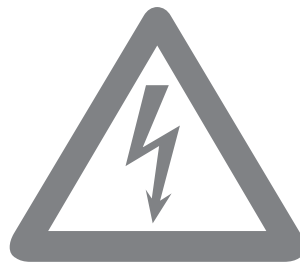


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## Scanpump process pumps

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<b>1</b>	<b>General</b> .....	<b>3</b>
1.1	Warning Symbols .....	3
1.2	Possible Dangers .....	3
1.3	Safety Consciousness.....	3
1.4	Modifications and Spare Parts .....	3
<b>2</b>	<b>Technical Data</b> .....	<b>3</b>
2.1	Limitations .....	3
<b>3</b>	<b>Use</b> .....	<b>4</b>
<b>4</b>	<b>Transport</b> .....	<b>4</b>
4.1	Pumps .....	4
4.2	Concrete Baseplates.....	4
4.3	Steel Baseplates and Baseframes .....	4
4.4	Vertical cantilever pumps series FV .....	5
4.5	Vertical pumps.....	5
4.6	Vertical Z22 .....	5
<b>5</b>	<b>Installation</b> .....	<b>5</b>
5.1	Baseplates, baseframes and stands .....	5
5.2	Pressure Test .....	5
5.3	Minimum Flow .....	5
5.4	Pressure Transients and Fluctuations.....	6
<b>6</b>	<b>Start-up</b> .....	<b>6</b>
<b>7</b>	<b>Operation</b> .....	<b>6</b>
7.1	Adjustment .....	6
7.2	Noise Level .....	6
<b>8</b>	<b>Dismantling and Repair</b> .....	<b>6</b>

## Scanpump Process Pumps

Series AK BA BE BG BK BL BM FB FR FV NB NK Z22

### 1 General



These instructions contain safety regulations for the assembly, operating and maintenance. For this reason, it is essential that these and the Operating Instructions are carefully read before installation or commissioning by both the installation crew as well as those responsible for operation or maintenance.

The scope of delivery is shown by the enclosed Technical Specification, which also states the designations of the assembly drawing, dimension print, sectional drawing and pump curve.

For the electric motor, we refer to the supplier's manual, which is enclosed, if the motor is delivered by Scanpump.

#### 1.1 Warning Symbols



Safety instructions, the non-observance of which could cause danger to life are highlighted with this symbol.



The presence of a dangerous voltage is identified with the symbol shown here.



Applies to safety instructions, the non-observance of which could damage the agitator or affect its functioning.

#### 1.2 Possible Dangers

The non-observance of the safety instructions can lead to both danger to personnel and also possible harm to the environment or the unit itself. It can also invalidate warranty.

#### 1.3 Safety Consciousness

The safety instructions in the Operating Instructions, the National Regulations for Safety as well as any internal safety regulations must be observed.

#### 1.4 Modifications and Spare Parts

Modifications or changes to the pump should only be carried out after consultations with the manufacturer. Original spare parts and accessories authorized by the manufacturer are essential for compliance with safety requirements. The use of other parts implies a safety risk and invalidates any claims for warranty.

### 2 Technical Data

The data and further particulars are found on the name plate. The weight for the pump is stated on the dimension print. For the hole package the weight is found on the address sheet, on the discharge flange, the box containing the coupling or on the package. The noise level is stated on the technical specification.

The pump must only be used for the stated data, see limitations below. If the pump is to be used for other data, this must be authorized by the supplier.

#### 2.1 Limitations

<b>Speed</b>	See the technical specification.
<b>Impeller diameter</b>	Max. diameter according to the technical specification.
<b>Minimum flow</b>	30% of the flow at best efficiency point, if not otherwise stated in the technical specification.
<b>Maximum flow</b>	The top flow achieved by the pump owing to available inlet pressure, NPSH and/or available motor power.
<b>Pressure rating</b>	See the technical specification.
<b>Temperature</b>	See the technical specification, if the temperature is higher than normal.

There are limitations to the corrosion resistance and erosion. See para 3 "Use".

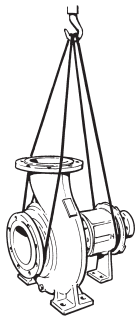


Fig. 1  
Lifting of a standard process pump.

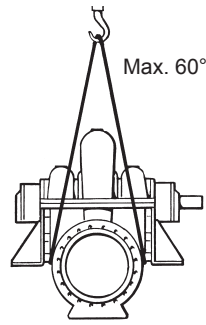


Fig. 2  
Lifting of a type Z22.

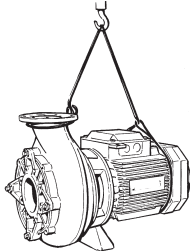


Fig. 3  
Lifting of a close-coupled pump.

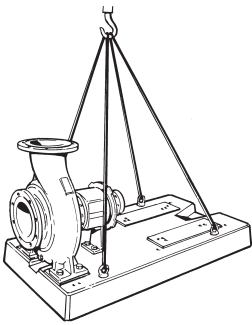


Fig. 4  
Fit lifting eyes, if the motor is missing, concrete baseplate.

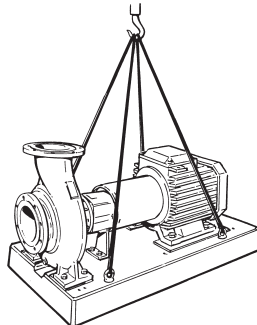


Fig. 5  
Lifting a pump unit with motor on a concrete baseplate.

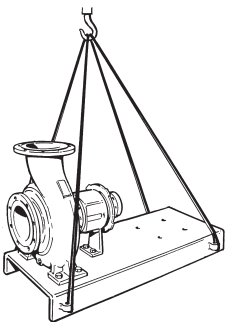


Fig. 6  
Lifting of a pump on a baseplate.

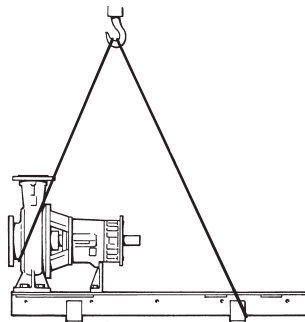


Fig. 7  
Lifting of a pump on a baseframe.

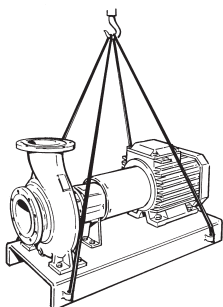


Fig. 8  
Lifting of a pump unit on a baseplate.

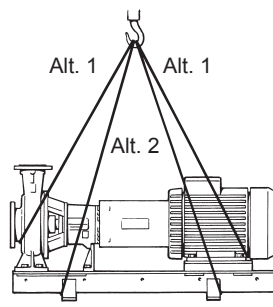


Fig. 9  
Different alternatives of lifting a pump unit on a baseframe.

### 3 Use



The pump must only handle liquids, to which the wetted pump parts are resistant and erosion-proof respectively according to the Technical Specification for the pump and/or experience. In the case of dangerous fluids, any leakage must be collected in a safe way. Moreover, it has to be considered, if warning signs and splash protection are required. It can be necessary to check the condition of the pump regularly.

In event of a leakage, that can imply risk of personal injury, the pump must be stopped immediately and the suction and discharge valves be closed.

If the pumped liquid temperature is higher than 65°C or if there is risk of freezing, warning signs and/or protection must be arranged.

### 4 Transport



Always check the position of the centre of gravity, before lifting or handling the unit. For heavy pumps and units, precautions must be taken to prevent the unit from tipping or sliding. Never lift by means of the pump or motor shaft, nor by the lantern, as the alignment can be affected.

Always use the biggest lifting eyes possible. The angle between the loops must not exceed 60° as shown in Fig. 2. The motor lifting eyes are only intended for lifting the bare motor.

#### 4.1 Pumps

A bare shaft pump is lifted as shown in Fig. 1. If there is no flange on the suction side, a loop is placed round the discharge flange.

Axially split pumps type Z22 are lifted with loops under the casing, inside of the feet, see Fig. 2. The sockets for lifting eyes must only be used for lifting the pump top part when servicing.

A close-coupled pump is lifted according to Fig. 3.

#### 4.2 Concrete Baseplates

A pump or a pump unit on a concrete baseplate is lifted with the help of lifting eyes as in Fig. 4 and 5.

#### 4.3 Steel Baseplates and Baseframes

A pump without motor is lifted as suggested in Fig. 6 for a steel baseplate and according to Fig. 7 for baseframes.

If the motor is fitted, lift a steel baseplate as in Fig. 8. Lifting eyes can also be used in the "fitting ears" of the baseplate. A pump unit on a baseframe is lifted according to the most suitable suggestion in Fig. 9.

**ATTENTION**

Be careful not to damage the fan cover of the motor.

#### 4.4 Vertical cantilever pumps series FV

These pumps are transported by forklift trucks according to Fig. 10. When lifting, loops are placed in the bearing bracket or alternatively in the motor bracket. The electric motor to be handled separately.

#### 4.5 Vertical pumps

When handling these units, the motor should not be fitted. The pump with its stand is placed horizontally or vertically on a pallet.

When lifting, loops are placed through three threaded holes for lifting eyes, in the motor stool. See the "Four-legged" stand and the "Quadruped" in Fig. 11.

For a pump installed vertically with "Elbow and foot" as in Fig. 12, a loop in the motor bracket is used. If the motor is fitted the centre of weight gravity must be carefully checked.

#### 4.6 Vertical Z22

To lift a vertical Z22 use four lifting eyes in the threaded holes for a horizontal foundation, see Fig. 13.

A vertical Z22 can be mounted with a tripod. The tripod is placed horizontally and fastened to a pallet when hand-led by a forklift truck, see Fig. 14. Alternatively vertically, suspended by the forks. The electric motor is always transported separately.

### 5 Installation

#### 5.1 Baseplates, baseframes and stands

##### ATTENTION

See the operating instructions for the different pump series. Baseplates and baseframes are fixed to a rigid foundation with cast-in foundation bolts. Moreover, fabricated baseplates and baseframes should be grouted in with concrete. Stands should be bolted to a concrete floor or similar before the motor is fitted.

#### 5.2 Pressure Test

##### ATTENTION

When the pipe system is tested the pump must be isolated to avoid damage to the seal, if the pressure is above the working pressure of the pump. Before pressure testing the pipe system, for pressure at or below the working pressure of the pump, the pump must be carefully vented. This is specially important on Z22, which are provided with vent plugs as shown in Fig. 15.

#### 5.3 Minimum Flow

If the pump should be required to operate against a closed valve or below its minimum flow, see 2.1, a by-pass must be fitted to avoid vibrations.



At very small flows the liquid can get very high temperatures because most of the power consumption of the motor is transferred to the liquid. If both the suction and discharge valves are closed during operation, the pump might explode due to the temperature and pressure increase.

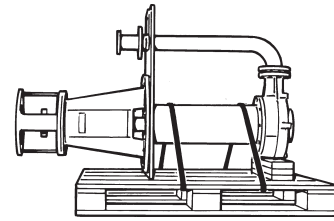


Fig. 10  
A pump type FV is placed on a pallet. Motor not fitted.

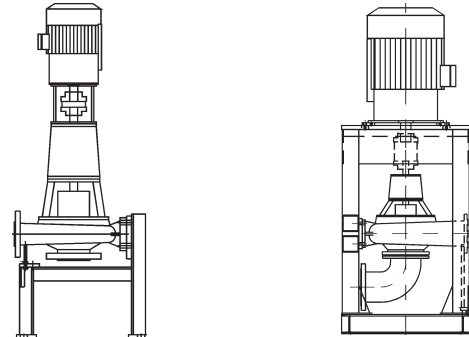


Fig. 11  
The first pump is mounted vertically on a "Four-legged" stand and the next in our "Quadruped".

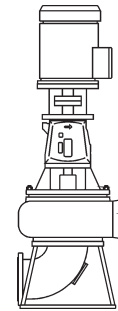


Fig. 12  
A pump vertically mounted with "Elbow and foot".

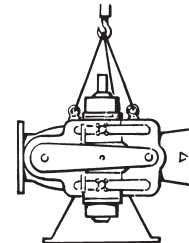


Fig. 13  
Use four lifting eyes when lifting a vertical Z22.

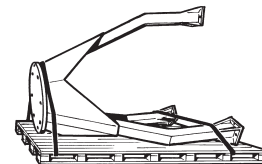


Fig. 14  
A tripod for a vertical Z22 can be transported on a pallet.

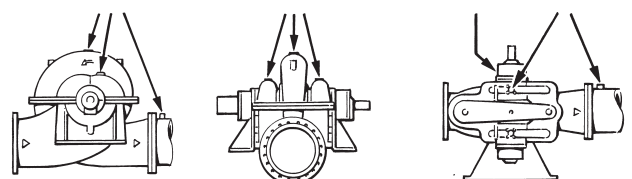


Fig. 15  
Z22-pumps should be vented through the venting plugs shown.

## 5.4 Pressure Transients and Fluctuations



If pressure transients should occur in the pipe system, the pressure can momentarily exceed the pump pressure rating, which is a safety risk. See the Operating instructions for the different pump series.

## 6 Start-up



- Before starting check that all guards for coupling, shaft ends, belts etc. are fitted.
- NB-pumps on Bearing Assemblies 1E, 2E and 3E have threaded impellers. When checking the direction of rotation on these pumps, the pump must be disconnected from the electric motor. Otherwise the impeller can be loosened and damage the casing.
- Never start or operate the pump without liquid.
- Never let the pump operate against a closed valve except for a few seconds at every start-up. See 5.3 "Minimum Flow" on page 5.

## 7 Operation

### 7.1 Adjustment



If an adjustment, e.g. tightening of the gland, must be made when the pump is operating, extreme care must be taken with regard to the rotating shaft.

### 7.2 Noise Level

Sound data according to ISO 9614 "Determination of noise using sound intensity" is available on each pump size in the area  $\pm 10\%$  of the flow at best efficiency point, see the Technical Specification. If sound levels exceed prescribed levels personal hearing protection must be used.

## 8 Dismantling and Repair



Before starting the work, the drive - including any remote controls - must be locked-off. If possible, the fuses should be removed.

Close the suction and discharge valves, and check that the pump is not under pressure.

Drain the pump completely. If the pumped liquid is hot, the pump is allowed to cool, if it is dangerous the pump must be drained in a safe way. Moreover, the pump should be cleaned by external and internal flushing.

Note that small quantities of liquid can remain locally in a drained pump, e.g. under the wear disc, under the impeller hub cap and in the seal housing.

See the Operating instructions for a thorough description.

# scanpump