











## 6 Start up / Shut down

### 6.1 Start up

#### ATTENTION

Switch off at the mains.

After connection the electrical wires, close the terminal box. Briefly start the motor (max. 30 sec.) and check the rotation according to the arrow on the top of the motor.

If the direction is incorrect change over two of the power leads.

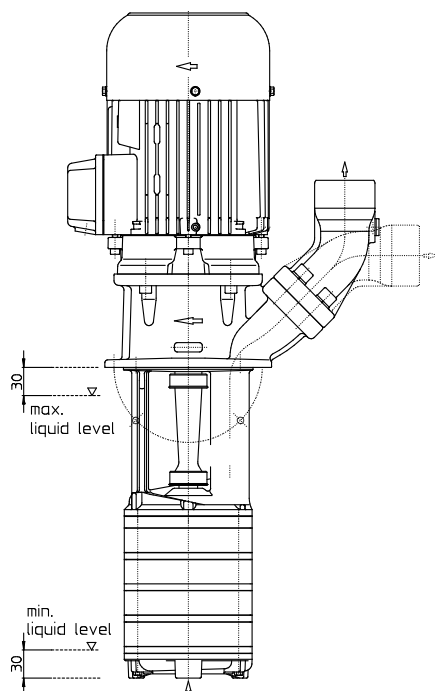
### 6.2 Shut down

All service work must be carried out by qualified service personnel. Pump must be disconnected from the power source and all rotating parts must stand still. Reassure that pump is disconnected from power source and cannot be switched on. Verify that there is no voltage at the terminal board! Open terminal box and disconnect the power leads. Empty out the pump.

## 7 Operation

### Liquid level

According to the drawing shown below, the maximum liquid level must stay about 30 mm below the mounting flange, also ensure that the minimal liquid level for the STE pump is 30 mm before starting up the motor, for the STL pump the suction hole of the pump body must be covered with liquid.



**If the pump should lock up and cease, shut pump down (see 6.2) and disconnect from power supply. Pump must be uninstalled and removed from the system prior to its repair.**

## 8 Servicing and Maintenance

#### ATTENTION

The surface of the motor must be kept free of dirt.

The motor shaft is spinning in permanently greased ball bearings (with special grease and increased bearing play) and does not require any special maintenance.

## 9 Troubleshooter's guide

| Fault                                | Cause  | Remedy  |
|--------------------------------------|--|---|
| Motor does not start, no motor noise | At least two of the power supply leads have failed | Check fuses, terminals and supply leads .           |
|                                      | Overload has tripped                               | Inspect overload                                    |
| Motor does not start, humming noise  | One of the supply leads has failed                 | See above   |
|                                      | Impeller faulty<br>Motor bearing faulty            | Replace impeller<br>Replace bearing                 |
| Overload trips                       | Pump locked up mechanically                        | Inspect pump hydraulics                             |
|                                      | High on/of cycling frequency                       | Check application                                   |
| Power consumption is too high        | Wrong direction of rotation of impeller            | See above   |
|                                      | Lime or other deposits<br>mechanical friction      | Clean pump mechanism<br>repair pump                 |
| Motor overheats                      | High on/off cycling frequency                      | See above   |
|                                      | Wrong power supply (voltage or cycles)             | Power supply must correspond with name plate rating |
|                                      | Insufficient cooling                               | Check air flow at motor fan                         |
| Pump does not pump                   | liquid level too low                               | Fill up liquid                                      |
|                                      | Pump mechanism faulty                              | replace pump mechanism                              |
|                                      | Pipe blocked                                       | Clean pipe  |
| Insufficient flow and pressure       | Wrong direction of rotation of impeller            | Change over two power supply leads                  |
|                                      | Pump mechanism silted up                           | Clean pump mechanism                                |
|                                      | Worn pump mechanism                                | Replace pump mechanism                              |
| Incorrect flow or pressure           | Wrong power supply (voltage or cycles)             | Power supply must correspond with name plate rating |
| Running noise/Vibration              | Foreign objects in pump end                        | Remove foreign objects                              |
|                                      | Impeller damaged                                   | Replace impeller                                    |
|                                      | Bearing/Bushing broken                             | Replace bearing/bushing                             |

## 10 Spare part

### 10.1 Spare part list for the immersion pumps of the series STE/STL141 ... 146

|    |                       | Item     | Description                               |          |
|----|-----------------------|----------|---|----------|
|    |                       | 1        | Stator with terminal board                |          |
|    |                       | 2        | Motor flange                              |          |
|    |                       | 3        | End shield                                |          |
|    |                       | 4        | Terminal box                              |          |
|    |                       | 7        | Fan                                       |          |
|    |                       | 8        | Fan cover                                 |          |
|    |                       | 9        | Ball bearing up to 1.1 kW                 | DIN 625  |
|    |                       | 9        | Ball bearing up 1.7 kW                    | DIN 628  |
|    |                       | 10       | Ball bearing                              | DIN 625  |
|    |                       | 11       | Gasket                                    |          |
|    |                       | 13       | Retaining ring up to 1.1 kW               |          |
|    |                       | 13       | Retaining ring up 1.7 kW                  | DIN 471  |
|    |                       | 14       | Thread rolling screw up 1.7 kW            | DIN 7500 |
|    |                       | 15       | Slotted cheese head screw                 | DIN 84   |
|    |                       | 16       | Stud bolt with bond up to 1.1 kW          |          |
|    |                       | 16       | Socket head cap screw up 1.7 kW           | DIN 912  |
|    |                       | 17       | Socket head cap screw                     | DIN 912  |
|    |                       | 19       | Parallel pin                              | DIN 7    |
|    |                       | 21       | Retaining ring                            | DIN 472  |
|    |                       | 22       | Retaining ring                            | DIN 471  |
|    |                       | 23       | Compensation disk up 1.7 kW               |          |
|    |                       | 24       | Shaft seal up 1.1 kW                      |          |
|    |                       | 25       | O-ring up 1.7 kW                          |          |
|    |                       | 26       | Shaft seal                                |          |
|    |                       | 50       | Pump body                                 |          |
|    |                       | 51       | Shaft with rotor                          |          |
|    |                       | 52       | Inlet cover for STE                       |          |
|    |                       | 52       | Intake cover for STL                      |          |
|    |                       | 53       | Pump plate up STL142                      |          |
|    |                       | 53       | Pump plate up STE142                      |          |
|    |                       | 54       | Flow plate up STE142                      |          |
|    |                       | 55       | Intermediate Cover                        |          |
|    |                       | 56       | Bearing stage STE/STL145...146            |          |
|    |                       | 57       | Impeller                                  |          |
|    |                       | 58       | Suction screw only for STL                |          |
|    |                       | 59       | Distance liner                            |          |
|    |                       | 60       | Distance liner up STE/STL142              |          |
|    |                       | 61       | Distance liner bearing stage              |          |
|    |                       | 62       | Running sleeve                            |          |
|    |                       | 63       | Bearing bush                              |          |
|    |                       | 64       | Distance plate                            |          |
|    |                       | 65       | Woodruff key                              | DIN 6888 |
|    |                       | 66       | O-ring                                    |          |
|    |                       | 68       | Splash ring                               |          |
|    |                       | 69       | Shaft seal                                |          |
|    |                       | 70       | Hexagon head screw<br>Up to STE/STL143    | DIN 931  |
|    |                       | 71       | Stud bolt STE/STL144...146                |          |
|    |                       | 72       | Hexagon domed cap nut<br>STE/STL144...146 | DIN 1587 |
|    |                       | 73       | Distance bolt STE144...146                |          |
|    |                       | 74       | Washer STE                                |          |
|    |                       | 75       | Hexagon thin nut STE                      | DIN 439  |
| 8  |                       |          |   |          |
| 19 |                       |          |   |          |
| 24 |                       |          |   |          |
| 23 |                       |          |   |          |
| 10 |                       |          |   |          |
| 11 |                       |          |   |          |
| 15 |                       |          |   |          |
| 4  |                       |          |   |          |
| 21 |                       |          |   |          |
| 9  |                       |          |   |          |
| 2  |                       |          |   |          |
| 22 |                       |          |   |          |
| 26 |                       |          |   |          |
| 17 |                       |          |   |          |
| 90 |                       |          |   |          |
| 69 |                       |          |   |          |
| 68 |                       |          |   |          |
| 62 |                       |          |   |          |
| 63 |                       |          |   |          |
| 64 |                       |          |   |          |
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| 65 |                       |          |   |          |
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| 63 |                       |          |   |          |
| 71 |                       |          |   |          |
| 72 |                       |          |   |          |
| 75 |                       |          |   |          |
|    |                       | 13       |   |          |
|    |                       | 7        |   |          |
|    |                       | 25       |   |          |
|    |                       | 3        |   |          |
|    |                       | 16       |   |          |
|    |                       | 14       |   |          |
|    |                       | 1        |   |          |
|    |                       | 51       |   |          |
|    |                       | 82       |   |          |
|    |                       | 87       |   |          |
|    |                       | 86       |   |          |
|    |                       | 85       |   |          |
|    |                       | 83       |   |          |
|    |                       | 84       |   |          |
|    |                       | 50       |   |          |
|    |                       | 91       |   |          |
|    |                       | 89       |   |          |
|    |                       | 88       |   |          |
|    |                       | 59       |   |          |
|    |                       | 55       |   |          |
|    |                       | 66       |   |          |
|    |                       | 60       |   |          |
|    |                       | 73       |   |          |
|    |                       | 54       |   |          |
|    |                       | 53       |   |          |
|    |                       | 61       |   |          |
|    |                       | 56       |   |          |
|    |                       | 57       |   |          |
|    |                       | 52       |   |          |
|    |                       | 74       |   |          |
|    |                       |          |   |          |
| 52 |                       |          |   |          |
| 58 |                       |          |   |          |
| 82 | Joining socket        |          |   |          |
| 83 | Socket head cap screw | DIN 912  |   |          |
| 84 | Spring washer         | DIN 7980 |   |          |
| 85 | O-ring                |          |   |          |
| 86 | Screw plug            | DIN 908  |   |          |
| 87 | Sealing ring          | DIN 7603 |   |          |
| 88 | Serrated lock washer  |          |   |          |
| 89 | Flat head screw       | DIN 7991 |   |          |
| 90 | Shaft clamp           |          |   |          |
| 91 | Insert shaft          |          |   |          |

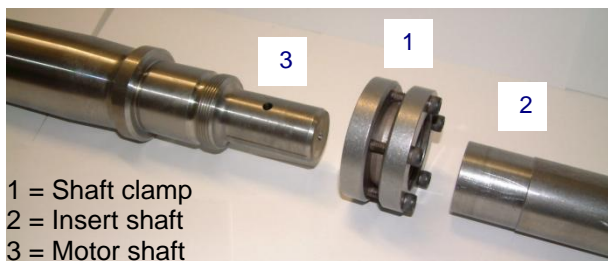


## 10.2 Indications to the spare part order

Spare parts are available from the supplier. Standard commercially available parts are to be purchased in accordance with the model type. The ordering of spare parts should contain the following details:

1. **Pumptype**  
e.g. STE145 / 370
2. **Pump No.**  
e.g. 12162510  
The date of the construction year is a component of the pumps type number.
3. **Voltage, Frequency and Power**  
Take item 1, 2 and 3 from the nameplate
4. **Spare part with item No.**  
e.g. Intake cover item No. 52

## 11 Repair Instructions / Replacing shaft clamps and shafts



### 11.1 Dismantling the insert shaft

- Disconnect the submersible pump from the mains both electrically and mechanically.
- Remove pump from system. Secure pump against tipping over, i.e. use ropes to secure pump.
- Set the pump down on the fan cover. Dismantle the pump unit and the extension pump body (if appropriate).



Wear safety gloves!

Risk of injury due to sharp edges on pump components, i.e. impeller blades.

- Loosen the screws on the shaft clamp (1) one after the other.



Do not, under any circumstances, remove the screws completely, **danger of injury!**

- Remove the extension shaft (2) and shaft clamp (1).
- Dismantle the pump body.
- Loosen the screws on the shaft clamp (1) (see above), pull the insert shaft (2) off the motor shaft (3).

## 11.2 Assembling the insert shaft and motor shaft

### ATTENTION

Clean the contact surfaces of the insert shaft (2) (inside) and the motor shaft (3). They must not be lubricated or oiled.

- Set the motor down on the fan cover.
- Position the shaft clamp (1) (use a new shaft clamp) in the centre of the cranked clamping diameter (2) of the insert shaft.
- Insert the motor shaft (3) into the insert shaft (2).
- **Tighten:**  
Mark the first screw and tighten all the screws evenly by hand, one after the other in a clockwise direction (not cross-ways).
- Tighten the shaft clamp ( $\varnothing$  24 mm ) for STE/STL141...142  
Use a torque screwdriver to tighten each screw first with 1.3 Nm then with 2.6 Nm and finally with 4 Nm (in a clockwise direction again).
- Tighten the shaft clamp ( $\varnothing$  35 mm ) for STE/STL143...146  
Use a torque screwdriver to tighten each screw first with 2 Nm then with 3.5 Nm and finally with 5 Nm (in a clockwise direction again).
- Mount the pump body.

The remainder of the reassembly process is to be completed in the opposite order of the prior described dismantling process.

### ATTENTION

Note torques for the screw connections!

When putting the pump back into use, **make sure the direction of rotation is correct!**

### Tightening torques for screwed connections

| Thread -<br>$\varnothing$ | M5  |  | M6        | M8                  | M12                     |
|---------------------------|---|--|-----------|---------------------|-------------------------|
| Strength classes          | 4.8   | 8.8  | 8.8       | 8.8                 |                         |
| Tightening torque (Nm)    | 2 Nm<br>Item. 15<br>3 Nm<br>Item.<br>14, 16 | 2 Nm<br>STE141<br>Item. 70<br>4,5 Nm<br>Item<br>70, 72 | 4,5<br>Nm | 20 Nm<br>Item<br>17 | 30 Nm<br>Item<br>75, 83 |

## 12 Disposal

When disposing of the pump or the packaging materials the local and national regulation for proper disposal must be complied with.

Prior to its disposal, the pump must be completely drained and decontaminated if necessary.

## 13 EC declaration of conformity

DEUTSCH / ENGLISH / FRANÇAIS / ESPAÑOL



### EG-Konformitätserklärung

#### EC declaration of conformity / Déclaration de conformité CE / Declaración de conformidad CE

Hersteller / Manufacturer / Constructeur / Fabricante

**Brinkmann Pumpen, K. H. Brinkmann GmbH & Co. KG**  
**Friedrichstraße 2, D-58791 Werdohl**

Produktbezeichnung / Product name / Désignation du produit / Designación del producto

**Tauchpumpen / Immersion pumps / Pompes plongeantes / Bombas de inmersión**

**Typ / Type / Tipo** **STE/STL141...146**

Das bezeichnete Produkt stimmt mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedsstaaten überein:

The named product conforms to the following Council Directives on approximation of laws of the EEC Member States:

Le produit sus-mentionné est conforme aux Directives du Conseil concernant le rapprochement des législations des Etats membres CEE:

El producto designado cumple con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CEE:

|                   |   |
|-------------------|---|
| <b>2006/42/EG</b> | Richtlinie für Maschinen                                    |
| <b>2006/42/EC</b> | Council Directive for machinery                             |
| <b>2006/42/CE</b> | Directive du Conseil pour les machines                      |
| <b>2006/42/CE</b> | Directivas del Consejo para máquinas                        |
| <b>2014/30/EU</b> | Richtlinie für elektromagnetische Verträglichkeit           |
| <b>2014/30/EU</b> | Council Directive for Electromagnetic compatibility         |
| <b>2014/30/UE</b> | Directive du Conseil pour Compatibilité électromagnétique   |
| <b>2014/30/UE</b> | Directivas del Consejo para Compatibilidad electromagnética |

Hinsichtlich der elektrischen Gefahren wurden gemäß Anhang I Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG die Schutzziele der Niederspannungsrichtlinie 2014/35/EU eingehalten.

With respect to potential electrical hazards as stated in appendix I No. 1.5.1 of the machine guide lines 2006/42/EC all safety protection goals are met according to the low voltage guide lines 2014/35/EU.

Conformément à l'annexe I N° 1.5.1 de la Directive "Machines" (2006/42/CE) les objectifs de sécurité relatifs au matériel électrique de la Directive "Basse Tension" 2014/35/UE ont été respectés.

Con respecto al potencial peligro eléctrico como se indica en el apéndice I No. 1.5.1 del manual de la máquina 2006/42/CE, todos los medios de protección de seguridad se encuentran según la guía de bajo voltaje 2014/35/UE.

Die Übereinstimmung mit den Vorschriften dieser Richtlinien wird nachgewiesen durch die vollständige Einhaltung folgender Normen:

Conformity with the requirements of this Directives is testified by complete adherence to the following standards:

La conformité aux prescriptions de ces Directives est démontrée par la conformité intégrale avec les normes suivantes:

La conformidad con las prescripciones de estas directivas queda justificada por haber cumplido totalmente las siguientes normas:

Harmonisierte Europ. Normen / Harmonised Europ. Standards / Normes europ. harmonisées / Normas europ. armonizadas

**EN 809 :1998+A1 :2009+AC :2010 EN ISO 12100 :2010 EN 60204-1 :2006/AC :2010 EN 61000-3-2 :2006/A2 :2009 EN 61000-3-3 :2013 EN 61000-6-2 :2005/AC :2005 EN 61000-6-3 :2007/A1 :2011/AC :2012**

Nationale Normen / National Standards / Normes nationales / Normas nacionales : **EN 60034-1 :2010/AC :2010**

**Die Hinweise in der Betriebsanleitung für den Einbau und die Inbetriebnahme der Pumpe sind zu beachten.**

**The instructions contained in the operating manual for installation and start up the pump have to be followed.**

**Les indications d'installation / montage et de mise en service de la pompe prévues dans l'instruction d'emploi doivent être suivies.**

**Tenga en cuenta las instrucciones en el manual para la instalación y puesta en marcha de la bomba.**

**Brinkmann Pumpen, K. H. Brinkmann GmbH & Co. KG**

Werdohl, 02.12.2016

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