

**FONDERIE SIME S.p.A.** of Via Garbo 27 - Legnago (VR) - Italy declares that its diesel-burning boilers are produced in accordance with the requirements of article 3 paragraph 3 of Directive PED 97/23/EEC and according to proper manufacturing practice, as they are designed and manufactured in accordance with UNI EN 303 -1: 2002 standards.

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# 1 BOILER DESCRIPTION

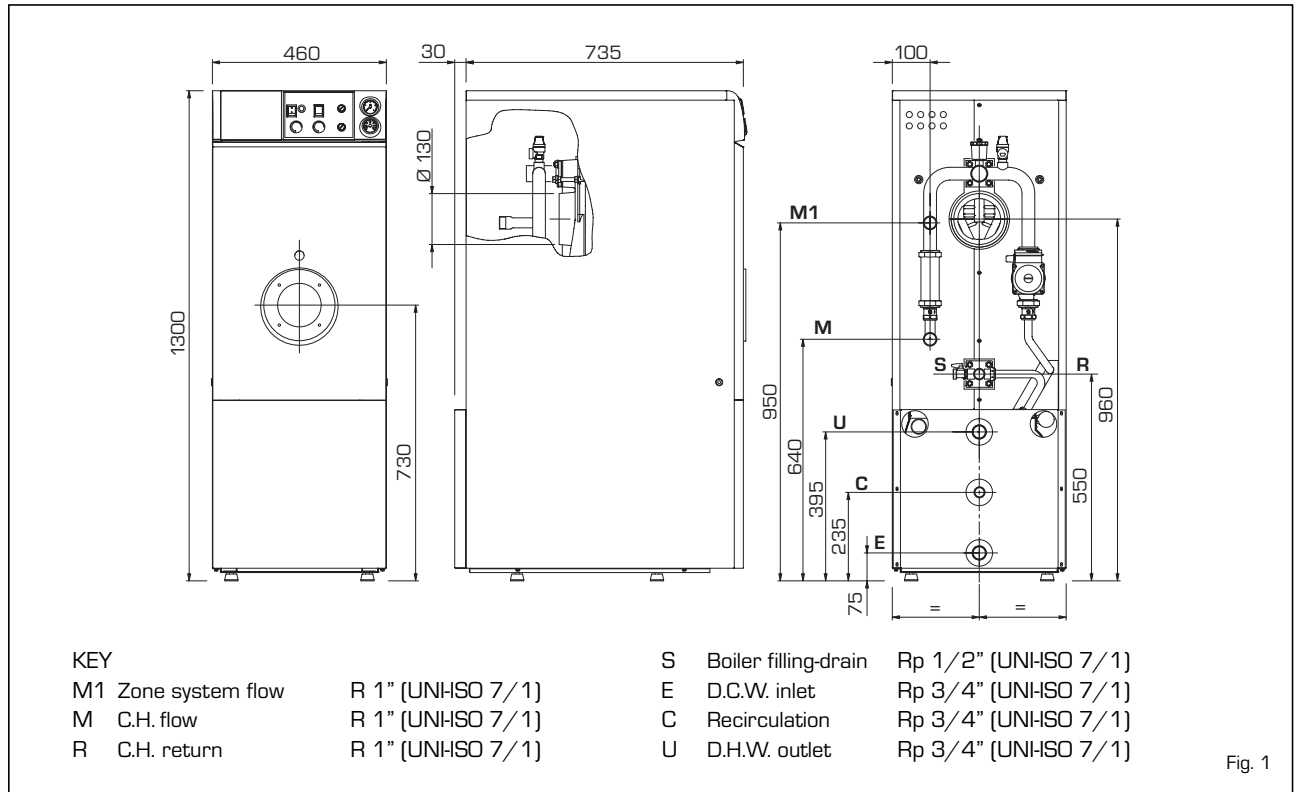
## 1.1 INTRODUCTION

The new "Rondò B" series of cast iron boilers, for heating and the production

of domestic hot water, has been designed in compliance with the European Directive CEE 92/42. They use light oil and have a perfectly

balanced combustion with a very high thermal efficiency for economical performance.

## 1.2 DIMENSIONAL DETAILS



## 1.3 TECHNICAL FEATURES

		Rondò B4	Rondò B5	Rondò B4 Nox: Class 3*	Rondò B5 NOx: Class 3*
<b>Output</b>	kW	31,3	40,0	27,6	32,7
	kcal/h	26.900	34.400	23.700	28.100
<b>Input</b>	kW	34,8	44,3	30,7	36,3
	kcal/h	29.900	38.100	26.400	31.200
<b>Sections</b>	n°	4	5	4	5
<b>Adsorbed power consumption</b>	W	80	80	80	80
<b>Maximum water head</b>	bar	4	4	4	4
<b>Water content</b>	l	19,8	23,8	19,8	23,8
<b>Smoke loss of head</b>	mbar	0,16	0,21	0,07	0,13
<b>Combustion chamber pressure</b>	mbar	-0,02	-0,02	-0,02	-0,02
<b>Suggested chimney depression</b>	mbar	0,18	0,23	0,09	0,15
<b>Smokes temperature</b>	°C	188	185	145	145
<b>Smokes flow</b>	m <sup>3</sup> st/h	41,4	52,8	37,4	43,9
<b>Smokes volume</b>	dm <sup>3</sup>	12	15	12	15
<b>CO<sub>2</sub></b>	%	12,5	12,5	12,8	12,9
<b>Heating adjustment range</b>	°C	30÷85	30÷85	30÷85	30÷85
<b>D.H.W. adjustment range</b>	°C	30÷60	30÷60	30÷60	30÷60
<b>D.H.W. production</b>					
D.H.W. tank capacity	l	80	80	80	80
D.H.W. flow rate Δt 30°C **	l/h	880	930	790	930
Recovery time from 25°C to 55°C	min	10	10	10	10
D.H.W. tank max. water head	bar	6	6	6	6
<b>Weight</b>	kg	217	243	217	243

\* Burner with low polluting emissions

\*\* With the sanitary water at inlet temperature 15°C - Boiler temperature 80°C

## 1.4 FUNCTIONAL DIAGRAM

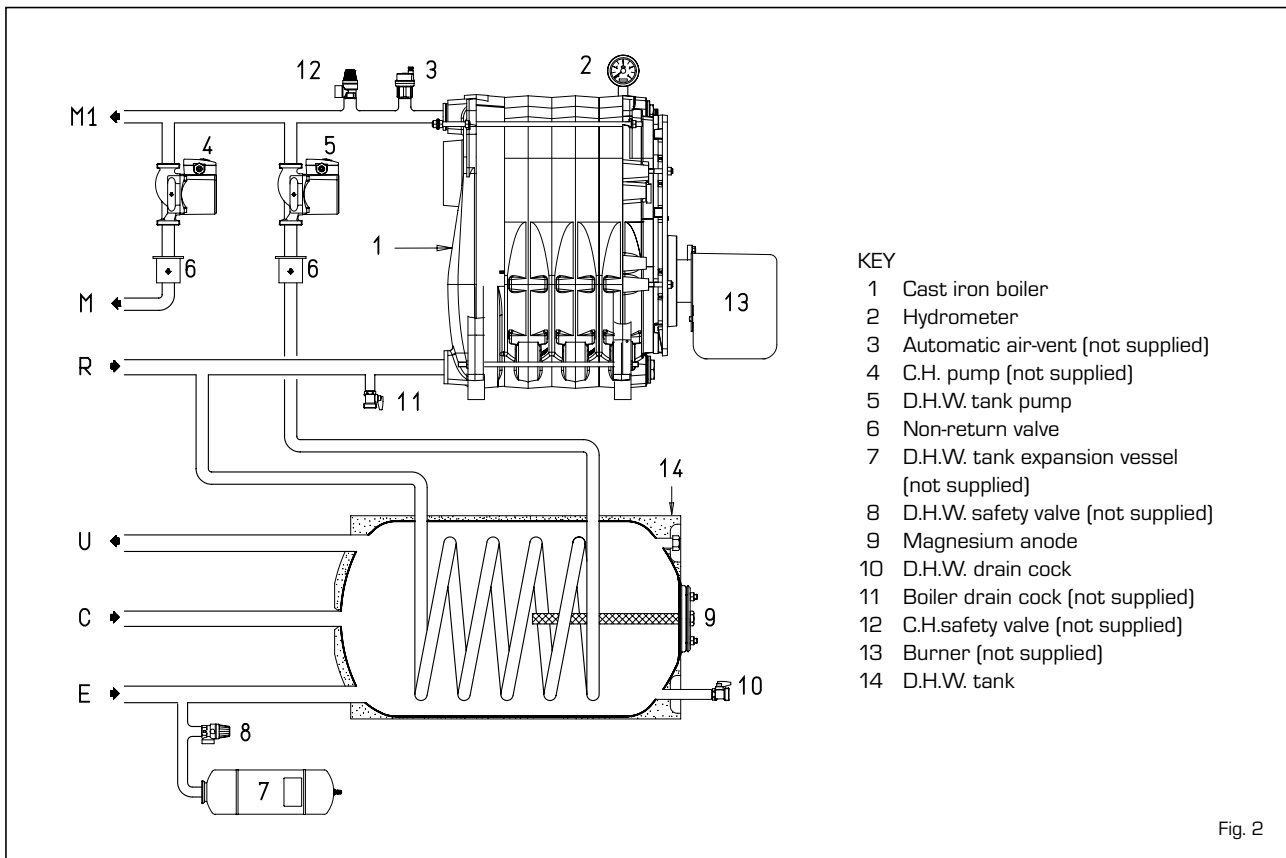


Fig. 2

## 1.5 COMBUSTION CHAMBER

The combustion chamber is of the straight flow type and complies with standard EN 303-3 appendix E.

The dimensions are shown in fig. 3.

	L mm	Volumen dm <sup>3</sup>
<b>Rondò B4</b>	405	24,0
<b>Rondò B5</b>	505	30,5

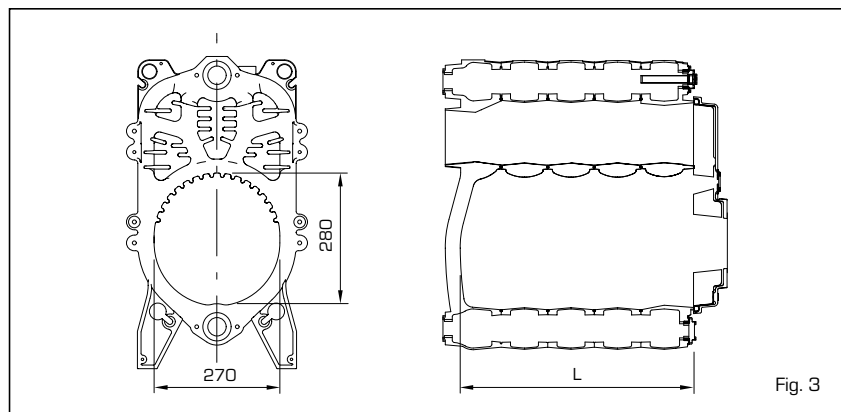


Fig. 3

## 1.6 COMPATIBLE BURNERS

In general, the oil burner that is compatible with the boiler should use spray of the semi solid type.

Section 1.6.1 - 1.6.2 shows the matching table of the burners together with the boilers have been tested with.

### 1.6.1 "RIELLO" burners

	Model	Nozzle		Atomising angle	Pump pressure bar
		Tipo	σ		
<b>Rondò B4</b>	RG1R	DELAVAN	0,75	60°W	13,0
	R2000 G38R	DELAVAN	0,75	60°W	12,5
<b>Rondò B5</b>	RG1R	DELAVAN	1,00	60°W	11,5
	R2000 G46R	DELAVAN	0,85	60°W	14,0

### 1.6.2 "RIELLO" burners - NOx: Class 3

	Model	Nozzle		Atomising angle	Pump pressure bar
		Tipo	σ		
<b>Rondò B4</b>	R2000 G36 RLN	DANFOSS	0,60	60°H	14,0
<b>Rondò B5</b>	R2000 G60 RLN	DANFOSS	0,75	60°H	12,0

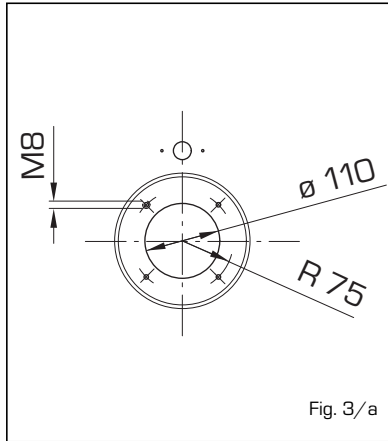
NOTE:

The best emission values are obtained with Danfoss 60°H nozzles. Use of Danfoss 60°H nozzles is recommended in the field to ensure continued dependable burner functioning.

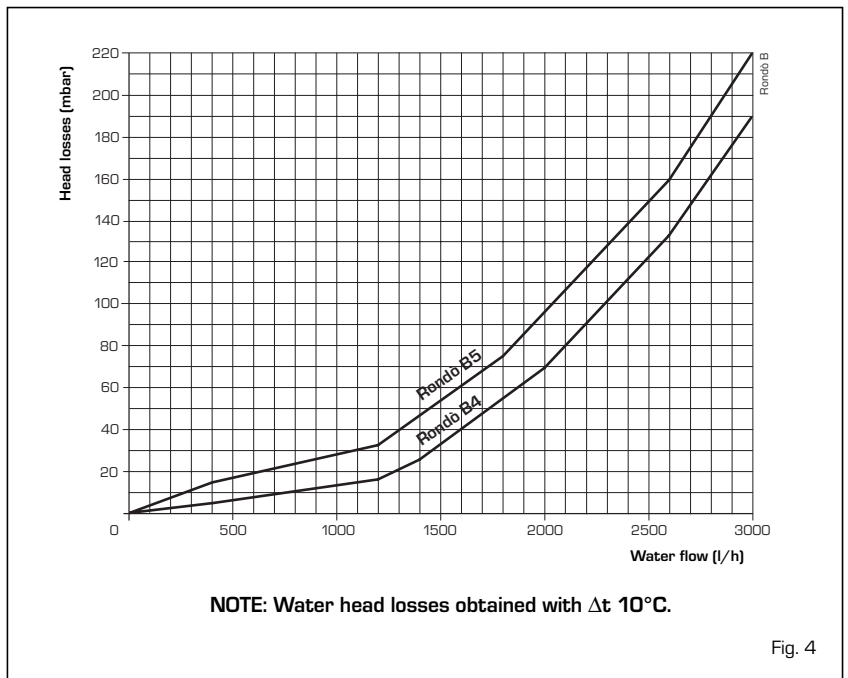
### 1.6.3 Burners assembly

The boiler door details is shown in figure 3/a for burner mounting.

The burners must be regulated such that the CO<sub>2</sub> value is that indicated in point 1.3, with a tolerance of ± 5%.



### 1.7 WATER HEAD LOSSES



## 2 INSTALLATION

### 2.1 BOILER ROOM

The boiler room should feature all the characteristics required by standards governing liquid fuel heating systems.

### 2.2 BOILER ROOM DIMENSIONS

Position the boiler body on the foundation bed, which should be at least 10 cm high.

The body should rest on a surface allowing shifting, possibly by means of sheet metal.

Leave a clearance between the boiler and the wall of at least 0.60 m, and between the top of the casing and the ceiling of 1 m (0.50 m in the case of boilers with incorporated D.H.W. tank). The ceiling height of the boiler room should be less than 2.5 m.

### 2.3 CONNECTING UP SYSTEM

When connecting up the water supply to the boiler, make sure that the specifications given in fig. 1 are observed. All connecting unions should be easy to disconnect by means of tightening rings. A closed expansion tank system must be used.

#### 2.3.1 Accessories (fig. 2)

To ensure boiler efficiency, fit an automatic air bleed valve (3) to the 3/8" sleeve of the heat delivery tube, and a pressure relief valve set to 3 bar (12) to the 1/2" sleeve.

Install a pressure relief valve calibrated to 6 bar (8) on the boiler water infeed pipe to prevent the risk of bursting due to excess pressure build up.

If the boiler safety valve cuts in frequently, install a 5-litre expansion vessel (7) with maximum operating pressure of 8 bar on the hot water circuit. The tank should be fitted with a natural rubber food-grade diaphragm.

The central heating circuit pump can be installed at the rear of the boiler in place of the connection union (4).

#### 2.3.2 Filling the water system

**Before connecting the boiler, thoroughly flush the system to eliminate scale which could damage the appliance.**

Filling must be done slowly so as to allow any air bubbles to be bled off

through the air valves.

In closed-circuit heating systems, the cold water filling pressure and the pre-charging pressure of the expansion vessel should be no less than or equal to the height of the water head of the installation (e.g. for water head of 5 meters, the vessel pre-charging pressure and installation filling pressure should be at least 0.5 bar).

#### 2.3.3 D.H.W. production

During the preparation of hot water, the circulating pump installed on the boiler circuit remains in operation until the boiler thermostat probe detects the pre-selected value.

Once the boiler thermostat has reached the set point, and the selector has been set to winter operation with the room thermostat on demand, the central heating circuit pump (not supplied) can be actuated.

**All residual air in the boiler coils must be bled at the first start-up to ensure proper operation.**

**To facilitate this operation, position the slot of the release screw on the check valve horizontally (6 fig. 2). Once the air has been bled, return the screw to its original position.**

This domestic hot water boiler is of the rapid accumulation type, made from vitreous enamelled steel with foam polyurethane lining, and has a capacity of 80 litres.

The high degree of thermal insulation drastically reduces heat dispersal, thereby cutting boiler maintenance costs.

#### 2.3.4 Characteristics of feedwater

To prevent lime scale and damage to the tap water exchanger, the water supplied should have a hardness of no more than 20°F.

In all cases the water used should be tested and adequate treatment devices should be installed. To prevent lime scale or deposits on the primary exchanger, the water used to supply the heating circuit should must be treated in accordance with UNI-CTI 8065 standards.

The water used for the central heating system should be treated in the following cases:

- For extensive systems (with high contents of water).
- Frequent addition of water into the

system.

- Should it be necessary to empty the system either partially or totally.

### 2.4 CONNECTING UP FLUE

The flue is of fundamental importance for the proper operation of the boiler; if not installed in compliance with the standards, starting the boiler will be difficult and there will be a consequent formation of soot, condensate and encrustation.

The flue used to expel combustion products into the atmosphere must meet the following requirements:

- be constructed with waterproof materials, and resistant to smoke temperature and condensate;
- be of adequate mechanical resilience and of low heat conductivity;
- be perfectly sealed to prevent cooling of the flue itself;
- be as vertical as possible; the terminal section of the flue must be fitted with a static exhaust device that ensures constant and efficient extraction of products generated by combustion;
- to prevent the wind from creating pressure zones around the chimney top greater than the uplift force of combustion gases, the exhaust outlet should be at least 0.4 m higher than structures adjacent to the stack (including the roof top) within 8 m;
- have a diameter that is not inferior to that of the boiler union: square or rectangular-section flues should have an internal section 10% greater than that of the boiler union;
- the useful section of the flue must conform to the following formula:

$$S = K \frac{P}{\sqrt{H}}$$

S resulting section in cm<sup>2</sup>

K reduction coefficient for liquid fuels:

- 0.045 for firewood
- 0.030 for coal
- 0.024 for light oil
- 0.016 for gas

P boiler input in kcal/h

H height of flue in meters, measured from the flame axis to the top of the flue reduced by:

- 0.50 m for each change of direction of the connection union between boiler and flue;
- 1.00 m for each metre of union itself.

## 2.5 ELECTRICAL CONNECTION

The boiler is fitted with an electricity cable, and requires a single-phase power supply of 230V - 50Hz through the main switch protected by fuses.

The room thermostat (required for enhanced room temperature control) should be installed as shown in fig. 6. Connect the burner and system circulation pump power cables supplied.

**NOTE: Device must be connected to**

**an efficient earthing system.**

**SIME declines all responsibility for injury caused to persons due to failure to earth the boiler. Always turn off the power supply before doing any work on the electrical panel.**

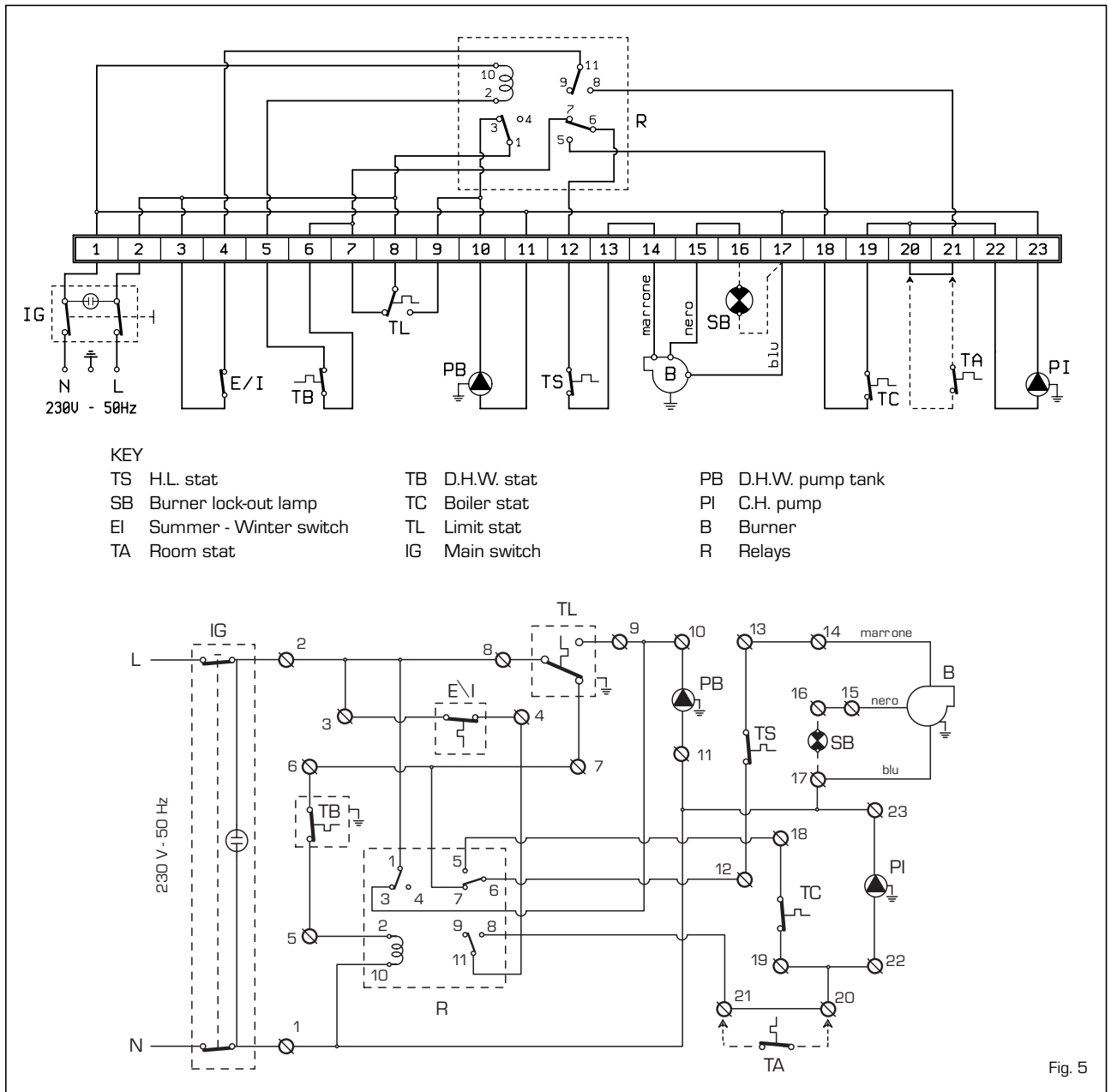


Fig. 5

## 3 USE AND MAINTENANCE

### 3.1 COMMISSIONING THE BOILER

When commissioning the boiler always make sure that:

- the system has been filled with water and adequately vented;
- the flow and return valves are fully open;
- the flue and chimney are free from obstructions;
- the electrical connections to the mains and the earthing are correct;
- no flammable liquids or materials are near the boiler;
- check that the circulating pump is not locked.

### 3.2 LIGHTING AND OPERATION

#### 3.2.1 Lighting the boiler (fig. 6)

To light the boiler proceed as follows:

- switch on the main switch (1); the burner will start;
- set the stat knob (7) to the desired D.H.W. temperature.

The boiler pump will continue operating until the preset temperature has been reached.

While the water is being heated, the boiler will continue automatic operation to maintain the heating temperature shown on the thermometer (5) around 80°C by means of the limit stat (6);

- once the water has been heated with the selector (2) set to the summer function position, the burner and the circulating pump will cease operation; when the selector (2) is set to the winter position, the system pump controlled by the room stat will start up.

In this case, operation of the burner will be controlled by the boiler stat (8) at the preset temperature;

- for best results, set the boiler stat knob (8) to a temperature no lower than 60°C to prevent the formation of condensate.

The set temperature value can be checked on the thermometer (5).

#### 3.2.2 Safety stat (fig. 6)

The manually reset safety stat (3) trips to switch-off the burners immediately when the boiler temperature exceeds 95°C. To restart the boiler, unscrew the black cover and press the button underneath. **If the problem occurs frequently, call an authorised technical**

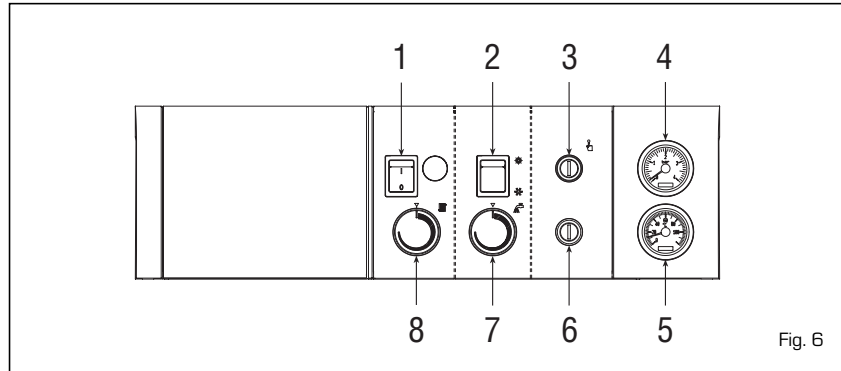


Fig. 6

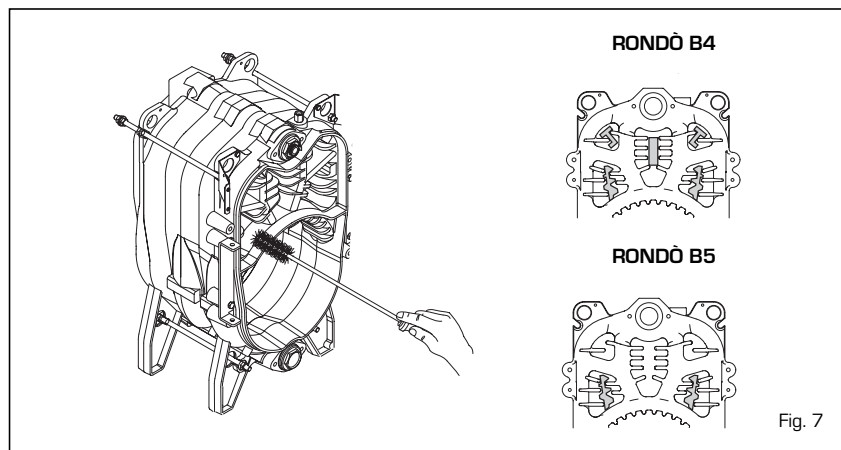


Fig. 7

**assistance centre for the necessary checks to be carried out.**

#### 3.2.3 System filling (fig. 6)

Periodically check the pressure values of the hydrometer (4) which, when the system is cold, should range between 1 and 1.2 bar.

If the pressure is less than 1 bar, reset the system.

#### 3.2.4 Turning OFF boiler (fig. 6)

To turn off the boiler, cut off the voltage by pressing the mains switch (1).

### 3.3 REGULAR CLEANING

**Maintenance of the boiler should be carried out annually by an authorised service engineer.**

**Disconnect the boiler from the electrical supply before servicing or maintenance is carried out.**

#### 3.3.1 Smoke side boiler (fig. 7)

To carry out cleaning of the smoke pas-

sages remove the screws that fix the door to the body of the boiler and with the special cleaning brush clean the internal surfaces and the smoke evacuation tube well, removing any deposits.

Once the maintenance is completed, the baffles have to be fitted onto the original positions.

#### 3.3.2 Tank unit protection anode

The magnesium anode (9 fig. 2) protects the boiler from galvanic currents; the durability of the anode will depend on the quality of the local water supply. **Check the magnesium anode periodically; replace when exhausted. Failure to renew exhausted anodes will render the guarantee null and void.**

The anode is fitted to the front of the boiler for easy access.

#### 3.3.3 Dismantling the skirt (fig. 8)

To dismantle the skirt, perform the following steps in order:

- dismantle the burner
- remove the cover (5) anchored on

- with pegs that snap in place;
- dismantle the control panel (3) anchored onto the sides with two self-tapping screws;
- remove the upper (1) and lower (2) front panels fastened onto the sides with pegs that snap in place;
- dismantle the left side (4), unscrewing the two screws holding it to the upper racket (7), removing the screw holding it onto the rear panel (8), and finally removing the screw holding the side onto the hot water tank bracket;
- dismantle the right side (6) in the same way.

### 3.3.4 Fault finding

Hereafter we outline a number of potential problems that may occur on the appliance and the relevant list of actions required.

A working fault, in most cases, provokes the "lock out" signal onto the control panel of the control box.

When this light turns on, the burner can operate again only after the reset button has been pressed; if this has been done and a regular ignition occurs, it means the failure can be defined momentary and not dangerous.

On the contrary, if the "lock out" stays, the cause of the fault, as well as the relevant action must be made according to the following chart:

#### The burner does not ignite

- Check the electric connections.
- Check the regular fuel flow, the cleanness of the filters, of the nozzle and air vent from the tube.
- Check the regular spark ignition and the proper function of the burner.

#### The burner ignites regularly but the flame goes out immediately

- Check the flame detection, the air calibration and the function of the appliance.

#### Difficulty in regulating the burner and/or lack of yield

- Check: the regular flow of fuel, the cleanness of the boiler, the non obstruction of the smoke duct, the real input supplied by the burner and its cleanness (dust).

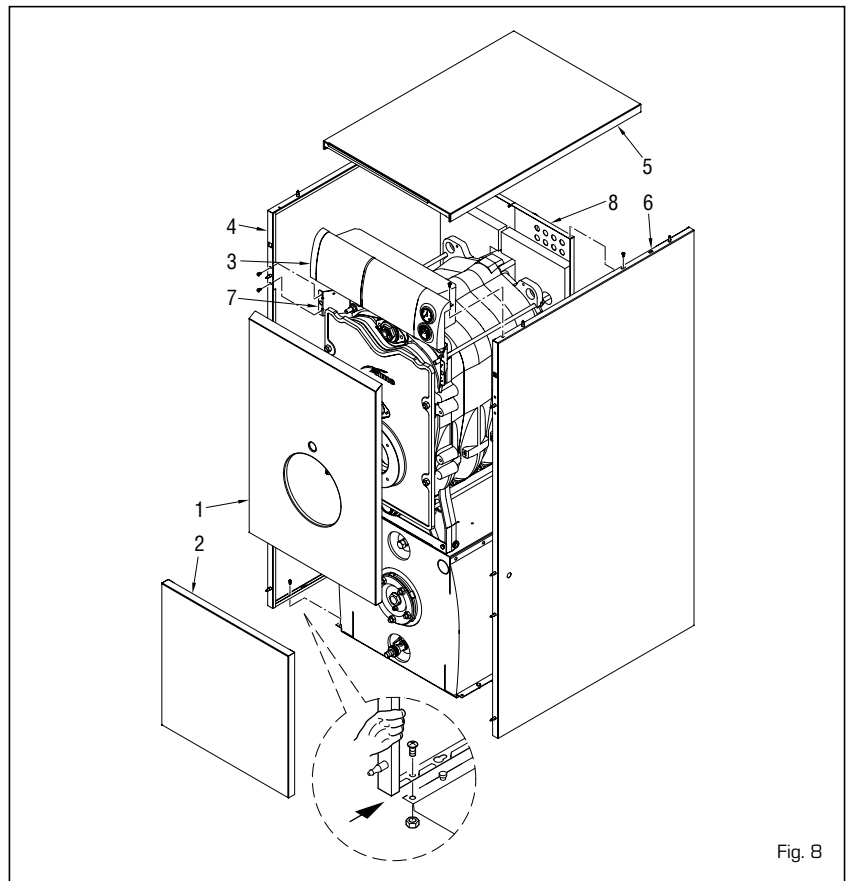


Fig. 8

#### The boiler gets dirty easily

- Check the burner regulator (smoke analysis), the fuel quantity, the flue obstruction and the cleanness of the air duct of the burner (dust).

#### The boiler does not heat up

- Control the cleanness of the shell, the matching, the adjustment, the burner performances, the pre-adjusted temperature, the correct function and position of the regulation stat.
- Make sure that the boiler is sufficiently powerful for the appliance.

#### Smell of unburnt products

- Control the cleanness of the boiler shell and the flue, the airtightness of the boiler and of the flue ducts (door, combustion chamber, smoke ducts, flue, washers).
- Control the quality of the fuel.

#### Frequent intervention of the boiler shutoff valve

- Control the presence of air in the system, the function of the circula-

tion pumps.

- Check the load pressure of the appliance, the efficiency of the expansion tanks and the valve calibration.

### 3.4 ANTIFREEZE PROTECTION

In freezing weather, make sure that the heating system continues to function and that the rooms are kept warm enough, including the room in which the boiler is installed; if this cannot be done, both the boiler and the heating system must be completely emptied. Completely emptying the system also means emptying the hot water tank and the hot water heating coil.

### 3.5 USER WARNINGS

When faults occur and/or the equipment does not operate correctly, turn it off, without attempting to make any repairs or take direct action. For any operation only contact the authorised technical personnel in your area.