

*Self-draining whirlpool pumps

SPA



OPERATING INSTRUCTIONS

made for your process

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Drawing for dismantling and assembly.

Declaration of conformity

1. GENERAL INFORMATION

Before using the product carefully read the information contained in this instruction manual, the manual should be kept for future reference.

Italian is the original language of this instruction manual, this language is the reference language in case of discrepancies in the translations.

This manual is part of the essential safety requirement and must be retained until the product is finally decommissioned.

The customer, in case of loss, can request a copy of the manual by contacting Bedu Pompen BV or their agent, specifying the type of product data shown on the label of the machine (see 2.3 Marking)

Any changes, alterations or modifications made to the product or part of it, not authorized by the manufacturer, will revoke the "CE declaration" and warranty.

This appliance should not be operated by children younger than 8 years, people with reduced physical, sensory or mental capacities, or inexperienced people who are not familiar with the product, unless they are given close supervision or instructions on how to use it safely and are made aware by a responsible person of the dangers its use might entail. Children must not play with the appliance.

It is the user's responsibility to clean and maintain the appliance. Children should never clean or maintain it unless they are given supervision.

Read carefully the installation

Read carefully the installation section which sets forth:

- The maximum permissible structural

working pressure (chapter 3.1).

- The type and section of the power cable (chapter 6.5).

- The type of electrical protection to be installed (chapter 6.5).

1.1. Symbols

To improve the understanding of the manual, below are indicated the symbols used with the related meaning.



Information and warnings that must be observed, otherwise there is a risk that the machine could damage or compromise personnel safety.



The failure to observe electrical information and warnings, could damage the machine or compromise personnel safety.



Notes and warnings for the correct management of the machine and its parts.



Operations that could be performed by the final user. After carefully reading of the instructions, is responsible for maintenance under normal conditions. They are authorized to affect standard maintenance operations.



Operations that must be performed by a qualified electrician. Specialized technician authorised to affect all electrical operations including maintenance. They are able to operate with in the presence of high voltages.



Operations that must be done performed by a qualified technician. Specialized technician able to install the device, under normal conditions, working during "maintenance", and allowed to do electrical and mechanical interventions for maintenance. They must be capable of executing simple electrical and mechanical operations related to the maintenance of the device.



Indicates that it is mandatory to use individual protection devices.



Operations that must be done with the device switched off and disconnected from the power supply.



Operations that must be done with the device switched on.

1.2. Manufacturer name and address Bedu Pompen B.V.

Poort van Midden Gelderland Rood 10 6666 LT HETEREN, The Netherlands

1.3. Authorized operators

The product is intended for use by expert operators divided into end users and specialized technicians. (see the symbols above).



It's forbidden, for the end user, carry out operations which must be done only by specialized technicians. The manufacturer declines any liability for damage related to the non-compliance of this warning.

1.4. Warranty

For the product warranty refer to the general terms and conditions of sale.





The warranty covers only the replacement and the repair of the defective parts of the goods (recognized by the manufacturer).

The Warranty will not be considered in the following cases:

- Whenever the use of the device does not conform to the instructions and information described in this manual.
- In case of changes or variations made without authorization of the manufacturer.
- In case of technical interventions executed by a nonauthorized personnel.
- In case of failing to carry out adequate maintenance.

1.5. Technical assistance

Any further information about the documentation, technical assistance and spare parts, shall be requested from: Bedu Pompen B.V. (paragraph 1.2).

2. TECHNICAL DESCRIPTION

Self-draining, single-impeller pumps, with motor insulated from pumped water, constructed with high quality, corrosion-proof plastic materials, with stainless steel diffuser.

PVC pipe connections:

Ports for cementing joint, with external thread for union coupling.

2.1. Intended use

For water circulation in spas, hydromassage bathtubs and whirlpools.

For clean water with a maximum temperature of 60 °C (140 °F).



Limit the water at the inlet to the bathtub to a maximum temperature of 50 °C (122 °F).

Maximum water level in the bathtub or spa: 2,000 mm above the pump.

2.2. Improper use

The device is designed and built only for the purpose described in paragraph 2.1.



Improper use of the device is forbidden, as is use under conditions other than those indicated in these instructions.

Improper use of the product reduces the safety and the efficiency of the device, Bedu shall not be responsible for failure or accident due to improper use.

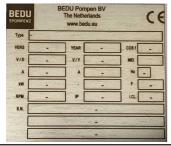


Do not use in ponds, tanks or swimming pools or where people may enter or come into contact with the water.

2.3. Marking

The following picture is a copy of the name-plate that is on the external case of the pump.

Example plate pump



3. TECHNICAL FEATURES

3.1. Technical data

Dimensions and weight (see technical catalogue). Nominal speed 2900/3450 rpm

Protection IP X5

Supply voltage / Frequency: - up to 240V 1~ 50/60 Hz

- up to 480V 3~ 50/60 Hz

Check that the mains frequency and voltage correspond to the electrical characteristics shown on the indicator plate.

The electric data marked on the label are referred to the nominal power of the motor.

Sound pressure: < 70 dB (A).

Max. starts per hour: 30 at regular intervals.

Maximum permissible pressure in the pump casing: 25 m (2,5 bar).

Maximum suction pressure: PN (Pa) - Hmax (Pa).

3.2. Operating conditions

Installation in well ventilated location protected from the weather, with a maximum ambient temperature of $40\ ^{\circ}\text{C}$

4. SAFETY

4.1. General provisions



Before using the product it is necessary to know all the safety indications.

Carefully read all operating instructions and the indications defined for the different steps: from transportation to disposal.

The specialized technicians must carefully comply with all applicable standards and laws, including local regulations of the country where the pump is sold.

The device has been built in conformity with the current safety laws. The improper use could damage people, animals and objects.

The manufacturer declines any liability in the event of damage due to improper use or use under conditions other than those indicated on the name-plate and in these instructions.



Follow the routine maintenance schedules and the promptly replace damaged parts, this will allows the device to work in the best conditions.

Use only original spare parts provided from Bedu pompen BV or from an authorized distributor.



Don't remove or change the labels placed on the device.

Do not start the device in case of defects or damaged parts.



Maintenance operations, requiring full or partial disassembly of the device, must be done only after disconnection from the supply.

4.2. Safety devices

The device has an external case that prevents any contact with internal parts.

4.3. Residual risks

The appliance, designed for use, when used in-line with the design and safety rules, doesn't have residual risks.

4.4. Information and Safety signals

For this kind of product there will not be any signals on the product.

4.5. Individual protection devices

During installation, starting and maintenance it is suggested to the authorized operators to consider the use of individual protection devices suitable for described activities.

During ordinary and extraordinary maintenance interventions, safety gloves are required.



individual protection device HAND PROTECTION

(gloves for protection against chemical, thermal and mechanical risks).

5. TRANSPORTATION AND HANDLING

The product is packed to maintain the content intact. During transportation avoid to stack excessive weights. Ensure that during the transportation the box cannot move.

It is not necessary to use any special vehicle to transport the packaged device.

The transport vehicles must comply, for the weight and dimensions, with the chosen product (see technical catalogue dimensions and weights).

5.1. Handling

Handle with care, the packages must not receive impacts.

Avoid to impact onto the package materials that could damage the pump.

6. INSTALLATION

6.1. Dimensions

For the dimensions of the device (see technical catalogue).

6.2. Ambient requirements and installation site dimensions

The customer has to prepare the installation site in order to guarantee the right installation and in order to fulfill the device requirements (electrical supply, etc...). The place where the device will be installed must fulfill the requirements in the paragraph 3.2.

It's Absolutely forbidden to install the machine in an environment with potentially explosive atmosphere.

6.3. Unpacking



Inspect the device in order to check any damages which may have occurred during transportation.

Package material, once removed, must be discarded/ recycled according to local laws of the destination country.

6.4. Installation

The SPA pumps must be installed with the rotor axis horizontal and feet downwards in piping layouts in which the filling and draining of the pump is obtained through the pipes, with filling and draining of the bathtub or spa.

Whirlpool tubs must be constructed so that the water cannot remain in the system after the tub has been drained.

To allow for self-draining, mount the pump on a base positioned at a level equal to or higher than the bathtub or spa suction port and, to allow for filling, with the delivery port positioned at a level lower than that for normal filling (under the overflow discharge).

Installation beneath the skirt of a bathtub or spa which is closed externally with protection panels must provide at least one slot with a 5-10 mm aperture (preferably between the panel and the floor) suitable for air recirculation for ventilation of the motor.

Mount the pump on a base located at least 40 mm (11/2 inches) above the intended mounting surface. For outdoor spas or whirlpools, the pump and electric parts must be installed within an enclosure for protection from the weather and flooding and installed on a base located at least 100 mm (4 inches) above the mounting surface.

Make sure installation allows access for servicing and inspection, disassembly or replacement of the pump. Follow standards for safety (some safety standards are indicated in the section 6.5.).

6.4.1. Pipes

Connections of pipes to the pump ports.

Use pipes made of PVC type, plastic material.

The pump ports are designed to allow for direct cemented joints (fig. 1). The external thread allows for connection with an optional, removable union coupling (fig. 2).

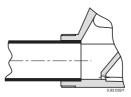


Fig. 1 Cemented joint.

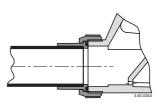


Fig. 2 Threaded union coupling.

To join the pipe to the pump or to the union coupling, use an adhesive or cement suitable for the ABS material. Follow carefully the instructions of the product chosen .

Tighten union couplings to the extent sufficient to ensure a tight seal.

Avoid tightening too much as excessive torque may damage the pump or the union couplings themselves. Make sure all joints are properly sealed.

The diameter of the pipes must not be smaller than the diameter of the pump ports.

Place a removable filter inside the bathtub or whirlpool suction port.

The suction pipe must have a minimum length of 500 mm and must lead upwards from the bathtub or whirlpool suction port to the pump suction port. The delivery pipe must also be positioned to allow for complete draining when the bathtub is drained.

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6.5. Electrical connection







Electrical connection must be carried out only by a qualified electrician in accordance with local regulations.

Follow safety standards EN 60335-2-41, EN 60335-2-60 or UL 1795 and UL 1081and adopt all safety measures indicated in installation standards.

The unit must be properly earthed (grounded).

Connect the earthing (grounding) conductor to the terminal with the \bigoplus marking.

Compare the frequency and mains voltage with the name-plate data and connect the supply conductors to the terminals in accordance with the appropriate diagram inside the terminal box cover.



ATTENTION: never allow washers or other metal parts to fall into the internal cable opening between the terminal box and stator. If this occurs, dismantle the motor to recover the object which has fallen inside.

The flexible power supply cord must be at least of the H05 RN-F or H05 VV-F type. For outdoor whirlpool or spas the mains cable must be at least of the H07 RN-F type with section of cable not less than (par. 12.5 TAB 1).

All the electrical components must be located outside the reach of individuals who use the pool and must be positioned or attached without any risk of their falling into the bathtub.

Make electric bonding connections.

Connect only to a circuit protected by a ground-fault circuit-interrupter with a rated residual operating current IΔN not exceeding 30 mA.

Install a device for disconnection from the mains (switch) with a contact separation of at least 3 mm in

With a three-phase motor install an overload protection device with curve D appropriate for the rated current of the pump.

Single-phase **SPAM**, are supplied with a capacitor connected to the terminals and (for 220-240 V - 50 Hz) with an incorporated thermal protector.

7. STARTUP AND OPERATION

7.1. Preliminary checks before start-up of the

Do not start-up the device in case of damaged parts.

7.2. First starting





ATTENTION: never run the pump dry, not even for a short trial run.

Start the pump when the bathtub has been filled. Stop the pump before the bathtub is drained.

To avoid damage to the pump due to prolonged operation in a no-water situation make sure the installed unit has level detectors or sensors to impede starting and to provide automatic stopping if there is no water in the bathtub or install a timer to protect against the risk of prolonged accidental operation.

At first start-up or following a long idle period, check that the shaft turns by hand.

For this purpose use the screwdriver notch on the shaft end ventilation side. Turn the shaft by hand only in the direction indicated by the arrows on the pump casing. Note that a slight degree of resistence to rotation is normal; this is due to friction caused by the mechanical seal.

The pump might be jammed by an obstruction, foreign

matter, sticking of mechanical seal surfaces or other causes.

If the shaft cannot be freed by hand, the pump will have to be dismantled and cleaned.

With three-phase motors check the direction of rotation.

Do not start the motor if the shaft is jammed. If jammed, the impeller may unscrew should the motor start rotating backwards. Reverse rotation can also damage the mechanical seal.

Momentarily start the motor to make sure pump shaft rotation corresponds to the direction indicated by the arrows on the pump casing: rotation is clockwise when viewing the shaft from the fan end.

Otherwise, disconnect electrical power and reverse the connections of two phases.

Never drop or insert any object into any opening.

Do not operate this unit without the guard over the suction fitting.

7.3. Switch off of the pump







The appliance must be switch off every time there are faults. (see troubleshooting).

The product is designed for a continuous duty, the switch off is performed by disconnecting the power supply by means the expected disconnecting devices. (see paragraph "6.5 Electrical connection").

8. MAINTENANCE

Before any operations it's necessary to disconnect the power supply.

If required ask to an electrician or to an expert technician.



Every maintenance operations, cleaning or reparation executed with the electrical system under voltage, it could cause serious injuries to people.



If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

In case of extraordinary maintenance, or maintenance operations that require part-removing, the operator must be a qualified technician able to read schemes and drawings.

It is suggest to register all maintenance operation executed.



During maintenance keep particular attention in order to avoid the introduction of small external parts, that could compromise the device safety. It is forbidden to execute any operations with



the direct use of hands. Use water-resistant, anti-cut gloves to disassemble and clean the filter or in other particular cases.



During maintenance operations external personnel is not allowed.

Maintenance operations that are not described in this manual must be made only by special personnel

authorized by Bedu Pompen BV

For further technical information regarding the use or the maintenance of the device, contact Bedu **Routine maintenance**









Before every maintenance operations disconnect the power supply and make sure that the device could not accidentally operate.



Clean the filter inserted in the bathtub suction opening at regular intervals.

The pump does not require servicing except for disassembly for cleaning and removal of any obstruction from inner parts and the draining hole when, with use and in the course of time, performance GB or self-draining capacity are found to be reduced.

Avoid cleaning an installed pump by hosing down directly with jets of water without protection panels on the bathtub.

Following a long idle period, check that the shaft turns by hand.

For this purpose use the screwdriver notch on the shaft end ventilation side. Turn the shaft by hand only in the direction indicated by the arrows on the pump casing. Note that a slight degree of resistence to rotation is normal; this is due to friction caused by the mechanical

The pump might be jammed by an obstruction, foreign matter, sticking of mechanical seal surfaces or other causes.

If the shaft cannot be freed by hand, the pump will have to be dismantled and cleaned.

8.2. Dismantling the pump





For dismantling and re-assembly see construction in the cross-section drawing (page 14).

Remove the motor assembly with the lantern bracket (32.00) from the pump casing (14.00), after removing the screws (14.24), the nuts (14.28) and the washers (14.29), levering them out with two screwsdrivers in diametrically opposed positions.

To remove the impeller (28.00) insert a large straightblade screwdriver in the slot on the shaft (78.00) at the ventilation end. Grip the impeller with one hand and unscrew it, turning the shaft counter-clockwise and twisting with both hands (fig. 3a).

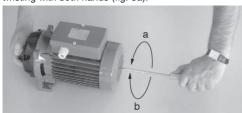


Fig. 3 Dismantling (a) and remounting (b) the impeller

If it is not possible to hold or move the shaft with the screwdriver, remove the fan cover (90.00) and motor fan (88.00) and unscrew the impeller by gripping the shaft with a suitable wrench.

With the impeller the rotating part of the mechanical seal (36.00) will remove.

8.3. Re-assembly

To replace the mechanical seal (36.00) fit the rotating part over the impeller hub (28.00) and push the spring right down as far as the front shoulder. In this way, correct spring compression will be ensured in subsequent assembly.

Lubricate the seal with water and align the impeller on the motor shaft.

ATTENTION: with the three-phase models, to avoid the unscrewing (and breaking) of the impeller should the motor start rotating backwards, clean the threaded shaft end and apply on the first half of the threaded part Loctite 638 (to avoid unscrewing due to the resistantforce of the water in the case of a backward rotation). Grip the impeller with one hand and turn the shaft with

a screwdriver in the clockwise direction until tight. With this operation the front surfaces of the mechanical seal come into contact without rubbing against each other during tightening.

Clean the Ö-ring (14.20) and seal surfaces with water. When replacing the motor assembly with the impeller, be careful to insert the locating lug inside the pump casing (14.00) into the locating slot on the diffuser cover (27.00).

DISPOSAL







The final disposal of the device must be done by specialized company.

Make sure the specialized company follows the classification of the material parts for the separation. Observe the local regulations and dispose the device accordingly with the international rules for environment protection.

10. SPARE PARTS

Spare-parts request

When ordering spare parts, please quote their designation, position number in the cross section drawing and rated data from the pump name plate (type, date and serial number).

The spare parts request shall be sent to Bedu Pompen by phone, fax, e-mail.

11. ESIGNATION OF PARTS

Nr. Designation

14.00 Pump casing

14.20 O-ring

14.24 Screw 14.28 Nut

14.29 Washer

27.00 Diffuser cover

27.04 Diffuser wall

27.08 O-ring

28.00 Impeller

36.00 Mechanical seal

70.00 Lantern bracket

73.00 Ball bearing

73.08 V-ring

76.00 Motor casing with winding

76.04 Cable gland

76.16 Support

76.54 Terminal board

78.00 Shaft with rotor packet

81.00 Ball bearing

81.04 V-ring

82.00 Motor end shield

82.04 Compensating spring

88.00 Motor fan

90.00 Fan cover

90.04 Screw

92.00 Tie-bolt

94.00 Capacitor

94.02 Capacitor gland

98.00 Terminal box cover

98.04 Screw

98.08 Gasket

Changes reserved.



12. TROUBLESHOOTING





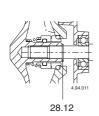
WARNING: Turn off the power supply before performing any operations.

Do not allow the pump or motor to run when dry even for a short period.

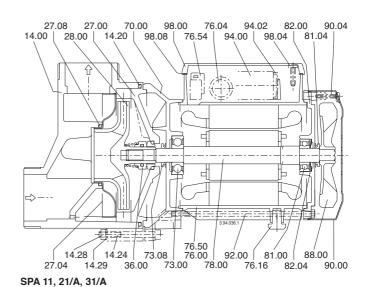
Strictly follow the user instructions and if necessary contact an authorised service centre.

PROBLEM	PROBABLE CAUSES	POSSIBLE REMEDIES
1) The motor does not start	In Unsuitable power supply In Incorrect electrical connections Ic) Engine overload protective device cuts in. Id) Blown or defective fuses Ie) Shaft blocked If the above causes have already been checked, the engine may be malfunctioning	1a) Check that the mains frequency and voltage correspond to the electrical characteristics shown on the indicator plate 1b) Connect the power supply cable to the terminal board correctly. Check that the thermal overload protection is set correctly (see data on the engine indicator plate) and make sure that the fuseboard upline of the engine has been properly connected 1c) Check the power supply and make sure that the pump shaft is turning freely. Check that the thermal overload protection has been set correctly (see engine indicator plate) 1d) Replace the fuses, check the electric power supply and points a) and c) 1e) Remove the cause of blockage as indicated in the "Blocked pump" instruction booklet 1f) Repair or replace the engine by applying to an authorised service centre
2) Pump blocked	Prolonged periods of inactivity with formation of rust inside the pump Presence of solid bodies in the pump rotor Bearings siezed	2a) Rotation may be started directly from the pump shaft or from the joint (remember to turn off the electricity supply first) or contact an authorised service centre 2b) If possible, dismantle the pump casing and remove any solid foreign bodies inside the rotor, if necessary contact an authorised service centre 2c) If the bearings are damaged replace them or if necessary contact an authorised service centre
3) The pump functions but no water comes out	Possible infiltration of air from suction tube connections, drain plugs or filling of pump or from the gaskets of the suction pipe 3b) Foot valve blocked or suction pipe not fully immersed in liquid 3c) Suction filter blocked	3a) Check which part is not tight and seal the connection adequately 3b) Clean or replace the bottom valve and use a suction pipe suitable for the application 3c) Clean the filter, if necessary, replace it . See point 2a) also.
4) Insufficient flow	4a) Pipes and accessories with diameter too small causing excessive loss of head 4b) Presence of deposits or solid bodies in the internal passages of the rotor 4c) Rotor deteriorated 4d) Worn rotor and pump case 4e) Excessive viscosity of the liquid pumped (if other than water) 4f) Incorrect direction of rotation 4g) Suction head excessive in relation to the suction capacity of pump 4h) Suction pipe too long	4a) Use pipes and accessories suitable for the specific application 4b) Clean the rotor and install a suction filter to prevent other foreign bodies from entering 4c) Replace the rotor, if necessary, contact an authorised service centre 4d) Replace the rotor and the pump casing 4e) The pump is unsuitable 4f) Invert the electrical connections on the terminal board or control panel 4g) Try to close the feeder gate partially and/or reduce the difference in level of the pump and the liquid being aspirated 4h) Bring the pump closer to the suction tank so as to use a shorter pipe. If necessary use a pipe of a wider diameter
5) Noise and vibrations from the pump	5a) Rotating part unbalanced 5b) Worn bearings 5c) Pump and pipes not firmly attached 5d) Flow too strong for the diameter of the delivery pipe 5e) Functioning in cavitation 5f) Unbalanced power supply 5g) Incorrect alignment of pump-motor unit	5a) Check that no solid bodies are obstructing the rotor 5b) Replace the bearings 5c) Anchor the delivery and suction piping as needed 5d) Use bigger diameters or reduce the pump flow 5e) Reduce the flow by adjusting the feeder gate and/or using pipes with a bigger internal diameter. See point 4g) too 5f) Check that the mains voltage is right 5g) If necessary, the unit must be re-aligned
6) Leakage from the mechanical seal	6a) The mechanical seal has functioned when dry or has stuck 6b) Mechanical seal scored by presence of abrasive parts in the liquid pumped 6c) Mechanical seal unsuitable for the type of application 6d) Slight initial drip during filling or on first start-up	In cases 6a), 6b) and 6c), replace the seal, if necessary contact an authorised service centre 6a) Make sure that the pump casing (and the suction pipe if the pump is not self-priming) are full of liquid and that all the air has been expelled. See point 5 e) too. 6b) Install a suction filter and use a seal suited to the characteristics of the liquid being pumped. 6c) Choose a seal with characteristics suitable for the specific application 6d) Wait for the seal to adjust to the rotation of the shaft. If the problem persists, see points 6a), 6b) or 6c) or contact an authorised service centre.

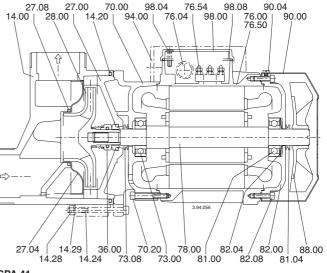
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SPA 11



(1) Draining hole



SPA 41

Tab. 1 TAB 1IEC 60335-1

Rated current of appliance	Nominal cross-sectional area	
А	mm ²	
>3 + ≤6 >6 + ≤10 >10 + ≤16 >16 + ≤25 >25 + ≤32 >32 + ≤40 >40 + ≤63	0,75 1,0 1,5 2,5 4 6	



EC - Declaration of Conformity

Manufacturer Details

Tradename

Bedu Pompen BV

Address

Poort van Midden Gelderland Rood 10, 6666 LT, Heteren, Netherlands

Product Details

Product Name

Centrifugal pumps

Model (+series) Name

SPA series

Applicable Standards Details

Directives

2006/42/EC (Machinery Directive) 2014/35/EU (Low Voltage Directive) 2014/30/EU (Electromagnetic compatibility)

Additional information

No further details.

Declaration

We hereby declare under our sole responsibility that the product(s) mentioned above to which this declaration relates complies with the above mentioned standards and Directives.

BEDU Pompen BV

Poort van Midden Gelderland Rood 10

6666 LT Heteren

Tel : +31 (0)88 - 4802 900 Fax : +31 (0)88 - 4802 901

E-mail : info@bedu.nl
Website : www.bedu.eu

<u>Standards</u>

EN-ISO 12100:2010 EN-IEC 60204-1:2006 EN 809+A1/C1

Business Unit Manager: Issued Date:

O1/10/ 2014

Marco Breunissen

Signature of representative(s)



made for your process

- Expert advice
- A customer-oriented organization that adapts to the requirements and wishes of your organization
- Innovative and customized solutions
- Breakdownservice, 24 hours a day, 7 days a week

- Technical service with extensive test facilities, working from our own workplace or at your location
- A fast and appropriate solution for all your issues
- Wide range of liquid pumps
- Repair, maintenance and revision

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