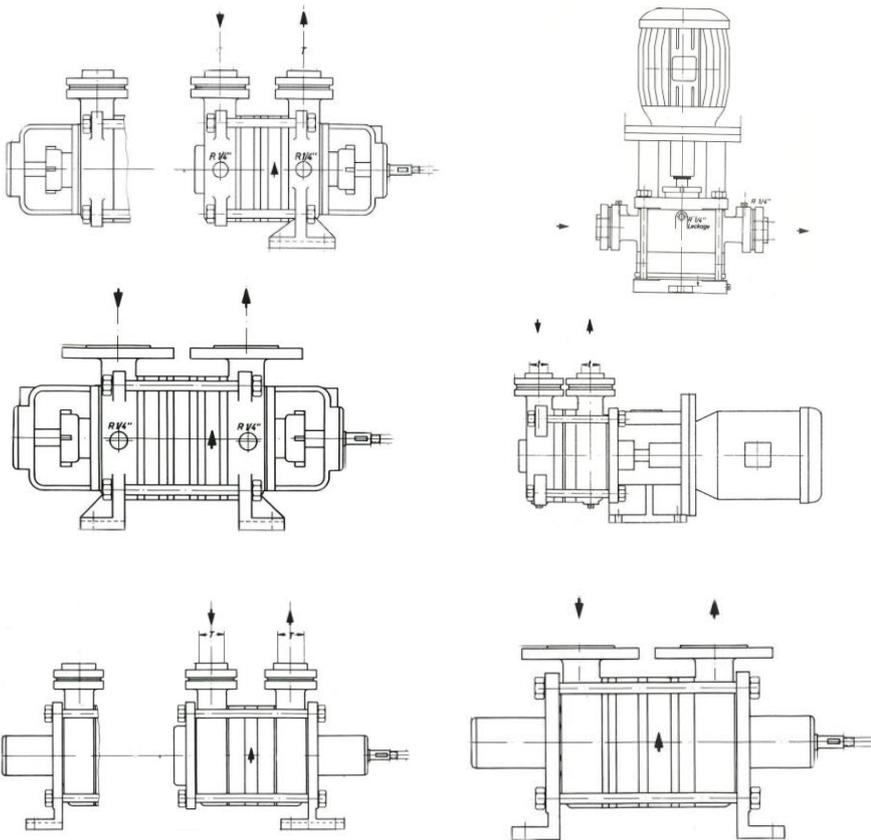


MANUAL

for ARCO KANZLER SIDE CHANNEL PUMPS

TYPE 12.. / 14.. / 15.. / 16.. / C2.. / C4.. / C5..



Imprint

Operating instructions

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In general: Subject to technical changes

THIS MANUAL MUST BE READ CAREFULLY AND KEPT FOR THE DURATION OF OPERATION

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Content

1. General information.....	4
1.1. Safety.....	4
1.2 Instruction labels in manual	4
1.3 Personnel qualification and training.....	5
1.4 Dangers if the safety instructions are not followed	5
1.5 Safety instructions for the operator / user.....	6
1.6 Safety instructions for inspection, maintenance, storage, installation and recommissioning work	6
1.7 Unauthorized conversion and manufacture of spare parts	7
1.8 Unauthorized modes of operation.....	7
1.9 Areas of application	7
1.9.1. Performance data	7
2. Transport and temporary storage.....	8
2.1 Storage and commissioning after storage (re-commissioning).....	10
2.2 Intermediate storage before initial commissioning.....	10
2.3 Interim storage after operation.....	11
3. Description / design.....	11
3.1 Labeling: name plate	11
4. Installation.....	12
4.1. Set-up	12
4.2 Electrical connection / pumped fluid	12
4.3 Checking the direction of rotation	13
4.4. Coupling protection.....	13
4.5. Pipework.....	13
4.5.1 General information on pipework.....	13
4.5.2. Suction pipe.....	14
4.5.3. Pressure pipe.....	14
4.5.4. Additional connections	14
4.5.5. Noise-reducing installation.....	15
5. Commissioning / decommissioning.....	15
5.1. Preparation for initial start-up.....	15
5.2. Initial commissioning.....	15
5.3. Decommissioning.....	15
6. Dismantling / repair work.....	16
6.1. Dismantling	16
6.2. Assembly	17
6.3. Tightening torques	17

7. Maintenance and servicing	18
7.1. Operation monitoring	18
7.1.1. Shaft bearings	18
7.1.2. Mechanical seal.....	18
7.1.3. Stuffing box packing	19
7.1.4. Pumping with magnetic coupling.....	19
7.1.5. Coupling	19
8. Important notes	20
9. Faults	20
Part list: Series 1201 – 1233 (W) (X).....	23
Part list: Series 1403 W – 1463 W (X).....	24
Part list: Series 1501 – 1532 (X)	25
Part list: Series 1611 – 1631	26
1-stage	26
Part list: Series 1612 – 1633	27
2-3-stages	27
EG Declaration of Conformity.....	28
<u>Appendix</u>	
Declaration of conformity.....	27
Certificate DIN EN ISO 9001:2015	29

1. General information

This manual is part of the pump or pump unit and is therefore valid for all type series listed on the cover sheet. In addition, this manual describes safe and proper use in all operating phases and contains basic instructions that must be followed during installation, operation, storage and maintenance.

The most important operating data can be found on the name plate.

The measuring surface - sound pressure level can reach over 90 decibels (A) depending on the performance of the pump (VDI guideline 3743 sheet 1). In this case, the unit must be encapsulated.

Arco pumps are self-priming side channel pumps in horizontal and vertical design. The side channel pump is suitable for pumping clean and turbid fluids as well as fluids containing gas. Due to the narrow clearances, the pump is not suitable for pumping media with abrasive or coarse admixtures or solid content.

1.1. Safety

This manual must be read before installation, commissioning, long-term storage and maintenance by the installer and the responsible specialist personnel / operator. This manual must always be available at the place of use of the pump/unit/system.

The general safety instructions listed under this point 1.1 Safety must be followed at all times. The special safety instructions given in this manual (e.g. for private use) must also be followed.

The pump has been built in accordance with the state of the art and recognised safety regulations. Nevertheless, its use may still pose a risk to the life and limbs of the user or third parties or cause damage to the pump and other property.

Only operate the pump when it is in perfect technical condition and in accordance with its intended use, in a safety-conscious and hazard-free manner and in compliance with this manual. The pump may only be used to pump the agreed pumped fluids. If no pumped fluid is specified, the pumped fluid is always pure water without solid components. The application limits of the pump with regard to temperature, pressure, flow rate and speed must be followed.

In the event of a safety-related fault, the pump must be shut down immediately and the fault rectified by the responsible specialist personnel.

Arco pumps must not be used for food products without the appropriate equipment or adaptation. The use for food products must be explicitly specified for the corresponding pump.

In addition to the overall documentation in this manual, the statutory or other safety and accident prevention regulations as well as the applicable standards and guidelines of the respective country of operation must be followed.

1.2 Instruction labels in manual

The safety instructions stated in this manual, which may cause danger to persons, the environment and machinery if not followed, are marked with the following danger symbol:



Safety sign according to DIN 4844 –W000



Safety sign according to DIN 4844 –W008

The word **ATTENTION** is placed in front of safety instructions, the negligence of which can cause danger to the pump and/or the unit and its function.

Instructions attached directly to the pump, such as the direction of rotation arrow  or



and the characteristics of suction



and direction of pressure



must be followed and must remain visible and fully legible for the entire operating life of the pump/unit.

1.3 Personnel qualification and training

The personnel for operation, maintenance, inspection, storage, recommissioning and assembly must have the appropriate qualifications for this work. The area of responsibility, competences and supervision of the personnel must be precisely regulated by the operator.

If the personnel do not have the necessary knowledge, the operator is responsible for training and instructing them or arranging for it be done. Furthermore, the operator must ensure that the contents of this manual or these operating instructions are fully understood by the personnel.

1.4 Dangers if the safety instructions are not followed

Failure to follow the safety instructions may result in danger to persons, the environment and the pump/pump unit.

The manufacturer is not liable for damage caused by negligence of the overall documentation.

Failure to follow the safety instructions will result in the loss of all claims for damages and warranty claims. In detail, negligence can result in the following hazards, for example:

- Failure of important functions of the pump system
- Failure of prescribed maintenance and servicing methods
- Danger to persons due to electrical, magnetic, mechanical and chemical effects
- Danger to the environment due to leakage of hazardous substances

1.5 Safety instructions for the operator / user



Always follow the instructions below to avoid personal injury and/or material damage

- Moving parts, such as couplings and shafts, must not be operated without contact protection
- Machine parts that are too hot or cold must be secured against contact by the customer before commissioning/re-commissioning
- Do not insert hands or fingers into gaps or holes in the pump
- When pumping hazardous liquids (e.g. explosive, corrosive, toxic, hot), leaks must be drained from the shaft and housing seal and at any other point in such a way that there is no risk to persons or the environment
- Applicable legal regulations must be complied with
- Dry running must be avoided at all costs and will cause the pump to fail
- Never operate the pump in the wrong direction of rotation
- Cavitation, overheating, overpressure and motor damage must be avoided at all costs
- Hazards due to electrical energy must be avoided at all costs
- The regulations of the respective country of operation must be followed

1.6 Safety instructions for inspection, maintenance, storage, installation and recommissioning work

The operator must ensure that all maintenance, inspection and assembly work is carried out by authorised and qualified specialist personnel who have studied the manual thoroughly and are sufficiently informed to be able to carry out this work safely.

Work on the machine should only be carried out when it is at a standstill. The procedure described in the operating instructions for shutting down the machine must be followed without fail.

The power supply to the motor must be disconnected before starting work.

Personnel must wear suitable protective clothing and safety goggles when commissioning/re-commissioning the pump, especially if the pump is used for pumping media that is harmful to health. Pumps or units that convey media that are hazardous to health must be thoroughly rinsed and cleaned with agents suitable for the conveyed material before dismantling. Immediately after completion of the work, all safety and protective devices must be refitted.

Before commissioning, the points listed in section 4.1 Installation and 5 Commissioning must be followed.

1.7 Unauthorized conversion and manufacture of spare parts

Conversion and modifications to the pump/unit or parts thereof are only permitted with the written authorisation of the manufacturer and supplier. The work may only be carried out with original spare parts and accessories authorised by the manufacturer. They serve to ensure the proper functioning of the pump/unit and safety. The use of other parts may invalidate the warranty, thus voiding any liability for the resulting consequences.

In the event of complaints, the pump must not be dismantled by the operator, as this will invalidate any warranty claims.

1.8 Unauthorized modes of operation

The operational safety of the pump/unit supplied is only guaranteed if it is used as intended in accordance with our order documents, in particular our order confirmation and delivery note.

The limit values specified in the order documents must not be exceeded under any circumstances. Each pump may only be used for the applications and performance ranges confirmed or offered in writing by the manufacturer/supplier. Written confirmation from the manufacturer/supplier must be obtained for use under changed operating conditions. If the pumping medium is unknown or the ambient conditions deviate from those specified, we deny any liability.

1.9 Areas of application

Depending on the pump design or pump materials, the pumps can be used to convey/circulate clean, solid-free, gaseous, neutral and chemically aggressive, low-viscosity, water-like medias such as acids, alkalis and solvents.

ATTENTION When using the devices, it is essential to ensure the chemical resistance of the pump materials.

ATTENTION The chemical resistance of the pump to commercially available liquids, depending on the temperature of the media, should be obtained from the manufacturer/supplier.

ATTENTION When pumping crystallising, sticky and easily soiled media, it is essential to ensure that the media does not harden in the pump and that no deposits or clumps form in the pump.

If necessary, all internal pump parts in contact with the liquid must be thoroughly rinsed. For pumps with magnetic coupling, there must be no magnetisable particles in the pumped fluid.

1.9.1. Performance data

The nameplates on the pump indicate the pump type and serial number in addition to the operating data. These must always be stated in the event of queries, repeat orders and especially when ordering spare parts. If spare parts are ordered without specifying the serial

number (S-No.) of the pump, incorrect deliveries cannot be ruled out. If you have any queries, please contact your manufacturer or supplier.

Kommentiert [JG1]: Confusing meaning

The maximum casing pressure (system pressure) must not be exceeded:

Pump type	Flange version	Max. casing pressure
1201 – 1233	Oval	12 bar
1403 W – 1446 W	Round	25 bar
14501 – 1463 W	Round	16 bar
1501 – 1532	Oval	12 bar
1611 – 1633	Oval	12 bar
C201 – C232	Oval	12 bar
C413 W – C463 W	Round	25 bar

For special seals, please contact the pump manufacturer for details.

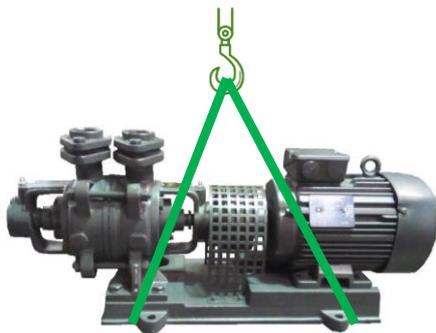
ATTENTION The maximum temperature of the pumped liquid must not exceed + 105° C.

ATTENTION The pressure load for a simple mechanical seal with flushing line should not exceed 9 bar and must not exceed 15 bar with a rotating liner.

2. Transport and temporary storage

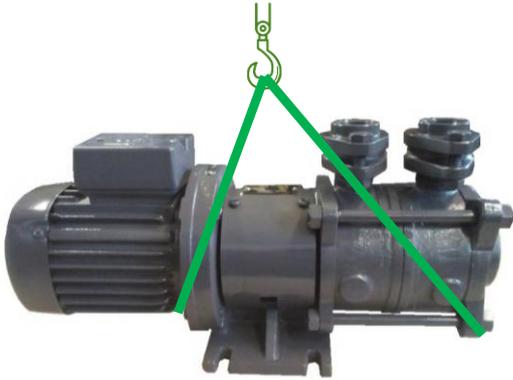
When transporting the pump or a complete pump unit by crane, the ropes must be attached as shown.

Attachment to pump unit with base plate (12, 14, C2 and C4 series)



The device is supplied by the manufacturer ready for operation.

Attachment to block pump (15 / C5 series)



Attachment to a vertical block pump (16 series)



ATTENTION The crane device and the ropes must have the appropriate dimensions. The ring eye of the motor must not be used to transport the entire pump unit.

In the event of transport damage, a report must always be made by the carrier. The pump motor unit must always be transported professionally.

2.1 Storage and commissioning after storage (re-commissioning)

Any storage of an Arco pump must be carried out under dry, frost-free storage conditions. The pump must be properly preserved from the inside and outside. The pump must be protected against the ingress of impurities. The pump flange must be sealed tightly.

The pump/unit must not be stored in the immediate vicinity of heat-emitting heating devices or elements.

Pumps made of grey cast iron or with grey cast iron pump parts that are stored for longer than four weeks must be filled with a deposit-free, corrosion-protecting preservative fluid that is safe for the pumped medium and sealed airtight. The pump shaft must be turned manually several times every four weeks.

Professional preservation is carried out as follows:

From the inside:

1. Seal the suction-side flange with a blind flange
2. Fill the pump with a suitable preservative
3. Slowly turn the shaft in the direction of pump rotation
4. Continue filling and turning until the preservative emerges bubble-free from the discharge flange
5. Close the pressure-side flange with the blind flange

From the outside:

Preserve all bare metal parts

The filling quantity must be checked approx. every three months during longer storage periods and refilled if lost.

Before commissioning, the pump must be thoroughly flushed and cleaned in compliance with all applicable regulations for the pumped liquid and the environment.

ATTENTION Risk of poisoning due to preservatives and cleaning agents in the food or drinking water sector. Only preservatives and cleaning fluids approved for the pumped liquid may be used.

Proper removal of the preservative is carried out as follows:

1. Select the cleaning agent according to the area of application
2. Drain the preservative, collect it and dispose of it in accordance with local regulations
3. Completely remove the preservative by flushing the pump
4. If the storage time exceeds 6 months: Check all elastomers (O-rings, shaft seals) for elastic degradation and replace if necessary

2.2 Intermediate storage before initial commissioning

Arco pumps and units are intended for immediate use by the operator. As a rule, Arco pumps and units are delivered within three working days after painting. If the pump/unit is to be stored by the operator for longer than four weeks, the information on storage and commissioning after storage in accordance with 2.1. must be followed.

2.3 Interim storage after operation

In general, Arco pumps and units are not intended for interim storage after commissioning. If interim storage is nevertheless necessary after commissioning (e.g. due to repair of the system in which the pump is used), the Arco pump must be thoroughly rinsed and cleaned before storage in compliance with all applicable statutory and manufacturer's regulations for the pumped fluid and the environment. Only cleaning fluids approved for the pumped fluid may be used. Cleaning fluids approved for the pumped liquid may be used.

The instructions on storage and commissioning after storage in accordance with 2.1. must be followed.

3. Description / design

Arco self-priming side channel pumps are centrifugal pumps in horizontal or vertical, single or multi-stage, sectional design with or without electric drive unit on a common base plate or in block design, in several material versions, sizes and with different shaft seals (also hermetically encapsulated with magnetic coupling).

Depending on the design, vertical pumps can be fitted with a suction pipe bend.

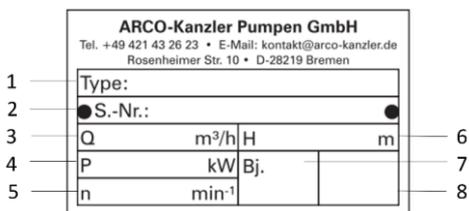
The pump unit must be freely accessible for monitoring, maintenance, servicing, assembly and disassembly.

Use in corrosive, erosive and dusty environments must be avoided. The limits of the electrical drive unit with regard to insulation class and protection class must be followed.

We do not accept liability for motors provided by the customer.

3.1 Labeling: name plate

Figure 1: Nameplate (example)



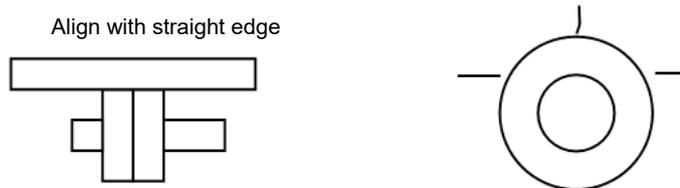
1	Type
2	Serial number
3	Flow rate
4	Power consumption (pump)
5	Speed
6	Delivery head
7	Year of manufacture
8	CE mark

4. Installation

4.1. Set-up

The complete pump unit is usually mounted on a foundation. The foundation must be levelled and equipped with fastening components. The operator must ensure that the foundation has sufficient load-bearing capacity. The base plate of horizontal pumps or the base plate of vertical pumps can also be cast 20 mm deep into the foundation. The complete pump unit must be levelled with a spirit level when it is installed on the foundation. If necessary, all levelling plates must be securely and fully in place. The pump unit must then be bolted down evenly.

ATTENTION Even if a completely assembled pump unit is delivered on a base plate, the coupling must be carefully checked after connecting the pipework and fastening the base plate and, if necessary, realigned via the pump and motor. The pump and motor are correctly aligned with each other if the distance of a straight edge placed over the coupling halves is the same around the entire circumference. The two coupling halves should be 1 to 2 mm apart.



The permissible axial and radial deviation, measured on the coupling face and on the coupling circumference, is 0.1 mm. If there is a deviation, the pump unit on the motor must be realigned again. The motor must be screwed on evenly and the coupling alignment must be checked again.

Units that are not correctly aligned lead to increased bearing, shaft and shaft seal loads.

4.2 Electrical connection / pumped fluid

ATTENTION All electrical work may only be carried out by authorised specialist personnel when the system is de-energized! The system must be secured such that it cannot be switched on unintentionally!

Before making the electrical connection, the pump must be filled with pumped fluid.

Dry running of the pump must be avoided at all costs.

The connection must be carried out in accordance with the relevant international or national regulations and the regulations of the local utility companies. Voltages and frequencies must

be compatible with the winding design of the electric drive. Information on the winding design and frequency can be found on the motor rating plate.

The maximum speed of the drive must not exceed 1,500 rpm at 50 Hz or 1,800 rpm at 60 Hz.

Operation of the motor without a motor protection device is not permitted.

For explosion-proof motors, the temperature class specified on the motor rating plate must match that of the medium to be pumped.

4.3 Checking the direction of rotation

ATTENTION Before checking the direction of rotation, the pump must be filled with water or the pumped fluid.

Dry running must be avoided at all costs.

Before checking the direction of rotation, ensure that the pump is connected to the pipework system in order to avoid splashing.

To check the direction of rotation, switch on the motor briefly; the motor must not reach operating speed.

The direction of rotation must match the direction of rotation arrow on the pump. If the direction of rotation is incorrect, make appropriate changes to the electrical connection.

4.4. Coupling protection



It is not permitted to operate the pump without a coupling or contact guard fitted. If the coupling or contact protection is not supplied by the manufacturer (pumps with free shaft end), it must be fitted by the operator in accordance with the regulations..

4.5. Pipework

4.5.1 General information on pipework

The nominal pipe sizes should at least correspond to those of the pump connections. In the case of longer pipes and when pumping viscous fluids, larger nominal diameters must be used, as otherwise friction losses will cause a reduction in performance. Particular care should be taken with the suction line. Transition pieces from small to large nominal diameters must be designed with an eccentric transition expansion piece.

The pipework must be supported and secured immediately upstream of the pump. Their weight must not burden the pump. Loads caused by temperature fluctuations and vibrations must be prevented by installing suitable compensators. Suction and discharge lines must be laid in such a way that no gas bubbles can accumulate in them.

It is necessary to connect measuring equipment to monitor pump operation in order to prevent dry running. All components in contact with liquids must be thoroughly cleaned before commissioning.

4.5.2. Suction pipe

The suction line should be as short as possible and should not have any sharp bends or angles. Deflections should be kept to a minimum. To prevent the formation of air pockets, the suction line to the pump must be laid in an ascending position and in a descending position for the inlet. The suction line must be designed with appropriate nominal diameters so that the flow velocity does not exceed 1.5 meters per second with respect to water at 20° C.

Before commissioning the pump, the suction line should be checked for leaks by means of a pressure test. If suction problems occur in the limit range of the suction head (depending on the pumped liquid, density, temperature, delivery head and holding pressure), it is essential to install a foot valve or a non-return valve.

Contamination in the pumped fluid must be kept away from the pump by using a suitable suction strainer or dirt trap. Newly laid pipework should be inspected inside for welding beads and other impurities. Under no circumstances should air from the fluid level or dirt from the sump enter the suction pipe via the suction strainer, filter or suction pipe. The suction strainer and/or dirt trap must be cleaned regularly. A slow-closing shut-off valve must be provided near the pump to shut off the suction line for repair and installation work. The shut-off valve in the suction line must not be used to regulate the delivery rate of the pump and must be fully open during operation.

4.5.3. Pressure pipe

The flow velocity in the pressure line should not exceed 3 meters per second in relation to the pumped medium water, 20° C. A slow-closing shut-off valve must be installed near the discharge connection for flow rate regulation, maintenance and installation work on the pump. If the pump remains pressurized after being switched off, a non-return valve must also be provided in the discharge line. The self-priming centrifugal pump is only able to evacuate (suction) the suction-line if the back pressure in the discharge line does not exceed 50 % of the maximum pump pressure. A small flow rate regulation is possible via the shut-off valve installed in the pressure line. However, it is essential to check the power consumption of the motor, as the power requirement of self-priming side channel centrifugal pumps increases as the pressure rises.

4.5.4. Additional connections

The position and dimensions of the required additional connections, e.g. for flushing, sealing and quench liquid, can be found in the operating instructions for the sealing system. The flushing, sealing and quench fluid supply must be checked at regular intervals. Depending on the version, the pump has drain plugs underneath the housing. Pressure or vacuum gauges can be attached to the side plug. This only applies to grey cast iron or bronze pumps. For all other pump designs, the manufacturer must be contacted.

4.5.5. Noise-reducing installation

Noise reduction can be achieved by insulating the foundation from the floor using a suitable insulation panel and by using suitable expansion joints between the pipework. The foundation must not have a fixed connection to the floor or walls. Expansion joints must be checked for brittleness and cracks at regular intervals.

5. Commissioning / decommissioning

5.1. Preparation for initial start-up

Before starting up, the pump must be vented and completely filled with pumped fluid. Any shut-off valves in the pipes must be fully opened.

5.2. Initial commissioning

After commissioning the pump or immediately after reaching the operating speed, the delivery rate and delivery pressure must be checked. If necessary, the flow rate can be slightly reduced by means of a shut-off valve in the pressure line. Then check the current consumption of the motor.

ATTENTION The pump must never be operated with an empty container or against a closed pressure line, as unauthorized dry running or heating of the pumped fluid will damage the pump unit.

5.3. Decommissioning

Switch off the motor and ensure that the pump runs smoothly. Then close the shut-off valves in the pressure and supply lines first.

ATTENTION At temperatures below the freezing point of the pumped fluid and / or longer periods of standstill, the pump must be emptied and preserved (see point 2. Transport and storage).

ATTENTION Backflows of the pumped fluid must not cause the pump shaft to rotate in the opposite direction to the specified direction of rotation, as otherwise the mechanical seals, which are dependent on the direction of rotation, may be damaged.

6. Dismantling / repair work

6.1. Dismantling

Only trained specialist personnel may carry out repair work. When replacing pump parts, the original spare parts recommended by the manufacturer must be used.

ATTENTION Risk of injury during (repair) work on the running pump

- Only touch the pump when it is at a standstill
- Do not carry out any work on a running pump
- De-energize and lock the motor for all installation and maintenance work

ATTENTION Carefully dismantle the ceramic parts of the plain bearings and magnets of the magnetic coupling

- No bumping
- No knocking/impacting

ATTENTION When dismantling, pay attention to the weight of the components

- Only lift and transport heavy components with suitable lifting gear
- Set components down safely and secure against tipping or rolling away

Personal protective equipment must be worn or used for all work on the pump. Allow the pump to cool down before carrying out any work. Ensure that the pump is depressurized beforehand. Empty the pump and collect the pumped fluid safely and dispose of it in an environmentally-friendly manner. Wear protective gloves, as components can be very sharp-edged due to wear or damage. Carefully remove components with springs (e.g. mechanical seal, ...), the spring tension can cause components to be ejected. Observe the manufacturer's instructions (e.g. for engine, clutch, mechanical seal, etc.)

Pay attention during disassembly:

Are the pressure and suction-side valves secured against unintentional opening?

Is the pump depressurized?

Has the pump been completely drained, flushed and decontaminated?

Are all electrical connections disconnected?

Is the motor secured against being switched on again?

Has the pump cooled down?

Has all contact protection been removed?

Have any auxiliary operating systems been shut down, depressurized and drained?

ATTENTION Mark the installation position and position of all components exactly before dismantling.

Dismantle components concentrically (axially) starting on the suction side.

Avoid tilting components during disassembly.

6.2. Assembly

The components must be reassembled concentrically without tilting in accordance with the markings.

Note during assembly:

All parts must be cleaned before reassembling the pump. Any markings must remain visible.

Replace all worn parts with original spare parts.

All seals should be replaced.

The specified tightening torques must be adhered to when screwing the pump together.

Re-attach or reactivate all safety and protective devices.

Fit new seals to all connections and ensure that the sliders are open again.

Install the pump in the system. Observe the warning notices during disassembly.

6.3. Tightening torques

The manufacturer recommends the following tightening torques:

Screw diameter	Tightening torque (Nm)
M6	7
M8	20
M10	40
M12	65
M14	100
M16	130
M18	140
M20	140
M22	140
M24	200

7. Maintenance and servicing

7.1. Operation monitoring

Ensure that the pump runs smoothly and vibration-free.

Avoid dry-running of the pump at all costs.

If the mechanical seals are working properly, leakage losses are minimal or invisible (vapour form).

Stuffing box packings must leak slightly during operation due to self-lubrication.

Operation of the pump/unit against closed shut-off valves is not permitted.

ATTENTION Use at temperatures higher than those specified in this manual is only permitted after consultation with and written confirmation from the manufacturer.

7.1.1. Shaft bearings

Arco pumps are generally fitted with shaft bearings with a lubrication device. Under normal operating conditions, these must be checked every 5,000 operating hours or once a year and relubricated with suitable lubricant/grease if necessary. After 10,000 operating hours or after 24 months at the latest, all bearings of the pump/unit (motor and/or shaft ball bearings) must be checked for wear and replaced if necessary. In the case of more difficult conditions (e.g. high ambient/fluid temperatures), the bearings must be checked earlier and replaced if necessary.

Dirty bearings must be cleaned and filled with grease. The free space in the bearing and bearing pedestal should be filled with 30-50 % grease. The grease must be free of resin and acid and have a consistency number in accordance with NLGI class 2.

For pumped media with a maximum temperature of 105° C, lithium soap-based greases with a dropping point above 185° C should be used.

If necessary, the bearings can also be lubricated with greases of other soap bases. The bearings must be cleaned for this purpose, as greases with different soap bases must not be mixed. The required relubrication intervals must then be adapted to these greases.

ATTENTION Intermittent operation, high temperatures, low viscosities and aggressive ambient and process conditions reduce the service life of a shaft bearing.

7.1.2. Mechanical seal

The mechanical seals are maintenance-free. If leaks occur after a long period of operation, the mechanical seal must be replaced as a complete unit.

7.1.3. Stuffing box packing

Stuffing box packings are low-maintenance and must leak slightly during operation due to their lubrication on the pump shaft. A leakage of the stuffing box packing of approximately one drop every 8 - 10 seconds is considered normal and has a favourable effect on the durability of the stuffing box packing. Stuffing box packings should not be retightened after initial start-up. Initial heavy dripping stops after the packing has broken in.

If major leaks occur during operation, tighten the stuffing box nut or stuffing box gland lightly and never at an angle. Before retightening, switch off the pump as described in 5.4 - Decommissioning. After tightening the stuffing box packing, it must still be possible to turn the pump shaft easily by hand. If tightening the stuffing box nut or stuffing box gland leads to excessive heating, or if the stuffing box nut / stuffing box gland can no longer be tightened any further, the stuffing box packing must be replaced completely.

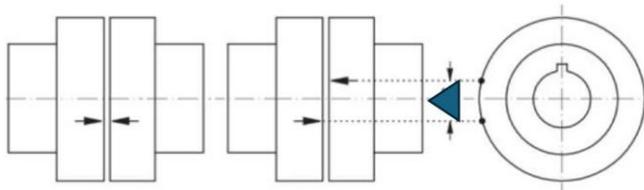
ATTENTION Excessive tightening of the stuffing box nut or stuffing box gland will damage the stuffing box packing and the pump shaft.

7.1.4. Pumping with magnetic coupling

ATTENTION There is a risk of injury from magnetic forces when installing or removing pumps with a magnetic coupling. When carrying out repairs, attention must be paid to hazards from magnetic fields (e.g. influence on pacemakers, etc.) when handling permanently magnetic individual parts. Please observe the instructions in the manufacturer's operating manual.

7.1.5. Coupling

ATTENTION Check the clutch for wear for the first time after 1,000 operating hours at the latest. Thereafter at regular intervals of a maximum of 2,500 operating hours.



This is how to check the clutch wear:

- Turn the coupling halves against each other
- Mark the position with a pin over both coupling halves

- Turn the coupling halves in opposite directions
- Mark the position with a pin over both coupling halves
- Measure the distance Δ between the two markings

Coupling size	Wear tolerance Δ in (mm)
I	max. 5.5
II	max. 5.5
III	max. 5.0
IV	max. 6.0
V	max. 7.0

- Check coupling alignment and realign motor if necessary

8. Important notes

ATTENTION It is necessary that the unit is earthed at the attached earthing screw.

For safety reasons, the complete unit should be controlled with a pressure monitoring system or dry-running protection.

It must be ensured that any solids in the pumped fluid do not get into the pump; this can be avoided, for example, by installing a dirt trap.

The drive motor must be monitored as usual with overload protection (motor protection switch).

9. Faults

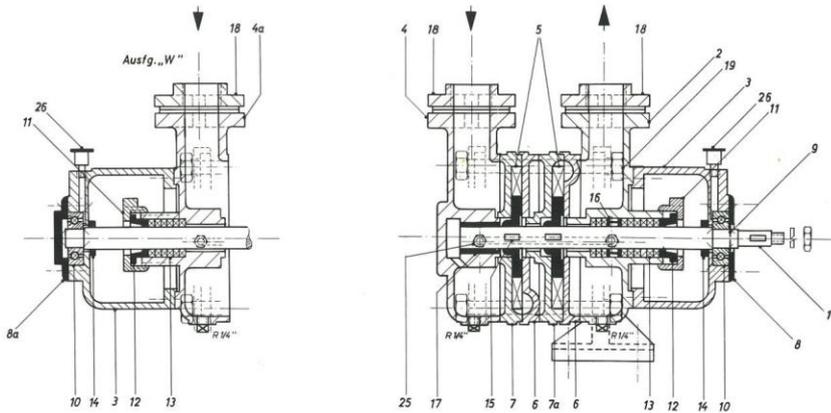
Faults that are not listed in the following table or cannot be traced back to the specified causes should be discussed with the manufacturer.

FAULT	Possible cause	Solution
Conveying capacity too low	Counter pressure too high	Readjust operating point
	Suction head too high or inlet head too low	Check liquid level. Open suction-side fittings completely.
	Clogged filter. Do not observe NPSH.	Clean suction-side filter and dirt trap

FAULT	Possible cause	Solution
	Sealing gaps too large due to wear	Replace worn pump parts
	Incorrect direction of rotation or speed	Connect motor correctly
	Housing or suction pipe not tight enough	Replace housing seal. Check flange connections.
Pump does not suction	Suction pipe or suction shaft seal leaking	Replace housing gasket. Control flange connections.
	Suction level too high	Check liquid level
	Clearance due to wear between impeller and stage too large	Replace worn pump parts
	Incorrect direction of rotation	Connect motor correctly
	Liquid level in the pump too low	Fill up the pump
	Suction or discharge gate valve closed	Open gate valve
	Incorrect pipe connection	Connect pump correctly
	Incorrect electrical connection	Connect motor correctly
	NPSH not obeyed	Clean suction filter and dirt trap
Sealing plugs not removed	Remove sealing plugs	
Leakage from pump	Housing screw connection leaking	Check tightening torque of lag bolts and adjust if necessary
	Pump is tense	Check that the pipe work is tension-free
	Seals defective	Replace seals
Temperature increase in the pump	Pump or pipework not filled correctly	Vent and fill pump, suction, or inlet pipework
	Suction level too high or inlet level to low	Check liquid level. Open suction-side shut-off devices.
	Pump runs dry	Clean suction side filter and strainer
Pump runs unevenly or noisily	Suction head too high or inlet head to low (cavitation)	Check liquid level. Open suction-side shut-off devices.
	Q_{min} is undercut	Clean suction-side filter and dirt trap
	Pump or pipework not completely filled or pump is cavitating	Pump, suction- or inlet pipework vent and fill
	Pump cavitates	Check inlet connections, inlet pressure

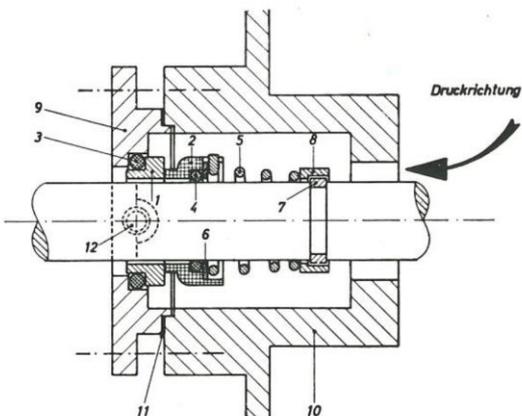
FAULT	Possible cause	Solution
		and check medium temperature ($NPSH_{\text{pump}} < NPSH_{\text{system}}$)
	The existing max. torque of the magnetic coupling has been exceeded	Check whether the pump is blocked by impurities (ease of movement of the pump). Check internal slide bearings Check operating conditions Check max. permissible density of the pumped liquid
	Pump is not level on the surface or is installed under tension	Check installation of the pump
	Foreign objects in the pump	Dismantle and clean the pump
	Coupling worn and / or poorly aligned	Check coupling wear and alignment of the coupling
	Motor is running on 2 phases	Check cable connections, insulation and fuse
	Roller bearing defective	Check smooth running of the pump
Motor protection switch switches off	Foreign objects in the pump	Dismantle and clean the pump
	Closed valve in the pressure line	Open the slide valve
	Increase friction in the pump	Check following conditions: <ul style="list-style-type: none"> - Pump blocked by impurities - Worn shaft bearing - Stuffing box too tight - Viscosity and/or density of the pumped medium increased
	Power consumption greater than the set-up limit value	Check motor protecting switch and electrical connection
	Permissible pumping conditions are not met	Check operating conditions

Part list: Series 1201 – 1233 (W) (X)



PartNo.	Designation	PartNo.	Designation	PartNo.	Designation
1	Pump shaft	8	Bearing lid with hole	15	Woodruff key
2	Pressure housing	8a	Bearing cap	16	Sammelring
3	Bearing block	9	Seegering	17	Bottom bracket
4	Suction housing	10	Ball bearing	18	Counter flange
5	Wheel	11	Gland nut	19	Lag Screws
6	Compression	12	Stuffing box	25	Circulating pipe
7	Suction level	13	Pack	26	Grease nipple
7a	Suction level kl. Brg.	14	Spray ring		

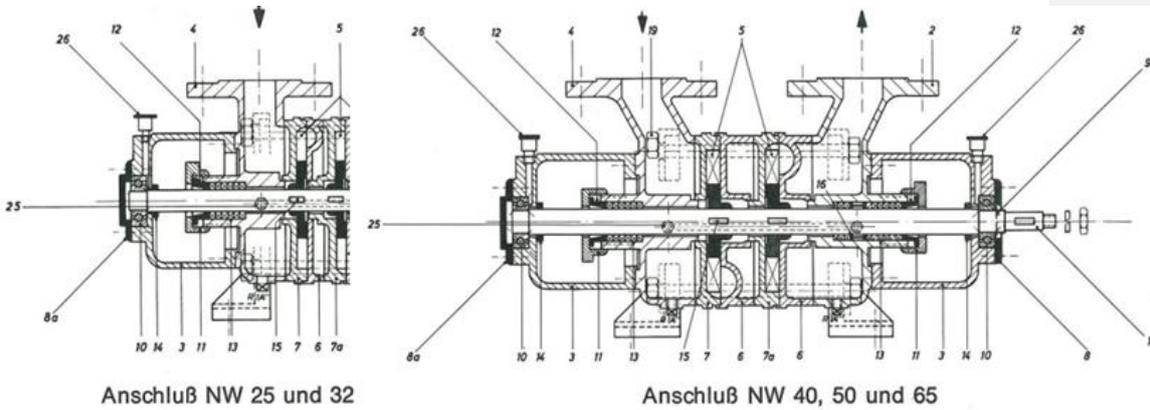
If the pump is equipped with a mechanical seal (GD), parts 11, 12, 13, 16, 25 are omitted.



PartNo.	Designation
1	Sliding ring – fixed
2	Mechanical ring – rotating
3	O-ring
4	O-ring
5	Cone spring
6	Pressure washer
7	Snap ring
8	Haltering
9	Cover
10	Pump body
11	Gasket
12	Connection R 1/4" for flushing (special version)

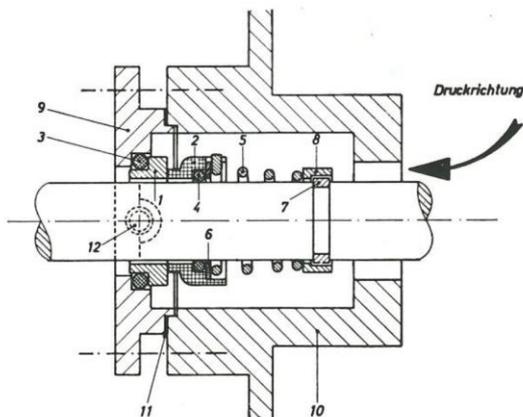
The mechanical seal is sold exclusively as a complete set (items 1-6).

Part list: Series 1403 W – 1463 W (X)



PartNo.	Designation	PartNo.	Designation	PartNo.	Designation
1	Pump shaft	8	Bearing lid with hole	15	Woodruff key
2	Pressure housing	8a	Bearing cap	16	Sammelring
3	Bearing block	9	Seegering	19	Lag Screws
4	Suction housing	10	Ball bearing	21	Bottom bracket suction stage
5	Wheel	11	Gland nut	25	Circulating pipe
6	Compression	12	Stuffing box	26	Grease nipple
7	Suction level	13	Pack		
7a	Suction level kl. Brg.	14	Spray ring		

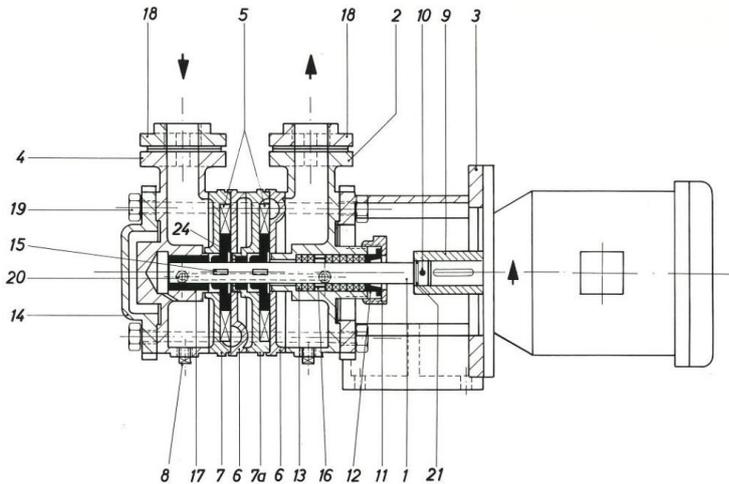
If the pump is equipped with a mechanical seal (GD), parts 11, 12, 13, 16, 25 are omitted.



PartNo.	Designation
1	Sliding ring – fixed
2	Mechanical ring – rotating
3	O-ring
4	O-ring
5	Cone spring
6	Pressure washer
7	Snap ring
8	Haltering
9	Cover
10	Pump body
11	Gasket
12	Connection R 1/4" for flushing (special version)

The mechanical seal is sold exclusively as a complete set (items 1-6).

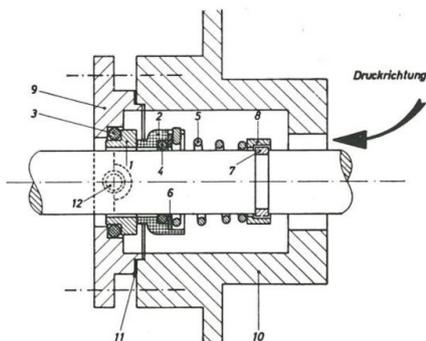
Part list: Series 1501 – 1532 (X)



Das Schnittbild zeigt eine 2-stufige Pumpe.
In der 1-stufigen Ausführung entfallen je ein Teil Nr. 5, 6 und 7a.

PartNo.	Designation	PartNo.	Designation	PartNo.	Designation
1	Pump shaft	9	Clutch sleeve	18	Counter flange
2	Pressure housing	10	Clamping sleeve	19	Lag Screws
3	Bearing block	11	Gland nut	20	Circulating pipe
4	Suction housing	12	Stuffing box	21	O-ring
5	Wheel	13	Pack	22	Housing gasket
6	Compression	14	Counter-pull flange (ED only)	23	Flange gasket
7	Suction level	15	Woodruff key	24	Bottom bracket (ED only)
7a	Suction level kl. Brg.	16	Sammelring		
8	Emptying plug	17	Bottom bracket		

If the pump is equipped with a mechanical seal (GD), parts 11, 12, 13, 16, 20 are omitted.
The parts marked with a * are not shown.

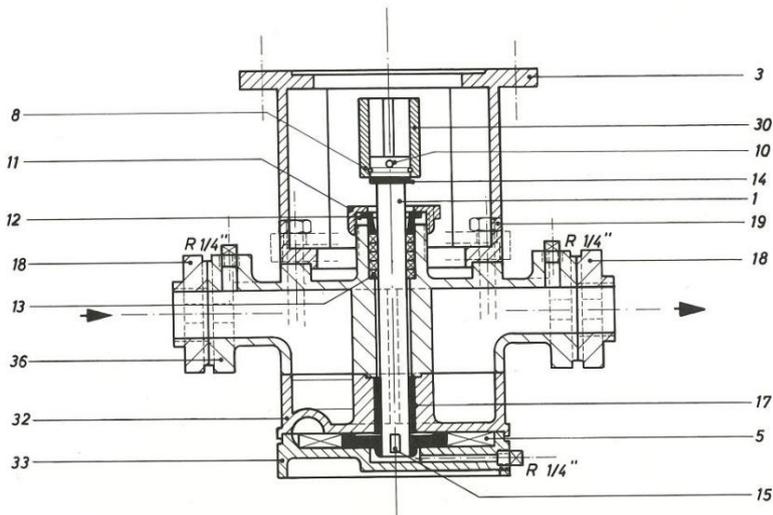


PartNo.	Designation
1	Sliding ring – fixed
2	Mechanical ring – rotating
3	O-ring
4	O-ring
5	Cone spring
6	Pressure washer
7	Snap ring
8	Haltering
9	Cover
10	Pump body
11	Gasket
12	Connection R 1/4" for flushing (special version)

The mechanical seal is sold exclusively as a complete set (items 1-6).

Part list: Series 1611 – 1631

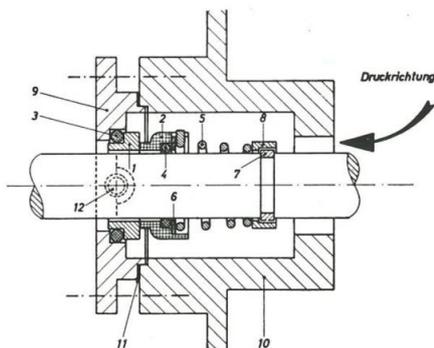
1-stage



Schnittbild der einstufigen Pumpe

PartNo.	Designation	PartNo.	Designation	PartNo.	Designation
1	Pump shaft	13	Pack	23	Flange gasket*
3	Motorized lantern	14	Spray ring	30	Clutch sleeve
5	Wheel	15	Woodruff key	32	Compression damping with bridge
8	O-ring	17	Bottom bracket	33	Floor slab
10	Clamping sleeve	18	Counter flange	36	Case
11	Gland nut	19	Lag Screws		
12	Stuffing box	22	Housing Gasket*		

If the pump is equipped with a mechanical seal (GD), parts 11, 12 and 13 are omitted.
The parts marked with a * are not shown.

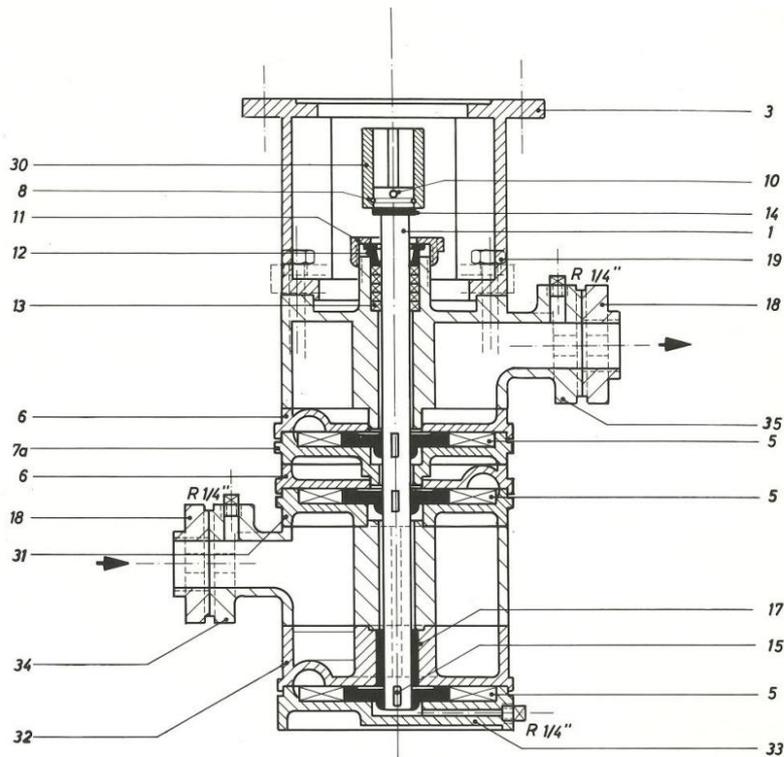


PartNo.	Designation
1	Sliding ring – fixed
2	Mechanical ring – rotating
3	O-ring
4	O-ring
5	Cone spring
6	Pressure washer
7	Snap ring
8	Haltering
9	Cover
10	Pump body
11	Gasket
12	Connection R 1/4" for flushing (special version)

The mechanical seal is sold exclusively as a complete set (items 1-6).

Part list: Series 1612 – 1633

2-3-stages



Schnittbild der dreistufigen Pumpe
 Bei der zweistufigen Ausführung entfallen die Teile 5, 6, 7a.

PartNo.	Designation	PartNo.	Designation	PartNo.	Designation
1	Pump shaft	12	Stuffing box	23	Flange gasket*
3	Motorized lantern	13	Pack	30	Clutch sleeve
5	Wheel	14	Spray ring	31	Suction stage with bar
6	Compression	15	Woodruff key	32	Compression damping with bridge
7a	Suction level kl. Drilling	17	Bottom bracket	33	Floor slab
8	O-ring	18	Counter flange	34	Suction housing
10	Clamping sleeve	19	Lag Screws	35	Pressure housing
11	Gland nut	22	Housing Gasket*		

If the pump is equipped with a mechanical seal (GD), parts 11, 12 and 13 are omitted.

The parts marked with a * are not shown.

Spare parts suitable for the mechanical seal can be found in the parts list for the 1-stage vertical pump. The mechanical seal is sold exclusively as a complete set (items 1-6).

EG Declaration of Conformity

as defined under the EC Machinery Directive 2006/42/EC, Annex II A

We hereby declare that the following machines

Object: Centrifugal pump, side channel pump
Type: 12...,14...,15...,16...,C2...,C4.. in all versions
Type and Serie no.: see front page of the operating instructions

comply with the relevant regulations listed below in its design and construction as well as in the version placed on the market by us:

1. EG Directives:
 - Machinery Directive 2006/42/EG
 - EMC Directive 2014/30/EU
 - Low Voltage Directive 2014/35/EU
 - Reach Regulation EC no. 1907 / 2006
 - Substance Directive 1272/2008/EG
2. Applied, harmonized EN Standards:
 - DIN EN ISO 12100, T 1 u. 2: Machine safety
 - DIN EN ISO 13857: Safety distances for limbs
 - DIN EN ISO 13732-1:2008-12: Temperatures of touchable surfaces
 - DIN EN 809: Safety requirements for pumps
 - DIN EN 60204-T. 1: Electrical equipment for industrial machinery
3. Applied National Technical Standards and Specifications:
 - DIN 45635: Noise measurement on machines
 - DGUV Vorschrift 3: Accident prevention regulation: Electrical systems and equipment
 - DGUV 100-500: Operation of work equipment
4. Installation and conformity declarations from our suppliers, e.g. for motors, couplings, mechanical seals, electronic add-on parts (if applicable)
5. Annex V of Directive 2006/42/EC has been complied with. Compliance with the requirements of the Low Voltage Directive has been ensured in accordance with Annex 1, No. 1.5.1 in accordance with Directive 2006/42/EC. The Annex to Directive 2014/34 EU has been complied with.
6. Additional information:

The Declaration of Conformity expires in the event of improper use or design modifications that have not been confirmed in writing by us as the manufacturer.

Bremen, July 9th, 2024

Management:



KANZLER Arco-Kanzler Pumpen GmbH
Arco Rosenheimer Straße 10
28216 Bremen / Germany



CERTIFICATE

Quality management system DIN EN ISO 9001:2015

Issued November 2015

The certification body of bregau zert GmbH Umweltgutachterorganisation, Mary-Astell-Straße 10, 28359 Bremen, Germany, hereby certifies that the company



**Arco-Kanzler
Pumpen GmbH**
Rosenheimer Straße 10
D-28219 Bremen
Germany

has established and maintains a quality management system according to the above mentioned standard. A quality audit was performed, confirmed in our report. The quality audit proofs, that this quality management meets the requirements of the norm DIN EN ISO 9001:2015 (issued Nov. 2015).

Scope of certification:

Production and sale of side channel pumps

This certificate is valid to:
Certificate registration no.:

5 August 2027
zert-QM-02/08/2024

This certificate is valid only in consideration with the successful execution of the surveillance audits.

Bremen, 6 August 2024


Regine Gudeatis
Certification Body
bregau zert GmbH Umweltgutachterorganisation



ARCO-Kanzler Pumpen GmbH

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