

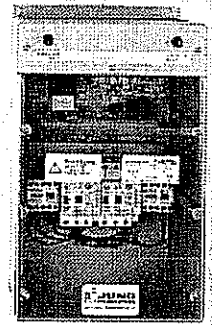
## General Safety Instructions

### Application

### Electrical Connection

### Installation

### Maintenance



## Control unit

You have bought a Jung Pumpen product and therefore purchased quality and performance. Guarantee this achievement by an installation according to the operating instructions so that our product can meet your demands to your full satisfaction. Please note that damages as a result of poor installation will affect the gurantee.

For this reason please follow the advice of the operating instructions.

Like any other electrical appliance the operation of this product can fail by electrical failure or technical faults. It is wise to always consider standby pumps, emergency generator and a control unit fitted with mains independent alarm.

BD 00 E	ID-No. 00482/06
BD 00	ID-No. 00299/06
BD 25	ID-No. 00302/09
BD 46	ID-No. 14358/05
BD 610	ID-No. 14359/05

# Operating Instructions

---

## General Safety Instruction

This operation manual gives basic instructions that should be followed carefully during installation, operation and maintenance. It is essential that this manual is carefully read by the responsible personnel/operator before assembly and commissioning. It is always to be kept available at the installation site.

## Identification of safety instructions in the operating manual

Safety instructions given in this manual non-available with which would affect safety are identified by the following symbol:



General danger for personnel



Dangerous voltage



Danger for machine and function

It is imperative that signs affixed to the machine, e.g.

- rotation arrow
- fluid connection symbols
- data / approval plate

be observed and kept legible.

## Qualification of personnel

An authorized (certified) electrician and mechanic shall carry out all work. Scope of responsibility and supervision of the personnel must be exactly defined by the plant operator. If the staff does not have the necessary knowledge, they must be trained and instructed, which may be performed by the machine manufacturer or supplier on behalf of the plant operator, moreover, the plant operator is to make sure that the contents of the operating manual are fully understood by the personnel.

## Hazards in the event of non-compliance with the safety instructions

Non-compliance with the safety instructions may produce a risk to the personnel as well as to the environment and the machine and results in a loss of any right to claim damages or compensation. For example, non-compliance may involve the following hazards:

- Failure of important functions of the machine/plant
- Failure of specified procedures of maintenance and repair
- Exposure of people to electrical, mechanical and chemical hazards
- Endangering the environment owing to hazardous substances being released.

## Safety regulations for owner / operator

All safety instructions contained in this manual, all relevant national and local health and safety codes and any other service and safety instructions issued by the plant operator shall be complied with.

## Safety instructions relevant for operation

If hot or cold machine components involve hazards, they must be guarded against accidental contact.

Guards for moving parts (e.g. coupling) must not be removed from the machine while in operation.

Any leakage of hazardous (e.g. explosive, toxic, hot) fluids (e.g. from the shaft seal) must be drained away so as to prevent any risk to persons or the environment. Statutory regulations are to be complied with. The pumping station must be kept tidy and in good condition.

Hazards resulting from electricity are to be prevented (see for example, the national-specifications or the regulations of your local electricity supply company.)

## Safety instructions relevant for maintenance, inspections and assembly work

It shall be the plant operator's responsibility to ensure that all maintenance, inspection and assembly work is performed by authorized and qualified personnel who have adequately familiarized themselves with the subject matter by studying this manual in detail.

Any work on the machine shall only be performed when it is at a stand-still, it being imperative that the procedure for shutting down the machine described in this manual be followed.

Pumps and pump units which convey hazardous media must be decontaminated. All waste emissions such as used oil must be appropriately disposed of, oil spills must be cleaned up and emissions to the environment must be reported. On completion of work all safety and protective facilities must be reinstalled and made operative again.

Prior to restarting the machine, the instructions listed under "Electrical Connection" and "Installation" are to be observed.

## Unauthorized alterations and production of spare parts

Any modification may be made to the machine only after consultation with the manufacturer. Using spare parts and accessories authorised by the manufacturer is in the interest of safety. Use of other parts may exempt the manufacturer from any warranty or compensation claims.

## Unauthorized modes of operation

The reliability of the machine delivered will be only guaranteed if it is used in the manner intended, in accordance with clause 1; of this manual. The limit values specified in the data sheet must under no circumstances be exceeded.

## Warranty claim

Jung Pumpen pumps are long living, high quality products with expected reliable operation. However, should the need arise for a warranty claim, please contact your Jung Pumpen distributor.

# Operating Instructions

---

## List of contents

- General safety instructions..... page 2
- List of contents..... page 3
- Extent of delivery..... page 4
  - Technical datas
  - Functional characteristics and equipment
  - E.M. wave instructions
- Extent of delivery..... page 5
  - Modes of operation
  - Instructions for qualified electricians
  - Malfunctions
- Installation instructions for qualified electricians..... page 6
  - Malfunction indication
  - Mounting
  - Connection of the pump
  - Connection of the mains
- Installation only for qualified electricians..... page 7
  - Connection of level control
  - Adjustment of standard operation
  - Adjustment as single unit with one pump
  - Operation without peak load function
  - Connection of external 230 V warning- or flashing lights
  - Buzzer shutdown
  - Connection of remote failure indicators
- Construction scheme..... page 8
  - Connection of self recharging battery
- Spare parts list ..... page 9
- Annex
  - Installation drawing for float switches ..... 3 24044
  - Circuit diagramm BD 23/25/46/610..... 4 27835

# Operating Instructions

**Extent of Delivery :** 1 control panel BD 00 E/00/25/46 or 610.

## Technical Data

Supply voltage	: 1N/PE x 230 V - 50 Hz : 3N/PE x 230 V - 50 Hz	Power input	: max. 4 VA (standby approx. 1 W)
Control voltage	: 230 V AC/12 V DC (extra low voltage)	Motor protection (protective motor switch)	: 6/10 A fuses (BD 00/00E) : 1,6 - 2,4 A (BD 25) : 4,0 - 6,3 A (BD 46) : 6,3-10,0 A (BD 610)
Switching capacity /AC 3	: max. 2 x 4,0 kW, AC3	Terminal capacity	: up to 2,5 mm <sup>2</sup>
Max. switching frequency	: 30 / h	Dimensions	: 430 x 250 x 155 mm (h x w x d)
Protective system	: IP 44	Ambient temperature	: - 20°C to 50°C
Weight	: approx. 4,0 kg		

## Description

Control panel in an enclosure base of insulating material with automatic or manual control. The control unit is designed for two d.o.l. starting Jung submersible pumps selected in accordance to the Jung guidelines. It is supplied ready for operation and has the following functions:

### Automatic operation:

- switching on of the pump at rising water levels in the sump
- automatically alternating start of pump 1 and 2 after every base load operation
- switching on of the resting pump by peak load level controller during excessive inflow or pump malfunction
- alternative operation without peak load (pumps do not work simultaneously), but with automatically change over to the resting pump in case of malfunctions
- alternative operation as a single unit
- temporary graduated pump start to prevent extreme rushes of current, e.g. after a power failure

### Outfit:

- modes of operation can be selected by Hand - 0 - Automatic selector switches
- „pump operating“ is signalled by green LED H1 and H2.
- „test run mode“ turn switch S1/S2 into position „Hand“. The pumps will run in continuous operation, independently from water level.
- the pump will be switched off by a special winding thermostat in case of an overheated motor. The pump will be switched on again automatically after cooling down.
- the pump will be switched off by a protective motor switch in case of electrical or mechanical overload, and automatically change over to the resting pump manual reactivation at the motor protective switch. (only BD 25/46/610)
- wrong power connection is indicated by a rotation control lamp H0. (only BD 00/25/46/610)
- possibility to connect up to 4 level sensors (e.g. submersible ball contact switches, bubbling through measurement control unit, .....)

## Standard mains independent operated alarm device

- signals inadmissible high water level in the sump by red LED H5 and buzzer H7 - buzzer clearance by push button S5 (option, code No. 19160, automatic reset to readiness for service)
- signals pump failures (triggered protective motor switch) by red LED H4 and H5 (only BD 25/46/610)
- tries to start the base load pump when an inadmissible high water level is reached (emergency start on damaged base- or peak load level switches)
- includes 2 potential free contacts (relay 5 A/250 V) for remote failure indication by a flash light or a buzzer (second relay switchable between flashing or permanent operation)

## Main independent alarm

The standard alarm device depends on the mains supply. To get an alarm signal in the event of a power failure, a self-recharging battery (part number 07562) can be installed. Space and connection slot in the control device are available. The battery secures an continuous alarm signal of 1 hour and is recharged automatically by the returning mains supply.

**WARNING** Do not use standard batteries, because they might explode.

## E.M. wave instructions

If you connect Jung submersible pumps and accessories in accordance to the Jung selection guidelines, install it as prescribed and operate as directed, the unit will meet the protection requirements of the (EMV) EG-direction 89/336 EWG and is suitable for the operation in domestic, industrial and municipal applications.

If the connection ensues to an internal power supply system of an industrial plant with own electricity supply by high-voltage transformers you may be will have insufficient resistance to jamming.

# Operating Instructions

**WARNING** To ensure a correct operation always keep the panel casing dry, clean and closed!

## Operation instructions

### Mode of operation

#### Automatic operation

The automatic operation is the standard operation. Turn switch S1/S2 into position „Automatik“. The pumps work automatically and alternating, depending on the water level in the sump.

The operation is signalled by the green LED H1/H2.

#### Test run

Turn switch S1/S2 into position „Hand“. The pumps will run in continuous operation, independently from water level.



If the pump operates in manual operation for too long, air might be sucked into the pump casing. Certain types of pumps must be deaerated before being restarted in automatic mode.

**WARNING**

Special rules apply to installation in explosive atmosphere.

### Stopping of the pump

Turn switch S1 and/or S2 into position „0“.

The pumps stop working. If one pump is left in automatic operation mode it will be switched on by „peak load“ and simultaneously to the „high water alarm“.



In case of repairs or maintenance works do not only turn the switch S1/S2 in position „0“ but take out the pre-fuses to disconnect the mains supply. Ensure that it cannot be energized again.

### Maintenance

The control unit is free of maintenance. The correct adjustment of the level sensors must be controlled regularly. Divergences must be corrected or the float has to be cleaned. For maintenance of the tank and the pump see separate operating instructions.

## Enclosure for qualified electricians only



**WARNING**

Repairs and maintenance should only be done by qualified electricians. Special rules apply to installation in explosive atmosphere.

Take out the mains fuses to isolate the mains supply before repairs or any other works and make sure it cannot be energized again.

Before starting check the efficiency of the protective arrangements of the pump and the monitoring equipment. Failure to heed this warning may cause a lethal accident.

Use the control unit only in accordance to the data stated on the name plate resp. in the technical data on page 4.

Jung Pumpen disclaims all responsibility for work done by untrained or and unauthorized personnel.

Level sensors must be used at low voltage. For further details please see data sheet / o.m. Local rules may specify otherwise.

Because the motor's nominal voltage measured at the terminal board of the pump, please consider the voltage drop of long supply cables.

Replace cables with damaged cable jackets. Do not pinch cables or pull them around sharp edges.

### Malfunctions

#### Pumps do not run

If the pumps do not run, neither in automatic nor in hand mode and neither operation nor a malfunction is displayed on the PCB, please check if there is supply voltage and if the pre-fuses are all right. If the fuses trigger iteratedly, refer the examination to qualified electricians.

**WARNING**

If necessary change the fuses, but always with the same nominal value! Wrong fuses can cause malfunctions.

#### Pumps with winding thermostat

Inadmissible high temperatures (e.g. emerged operation or media with high temperature) will release the thermostat. After cooling down the pump restarts again automatically. The malfunction will not be displayed.

#### BD 00E and BD 00

The release of fuse(s) does not automatically lead to a malfunction signal. Even if a pump cannot operate with triggered fuse(s), the operation still can be signalled by the green LED. The malfunction will be signalled, when the water in the sump reaches the alarm level.

# Operating Instructions

## Malfunction indication

Indicator „H0" lights - „wrong sense of rotation" (only three-phase models)

cause: Wrong phase sequenz of the mains supply or one phase is missing

(result: lower or missing pump flow rate)

remedy: Change two of the three leads

(prerequisite: the pump is connected in the way this manual shows)

Indicator „H3" or „H4" lights - „pump malfunction, protective motor switch": (not at BD00 or BD 00E)

cause: Wrong adjusted protective motor switch, electrical or mechanical overload of the pump. (tightend or blocked impeller, electrical motor fault)

remedy: Check pump impeller and remove blocking parts if necessary.

Resetting of the overload relay and electrical fault finding should only be done by qualified electricians.

Indicator „H5" „high water level" lights and buzzer sounds

cause: Sump water level is too high because of low pump flow rate or excessive inflow.

remedy: Check pump impeller and tube to remove blocking parts if necessary. Remove excessive inflow. The buzzer can be tuned out by pushing the reset switch S5 „Summer aus".

## Mounting

The panel is supplied ready for operation. The panel enclosure base must be screwed with 4 screws in vertical position onto the wall.

Install the control panel in a well-ventilated and dry area, safe from flooding. A high degree of humidity could damage the unit.

The panel should be mounted at a place higher than the backpressure level and should be easily accessible to facilitate checking in case of trouble.

The control unit must not be installed in an explosion hazard location or inside the sump !

## Electrical Connection



**WARNING**

Repairs and maintenance should only be done by qualified electricians.

Special rules apply to installation in explosive atmosphere.

Take out the mains fuses to isolate the mains supply before repairs or any other works and make sure it cannot be energized again.

## Connection of the pump:

The dashed drawn connections in the diagram must be wired at site by the customer.

To guarantee the perfect performance of the rotation sense control, the connection between the control unit and the motor has to be made in accordance to the factory specifications: U1 = black lead, V1 = brown lead, W1 = blue lead

The leads of the motor protective thermostats 30/32 unconditional have to be connected to the terminals 30/32 of the control unit, if not the protective motor switch has no function ! (only BD 25/46/610)

Do not connect lead 31 of the pump cable– cut off the lead end or isolate it. (230 V !)

The motor protector switches must be adjusted to the motor rating shown on the pump type plate + 10% (nominal current x 0,58).

Check the efficiency of the protective earthing.

Check correct rotation of the motors. Pumps operating in reverse rotation will show a reduction in capacity accompanied with excessive noise and vibrations.

## Connection to mains

Connection according to wiring diagramm !

Control unit	Core size	Dimension
BD 00 E	3 G 2,5	3 x 2,5 mm <sup>2</sup>
BD 00	5 G 1,5	5 x 1,5 mm <sup>2</sup>
BD 25	5 G 2,5	5 x 2,5 mm <sup>2</sup>
BD 46	5 G 2,5	5 x 2,5 mm <sup>2</sup>
BD 610	5 G 4,0	5 x 4,0 mm <sup>2</sup>

Install separate pre-fuses ! For fusing use only slow fuses or automatic circuit breakers with C, D, G or K characteristic.

Control unit	Fuse size
BD 00 E	20 A
BD 00	16 A
BD 25	16 A
BD 46	20 A
BD 610	25 A

If the sense of rotation of the mains supply is wrong, the „HO" pilot light will be shining. If so change two phases of the main supply at the control device.

# Operating Instructions

## Equipotential bonding

Connection to the earthing bar of the control unit with a lead of max. 10 mm<sup>2</sup> (see wiring diagramm)

## Connection of level control

To control the water level in the sump please use a JUNG air diaphragm circuit control unit, a JUNG static air level control unit or alternatively a JUNG float switch unit. (see catalogue)

The control unit is designed to switch the pump on and off in connection with latching contact operating relays or separate level switches. Electrical connection see wiring diagramm. The contacts must have a min. load of 0,5 A / 30 V DC.



Use only float switches with protective conductor (safety class 1).  
Connection see wiring diagramm.

### WARNING

Before starting check the efficiency of the protective arrangements of the pump and the monitoring equipment. Failure to heed this warning may cause a lethal accident.

At automatic mode there is a risk of a sudden restart !

Special rules apply to installation in explosive atmosphere

## A Connection of maintained-contact switches

basic load On/Off: at terminal 21 / 23  
peak load On/Off: at terminal 24 / 25  
high water alarm: at terminal 27 / 28

## B Connection of separated contact switches

basic load On: at terminal 21 / 22  
peak load On: at terminal 24 / 25  
Off: at terminal 22 / 23  
high water alarm: at terminal 27 / 28

## Adjustment of standard operation

Normal operation with peak load function  
Position of micro switches as follows:

switch	position	function
S6 *	= / □	permanent or flashing operation of K7 + H7
S7	„Aus“ (off)	lock-out off
S8	„Ein“ (on)	peak load on

The selector switches S1 and S2 have to be in position „Automatik“ (automatic).

\* Only necessary if a warning or flashing light is connected.

switch	position	function
S8	SL / GL	GL = basic load SL = peak load

With switch S8 the basic- or peak-load function in case of high water level can be selected.



### WARNING

Repairs and maintenance should only be done by qualified electricians.

Special rules apply to installation in explosive atmosphere.

Take out the mains fuses to isolate the mains supply before repairs or any other works and make sure it cannot be energized again.

Before starting check the efficiency of the protective arrangements of the pump and the monitoring equipment. Failure to heed this warning may cause a lethal accident.  
At automatic mode there is a risk of a sudden restart !

## Operation as a single unit with one pump

Push the selector switch of the connected pump into position „Automatik“. The switch of the missing pump must be in position „0“

## Operation without peak load

pumps do not work parallel

switch	position	function
S7	„Verriegel Ein“ (on)	„lock-out“ on
S8	„GL“ (basic load)	„basic load“ on

Disconnect or do not connect the float switch for peak load operation at terminal 24/25. The signal „on“ of the float switch leads to a transfer to the stand by pump.

## Buzzer shutdown

Unscrew clear view front cover and pull off the jumper plug „BRX“ on the PCB above H7.

To prevent losing the plug, push it on one of the pins of the 2-pole plug connector.

## Connection of additional buzzer

Unscrew the terminal cover and connect leads of the buzzer to the terminals „S+“ and „S-“. The normally open contact has a max. load of 30 mA / 12 V DC.  
The contact opens again after fault clearance.

## Connection of remote failure indicator

Unscrew the terminal cover and connect leads of the indicator to the terminals 40 / 41. The normally open contact has a max. load of 5A/250V AC.

The contact opens again after fault clearance.

## Buzzer signal pulsating / continuous

switch	position	function
S6 *	= / □	permanent or flashing operation of K6, K7 and H7

## Connecting external 230 V ~ warning- or flashlight

Unscrew clear view front cover and connect 230 V ~ warning light (max. 1 A) with terminal N and 43.

Connect terminal U ~ with terminal 42 by use of an isolated 0,75 mm<sup>2</sup> wire strap (see wiring diagramm).  
Circuit is protected by F3.

switch	position	function
S6	=	permanent operation of K6, K7 and H7
S6	□	flashing operation of K6, K7 and H7

# Operating Instructions

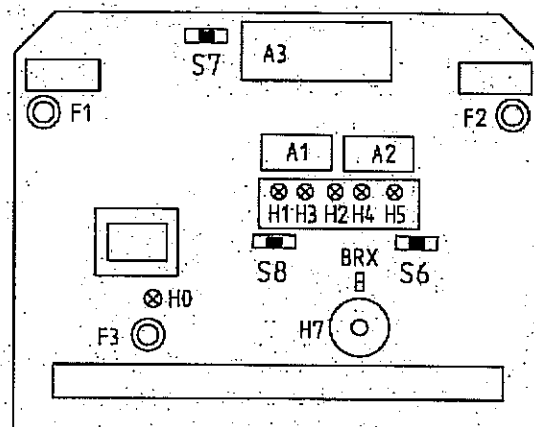
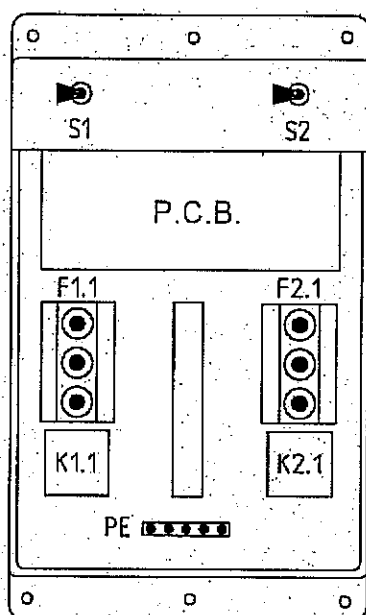
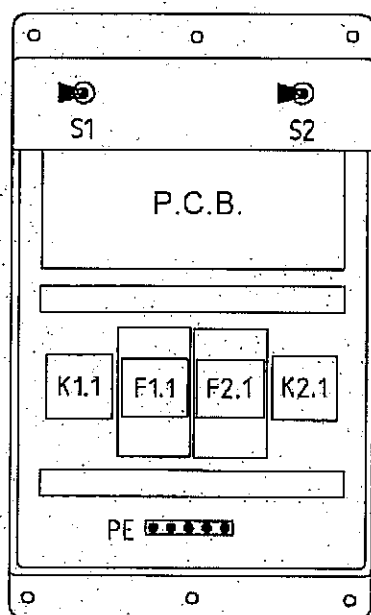
## Connecting the self recharging battery

Unscrew the front panel. Put accumulator onto the connection slot ( A3) of the printed control board, secure it with the cable clamp and connect it with the clip. The discharged accumulator will be charged operative within 24 hours.

(Completely charged in 100 hrs.) Check operability of the accumulator regularly! Accumulator working life: 5-10 years

Note date of accumulator insert - change it after 5 years providently.

Use only 9v accumulator (code no. 07562). By use of usual batteries there is a danger of explosion!



30206110

F 1.1 / F 2.1	motor fuse or protective motor switch of pump 1 / 2
K 1.1 / K 2.1	motor contactor
PE	equipotential bonding
S 1 / S 2	hand 0 automatic selector switch of pump 1 / 2

H0	rotary field indicator
H 1 / H2	operation indication pump 1 / 2
H 3 / H4	malfunction pump 1 / 2
H 5	high water level
H 7	buzzer
A 1 / A 2	hour meter (option)
A 3	9 V rechargeable battery (option)
S 6	K6, K7 + H7 continuous / flashing
S 7	lock out of relay K1 and K2 (On / Off)
S 8	emergency operation=basic load / peak load
BRX	junper plug for buzzer shutdown



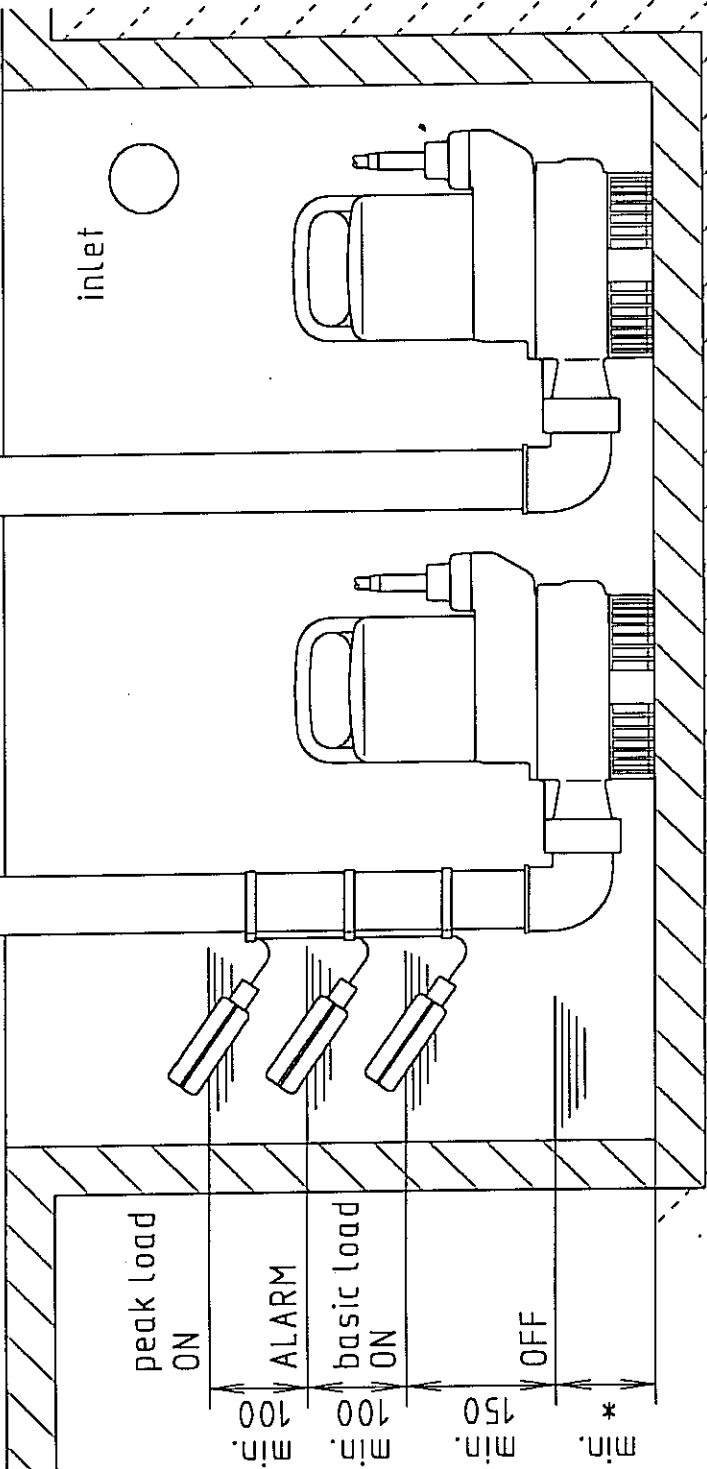
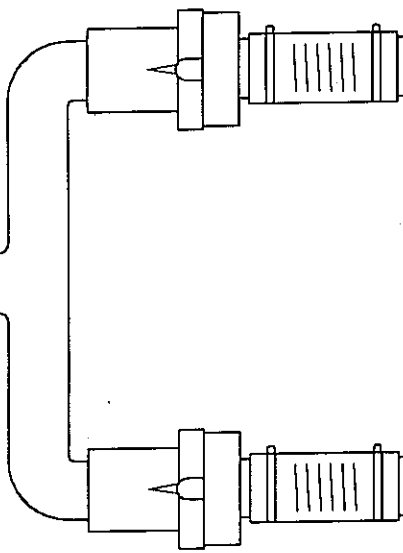
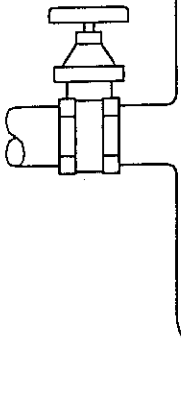
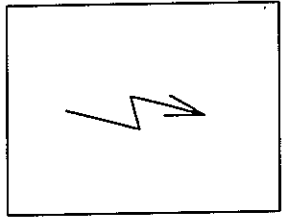
# Operating Instructions

## Spare Parts List

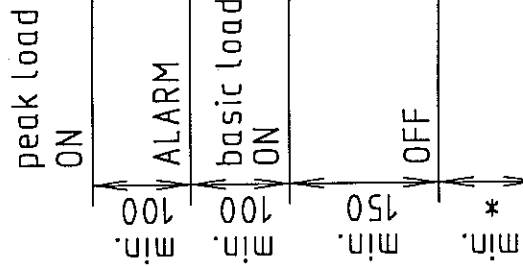
ID-No.	Description	Diagram Mark	Qty.
19177	motor contactor DIL EM 10	(K 1.1 / 2.1)	2
19241	earth terminal		1
20102	panel enclosure base		1
20104	clear view cover		1
22664	hand – 0 – automatic selector switch	(S 1 / 2)	2
24165	cover for operator panel		1
27649	printed control board for BD		1
Printed circuit board			
27841	mounting base BD 00 E completely		1
27842	mounting base BD 00 completely		1
27843	mounting base BD 25 completely		1
27844	mounting base BD 46 completely		1
27845	mounting base BD 610 completely		1
BD 00 E			
14582	fuse base, 1-pole 16 A, E 14	(F 1.1/2.1)	2
13839	fuse cap D 01, 16 A, E 14	"	2
18703	gauge piece D 01, 10 A	"	2
BD 00			
05721	fuse base, 3-pole 63 A, E 18	(F 1.1/2.1)	2
05723	fuse cap D 02, 63 A, E 18	"	6
18095	gauge piece D 02, 63 A	"	6
BD 25/46/610			
14249	protective motor switch 2,5 – 4,0 A, for BD 25 Ex	(F 1.1/2.1)	2
14713	protective motor switch 4,0 - 6,3 A, for BD 46 Ex	"	2
14714	protective motor switch 6,3 - 10 A, for BD 610 Ex	"	2
Accessories			
22665	hour meter, soldered (option)	(A1/2)	2
07562	rechargeable battery 9 V / 110 mAh	(A 3)	1

To order spare parts, indicate type of control device and part number of unit.

Einbau  
US151+251



inlet



Das Urheberrecht an dieser Zeichnung verbleibt uns. Diese darf ohne unsere ausdrückliche Genehmigung weder vervielfältigt, noch dritten Personen zugänglich gemacht werden.

\* min. top edge of pump casing  
↑ Notice of min. distance!

3 24044-03



# PCB - BD ...

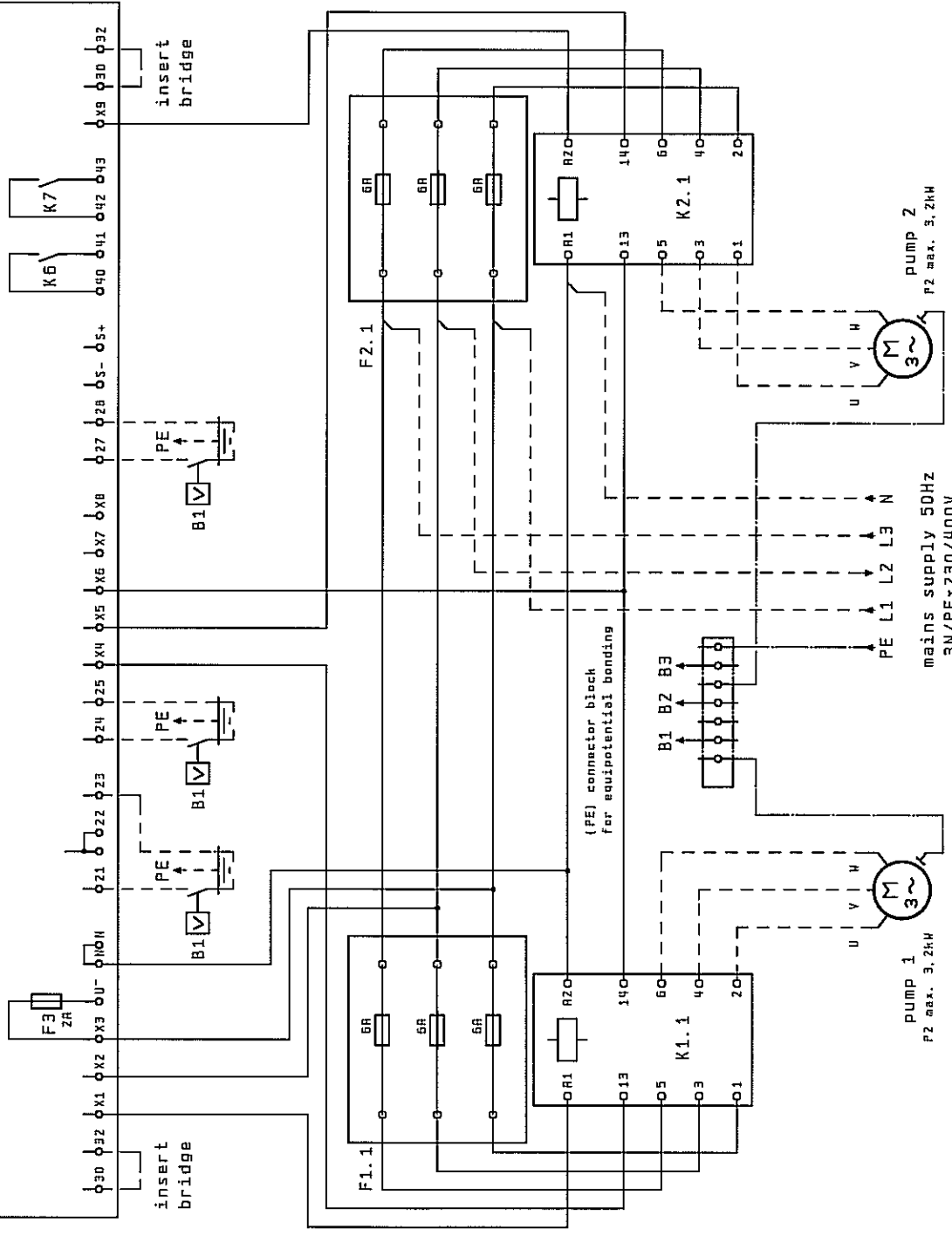
**Caution**  
 Connection and repairs should only be carried out by qualified electricians. Please pay attention to the advices of the operating instructions.

- F1.1 = motor fuses pump 1
- K1.1 = motor contactor pump 1
- F2.1 = motor fuses pump 2
- K2.1 = motor contactor pump 2
- PE = protective conductor

- level switches**
- B1 = basic load
  - B2 = peak load
  - B3 = alarm high water level

Use only float switches with protective conductor!

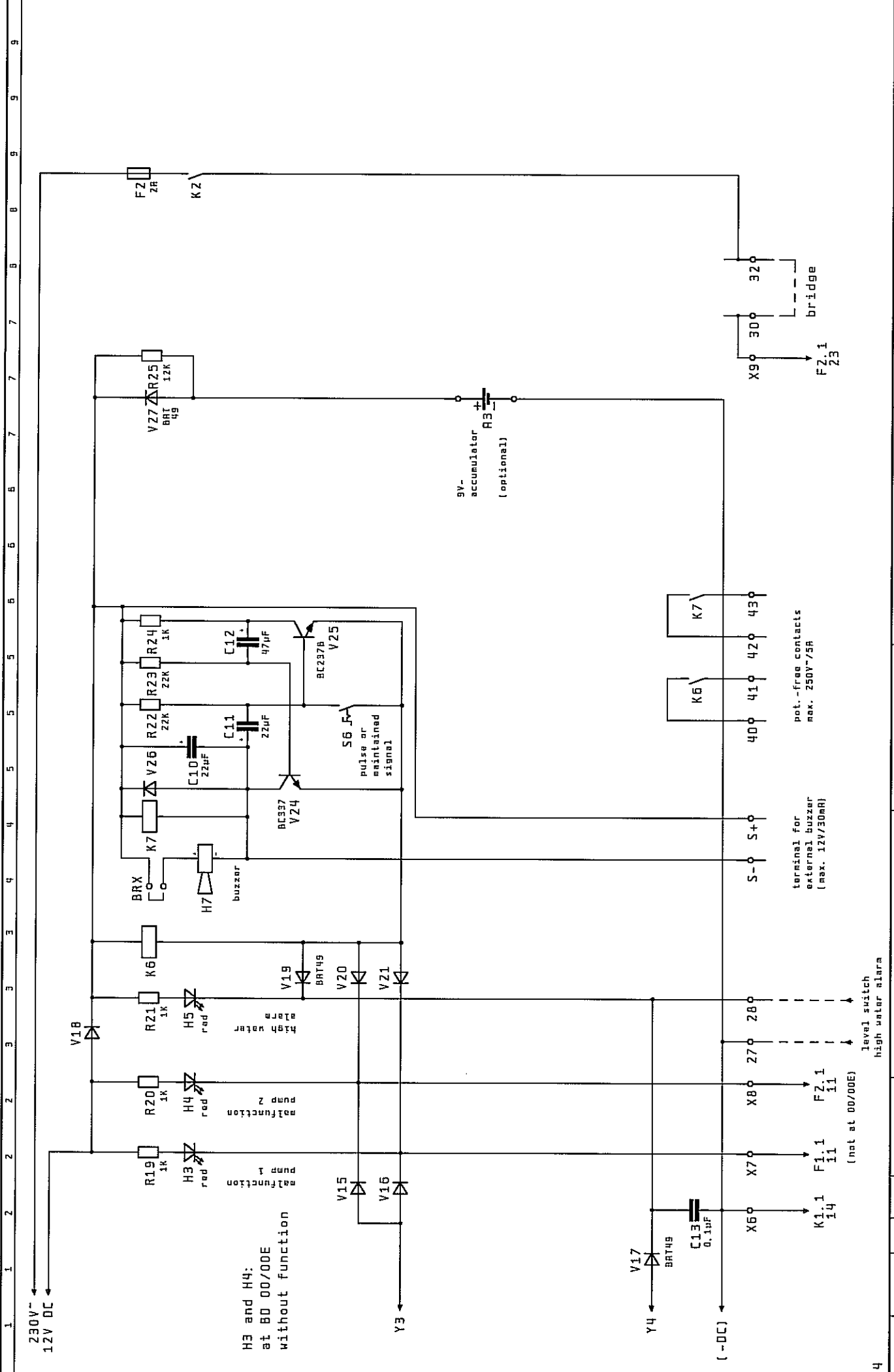
Dashed drawn connections have to be made by customer!



Datum	09. Aug. 2002
Bearb.	SCH
Bepr.	
Name	
Datum	
Urspr.	
Ers.f.	
BD ...	
JUNG PUMPEN 33803 STEINHAGEN	
Ers.d.	
BD 00	
27835GB	
Bil. 2	
5 Bl.	







Datum		09. Aug. 2002	
Bearb. Sch.			
Bepr.			
Name		BO . . .	
Erst. f.		Erst. d.	
Ur.spr.		Erst. d.	
Name		JUNG PUMPEN	
Nr.		33803 STEINHAGEN	
Name		PCB	
Nr.		278356B	
Bl.		83. 5	
Bl.		5 Bl.	

