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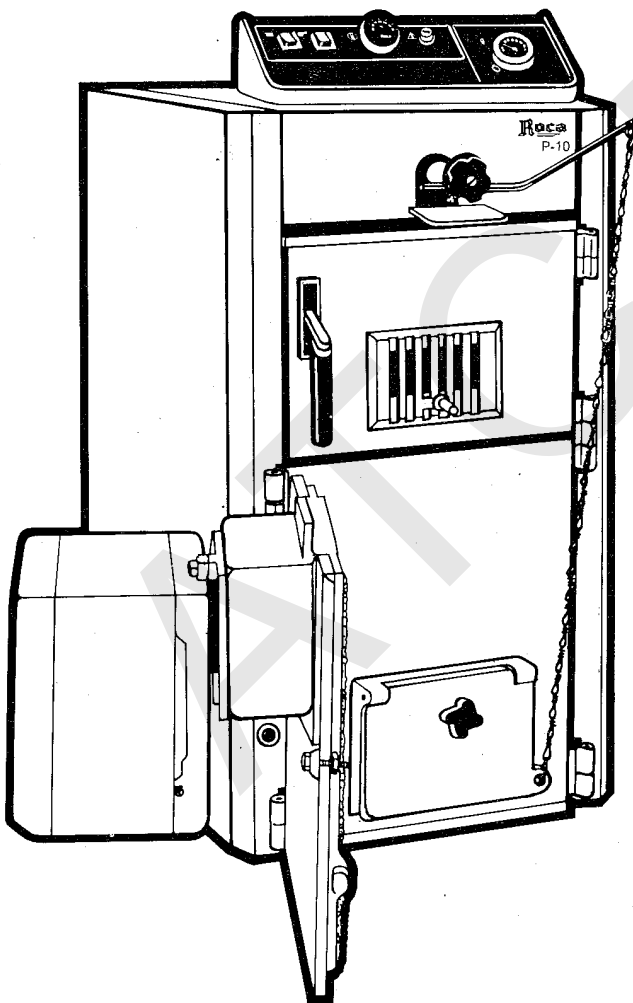
Caldera policombustible

Instrucciones de Instalación,
Montaje y Funcionamiento
para el **INSTALADOR**

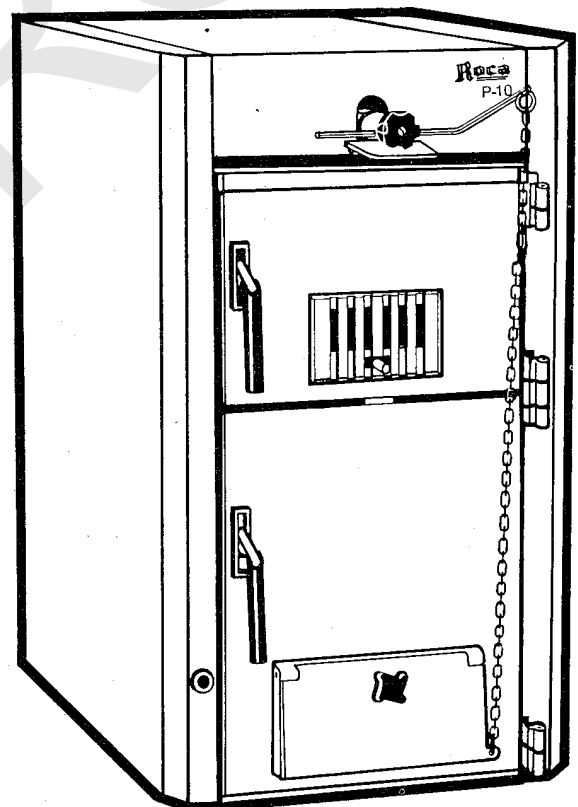
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Multifuel Boiler

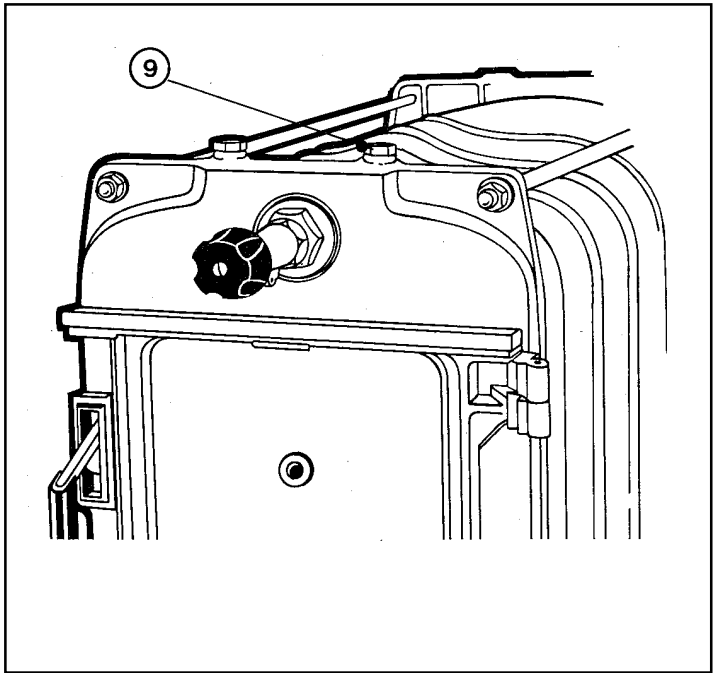
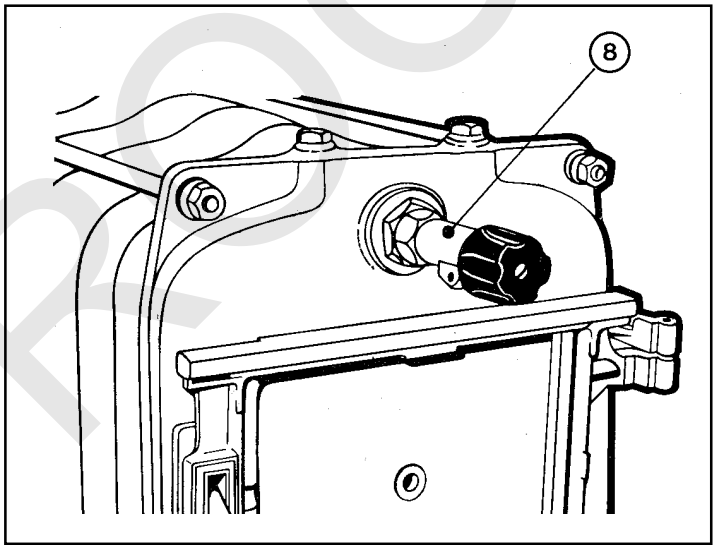
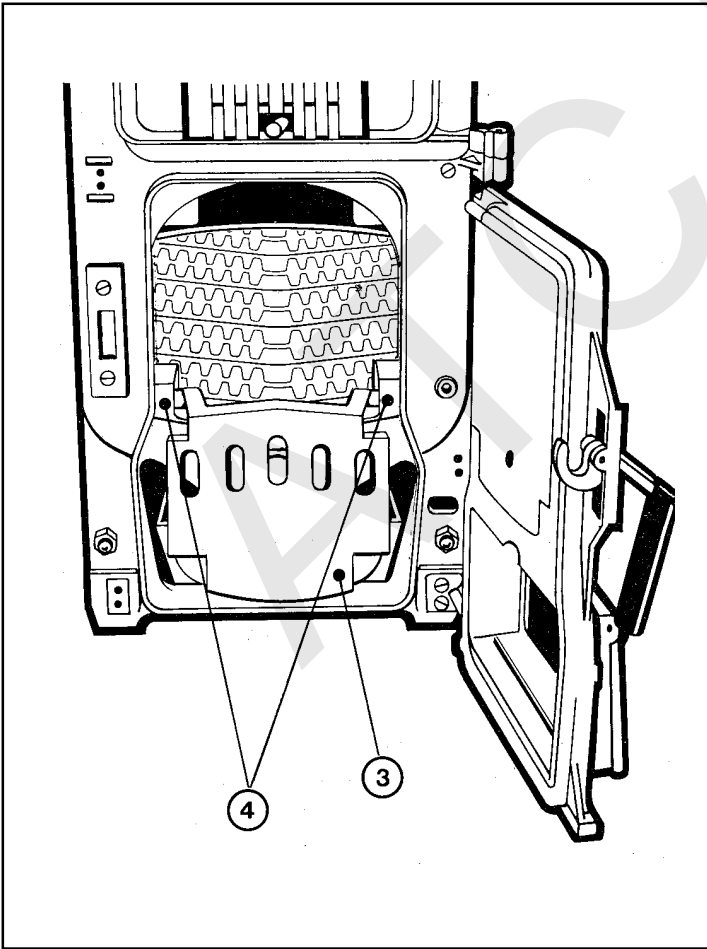
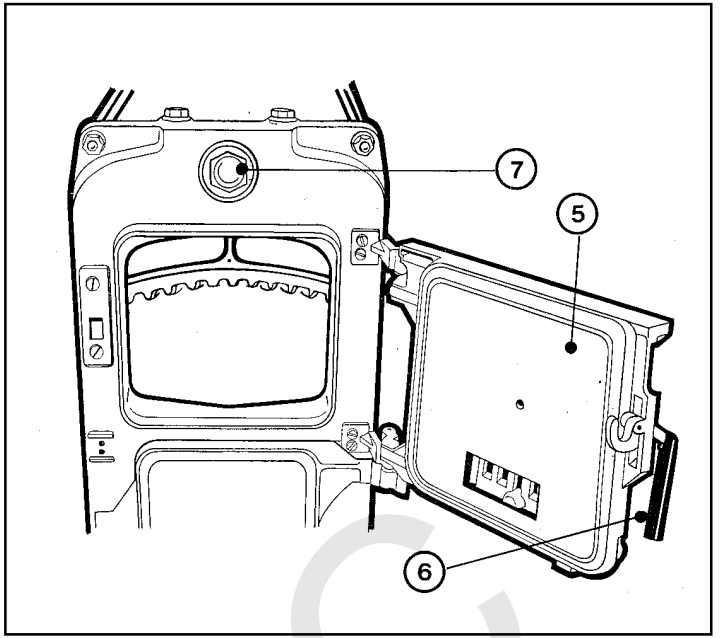
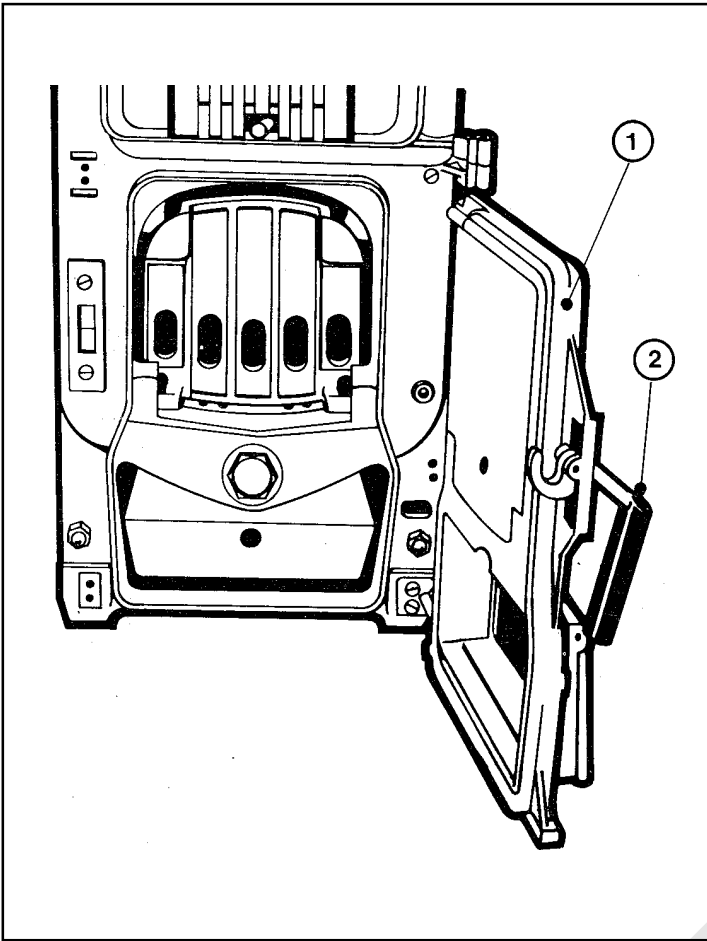
Installation, Assembly
and Working Instructions
for the **INSTALLER**

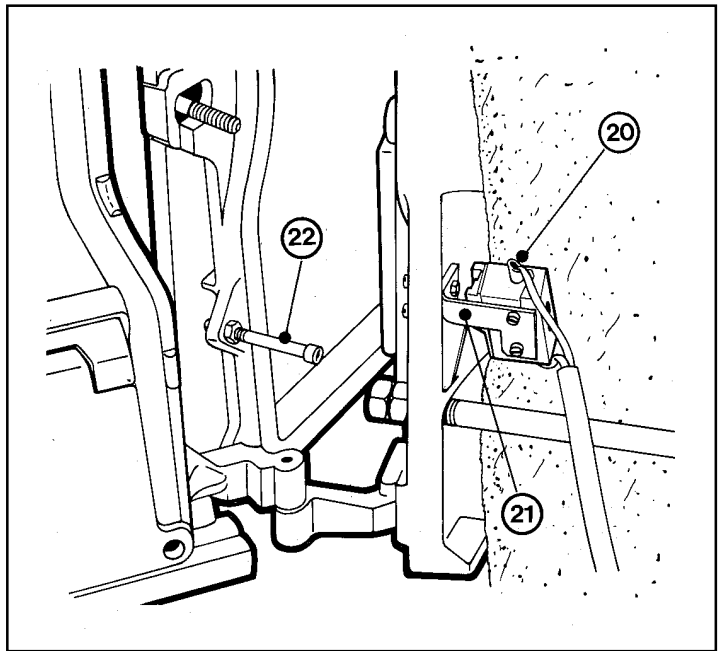
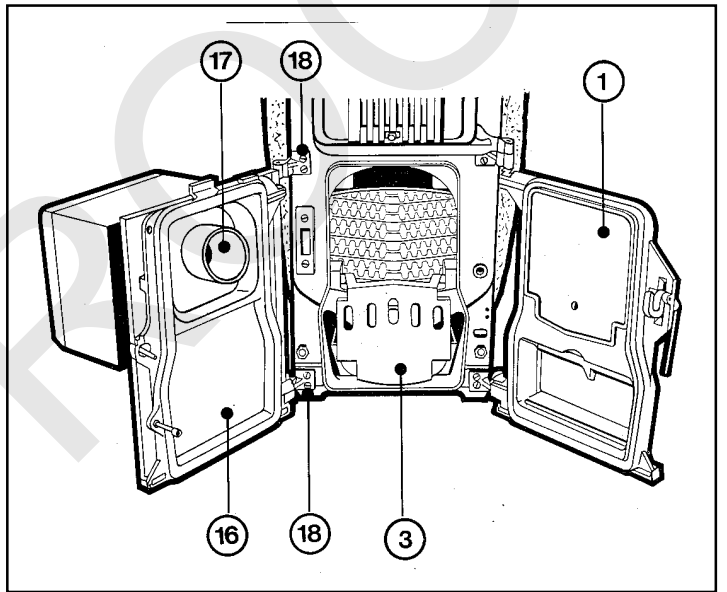
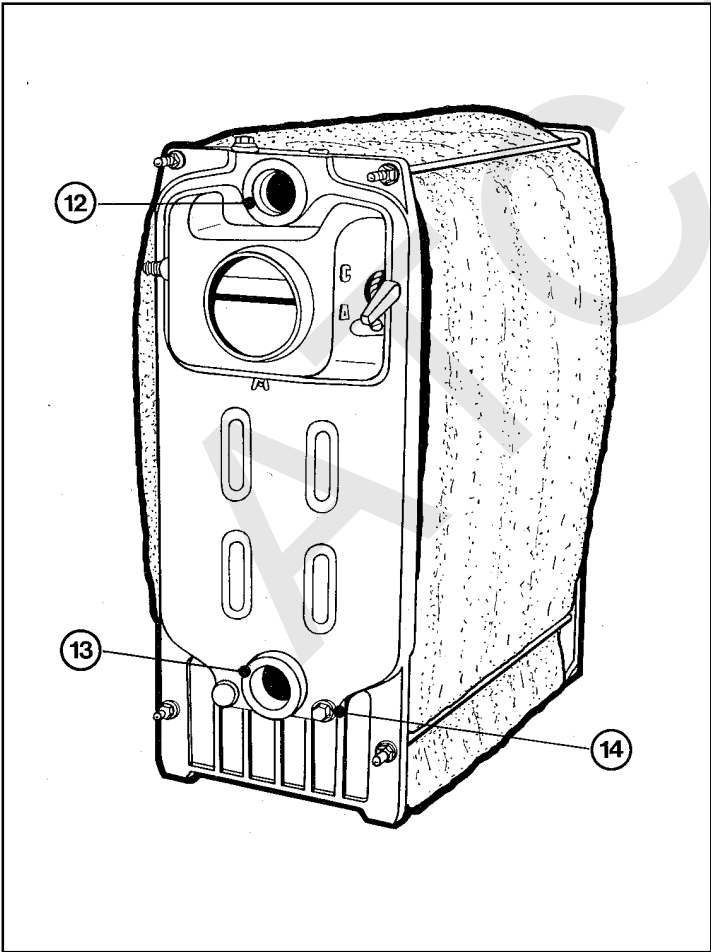
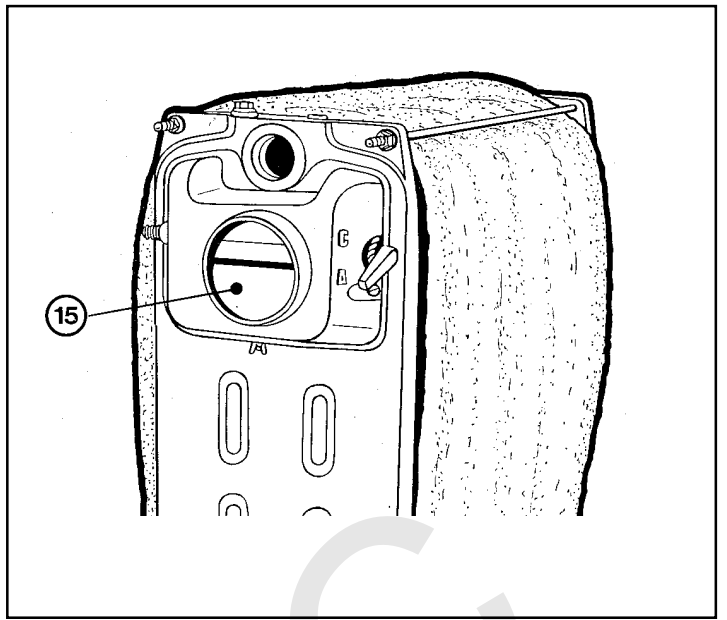
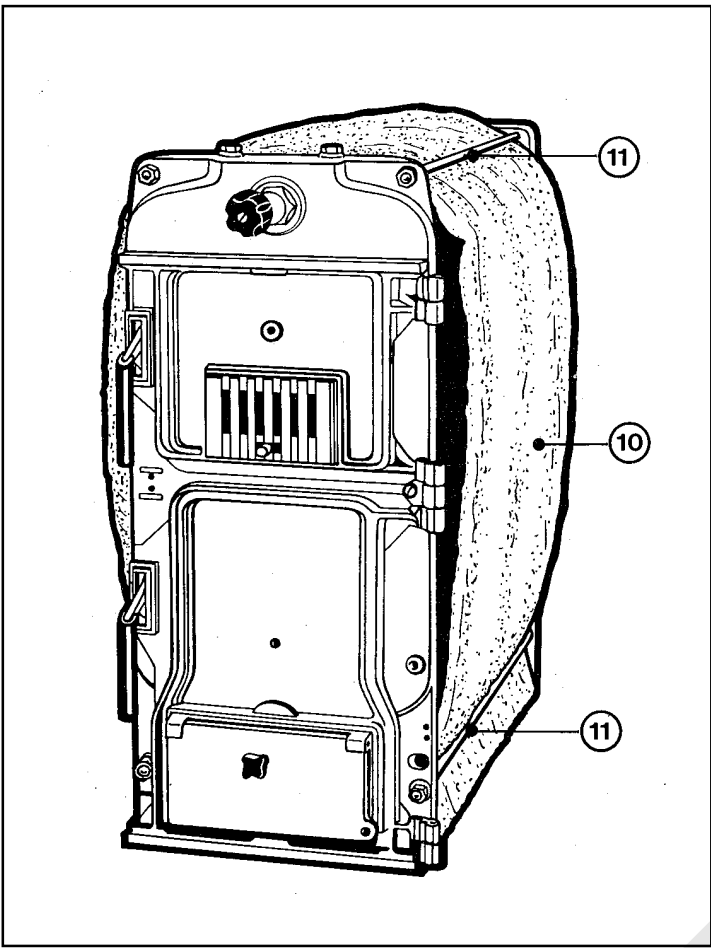


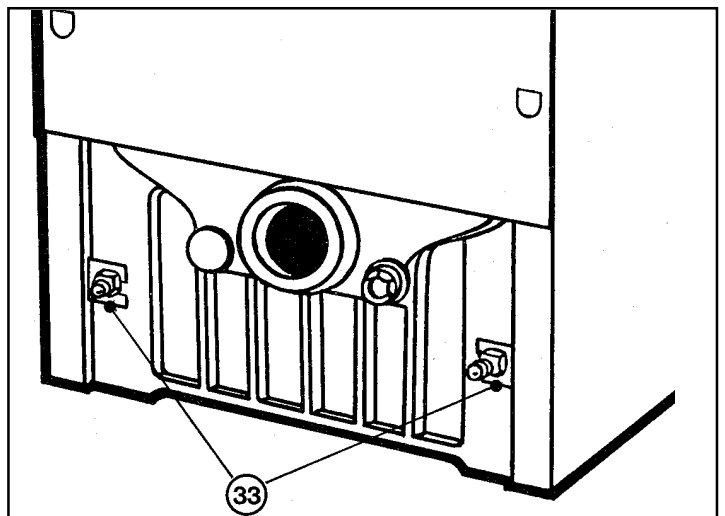
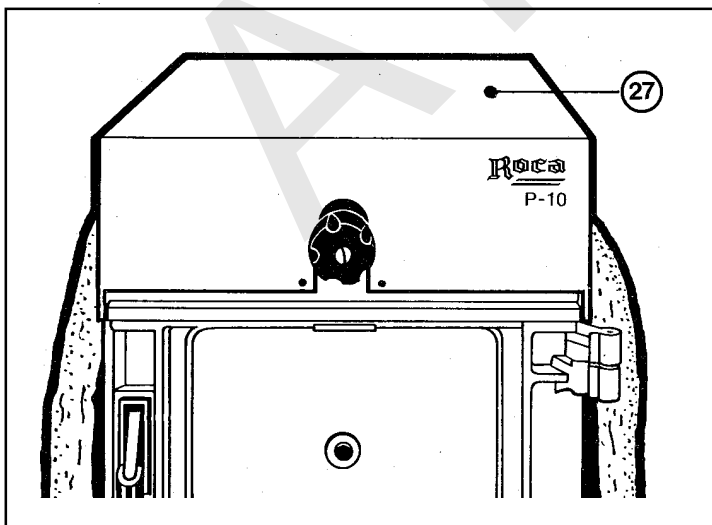
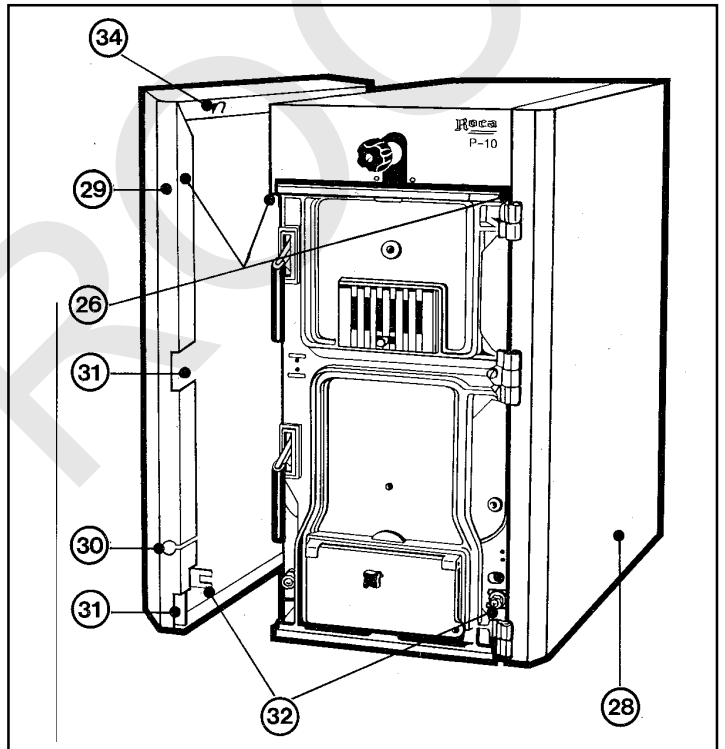
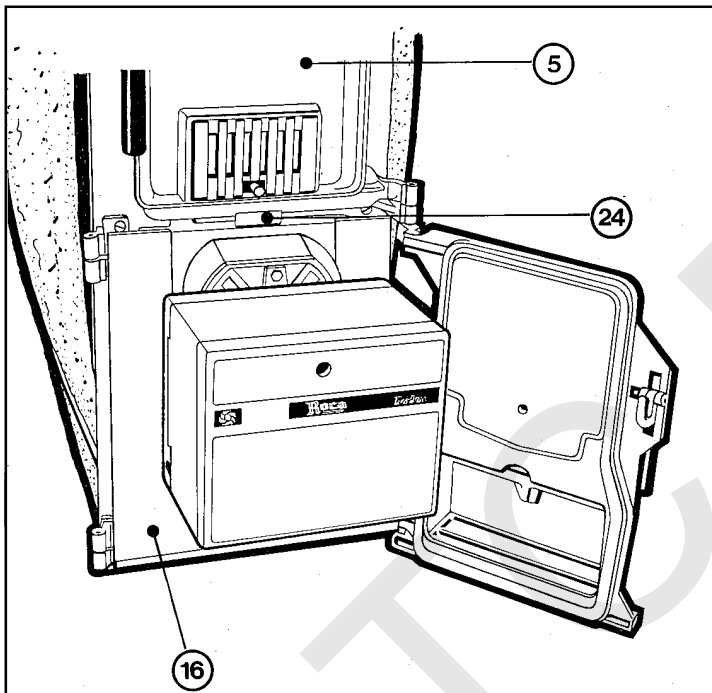
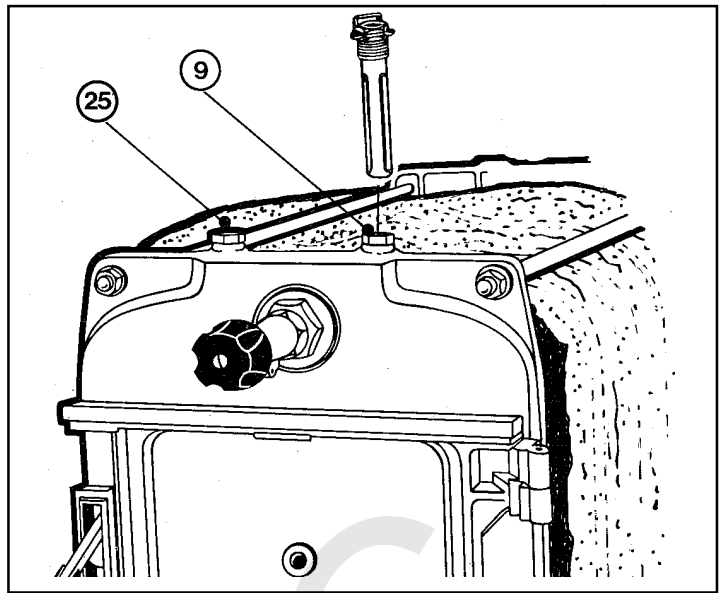
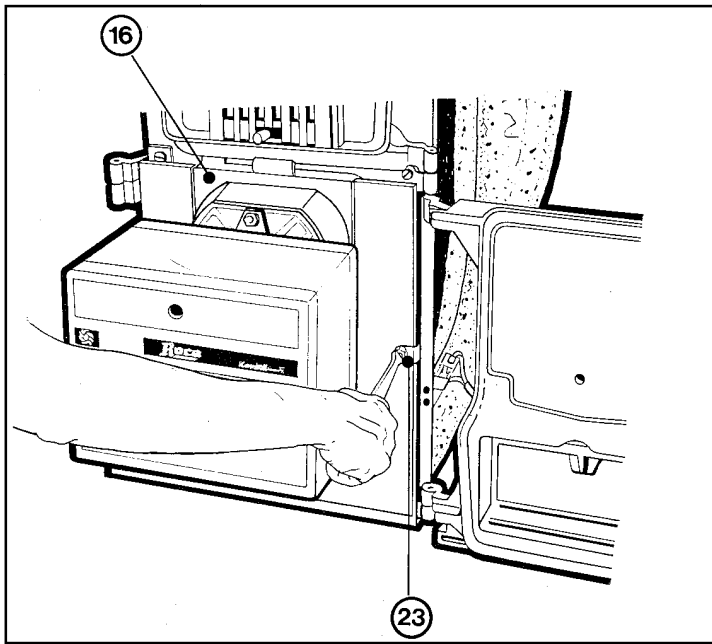
Combustibles fluidos
For fluid-fuel firing

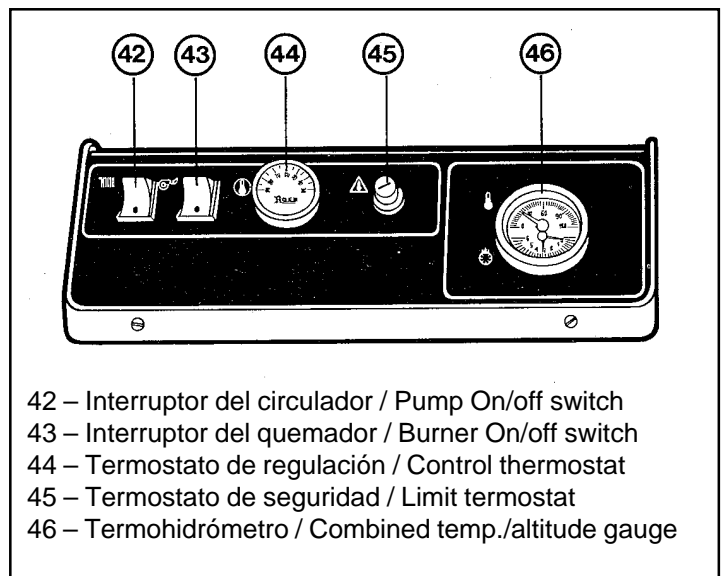
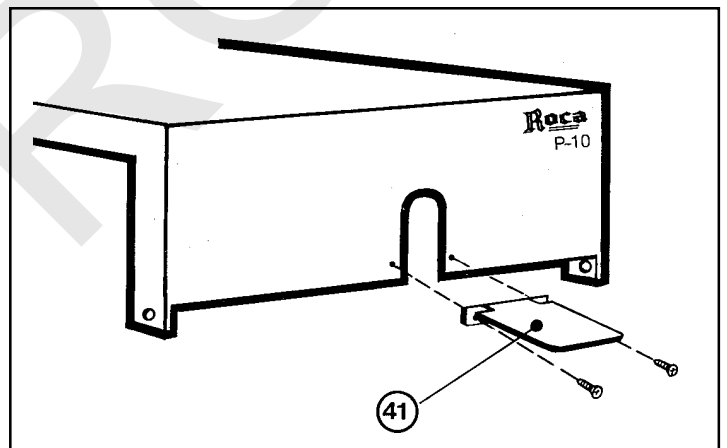
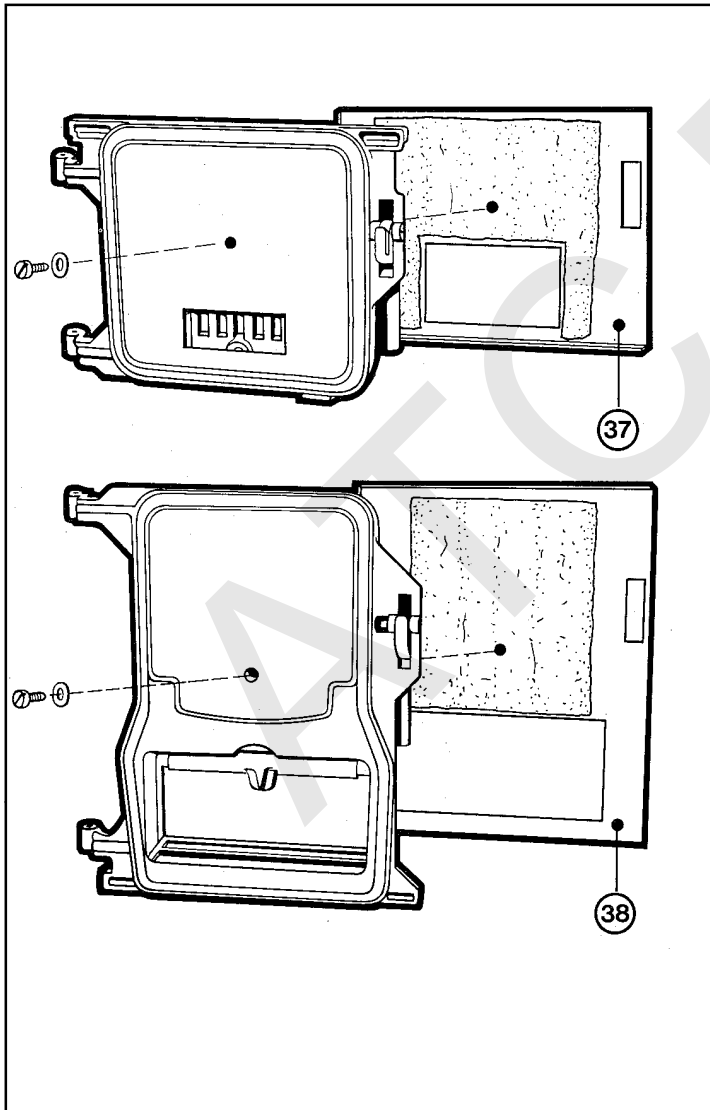
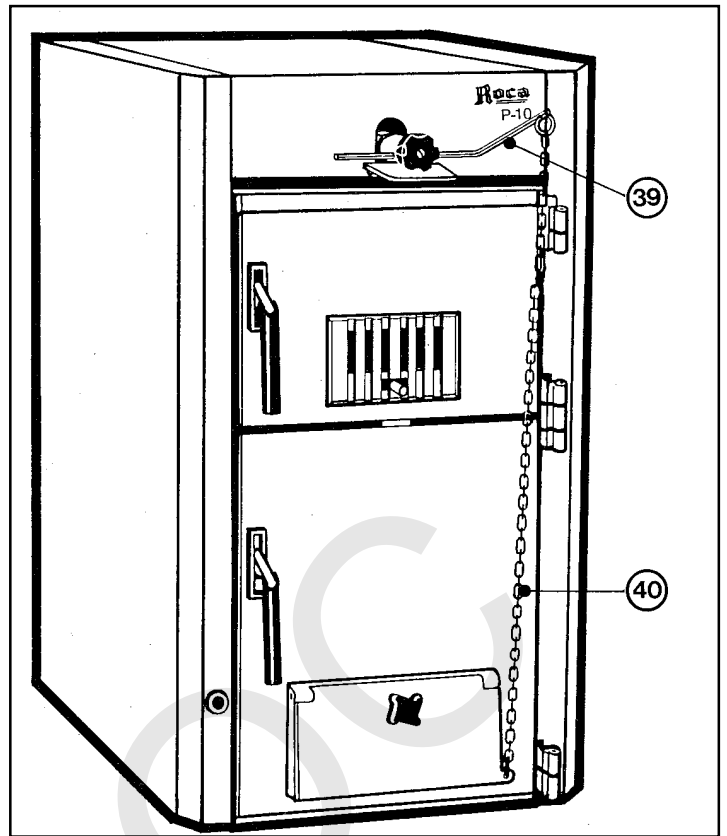
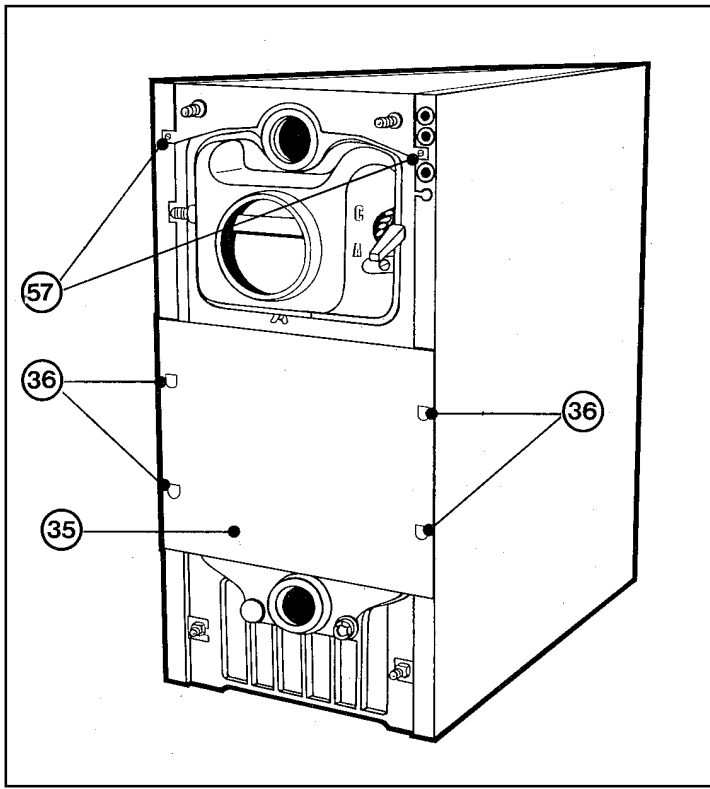


Combustibles sólidos
For solid-fuel firing

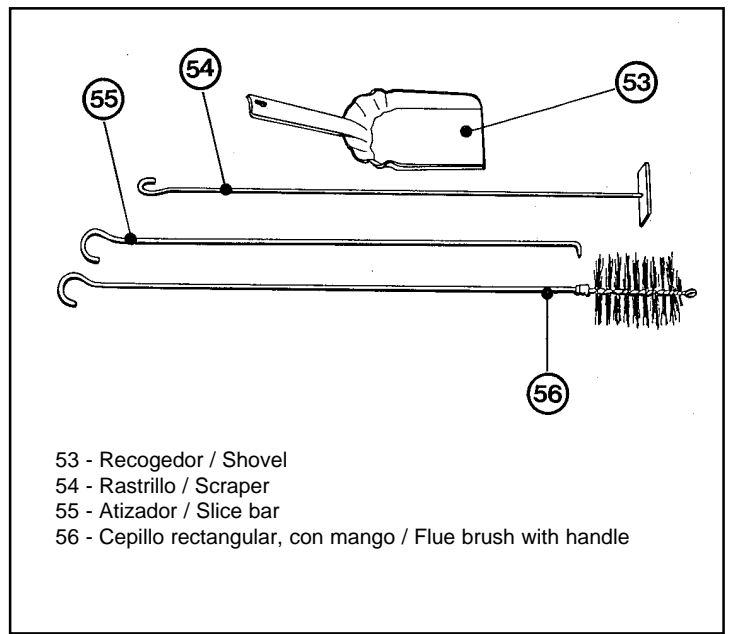
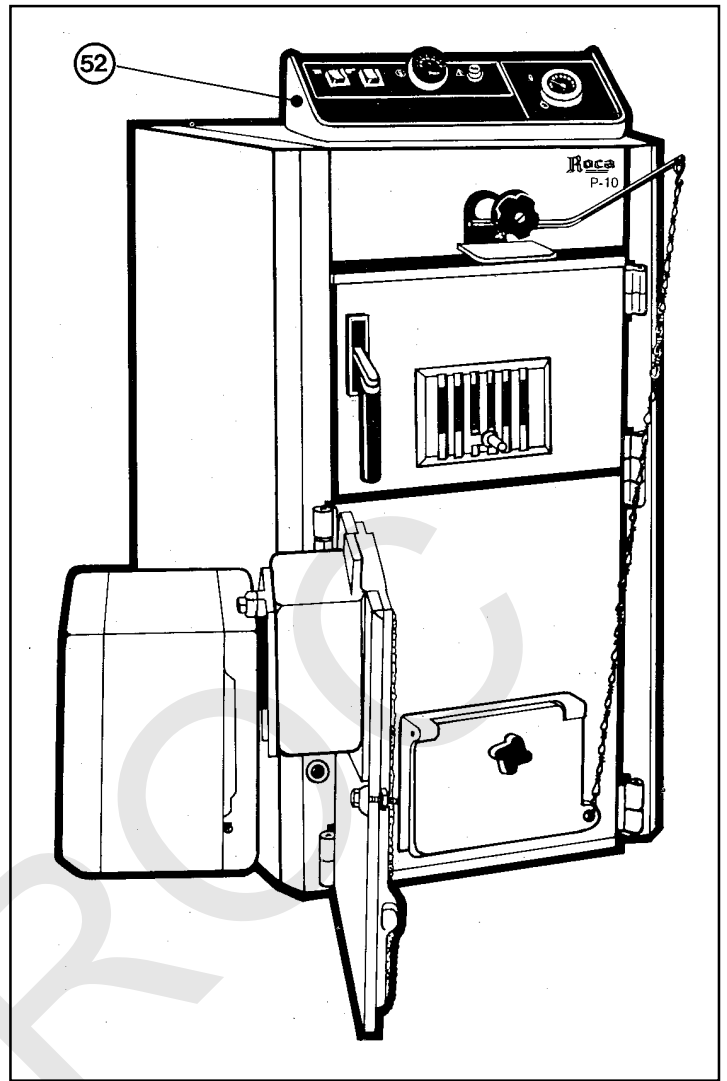
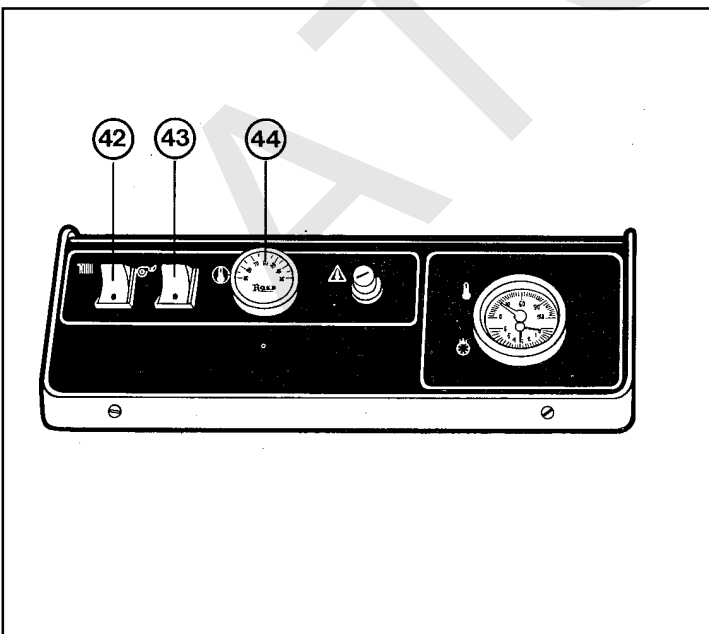
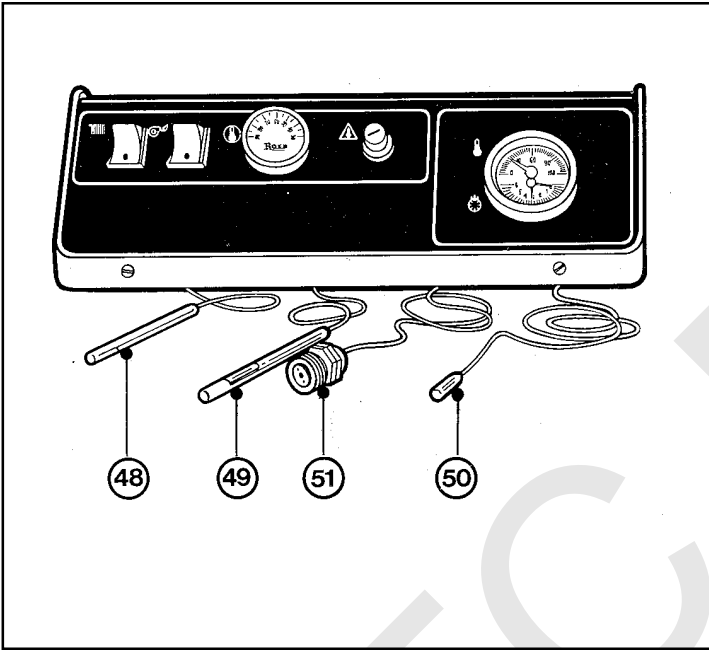
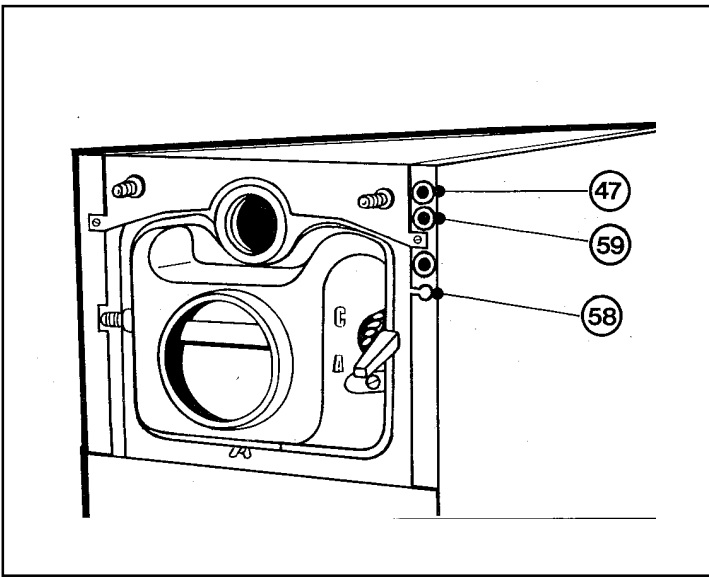






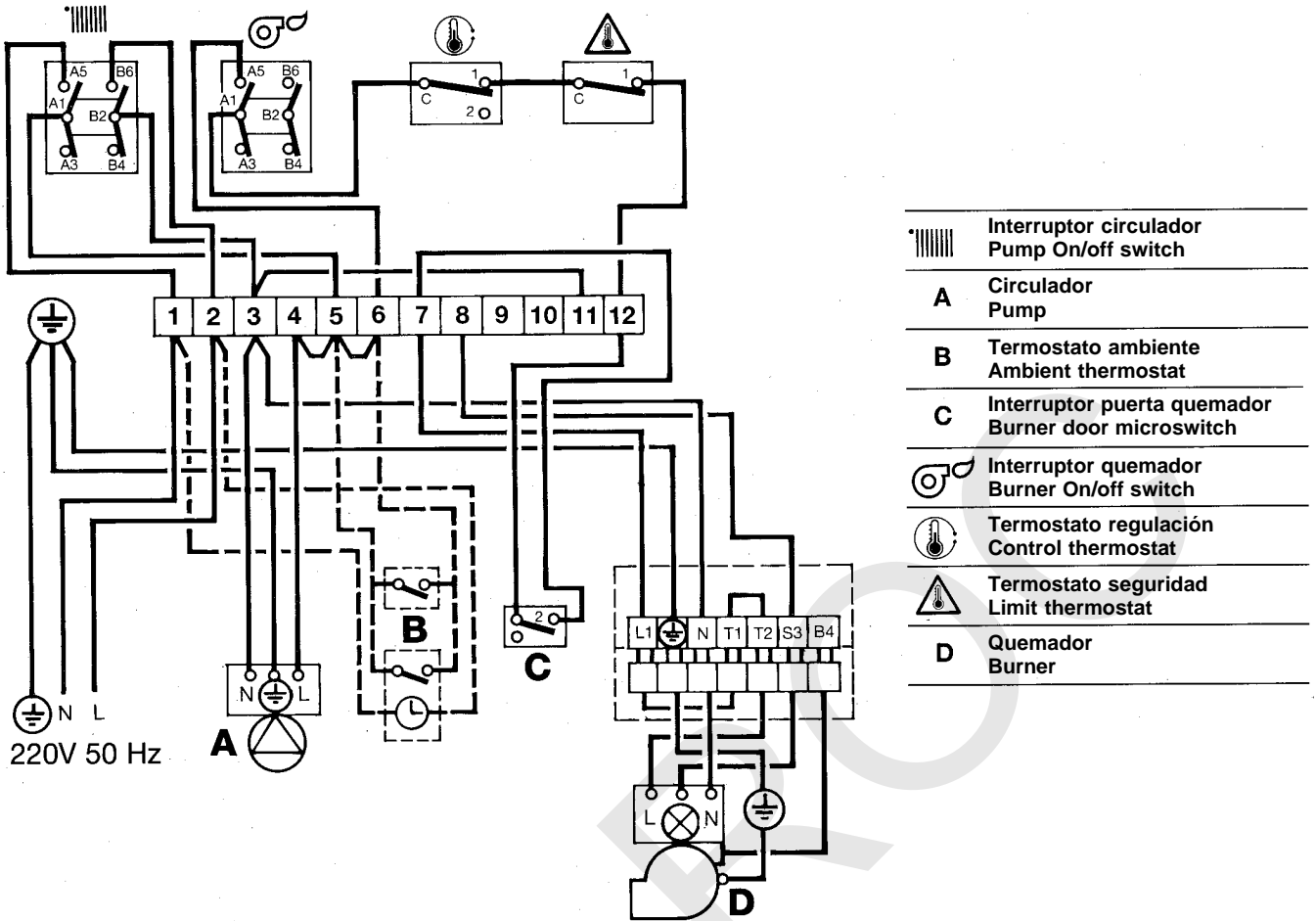


- 42 – Interruptor del circulador / Pump On/off switch
- 43 – Interruptor del quemador / Burner On/off switch
- 44 – Termostato de regulación / Control thermostat
- 45 – Termostato de seguridad / Limit thermostat
- 46 – Termohidrómetro / Combined temp./altitude gauge



- 53 - Recogedor / Shovel
- 54 - Rastrillo / Scraper
- 55 - Atizador / Slice bar
- 56 - Cepillo rectangular, con mango / Flue brush with handle

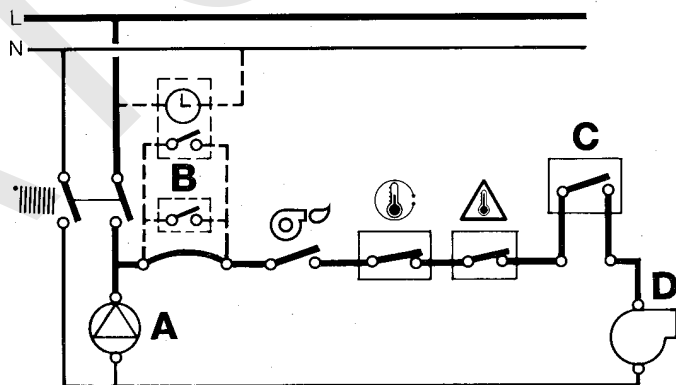
Esquema de conexionado / Wiring diagram



	Interruptor circulador Pump On/off switch
A	Circulador Pump
B	Termostato ambiente Ambient thermostat
C	Interruptor puerta quemador Burner door microswitch
	Interruptor quemador Burner On/off switch
	Termostato regulación Control thermostat
	Termostato seguridad Limit thermostat
D	Quemador Burner

Nota: Si se coloca termostato ambiente, deshacer el puente existente entre los bornes 5 y 6.
Note: Where an ambient thermostat has been installed, remove the jumper across terminals 5 and 6.

Esquema eléctrico de principio Schematic Wiring Diagram



	Interruptor circulador Pump On/off switch	A	Circulador Pump
	Interruptor quemador Burner On/off switch	B	Termostato ambiente Ambient thermostat
	Termostato regulación Control thermostat	C	Interruptor pta. quemador Burner door microswitch
	Termostato seguridad Limit thermostat	D	Quemador Burner

Main features

Constructed basically from cast-iron, which constitutes a guarantee of indefinite continuous use.

It permits fitting the ashpit door and the burner door, with burner assembly at the same time and therefore it is not necessary to change accessories for adapting the boiler for using different fuels.

The cast-iron sections, joined together by means of push nipples, make up a completely sealed combustion chamber and flueways, for making full use of the combustion heat and energy consumed.

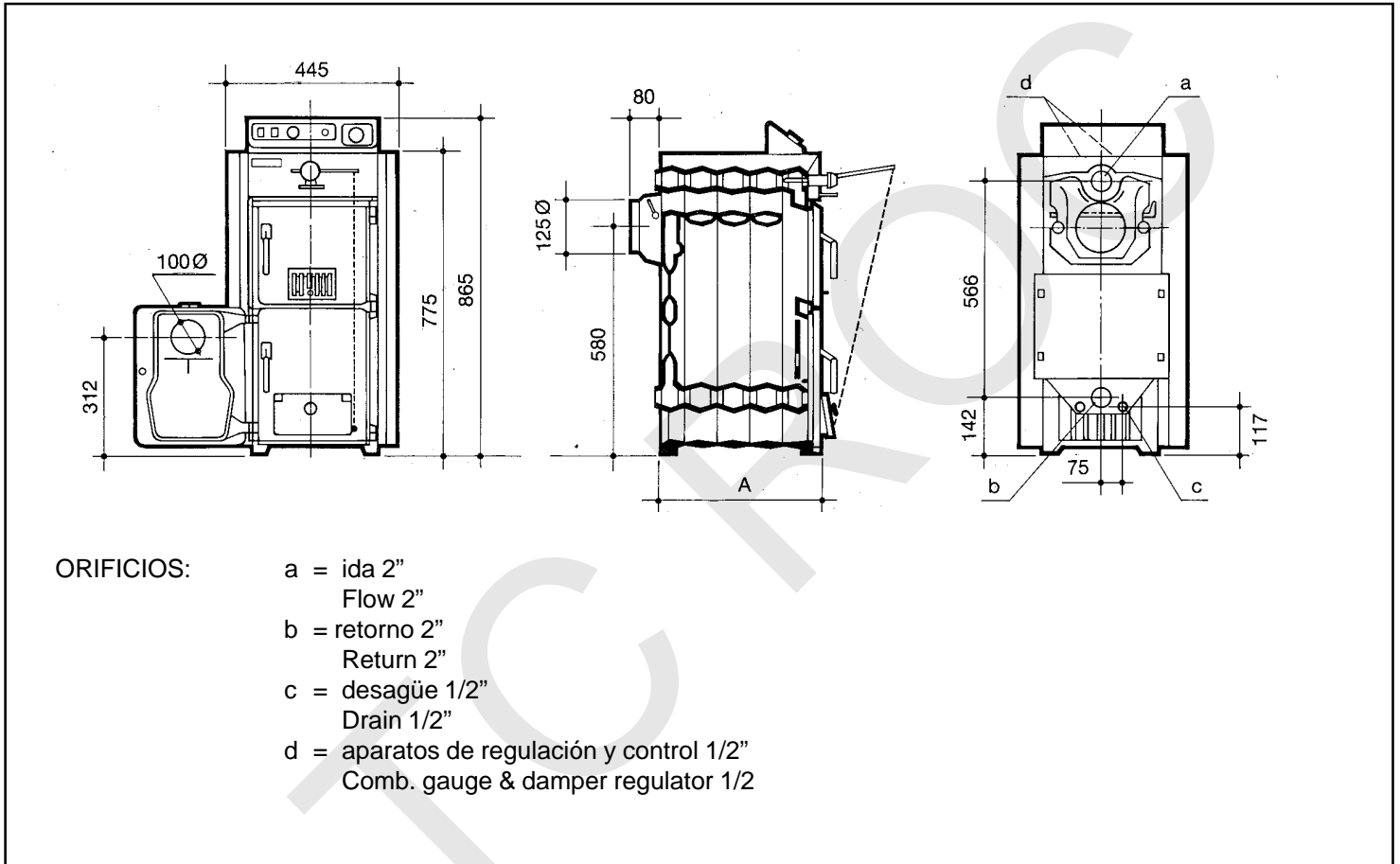
Combustion chamber with fixed water-cooled grates adapted for burning all types of fuel, with no need of firebrick protection.

It has an ash-pan for quick and clean removal of ashes and cinders.

The boiler body and all the doors are thermally insulated to prevent heat loss and improve efficiency.

Automatic damper regulator, control panel and burner safety microswitch for use according to the chosen fuel.

Dimensions and Technical Features



Boiler Type	Nº. of Sections	Water content Litres	(3) Flueway Pressure Drop mm.w.g.	Depth A mm	For solid-fuel firing							For fluid-fuel firing				
					(1) Heat Output		Net Efficiency %	(2) Fuel Load Volume		Ashpit Volume dm ³	Approx. Weight kg	(4) Anti-runaway Equipment	Heat Output		Net Efficiency %	Approx. Weight kg
					kcal/h	kW		dm ³	dm ³				kcal/h	kW		
P-10-3	3	13	0,10	309	7.000	8,1	75	12	5,3	118	AE0	10.000	11,6	82	125	
P-10-4	4	17	0,15	414	10.000	11,6	75	19	7,6	147	AE1	14.000	16,3	82	154	
P-10-5	5	21	0,20	519	13.000	15,1	75	26	10,0	176	AE1	18.000	20,9	82	183	

(1) Output obtained with coal

- Granulometry 20 ÷ 60 mm
- Calorific value (net) 7,000 kcal/h

(2) Corresponds to the volume occupied by the fuel from the grates to the bottom of the firedoor.

(3) With excess air e ≈ 25%

(4) Optional

Chimney sizing

To guarantee the necessary negative pressure at the base of the chimney, the diameter should be 17.5cm and the minimum height 5 m. When fitting approved chimneys, please observe the makers' directions.

Delivery

- 1 - The P-10 boiler for solid fuels is delivered in two packages:
 - Pack 1 - Fully assembled boiler body, painted with an anti-rust primer, protected with wooden packing for transport.
The ash-pan beneath the grates.
The automatic damper regulator, in its packing, and the shovel inside the combustion chamber.
 - Pack 2 - The casing unit in a cardboard pack which contains:
 - The casing, comprising:
 - Top cover
 - Right-hand panel
 - Left-hand panel
 - Back cover
 - Firedoor case
 - Ashpit door case
 - Boiler cleaning tools:
 - Flue brush
 - Brush handle
 - Scraper
 - Slice bar
 - Insulating blanket for the boiler.
 - A plastic bag containing:
 - The protective cover for the damper regulator, the screws for fixing it, as well as the screws and washers for fixing the casing.
- 2 - The P-10 boiler for fluid fuels comes in three packages. The contents of two of them are similar to those for the solid-fuel version, and the other contains the conversion kit CLS-7 for fluid-fuel firing and comprises:
 - Pack 3 - Burner door with fitted casing.
 - Control panel with burner door microswitch.
 - Plastic bag with accessories and nuts & bolts.

Assembly

Checking the material

First we suggest checking the number of packages, that their contents conforms to those indicated in "Delivery" and that no incident in transport or lying on site has altered their composition.

With respect to the boiler, proceed to:

- 1 - Remove the packing.
- 2 - Open the ashpit door (1) by means of the handle (2).
- 3 - Lower the front section grille (3) hinged on the built-in section brackets (4) and leave it upside down.
- 4 - Take out the material contained in the combustion chamber and replace the grille (3) in its original position. Close the door (1).
- 5 - Open the firedoor (5) using the handle (6) and check the flues to make sure that no foreign body has entered them. If so, it should be removed. Close the door (5).

Location

- 6 - Check that the P-10 boiler is properly levelled on the base chosen for its use.

Damper Regulator

- 7 - Remove the plastic cap that protects the threads of the 1¼" x ¾" tapping (7) in the front section and fit the body with handle of the automatic damper regulator (8)* according to the instructions that come with this accessory.

* This operation can be omitted in boilers intended for continuous use of fluid fuels and the bushing in the tapping (7) substituted by a 1¼" plug. Nevertheless, from the aesthetic point of view it is suggested that this piece be fitted.
In any case, it is preferable not to fit the hexagonal rod and chain permanently until after assembling the casing.

Controls

- 8 - If it is decided to fit a combined temperature/altitude gauge in boilers intended for continuous use of solid fuels*, the metal plug must be removed from the top tapping (9) in the front section and the pocket should be screwed into it. The combined temp./altitude gauge shall be installed after fitting the casing.
If an altitude gauge and a thermometer are being fitted separately, the former will have to be screwed into the same tapping (9) in the front section, after fitting the casing.
* Operation 8 should be omitted in boilers intended for continuous use of fluid fuels.

Insulating blanket

- 9 - Cover the body of the boiler with the insulating blanket (10) passing it between the body and the four tie-rods (11) to ensure its immobility.

Connecting to the installation

- 10 - Remove the plastic caps that protect the threads of the upper (12) and lower (13) tappings in the back section and make connections to the flow and return circuits respectively.
- 11 - Remove the plug from the tapping (14) in the back section and fit a drain cock.

Safety devices

- 12 - Fit the specific safety devices for sealed system or open vented installations (safety valve, sealed or open expansion vessel).
In any case the diameters of the safety pipes shall comply with current regulations.

Connecting to the flue duct system

- 13 - Connect the boiler to the flue duct system through the smoke hood (15).
- 14 - Carefully pack round the base of the chimney with putty and check the sealing of the smoke hood to ensure that no air can leak in.

Fitting complementary equipment for using fluid fuels

In order to use fluid fuels it is necessary to equip the boiler with the required components which are:

- Burner door with fitted casing.
 - Control panel and microswitch.
- 15 - Open the ashpit door (1) and lower the front section grille (3). This action prevents damage to the blast tube (17) which, on closing the burner door (16) with the burner fitted, might strike the grille if this were still in its original position.
 - 16 - Adding the burner door (16) to the boiler does not make it necessary for the ashpit door (1) to be removed. It is sufficient to leave the latter open and hang the former from the hinges (18) after fitting them to the left of the front section using the four bolts which, together with the two fixing pins, are supplied in a plastic bag with the door.
 - 17 - Fit the microswitch (20) (a switch necessary for preventing accidental functioning of the burner when using solid fuels), with its bracket (21) on the lower right part of the rear surface of the front section, using the two M4 x 25* bolts in such a way that the operating lever can be pushed by the M5 x 55* bolt (22) which will have been fixed in the hole for this purpose in the burner door, with an M5* nut.

* Supplied in a plastic bag.

- 18 - Fix the burner to the door (16) with the flange adapted for "Roca" burners, in accordance with the instructions that come with it. Close the burner door and immobilize it by tightening the locking screw (23) with a suitable tool.

Safety against opening the firedoor

It is impossible to open the firedoor (5) accidentally once the burner door (16) is immobilized since the flange (24) makes it impracticable. The firedoor can be opened only after deliberately loosening bolt (23) and opening the burner door.

Controls

19 - Insert the triple* pocket in the tapping (9) and the pocket for the control panel altitude gauge in the tapping (25) in the front section after removing the metal plugs from both of them.

* Supplied in a plastic bag inside the control panel packing.

Control panel

The control panel that forms part of the complementary equipment for using fluid fuels has to be installed on the top casing cover, and so will be fitted after assembling the casing.

Watertight test

20 - Fill the installation with water and check that there are no leaks in any part of the hydraulic circuit.

Fitting the casing

According to whether the boiler is intended for continuous use of solid or fluid fuels, it is advisable to open the required number of pre-punched holes in the top cover, taking into consideration the apparatuses or control panel that are going to be fitted. In the latter case, the three knock-outs should be cleared.

21 - Place the top cover (27) on the boiler, introducing the rear ends of the two tie-rods in the holes provided in the casing.

22 - Situate the right (28) and left* (29) side casing panels in their respective sides of the boiler. The left panel has an opening (30) where the cable entry carrying the cable connecting the burner and the control panel in fluid-fired boilers should be fitted.

* When the boiler incorporates a burner door, the slots (31) on the front edge which coincide with the hinges should be left free.

23 - The lower front brackets (32) should be fixed between the two nuts screwed on the ends of the tie-rods*, while the rear ones (33) fit on the ends of the tie-rods.

* Where a burner door has been fitted to the boiler, this should be opened to allow easy manipulation of the nuts.

24 - Insert the side edges of the top cover (27) into the locating lugs (34) on the upper edges of the side casing panels. Fasten the two sides to the top cover using the four self-tapping screws provided – two in the front part (26) and two in the rear (57).

25 - Hang the back cover (35) introducing the four locating lugs into their respective slots (36) punched on the rear edge of the side casing panels.

26 - Fit the casing panels (37) and (38) to the firedoor and ashpit door respectively, using the screws and washers provided.

27 - Fit* the hexagonal rod (39) and the chain (40) of the damper regulator as indicated in the instructions that come with it.

28 - Open the firedoor and fit* the plate (41) for protecting the damper regulator in the front part of the top casing cover, using the two M4 screws supplied. Close the firedoor.

* This operation will not be necessary in boilers intended for continuous use of fluid fuels if a damper regulator has not been fitted.

29 - In boilers designed for solid fuel firing, screw the altitude or combined temp./altitude gauge, -whichever control unit is chosen-, in the pocket provided for this purpose in the front section. (See operation 8 in "Assembly").

Fitting the control panel

The control panel that is supplied with the complementary equipment for using fluid fuels incorporates the [relative parts](#), as well as the terminal strip and the burner door microswitch.
30 - Fit the two fixing brackets for the control panel to the top casing cover, using the screws provided.

Electrical connections

31 - Before fitting the control panel, make the electrical connections in accordance with the following [diagram](#).

The burner cable incorporates a multiple connection plug and a cable entry. The latter should be fitted in the existing opening (30) in the left-hand side casing panel.

Likewise with the cable that supplies the pump, its cable entry should be fitted in the existing opening (58) in the rear part of the left-hand side casing panel.

The mains power cable is passed through cable entry (47). If an ambient thermostat is installed, then its cable will pass through (59).

The different cables from the control panel will come out through the same knock-out in the top casing cover.

32 - The bulbs for the control thermostat (48), limitthermostat (49) and the thermometer (50) are inserted* in the triple pocket which is in turn introduced in the tapping provided for this purpose in the front section. Fasten the capillaries with the clip in the pocket.

Screw* the altitude gauge sensor (51) in its pocket, located in the chosen tapping in the front section. (See "Assembly" operations).

* Through the knock-outs in the top casing cover which have not been used for passing electrical cables.

33 - Secure the control panel (52) using the bracket fitted to the top casing cover and the M6 screws provided.

Operation

Schematic Wiring Diagram

(See Diagram)

Operations prior to the first lighting

1 - Check that the installation is full of water and place the fixed pointer on the altitude or combined temp./altitude gauge in the position corresponding to the static head of the installation.

2 - Check the pump for correct operation.

3 - Bleed the air from the system and radiators.

4 - In installations with a sealed expansion vessel, top up with water (if necessary) until the mobile pointer on the altitude or combined temp./altitude gauge is slightly above the fixed one. Where an open expansion vessel has been installed, refill until the mobile pointer levels with the fixed one.

First lighting with solid fuels

5 - Check that the smokehood damper is open. (Handle in position "A").

6 - Open the ashpit door, lower the front section grille and put a sufficient amount of straw or paper, kindling or coal so as to aid lighting up.

While doing this, keep the firedoor and its observation window closed. The latter will be kept open only when using fuel with an excessive content of volatile material requiring a secondary supply of air for burning.

7 - Switch on the system circulating pump.

8 - Following the initial combustion, put the grille back in its original position and close the ashpit door.

9 - Open the firedoor and stoke with the chosen fuel, loading it so as not to smother the fire, to an appropriate level. Close the firedoor and check that there are no leaks of flue gases.

- 10 - Set the automatic damper regulator according to the instructions that come with it.
- 11 - Bleed all the radiators and ensure that they reach the required operating temperature in accordance with that selected on the damper regulator.

First lighting with fluid fuels

- 5 - Connect the fuel supply line to the burner.
- 6 - Check that the smokehood damper is open. (Handle in position "A").
- 7 - Turn ON the main switch for the power supply to reach the control panel.
- 8 - Turn ON the switch (42) to start up the system pump.
- 9 - Turn ON the switch (43) to start up the burner and check its running against the instructions that come with it.
- 10 - Set the control thermostat (44) to 80 °C approximately. Check that both the control and limit thermostats operate correctly.
Where an ambient thermostat has been installed, set it to the required comfort temperature.
- 11 - Bleed all the radiators and ensure that they reach the required operating temperature in accordance with that selected on the control thermostat.
- 12 - Check that there are no leaks of flue gases.
- 13 - Check the burner safety devices.

Maintenance

To aid operating and cleaning the boiler, a set of tools is supplied, comprising:

- 53 - Shovel
- 54 - Scraper
- 55 - Slice bar
- 56 - Flue brush with handle

The shovel (53) is used in stoking the boiler, for putting solid fuel in the combustion chamber, as well as for collecting and removing cinders from the ash-pan.

The scraper (54) permits drawing ashes and slag which might have fallen onto the base of the boiler, from the back to a more accessible place for collecting and removing.

The slice bar (55) eases cleaning of the grate bars in such a way that the cinders which have remained on the surface can fall onto the ash-pan. It can also be used –if necessary– for poking the solid fuels.

The flue brush (56) is used for cleaning the flues and the interior walls of the boiler.

Important recommendations

- If the installation is located in a frost-risk area, some anti-freeze solution should be added to the water in proportion to the minimum outside temperature of the place.
- The characteristics of the water in the installation should preferably be:

pH : 7.5 ÷ 8.5
Hardness: 8 ÷ 12 French degrees*

* One French degree is equivalent to 1 gram of calcium carbonate in 100 litres of water.

- If it were essential to add water to the system, always wait until the boiler has cooled down completely.