

Please keep your operating instruction in a safe place!



Operating Instruction for Centrifugal Pump BC 25

Type

Serial No.



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1 MANUFACTURER AND CENTRIFUGAL PUMP IDENTIFICATION DATA

1.1 MANUFACTURER DATA

see cover

1.2 CENTRIFUGAL PUMP DATA

see cover

2 INFORMATION ON TECHNICAL ASSISTANCE

If the malfunction of the centrifugal pump is not among those included in the TROUBLESHOOTING table (chapter 14.1), contact the manufacturer.

3 INTRODUCTION

This publication contains all the necessary information an instructions for use and maintenance of your centrifugal pump.

Follow the advice given to obtain optimum performance and correct operation of the electropump. For any other information you may require, please contact the manufacturer.

IT IS STRICTLY FORBIDDEN TO REPRODUCE THE ILLUSTRATIONS AND THE TEXT, EVEN IN PART.

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5 GENERAL SAFETY WARNINGS

FAILURE TO OBSERVE THESE WARNINGS AND/OR TAMPERING WITH THE ELECTROPUMP RELIEVES THE MANUFACTURER OF ANY RESPONSIBILITY IN THE EVENT OF DAMAGE TO PERSONS OR THINGS AND/OR TO THE CENTRIFUGAL PUMP.

Before starting up the centrifugal pump it is indispensable for the user to know how to perform all the operations described in this manual and to apply them at all times during use or maintenance of the centrifugal pump.

5.1 PREVENTIVE MEASURES TO BE TAKEN BY THE USER

- a)  The user must absolutely comply with all the accidentprevention regulations in force in the country in which the pump is being used; the indications
- b)  given in chapters 7.1, 7.2 and 7.3 must be scrupulously followed.
- c) During centrifugal pump repairs or maintenance, remove the plug from the socket and/or switch off the switch (if provided), thus interrupting the supply of electric power to the electropump. This will prevent accidental starting which could cause damage to persons and/or things.

- d) All maintenance operations, installations or shifting of centrifugal pump with the electric system live may cause severe and even mortal accidents.
- e) During operation, avoid moving or shifting the centrifugal pump.
- f) Before using the centrifugal pump, always check that the cable and all the electric devices are efficient.
- g) Never start the centrifugal pump (by inserting the plug in the socket and/or switching on the switch) with bare feet or, worse with your feet in the water, or with wet hands.
- h) The user must not carry out under his own initiative any operations or jobs not contemplated in this manual.

5.2 GENERAL SAFETY WARNINGS



Centrifugal pumps are designed in such a way that all the moving parts are rendered inoffensive by the use of casings. The manufacturer declines all responsibility in the event of damage caused as a result of tempering with these devices.



Each lead or live part is electrically insulated to earth; there is also a further safety device in that the accessible conductive parts are connected to an earth lead so that the parts within reach cannot become dangerous in the event of failure of the principal insulation.

6 DESCRIPTION

6.1 GENERAL DESCRIPTION

Centrifugal pumps type BC 25 are all similar from the functional and constructive point of view; the only differences are the following:

- ein- single-impeller or twin-impeller
- power
- flow rate
- head
- electric power supply (single-phase or three-phase)
- weight
- dimensions

Centrifugal pumps type BC 25 are used for lifting and distributing water, even at high temperatures (chapter 7). These centrifugal pumps guarantee long life and constant performance if used according to the indications given in chapter 8 and chapter 14.

6.2 TECHNICAL AND CONSTRUCTIVE CHARACTERISTICS

Centrifugal pumps type BC 25 are designed and built according to the following design and/or construction standards:

RISKS OF A MECHANICAL NATURE

(Annex 1, machines Directive):

- EN 292-1 and EN 292-2

RISKS OF AN ELECTRICAL NATURE

(Annex 1, machines Directive):

- EN 292-1 and EN 292-2
- EN 60 335-2-41

RISKS OF VARIOUS NATURE (Annex 1, Machines Directive):

- 89/392/EEG - Annex 1

7 TECHNICAL DATA CARD

7.1 PUMP TECHNICAL DATA

Max fluid temperature	[°C]	110
Max. operating pressure	[bar]	8
impeller type		closed
shaft sealing type		mechanical seal
bearing type		shielded ball bearing
Suction diameter	[inches]	G1½ thread
Delivery diameter	[inches]	G1 thread
Pump casing material		CrNi-steel, 1.4301
Impeller material		CrNi-steel, 1.4301
Shaft material		CrNi-steel, 1.4305
Motor support material		cast aluminium

7.2 MOTOR TECHNICAL DATA

Power	[kW]	siehe Typenschild
Type		rotary current motor
Poles		2
Insulation class		F
Degree of protection		IP55
Type of duty		continuous
Phaset - frequency - voltage		see plate of centrifugal pump
Starting condensator (always in-circuit)		single phase only
Overload protection		thermal with automatic reset (single phase only)
Motor casing material		aluminium

7.3 OPERATING DATA

See plate on the electropump.

THE MANUFACTURER RESERVES THE RIGHT TO ALTER THE TECHNICAL DATA IN ORDER TO MAKE IMPROVEMENTS AND BRING THEM UP-TO-DATE.

8 CONTEMPLATED AND NOT CONTEMPLATED USE

CAUTION

Failure to respect the prescribed limits constitutes a situation of use that is

technically improper and endangers the safety of persons, RELIEVING THE MANUFACTURERS OF ANY RESPONSIBILITY IN THE EVENT OF ACCIDENTS TO THE ELECTROPUMP, AND ALSO RENDERING THE GUARANTEE INVALID.

8.1 CONTEMPLATED CONDITIONS OF USE

Centrifugal Pumps type BC 25 may be used for pumping clean water and other fluids compatible with stainless steel; in particular:

- for domestic water supply stations with permanent operation or discontinuous operation
- Booster systems for water supply plants
- emptying/filling of basins and tanks
- irrigation of gardens
- cooling and cleaning installations

Use the centrifugal pump in keeping with its technical characteristics (chapter 7).

8.2 NOT CONTEMPLATED CONDITIONS OF USE

Centrifugal pumps type BC 25 cannot be used for handling dirty water or water with suspended bodies, water containing acids and corrosive liquids in general, sea-water, inflammable and generally dangerous liquids, water with temperatures higher than those specified in 7.1

Centrifugal pumps type BC 25 must never be allowed to run without water.

9 HANDLING AND TRANSPORT

9.1 UNPACKING

Check that there are no breakages or severe dents in the packing; if there are, point this out immediately to the person who delivers the material. After removing the centrifugal pump from the package, check that it has not suffered any damage during transport; if damage is found, inform the manufacturer within 8 days of delivery. Then check that the characteristics stated on the plate of the electropump are the same as you requested in your order.

9.2 HANDLING AND DISINSTALLING

CAUTION FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE THE CENTRIFUGALPUMP TO FALL, SUFFERING SEVERE DAMAGE. ABSOLUTELY DO NOT USE THE POWER CABLE TO LIFT OR DRAG THE ELECTROPUMP.



To handle or disinstall the electropump you must:

- a) Remove the plug from the power socket and/or switch off the switch, if provided.
- b) In case that the outlet pipe and/or the suction pipe is too long or otherwise hindering these have to be removed from the centrifugal pump.
- c) Unscrew the screws that anchor the electropump to the surface on which it stands.
- d) Roll up and hold the electric power cable in your hand.
- e) Lift the centrifugal pump in both hands or with a rope.

9.3 TRANSPORT

Transport presents no problems.

10 INSTALLATION

CAUTION TO LIFT OR LOWER THE CENTRIFUGAL PUMP, USE THE HANDLE OR HOLD IT WITH BOTH HANDS; NEVER USE THE ELECTRIC POWER CABLE.

10.1 GENERAL PRECAUTIONS FOR INSTALLATION

- a) Use plastic pipes with a certain degree of rigidity or metal pipes, to prevent them from collapsing under the vacuum that is created during suction.
- b) If using flexible pipes or hoses for suction or delivery, avoid bending them to prevent choking or blockages due to treading on them or twisting them.
- c) Seal any connections in the pipes; air infiltrations in the suction pipe have a negative influence on pump operation.
- d) The suction pipe must have a foot valve and filter to prevent the entry of foreign bodies.
- e) The end of the suction pipe must be immersed at a depth of at least twice the diameter of the pipe; it must also be at a distance of at least one and a half times the pipe diameter from the bottom of the tank.
- f) On the delivery pipe, at the output of the electropump, it is advisable to fit a no-return valve (with quick closing, to reduce water hammer) and a gate valve, in this order.
- g) anchor the pipes to the tank, or to fixed parts, so that their weight is not borne by the centrifugal pump.
- h) Avoid using too many curves and valves in the system.
- i) For suction depths greater than 4 m, use a pipe with a larger diameter to obtain better performance.

10.2 INSTALLATION

- a) The centrifugal pump must be placed on a level surface, as near as possible to a source of water
- b) When positioning the electropump, observe the minimum required distances (fig. 2) from walls, from the sides of the drain or other location, so as to allow functioning, use and maintenance operations in safe conditions (as per EN 292-2 p. 5.5.1b).
- c) The exact position of the pipe lines and the centrifugal pump has to be checked and afterwards the centrifugal pump has to be fixed at the foot holes at the floor or the fundament.

11 ASSEMBLY AND DISASSEMBLY

The centrifugal pump has no separate accessories, so no assembly is required for installation.

If the centrifugal pump has to be disassembled (due to breakage or any other reason), the user must apply to the dealer or to the assistance service.

FAILURE TO COMPLY WITH THIS RULE RENDERS THE GUARANTEE INVALID.

12 PREPARATION FOR USE

On three-phase centrifugal pumps type BC 25, check the direction of rotation of the motor. The impeller must turn in a clockwise direction when viewing the centrifugal pump from above (see the arrow on the pump).

As it is not possible to check the direction of rotation of the impeller visually, proceed as follows; before anchoring the centrifugal pump in the system and without the pipes, connect the power cables to the electric panel and switch on the main switch for a moment; the direction of rotation of the fan that cools the motor of the centrifugal pump is the same as the direction of rotation of the impeller. If it is turning in the wrong direction (that is, anti-clockwise), invert two of the three leads on the motor base.

12.1 ELECTRIC CONNECTION

ABSOLUTELY AVOID GETTING THE BASE WET OR DAMP WHEN CONNECTION THE CENTRIFUGAL PUMP.

THE ELECTRIC CONNECTION MUST BE CARRIED OUT BY A SKILLED TECHNICIAN.

CAUTION

- For connection to the power mains, use a cable complying with IEC standards with a suitable section (bearing in mind the installed power, as in chapter 7) and a suitable length; remember also the mains voltage and polarity (chapter 7).
- The power cable must be connected to the terminals as illustrated in the wiring diagram.
- The mains must have an efficient earth system complying with the electrical standards in force in the user's country; the installer is responsible for checking this.

12.2 SINGLE-PHASE VERSION (fig. 2)

All single-phase centrifugal pumps have the capacitor housed inside the terminal cover box, or fixed on the outside by means of a clamp.

Motors up to 0,9 kW have thermal protection in the winding, while 1,1 and 1,5 kW motors have a motor-protector housed inside the terminal cover box (fig. 3).

Following sequence must be considered:

- a) Remove both fastening screws of the terminal box cover and remove the cover. Carry the end of the current cable through the hole of the terminal box casing.
- b) Connect the yellow/green wire of the current cable at the earthing.
- c) Connect the other wires of the current cable according to the diagram inside the motor terminal box at the motor terminal board.
- d) Put on the terminal box cover and fix the fastening screws.

12.3 THREE-PHASE VERSION (fig. 4)

The three-phase version has no internal motor protection device. The operation without motor protection is not permitted. The motor protection device must be provided by the operator

Following sequence must be considered:

- a) Remove both fastening screws of the terminal box cover and remove the cover. Carry the end of the current cable through the hole of the terminal box casing.
- b) Connect the yellow/green wire of the current cable at the earthing.
- c) Connect the other wires of the current cable according to the diagram inside the motor terminal box at the motor terminal board.
- d) Afterwards fasten the cable clamp inside the terminal box casing so that the current cable is being cramped.
- e) Put on the terminal box cover and fix the fastening screws.

12.4 FILLING THE PUMP

CAUTION

THIS OPERATION MUST BE PERFORMED WITH THE ELECTRIC BASE OF THE MOTOR PERFECTLY CLOSED.

- a) Unscrewed the filling plug at the upper front side of the pump.
- b) Fill up the pump with liquid by means of a funnel up to overflow.
- c) Fasten the filling plug screw carefully in order to avoid penetration of air or liquid.

12.5 ADJUSTING AND REGISTERING

Check that there are no leaks in the system. Ensure that the electropump does not vibrate abnormally during operation, is not too noisy, and does not have large variations in pressure and electric absorption. If any of these are found, see chapter 14.

13 USE AND START-UP

NEVER RUN THE CENTRIFUGAL PUMP WITHOUT WATER; LACK OF WATER MAY CAUSE SEVERE DAMAGE TO THE INTERNAL COMPONENTS.

13.1 GENERAL WARNINGS

- a) Prolonged operation of the centrifugal pump with the gate valve on the delivery pipe closed may cause damage.
- b) Avoid frequent starting and stopping of the centrifugal pump.
- c) If there is an interruption in the power supply, it is advisable to switch off the pump.

13.2 STARTING

- a) Ensure that the foot valve is not blocked.
- b) Switch on and off two times to check operating conditions.
- c) Begin continuous operation and gradually open the gate valve on delivery.
- d) Check that noise, vibrations, pressure and electric voltage are at normal level (see chapter 14).

13.3 SWITCH OFF

- a) First of all, close the gate valve on delivery (this should always be done if the system is without no-return valves, especially in the presence of high heads), to prevent overpressures in the pipes and pump due to water hammer.
- b) Switch off.

14 MAINTENANCE AND REPAIRS

CAUTION BEFORE CARRYING OUT ANY MAINTENANCE OPERATIONS, DISCONNECT THE PLUG AND/OR SWITCH OFF. THE CENTRIFUGAL PUMP MUST BE DISMANTLED ONLY BY SKILLED TECHNICIANS. FAILURE TO OBSERVE THIS RULE RENDERS THE GUARANTEE INVALID. THE SAME APPLIES TO REPAIR JOBS AND/OR REPLACEMENTS.



When the centrifugal pump is to remain inactive for a long period, it is advisable to empty it completely, removing the drainage and filling caps, wash it out accurately with clean water, then drain it again, ensuring that no water is left inside it.

This operation must always be performed when there is a risk of frost, to prevent breakages of the pump body.

14.1 TROUBLESHOOTING

TYPE OF FAULT

The pump does not work (the motor does not turn over)

CAUSE	REMEDY
Plug not inserted	Check power connection to the line
Motorprotection activated	Check the cause and reset the device
Thermal protection has tripped (single-phase)	This resets automatically (single-phase only)
Incorrect electric connection	Check terminal board and electric panel
Faulty motor or capacitor	Contact the manufacturer
Damaged bearing (noisy)	Contact the manufacturer

TYPE OF FAULT

The pump does not work (the motor turns over)

CAUSE	REMEDY
Clogged filter at end of suction	Dismantle and clean the filter
Foot valve blocked	Clean the valve and check its operation
No water in the pump	Fill the pump (chapter 12)
Pressure too low	Choke the delivery gate valve

TYPE OF FAULT

The pump works at a low flow rate

CAUSE	REMEDY
Foot valve partly clogged	Clean the valve and check its operation
Water level too low	Switch off the pump or immerse the foot valve
Wrong direction or rotation	Check the direction of rotation (three-phase only, chapter 12)
Wrong supply voltage	Feed the pump with the voltage indicated on the data plate
Leaking pipes	Check the connections

TYPE OF FAULT

The pump stops after brief periods of operation (tripping of the thermal protection)

CAUSE	REMEDY
Heating of the liquid because of too low rate of flow	Check point of operating and adjust point of operation if necessary
Overload because of too high rate of flow	Check point of operating and adjust point of operation if necessary
Internal defect	Contact the manufacturer.

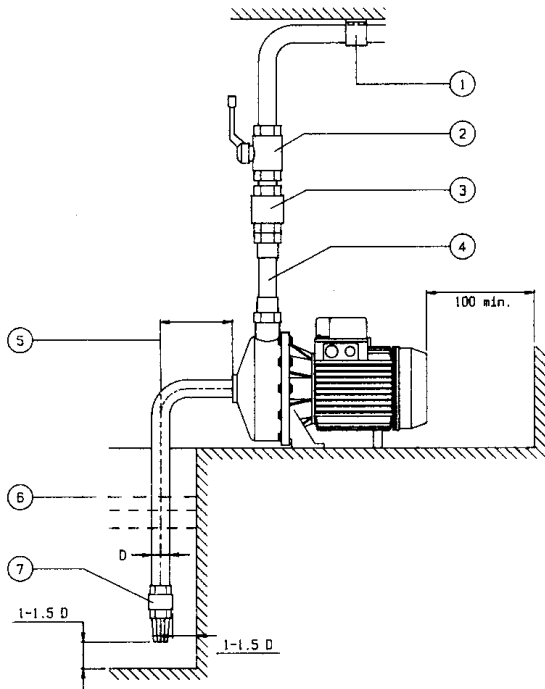
TYPE OF FAULT

The pump vibrates or makes too much noise while operating

CAUSE	REMEDY
Flow rate too high	Reduce flow rate
Cavitation	Contact the manufacturer
Irregular piping	Fix the pipes better
Noisy bearing	Contact the manufacturer
Foreign bodies rubbing against the motor fan	Remove the foreign bodies

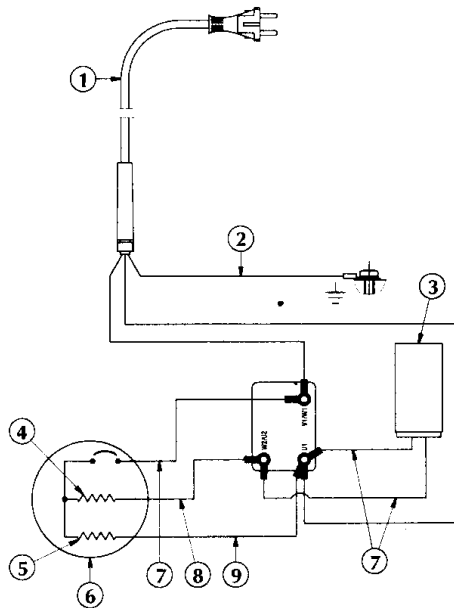
15 TECHNICAL DOCUMENTS SUPPLIED

15.1 DIAGRAM FOR INSTALLATION WITH MINIMUM FUNCTIONAL SPACES (fig. 1)



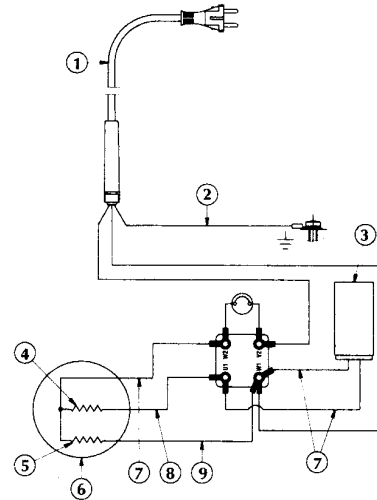
- | | |
|---------------------|--------------------------------------------------|
| 1) pipe support | 5) short pipe to prevent formation of air pocket |
| 2) gate valve | 6) min. water level |
| 3) non-return valve | 7) foot valve |
| 4) flexible couplin | |

15.2 WIRING DIAGRAM FOR SINGLE-PHASE CENTRIFUGAL PUMP WITH BUILT IN THERMAL OVERLOAD PROTECTION (fig. 2)



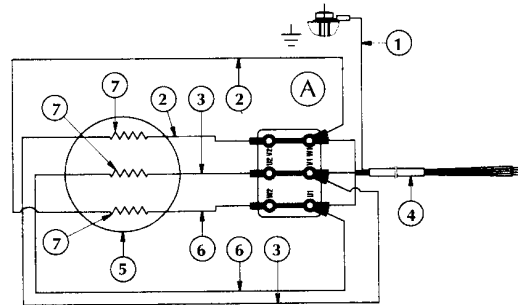
- | | | |
|-----------------|------------|----------|
| 1) supply cable | 4) starter | 7) black |
| 2) yellow/green | 5) run | 8) red |
| 3) capacitor | 6) motor | 9) green |

15.3 BASIC DIAGRAM FOR SINGLE-PHASE CENTRIFUGAL PUMP WITH MOTOR-PROTECTOR IN THE BOX (fig. 3)

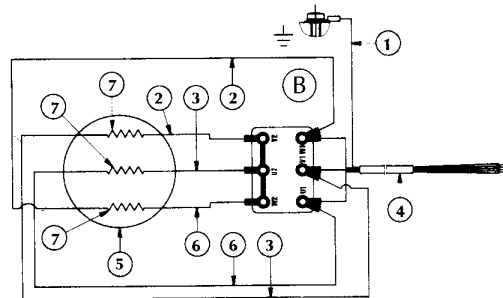


- | | | |
|-----------------|------------|---------------|
| 1) supply cable | 4) starter | 7) white |
| 2) yellow/green | 5) run | 8) red |
| 3) capacitor | 6) motor | 9) green/blue |

15.4 WIRING DIAGRAM FOR THREE-PHASE CENTRIFUGAL PUMP (fig. 4)



DELTA CONNECTION



STAR CONNECTION

- | | | |
|-------------------|-----------------|------------|
| 1) yellow/green | 4) supply cable | 7) winding |
| 2) green/darkblue | 5) motor | |
| 3) red | 6) black | |

16 INFORMATION ON AIR-BORNE NOISE

The weighted sound pressure level A produced by the centrifugal pump does not exceed the value of 70 dB(A).

EG Declaration of Conformity
In accordance with EC Machinery Directive 2006/42 EC, Appendix II, 1 A

We, EDUR Pumpenfabrik Eduard Redlien GmbH & Co. KG
Hamburger Chaussee 148-152
D-24113 Kiel

hereby declare that the compact design rotary pump – see cover sheet for information regarding pump model,

conforms to all of the relevant regulations of EC Machinery Directive 2006/42/EC. The protection objectives of the low voltage directive were observed in accordance with Appendix I, No. 1.5.1 of the machinery directive. The following harmonised standards applied:

DIN EN 12100-1	DIN EN 809
DIN EN 12100-2	DIN EN 14121

Person responsible for the documentation: A. Weiss

Declaration of Incorporation
In accordance with EC Machinery Directive 2006/42/EC, Appendix II, 1 B

We, EDUR Pumpenfabrik Eduard Redlien GmbH & Co. KG
Hamburger Chaussee 148-152
D-24113 Kiel

hereby declare that the incomplete compact design rotary pump – see cover sheet for information regarding pump model – supplied without motor conforms to the following essential requirements of EC Machinery Directive 2006/42/EC, Appendix I: 1.1.1.; 1.1.2.; 1.1.3.; 1.1.5.

The following harmonised standards applied:

DIN EN 12100-1	DIN EN 809
DIN EN 12100-2	DIN EN 14121

This incomplete machine may only be put into operation after it has been determined that the machine into which this incomplete machine is to be installed, conforms to the regulations of the machinery directive.

Person responsible for the documentation: A. Weiss