

**STEEL BOILERS**

# **RTQ 3S**

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



**RIELLO**

## CONFORMITY

**RTQ 3S RIELLO** boilers *conform* to the Efficiency Directive 92/42/CEE.

When used in conjunction with a CE marked jet burner, they also *satisfy* the requirements of the Gas Appliances Directive 2009/142/EC (until 20 April 2018 ) and Regulation (EU) 2016/426 (from 21 April 2018) and applicable sections of the Electromagnetic Compatibility Directive 2014/30/UE and Low Voltage Directive 2014/35/UE.



## RANGE

MODEL	CODE
RTQ 2700 3S	20106515
RTQ 3000 3S	20106514
RTQ 3500 3S	20107462
RTQ 4000 3S	20107467

*Dear Customer,*

*Thank you for choosing a **RTQ 3S RIELLO**, boiler. You have purchased a modern, high efficiency, quality product that is designed to give dependable and safe service and to provide comfort in the home for many years to come. Arrange for your 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 **RTQ 3S RIELLO** 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 Doc-0084217 Rev. 4 (04/18) is made up of 36 pages.

## GENERAL SAFETY INFORMATION

-  The boiler is delivered in separate crates. Check that it is complete, undamaged and as ordered as soon as you receive it. Report any discrepancies or damage to the dealer who sold it.
-  The **RTQ 3S RIELLO** boiler 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.
-  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, disconnect it immediately from the mains electricity supply, shut off the water supply, and notify your local **RIELLO** Technical Assistance Centre or a qualified heating engineer immediately.
-  Periodically check that operating pressure in the water 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 or a professionally qualified heating engineer.
-  If the boiler is not going to be used for an extended period of time, contact **RIELLO**'s Technical Assistance Service or a qualified heating engineer to have it prepared for shut-down as follows:
  - Switch the boiler OFF at the control panel and at the mains power switch
  - 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.

-  Do not allow children or infirm persons to operate this **RTQ 3S RIELLO** 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 and the control panel switch OFF.
-  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 anti-frost systems to do so.
-  Do not switch the boiler off if outdoor temperature drops below ZERO (risk of freezing).
-  Do not store containers of flammable substances 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

**RTQ 3S RIELLO** steel boilers are high efficiency boilers with horizontal, flame reversal combustion chambers and concentrically arranged flue gas pipes. They are designed for central heating and, when used in conjunction with a suitable storage cylinder, for domestic hot water production too.

Because they operate at low pressure, they provide a gradual heating action without thermal shock.

The most important technical features of these boilers are:

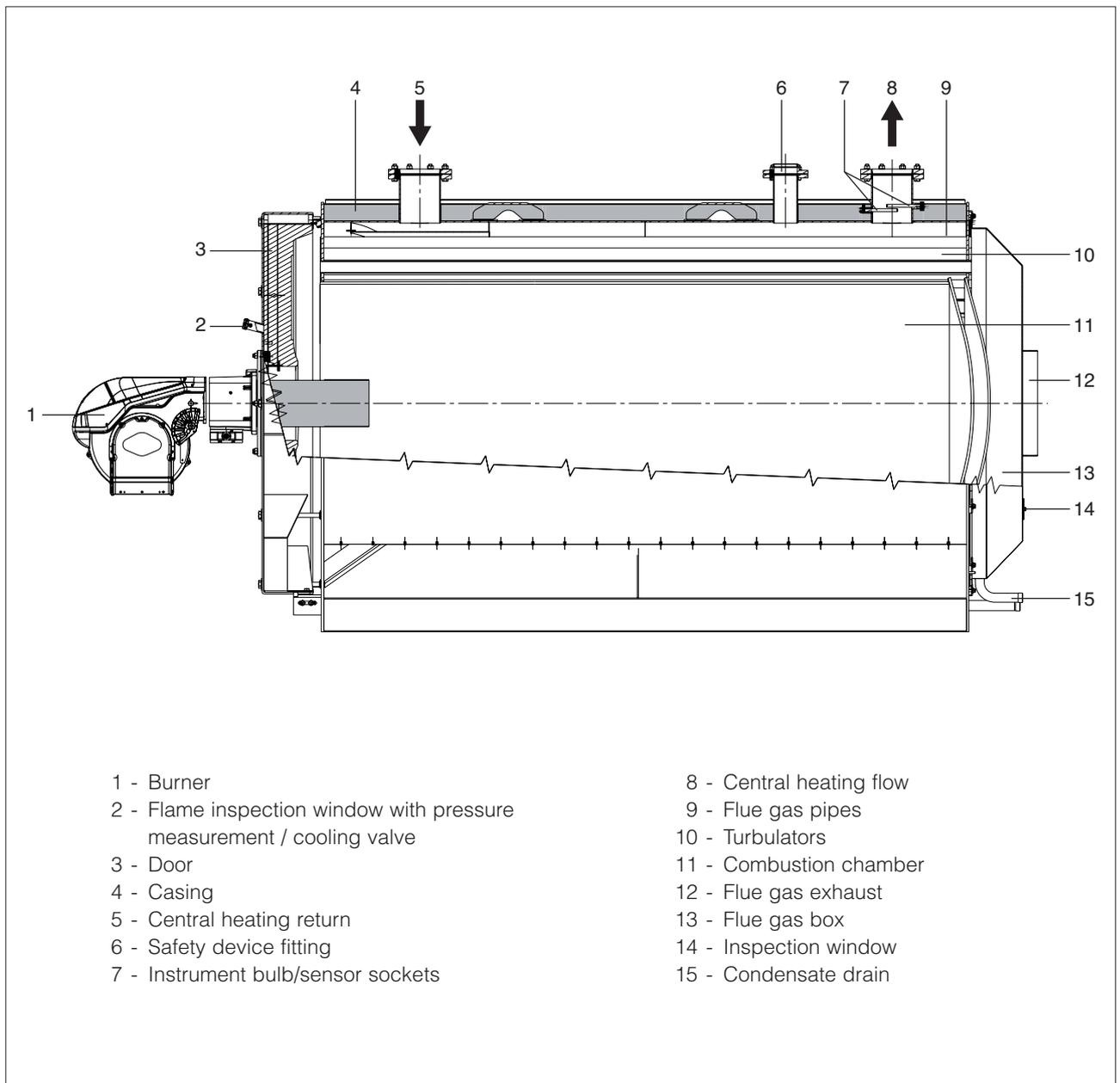
- The combustion chamber and heat exchange system are specially designed and shaped to achieve the best possible volume ratio.
- Only top quality materials are used to ensure a long working life.

Stainless steel turbulators inside the flue gas pipes establish an ideal pressure inside the combustion chamber and an ideal flue gas temperature. Evenly distributed thermal load optimises the efficiency of the boiler-burner system.

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

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

The front door can open in either direction, even without removing the burner.



The **RIELLO** control panels that can be used with **RIELLO RTQ 3S** steel boilers are listed below. These control panels cater for all the needs of the heating system and of all the devices installed in it.

Respect the indications of the table rigorously to ensure trouble-free operation and maximum reliability of your boiler over time.

CONTROL PANELS	
MODEL	TYPE
TECH CLIMA TOP	Climate control
TECH CLIMA COMFORT	Climate control
TECH CLIMA MIX	Climate control
TECH PRIME	Electro-mechanical
TECH PRIME ACS	Electro-mechanical

		Single stage 	Two stage 	Modulating 	Cascaded 	Wood fuelled 	Solar 	DHW 	Direct CH circuit 	Mixed CH zone 1 	Mixed CH zone 2 
<b>CLIMA TOP</b>	<b>STANDARD</b>	●	●	●					●		
	Control by control panel with assistance of accessories listed below				○	○	○	○		○	○
	<b>ACCESSORIES</b>										
	Immersion temperature sensor				1	1	1	1			
	Solar collector temperature sensor						1				
Pipe temperature sensor									1	1	
<b>CLIMA COMFORT</b>	<b>STANDARD</b>	●	●	●					●		
	Control by control panel with assistance of accessories listed below				○	○	○	○		○	○
	<b>ACCESSORIES</b>										
	Immersion temperature sensor				1	1	1	1			
	Solar collector temperature sensor						1				
	Pipe temperature sensor									1	1
Two-stage burner control kit										1	
1 mixed zone kit										1	
<b>CLIMA MIX</b>	<b>STANDARD</b>									●	
	Control by control panel with assistance of accessories listed below										○
	<b>ACCESSORIES</b>										
Pipe temperature sensor									1	1	
1 mixed zone kit										1	
<b>PRIME</b>	<b>STANDARD</b>	●							●		
	Control by control panel with assistance of accessories listed below		○								
<b>ACCESSORIES</b>											
Two stage burner kit			1								
<b>PRIME ACS</b>	<b>STANDARD</b>	●						●	●		
	Control by control panel with assistance of accessories listed below		○								
	<b>ACCESSORIES</b>										
Two stage burner kit			1								
Total shutdown kit	1	1									

## RECOMMENDED BURNERS

The burners recommended to obtain the best possible performance from **RTQ 3S RIELLO** boilers are:

BURNER		RTQ 3S				ACCESSORIES KIT	
MODEL	CODE	2700	3000	3500	4000	BURNER PLATE	
GAS	RS 300/M	20071010	•	•		20076596	
	RS 300/E	on demand	•	•		20076596	
	RS 300/EV	on demand	•	•		20076596	
	RS 310/M MZ	20068351 - 20061373 - 20074146 - 20074149	•	•		20076596	
	RS 410/M MZ	20068361 - 20067141 - 20074148 - 20074150		•		20076596	
	RS 410/M MZ	20068356			•	•	Standard
	RS 410/M BLU	20068270			•		Standard
	RS 310/EV BLU	20083956	•	•			20076596
	RS 410/EV BLU	20083957		•			20076596
	RS 510/M BLU	20069845				•	Standard
	GAS 9 P/M t.l.	3754038	•	•			Standard
	GAS 10 P/M t.c.	3754133		•			20067633
	GAS 10 P/M t.c.	3754133				•	20078662
	GAS 10 P/M t.l.	3754138		•			20067633
	GAS 10 P/M t.l.	3754134				•	20078662
MIXED OIL/GAS	GI/EMME 3000 t.c.	3488753	•				20067633
	GI/EMME 4500 t.c.	3489057		•			20067633
	RLS 300/E MX	3898530	•	•			20076596
	RLS 300/EV MX	on demand	•	•			20076596
	RLS 310/M MX	20087648 - 20087651	•	•			20076596
	RLS 310/E MX	20082946 - 20087644	•	•			20076596
	RLS 410/M MX	20087650 - 20076483		•			20076596
	RLS 410/E MX	20087646 - 20084376		•			20076596
RLS 500/M MX	3899602			•	•	20078662	

BURNER		RTQ 3S				ACCESSORIES KIT
MODEL	CODE	2700	3000	3500	4000	BURNER PLATE
OLI	RL 300/B MZ	3478410	•	•		20076596
	RL 300/B MZ	3478400			•	Standard
	RL 400/B MZ	3478512		•		20076596
NAPHTHA	PRESS 300 T/N ECO t.l.	3439022	•	•		Standard

-  The couplings were obtained with the operating point at 3% O<sub>2</sub>.
-  Refer to the instruction manual supplied with the chosen burner for the installation of the burner, the electrical connections and the necessary adjustments.
-  Prolonged heads and burner support plates are necessary for proper installation and for the optimal combination of the burners.
-  In the case of two-stage burners, the flow rate of the 1st stage must not be less than 70% of the total. For liquid-fuel burners equipped with 2 nozzles, adequately choose the first stage nozzle.
-  Remember that in Italy, the Prime Ministerial Decree of 2 October 1995 provides for the use of fuel oil with sulphur content of less than 0.3% by weight in heating systems with power lower than 3 MW. Refer to the current law in the country of installation.

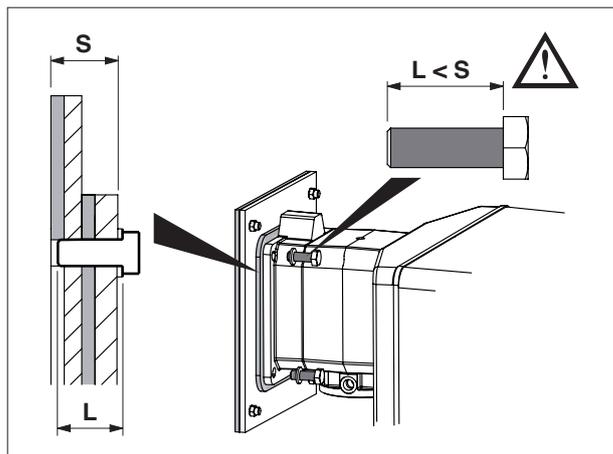
## IMPORTANT NOTES FOR BURNER INSTALLATION

Before fixing the burner to the boiler, make sure that:

- The door opens the right way (see the relevant sections for details on how to reverse the door).
- The length (L) of the burner fixing bolts is less than (S), i.e. the total depth of the seal, plates and washer.

**Longer bolts can cause the door to warp, compromising its ability to seal the boiler hermetically and permitting the release of combustion fumes.**

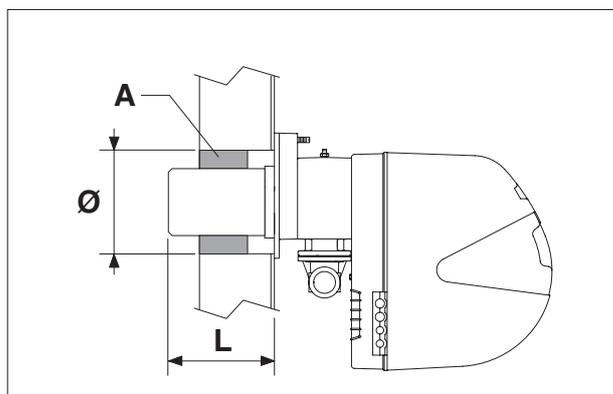
To ensure correct burner installation, also refer to the burner's own manual.



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 as specified in the following table

**!** When you finish installing the burner in the boiler, fill the gap between the burner's blast tube and the refractory material in the door with the ceramic insulation (A) supplied with the boiler.



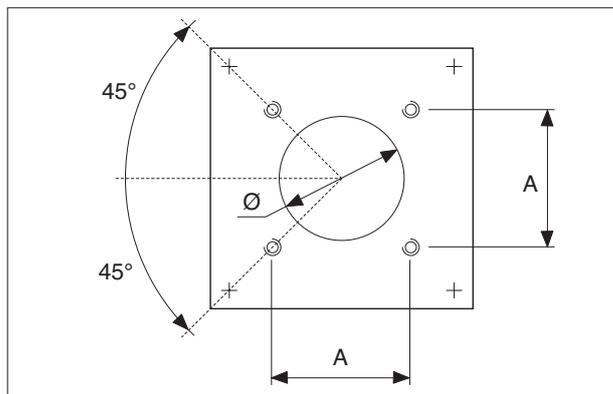
DIMENSIONS (mm)	RTQ 35			
	2700	3000	3500	4000
Burner head - L min. (mm)	350	350	405	405
Hole in door - Ø (mm)	350	350	440	440

**!** Blast tubes must not exceed the specified lengths by more than 20%.

**⊘** Do not re-use old burners if their blast tube lengths are below those specified in the table.

## BURNER PLATE

**RTQ 3S RIELLO** boilers have burner plates with holes arranged to accept the recommended burners. The following table shows the dimensions of the holes.

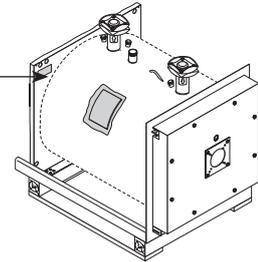


DIMENSIONS (mm)	RTQ 35			
	2700	3000	3500	4000
Ø	300	300	350	350
A	260	260	310	310
Threads	M18	M18	M20	M20

The boilers are identified by two plates:

**- Serial number plate**

This is located on the boiler body and specifies the serial number, model, and furnace power.

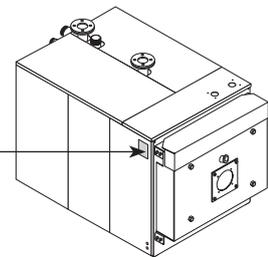


**- Data plate**

This lists the technical specifications and performance of the product. It comes inside the documentation envelope. On completion of the installation you **MUST** apply it in a clearly visible position at the top of one of the side panels. If you damage or lose this label, order a replacement immediately from **RIELLO's** Technical Assistance Service.



WEEK OF MANUFACTURE



**!** 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.

## TECHNICAL DATA

DESCRIPTION	RTQ 3S					
	2700	3000	3500	4000		
Fuel	OIL/GAS					
Rated heat input	min	2401	2701	3001	3501	kW
	max	2700	3000	3500	4000	kW
Rated useful heat output Pn	min	2310	2598	2887	3368	kW
	max	2576	2862	3339	3816	kW
Useful efficiency at minimum Pn		96,2	96,2	96,2	96,2	%
Useful efficiency at maximum Pn		95,4	95,4	95,4	95,4	%
Useful efficiency at 30% max. Pn		96,7	96,7	96,7	96,7	%
Constant pressure drop	< 0,1				%	
Flue gas temperature ( $\Delta T$ )	100÷120				°C	
Flue gas mass flow rate	1,10	1,26	1,43	1,63	kg/sec	
Furnace pressure	8,0	6,5	7,1	8	mbar	
Furnace volume	2729,8	3256,9	3743	4235	dm <sup>3</sup>	
Total volume of flue gas side	3648	4464	5140	5847	dm <sup>3</sup>	
Total surface area for heat exchange	69,36	80,11	94,66	108,3	m <sup>2</sup>	
Volumetric heat load	989	921	935	945	kW/m <sup>3</sup>	
Specific heat load	37,1	35,7	35,3	35,2	kW/m <sup>2</sup>	
Maximum operating pressure	6				bar	
Maximum admissible temperature	95				°C	
Maximum operating temperature	85				°C	
Min. admissible water return temp.	55				°C	
Pressure drop $\Delta T$ 10°C	190	230	240	280	mbar	
Pressure drop $\Delta T$ 20°C	40	50	55	65	mbar	
Water capacity	2700	2750	3650	4075	litri	
Turbulators	106	119	130	140	n°	

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

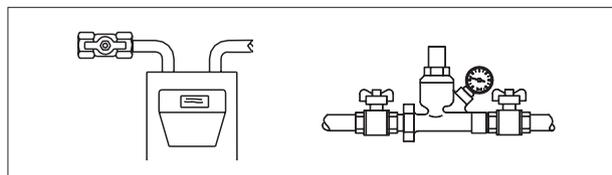
⚠ Values obtained with **RIELLO** gas burners, calibrated with CO<sub>2</sub> = 9,7%,  $\lambda$  = 1,2 and with **RIELLO** fuel oil burners calibrated with CO<sub>2</sub> = 12,5%.

Have **RIEHO**'s Technical Assistance Service start up your **RTQ 3S** boiler for the first time. Once this has been done, the boiler can be left to function automatically.

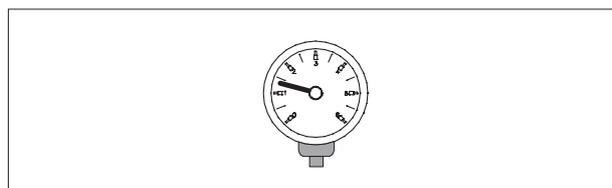
Under certain circumstances, such as after long periods of disuse, the service engineer responsible for the boiler may need to re-start it without involving the Technical Assistance Service.

To do so, perform the following checks and operations:

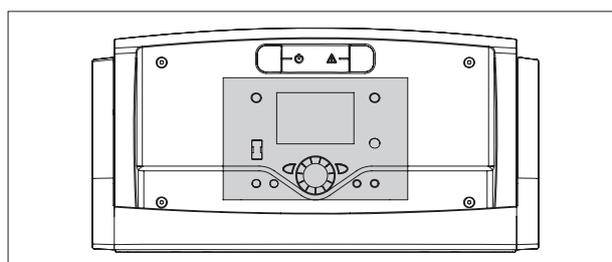
- Check that the gas cock and heating water cock are open



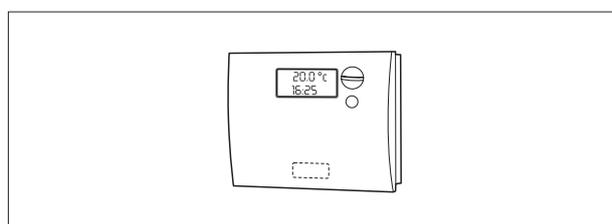
- While the system is still cold, check that working pressure in the water circuit is **over 1 bar** but below the maximum limit specified for the boiler



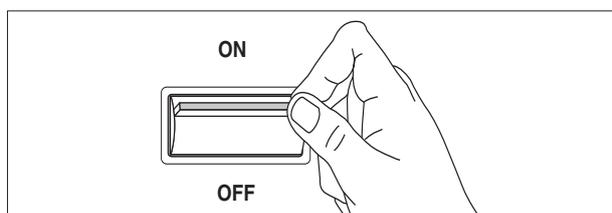
- If the system is equipped with a temperature controller or timer thermostat, make sure that it is switched on



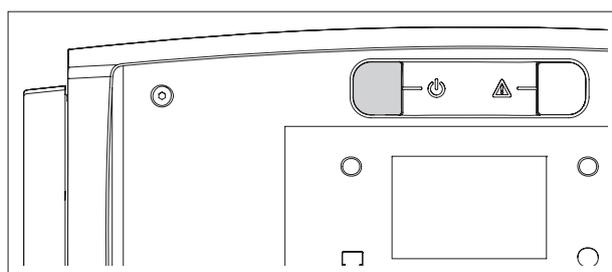
- Adjust the timer thermostat/s or temperature controller to the desired temperature (~20°C)



- Turn the system's main power switch ON



- Turn the control panel power switch ON and make sure that the green power indicator lights.



- Make the settings as instructed in the instruction manual for your control panel.

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

The burner will then switch off and on automatically to maintain the set temperature without further operator action.

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 and wait until the flame ignites.

Repeat this operation 2 -3 times at the most. If the problem persists after that, call **RIELLO's** Technical Assistance Service.

## TEMPORARY SHUTDOWN

If you need to shut down the system for a short period, proceed as follows.

- Turn the control panel power switch OFF and make sure that the green power indicator goes out

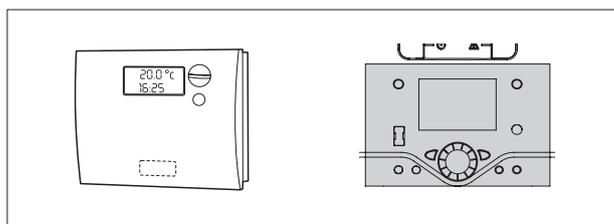
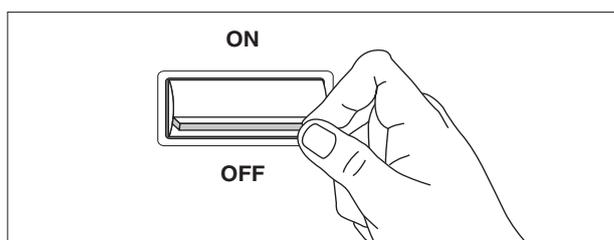
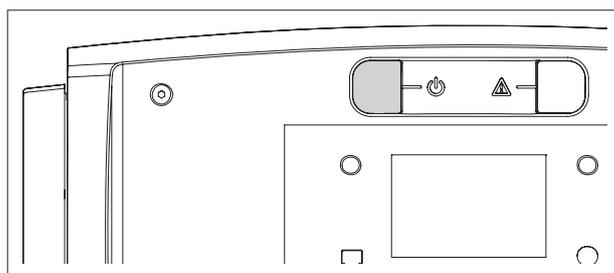
- Turn the mains power switch OFF

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

Then proceed as follows:

- Make the settings as instructed in the instruction manual for your control panel.

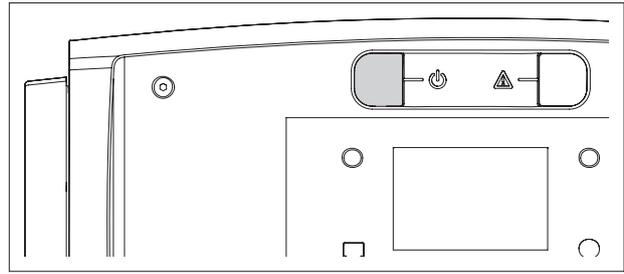
- Make sure that the temperature controller or timer / room thermostat is set to "frost protection" mode.



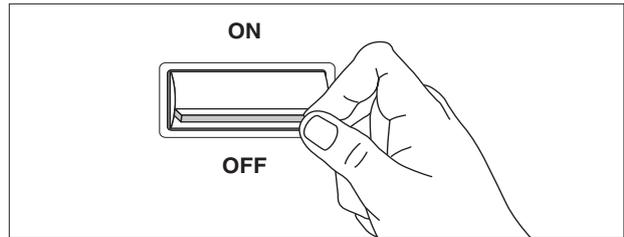
## PREPARING FOR EXTENDED PERIODS OF DISUSE

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

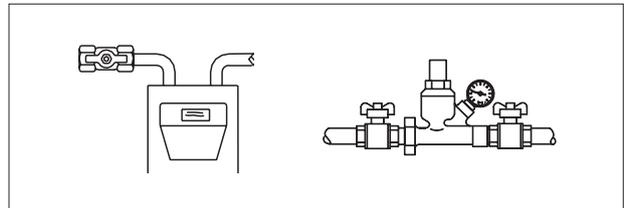
- Turn the control panel power switch OFF and make sure that the green power indicator goes out



- Turn the mains 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** Technical Assistance Service if you encounter any problems in completing the above procedure.

## CLEANING

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

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 cleaning pads or powder detergents.

**—** Never clean the boiler without first disconnecting it from the mains electricity supply by turning the main power switch and the control panel switch OFF.

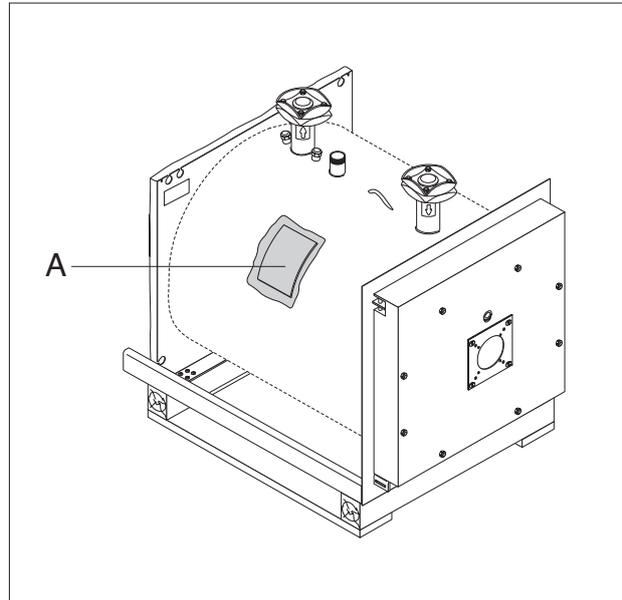
**!** The combustion chamber and flue pipes must be cleaned periodically by the Technical Assistance Service or by a qualified heating engineer (see page 34).



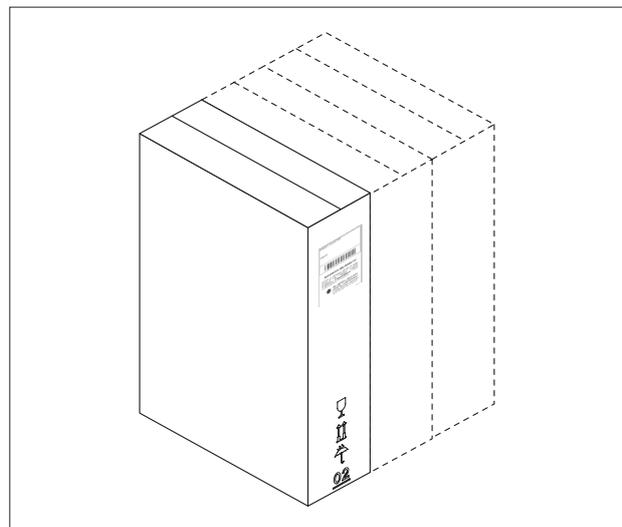
RTQ 3S **RIELLO** steel boilers come in **3 separate crates**:

- 1) **BOILER BODY CRATE** to which is attached the documentation envelope (A) containing:
  - Instruction manual
  - Data label (to be applied to the casing on completion of the installation)
  - Water test certificate
  - Bar code labels
  - Spare parts catalogue

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



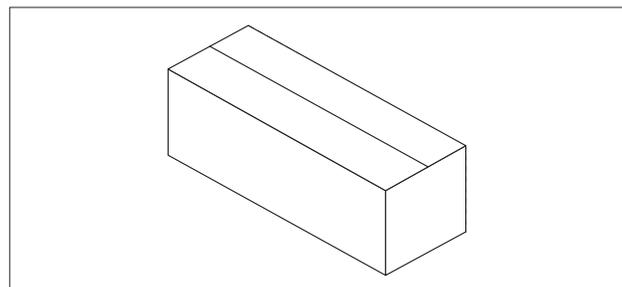
- 2) **THE CASING PANELS** complete with assembly accessories (2 packs for models RTQ 2700-3000 3S and 3 packs for models RTQ 3500-4000 3S).



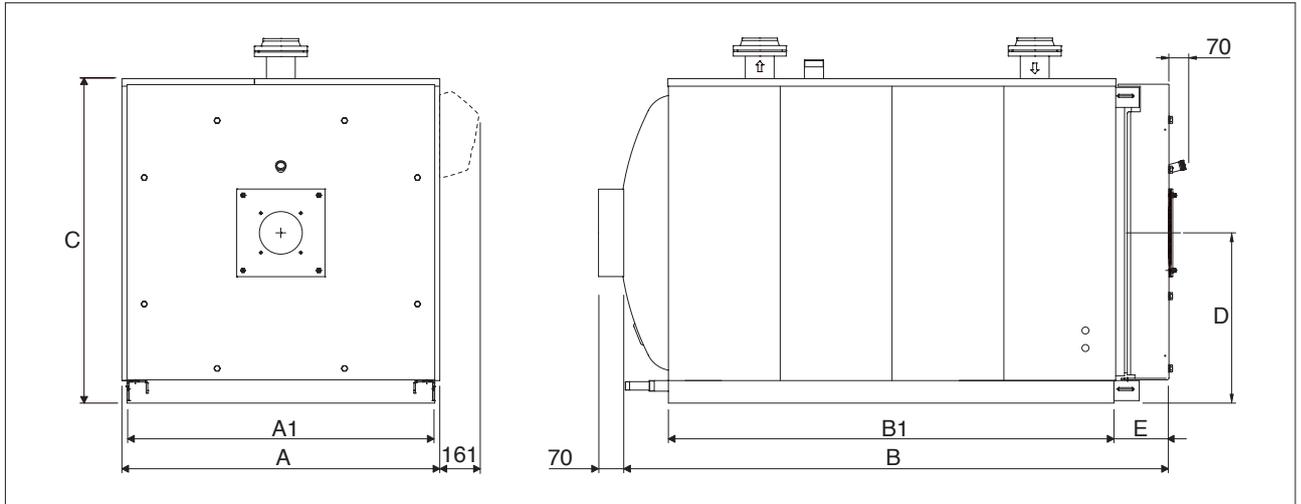
- 3) **THE FRONT COVER** to fit on top of the front door.

### IMPORTANT

For the boiler to function correctly, it must be connected to a **RIELLO TECH** control panel and dedicated control accessories.



## OVERALL DIMENSIONS AND WEIGHTS



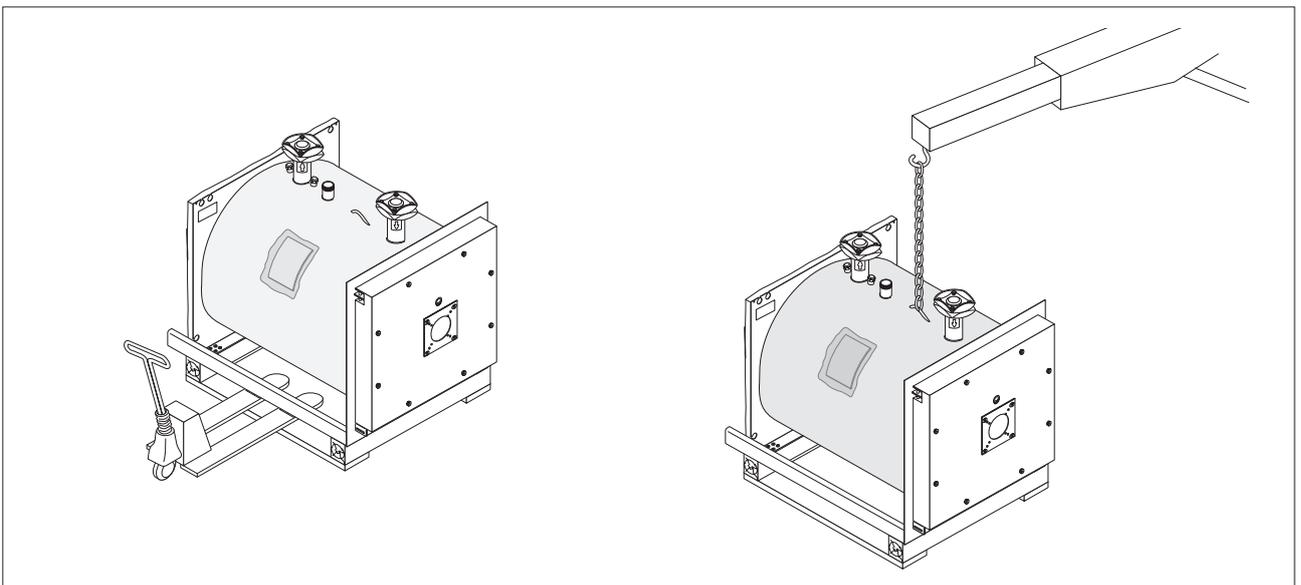
DESCRIPTION	RTQ 3S				
	2700	3000	3500	4000	
A -Width	1865	1935	2040	2070	mm
A1 -Base width	1815	1885	1990	2020	mm
B -Depth	3490	3600	3934	4184	mm
B1 -Base depth	2940	3040	3310	3560	mm
C -Height	1995	2055	2140	2170	mm
D -Burner and flue height	1050	1080	1155	1170	mm
E -Door depth	310	320	325	325	mm
Weight of boiler	4676	5190	6015	6600	kg
Weight of casing	150	156	180	190	kg

## HANDLING

**RTQ 3S RIELLO** steel boilers are fitted with lifting attachments. Take great care when moving them and only use lifting equipment of adequate capacity.

Remove the fixing screws and remove the wooden pallet before positioning the boiler.

**⚠** Wear suitable personal protective equipment and use suitable safety devices.



**RTQ 3S RIELLO** steel boilers must be installed in a dedicated boiler room, with adequately sized vents, in compliance with applicable laws and standards.

If at all possible, the boiler should be installed on a raised base to prevent the burner fan sucking up dust.

 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 tank are made and installed in compliance with applicable

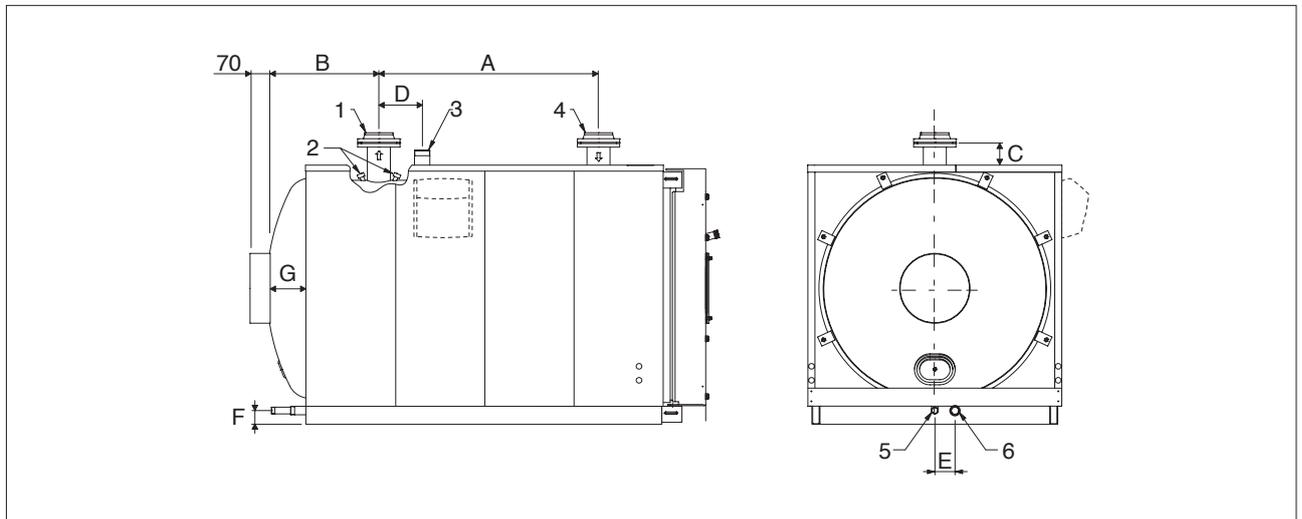
standards.

- 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.21).

## WATER CONNECTIONS

**RTQ 3S RIELLO** boilers are designed and made for use in central heating installations, but can also be used for domestic hot water production if connected to a suitable storage cylinder. Water fittings are as specified in the following table.

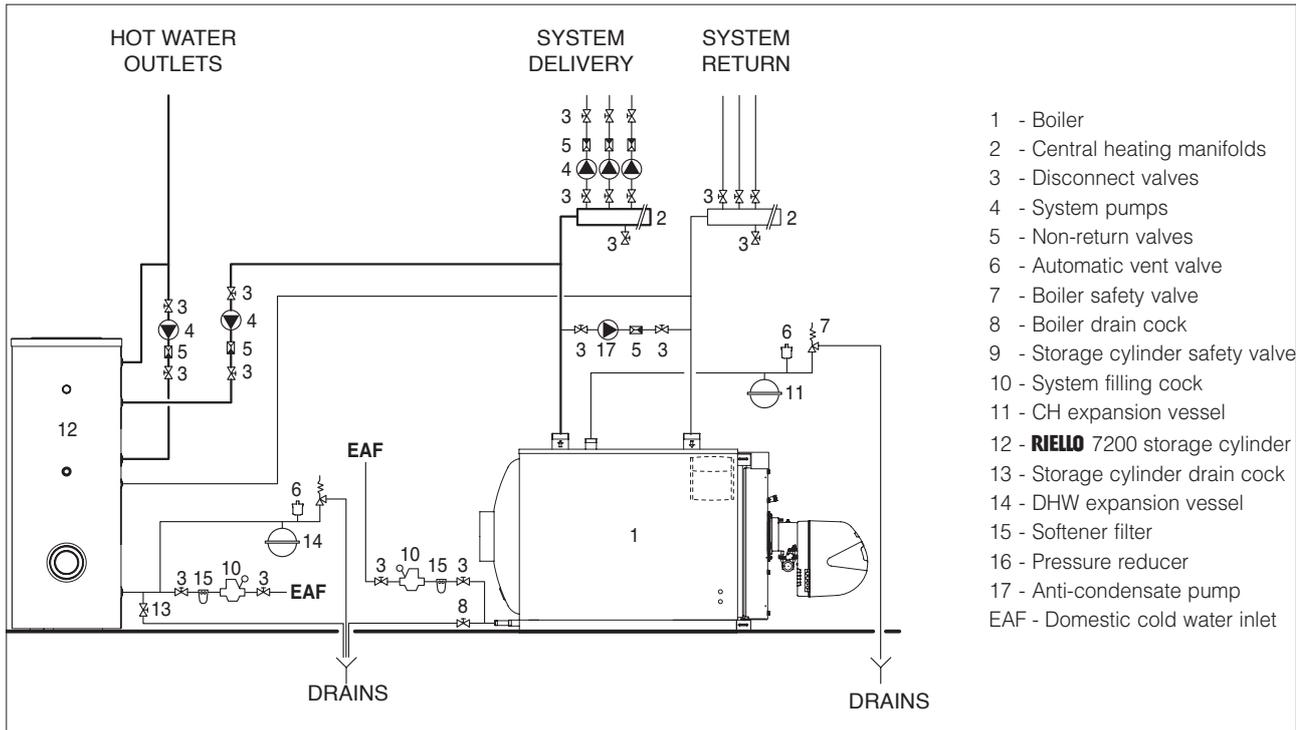
 Allow for the dimensions of the control panel that needs to be installed on top of the boiler.



DESCRIPTION	RTQ 3S				
	2700	3000	3500	4000	
1 - Central heating flow (*)	DN175	DN175	DN200	DN200	Ø
2 - Instrument bulb / sensor socket	G1/2"	G1/2"	G1/2"	G1/2"	Ø
3 - Safety device fitting	DN100	DN100	DN125	DN125	Ø
4 - System return (*)	DN175	DN175	DN200	DN200	Ø
5 - Condensate drain	G1"1/4	G1"1/4	G1"1/4	G1"1/4	Ø
6 - Boiler drain	G1"1/2	G1"1/2	G1"1/2	G1"1/2	Ø
A	2115	2215	2410	2660	mm
B	610	610	690	690	mm
C	95	107	100	100	mm
D	500	500	550	550	mm
E	129	137	150	150	mm
F	132	125	160	160	mm
G	140	140	160	170	mm

(\*) All flanged connections are PN6 according to EN 1092-1.

**Schematic diagram - central heating and domestic hot water production**



- 1 - Boiler
- 2 - Central heating manifolds
- 3 - Disconnect valves
- 4 - System pumps
- 5 - Non-return valves
- 6 - Automatic vent valve
- 7 - Boiler safety valve
- 8 - Boiler drain cock
- 9 - Storage cylinder safety valve
- 10 - System filling cock
- 11 - CH expansion vessel
- 12 - **RIELLO** 7200 storage cylinder
- 13 - Storage cylinder drain cock
- 14 - DHW expansion vessel
- 15 - Softener filter
- 16 - Pressure reducer
- 17 - Anti-condensate pump
- EAF - Domestic cold water inlet

⚠ 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.

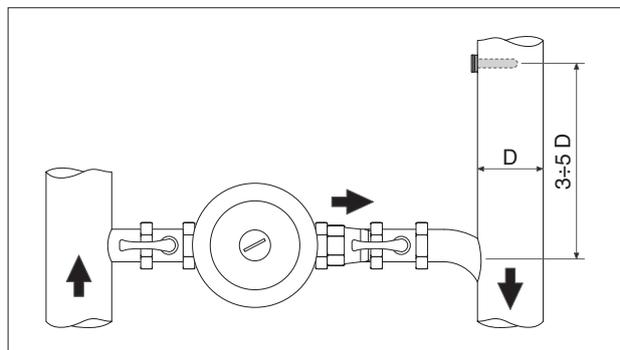
⚠ Circuits filled with anti-freeze must be fitted with water disconnectors.

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

REFERENCE VALUES	
PH	6-8
Electrical conductivity	below di 200 μS/cm (25°C)
Chlorine ions	below di 50 ppm
Sulphuric acid ions	below di 50 ppm
Total iron	below di 0,3 ppm
Alkalinity M	below di 50 ppm
Total hardness	below di 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	below di 30 ppm

**ANTI-CONDENSATE PUMP**

An anti-condensate pump operates during periods of no heat request to avoid damage until the boiler returns to a stable operating temperature. While the system is operating, this pump must guarantee a flow rate between 20 and 30% of maximum flow, must ensure a water return temperature no lower than the minimum permissible (see technical data) and must also delay shutting down for at least 3 minutes at the beginning of extended periods of boiler shutdown (overnight or weekend shutdown etc.).

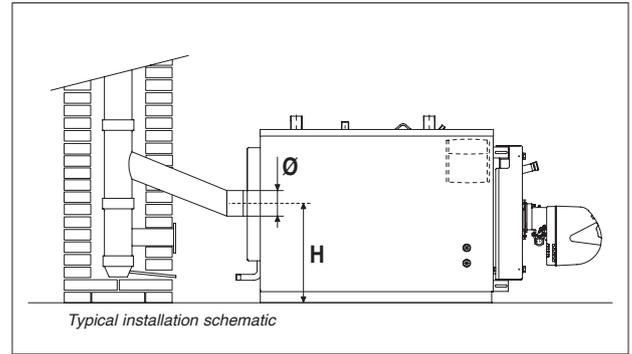


⚠ A sensor socket must be positioned at a distance of 3 to 5 times the diameter of the water return pipe, upstream from the water fitting, to measure effective water return temperature and control the anti-condensate pump or the temperature controller stabilisation function.

⚠ Any temperature controllers installed remotely from the control panel must be compatible with the system's electrical connections and functioning logic.

## 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.



DIMENSION (mm)	RTQ 3S			
	2700	3000	3500	4000
Ø	500	500	550	600
H	1050	1080	1155	1170

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

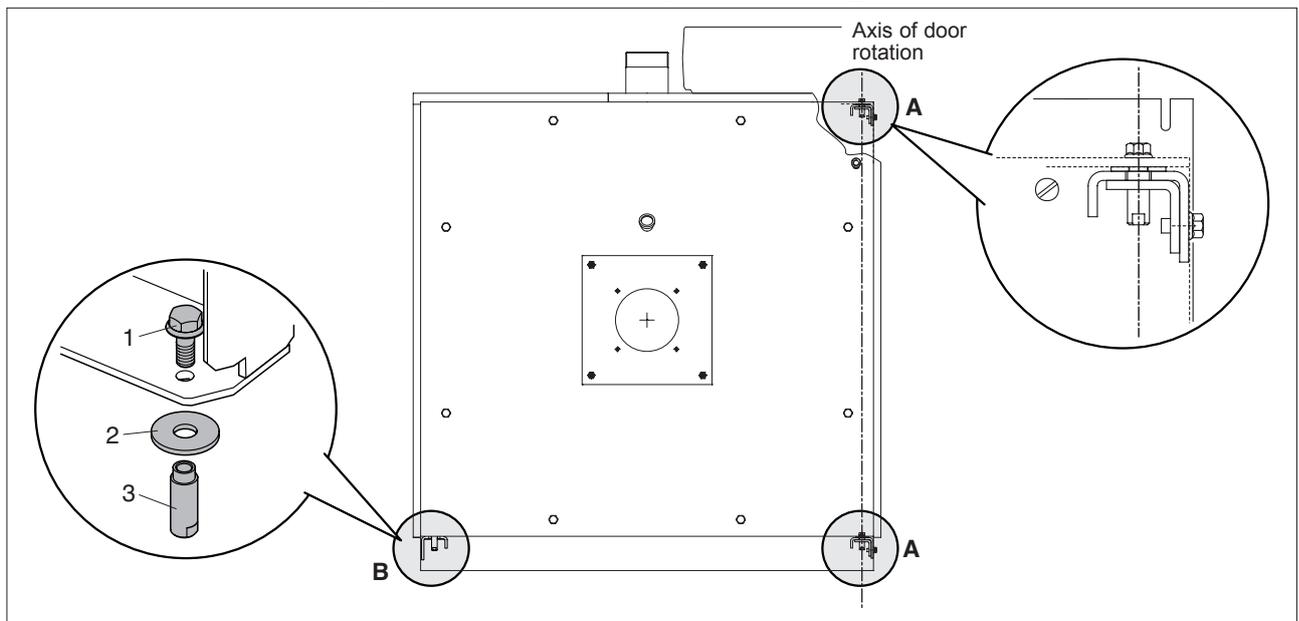
⚠ Inadequate or badly dimensioned stacks and exhausts can increase combustion noise, cause condensation problems and affect combustion parameters.

⚠ Uninsulated flues are potentially dangerous and can cause burns.

⚠ Joints must be sealed using materials capable of withstanding temperatures of at least 200°C (e.g. filler, mastic or silicone based sealant).

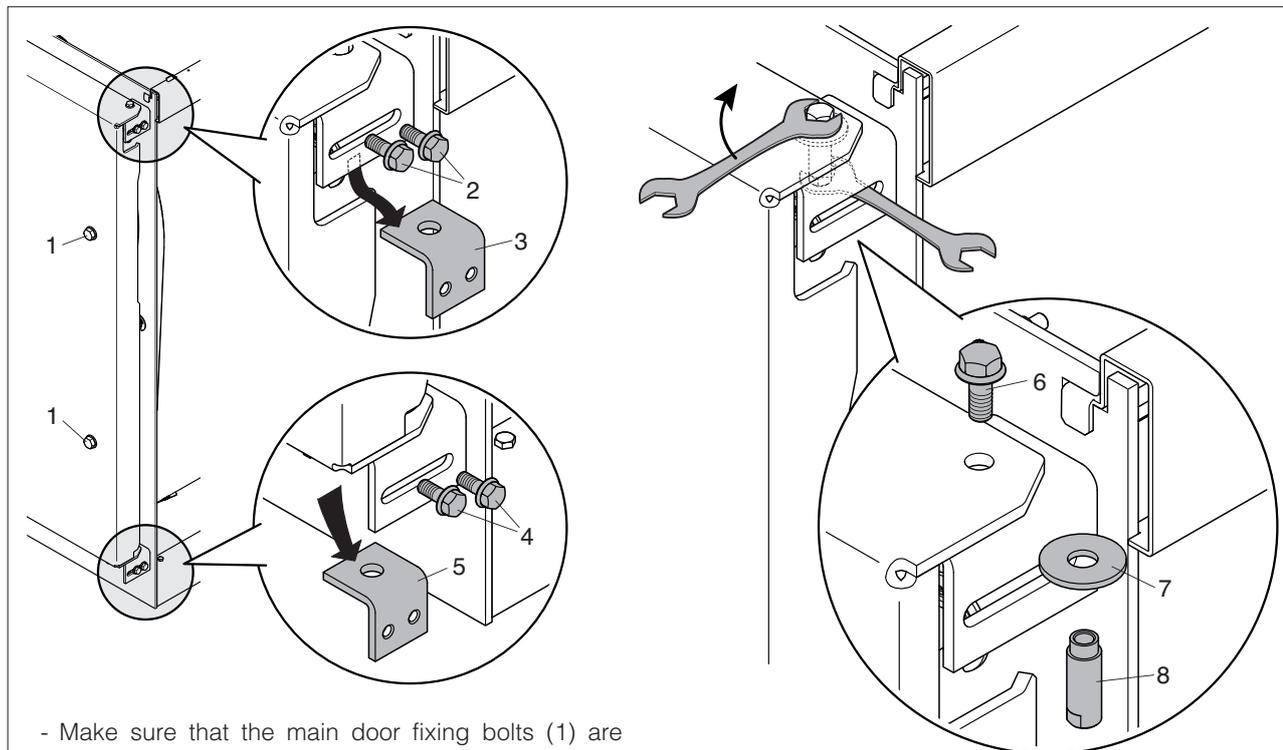
## DOOR HINGES

The boilers come fitted with 2 hinges that allow the door to open from left to right.



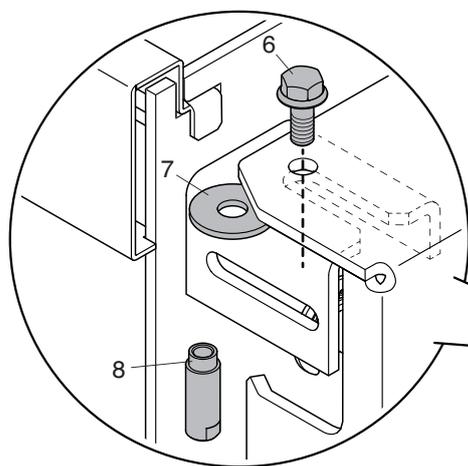
## CHANGING THE DIRECTION OF DOOR OPENING

The boiler door hinges are factory fitted on the right of the door. If opting to open the door from right to left, rotating on the hinges placed on the left, perform these operations:



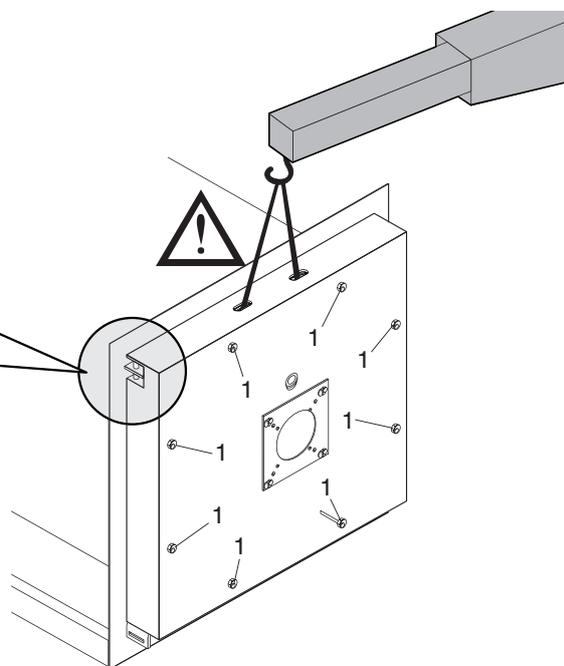
- Make sure that the main door fixing bolts (1) are securely tightened.
- Remove the top safety bolts (2) and the door stop bracket (3).
- Remove the bottom safety bolts (4) and the door stop bracket (5).

- Insert a spanner through the slot in the side of the top door mounting bracket and hold the bushing (5) steady.
- Unscrew the top bolt (6), then remove the bushing (8) and washer (7).

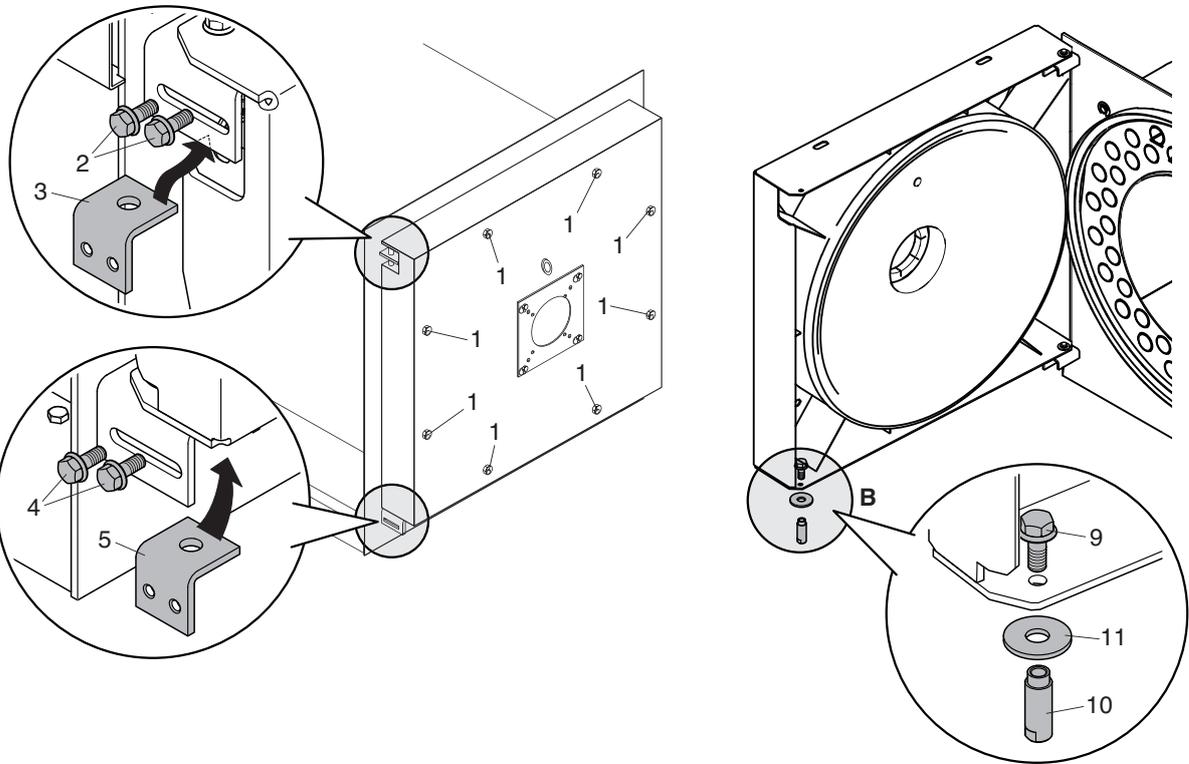


- Fit the bushing (8), bolt (6) and washer (7) to the opposite side of the door.

**!** If the insertion of the washer (7) or the tightening of the bolt (6) on the bushing (8) is difficult due to insufficient door alignment, **affix it to a proper size hoist** (refer to the weights and dimensions table), **loosen the locking screws only slightly** (1) to allow the lifting of the door and facilitate the insertion of the washer (7) or



align the hole on the door to the hinge sleeve. **Once the bolt (6) has engaged its hole, re-tighten the door fixing bolts (1).**



- Fit the top door stop bracket (3) to the opposite side of the door and fix it in place with the safety bolts (2).
- Fit the bottom door stop bracket (5) to the opposite side of the door and fix it in place with the safety bolts (4).

**⚠ Make sure that the safety bolts (2 and 4) are securely tightened before attempting to open the door.**

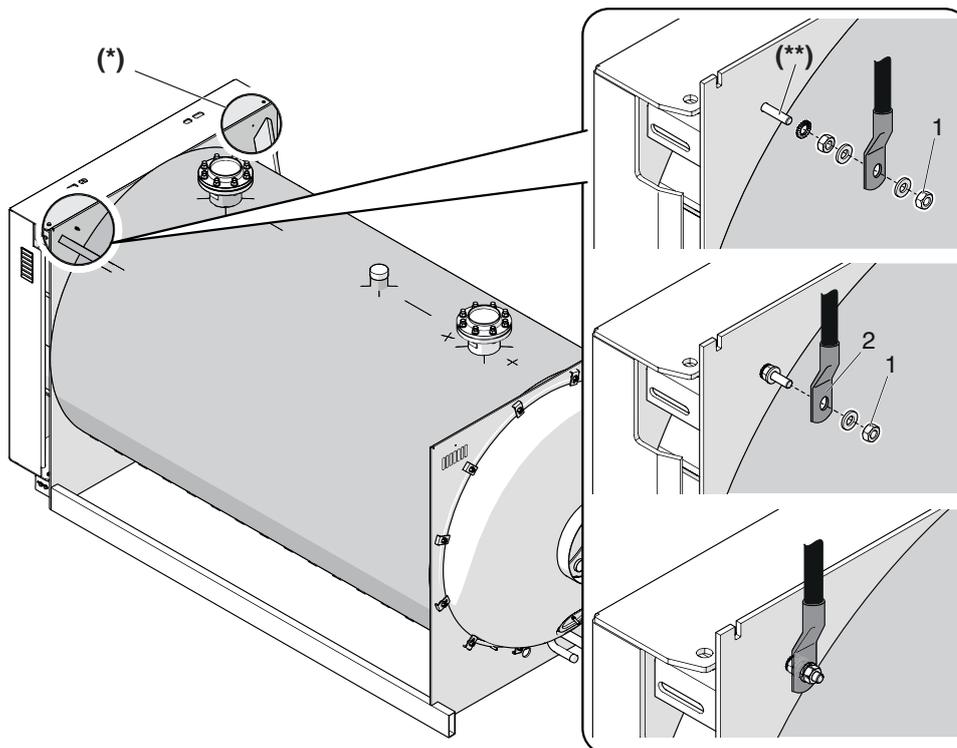
- Completely unscrew the main fixing bolts (1) and open the door. (These bolts are captive in the door and cannot be removed.)
- Remove the spare hinge assembly 'B' (bolt (9), bushing (10), and washer (11)) opposite the hinged side of the door.

A terminal is provided on the front boiler head to connect the boiler body to an efficient earth system.

Proceed as follows.

- Unscrew the nut and washer (1) from the earth terminal.
- Attach the earth cable's eye connector (2) to the terminal. (Make sure that the cable is of adequate size and complies with legislation in the country of installation).
- Fit the nut and washer (1) to the earth terminal and tighten the nut.
- Connect the other end of the cable to the system's earth bar.

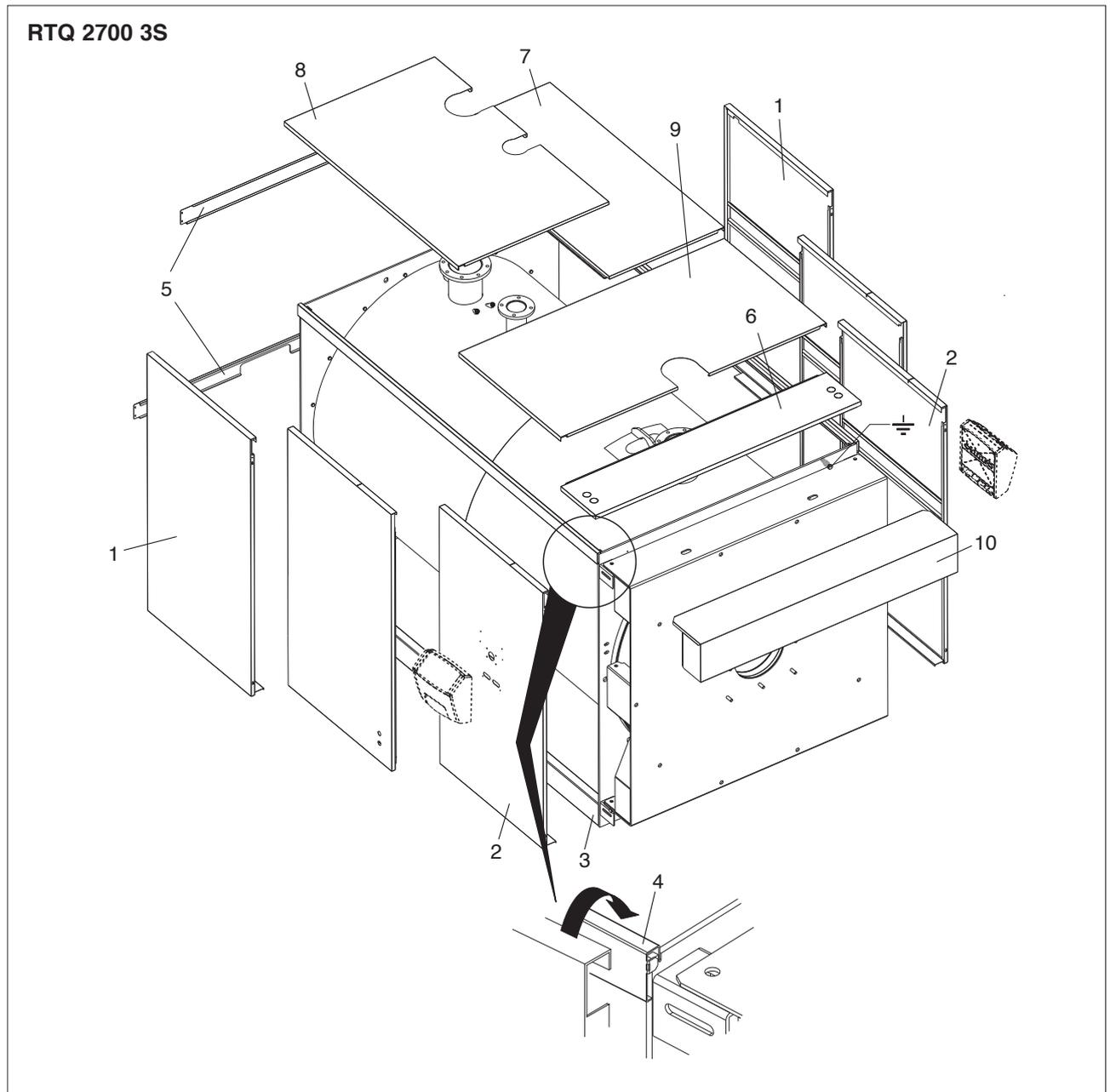
 Another hole (\*) in the left side of the boiler head can also be used to earth the appliance. If you wish to use this hole for the earth connection, remove the terminal fittings from the right of the head and move them to the left earthing point.



(\*\*) M6x30 brass

## FITTING THE CASING PANELS

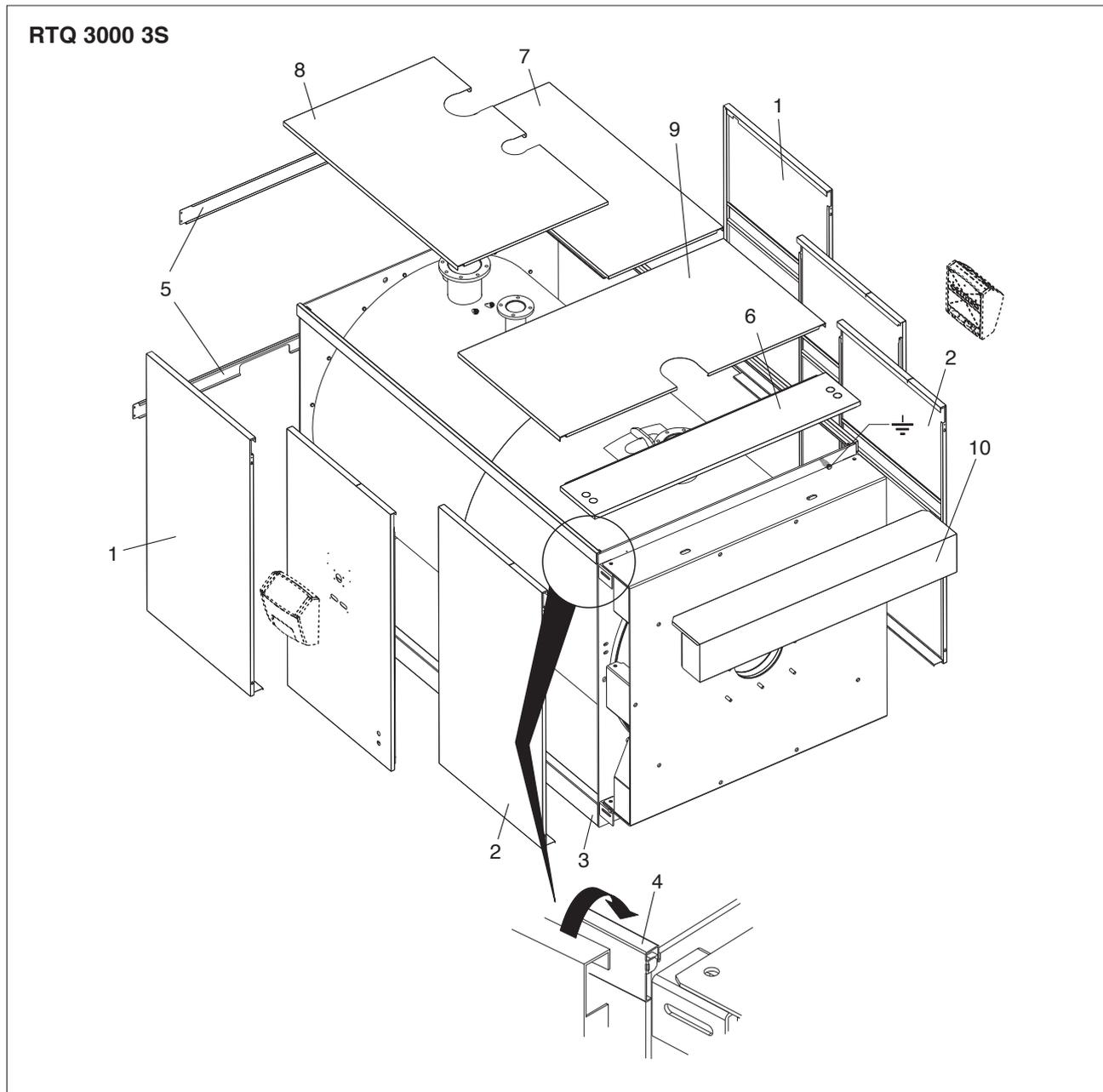
- engage the bottoms of the rear side (1) and front side panels (2) in the bottom rails (3), then hook their top lips over the top rails (4) running between the front and rear heads;
- secure the side panels in place with the top cross beam (5) and the screws provided;
- mount the chosen control panel on the front top panel (6), referring to the control panel booklet;
- route the electrical cables and insert the sensors in their sockets;
- fit the cable grommets provided into their seats in the panels;
- fit, in this order, the rear panels (7) and (8), then the central panel (9) to close the top of the boiler;
- once all the panels are in place, fit the front cover (10) over the top of the door.



 Refer to the instruction manuals for the **RIELLO TECH** control panel and for your chosen burner.

- engage the bottoms of the rear side (1) and front side panels (2) in the bottom rails (3), then hook their top lips over the top rails (4) running between the front and rear heads;
- secure the side panels in place with the top cross beam (5) and the screws provided;
- mount the chosen control panel on the front top panel (6), referring to the control panel booklet;

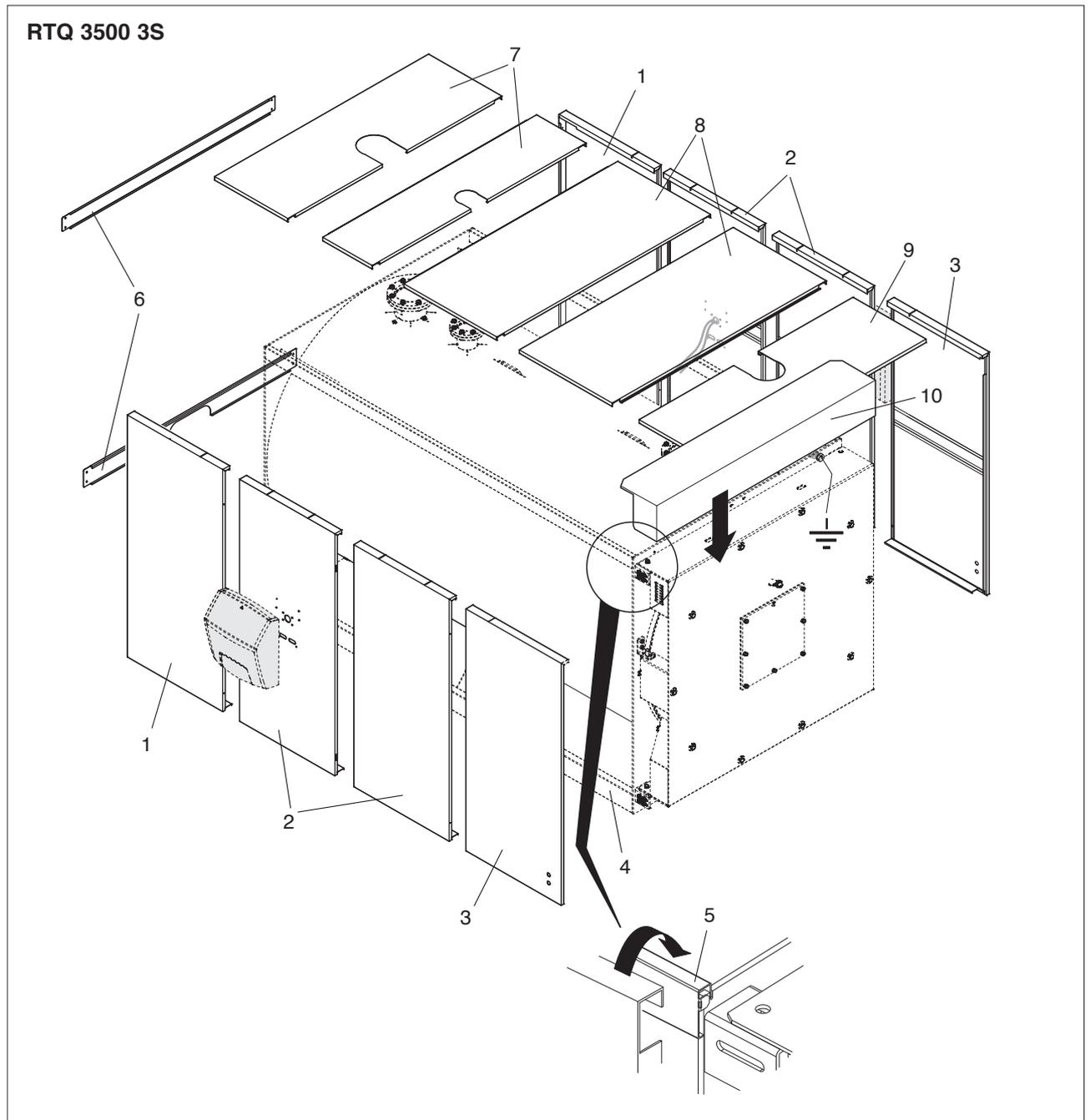
- route the electrical cables and insert the sensors in their sockets;
- fit the cable grommets provided into their seats in the panels;
- fit, in this order, the rear panels (7) and (8), then the central panel (9) to close the top of the boiler;
- once all the panels are in place, fit the front cover (10) over the top of the door.



 Refer to the instruction manuals for the **RIELO TECH** control panel and for your chosen burner.

- Engage the bottom of the side panels (1), central panel (2) and front panel (3) in the bottom rails (4) and engage the top lip of the side panels in the slots (5) in the front and rear heads;
- secure the side panels in place with the top cross beam (6) and the screws provided;
- mount the chosen control panel on one of the two front side panels (3), referring to the control panel booklet;

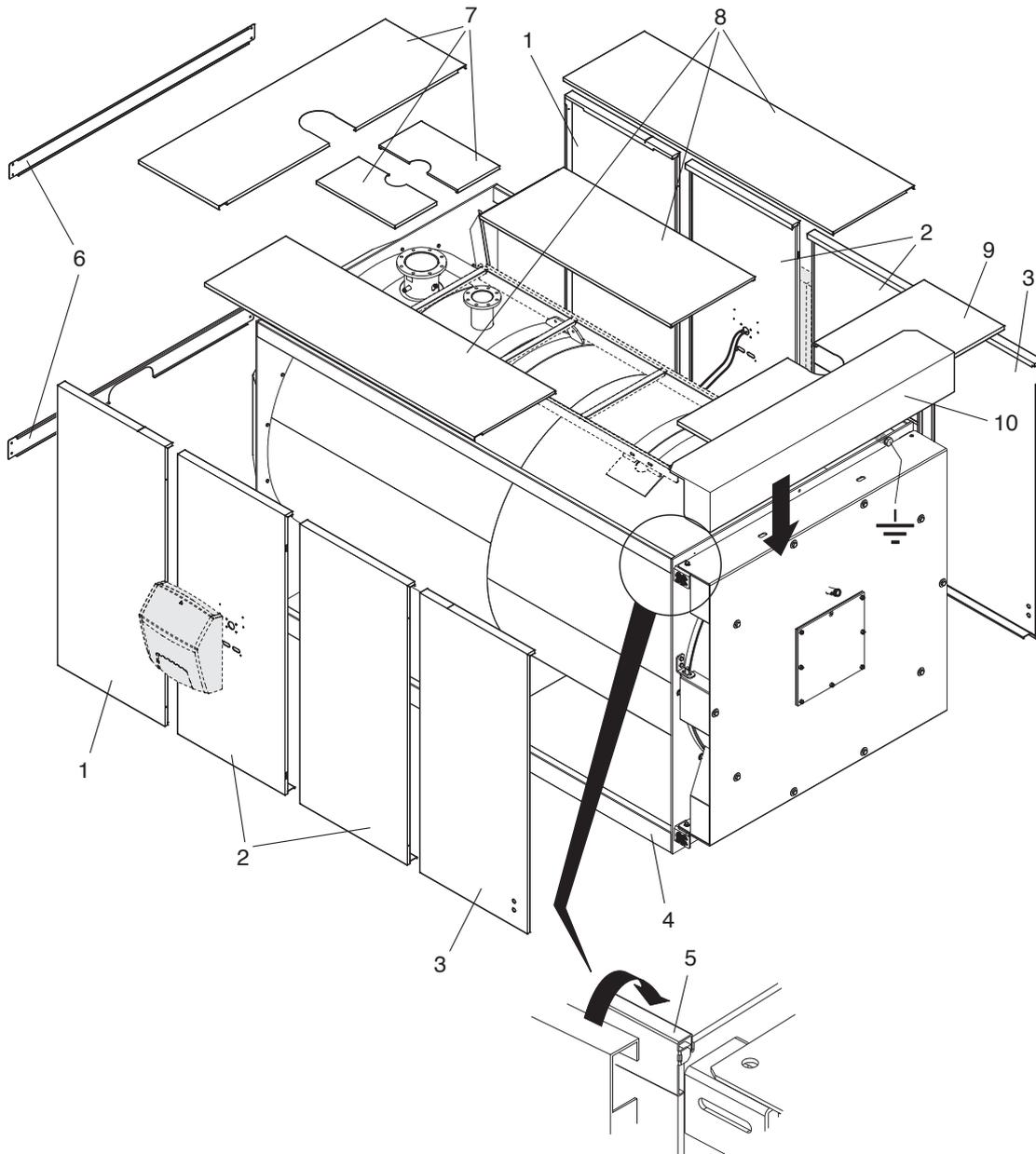
- route the electrical cables and insert the bulbs/sensors in their sockets;
- fit the cable grommets provided into their seats in the panels;
- mount in sequence the rear panels (7), central panels (8) and the front panel (9). Completely close the top part;
- once all the panels are in place, fit the front cover (10) over the top of the door.



 Refer to the instruction manuals for the **RIELO TECH** control panel and for your chosen burner.

- Engage the bottom of the side panels (1), central panel (2) and front panel (3) in the bottom rails (4) and engage the top lip of the side panels in the slots (5) in the front and rear heads;
- secure the side panels in place with the top cross beam (6) and the screws provided;
- mount the chosen control panel on one of the two front side panels (3), referring to the control panel booklet;
- route the electrical cables and insert the bulbs/sensors in their sockets;
- fit the cable grommets provided into their seats in the panels;
- mount in sequence the rear panels (7), central panels (8) and the front panel (9). Completely close the top part;
- once all the panels are in place, fit the front cover (10) over the top of the door.

### RTQ 4000 3S

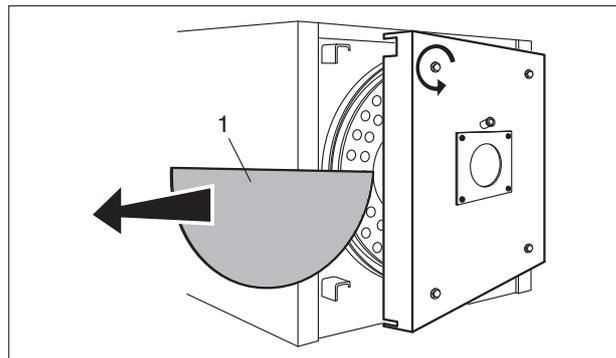


 Refer to the instruction manuals for the **RIELO TECH** control panel and for your chosen burner.

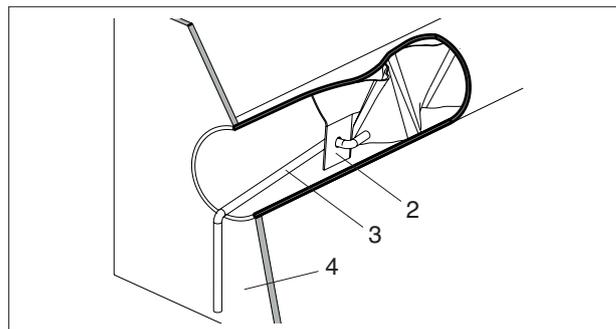
## PREPARING FOR INITIAL START-UP

It is essential to perform the following checks before starting up or testing the functioning of your **RTQ 3S RIELLO** boiler. In particular, check that:

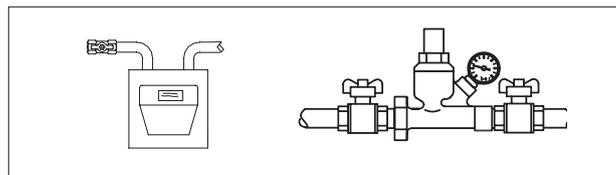
- The protective cardboard sheet (1) has been removed from the ceramic fibre



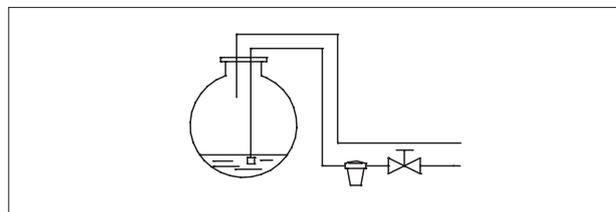
- The turbulators (2) are correctly positioned (vertical position) inside the heat exchange tubes and the clips (3) are resting against the wall (4) of the heat exchanger



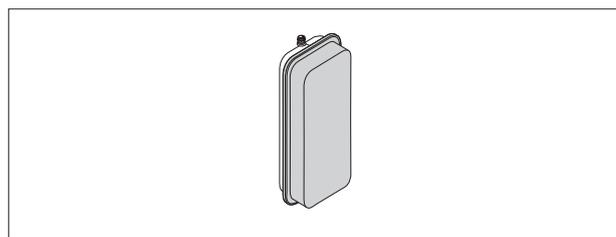
- The water and gas cocks are open



- There is an adequate fuel supply

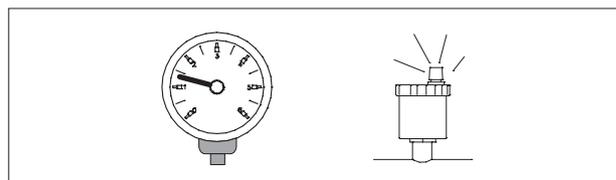


- The expansion vessel is properly charged

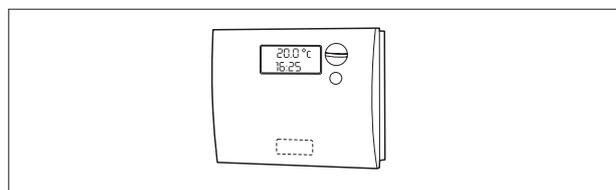


- The working pressure in the water circuit is over 1 bar but below the maximum limit specified for the boiler

- The water circuits have been properly bled



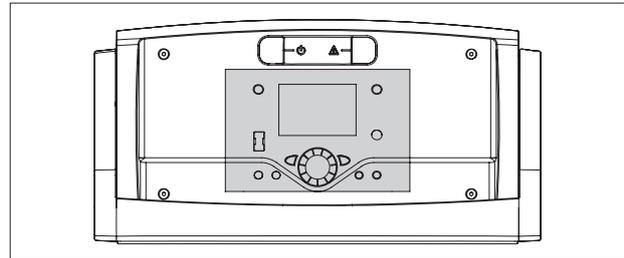
- The mains power connections to the boiler and its accessories (burner, pump, control panel, thermostats, etc.) have been properly made.



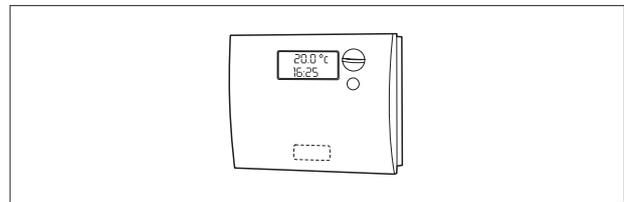
- ⚠ The phase-neutral polarity has been respected.  
A ground (earth) connection is obligatory.

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

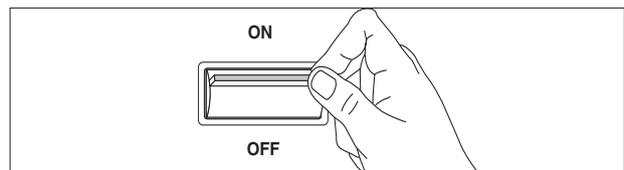
- If the system is equipped with a temperature controller or timer thermostat, make sure that it is switched on



- Adjust the timer thermostat/s or temperature controller to the desired temperature (~20°C)

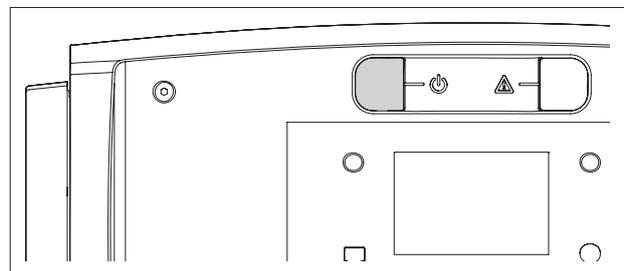


- Turn the system's main power switch ON



- Make the settings as instructed in the instruction manual for your control panel.

- Turn the control panel power switch ON 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 and wait until the flame ignites.

Repeat this operation 2-3 times at the most. If the problem persists, perform the following checks:

- All checks listed in the burner's own instruction manual;
- All steps listed in the 'Preparing for Initial Start-up' section;
- All the electrical connections shown on the control panel wiring diagrams.

## 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:

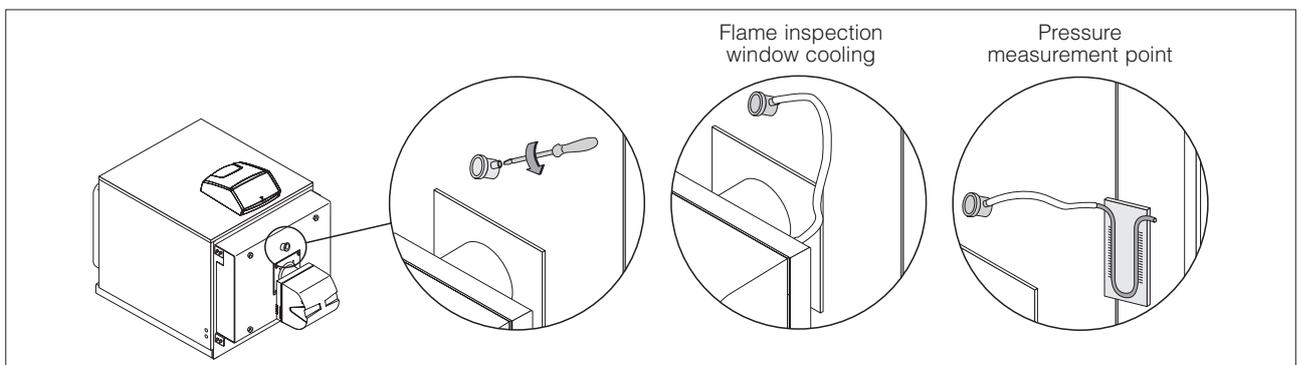
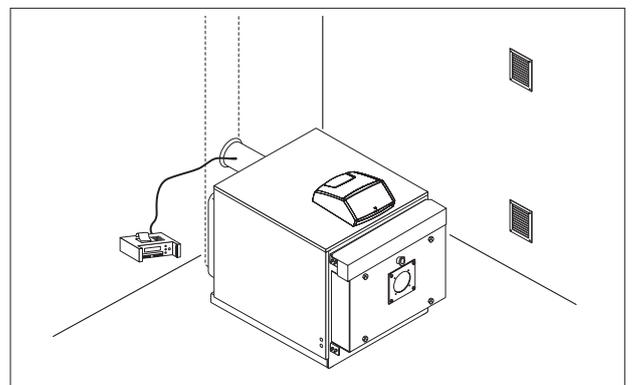
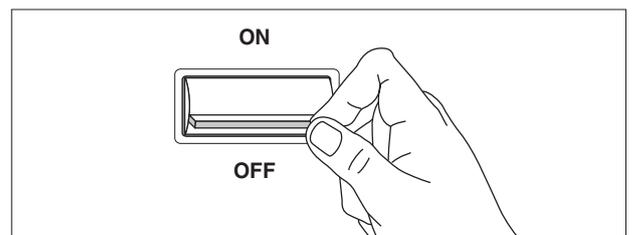
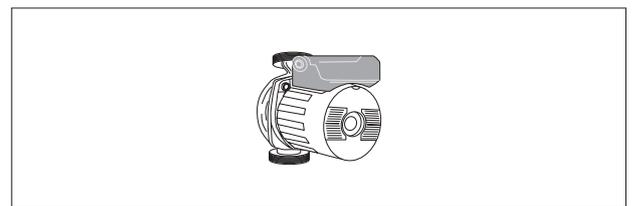
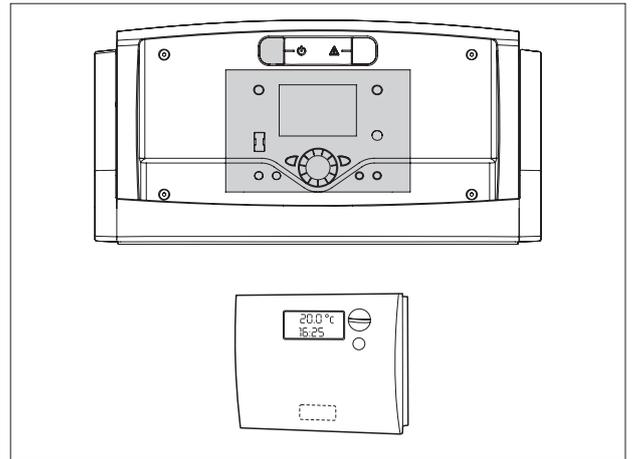
- The boiler thermostat setting is changed
- Power to the control panel is switched off and on again
- The room thermostat or timer thermostat is adjusted.

Check that there are no leaks from around the door seal. If there is any leakage of combustion gases, adjust the door as instructed on page 33.

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

Turn off the main power switch to the boiler and make sure that the boiler shuts down properly.

Provided all the above conditions are satisfied, start the boiler up again, then analyse the combustion fumes, measure fuel flow and re-check the door seal.



**!** A rubber socket is attached to the flame inspection window. If this is used as a pressure measurement point, leave the screw in place in order to close off

the pressure measurement line during normal boiler functioning. If the rubber socket is used to cool the flame inspection window, remove the screw to ensure an adequate air flow.

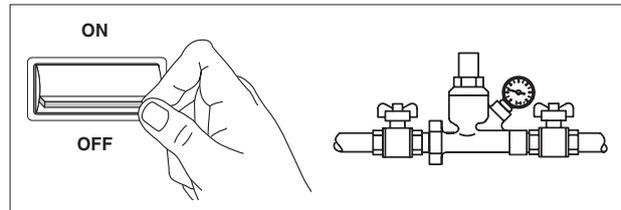
Regular maintenance is a legal requirement. It is also essential for the safety, efficiency and durability of the boiler. Proper maintenance keeps consumption and emissions down, and ensures that the boiler continues to operate reliably over time.

- Turn the system's main power switch OFF
- Close the fuel shut-off cocks.

**⚠** Make sure that the door is properly adjusted after every maintenance operation.

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

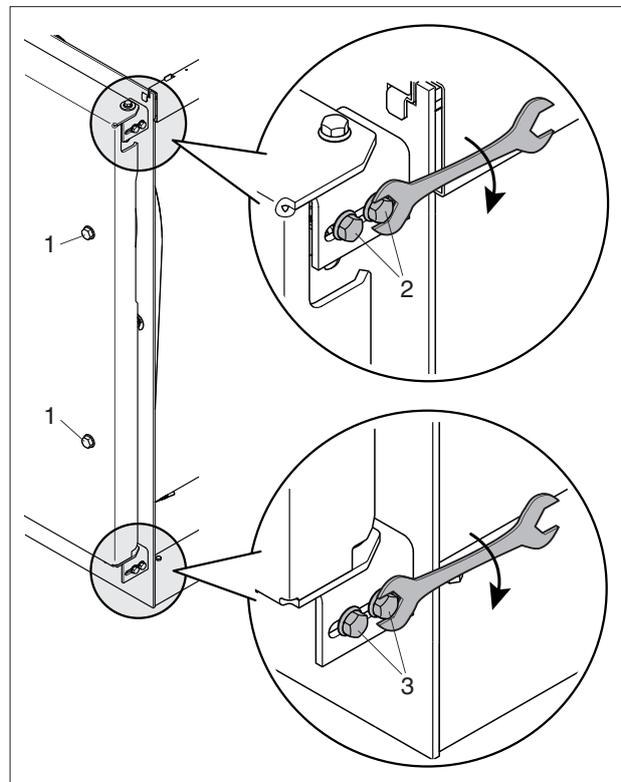
Analyse the combustion fumes before commencing any maintenance. The results of fume analysis can give a clear idea of what servicing or repairs are needed.



## OPENING THE DOOR

- Make sure that the top safety bolts (2) and bottom safety bolts (3) on the hinged side of the boiler are tight.
- Completely unscrew the main fixing bolts (1) and open the door. (These bolts are captive in the door and cannot be removed.)

**⚠** The first time you open the door, remove the spare hinge assembly 'B' (bushing (10), bolt (9), and washer (11)) opposite the hinged side of the door.

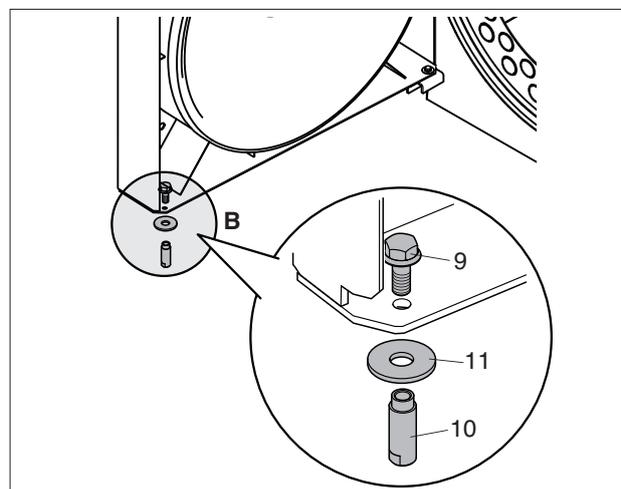


## ADJUSTING THE DOOR

Make quite sure that the door presses uniformly all around the double seal to prevent dangerous fumes escaping into the air from the pressurised furnace. Proceed as follows to adjust the door seals:

- Push the door shut and tighten the main fixing bolts (1) until the seals start to compress.
- Loosen the safety bolts (2 and 3) then fully tighten the main door fixing bolts (1).
- Re-tighten the safety bolts (2 and 3).

**⚠** Make sure that the door is properly adjusted after every maintenance operation.



## 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.

Proceed as follows to clean the boiler:

- Open the front door (1) and pull out the turbulators (2)

⚠ If you need to replace any turbulators, make sure that the replacements have the characteristics listed in the table below.

- Use a flue brush (3) or other suitable tool to clean inside the combustion chamber and the flue gas pipes.
- Open the inspection window (4) and clean out any deposits from inside the flue gas box.

If more thorough cleaning is required, remove the flue gas box cover (5). Fit a new glass fibre seal when fitting the cover again.

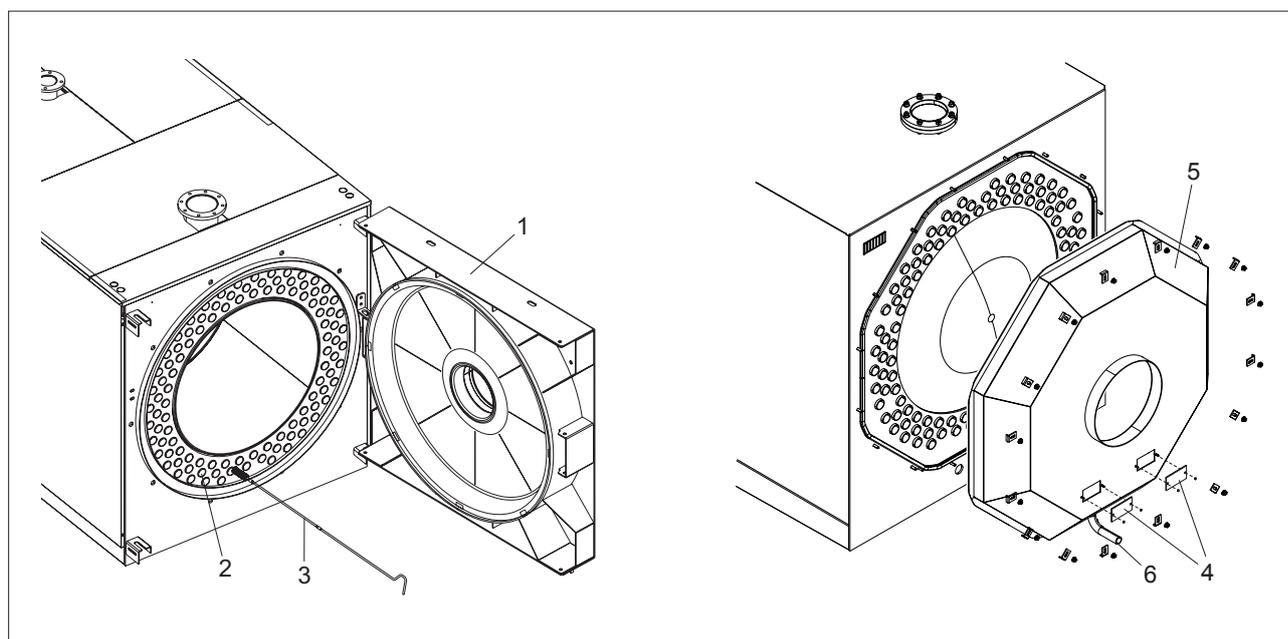
Check at regular intervals that the condensate drain (6) is not blocked.

Clean all removed components, then follow the above steps in the reverse order to refit them.

⚠ If you are using fuel oil burners with a smoke scale reading higher than 3, perform the following actions **every 300 hours** of operation:

- Clean the boiler's heat exchange surfaces.
- Check and clean the turbulators. Replace if worn or damaged.

DIMENSIONS (mm)	RTQ 3S			
	2700	3000	3500	4000
Depth	2760	2460	2340	2340
N° waves	46	41	39	39
N° turbulators	106	119	130	140
Depth clip	89	250	400	400



FAULT	CAUSE	CORRECTIVE ACTION
The boiler becomes dirty very quickly	Burner badly adjusted	Check the adj. 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 keeps shutting down, and the control panel warning light comes on	Control thermostat problem	Check functioning of 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
	Problem with minimum temp. thermostat (if present)	Check the temperature setting
There is a smell of fumes	Fumes escaping into the air	Clean the boiler body Clean the flue gas pipes Check that the boiler, flue gas pipes and stack are all properly sealed Check the door seal
The safety valve keeps opening	Circuit pressure too high	Check the circuit pressure Check pressure reducer functioning Check pressure reducer setting
	Problem with heating system expansion vessel	Check the efficiency of the expansion vessel

# RIELLO

RIELLO S.p.A.  
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The manufacturer strives to continuously improve all products. Appearance, dimensions, technical specifications, standard equipment and accessories are therefore liable to modification without notice.