

# CU 100

## Installation and operating instructions

(GB) (D) (F) (I) (E) (P) (GR) (NL) (S) (FIN) (DK)



## **(GB) Declaration of Conformity**

We, Grundfos, declare under our sole responsibility that the product CU 100, to which this declaration relates, is in conformity with these Council directives on the approximation of the laws of the EC member states:

- Machinery Directive (2006/42/EC).  
Standard used: EN 60204-1: 2006
- Low Voltage Directive(2006/95/EC).  
Standard used: EN 60439-1: 2004.
- EMC Directive (2004/108/EC).  
Standard used: EN 61000-6-2: 2005 and EN 61000-6-3: 2007.

## **(F) Déclaration de Conformité**

Nous, Grundfos, déclarons sous notre seule responsabilité, que le produit CU 100, auquel se réfère cette déclaration, est conforme aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous :

- Directive Machines (2006/42/CE).  
Norme utilisée : EN 60204-1: 2006
- Directive Basse Tension (2006/95/CE).  
Norme utilisée : EN 60439-1: 2004.
- Directive Compatibilité Electromagnétique CEM (2004/108/CE).  
Normes utilisées : EN 61000-6-2: 2005 et EN 61000-6-3: 2007.

## **(E) Declaración de Conformidad**

Nosotros, Grundfos, declaramos bajo nuestra propia responsabilidad que el producto CU 100, al cual se refiere esta declaración, está conforme con las Directivas del Consejo en la aproximación de las leyes de los Estados Miembros del EM:

- Directiva de Maquinaria (2006/42/CE).  
Norma aplicada: EN 60204-1: 2006
- Directiva de Baja Tensión(2006/95/CE).  
Norma aplicada: EN 60439-1: 2004.
- Directiva EMC (2004/108/CE).  
Normas aplicadas: EN 61000-6-2: 2005 y EN 61000-6-3: 2007.

## **(GR) Δήλωση Συμμόρφωσης**

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα CU 100, στα οποία αναφέρεται η παρούσα δήλωση, συμμορφώνονται με τις εξής Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ:

- Οδηγία για μηχανήματα (2006/42/ΕC).  
Πρότυπο που χρησιμοποιήθηκε: EN 60204-1: 2006
- Οδηγία χαμηλής τάσης(2006/95/ΕC).  
Πρότυπο που χρησιμοποιήθηκε: EN 60439-1: 2004.
- Οδηγία Ηλεκτρομαγνητικής Συμβατότητας (EMC) (2004/108/ΕC).  
Πρότυπα που χρησιμοποιήθηκαν: EN 61000-6-2: 2005 και EN 61000-6-3: 2007.

## **(S) Försäkran om överensstämmelse**

Vi, Grundfos, försäkrar under ansvar att produkten CU 100, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

- Maskindirektiv (2006/42/EG).  
Tillämpad standard: EN 60204-1: 2006
- Lågspänningsdirektiv(2006/95/EG).  
Tillämpad standard: EN 60439-1: 2004.
- EMC-direktiv (2004/108/EG).  
Tillämpade standarder: EN 61000-6-2: 2005 och EN 61000-6-3: 2007.

## **(DK) Overensstemmelseserklæring**

Vi, Grundfos, erklærer under ansvar at produktet CU 100 som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

- Maskindirektiv (2006/42/EC).  
Anvendt standard: EN 60204-1: 2006
- Lavspændingsdirektiv(2006/95/EC).  
Anvendt standard: EN 60439-1: 2004.
- EMC-direktiv (2004/108/EC).  
Anvendte standarder: EN 61000-6-2: 2005 og EN 61000-6-3: 2007.

## **(D) Konformitätserklärung**

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt CU 100, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmt:

- Maschinenrichtlinie(2006/42/EG).  
Norm, die verwendet wurde: EN 60204-1: 2006
- Niederspannungsrichtlinie (2006/95/EG).  
Norm, die verwendet wurde: EN 60439-1: 2004.
- EMV-Richtlinie (2004/108/EG).  
Normen, die verwendet wurden: EN 61000-6-2: 2005 und EN 61000-6-3: 2007.

## **(I) Dichiarazione di Conformità**

Grundfos dichiara sotto la sua esclusiva responsabilità che il prodotto CU 100, al quale si riferisce questa dichiarazione, è conforme alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

- Direttiva Macchine (2006/42/CE).  
Norma applicata: EN 60204-1: 2006
- Direttiva Basse Tensione (2006/95/CE).  
Norma applicata: EN 60439-1: 2004.
- Direttiva EMC (2004/108/CE).  
Norme applicate: EN 61000-6-2: 2005 e EN 61000-6-3: 2007.

## **(P) Declaração de Conformidade**

A Grundfos declara sob sua única responsabilidade que o produto CU 100, ao qual diz respeito esta declaração, está em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

- Directiva Máquinas (2006/42/CE).  
Normas utilizadas: EN 60204-1: 2006
- Directiva Baixa Tensão(2006/95/CE).  
Normas utilizadas: EN 60439-1: 2004.
- Directiva EMC (compatibilidade electromagnética) (2004/108/CE).  
Normas utilizadas: EN 61000-6-2: 2005 e EN 61000-6-3: 2007.

## **(NL) Overeenkomstigheidsverklaring**

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat het product CU 100 waarop deze verklaring betrekking heeft, in overeenstemming is met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG lidstaten betreffende:

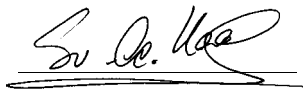
- Machine Richtlijn (2006/42/EC).  
Gebruikte norm: EN 60204-1: 2006
- Laagspannings Richtlijn(2006/95/EC).  
Gebruikte norm: EN 60439-1: 2004.
- EMC Richtlijn (2004/108/EC).  
Gebruikte normen: EN 61000-6-2: 2005 en EN 61000-6-3: 2007.

## **(FIN) Vaatimustenmukaisuusvakuutus**

Me, Grundfos, vakuutamme omalla vastuullamme, että tuote CU 100, jota tämä vakuutus koskee, on EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäviin Euroopan neuvoston direktiivien vaatimusten mukainen seuraavasti:

- Konedirektiivi (2006/42/EY).  
Sovellettu standardi: EN 60204-1: 2006
- Pienjännitedirektiivi(2006/95/EY).  
Sovellettu standardi: EN 60439-1: 2004.
- EMC-direktiivi (2004/108/EY).  
Sovellettavat standardit: EN 61000-6-2: 2005 ja EN 61000-6-3: 2007.

Bjerringbro, 15th June 2010



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Person authorised to compile technical file and empowered to sign the EC declaration of conformity.

# CU 100

|                                               |    |     |
|-----------------------------------------------|----|-----|
| Installation and operating instructions       | 4  | GB  |
| Montage- und Betriebsanleitung                | 9  | D   |
| Notice d'installation et d'entretien          | 15 | F   |
| Istruzioni di installazione e funzionamento   | 20 | I   |
| Instrucciones de instalación y funcionamiento | 25 | E   |
| Instruções de instalação e funcionamento      | 30 | P   |
| Οδηγίες εγκατάστασης και λειτουργίας          | 35 | GR  |
| Installatie- en bedieningsinstructies         | 40 | NL  |
| Monterings- och driftsinstruktion             | 45 | S   |
| Asennus- ja käyttöohjeet                      | 50 | FIN |
| Monterings- og driftsinstruktion              | 55 | DK  |

CONTENTS

|                        | Page |
|------------------------|------|
| 1. General description | 4    |
| 2. Applications        | 4    |
| 3. Type key            | 4    |
| 4. Functions           | 4    |
| 5. Construction        | 5    |
| 6. Installation        | 7    |
| 7. Wiring diagrams     | 7    |
| 8. Maintenance         | 7    |
| 9. Fault finding chart | 8    |
| 10. Technical data     | 8    |
| 11. Disposal           | 8    |

**Warning**



**Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.**

**1. General description**

The control box CU 100 is designed for the control of small pumps.

The CU 100 is incorporated in an IP54 plastic cabinet and has screwed metric cable entries.

The control box is available in several variants which can be used for

- single-phase pumps or
- three-phase pumps

and

- start/stop by means of a float switch or
- manual start/stop.

Single-phase control boxes are supplied with capacitors and with or without float switch.

Three-phase control boxes are supplied with a float switch.

**2. Applications**

The control box CU 100 is designed for the starting, operation and protection of small pumps.

- Single-phase: up to 9 amps.
- Three-phase: up to 5 amps.

See section 10. *Technical data*.

**3. Type key**

| Example                                   | CU | 100 | 230 | 1 | 9 | 30/150 | A |
|-------------------------------------------|----|-----|-----|---|---|--------|---|
| Type range                                |    |     |     |   |   |        |   |
| Type designation                          |    |     |     |   |   |        |   |
| Voltage:                                  |    |     |     |   |   |        |   |
| 230 = 230 [V]                             |    |     |     |   |   |        |   |
| 400 = 400 [V]                             |    |     |     |   |   |        |   |
| Number of phases:                         |    |     |     |   |   |        |   |
| 1 = One phase                             |    |     |     |   |   |        |   |
| 3 = Three phases                          |    |     |     |   |   |        |   |
| Maximum amp. consumption for the pump [A] |    |     |     |   |   |        |   |
| Run / starting capacitor [μF]             |    |     |     |   |   |        |   |
| A = with float switch                     |    |     |     |   |   |        |   |
| [ ] = without float switch                |    |     |     |   |   |        |   |

**4. Functions**

The control boxes CU 100 incorporate:

- an on/off switch (O/I),
- a contactor which is cut in and out by the float switch (if installed) and/or
- a man/auto switch in the cabinet front as well as
- capacitors for single-phase variants.

During manual operation, the pump is started and stopped by means of the man/auto switch or the thermal relay.

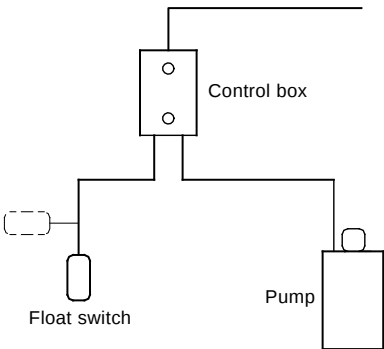
Single-phase variants: The thermal relay must be reset manually with the button in the cabinet front.

Three-phase variants: The motor starter is automatically reset.

During automatic operation, the float switch will start and stop the pump.

See the following functional block diagram.

**Functional block diagram:**



**Fig. 1**

TM01 1267 4097

5. Construction

External construction:

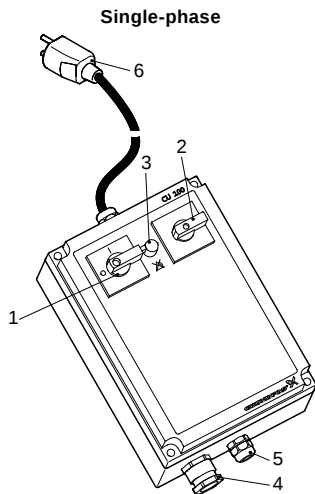


Fig. 2

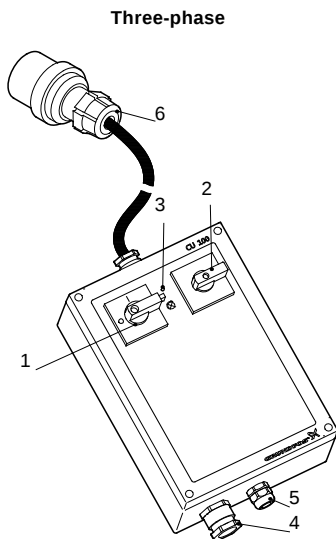


Fig. 3

The position numbers in the table refer to figs. 2 and 3.

| Pos. | Description                                                                                       |
|------|---------------------------------------------------------------------------------------------------|
| 1    | On/off switch – lockable                                                                          |
| 2    | Man/auto switch                                                                                   |
| 3    | Single-phase:<br>Resetting of thermal relay                                                       |
|      | Three-phase:<br>Phase sequence indicator                                                          |
| 4    | Connection of pump                                                                                |
| 5    | Connection of float switch (model A only)                                                         |
| 6    | Mains connecting cable (3 metres):<br>Single-phase: with Schuko plug<br>Three-phase: with CE plug |

GB

TM02 6030 0703

TM02 6028 0703

Internal construction

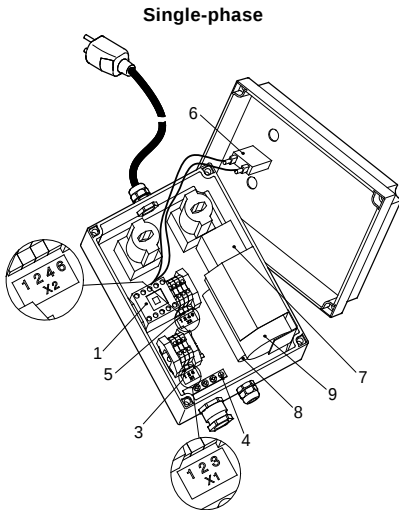


Fig. 4

TM02 6031 4902

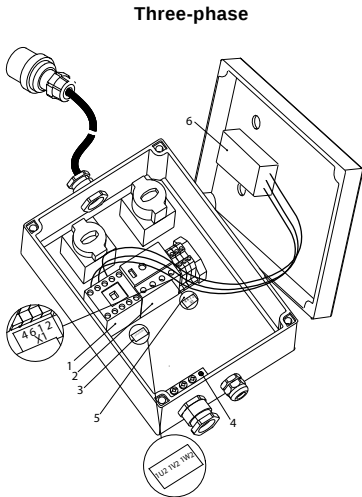


Fig. 5

TM02 6029 0509

The position numbers in the table refer to figs. 4 and 5.

| Pos. | Description                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Starter relay                                                                                                                                             |
| 2    | Motor protection:<br>Single-phase: Manual resetting, in the cabinet front<br>Three-phase: Automatic resetting                                             |
| 3    | Terminal block for connection of pump.<br>Single-phase: Leads marked 1, 2 and 3 [1, 2 and 3]<br>Three-phase: Leads marked 1, 2 and 3 [1, 2 and 3]         |
| 4    | Earth bar, lead marked greenish yellow [⊕]                                                                                                                |
| 5    | Terminals for the connection of:<br>thermal switch(es)*: Leads marked 4, 5 and 6 [4 and 6] and<br>float switch**: Leads marked brown and black [1 and 2]. |
| 6    | Single-phase: Thermal relay<br>Three-phase: Phase sequence indicator                                                                                      |
| 7    | Single-phase: Capacitor contact                                                                                                                           |
| 8    | Single-phase: Run capacitor                                                                                                                               |
| 9    | Single-phase: Starting capacitor                                                                                                                          |

The lead markings in [ ] refer to SEG, SE1, SEV, DP and EF pumps from Grundfos.

\* If the pump has more than one thermal switch, the switches must be connected in series so that the lowest switch stops the pump and the highest one is in reserve.

\*\* The float switch is supplied with the control box and must be connected to the brown and black leads (NO contact).

6. Installation

Warning



*Before starting any work on pumps used to pump liquids which could be constituted as being hazardous to health, thorough cleaning/venting of pumps, pits, etc. must be carried out according to local regulations.*

*Before making any connections in the CU 100 or work on pumps, pits, etc., it must be ensured that the electricity supply has been switched off and that it cannot be accidentally switched on.*



*The control box CU 100 must not be installed and used for pumps installed in potentially explosive environments.*

- Check that the control box is suitable for the local conditions, i.e. pump (current, voltage, etc.).
- Remove transport protectors, if any, from inside the cabinet.
- Remove the cabinet front and mount the control box on a plane surface with four screws through the mounting holes in the back plate of the cabinet, see fig. 6. The cable entries for the pump and the float switch must pointing downwards.

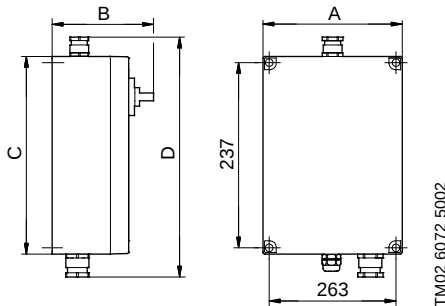


Fig. 6

| Pos. | Three-phase and single-phase with start and run capacitor | Single-phase with run capacitor |
|------|-----------------------------------------------------------|---------------------------------|
| A    | 180                                                       | 180                             |
| B    | 155                                                       | 133                             |
| C    | 253                                                       | 253                             |
| D    | 305                                                       | 305                             |

7. Wiring diagrams

The figures in the table below refer to the wiring diagrams at the end of these instructions.

| Control box             | Figure |
|-------------------------|--------|
| CU 100.230.1.9.30       | A      |
| CU 100.230.1.9.30.A     | B      |
| CU 100.230.1.9.30/150   | C      |
| CU 100.230.1.9.30/150.A | D      |
| CU 100.230.3.5.A        | E      |
| CU 100.230.3.12.A       |        |
| CU 100.400.3.5.A        | F      |

GB

8. Maintenance

During normal operation, the control box CU 100 is maintenance-free.

It is advisable to carry out periodic checks of the control box and the installation, i.e. cable entries, cables, float switch, gasket of the cabinet front and the pump. In particularly aggressive environments, it is advisable to check the contact in the control box.

## 9. Fault finding chart

GB



### Warning

*Before starting any work on pumps used to pump liquids which could be constituted as being hazardous to health, thorough cleaning/venting of pumps, pits, etc. must be carried out according to local regulations.*

*Before making any connections in the CU 100 or work on pumps, pits, etc., it must be ensured that the electricity supply has been switched off and that it cannot be accidentally switched on.*

| Fault                                        | Cause                                      | Remedy                                                                                               |
|----------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------|
| 1. The pump does not run.                    | a) Incorrect setting of switches.          | Check the setting of the switches in the cabinet front. Select the desired operating mode.           |
|                                              | b) Fuse in front of the control box blown. | Replace the fuse.                                                                                    |
|                                              | c) The float switch does not function.     | Clean or replace the float switch.                                                                   |
|                                              | d) Capacitor defective.                    | Replace the capacitor.                                                                               |
| 2. The pump starts and stops too frequently. | a) Incorrect setting of motor starter.     | Set the motor starter to the rated current stated on the pump nameplate (three-phase variants only). |
|                                              | b) Float switch not positioned correctly.  | Place the float switch in the right position.                                                        |

## 10. Technical data

### Voltage variants, rated voltages

- 1 x 230 V, 50 Hz.
- 3 x 230 V, 50 Hz.
- 3 x 400 V, 50 Hz.

### Voltage tolerances

–15%/+10%.

See the voltage tolerance stated in the installation and operating instructions for the pump.

### Back-up fuse

Depending on variant, see nameplate.

### Ambient temperature

- During operation: –30°C to +50°C.
- In stock: –30°C to +60°C.

### Enclosure class

IP54.

### EMC (electromagnetic compatibility)

According to EN 61 000-6-2 and EN 61 000-6-3.

### Weight

Approx. 4 kg. Depending on variant, see nameplate.

## 11. Disposal

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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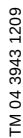


Fig. B

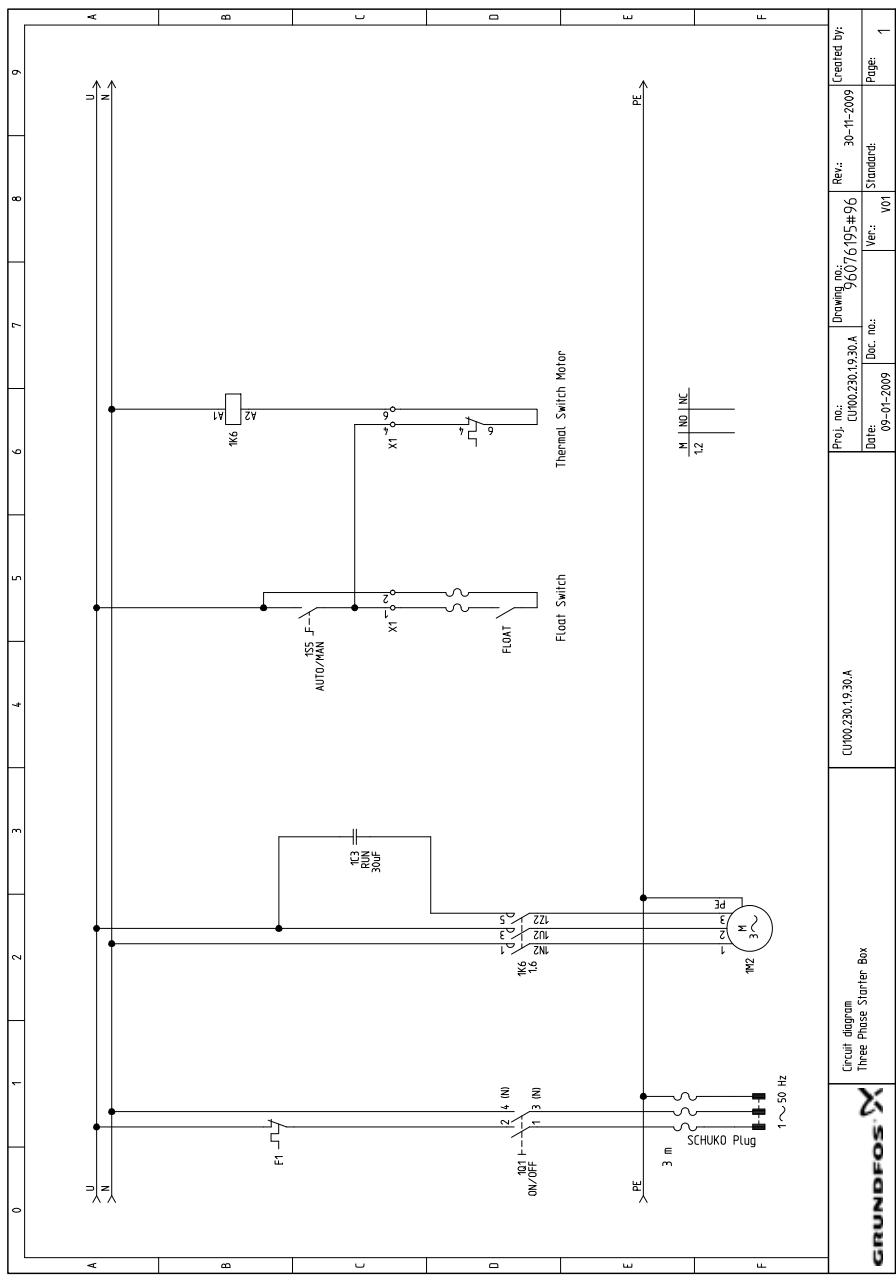
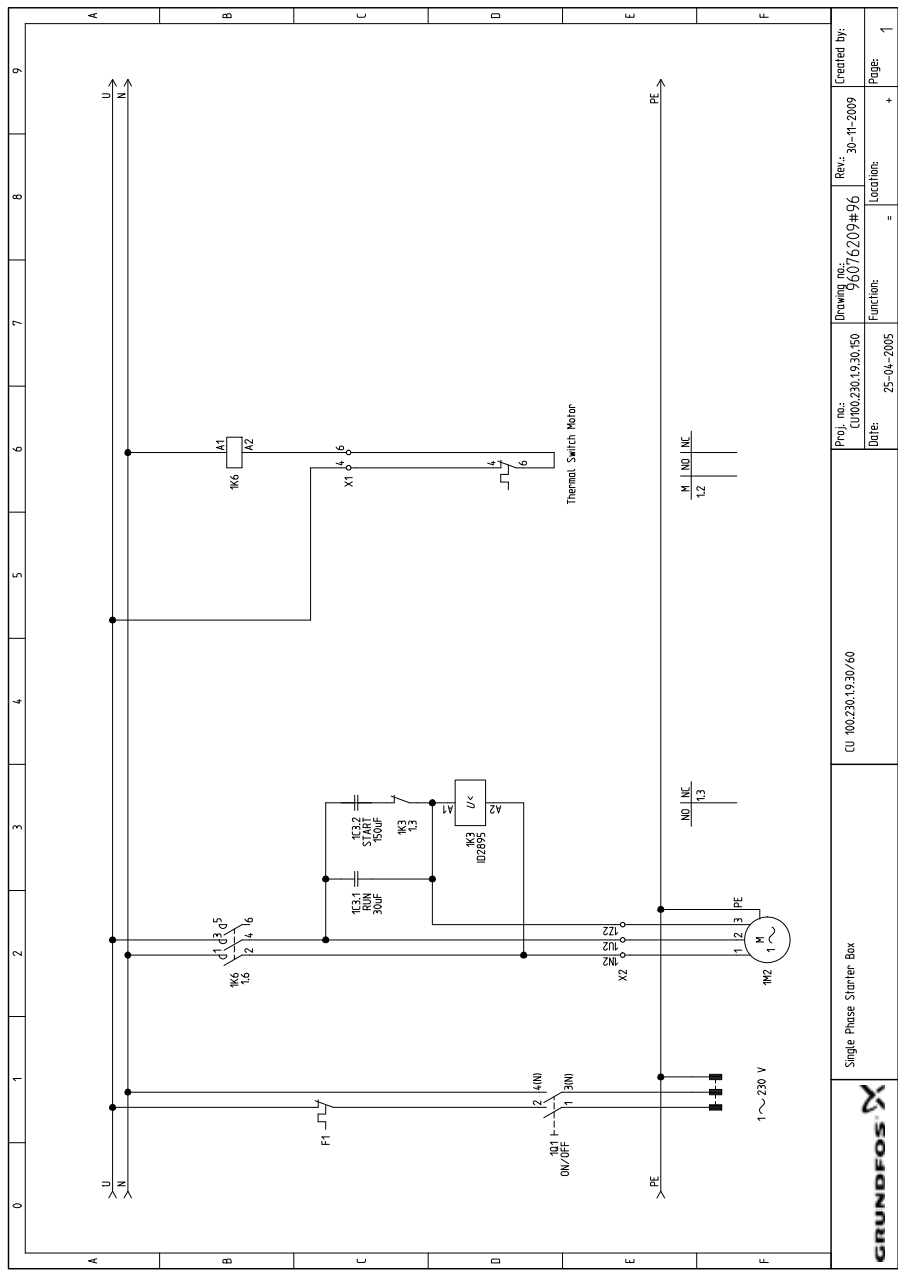
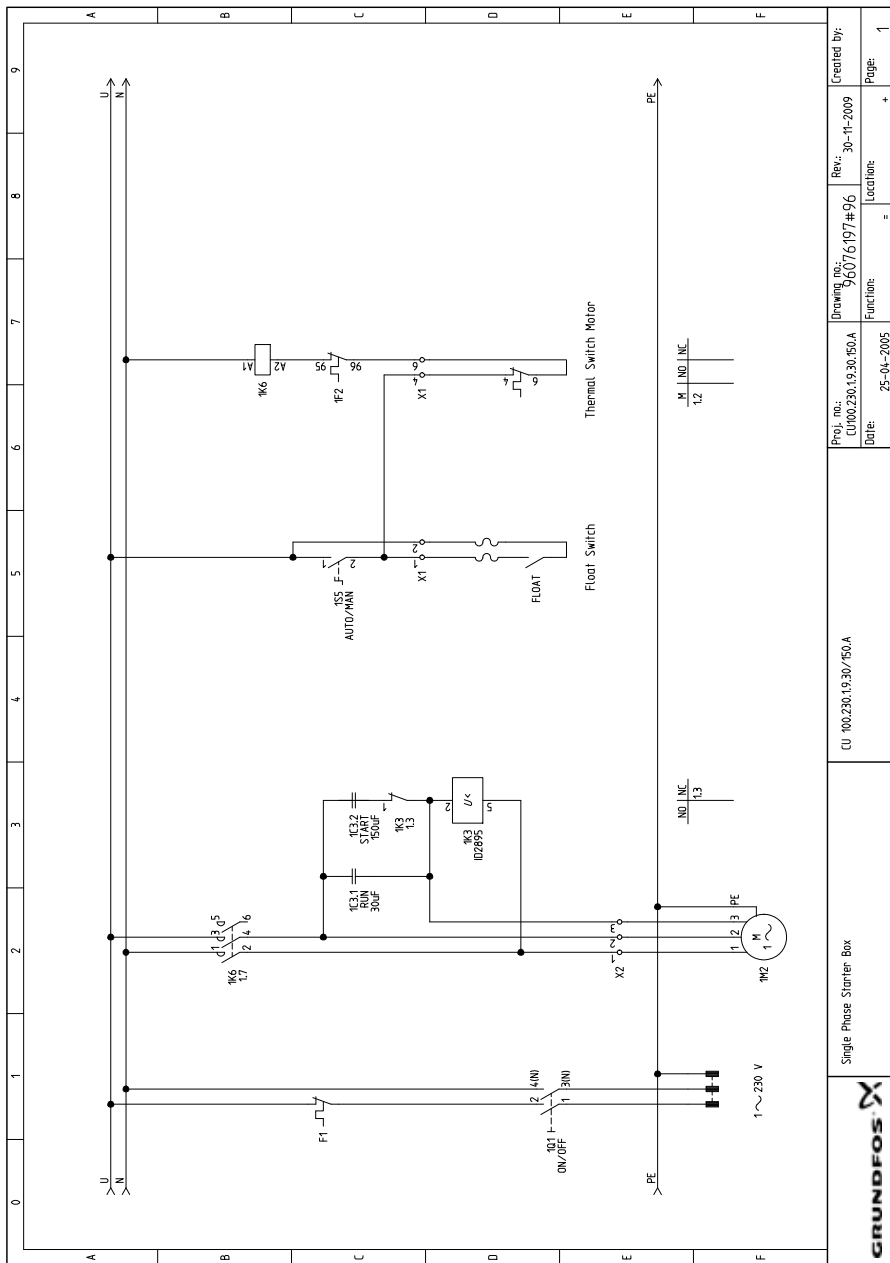


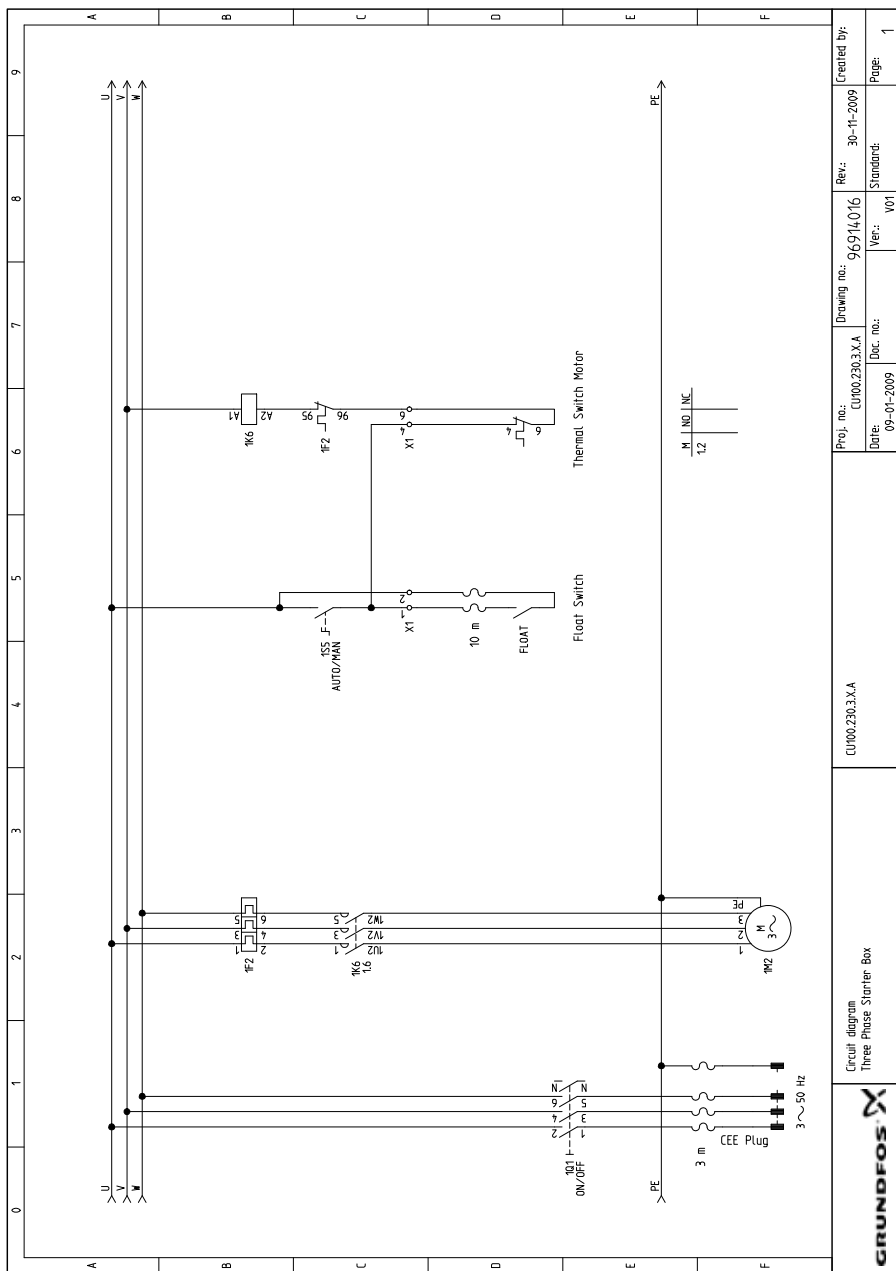
Fig. C



**Fig. D**



**Fig. F**



**Fig. F**





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