Chemical resistant pumps for corrosive and highly pure media

Operating
Maintenance
Assembly Instruction

UP Pump Series

normal priming,
centrifugal pumps
with a single mechanical seal

materials: stainless steel 1.4581
General instructions

The present operating instructions must be complied with when installing, operating and servicing the pumps. This is the reason why these instructions must be read by the operator, the assembling personnel and all the other specialists/operators before installing and commissioning the pump. These instructions must be readily available for consultation at the site of installation.

The personnel in charge of operation, maintenance, inspection and assembly must be qualified to carry out this work. The scope of the personnel’s responsibility, competence and supervision must be precisely defined by the management. The management must also ensure that the operating instructions are fully understood and complied with by the personnel.

Non-compliance with the present instructions may not only cause damage to the environment and be dangerous for the personnel but may also result in the total destruction of or damage to the pump or the installation.

The present instructions, current national measures for accident prevention, and all internal works-, operating- and safety instructions specified by the user are to be complied with.

The work is to be carried out on inactive pumps. Pumps which are used with hazardous materials must be decontaminated. Before started such pumps up again, the instructions for initial commissioning are to be complied with.

Installing the pump

The pump is to be installed horizontally at the chosen operating site. Monobloc pumps are installed stress-free in situ (on the ground or the bottom plate) with the help of the feet.

Relocating pipelines

Prior to installing a **SCHMITT centrifugal pump**, please ensure the very best and appropriate arrangement of the connecting tubes. Inappropriate tube cross section and erroneous arrangement can result in lost performance, and even damage.

The pipeline’s nominal width and the incorporated armature must be of equal width or wider than the pump’s nominal width. Suction lines must be as short as possible. Sharp bends must be avoided, especially before the pump’s suction connection pieces. Pipelines are to be connected to the pump in such a manner that no forces act on the pump (e.g. mismatch, weight or dilation when hot liquids are being pumped). Use compensators or flexible connection pieces. This also applies in the event of metal pipelines.

Operation

Avoid pumping solids and mud. If necessary, overflow protection, filters or screen cages are to be incorporated into the suction line. Please be careful that these do not become blocked since the pump will otherwise cavitate. This can result in damage, particularly to the axial face seals.
Installation | Commissioning

Pump Series: UP 80 - UP 210
Materials: Stainless Steel 1.4581

These pumps are “normal priming”, i.e. the feeding medium has to fed into the pump.

The axial input is located centrally in the housing, with the output leading tangentially right to the top (standard version).

Pumps belonging to this series are fitted with a single-acting, internal axial face seal which is flushed and cooled by the feeding liquid. It is made of various different materials, depending on its use. Due to the contact pressure required by the sealing surfaces, high temperatures are very rapidly reached in the event of dry-running which may result in damage to the sealing parts.

Never allow the pump to run dry - this also applies to rotational direction tests of the motor!

Once the pumps have been installed at the chosen site, and the suction and pressure lines have been properly connected, the pump is filled with liquid. Please make sure that the lines and the pump have been bled. Also ensure that all the connected lines are absolutely watertight.

Before connecting the motor to the power supply, please match the voltage with the indications on the motor; check explosion-proof motors for their protection class.

The connection must comply with VDE regulations and those of the local electricity board.

Test the pump’s rotational direction by giving it a brief current pulse. Switch the pump on by activating the closed slide valve on its pressure side. Subsequently, open the slide valve to reach the desired flowing or working point.

Only operate the pumps very briefly with closed, pressure-side slide valve. The axial face seal and other parts may be damaged due to overheating of the pumping medium.

Suction-side throttling is not permitted. This results in cavitation; performance levels fall off and damage may be caused to pump parts and axial face seals.

Only use the pumps for the pumping mediums and operating conditions specified in the order form. As stated in our General Terms of Sale, we shall not be held liable, for any damage which resulted from non-compliance with the present operating instructions.
Dismantling I Repairs I Assembly

Pump Series: UP 80 - UP 210
Materials: Stainless Steel 1.4581

Before dismantling the pumps, secure them so as to ensure that they cannot be switched on. The pump housing must have reached ambient temperature, must be unpressurized and empty. Carefully clean the pump when this is used for hazardous and environmentally dangerous feeding media. Pollutants from this operation are to be disposed of in the appropriate manner.

Dismantling

Unscrew the housing screws (27-3) and remove the housing (06). Unscrew the locking nut (04-2). Hold the shaft-extension (02) between the pump and the motor tight with a fork wrench and unscrew the impeller (04). All parts have right-hand thread. The impeller is best removed with the use of a ribbon gripper. All axial face sealing parts are located on the shaft extension (02) and can easily be removed from this sheath. Remove the cover (05) from the flange (01). A stationary ring (33) and a o-ring seal (34) are to be found in the cover. Push the stationary ring and the o-ring seal out of the cover.

Checking the shaft-extension (02)

The shaft-extension must not present any mechanical or chemical damage.
Should the shaft-extension need replacing, remove the cotter pin (29). Then remove the shaft-extension from the motor shaft with a take-off device. When assembling the new shaft-extension, ensure compliance with all measurements and distances (see drawing).

Attention!
When ordering spare parts, please mention the pump`s reference number.

Assembling

Fit the stationary seal (33) onto the o-ring seal (34) and press both down into the cover (05).
Place the assembled cover on the flange (01). Insert the o-ring seal (31) and the thrust washer (35) into the rotating seal (30) and push them and the coil spring (32) over the shaft extension (02) until the rotating seal and the stationary ring meet.
Please ensure utmost cleanliness during assembly, especially of the slide rings`sealing surfaces.
Now screw the impeller down onto the shaft extension`s bearing surface. Insert the locking washer (42-4) and tighten the locking nut (04-2).
Replace the housing seal (36) if necessary and then put the housing back and tighten with the housing screws.
Release the pump shaft by rotating it and check for smooth and even running.

When starting the pump up again, please comply with the instructions for initial commissioning.
# Parts Description of the UP Pump series

<table>
<thead>
<tr>
<th>part no.</th>
<th>part</th>
<th>standard</th>
<th>materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>mounting flange</td>
<td>AL</td>
<td>stainless steel</td>
</tr>
<tr>
<td>02</td>
<td>shaft extension C</td>
<td>stainless steel</td>
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<tr>
<td>04 - 2</td>
<td>locking nut</td>
<td>stainless steel</td>
<td>stainless steel</td>
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<tr>
<td>05</td>
<td>backplate</td>
<td>stainless steel</td>
<td>stainless steel</td>
</tr>
<tr>
<td>06</td>
<td>pump housing</td>
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<td>26</td>
<td>flinging disc</td>
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<td>26 - 1</td>
<td>thermal conduction plate</td>
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</tr>
<tr>
<td>27 - 3</td>
<td>hexagon bolt</td>
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<td>28</td>
<td>cotter pin</td>
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<td>30</td>
<td>rotating seal</td>
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<td>31</td>
<td>o-ring seal</td>
<td>*FKM</td>
<td>TEF or EPDM</td>
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<tr>
<td>32</td>
<td>coil spring righthand side</td>
<td>Hast. C</td>
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<td>33</td>
<td>stationary seal</td>
<td>ceramic</td>
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<tr>
<td>34</td>
<td>o-ring seal</td>
<td>*FKM</td>
<td>TEF or EPDM</td>
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<tr>
<td>35</td>
<td>thrust washer</td>
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<td>36</td>
<td>pump housing seal</td>
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<tr>
<td>42 - 4</td>
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<tr>
<td>43</td>
<td>hexagon nut</td>
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</table>

*FKM = e.g. Viton®
Dismantling I Assembly of the shaft extension

UP Pump Series: with a single mechanical axial face seal

Remove the cotter pin (29) by punching it out.
Strip the shaft extension (02).
Unscrew the flange (01) from the motor.
Mount a new shaft extension (02).
In the event of incorporated flange, adjust assembly dimension “A”.
Bore and pin the shaft extension.
Test for concentric running.
Screw the flange (01) and all other parts and mount in accordance with the repair instructions.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>A in mm</th>
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<tr>
<td>80 - 100</td>
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<td>115</td>
<td>11.0</td>
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<tr>
<td>130</td>
<td>9.0</td>
</tr>
<tr>
<td>150 - 210</td>
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Concentric running accuracy 0.02
Characteristics of the UP Pump Series

Motor power

UP 130  0.55 kw
UP 115  0.25 kw
UP 101  0.18 kw
UP  80  0.18 kw

UP 80 bis UP 130 Pump Series

Characteristic lines measured with water, 20° C and 2900 Rpm (50 Hz.)

Motor power

UP 210  5.50 kw
UP 190  3.00 kw
UP 170  2.20 kw
UP 150  1.10 kw

UP 150 bis UP 210 Pump Series
## Specification of the UP Pump Series

The dimensions of the motors refer to three-phase standard motors.

<table>
<thead>
<tr>
<th>Type</th>
<th>h</th>
<th>h1</th>
<th>h2</th>
<th>g</th>
<th>g1</th>
<th>p</th>
<th>a</th>
<th>b</th>
<th>e</th>
<th>f</th>
<th>c</th>
<th>s</th>
<th>m</th>
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<th>pressure conn.</th>
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<td>72</td>
<td>40 G 2½&quot;</td>
<td>40 G 2½&quot;</td>
<td>34,6</td>
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</table>
Warranty

General conditions

**SCHMITT centrifugal pumps** meet very high design and engineering specifications.

Appropriate assembly and operation, as recommended in the present operating instructions, are a prerequisite for troublefree continuous operation.

Thus, in order necessary to comply with the present instructions for assembly and commissioning of the pumps, as well as for maintenance work, it is necessary to read these carefully and to comply with the recommendations. Each and every **SCHMITT centrifugal pump** has been given a reference number which is to be mentioned in all subsequent correspondence and when ordering spare parts.

Warranty

We provide a guarantee in accordance with our General Terms of Sale.

Please advise us immediately of any damage which may have occurred during the guarantee period. Only prompt action will give you a right to claim on the guarantee.

We shall only be liable for all those materials and versions recommended by us, to the extent that the operating instructions and the feeding liquids match the specifications requested at the time of ordering the equipment.

Please contact us should any alterations have to be made concerning the concentrations and the temperature of the feeding medium or the hydraulic data. We shall then check to see whether the pump supplied by us can be used in such operating conditions. As mentioned in our General Terms of Delivery, we shall not be liable for any damage resulting from non-compliance with the operating instructions.

Please inform us writing prior to any modifications or maintenance work carried out during the period of guarantee. Omission to do so will cancel the present guarantee.

Such modifications or maintenance work are only to be carried out by specialised personnel or else you may send us the pump for an expert opinion or repairs.

We shall not be held liable for any pump parts which show signs of premature wear and tear due to their material properties or the way in which they were used, such as axial face seals, seals and similar. We only guarantee spare parts not made by us within the limits of the guarantee awarded to us by the sub-contractor.