

General Safety Instructions

Application

Electrical Connection

Installation

Maintenance



Submersible sump pump

You have bought a Jung Pumpen product and therefore purchased quality and performance. Guarantee this achievement by an installation according to the operating instructions so that our product can meet your demands to your full satisfaction. Please note that damages as a result of poor installation will affect the guarantee.

For this reason please follow the advice of the operating instructions.

Like any other electrical appliance the operation of this product can fail by electrical failure or technical faults. It is wise to always consider standby pumps, emergency generator and a control unit fitted with mains independent alarm.

Operating Instructions

General Safety Instruction

This operation manual gives basic instructions that should be followed carefully during installation, operation and maintenance. It is essential that this manual is carefully read by the responsible personnel/operator before assembly and commissioning. It is always to be kept available at the installation site.

Identification of safety instructions in the operating manual

Safety instructions given in this manual non-available with which would affect safety are identified by the following symbol:



General danger for personnel



Dangerous voltage



Danger for machine and function

It is imperative that signs affixed to the machine, e.g.

- rotation arrow
- fluid connection symbols
- data / approval plate

be observed and kept legible.

Qualification of personnel

An authorized (certified) electrician and mechanic shall carry out all work. Scope of responsibility and supervision of the personnel must be exactly defined by the plant operator. If the staff does not have the necessary knowledge, they must be trained and instructed, which may be performed by the machine manufacturer or supplier on behalf of the plant operator, moreover, the plant operator is to make sure that the contents of the operating manual are fully understood by the personnel.

Hazards in the event of non-compliance with the safety instructions

Non-compliance with the safety instructions may produce a risk to the personnel as well as to the environment and the machine and results in a loss of any right to claim damages or compensation. For example, non-compliance may involve the following hazards:

- Failure of important functions of the machine/plant
- Failure of specified procedures of maintenance and repair
- Exposure of people to electrical, mechanical and chemical hazards
- Endangering the environment owing to hazardous substances being released.

Safety regulations for owner / operator

All safety instructions contained in this manual, all relevant national and local health and safety codes and any other service and safety instructions issued by the plant operator shall be complied with.

Safety instructions relevant for operation

If hot or cold machine components involve hazards, they must be guarded against accidental contact.

Guards for moving parts (e.g. coupling) must not be removed from the machine while in operation.

Any leakage of hazardous (e.g. explosive, toxic, hot) fluids (e.g. from the shaft seal) must be drained away so as to prevent any risk to persons or the environment. Statutory regulations are to be complied with. The pumping station must be kept tidy and in good condition.

Hazards resulting from electricity are to be prevented (see for example, the national-specifications or the regulations of your local electricity supply company.)

Safety instructions relevant for maintenance, inspections and assembly work

It shall be the plant operator's responsibility to ensure that all maintenance, inspection and assembly work is performed by authorized and qualified personnel who have adequately familiarized themselves with the subject matter by studying this manual in detail.

Any work on the machine shall only be performed when it is at a stand-still, it being imperative that the procedure for shutting down the machine described in this manual be followed.

Pumps and pump units which convey hazardous media must be decontaminated. All waste emissions such as used oil must be appropriately disposed of, oil spills must be cleaned up and emissions to the environment must be reported. On completion of work all safety and protective facilities must be reinstalled and made operative again.

Prior to restarting the machine, the instructions listed under "Electrical Connection" and "Installation" are to be observed.

Unauthorized alterations and production of spare parts

Any modification may be made to the machine only after consultation with the manufacturer. Using spare parts and accessories authorised by the manufacturer is in the interest of safety. Use of other parts may exempt the manufacturer from any warranty or compensation claims.

Unauthorized modes of operation

The reliability of the machine delivered will be only guaranteed if it is used in the manner intended, in accordance with clause 1; of this manual: The limit values specified in the data sheet must under no circumstances be exceeded.

Warranty claim

Jung Pumpen pumps are long living, high quality products with expected reliable operation. However, should the need arise for a warranty claim, please contact your Jung Pumpen distributor.

Operating Instructions

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Operating Instructions

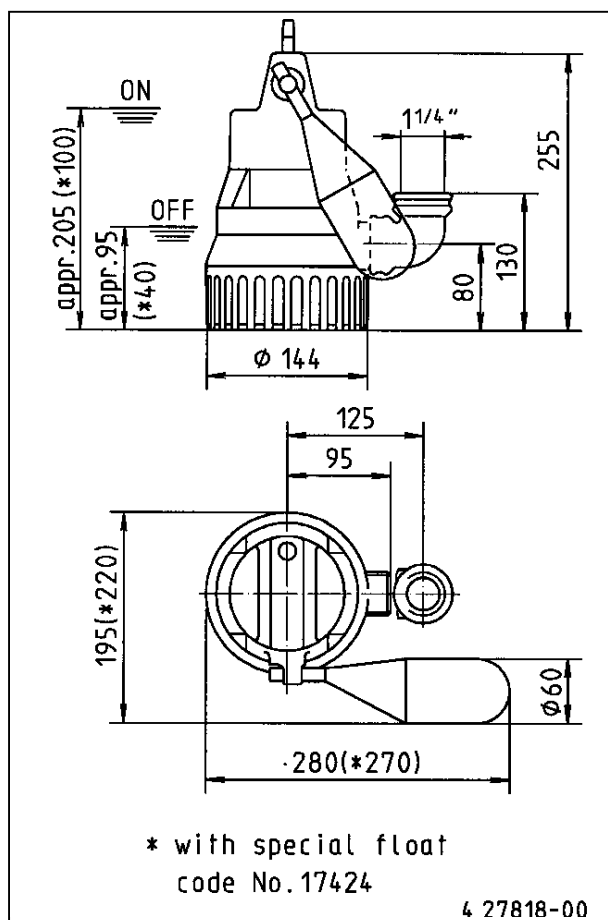
Technical Data

	U 3 K special	U 3 KS special
Supply voltage [V]	1 x 230	
Power input P ₁ [kW]	0,32	
Nominal current [A]	1,40	
cos phi	0,99	
r.p.m. [1/min]	2720	
weight [kg]	4,20	3,50
max. switch. frequency	30 / h	
max. water temperature	35° C	
protective system	IP 68	

Description

This manual applies to a Jung Pumpen submersible sump pump U 3 K special or U 3 KS special with vortex impeller and mounted on level control.

Picture 1: dimensions



Application

- The U 3 K/KS pump is designed for usual domestic waste water. It must not be used for pumping sewage water from lavatories. In some countries sumps with a connection to the public sewer are an explosion hazardous location. For this application the **explosion proof UFK series** is necessary, for further information ask your distributor.
- Only Ex-approved pumps may be used at different operating conditions in explosion hazardous locations. Please ask the industrial and trade supervision, the building inspection or the employer's liability insurance association for such an application.
- Allowed temperature of pumped medium :
- Continuous operation : 35 °C (S1-operation)
Intermittent operation : 60°C (S3-operation 40%),
4 min. operation, 6 min. stand by
- The pumps can be used for pumping waste water from dish washers and washing machines.
- If kept dry the pump can be stored down to a minimum temperature of -20°C.
- The flooded pump must not freeze.
- Without any additional accessories, a low level pumping in flooded basements, on flat roofs etc. down to 5 mm water level is possible (see low level pumping).

Transportation and storage

The pump can be transported and stored in vertical or horizontal position.



Always use the handle to carry the pump, never lift it at the cable. Make sure the pump cannot roll or fall over and injure people or damage property.

If kept dry the pump can be stored down to a minimum temperature of -20°C. The flooded pump must not freeze.

For longer periods of storage, the pump must be protected against moisture and heat. The impeller should be rotated occasionally to prevent the seals from sticking together.

After a long period of storage, the pump should be inspected before it is taken into operation. Pay special attention to the seals and the cable gland.

Follow the instructions of „Operation“.

Operating Instructions



Please pay attention to the following regulations at installing the pump(s) or ask your qualified electrician / distributor.

- regulations for electrical installations (in Germany: VDE 0100, VDE 0165)
- VDE 0100 Teil 701, bathrooms
- VDE 0100 Teil 704, building ground
- VDE 0100 Teil 737, damp rooms
- regulations for prevention of accidents in sewage technical installations (in Germany: GUV 7.4, GUV 17.6)
- guidelines for explosion protection (in Germany: GUV 19.8)
- electrical installations in explosion hazardous areas (in Germany: Ex V)

Safety precautions

In order to minimize the risk of accidents in connection with the service and installation work, the following rules should be followed:

- Never work alone. Use a lifting harness, safety line and a respirator as required. Do not ignore the risk of drowning.
- Make sure there are no poisonous gases within the work area.
- Check the explosion risk before welding or using electric hand tools.
- Do not ignore health hazards. Observe strict cleanliness.
- Bear in mind the risk of electrical accidents.
- Make sure that the lifting equipment is in good condition.
- Provide a suitable barrier around the work area, e.g. guard rail
- Make sure you have a clear path of retreat.
- Use safety helmet, safety goggles and protective shoes.
- All personnel who work with sewage systems must be vaccinated against diseases to which they may be exposed.
- A first-aid kit must be close at hand.
- Note that special rules apply to installation in explosive atmosphere.

Follow all other health and safety rules and local codes and ordinances

Electrical connection



Following works should only be done by qualified and authorized electricians.



Jung Pumpen disclaims all responsibility for work done by untrained or/and unauthorized personnel.

Heed operating voltage !

(see name plate and additional labels)

- Take out the main fuses to isolate the mains supply from the control unit before repairs or any other works and make sure it cannot be energized again.
- If the pump is equipped with automatic level control, there is a risk of sudden restart.
- Before starting check the efficiency of the protective arrangements of the pump and the monitoring equipment. Failure to heed this warning may cause a lethal accident.

- Do not put the lead ends into water! Irruption of water may cause malfunctions.
- If persons are likely to come into physical contact with pump or pumped media, the earthed (grounded) socket must have an additional connection to an earth- (ground) fault protection device (GFI).
- When pumping near a lake, a jetty, a pond etc. a safety distance of at least 20 m between the person and the pump is applicable. Do not place the pump directly in a pool. Observe the special safety regulations if used in connection with swimming pools.
- Use the pump only in accordance to the data stated on the pump's plate resp. in the technical data on page 4.



WARNING

Special rules apply to installation in explosive atmosphere.

Intrinsically safe circuits (Exi) are normally required for the automatic level control system by level regulators.

- A Jung Pumpen control unit gives you the certainty of design under safety regulations and an acceptance of work without any problems.
- Level sensors must be used at low voltage. For further details please see data sheet / o.m. Local rules may specify otherwise.
- To prevent the pump from blocking after long rest periods an additional daily trial run unit can be installed.
- Connection only to a mains supply installed in accordance to the local regulations. For fusing use only 10 A slow fuses or automatic circuit-breaker with C or D characteristic. (former G and K)
- Because the motor's nominal voltage is measured at the terminal board of the pump, please consider the voltage drop of long supply cables.
- The motors of the three-phase a.c. pumps must be protected by a suitable overcurrent release. Adjustment as following:
direct start: + 10% of the nominal current
star-delta start: (nominal current x 0,58) + 10 %
If the protective arrangement has triggered, eliminate the trouble
- Replace the cable if the cable jacket is damaged. Do not pinch the cable or pull it around sharp bends.
- Always install the control unit in a dry and well ventilated room above the backpressure level. Never install the control unit in the sump !

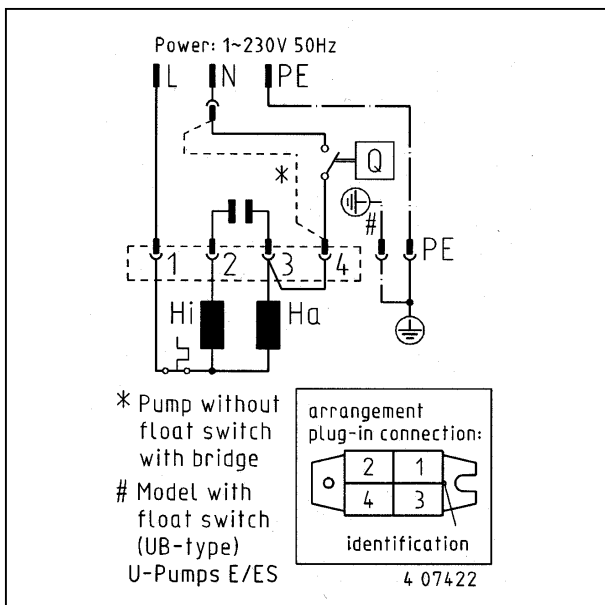
Earthing

For safety reasons, the earth conductor should be appr. 50 mm (2 inch) longer than the phase conductors. If the motor cable is jerked loose by mistake, the earth conductor should be at last conductor to come loose from its terminal. This applies to both ends of cable. Ensure the correct earthing of the pump and the control unit.

Operating Instructions

Electrical connection

Picture 2: wiring diagram



Winding thermostat

Because of the built-in thermostat an additional motor protection is not necessary. Inadmissible high temperatures and operation times will release the thermostat. If so, pull out the plug before repairs to prevent automatically pump restarts.



Heed operating voltage !
(see name plate)
Do not put the plug into water!
Irruption of water may cause malfunctions.

Sense of rotation (only three-phase models)

Before installation you have to check the sense of rotation. At correct rotating field the start bump of the pump is into the opposite direction to the arrow on the top of the pump. In case of wrong direction of rotation change two of the three phases of the mains supply.



Watch out for the start bump,
which can be powerful

Operation through frequency converter

WARNING

If you want to operate pumps through a frequency converter please contact your distributor !

If the technical feasibility is already checked, the pumps have to be ordered as a special version !

They need a special PTC thermistor for motor protection and a tripping unit with a conformity certificate ! (e.g. PTB 3.53 – PTC/A)

Use frequency converters only for deceleration !

If three-phase current pumps are operated through a frequency converter, the r.p.m. change proportional to the input-frequency.

Frequency converters have a setting range between nearly 0 Hz and more than 50 Hz. Because of physically reasons the pumps must not be operated with higher frequencies than indicated on the name plate. If the frequency rises beyond the rated value, the absorbed power escalates to the overload of the motor.

To recognize pumps with a PTC thermistor, please check the name plate. The last letter in the field of the motor type must be a **K**.

Example: motor type: D 160-4/200 K has a PTC thermistor and can be operated through a frequency converter. Pumps without this mark cannot be operated through a frequency converter.

Example: motor type: D 112-4/200

Additionally the pumps have a label at the lead end to point out the possible frequency converter operation.

Supply voltage of the PTC thermistor: max. 2,5 V !

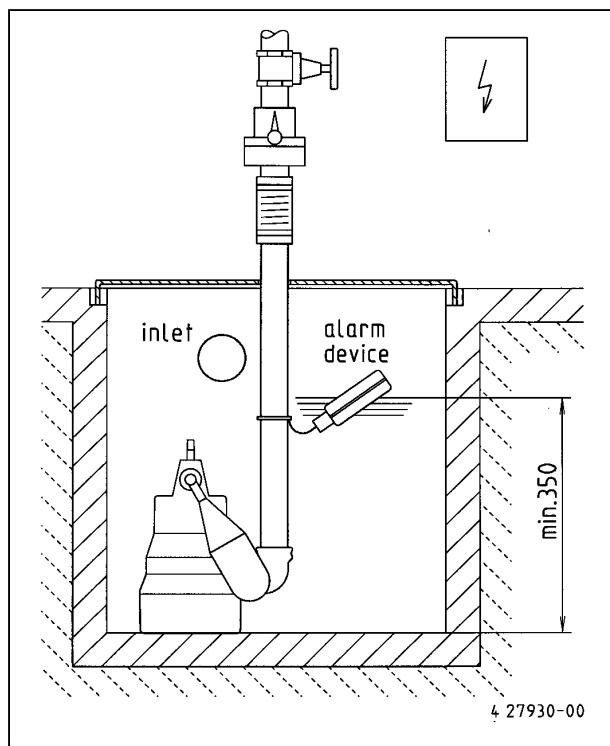
Installation

To ensure the proper installation, consider the dimensions of the installation. The sump has to be cleaned from all sediments before any installation or repair works. The minimum height between the lifting hook and the floor shall be sufficient to lift the pump out of the sump. The lifting equipment shall be able to hoist the pump straight up and down in the sump, preferably without the need for resetting the lifting hook. Oversized lifting equipment could cause damages if the pump should stick when it is lifted.

The lifting equipment has to be securely anchored.

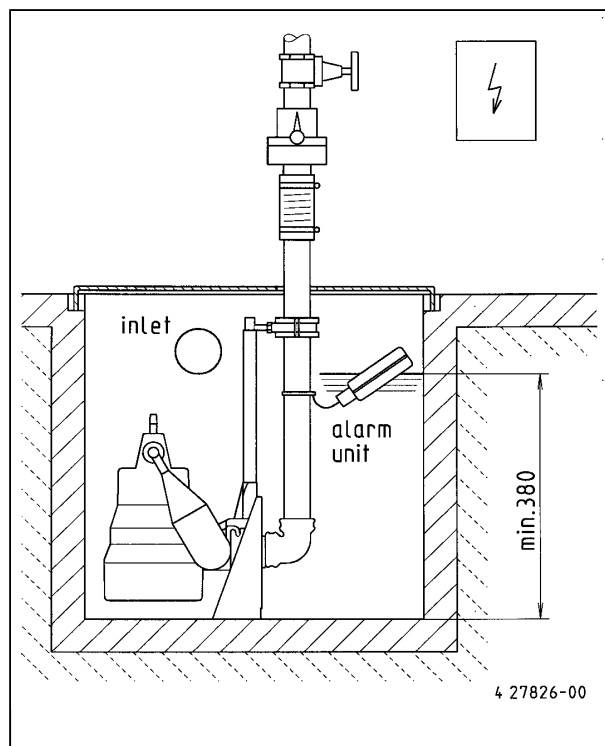
Operating Instructions

Picture 3: single installation example



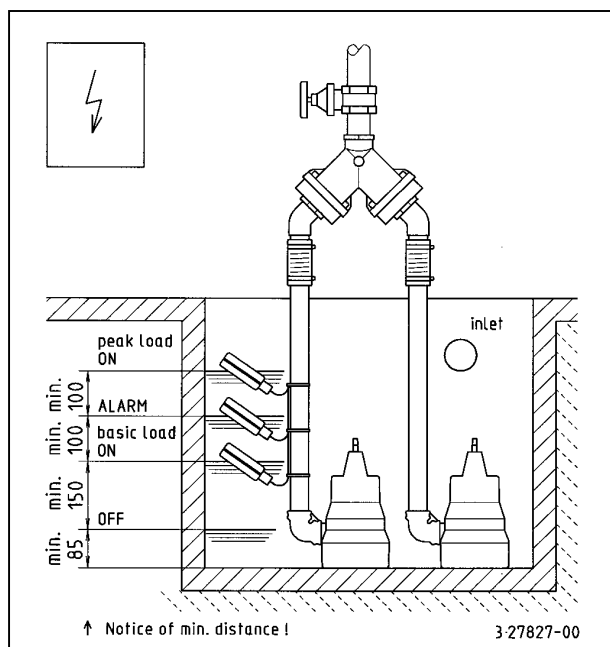
Single unit with built-in level control
Sump dimensions: min. 40 x 40 cm
If a covering plate is installed intend a sump ventilation.

Picture 4: stationary single installation example



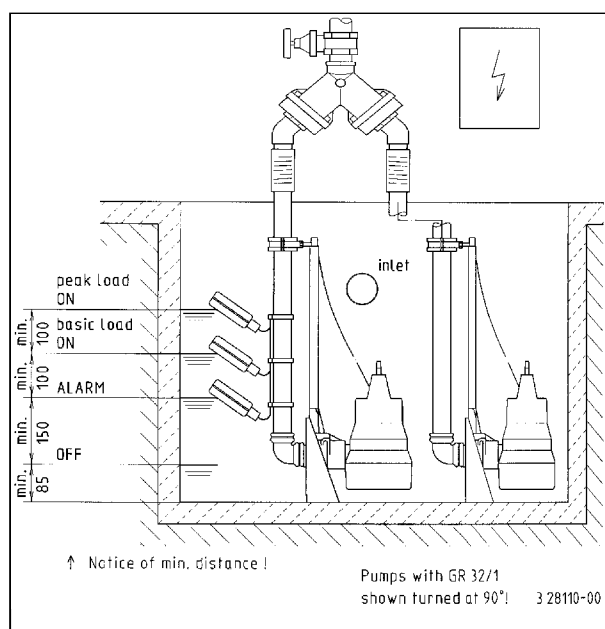
Single unit with guide rail system GR 32 and built-in level control. Sump dimensions: min. 40 x 50 cm.
If a covering plate is installed intend a sump ventilation.

Picture 5: duplex installation example



Sump dimensions: min. 50 x 50 cm
If a covering plate is installed intend a sump ventilation.

Picture 6: stationary duplex installation example



Duplex unit with guide rail system GR 32 and built-in level control. Sump dimensions: min. 50x 50 cm.
If a covering plate is installed intend a sump ventilation

Operating Instructions



Always use the shackle to carry the pump, never lift it at the cable or the hose !
To lower the pump in a deep tank, use a rope or a chain.

WARNING

Stay clear of suspended loads.

Take out the main fuses to isolate the mains supply both control unit and pump before any works and make sure it cannot be energized again.

Make sure the pump cannot roll or fall over and injure people or damage property.

In some installations the water and the pump can be hot. Bear in mind the risk of burn injuries.

Before installation, please check:

- the visible parts of the pump and the installation
- sluice and reflux valves
- the oil level in the oil chamber
- if the impeller moves freely
- direction of rotation

The pump should be installed correspondingly to picture 3, 4, 5 or 6. Under DIN EN 12056-2 the pressure tube must be taken in a loop over the local back-up level and secured with a reflux valve. Observe the min. flow speed of 0,7 m/s in the pipe work.

To ensure the proper installation, consider the dimensions of the installation. The sump has to be cleaned from all sediments before any installation or repair works. The minimum height between the lifting hook and the floor shall be sufficient to lift the pump out of the sump. The lifting equipment shall be able to hoist the pump straight up and down in the sump, preferably without the need for resetting the lifting hook. Oversized lifting equipment could cause damages if the pump should stick when it is lifted.

The lifting equipment has to be securely anchored.

Stationary installation

To remove the pump easily we recommend our guide rail systems, alternatively a flexible connection (min. DN 32/1¼") in the pressure tube near the pump is conceivable.

Adjust the duck foot bend, drill the holes through the base of the duck foot bend and install the coupling unit, the guide tubes and the guide bracket with the enclosed screws and plugs. Install the pipe work including a ball reflux valve or a swing type check valve and a stop valve. Mount the guide rail claw on the pump, fasten the chain at the shackle and lower the pump via guide tube into the sump. A fastening device for a hoist simplifies the pump installation.

WARNING

Observe the measurements of the level sensors as shown in the pictures 3, 4, 5 and 6. The sensors must not be installed below the inlet.

In contrast to the U 6 Niro ES/ DS with built-in level control, the switching points of the U 6 K Niro E/D can be varied if separate float switches are used.

The control unit must be installed in well ventilated room above the back pressure level.

Mobile operation / deaeration

For mobile operation and retrofitting of existing sumps a pump base installation is uncomplicated and easy to maintain. Mount a 90° elbow to the discharge, install the pressure pipe, fasten the chain at the shackle and lower the pump into the sump. A fastening device for a hoist simplifies the pump installation.

WARNING

The level sensors must not be installed below the inlet. The control unit must be installed in well ventilated room above the back pressure level. Climbing pressure pipe work has to be installed frost protected.

If a flexible hose is connected to the pump, no reflux valve must be installed and the hose must have a gradient to ensure a completely drained off hose when the pump stops working. When the pump is submerged again, water in the hose will prevent the deaeration of the spiral housing and therewith the correct operation of the pump. For the same reason the pump may not operate properly when it is submerged in switched on condition.

In sumps that can dry out, ensure the correct deaeration of the spiral housing by drilling a Ø 6 mm hole into the enclosed quarter elbow (part. No. 16687) at the marked position.

WARNING

In case of a damage at the pump a slight quantity of the oil chamber filling can leak into the pumping medium.

Operating Instructions

Maintenance



Take out the main fuses to isolate the mains supply of both, control unit and pump, before any works and make sure it cannot be energized again. Check the cable on mechanical or chemical damages.



At using a chain to lift the pump, please pay attention to the rules for prevention of accidents. Chains have to be inspected regularly by qualified personal.



Only authorised workshops or the manufacturer are permitted to carry out repairs effecting the electrical security. In case of repairs defective parts must be replaced by genuine spare parts. Jung Pumpen disclaims all responsibility for work done by untrained, unauthorized personnel.

General safety

- clean the pump thoroughly
- beware of the risk of infection
- follow local safety regulations

The pump is designed for use in liquids which can be dangerous to health. When working on the pump, prevent injuries to the eyes and skin, by:

- wearing goggles and rubber gloves
- cleaning the pump before any works
- cleaning the parts after dismantling
- hold a cloth over the drain plug to prevent splatter when opening the oil chamber

In case of contact with dangerous liquids:

- eye contact: rinse your eyes immediately in running water for 15 min. Hold your eyelids apart with your fingers. Contact an eye specialist
- skin contact: remove contaminated clothes, wash your skin with soap and water, seek medical attention, if necessary

To keep the reliability of operation servicing should be made after every 300 working hours, but not later than once a year.

If the pump delivers water with abrasive additions servicing should be carried out at adequate shorter intervals. At decreasing flow rates or ascending noises the impeller has to be checked on wear, and if necessary, it has to be changed.

WARNING

In case of a damage at the pump a slight quantity of the oil chamber filling can leak into the pumping medium.

Maintenance



In case of repairs or maintenance pull main plug. Check the cable on mechanical or chemical damages.

The foot strainer prevents blockages in the pump, it has to be cleaned regularly as well as the float switch to guarantee the trouble free operation with full performance. In case of blockages take off the wear plate (see whirl system) and remove blocking parts. Other works are not necessary.

Cleaning

Regularly cleaning of the impeller and the level control sensors or float switches secures the maximum pumping capacity and operational reliability.

Installation of flap trap

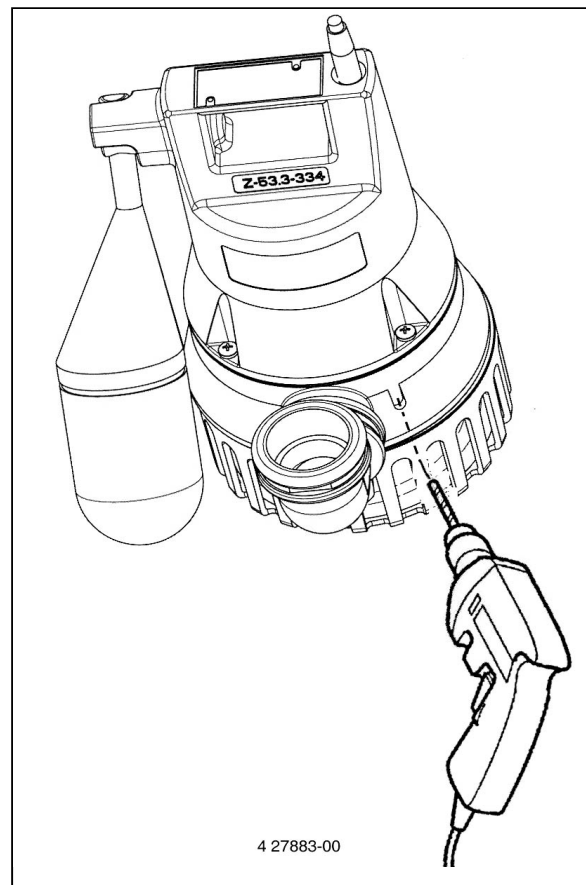
The enclosed rubber flap must be screwed into the discharge branch of the pump casing by using the grooved sheet metal screw. (see pic. 7)

If the pump is used in sumps that can dry out, replace the flap trap by a separate reflux valve (e.g. Jung Pumpen swing type check valve No. 9739). The reflux valve should be mounted above the screw fitting.

To ensure the correct deaeration of the spiral housing drill a Ø 6 mm hole into the enclosed quarter elbow (part. No. 16687) at the marked position.

In contrast to the U 3 KS Niro with built-in level control, the switching points of the U 3 K Niro can be varied if separate float switches are used.

Picture 7: deaeration hole



Operating Instructions

Low level pumping

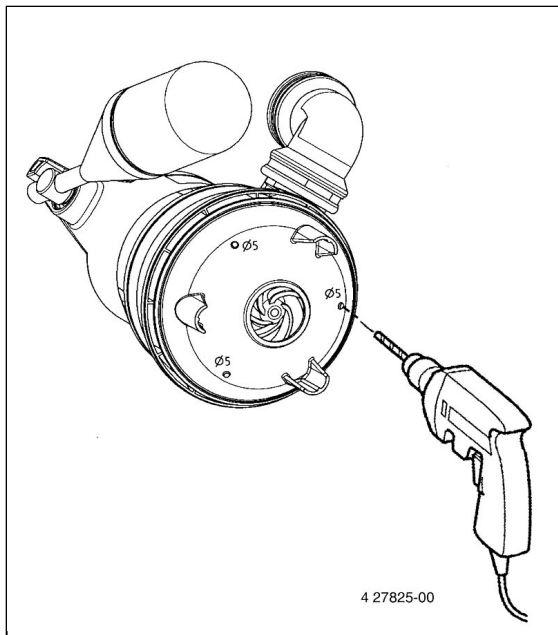
Flooded basements, roofs etc. can easily be drained down to a level of 5 mm with the U 3 K Niro. Put 2 screwdrivers into the „detach slots“ between foot strainer and pump casing and lever down the foot strainer. To ensure the suction of the pump, the hose must be emptied before each pumping sequence and the lowest water level must be 40 mm / 1,6 inch. The built-in level control of the U 3 KS Niro is not working in the low level pumping mode.

Whirl system

To keep the bottom of the sump in the suction area of the pump largely free of sediments a small modification is necessary. The pump performance will be reduced to 6 m³/h and 6,0 meters of head.

Take off the foot strainer as described under shallow pumping. Unscrew the 6 grooved sheet metal screws (part No. 08552) out of the wear plate and take it of. Drill 3 holes with Ø 5 mm into the wear plate as shown on picture 5, remove the burr from the holes and assemble the pump again. The new holes must not be covered from a web of the foot strainer.

Picture 8: whirl system



Checking of pump unit

WARNING Worn out impellers can have sharp edges !

Inspect and adjust the impeller depending on the frequency of operation and the medium being pumped, but not later than half-yearly. At reduced pump performances or increased operational noises the impeller and the pump casing must be checked and replaced if necessary by qualified experts.

Torque ratio M_A for screw material:

for M 6, M_A = 8 Nm (0.8 kpm)
for M 8, M_A = 20 Nm (2.0 kpm)
for M 10, M_A = 40 Nm (4.0 kpm)
for M 12, M_A = 70 Nm (7.0 kpm)
for M 16, M_A = 160 Nm (16.0 kpm)

Malfunctions

Pump does not run

cause: missing mains supply
remedy: check supply voltage
cause: faulty fuse (maybe too low)
remedy: check fuse and change if necessary
cause: damaged supply cable
remedy: changing of the cable gland only by qualified personnel

Pump runs, but doesn't deliver water

cause: trapped air in the spiral housing
remedy: drain off the pressure tube or hose, to ensure the opening of the reflux valve to deaerate the spiral housing and ensure the correct operation of the pump

Blockage of impeller

cause: solid- or fibrous admixtures blocking the impeller
remedy: check impeller, as explained under „adjustment of impeller“ or „cleaning“

Reduced performance curve

cause: clogged impeller
remedy: clean impeller and spiral housing
cause: worn-out impeller and / or wear plate
remedy: change impeller and / or spiral housing

WARNING

At replacing the impeller, prevent the bearings against being pushed out of their position, by supporting the upper edge of the motor shaft when pressing on the impeller.

CE

Jung Pumpen GmbH & Co
Industriestraße 4-6 · 33803 Steinhagen

XX¹

EN 12050-2

Abwasserhebeanlage für fäkalienfreies
Abwasser DN 32

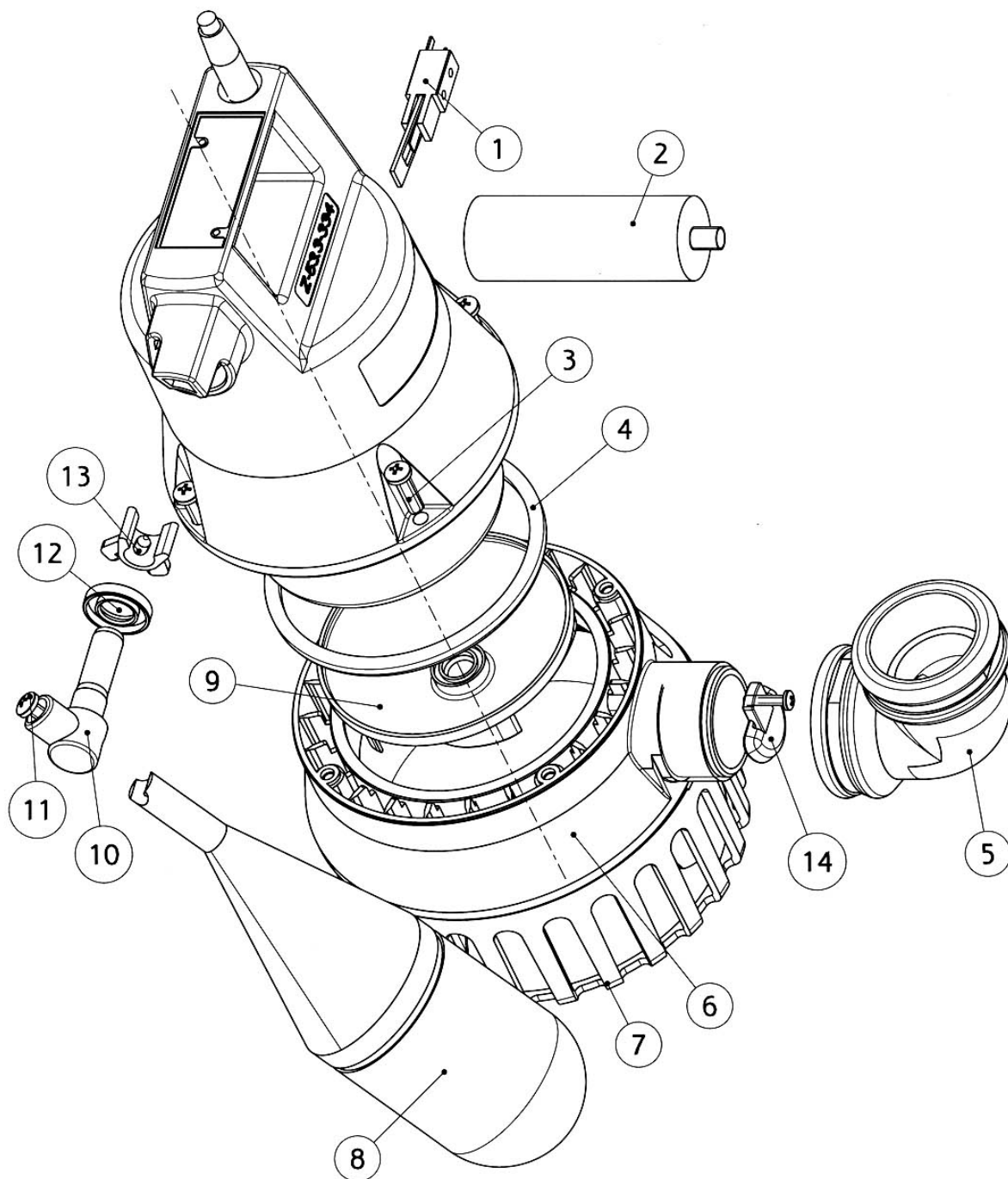
Hebewirkung – siehe technische Daten

Geräuschemissionswert < 70dB (A)

¹ Die beiden ersten Ziffern der Pumpen-Nr. bezeichnen das Produktionsjahr.

Operating Instructions

Picture 9: sectional drawing



Operating Instructions

			Qty.	
Pos.	Code-No.	Description	U 3 K	U 3 KS
1	08219	micro switch with leads	-	1
2	16318	capacitor 6µF / 400 V DB	1	1
3	20538	screw „Amtec“ 5,0 x 20	4	4
4	16325	O-ring 86 x 6	1	1
5	16687	quarter elbow 1¼"	1	1
6	27183	spiral housing	1	1
7	27186	strainer base	1	1
8	07162	float	-	1
9	26211	impeller	1	1
10	27187	camshaft	-	1
11	16327	sheet metal screw 4,8 x 32	-	1
12	03990	rotary shaft seal 12 x 24 x 4,5	-	1
13	27226	operating cam	-	1
14	16936	reflux valve compl.	1	1

Replacement kits

27227	spiral housing completely, including 27186
27230	terminal completely (U 3 K spezial), including 16318
27231	terminal cover completely (U 3 KS spezial with 3,0 m cable), including 03990, 08219, 16318, 27187, 27226
27399	motor unit completely, including 26211

By ordering spare parts indicate type of the pump and the part number.