# CC-131, CC-131R, CC-131C
# & CC-132, CC-132R, CC-132C

E

## Cuadros de Control

**para Grupos Térmicos NGO 50/GT & NGO 50/GTA**
Instrucciones de Instalación,
Montaje y Funcionamiento
para el **INSTALADOR**

D

## Konttroll-Schalttafeln

**für die Heizkessel NGO 50/GT & NGO 50/GTA**
Installations-, Montage-
und Betriebsanleitung
für den **INSTALLATEUR**

GB

## Control Panels

**for Heating Units NGO 50/GT & NGO 50/GTA**
Installation, Assembly
and Working Instructions
for the **INSTALLER**

I

## Quadri di Controllo

**per Gruppi Termici NGO 50/GT & NGO 50/GTA**
Istruzioni per l'Installazione,
il Montaggio e il Funzionamento
per l'**INSTALLATORE**

F

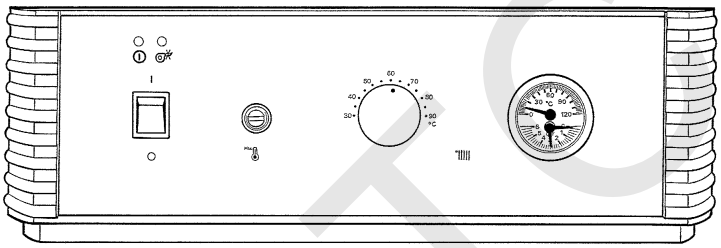
## Tableaux de Contrôle

**pour les Groupes Thermiques NGO 50/GT & NGO 50/GTA**
Instructions d'Installation,
de Montage et de Fonctionnement
pour l'**INSTALLATEUR**

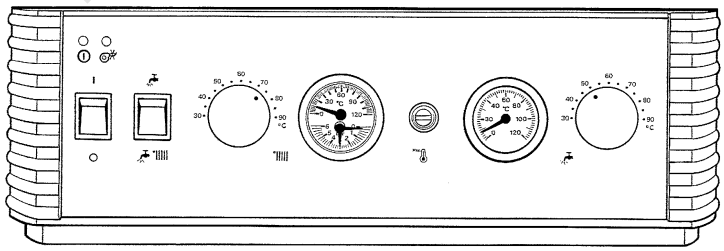
P

## Quadros de Controlo

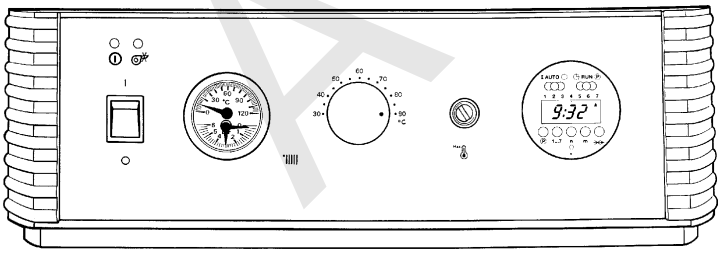
**para Grupos Térmicos NGO 50/GT & NGO 50/GTA**
Instruções de Instalação,
Montagem e Funcionamento
para o **INSTALADOR**



**CC-131**



**CC-132**



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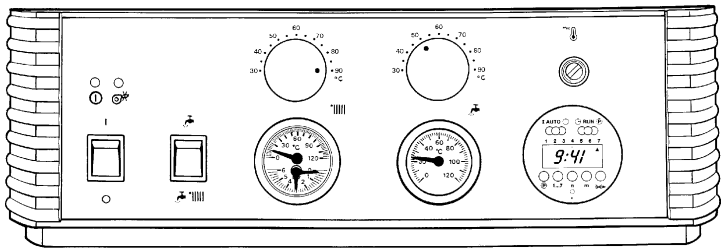
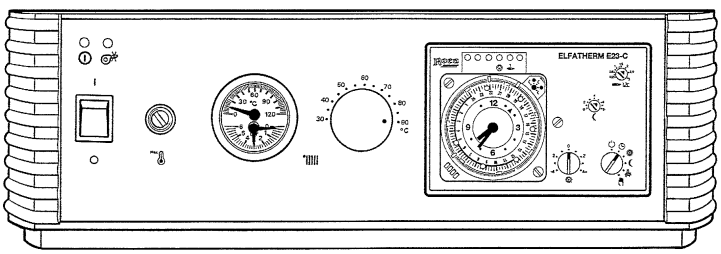
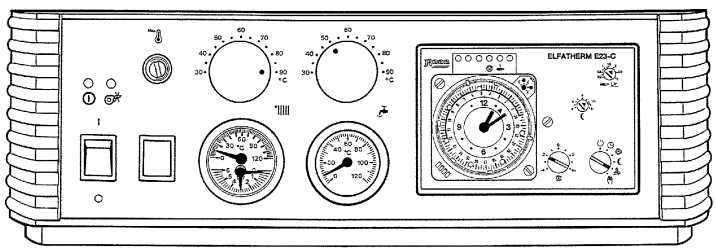


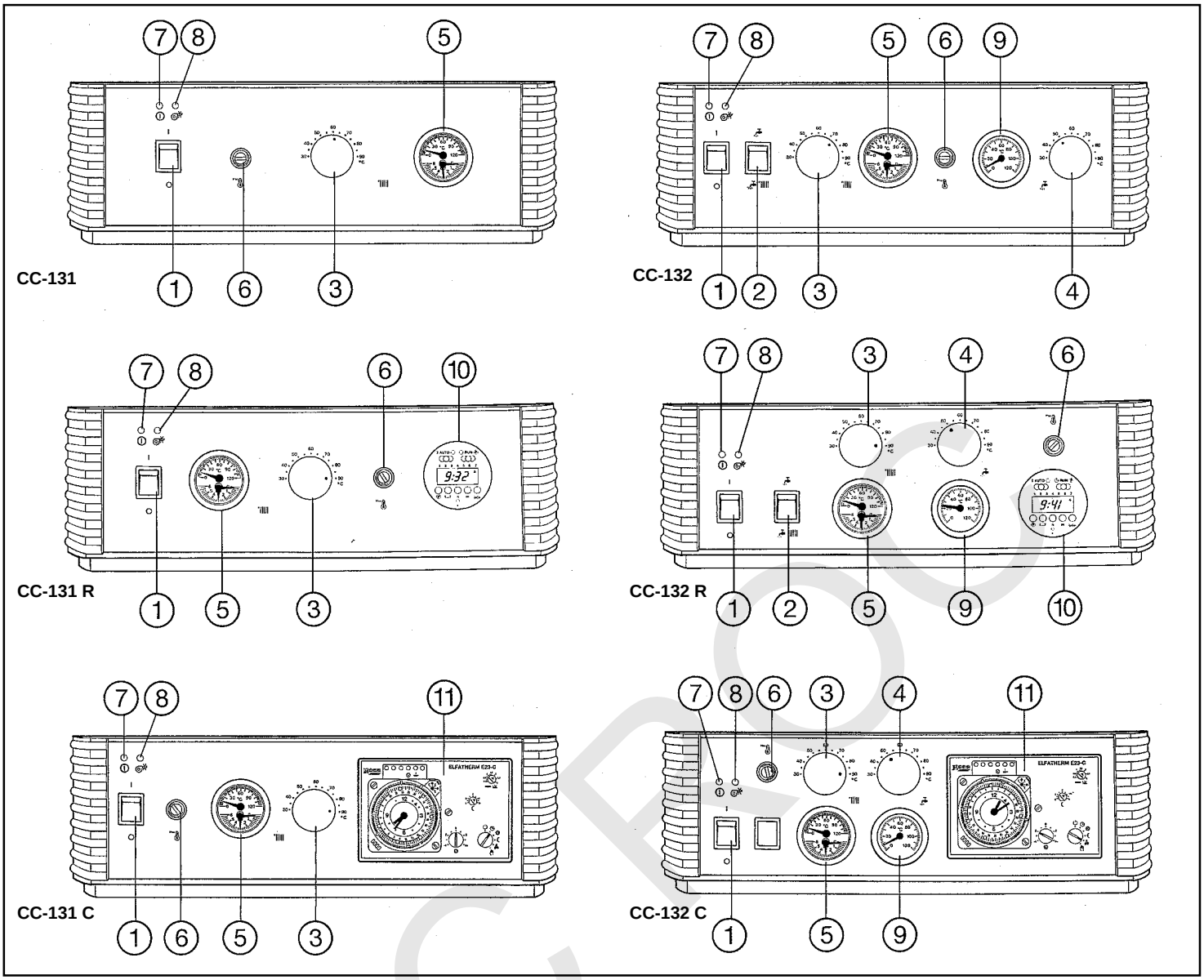
**CC-132 R**




**CC-131 C**




**CC-132 C**




## Principales componentes/Main components/Principaux composants Hauptkomponenten/Componenti principali/Principais componentes

1 - Interruptor general de tensión.
Main On/Off switch.
Interrupteur général de tension.
Hauptstromschalter.
Interruttore generale di alimentazione.
Interruptor geral de tensão.

2 - Interruptor selección de servicio.
Service selector switch.
Interrupteur de sélection de service.
Betriebswahlschalter.
Interruttore di selezione del servizio.
Interruptor selecção de serviço.

3 - Termostato regulación caldera con volante.
Boiler thermostat knob.
Thermostat de régulation de la chaudiere avec volant.
Regelthermostat für den Kessel mit Handrad.
Termostato di regolazione della caldaia con manopola.
Termostato regulação da caldeira com volante.

4 - Termostato regulación Agua Caliente Sanitaria con volante.
DHW control thermostat knob.
Thermostat de régulation d'Eau Chaude Sanitaire avec volant.
Regelthermostat für Heißwasser mit Handrad.
Termostato di regolazione dell'Acqua Calda Sanitaria con manopola.
Termostato regulação de Ägua Quente Sanitária com volante.

5 - Termohidrómetro con válvula antirretorno.
Temp./altitude gauge with non-return valve.
Thermohydrometre avec clapet antiretour.
Thermohydrometer mit Rückstromsperre.
Termoidrometro con valvola antiritorno.
Termo-hidrómetro com válvula anti-retorno.

6 - Termostato de seguridad.
Limit thermostat.
Thermostat de sécurité.
Sicherheitsthermostat.
Termostato di sicurezza.
Termostato de segurança.

7 - Piloto indicador tensión.
Power on lamp.
Voyant indicateur de tension.
Kontrolleuchte Spannung.
Spia indicatrice di tensione
Piloto indicador de tensão.

8 - Piloto señalización bloqueo.
Burner lockout lamp.
Voyant de signalisation de blocage.
Kontrolleuchte blockierung.
Spia segnalazione blocco.
Piloto sinalização bloqueio.

9 - Termómetro Agua Caliente Sanitaria.
DHW thermometer.
Thermomètre d'Eau Chaude Sanitaire.
Heißwasser-Thermometer.
Termometro Acqua Calda Sanitaria.
Termómetro Água Quente Sanitária.

10 - Reloj programador (sólo CC-131R y CC-132R).
Timer (CC-131R and CC-132R only).
Horloge de programmation (CC-131R et CC-132R seulement).
Schaltuhr (nur CC-131R und CC-132R).
Orologio programmatore (solamente CC-131R e CC-132R).
Relógio programador (só CC-131R e CC-132R).

11 - Central de regulación (sólo CC-131C y CC-132C).
Control Centre ( CC-131C and CC-132C only).
Centrale de régulation (CC-131C et CC-132C).
Regelwarte (nur CC-131C und CC-132C).
Centralina di termoregolazione (solamente CC-131C e CC-132C).
Central de regulação (só CC-131C e CC-132C).

Termostato fijo 80°C.
Thermostat set at 80°C.
Thermostat fixe 80°C.
Fest auf 80°C eingestellter Thermostat.
Termostato fisso 80°C.
Termostato fixo 80°C.

**Fig. 1**

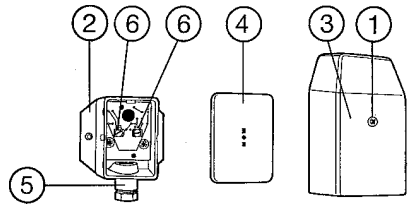



**Fig. 2**

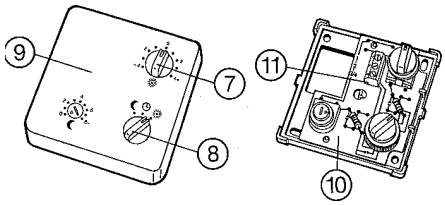



**Fig. 3 CC-131 C**

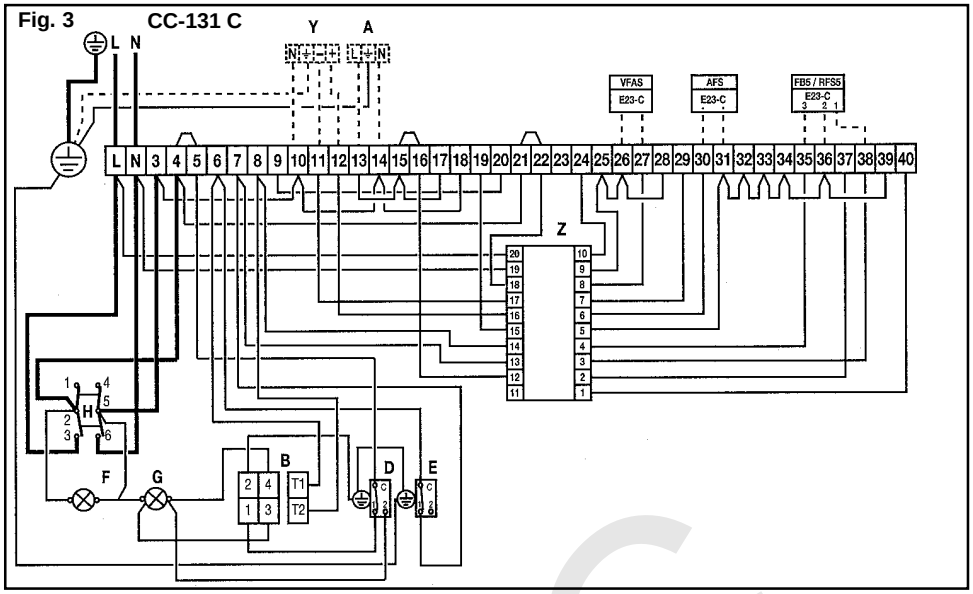



**Fig. 3 CC-131**

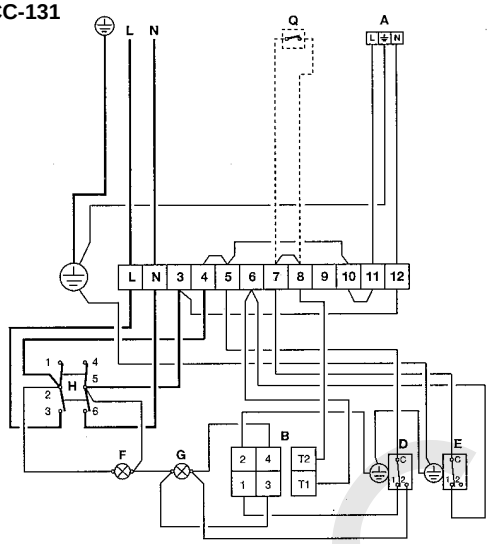



**Fig. 4 CC-131**

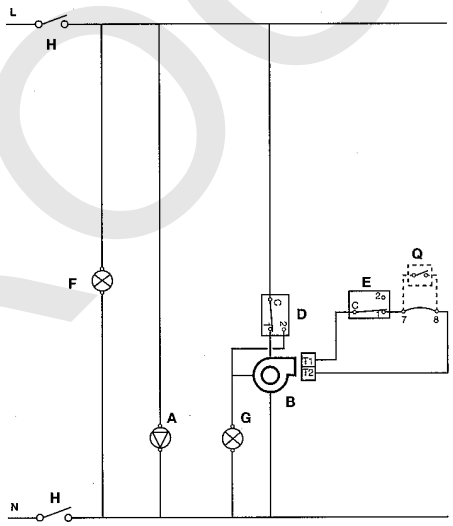



**Fig. 3 CC-131 R**

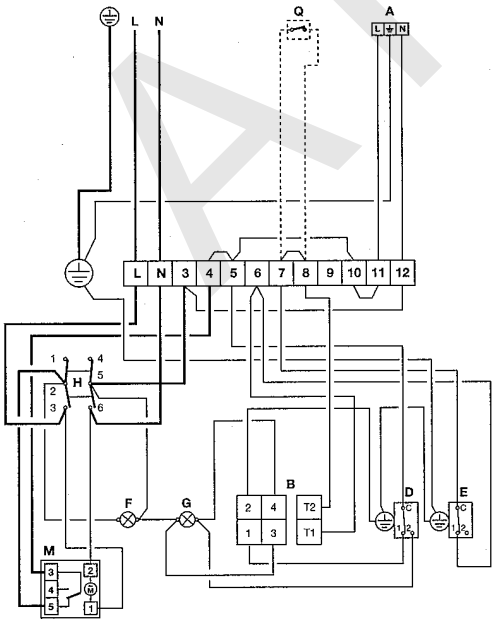



**Fig. 4 CC-131 R**

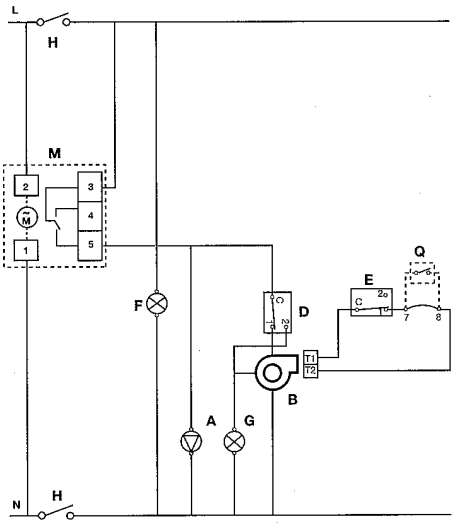


**Fig. 4 CC-131 C**

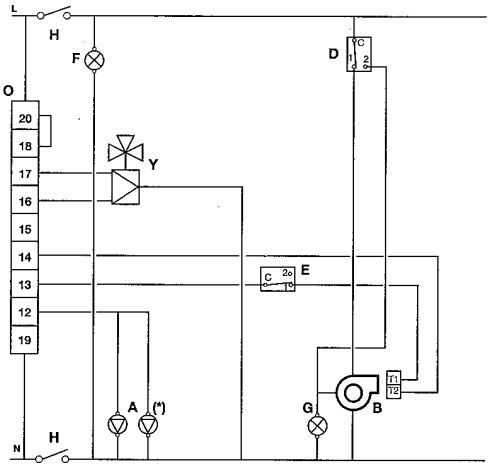



**Fig.5 CC-132 C**

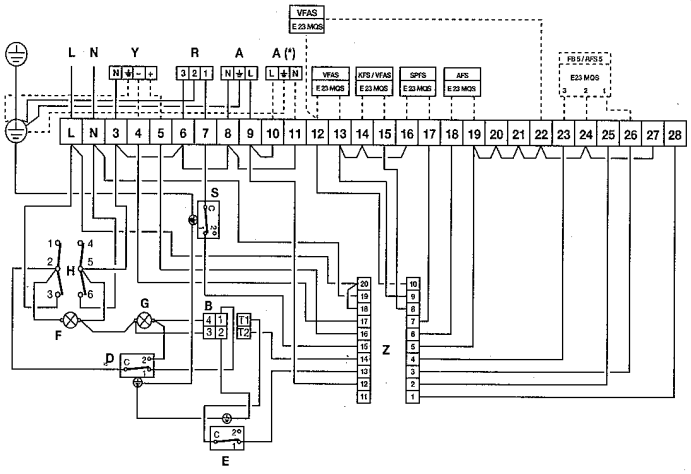



**Fig. 5 CC-132**

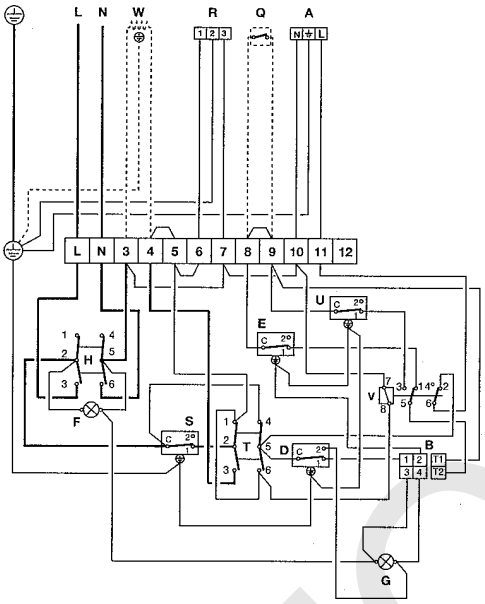



**Fig. 6 CC-132**

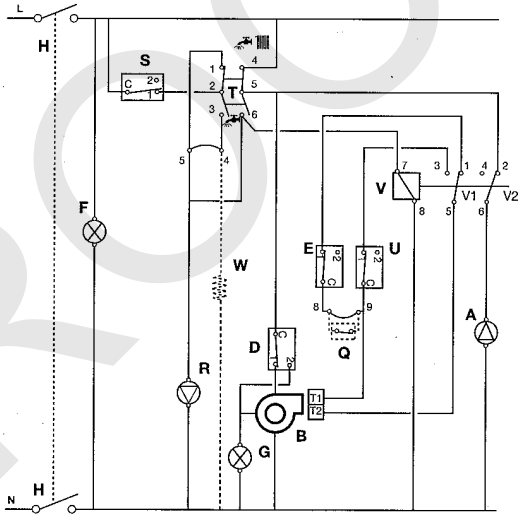



**Fig. 5 CC-132 R**

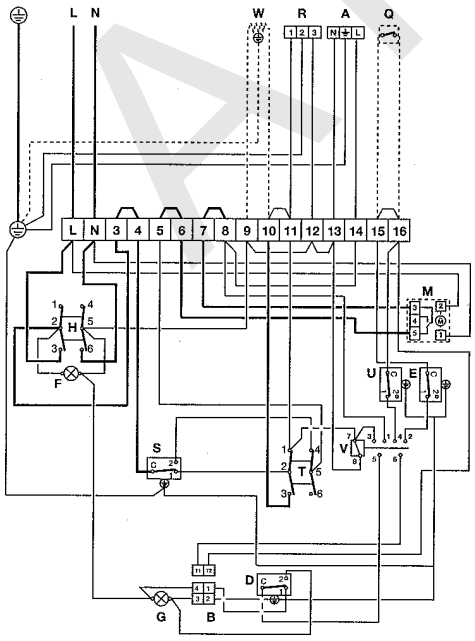



**Fig. 6 CC-132 R**

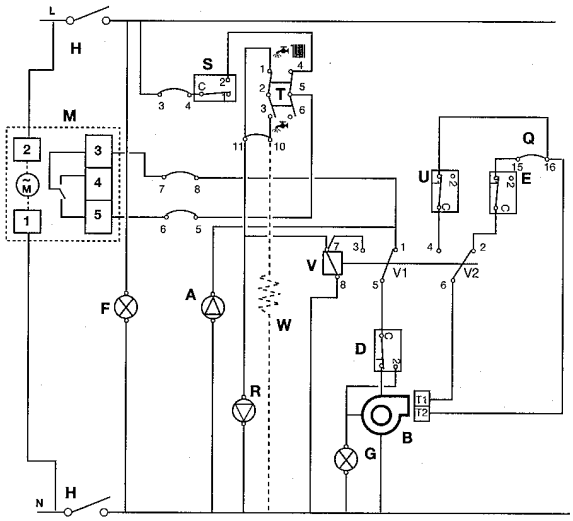


**Fig. 6 CC-132 C**

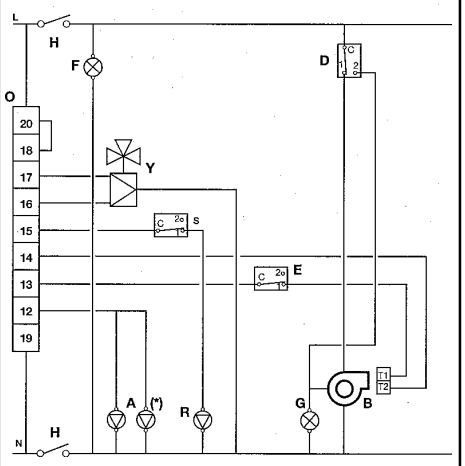
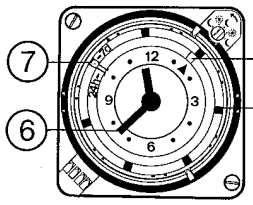



**Fig. 9**




Encaje semanal (7 días)
Weekly notch (7 days)
Cran de programmation hebdomadaire (7 jours)
Wocheneinschnitt (7 Tage)
Camma settimanale (7 giorni)
Encaixe semanal (7 dias)

Encaje diario (24 horas)
Daily notch (24 hours)
Cran de programmation quotidienne (24 heures)
Tageseinschnitt (24 Stunden)
Camma quotidiana (24 ore)
Encaixe diário (24 horas)

**Fig. 8**

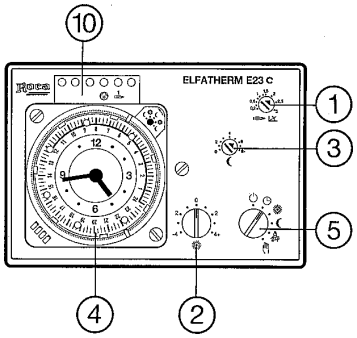



**Fig.10**

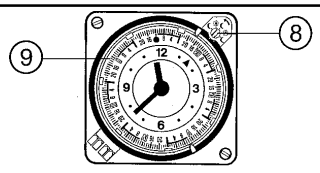



**Fig.11**

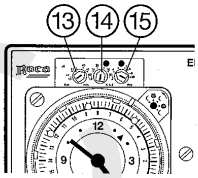



**Fig. 12**

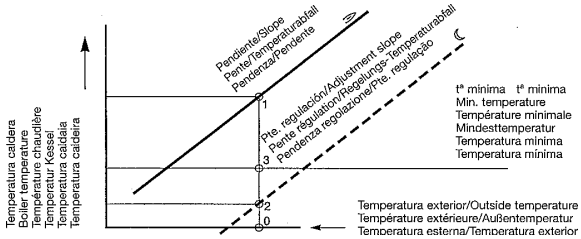
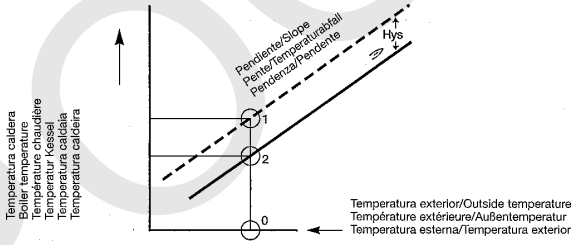



**Fig.13**




## Leyenda/Legend/Légende/Erlauterung/Legenda/Legenda

**A** Circulador Calefacción.
Heating pump.
Circulateur de Chauffage.
Umwälzpumpe Heizung.
Circolatore Riscaldamento.
Circulador de Aquecimento.

**A*** Circulador segundo circuito Calefacción.
Second Heating Circuit Pump.
Circulateur du second circuit de Chauffage.
Umwälzpumpe für den zweiten Heizkreislauf.
Circolatore secondo circuito di Riscaldamento.
Circulador segundo circuito Aquecimento central.

**B** Quemador.
Burner.
Brûleur.
Brenner.
Bruciatore.
Queimador.

**D** Termostato seguridad.
Limit thermostat.
Thermostat de sécurité.
Sicherheitsthermostat.
Termostato di sicurezza.
Termóstato segurança.

**E** Termostato regulación caldera.
Boiler control thermostat.
Thermostat de régulation de la chaudiere.
Regelthermostat Kessel.
Termostato di regolazione della caldaia.
Termostato de regulação da caldeira.

**F** Señalización tensión.
Power ON indicator lamp.
Signalisation tension.
Anzeige Spannung.
Segnalazione della tensione.
Indiação de tensão.

**G** Señalización bloqueo quemador.
Burner Lockout lamp.
Signalisation de blocage du brûleur.
Anzeige Brennerblockierung.
Segnalazione del blocco del bruciatore.
Indicação de bloqueio do queimador.

**H** Interruptor general.
Main On/Off switch.
Interrupteur général.
Hauptschalter.
Interruttore generale.
Interruptor geral.

**Q** Termostato ambiente opcional (no para CC-131C o CC-132 C).
Ambient thermostat (optional not for CC-131C or CC-132C).
Thermostat d'ambiance en option (pas pour CC-131C ou CC-132C).
Auf Wunsch gelieferter Raumthermostat (nicht für CC-131C bzw. CC-132C).
Termostato ambiente opzionale (non per CC-131C o CC-132C).
Termostato de ambiente opcional (não para CC-131C ou CC-132C).

**R** Circulador Agua Caliente Sanitaria.
DHW pump. Circulateur d'Eau Chaude Sanitaire.
Umwälzpumpe Heißwasser.
Circolatore Acqua Calda Sanitaria.
Circulador de Água Quente Sanitária.

**S** Termostato regulación Agua Caliente Sanitaria.
DHW control thermostat.
Thermostat de régulation d'Eau Chaude Sanitaire.
Regelthermostat Heißwasser.
Termostato regolatore Acqua Calda Sanitaria.
Termostato regulação de Água Quente Sanitária.

**T** Interruptor selección servicio.
Service selector switch.
Interrupteur de sélection de service.
Wahlschalter Betriebsart.
Interruttore selettore servizio.
Interruptor selecção de serviço.

**U** Termostato fijo 80°C.
Thermostat set at 80°C.
Thermostat fixe 80°C.
Fest auf 80 'C eingestellter Thermostat.
Termostato fisso 80°C.
Termostato fixo 80°C.

**V** Relé.
Relay.
Relais.
Relais.
Relè.
Relé.

**Y** Servomotor válvula 3 vías.
Motorized 3-way valve.
Servomoteur vanne 3 voies.
Servomotor 3-Wege-ventil.
Servomotore valvola a tre vie.
Servomotor válvula 3 vías.

**W** Resistencia opcional.
Electric heater (optional).
Résistance en option.
Auf Wunsch gelieferter Heizwiderstand.
Resistenza opzionale.
Resistencia opcional.

**M** Reloj programador (CC-131R y CC-132R).
Timer (CC-131R and CC-132R).
Horloge de programmation (CC-131R et CC-132R).
Schaltuhr (CC-131R und CC-132R).
Orologio programmatore (CC-131R e CC-132R).
Relógio programador (CC-131R e CC-132R).

**Z** Central de regulación (CC-131C y CC-132C).
Control Centre (CC-131C and CC-132C).
Centrale de régulation (CC-131C et CC-132C).
Regelwarte (CC-131C und CC-132C).
Centralina di termoregolazione (CC-131C e CC-132C).
Central de regulação (CC-131C e CC-132C).

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## Delivery

- In a single package, with all the components assembled and wired.

## Installation

None required. The maximum power (W) that the components not supplied with the boiler can consume is:

| | CC-131 | CC-131R | CC-131C | CC-132 | CC-132R | CC-132C |
|---|---|---|---|---|---|---|
| Burner | 850 | 850 | 350 | 850 | 850 | 350 |
| Pump | 1750 | 1750 | 350 | 1750 | 1750 | 250 |
| DHW pump | - | - | - | 1750 | 1750 | 1750 |
| Storage tank | 2800 | 2800 | 2800 | 2800 | 2800 | 2800 |

## Assembly

- Refer to the "Casing and Control Panel" operations in the Instructions for the INSTALLER, enclosed with the boiler.

## Control Panels C-131C (Control Equipment components)

**AFS Outdoor sensor**

Place it facing North, preferably, at 2.5 m above ground level. See Figure 1.

- Loosen the screw (1) and separate the sensor (2) from its solar protector (3).
- Remove the cover (4) press-fitted onto the sensor (2).
- Insert the lead into the cable entry (5) and wire it to the terminals (6).
- Fit the cover (4) and secure the sensor by its metal base.
- Replace the solar protector (3).

**KFS Boiler sensor**

- Insert the bulb into the multiple pocket incorporated in the boiler.

**FB 5 Remote Control or RFS 5 Ambient sensor (both optional)**

It shall be located in the area selected to control the installation. In the case of the ambient sensor, it should be located at about 1.5 m above ground level.

Press controls (7) and (8) to separate the cover (9) from the base (1 0). See Figure 2.

- Make the electrical connections at the three points on the terminal strip (11).
- Secure the base using the accessories provided.
- Snap the cover onto the base.
- Move the switches ☼ and ☾ at the back of the unit, from "int" to "ext".

Use of an ambient sensor means that regulation will also take place in accordance with the room temperature. In this case, the relationship between the positions of the Moon potentiometer and the reduction of ambient temperature are shown in the table below.

| Position Moon | Reduction in ambient temp. |
|---|---|
| 0 | 0 °C |
| -2 | 2,5 °C |
| -4 | 5 °C |
| -6 | 7,5 °C |
| -8 | 10 °C |

| Approx. Ohmic resistance values | | | | | |
|---|---|---|---|---|---|
| AFS outdoor sensor, and KFS boiler sensor | | RFS 5 ambient sensor | | FB 5 Remote Control | |
| -20 °C | 690Ω | "0" on SUN | | Position of SUN | |
| -10 °C | 755Ω | potentiometer | | potentiometer | |
| 0 °C | 825Ω | | | | |
| 10 °C | 895Ω | 15 °C | 561Ω | -4 | 490Ω |
| 20 °C | 970Ω | 20 °C | 512Ω | 0 | 512Ω |
| 25 °C | 1.010Ω | 25 °C | 468Ω | +4 | 535Ω |
| 30 °C | 1.050Ω | | | | |

| Approx. Ohmic resistance values | | | | | |
|---|---|---|---|---|---|
| AFS outdoor sensor, and KFS boiler sensor | | RFS 5 ambient sensor | | FB 5 Remote Control | |
| 40 °C | 1130Ω | "0" on MOON | | Position of MOON | |
| 50 °C | 1220Ω | potentiometer | | potentiometer | |
| 60 °C | 1310Ω | | | | |
| 70 °C | 1405Ω | 10 °C | 1148Ω | 0 | 1047Ω |
| 80 °C | 1505Ω | 15 °C | 1096Ω | -4 | 1023Ω |
| 95 °C | 1605Ω | 20 °C | 1047Ω | -8 | 1000Ω |

**Electrical connections**

Make them in accordance with the wiring diagrams provided. See Figures 3 (CC-131), (CC-131R), (CC-131C) and figures 5 (CC-132), (CC-132R), (CC-132C).

**Notes:**

* Wire the ambient themostat (optional) to terminals 11 and 12 of Control Panels CC-131 or CC-131R, or to terminals 8 and 9 of Control Panels CC-132 or CC-132R, removing the jumper between them.
* Connect the electric heater (optional) to terminals 3 and 4, removing the jumper across 4 and 5 (NGO 50/GTA Range).
* The installation should include a switch, a circuit breaker or other omnipolar disconnect switch that isolates all power supply lines to the unit.
* The connection of external appliances not supplied with the boiler should be done through approved wiring harness type ES-NO5W5-F of the following sizes ($mm^2$):

| | |
|---|---|
| Pump | 3 x 1 $mm^2$ |
| DHW pump | 3 x 1 $mm^2$ |
| Burner | 3 x 1 $mm^2$ |
| Ambient thermostat | 2 x 1 $mm^2$ |
| Electric Heater | 3 x 2.5 $mm^2$ |

## Operation

### Schematic wiring diagrams

Refer to the diagrams enclosed.

See figures 4 (CC-131), (CC-131R), (CC-131C) and figures 6 (CC-132), (CC-132R), (CC-132C).

### Timer (CC-131R and CC-132R)

The programmed schedule will start when the main switch is turned ON.

### Control Centre (CC-131C and CC-132 C)

See Figure 8.

1 - Slope selector
2 - Sun selector
3 - Moon selector
4 - Timer
5 - Programme selector

### Slope Selector

- Evaluate the slope on the installation, based on design temperatures.

$$\text{Slope} = \frac{\text{Increase of flow water temp.*}}{\text{Ambient temp. -Outside temp.}}$$

* Difference between the maximum anticipated flow temperature and the minimum for the heat output of one radiator (30°C).

**Evaluation example**

Calculate the slope of an installation, based on:

- Maximum flow water temperature = 80°C
- Ambient temperature (comfort) = 20°C
- Outside temperature = -5°C

$$\text{Slope} = \frac{80 - 30}{20 - (-5)} = 2$$

- Use potentiometer (1) to select the Slope calculated for the installation in question.

### Sun Selector

The relationship between the positions of the Sun potentiometer and the ambient temperature is shown in the table below.

| Position Sun | Reduction / Increase in ambient temperature |
|---|---|
| -4 | -8 °C |
| -2 | -4 °C |
| 0 | 0 °C |
| +2 | +4 °C |
| +4 | +8 °C |

### Moon Selector

This selector allows the corresponding ambient temperature to be reduced according to the position of the Sun selector.

The relationship between the positions of the Moon potentiometer and the ambient temperature are shown in the table below.

| Position Moon | Reduction in ambient temperature |
|---|---|
| 0 | 0 °C |
| -2 | 4 °C |
| -4 | 8 °C |
| -6 | 12 °C |
| -8 | 16 °C |

### Timer

**Daily programme**

It is factory-set. The red (Sun) and blue (Moon) cams should be moved alternatively on the rotary ring to the times chosen for the start of both programmes.

To set the time on the clock, move the minute hand (6) until the real time coincides with the symbol ▲.

**Weekly programme**

- Remove the rotary ring, press-fitted on the dial.
- Turn the minute hand (6) until the pin (7) on the green ring moves to a notch on the yellow one. See Figure 9.
- Turn the minute hand (6) until the clock is set at the right time.
- Turn the rotary ring and snap it onto the dial. The rotary indicator (8) should point to the day being set (I = Monday, VII = Sunday), and the symbol ▲ must show the real time.
- Set the desired weekly programme for alternate Sun-Moon operation using the cams supplied.

**Switching from weekly to daily programme**

- Remove the press-fitted rotary ring (9) from the dial. See Figure 10.
- Turn the minute hand until the pin (7) on the yellow ring moves to fit the notch in the green one.
- Set the time on the clock.
- Turn the rotary ring and snap it onto the dial.
- Set the daily Sun-Moon programme.

### Programme Selector

⏻ The Control centre is switched "Off". The clock works.
The installation comes into service when the outside temperature drops below 0°C, governed by the Moon programme and thus being always protected against the risk of freezing.

◷ Regulation according to the alternate Sun- Moon programmes established.

☼ Permanent regulation by the Sun programme.

☾ Permanent regulation by the Moon programme.

Regulation cancelled based on the outside temperature. The pump is switched "On" and the burner is working at full output. This programme allows for the combustion analysis to be conducted.

Emergency programme in case of defective operation of the control equipment.
Adjust the boiler temperature through the thermostat. The pump is switched "On".

### Service indicator lamps

Under the cover (10) are the pump ⌂ and burner ✑ run lamps. See Figure 11.

## Burner low temperature cut-out

With the ”min” control (13) we can set the minimum temperature of the water in the boiler for disconnecting the burner when the Moon programme comes into service. Adjustable from 10°C up to 60°C. It is factory-set at 50°C. See Figure 12.

## Adjustment cut-out ☼. Adjustment connection ☾.

0 - Outside temperature considered.
1 - Boiler temperature regulation ☼.
Burner disconnection. (OFF)
2 - Boiler temperature regulation ☾.
Boiler connection. (ON)
3 - Minimum boiler temperature selected.
Burner disconnection. (OFF)
2-3 - Boiler temperature differential between connection and disconnection of the burner during the night setback regulation ☾.

## Rapid Heating of the boiler

With the KAE control (14) full running of the installation is optimized on starting up or passing from a Moon programme to a Sun programme. Whilst the temperature of the water in the boiler does not reach the selected value, the burner operates but the pump does not.
Adjustable from 10°C up to 60°C. It is factory-set at 10°C. It should be set 5°C below the ”minimum” temperature selected.

## Temperature differential (increasing)

With the ”Hys” control (15) we can set the value of the difference which will exist, with the installation under normal operating conditions, between the temperature of the water in the boiler when the burner is switched ON or OFF. Adjustable from 4°C up to 10°C. It is factory-set at 5°C. See Figure 13.
0 - Burner start-up
1 - Burner disconnection (OFF)
2 - Burner connection (ON)

**Note:**
The adjustments made with the KAE and ”min” potentiometers have priority over the ”Hys” differential

**Note:**
Characteristics and performance qualities subject to change without notice.