

## SA-CSIR, SA-CSCR

Control box

Installation and operating instructions



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**GRUNDFOS** 

# English (GB) Installation and operating instructions

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## Original installation and operating instructions

These installation and operating instructions describe the SA-CSIR, SA-CSCR control box.

Sections 1-3 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 4-8 give important information about the product, as well as information on service, fault finding and disposal of the product.

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Prior to installation, read this document. Installation and operation must comply with local regulations and accepted codes of good practice.

## 1. General information

### 1.1 Target group



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

### 1.2 Symbols used in this document

#### 1.2.1 Warnings against hazards involving risk of death or personal injury



##### **DANGER**

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



##### **WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



##### **CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The text accompanying the three hazard symbols DANGER, WARNING and CAUTION is structured in the following way:

##### **SIGNAL WORD**



##### **Description of hazard**

Consequence of ignoring the warning.

- Action to avoid the hazard.

### 1.2.2 Other important notes



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

## 2. Receiving the product

Inspect the product for visible damage. In case you find damage to the product, do not install it, but contact Grundfos service or sales for advice.

## 3. Installing the product

### **DANGER**

#### **Electric shock**



Death or serious personal injury

- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.



The SA-CSIR, SA-CSCR Grundfos submersible pump control box is intended for use with Grundfos single-phase, 3-wire submersible motors as a starting device only.

## 3.1 Location

The product can be installed indoors and outdoors under a cover.

## 3.2 Mechanical installation

### 3.2.1 Mounting

Mount the control box in vertical position with the top side up.

If you mount it in any other position, the starting relay may not function properly, and the overload relay may trip.

The starting relay is mounted inside the control box and if it is not possible to mount the control box in vertical position, make sure to position the starting relay correctly according to the arrow on the component.

Fasten the control box securely to the mounting surface through the mounting holes provided.

## 3.3 Electrical connection

### 3.3.1 Wiring

Connect the control box to the mains supply and the motor as shown in the wiring diagrams below. See also section [3.3.3 Earthing](#) on page 9.

Use 2.5 mm<sup>2</sup> (AWG 14, 70 °C) copper conductors only and tighten all connections to 2 Nm.



Do not operate the pump without the control box. Otherwise, the motor will burn out.

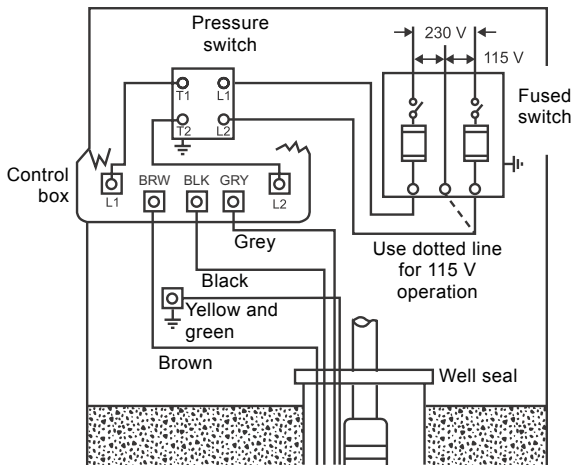
The control box is for submersible pumps only.

Make sure that the submersible pump, the submersible motor and control box are designed for the same voltage.

Connect a properly sized motor and electrical wires as per fig. 1 on page 6.

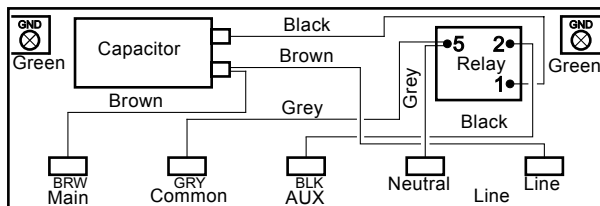
Before making the final connection of the submersible drop cable to the control box, check the insulation resistance.

## 3.3.2 Wiring diagrams



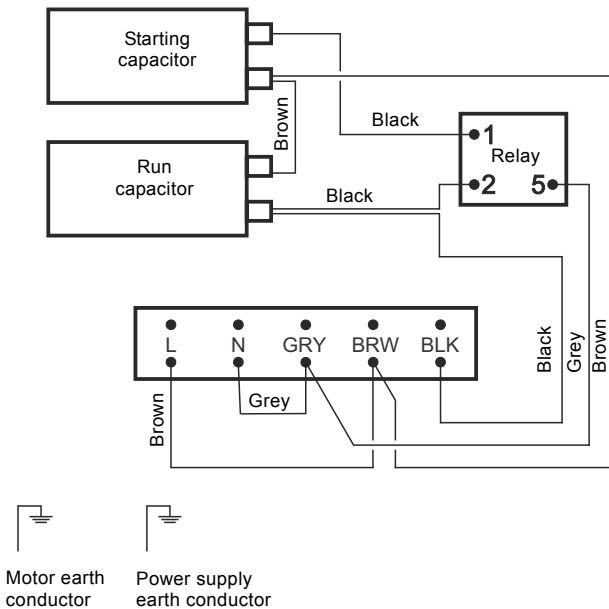
TM06 5330 4615

**Fig. 1** Overview of single-phase connection for Grundfos 3-wire control boxes



TM06 5331 4615

**Fig. 2** Connection of 0.37 - 0.75 kW SA-CSIR models



**Fig. 3** Connection of 1.1 kW SA-CSCR models

TM06 5332 4615





### 3.3.3 Earthing

#### DANGER

##### Electric shock

Death or serious personal injury



- Switch off the power supply on the mains switch, not in the control box, before working on or around control box, pipes, cables, pump or motor.
- Install an earth conductor of at least the same size as the submersible drop cable. Run the earth conductor as short a distance as possible and fasten it securely to a true earth connection, such as the submersible motor.
- Wear rubber gloves and boots and take care to connect metal control boxes and motors to the power supply earth connection or a steel pipe or casing extending into the well.

### 3.3.4 General recommendations

To prevent serious or fatal electric shock, proceed as follows:

- Connect the control box, all metal pipes, and the motor frame to the power supply earth terminal using a copper wire.
- Comply with local electrical regulations. The earth conductor must at least be the same size as the power supply wires.
- Permanently insulate all unused wire ends in the control box and other equipment.

### 3.3.5 Protection



When installing the motor and the control box, include circuit and component protection.



Only use the pump for pumping fresh groundwater. Do not use the pump in swimming pools or marine areas.

### Overload protection

Tripping of the overload relay may be caused by short-circuited capacitor, voltage supply problems, overloaded or locked pump or that the starting relay needs to be replaced.

Reset the overload relay and make analysis to establish the tripping cause. Remedy the cause of tripping and reset overload relay again.



Do not remove or leave out the overload protection as this may lead to motor burnout.

## 4. Product introduction

SA CSIR, capacitor start induction run, and SA CSCR, capacitor start capacitor run, are Grundfos control boxes for controlling Grundfos single-phase, 3-wire submersible motors.

### 4.1 Approvals and marks

The control boxes have the following approvals, and the marks of approval appear from the label on the front cover.



## 5. Servicing the product

Service must be performed by a qualified service engineer who is familiar with local regulations.

## 6. Fault finding the product

### DANGER



#### Electric shock

Death or serious personal injury

- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

Fault	Cause	Remedy
The product is not running.	The overload relay has tripped.	<p>Follow steps 1 to 5 below and restart the pump. Contact Grundfos service if the problem persists.</p> <ol style="list-style-type: none"> <li>1. Overload relay, if equipped, 1.5 kW and up:               <ul style="list-style-type: none"> <li>Push the reset button to make sure the contacts are closed.</li> <li>– Ohmmeter setting: (Rx1).</li> <li>– Terminal connections: ohmmeter leads to overloaded terminals.</li> <li>– Ohmmeter reading: must not be over 0.5 ohms.</li> </ul> </li> <li>2. Capacitor:               <ul style="list-style-type: none"> <li>Disconnect one lead from each capacitor prior to checking.</li> <li>– Ohmmeter setting: (Rx1000).</li> <li>– Terminal connections: individual capacitor terminals.</li> <li>– Ohmmeter reading: pointer must swing toward zero then drift back toward infinity.</li> </ul> </li> </ol>

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Fault	Cause	Remedy
		<p>3. Relay coil: Disconnect the lead from terminal 5.</p> <ul style="list-style-type: none"><li>– Ohmmeter setting: (Rx1000).</li><li>– Terminal connections: "5" and "2" on relay.</li><li>– Ohmmeter reading: 8,560-11,235 ohms, measured at 25 °C.</li></ul>
		<p>4. Relay contact: Disconnect the lead from terminal 1.</p> <ul style="list-style-type: none"><li>– Ohmmeter setting: (Rx1).</li><li>– Terminal connections: "1" and "2" on relay.</li><li>– Ohmmeter reading: must be zero.</li></ul>
		<p>5. Magnetic contactor only, if equipped, and DLX box only: Disconnect 1 coil lead.</p> <ul style="list-style-type: none"><li>– Ohmmeter setting: (Rx1000).</li><li>– Check coil resistance: 1000-1400 ohm.</li><li>– Remove contact cover and inspect contacts.</li></ul>

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## 7. Technical data

### SA-CSIR, 0.37 - 0.75 kW

Motor [kW]	Voltage [V]	Width [mm]	Depth [mm]	Height [mm]
0.37	200-240	124	70	213
0.55	200-240	124	70	213
0.75	200-240	124	70	213

### SA-CSCR, 1.1 - 2.2 kW

Motor [kW]	Voltage [V]	Width [mm]	Depth [mm]	Height [mm]
1.1	200-240	210	149	250
1.5	200-240	210	149	250
2.2	200-240	210	149	250

## 8. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

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Subject to alterations.

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