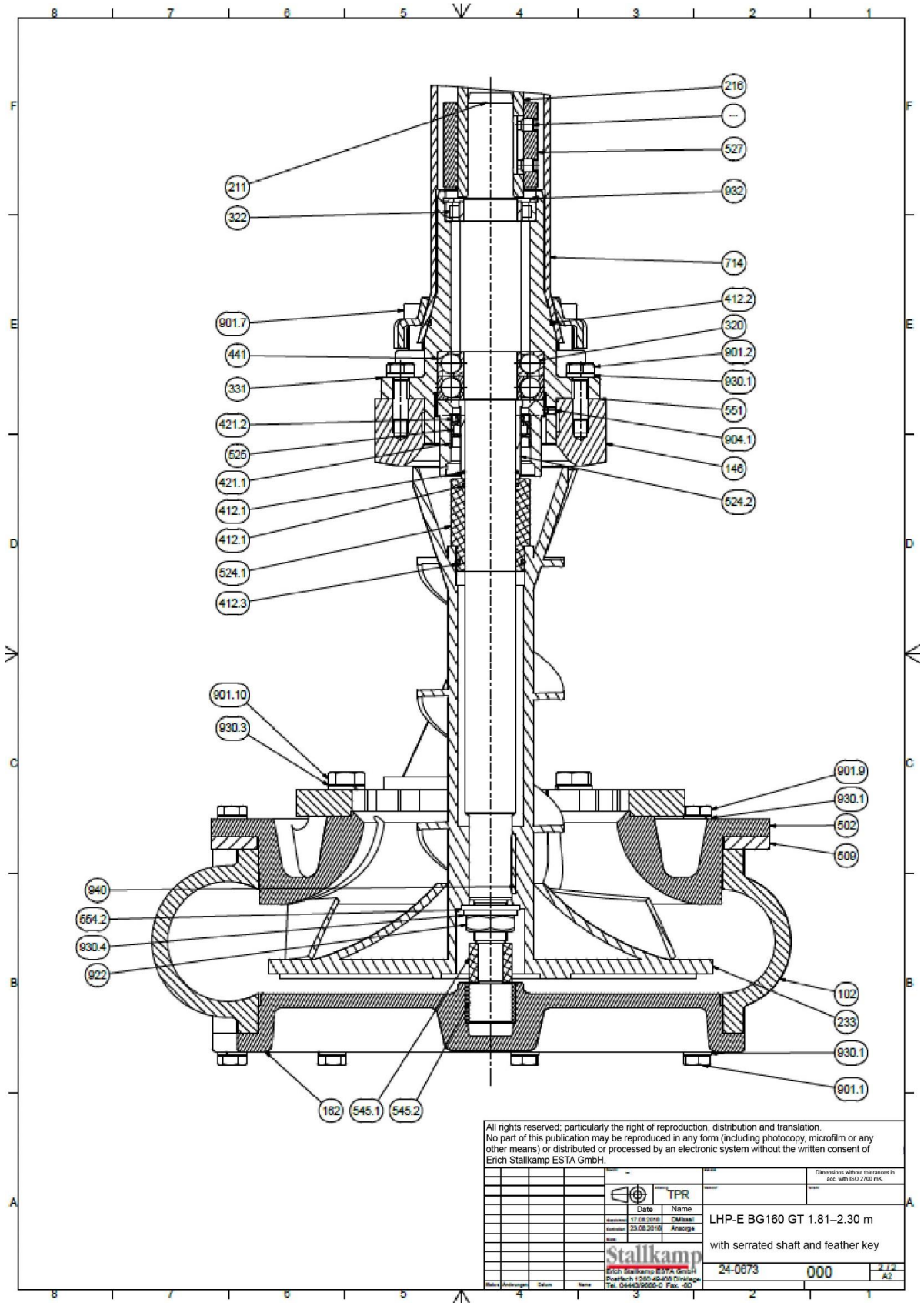


15.2 Detail flange connection pump housing LHP-M1307, drg.: 0-24-0010-10-1 As supplied until 2018 (serrated pump shaft)

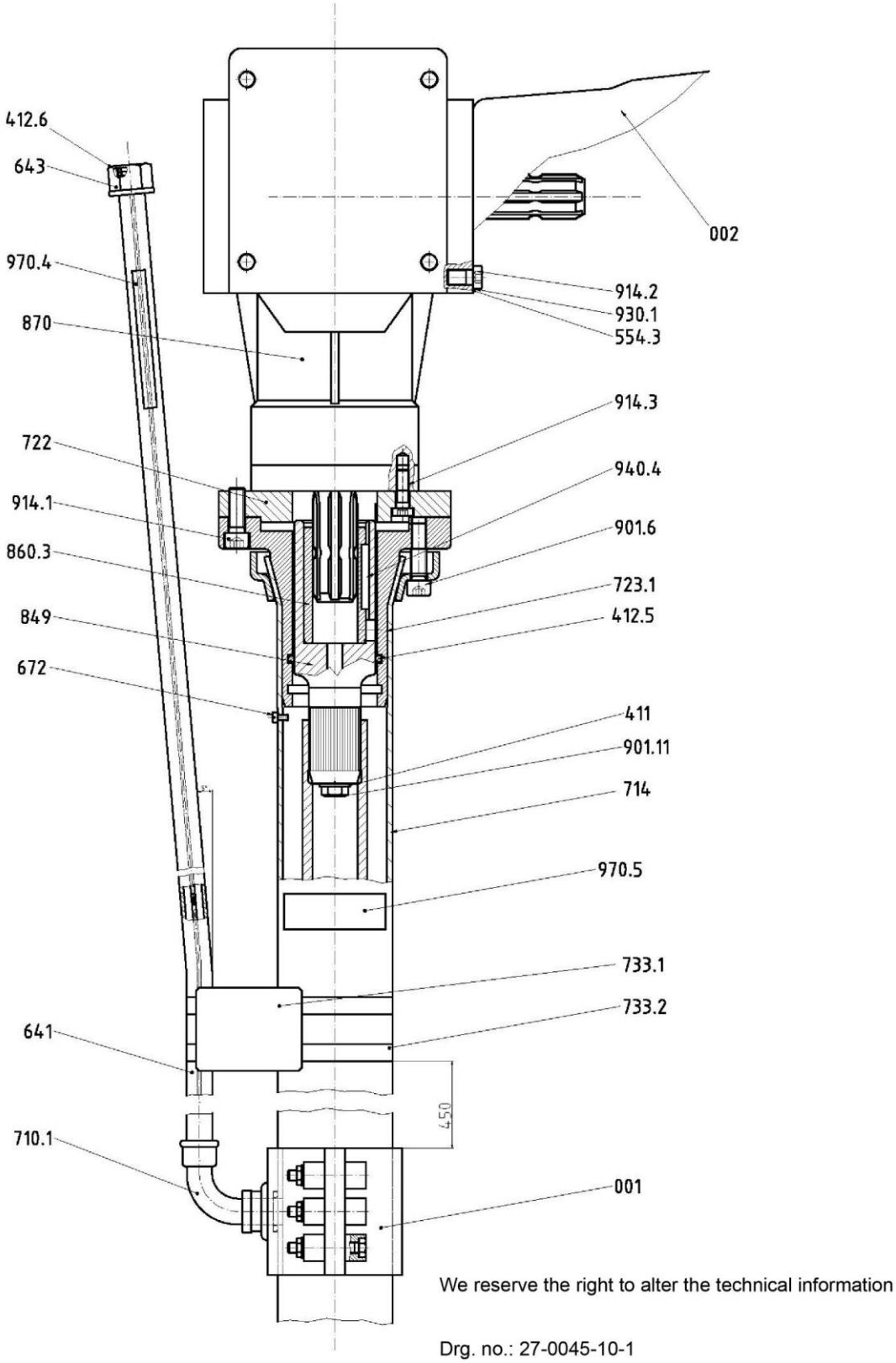


15.3 Detail flange connection pump housing LHP-M1307, drg.: 24-0673 As supplied from 2019 (pump shaft with feather key connection)

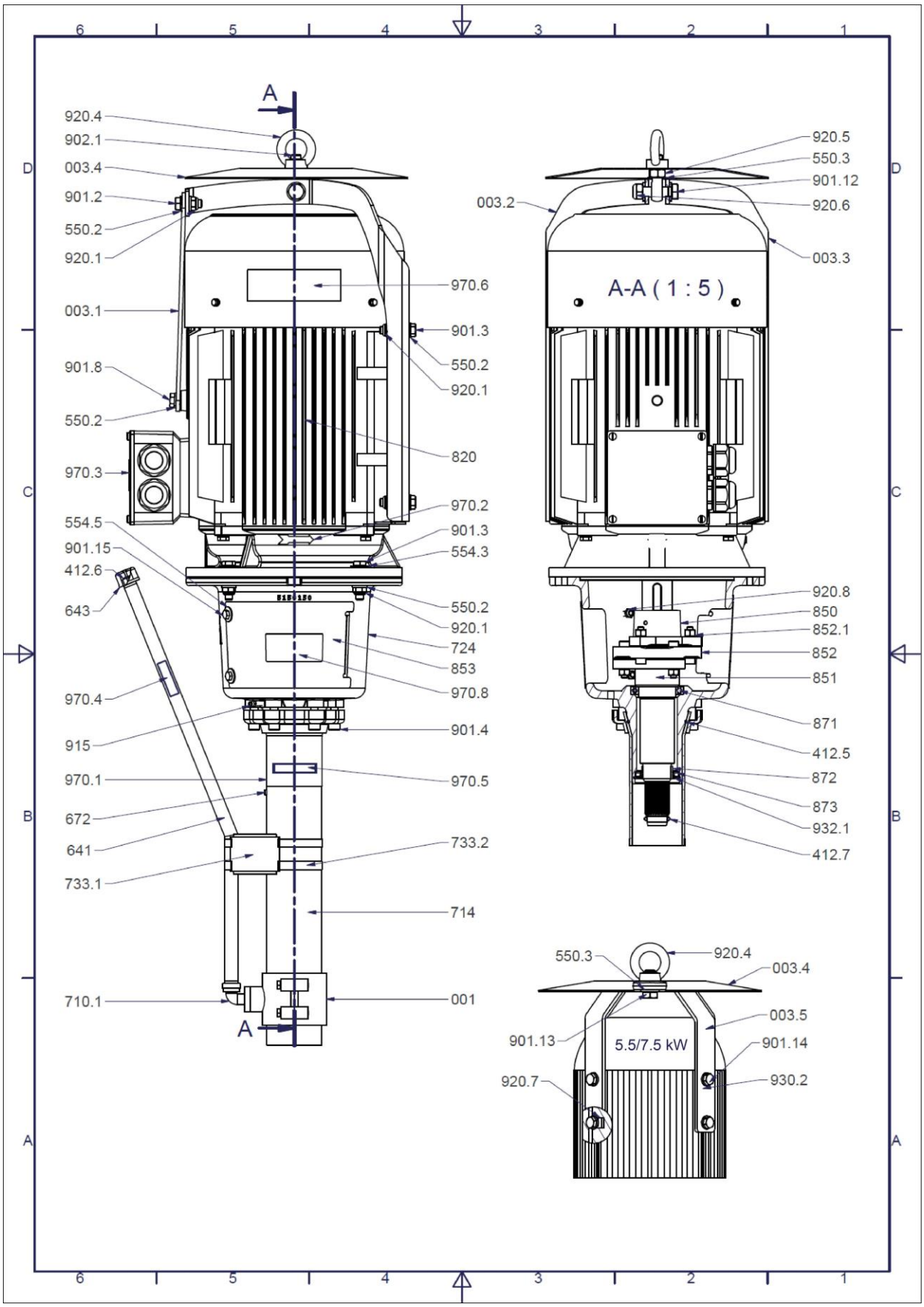
See also Technical Information Tec-Inf 020-A "Shaft connection conversion".



15.4 Detail flange connection angular gear LHP-M1307, drg.: 27-0045-10-1



15.5 Detail flange connection electrical motor LHP-M1307, drg.: 27-0121



16 MAINTENANCE AND REVISION LIST FOR LHP-M1307

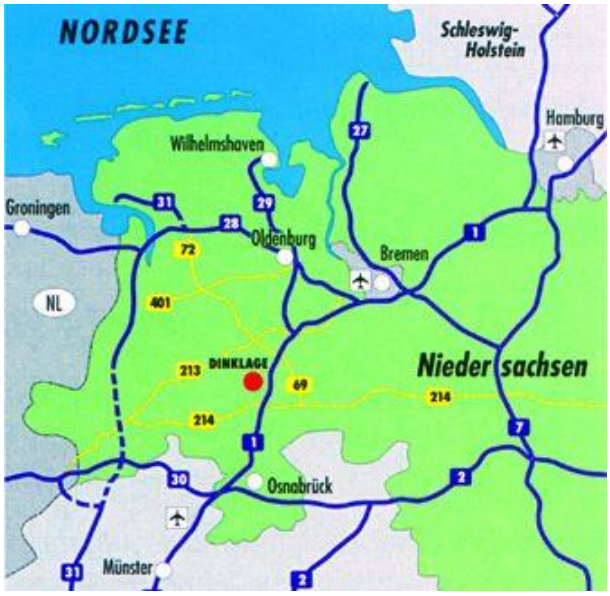
Each person must properly enter all maintenance and revision work in the list and confirm it with his or her own signature and that of their supervisor.

This list must be submitted to the supervisory bodies of the professional association, the TÜV and the manufacturer on request.

Maintenance/revision on the device with the machine no.	Notes	Date	Signature of installer	Signature of supervisor

Maintenance/revision on the device with the machine no.	Notes	Date	Signature of installer	Signature of supervisor

You can find us here



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- Pump technology

- Agitating technology

- Stainless steel tanks

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