BAUER

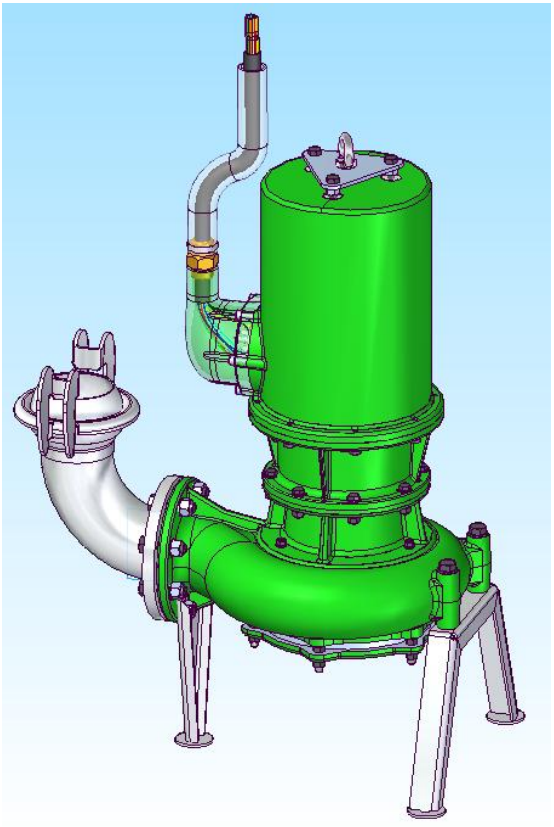
FOR A GREEN WORLD

OPERATING MANUAL

for

Submersible Motor Pumps

ESPH and CSPH
7,5 / 11 / 15



Version: I - 2012

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Submersible Motor Pumps
ESPH&CSPH
E

INTRODUCTION

Thank you very much for purchasing a BAUER submersible motor pump!

We have pleasure to present to you a **BAUER submersible motor pump** that features state-of-art technology and top quality. This manual describes how to operate and maintain your **BAUER submersible motor pump**. For reasons of clearness and due to the many possibilities, this manual does not contain everything down into detail. In particular, it cannot possibly deal with every conceivable aspect of operation and maintenance. If you need further information or if you are faced with any special problem for which this manual does not give sufficient details, please do not hesitate to contact **BAUER company** at Kowaldstraße 2, A-8570 Voitsberg for the information you need.
We should also like to emphasise that the contents of this operating manual do neither form part of nor alter in any way any previous or existing agreement, promise or legal relationship. Commitments on the part of **BAUER** are based solely on the respective purchase contract, which also contains the complete and only valid warranty arrangement. Said contractual terms of warranty are neither extended nor limited by the contents of the present operating manual.
All information contained in the present manual is based on the latest product details available at the time of printing.
BAUER reserves the right to change without notice, without assuming any liability!
BAUER submersible motor pumps are designed for safe and reliable performance provided they are operated in compliance with the present instruction manual. In spite of the simplicity of the pump we therefore request that you read this manual carefully before putting your **BAUER submersible motor pump** into operation! All instructions given for handling, operating and servicing the pump must be strictly observed. On condition that these instructions are followed the pump will operate trouble-free to your full satisfaction for many years!
Non-observance of our instructions may cause personal injury or damage to the equipment!

This operating manual is considered an integral part of the submersible motor pump. Suppliers of new and used submersible motor pumps are advised to put down in writing that this manual was handed over together with the pump.

Please make this manual available to your operating personnel. You are kindly requested to state the pump type and serial number of the submersible motor pump in all inquiries, correspondence, warranty problems or parts orders.

We hope you will enjoy working with your BAUER submersible motor pump!

PRODUCT DETAILS

Type designation: Submersible motor pump

Type number: ESPH/CSPH

Serial number[1]: _____

Dealer: Name: _____

Address: _____

_____

Tel./Fax: _____

Date of delivery: _____

Manufacturer:

Röhren- und Pumpenwerk **BAUER** Ges.m.b.H.
Kowaldstr. 2
A - 8570 Voitsberg
Tel.: +43 3142 200 - 0
Fax: +43 3142 200 –320 /-340
e-mail: sales@bauer-at.com
www.bauer-at.com

Owner or operator: Name: _____

Address: _____

_____

Tel./Fax: _____

Note: Please make a note of the type and serial number of your submersible motor pump and its accessories! Be sure to specify these details every time you contact your dealer.

[1] In all warranty claims and correspondence relating to this machine it is essential to specify the complete serial number group including all letters. This applies to the machine itself and to any components involved. We cannot emphasise this point often enough.

General safety instructions

Symbols and terms

The CE symbol that has to be affixed on the machine by the manufacturer outwardly demonstrates compliance of the machine with the directives for machines and other relevant EU directives.

 **WARNING!**	This "Warning" symbol refers to important safety instructions in this manual. Whenever you see this symbol be aware of possible injury hazards. Read the note following the symbol very carefully and inform the other operators accordingly.

CAUTION !	Non-observance of this instruction may cause damage to or destroy the machine or individual components.

NOTE	It is important to observe this note or condition!

	This symbol is a "WARNING from dangerous voltage" NON-OBSERVANCE may cause electric shock with harmful or even fatal consequences for the operator.

Qualified operators are persons who on account of their training, experience and instruction as well as their knowledge of relevant standards, rules, precautions to be taken for accident prevention and operating conditions, have been authorised by the person in charge of plant safety to perform the individual tasks required, and in doing so are able to recognise and avoid potential hazards. Among other things, knowledge of first-aid procedures is also required.

Product liability

As defined by the product liability law every farmer is also an entrepreneur!

According to §9 PHG (Product Liability Law), liability for damage to corporal things caused by defective products is expressly excluded. This exclusion of liability also applies to parts not manufactured by BAUER itself but purchased from external suppliers.

Non-conforming use will make expire the validity of the conformity certificate.

Duty to furnish information

Even if the customer passes on the machine later-on he is obliged to hand the operating manual on to the new receiver too. The receiver of the machine must be instructed with reference to the mentioned regulations.

Intended Use

- BAUER submersible motor pumps are built exclusively for normal use in agricultural applications, industrial facilities and biogas plants (intended use).
- Any use beyond such normal use is considered non-conforming. The manufacturer is not liable for damage resulting from such non-conforming use, the sole liability for damage from non-conforming use lies with the user.
- Intended use also includes compliance with the manufacturer's operating, maintenance and service instructions.
- The manufacturer's operating and maintenance instructions do not regard local security provisions.
- The BAUER submersible motor pump may be used and operated only by persons who are familiar with the device and aware of the hazards involved.
- All rules relevant for accident prevention as well as any other generally valid specifications and regulations relating to safety, work medicine and traffic law must be strictly observed.
- Unauthorised modification of the machine releases the manufacturer from liability for damage resulting there from.

Index

1 General instructions for safety and accident prevention

Check the machine for operational safety before every start-up.

1. In addition to the instructions contained in this manual, all specifications generally valid for safety and accident prevention must be observed, for instance when working in biogas plants: safety regulations for biogas plants!
2. The warning and instruction signs affixed to the machine give very important instructions for safe operation. Observing them serves your own personal safety!
3. Never put the machine into operation unless all guards and safety devices are completely mounted and in their proper working position!
4. Acquaint yourself with all equipment components and controls as well as their respective functions before starting to work. It is too late when the device is already running!
5. The operator's clothes should fit tightly. Avoid wearing loose clothes!
6. When handling slurry always keep in mind that the gasses produced are highly toxic and extremely explosive in combination with oxygen. Therefore, open fires, light tests, sparking and smoking are strictly forbidden!
7. Utmost care is required with regard to gasses in slurry and dung channels at open valves to the preliminary pit, before the main pit, or at cross channels. The same applies to mixing and withdrawal points when mixers or pumps are running!
8. When handling slurry always ensure sufficient ventilation!
9. Keep the machine clean to avoid fire hazards!

Electric-driven implements

1. All work beyond normal maintenance of the implement should be performed only by a professional electrician!
2. Defective or broken plugs and sockets must be replaced by a professional electrician!
3. Never pull a plug out of the socket at the flexible electric cord!
4. Extension cables for power supply should be used only temporarily! Never use such lines permanently as a substitute for the required fixed installations!
5. Flexible lines laid across traffic areas on the farm must have at least 5 m ground clearance!
6. Always turn off the power supply before you do any work on the machine!

7. Check all electric lines for visible defects before you put the machine into operation! Replace defective cables and do not start the machine before that!
8. Never use electric-driven implements in damp locations or locations exposed to fire hazard unless the machines have been adequately protected against moisture and dust!
9. Covering electric motors may cause heat concentration with high temperatures which could destroy the operating equipment and cause fires!

Hand-operated devices (valves)

1. Because of the slurry gasses produced in the lines, no slurry is allowed to remain in closed pipelines – bursting hazard!
2. Lay the pipelines with sufficient inclination and make sure that the selected closing order of valves allows all lines to be drained completely!
3. Protect the valves against unauthorised handling!
4. If a valve gets jammed do not apply force! Use only the operating levers supplied with the implement!
5. Observe the permissible maximum operating pressure of valves and pipelines when pumps are operated!
6. Service only when the tanks are empty!

Maintenance

1. Never perform any maintenance, service, cleaning or repair work unless the drive is turned off and the engine is standing still!
2. Check proper fit of all nuts and bolts regularly and tighten them, if necessary.
3. If maintenance work is required on the lifted machine always secure it by means of appropriate supports!
4. When exchanging tools with cutting edges always use proper tools and wear safe protective gloves.
5. Dispose of oil, grease and filters according to local laws and regulations!
6. Always turn off power before working on the electric system (! 5 safety regulations according to ÖVE EN 50110-1).
7. Spare parts must meet manufacturer's minimum technical specifications! This is the case for instance with original spare parts!

2 GENERAL INFORMATION

BAUER products are designed and manufactured carefully and subject to a system of continuous quality control. The viscous liquid pumps of series CSPH/ESPH and CSP/ESP fully meet the requirements of the agricultural practice. They are best suited for homogenizing all kinds of liquids containing organic solids such as straw, fibres etc. The submersible motor pump CSP/ESP can be used in a pH value range from 4.7 to 9.9 for pig and cattle slurry as well as with a dry solids content of 12%. Short set-up times, easy handling and maximum performance reliability are further advantages of this pump series. Mixer drive is electric by means of a three-phase submersible motor.

Before turning on a submersible motor pumps make sure net voltage complies with the data on the nameplate.

In order to be able to work efficiently with the maintenance-friendly submersible motor pump it is helpful to operate it in connection with a hoisting device.

Although the pump is simple in design you should study this manual carefully and strictly observe all operating and service instructions contained. On this condition your motor mixer will operate to your full satisfaction for many years!

Make this manual available to all operators handling the equipment. Serial number and pump type are stamped into the nameplate. Please specify these data in your inquiries, correspondence, warranty matters and parts orders. We warrant for this pump according to our General Terms of Sale.

3 DESCRIPTION

The submersible motor pump CSPH/ESPH consists of a three-phase submersible motor (insulation class H for a media temperature of 65°C) with connecting cable, oil chamber as well as the pump housing with chopper and impeller. The electric motor flanged to the pump housing has an output of 7.5 / 11 or 15 kW, depending on the respective model.

The motor is equipped with triple PTC resistors 180° to protect it from overheating. Yet the motor protection will only be effective if the motor connecting cable is linked up not only with a star-delta starter but also with a suitable thermistor tripping device.
Thus the motor is protected from phase failure, undervoltage and high thermal load.
The control box that is available as part of the motor accessories, includes not only the starting contactor but also the thermistor tripping device. The red warning light lights up when the thermistor tripping device and the motor protective relay have responded.

NOTE!	The motor cable should be mounted to the control box only by a qualified technician. Check-up must be performed according to the wiring diagram! The wiring diagram is placed inside the control box. The control box must be tightly screwed and should preferably be installed under a roof where it is protected from the weather.

WARNING!	When connecting the system to power supply ensure the connecting cable is amply dimensioned and provided with mains protection and the turning direction of the motor is correct.

The motor is sealed by two mechanical seals mounted in series which are lubricated by the oil contained in the oil chamber. The bearing of the THREE-PHASE SUBMERSIBLE MOTOR is life-lubricated.
The BAUER submersible motor pumps type CSPH and ESPH are equipped with a leakage detector which is only effective if a relay for leakage detection has been mounted in the control box (see chapter Accessories -

Bauer Control Unit). Furthermore the three-phase submersible motors of the submersible motor pumps type CSPH and ESPH are protected by insulation class H so that they can be operated at an ambient temperature (temperature of medium) of up to 60°C.

4 MOUNTING INSTRUCTIONS

4.1 Mounting of the guide tube and of the guide tube bracket

Slip the guide tube bracket over the guide tube and fasten it at the silo edge / pit cover.
Use a bubble level to bring the guide tube into a vertical position. Set and secure the bottom bearing accordingly.

4.2 Mounting of the cantilever arm and of the cable winch

Put the cantilever arm onto the guide tube and mount the holder for the cable winch and the crank with the clamping lugs according to the drawing (see figure 1).

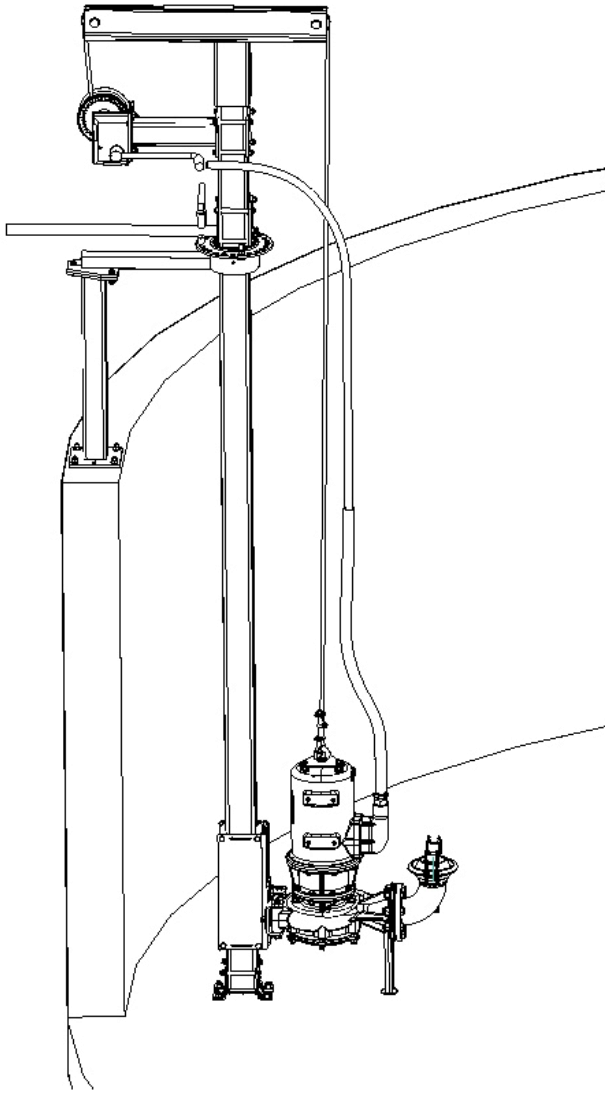


Figure 1 Suspension of the pump only by means of pre-mounted bracket

4.3 Mounting of the submersible motor pump

Put the rope over the rope pulleys and attach its thimble at the ring bolt of the submersible motor pump (figure 3.1). Bring the submersible motor pump by means of the cable winch into a position under the guide tube bracket and fix it to the guide tube by means of two screwed connections (M16X130) (see figures 2 and 3.1).

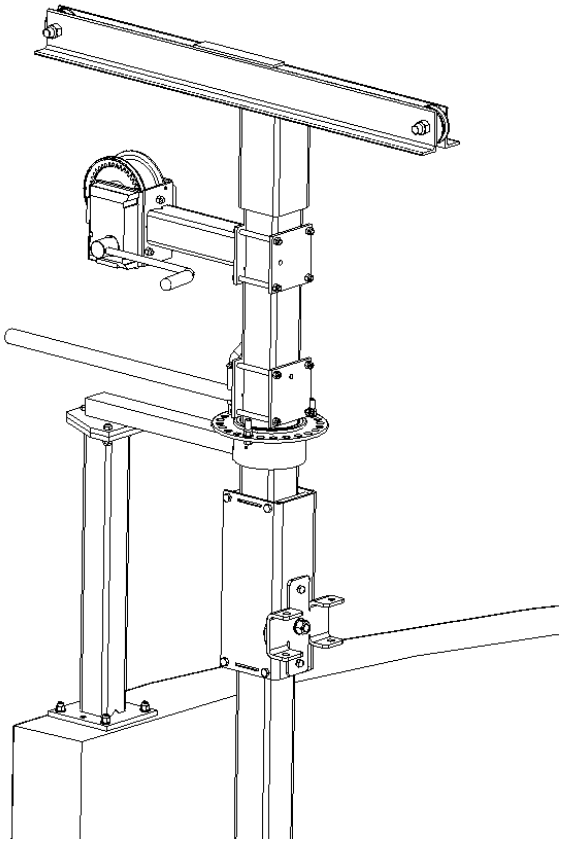


Figure 2 Position under the guide tube bracket

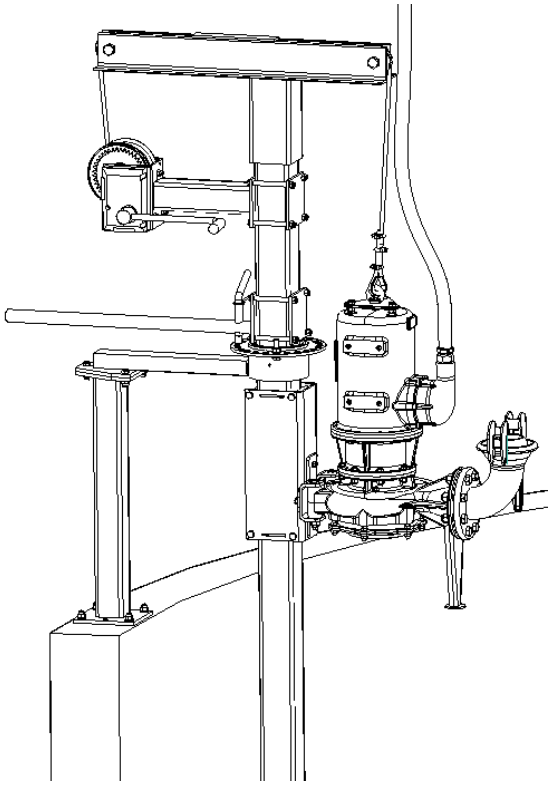


Figure 3.2 Mounting to the bracket (hex screw DIN 93 M16x130-8.8; washer DIN 126 18-galv. and hex nut DIN 934 M16-8)

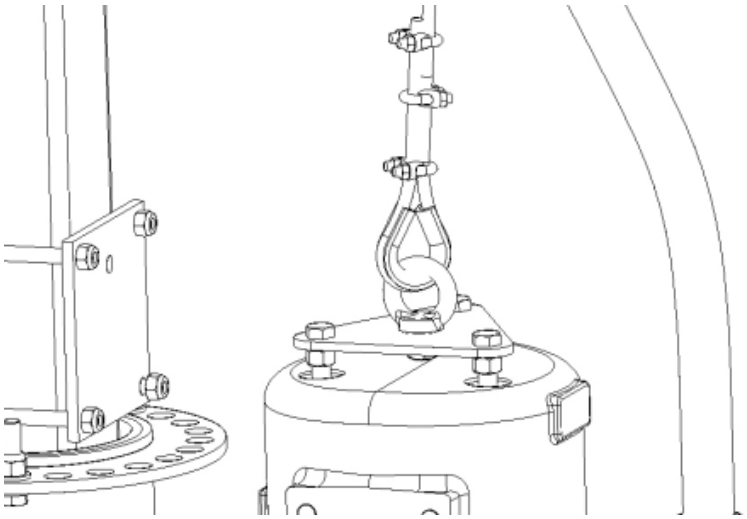


Figure 3.1 Mounting by means of thimble and ring bolt

4.4 Mounting of rope

Wire rope clips

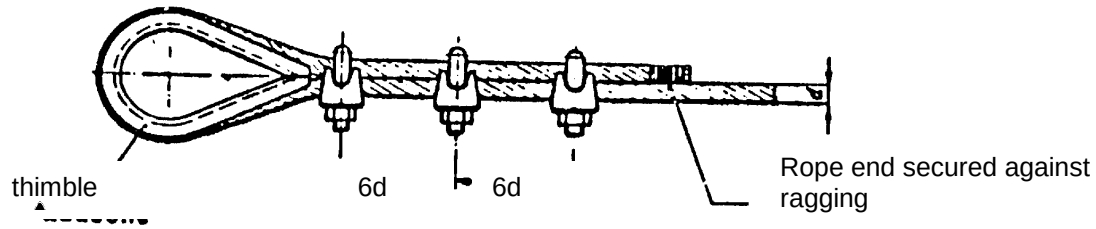


Figure 4

Number of wire rope clips needed for rope diameter of 8 mm: 3

Where to fix the rope clips:
First rope clip:

Standard thimble: directly at the thimble
Round thimble: twice the diameter of the thimble away from thimble

Second and third wire rope clip:

6 times the rope diameter from clip to clip (i.e. for rope diameter of 8 mm spacing between clips: about 48 mm) according to figure 4

Tighten rope clips after putting rope under traction!!!

CAUTION!	Make sure to mount the rope clamps correctly. The bracket of the clip must always be put onto the end of the rope which is not under traction (see figure 5).

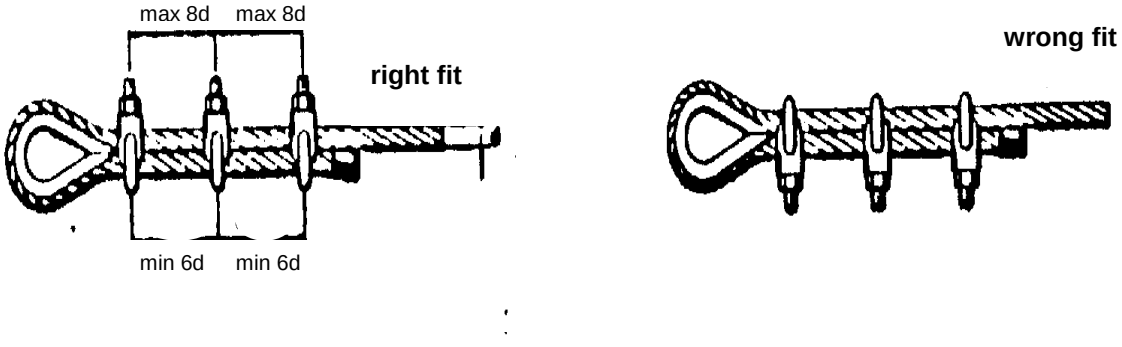


Figure 5

5 ELECTRICAL CONNECTION

The electrical connection must imperatively be carried out by an approved electrician. The three-phase motor is protected from phase failure, low voltage and overloading by the thermal coil protection (PTC resistors) together with the tripping device. Upon request, Bauer supplies fully wired electrical control units ready for connection. Weatherproof installation of the electrical control is recommended (inside a building or under a weather-proof hood at the manure tank).

All mixers are equipped with an 8 m long electric cable 12 x 2.5 (cable Ø 23 mm). The cable connection to the motor must not be dismounted!

Fix the electric cable to the traction rope by means of a stainless bolt-snap, which enables the cable to follow automatically lifting and lowering movements of the pump.

Attach the cable to the rope by means of the provided rope strap about 1 m above the upper edge of the console (see figure 1) in order to prevent the cable loops from getting into the suction mouth area when lifting the pump. Attach the upper-most bolt-snap to the backing plate. Check cable length to make sure the cable is not under traction when the pump is completely lowered! Take care to place the cable in wide loops in order to prevent it from folding.

6 PUTTTING INTO OPERATION

- When putting the pump into operation for the first time, check if the mains voltage corresponds to the voltage indicated on the motor's rating plate.
- Before connecting the motor, check the phase-sequence for the sense of rotation of the motor.
- Seen from front, the impeller must rotate anticlockwise!
- The submersible motor pump only may be started when submerged into the slurry.
- When connecting the motor, strictly observe all regulations applicable for electrical devices as well as the manufacturer's instructions (e.g. motor protective switch, main switch eventually lockable).
- Check the setting of the motor protective switch, see 018 2565.4, page 23.

WARNING ! Check oil level in the oil box before starting the machine! (Quality and quantity of oil see Technical Data).

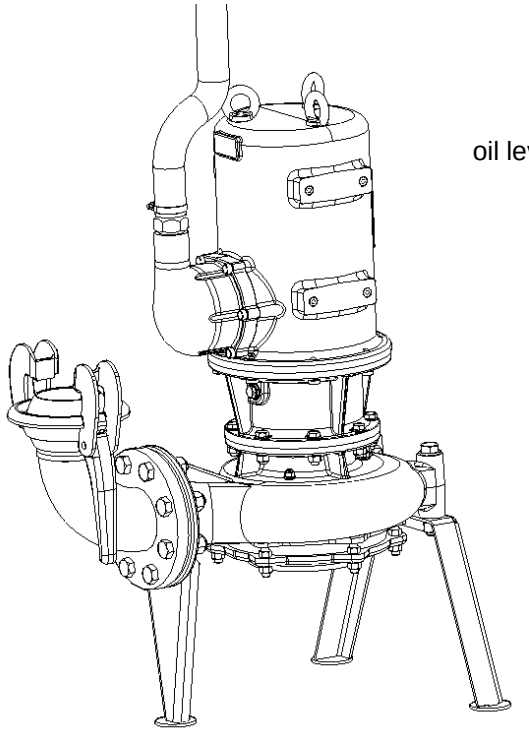


Figure 6

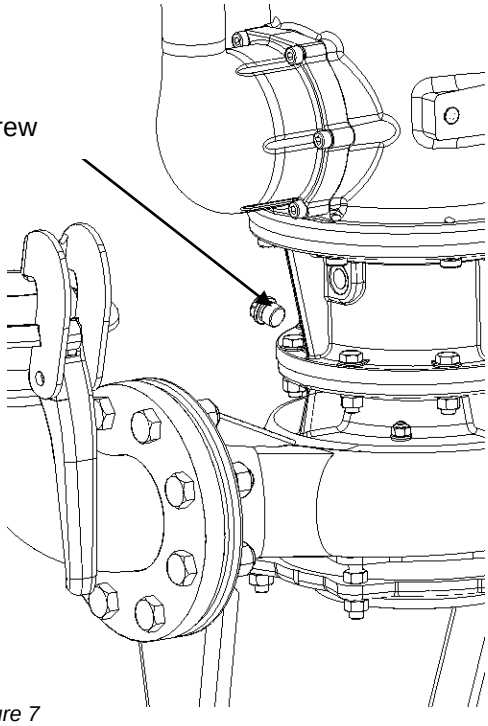


Figure 7

- Bring the submersible motor pump into a vertical position (see figure 6).
- Open the oil level checking screw (see figure 7).
- The oil level must reach the opening (oil level is correct when a little bit of oil is coming out).

When the submersible motor pump has been started correctly and/or when the leakage detector has been connected duly, the power supply will be interrupted via the tripping device in case of pollution of the oil in the oil reservoir due to damaged seals.

6.1 Interval Operation

6.1.1 Connections

Power supply by means of 5-pole connecting cable directly attached to ingoing terminals.

Motor connected to terminal strip in control box.

Warning:
Electrical connections to be made by approved electricians only!

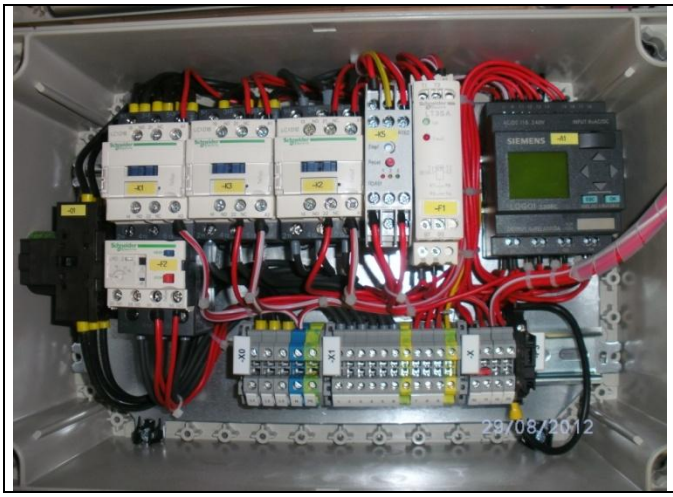
Before turning power supply on check tight fit of all screws and terminals.

Fuse protection of power supply see Technical Date (page 30).

6.1.2 Control Box Components

Three contactors for star-delta start-up. Control unit LOGO for manual and interval operation.
Motor protection devices:

- Motor protecting relay for current monitoring
- Thermistor tripping relay for temperature monitoring



6.1.3 Settings

Motor protective relay: see drawing no. 018 2565.4 Automatic Reset (see page 23)

6.1.4 Starting Procedure (Manual- and Interval Operation)

Put main switch for power supply to 1.

BAUER Control unit with timer for interval operation

Logo programming

6.1.5 Initial operation of timer LOGO

Before the initial operation, the control panel has to be connected correctly according to the connection diagram.
Put switch „Hand 0 Interval“ to 0.

After switching on the main switch, time and date are blinking on the display

Mo 15:30 2006-02-16

Setting of time and date

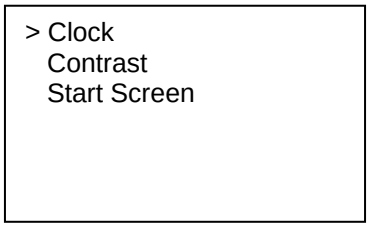
Press key ESC.

The display is showing the following:

> Stop Set Parameter Set Prg Name

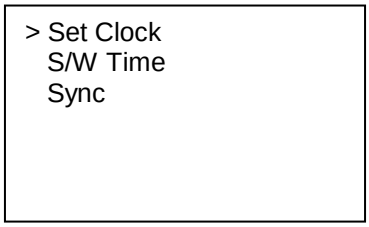
Confirm with key Cursor down ▼ (press twice), then set Cursor > to Set.
Confirm with key OK (once).

The display is showing the following:



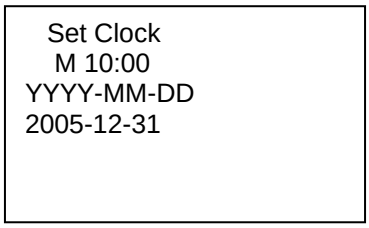
Confirm again with the key OK (once).

The display is showing the following:



Confirm again with the key OK (once).

The display is showing the following:



The Cursor stands blinking on weekdays

1.) Choose weekday: key ▼ or ▲
2.) Move the Cursor to the next position: key ◄ or ►
3.) Change the value in place: key ▼ or ▲
4.) Set the right time, repeat steps 2 and 3.
5.) Set the correct date, repeat steps 2 and 3.
6.) Confirm with key OK.

Press the key ESC for returning to the main window.

Date and time

B 9 Weekly clock timer

Every weekly clock timer has three cams for adjusting (B9 / 1,2,3), where you can parameterize a time window. Set the switching point and the stop position with the cams. The weekly timer starts the interval operation at the switching point and stops operation at the stop position.

Timing point:

Every time between 00:00 and 23:59 hours is possible.
--:-- means week day not chosen

Parameterizing window

This is how the parameterizing window B9/1 looks like (factory setting)

```
B9                    1
D  =MTWTFSS
On   = 22:00
Off   = 04:00
```

The letters behind the letter D (for day) refer to the weekdays.

M : Monday
T : Tuesday
W: Wednesday
T : Thursday
F : Friday
S : Saturday
S : Sunday

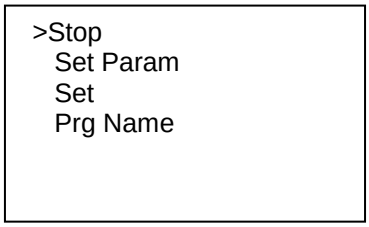
The capital letter means: weekday chosen
– means weekday not chosen

B 9 Setting of weekly timer

This is how to enter timing points:

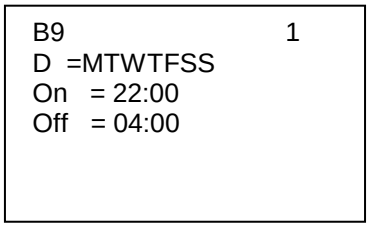
Press key ESC.

The display is showing the following:



Confirm with key ▼ and choose „Set Param“ and confirm with key OK.

The display is showing the following:



1.) Press key OK; the cursor is on the first weekday.
2.) Choose one or more weekdays with the keys ▼ or ▲.
3.) Move the cursor with the key ► to the next weekday.
4.) Repeat the procedure until you have programmed all days.
5.) Move the cursor with the key ► to the first position for the start time.
6.) Set the start time.
7.) Change the value at the position with the keys ▼ or ▲.
8.) Between the positions move the cursor with the keys ◄and ►.
9.) Move the cursor with the key ► to the first position of the stop time.
10.) Set the stop time as described in steps 6-8.

Confirm entries with the key OK.

You get to the next cams B9/2 and B9/3 with the key ▼.

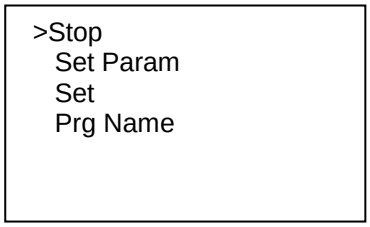
Confirm entries by pressing the key OK and then press twice the key ESC.

In this way you return to the main menu.

B 11 Setting of interval times

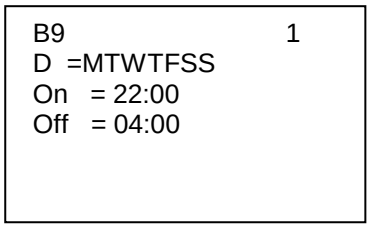
Press key ESC.

The display is showing the following:



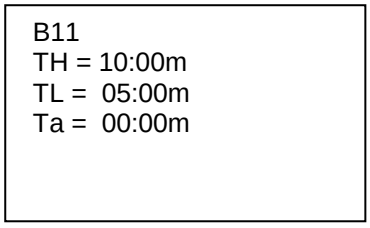
Confirm with the key ▼, choose „Set Param“ and confirm with the key OK.

The display is showing the following:



Press 4 times the key ▼.

The display is showing the following:



You can set the pumping times and pauses in the parameter B11.

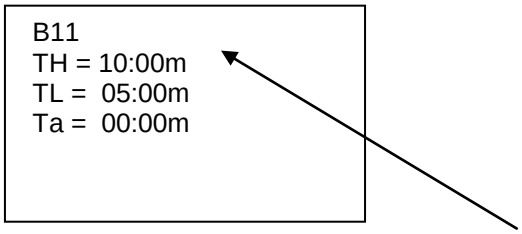
TH = pumping time
TL = pause
Ta = displays the countdown of pumping times or pauses

Factory setting
TH = 10:00m
TL = 05:00m
Ta = 00:00m

Attention: If the weekly timer has not been programmed, the interval time will not work.

Press the key OK; the cursor moves to TH and stands there blinking.
Set the pumping time with the key ▼ or ▲ (example 10 m).
Move the cursor to the next position with the key ►.
Set the pumping time with the key ▼ or ▲ (example 00 s).

Change to time period with the key ►.



Set the time period with the key ▼ or ▲: s,m,h.

s seconds
m minutes
h hours

Press the key ▼ and set duration of pause.
Set duration of pause with the keys ▼ or ▲ (example: 05 m).
Move the cursor to the next position ►.
Set duration of pause with the keys ▼ or ▲ (example: 00 s).

Confirm the entry with the key OK.
Press twice ESC for returning to the main menu.

B 17 Operating hour meter

There is no need to set anything.
The current operating hours are shown on the display.

See operating hours :

Press key ESC.

The display is showing the following:

```
>Stop
  Set Param
  Set
  Prg Name
```

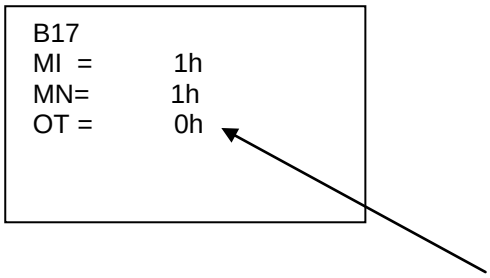
Confirm with key ▼ , choose „Set Param“ and confirm with key OK.

The display is showing the following:

```
B9                    1
D  =MTWTFSS
On   = 22:00
Off   = 04:00
```

Confirm 3 times with the key ▼.

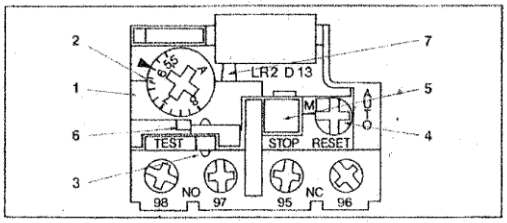
The display is showing the following:



OT displays the consumed operating hours.
Do not change parameters MI and MN !!
Press twice ESC for returning to the main menu.

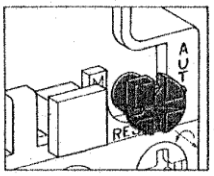
MOTORSCHUTZRELAIS

Einstellung des Motorschutzrelais

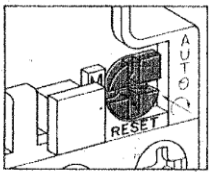


- Nach Hochklappen der transparenten Abdeckung 1 sind die Einstellungen zugänglich.
- Die Einstellung erfolgt über Potentiometer 2 mit Ampère-Skala.
- Die Einstellung kann durch Verplomben 3 der Abdeckung verriegelt werden.

Umschaltung der Rückstellung "AUTO/HAND" 4



Manuelle Rückstellung



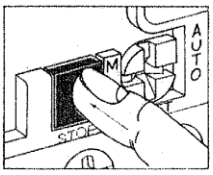
Automatische Rückstellung

- Die transparente Abdeckung hochklappen und den blauen RESET-Taster 4 betätigen:
  - Drehen nach links: manuelle Rückstellung.
  - Drücken und Drehen nach rechts: automatische Rückstellung.

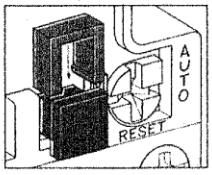
Der Schalter ist in dieser Stellung verriegelt.Die Rückkehr zur manuellen Rückstellung erfolgt durch Drehen des Tasters nach links.

- Bei zugeklappter Abdeckung ist die Position verriegelt.
- Die manuelle Rückstellung erfolgt durch Drücken des blauen RESET-Tasters.

Funktion AUS 5



AUS

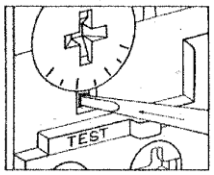


Verriegelung

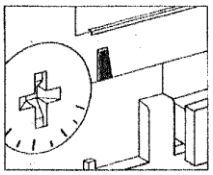
- Die Funktion AUS erfolgt durch Drücken des roten STOP-Tasters 5.
- Betätigen des STOP-Tasters:
  - Auswirkung auf den Hilfsschalter "Ö",
  - ohne Auswirkung auf den Hilfsschalter "S".
- Der STOP-Taster kann durch Einsetzen einer Steckbrücke verriegelt werden (Typ: **LA7-D901**).

Bei aufgesetzter Abdeckung wird der Taster verriegelt.

Funktion TEST 6



TEST



Auslöseanzeige

- Die Funktion TEST ist durch Betätigen des roten TEST-Tasters 6 mittels eines Schraubendrehers zugänglich.
- Bei Betätigung des TEST-Tasters wird eine Auslösung des Motorschutzrelais simuliert:
  - Auswirkung auf beide Hilfsschalter, "Ö" und "S",
  - Betätigung der Auslöseanzeige 7.

<u>richtige Einstellung des Potentiometers 2 :</u>

<u>1.) Direktanlauf :</u> Wert des Motornennstromes laut Motortypenschild

<u>2.) Stern - Dreieckanlauf :</u> Wert des Motornennstromes laut Motortypenschild mal 0,58

94-07 Gw

018 2565.4

Röhren- und Pumpenwerk BAUER Gesellschaft m. b. H. , A-8570 Voitsberg / Austria , Tel. 03142/22 473 , Telefax 03142/23095

Manual Operation

Put the rotary switch to position “manual operation” and wait for about 5 sec until LOGO is ready to work.

The motor is starting up and after about 3 sec it is changed over from “**Star**” to “**Delta**”.

The green light is on.

The motor is running continuously.

Put the rotary switch to position „**O**″. The motor stops.

Put the rotary switch to position „interval operation”.

The motor is running in interval operating mode according to programming.

Factory setting: from 10 o’clock p.m. to 04 o’clock a.m.

Interval operation**: 10 min „on” and 5 min „off”**

6.1.6 Malfunctions

In case of malfunctions, see also display → Error message texts

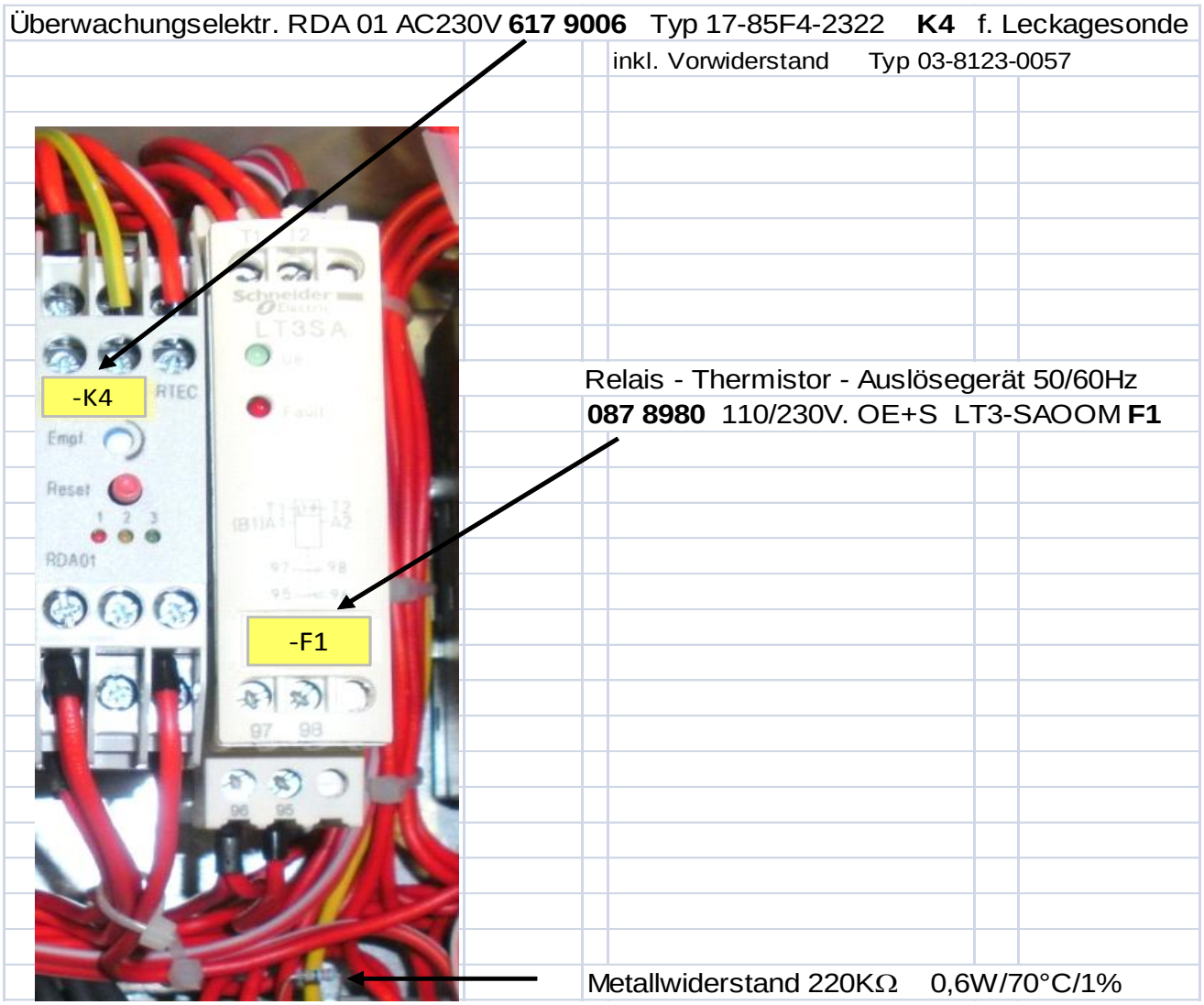
- **The red light is on: „Motor malfunction″**
    - Thermistor tripping relay has responded (motor is overheating).
    - Running mode switch is not in position “0” but in position „manual“ or „interval“ when turning the motor on or after a power failure.
    - The leakage detector has responded (press reset key on K4) or main switch OFF – ON.

- **The red light is blinking: „Motor malfunction”**
    - Only when thermistor tripping relay has responded.
    - Find the cause and remedy.
    - Red light goes out.

- **The motor cannot be started up :**
    - Check power supply.
    - Check control voltage fuse „ F3 ″.
    - Set bridge at 10,11 or check float switch if any.

ATTENTION : When running in interval operation mode, the timer may be in pause mode (check programming).

- **Check motor function in manual operating mode.**



Monitoring electronics RDA 01 AC230V **617 9006**, type 17-85F4-2322 **K4** for leakage detector including protective resistor type 03-8123-0057
Relay-thermistor-triggering device 50/60Hz **087 8980** 110/230V OE+S LT3-SAOOM **F1**
Metal resistor 220 kOhm 0,6W/70°C/1%

Repeat STARTING PROCEDURE:

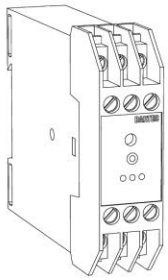
- **The red light for leakage detector is lit:**
  (Note: tripping device RDA 01 has switched off the motor.)
  - Put running mode switch to O.
  - Put main switch to "O" and after 5 sec put it back to position "1" for power supply.
    (This corresponds to a reset of the tripping device.)

If the light did not go off, check the submersible motor pump on eventual damage of seals.

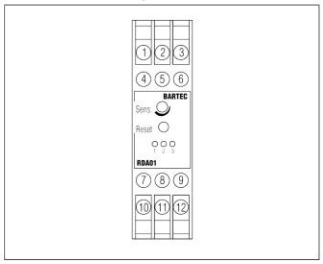
6.1.7 Safety Instructions

Always shut down the power supply before working on the starter.

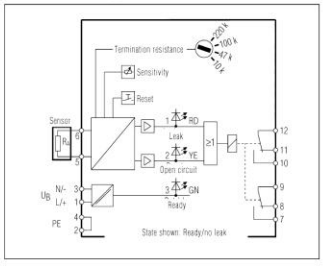
RDA Leakage detector



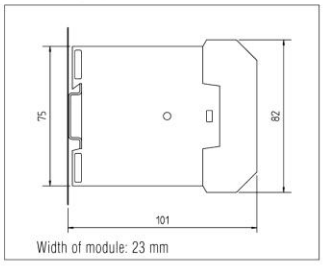
Terminal arrangement



Connection / function



Dimensions



Description

The RDA electronic evaluation unit is used with leakage detection sensors. Electro-conductive liquids of ≥ 2 µS/cm and light liquids such as oil on water can be detected. The RDA evaluates changes in resistance of the sensor. Leaks are indicated by LED buzzer and relay output. These signals remain in memory until a reset is carried out with the keypad. Probes and sensors with various termination resistances can be connected to the system for a variety of response sensitivity. A selector is available to adapt the RDA to various response sensitivities. A potentiometer is installed in the front panel of the enclosure for precision setting of detection sensitivity.

Features

- For electroconductive liquids (RDA01)
- For low density liquids on water (RDA02)
- Group alarm relay, 2 changeover contacts
- Piezo-buzzer
- Latching
- Reset button on front panel of enclosure
- Sensitivity setting
- R_A can be set
- High degree of EMC protection
- Fail safe relay tripping

Technical data

Supply voltage
AC 230 V / 50 Hz / 1,2 VA
DC 24 V ± 10 %

Ambient temperature
- 25 °C to + 60 °C

Indicators

Ready	green LED
Alarm	red LED
Open circuit	yellow LED

Output
Group alarm relay, 2 changeover contacts
AC 230 V / 0,3 A
DC 24 V / 1 A

Structure
Snap-on rail mounted enclosure for TS 35 rail IP 20, protection class II

Alarm reset
Button on front panel of enclosure

Sensitivity setting
Potentiometer on front panel of enclosure

Sensor termination resistance
settable to 10 kΩ; 47 kΩ; 100 kΩ; 220 kΩ

Sensor types
17-85M1-... / ...

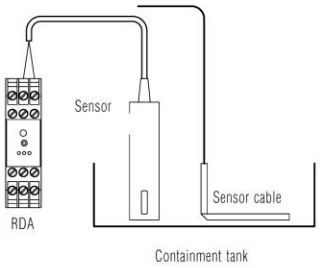
Directives / standards / approvals
89/336/EEC-EMC
73/23/EEC - Low voltage RL
Design approval Section § 19h WHG

RDA 01

Electroconductive liquids

Types:	
RDA01	17-85F4-2.22
Sensor	17-85M1-.../...

Example

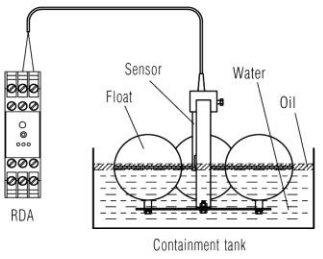


RDA 02

Low density liquids on water

Types:	
RDA02	17-85F4-2.32
Sensor	17-85M1-6456/..00
Float	17-85Z2-1000

Example



Selection chart			
Voltage	**Code**	**Detection**	**Code**
AC 230 V	**3**	RDA01 Electro-conductive liquids	**2**
DC 24 V	**4**	RDA2 Low density liquids on water	**3**

17-85F4-2 ☐ ☐ 2

Order number
Please enter code

7 MAINTENANCE AND MACHINE CARE

The wire rope is made of stainless V4A material. Nevertheless check the rope regularly and do replace it if it is worn. Incidental greasing or lubricating will increase its useful lifetime.
Spray the entire rope winch (with casing) frequently with oil to protect it from corrosion.

Before lifting, transporting or repairing the pump always switch off power at the main switch and secure the control box from any unintentional switching.

Do not touch the revolving parts of the mixer before having switched off power supply and secured the unit from unintentional turning on.

When the submersible motor pump is running, it must always be fixed and engaged to the guide tube. The guide tube must be tightly clamped inside the guide tube bracket.

! When the submersible motor pump is running, it must always be submerged in the medium for cooling the motor and gaskets.

Always switch off and lock main switch when lifting the submersible motor pump.

! Never use the power cable in order to haul or lift the submersible motor pump!

CLEANING

The inside of pipes and fittings can be cleaned best by rinsing them with water.

The pumps shall be stored possibly under a roof, protected against direct atmospheric exposure. In areas with freeze in winter, the pump housing must be drained completely.

CABLE CHECK

Check intactness of cable – is it damaged, twisted, squeezed or the like? With a damaged cable, fluid may come into the submersible motor. Faulty parts must be replaced immediately.

CHECKING THE LIFTING DEVICE

Check wear and corrosion of hoisting chains and wire ropes. Whenever there are traces of material fatigue, replace affected parts immediately. Check rope winch, lifting hook and shackles as to wear or rupture and clean and lubricate at the same time. This should be done at least every six months.

DISPOSAL

Observe local laws and regulations when disposing of pumps and pump components after repairs and service or when a pump is withdrawn from service. This applies in particular to the treatment of residual slurry in the pump body.

LUBRICATION AND MAINTENANCE SCHEDULE

Always switch off power supply prior to an oil exchange and lubrication and secure the machine against unintended starting.

Interval	after 750 operating hours	every 12 months	after 3000 operating hours
OIL CHANGE / OIL CHECK	First oil exchange: Unscrew the filling screw in order to drain the oil completely off the drain screw. Tightening torque for filling- and drain screws: 3/8`` = 34 Nm	Remove the drain screw and check the oil level and oil quality (the colour of the oil must not be white). Tightening torque for filling- and drain screws: 3/8`` = 34 Nm	Oil change. Unscrew the filling screw in order to drain the oil completely off the drain screw. Tightening torque for filling- and drain screws: 3/8`` = 34 Nm
Electric cables and general overhaul	Retighten bolts and nuts.	Check on wear, twist and eventual breakage. Retighten bolts and nuts.	

The cable winch shall be cleaned, lubricated and checked on wear every 6 months.

Oil quality: Engine Oil; Viscosity Grade SAE20W20 or SAE20; SAE HD30; Quality Level API CF/SF
Quantity: 1 l
High quality **HYDRAULIC OIL**, confirming DIN 51524 Part 2, ISO Viscosity Grade: 22

PROCEDURE OF OIL CHANGE

1. Unscrew the screw plug (figure 8).
2. Drain off the oil (figure 9).
3. Fill in the given quantity and type of oil up to the bottom edge of the tapping (figure 10).
4. Screw-in the screw plug (34 Nm) and seal it with an appropriate sealing agent (figure 11).

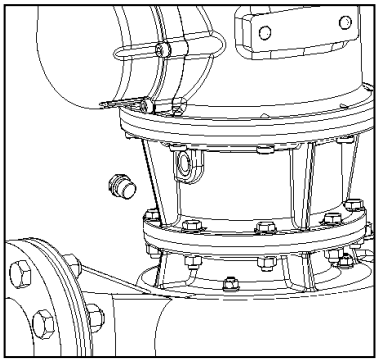


Figure 8

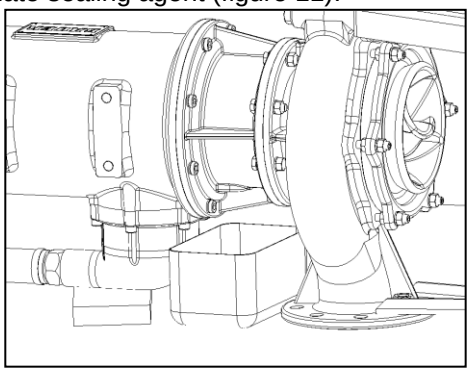


Figure 9

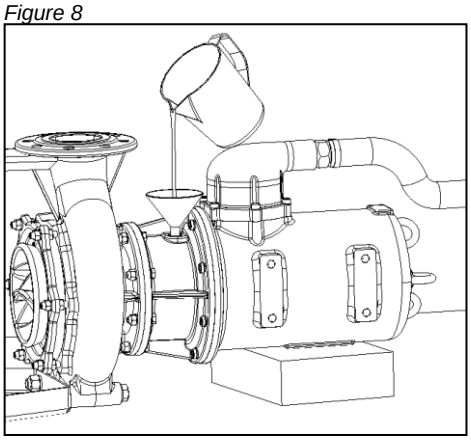


Figure 10

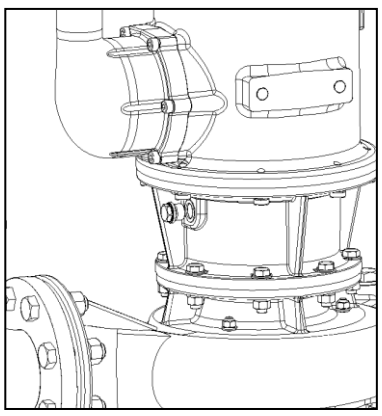


Figure 11

8 TROUBLE-SHOOTING

Always switch off the main switch and secure it against unintended switching on before lifting or shifting the submersible motor pump or carrying out repairs.

Trouble	Causes	Remedy
Pump does not deliver	Impeller got stuck	Remove foreign matters
	Cutting mechanism is blocking	Remove foreign matters
	Excessive height difference to distributing device.	Reduce height difference
	Wrong sense of rotation	Inverse sense of rotation
	Too high content of solids	Add water
Capacity is decreasing	Excessive counter-pressure	Remove foreign matters
	Too high content of solids	Add water
Red luminous button is lit!	Motor protective device has switched off the motor.	Repair the cause of failure
		In manual mode the red luminous button will extinguish.
		In level- and interval operation, put the selector switch to "0". Then the red luminous button will extinguish and the horn will stop.
Submersible motor pump does not start	No voltage or error at control box	Check motor protection Mains voltage available Check mains fuses
	Breakage of motor cable	Visual check if cables and other connections are okay. For further checks, call an electrician.
	Impeller is blocking	Check if impeller is blocked by wood particles, hoses or other objects and remove them.
Submersible motor pump is starting but is stopped by motor protection	Mains voltage not okay.	Meter the voltage. L1-L2-L3 400V~ L1-N 230V~ Check the supply fuses.
	Mechanical causes	Check motor and gear with mixer blades on smooth running.
	Defect of motor	Check through BAUER's after-sales service or by an authorized dealer.

If you do not succeed in repairing the error by means of the above measures, contact BAUER's after-sales service or your authorized dealer.

9 TECHNICAL DATA

9.1 Data of Rating Plate

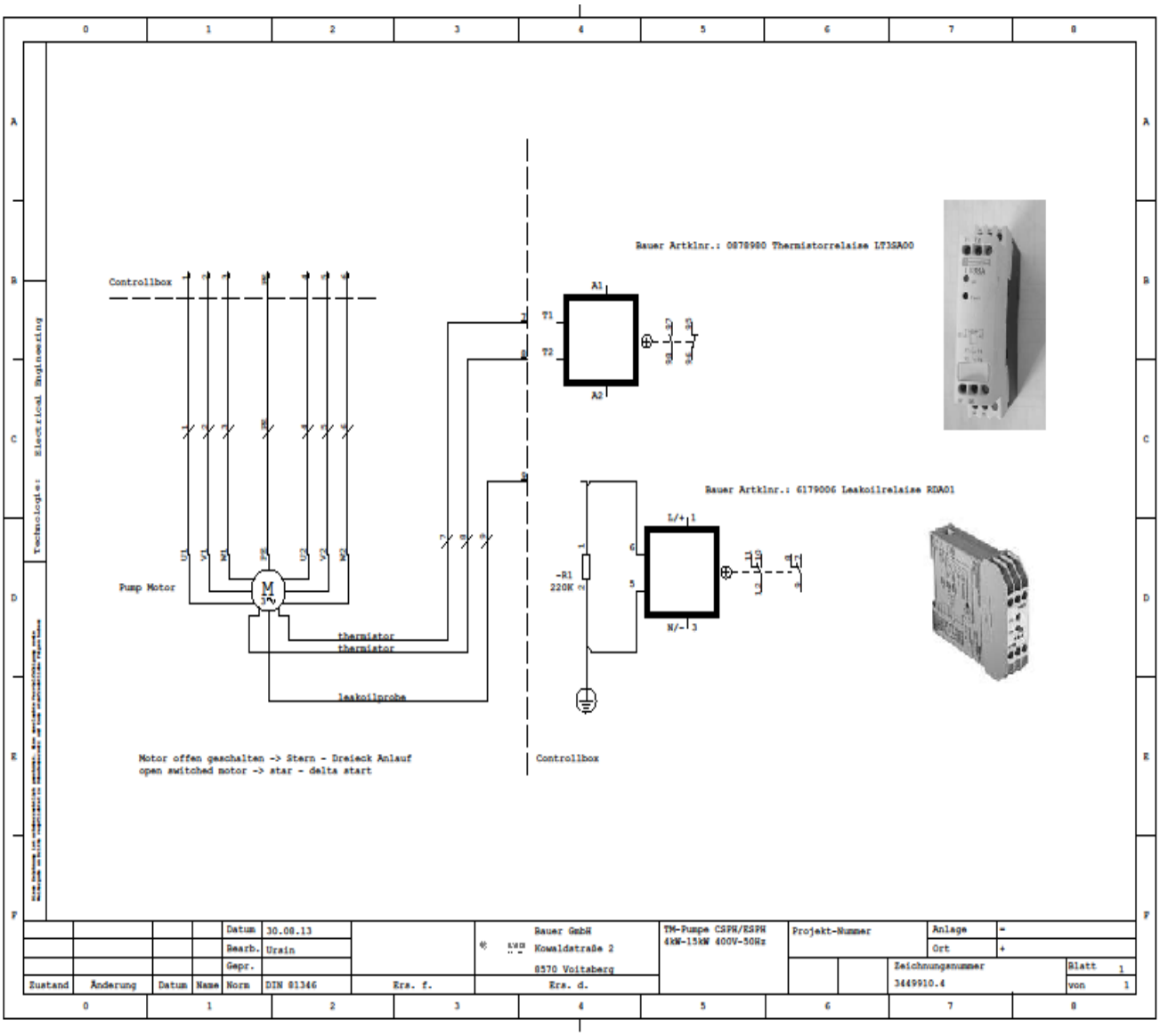
Designation 50 Hz operation			CSPH 7,5	CSPH 11	CSPH 15	ESPH 7,5	ESPH 11	ESPH 15
Voltage	U	[V]	400	400	400	400	400	400
Rated current	I	[A]	15,6	22	28,6	15,6	22	28,6
Speed	n	[min^{-1}]	1450	1450	1445	1450	1450	1450
Power factor	Cosφ	[1]	0,81	0,84	0,86	0,81	0,84	0,86
Frequency	Hz	[Hz]	50					
Protection			IP68					
Insulation class			CSPH: H			ESPH: H		
Efficiency class			High efficiency					
Capacity	Q	[m³/h]	20 - 180	20 - 230	20 - 240			
Manometric head	H	[m]	19,5 - 7,2	22 - 6,9	23,7 - 7,4			
Power consumption	P	[kW]	5,4 - 7,2	7,1 - 10,6	7,8 - 12			
Outer Ø of impeller	d2xb	[mm]	264x52x10°	264x72x5°	254x72x0°			
Weight		[kg]						
Hydraulic oil DIN 51524 Part 2 ISO VG 22			1,8 litres					
Article number			344 0024	344 0034	344 0044			

Designation 60 Hz operation			CSPH 7,5	CSPH 11	CSPH 15	ESPH 7,5	ESPH 11	ESPH 15
Voltage	U	[V]	480	480	480	480	480	480
Rated current	I	[A]	13	18,3	23,8	13	18,3	23,8
Speed	n	[min^{-1}]	1750	1750	1750	1750	1750	1750
Power factor	Cosφ	[1]	0,81	0,84	0,86	0,81	0,84	0,86
Frequency	Hz	[Hz]	60					
Protection			IP68					
Insulation class			CSPH: H			ESPH: H		
Efficiency class			High efficiency					
Capacity	Q	[m³/h]	20 - 170	20 - 215	20 - 246			
Manometric head	H	[m]	17,1 - 3,9	20,4 - 5	26,3 - 7,7			
Power consumption	P	[kW]	6 - 7,5	7,4 - 10,6	10 - 14,7			
Outer Ø of impeller	d2xb	[mm]	225x52x10°	225x72x5°	240x72x0°			
Weight		[kg]						
Hydraulic oil DIN 51524 Part 2 ISO VG 22			1,8 litres					
Article number			344 0027	344 0037	344 0047			

Power	P	[KW]		**7,5**	**11**	**15**
Protection of supply				25 A/C	32 A/C	50 A/C
Min. cross section of supply cable (depending on length of line, etc.)				5X4mm² Cu	5X6mm² Cu	5X10mm² Cu

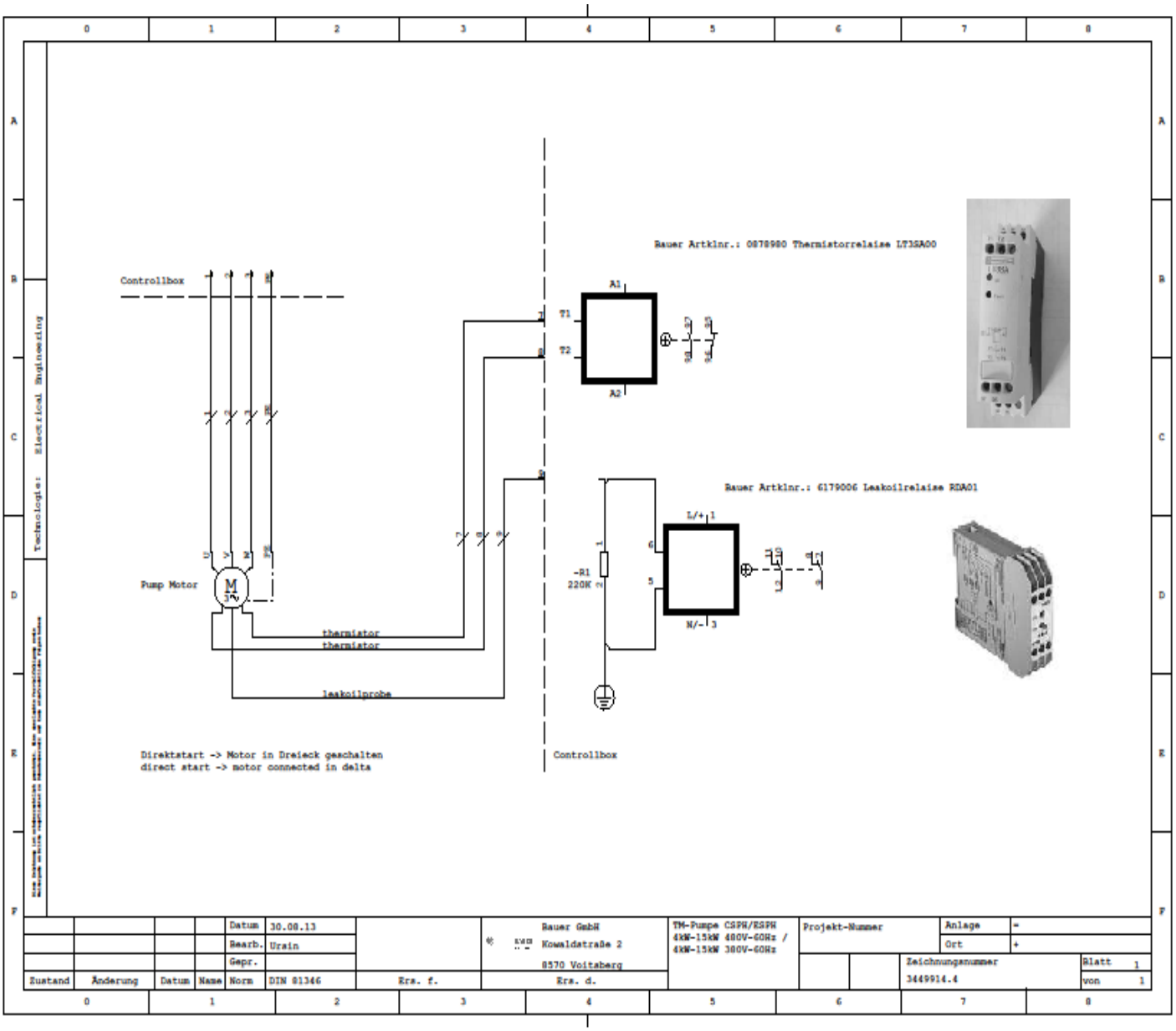
9.2 Wiring Diagram

Wiring diagram 400 V 50 HZ star- delta start



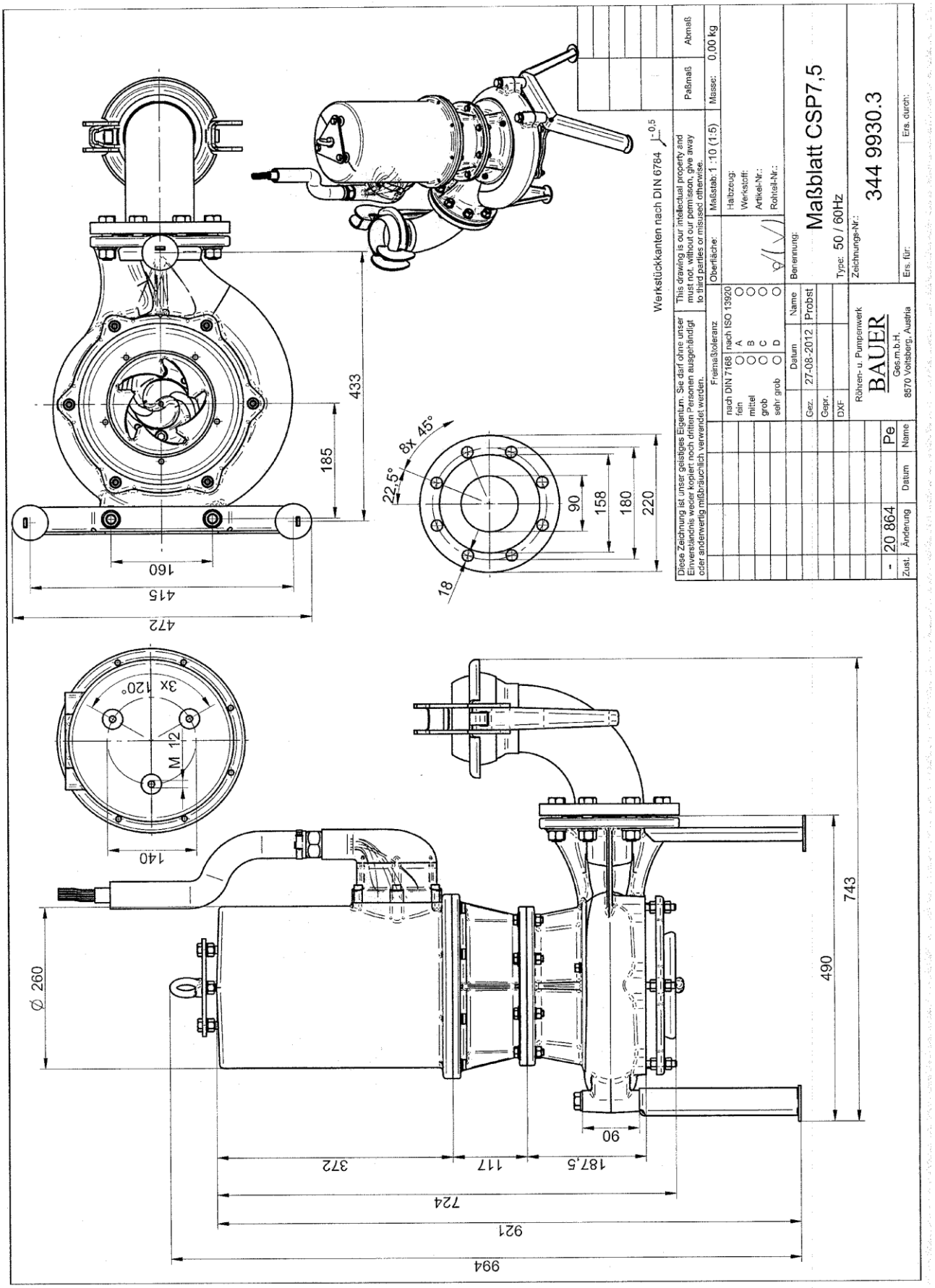
Wiring diagram valid for CSPH / ESPH

Wiring diagram 480 V 60 HZ delta start

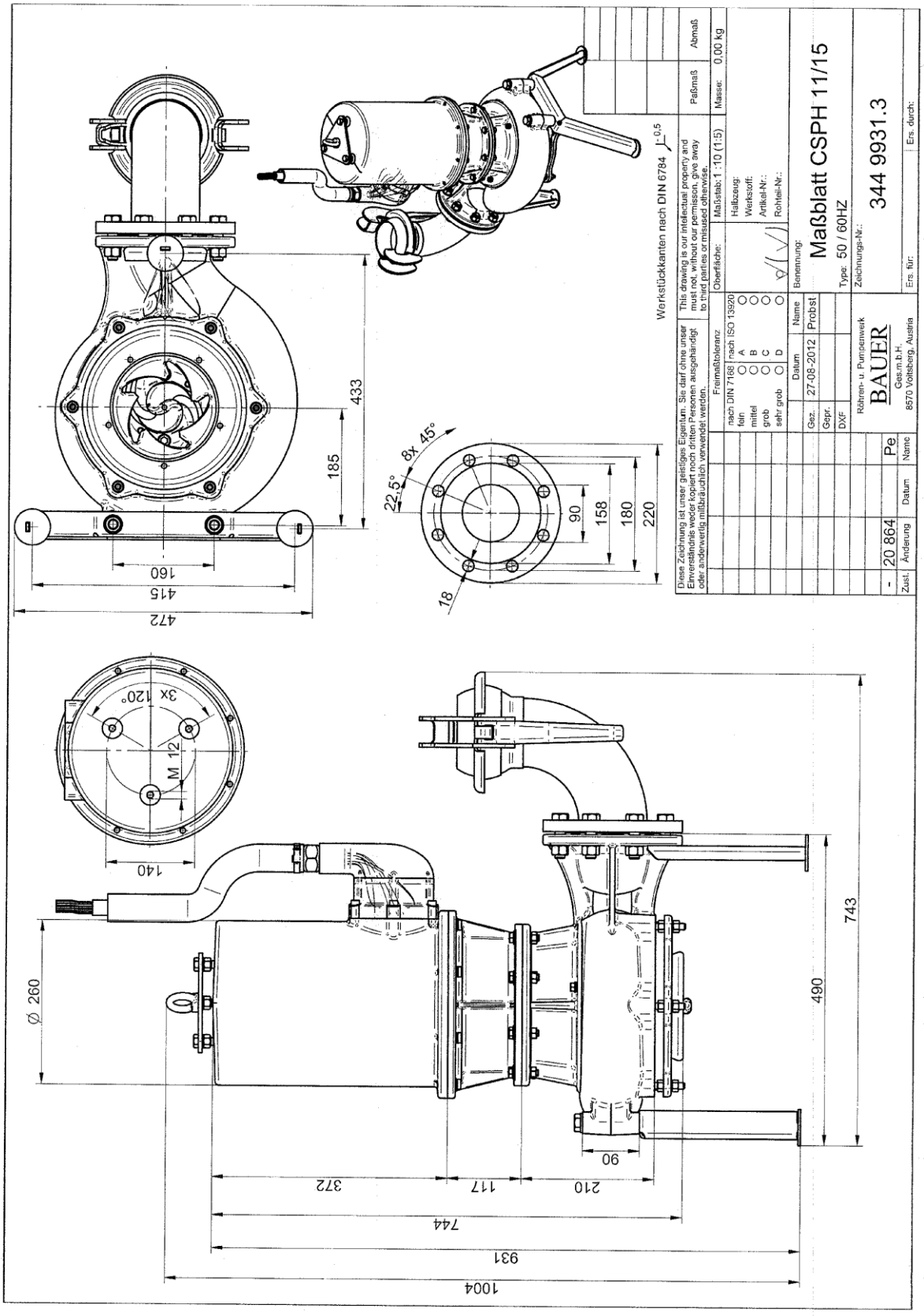


Wiring diagram valid for CSPH / ESPH

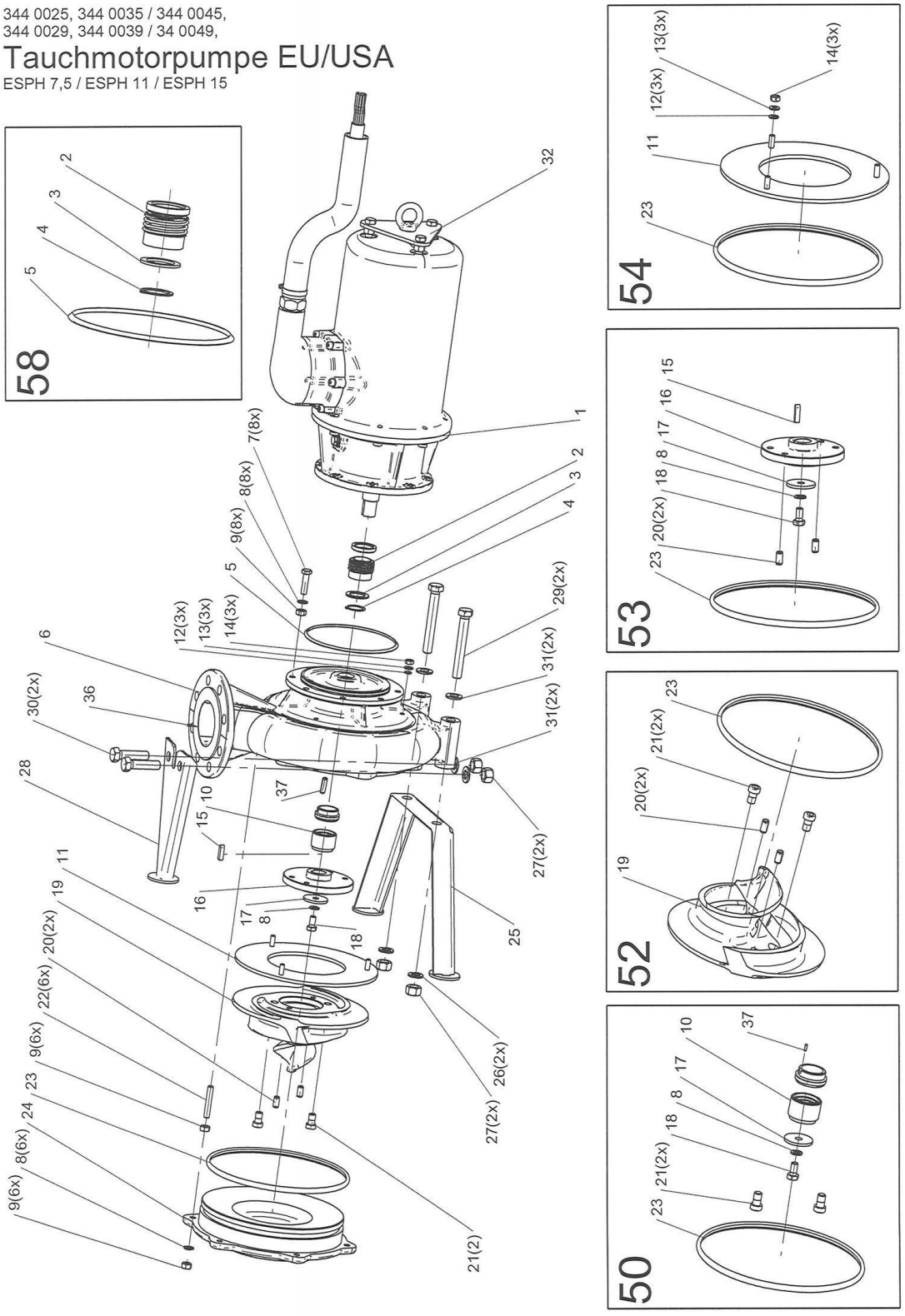
Dimensional Sheet CSPH/ESPH 7,5 kW



9.3 Dimensional Sheet CSPH/ESPH 11 and 15 kW

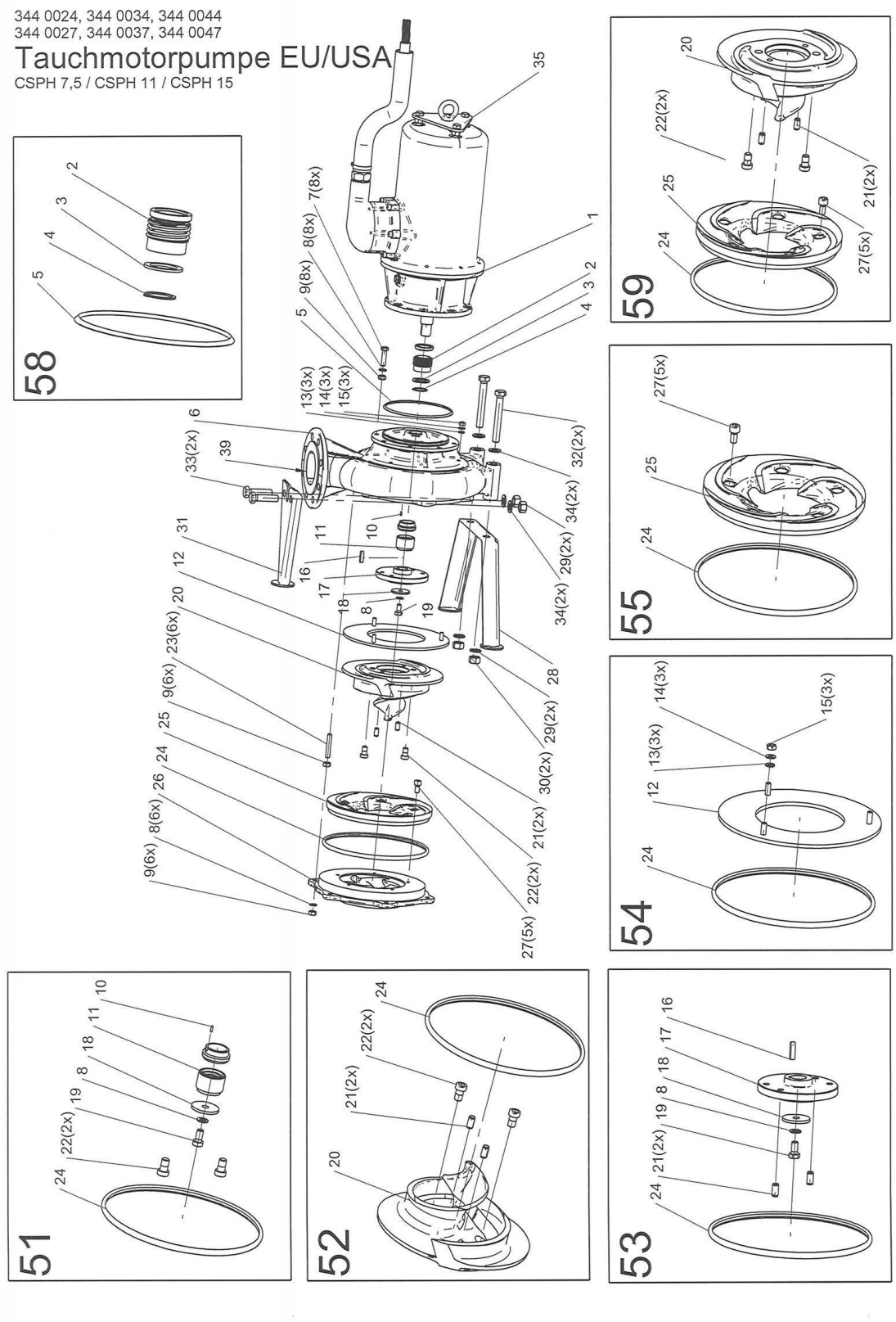


9.4 Explosion View Drawing ESPH



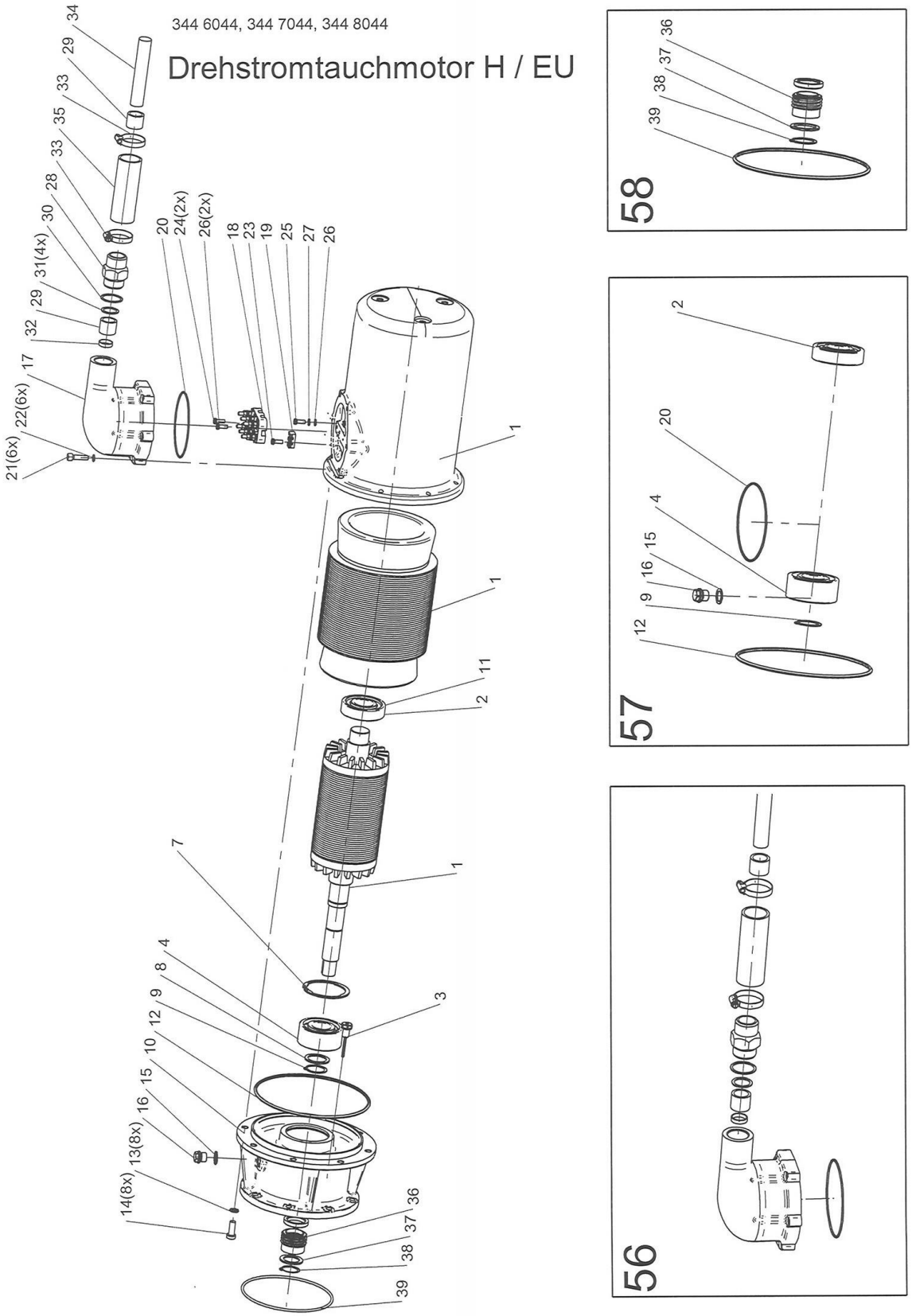
The units in the windows are available as repair kits under their corresponding number!

9.5 Explosion View Drawing CSPH



The units in the windows are available as repair kits under their corresponding number!

9.6 Explosion View Drawing of 3-ph Submersible Motor



The units in the windows are available as repair kits under their corresponding number!

10 MOUNTING INSTRUCTIONS FOR MECHANICAL SEAL

10.1 Accessories for Mounting of Mechanical Seal

1) Loctite 243 for securing the threaded pins of the mechanical seal at pump type CSP.

2) Adhesive tape to cover sharp edges of the groove of sealing ring when exchanging the rear mechanical seal.

3) Molykote to lubricate the slide faces of O-rings.

4) Allen key (size 2) for threaded pins of mechanical seal.

5) Knife to separate the adhesive tape.

6) Wrench size 17

7) Auxiliary mounting devices, see figures 13 and 14 with hex screw M10x20.

10.2 Auxiliary Mounting Devices (Setting of working length and mounting)

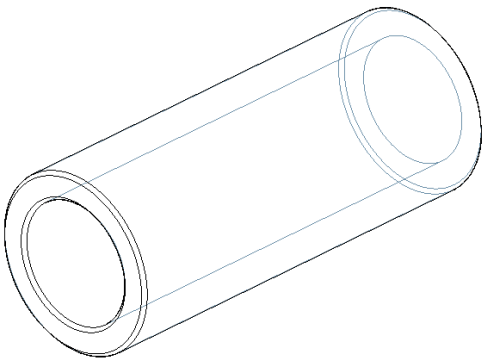


Figure 13: Mounting device for counter-rings

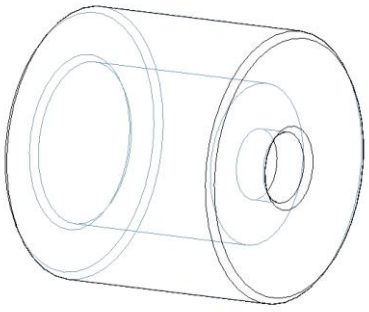
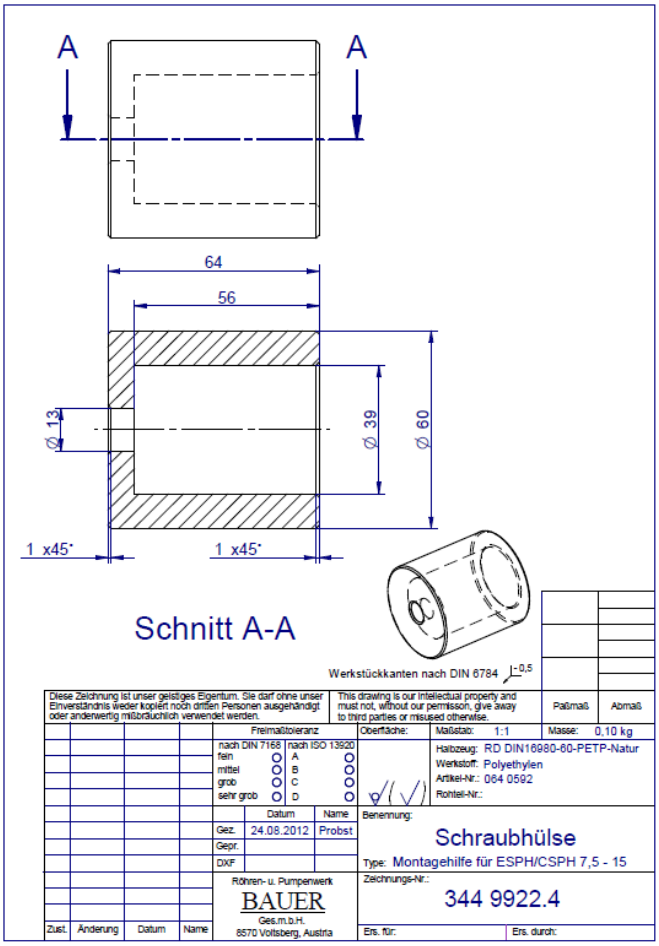


Figure 14: Mounting device for CSP (HJ 977)


A
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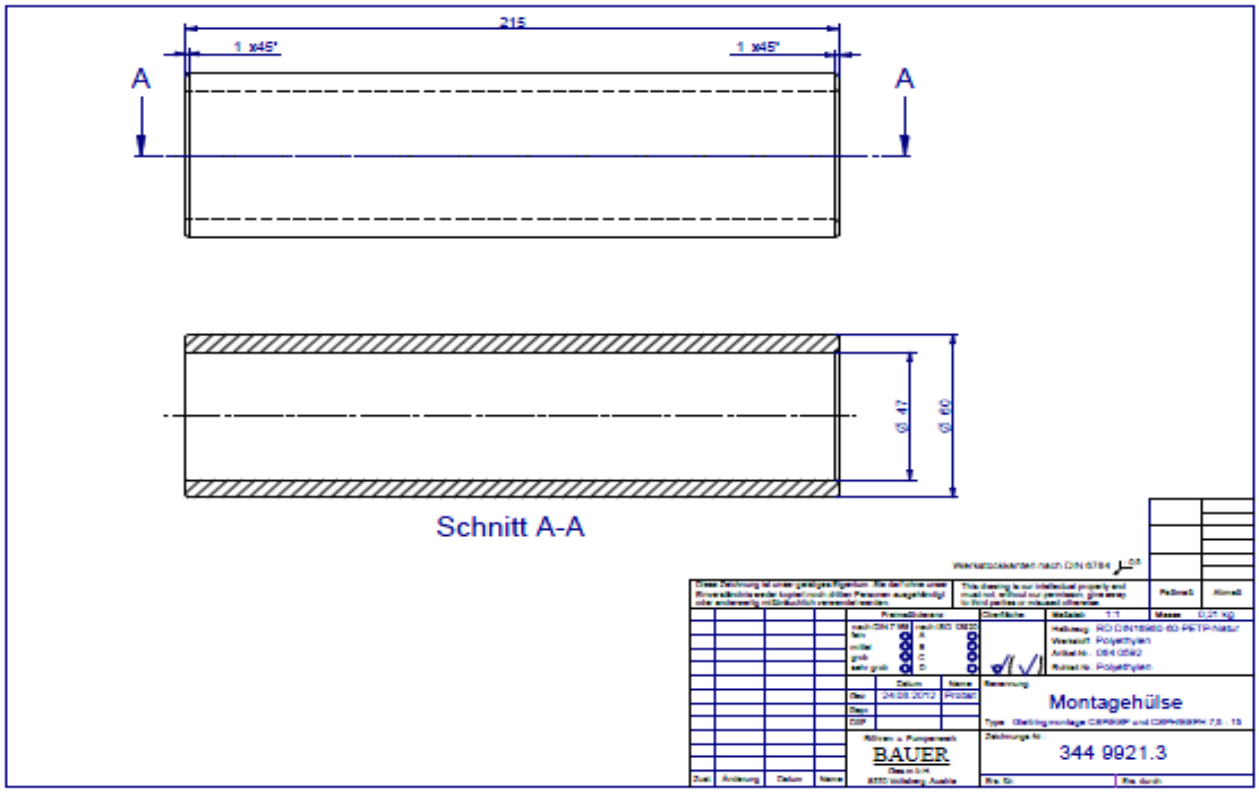
64
56
Ø 13
Ø 39
Ø 60
1 x45°
1 x45°
Schnitt A-A
Werkstückkanten nach DIN 6784
Diese Zeichnung ist unser geistiges Eigentum. Sie darf ohne unser Einverständnis weder kopiert noch dritten Personen ausgehändigt oder anderweitig mißbräuchlich verwendet werden.
This drawing is our intellectual property and must not, without our permisson, give away to third parties or misused otherwise.
Paßmaß
Abmaß
Freimaßtoleranz
nach DIN 7168
nach ISO 13920
fein
mittel
grob
sehr grob
Oberfläche:
Maßstab: 1:1
Masse: 0,10 kg
Halbzeug: RD DIN16980-60-PETP-Natur
Werkstoff: Polyethylen
Artikel-Nr.: 064 0592
Rohteil-Nr.:
Datum
Name
Gez. 24.08.2012 Probst
Gepr.
DXF
Benennung:
Schraubhülse
Type: Montagehilfe für ESPH/CSPH 7,5 - 15
Röhren- u. Pumpenwerk
BAUER
Ges.m.b.H.
8570 Voitsberg, Austria
Zeichnungs-Nr.:
344 9922.4
Zust.
Änderung
Datum
Name
Ers. für:
Ers. durch:


215
1 x45°
1 x45°
A
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Ø 47
Ø 60
Schnitt A-A
Montagehülse
344 9921.3
BAUER

Procedure

1) The lock against rotation for the counter-ring in the seal holder only is needed for installation of the mechanical seal HJ 977 with pump type CSPH (figure 16)! For installation of the mechanical seal MG12 with pump type ESPH, no locking pin is mounted (figure 15) since it would hinder function of the seal. For installation see figure 19.

Without locking pin

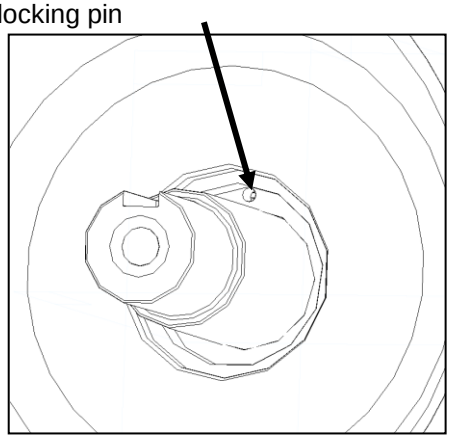


Figure 15: ESP counter-ring with lock against rotation

with locking pin

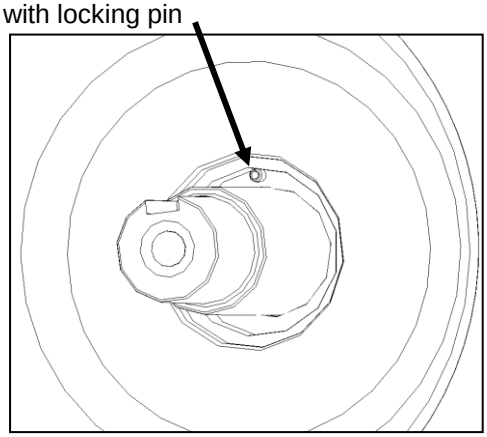


Figure 16: CSP counter-ring with lock against rotation

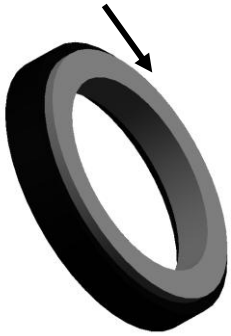


Figure 18: HJ 977 with CSPH and ESPH

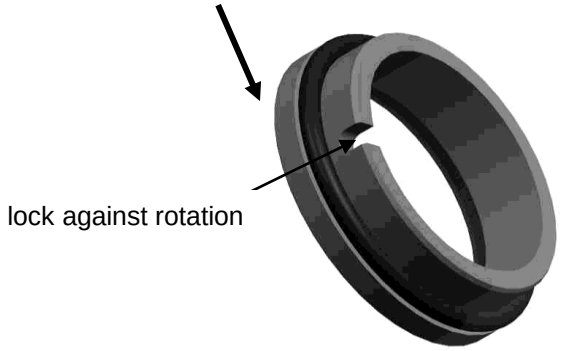


Figure 17: MG12 with CSPH and ESPH motor-side

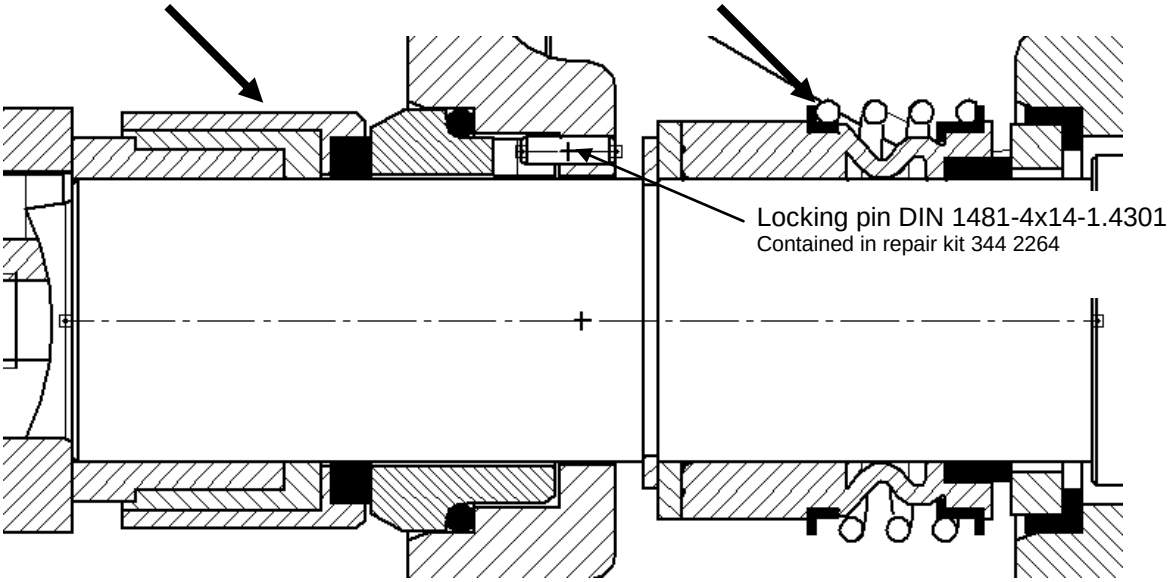


Figure 19: Installation of mechanical seal HJ 977 and MG12, motor side

2) Mounting the counter-ring (non-rotating part) of the mechanical seal

- Moisten the pump shaft with Molykote in order to reduce the friction between O-ring and shaft. Alternatively you may use alcohol or silicone grease.
- Push the counter-ring of the mechanical seal by hand onto the free shaft end as far as possible. (ATTENTION: When you suddenly feel resistance, do not use excessive force as this would damage the mechanical seal).
- The counter-ring with the O-ring is pushed back to the shoulder by means of the mounting sleeve shown on figure 21. (Attention! For type HJ 977, the recess of the counter-ring must be in alignment with the locking pin fixed in the box).

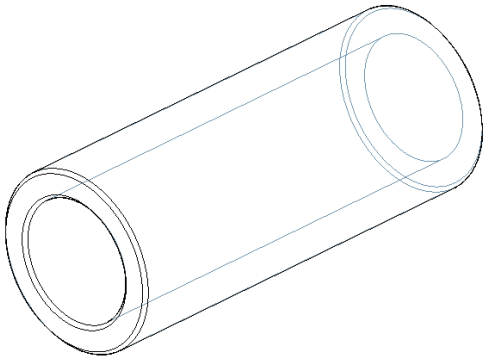


Figure 20: Mounting sleeve

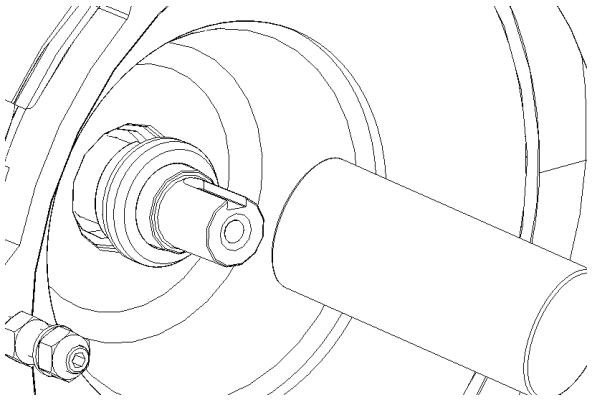


Figure 21: Installation with mounting sleeve, counter-ring

3.1) Mounting the rotating part of the mechanical seal HJ 977

Mounting the rotating part of the mechanical seal requires some preparations:

- Remove the (2 pieces of) threaded pins of the mechanical seal in order to moisten them with Loctite 243.
- Screw the threaded pins into the mechanical seal so as to ensure its unhindered pushing onto the shaft.
- Moisten the free shaft end and the O-ring of the mechanical seal with Molykote to minimize friction.
- Put the mechanical seal onto the free shaft end and push it carefully by hand to the counter-ring (figure 22).
- Now put the screw sleeve onto the shaft end and fasten the sleeve with a hex screw M10x25 up to the shoulder. (Thus the working length of the mechanical seal is set. This is essential for a proper functioning of the mechanical seal (figure 23)).
- After length setting, tighten the threaded pins (to fix the mechanical seal on the pump shaft).

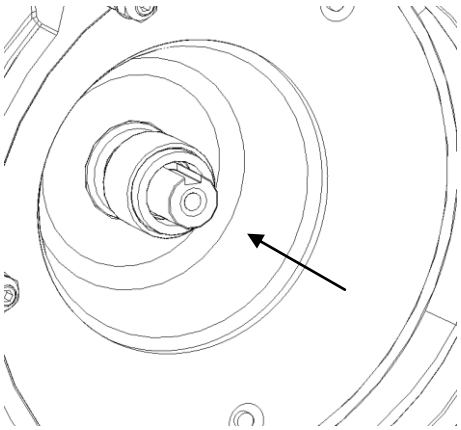


Figure 22: Manual pushing

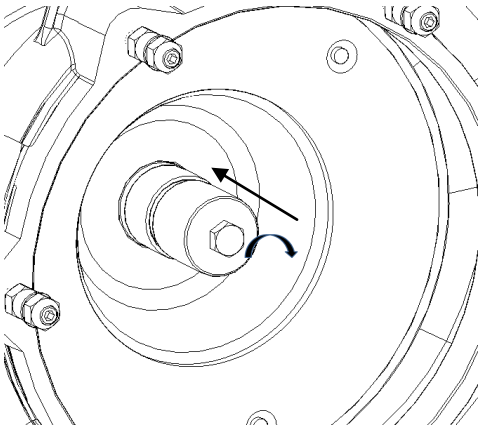


Figure 23: Setting of working length with mounting sleeve

3.2) Mounting the rotating part of MG 12

- Moisten the free shaft end and the O-ring of the mechanical seal with Molykote to minimize friction between mechanical seal and shaft for mounting.
- Push the mechanical seal by hand onto the shaft (as far as possible).
- Now put the impeller hub onto the shaft and tighten it carefully with the adequate screw (moistened with Loctite 243) with a torque of 80 Nm.

10.3 Installation of Mechanical Seal in Oil Reservoir

The mechanical seal MG12 installed in the oil reservoir of the pump is installed in a similar way to the mechanical seal MG12 installed in pump ESP.

- Moisten the shaft and the counter-ring with Molykote to minimize friction.
- Push the counter-ring over the shaft manually.
- Press the counter-ring into the seal seat (up to the shoulder) by means of the mounting sleeve.
- Moisten the rotating part of the mechanical seal inside and slip it over the shaft end until touching the counter-ring.
- Now push the supporting washer (DIN 988-S30x42x2,5) onto the shaft and place the circlip (DIN 741-30x1,5) onto it.
- Press on the circlip with the mounting sleeve, and with the supporting washer, tension the spring of the mechanical seal until you can hear clicking of the circlip in the groove (figure 24).
- Finally check if the circlip is in the groove duly so that it cannot become loose automatically.

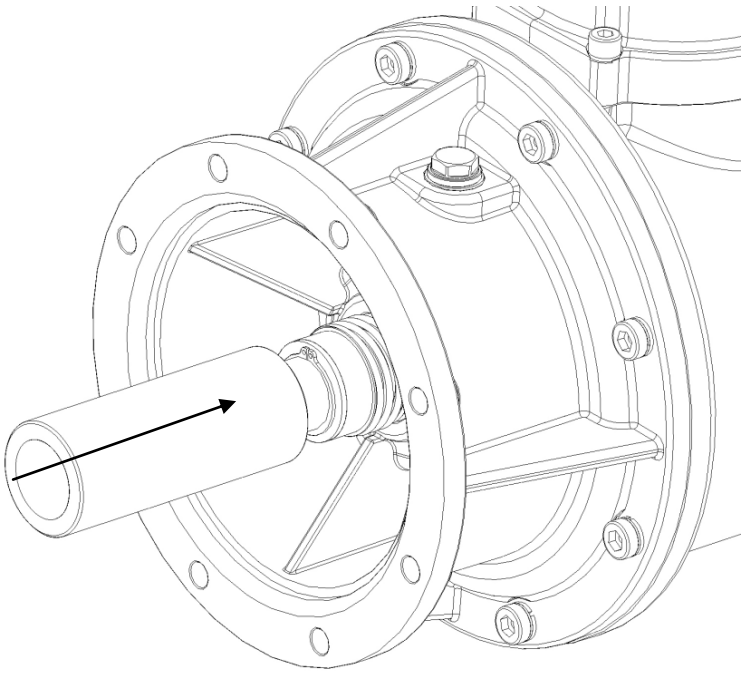


Figure 24: Installation of MG 12/30 in oil reservoir

10.4 Installation of Mechanical Seal CSPH (HJ 977) and ESPJH (MG12)

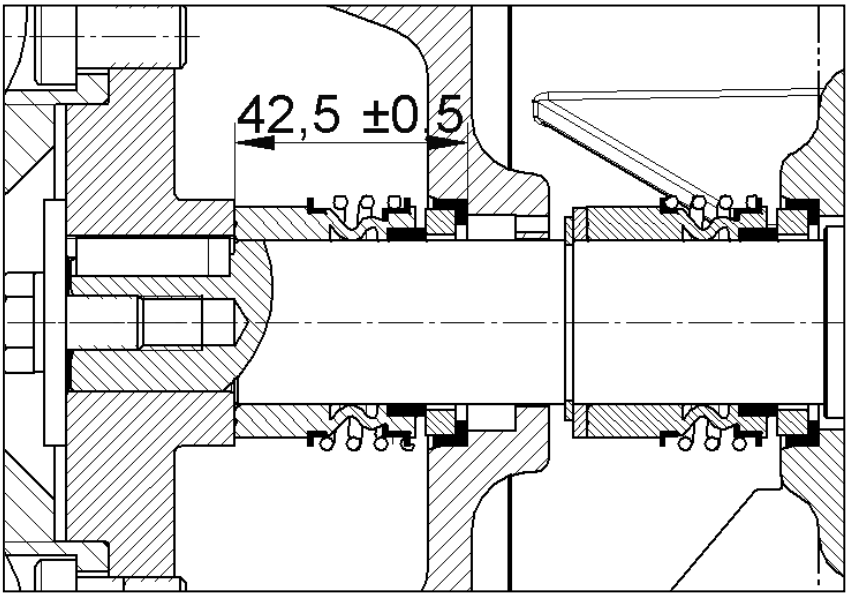


Figure 25: Installation of MG 12/30

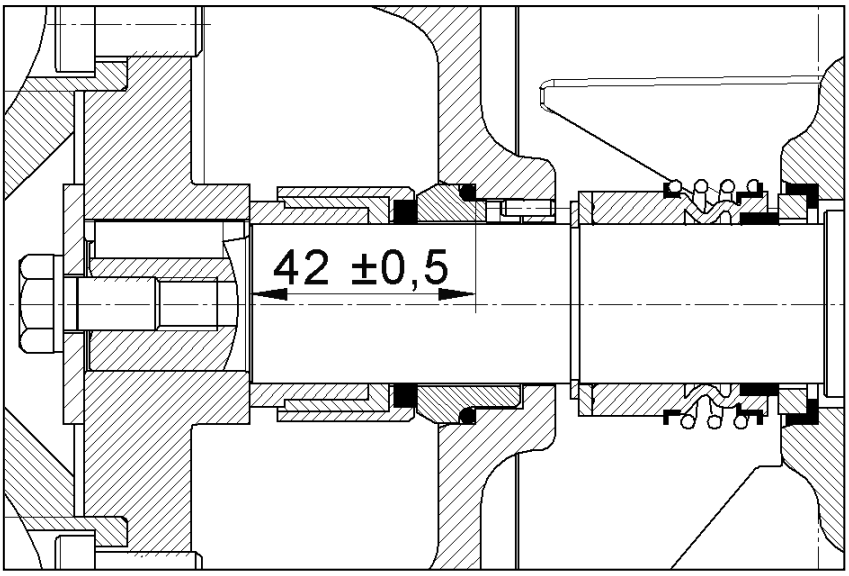
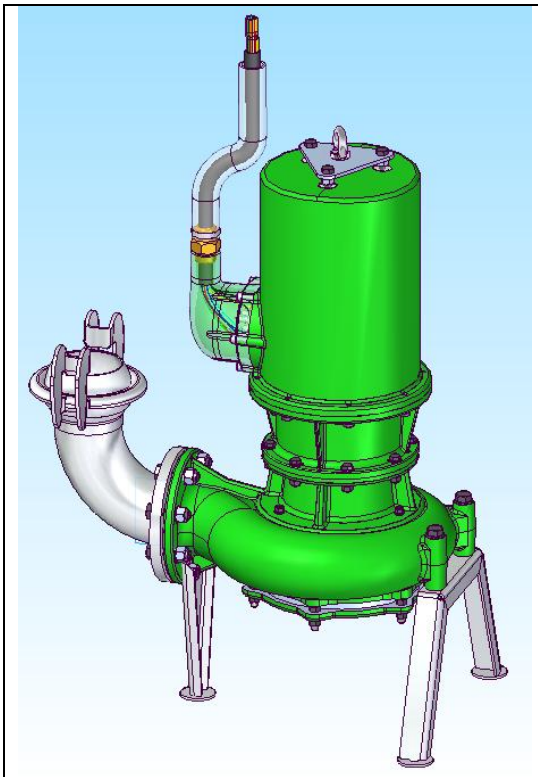


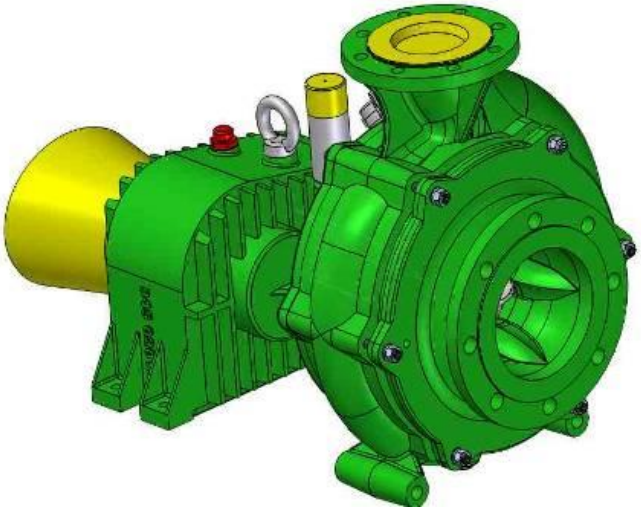
Figure 26: Installation of HJ 977

11 PRODUCT RANGE SLURRY

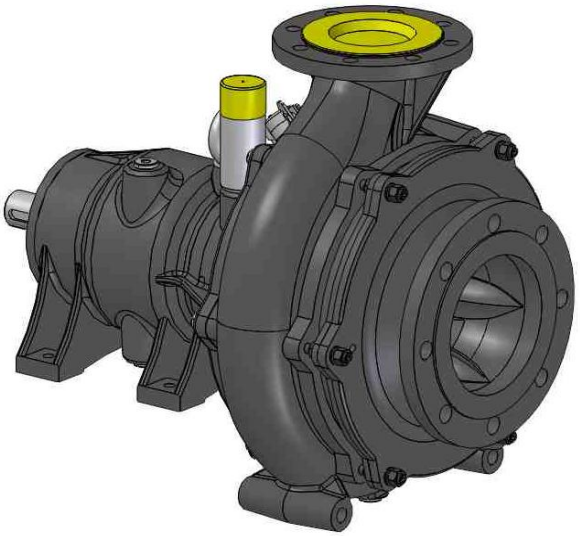


Submersible motor pump MAGNUM
CSPH 7,5/11/15

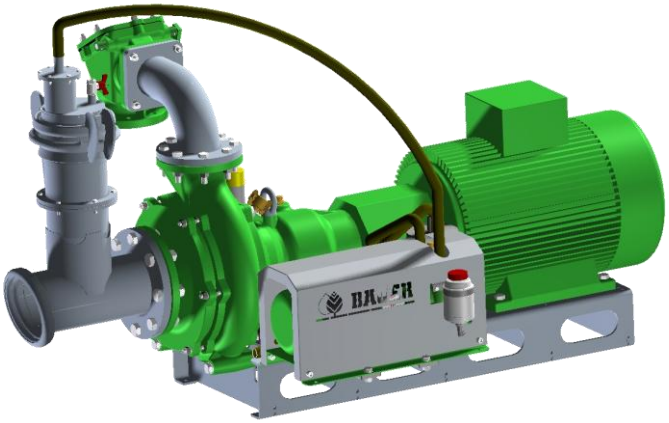
Gear pump MAGNUM SM
SM 540 L4/ SM 540 L4-M



Gear pump MAGNUM SX
SX 1000 and SX 2000



Pedestal pump MAGNUM SX
SX 2600



Electric pumping unit MAGNUM SX
SX 2600 with electric motor and self priming unit

Diesel pumping units
6068 DF 150/ 6068 TF 150

Long shaft pump MAGNUM LP
LP 55 with three-way valve and mixing nozzles

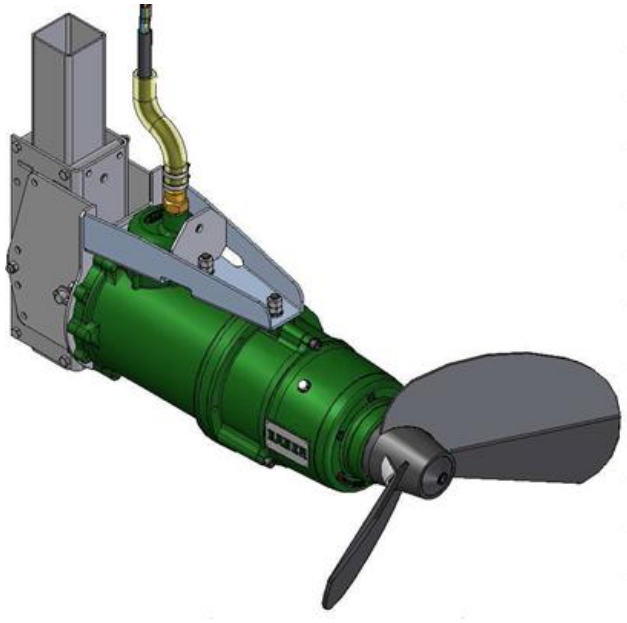
Long shaft pump MAGNUM LE
LE 11/ LE 15/ LE 18,5 with one or two three-way valves

Tractor mixer MTX

MTX 600/4 / MTX 600/5 / MTX 600/6 with 2 blades
MTX 750/4 / MTX 750/5 / MTX 750/6 with 2 blades
MTX3 600/4 / MTX3 600/5 / MTX3 600/6 with 3 blades

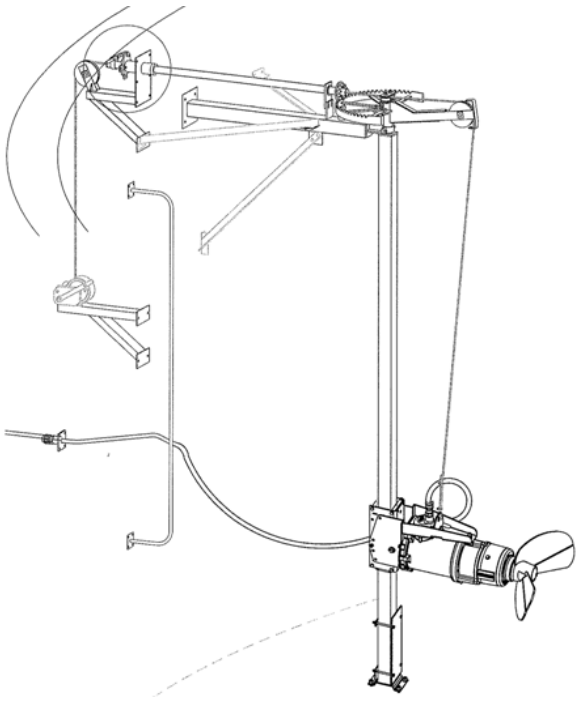
Electric mixer MEX

MEX 305/ MEX 450 G/ MEX 450 G



Submersible motor mixer MSXH

MSXH 5,5/ MSXH 7,5/ MSXH 11/ MSXH 11ECO/ MSXH 15

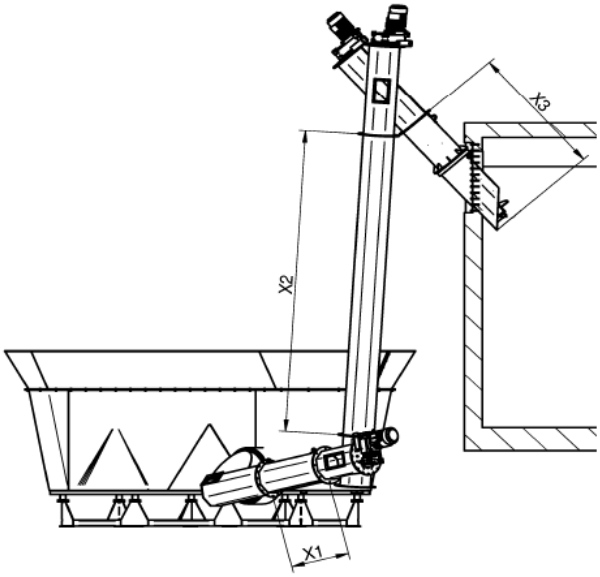


Lifting- & lowering device

With wall interface for biogas plants

Eccentric spiral pump

HD 130/100; HD 150/110; HD 200/120; HD 200/120Tandem

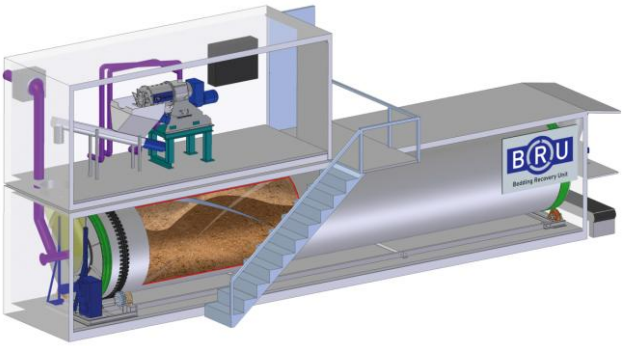


BIODOS

Base container UNO/ DUO/ TRIO, Feeding units

SEPARATOR S 655

S 655/ S 655 HD/ S 855/ S 855 HD



Bedding Recovery Unit

BRU 500 and BRU 1000

Bauer's product range in the sector of slurry mainly comprises the above mentioned products which stand out by a high process reliability. For more detailed information, please browse our Web site www.bauer-at.com or contact our staff at the contact address given at the beginning.

12 CONFORMITY CERTIFICATE

EC Declaration of Conformity

according to EC Directive 2006/42/EC

The manufacturer

Röhren- und Pumpenwerk BAUER Gesellschaft m.b.H.
Kowaldstraße 2, 8570 Voitsberg, Austria
phone +43 3142 200-0; fax: +43 3142 200-320/-340

herewith confirms that the machine mentioned below

Designation of machine	**Submersible Motor Pump**
Machine type / basic units	**ESPH / CSPH**
Consists of	**Submersible Motor Pump incl. electric cable (8 m)**

corresponds analogously to the requirements of the Machinery Directive 2006/42/EC.
In case of a modification of the machine not accorded with BAUER GmbH, this declaration will cease to be valid.

The following standards as amended have been applied analogously:

DIN EN ISO 12100-1	Safety of machines – Basic concepts, general principles for design, Part 1: Basic terminology, methodology
DIN EN ISO 12100-2	Safety of machines – Basic concepts, general principles for design, Part 2: Technical principles and specifications
DIN EN 60204-1	Safety of machines - Electrical equipment of machines, Part 1: General requirements
EN ISO 14121-1	Safety of machines – Risk assessment

Norms related to products

EN ISO 13857	Safety of machines, safety clearance to secure no touching hazard area with upper extremities.
DIN EN 349	Safety of machine, minimum clearance to avoid crushing body parts
DIN EN 809	Pumps and pump units for liquids - Common safety requirements

The documents belonging to the machine according to annex VII, part B have been attached.

The partly completed machine must not be put into operation unless it has been proven that the machine where the partly completed machine shall be installed, corresponds to the regulations of the EC Machinery Directive (2006/42/EC). CE marking is done by the machine owner as final producer.

Person in charge of documentation: Thomas Theissl, Kowaldstraße 2, 8570 Voitsberg, Austria,

Technical Designer in Charge

Commercial Manager