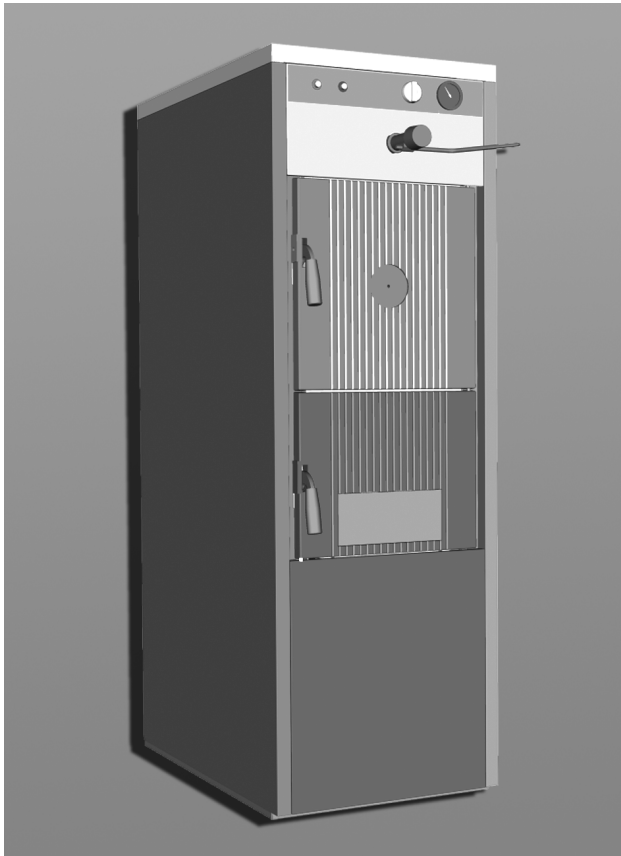


## GFN K

ISO 9001 : 2000  
CERTIFIED COMPANY



**CE**

INSTRUCTIONS FOR USE, INSTALLATION AND MAINTENANCE  
INSTRUCTIONS D'UTILISATION, D'INSTALLATION ET D'ENTRETIEN  
ИНСТРУКЦИИ ЗА УПОТРЕБА, ИНСТАЛИРАНЕ И ТЕХНИЧЕСКО ОБСЛУЖВАНЕ  
ΟΔΗΓΙΕΣ ΧΡΗΣΗΣ, ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΣΥΝΤΗΡΗΣΗΣ  
UPUTE ZA UPORABU, POSTAVLJANJE I ODRŽAVANJE  
INSTRUCȚIUNI DE UTILIZARE, INSTALARE ȘI ÎNTREȚINERE  
NAVODILÁ ZA UPORABO, INSTALIRANJE IN VZDRŽEVANJE





- Carefully read the warnings in this instruction booklet since they provide important information on safe installation, use and maintenance.
- This instruction booklet is an integral part of the product and must be carefully kept by the user for future reference.
- If the unit is sold or transferred to another owner or if it is to be moved, always make sure that the booklet accompanies the boiler so that it can be consulted by the new owner and/or installer.
- Installation and maintenance must be carried out by professionally qualified personnel, according to current regulations and the manufacturer's instructions.
- Incorrect installation or poor maintenance can cause damage or physical injury. The manufacturer declines any responsibility for damage caused by errors in installation and use or by failure to follow the manufacturer's instructions.
- Before carrying out any cleaning or maintenance operation, disconnect the unit from the electrical power supply using the switch and/or the special cut-off devices.
- In case the unit breaks down and/or functions poorly, deactivate it, do not make any attempt to repair it or directly intervene. Contact professionally qualified personnel. Any repair/replacement of products must only be carried out by qualified professional personnel using exclusively genuine parts. Failure to comply with the above could affect the safety of the unit.
- Periodical maintenance carried out by qualified personnel is essential for guaranteeing good operation of the unit.
- This unit must only be used for the purpose for which it was designed. Any other use is considered improper and therefore hazardous.
- After removing the packing, check the integrity of the contents. Packing materials must not be left within the reach of children as they are potentially hazardous.
- In case of doubt do not use the unit, and contact the supplier.
- The images shown in this manual are a simplified representation of the product. In this representation there may be slight, unimportant differences with the supplied product.

	<p>This symbol indicates <b>"Caution"</b> and is placed next to all safety warnings. Strictly follow these instructions in order to avoid danger and damage to persons, animals and things.</p>
	<p>This symbol calls attention to a note or important notice.</p>

## Declaration of conformity






Manufacturer: FERROLI S.p.A.

Address: Via Ritonda 78/a 37047 San Bonifacio VR Italy

declares that this unit complies with the following EU directives:

- Low Voltage Directive 73/23 (amended by 93/68)
- Electromagnetic Compatibility Directive 89/336 (amended by 93/68)

President and Legal Representative  
*Cav. del Lavoro*  
*Dante Ferrolì*

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# 1. Operating instructions

## 1.1 Introduction

The **GFN K** is a new boiler in cast iron for heating and domestic hot water production, using solid fuels (coal and wood), oil (with optional kit) or pellets (with optional kit). The boiler shell consists of elements assembled with nipples; the profile of the elements is particularly careful and the optimum finning ensures high heat efficiency, performance and considerable energy saving. The combustion chamber is specially designed to take large pieces of wood; loading is by means of the large top door. The combustion chamber is completely wet, to ensure long life and high efficiency. The hot water tank is equipped with an electric heater to ensure domestic hot water production even in summer.

## 1.2 Control panel

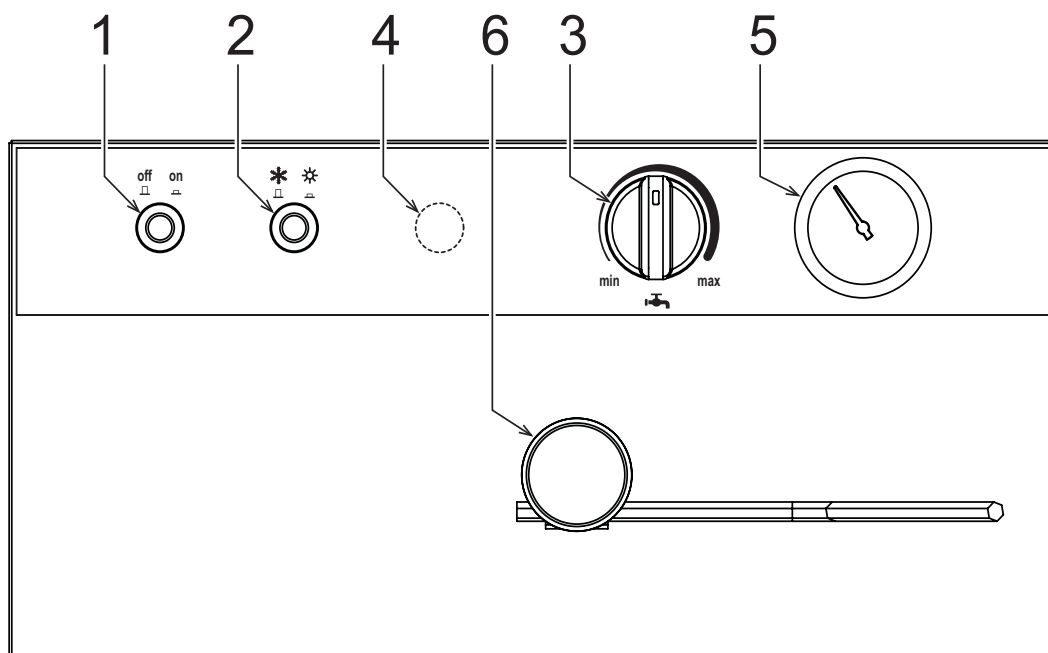


fig. 1 - Control panel

- 1 On switch
- 2 Summer/Winter switch
- 3 DHW temperature adjustment knob
- 4 Arrangement for oil burner kit thermostat
- 5 Water gauge
- 6 Draught thermostatic control

## 1.3 Turning on and off

### Fuel

The boiler must be used with coal or natural and untreated wood. Pressed fuels and briquettes can be used, provided they are entirely in wood. An oil or pellet burner can be installed on the boiler with the special optional conversion kit. Refer to the instructions supplied with the burner.




The burning of waste, plastic or liquids can create poisonous burnt gases with the risk of poisoning, death or explosion.

- Only use the fuels indicated.
- In the presence of risk of explosion, fire, burnt gases or fumes, put the boiler out of service.
- The boiler must only be operated by adults who have read the instructions and how to use it.
- The user is only authorised to start the boiler, set the temperature, clean and decommission it.
- Make sure unsupervised children keep away from the boiler when it is operating.
- Do not burn flammable liquids or use them to increase boiler performance.
- Clean the boiler surface with non-flammable agents only.
- Do not place flammable objects on or near the boiler.
- Do not store flammable materials (e.g. wood, paper, petroleum, gas oil) in the boiler installation room.

Wood is an extremely heterogeneous fuel for type, moisture content, shape and size. Boiler efficiency also depends on the type of wood used and its moisture content, as well as by its size and method of loading. Excellent quality woods are oak, ash, beech, maple and fruit trees except cherry; good quality woods are chestnut and birch; sufficient quality woods are limewood, poplar and willow. In general, resiniferous woods are mediocre fuels. The higher the moisture content, the lower the heating power. The use of damp fuels causes a loss of efficiency. Use wood logs dried outdoors and in the natural state (stored for 2 years with max. humidity of 20%).

### Boiler lighting

- Open the bottom door and remove any ash present in the combustion chamber. Close the bottom door.
- Switch on the power to the unit. Turn the lighting switch to ON and the Summer/Winter switch to .
- Turn the thermostatic control knob 6 to the required temperature value.
- Fully open the draught control on the flue.
- Open the top door. Place a little paper and dry kindling on the burner grate.
- Light the fuel and add a few pieces of slightly larger wood.
- Close the door and wait for a first bed of embers to form.
- Open the top door slowly.
- Spread the embers evenly on the burner with a poker.
- After the bed of embers has formed, load small and medium-size pieces of wood or coke coal.



- Pieces that are too long do not fall regularly, causing empty spaces with the creation of areas of unburnt wood.
- Pieces that are too short cause uneven air passages, with a decrease in power and efficiency
- Always open the top door slowly in order to prevent puffs and smoke.
- Do not open the bottom door during operation.
- During the loading stage avoid keeping the top door open for long periods.
- In case of operation with reduced performance, distilled gases at low temperature may form, which can cause smoke poisoning if breathed.
- If dense smoke is visible, do not breathe.
- Make sure the installation room is well-ventilated.
- Clean the boiler and exhaust gas ducts as prescribed.

### Boiler shutdown

To shut down the boiler, allow all the fuel to be burned.

#### **Shutdown for short periods**

For short shutdown periods, turn the lighting switch to OFF after the fuel has finished and the boiler has cooled.

- Clean the loading door support surfaces and the loading compartment.
- Remove the ashes and clean the combustion chamber.
- Close the ash compartment door and the loading door.

### Shutdown for long periods

To put the boiler out of service for long periods (e.g. at the end of the cold season), carefully clean the boiler to prevent corrosion.



To avoid damage caused by freezing during long idle periods in winter, it is advisable to drain all water from the boiler, or add a suitable antifreeze to the heating system, in compliance with that prescribed in sec. 2.3.

## 1.4 Adjustments

### Summer mode

Turn the Summer/Winter switch **2** to ☀ and the knob **3** to the required temperature value. The hot water tank heating element is activated. The boiler is ready to deliver domestic hot water only, without having to load wood.



In Summer mode the circulating pumps are deactivated. The boiler must not be loaded with fuel and lit since the heat produced may not be properly dissipated.

### Winter mode

Turn the Summer/Winter switch to ❄. The hot water tank heating element is deactivated. To deliver heat or domestic hot water the boiler must be loaded with fuel and lit. Turn the knob 3 to the required domestic hot water temperature value and the draught thermostatic control knob to the required temperature value.

To prevent condensation in the combustion chamber, it is advisable to turn the adjustment knob to 60°C; turning it to 80°C and adjusting the heating water temperature by means of the mixer valve would be optimum.

Load the combustion chamber with combustible material (paper and wood) and after obtaining a good bed of fire and embers, add small and medium-size pieces of coke coal: when lit, boiler operation will be automatic.

The only manual operations necessary are:

- Periodical cleaning of the firebox through the front grill, with emptying of the ashpan, opening the bottom door.
- Periodical loading of the firebox with coal coke through the special top door. Remember that with a complete load of coke coal, operation without reloading varies from a minimum of approx. 4 hours (at nominal output) to a maximum of approx. 12 hours (at reduced output) with draught control set to a temperature value of between approx. 80° and 40°C respectively.
- Adjustment of the damper shutter opening in order to adapt the flue draught to the value necessary for balanced combustion, that is neither too fast nor too slow (e.g. open for normal operation, closed for reduced output, with variable openings at intermediate powers and according to flue draught).

### System pressure adjustment

Periodically check that the system is full of water. These checks must be carried out cold, checking the expansion tanks (open types must have water at the initial level, whereas in closed types the pressure must be equal to or higher than the initial prefilling pressure).




## 2. Installation

### 2.1 General Instructions

BOILER INSTALLATION MUST ONLY BE PERFORMED BY QUALIFIED PERSONNEL, IN ACCORDANCE WITH ALL THE INSTRUCTIONS GIVEN IN THIS TECHNICAL MANUAL, THE PROVISIONS OF CURRENT LAW, THE PRESCRIPTIONS OF NATIONAL AND LOCAL STANDARDS AND THE RULES OF PROPER WORKMANSHIP.

### 2.2 Place of installation

The boiler must be installed in a special room with ventilation openings towards the outside in conformity with current regulations. If there are several burners or extraction units that can work together in the same room, the ventilation openings must be sized for simultaneous operation of all the units. The place of installation must be free of flammable objects or materials, corrosive gases, volatile substances or dusts that can be sucked by the fan. The room must be dry and not exposed to rain, snow or frost.

 A space must be provided around the unit for removing the casing and for normal maintenance operations. In particular, make sure there is sufficient room at the front of the boiler for loading fuel.

For installation, proceed as follows:

1. Unpack the boiler.
2. Fit the thermostatic control "H" fig. 2.
3. Fit the draught control "M" fig. 2 and connect the boiler to the flue.
4. Connect the boiler delivery and return to the heating system.
5. Adjust the air inlet door adjustment screw so that in any case there remains an air passage of not more than 1 - 2 mm. With the boiler cold, set the thermostat to 60°. Hook the chain "C" to the special air inlet door eyelet "D", adjusting its length so that the air passage "L" (fig. 2) is approx. 15 mm for "coke III" and 2 mm for "wood".

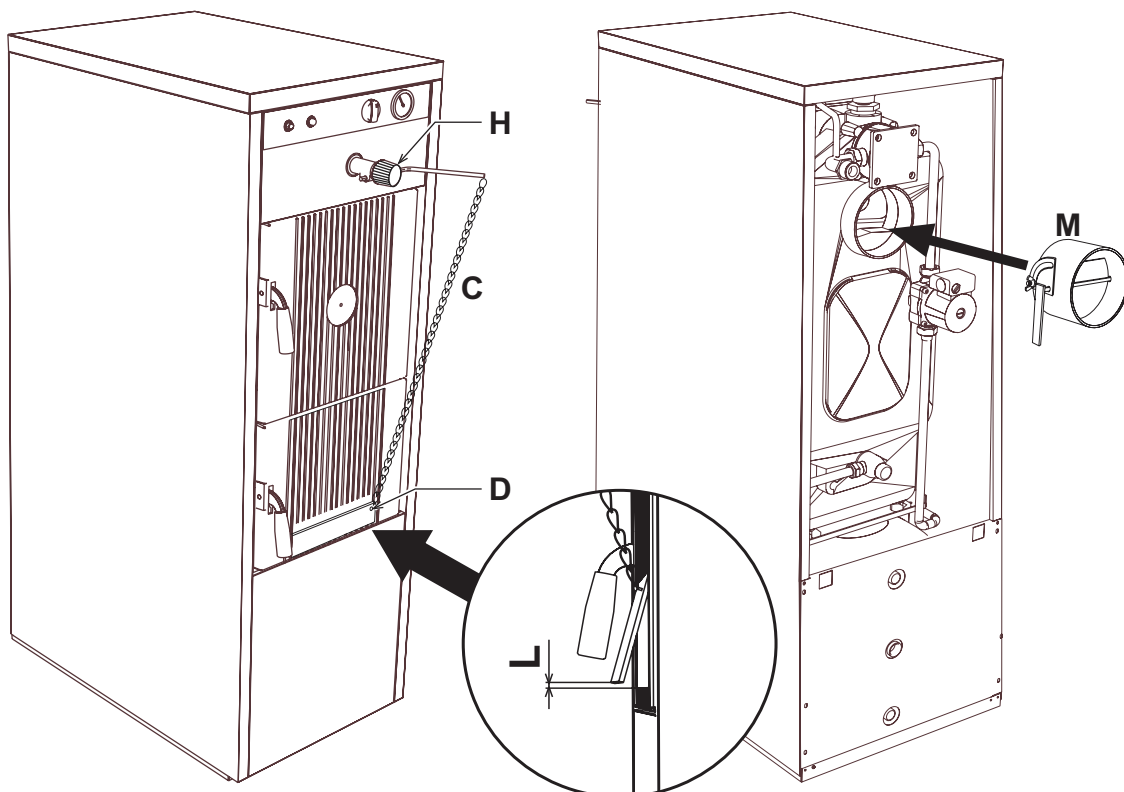


fig. 2 - Installation

## 2.3 Plumbing connections

The heating capacity of the unit must be previously established by calculating the building's heat requirement according to current regulations. The system must be provided with all the components for correct and regular operation. It is advisable to install on-off valves between the boiler and heating system allowing the boiler to be isolated from the system if necessary.



The safety valve outlet must be connected to a funnel or collection pipe to prevent water spurting onto the floor in case of overpressure in the heating circuit. Otherwise, if the drain valve is activated and floods the room, the boiler manufacturer cannot be held liable.

Do not use the water system pipes to earth electrical appliances.

Before installation, carefully wash all the pipes of the system to remove residuals or impurities that could affect correct operation of the unit.

Carry out the relevant connections according to the diagram in cap. 4.1 "Dimensions and connections" and the symbols given on the unit.

### Characteristics of the water system

In the presence of water harder than 25° Fr (1°F = 10ppm CaCO<sub>3</sub>), use suitably treated water in order to avoid possible scaling in the boiler. Treatment must not reduce the hardness to values below 15°F (Decree 236/88 for uses of water intended for human consumption). Treatment of the water used is indispensable in case of very large systems or with frequent introduction of replenishing water in the system.

### Antifreeze system, antifreeze fluids, additives and inhibitors

If necessary, antifreeze fluids, additives and inhibitors can be used only if the manufacturer of these products guarantees that they are suitable for this use and do not cause damage to the boiler exchanger or other components and/or materials of the unit and system. Do not use antifreeze fluids, additives or inhibitors that are not specific for use in heating systems and not compatible with the boiler materials and system.

## 2.4 Conversion for use with an oil or pellet burner

An optional kit is available for use with an oil or pellet burner.

For installation, refer to the instructions contained in the kit.

## 2.5 Electrical connections

### Accessing the electrical terminal block

To access the electrical terminal block 1 fig. 3 lift the boiler cover.

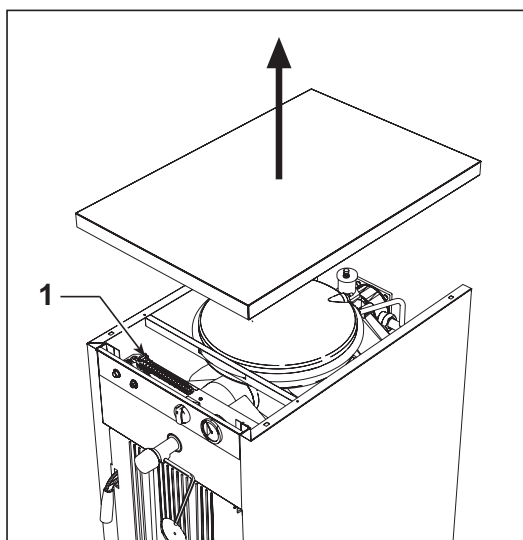


fig. 3 - Accessing the terminal block



### Connection to the electrical grid



The unit's electrical safety is only guaranteed when correctly connected to an efficient earthing system executed according to current safety standards. Have the efficiency and suitability of the earthing system checked by professionally qualified personnel. The manufacturer is not responsible for any damage caused by failure to earth the system. Also make sure that the electrical system is adequate for the maximum power absorbed by the unit, as specified on the boiler dataplate.

The boiler is prewired and provided with a Y-cable and plug for connection to the electricity line. The connections to the grid must be made with a permanent connection and equipped with a bipolar switch whose contacts have a minimum opening of at least 3 mm, interposing fuses of max. 3A between the boiler and the line. It is important to respect the polarities (LINE: brown wire / NEUTRAL: blue wire / EARTH: yellow-green wire) in making connections to the electrical line. During installation or when changing the power cable, the earth wire must be left 2 cm longer than the others.



The user must never change the unit's power cable. If the cable gets damaged, switch off the unit and have it changed solely by professionally qualified personnel. If changing the electric power cable, use solely "HAR H05 VV-F" 3x0.75 mm<sup>2</sup> cable with a maximum outside diameter of 8 mm.

## 2.6 Connection to the flue

The unit must be connected to a flue designed and built in compliance with current regulations. The pipe between the boiler and flue must be made from material suitable for the purpose, i.e. heat and corrosion resistant. Ensure the seal at the joints and insulate the entire pipe between boiler and flue, to prevent the formation of condensate.



### 3. Service and maintenance

All adjustment, commissioning and periodical control operations described below must only be carried out by Qualified Personnel (meeting the professional technical requirements prescribed by current regulations).

**FERROLI** declines any liability for damage and/or injury caused by unqualified and unauthorised persons tampering with the unit.

#### 3.1 Adjustments

##### Secondary air adjustment

The secondary air control device must be set during the commissioning stage.

Adjust the air inlet door adjustment screw so that in any case there remains an air passage of not more than 1 - 2 mm. With the boiler cold, set the thermostat to 60°. Hook the chain to the special air inlet door eyelet, adjusting its length so that the air passage "L" (fig. 2) is approx. 15 mm for "coke III" and 2 mm for "wood".

#### 3.2 Startup



Checks to be made at first lighting, and after all maintenance operations that involved disconnecting from the systems or operations on safety devices or parts of the boiler.

##### Before lighting the boiler

- Open any on-off valves between the boiler and the systems.
- Check correct prefilling of the expansion tank
- Fill the water system and make sure that all air contained in the boiler and the system has been vented.
- Make sure there are no water leaks in the system, connections or boiler.
- Check correct connection of the electrical system and efficiency of the earthing system
- Make sure there are no flammable liquids or materials in the immediate vicinity of the boiler

##### Checks during operation

- Turn the unit on as described in sec. 1.3.
- Check the seal of the water systems.
- Check the efficiency of the flue and air-fume ducts while the boiler is working.
- Check that the water is circulating properly between the boiler and the systems.
- Check the seal of the wood loading and combustion chamber doors.
- Check combustion and correct setting of the secondary air control device.

#### 3.3 Maintenance

##### Instructions



- Before carrying out any maintenance operation, disconnect the power to the boiler and wait until it is at room temperature.
- Never drain (even partially) the water from the system unless absolutely necessary.
- Do not clean the boiler and/or its parts with easily flammable substances (e.g. petrol, alcohol, etc.).
- Do not leave containers of flammable substances in the room where the boiler is installed.
- Do not clean the heating system when the boiler is operating.
- Use tube brushes and aspirators for cleaning; if rags are used, make sure they are not left inside the boiler.
- If the ash is still hot, wear protective gloves.
- Put the ashes in a non-flammable container provided with lid.

Regularly or the end of every period of operation, carefully clean the boiler, and also the flue if necessary. To clean the boiler, open both cast-iron doors, remove the coal grate then, with a flexible metal tube brush, carefully clean the combustion chamber and the various flueways. Then remove any soot deposited in the ashpan. Also make sure the fume exhaust pipes and flue are clean and perfectly tight.

**Periodical check**

To ensure correct operation of the unit over time, have qualified personnel carry out a yearly check, providing for the following:

- Check and if necessary clean the boiler and flueways as described above.
- Check the state of the burner plates.
- Check the seal of the ash compartment and loading door; replace the seal if necessary.
- The control and safety devices must work properly.
- The fume exhaust circuit must be perfectly efficient.
- The fume ducts must be free of obstructions and leaks
- The water pressure in the cold water system must be about 1 bar; otherwise, bring it to that value.
- The circulating pump must not be blocked.
- The expansion tank must be filled.
- A possible oil or pellet burner (with optional kit) must be checked according to the instructions supplied with it.



Periodically (at least once a year) check the magnesium anode. Replace it when necessary.



## 4. Technical data and characteristics

### 4.1 Dimensions and connections

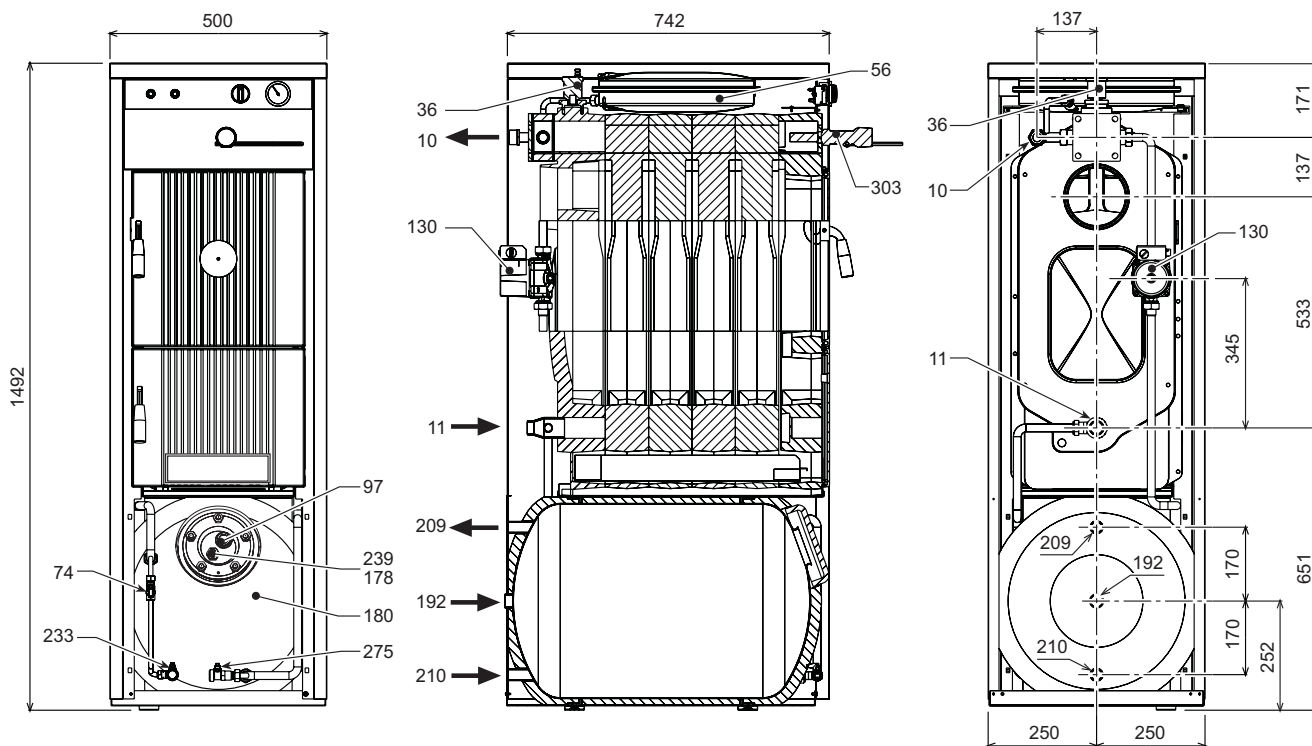


fig. 4 - Dimensions

- 10 System delivery
- 11 System return
- 36 Automatic air vent
- 56 Expansion tank
- 74 System filling cock
- 97 Magnesium anode
- 130 Hot water tank circulating pump
- 178 Hot water tank thermometer bulb
- 180 Hot water tank
- 192 Recirculation
- 209 Hot water tank delivery
- 210 Hot water tank return
- 233 Hot water tank drain cock
- 239 Electrical heating element
- 275 Heating system drain cock
- 303 Thermostatic control

4.2 Plumbing circuit

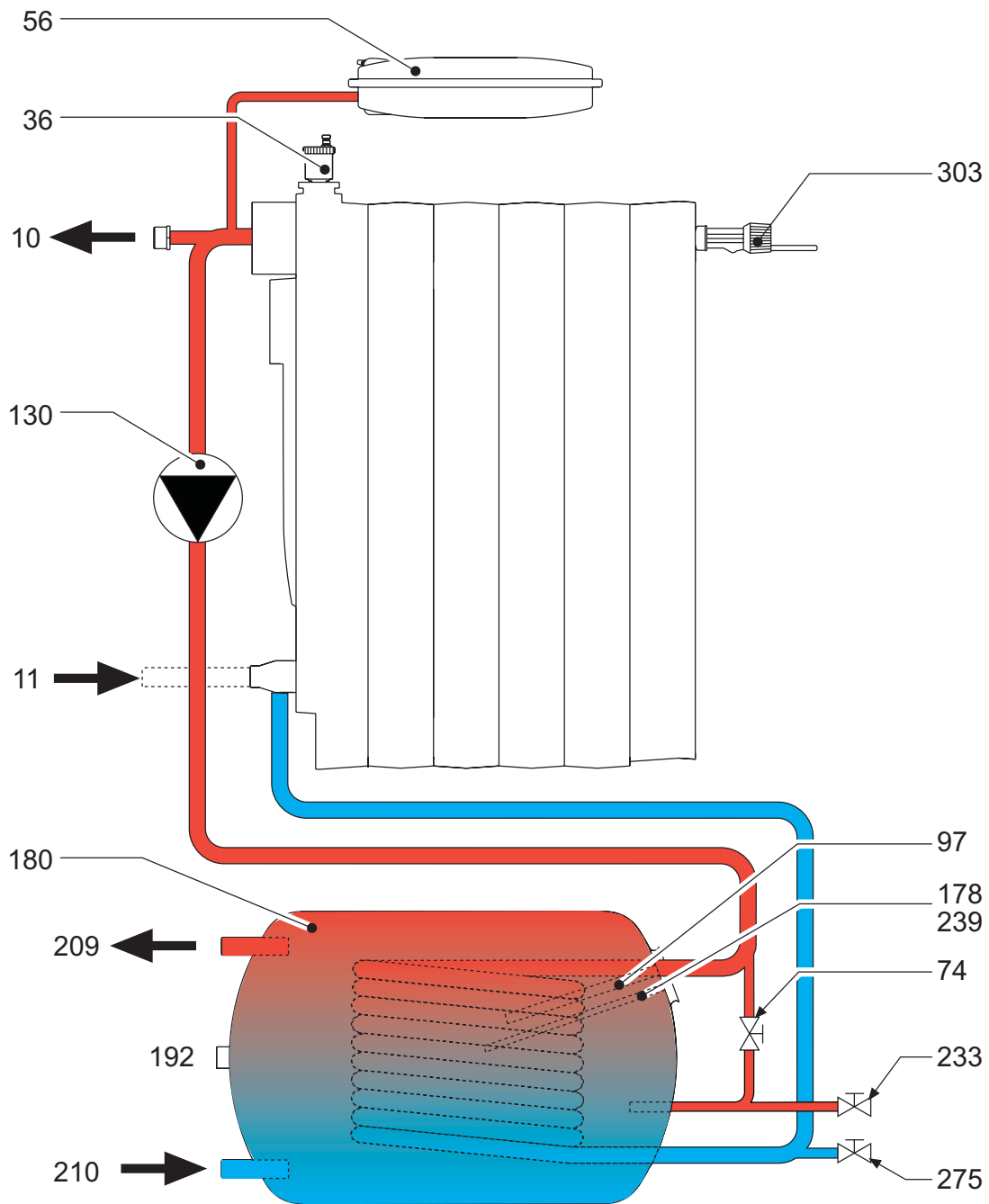


fig. 5 - Plumbing circuit

- 10 System delivery
- 11 System return
- 36 Automatic air vent
- 56 Expansion tank
- 74 System filling cock
- 97 Magnesium anode
- 130 Hot water tank circulating pump
- 178 Hot water tank thermometer bulb
- 180 Hot water tank
- 192 Recirculation

- 209 Hot water tank delivery
- 210 Hot water tank return
- 233 Hot water tank drain cock
- 239 Electrical heating element
- 275 Heating system drain cock
- 303 Thermostatic control

### 4.3 Technical data table

The column on the right gives the abbreviation used on the dataplate.

Data	Unit	Value	
Nominal heating capacity	kW	30.6	(Q)
Nominal heat output	kW	19.9	(P)
Efficiency Pn	%	65	
Efficiency class Directive 92/42 EEC	-		
Max. working pressure in heating	bar	3	(PMS)
Max. heating temperature	°C	95	(tmax)
Heating water content	litres	28	
Heating expansion tank capacity	litres	10	
Heating expansion tank prefilling pressure	bar	1	
Max. working pressure in hot water production	bar	9	(PMW)
Min. working pressure in hot water production	bar	0.1	
Hot water content	litres	100	
Protection rating	IP	X0D	
Power supply voltage	V/Hz	230V/50Hz	
Electrical absorption	W	90	
Heater electrical absorption	W	1000	
Empty weight	kg	320	
Type of unit			
PIN CE			

### 4.4 Diagrams

#### Pressure loss

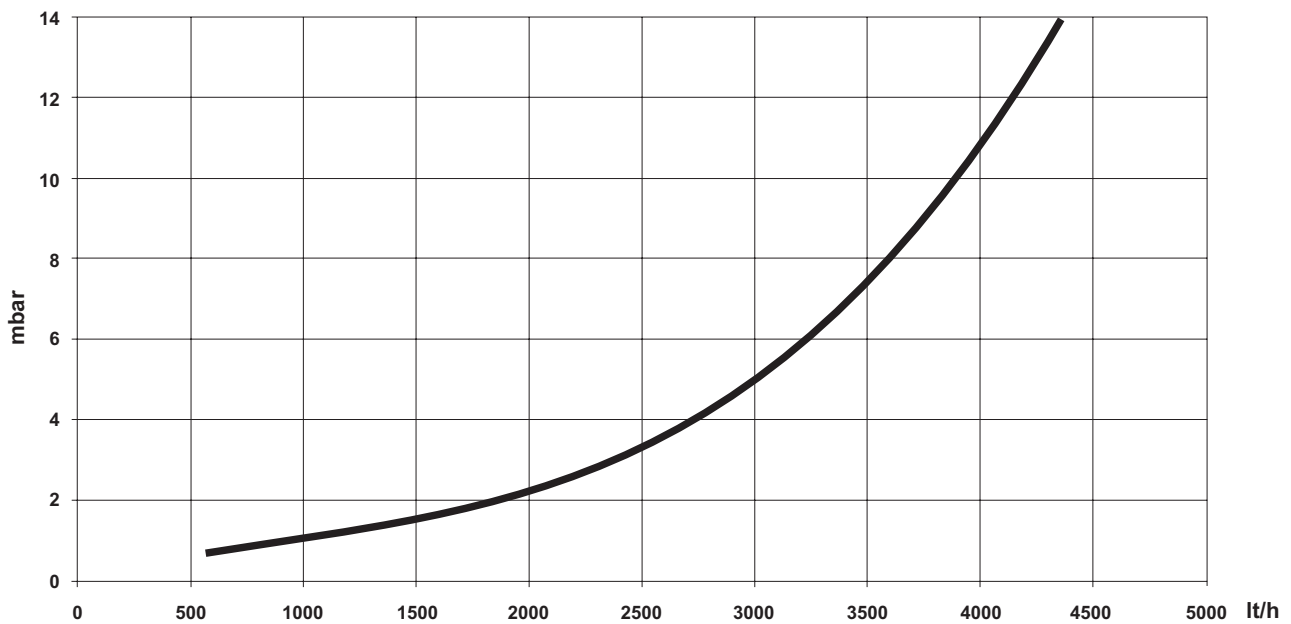


fig. 6 - Pressure loss

### 4.5 Wiring diagram

#### Connection wiring diagram

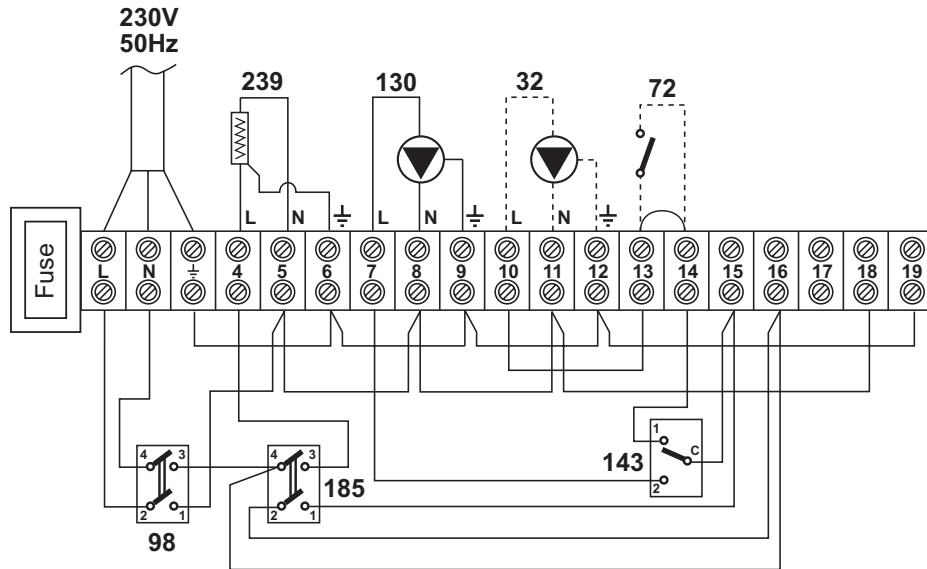


fig. 7 - Connection wiring diagram

#### Main wiring diagram

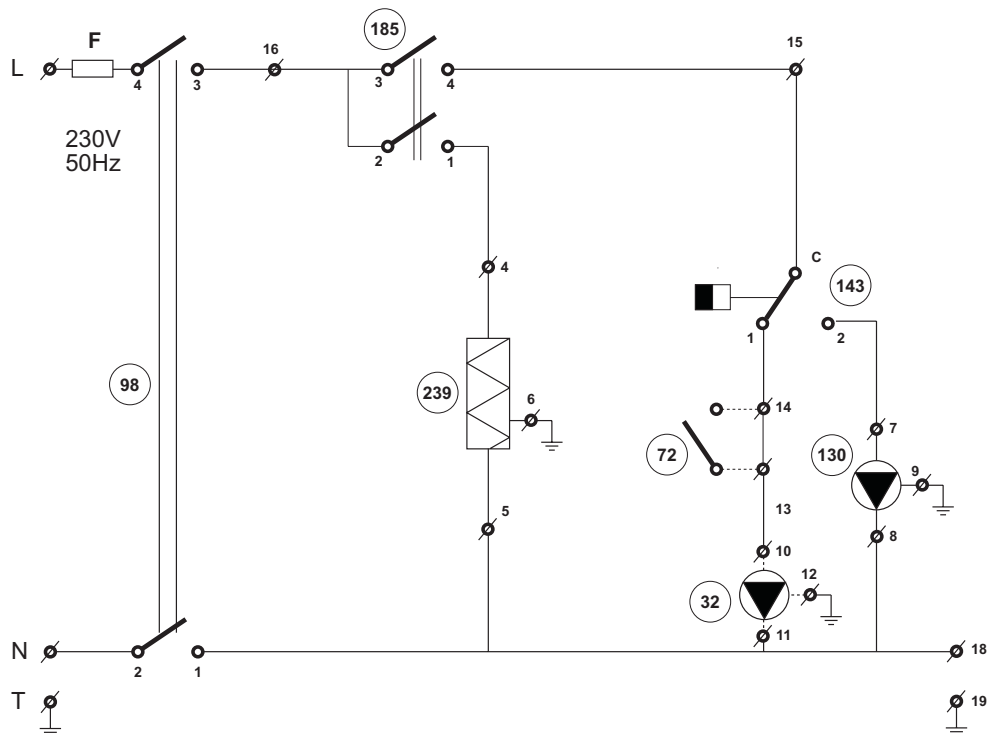


fig. 8 - Main wiring diagram

- |     |  |     |                                   |
|-----|--|-----|-----------------------------------|
| 32  | System circulating pump (not supplied) | 143 | Hot water tank control thermostat |
| 72  | Room thermostat (not supplied)         | 185 | Summer/Winter switch              |
| 98  | Switch                                 | 239 | Electrical heating element        |
| 130 | Hot water tank circulating pump        |     |                                   |

The logo for Ferroli features the word "ferroli" in a bold, lowercase, sans-serif font. A grey, curved graphic element, resembling a stylized arch or a swoosh, is positioned above the letters "e" and "r".

**ferroli**

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