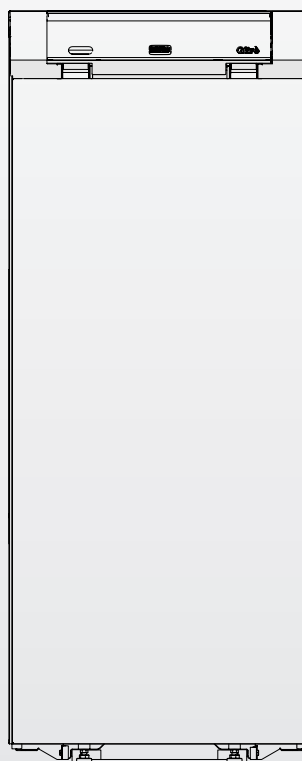


GITRÈ



GITRÈ B/100

GITRÈ

EN INSTALLATION AND MAINTENANCE MANUAL

RIELLO

Dear heating engineer,
Congratulations on having chosen a **RIELLO** boiler. You have selected a modern, quality product that is designed to give dependable, efficient and safe service and to provide comfort in the home for many years to come.
This manual provides information that is essential to the installation of the appliance. Used in conjunction with your own knowledge and expertise it will enable you to install the appliance quickly, easily, and correctly.

Please accept our thanks and our congratulations on your choice of product.
Riello S.p.A.

CONFORMITY

GITRÈ boilers conform to the following directives:

- Directive 92/42/EEC on efficiency requirements
- Electromagnetic Compatibility Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC
- Ecodesign Directive 2009/125/CE for energy-related products
- Energy Labelling Directive 2010/30/EU
- Delegated Regulation (EU) N. 811/2013
- Delegated Regulation (EU) N. 813/2013
- Delegated Regulation (EU) N. 814/2013



! This product must only be used for the purpose for which it is designed and made, as specified by **RIELLO**. **RIELLO** declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.

RANGE

MODEL	CODE
GITRÈ 4	20109011
GITRÈ 5	20109012
GITRÈ 6	20109013
GITRÈ 5 B/100	20109014


ACCESSORIES

For a complete list of accessories and details of their compatibility, refer to the Catalogue.

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The following symbols are used in this manual:

 **CAUTION!** = Identifies actions that require caution and adequate preparation.

 **STOP!** = Identifies actions that you MUST NOT do.

1 GENERAL INFORMATION

1.1 General Safety Information

- !** Check that the product is complete, undamaged and as ordered as soon as you receive it. Report any discrepancies or damage to the **RIELLO** dealer who sold it.
- !** This product must be installed by a legally qualified heating engineer. On completion of the installation, the installer must issue the owner with a declaration of conformity confirming that the installation has been completed to the highest standards in compliance with the instructions provided by **RIELLO** in this instruction manual, and that it conforms to all applicable laws and standards.
- !** This product must only be used for the purpose for which it is designed and made, as specified by **RIELLO**. **RIELLO** declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.
- !** The room where the boiler is installed must be properly ventilated to ensure a sufficient supply of air for correct combustion.
- !** If you notice any water leaks, disconnect the boiler from the mains electricity supply and shut off the water supply.
- !** The boiler must be serviced at least once a year.
- !** Periodically check that pressure in the central heating circuit, when cold, is approximately 1.5 bar and below the maximum limit specified for the boiler.
- !** If the boiler is not going to be used for an extended period of time, perform the operations described later in this manual.
- !** This manual is an integral part of the equipment and therefore must be stored carefully and must **ALWAYS** accompany the boiler even if it is sold to another Owner or User or transferred to another plant. If it is damaged or lost, request another copy from your local Technical Assistance Service **RIELLO**.

1.2 Precautions

The operation of any appliance that uses fuel, electrical power and water demands that a number of fundamental safety precautions be respected:

- ⊖** Do not allow children or infirm persons to operate the system unsupervised.
- ⊖** It is forbidden to use electrical devices or equipment, such as switches, appliances, etc. if there is a smell of gas or unburnt products. If so:
 - Ventilate the room, opening doors and windows
 - Close the fuel shut-off cock.
- ⊖** Do not touch the boiler while barefoot or wet.
- ⊖** Never clean or service the boiler without first disconnecting it from the mains electricity supply by turning the mains power switch and the control panel switch OFF.
- ⊖** Do not tamper with or adjust the safety or control devices without prior authorisation and instructions from the manufacturer.
- ⊖** Never pull, disconnect, or twist the electrical cables coming from the appliance even if it is disconnected from the mains electricity supply.
- ⊖** Do not obstruct or restrict the vents in the room where the boiler is installed. Adequate ventilation is essential for correct combustion.
- ⊖** Do not expose the boiler to the elements. It is not designed for use outdoors.
- ⊖** It is prohibited to leave inflammable substances and containers in the room where the boiler is installed.
- ⊖** Do not dispose of packaging material into the environment, or leave it within the reach of children, since it can become a potential hazard. Dispose of packaging material in compliance with applicable legislation.
- ⊖** It is forbidden to operate the boiler without water.

1.3 Description of the appliance

The **GITRÈ** boiler is an oil fuelled hot water boiler capable of low temperature functioning. **GITRÈ** versions are designed only for central heating applications. The **GITRÈ B/100** version is equipped with a 100 litre vitrified storage cylinder and can be used for central heating and domestic hot water production.

The cast iron boiler body features a triple flue pass design and a horizontal combustion chamber.

The front cover opens fully to facilitate the inspection, maintenance and cleaning of internal parts and to minimise service time.

The boiler body is covered in high density glass wool insulation to reduce heat loss.

The boiler is fitted with a single stage oil burner.

The **GITRÈ** boiler's control logic incorporates a total shutdown function to minimise energy consumption:

- The **GITRÈ** (heating only) model only starts up if the central heating system requests heat (i.e. when the room thermostat switches the heating on);
- If the **GITRÈ B/100** (heating and DHW) model is in "Summer" mode ("Summer/Winter" selector turned to Summer position), it only starts up in response to a request for domestic hot water. If it is in "Winter" mode ("Summer/Winter" selector turned to Winter position), it starts up either in response to a request for heat from the central heating system (i.e. when the room thermostat switches the heating on) or in response to a request for domestic hot water. (DHW heat requests are prioritised over central heating requests.).


1.4 Safety and control devices


GITRÈ boilers incorporate the following safety and control devices:


- **A manual reset safety thermostat** that forces a safety shutdown if boiler temperature exceeds the safety threshold (110°C). The sensor used to monitor this temperature is located on the body of the heat exchanger;
- **A minimum temperature thermostat** that enables the central heating pump only if boiler temperature exceeds the minimum permissible (50°C);
- **An electronic burner controller** that monitors the correct functioning of the selected burner program and sends a lockout signal to the control panel in the event of an error.

ONLY FOR GITRÈ B/100 MODELS

- **A maximum temperature thermostat** that shuts down the burner if boiler temperature reaches or exceeds the default maximum limit (82°C) during the heating of domestic hot water in the storage tank;
- **A heat dissipation thermostat** that starts up the storage tank pump to dissipate excess heat in order to keep boiler temperature below the safety threshold (90°C).

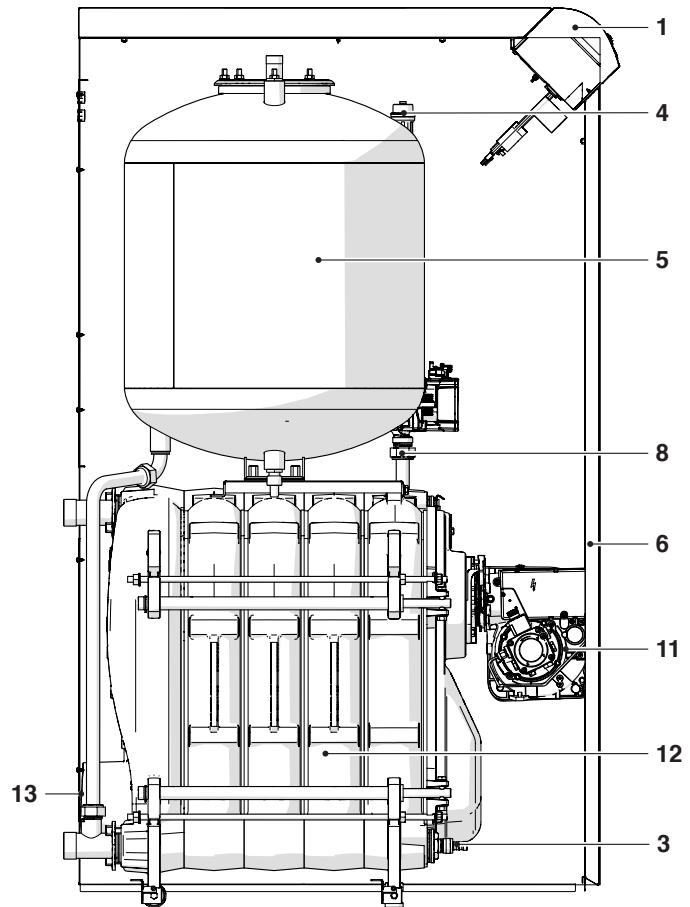
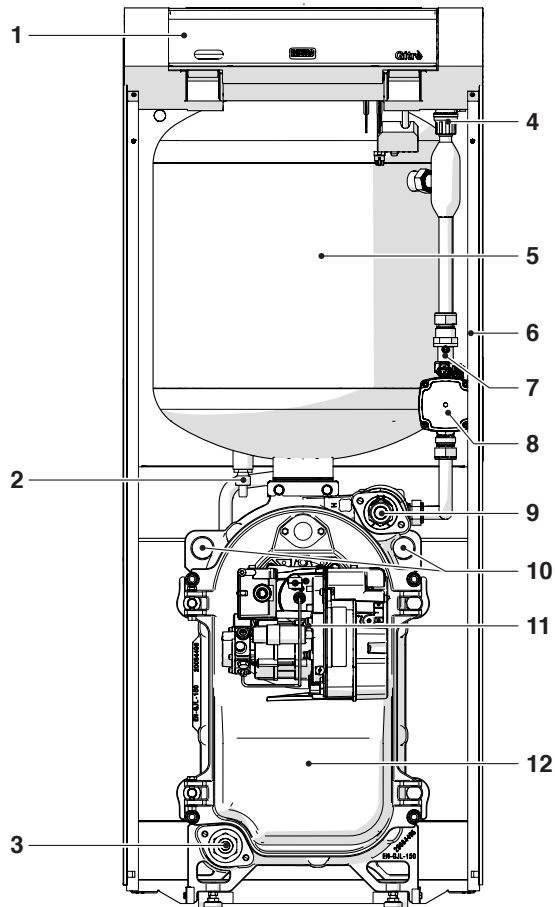
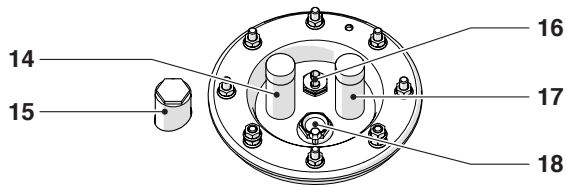
 The intervention of a safety device indicates a potentially dangerous malfunction in the system. Contact the manufacturer's Technical Assistance Service immediately.

 Safety devices must only be replaced by the manufacturer's Technical Assistance Service using original spare parts. Refer to the spare parts catalogue supplied with the boiler.

 Do not use the boiler if any of its safety devices are faulty.

Always check that the boiler is functioning correctly after repairs have been made.

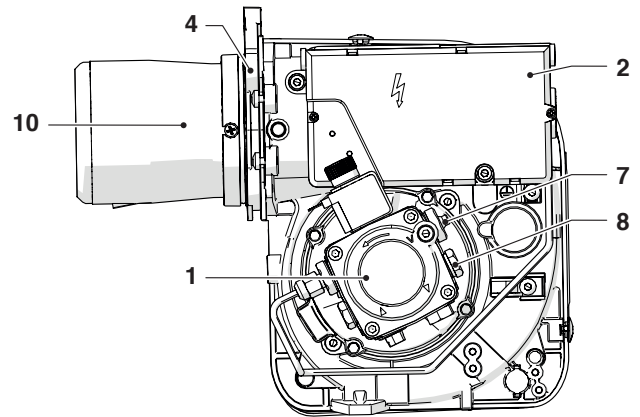
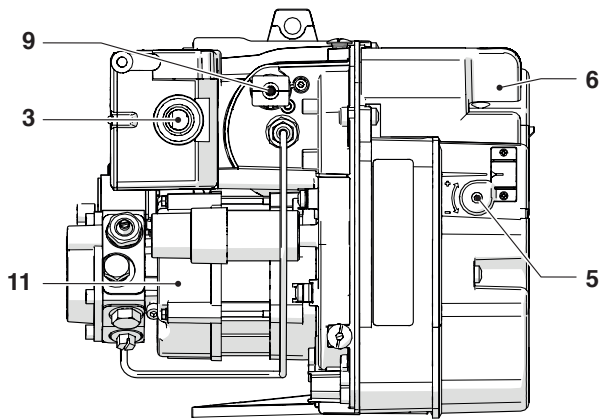
GITRÈ B/100



- 1 Control panel
- 2 Storage cylinder drain cock
- 3 CH circuit drain cock
- 4 Automatic vent valve
- 5 Storage cylinder
- 6 Casing
- 7 Non-return valve
- 8 Boiler circulator
- 9 Boiler temperature sensor socket
- 10 Lifting holes

- 11 Burner
- 12 Boiler body
- 13 Flue gas exhaust fitting
- 14 Domestic cold water inlet
- 15 DHW circulation
- 16 Storage cylinder temperature sensor socket
- 17 DHW outlet
- 18 Magnesium anode

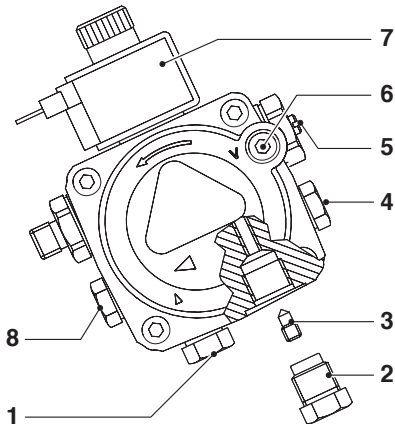
BURNER



- 1 Pump
- 2 Burner controller
- 3 Reset button with lockout indicator
- 4 Flange with seal
- 5 Air damper adjuster screw
- 6 Air intake

- 7 Oil pump pressure adjuster screw
- 8 Pressure gauge fitting
- 9 Photoresistor
- 10 Combustion head
- 11 Motor

OIL PUMP



- 1 Suction port
- 2 Return
- 3 By-pass screw
- 4 Pressure gauge fitting
- 5 Pressure adjuster screw
- 6 Vacuum gauge fitting
- 7 Valve
- 8 Auxiliary pressure measurement fitting

1.7 Technical specifications

DESCRIPTION	GITRÈ						
	GITRÈ 4	GITRÈ 5	GITRÈ 6	GITRÈ 5 B/100			
Device type	Low temperature central heating			Mixed low temperature heating			
Fuel	B23 - C13 (*) - C33 (*) Heating fuel oil (Light oil)						
Maximum rated heat input at furnace referred to HVC (LCV)	28,3 (26,7)	35,8 (33,8)	44,7 (42,1)	35,8 (33,8)	kW		
Useful (rated) heat output	25	32	40	32	kW		
Maximum useful heat output	P4	(60-80°C)	25,3	32,1	39,8	32,1	kW
30% heat output	P1	with return at 37°C	7,6	9,6	11,9	9,6	kW
Seasonal energy efficiency in central heating mode	B						
Seasonal energy efficiency in DHW mode	-			B			
Seasonal energy efficiency in central heating mode	ηs		86			%	
Efficiency at rated heat output in high temperature mode referred to HCV	η4	(60-80°C)	89,4	89,8	89,1	89,8	%
Efficiency at 30% rated heat output in low temperature mode referred to HCV	η1	with return at 37°C	91,4	90,6	90,2	90,6	%
Energy efficiency in DHW mode	ηWH		-			76,3	%
Storage cylinder charging profile				-	XL		
Heat loss in standby mode	Pstby		60,1	60,1	58,6	60,1	W
Combustion efficiency referred to LCV			95,3	96,0	96,1	96,0	%
Annual energy consumption	QHE		85	107	134	107	GJ
Daily electrical energy consumption	Qelec		-	-	-	0,105	kWh
Annual electrical energy consumption	AEC		-	-	-	28,60	kWh
Daily fuel consumption	Qfuel		-	-	-	27,26	kWh
Annual fuel consumption	AFC		-	-	-	36,50	GJ
Noise level (sound power)	LWA		69	70	73	70	dB(A)
Emissions at maximum heat input	NOx	(referred to HCV)	175				mg/kWh
	CO2		12,5				%
	CO w.a. <		50				ppm
	Flue gas T	At Pn (60- 80°C)	121	110	106	110	°C
Smoke scale					<0,5		
Flue gas mass flow rate			9,6	12,33	16,1	12,33	g/s
Maximum working pressure					3	bar	
Safety thermostat trip temperature					110	°C	
Maximum operating temperature					55-82	°C	
Minimum return temperature					37	°C	
Boiler water capacity			19,4	23,7	28	23,7	l
Turbulators					6	n°	
Power supply					230-50	V-Hz	
Electric degree of protection					X0D	IP	
Absorbed power supply (max)			185	157	164	210	W
Consumption at full load	Elmax		185	157	164	157	W
Consumption at part load	Elmin		57	48	50	48	W
Electrical consumption in standby mode	P sb					1,6	W

LCV: Lower calorific value of fuel
HCV: Higher calorific value of fuel
Test conditions:

- Room temperature 22°C
- Atmospheric pressure 1018 mbar

(*) In conjunction with the 80/125 concentric flue kit available from the catalogue (FRANCE ONLY).

STORAGE CYLINDER		GITRÈ 5 B/100	
Type of storage cylinder		Vitrified steel	
Storage cylinder layout		Vertical	
Heat exchanger layout		Vertical	
Maximum power absorbed		24,9	kW
DHW water temperature setting range		0-70	°C
Storage cylinder capacity		100	l
Coil water capacity		5	l
Coil heat exchange surface area		1,02	m ²
Domestic hot water production (ΔT 35°C) (*)		612	l/h
Water draw in 10 minutes with primary buffer tank at:	48°C	170	l
	60°C	230	l
Specific flow rate	(EN 13203)	21	l/min
Replenishment time with ΔT 35°C)		10	min
Maximum operating pressure of storage cylinder		6	bar
STORAGE CYLINDER PUMP			
Electrical consumption		53	W
EEl Part 3 (**)		≤ 0,20	
P L, Avg (***)		≤ 24	W
Minimum pressure at pump suction inlet		0,5	bar

(*) Inlet water temperature 10°C and average outlet water temperature 45°C with coil inlet temperature of 80°C

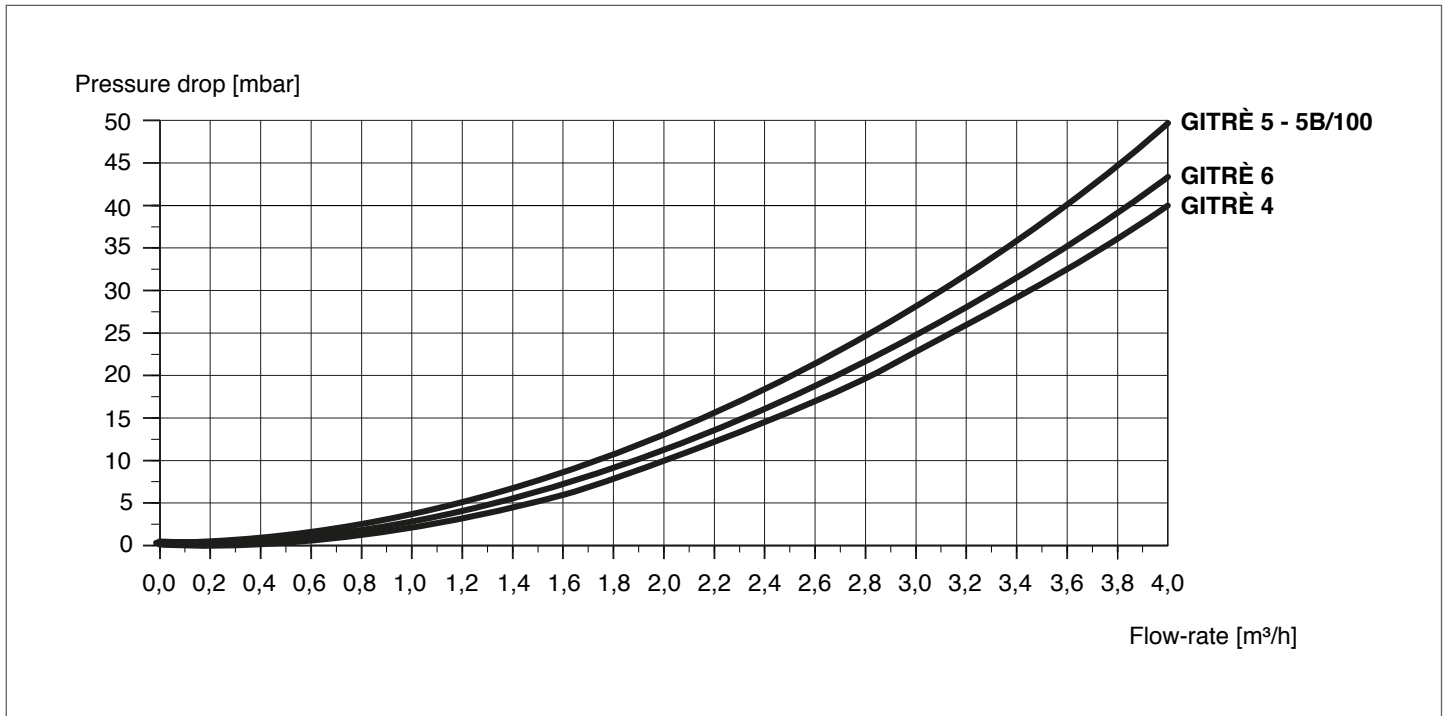
(**) Energy efficiency rating according to regulations 641/2009-622/2012

(***) Approximate average annual electricity consumption according to regulations 641/2009-622/2012

1.7.1 Water-side pressure drop

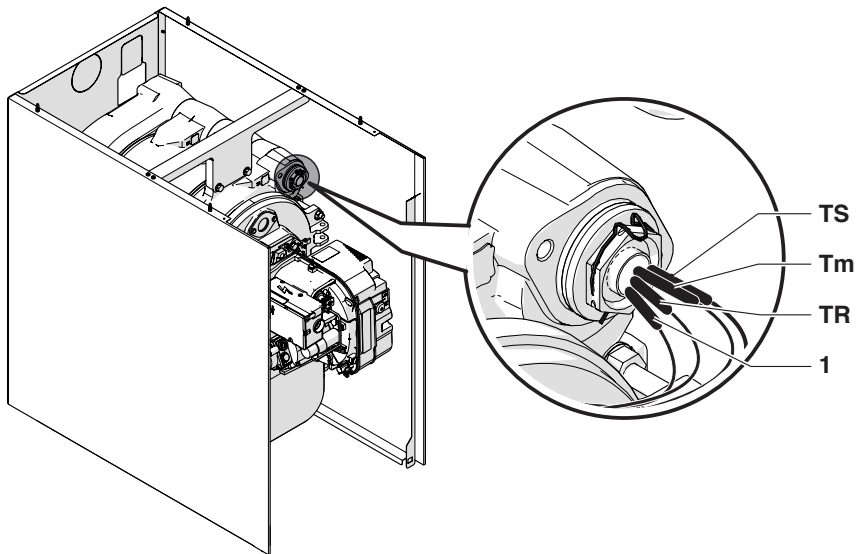
GITRÈ boilers come without a pump. A pump must therefore be provided as part of the installation.

In order to choose a pump of the right size, bear in mind the boiler's water-side pressure drop, as shown in the figure below.



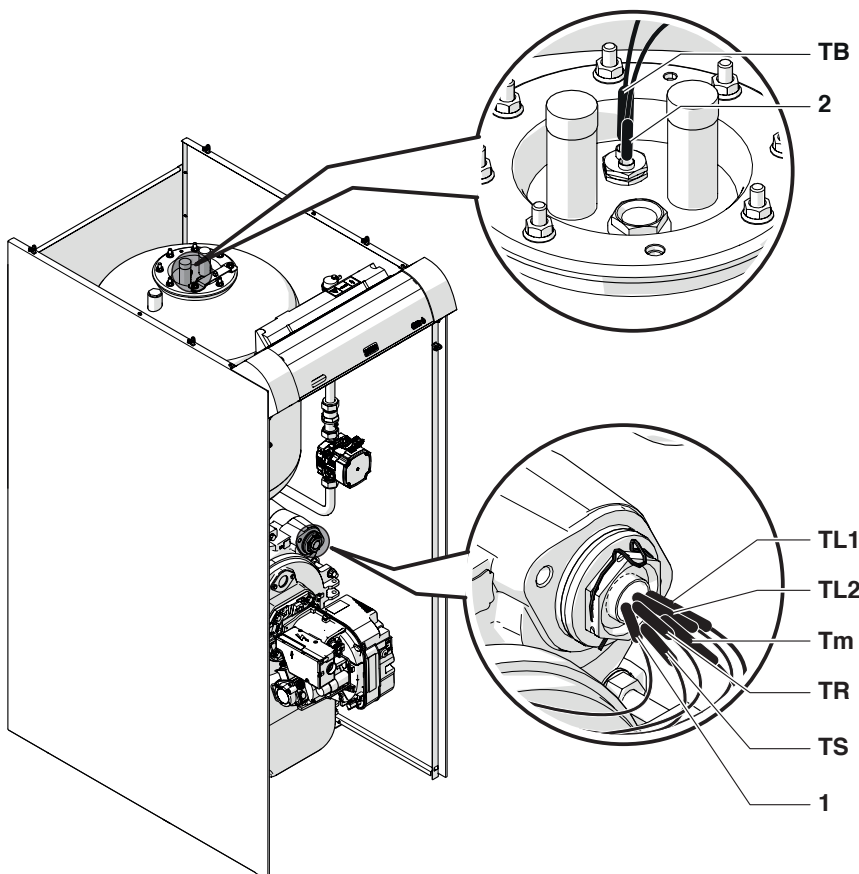
1.8 Location of sensors

GITRÈ



- TS Safety thermostat sensor
- Tm Minimum temperature thermostat sensor
- TR Boiler thermostat sensor
- 1 Boiler temperature gauge

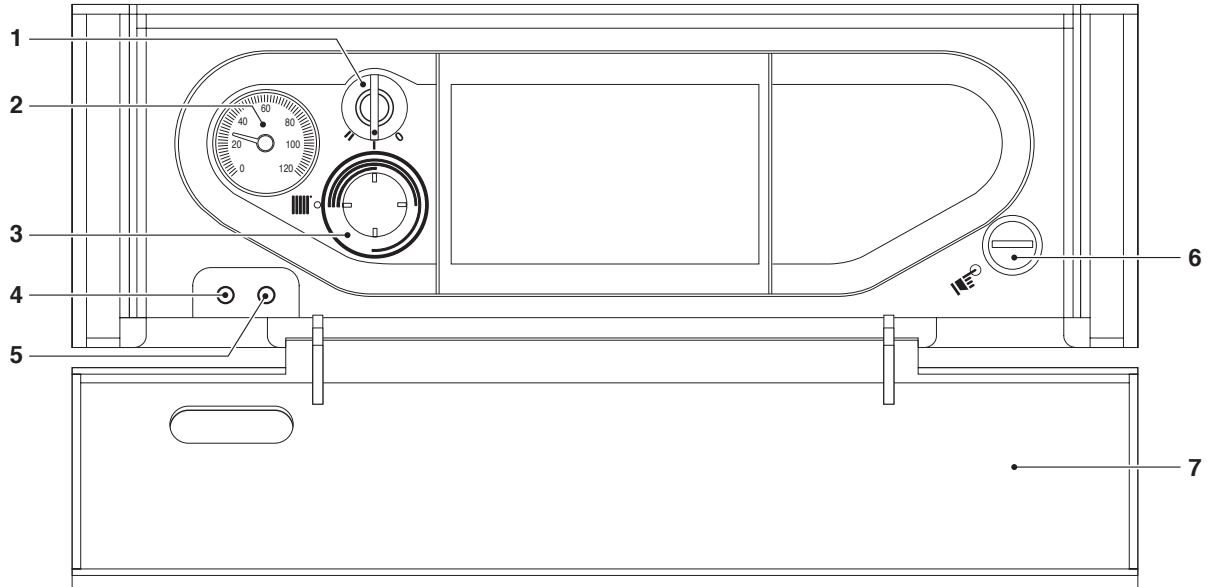
GITRÈ B/100



- TR Boiler thermostat sensor
- TS Safety thermostat sensor
- TB Storage cylinder thermostat sensor
- TL1 Maximum temperature thermostat sensor
- TL2 Heat dissipation thermostat sensor
- Tm Minimum temperature thermostat sensor
- 1 Boiler temperature gauge
- 2 DHW thermostat

1.9 Control panel

GITRÈ



1 Function selector

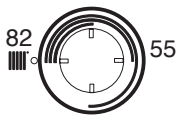
- 0 Off
- I On
- II Burner reset

2 Boiler temperature gauge

Displays the temperature of the central heating water

3 Boiler thermostat

Allows you to set the temperature of the central heating water (setting range 55-82°C)



4 Electrical power indicator (green)

Lights to show that the boiler is receiving electrical power

5 Burner lockout indicator (red)

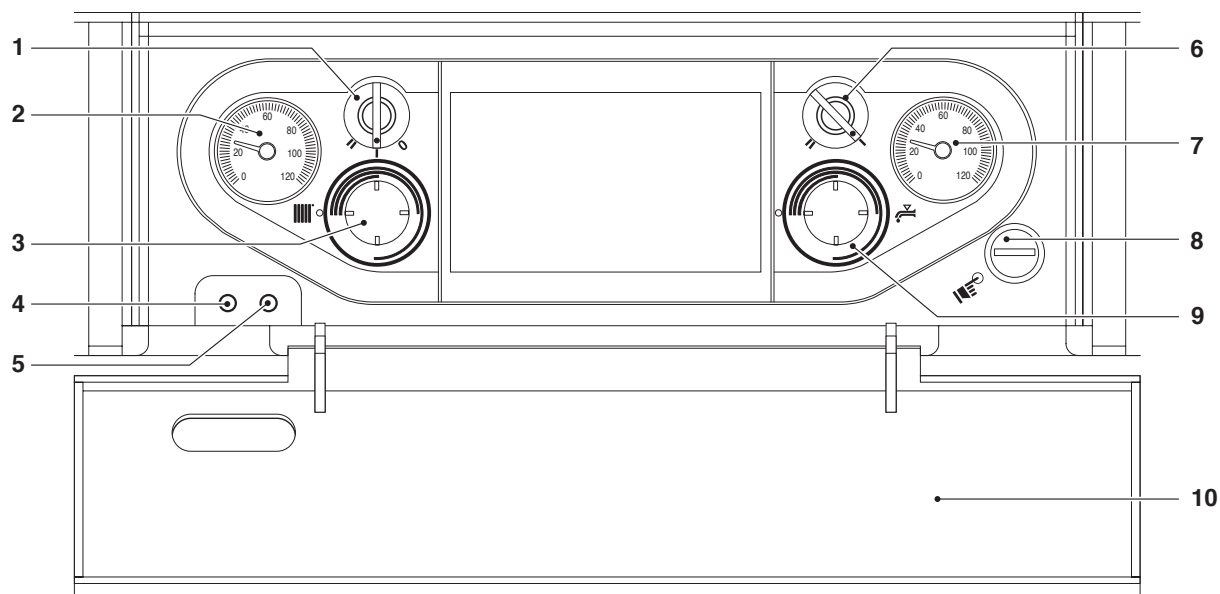
Lights to show that the burner locked out

6 Manual reset for safety thermostat

Allows you to reset the boiler if the safety thermostat trips. Unscrew the protective cover to access the reset button

7 Protective cover over control panel

GITRÈ B/100

**1 Function selector**

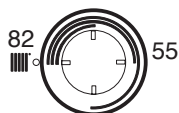
- 0 Off
- I On
- II Burner reset

2 Boiler temperature gauge

Displays the temperature of the central heating water

3 Boiler thermostat

Allows you to set the temperature of the central heating water (setting range 55–82°C)

**4 Electrical power indicator (green)**

Lights to show that the boiler is receiving electrical power

5 Burner lockout indicator (red)

Lights to show that the burner locked out

6 Summer (I) / Winter (II) selector**7 Storage cylinder temperature gauge**

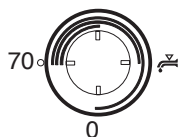
Displays the temperature of the domestic hot water in the storage cylinder

8 Manual reset for safety thermostat

Allows you to reset the boiler if the safety thermostat trips. Unscrew the protective cover to access the reset button

9 Storage cylinder thermostat

Allows you to set the temperature of the domestic hot water (setting range 0–70°C)

**10 Protective cover over control panel**

2 INSTALLATION

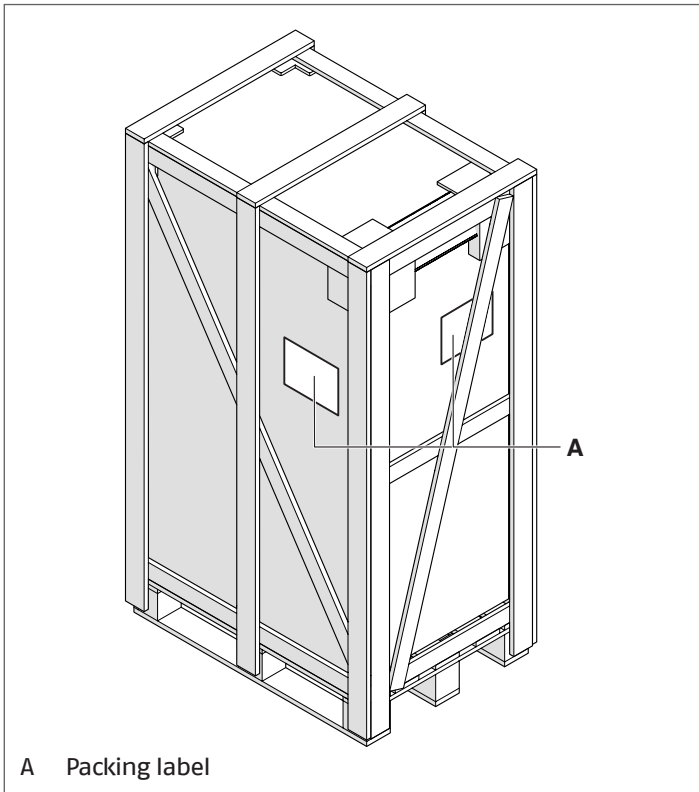
2.1 Unpacking the product

GITRÈ boilers are delivered on a pallet, packed and protected by a wooden cage.

The following items are delivered in a plastic bag (1) inside the boiler:

- User manual
- Installation and maintenance manual
- Spare parts catalogue
- Hydraulic test certificate
- Energy label

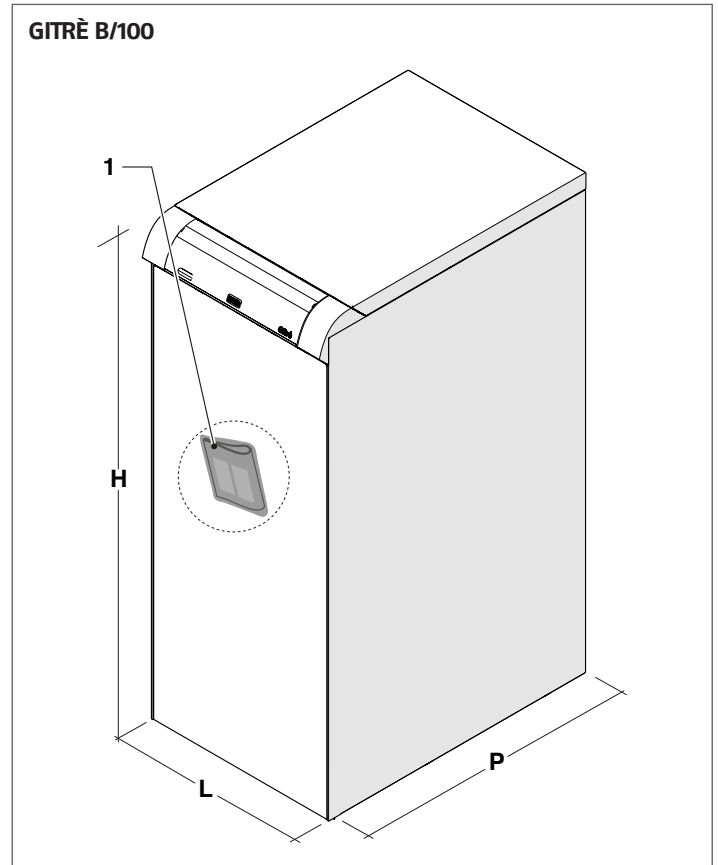
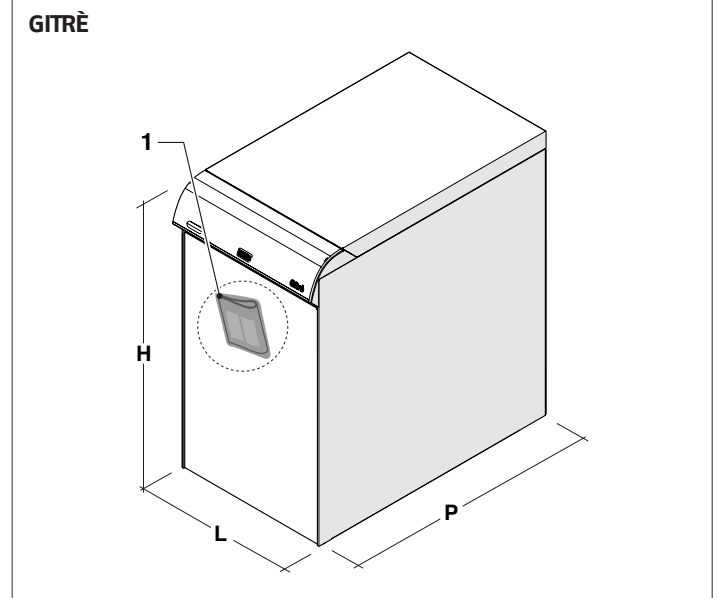
2.1.1 Positioning of labels



! The instruction manual is an integral part of the boiler. Once located, read it thoroughly and keep it safe.

! Keep the documentation envelope in a safe place. Any replacement documents must be ordered from Riello S.p.A. who reserve the right to charge for the cost of the replacement.

2.2 Overall dimensions and weights



Description	GITRÈ 4	GITRÈ 5	GITRÈ 6	GITRÈ 5 B/100	
L	450	450	450	600	mm
P	797	897	997	900	mm
H	850	850	850	1500	mm
Net weight	182	214	248	286	kg

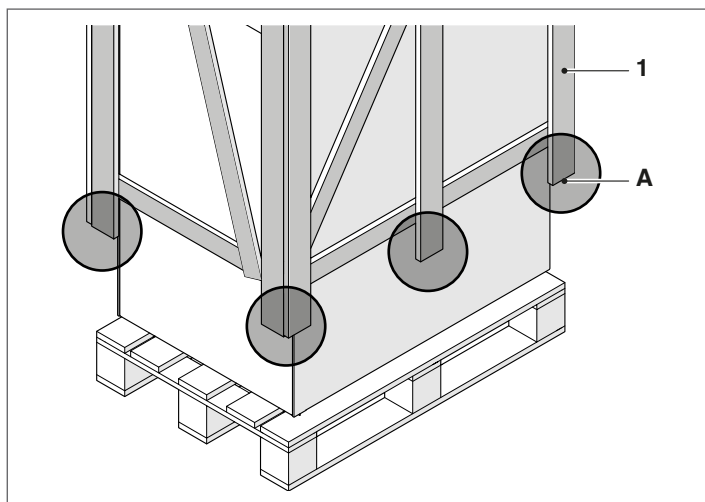
2.3 Moving and removing the packing

! If the installation involves a lot of moving (e.g. to a rooftop or cellar utility room) do not remove the protective wooden cage until the boiler is at its place of installation.

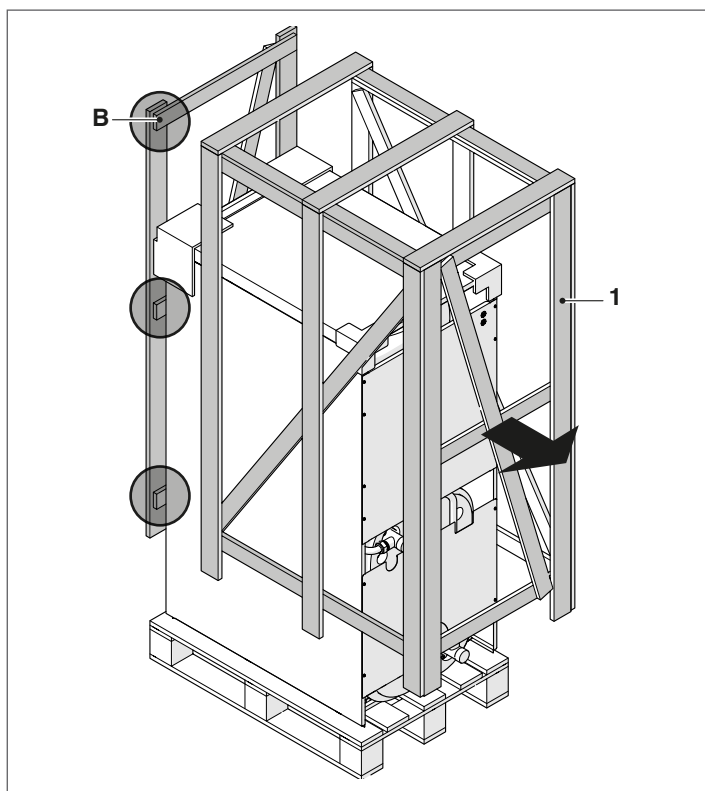
! Wear suitable personal protection equipment when moving the boiler and removing the packing. Only use lifting equipment that is suitable for the weight involved.

Proceed as follows to remove the packing:

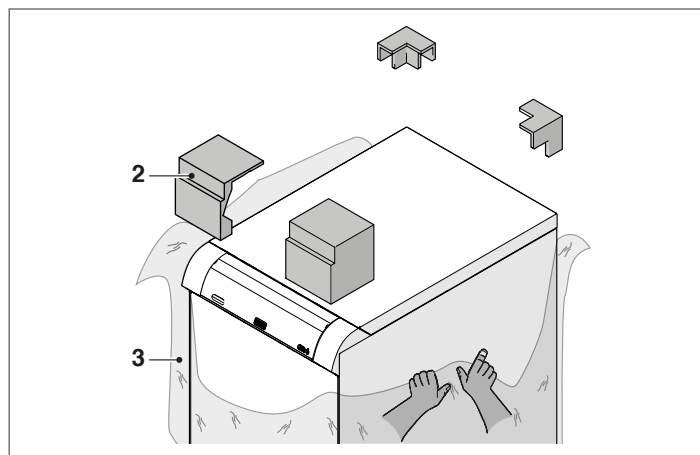
- Remove the staples (A) fixing the wooden cage (1) to the pallet



- Lift off the wooden cage (1) or slide it off to the rear. (Pull out the staples (B) and remove the front of the cage first in order to slide it off to the rear.)

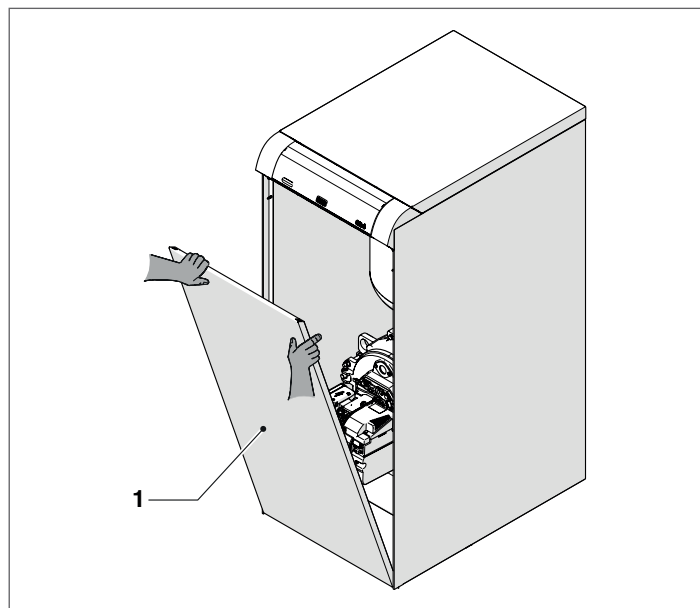


- Remove the polystyrene edge protectors (2)
- Pull off the protective bag (3).

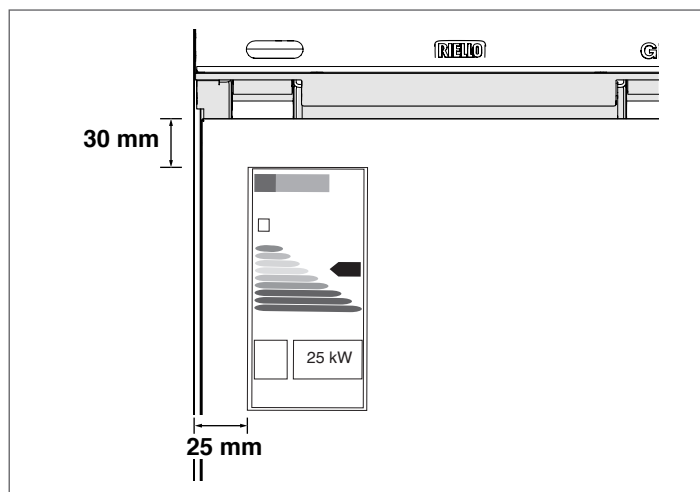


! Do not dispose of packaging material into the environment, or leave it within the reach of children, since it can become a potential hazard. Dispose of packaging material in compliance with applicable legislation.

With the packing removed, remove the front panel (1).

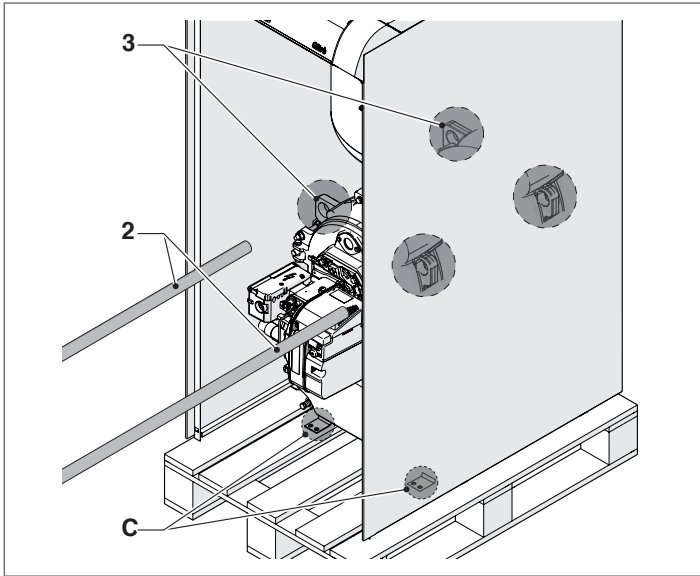


Locate the bag containing the documentation, remove the energy label and apply it to the boiler casing.



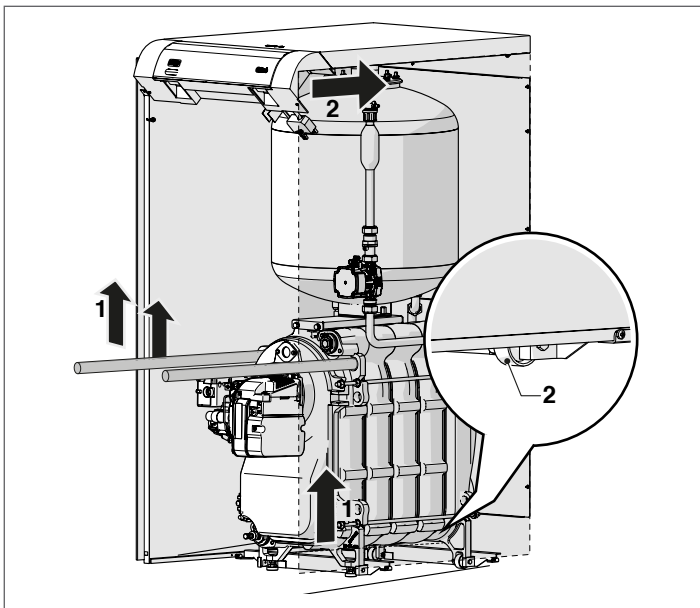
To move the boiler manually, proceed as follows:

- Remove the fixing screws (C) to free the boiler from the pallet;
- Lift the boiler by inserting two 1" diameter pipes (2) through the lifting holes (3) in the boiler body.



! Take care because the boiler might swing when lifted.

Provided the floor is smooth and level, the boiler can be lifted a little (1) and moved on wheels (2).



Level off the boiler by adjusting the 2 feet at the front of the boiler.

2.4 Installation premises

GITRÈ boilers must be installed in rooms with suitably sized air vents conforming to the technical standards and regulations applicable at the place of installation.

! When installing the boiler, allow sufficient space around it to access all safety and control devices and to permit easy maintenance.

! Check that the appliance's electrical protection level is suitable for the place of installation.

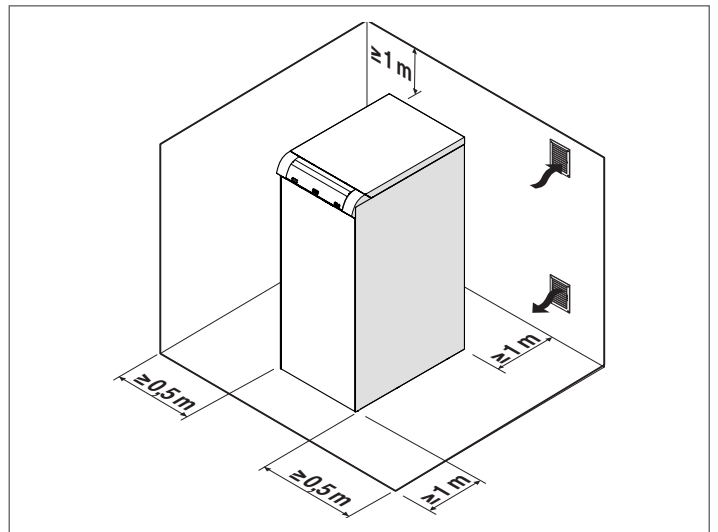
! Make sure that comburent air is not contaminated by substances containing chlorine or fluorine (elements found in sprays, paints, detergents etc.).

⊖ These boilers must be installed indoors. They are not designed for outside use.

⊖ Do not obstruct or restrict the air vents in the room where the boiler is installed. A free air supply is essential for correct combustion.

2.4.1 Recommended minimum distances

This figure shows the minimum installation distances that must be respected in order to allow proper maintenance of the boiler.



2.5 Installation in older systems and systems requiring modernisation

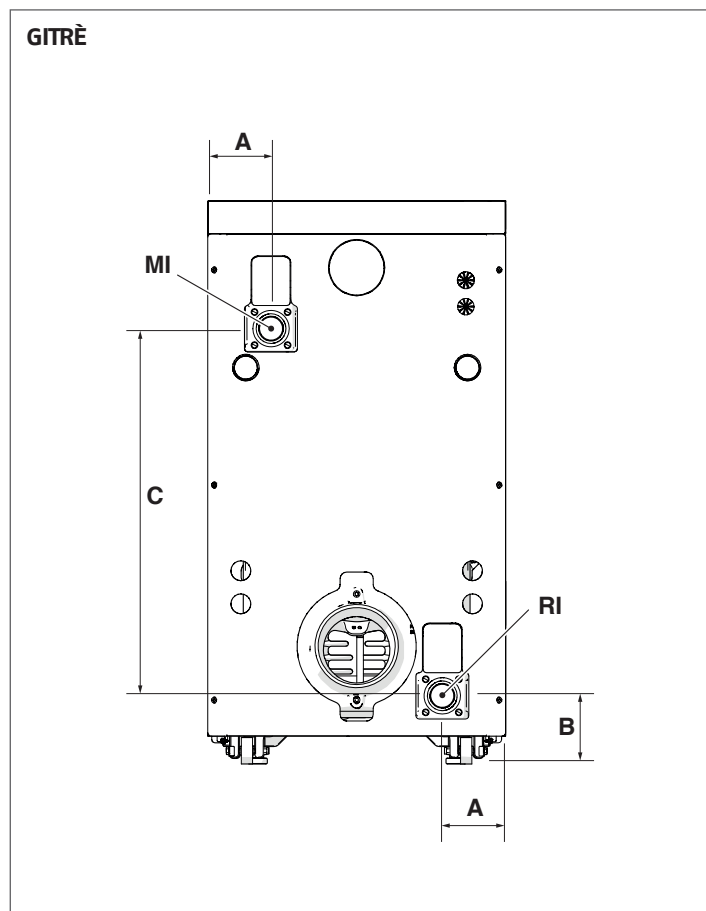
When installing these boilers in older systems or systems requiring modernisation, always perform the following checks:

- Make sure that the flue is able to withstand the temperature of the combustion gases and that it has been designed and made in compliance with applicable standards. The flue must also be as straight as possible, sealed, insulated and not blocked or choked. Refer to the "Combustion gas exhaust" section on page 20 for further information.
- Make sure that the electrical supply system has been installed by a qualified electrician in compliance with applicable standards
- Make sure that the fuel feed line and any storage tank are made and installed in compliance with applicable standards
- Make sure that expansion vessels are big enough to contain the additional volume generated by thermal expansion
- Make sure that the flow rate, head and direction of flow of the pumps are suitable and correct
- Make sure that the central heating circuit has been flushed out to remove all sludge and lime scale, and that it has been bled and seal tested
- Make sure that a suitable water treatment system is installed if the quality of the supply/recirculation water so demands. (Refer to the reference values on page 22); See Riello S.p.A.'s Catalogue

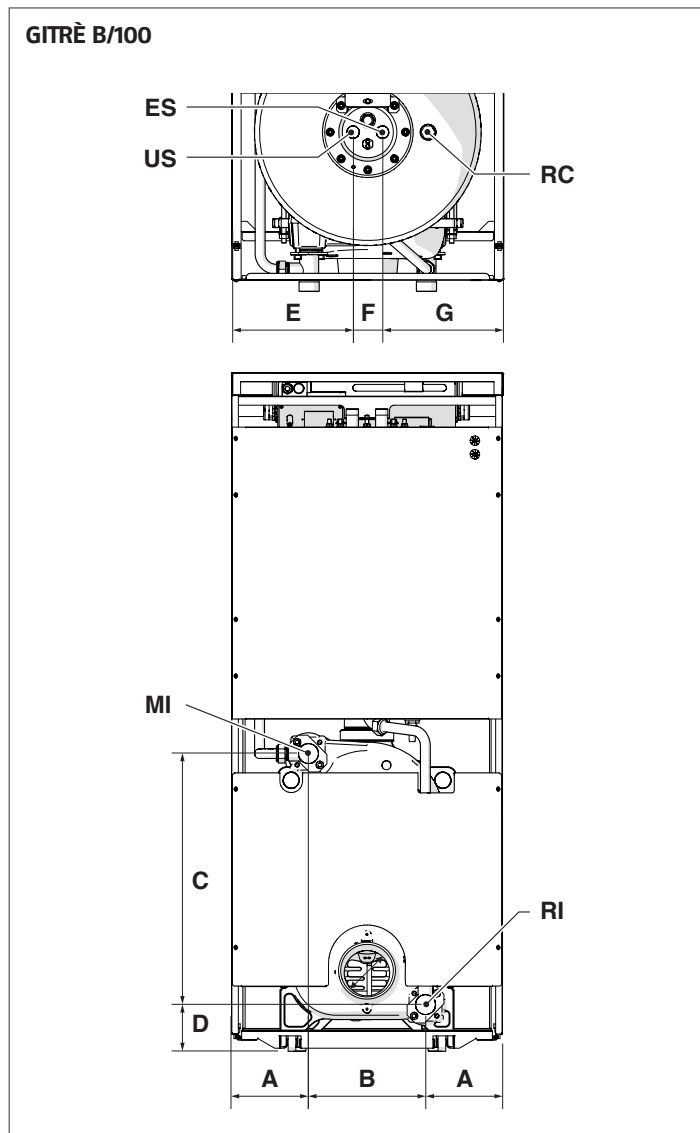
! The manufacturer declines all responsibility for damage caused by incorrectly constructed flue systems.

2.6 Water connections

The following figures and tables give the dimensions and positions of the water fittings for (**GITRÈ** and **GITRÈ B/100**) boilers. Before installing the boiler, flush out all the pipes of the central heating circuit to remove any machining residues.



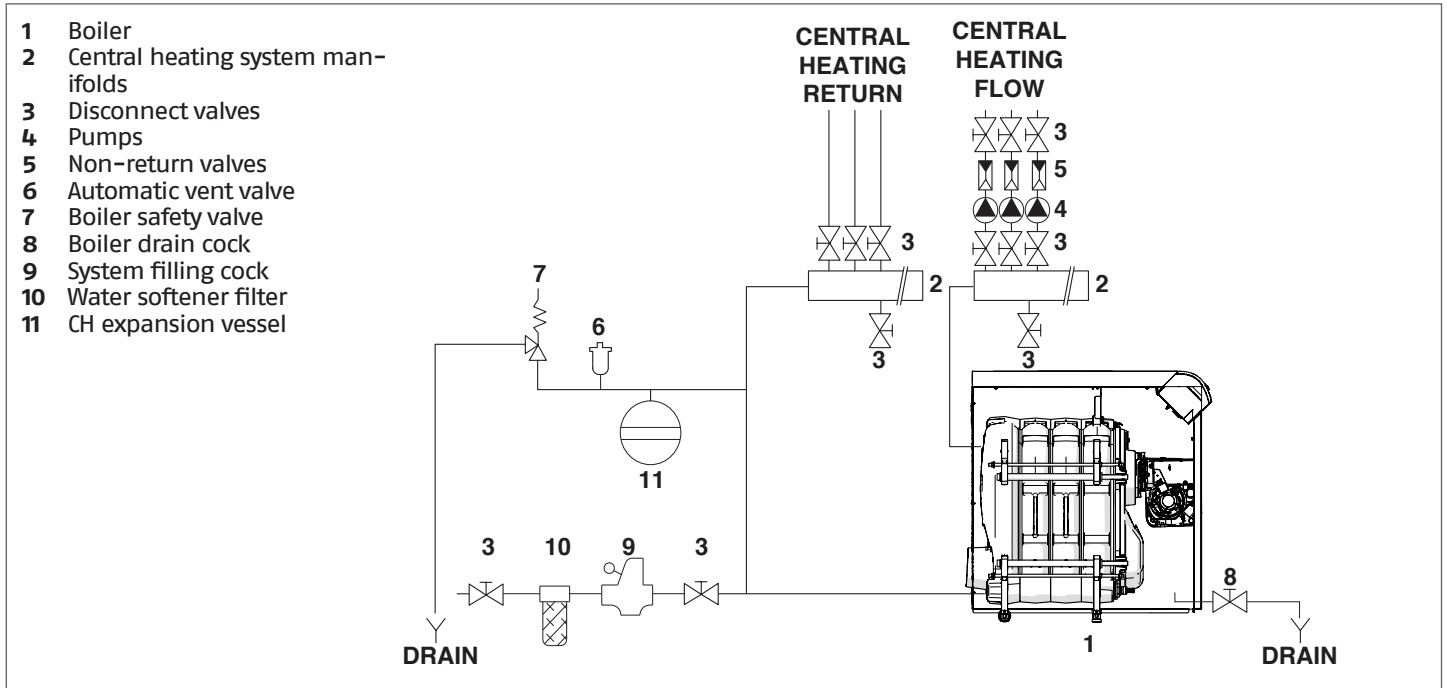
DESCRIPTION	GITRÈ			
	GITRÈ 4	GITRÈ 5	GITRÈ 6	
A		96		mm
B		103		mm
C		555		mm
MI (CH flow)		1"1/4 F		∅
RI (CH return)		1"1/4 F		∅



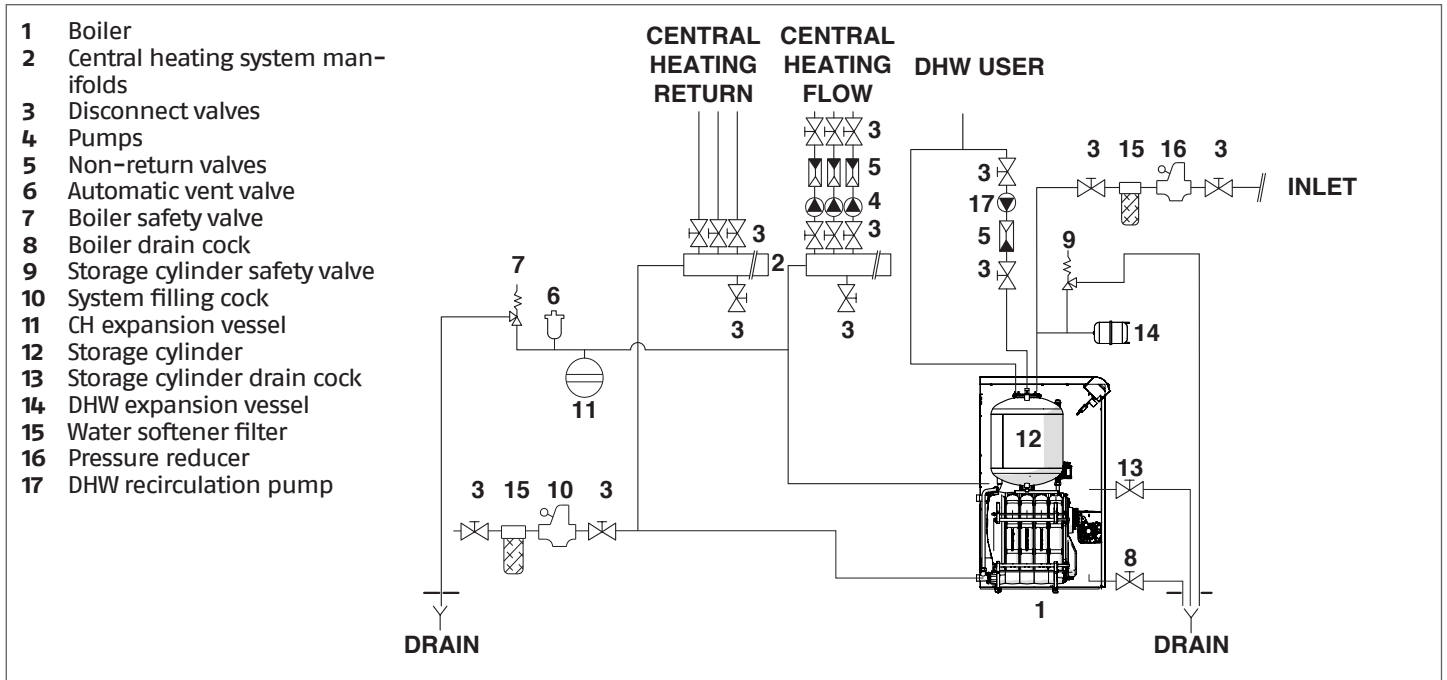
DESCRIPTION	GITRÈ		
	GITRÈ 5 B/100		
A	170		mm
B	260		mm
C	555		mm
D	103		mm
E	267,5		mm
F	65		mm
G	267,5		mm
MI (CH flow)	1"1/4 M		∅
RI (CH return)	1"1/4 M		∅
US (DHW outlet)	3/4" M		∅
RC (DHW recirculation)	3/4" F		∅
ES (domestic cold water inlet)	3/4" M		∅

2.7 Typical water system schematics

Typical schematic – Central heating system – GITRÈ



Schematic diagram – central heating and domestic hot water production – GITRÈ B/100



! The DHW and central heating circuits must incorporate expansion vessels of adequate capacity as well as suitably rated safety valves. The condensate drain must be connected to a suitable collection and drain system.

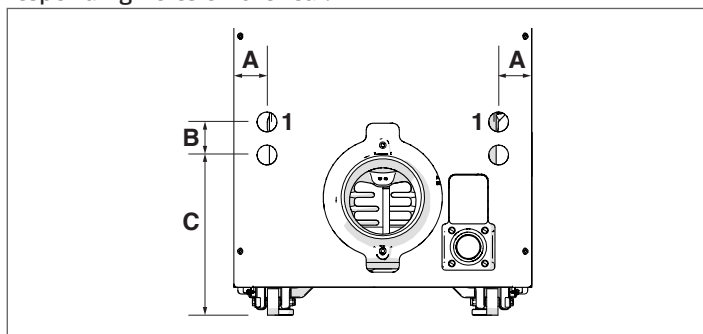
! The choice of system components and the method of their installation are left up to the heating engineer installing the system. Installers must use their expertise to ensure proper installation and functioning in conformity to all applicable legislation.

! If needed, water supplies and recovery circuits must be conditioned by suitable treatment systems. Refer to the values listed in the table on page 22.

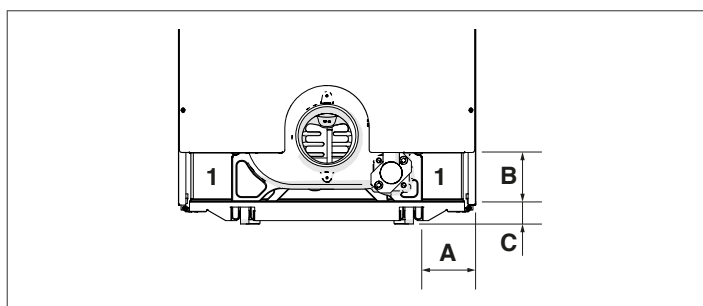
⊖ Never run the boiler or the pumps dry.

2.8 Fuel connections

GITRÈ boilers have their fuel connections at the rear. Fuel supply hoses must pass through the hole (1) in the back of the boiler before being connected to the fuel pump. Connect the hoses provided and pass a length of about 500 mm through the corresponding holes on the rear.



DESCRIPTION	GITRÈ			
	GITRÈ 4	GITRÈ 5	GITRÈ 6	
A		50		mm
B		50		mm
C		242		mm



DESCRIPTION	GITRÈ		
	GITRÈ 5 B/100		
A	107		mm
B	96		mm
C	47		mm

If the oil feed system is in negative pressure, the return line must reach the same height as the suction line. This avoids having to install a bottom valve, which would be essential if the return hose were to be located above the level of the fuel.

! The installer must ensure that the negative pressure differential in the oil feed never exceeds 0.4 bar (30 cm Hg). If this value is exceeded, the fuel oil will release gas. Make sure that the oil hoses are perfectly oil-tight.

! Clean out the oil tank at suitable intervals.

! The oil feed line must be suitable for the flow rate demanded by the burner. The oil feed system must also be equipped with all the necessary safety and control devices required by applicable legislation and standards. Refer to the table alongside for oil feed line characteristics.

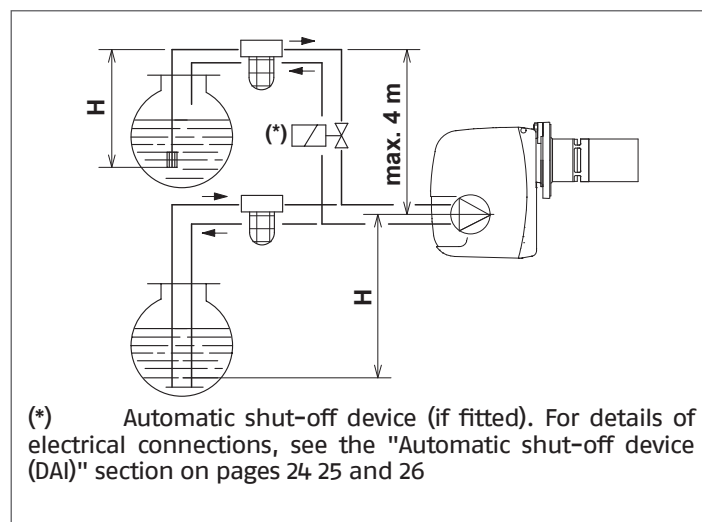
! A filter must be installed in the oil feed line.

! Make sure that the oil return line is not kinked or blocked before starting up the boiler. Excessive back-pressure can cause the pump seal to fail.

Priming the pump

To prime the oil pump simply start up the burner and check for a flame.

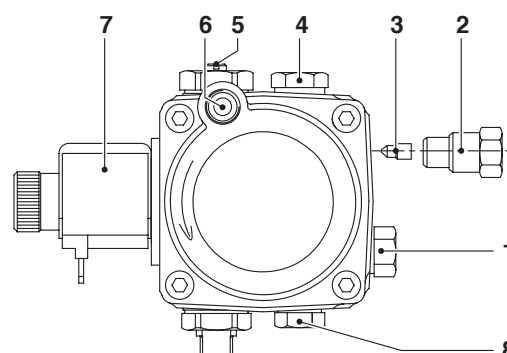
If the burner enters lockout before any fuel reaches it, wait at least 20 seconds then turn the function selector to position (II) "Reset burner" for at least 1 second before returning it to position (I). Wait for the burner to complete the entire ignition cycle again, up to the ignition of the flame.



H (m)	L (m)	
	Øi (8mm)	Øi (10mm)
0	35	100
0,5	30	100
1	25	100
1,5	20	90
2	15	70
3	8	30
3,5	6	20

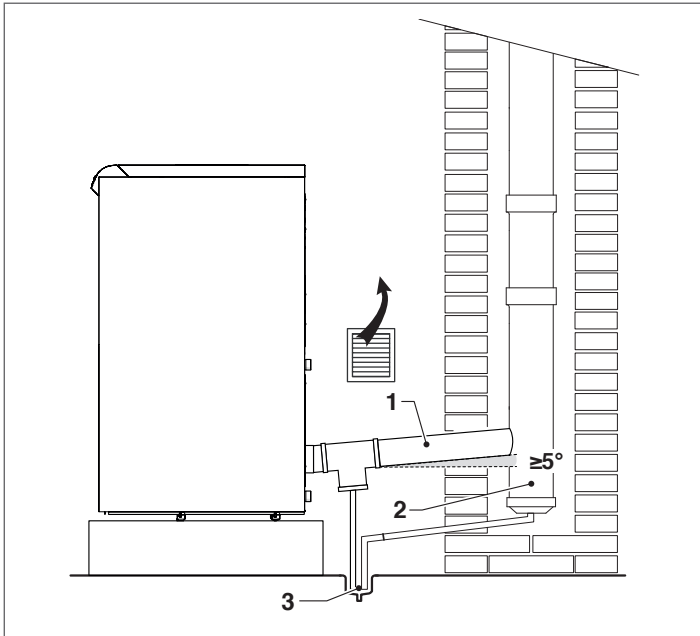
H = Height difference
 L = Maximum length of suction hose
 Øi = Internal diameter of hose

- 1 Suction port
- 2 Return
- 3 By-pass screw
- 4 Pressure gauge fitting
- 5 Pressure adjuster screw
- 6 Vacuum gauge fitting
- 7 Valve
- 8 Auxiliary pressure measurement fitting

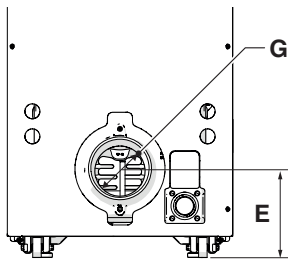


2.9 Combustion gas exhaust

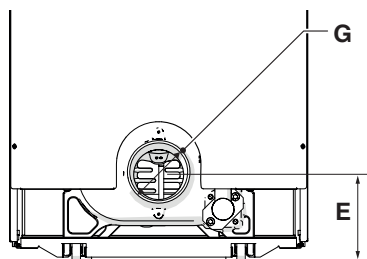
The flue pipe (1) and the connection to the stack (2) must be made in conformity to the laws, standards and regulations applicable in the place of installation.



GITRÈ



GITRÈ B/100



DESCRIPTION	GITRÈ 4	GITRÈ 5	GITRÈ 6	GITRÈ 5 B/100	
E		178			mm
G (flue gas exhaust fitting)		126-139 concentric			∅

GITRÈ boilers derive their comburent air from the room in which they are installed. Suitable air vents must therefore be provided in compliance with applicable laws and standards.

⊖ Do not obstruct or restrict the air vents in the room where the boiler is installed. Adequate ventilation is essential for correct combustion and functioning.

2.9.1 Technical specifications of stack

The stack must satisfy the following requirements::

- It must be constructed from materials that are impermeable to flue gases and that offer lasting resistance to mechanical stress, heat and the action of the products of combustion and condensate
- It must be vertical, free of restrictions and contain bends of no more than 45°
- It must be suitable for the specific operating conditions of the boiler and must be CE marked (EN1856-1, EN1443)
- It must be of adequate dimensions to ensure draught and venting properties suitable for the needs of the boiler (EN13384-1)
- It must have adequate external insulation to prevent condensation and the cooling of flue gases
- the stack must have a dedicated condensate drain system at the bottom.

! The diameter of the stack must never be smaller than that of the flue pipe from the boiler.

! In configuration B23, the stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the boiler's flue gas exhaust.

2.9.2 Connection to the stack

The boiler must be connected to the stack using rigid flue pipes that are resistant to heat, condensate and mechanical stress. All joints must be sealed and the finished flue must be insulated. Only use materials that are suitable for this purpose, e.g. stainless steel.

The near-horizontal section of flue pipe must have a slope of at least 5° towards the boiler and must also be properly insulated. In long near-horizontal sections of flue pipe (L>1 m), install a condensate drain system near the boiler exhaust (as shown in the figure) to drain off any condensate forming in this section of flue.

The diameter of the stack must always be greater than that of the flue pipe from the boiler's exhaust fitting. To change direction, use a T section with an inspection cap to permit easy access for cleaning inside the pipe. After cleaning, always make sure that inspection caps are replaced tightly and that their seals are undamaged and efficient.

! Flue pipes must maintain a distance of at least 500 mm from flammable or heat sensitive construction materials.

! Joints must be sealed with materials that are resistant to acid condensate and to the high temperatures of the boiler's flue gases.

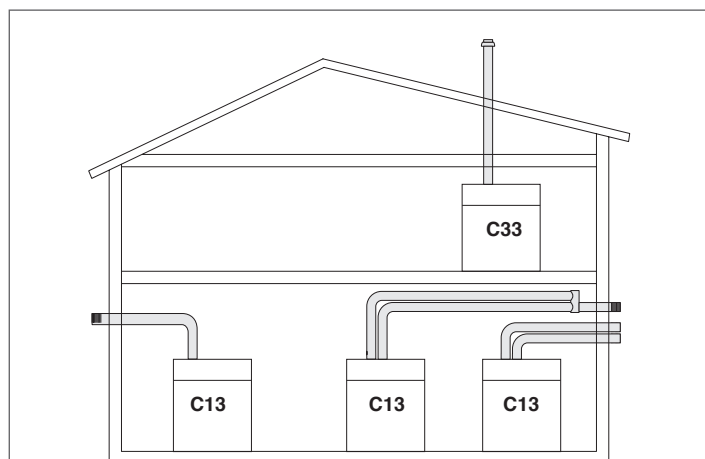
! When installing flue pipes, always bear in mind the direction of the flue gases and of possible condensate flows.

! Inadequate or badly dimensioned stacks and flues can increase combustion noise, cause condensation problems and affect combustion parameters.

! Uninsulated flues are potentially dangerous and can cause burns.

BOILER CONFIGURATIONS C13 – C33

If comburent air is drawn from outdoors, the appliances are type C "sealed" and the boiler room does not require ventilation.



C13 Concentric wall vent. Twin flue pipes can also be used, but the wall through-pipes must be concentric or located close enough to be subjected to similar wind conditions.

C33 Concentric roof vent. Outlets as for C13.

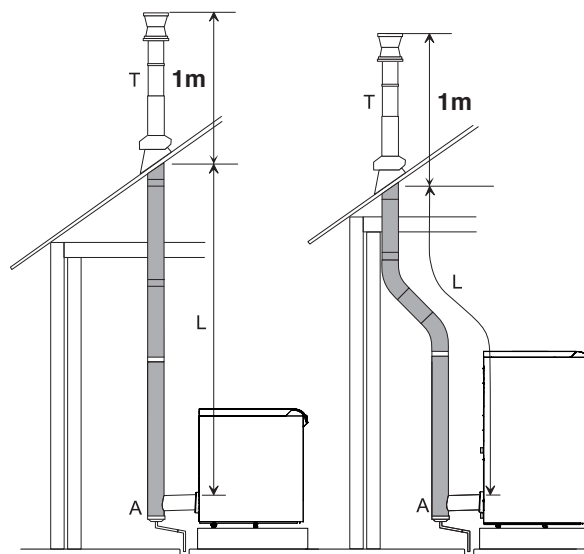
! See the specific standard for details.

Concentric flue pipes (Ø 80/125) – FRANCE ONLY

The boiler must be fitted with the relevant kit for use in these configurations. (See the manual provided with the kit for installation instructions).

Coaxial flues can be oriented in whatever direction is most convenient for the room, provided the maximum specified lengths are respected.

Connections in configuration C33



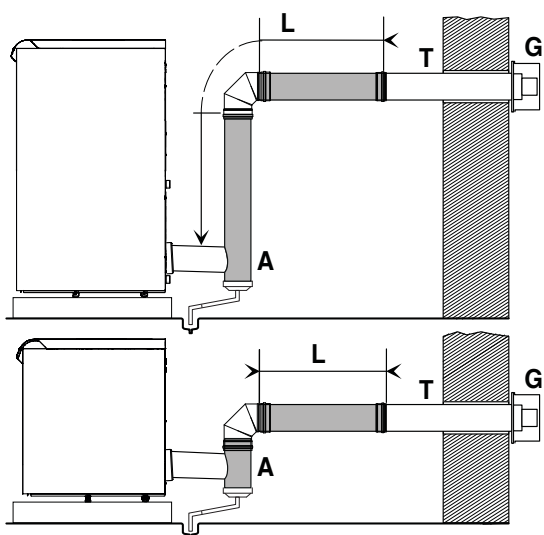
A Adaptor
 T Terminal
 L Maximum straight length
 (This length must be reduced by 1 metre for every 90° curve and by 0.5 metres for every 45° curve.)

Description	GITRÈ 4	GITRÈ 5 GITRÈ 5 B/100	GITRÈ 6	
L	6.5	7.0	7.5	m

! Use of flues longer than the specified maximum leads to a loss of heat output from the boiler.

! Never obstruct or choke the comburent air intake pipe.

Connections in configuration C13

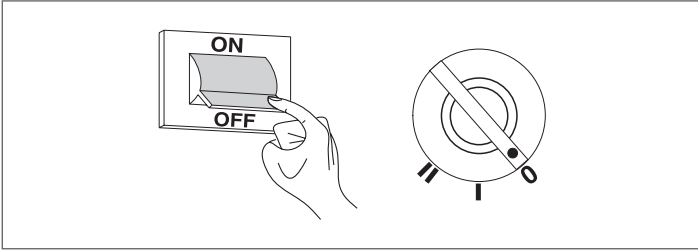


A Adaptor
 G Protective grille (not supplied)
 T Terminal
 L Maximum straight length
 (This length must be reduced by 1 metre for every 90° curve and by 0.5 metres for every 45° curve.)

Description	GITRÈ 4	GITRÈ 5 GITRÈ 5 B/100	GITRÈ 6	
L	6.5	7.0	7.5	m

2.10 System filling and emptying

GITRÈ boilers require a filling pipe connected to the central heating circuit return pipe. Turn the mains power switch **OFF** and turn the control panel function selector to **(0)** before filling or draining the system.



2.10.1 Water quality requirements

The heat transfer fluid (water) for the central heating circuit must conform to the quality parameters given in the following table:

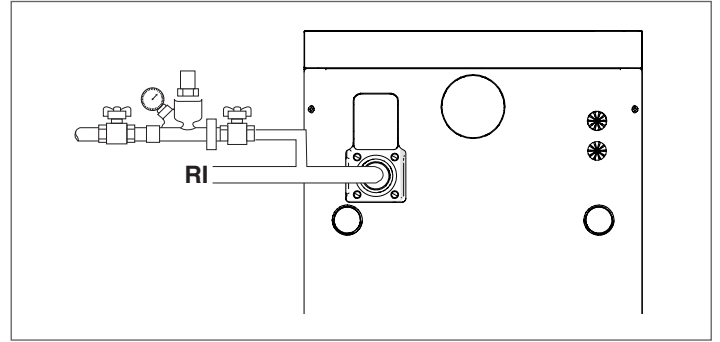
REFERENCE VALUES	
pH	6-8
Electrical conductivity	less than 200 $\mu\text{S}/\text{cm}$ (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm

If the hardness of the water exceeds the value specified in the table, it is mandatory to install a water softening system.

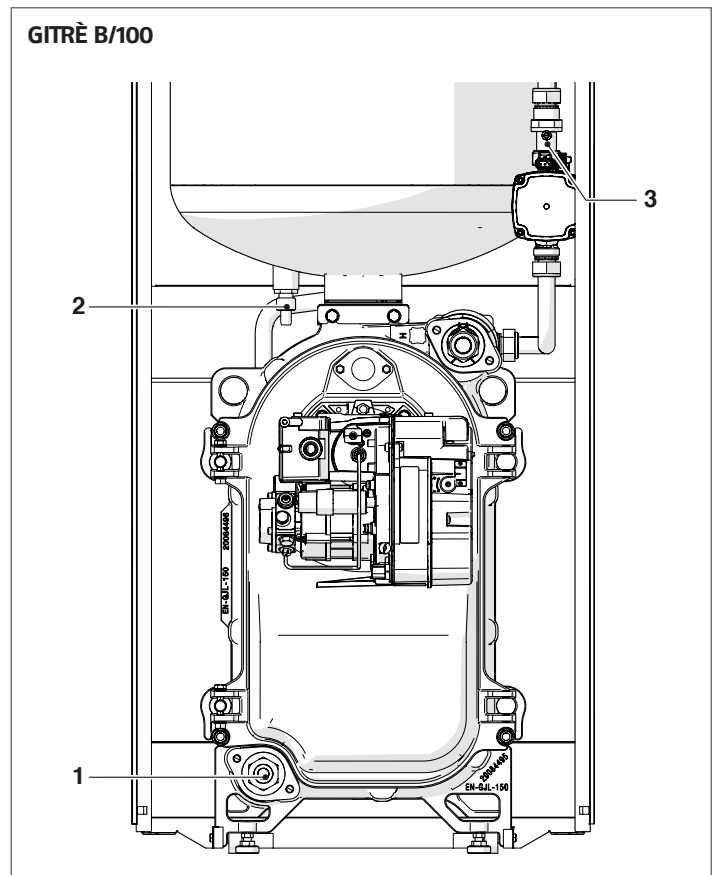
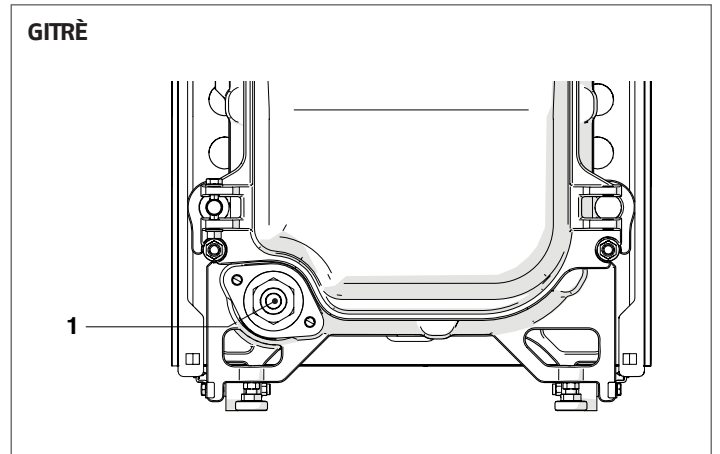
! Excessive water softening (leading to a total hardness < 15°F) can cause corrosion in metal parts (pipes and boiler components). Keep the electrical conductivity of the water under 200 $\mu\text{S}/\text{cm}$.

e Do not top up the central heating circuit on a frequent or continuous basis as this can damage the boiler's heat exchanger. The use of automatic topping up systems should be avoided for this reason.

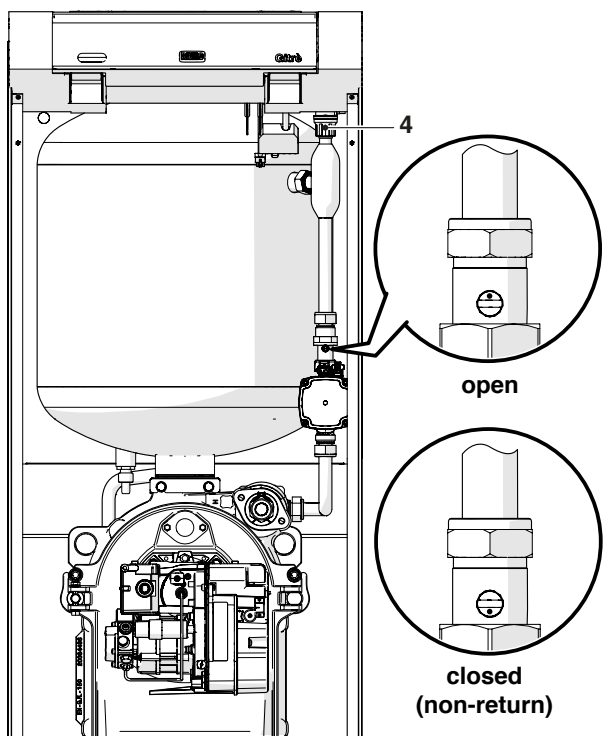
2.10.2 Filling



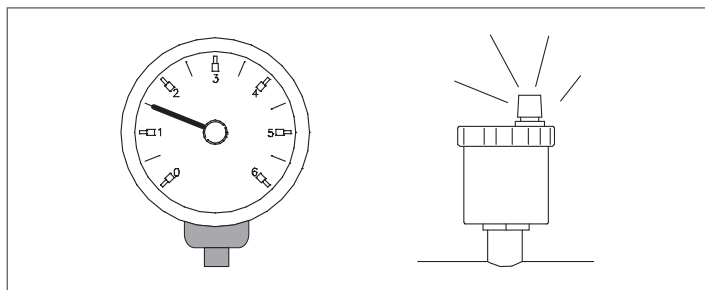
- Make sure that the central heating drain cock (1) and storage cylinder drain cock (2) (**GITRÈ B/100** models) are closed before you start filling the system.
- Open the non-return valve (3) (**GITRÈ B/100** models only) to facilitate filling (the slot in the screw must be perpendicular to the direction of flow = horizontal)



GITRÈ B/100



- Open the central heating circuit shut-off cocks and slowly fill the system until the pressure gauge reads out a value of **1.5 bar** (cold).



- Close the shut-off cocks opened previously and close the non-return valve (3) (**GITRÈ B/100** models)

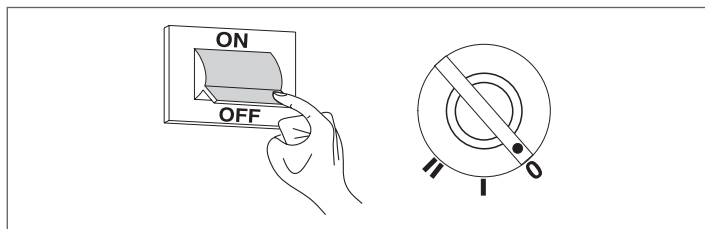
NOTE

The system is de-aerated automatically through the automatic vent valve (4) (**GITRÈ B/100** models).

2.10.3 Emptying

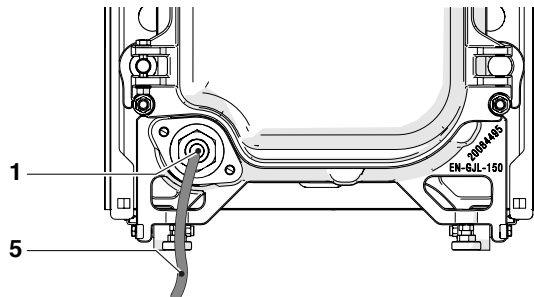
Before draining the boiler or storage cylinder:

- Turn the mains power switch **OFF** and turn the control panel function selector to **(0)**.

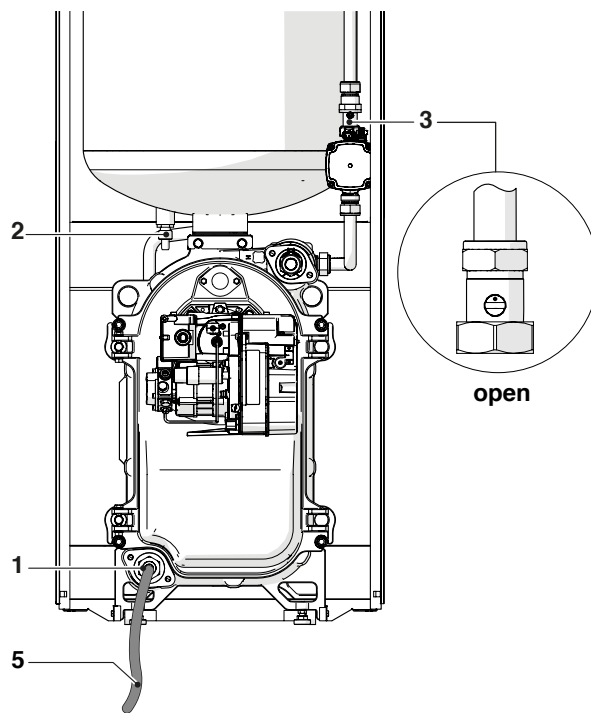


- Close the water supply shut-off cocks;
- To empty the boiler, connect a rubber hose (5) (internal diameter $\varnothing_{int}=12\text{mm}$) to the hose union on the boiler's drain cock (1).
- To empty the storage cylinder, connect a rubber hose (5) (internal diameter $\varnothing_{int}=12\text{mm}$) to the hose union on the storage cylinder's drain cock (2) (**GITRÈ B/100** models)

GITRÈ



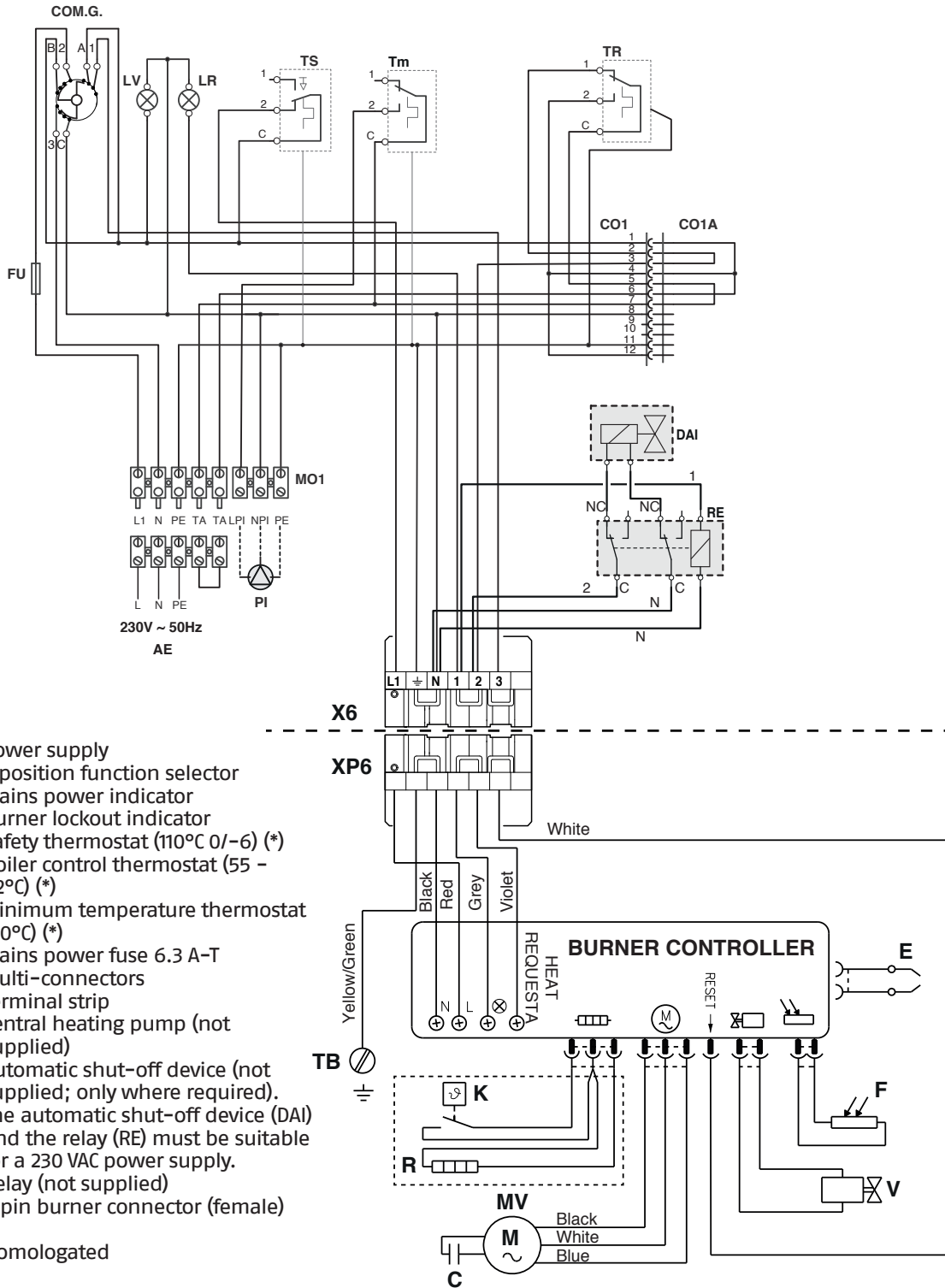
GITRÈ B/100



NOTE Open a hot water tap to facilitate emptying the storage cylinder.
Open the non-return valve (3) to facilitate emptying the boiler

2.11 Wiring diagram

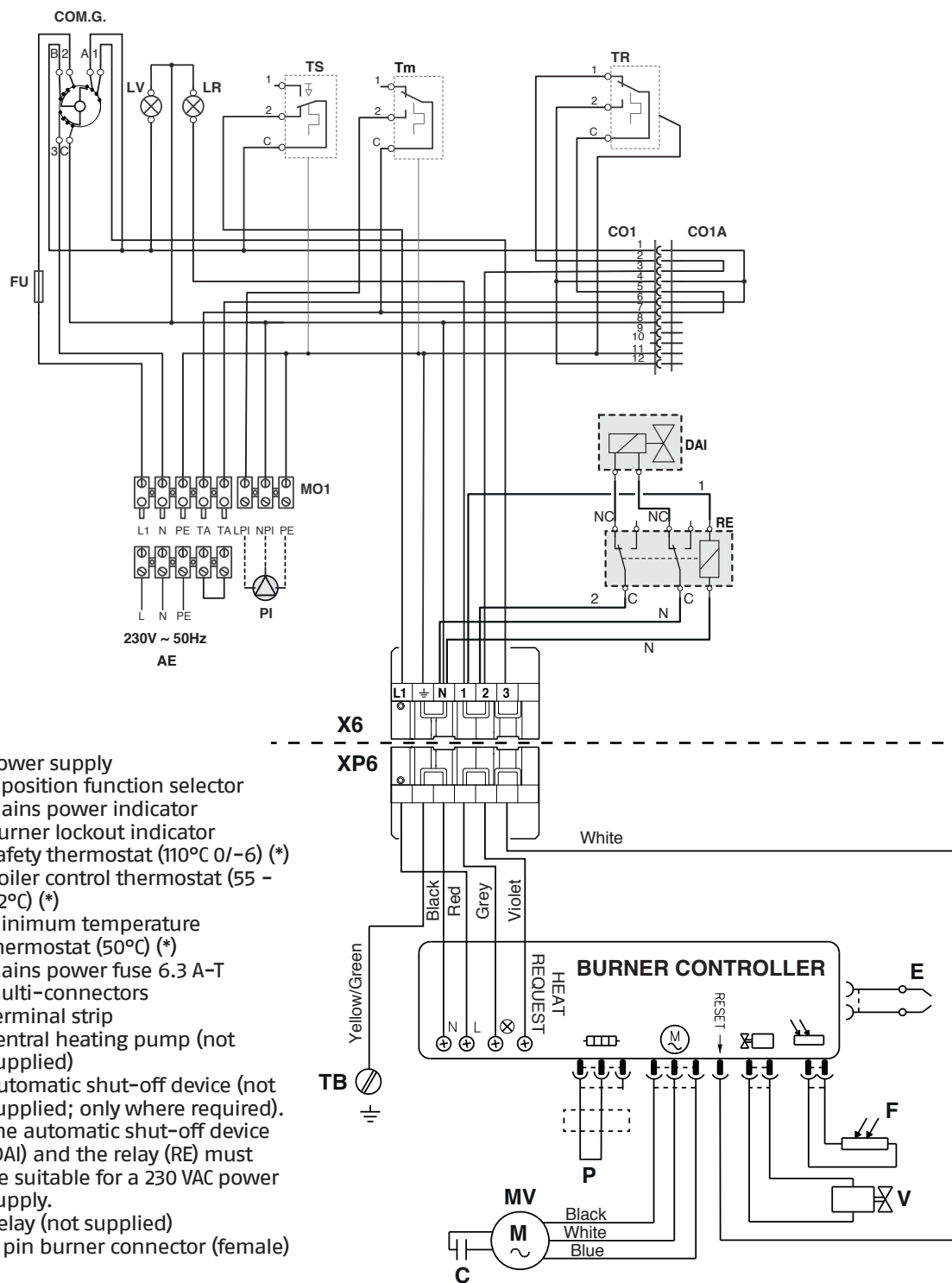
GITRÈ 4



- AE Power supply
- COM.G. 3 position function selector
- LV Mains power indicator
- LR Burner lockout indicator
- TS Safety thermostat (110°C 0/-6) (*)
- TR Boiler control thermostat (55 - 82°C) (*)
- Tm Minimum temperature thermostat (50°C) (*)
- FU Mains power fuse 6.3 A-T
- CO1-CO1A Multi-connectors
- MO1 Terminal strip
- PI Central heating pump (not supplied)
- DAI Automatic shut-off device (not supplied; only where required). The automatic shut-off device (DAI) and the relay (RE) must be suitable for a 230 VAC power supply.
- RE Relay (not supplied)
- X6 6 pin burner connector (female)
- (*) Homologated

- | | | | |
|----|--|-----|-------------------------------|
| C | Condenser | R | Heating element |
| E | Ignition electrodes | TB | Burner ground |
| F | Flame detector | V | Fuel oil valve |
| K | Thermostat for enabling start-up after pre-heating | XP6 | 6 pin burner connector (male) |
| MV | Fan motor | | |

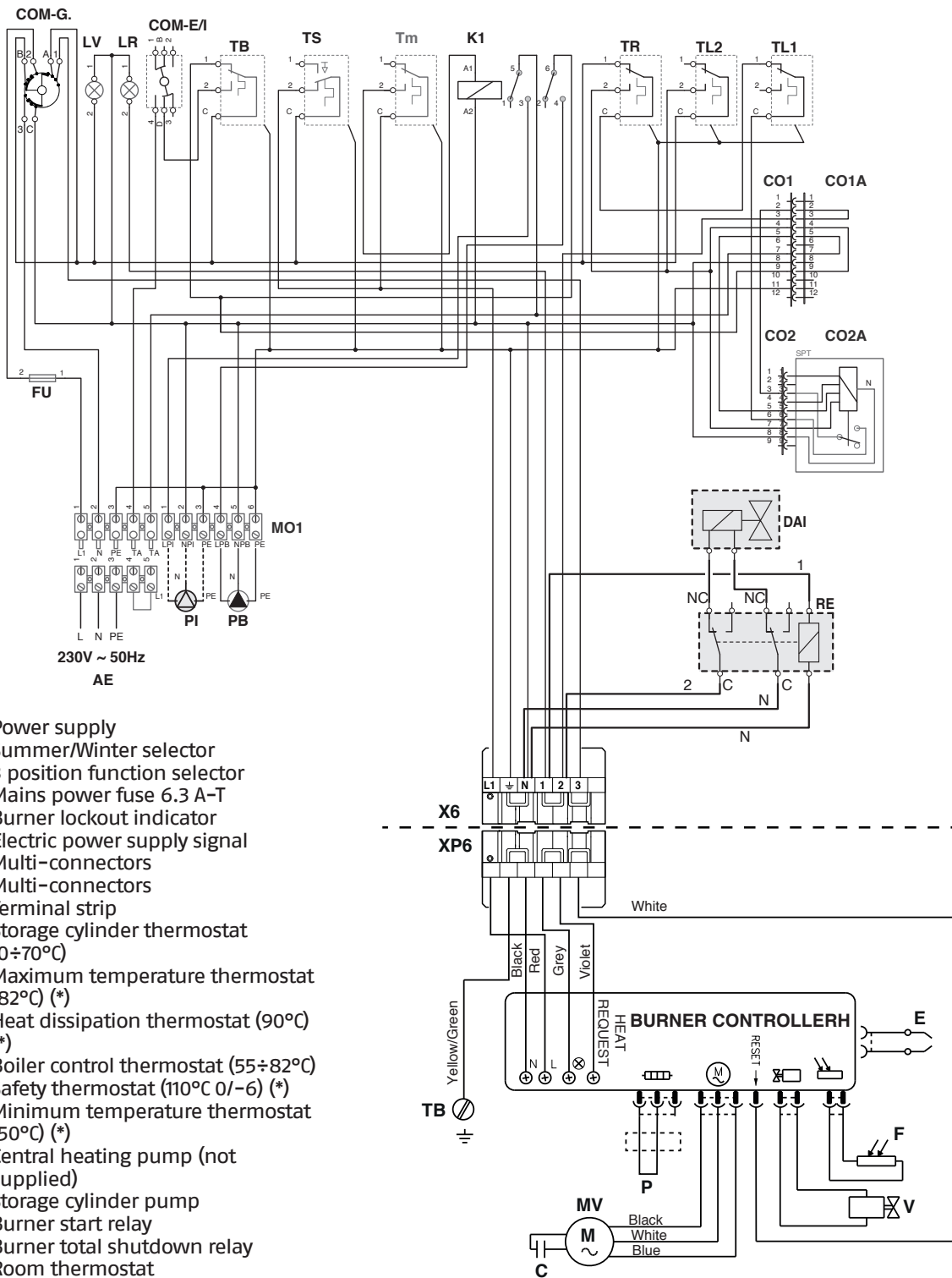
GITRÈ 5-GITRÈ 6



- AE Power supply
- COM.G. 3 position function selector
- LV Mains power indicator
- LR Burner lockout indicator
- TS Safety thermostat (110°C 0/-6) (*)
- TR Boiler control thermostat (55 - 82°C) (*)
- Tm Minimum temperature thermostat (50°C) (*)
- FU Mains power fuse 6.3 A-T
- CO1-CO1A Multi-connectors
- MO1 Terminal strip
- PI Central heating pump (not supplied)
- DAI Automatic shut-off device (not supplied; only where required). The automatic shut-off device (DAI) and the relay (RE) must be suitable for a 230 VAC power supply.
- RE Relay (not supplied)
- X6 6 pin burner connector (female)
- (*) Homologated

- C Condenser
- E Ignition electrodes
- F Flame detector
- MV Fan motor
- P Short circuit socket
- TB Burner ground
- V Fuel oil valve
- XP6 6 pin burner connector (male)

GITRÈ 5 B/100



- AE Power supply
- COM.E/I Summer/Winter selector
- COM.G. 3 position function selector
- FU Mains power fuse 6.3 A-T
- LR Burner lockout indicator
- LV Electric power supply signal
- CO1-CO1A Multi-connectors
- CO2-CO2A Multi-connectors
- M01 Terminal strip
- TB Storage cylinder thermostat (0÷70°C)
- TL1 Maximum temperature thermostat (82°C (*)
- TL2 Heat dissipation thermostat (90°C (*)
- TR Boiler control thermostat (55÷82°C)
- TS Safety thermostat (110°C 0/-6) (*)
- Tm Minimum temperature thermostat (50°C (*)
- PI Central heating pump (not supplied)
- PB Storage cylinder pump
- K1 Burner start relay
- SPT Burner total shutdown relay
- TA Room thermostat
- DAI Automatic shut-off device (not supplied; only where required). The automatic shut-off device (DAI) and the relay (RE) must be suitable for a 230 VAC power supply.
- RE Relay (not supplied)

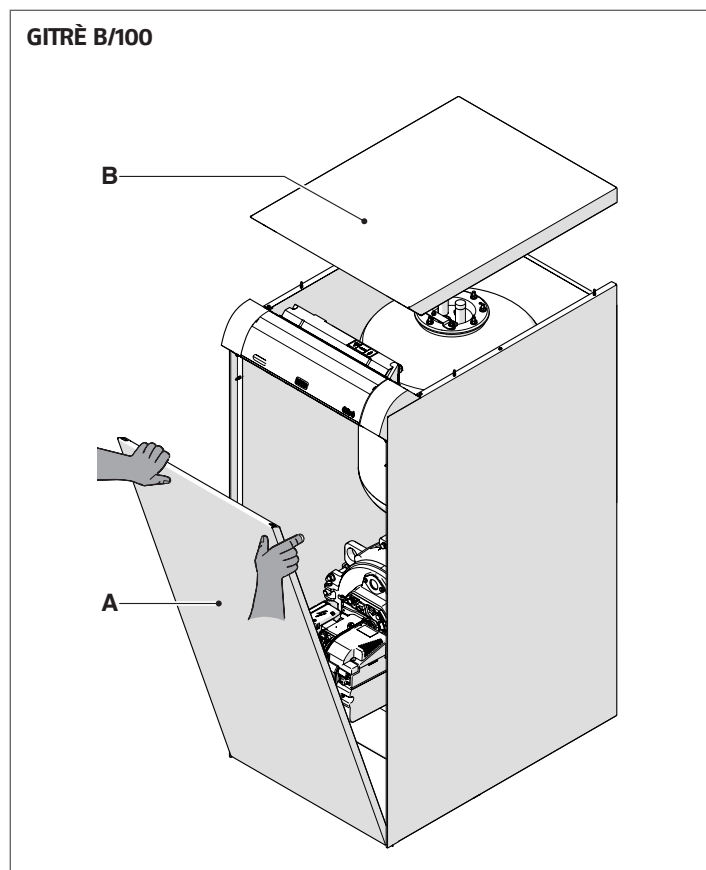
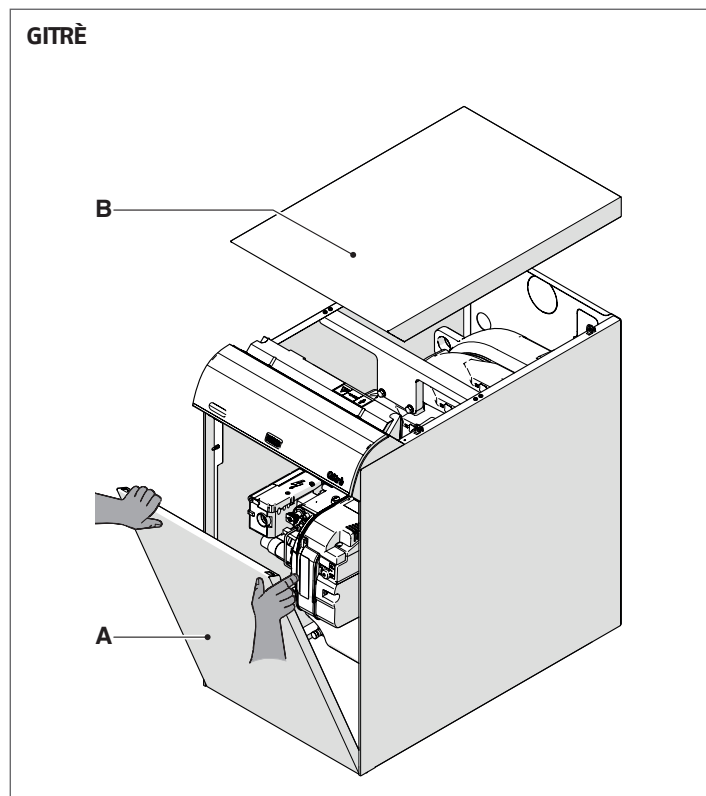
- X6 6 pin burner connector (female)
- (*) Homologated
- C Condenser
- E Ignition electrodes
- F Flame detector
- MV Fan motor
- P Short circuit socket
- TB Burner ground
- V Fuel oil valve
- XP6 6 pin burner connector (male)

2.12 Electrical connections

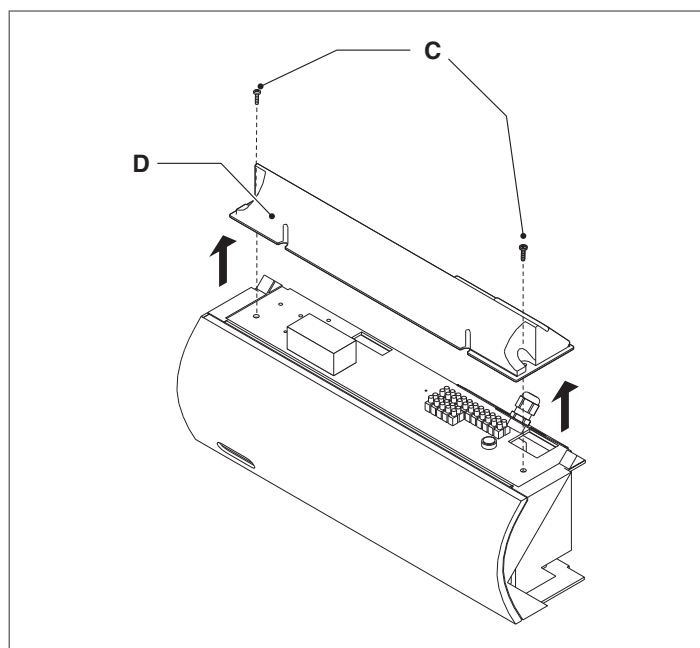
GITRÈ boilers are fully cabled in the factory. The only connections required for their installation are those of the mains power supply, room thermostat and central heating circuit pump.

Proceed as follows to access the control panel terminals:

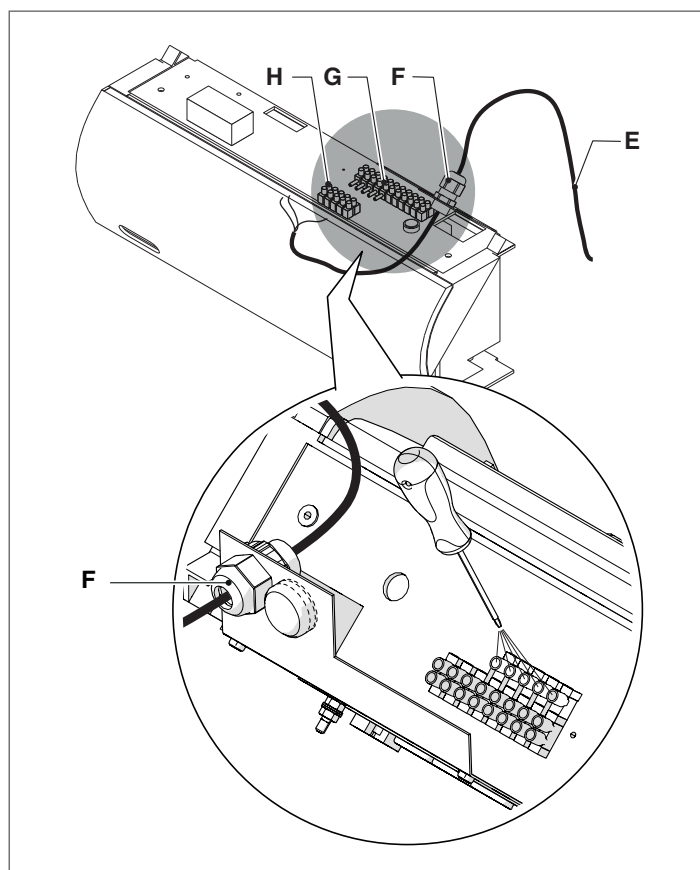
- Remove the front and top panels (A) and (B) from the boiler casing;



- Unscrew the fixing screw (C) and remove the protective cover (D);



- Route the power cable (E) through the cable gland (F) and secure it in place.

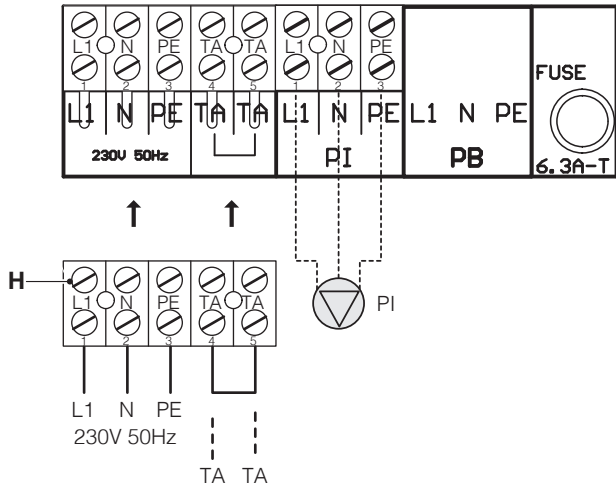


The terminal strip (H) can be removed to facilitate the connection of cables. Simply loosen the terminal strip fixing screws (G).

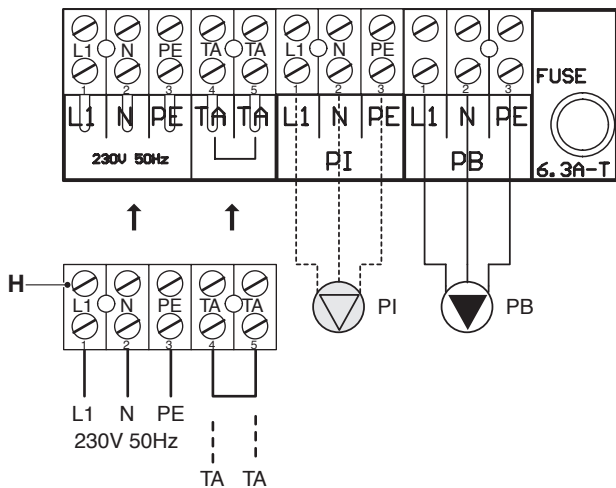
- Make the electrical connections as shown in the following diagrams;

Connections to be made by the heating engineer – control panel terminal strip

GITRÈ



GITRÈ B/100



- L1 Live
- N Neutral
- PE Earth/ground
- TA Room thermostat
- PI Central heating pump (not supplied)
- PB Storage cylinder pump

! The jumper (TA-TA) must be removed from the terminal strip (H) in order to connect up the room thermostat.

NOTE The room thermostat connection must be dry (no voltage).

- !** The following is mandatory:
 - The use of an omnipolar magnetothermic switch, line disconnecting switch in compliance with CEI-EN standards (contact opening of at least 3 mm)
 - Respect the connection L (line) – N (neutral). Keep the earth conductor 2 cm longer than the power supply conductors
 - Use cables with a section greater than or equal to 1.5 mm², complete with cable terminal caps
 - Refer to the wiring diagrams in this manual for all electric operations
 - Connect the equipment to an effective earthing system.

⊖ It is strictly forbidden to use water pipes to ground the appliance.

⊖ It is prohibited to pass the power supply and room thermostat cables near hot surfaces (delivery pipes). If contact is possible with parts that have temperatures above 50°C, use a suitable type of cable.

The manufacturer is not responsible for any damage caused by failure to earth connect the device and failure to comply with what is indicated in the wiring diagrams.

On completion of the electrical connections, replace all removed components in the opposite order.

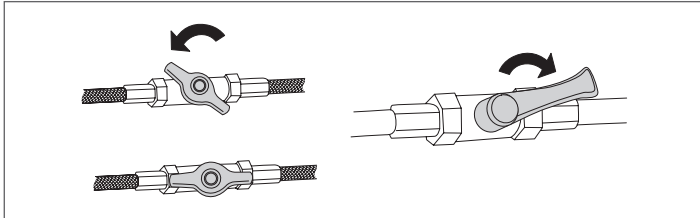
3 COMMISSIONING AND MAINTENANCE

3.1 Preparing for initial startup

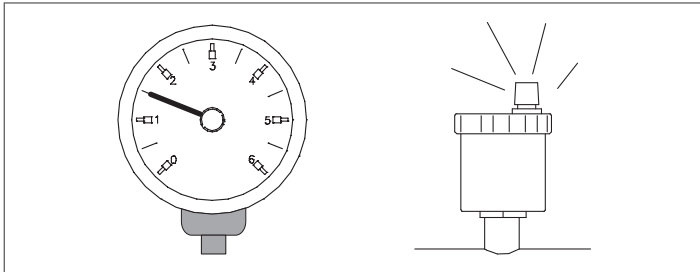
The boiler must be started up for the first time by the manufacturer's Technical Assistance Service.

Perform the following checks before starting up the boiler:

- Check that the fuel shut-off cock and heating system shut-off cock are open



- Check that the central heating circuit pressure gauge shows a pressure over **1 bar** with the system cold. Check also that the circuit is properly de-aerated

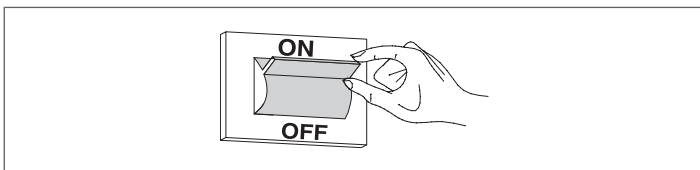


- Check that the expansion vessel is correctly pre-charged
- the electric connections have been made correctly
- Check that the flue and air vents are made to applicable laws and standards.

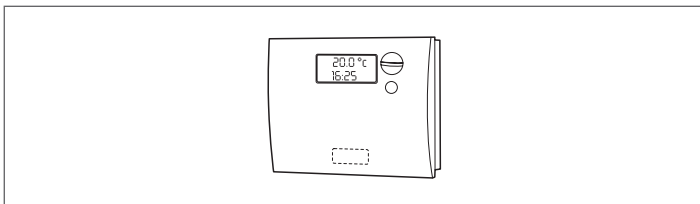
3.2 Initial startup

Once you have completed all the checks listed above, proceed as follows to start up the boiler for the first time:

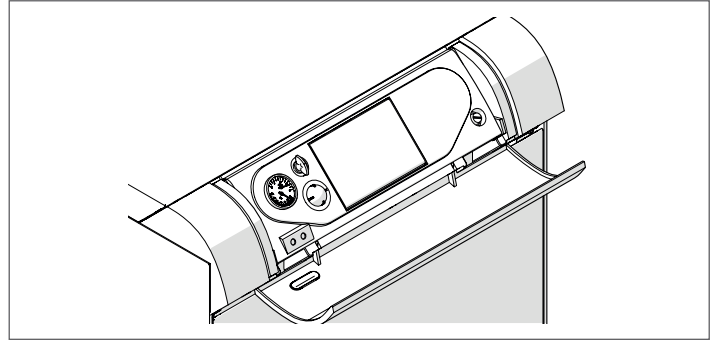
- Turn the boiler's mains power switch ON



- Set the room thermostat to the required temperature (~ 20°C) or, if the system has a timer or timer-thermostat, make sure that this is switched "ON" and adjusted to the required temperature (~ 20°C).;

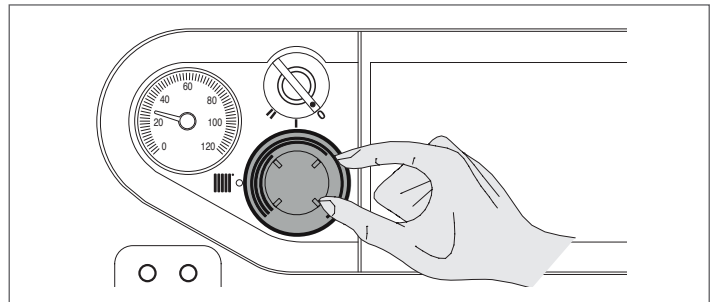


- Open the control panel access door;



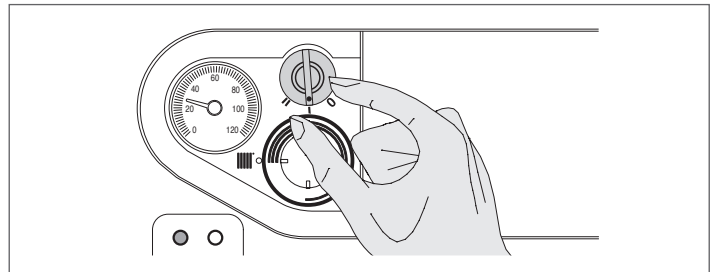
ONLY FOR MODELS **GITRÈ 4-GITRÈ 5-GITRÈ 6**

- Turn the boiler thermostat to about the middle of the section with three lines;



- Turn the function selector to ON (I) and make sure that the green power indicator lights.

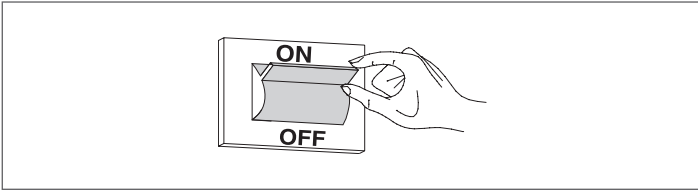
NOTE in the case of **GITRÈ 4** models, the burner only starts up at the end of the fuel oil pre-heating phase.



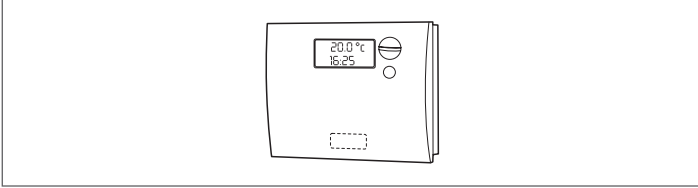
The boiler now starts up and the burner remains lit until the temperature setpoint is reached.

ONLY FOR GITRÈ B/100 MODELS

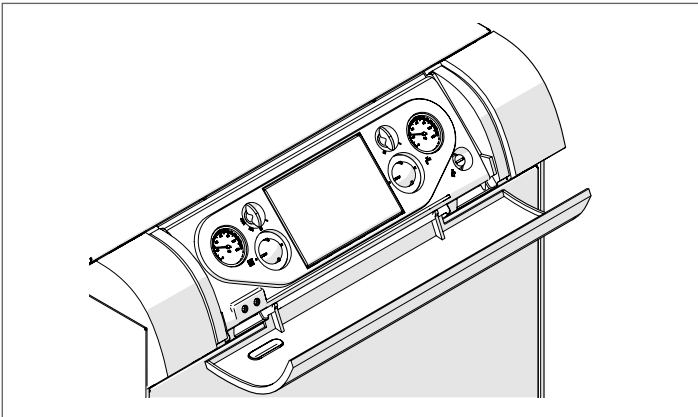
- Turn the boiler's mains power switch ON;



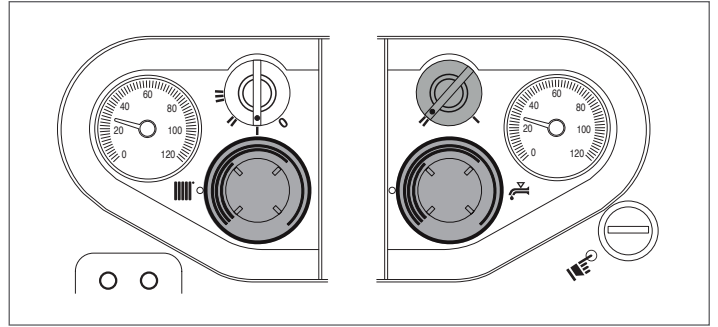
- Set the room thermostat to the required temperature (~ 20°C) or, if the system has a timer or timer-thermostat, make sure that this is switched "ON" and adjusted to the required temperature (~ 20°C).;



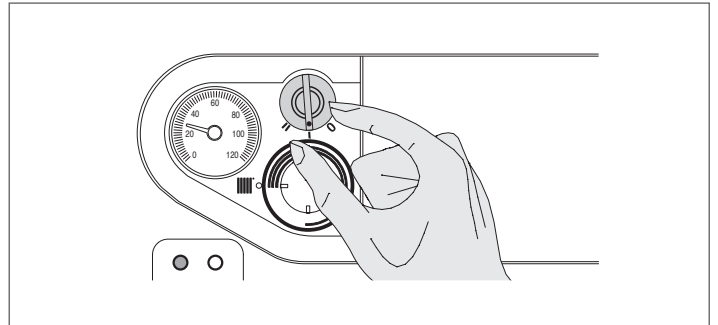
- Open the control panel access door;



- Adjust the boiler and storage cylinder thermostats to about the middle of the section with three lines;
- Turn the Summer/Winter selector to (II) Winter;



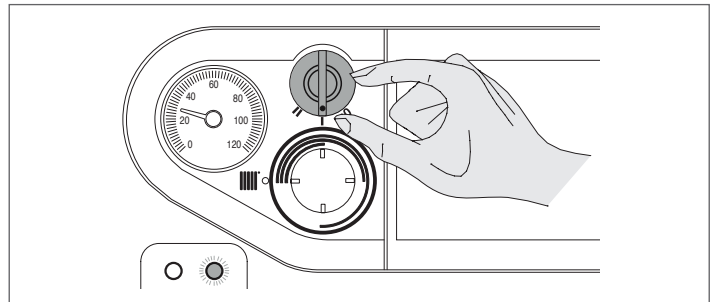
- Turn the function selector to ON (I) and make sure that the green power indicator lights.



The boiler now starts up and the burner remains lit until the temperature setpoint is reached.

3.2.1 Ignition failure

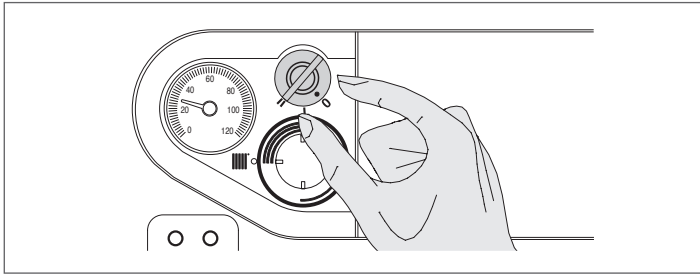
If any ignition errors or malfunctions occur, the burner enters "LOCKOUT". This is shown by the red button light on the burner and by the warning light on the control panel.



! If a "LOCKOUT SHUTDOWN" occurs, wait about 30 seconds before resetting the burner.

3.2.2 Resetting the burner and safety thermostat

To restore normal startup conditions, open the protective cover over the control panel and turn the function selector to position (II) "Reset burner" for at least 1 second before returning it to position (I). Wait for the burner to complete the entire ignition cycle again, up to the ignition of the flame.

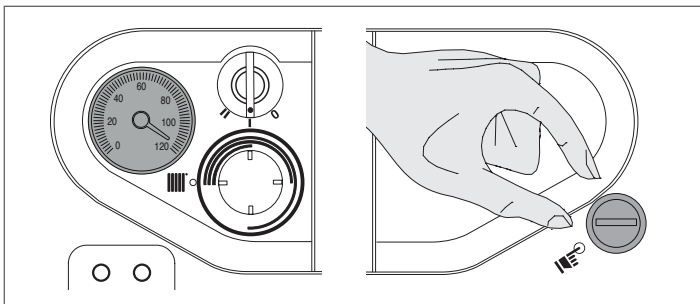


If boiler temperature becomes too high, the manual reset safety thermostat trips.

! No warning signal is given if the safety thermostat trips, but the fact that it has tripped can be seen from the boiler temperature gauge ($T > 110^{\circ}\text{C}$).

Proceed as follows to reset the safety thermostat:

- Wait until boiler temperature falls below 80°C ;
- Open the control panel cover;
- Unscrew the cap over the safety thermostat reset button;
- Press the reset button;
- Replace the cap.

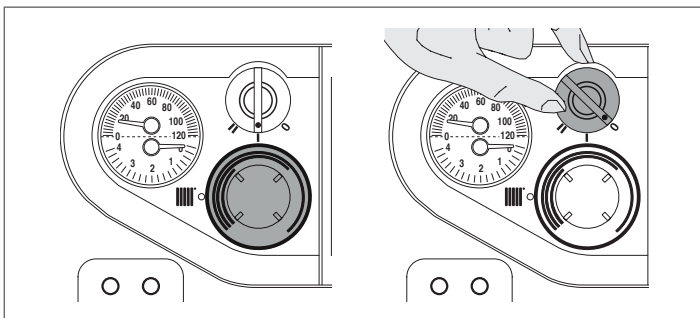


! Eliminate the cause of the overheating before restarting the boiler.

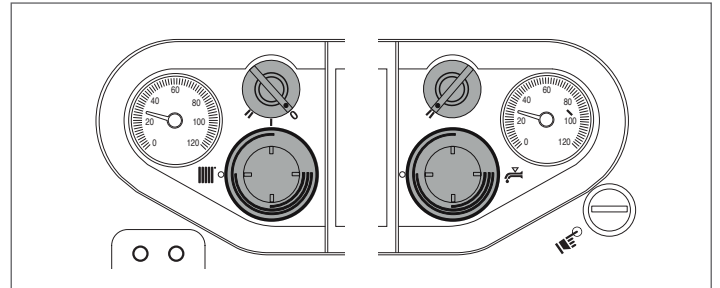
3.3 Checks during and after initial start-up

Once the boiler has started up, make sure that it shuts down and re-starts properly when:

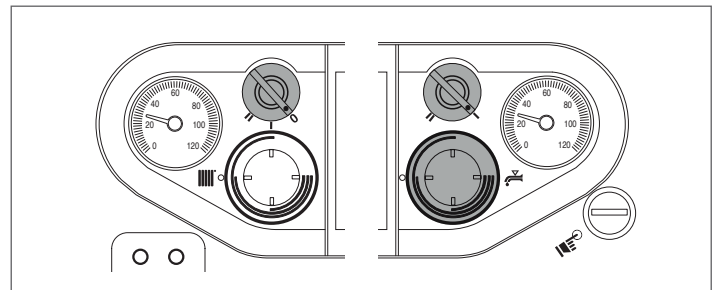
- The boiler thermostat setting is changed;
- The function selector is moved from position (I) to (O) and back;



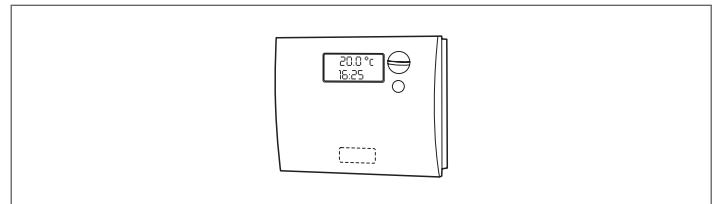
- The "Summer/Winter" selector is set to (II) "Winter", the boiler thermostat is adjusted to its minimum setting and the storage cylinder temperature setpoint is changed (**GITRÈ 5 B/100** models only). Then turn the function selector from position (I) to (O) and back;



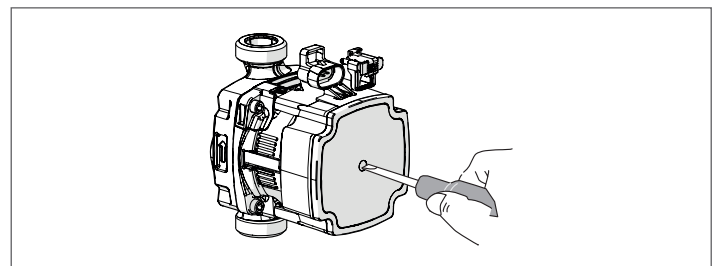
- The "Summer/Winter" selector is set to (I) "Summer" and the storage cylinder temperature setpoint is changed. (**GITRÈ 5 B/100** models only). Then turn the function selector from position (I) to (O) and back;



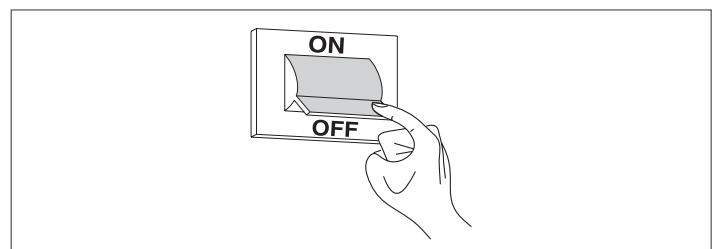
- The room thermostat or timer setting is changed;



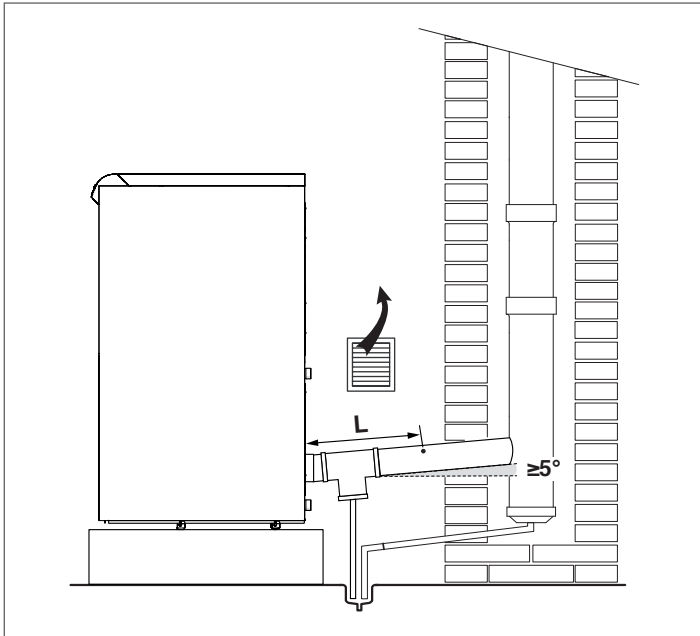
- Make sure that all the pumps in the system are free and rotate in the right direction;



- Turn the mains power switch OFF and make sure that the boiler shuts down completely.



Provided all the above conditions are satisfied, start the boiler up again, then analyse the combustion fumes. The sampling hole for flue gas analysis must be located along the straight section of flue at a distance (L) from the boiler exhaust. (Refer to applicable standards before drilling).



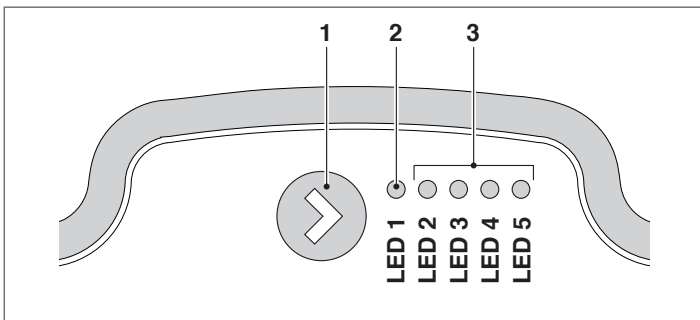
! Always plug the sampling hole after analysing the flue gases.

3.3.1 Storage cylinder pump control

The pump is configured in the factory for a maximum head of 7 metres. Use the button (1) only to activate the button lock function as instructed below.

USER INTERFACE

The user interface consists of a push-button (1), a red/green LED (2) and four yellow LEDs (3).



FUNCTIONING MODE

Performance display

When the pump is running, LED 1 is green. The four yellow LEDs indicate the pump's instantaneous electrical power consumption as shown in the table.

Nr. displayed	Meaning	% power
LED 1 flashing green	Stand-by	0
LED 1 green and LED 2 yellow, both lit	Low load	0-25
LED 1 green and LEDs 2, 3 yellow, all lit	Low-medium load	25-50
LED 1 green, LEDs 2, 3, 4 yellow, all lit	Medium-high load	50-75
LED 1 green, LEDs 2, 3, 4, 5 yellow, all lit	High load	75-100

The pump functions at fixed speed.

Alarm display

If the pump detects one or more alarm conditions, LED 1 changes from green to red. When an alarm is active, the LEDs indicate the type of alarm as shown in the following table. If more than one alarm is active at the same time, the LEDs only show the alarm condition with the highest priority. Alarm priority follows the order of the table.

When no alarm is active, the user interface automatically displays pump performance.

Nr. displayed	Meaning	Function	Action
LED 1 red and LED 5 yellow, both lit	The pump rotor is blocked	The pump automatically attempts to start every 1.5 seconds	Wait or check that the pump rotor is free to rotate
LED 1 red and LED 4 yellow, both lit	Supply voltage too low	Indication only. The pump continues to function	Check the voltage of the power supply
LED 1 red and LED 3 yellow, both lit	Electronic controller error	The pump has stopped because supply voltage is too low or because an error has occurred in the internal electronic controller	Check the voltage of the power supply or replace the pump

Button lock/unlock function

The button lock function serves to prevent improper use or accidental changes to pump settings.

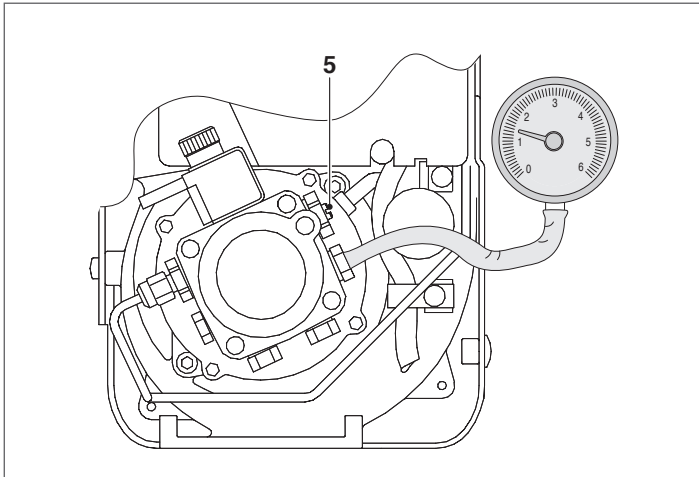
When the button lock is active, pressing the button has no effect. This prevents users from accidentally accessing setting mode while allowing them to use setting display mode.

When the button is held down for 10 seconds, all the LEDs except the red LED flash for one second to indicate that the button lock function has been activated/deactivated.

3.3.2 Burner control and adjustment

ADJUSTING PUMP PRESSURE

Turn the adjuster screw (5) to achieve the pressure setting specified in the table.



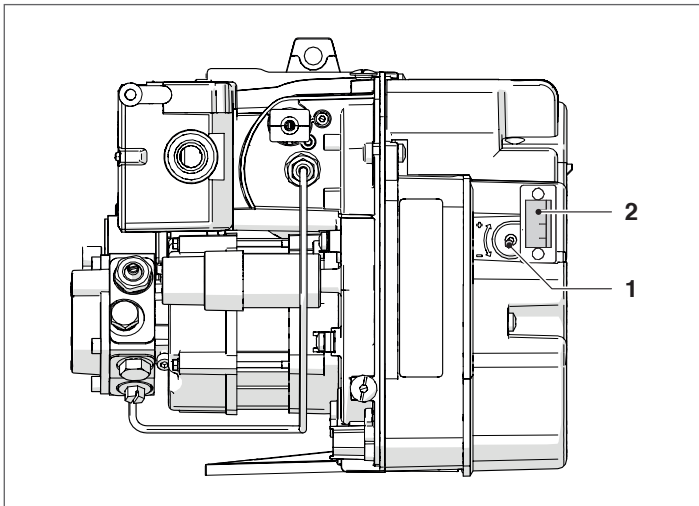
	GITRÈ 4 (*)	GITRÈ 5 GITRÈ 5 B/100	GITRÈ 6
Adjusting pump pressure	12 bar	12 bar	11 bar

(*) Burner with oil heater

ADJUSTING THE AIR DAMPER

The air damper can be adjusted without removing the burner cover.

- Use an Allen key to turn the adjuster screw (1) to achieve the required setting on the graduated scale (2)



	GITRÈ 4 (*)	GITRÈ 5 GITRÈ 5 B/100	GITRÈ 6
Adjusting the air damper	5,3	3,2	2,5

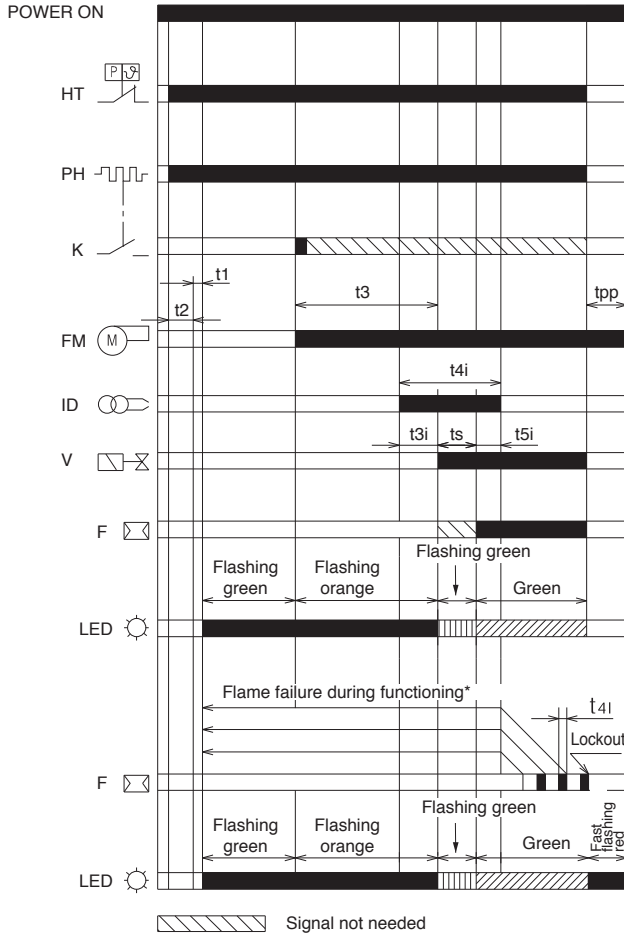
(*) Burner with oil heater

3.3.3 Burner functioning and programming

ONLY FOR GITRÈ 4 MODELS

Program for functioning with heater

Normal functioning



- HT Heat request
- PH Pre-heater
- K Thermostat for enabling start-up after pre-heating
- FM Fan motor
- ID Ignition electrode
- V Fuel oil valve
- F Flame detector
- LED Colour of button LED

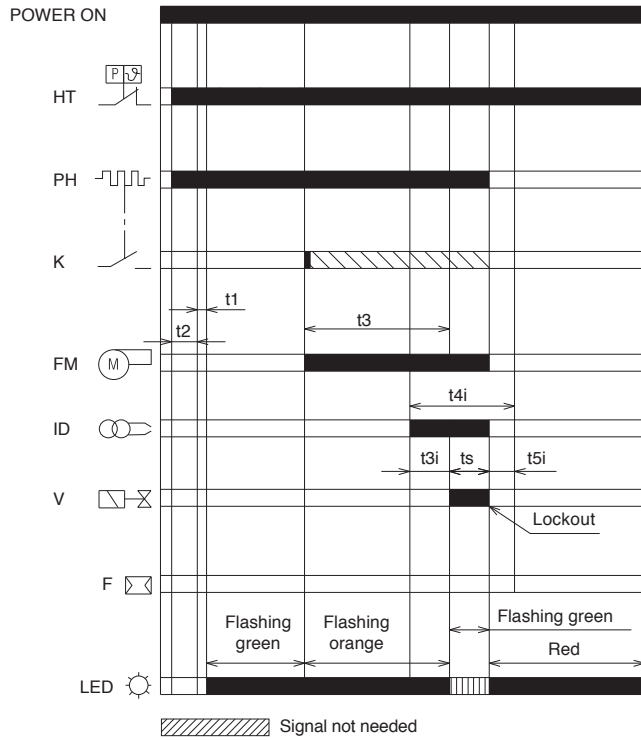
Cycle times		
t0	-	-
t1	≤	1
t2	-	3.5
t2l	-	25
t2p	max	600 (*)
t3	-	15
t3l	≤	25
t3i	-	2
ts	-	5
t4i	-	10
t4l	≤	1
t5i	-	3
-	-	0.4
-	-	0.8
tr		3 repeats
tpp		10

Times are expressed in seconds.

(*) independent of burner controller

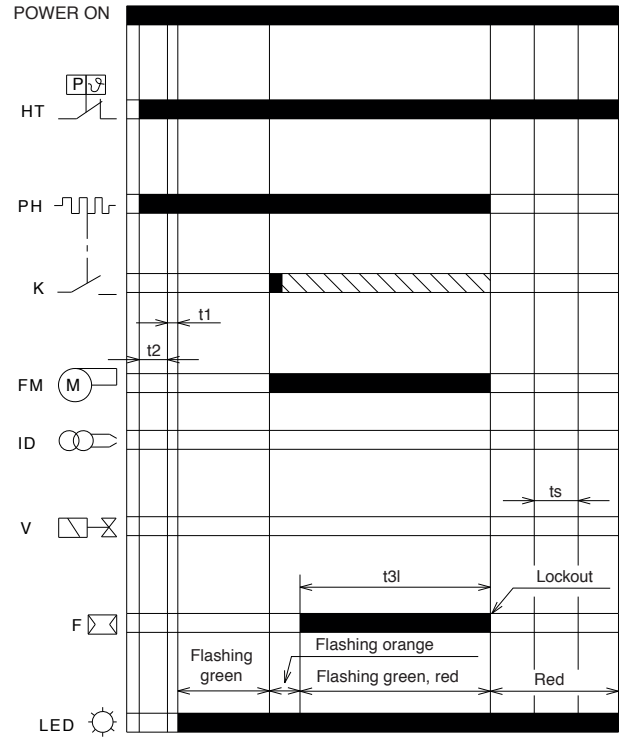
	DESCRIPTION
t0	Standby: the burner waits for a heat request
t1	Input signal standby time: reaction time, the burner controller waits for time t1
t2	Initialisation verification time: time following start-up of main power supply
t2l	Check for extraneous light or false flame signal during t2 : the burner controller waits for time t2 then enters lockout; the motor does not start
t2p	Maximum fuel oil pre-heating time: the burner controller waits for time t2p then enters lockout
t3	Pre-purging time: the fan motor runs then the fuel oil valve opens
t3l	Check for extraneous light or false flame signal during pre-purging: the burner controller enters lockout after time t3l
t3i	Spark pre-ignition time
ts	Safety time
t4i	Total spark ignition time
t4l	Valve deactivation reaction time following flame failure
t5i	Spark post-ignition time
-	Time needed to reset controller from reset button
-	Time needed to reset controller from remote reset
tr	Cycle repetition: max. 3 repeats of the complete ignition sequence if flame fails during normal functioning; the controller enters lockout if no flame is detected after the last ignition attempt
tpp	Post-purging time: supplementary purge at the end of the heat request Post-purging can be interrupted by a new heat request

Lockout caused by ignition failure



- HT Heat request
- PH Pre-heater
- K Thermostat for enabling start-up after pre-heating
- FM Fan motor
- ID Ignition electrode
- V Fuel oil valve
- F Flame detector
- LED Colour of button LED

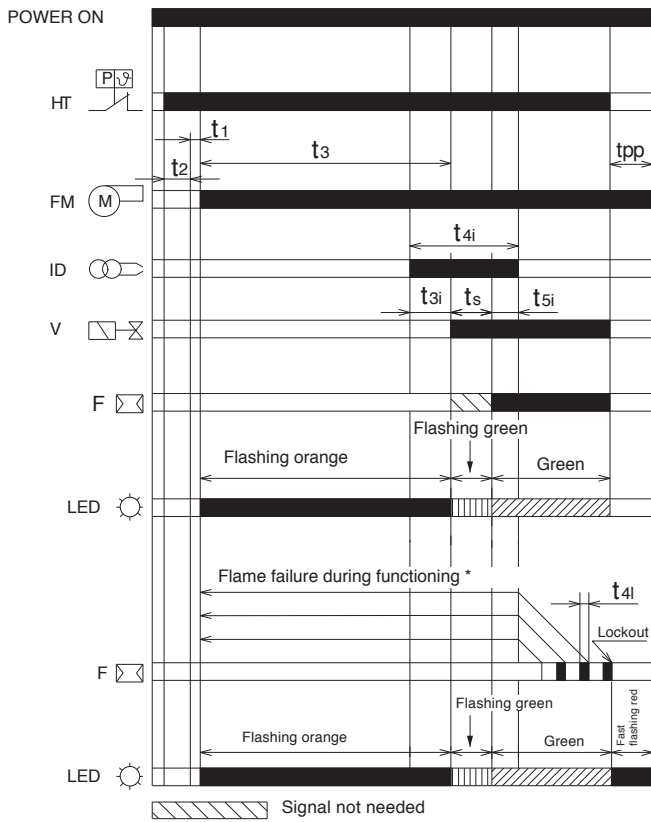
Lockout caused by extraneous light during pre-purging



Cycle times		
t0	-	-
t1	≤	1
t2	-	3.5
t2l	-	25
t2p	max	600 (*)
t3	-	15
t3l	≤	25
t3i	-	2
ts	-	5
t4i	-	10
t4l	≤	1
t5i	-	3
-	-	0.4
-	-	0.8
tr		3 repeats
tpp		10

Times are expressed in seconds.
 (*) independent of burner controller

ONLY FOR MODELS GITRÈ 5-GITRÈ 6-GITRÈ 5 B/100
Program for functioning without heater
Normal functioning



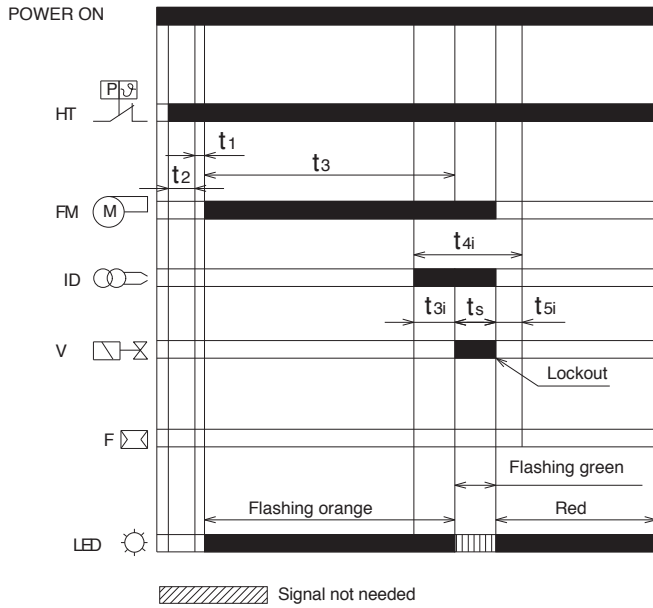
- HT Heat request
- FM Fan motor
- ID Ignition electrode
- V Fuel oil valve
- F Flame detector
- LED Colour of button LED

Cycle times		
t0	-	-
t1	≤	1
t2	-	3.5
t2l	-	25
t2p	max	600 (*)
t3	-	15
t3l	≤	25
t3i	-	2
ts	-	5
t4i	-	10
t4l	≤	1
t5i	-	3
-	-	0.4
-	-	0.8
tr		3 repeats
tpp		10

Times are expressed in seconds.
 (*) independent of burner controller

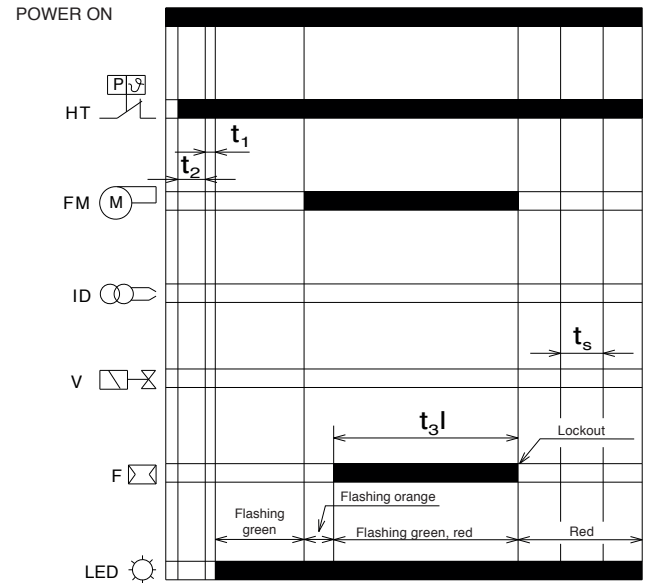
	DESCRIPTION
t0	Standby: the burner waits for a heat request
t1	Input signal standby time: reaction time, the burner controller waits for time t1
t2	Initialisation verification time: time following start-up of main power supply
t2l	Check for extraneous light or false flame signal during t2 : the burner controller waits for time t2 then enters lockout; the motor does not start
t2p	Maximum fuel oil pre-heating time: the burner controller waits for time t2p then enters lockout
t3	Pre-purging time: the fan motor runs then the fuel oil valve opens
t3l	Check for extraneous light or false flame signal during pre-purging: the burner controller enters lockout after time t3l
t3i	Spark pre-ignition time
ts	Safety time
t4i	Total spark ignition time
t4l	Valve deactivation reaction time following flame failure
t5i	Spark post-ignition time
-	Time needed to reset controller from reset button
-	Time needed to reset controller from remote reset
tr	Cycle repetition: max. 3 repeats of the complete ignition sequence if flame fails during normal functioning; the controller enters lockout if no flame is detected after the last ignition attempt
tpp	Post-purging time: supplementary purge at the end of the heat request Post-purging can be interrupted by a new heat request

Lockout caused by ignition failure



- HT Heat request
- FM Fan motor
- ID Ignition electrode
- V Fuel oil valve
- F Flame detector
- LED Colour of button LED

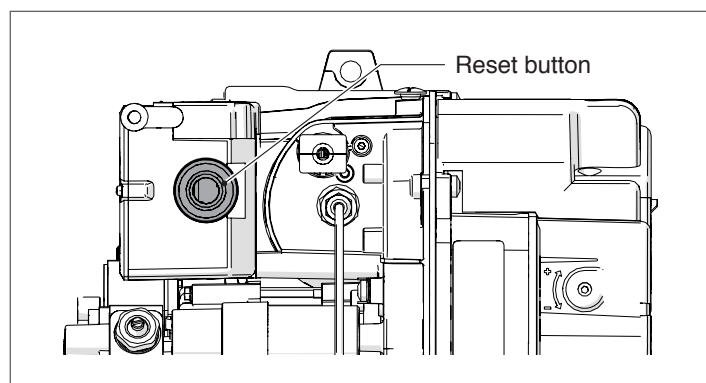
Lockout caused by extraneous light during pre-purging



Cycle times		
t0	-	-
t1	≤	1
t2	-	3.5
t2l	-	25
t2p	max	600 (*)
t3	-	15
t3l	≤	25
t3i	-	2
ts	-	5
t4i	-	10
t4l	≤	1
t5i	-	3
-	-	0.4
-	-	0.8
tr		3 repeats
tpp		10

Times are expressed in seconds.
 (*) independent of burner controller

Functioning status display



Functioning status	Reset button LED colour	Flash time	Seconds	
			ON	OFF
OFF	○ OFF	-	-	-
Pre-heating time	● Flashing GREEN	Slow	0,5	2,5
Pre-ventilation	● Flashing ORANGE	Slow	0,5	0,5
Safety time	● Flashing GREEN	Slow	0,5	0,5
Normal functioning position	● GREEN	-	Steady ON	
Extraneous light or false flame signal	●● GREEN, RED alternate flashing	Slow	0,5	0,5
Power supply frequency error	● ORANGE	-	Steady ON	
Internal voltage error	●● ORANGE, GREEN alternate flashing	Fast	0,2	0,2
Reset / remote reset button error	●● GREEN, RED alternate flashing	Fast	0,2	0,2
Lockout for flame failure after Ts	● RED	-	Steady ON	
Lockout for extraneous light or false flame signal	● RED flashing	Slow	0,5	0,5
Lockout for maximum number of cycle repetitions (flame failure during functioning)	● RED flashing	Fast	0,2	0,2
Lockout for exceeding maximum pre-heating time	● RED flashing	Slow	0,5	0,5
Lockout for fan motor fault	●● RED, ORANGE flashing	Reversed	2,5	0,5
Lockout for fuel oil valve fault	●● RED, GREEN flashing	Reversed	2,5	0,5
Lockout for EEPROM fault	●● ORANGE, GREEN alternate flashing	Slow	0,5	0,5

Fault diagnosis - lockouts

Description of lockout	Lockout time
Presence of extraneous light during standby	After 25 seconds
Pre-heating not finished	After 600 seconds
Detection of extraneous light during pre-purging or pre-heating	After 25 seconds
Detection of extraneous light during pre-heating	After 25 seconds
Flame not detected by end of safety time	5 seconds after the activation of the fuel oil valve
Flame failure during functioning	After 3 ignition attempts
Fan motor fault	Immediate (during pre-purging)
Fuel oil valve fault	Immediate (during pre-purging)
EEPROM fault	Immediate (during pre-purging)

! The burner can only be reset consecutively 5 times. After that, the power supply must be disconnected in order to obtain a further 5 resets. The burner can only be reset provided the controller is powered on.

MAIN BURNER FUNCTIONS

OIL PRE-HEATING FUNCTION (GITRÈ 4 model)

The burner has an oil pre-heating function. When the boiler thermostat requests a burner start-up, the burner waits for the contacts of pre-heating thermostat (K), located at the oil nozzle holder, to close.

If the startup or pre-heating thermostat does not close after 600 seconds, the burner controller locks out.

If the flame goes out during normal functioning, the burner only repeats the ignition cycle provided the contacts of the startup or pre-heating thermostat (K) are closed.

If the flame goes out during normal functioning and the contacts of the startup or pre-heating thermostat (K) are open, the burner remains in the purge phase for the duration of post-purging time (if programmed), then purging stops and the burner waits for the contacts of the startup or pre-heating thermostat (K) to close before restarting pre-purging time.

CONTROLLED SHUTDOWN AND RESTART

After 24 hours of continuous functioning, the controller initiates a controlled shutdown followed by a re-start to ensure that the flame detector is not faulty.

You can reduce reduced shutdown and restart time to 1 hour (see "Programming Mode").

POST-PURGING

The post-purging function keeps the fan running for a set time after the burner shuts down provided there is no new heat request.

When the contacts of the heat request thermostat open, the burner controller shuts down the flame and shuts off the oil supply.

Post-purging does not occur:

- after a lockout;
- if a heat request is cancelled during pre-purging.

Post-purging occurs:

- if a heat request is cancelled during safety time;
- if a heat request is cancelled during normal functioning.

NOTE

If extraneous light or a false flame signal is detected during post-purging, the burner locks out after 25 seconds.

If a new heat request is detected during post-purging, post-purging time is reset, the fan motor stops and a new burner ignition cycle is initiated.

PROGRAMMING MENU

General

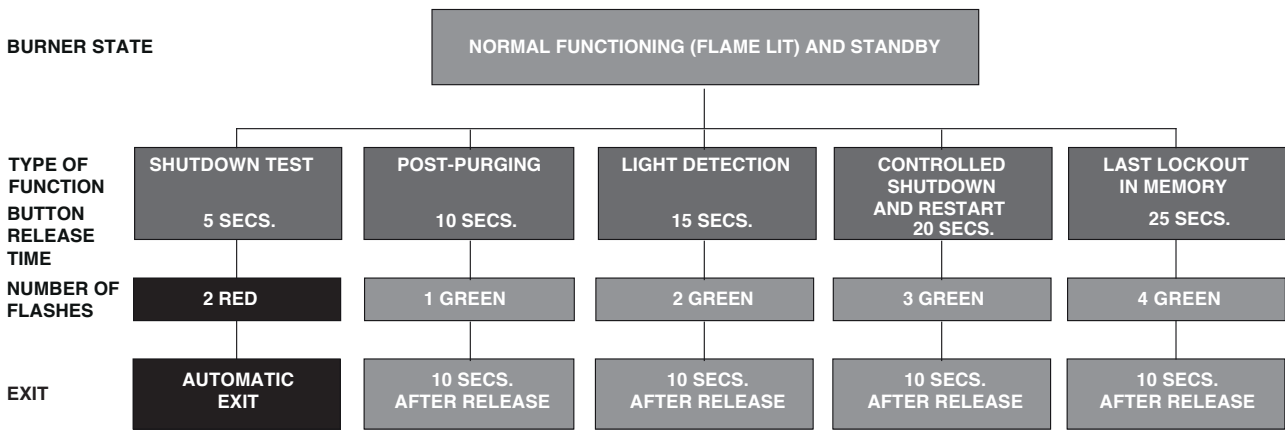
You can use the reset or remote reset buttons to enter programming mode only during NORMAL FUNCTIONING and STANDBY.

If the reset or remote reset button is not pressed for 10 seconds in menu mode, the controller automatically closes the menu and the green LED flashes for the set value.

If you press the reset or remote reset button more than the maximum permissible number of times, the maximum permissible value is stored in memory.

If you press and hold the reset or remote reset button for over 60 seconds, a button error is displayed and the burner controller resets itself.

Menu access block diagram



Function	Button release time	No. of LED flashes for menu page	No. of times reset button is pressed	No. of (green) LED flashes	Exit menu
Shutdown test	$5s \leq t < 10s$	2 flashes RED	/none	/none	Automatic when flashing finishes
Post-purging	$10s \leq t < 15s$	1 flash GREEN	1 = 10 secs. (default) 2 = 20 secs. 3 = 30 secs. 4 = 60 secs. 5 = 120 secs. 6 = 0 secs. (disabled)	1 flash 2 flashes 3 flashes 4 flashes 5 flashes 6 flashes	10 seconds after button is released
Light detection	$15s \leq t < 20s$	2 flashes GREEN	1 = enabled 2 = disabled (default)	1 flash 2 flashes	10 seconds after button is released
Controlled shutdown and restart	$20s \leq t < 25s$	3 flashes GREEN	1 = 0 disabled 2 = 1 hour 3 = 24 hours (default)	1 flash 2 flashes 3 flashes	10 seconds after button is released
Last lockout in memory	$25s \leq t < 30s$	4 flashes GREEN	/none	Display of lockout type acc. to table	10 seconds after button is released

SHUTDOWN TEST

Shutdown test sequence:

- The burner shuts down and restarts.
- The burner shuts down then restarts automatically. Each shutdown test resets (zeroes) the ignition cycle count.
- No LEDs flash when you exit the shutdown test menu.

The burner shuts down and restarts.

The burner shuts down then restarts automatically. Each shutdown test resets (zeroes) the ignition cycle count.

No LEDs flash when you exit the shutdown test menu.

POST-PURGING

Post-purging time can be set to a maximum of **120 seconds**. To set post-purging time, proceed as follows.

Post-purging programming sequence:

- programming permitted in NORMAL FUNCTIONING and STANDBY mode;
- Press and hold the burner reset button for between 10 and 15 seconds.;
- The GREEN LED flashes 1 once;

- Release the button;
- The GREEN LED stays OFF;
- Press the button from 1 to 5 times (*);
- The GREEN LED flashes ON-OFF at each press and release;
- After 10 seconds, the GREEN LED flashes for the programmed number of times (0.5s ON; 0.5s OFF).

Post-purging de-activation sequence:

- resetting permitted in NORMAL FUNCTIONING and STANDBY mode;
- Press and hold the burner reset button for between 10 and 15 seconds.;
- The GREEN LED flashes 1 once;
- Release the button;
- The GREEN LED stays OFF;
- Press the button 6 times (*);
- The GREEN LED flashes ON-OFF at each press and release;
- After 10 seconds, the green LED flashes 6 times (0.5s ON; 0.5s OFF).

If a heat request occurs during the programming of the post-purging function, the controller exits the menu without saving the new setting.

If a heat request occurs while the LED is flashing, the controller exits the menu but the new setting is saved.

LIGHT DETECTION

Enabling/disabling sequence:

- programming permitted in NORMAL FUNCTIONING and STANDBY mode;
- Press and hold the burner reset button for between 15 and 20 seconds.;
- The GREEN LED flashes 2 times.;
- Release the button;
- The GREEN LED stays OFF;
- Press the burner reset button once to enable or twice to disable the function. (*);
- The GREEN LED flashes ON-OFF at each press and release;
- After 10 seconds, the GREEN LED flashes for the programmed number of times (0.5s ON; 0.5s OFF).

CONTROLLED SHUTDOWN AND RESTART

Enabling/disabling sequence:

- programming permitted in NORMAL FUNCTIONING and STANDBY mode;
- Press and hold the burner reset button for between 20 and 25 seconds.;
- The GREEN LED flashes 3 times;
- Release the button;
- The GREEN LED stays OFF;
- Press the burner reset button once to enable the function. (*);
- Press the burner reset button twice to select one shutdown every hour. (*);
- Press the burner reset button 3 times to select one shutdown every 24 hours. (*);
- The GREEN LED flashes ON-OFF at each press and release;
- After 10 seconds, the GREEN LED flashes for the programmed number of times (0.5s ON; 0.5s OFF).

Changes to the setting of the controlled shutdown and restart function become active:

- after the next heat request from the thermostat (HT);
- after the next controlled shutdown and restart;
- after a flame failure during normal functioning;
- after power has been switched off and back on again.

DISPLAYING THE LAST LOCKOUT

The burner controller lets you display the last lockout stored in memory. To do so, access the "Programming menu". This page can be accessed during NORMAL FUNCTIONING or STANDBY mode.

Sequence for displaying the last lockout in memory:

- Press and hold the burner reset button for between 25 and 30 seconds.;
- The GREEN LED flashes 4 times;
- Release the button;
- The type of lockout is displayed for 10 seconds.

Lockout type display time can be extended (for another 10 seconds) by pressing the reset button again while the lockout type is being displayed.

- (*) Always wait 1 second between every press and release of the button to ensure correct interpretation of the command.

SHUTDOWN TEST

If the reset button is pressed and held down for a time between 5 and 10 seconds during normal functioning, the burner shuts down, the fuel oil valve closes, the flame goes out and then the startup sequence starts. (Holding the button for longer moves on to the next menu function).

If controlled shutdown and restart is enabled, the number of startup sequence repetitions and the number of resets permitted are both zeroed.

FLAME SIGNAL DIAGNOSIS

The burner can assess the quality of the signal from the flame detector during functioning.

Flame detector signal quality	Flame quality	No. of green LED flashes
Acceptable	3-6 lux 6 to 9 lux	1 - 2 flashes
Good	9-12 lux 12-15 lux	3 - 4 flashes
Excellent	15-18 lux > 18 lux	5 flashes Always on

NOTE

Note: If flame luminosity is only 2 lux, the burner repeats the startup cycle 3 times then enters lockout.

Flame detection	Parameters
Type of sensor	CDS photoconductive cell
Functioning principle	Visible light measurement
Sensitivity to light during pre-purging	> 1 lux
Flame luminosity during normal functioning	> 3 lux
Luminosity typical of flame failure	< 2 Lux

CYCLING AND THE SEQUENCE REPETITION LIMIT

The burner controller has a cycling function. This means that the controller will repeat the complete startup sequence up to 3 times if the flame goes out during normal functioning.

If the flame goes out a fourth time, the burner controller locks out. If the burner controller receives a new heat request while it is repeating the ignition cycle, the ignition attempt count is reset when the heat request thermostat trips.

NOTE

Note: If the burner functions continuously for 510 seconds, the controller is allowed one additional startup attempt.

Disconnect and reconnect power to the burner to obtain a further complete series of startup attempts (max. 3) for the next heat request.

EXTRANEOUS LIGHT OR FALSE FLAME SIGNAL

If extraneous light or a false flame signal is detected when the fan motor is running during pre-purging, the burner stays in purge mode until the light or flame signal stops. If this does not occur within 25 seconds, the burner locks out. The burner also locks out if extraneous light or a false flame signal is detected three times.

PRE AND POST-IGNITION

During pre-ignition, the ignition electrode switches on 2 seconds before the fuel oil valve opens. During post-ignition, the ignition electrode switches off 3 seconds after the end of safety time. Ignition remains active throughout safety time.

NOTE

If the ignition cycle repeats continuously or a series of heat requests are received in a short time, the functioning of the ignition transformer is limited to one cycle a minute.

POWER SUPPLY FREQUENCY ERROR

- The burner controller automatically detects the frequency of the main power supply over the interval of 50 to 60 Hz. Operating times are verified for both frequencies.
- An error is indicated by the LED flashing (see the "Fault diagnosis - lockouts" section on page 38).
- If an error is detected before a heat request is made or during pre-heating, the burner does not start up and the error is signalled.
- If an error is detected during pre-purging, the burner remains in purge mode and the error is signalled.
- If no error is detected during normal functioning, the burner continues to function normally.
- The burner starts up as soon as the error disappears.

FAN MOTOR CONTROL

The burner controller automatically detects the presence of the fan motor and enters lockout in the event of a fan motor failure. An error is indicated by the LED flashing (see the "Fault diagnosis - lockouts" section on page 38).

INTERNAL VOLTAGE ERROR

The burner controller automatically checks that internal voltage is correct. An error is indicated by the LED flashing (see the "Fault diagnosis - lockouts" section on page 38).

- If an error is detected during initialisation, the burner does not start up.
- If an error is detected after a lockout, the burner will not start up.
- If an error is detected after a shutdown test, the burner will not start up.

If no error is detected during normal functioning, the burner continues to function normally. The burner starts up as soon as the error disappears.

RESET / REMOTE RESET BUTTON ERROR

If the reset or remote reset button is held down for more than 60 seconds, the LED flashes to indicate an error until the button is released. (See the "Fault diagnosis - lockouts" section on page 38).

This is merely a signal of the error condition.

- If an error is detected during pre-ventilation or safety time, the burner does not enter lockout but continues with the startup sequence.
- If an error is detected during normal functioning, the burner shuts down and does not restart. The error is signalled.
- If an error is detected while the burner is already locked out, no signal is displayed but the burner cannot be reset.

The LED stops flashing as soon as the error disappears.

EEPROM CONTROL

The burner controller automatically checks for errors in the microcontroller EEPROM and enters lockout if an error is detected. An error is indicated by the LED flashing (see the "Fault diagnosis - lockouts" section on page 38).

DEACTIVATION OF AUTOMATIC PRE-HEATING

The automatic pre-heating functioning can be deactivated by pressing the reset or remote reset button.

Pre-heating remains de-activated until:

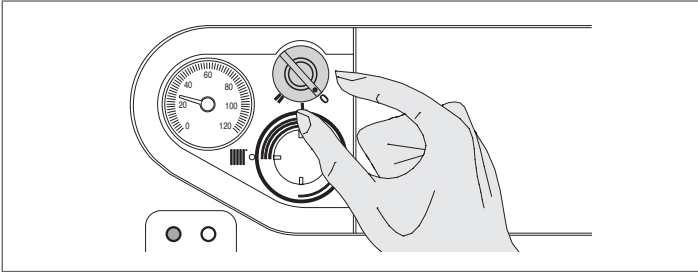
- a lockout occurs;
- mains power fails or is switched off;
- the boiler shuts down for a controlled shutdown and restart.

Pre-heating de-activation sequence	Colour of button LED
Only de-activate the pre-heating if no lockout or errors are present	-
Deactivate the pre-heating by means of the reset or remote reset button.	-
Switch on the burner and simultaneously hold down the reset or remote reset button for 3 seconds.	RED
Release the reset or remote reset button within 3 seconds.	OFF
The burner will de-activate pre-heating only if the reset or remote reset button is released within 3 seconds.	-

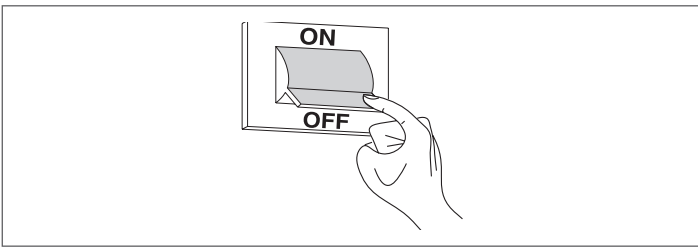
3.4 Temporary shutdown

To switch the boiler off for short periods with outdoor temperature ABOVE ZERO:

- Open the control panel access door;
- Turn the control panel power switch to (0) OFF and make sure that the green power indicator goes out;



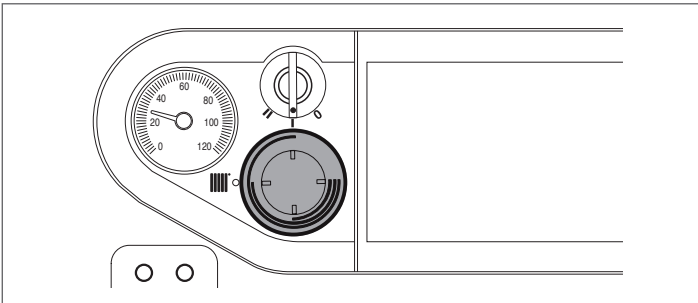
- switch the boiler OFF at the mains power switch;



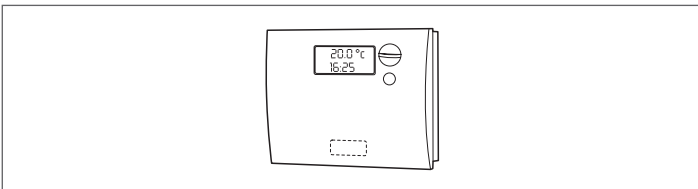
! Do NOT perform this procedure if outdoor temperature might fall below ZERO (risk of freezing).

Then proceed as follows:

- Adjust the boiler thermostat to its minimum setting;

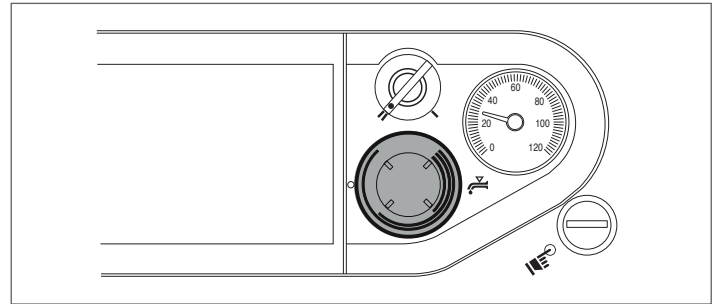


- Turn the room thermostat to about 10°C or select the frost protection function.



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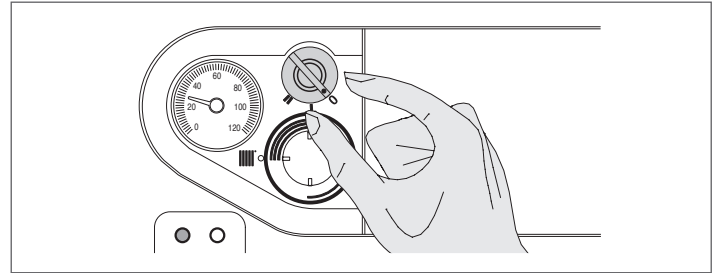
- in addition to the previous operations, turn the storage cylinder thermostat to about the middle of the section with one line.



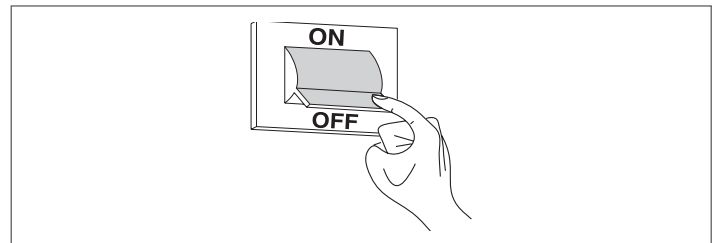
3.5 Preparing for extended periods of disuse

If the boiler is not going to be used for an extended period of time, proceed as follows to prepare it for shut-down

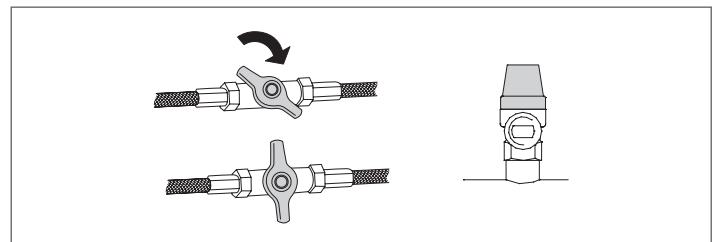
- Open the control panel access door;
- Turn the control panel power switch to (0) OFF and make sure that the green power indicator goes out;



- switch the boiler OFF at the mains power switch;



- Close the boiler's fuel cock and water supply cock.



! Drain the central heating circuit and domestic hot water circuit if there is any risk of freezing.

3.6 Cleaning and servicing the boiler

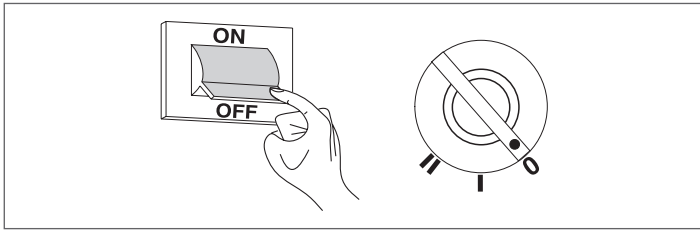
It is essential to clean the boiler and remove carbon deposits from the surfaces of the heat exchanger in order to keep the boiler efficient and economical.

! All cleaning operations MUST be performed under the following conditions:

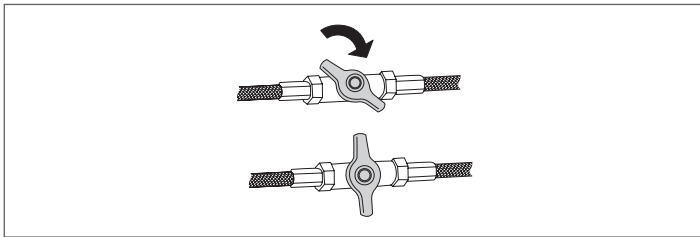
- boiler cold
- boiler switched OFF
- Suitable personal protection equipment

Perform the following operations before beginning any maintenance or cleaning:

- Turn the mains power switch OFF and turn the control panel function selector OFF (0);



- Close all external fuel shut-off cocks.

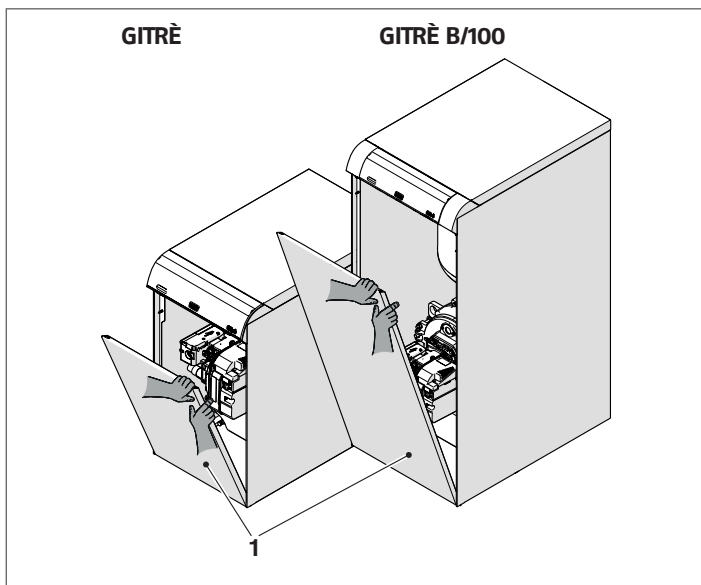


3.7 Annual cleaning

3.7.1 Cleaning and servicing the boiler

Proceed as follows to access the internal parts of the boiler:

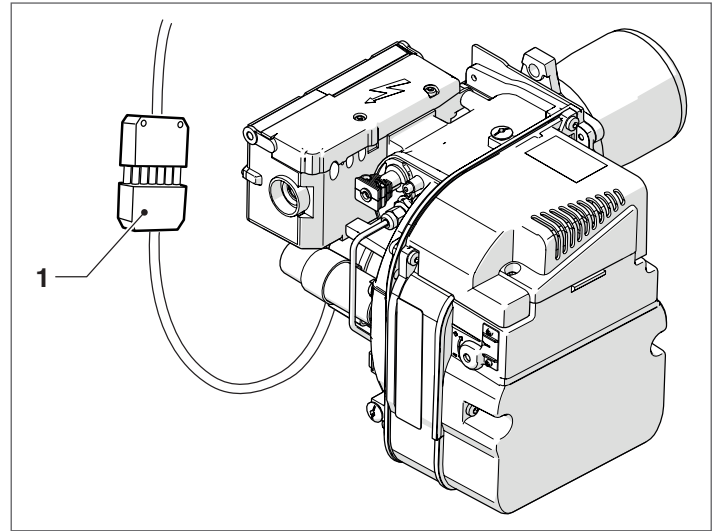
- Remove the front panel (1);



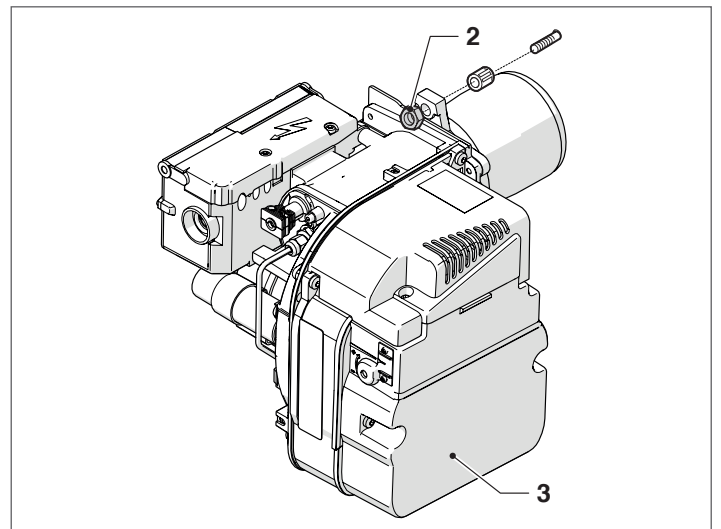
REMOVING THE BURNER

Proceed as follows to remove the burner:

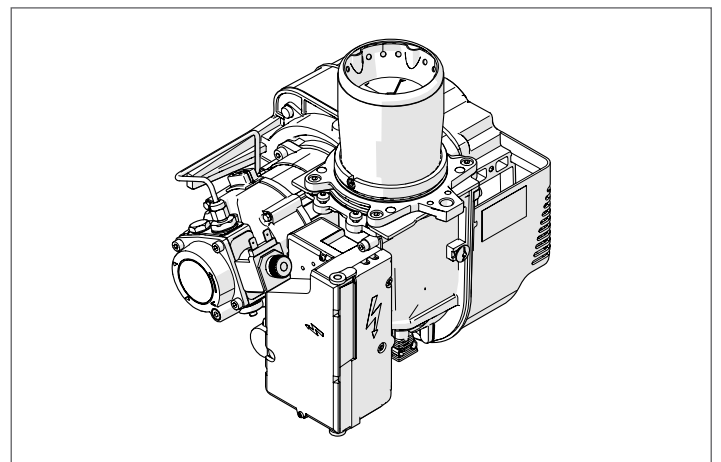
- Close the fuel shut-off cocks;
- Disconnect the connectors (1);



- Unscrew the fixing nut (2) and remove the burner;
- Pull the burner (3) out, taking care not to damage it;



- Place the burner in an upright position.

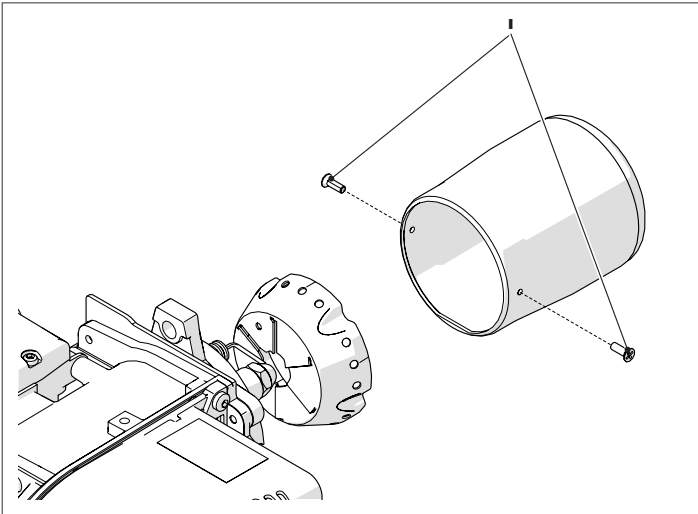


Reverse the above steps to reassemble.

REMOVING THE BLAST TUBE

Proceed as follows to remove the blast tube:

- Remove the screws (1) and remove the blast tube.



! With the blast tube removed, check its front edge to make sure that it is smooth, free from deposits, burns and dents.

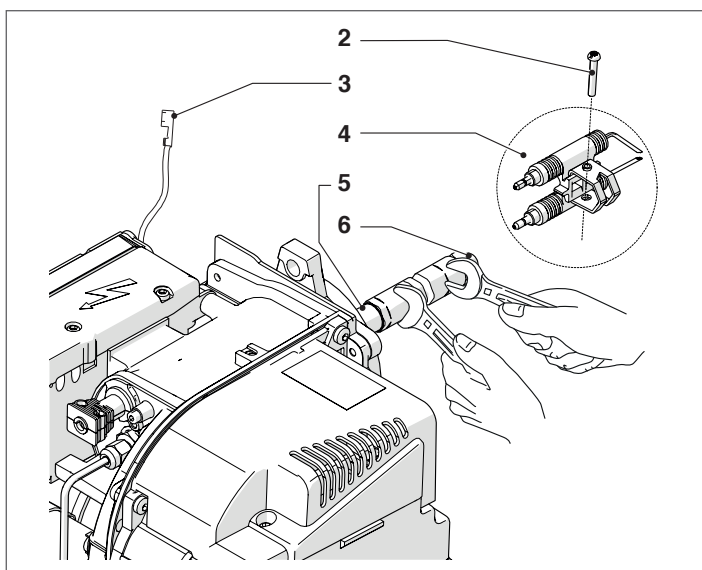
Reverse the above steps to reassemble.

REPLACING THE NOZZLE

	GITRÈ 4 (*)	GITRÈ 5 GITRÈ 5 B/100	GITRÈ 6
Nozzle type	0,60 80°W Delavan	0,65 80°S Danfoss	0,85 60°B Delavan

Remove the blast tube then proceed as follows:

- Loosen the screws (2) and disconnect the high voltage cable (3)
- Remove the electrode holder (4)
- Clean the electrodes without removing the clamp
- Hold the nozzle holder (5) steady with one wrench while using a second wrench to remove the nozzle (6)



- Make sure that the new nozzle is exactly the same type and size as the old one
- Clean the contact and sealing surfaces
- Screw the new nozzle into place by hand first, then tighten fully
- Re-fit the electrode holder (2), reversing the instructions for removal.

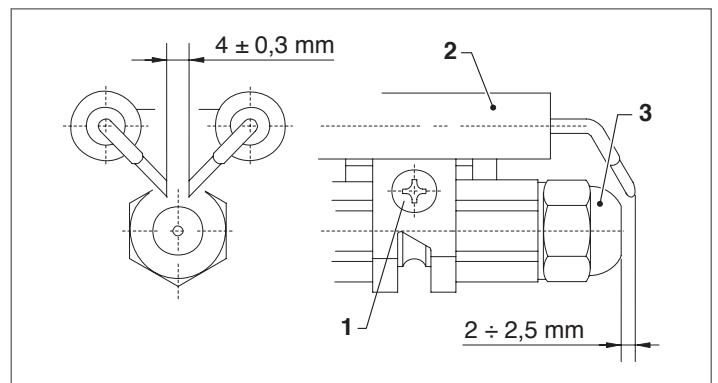
⊖ Do not use nozzles of different make, type and specifications to the original.

SETTING THE ELECTRODES

Correct electrode positioning is essential for efficient ignition and combustion.

Proceed as follows to set electrode position:

- Loosen the screw (1)
- Position the ignition electrodes (2) at the specified distance from the nozzle (3)
- Tighten the screw (1).



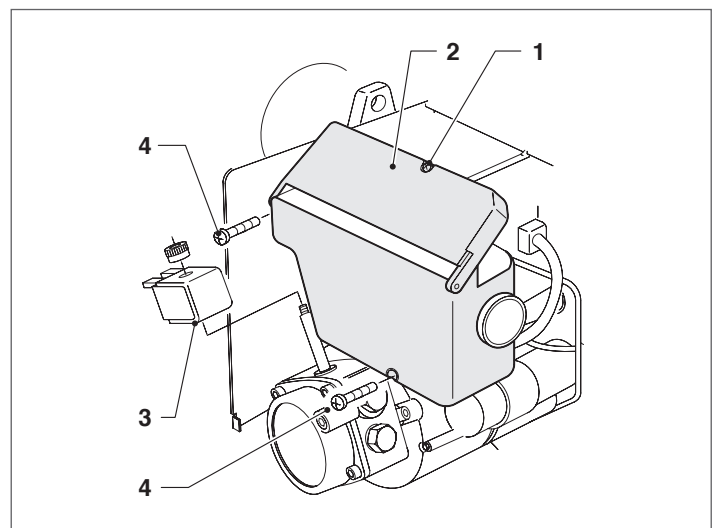
⊖ Electrode position cannot be changed.

REMOVING THE BURNER CONTROLLER

The burner cover has to be removed first in order to remove the controller.

Proceed as follows:

- Loosen the screw (1), open the cover (2) and remove all the components inside
- Remove the coil (3)
- Unscrew and remove the two screws (4).



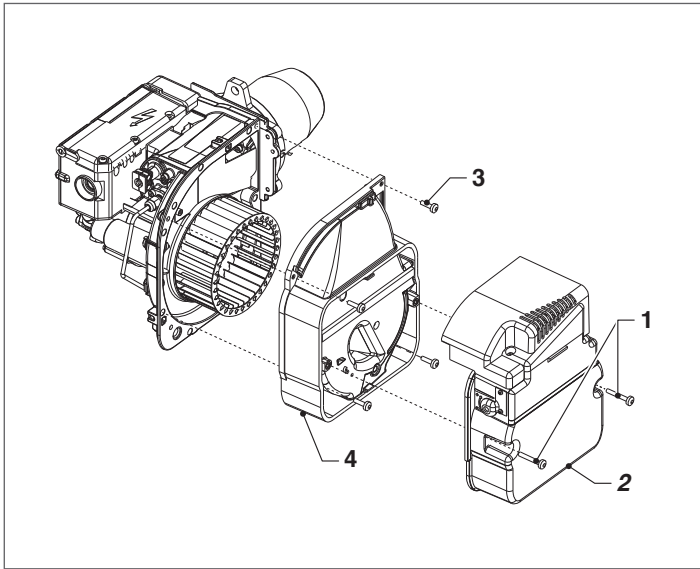
CLEANING THE FAN

! Clean the inside and the rotor blades of the fan unit to remove any build-up of dust. Accumulated dust reduces the air flow and therefore reduces combustion efficiency, leading to increased emissions.

! Take care not to damage or block the fan while performing cleaning or maintenance.

Proceed as follows

- Unscrew the screws (1) and remove the air damper (2);
- Unscrew the screws (3) and remove the suction cover (4);
- Clean the fan and the inside of the suction cover using a suitable brush and compressed air.

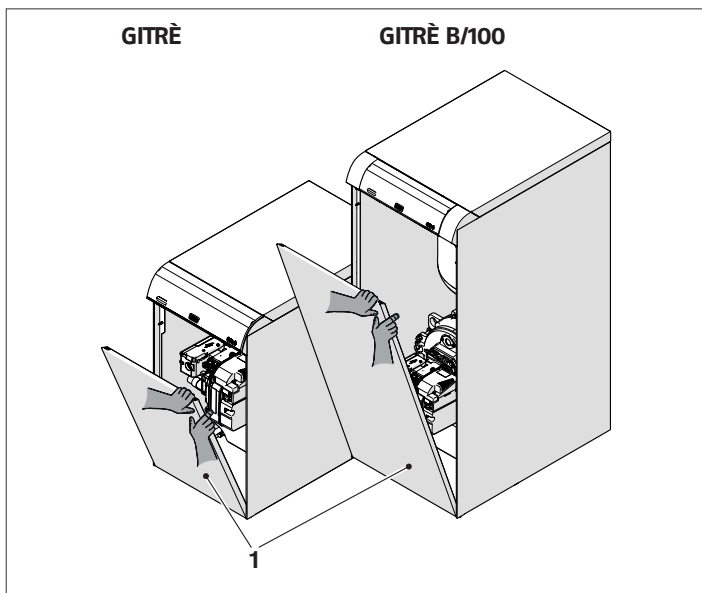


- Reverse the above steps to reassemble. Take care to replace all burner parts in their original positions.

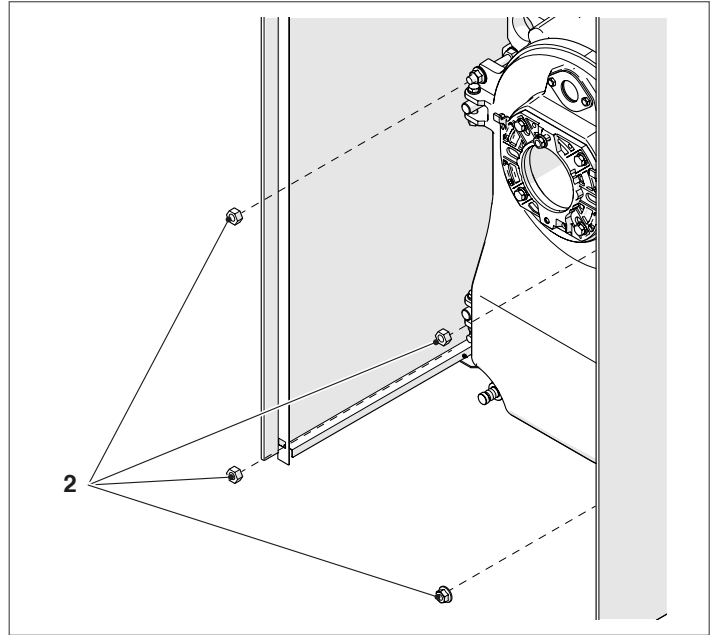
3.7.2 Cleaning the heat exchanger

Proceed as follows to access the internal parts of the boiler:

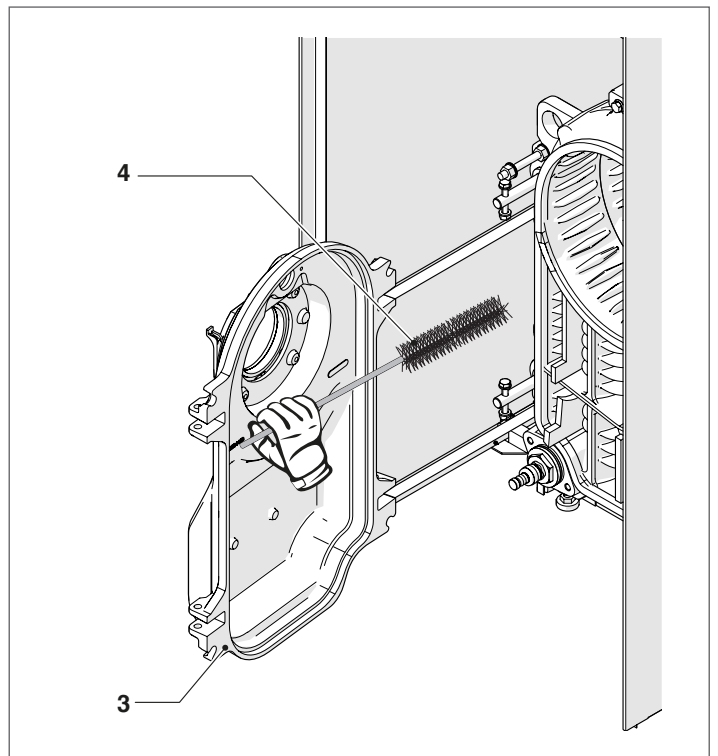
- Remove the front panel (1);



- Remove the burner;
- Remove the 2 bottom cover fixing nuts (2);
- Remove the 2 top cover fixing nuts (2);



- Release the cover (3) of the heat exchanger, pulling it towards you;
- Remove the cover (3) and remove the turbulators (if fitted) from the flue gas pipes;
- Use a flue brush (4) or other suitable tool to clean inside the combustion chamber and the flue gas pipes;



- Remove any dislodged soot.

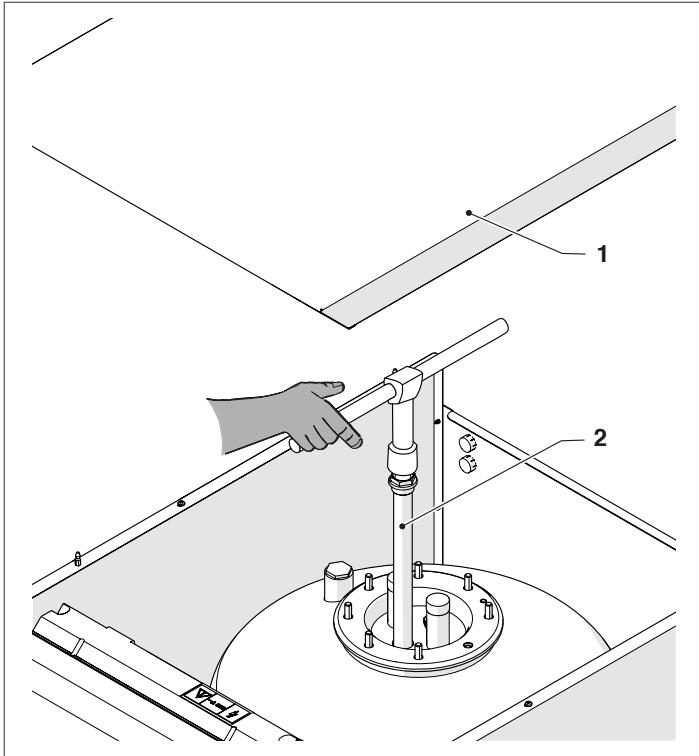
On completion of cleaning, replace the turbulators inside the flue gas pipes, and reverse the steps given above to replace all other components.

Fit a new fibreglass seal when fitting the cover on the flue gas box.

3.7.3 Checking and replacing the storage cylinder anode (GITRÈ 5 B/100 model)

Proceed as follows to check the condition of the magnesium anode:

- Remove the top panel (1);
- Close the DHW circuit shut-off cock;
- Connect a plastic hose to the hose union and partly empty the storage cylinder through the storage cylinder drain cock;
- Remove the magnesium anode (2) using a suitable box spanner;
- Check the magnesium anode for wear and replace it if necessary.



3.8 Extraordinary cleaning

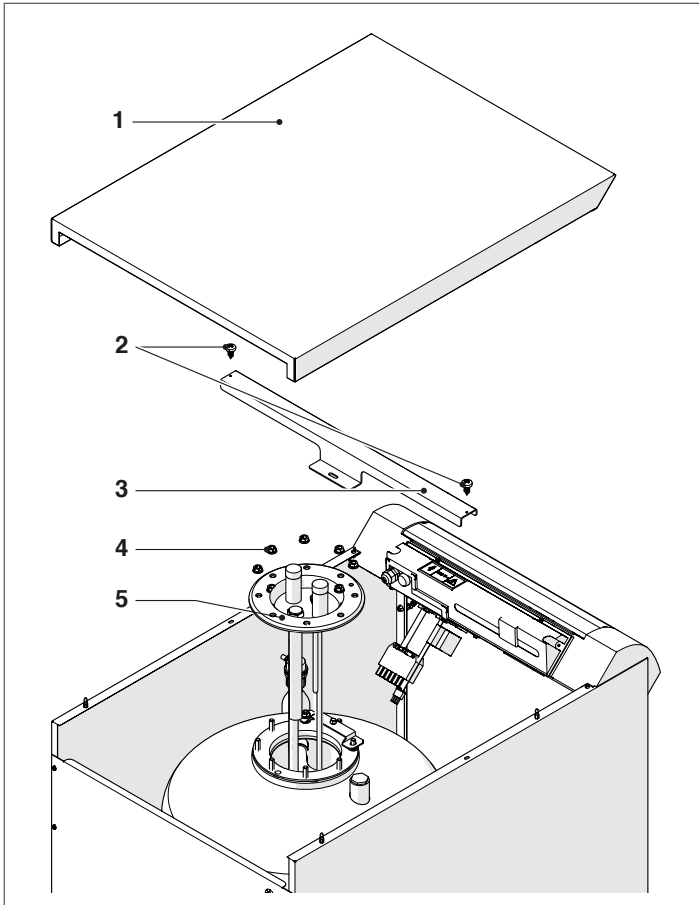
3.8.1 Cleaning the storage cylinder

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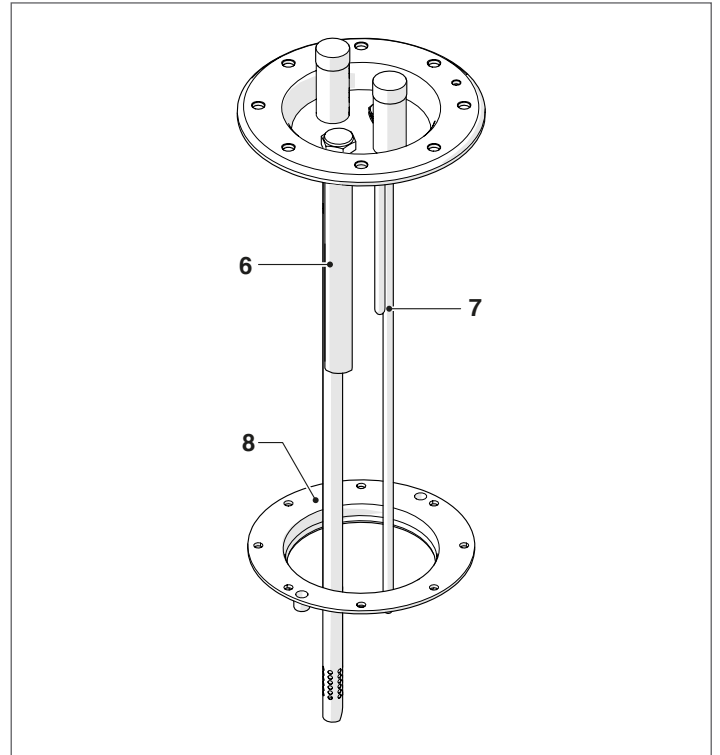
Extraordinary cleaning may be required if the performance of the storage cylinder deteriorates or if the water supply is particularly hard.

Perform the following operations before beginning any cleaning:

- Remove the top panel (1);
- Close the DHW circuit shut-off cock;
- Connect a plastic hose to the hose union and partly empty the storage cylinder through the storage cylinder drain cock;
- Pull the sensors out of their sockets;
- Remove the screws (2) fixing the bracket (3) to the casing;
- Remove the screws (4) fixing the flange (5) in place, and remove the flange;

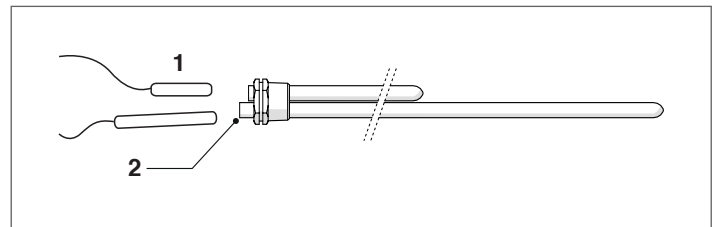


- Clean inside the storage cylinder and remove any residues through the access hole;
- Check the magnesium anode (6) for wear (Replace if necessary.);
- Check the condition of the sensor holders (7);
- Check the condition of the seal (8).



On completion of cleaning, refit all removed parts in the reverse order, taking care to ensure the efficiency of the seals.

! Insert the DHW temperature sensor (1) into the shorter sensor holder and the TB storage cylinder thermostat sensor (2) into the longer sensor holder. Push the sensors all the way into their sockets. The socket for the TB thermostat sensor has a raised lip above the surface of the cap.



N.B.: Tighten the fixing nuts, proceeding diagonally around the flange to apply pressure uniformly around the seal.

3.9 External cleaning

Clean the boiler's casing panels and control panel with a soft cloth dampened in soapy water.

To remove marks from the boiler casing, use a cloth dampened in a 50% mix of water and denatured alcohol or a suitable cleaning product.

Wipe the boiler dry after cleaning it.

⊖ Do not use abrasive products, petrol or triethylene.

3.10 Troubleshooting

FAULT	CAUSE	SOLUTION
The boiler becomes dirty very quickly	Burner badly adjusted	- Check adjustment of burner (perform flue gas analysis)
	Blockage in stack	- Clean flue pipes
	Burner air intake dirty	- Clean the burner air intake
The boiler does not reach its temperature setpoint	Boiler dirty	- Clean
	Burner capacity insufficient	- Check and adjust the burner
	Problem with boiler control thermostat	- Check correct functioning - Check the temperature setting
The generator triggers a thermal safety block	Problem with boiler control thermostat	- Check correct functioning - Check the temperature setting - Check the electrical wiring - Check the position of the sensor bulbs
	No water	- Check the bleed valve - Check CH circuit pressure
The generator is at temperature but the heating system is cold	Air in the circuit	- Bleed the circuit
	Pump malfunctioning	- Check/unseize the pump - Change the pump
	Minimum temperature thermostat faulty	- Replace the minimum temperature thermostat
There is a smell of fumes	Fumes escaping into the air	- Check that the burner body is clean - Check that the flue pipes are clean - Check the condition of the boiler seals - Check the quality of combustion
The safety valve keeps opening	Incorrect circuit pressure	- Check the circuit pressure - Check pressure reducer functioning - Check pressure reducer setting
	CH expansion vessel	- Check the efficiency of the expansion vessel

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FAULT	CAUSE	SOLUTION
The storage cylinder safety valve keeps opening	Storage cylinder safety valve	- Check valve setting and efficiency
	Incorrect DHW circuit pressure	- Check DHW circuit pressure
	DHW circuit expansion vessel	- Check the efficiency of the expansion vessel
The DHW pump is not working	DHW pump problem	- Check/unseize the pump - Check the electrical connection between the pump and the control panel
	Storage cylinder temperature sensor problem	- Check the positioning of the storage cylinder temperature sensor
Insufficient domestic hot water	Incorrect pressure in DHW circuit	- Fit a pressure limiter
	Lime scale or deposits in storage cylinder	- Check and clean as necessary - Check the setting of the storage cylinder thermostat
	Storage cylinder thermostat	- Check the setting of the storage cylinder thermostat

TROUBLESHOOTING

Problem	Diagnostic signal	Probable cause	Remedy
The burner does not ignite when heat is requested	○ OFF	No electrical power	Check voltage at L, N and in power plug Check the condition of the fuses Check that the safety thermostat has not tripped
	●● GREEN, RED alternate flashing	The flame detector reads extraneous light	Eliminate cause of light or false flame signal
	○ OFF	The burner controller connectors are not properly plugged in	Make sure that all connectors are properly connected
	○ GREEN flashing	Short circuit connector P not connected	Replace as necessary
The burner locks out before or during pre-purging or pre-heating	● RED flashing	The flame detector is reading extraneous light	Eliminate cause of light or false flame signal
The burner performs pre-purging and ignition correctly but locks out after about 5 seconds	● RED	Flame detector dirty	Clean the flame detector
		The flame detector is faulty	Change as necessary
		The flame detaches or fails	Check fuel oil pressure and flow rate Check the air flow Change the nozzle Check solenoid valve coil
The burner starts up only after late ignition.	○ OFF	Ignition electrodes incorrectly positioned	Adjust ignition electrodes as instructed in this manual.
		Air flow rate too high	Adjust air flow rate as instructed in this manual.
		Nozzle dirty or worn	Replace

4 RECYCLING AND DISPOSAL

Packaging materials from **RIELLO GITRÈ** boilers must be disposed of through appropriate channels in order to permit recovery and recycling. At the end of its useful life, dispose of the boiler in compliance with applicable legislation.



RIELLO

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