

**CAST IRON
BOILERS**

TreGgi

N - NK

**INSTALLATION, USER-OPERATION, MAINTENANCE
AND SYSTEM MANAGEMENT MANUAL**



TreGgi N

TreGgi NK

RIELLO

CONFORMITY

RIELLO TreGij boilers conform to the Efficiency Directive 92/42/EEC.
When used in conjunction with a CE marked jet burner, they also satisfy the requirements of the Gas Directive 2009/142/CE and applicable sections of the Electromagnetic Compatibility Directive 2004/108/CE and Low Voltage Directive 2006/95/CE.



RANGE

MODEL	CODE
<i>TreGij</i> 3 N	4040719
<i>TreGij</i> 4 N	4040720
<i>TreGij</i> 5 N	4040721
<i>TreGij</i> 6 N	4040722
<i>TreGij</i> 7 N	4040723
<i>TreGij</i> 8 N	4040724
<i>TreGij</i> 9 N	4040725
<i>TreGij</i> 10 N	4040726
<i>TreGij</i> 3/100 NK	4040727
<i>TreGij</i> 4/100 NK	4040728
<i>TreGij</i> 5/100 NK	4040729
<i>TreGij</i> 6/100 NK	4040730
<i>TreGij</i> 7/100 NK	4040731
<i>TreGij</i> 8/100 NK	4040732
<i>TreGij</i> 3/60 NK	4040733
<i>TreGij</i> 4/60 NK	4040734

Dear Customer,

Thank you for choosing a **RIELLO** *TreGij* boiler, a modern, high quality and high efficiency product that will assure you maximum comfort over a long period, with high reliability and safety. Arrange for the boiler to be serviced regularly by an authorised **RIELLO** Technical Assistance Centre. Their personnel are specially trained to keep your boiler efficient and cheap to run. Technical Assistance Centres also stock any original spare parts that might be required.

This instruction manual contains important instructions and precautions that must be observed to ensure the trouble-free installation and efficient functioning of your **RIELLO** *TreGij* boiler.

Please accept our renewed thanks for your purchase.

Riello S.p.A.

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The following symbols are used in this manual:



CAUTION = Indicates actions that require caution and adequate preparation



STOP = Identifies actions that you MUST NOT do

This manual, Code 068645EN - Rev. 7 (12/13) is made up of 48 pages.

GENERAL SAFETY INFORMATION

-  The boiler is delivered in a single crate. Check that the appliance is complete and undamaged as soon as you receive it. Report any discrepancies or damage to the **RIELLO** dealer who sold it.
-  This *TreGij* boiler must be installed by a legally qualified installer. 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.
-  The boiler must only be used for the purpose specified by **RIELLO** and for which it is designed. The manufacturer declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.
-  If you notice any water leaking from the boiler, shut off the water supply and notify your local **RIELLO** Technical Assistance Centre or a qualified heating engineer immediately.
-  Periodically check that working pressure in the heating circuit is **over 1 bar** but below the maximum limit specified for the appliance. If this is not the case, contact **RIELLO**'s Technical Assistance Service or a professionally qualified heating engineer.
-  If the boiler is not going to be used for an extended period of time, perform at least the following operations:
 - Turn the appliance's main function selector to position **(I)** "Off"
 - Turn the main power switch OFF
 - Close the fuel cock and heating circuit water cock
 - Drain the central heating circuit if there is any risk of freezing.
-  The boiler must be serviced at least once a year.
-  This instruction manual is an integral part of the boiler. It must be kept safe and must ALWAYS accompany the boiler, even if it is sold to another owner or transferred to another user or to another installation. If you damage or lose this manual, order a replacement immediately from your local **RIELLO** Technical Assistance Centre.

PRECAUTIONS

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

-  Do not allow children or infirm persons to operate this *TreGij* boiler unsupervised.
-  Do not operate any electrical devices or equipment, including switches or domestic appliances, etc., if you can smell fuel or fumes. If you detect any suspicious smells:
 - Ventilate the room by opening all doors and windows;
 - Close the fuel shut-off cock;
 - Report the fault immediately to the **RIELLO** Technical Assistance Service or a professionally qualified heating engineer.
-  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 main power switch off and turning the main function selector to OFF **(I)**.
-  Do not tamper with or adjust the safety or control devices without prior authorisation and instructions from the boiler's manufacturer.
-  Never pull, disconnect, or twist the electrical cables coming from the boiler 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. Do not install the boiler outdoors. It is not designed to work outdoors and is not fitted with the necessary automatic frost protection systems to do so.
-  Do not switch the boiler off if outdoor temperature drops below ZERO (risk of freezing).
-  Do not store flammable substances or packaging 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.

PRODUCT DESCRIPTION

RIELLO TreGij cast iron boilers are high efficiency, triple flue pass boilers with a horizontal combustion chamber for central heating only (**TreGij N**) or for central heating and domestic hot water production when equipped with a 100 or 60 litre vitrified storage cylinder (**TreGij NK**).

The most important technical features of these boilers are:

- The combustion chamber and heat exchange system are specially designed and shaped to achieve the best possible volume ratio.
- Only top quality materials, including special MB18C cast iron, are used to ensure a long working life.

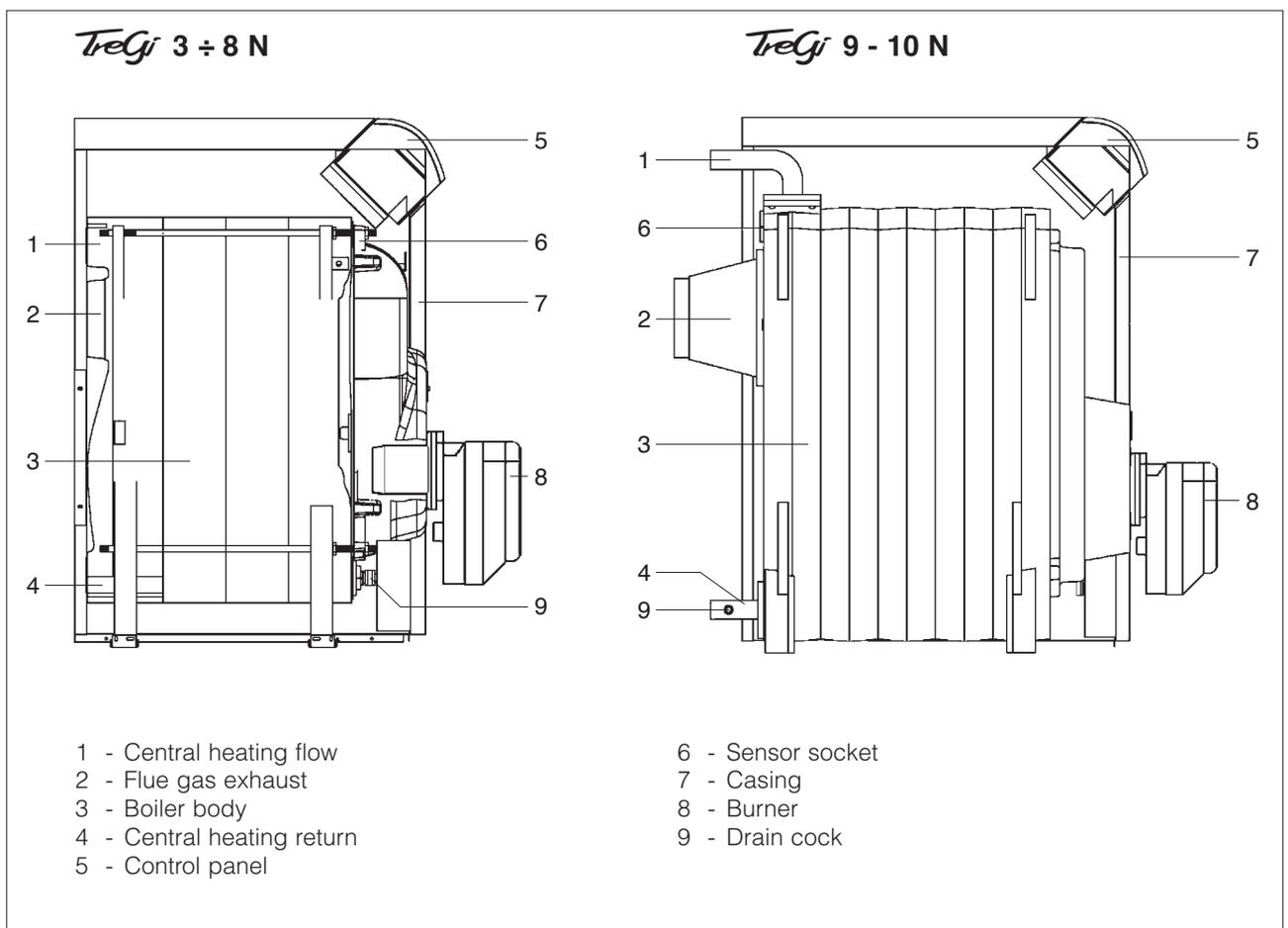
The boiler body is thoroughly insulated with a layer of high density glass wool.

The boiler's front door can be opened completely to facilitate the inspection, maintenance and cleaning of internal parts and to speed up servicing in general.

If equipped with an optional total shutdown control card, **RIELLO TreGij** boilers can implement total shutdown logic and save energy as follows:

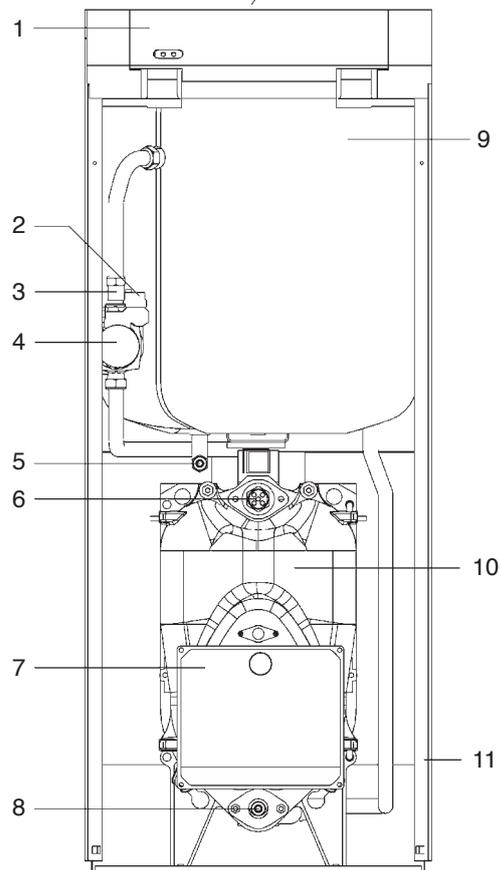
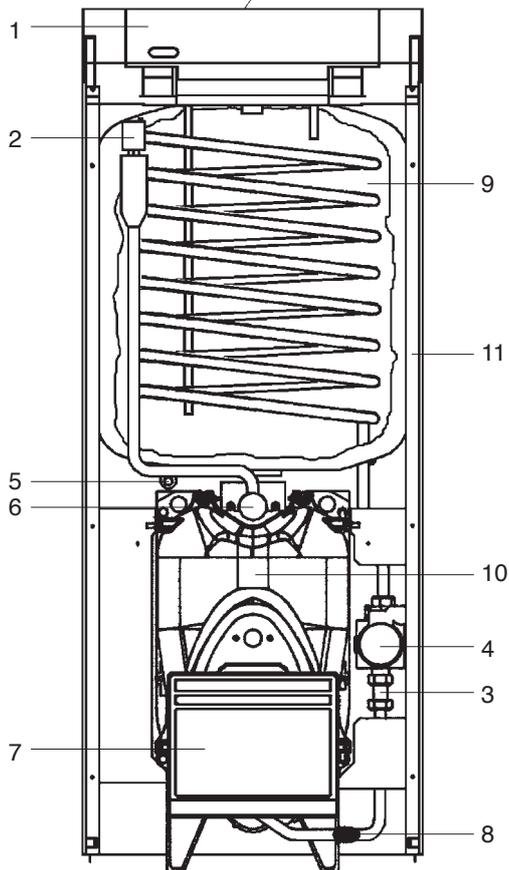
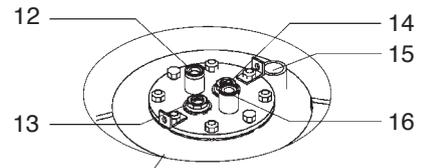
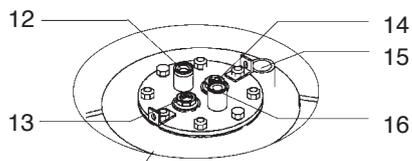
- **TreGij N** models only start up if the heating system requests heat (i.e. when the room thermostat switches the heating on).
- When the Summer/Winter selector is set to Summer mode **TreGij NK**, models apply total shutdown logic and save energy by starting up only when a domestic hot water tap is opened.

Both types of boiler have an overtemperature dispersal function to disperse the heat left by thermal inertia.



TreGj 3/100 - 4/100 NK

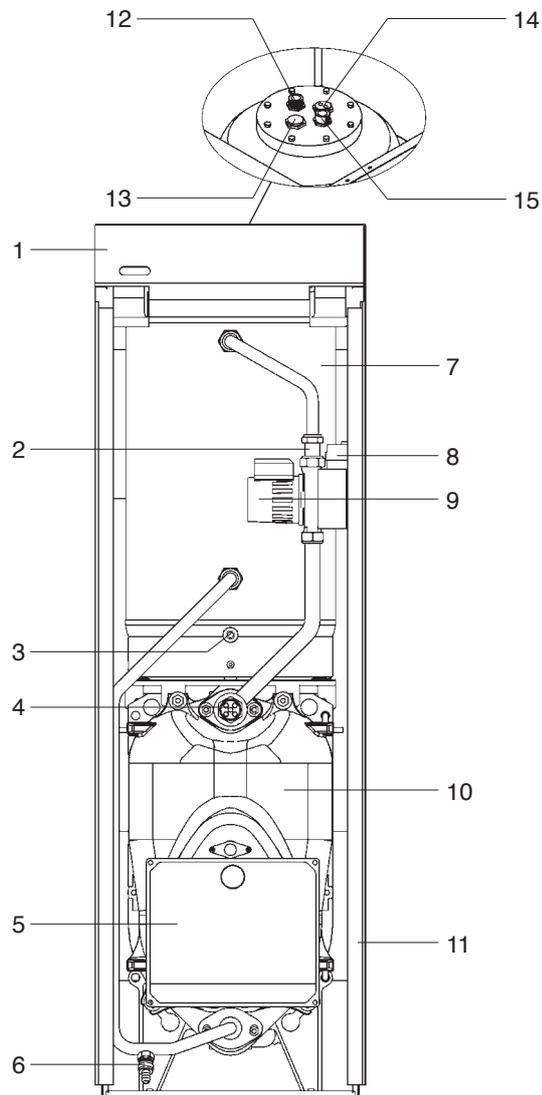
TreGj 5/100 ÷ 8/100 NK



- 1 - Control panel
- 2 - Automatic vent valve
- 3 - Non-return valve
- 4 - Storage cylinder pump
- 5 - Storage cylinder drain cock
- 6 - Boiler sensor socket
- 7 - Burner
- 8 - CH drain cock

- 9 - Storage cylinder (100 l)
- 10 - Boiler body
- 11 - Casing
- 12 - Domestic cold water inlet
- 13 - Magnesium anode
- 14 - Storage cylinder sensor socket
- 15 - Domestic hot water recirculation
- 16 - Domestic hot water outlet

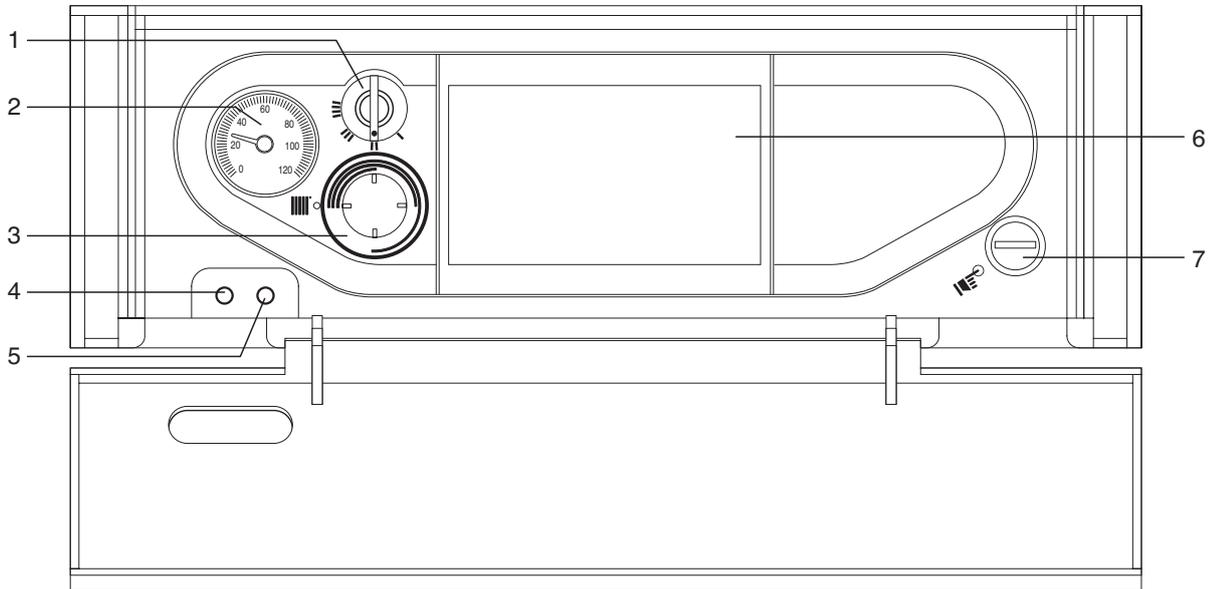
TeGi 3/60 - 4/60 NK



- 1 - Control panel
- 2 - Non-return valve
- 3 - Storage cylinder drain cock
- 4 - Boiler sensor socket
- 5 - Burner
- 6 - CH drain cock
- 7 - Storage cylinder (60 l)
- 8 - Automatic vent valve

- 9 - Storage cylinder pump
- 10 - Boiler body
- 11 - Casing
- 12 - Domestic hot water outlet
- 13 - Magnesium anode
- 14 - Storage cylinder sensor socket
- 15 - Domestic cold water inlet

TreGij N



1 - Function selector

- I Off
- II On
- III On
- IIII Automatic mode (only active with temperature control kit installed)

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.

4 - Electrical power indicator (green)

Lights to show that the boiler is receiving electrical power.

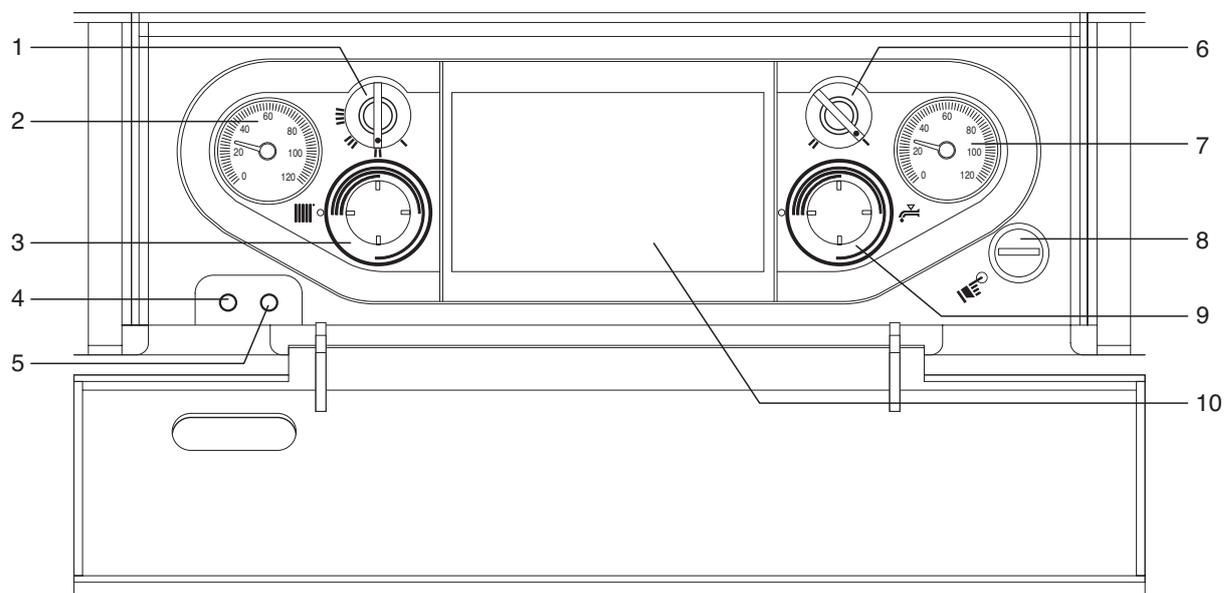
5 - Burner lockout indicator (red)

Lights to show that the burner lockout has tripped.

6 - Function indicators

7 -  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.



1 - **Function selector**

- I Off
- II On
- III On
- IIII Automatic mode (only active with temperature control kit installed)

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.

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 lockout has tripped.

6 - **Summer (I) / Winter (II) selector**

7 - **Storage cylinder temperature gauge**

Displays the temperature of the domestic hot water.

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.

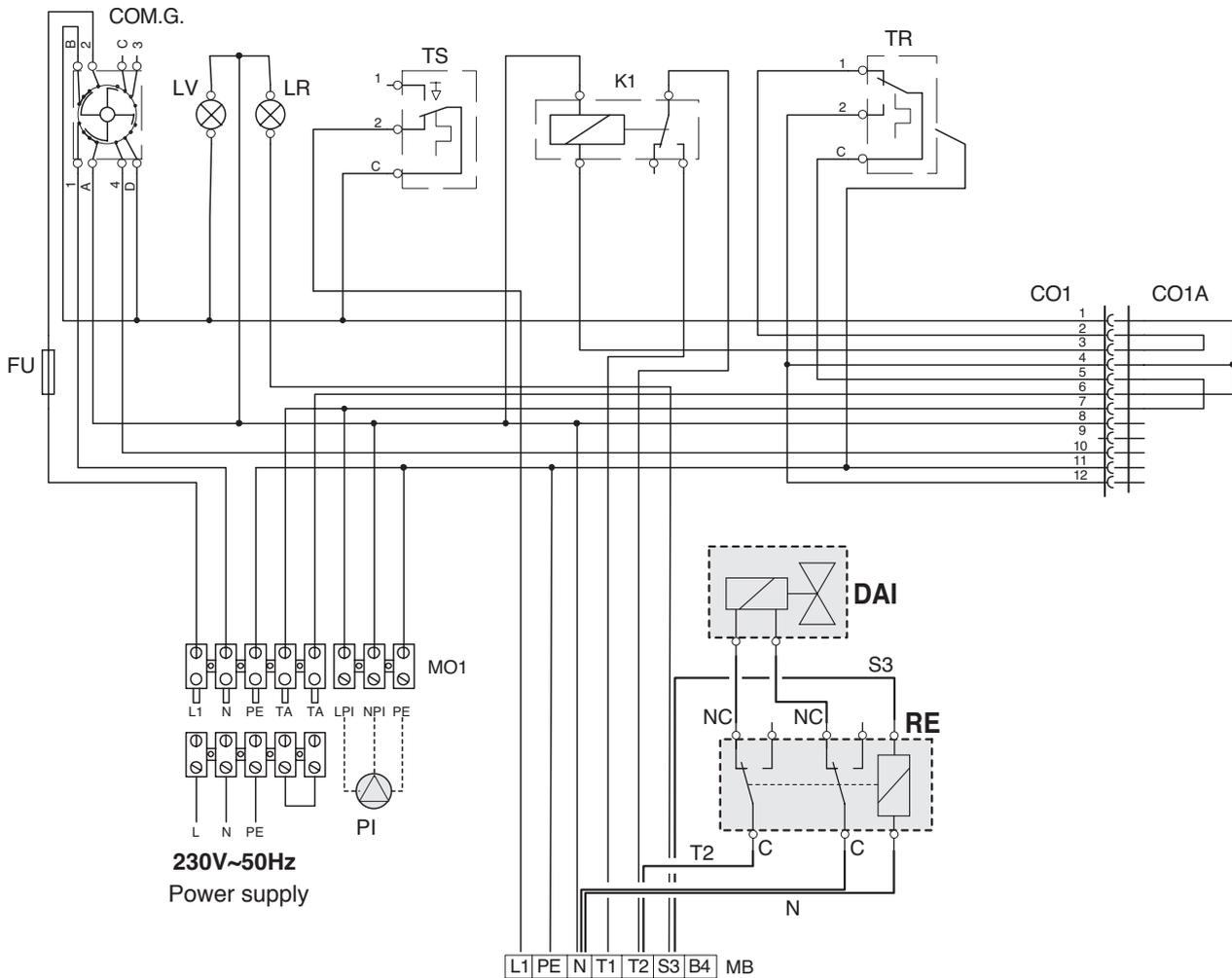
9 - **Storage cylinder thermostat**

Allows you to set the temperature of the domestic hot water.

10 - **Function indicators**

FUNCTIONAL WIRING DIAGRAM

TreGij N

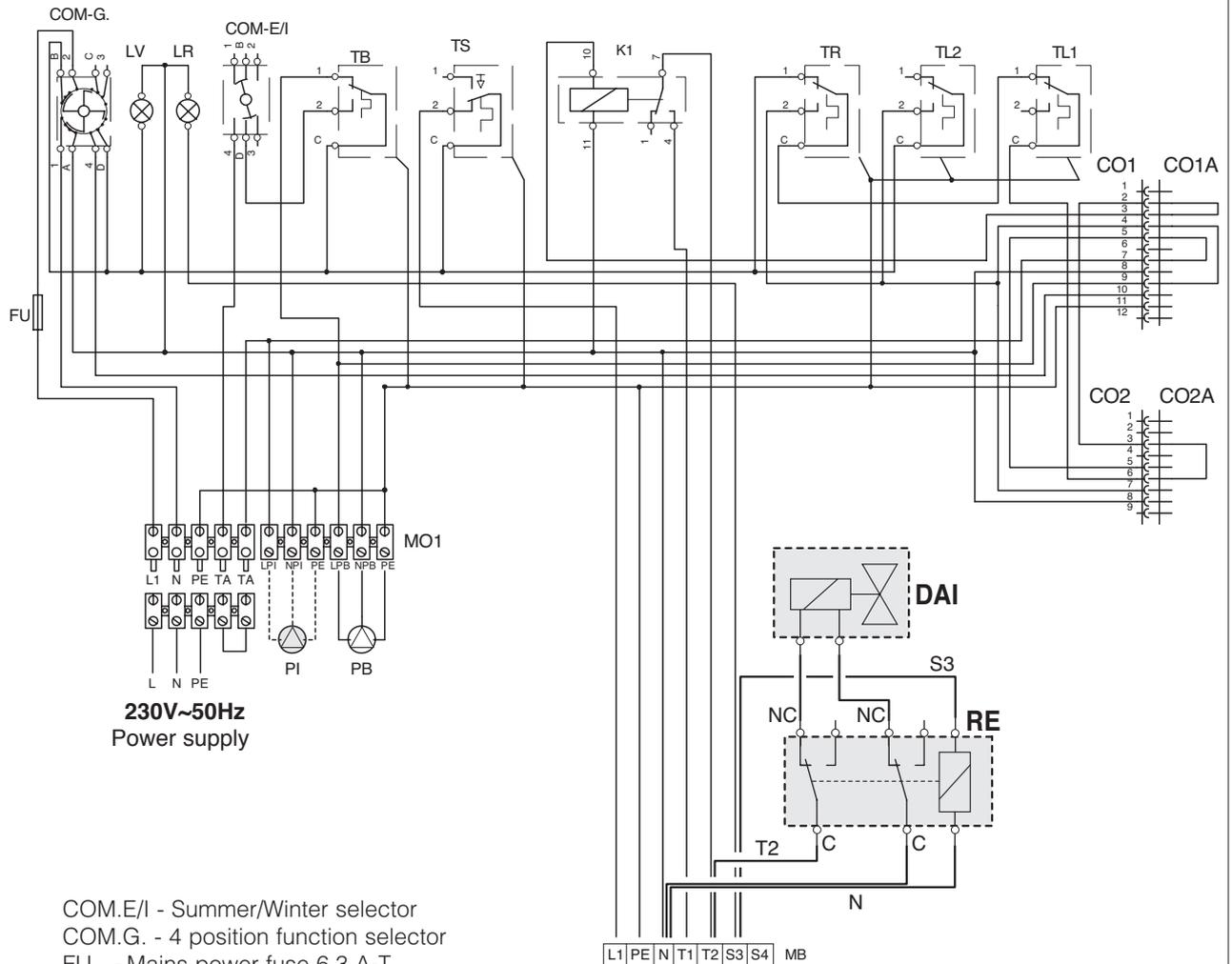


- COM.G. - 4 position function selector
- LV - Mains power indicator
- LR - Burner lockout indicator
- TS - Safety thermostat (110°C 0/-6) (*)
- TR - Boiler control thermostat (33-82°C ±3) (*)
- FU - Mains power fuse 6.3 A-T
- CO1-CO1A - Multi-connectors
- MO1 - Terminal strip
- MB- 7 pin burner connector
- 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)

(*) Homologated



- COM.E/I - Summer/Winter selector
- COM.G. - 4 position function selector
- FU - Mains power fuse 6.3 A-T
- LR - Burner lockout indicator
- LV - Mains power indicator
- CO1-CO1A - Multi-connectors
- CO2-CO2A - Multi-connectors
- MO1 - Terminal strip
- MB - 7 pin burner connector
- TB - Storage cylinder thermostat (0-70°C ±3)
- TL1 - Maximum temperature thermostat (82°C)
- TL2 - Overtemperature dispersal thermostat (90°C)
- TR - Boiler control thermostat (33-82°C ±3) (*)
- TS - Safety thermostat (110°C 0/-6) (*)
- PI - Central heating pump (not supplied)
- PB - Storage cylinder pump

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)

(*) Homologated

RECOMMENDED BURNERS

The burners recommended to obtain the best possible performance from *TreGij* boilers are:

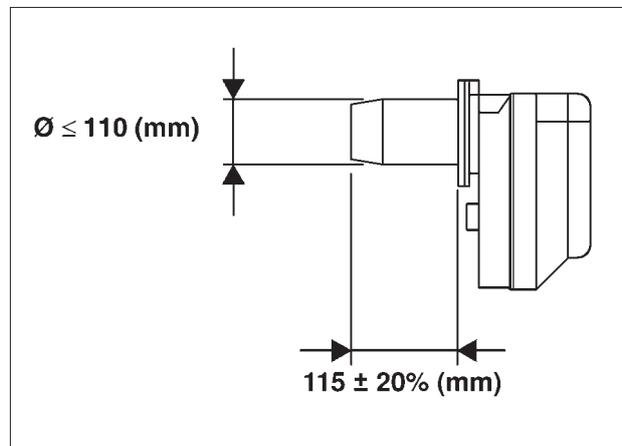
BURNER			<i>TreGij</i> BOILER							
MODEL	CODE		3N / 3NK	4N / 4NK	5N / 5 NK	6N / 6NK	7N / 7NK	8N / 8NK	9N	10N
G A S	GULLIVER BS1	3761112	•	•	•					
	GULLIVER BS2	3761212				•	•	•		
O I L	GULLIVER RG 0.R	3736500	•							
	GULLIVER RG 0.3	3735900	•							
	GULLIVER RG 1 NR	3736405		•	•					
	GULLIVER RG 1 RK	3736210		•	•					
	GULLIVER RG 2	3737700				•	•		•	•
	REG 3	3772100	•							
	REG 5	3772200		•	•					
	GULLIVER RG 2 KD	3738100						•		

- !** See the instruction manual provided with the burner for further information on:
- Burner installation
 - Electrical connections
 - Burner adjustments.

IMPORTANT

If you are installing a new boiler but re-using an old burner, always perform the following checks:

- Make sure that the performance of the old burner is adequate for the requirements of the boiler
- Make sure that the length and diameter of the burner's blast tube are suitable for the boiler's combustion chamber.



IDENTIFICATION

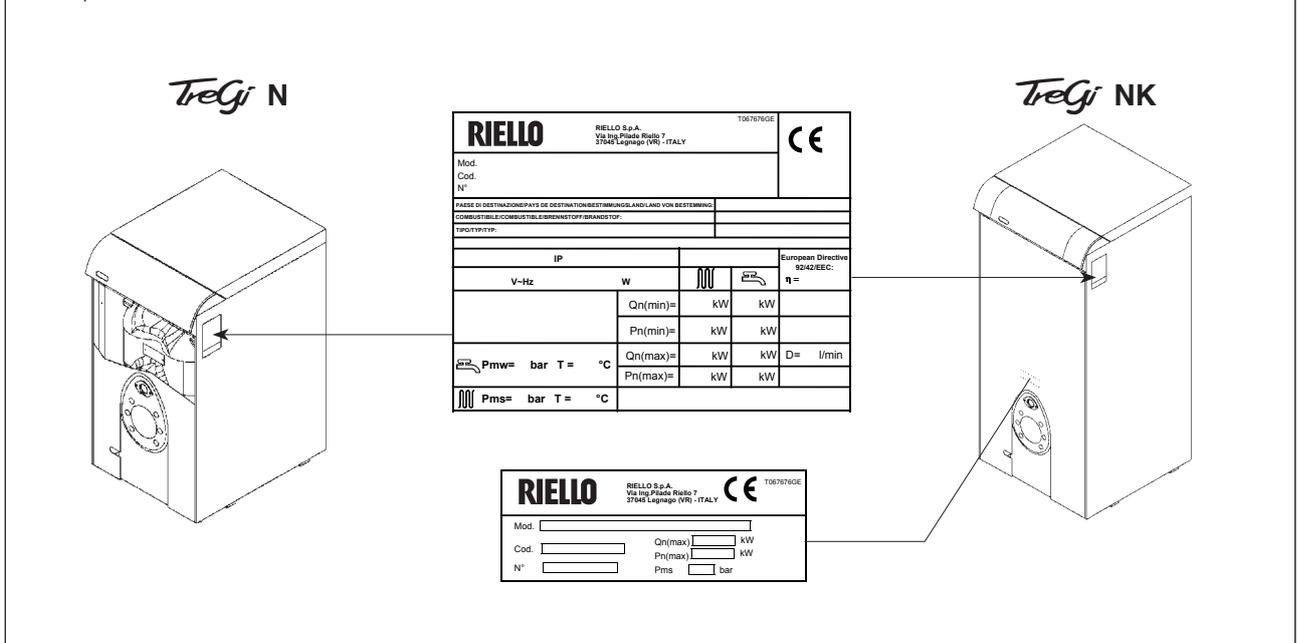
Boilers are identified by two plates:

- Data plate

This lists the technical specifications and performance of the product.

- Serial number plate

This is located on the boiler body and specifies the serial number, model, working pressure and rated heat input.



⚠ If these plates or any other means of clearly identifying the product are defaced, removed or lost, proper installation and servicing may be rendered difficult

DATA PLATE

-  DHW system
-  Central heating system
- Qn** Rated heat input
- Pn** Rated useful heat output
- IP** Index of protection
- Pmw** Maximum working pressure, DHW system
- Pms** Maximum working pressure, central heating system
- T** Temperature
- η** Efficiency
- D** Specific flow rate

RIELLO		RIELLO S.p.A. Via Ing. Piledo Riello 7 37045 Legnago (VR) - ITALY		T067676GE		CE	
Mod.	_____	Qn(max)	_____ kW				
Cod.	_____	Pn(max)	_____ kW				
N°	_____	Pms	_____ bar				

RIELLO		RIELLO S.p.A. Via Ing. Piledo Riello 7 37045 Legnago (VR) - ITALY		T067676GE		CE	
Mod.	_____						
Cod.	_____						
N°	_____						
PAESE DI DESTINAZIONE/PAYS DE DESTINATION/BESTIMMUNGSLAND/LAND VON BESTEMMING:							
COMBUSTIBILE/COMBUSTIBLE/BRENNSTOFF/BRANDSTOF:							
TIPO/TYP/TYP:							
IP		W				European Directive 92/42/EEC: η =	
V-Hz		Qn(min)=		kW		kW	
		Pn(min)=		kW		kW	
 Pmw=		bar		T =		°C	
		Qn(max)=		kW		kW D= l/min	
		Pn(max)=		kW		kW	
 Pms=		bar		T =		°C	

TECHNICAL SPECIFICATIONS

DESCRIPTION	MODEL <i>TreGj</i> N									
	3	4	5	6	7	8	9	10		
Fuel	gas / oil									
Rated heat input	Minimum	16,3	27,2	36,0	46,1	55,0	63,0	-	-	kW
	Maximum	26,5	34,8	44,3	53,1	62,0	70,0	80,0	92,0	kW
Rated useful heat output Pn	Minimum	14,9	25,0	33,0	42,3	50,0	57,6	-	-	kW
	Maximum	23,9	31,5	40,2	48,2	56,2	63,8	72,5	83,5	kW
Useful efficiency at Pn	Minimum	91,4	91,9	91,7	91,8	90,9	91,4	-	-	%
	Maximum	90,2	90,5	90,7	90,8	90,6	91,1	90,63	90,76	%
Useful efficiency at 30% max. Pn		90,9	91,3	91,6	92,0	91,8	92,0	90,3	90,5	%
Constant pressure drop		2,3	1,8	1,3	1,2	1,0	0,9	0,78	0,70	%
Flue gas temperature (ΔT)		> 140						196	202	$^{\circ}C$
Maximum flue gas flow rate (gas/oil)		0,010	0,013	0,017	0,020	0,024	0,027	0,033	0,037	Kg/s
Furnace pressure	Minimum	0,03	0,12	0,17	0,26	0,33	0,47	-	-	mbar
	Maximum	0,10	0,17	0,26	0,36	0,42	0,60	0,23	0,28	mbar
Furnace volume		16	22	28	34	40	46	49	57	dm ³
Total volume of flue gas side		22	31	39	47	55	63	-	-	dm ³
Total surface area for heat exchange		0,93	1,30	1,67	2,04	2,41	2,78	2,61	3,00	m ²
Volumetric heat load		1656	1582	1582	1562	1550	1522	1632	1614	kW/m ³
Specific heat load		25,7	24,2	24,1	23,6	23,3	22,9	27,8	27,8	kW/m ²
Maximum working pressure		4								bar
Safety thermostat trip temperature		110								$^{\circ}C$
Maximum working temperature		82								$^{\circ}C$
Minimum admissible water return temperature		35						40		$^{\circ}C$
Pressure drop ΔT 10 $^{\circ}C$		4	6	10	14	20	26	29	34	mbar
Pressure drop ΔT 20 $^{\circ}C$		1,2	1,6	2,5	3,5	5,0	7,0	8,0	9,0	mbar
Water capacity		13,7	17,2	20,7	24,2	27,7	31,2	42,0	47,0	l
Turbulators		5	5	2	2	-	-	4	4	n $^{\circ}$
Index of protection		X0D								IP

The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue gas exhaust.

Values obtained with **RIELLO** Modelli GULLIVER RG burners with CO₂ = 12,5% and GULLIVER BS burners with CO₂ = 9,5%.

DESCRIPTION	MODEL <i>Tegji</i> NK									
	3/100	4/100	5/100	6/100	7/100	8/100	3/60	4/60		
Fuel	Gas / oil									
Heat input at furnace	Minimum	16,3	27,2	36,0	46,1	55,0	63,0	16,3	27,2	kW
	Maximum	26,5	34,8	44,3	53,1	62,0	70,0	26,5	34,8	kW
Rated useful heat output Pn	Minimum	14,9	25,0	33,0	42,3	50,0	57,6	14,9	25,0	kW
	Maximum	23,9	31,5	40,2	48,2	56,2	63,8	23,9	31,5	kW
Useful efficiency at Pn	Minimum	91,4	91,9	91,7	91,8	90,9	91,4	91,4	91,9	%
	Maximum	90,2	90,5	90,7	90,8	90,6	91,1	90,2	90,5	%
Useful efficiency at 30% max. Pn		90,9	91,3	91,6	92,0	91,8	92,0	90,9	91,3	%
Constant pressure drop		2,3	1,8	1,3	1,2	1,0	0,9	2,3	1,8	%
Flue gas temperature (ΔT)		> 140								$^{\circ}C$
Maximum flue gas flow rate (gas/oil)		0,010	0,013	0,017	0,020	0,024	0,027	0,010	0,013	Kg/s
CO ₂ (gas/oil)		9,5/12,5								%
Furnace pressure	Minimum	0,03	0,12	0,17	0,26	0,33	0,47	0,03	0,12	mbar
	Maximum	0,10	0,17	0,26	0,36	0,42	0,60	0,10	0,17	mbar
Furnace volume		16	22	28	34	40	46	16	22	dm ³
Total volume of flue gas side		22	31	39	47	55	63	22	31	dm ³
Total surface area for heat exchange		0,93	1,30	1,67	2,04	2,41	2,78	0,93	1,30	m ²
Volumetric heat load		1656	1582	1582	1562	1550	1522	1656	1582	kW/m ³
Specific heat load		25,7	24,2	24,1	23,6	23,3	22,9	25,7	24,2	kW/m ²
Maximum working pressure		4								bar
Safety thermostat trip temperature		110								$^{\circ}C$
Maximum working temperature		82								$^{\circ}C$
Minimum admissible water return temperature		35								$^{\circ}C$
Pressure drop ΔT 10 $^{\circ}C$		4	6	10	14	20	26	4	6	mbar
Pressure drop ΔT 20 $^{\circ}C$		1,2	1,6	2,5	3,5	5,0	7,0	1,2	1,6	mbar
Water capacity		13,7	17,2	20,7	24,2	27,7	31,2	13,7	17,2	l
Turbulators		5	5	2	2	-	-	5	5	n $^{\circ}$
Index of protection		X0D								IP

⚠ The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue gas exhaust.

⚠ Values obtained with **RIELLO** GULLIVER RG burners with CO₂ = 12,5% and GULLIVER BS burners with CO₂ = 9,5%.

STORAGE CYLINDER CHARACTERISTICS	MODEL <i>Tegji</i> NK									
	3/100	4/100	5/100	6/100	7/100	8/100	3/60	4/60		
Storage cylinder type	Vitrified									
Cylinder layout	Vertical									
Heat exchanger layout	Vertical									
Power consumption	23,8	31,3	31,3	31,3	31,3	31,3	23,2	30,9		kW
Storage cylinder capacity	100						60			l
Coil water capacity	6,9						6,6			l
Heat exchanger surface area	1,10						1,01			m ²
Domestic hot water production with ΔT 35 $^{\circ}C$	585	770	770	770	770	770	570	760		l/h
Water draw in 10' with storage cylinder at 48 $^{\circ}C$ (*)	160	170	185	185	185	185	115	125		l
Water draw in 10' with storage cylinder at 60 $^{\circ}C$ (*)	210	230	230	230	230	230	140	150		l
Replenishment time with ΔT 35 $^{\circ}C$	14	10	11	11	11	11	12	10		min
Maximum working pressure 7 bar	7									bar

(*) Inlet water temperature 13 $^{\circ}C$; average outlet temperature 43 $^{\circ}C$.

- Performance obtained with fill pump at maximum speed.

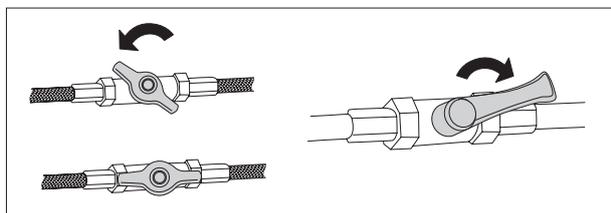
The following accessories are available, to be ordered separately.

ACCESSORY	CODE
Temperature control interface kit	4047331
Total shutdown control card kit	4047318

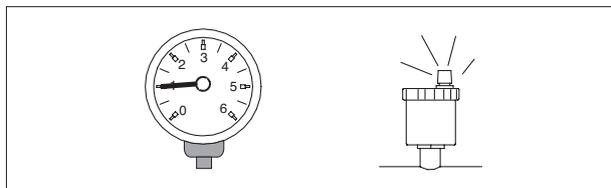
START UP

Have **RIELLO**'s Technical Assistance Service start-up your *TreGi* boiler for the first time. Once this has been done, the boiler can be left to function automatically. Under certain circumstances, such as after long periods of disuse, the service engineer responsible for the boiler may need to re-start it without involving the Technical Assistance Service. To do so, perform the following checks and operations:

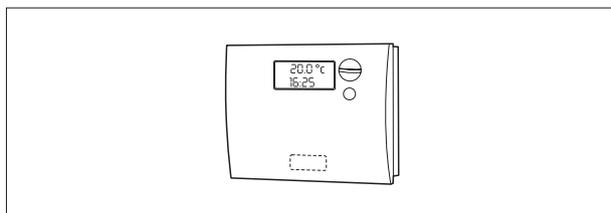
- Check that the gas cock and heating water cock are open



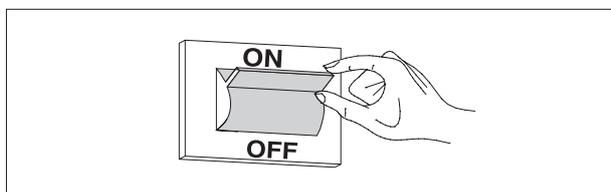
- While the system is still cold, check that working pressure in the heating circuit is **over 1 bar** but below the maximum limit specified for the boiler. If this is not the case, contact **RIELLO**'s Technical Assistance Service.



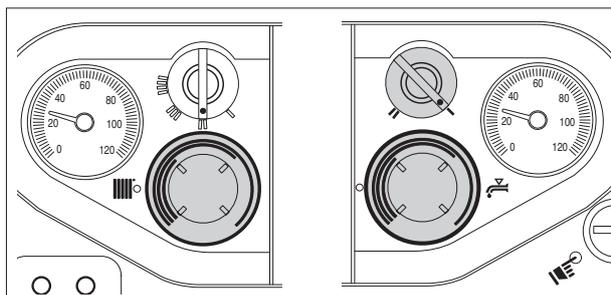
- Set the room thermostat to the required temperature (~20 °C) or, if the system has a timer, make sure that this is switched "On" and adjusted to the required temperature (~20 °C).



- Turn the system's main power switch ON



- Adjust the boiler and storage cylinder thermostats (**NK** models) to about the middle of the section with three lines



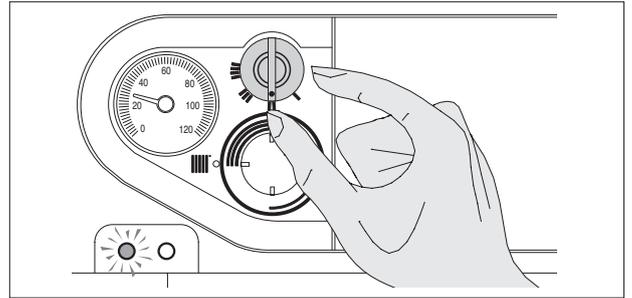
- Turn the function selector to ON (II) and make sure that the green power indicator lights.

The burner should now ignite and remain in operation until the set temperature is reached.

If any ignition faults or malfunctions occur, the burner performs a 'LOCKOUT SHUTDOWN'. 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.

To reset the burner, press the red button light on the burner. The complete ignition cycle will be repeated up to the ignition of the flame.

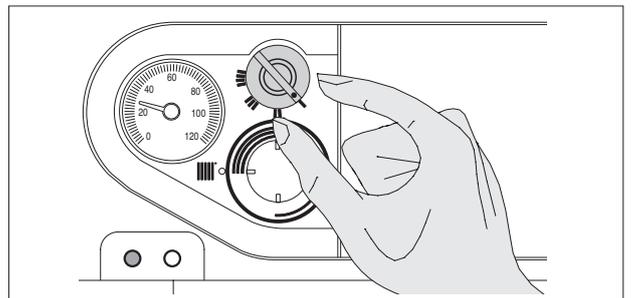


This operation can be repeated 2-3 times at the most, at intervals of at least one minute. If the problem persists after that, call **RIELLO**'s Technical Assistance Service.

TEMPORARY SHUTDOWN

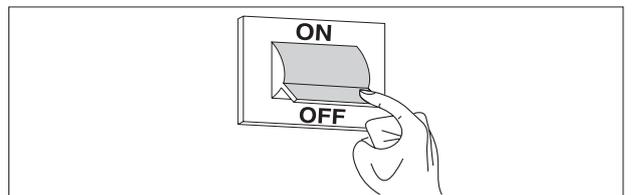
If you are going to be away for a short period of time like a weekend or a short holiday, etc., and outdoor temperatures are above ZERO, proceed as follows:

- Turn the function selector to OFF (I) and make sure that the green power indicator goes out



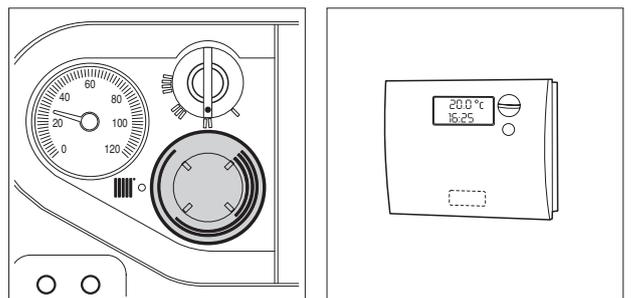
- Turn the system's main power switch OFF

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



In that case proceed as follows:

- Adjust the boiler thermostat to about the middle of the section with one line
- Adjust the room thermostat to about 10°C.

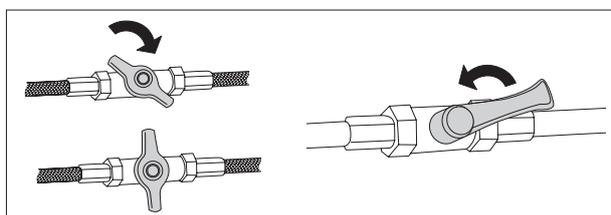
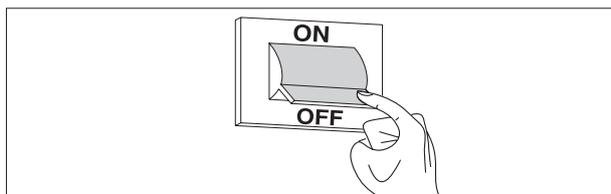
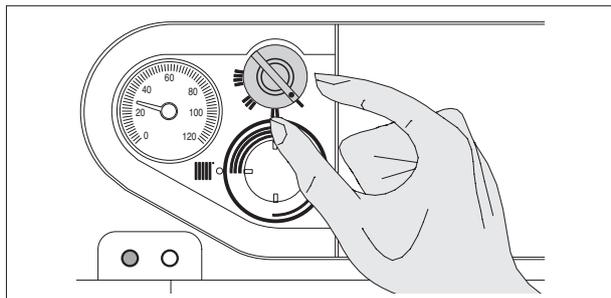


PREPARING FOR EXTENDED PERIODS OF DISUSE

If the boiler is not going to be used for an extended period of time, perform the following operations:

- Turn the function selector to OFF (I) and make sure that the green power indicator goes out
- Turn the system's main power switch OFF
- Close the fuel cock and heating circuit water cock
- Drain the central heating circuit if there is any risk of freezing.

 Contact **RIELLO's** Technical Assistance Service if you encounter any problems in completing the above procedure.



CLEANING

Use a cloth dampened in soapy water to clean the boiler's external casing.

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

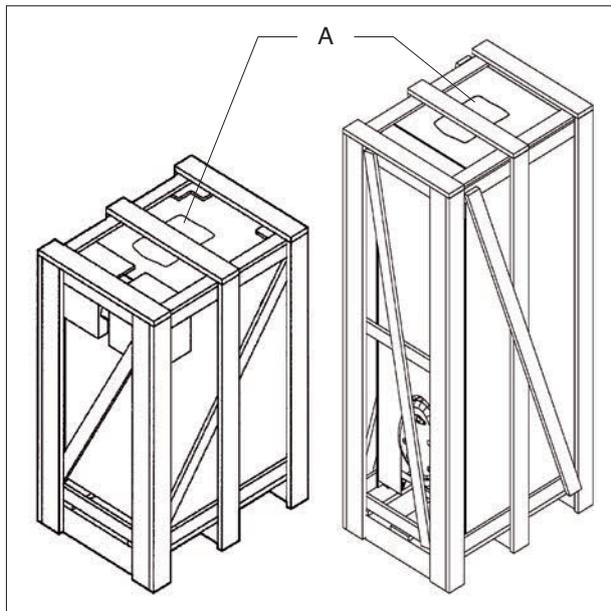
Carefully dry the boiler after cleaning.

 The combustion chamber and flues must be cleaned periodically by **RIELLO's** Technical Assistance Service or by a qualified heating engineer (see page 42).

-  Do not use abrasive products, petrol or triethylene.
-  Never clean the boiler without first disconnecting it from the mains electricity supply by turning the main power switch and the function selector OFF.

RIELLO *TreGi* boilers 3 ÷ 10 N, and *TreGi* boilers 3 - 4 NK are delivered in a robust wooden crate and are further protected by PVC wrapping. The document bag (A) is located under the top panel of the casing and contains:

- Instruction manual
- System service booklet (only for *TreGi* 3 - 4 N)
- Warranty certificate
- Spare parts catalogue
- Bar code labels.



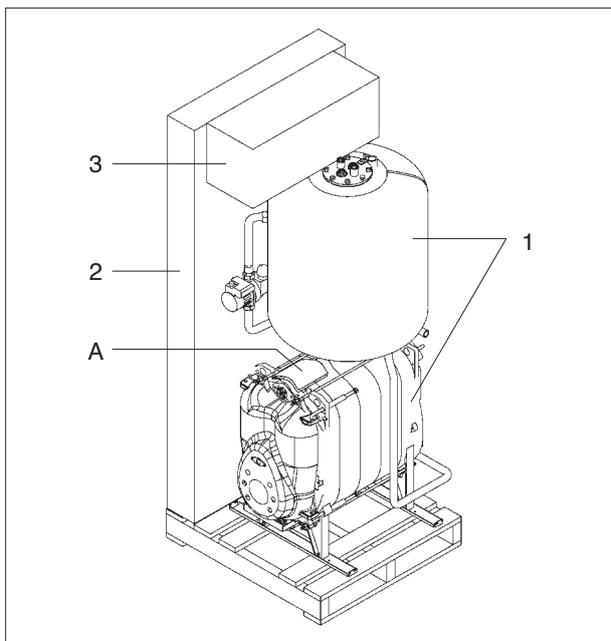
RIELLO *TreGi* 5/100 ÷ 8/100 NK boilers are delivered in 3 boxes on a single pallet and are further protected by a nylon film.

1) **The BOILER BODY box**, to which the documentation envelope (A) is attached, also contains:

- Instruction manual
- Warranty certificate
- Spare parts catalogue
- Data plate
- Bar code labels
- Electrical connections
(for the T1-T2 connectors on the burner).

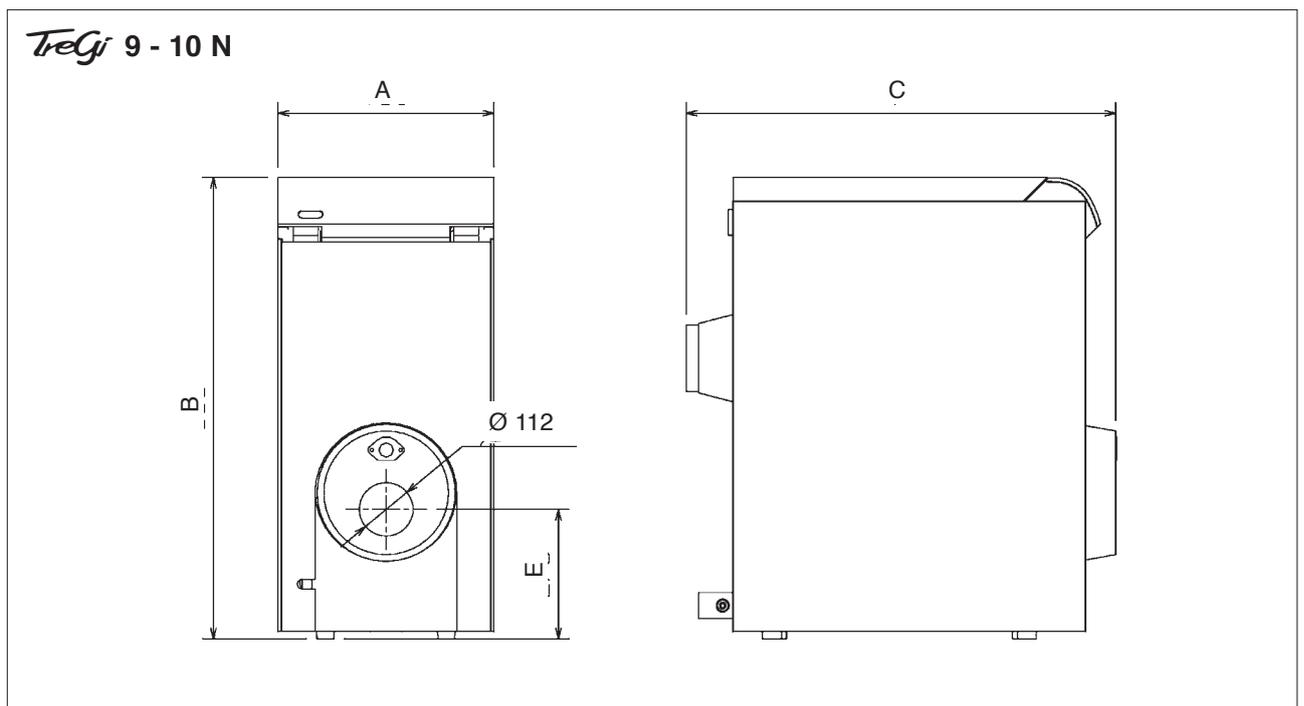
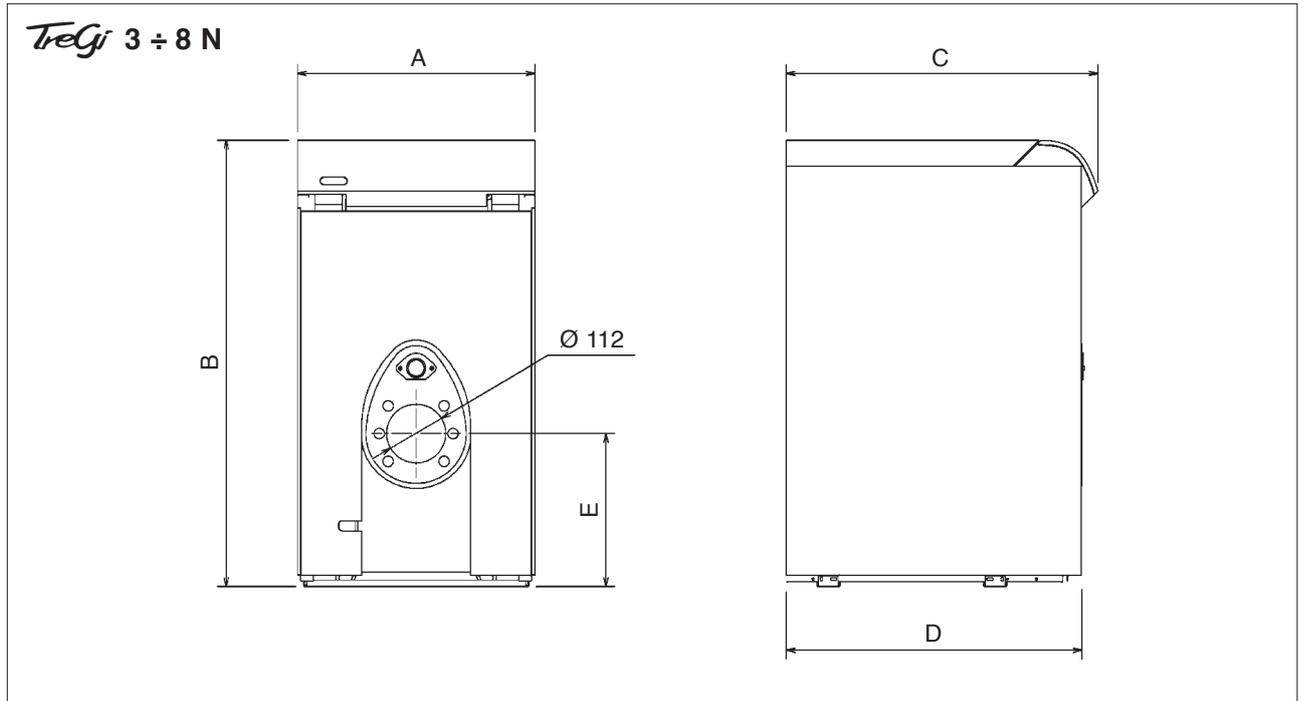
2) **The CASING box** contains the accessories and fasteners for assembling and insulating the boiler body.

3) **CONTROL PANEL.**



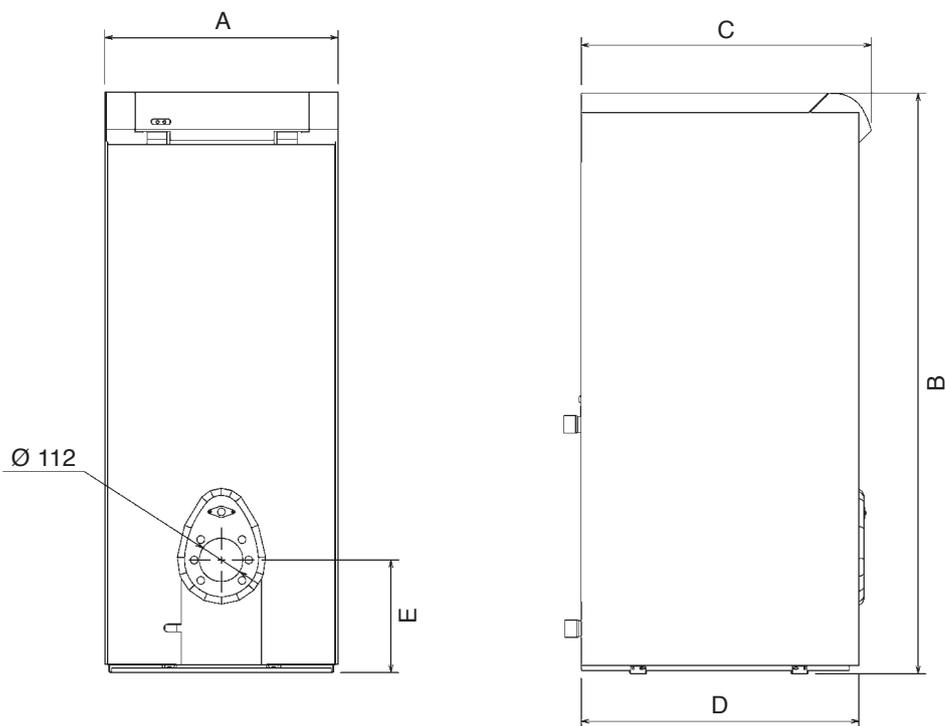
⚠ The instruction manual is an integral part of the boiler. Once located, read it thoroughly and keep it safe.

OVERALL DIMENSIONS AND WEIGHTS



DESCRIPTION	MODEL <i>TreGj</i> N								
	3	4	5	6	7	8	9	10	
A - Width	450								mm
B - Height	850						965		mm
C - Overall depth	490	590	690	790	890	990	995	1095	mm
D - Depth	460	560	660	760	860	960	-	-	mm
E	290						276		mm
Net weight	122	147	171	196	219	244	267	297	Kg

TreGj NK



DESCRIPTION	MODEL TreGj NK								
	3/100	4/100	5/100	6/100	7/100	8/100	3/60	4/60	
A - Width	600						450		mm
B - Height	1470		1510				1470		mm
C - Overall depth	580	690	790	890	990	580		mm	
D - Depth	550	660	760	860	960	550		mm	
E	290								mm
Net weight	165	205	232	264	286	306	170	200	Kg

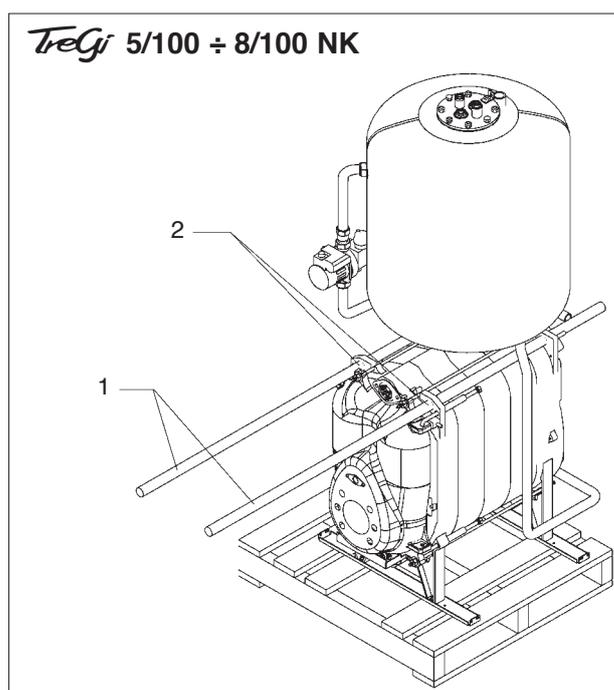
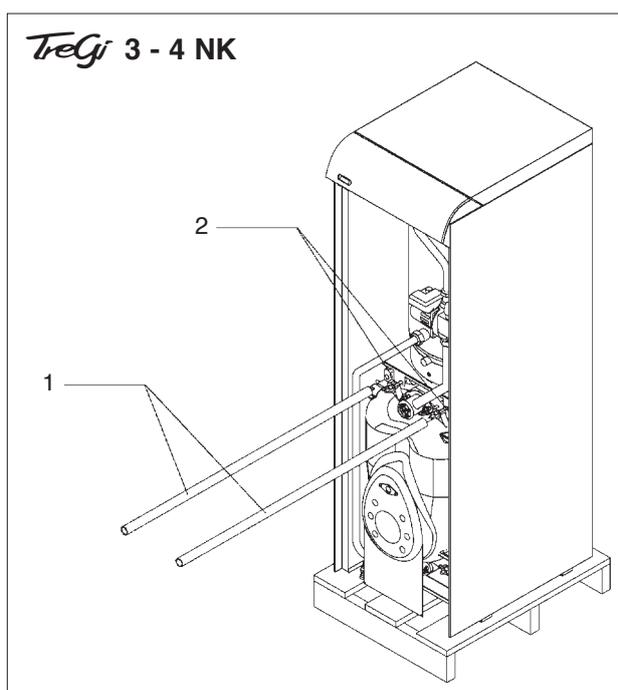
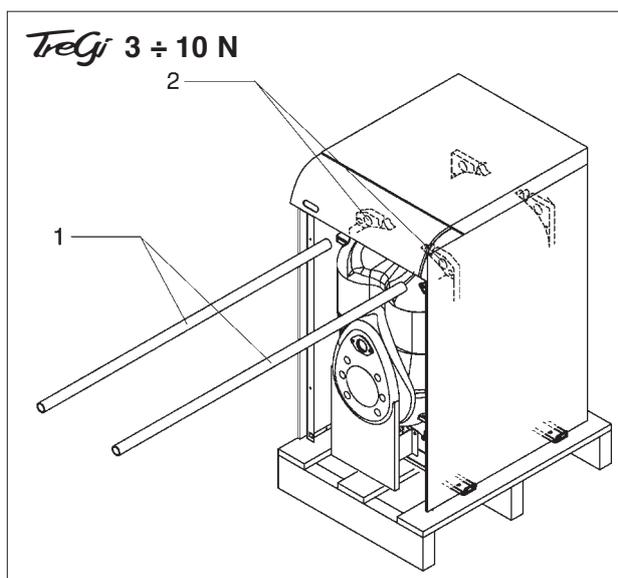
HANDLING

Once you have removed the outer packaging, proceed as follows to unpack and handle the boiler

- Remove the screws fixing the boiler to the pallet.
- Remove the front panel
- Lift the boiler by inserting two 3/4" diameter pipes (1) through the lifting holes (2) in the boiler body.

 Wear suitable personal protective equipment and use suitable safety devices.

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



PLACE OF INSTALLATION

TreGj N - NK boilers from size **5** to **10** must be installed in dedicated boiler rooms.

The boiler room must have adequately sized vents, and must comply with applicable laws and standards.

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

⚠ If the specific weight of the gas supply to the burner is greater than the specific weight of air, install all electrical parts at least 500 mm above floor level.

⊘ Do not install the boiler outdoors. It is not designed to work outdoors and is not fitted with the necessary automatic anti-frost systems to do so.

INSTALLATION IN OLDER SYSTEMS AND SYSTEMS REQUIRING MODERNISATION

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

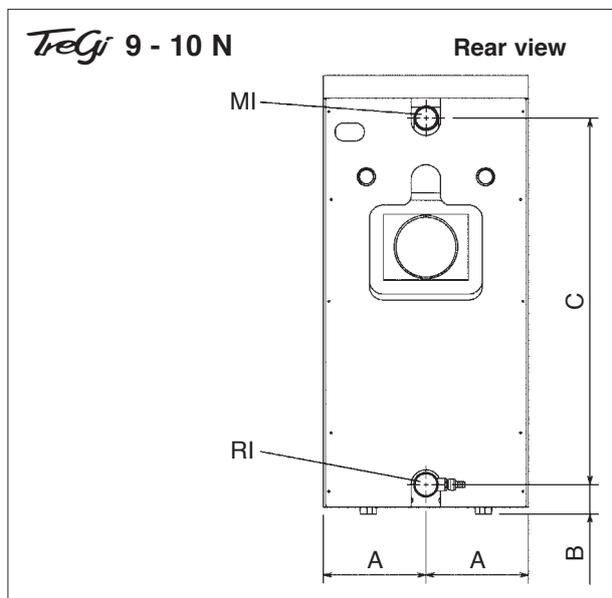
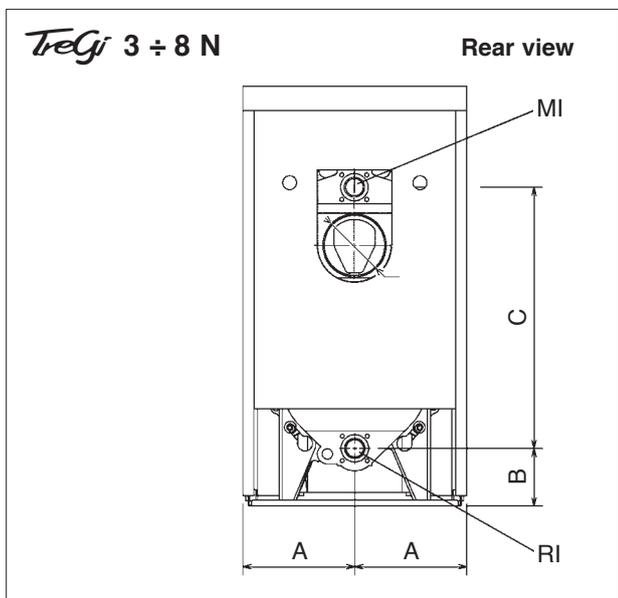
- Make sure that the stack is able to withstand the temperature of the combustion gases and that it has been designed and made in compliance with applicable standards. The stack must also be as straight as possible, sealed, insulated and not blocked or choked.
- Make sure that the electrical system has been installed by a qualified electrician in compliance with applicable standards.
- Make sure that the oil feed line and any oil storage

cylinder are made and installed in compliance with applicable standards.

- Make sure that the expansion vessels are big enough to contain the volume generated by thermal expansion.
- Make sure that flow rate, head and direction of flow of the pumps are suitable and correct.
- Make sure that the circuit has been flushed out to remove all sludge and lime scale, and has been vented and seal tested.
- Make sure that a suitable water treatment system is installed if the quality of the supply/recirculation water so demands. (See page 28.)

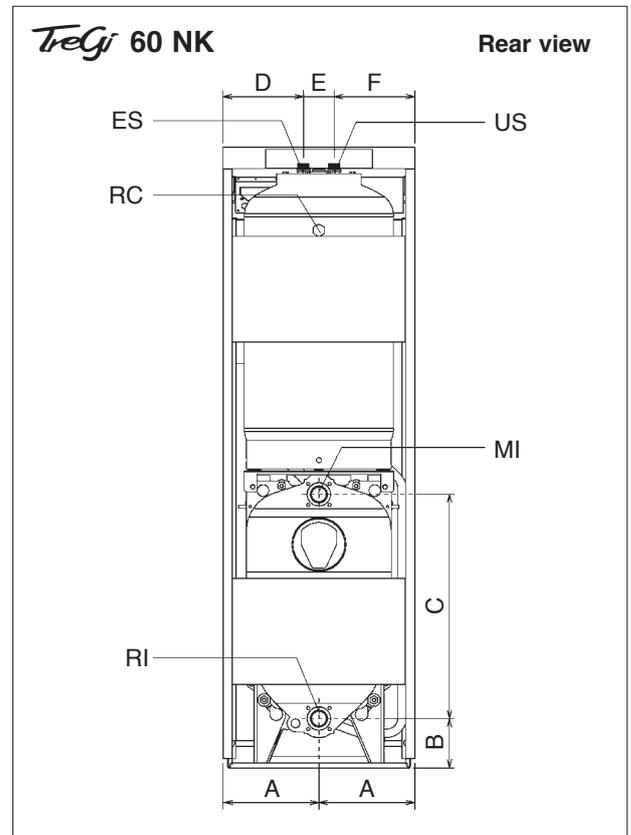
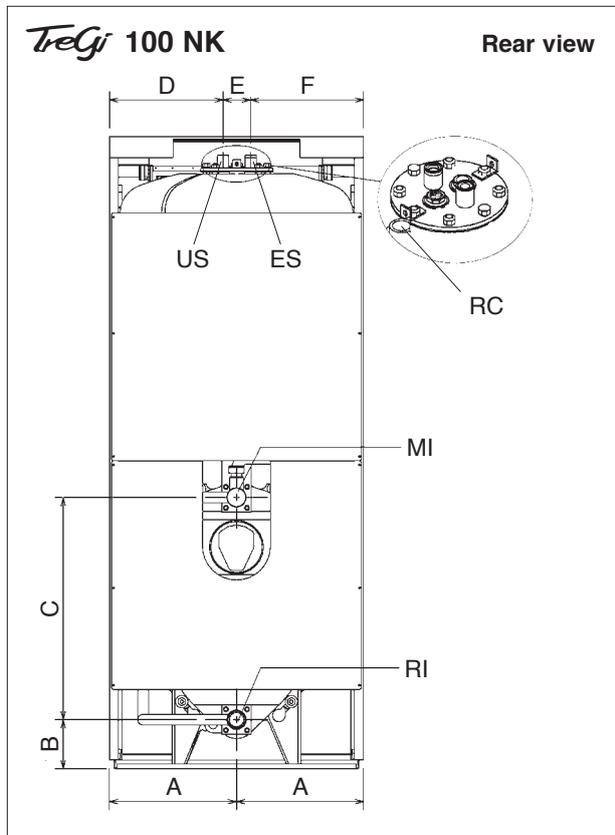
WATER CONNECTIONS

TreGj N boilers are designed and made for use in central heating installations, but can also be used for domestic hot water production if connected to suitable systems. Water fittings are as specified in the following table:



DESCRIPTION	MODEL <i>TreGj</i> N								
	3	4	5	6	7	8	9	10	
A	225								mm
B	117				65				mm
C	530				815				mm
MI (CH flow)	1"1/4 F				1"1/2 F				Ø
RI (CH return)	1"1/4 F				1"1/2 F				Ø

TreGj NK boilers are designed and made for use in central heating installations and for domestic hot water production. Water fittings are as specified below:

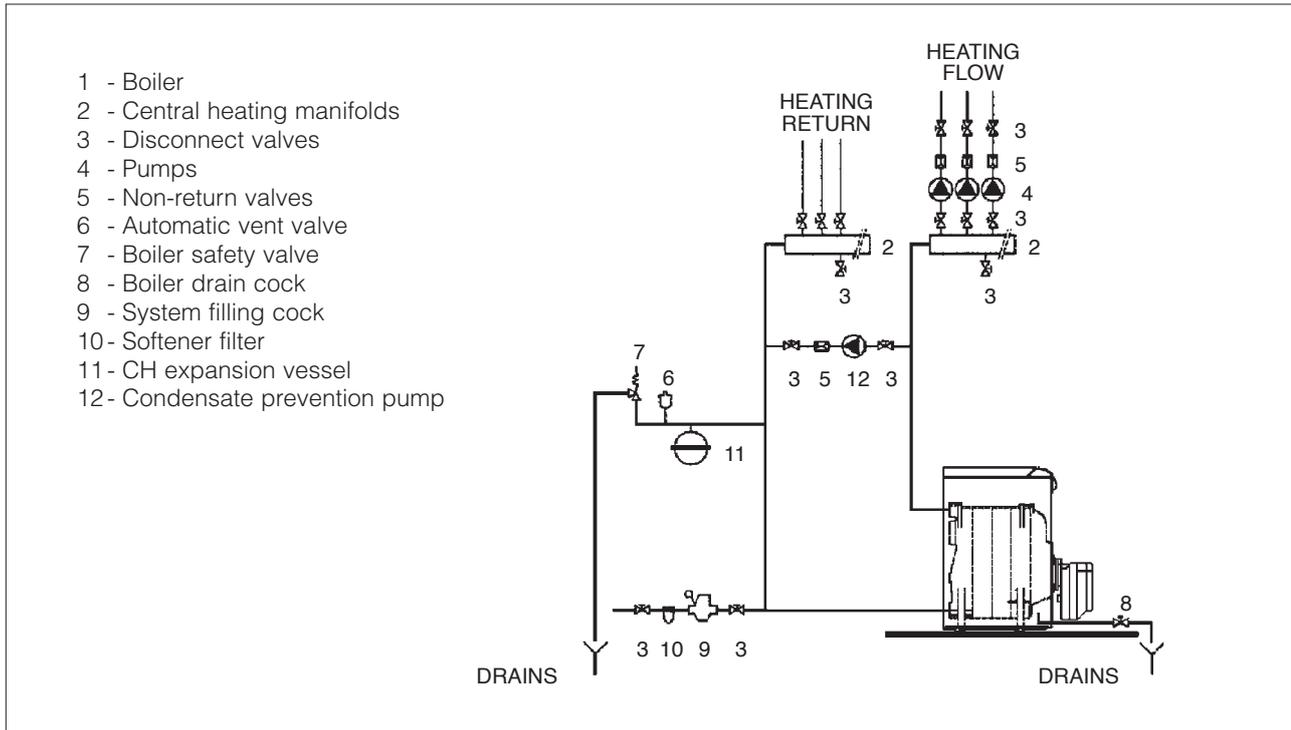


DESCRIPTION	MODEL <i>TreGj</i> NK								
	3/100	4/100	5/100	6/100	7/100	8/100	3/60	4/60	
A	300						225		mm
B	117								mm
C	530								mm
D	267						189		mm
E	65								mm
F	267						189		mm
MI (CH flow)	1"1/4 F								Ø
RI (CH return)	1"1/4 F								Ø
US (DHW outlet)	3/4" M								Ø
RC (DHW recirculation)	3/4" F								Ø
ES (domestic cold water inlet)	3/4" M								Ø

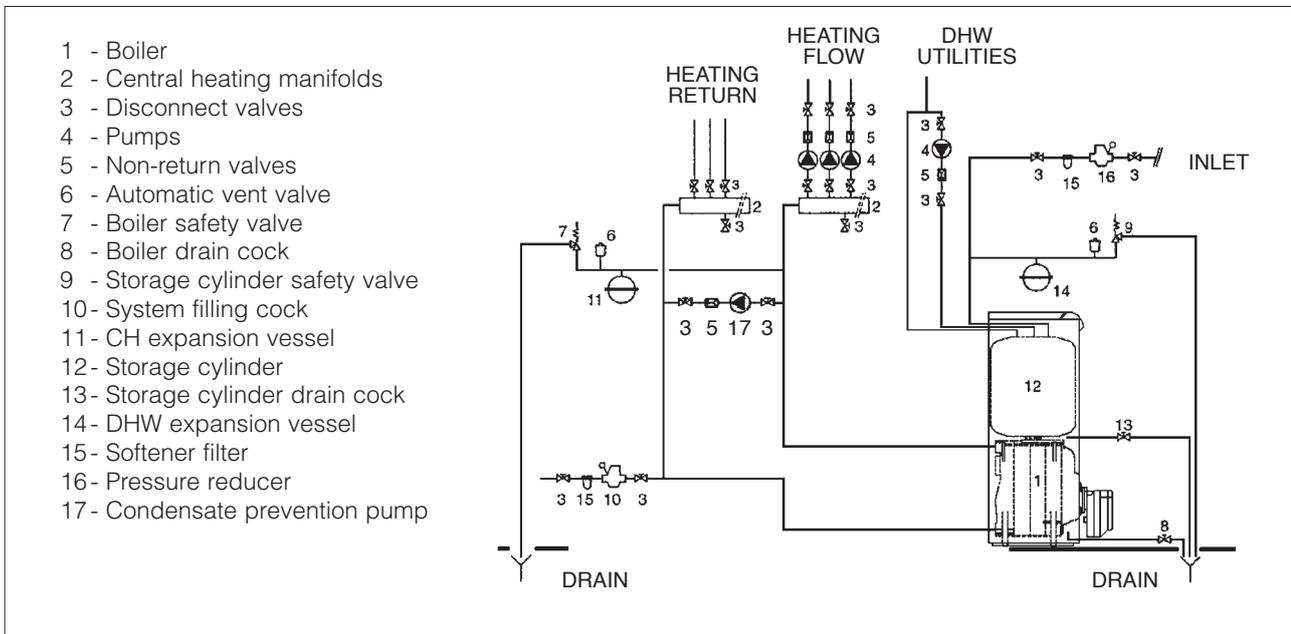
IMPORTANT!

To avoid damage to the boiler, while the burner is functioning there must be a minimum water flow rate of about 25 % maximum flow rate with $\Delta T = 10^{\circ}\text{C}$. Use a suitable recirculation pump if necessary. Water return temperature in continuous service must be $>40^{\circ}\text{C}$.

Schematic diagram - central heating - *TreGj N*



Schematic diagram – central heating and domestic hot water production - *TreGj NK*



⚠ The domestic hot water circuit must include an expansion vessel of adequate capacity as well as a safety valve (max 6 bar), connected directly to the storage cylinder.

 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 compliance with all applicable legislation.

 Circuits filled with anti-freeze must be fitted with water disconnectors.

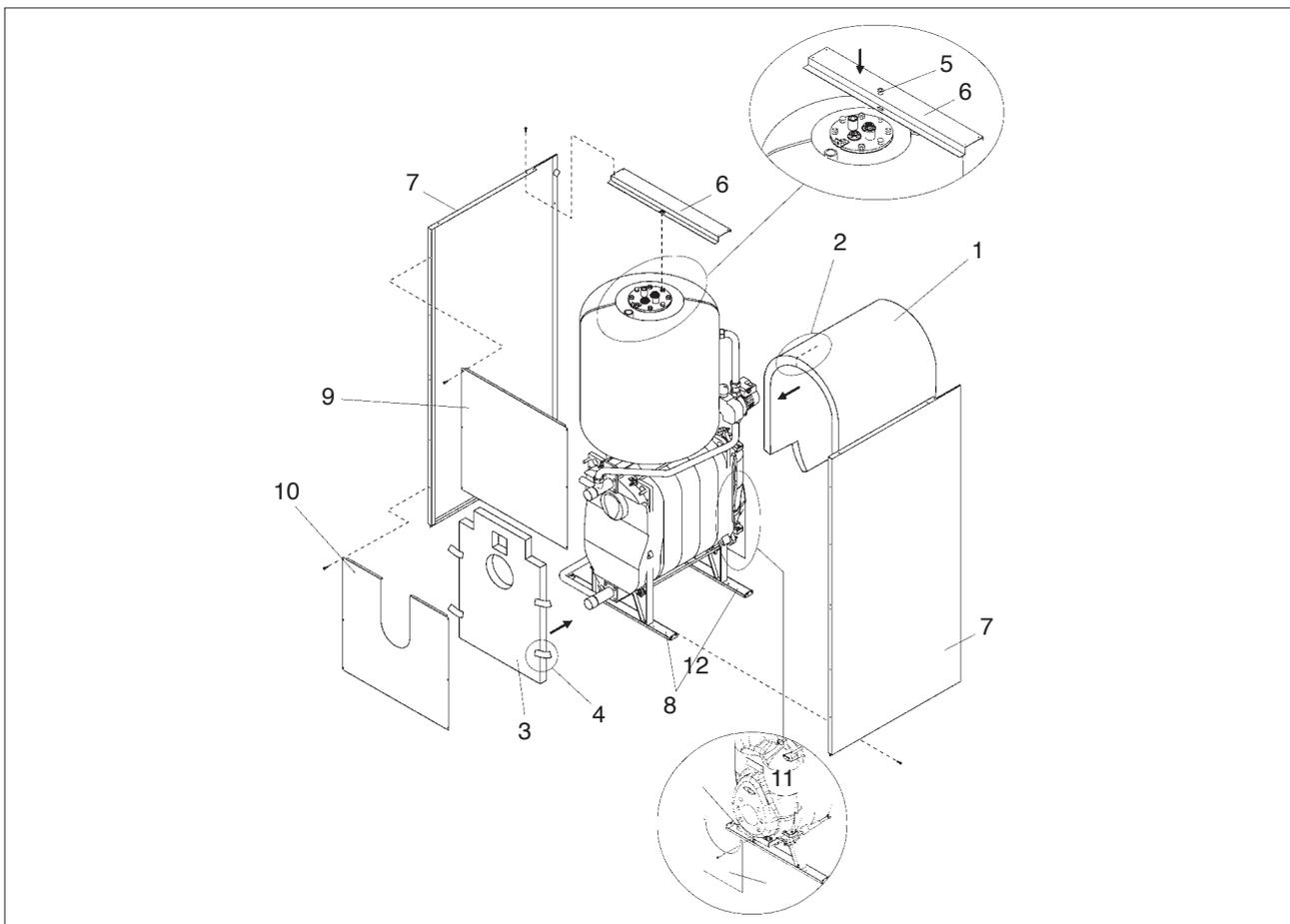
 If needed, water supplies and recovery circuits must be conditioned by suitable treatment systems. See the table for applicable reference values.

REFERENCE VALUES	
PH	6-8
Electrical conductivity	below 200 $\mu\text{s}/\text{cm}$ (25°C)
Chlorine ions	below 50 ppm
Sulphuric acid ions	below 50 ppm
Total iron	below 0,3 ppm
Alkalinity M	below 50 ppm
Total hardness	less than 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	below 30 ppm

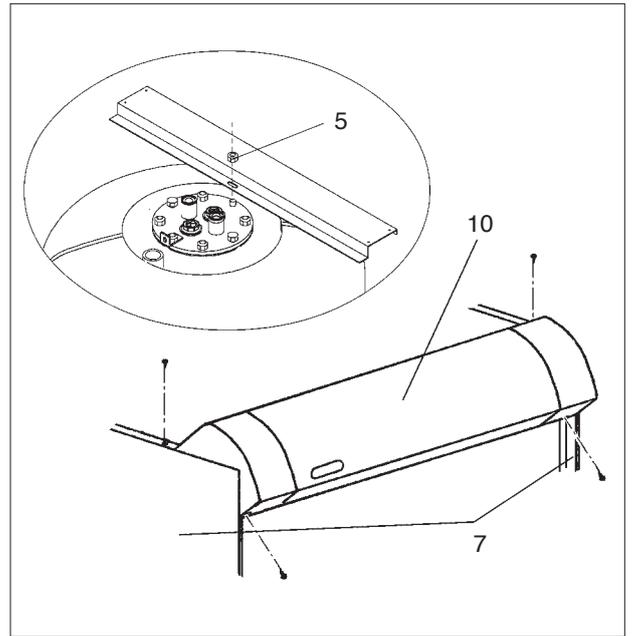
FITTING THE CASING PANELS

MODELS *TreGi* 5/100 ÷ 8/100 NK

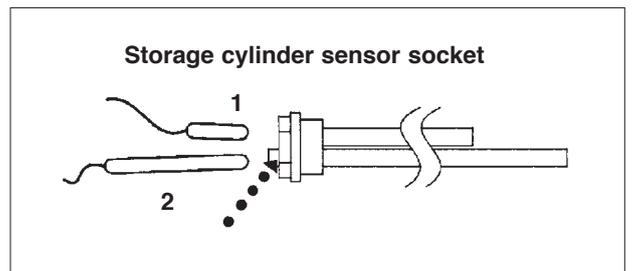
- Remove the boiler body casing panels and insulation from the cardboard packing.
- Fit the insulation (1) around the boiler body, taking care to position the slit (2) at the rear.
- Fit the insulation (3) to the rear of the boiler body, and fix it in place with the adhesive aluminium foil tape (4) supplied with the casing.
- Remove the top nut (5) from the storage cylinder flange and fit the casing support bracket (6).
- Replace the nut (5) on the flange but do not tighten yet.
- Fix the side panels (7) to the bracket (6) and base (8) using the screws provided.
- Fit the rear panels (9) and (10) and fix them in place with the screws provided.
- Fit the front panel (11) to the bracket (12) using one of the burnished screws provided.



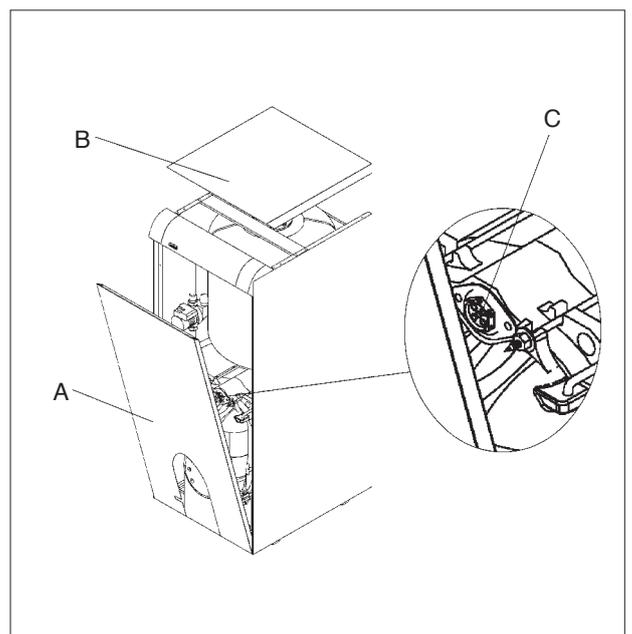
- Fit the control panel (10) to the side panels (7) using four of the burnished self-tapping screws provided
- Make sure that the side panels and control panel line up correctly, then tighten the nut (5) on the storage cylinder flange



- Push the domestic hot water temperature sensor (1) into the shorter sensor holder and the TB storage cylinder thermostat (2) into the longer sensor holder. Take care to 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



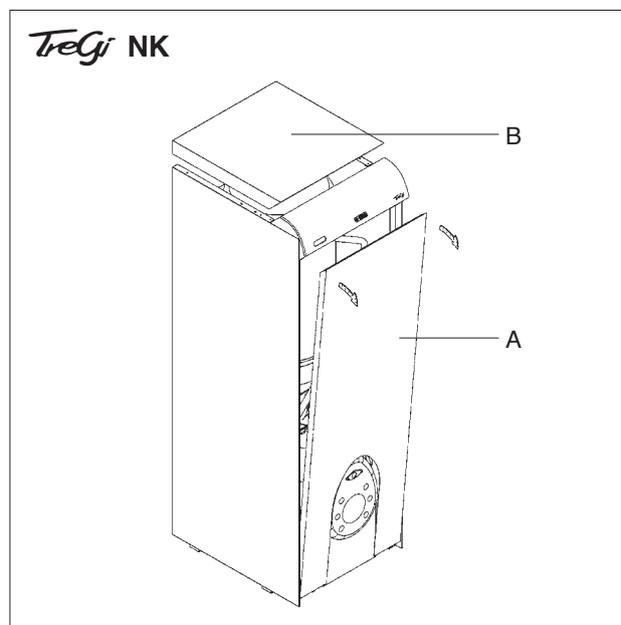
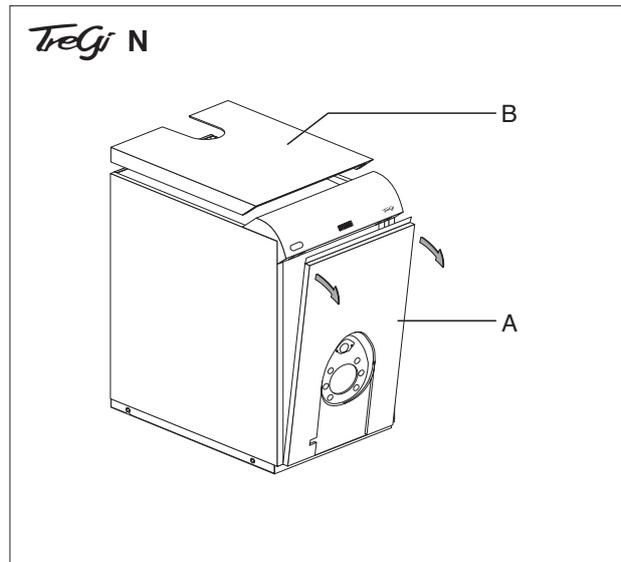
- Push the bulbs of the temperature gauge and TR thermostat all the way into the sockets (C) on the boiler
- Make the necessary electrical connections and then fit the front and top panels (A) and (B).



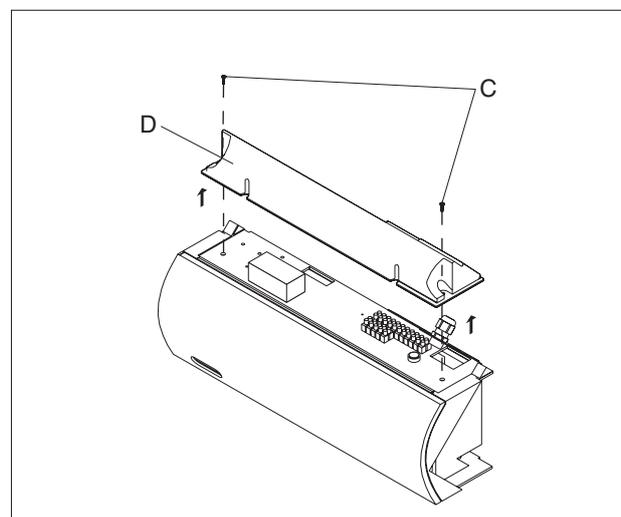
RIELLO TreGij boilers must be connected to the terminal strip inside the control panel (see the diagram on pages 11-12). This must be done by the heating engineer or a qualified electrician.

Proceed as follows to access the control panel terminal strip:

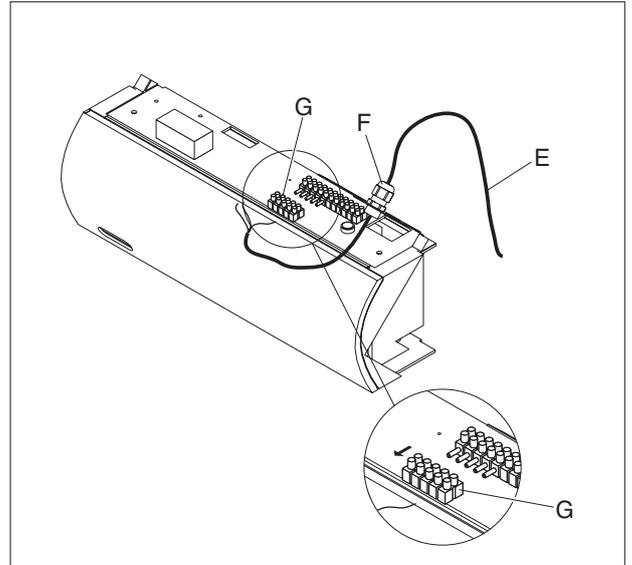
- Remove the front and top panels (A) and (B).



- Unscrew the screws (C) and remove the cover (D).



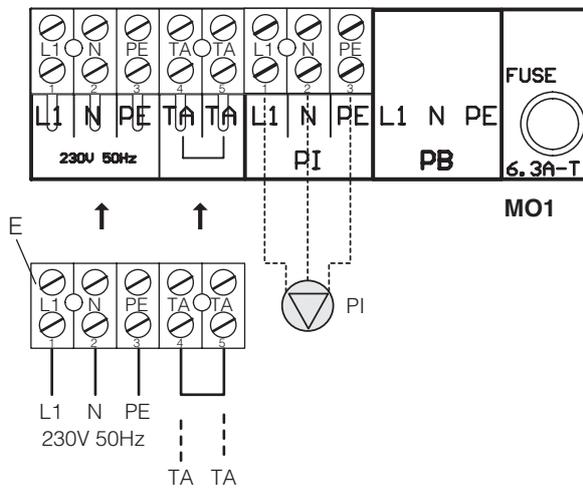
- Route the power cable (E) through the cable clamp (F) and fix it in place
- Access the terminal strip (G).



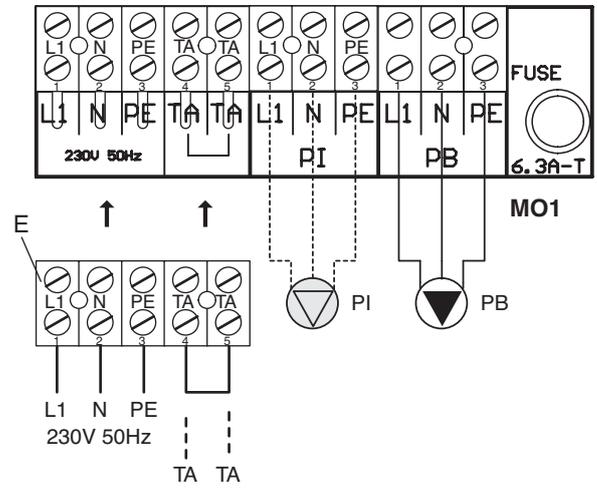
- Make the electrical connections as shown in the following diagrams

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

TreGir N



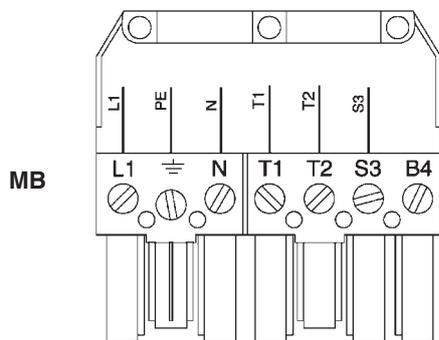
TreGir NK



- 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 E in order to connect up the room thermostat

Electrical connections to be made by the heating engineer - burner

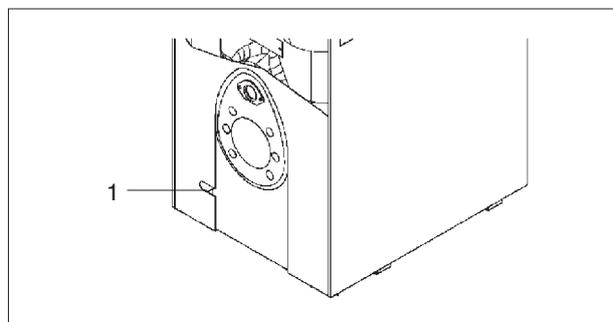


MB: Connect up the 7 pin connector supplied with the burner.

NOTE

Route the burner connection cable out of the casing through the slot (1).

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



Automatic shut-off device (DAI)

(not supplied; only where required).

- Connect up the automatic shut-off device (DAI) as shown in the wiring diagram on page 11. This ensure that fuel only passes when the burner is functioning.

! The following instructions are mandatory:

- 1 -Use a multi-pole magnetic thermal trip switch and disconnector conforming to IEC-EN standards (with a contact gap of at least 3 mm).
- 2 -Respect the L (Phase) - N (Neutral) polarity. Keep the ground wire about 2 cm longer than the power wires.
- 3 -Use cables with a cross section of 1.5 mm² or more, complete with end terminals.
- 4 -Always refer to the electrical wiring diagrams in this manual when performing any electrical work.
- 5 -Make sure the appliance is connected to an effective ground.

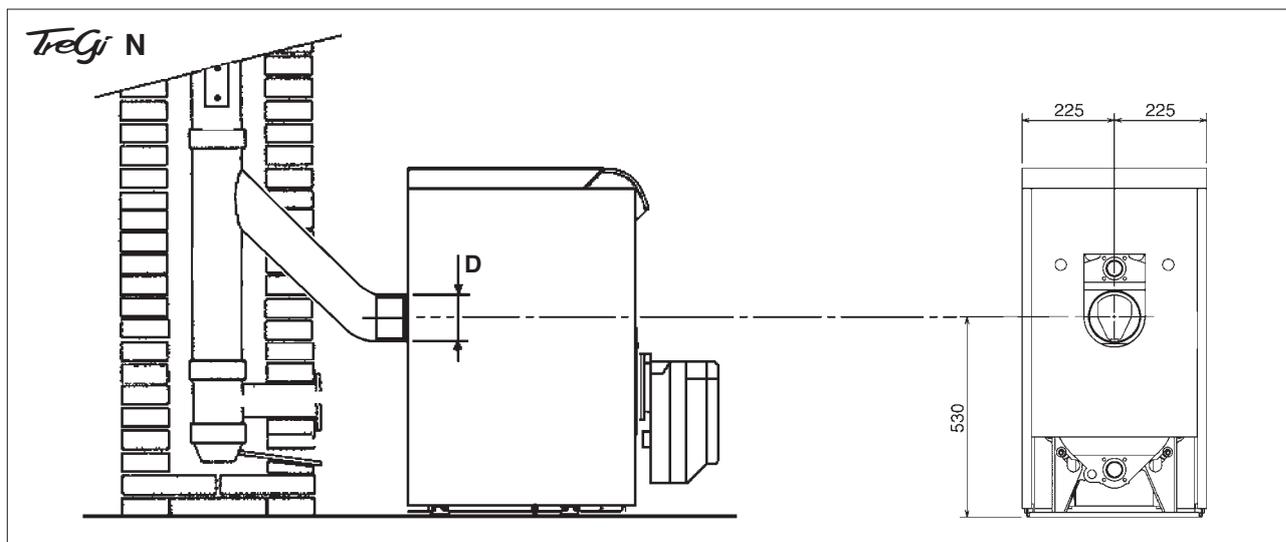
⊖ It is strictly forbidden to use fuel and/or water pipes to ground the appliance.

⊖ The power supply and room thermostat cables must not run near hot surfaces (outlet pipes).

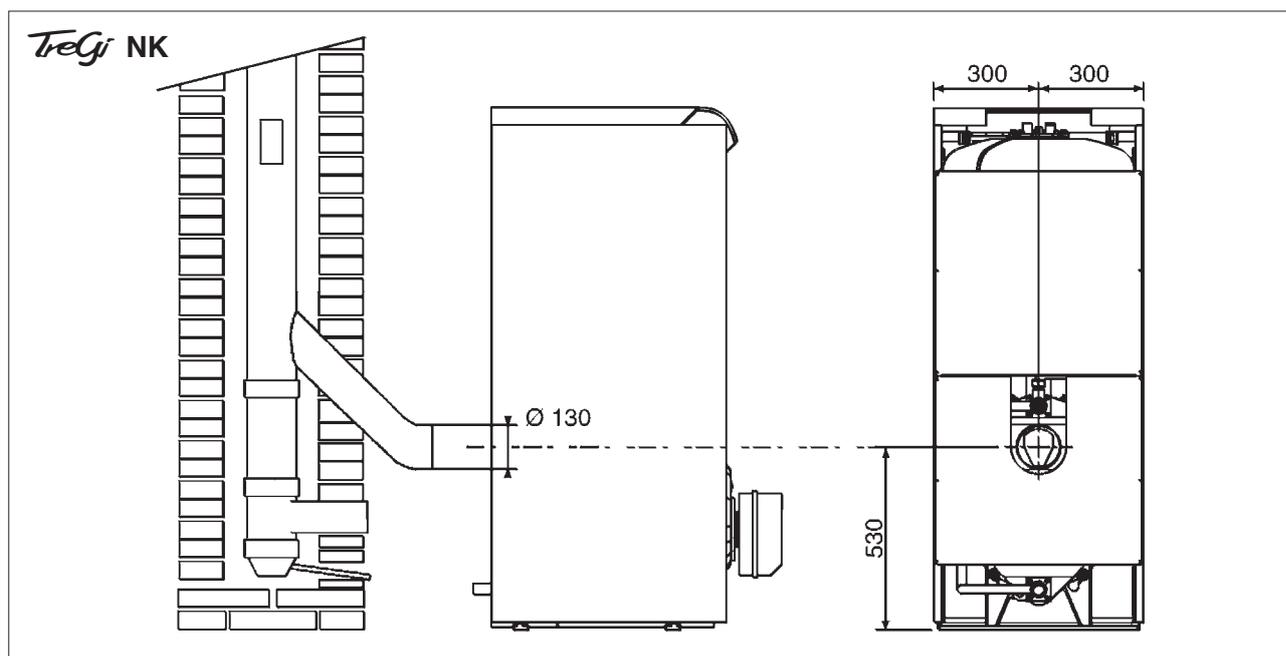
The manufacturer cannot accept any liability for damage caused by failure to earth the appliance or comply with the wiring diagrams.

COMBUSTION GAS EXHAUST

The flue gas exhaust and its connection to the stack must be made in compliance with applicable laws and standards, using heat resistant, condensate resistant and stress resistant rigid pipe and sealed joints.



DESCRIPTION	MODEL <i>TreGj N</i>								mm
	3	4	5	6	7	8	9	10	
Ø - D	130	130	130	130	130	130	180	180	



⚠ The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue gas exhaust.

⚠ Inadequate or badly dimensioned stacks and exhausts can increase combustion noise, cause condensation problems and affect combustion parameters

⚠ Uninsulated flue pipes are potentially dangerous and can cause burns.

⚠ Joints must be sealed using materials capable of withstanding temperatures of at least 250°C (e.g. filler, mastic or silicone based sealant).

FILLING AND EMPTYING THE SYSTEM

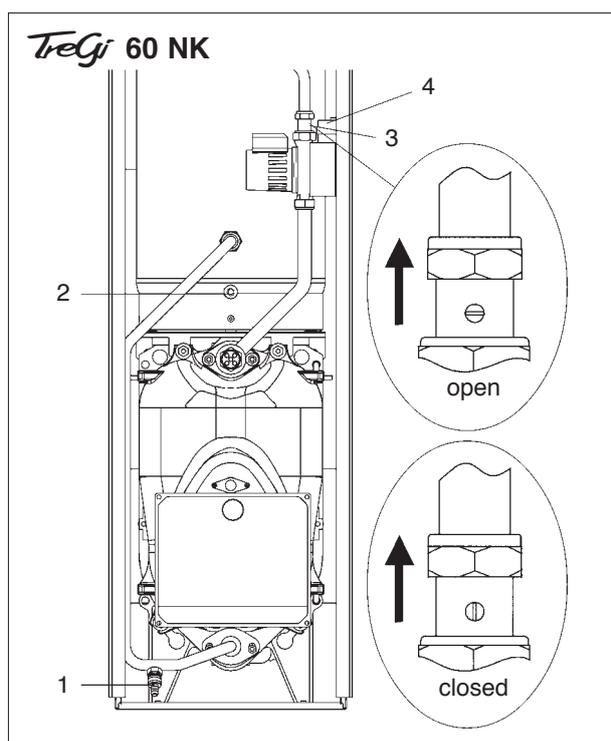
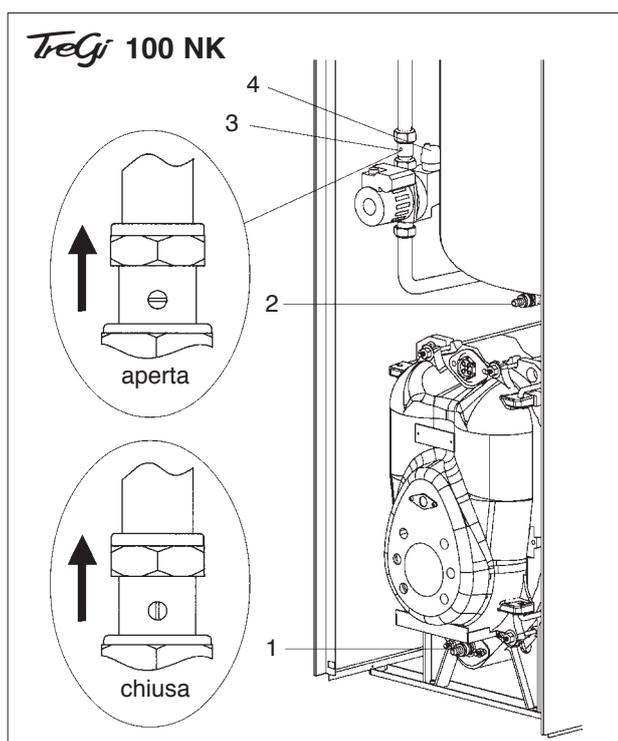
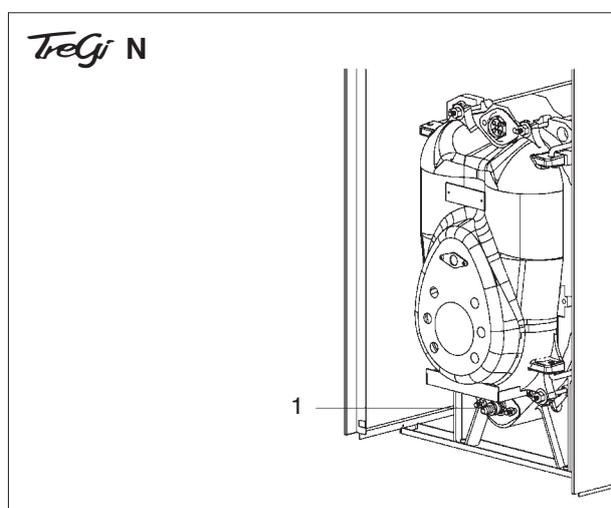
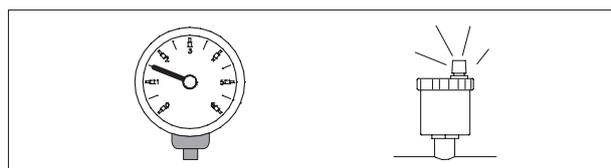
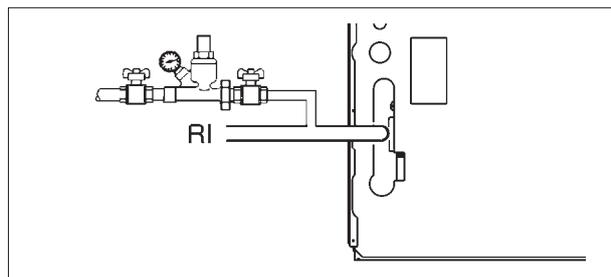
RIELLO *TreGgi* boilers must be fitted with a central heating circuit filling system connected to the boiler return line.

FILLING THE SYSTEM

- Make sure that the central heating drain cock (1) and storage cylinder drain cock (2) (**NK** models) are closed before you start filling the system.
- Open the non-return valve (3) to facilitate filling (the slot in the screw must be perpendicular to the direction of flow).
- Open the shut-off cocks for the water circuit.
- Slowly fill the system to a cold pressure of **1.5 bar**.
- Close all previously opened valves including the non-return valve (3) (**NK** models) (the slot in the screw must be parallel to the direction of flow).

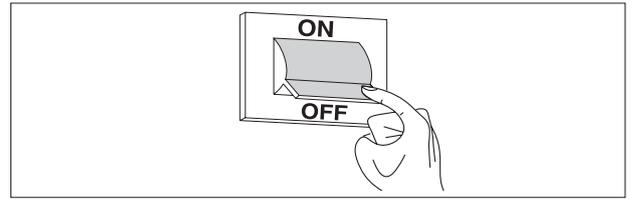
NOTE

The system is de-aerated automatically through the automatic vent valve (4) (**NK** models).

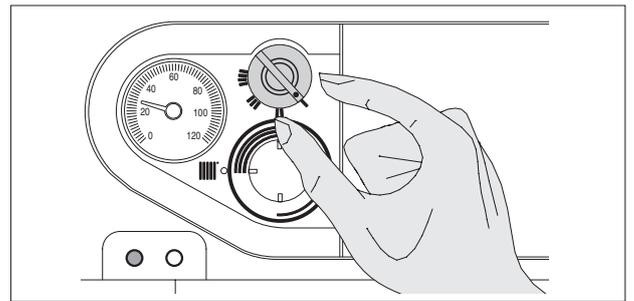


EMPTYING THE SYSTEM

Switch the electricity supply OFF at the system's main switch and turn the control panel function selector to OFF (I) before starting to empty the boiler or storage cylinder.



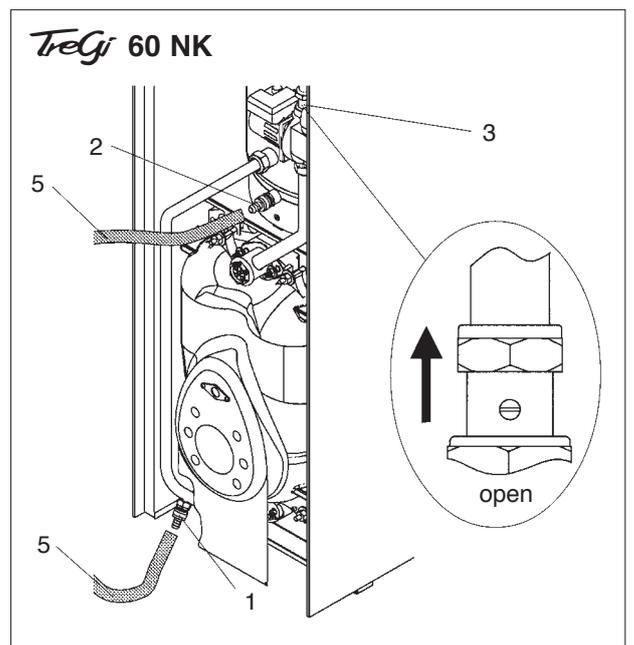
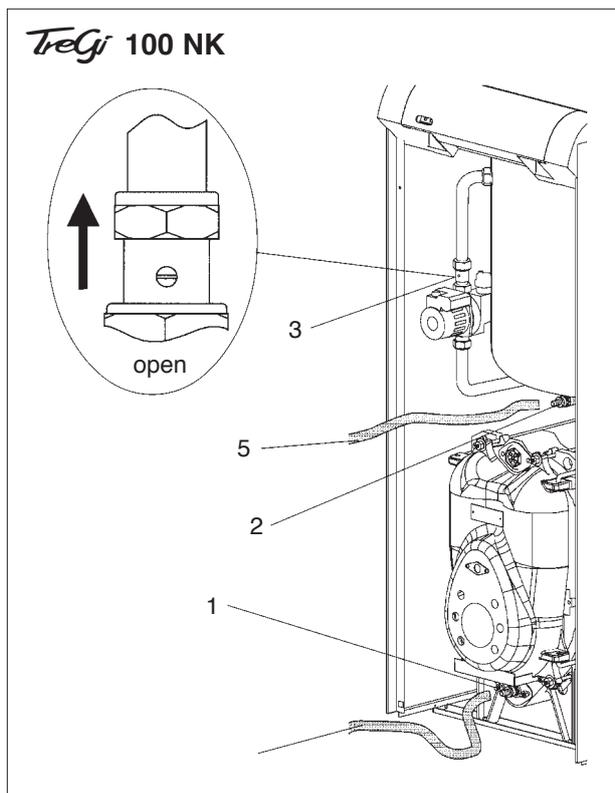
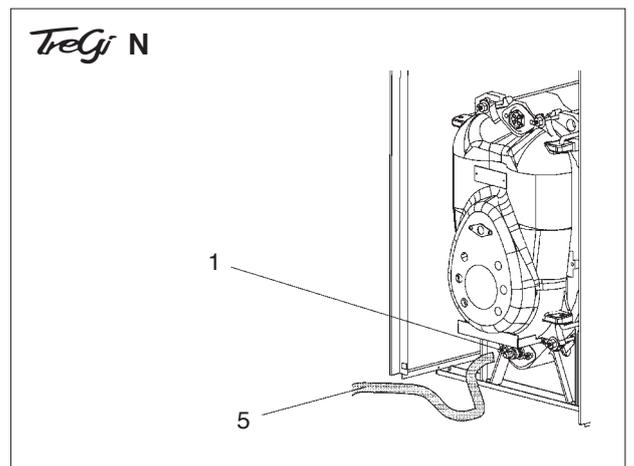
- Close the shut-off cocks for the water circuit
- Connect plastic hoses (5) to the hose unions on the boiler drain cock (1) and/or storage cylinder drain cock (2) (NK models).



NOTE

Open the non-return valve (3) to facilitate emptying (the slot in the screw must be perpendicular to the direction of flow).

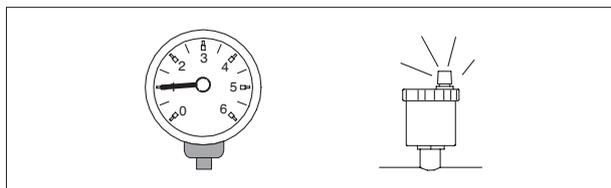
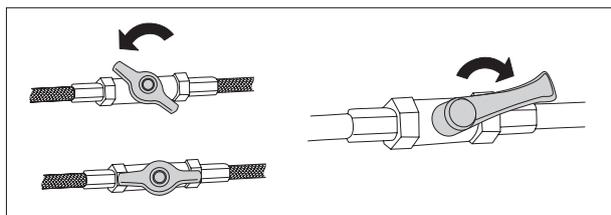
Open a hot water tap to facilitate emptying.



PREPARING FOR FIRST START-UP

It is essential to perform the following checks before starting up or testing the functioning of **RIELLO TreGgi** boiler. In particular:

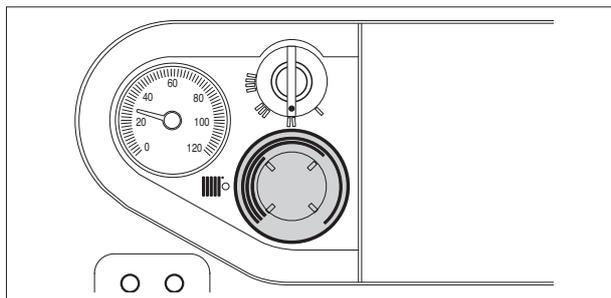
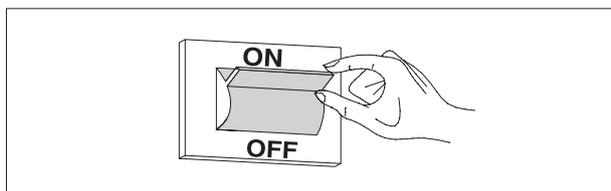
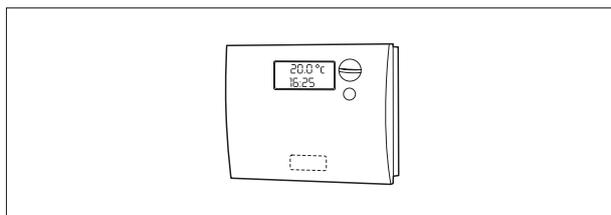
- Check that the fuel shut-off cock and heating system shut-off cock are open
- Check that the water pressure gauge shows a pressure **over 1 bar** with the system cold. Check also that the water circuit is properly de-aerated
- Check that the expansion vessel is correctly pre-charged
- Check that the electrical connections have been made correctly
- Check that the flue gas exhaust and stack have been correctly installed and connected.



INITIAL START-UP

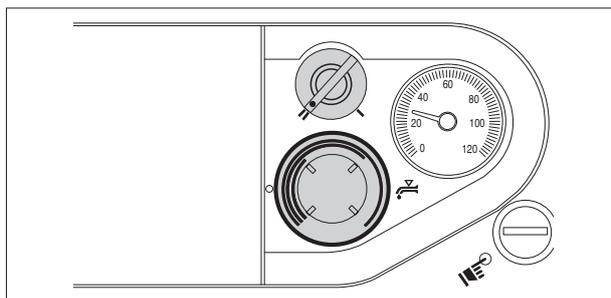
Once you have completed all the preparatory steps, proceed as follows to start up the boiler for the first time:

- Set the room thermostat to the required temperature (~20 °C) or, if the system has a timer, make sure that this is switched "On" and adjusted to the required temperature (~20 °C)
- Turn the system's main power switch ON
- Adjust the boiler thermostat to about the middle of the section with three lines.

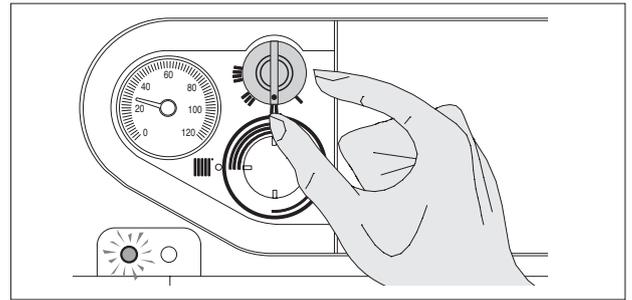


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- Adjust the boiler and storage cylinder thermostats to about the middle of the section with three lines
- Turn the Summer/Winter selector to (II) Winter.

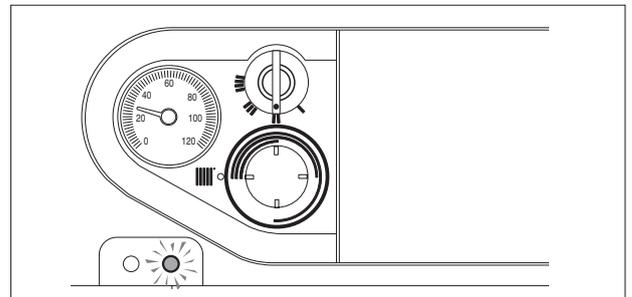


- Turn the function selector to ON (II) and make sure that the green power indicator lights.



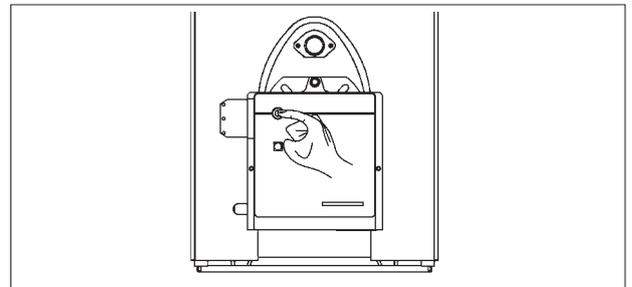
RIELLO TreGgi boiler will now start up and the burner will remain lit until the set temperature is reached

If any ignition faults or malfunctions occur, the burner performs a 'LOCKOUT SHUTDOWN'. 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.

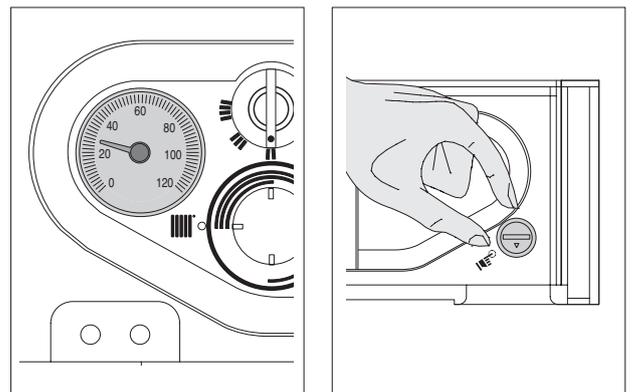
To reset the burner, press the red button light on the burner. The complete ignition cycle will be repeated up to the ignition of the flame.



- ⚠ 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:

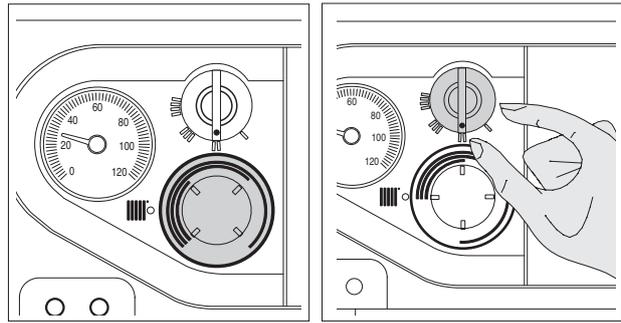
- Wait until boiler temperature falls below 80°C .
- Remove the safety thermostat cover.
- Press the manual reset button.
- The complete ignition cycle will be repeated up to the ignition of the flame.



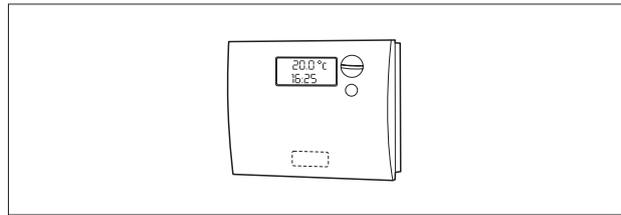
CHECKS DURING AND AFTER INITIAL START-UP

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

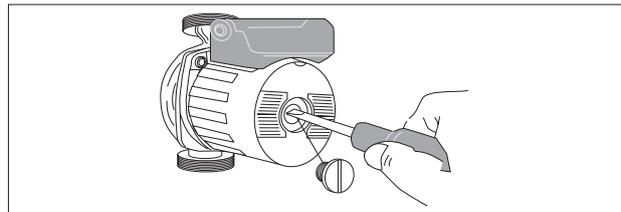
- The boiler thermostat setting is changed
- The function selector is moved from position (II) to (I) and back



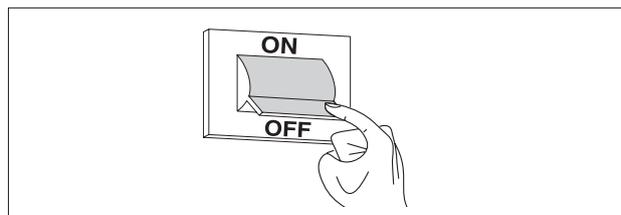
- The room thermostat or timer setting is changed.



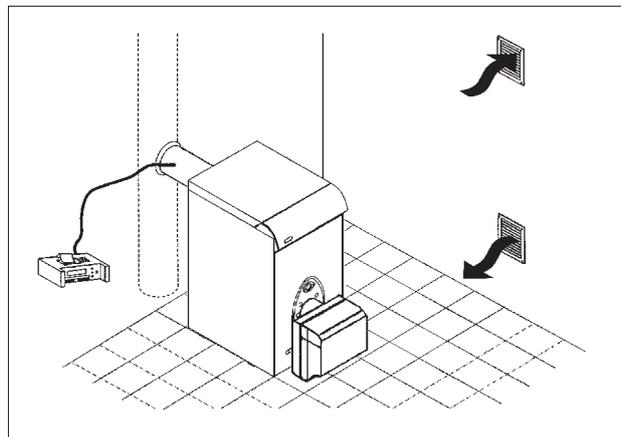
Make sure that the pump is free and rotates in the right direction.



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



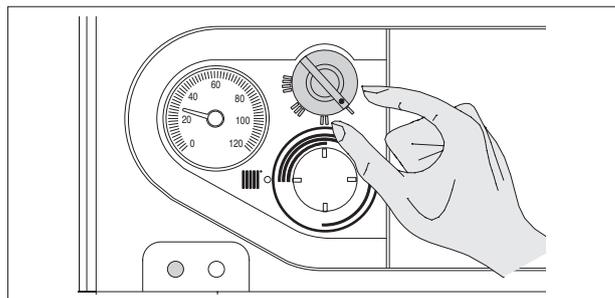
Provided all the above conditions are satisfied, start the boiler up again, then analyse the combustion fumes.



TEMPORARY SHUTDOWN

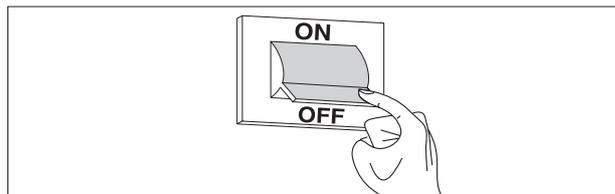
If you are going to be away for a short period of time like a weekend or a short holiday, etc., and outdoor temperatures are above ZERO, proceed as follows.

- Turn the function selector to OFF (I) and make sure that the green power indicator goes out



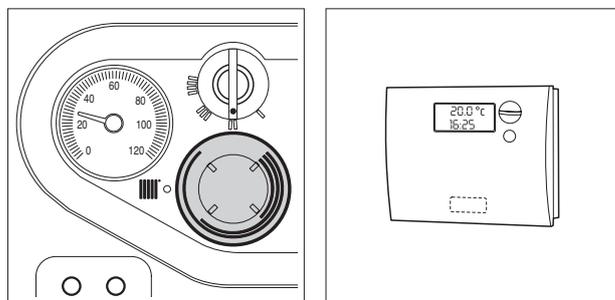
- Turn the system's main power switch OFF.

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



Then proceed as follows:

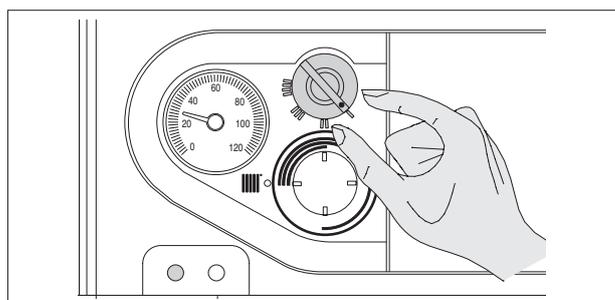
- Adjust the boiler thermostat to about the middle of the section with one line
- Adjust the room thermostat to about 10°C.



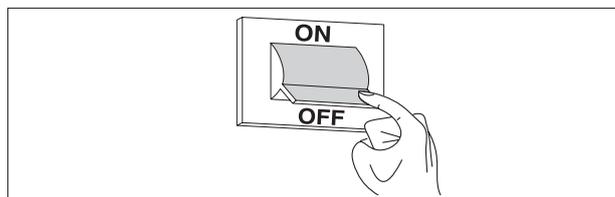
PREPARING FOR EXTENDED PERIODS OF DISUSE

If the boiler is not going to be used for an extended period of time, perform the following operations:

- Turn the function selector to OFF (I) and make sure that the green power indicator goes out

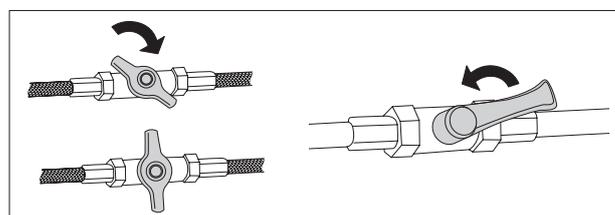


- Turn the system's main power switch OFF



- Close the fuel cock and heating circuit water cock

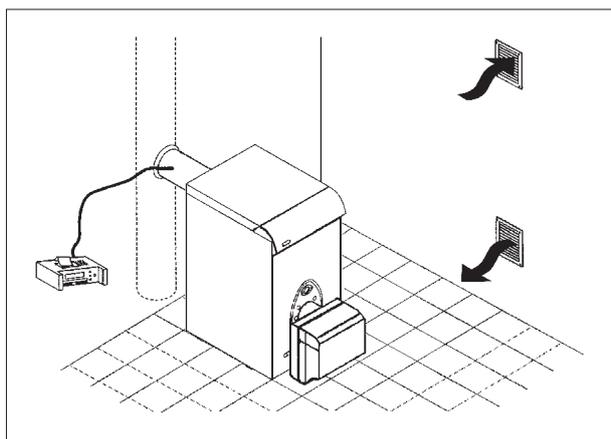
⚠ Drain the central heating circuit if there is any risk of freezing.



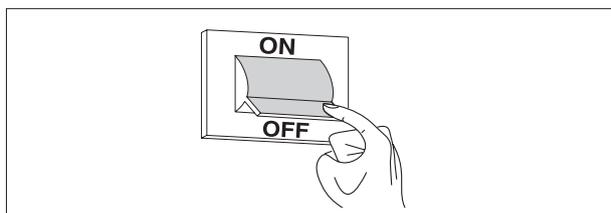
Regular maintenance is a legal requirement. In Italy it is required by Presidential Decree 412 of the 26th August 1993. It is also essential for the safety, efficiency and durability of the boiler. Proper maintenance keeps consumption and emissions down, and ensures that the boiler continues to operate reliably over time.

Have your boiler serviced either by **RIELLO**'s Technical Assistance Service or by a qualified heating engineer.

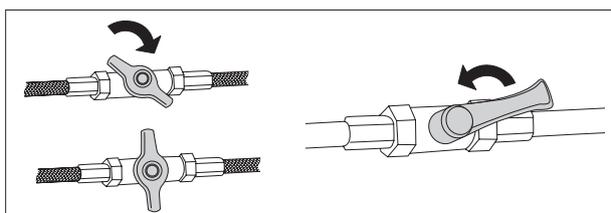
Analyse the combustion fumes before commencing any maintenance. The results of fume analysis can give a clear idea of what servicing or repairs are needed.



- Turn the system's main power switch OFF



- Close all the gas cocks.



CLEANING THE BOILER

Clean the boiler and remove any carbon deposits from the surfaces of the heat exchanger **at least once a year**. This not only extends the boiler's working life, but also keeps it efficient in terms of heat output and consumption.

Perform the following operations before beginning any cleaning:

- Switch the electricity supply OFF at the system's main switch and turn the control panel function selector to OFF (I)
- Close the fuel shut-off cocks.

External

Clean the outside of the boiler with a soft cloth damped in soapy water. To remove stubborn marks, use a cloth damped in a 50% mix of water and denatured alcohol or a suitable cleaning product. Carefully dry the boiler after cleaning.



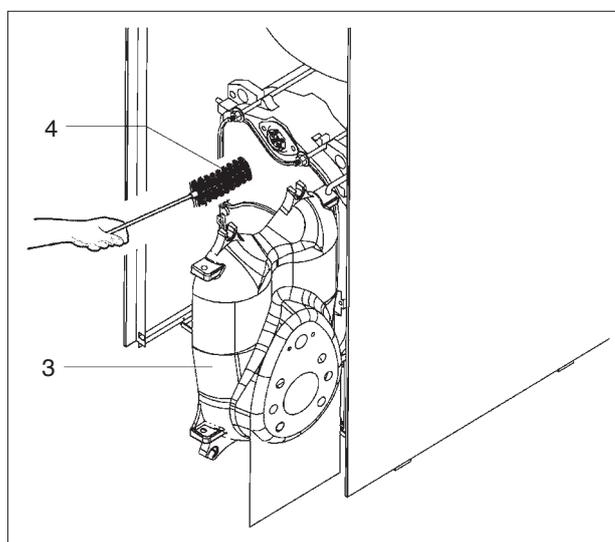
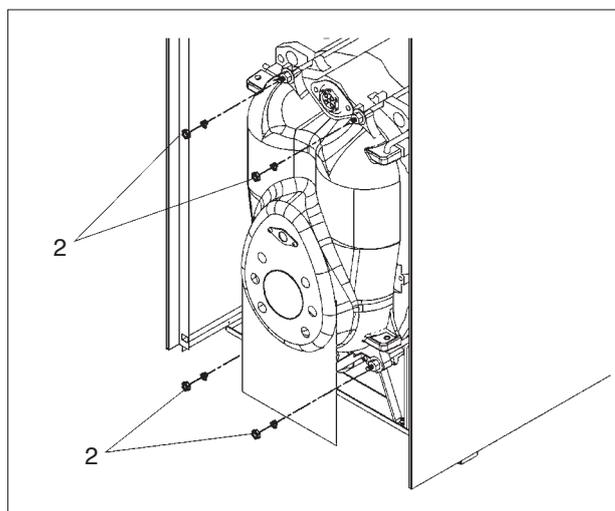
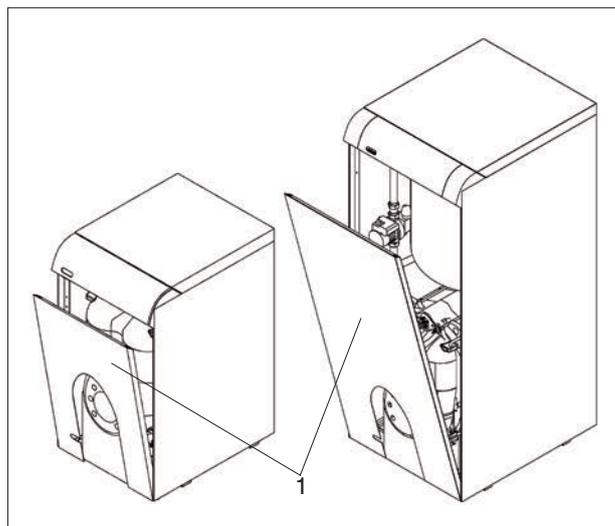
Do not use abrasive products, petrol or triethylene.

Internal

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

- Remove the burner, following the instructions provided in the burner's own instruction manual
- Remove the front panel (1)
- Remove the four door fixing nuts (2)
- Open the door (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.



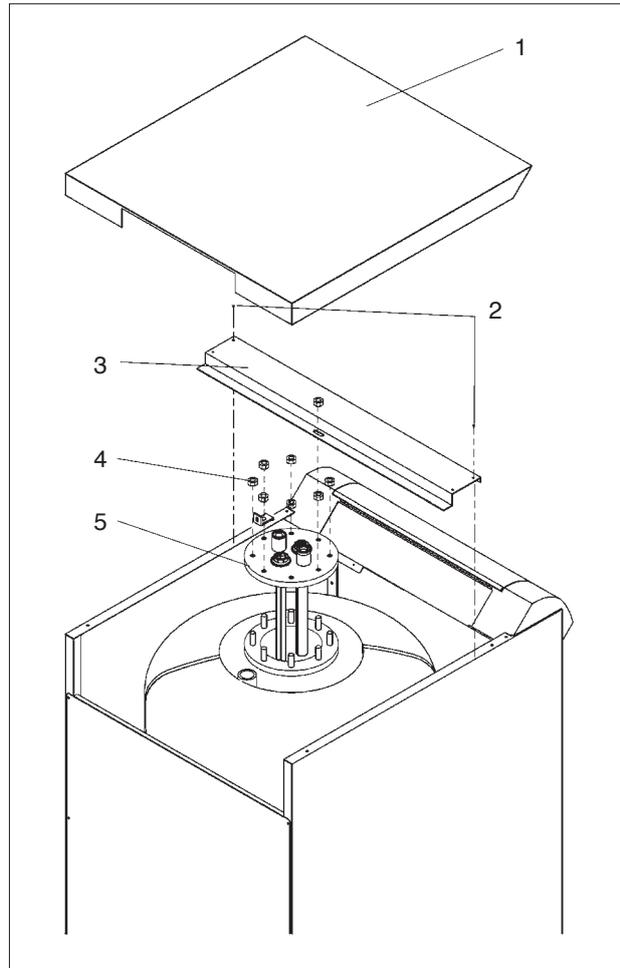
CLEANING THE STORAGE CYLINDER

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The storage cylinder should be serviced once a year to check the condition of the internal parts and the magnesium anode, as well as for cleaning purposes.

Perform the following operations before beginning any cleaning:

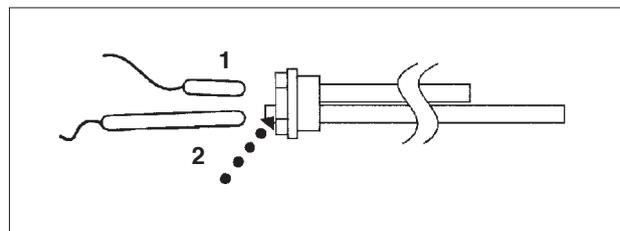
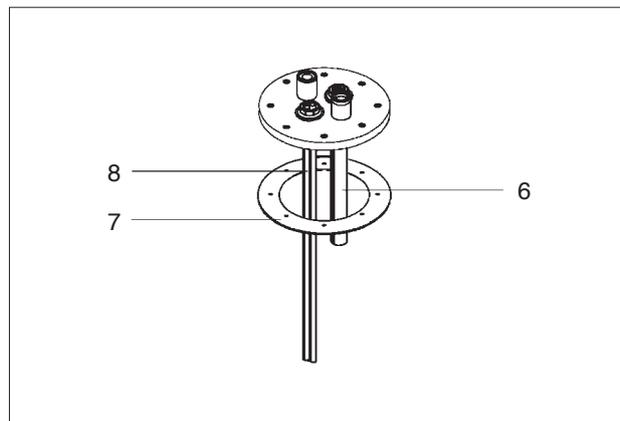
- Remove the top panel (1)
- Close the shut-off cocks for the domestic hot water circuit
- Connect a plastic hose to the hose union and empty the storage cylinder through the storage cylinder drain cock
- Pull the sensors out of their sockets
- Remove the screws (2) fixing the bracket (3) to the casing
- Remove the screws (4) fixing the flange (5) in place, and remove the flange
- Clean inside the domestic hot water cylinder and remove any residues through the access hole



- Check the magnesium anode (6) for wear and replace it if necessary
- Check the condition of the seal (7)
- Check the condition of the sensor holders (8).

Replace all removed components in the opposite order.

! Push the domestic hot water temperature sensor (1) into the shorter sensor holder and the TB storage cylinder thermostat (2) into the longer sensor holder. Take care to 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.

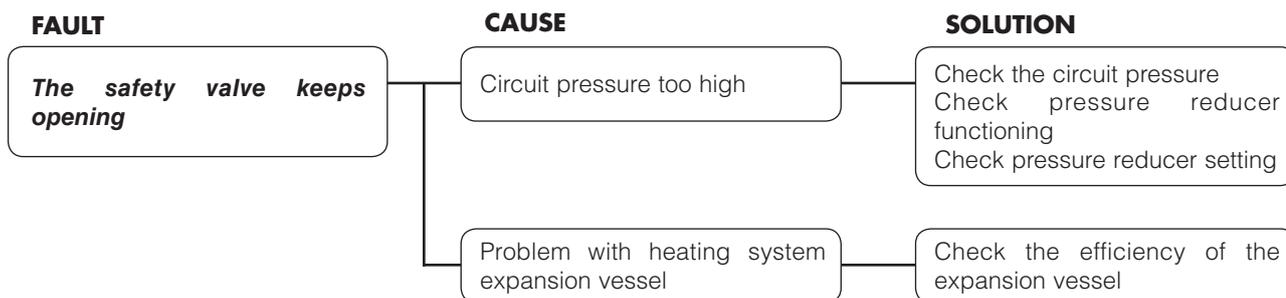


NOTE

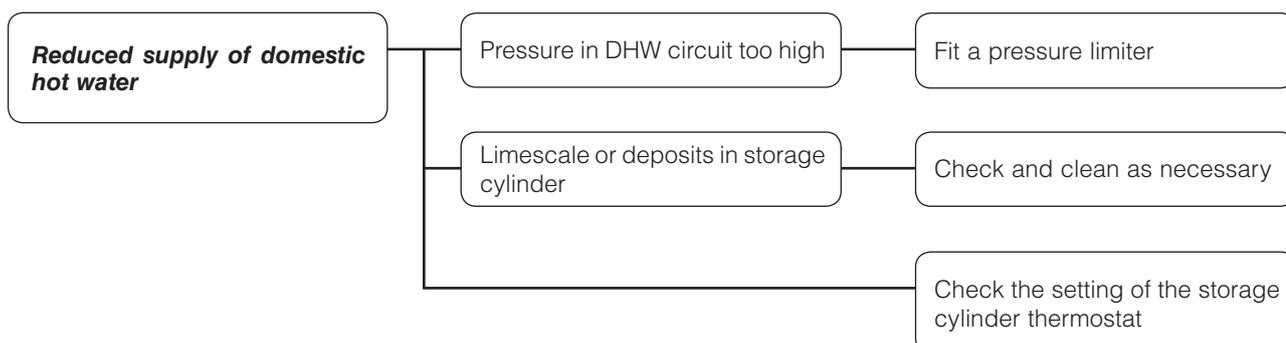
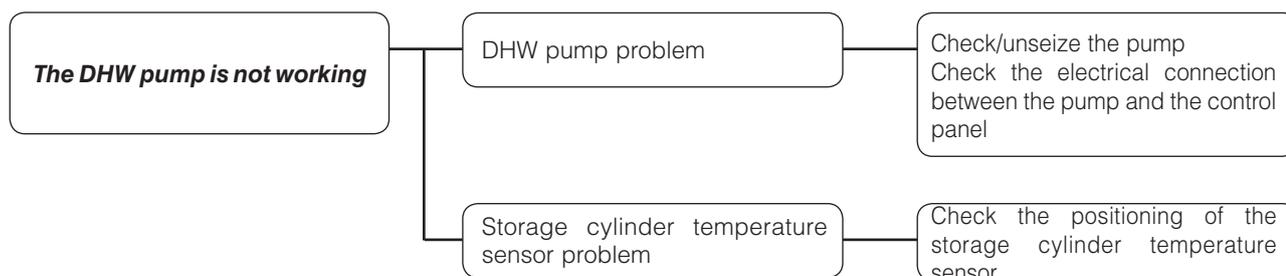
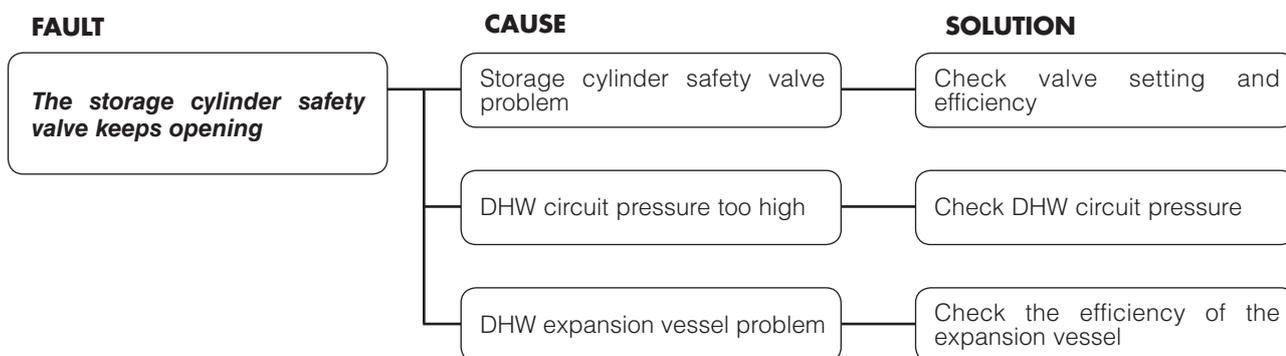
Tighten the fixing nuts, proceeding diagonally around the flange to apply pressure uniformly around the seal.

TROUBLESHOOTING

FAULT	CAUSE	SOLUTION
The boiler becomes dirty very quickly	Burner badly adjusted	Check the adjustment of the burner (perform flue gas analysis)
	Blockage in stack	Clean the flue gas pipes and stack
	Burner air intake dirty	Clean the burner air intake
The boiler does not reach its temperature setpoint	Boiler dirty	Clean the flue gas pipes
	Boiler and burner mismatched	Check specifications and settings
	Insufficient air/fuel flow to burner	Check and adjust the burner
	Control thermostat problem	Check the functioning of the thermostat Check the temperature setting
The boiler enters temperature safety lockout	Control thermostat problem	Check the functioning of the thermostat Check the temperature setting Check the electrical wiring Check the sensors
	No water supply Air in the circuit	Check the circuit pressure Check the vent valve
The boiler has reached the set temperature but the radiators are still cold	Air in the circuit	Bleed the circuit
	Pump malfunctioning	Check/unseize the pump
There is a smell of fumes	Fumes escaping into the air	Clean the boiler body Clean the flue gas pipes Check the seals between the boiler head and the flue gas box Check that the boiler, flue pipes and flue gas exhaust stack are all properly sealed



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