



PREXTHERM N

400 - 500

ENGLISH

HIGH-EFFICIENCY STEEL BOILER FOR LIQUID FUELS AND/OR GAS
OPERATING, INSTALLATION AND MAINTENANCE INSTRUCTIONS

ITALIANO

CALDAIA IN ACCIAIO AD ALTO RENDIMENTO PER COMBUSTIBILI LIQUIDI E/O GASSOSI
ISTRUZIONI PER L'USO L'INSTALLAZIONE E LA MANUTENZIONE

FRANÇAIS

CHAUDIÈRE EN ACIER A HAUT RENDEMENT POUR COMBUSTIBLES LIQUIDES ET/OU GAZEUX
INSTRUCTIONS POUR L'INSTALLATION ET L'ENTRETIEN

DEUTSCH

HEIZKESSEL AUS GUSSEISEN MIT HOHEM WIRKUNGS-GRAD FÜR FLÜSSIGE und/oder GASFÖRMIGE BRENNSTOFFE
INSTALLATIONS-, BEDIENUNGS- UND WARTUNGSANLEITUNGEN

ESPAÑOL

CALDERA DE ACERO, DE ALTO RENDIMIENTO PARA COMBUSTIBLES LÍQUIDOS Y/O GASEOSOS
INSTRUCCIONES DE USO, INSTALACIÓN Y MANTENIMIENTO

PORTUGUÊS

CALDEIRA DE AÇO DE ALTO RENDIMENTO PARA COMBUSTÍVEIS LÍQUIDOS E/OU GASOSOS
INSTRUÇÕES PARA O USO, INSTALAÇÃO E MANUTENÇÃO

NEDERLANDS

VERWARMINGSKETEL MET HOOG RENDEMENT VOOR VLOEIBARE en/of GASVORMIGE BRANDSTOF
AANWIJZINGEN VOOR HET GEBRUIK, DE INSTALLATIE EN HET ONDERHOUD

DANSK

STØBEJERNSFYR UDBYTTETIL FLYDENDE BRÆNDSTOF OG/ELLER GAS
INSTRUKTIONER VEDRØRENDE BRUG, INSTALLATION OG VEDLIGEHOLDELSE

TÜRKÇE

Sıvı ve / veya gazlı yakıtlar için yüksek verimli çelik kazan
Montaj, kullanım ve bakım kılavuzu

Ελληνικά

ΧΥΤΟΣΙΔΗΡΟΣ ΛΕΒΗΤΑΣ ΥΨΗΛΗΣ ΑΠΟΔΟΣΗΣ ΓΙΑ ΥΓΡΑ και/ή ΑΕΡΙΑ ΚΑΥΣΙΜΑ
ΟΔΗΓΙΕΣ ΧΡΗΣΗΣ, ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΣΥΝΤΗΡΗΣΗΣ



ENGLISH

Dear Customer,

Thank you for having chosen the **PREXTHERM N**, an advanced-concept Ferroli boiler featuring cutting-edge technology, high reliability and constructional quality. Carefully read this manual and keep it for future reference.

The **PREXTHERM N** is a high-efficiency heat generator for the production of hot water for heating purposes, suitable for operation with jet burners on gas or liquid fuel.



Important warnings

- This manual provides important indications on the safety of operation, installation and maintenance, and is an integral and essential part of the product. Read this manual before installation and operation. It should be carefully kept for future reference.
- This appliance must only be used for the purposes it has been specifically designed for. This appliance is used to heat water to below-boiling temperatures at atmospheric pressure, and must be connected to a heating and/or domestic hot water distribution system, according to its characteristics, performance and heating capacity. All other uses are considered improper and thus dangerous.
- The appliance may not be opened nor its components tampered with, except for the parts included in the maintenance operations. The appliance may not be modified to alter its performance or use.
- The installation and maintenance operations must be performed according to the standards in force, the instructions of the manufacturer and must be carried out by professionally qualified personnel.
- Incorrect installation or poor maintenance may cause damage to people, animals or things. The manufacturer declines all liability for damage deriving from errors in the installation and operation of the appliance, and in any case from the failure to observe the instructions provided.
- Before performing any cleaning or maintenance operations, disconnect the appliance from the mains power supply using the system switch and/or the corresponding on-off devices.
- In the event of faults and/or poor operation of the appliance, it should be deactivated. Do not attempt to repair the appliance. Contact professionally qualified personnel only.
- After having removed the packaging, check that the contents are intact. The parts of the packaging must not be left within the reach of children, as they are potential sources of danger.



Certification

The CE Mark attests that Ferroli appliances conform to the requirements specified in the applicable European directives.

In particular, this appliance conforms to the following EEC directives:

- Gas directive 90/396
- Efficiency directive 92/42
- Low voltage directive 73/23 (amended by 93/68)
- Electromagnetic compatibility directive 89/336 (amended by 93/68)

1. OPERATING INSTRUCTIONS

1.1 Control panel

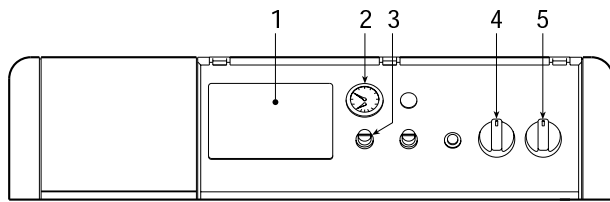
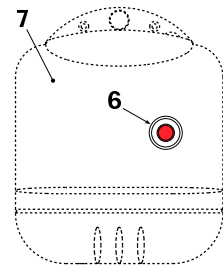


fig. 1

Key

- 1 Ready for electronic control unit
- 2 Thermohydrometer
- 3 Safety thermostat
- 4 Control thermostat, 2 Stages
- 5 "0 - I - TEST" boiler switch
- 6 Burner lockout indicator light
- 7 Burner (not supplied or supplied separately)



1.2 Ignition

Move the main switch 5 to position "I" to power the boiler and the burner. Refer to the burner manual for the operation of this device.

1.3 Setting

Set the desired system temperature using the control thermostat 4. If the thermoregulation control unit (optional) is connected, refer to the corresponding instruction manual. The thermal head between the boiler outlet and return must not exceed 20°C. This limit must be maintained both during normal operation and in the start-up phase. Higher thermal heads may cause serious problems to the structure of the boiler.

1.4 Shut-down

To shut the boiler down, move the switch 5 (Fig. 1) on the control panel to position "0" and close the fuel on-off valve.

Danger of frost: the best safeguard in very cold periods is to operate the boiler and the utilities, so that the entire system is running. Alternatively, add special antifreeze to the system, in the proportions indicated by the supplier, based on the minimum hypothesised ambient temperature.

1.5 Anomalies

Two lockout conditions may occur that can be reset by the user:

a - Burner lockout signalled by the corresponding light 6 (Fig. 1). Refer to the burner manual.

b - Activation of the safety thermostat when the temperature in the boiler reaches the limit value above which a dangerous situation may arise.

To reset operation, unscrew cap 3 and press the reset button.

If the problem occurs again, contact qualified personnel or the service centre.

In the event of faults and/or poor operation of the appliance, it should be deactivated. Do not attempt to repair the appliance. Contact professionally qualified and authorised personnel only.

2. INSTALLATION

General instructions

This appliance must only be used for the purposes it has been specifically designed for. This appliance is used to heat water to below-boiling temperatures at atmospheric pressure, and must be connected to a heating and/or domestic hot water distribution system, according to its characteristics, performance and heating capacity. All other uses are considered improper.



THE BOILER MUST ONLY BE INSTALLED BY QUALIFIED AND SPECIALIST PERSONNEL, IN COMPLETE COMPLIANCE WITH ALL THE INSTRUCTIONS REPORTED IN THIS TECHNICAL MANUAL, THE LEGAL STANDARDS IN FORCE, THE PRESCRIPTIONS OF ANY NATIONAL AND LOCAL STANDARDS, AND ACCORDING TO THE RULES OF GOOD PRACTICE.

Incorrect installation may cause damage to people, animals and things. The manufacturer will not be held liable in such events.

Place of installation

The room in which the boiler is installed must have ventilation openings to the outside according to the standards in force. If the same room features a series of burners or exhaust devices that can operate at the same time, the ventilation openings must be large enough for the simultaneous operation of all the appliances.

The place of installation must be free of flammable objects or materials, corrosive gas, dust or volatile substances that, sucked in by the burner's fan, may block the internal tubing of the burner or the combustion head. The environment must be dry and not exposed to rain, snow or frost.

Positioning the boiler

The minimum spaces shown in the figure must be complied with. Specifically, make sure that after assembling the boiler with the burner on the front door, the latter can be opened without the burner hitting against the wall or any other boiler. Leave a free space of at least 100mm on the side that the door swings towards.

In normal conditions, the boiler can rest directly on the floor, being already fitted with its own base made from metal section bars. Only if the room is very damp should an additional 8 - 10 cm concrete base be put in.

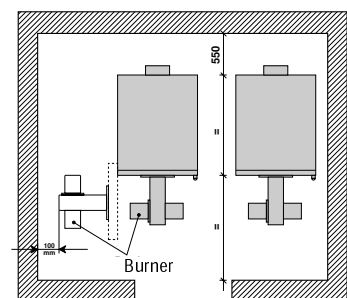


fig. 2

2.1 Water connections

Make the water connections to the appliance according to the indications shown both next to each fitting and in Figure 5 of this booklet. The connections must be made in such a way that the pipes are not under stress. The safety valve must be fitted in the central heating circuit, as close as possible to the boiler, without there being any obstructions or on-off devices between the boiler and the valve. The appliance is not supplied with an expansion vessel, and therefore such device must be connected by the installer. Please note that in this regard, the pressure in the system, when cold, must be between 0.5 and 1 bar. Suitably treated water should be used in the central heating system, to prevent any possible deposits in the boiler due to hard water, or corrosion due to aggressive water. It should also be remembered that even minor deposits measuring just a few millimetres thick can cause, due to their low thermal conductivity, significant overheating of the plate, with consequent serious problems: uniform and localised differential expansion that causes damage to the plate and the welding.

2.2 Connecting the burner (fig. 3)

This appliance is designed for oil or gas jet burners. The burner must be chosen according to the field of operation, the operating pressure and the size of the combustion chamber. The fuel flow-rate must in any case be set between the max. and min. heat input of the boiler. A two-stage burner should be used, fitted with an intermediate flange for fastening the burner support plate ring 3 to the door 4. As regards the dimensions of the draught tube, the lengths indicated in the table below should be followed, so as to avoid rapid flame reversal with a consequent increase in the flue gas outlet temperature and a reduction in the efficiency of the boiler.

N.B. -To prevent the door from overheating near the burner support plate, close any cracks between the burner sleeve and the opening in the door, using an insulating gasket 2. The fuel coupling hoses must be long enough to permit opening the door by 90° with the burner fitted.

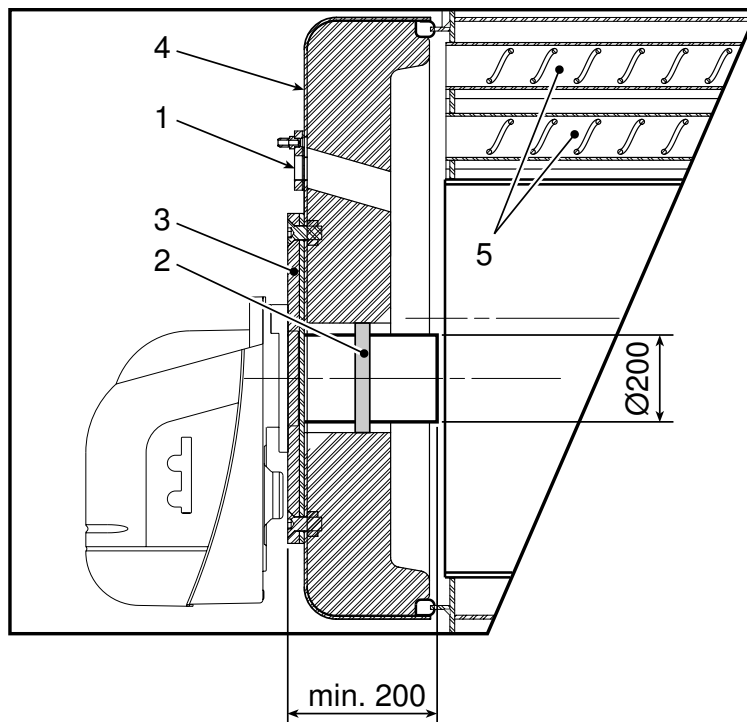


fig. 3

Key

- 1 Flame inspection window
- 2 Insulating Gasket
- 3 Burner support plate
- 4 Front door
- 5 Turbulators é

2.3 Electrical connections



THE BOILER SHOULD BE CONNECTED TO A SINGLE-PHASE, 230 VOLT-50 HZ ELECTRICAL LINE, USING A PERMANENT CONNECTION, INSTALLING A DOUBLE POLE SWITCH WITH CONTACT OPENINGS OF AT LEAST 3MM, AND SUITABLE FUSES. CONNECT THE BURNER AND THE ROOM THERMOSTAT (IF FEATURED) AS SHOWN IN THE WIRING DIAGRAM IN CHAP. 4.

The electrical safety of the appliance is ensured only when the appliance is correctly connected to an effective earth system, as prescribed by the safety standards in force. Have professionally qualified personnel check the efficiency and the rating of the earth system. The manufacturer is not liable for any damage caused by the appliance not being correctly earthed. In addition, make sure that the electrical system is adequately rated for the maximum power absorbed by the appliance, indicated on the rating plate, and in particular that the cross-section of the wires is suitable for the power absorbed by the appliance.

2.4 Flue connections

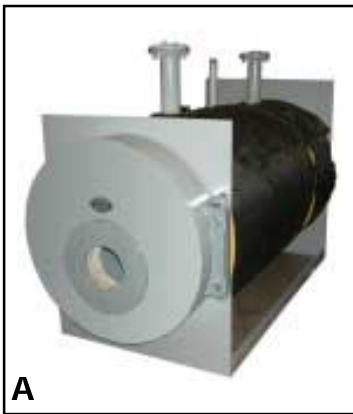
The boiler should be connected to a suitable flue, manufactured in compliance with the standards in force. The pipe between the boiler and the flue must be made from material suitable for this purpose, that is, resistant to both high temperatures and corrosion. The joints should be carefully sealed and the entire length of the pipe between the boiler and the flue should be thermally insulated, to avoid the formation of condensate.

In normal conditions, the stack must operate in depression, overcome the drag, have an air-tight seal and be smooth on the inside, be made from material resistant to high temperatures and corrosion, and feature inspection openings. The walls should be suitably insulated to prevent excess cooling of the flue gases

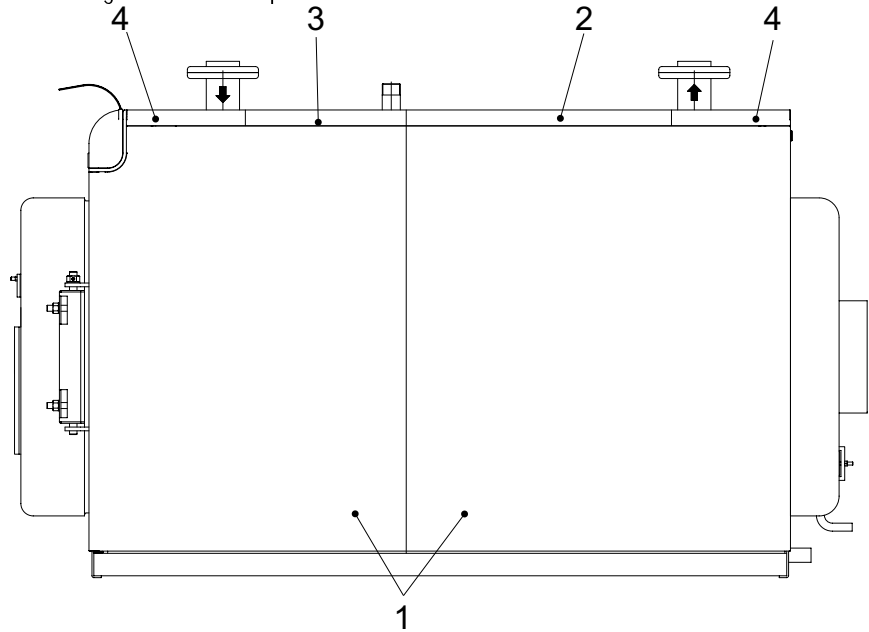
For systems with more than one boiler, each boiler must have a stack that is separate or insulated from the adjacent ones. No other discharge can be connected to the boiler stack.

2.5 Assembling the casing

The boiler is supplied in 3 separate boxes, containing the Casing, the Control panel and the Boiler body. Follow the instructions below for the assembly of the casing and the control panel.



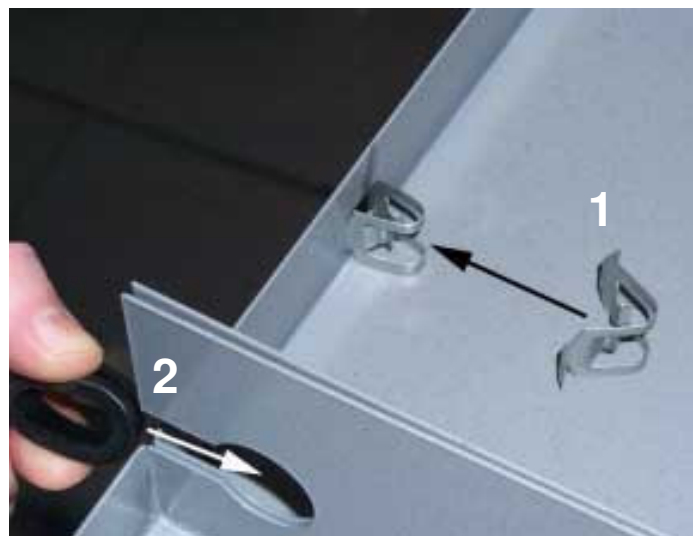
A Boiler body



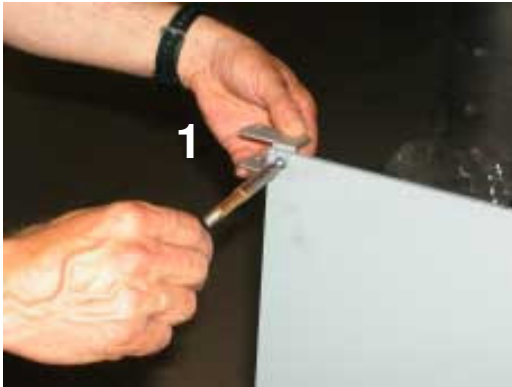
- B Sequence for fitting the casing
- 1 - Combined front + rear side (no. 2)
 - 2 - Rear middle cover (no. 2)
 - 3 - Front middle cover (no. 2)



C Couple and secure the right and left side panels, following the summary table at point "B".



D Fit the "pin holder springs" "1" and the cable glands "2".



E Fasten the 2 front "side support brackets" "1".



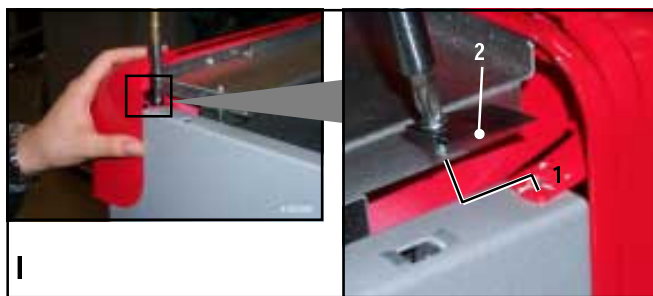
F Place the sides on the boiler shell.



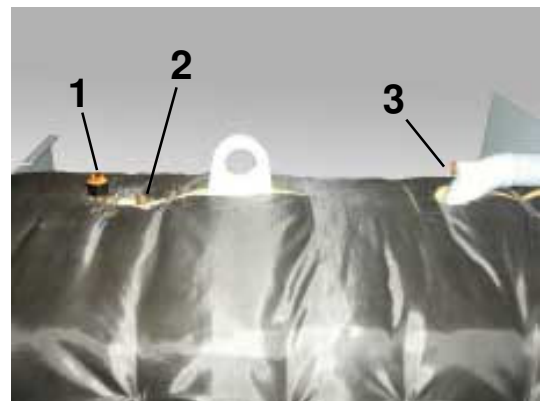
G Secure the sides at the front and rear.



H Fit the wiring protection box "1" using the screws "2" on the sides, and position the pre-wired control panel.



I Fit the control panel to the sides using the tabs "1". Place the reinforcement spring "2" between the head of the screw and the tab.



L Wiring connections to the boiler:
 - have the burner connection cables come out of the bottom of the right-hand side if you want the door to open to the right or vice versa the left-hand side.
 - connect the specific connector to the pressure switch 1 and the pressure gauge coupling to the sheath 2.
 - insert the thermostat and thermometer bulbs fully inside the sheath 3, fastening them with the clip.



M Fit the covers following the sequence given in point "B".

2.6 Opening and adjusting the door

Opening

The burner door can be opened to the right or to the left by simply loosening the 2 nuts to the right or left of part 1.

Seal and horizontal adjustment

Screw down the lock nuts 2; screw down the nuts 1 as much as necessary; then lock the lock nuts 2.

Positioning and vertical adjustment

After fitting the burner, it may be necessary to reposition the door. This is possible by loosening the grub screw 3 and turning the nut 4. It will be necessary for the entire **sealing bead 5 to be under pressure on the stop.**

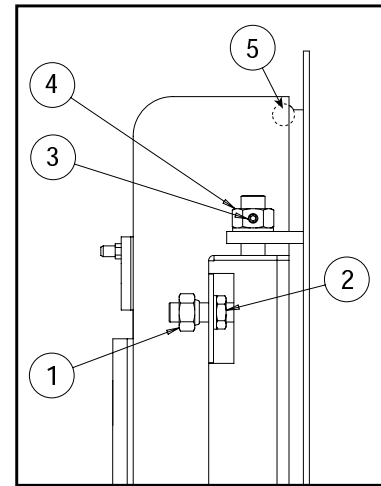


fig. 4

3. SERVICE AND MAINTENANCE

All the adjustment, commissioning and maintenance operations must be performed by Qualified Personnel, in compliance with the standards in force.

FERROLI S.p.A. declines all liability for damage to persons and/or things deriving from the tampering with the appliance by unqualified or unauthorised persons.

Before performing any cleaning or maintenance operations, disconnect the appliance from the mains power supply using the system switch and/or the special on-off devices.

3.1 Commissioning

Checks to be performed on first ignition, and after all maintenance operations that involve the disconnection of the appliance from the systems or intervention on the safety devices or parts of the boiler:

Before first ignition

Before igniting the boiler for the first time, check that:

- a the system is filled at the right pressure and any air has been correctly vented;
- b there are no water or fuel leaks;
- c the electrical power supply is correct;
- d all the flues have been installed correctly and not too near to or across any flammable parts;
- e there are no flammable substances near the appliance;
- f the burner is suitably sized for the output of boiler;
- g the water on-off valves are open.

First ignition

After having carried out the preliminary checks, the following ignition operations can be performed:

- 1 Open the fuel on-off valve.
- 2 Set the thermostat 4 (Fig. 1) to the desired value.
- 3 Close the switch upstream from the boiler and switch 5 (Fig. 1) on the control panel.

At this stage, the burner will be ignited and the boiler will start operation.

After first ignition

After first ignition, check that:

- 1 The burner anchor ring and smokebox are sealed. If flue gas leaks from the door, adjust the corresponding screws so as to further compress the gasket against the ledge, at the point where the leaks occur.
- 2 The burner is working correctly. This check should be performed using the required instruments, following the manufacturer's instructions.
- 3 The thermostats are working correctly.
- 4 Water is circulating in the system.
- 5 The flue gas is completely expelled through the flue.

3.2 Adjustments

Adjusting the burner

The efficiency and correct operation of the boiler depend above all on accuracy of the adjustments made to the burner.

Carefully follow the instructions provided by the manufacturer. Two-stage burners must have the first stage adjusted to an output that is no lower than the minimum rated output of the boiler. The output of the second stage must not be greater than the maximum rated output of the boiler.

3.3 Shut-down

For brief periods of inactivity, simply use switch 5 (Fig. 1) on the control panel.

For extended periods of inactivity, as well as operating switch 5, the fuel on-off valve must also be closed.

3.4 Maintenance

To ensure the maximum reliability of the heating system and minimum running costs, the boiler must be cleaned regularly, at least once a year. These maintenance operations must be performed by qualified and specialist personnel.

In any case, it is good practice to check the condition inside the boiler once a week, by opening the front door, so as to avoid anomalous operation for extended periods. During this operation, all the turbulators should be removed longitudinally, so as to prevent them from becoming clogged due to the inevitable deposits of soot.

Cleaning the boiler

- 1 Disconnect the power supply to the boiler
- 3 Open the door by undoing the 2 nuts (see 2.6).
- 4 Carefully clean the tube bundle: open the front door of the boiler completely, and remove all the turbulators from the tubes. Thoroughly clean the tube bundle using the brush. Remove the soot deposits from the rear smokebox, through the door. Brush and scrape the furnace to remove the deposits of sulphur and other solid substances. Check the nozzles and the position of the burner combustion head, in the event where carbon deposits are formed (to clean the burner, always refer to the instructions provided by the manufacturer).
- 5 Close the door again, and fasten it using the knob.

Descaling the boiler

It is extremely important, above all in areas where the water is very hard, to periodically de-scale, or better still, to inhibit the formation of lime-scale deposits in the system. These periodical or continuous operations are indispensable for extending the life of the boiler and preventing localised overheating of the metal plate, differential expansion or thermal shock. Therefore, after the first operating season at the latest, thorough descaling should be performed. This operation must be repeated at the end of the heating period. If continuous descaling is practiced, it is essential to use a safe and absolutely non-corrosive product. In addition, it is essential to periodically remove the slime that deposits inside the boiler, through the special fitting.

4. TECHNICAL SPECIFICATIONS

Model	Heat input gas+oil (NHV) kW		Heat output kW		Water content dm3	Operating pressure bar	Water pressure drop		Boiler weight with no load Kg
	Max	Min	Max	Min			$\Delta t 10^{\circ}\text{C}$ $\Delta p \text{ mbar}$	$\Delta t 20^{\circ}\text{C}$ $\Delta p \text{ mbar}$	
Prextherm N 400	435	279	400	260	460	6	14	7	780
Prextherm N 500	541	345	500	325	518	6	18	9	850

Model	Combustion chamber				Dimensions			Connections				
	\varnothing mm	Length mm	Volume m3	Combustion chamber load loss $\Delta p \text{ mbar}$	A mm	B mm	C mm	System delivery $\varnothing 1 \text{ mm}$	System return $\varnothing 2 \text{ mm}$	For safety equipment $\varnothing 3$	Condensate outlet $\varnothing 4$	Boiler outlet $\varnothing 5$
Prextherm N 400	518	1525	0,32	2,5	1675	610	1662	DN80 - 3"	DN80 - 3"	1" 1/2	3/8"	1"
Prextherm N 500	518	1705	0,36	2,9	1875	810	1862	DN80 - 3"	DN80 - 3"	1" 1/2	3/8"	1"

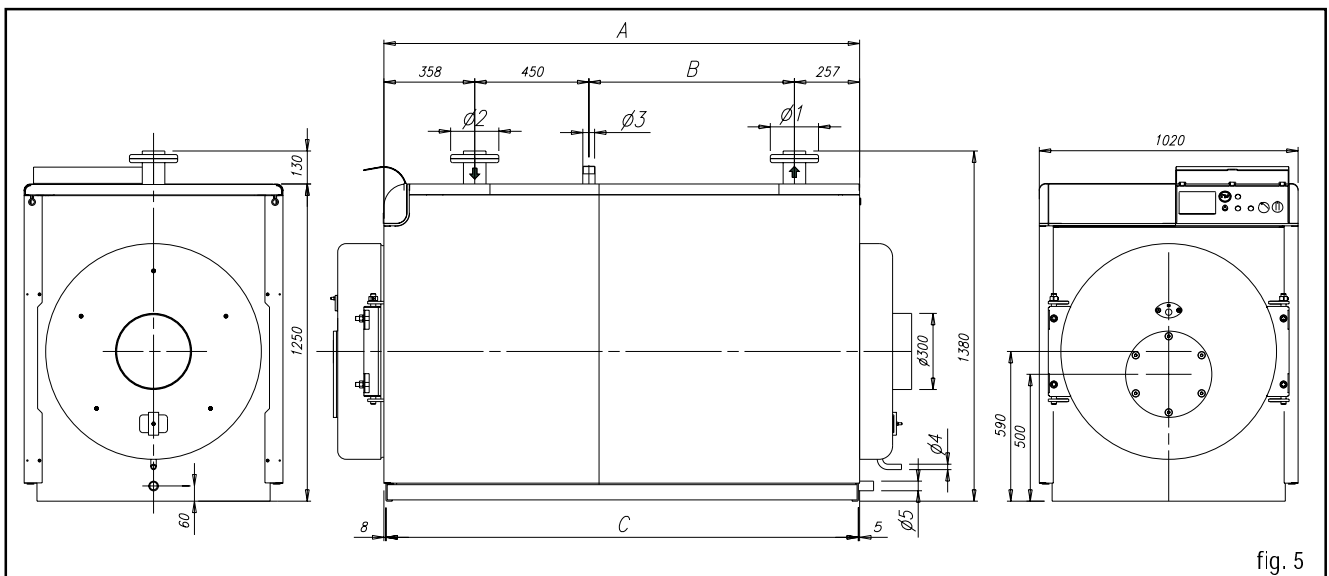
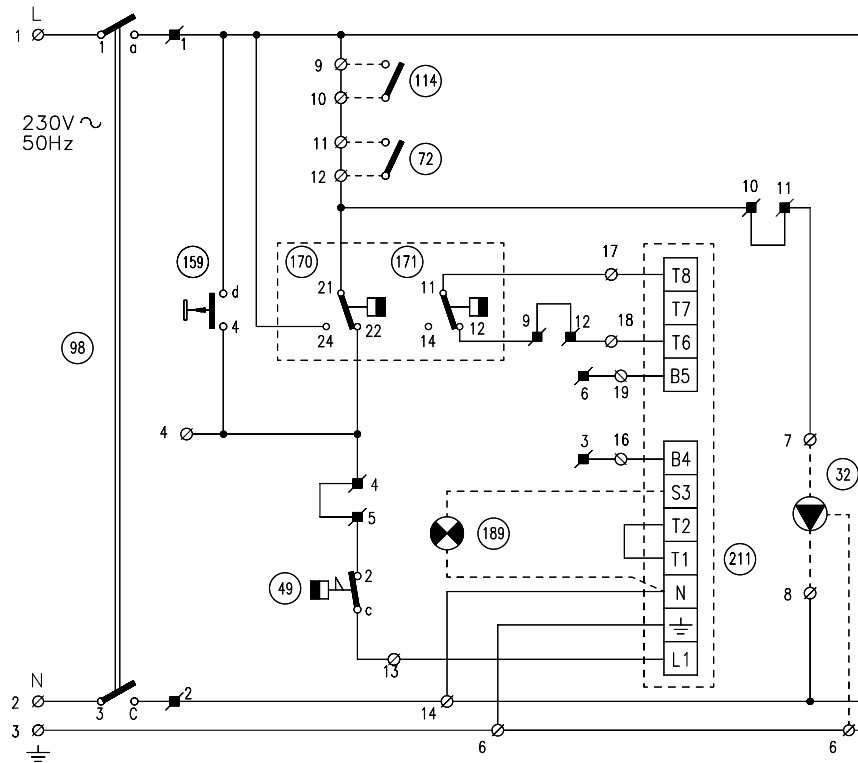


fig. 5

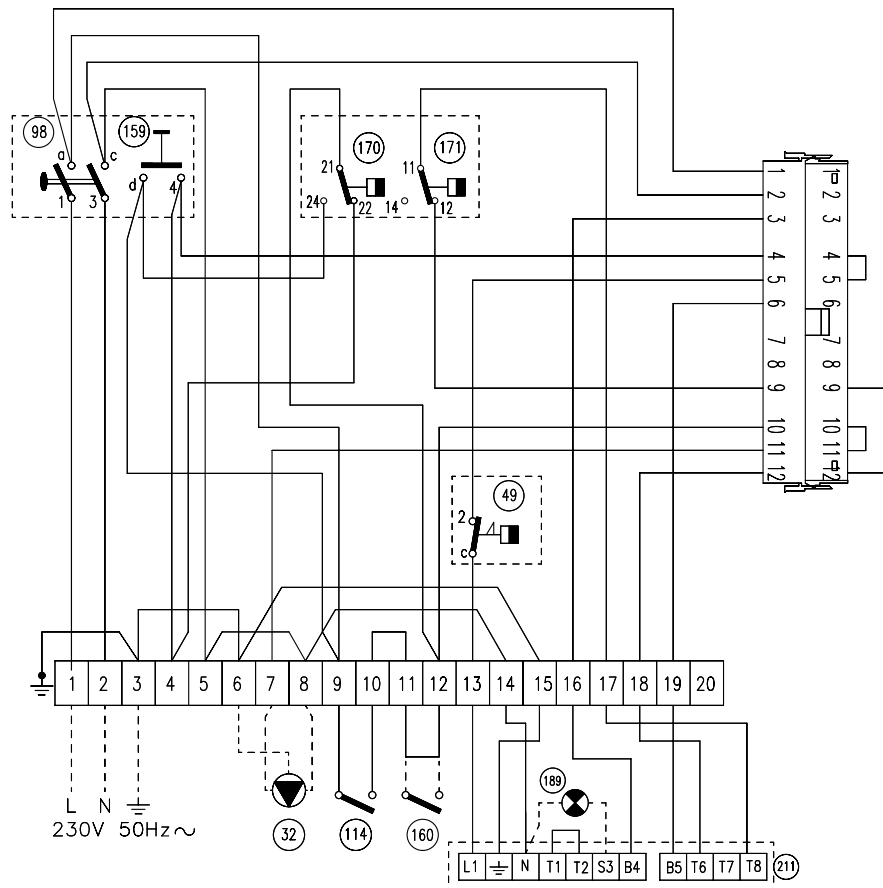
Main wiring diagram

fig. 6



Electrical connection diagram

fig. 7



Key

- 32 Pump (not supplied)
- 49 Safety thermostat
- 72 Room thermostat (not supplied)
- 98 Switch
- 114 Water pressure Switch
- 159 Test knob

- 160 Auxiliary contact
- 170 Boiler setting thermostat, 1st stage
- 171 Boiler setting thermostat, 2nd stage
- 189 Lockout indicator light (not supplied)
- 211 Burner connector

Note The dashed sections of wiring are the responsibility of the installer