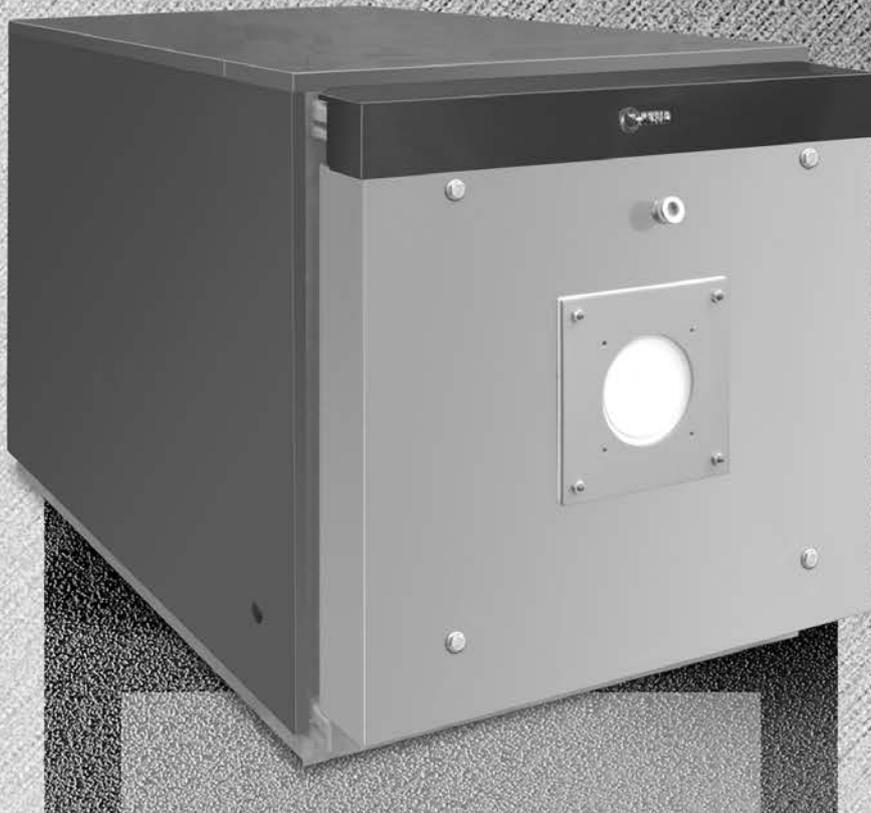


STEEL BOILERS

RTQ 3S

35-55-70-91

**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 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 |
|-----------|----------|
| RTQ 35 3S | 20025617 |
| RTQ 55 3S | 20025618 |
| RTQ 70 3S | 20025619 |
| RTQ 91 3S | 20024200 |

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 20025364 Rev. 11 (01/16) is made up of 32 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.
-  Drain the central heating circuit if there is any risk of freezing
-  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:

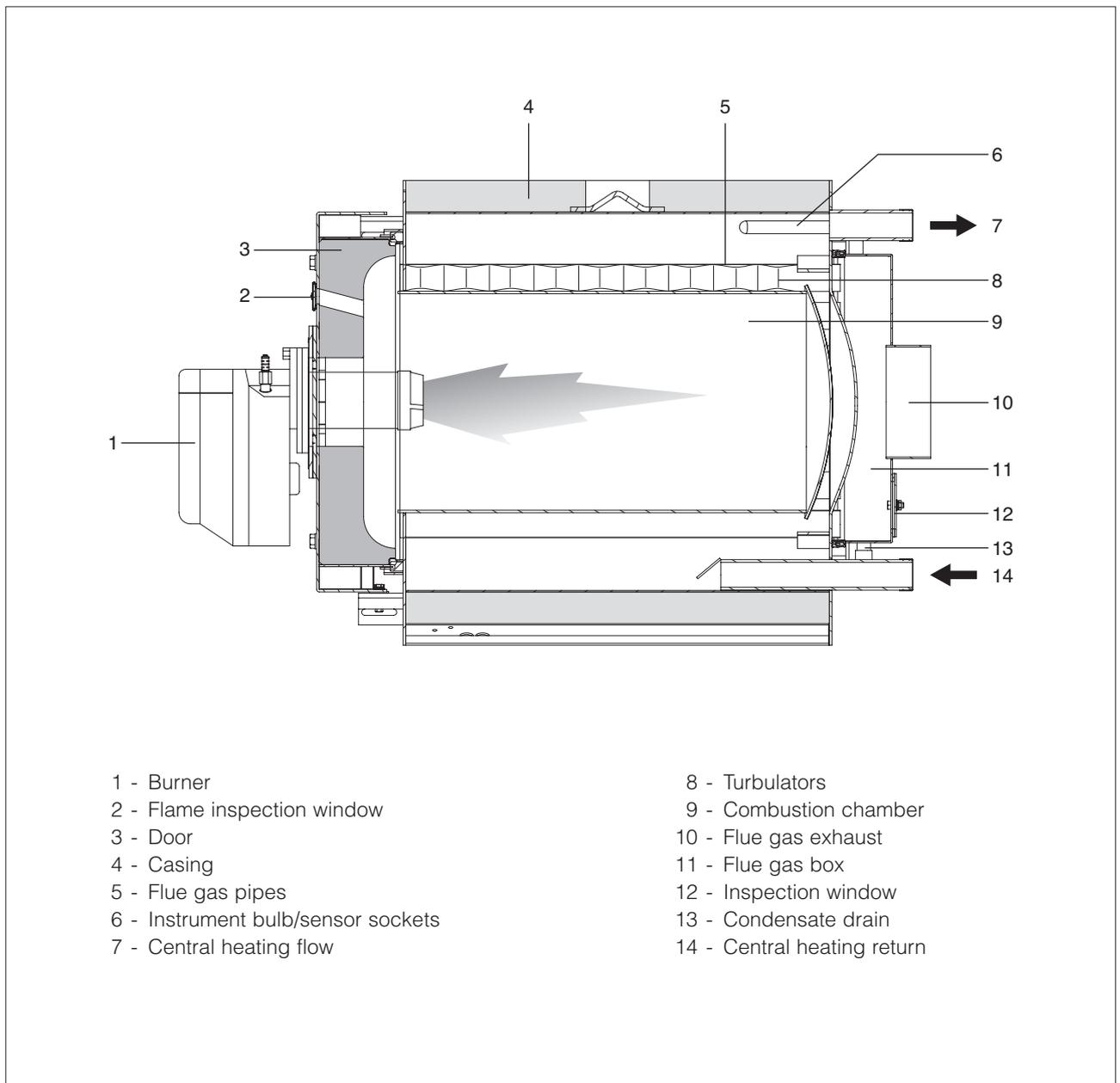
- The combustion chamber and heat exchange system are specially designed and shaped to achieve the best possible volume ratio.
- Only top quality materials are used to ensure a long working life.

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 | | MINIMUM CH FLOW TEMPERATURE | |
|--------------------|--------------------|-----------------------------|-----------|
| MODELL | TYPE | T° > 50°C | T° > 40°C |
| 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 |
|------------------------------|--|------------------|---------------|----------------|--------------|------------------|-----------|---------|-----------------------|---------------------|---------------------|
| CLIMA TOP | STANDARD | ● | ● | ● | | | | | ● | | |
| | Control by control panel with assistance of accessories listed below | | | | ○ | ○ | ○ | ○ | | ○ | ○ |
| | ACCESSORIES | | | | | | | | | | |
| | Immersion temperature sensor | | | | 1 | 1 | 1 | 1 | | | |
| | Solar collector temperature sensor | | | | | | 1 | | | | |
| Pipe temperature sensor | | | | | | | | | 1 | 1 | |
| CLIMA COMFORT | STANDARD | ● | | | | | | | ● | | |
| | Control by control panel with assistance of accessories listed below | | ○ | | ○ | | ○ | ○ | | ○ | ○ |
| | ACCESSORIES | | | | | | | | | | |
| | Immersion temperature sensor | | | | 1 | | 1 | 1 | | | |
| | Solar collector temperature sensor | | | | | | 1 | | | | |
| | Pipe temperature sensor | | | | | | | | | 1 | 1 |
| Two-stage burner control kit | | 1 | | | | | | | | | |
| 1 mixed zone kit | | | | | | | | | | 1 | |
| CLIMA MIX | STANDARD | | | | | | | | | ● | |
| | Control by control panel with assistance of accessories listed below | | | | | | | | | | ○ |
| | ACCESSORIES | | | | | | | | | | |
| Pipe temperature sensor | | | | | | | | | 1 | 1 | |
| 1 mixed zone kit | | | | | | | | | | 1 | |
| PRIME | STANDARD | ● | | | | | | | ● | | |
| | Control by control panel with assistance of accessories listed below | | ○ | | | | | | | | |
| | ACCESSORIES | | | | | | | | | | |
| Two stage burner kit | | 1 | | | | | | | | | |
| PRIME ACS | STANDARD | ● | | | | | | ● | ● | | |
| | Control by control panel with assistance of accessories listed below | | ○ | | | | | | | | |
| | ACCESSORIES | | | | | | | | | | |
| | Two stage burner kit | | 1 | | | | | | | | |
| Total shutdown kit | 1 | 1 | | | | | | | | | |

When a TECH CLIMA TOP or CLIMA COMFORT control panel is installed, the boiler return (cold) line must be equipped with a temperature sensor socket. See the catalogue for the necessary accessory part numbers.

RECOMMENDED BURNERS

⚠ See the instruction manual provided with the burner for further information on:

- burner installation
- electrical connections
- burner adjustments.

- ⚠
- 1 - Long heads and burner plates are required for the correct installation and coupling of the burners.
 - 2 - If a two stage burner is installed, 1st stage heat input must not be less than 70% of total heat input. With liquid fuel burners equipped with 2 nozzles, it is therefore important to choose the correct first stage nozzle.
 - 3 - In Italy, the Decree of the President of the Council of Ministers of the 2nd October 1995 requires that heating systems with heating power of less than 3 MW use fuel oil with a sulphur content of less than 0.3 % by weight.

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.

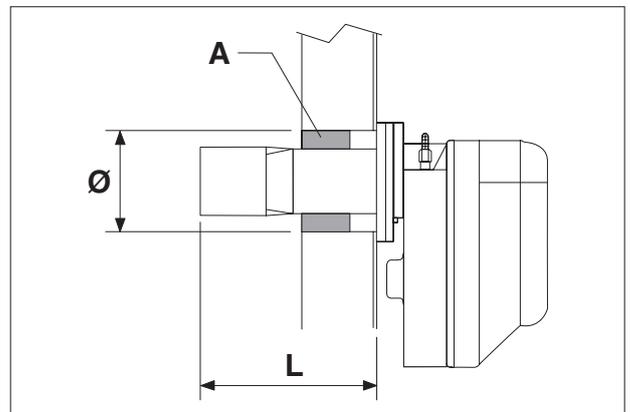
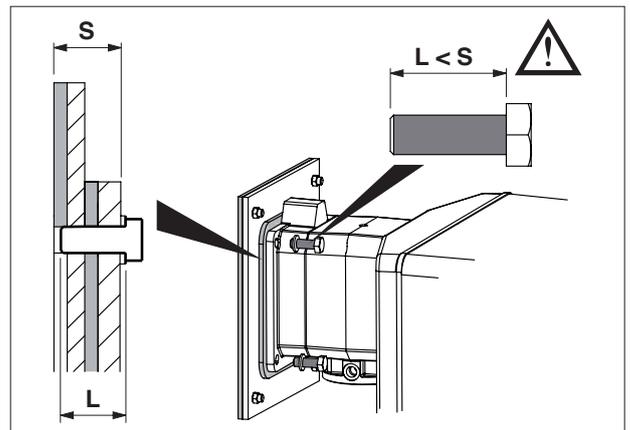
Longer bolts can cause the door to warp, compromising its ability to seal the boiler hermetically and permitting the release of combustion fumes.

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.

| DIMENSIONS (mm) | RTQ 3S | | | |
|--------------------|--------|-----|-----|-----|
| | 35 | 55 | 70 | 91 |
| L min. | 115 | 115 | 170 | 170 |
| Ø hole in door | 110 | 110 | 140 | 140 |



! 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.

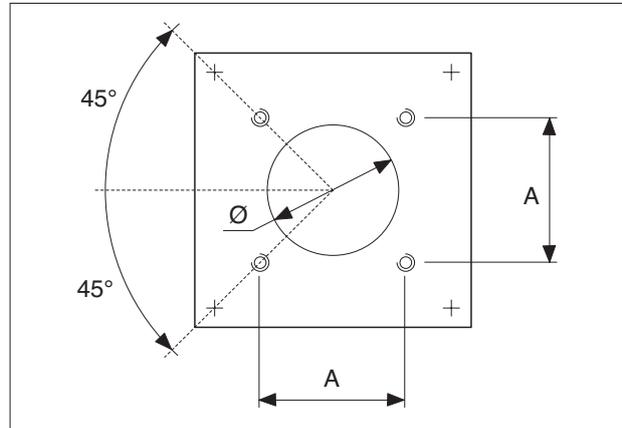
! Blast tubes must not exceed the specified lengths by more than **20%**.

⊘ 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 3S | | | |
|-----------------|--------|-----|-----|-----|
| | 35 | 55 | 70 | 91 |
| Ø | 110 | 110 | 140 | 140 |
| A | 106 | 106 | 120 | 120 |
| Threads | M8 | M8 | M8 | M8 |

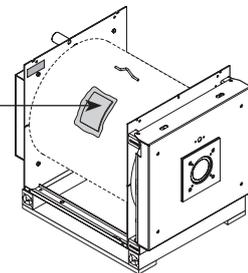


PRODUCT IDENTIFICATION

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.

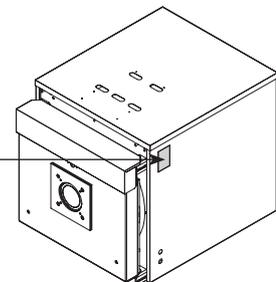
It comes inside the documentation envelope. On completion of the installation you **MUST** apply it in a clearly visible position at the top of one of the side panels.

If you damage or lose this label, order a replacement immediately from **RIELLO's** Technical Assistance Service.



23.27.0000581

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 SPECIFICATIONS

| DESCRIPTION | RTQ 3S | | | | | |
|--------------------------------------|-----------|-------|-------|-------|-------|-------------------|
| | 35 | 55 | 70 | 91 | | |
| Fuel | GAS / OIL | | | | | |
| Rated heat input | min | 25 | 35 | 55 | 70 | kW |
| | max | 34,8 | 55 | 69 | 90 | kW |
| Rated useful heat output Pn | min | 23,6 | 33,3 | 51,8 | 66,9 | kW |
| | max | 32,8 | 51,6 | 65,0 | 84,8 | kW |
| Useful efficiency at minimum Pn | | 94,2 | 95,1 | 94,2 | 95,6 | % |
| Useful efficiency at maximum Pn | | 94,2 | 93,8 | 94,2 | 94,2 | % |
| Useful efficiency at 30% (47°C) | | 95,9 | 95,5 | 95,9 | 95,9 | % |
| Constant pressure drop | | < 1,5 | | | | % |
| Flue gas temperature | | 98 | 94 | 92 | 93 | °C |
| Flue gas mass flow rate | | 0,015 | 0,024 | 0,030 | 0,040 | kg/sec |
| Furnace pressure | | 0,4 | 0,9 | 0,6 | 2,0 | mbar |
| Furnace volume | | 37,8 | 45,2 | 80,2 | 97,4 | dm ³ |
| Total volume of flue gas side | | 62,2 | 73,4 | 119,1 | 139,7 | dm ³ |
| Total surface area for heat exchange | | 1,90 | 2,50 | 3,02 | 3,62 | m ² |
| Volumetric heat load | | 921 | 1187 | 872 | 928 | kW/m ³ |
| Specific heat load | | 17,8 | 21,3 | 22,4 | 24,1 | kW/m ² |
| Maximum operating pressure | | 6 | | | | bar |
| Maximum admissible temperature | | 110 | | | | °C |
| Maximum operating temperature | | 95 | | | | °C |
| Min. admissible water return temp. | | 50 | | | | °C |
| Pressure drop ΔT 10°C | | 10,0 | 20,0 | 40,0 | 42,0 | mbar |
| Pressure drop ΔT 20°C | | 5,0 | 3,0 | 10,0 | 14,0 | mbar |
| Water capacity | | 71 | 87 | 103 | 126 | litres |
| Turbulators | | 14 | 16 | 22 | 22 | 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** Models GULLIVER BS with CO₂ = 9,7%.

ACCESSORIES

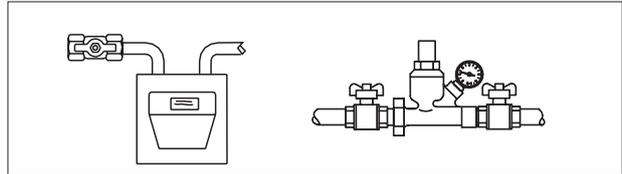
| ACCESSORY | CODE |
|---|---------|
| Hydraulic connection kit RIELLO 7300 | 4030030 |

Have **RIELLO'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.

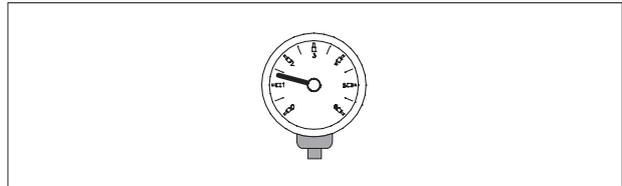
Under certain circumstances, such as after long periods of disuse, the service engineer responsible for the boiler may need to re-start it without involving the Technical Assistance Service.

To do so, perform the following checks and operations:

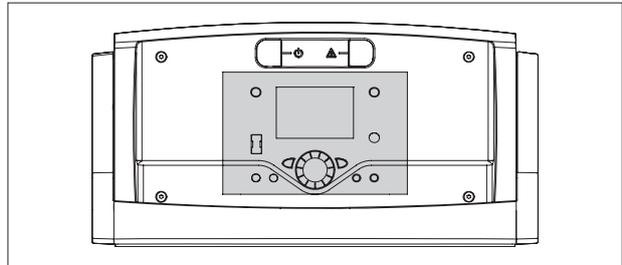
- Check that the gas cock and heating water cock are open



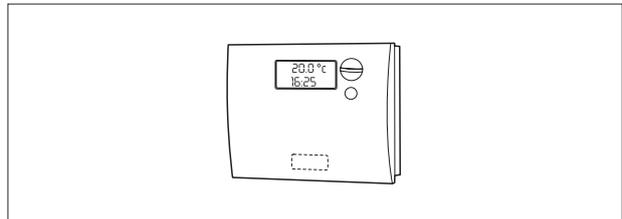
- While the system is still cold, check that working pressure in the water circuit is **over 1 bar** but below the maximum limit specified for the boiler



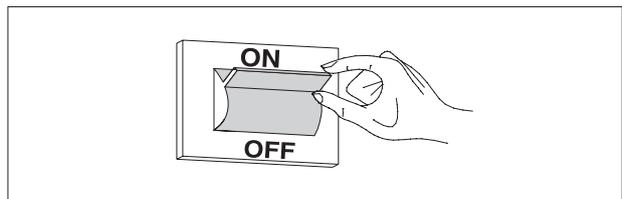
- If the system is equipped with a temperature controller or timer thermostat, make sure that it is switched on



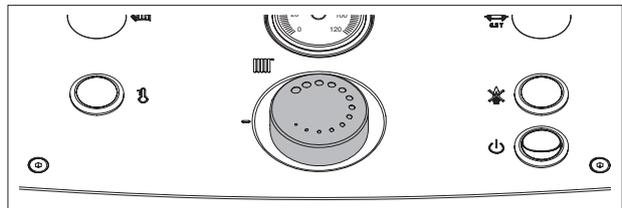
- Adjust the timer thermostat/s or temperature controller to the desired temperature (~20°C)



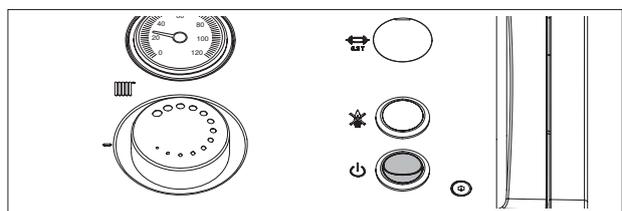
- Turn the system's main power switch ON



- 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.

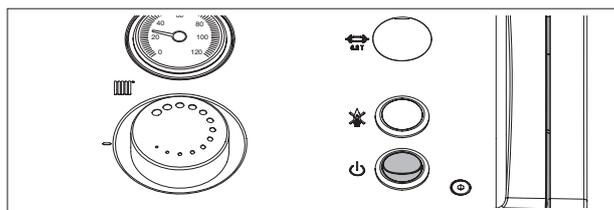
To reset the burner, press the red button light on the burner and wait until the flame ignites.

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

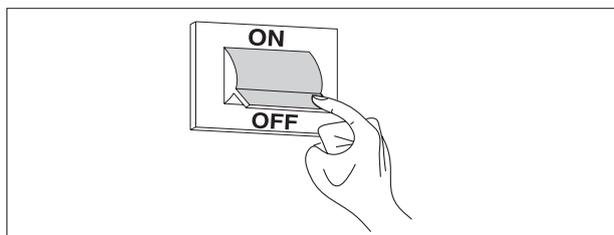
TEMPORARY SHUTDOWN

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



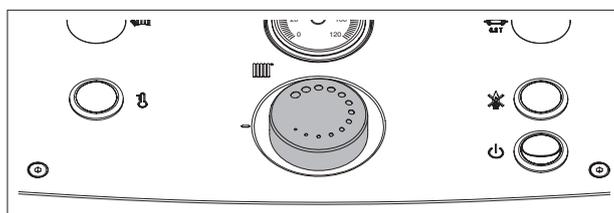
- Turn the mains power switch OFF



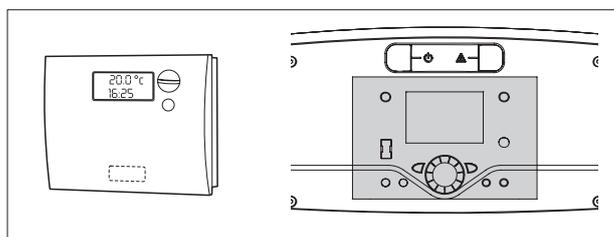
! Do NOT perform this procedure if outdoor temperature falls below ZERO (risk of freezing).

Then proceed as follows:

- Adjust the boiler thermostat to its minimum setting (60°C)



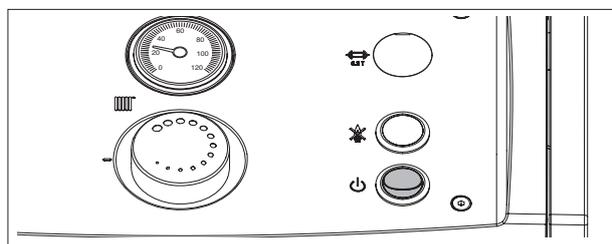
- Make sure that the temperature controller or timer / room thermostat is set to "frost protection" mode.



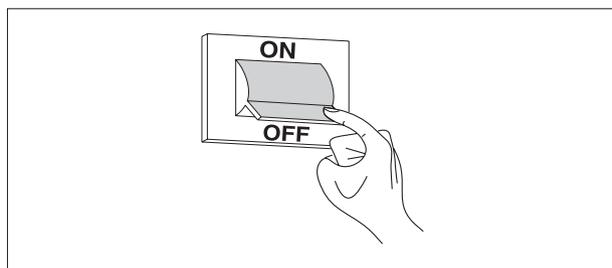
PREPARING FOR EXTENDED PERIODS OF DISUSE

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

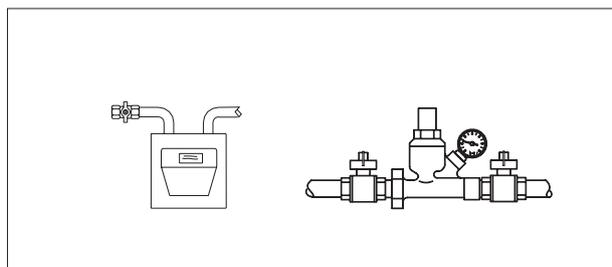


- Turn the mains power switch OFF



- 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 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.

⊖ Do not use abrasive cleaning pads or powder detergents.

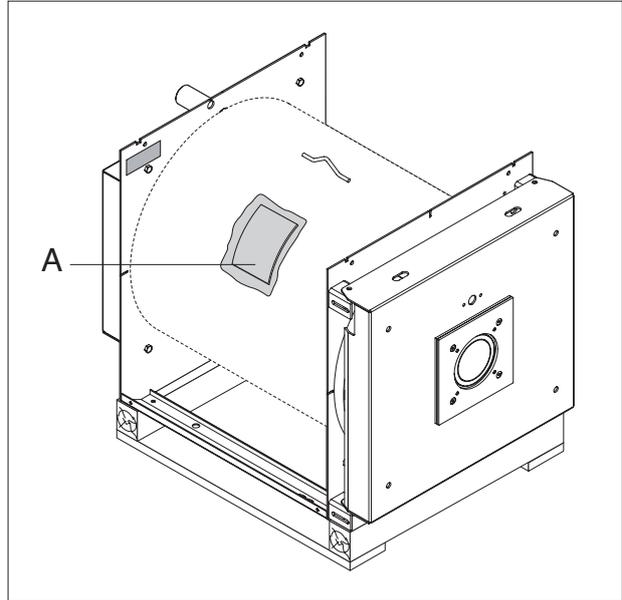
⊖ Never clean the boiler without first disconnecting it from the mains electricity supply by turning the main power switch and the control panel switch OFF.

⚠ The combustion chamber and flue pipes must be cleaned periodically by the Technical Assistance Service or by a qualified heating engineer (see page 30).

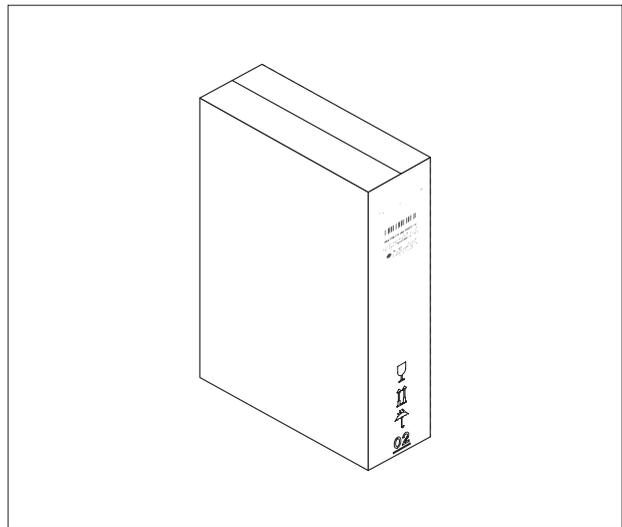
RTQ 3S RIELLO steel boilers come in **3 separate crates**:

- 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)
 - Certificate of Warranty and 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.



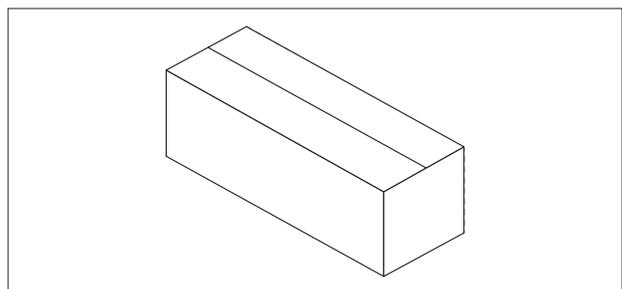
- 2) **THE CASING PANELS** complete with assembly accessories.



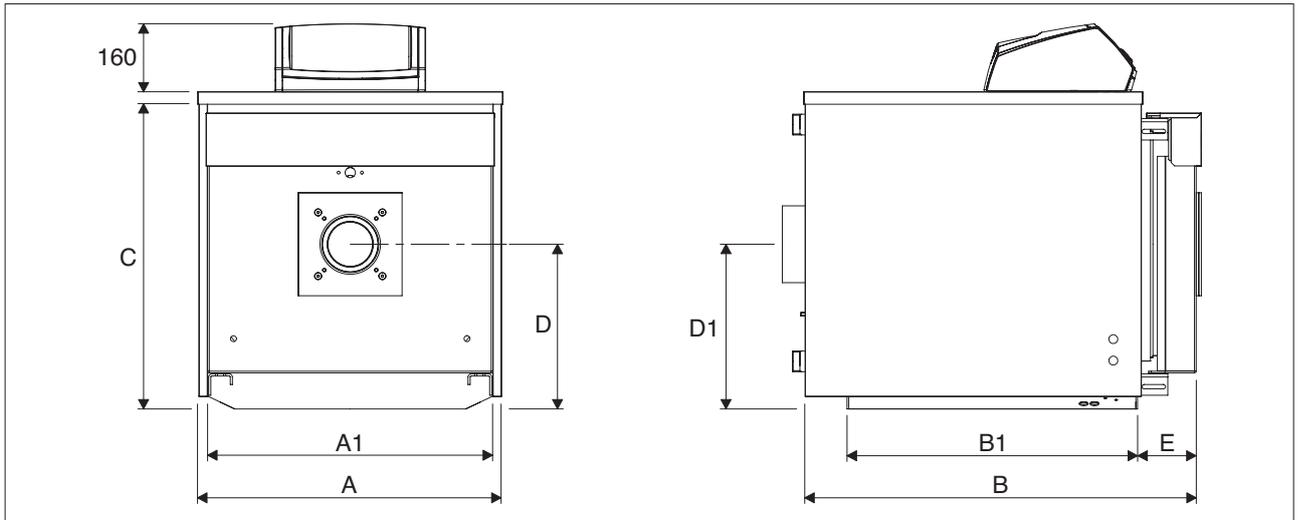
- 3) **THE FRONT COVER** to fit on top of the front door.

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



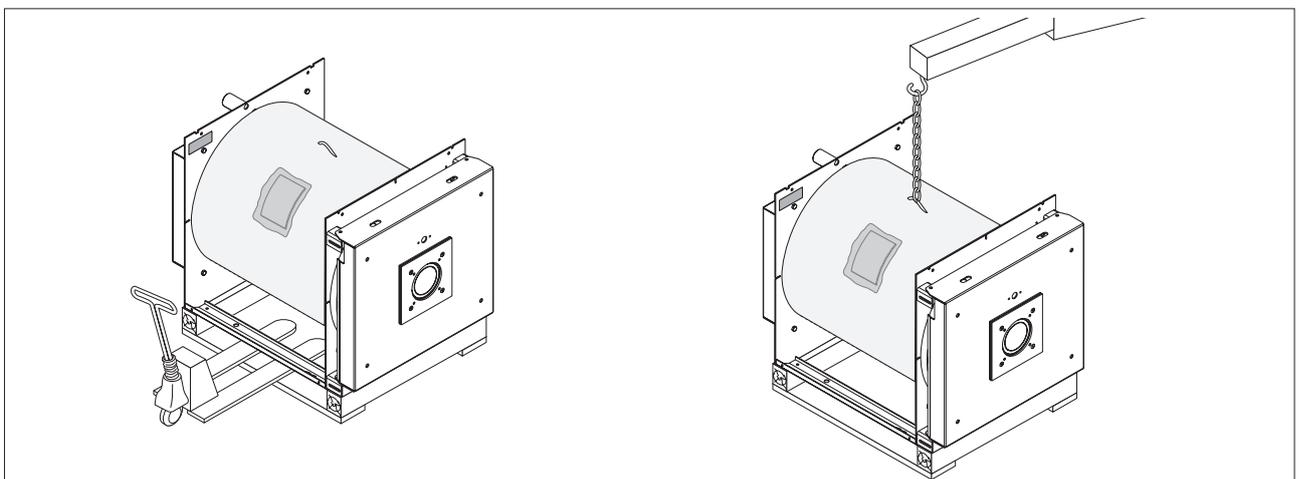
| DIMENSIONS | RTQ 3S | | | | |
|-------------------|--------|-----|-----|------|----|
| | 35 | 55 | 70 | 91 | |
| A - Width | 605 | 605 | 705 | 705 | mm |
| A1 - Base width | 560 | 560 | 660 | 660 | mm |
| B - Depth | 830 | 980 | 910 | 1060 | mm |
| B1 - Base depth | 623 | 773 | 672 | 822 | mm |
| C - Height | 605 | 605 | 740 | 740 | mm |
| D - Burner height | 310 | 310 | 384 | 384 | mm |
| D1 - Flue height | 325 | 325 | 384 | 384 | mm |
| E - Door depth | 110 | 110 | 135 | 135 | mm |
| Weight of boiler | 119 | 140 | 177 | 201 | Kg |
| Weight of casing | 18 | 20 | 22 | 24 | 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.



PLACE OF INSTALLATION

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.

POSITIONING THE BOILER

RIELLO RTQ 3S boilers can be positioned:

On the floor or pedestal

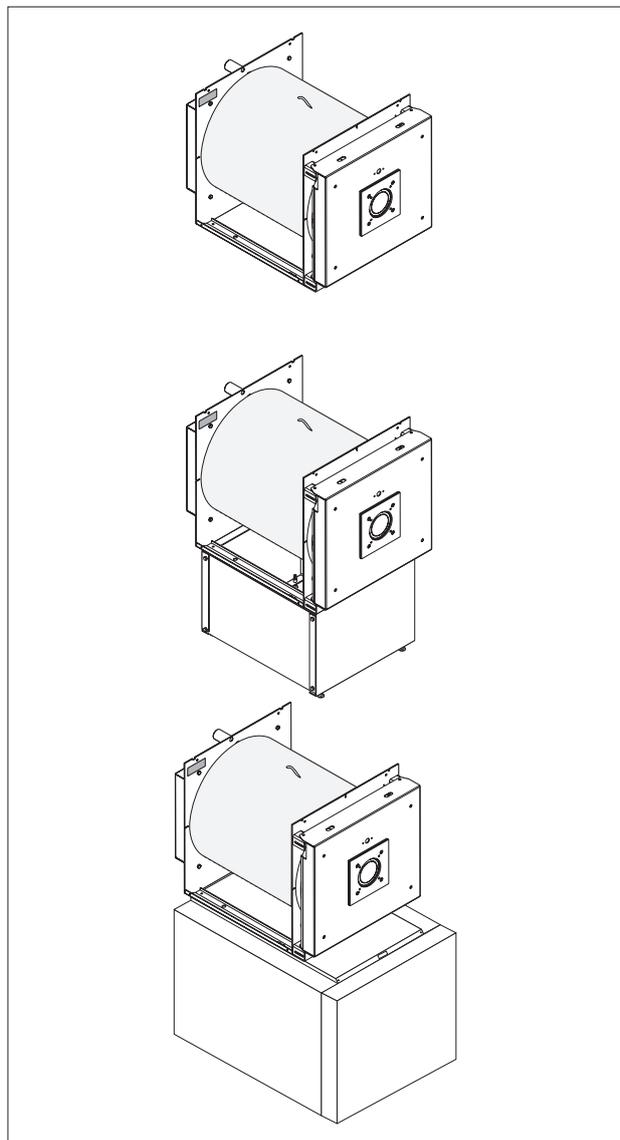
The ideal solution for just heating installation.

⚠ If you are installing the boiler without a pedestal, the limited gap between the burner and the floor makes it particularly important to keep the boiler room clean.

On the heater

This is more practical with a combined installation (heating and hot water).

In this case, **RIELLO 7300** boiler heater combinations are used, as this heater has been specifically designed and manufactured to support the weight of the boiler.



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

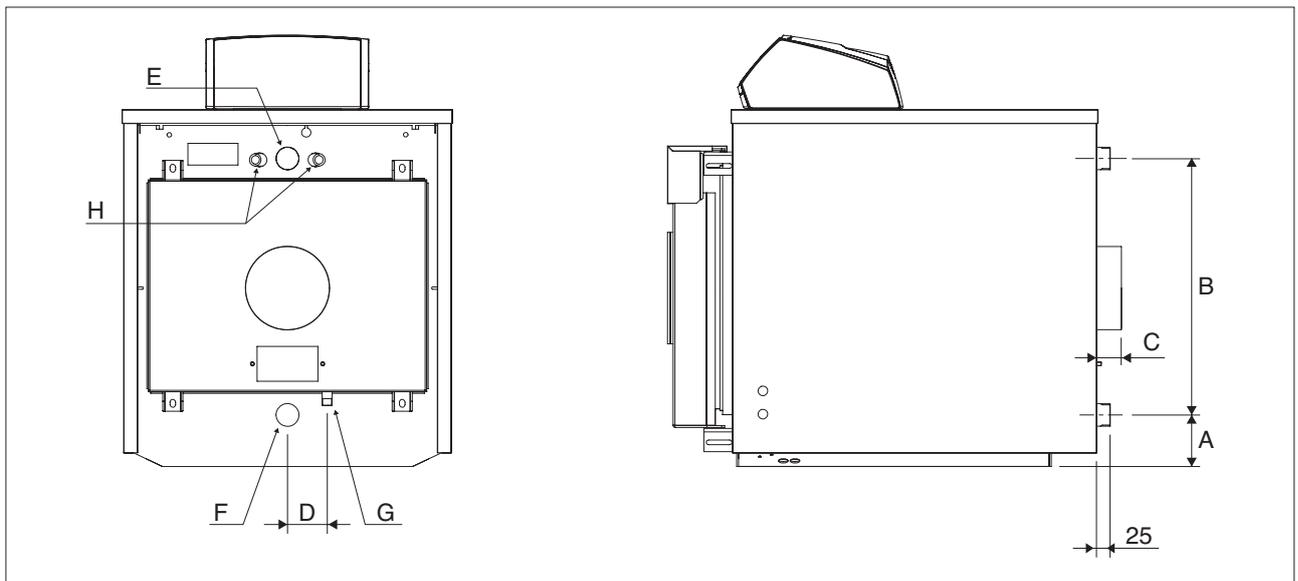
are made and installed in compliance with applicable standards.

- 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 20).

WATER CONNECTIONS

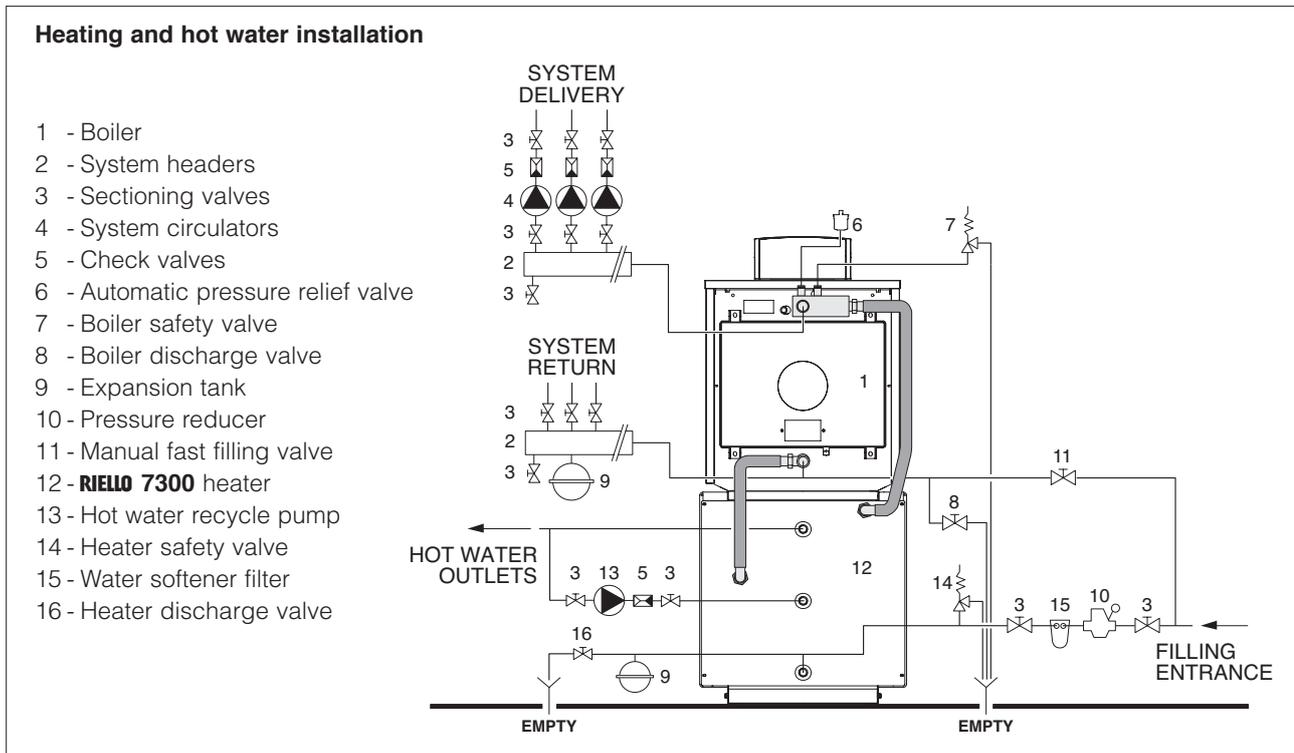
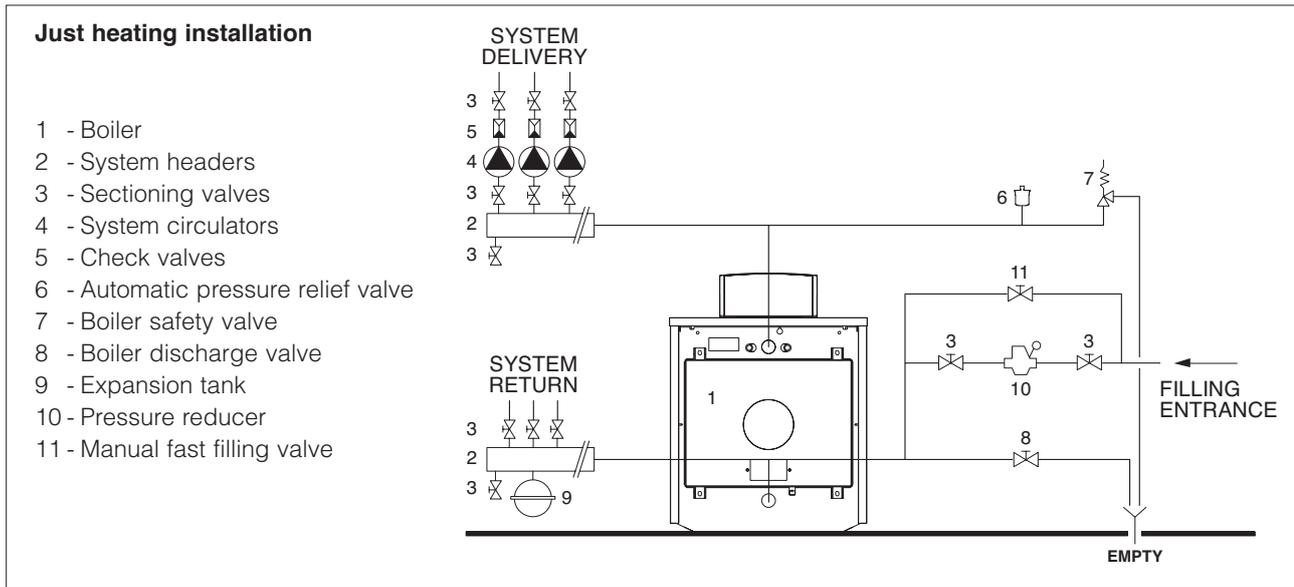
RTQ 3S RIELLO boilers are designed and made for use in central heating installations, but can also be used for domestic hot water production if connected to a suitable storage cylinder. Water fittings are as specified in the following table.

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



| DIMENSIONS | RTQ 3S | | | | |
|--|---------------|--------|--------|--------|----|
| | 35 | 55 | 70 | 91 | |
| A - Return-base distance | 85 | 85 | 110 | 110 | mm |
| B - Delivery/return centre to centre distance | 455 | 455 | 552 | 552 | mm |
| C - Flue gas discharge projection | 50 | 50 | 60 | 60 | mm |
| D - Del./ret. centre to centre distance condensation safety/discharge | 75 | 75 | 85 | 85 | mm |
| E - System delivery | 1" 1/4 | 1" 1/4 | 1" 1/2 | 1" 1/2 | Ø |
| F - System return/boiler discharge | 1" 1/4 | 1" 1/4 | 1" 1/2 | 1" 1/2 | Ø |
| G - Flue pipe condensation discharge | 1/2" | 1/2" | 1/2" | 1/2" | Ø |
| H - Instrument bulb / sensor socket | G 1/2" - Ø 16 | | | | Ø |

Below are given the two main hydraulic diagrams:



! 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.

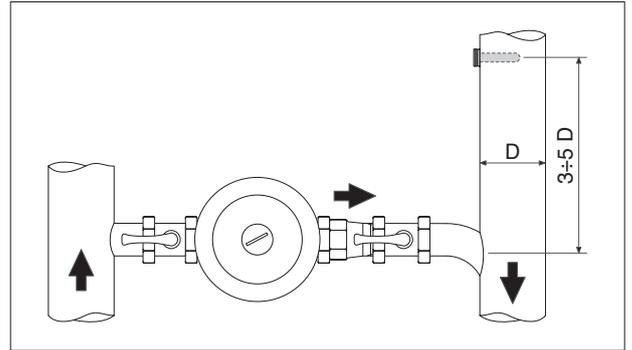
! Circuits filled with anti-freeze must be fitted with water disconnectors.

! 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 200 mV/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 | 35° F |
| Sulphur ions | none |
| Ammonia ions | none |
| Silicon ions | below 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% maximum flow to ensure a water return temperature no lower than 55 °C. Pump shutdown must also be delayed for at least 3 minutes at the beginning of extended periods of boiler shutdown (overnight or weekend shutdown etc.).



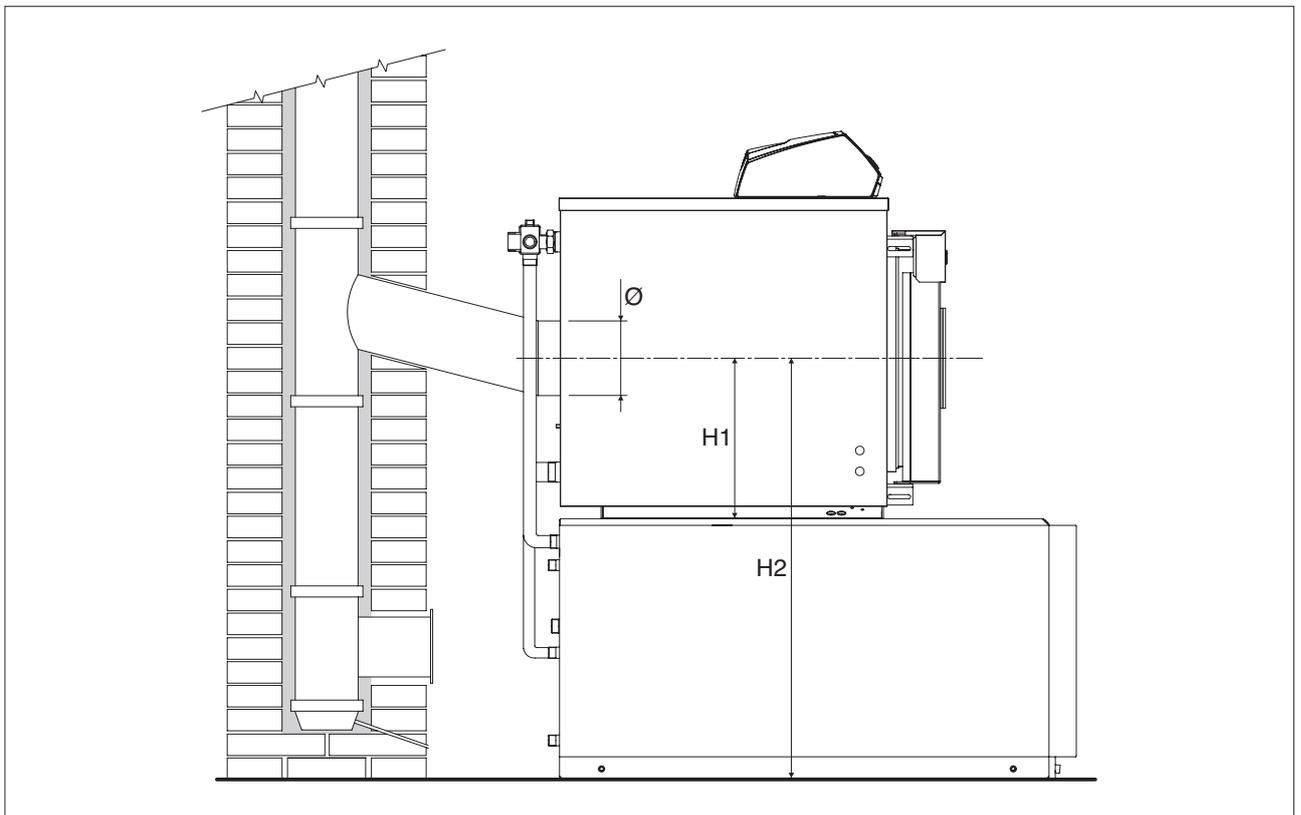
⚠ A sensor socket must be positioned at a distance of 3 to 5 times the diameter of the water return pipe, upstream from the water fitting, to measure effective water return temperature and control the anti-condensate pump or the temperature controller stabilisation function.

⚠ 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.

| DIMENSIONS (mm) | RTQ 35 | | | |
|------------------|--------|-----|------|------|
| | 35 | 55 | 70 | 91 |
| Ø | 139 | 139 | 179 | 179 |
| H1 | 325 | 325 | 384 | 384 |
| H2 (with heater) | 950 | 950 | 1010 | 1010 |



⚠ The flue pipe must guarantee minimum depression as laid down by current Technical Standards, taking "zero" pressure at the connection with the flue duct.

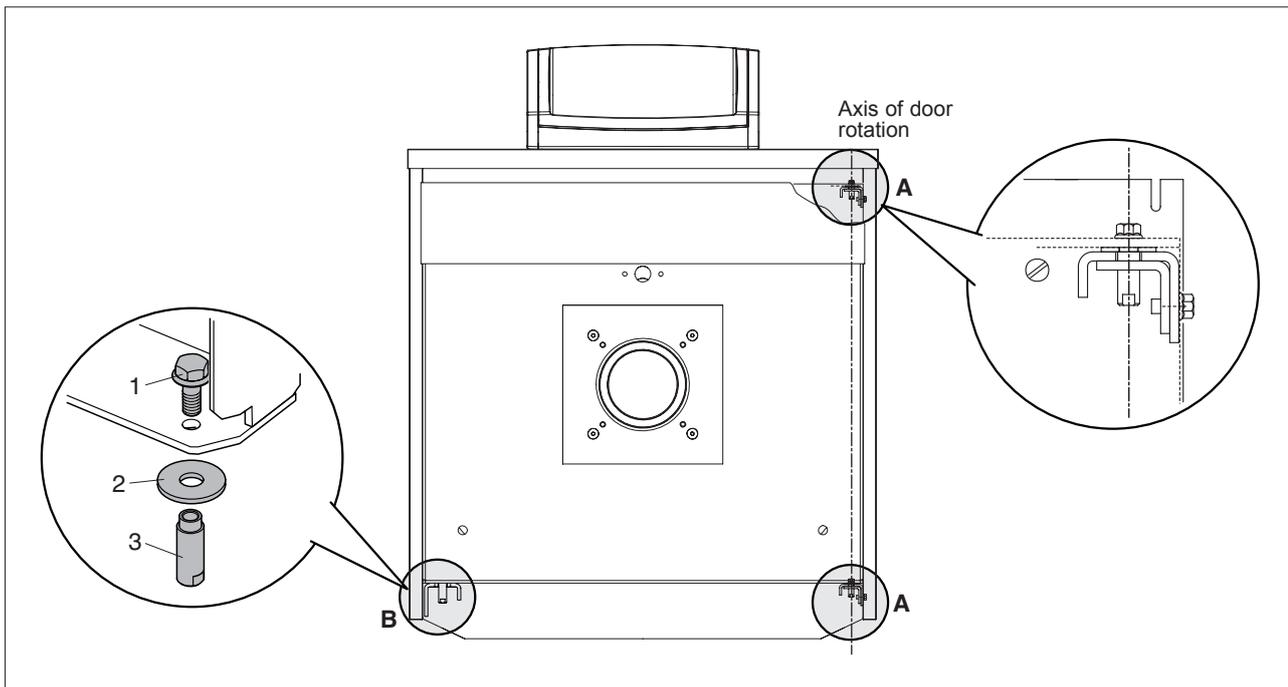
⚠ Unsuitable or wrong sized flue pipes and flue ducts could increase combustion noise, cause condensation problems and have a negative effect on combustion parameters.

⚠ Any discharge pipes that are not insulated are a potential hazard.

⚠ The connections must be sealed with material resistant to temperatures of at least 250°C (for example, filler, putty, silicone preparations).

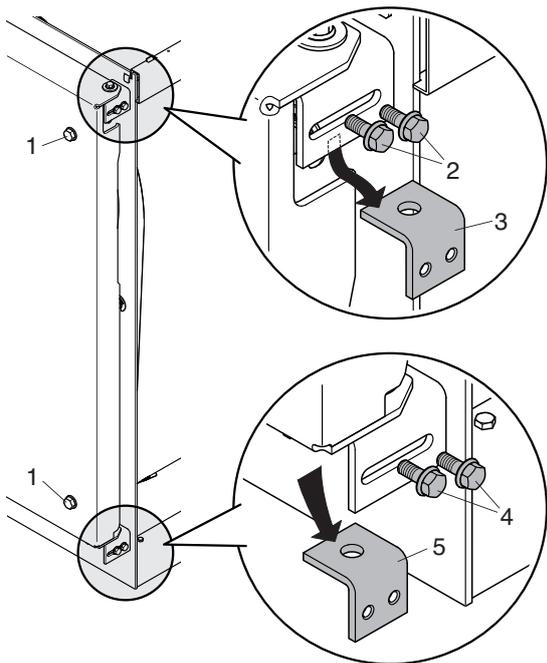
DOOR HINGES

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

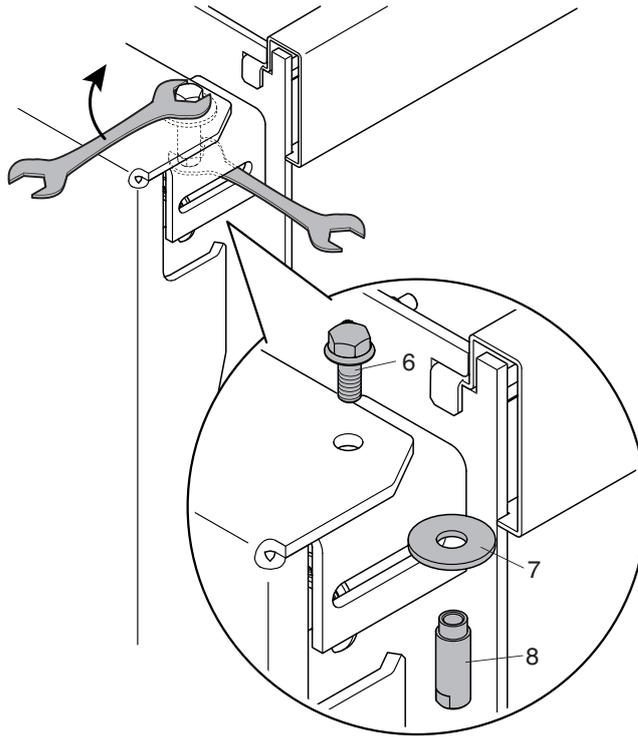


CHANGING THE DIRECTION OF DOOR OPENING

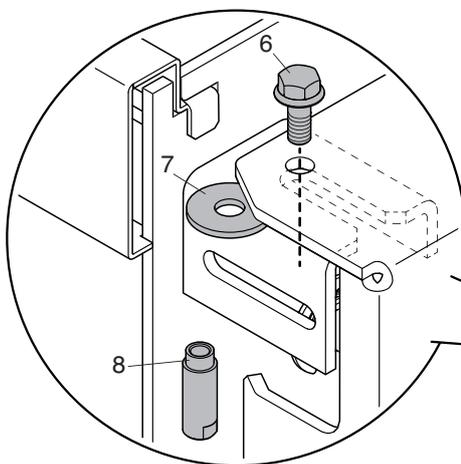
The boiler door hinges are factory fitted on the right of the door. If you need to reverse the direction of opening, remove the boiler's side panel and proceed as follows.



- 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).

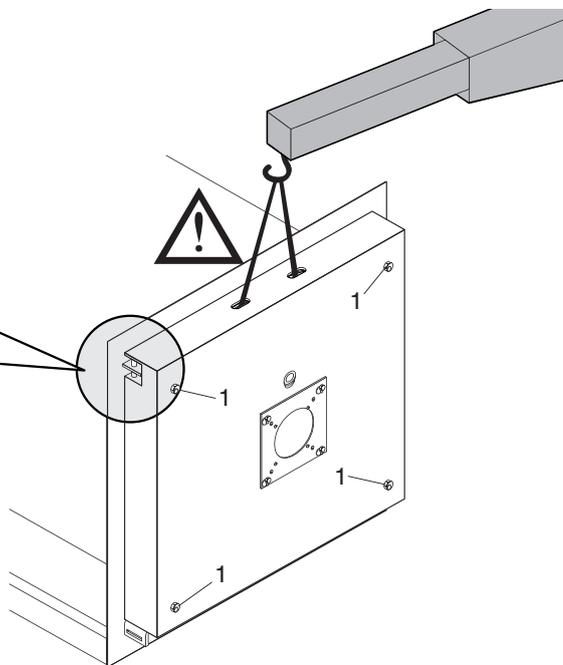


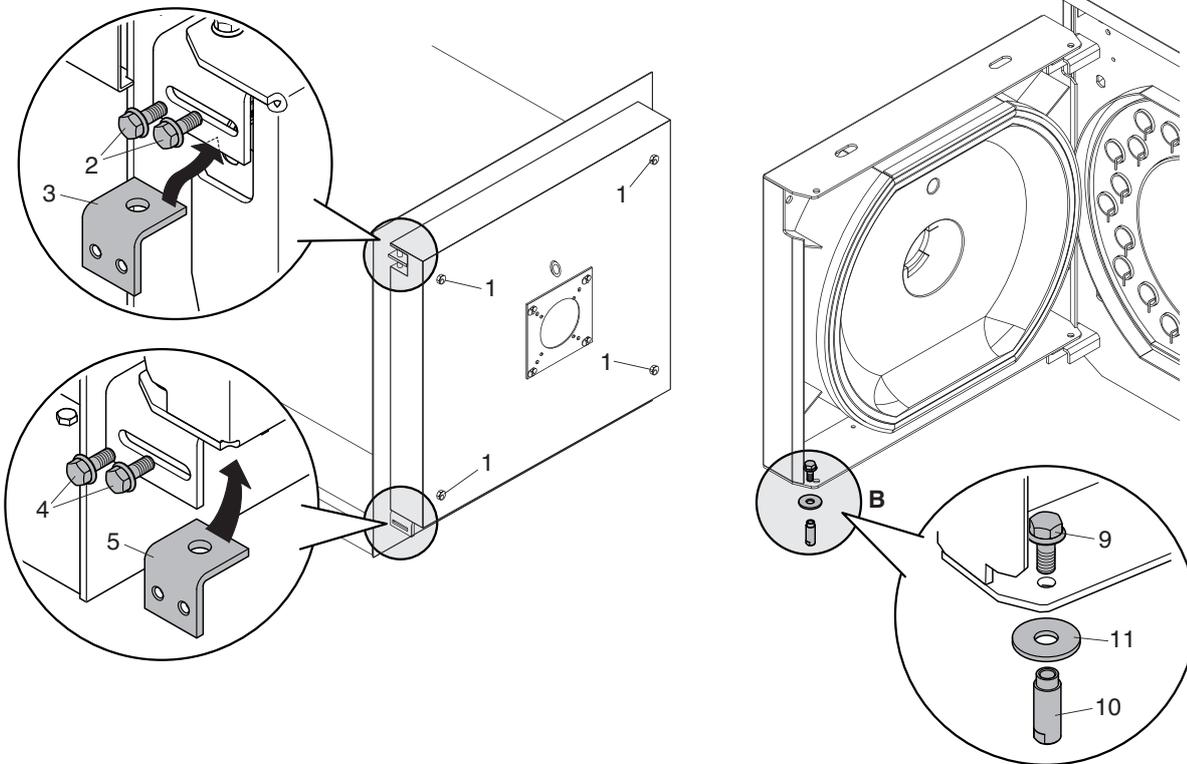
- Insert a spanner through the slot in the side of the top door mounting bracket and hold the bushing (5) steady.
- Unscrew the top bolt (6), then remove the bushing (5) and washer (7).



- Fit the bushing (5), bolt (6) and washer (7) to the opposite side of the door.

⚠ If it proves difficult to align the bolt (6) with the hole in the door, **slightly loosen** the door fixing bolts (1) and lift the door gently to align the hole with the bolt (6). Only lift the door by means of equipment that is suitable for the weight involved, using suitable safety equipment. **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.

EARTH CONNECTION

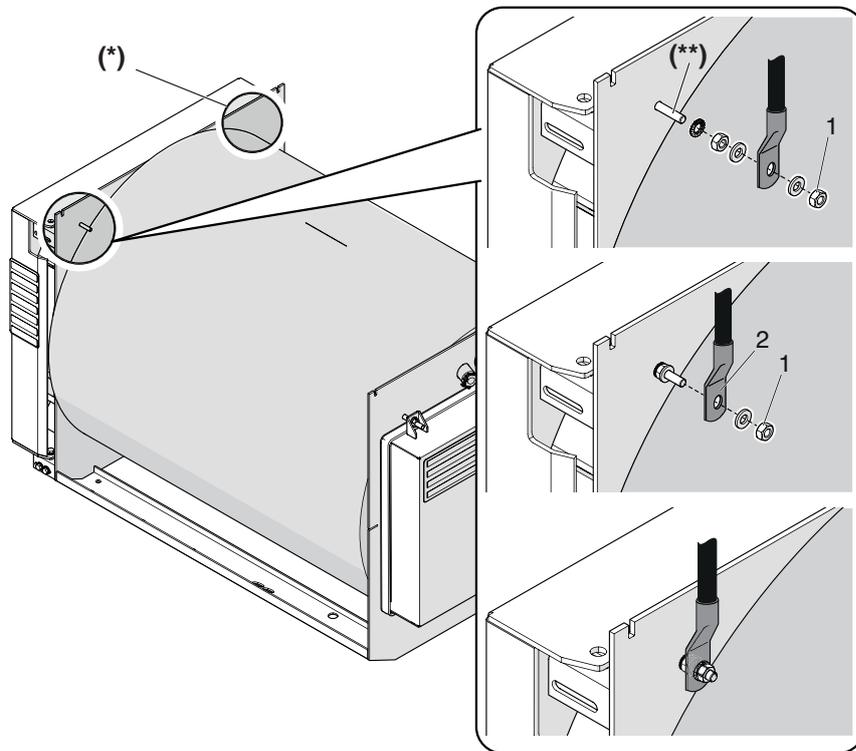
A terminal is provided on the front boiler head to connect the boiler body to an efficient earth system.

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.

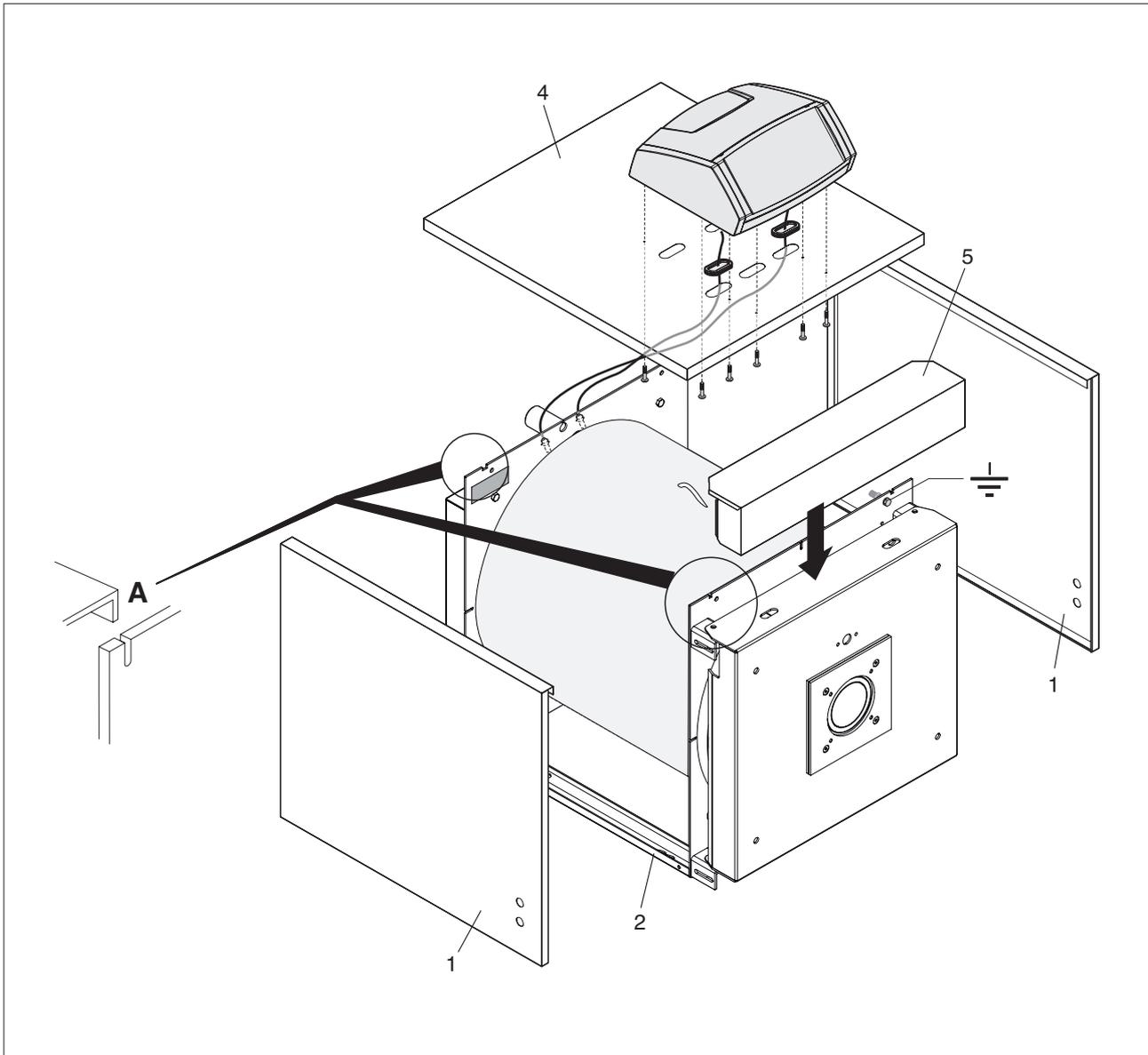
 Another hole (*) in the left side of the boiler head can also be used to earth the appliance. If you wish to use this hole for the earth connection, remove the terminal fittings from the right of the head and move them to the left earthing point.



(**) M6x30 brass

FITTING THE CASING PANELS

- Engage the bottom of the side panels (1) in the bottom rails (2) and engage the top lip of the side panels in the slots (A) in the front and rear heads
- Secure the side panels in place with the top cross beam (3) and the screws provided
- Fit your chosen control panel on the top panel (4) as instructed in the control panel's own instruction manual
- Route the electrical cables and insert the bulbs/sensors in their sockets
- Fit the cable grommets provided into their seats in the panels
- Fit the top panel (4) to close the top of the boiler
- Once all the panels are in place, fit the front cover (5) over the top of the door.

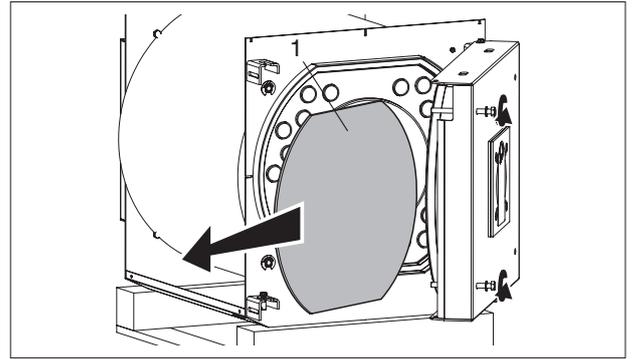


 - Refer to the instruction manuals for the **RIEHO TECH** control panel and for your chosen burner.

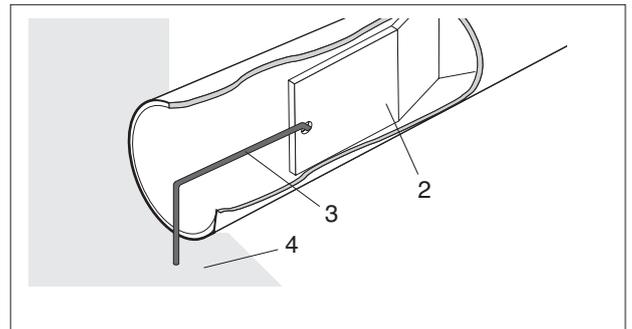
PREPARING FOR INITIAL START-UP

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:

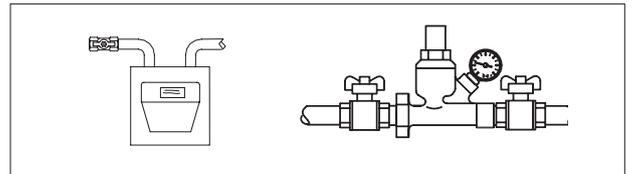
- The protective cardboard sheet (1) has been removed from the ceramic fibre



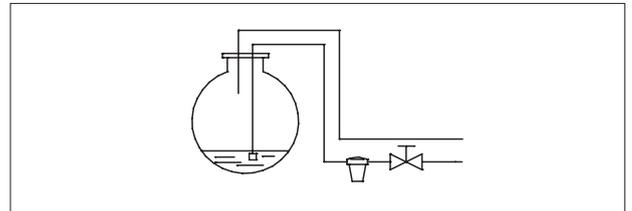
- The turbulators (2) are correctly positioned (vertically) inside the heat exchange tubes and the clips (3) are resting against the wall (4) of the heat exchanger



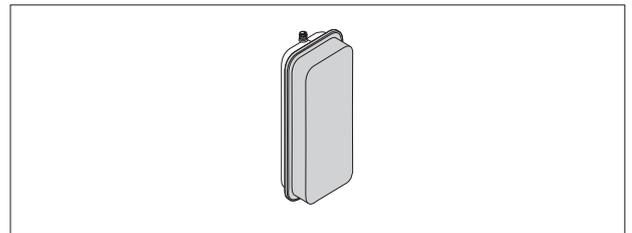
- The water and gas cocks are open



- There is an adequate fuel supply

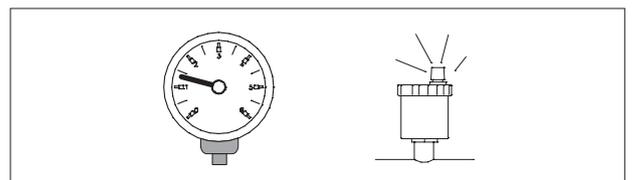


- The expansion vessel is properly charged



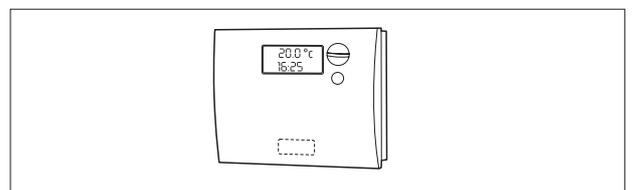
- The working pressure in the water circuit is over 1 bar but below the maximum limit specified for the boiler

- The water circuits have been properly bled



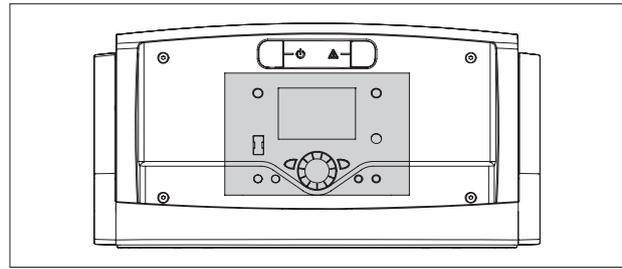
- The mains power connections to the boiler and its accessories (burner, pump, control panel, thermostats, etc.) have been properly made.

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

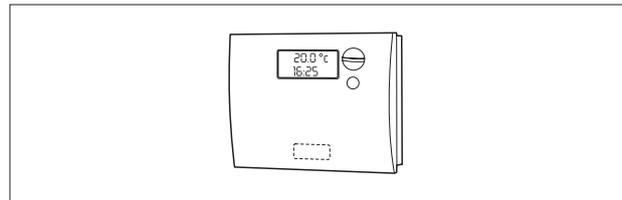


Once you have completed all the preparatory steps, proceed as follows to start up the boiler for the first time:

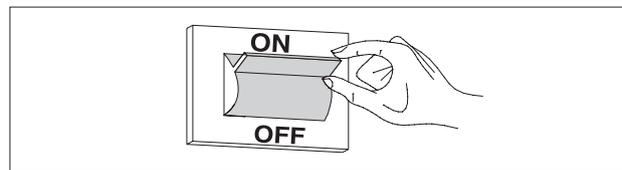
- If the system is equipped with a temperature controller or timer thermostat, make sure that it is switched ON



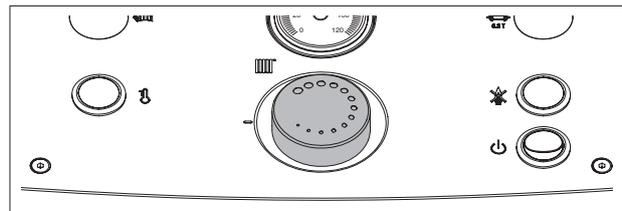
- Adjust the timer thermostat/s or temperature controller to the desired temperature (~20°C)



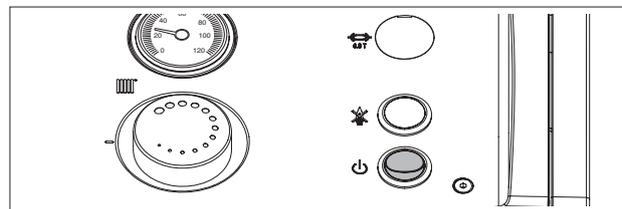
- Turn the system's main power switch ON



- Adjust the boiler thermostat on the control panel



- Turn the control panel power switch ON (1) and make sure that the green power indicator (if fitted) 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:

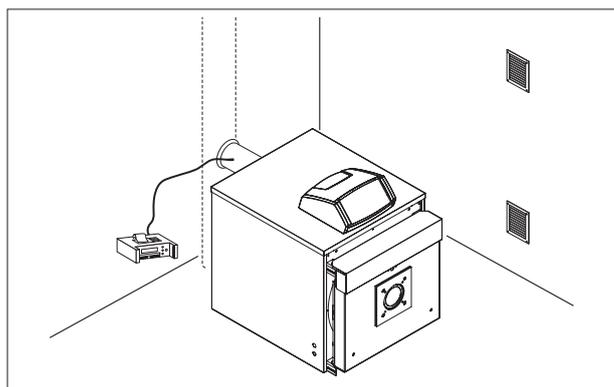
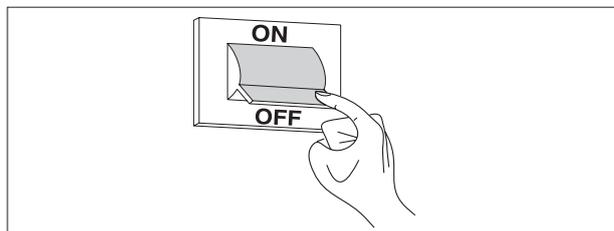
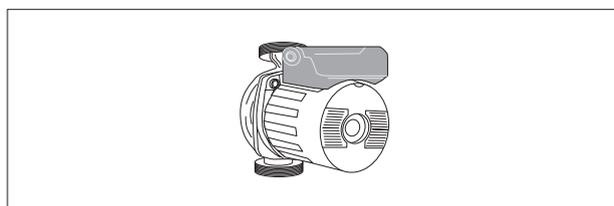
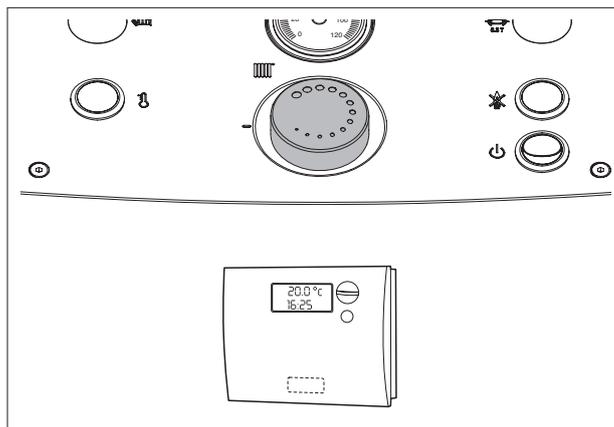
- The boiler thermostat setting is changed
- Power to the control panel is switched off and on again
- The room thermostat or timer thermostat is adjusted.

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 29.

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.



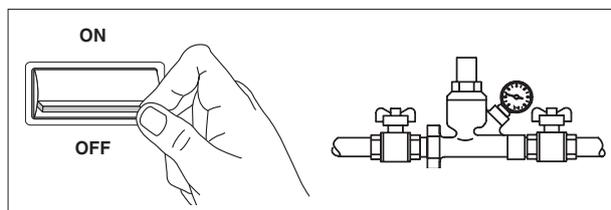
Regular maintenance is a legal requirement. In Italy it is required by Presidential Decree 412 of the 26th August 1993. It is also essential for the safety, efficiency and durability of the boiler. Proper maintenance keeps consumption and emissions down, and ensures that the boiler continues to operate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

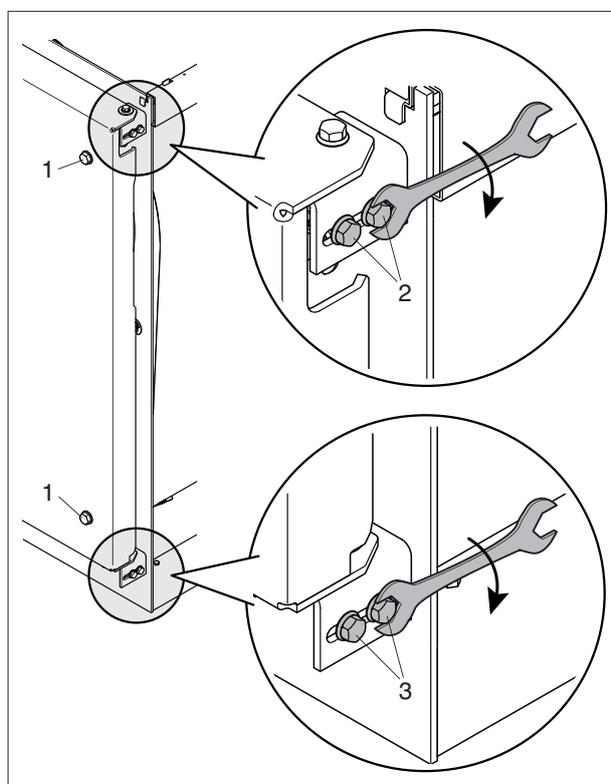
⚠ Make sure that the door is properly adjusted after every maintenance operation.



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.

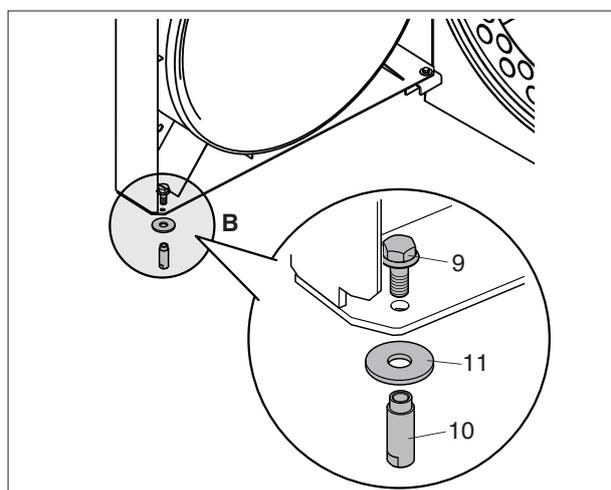


ADJUSTING THE DOOR

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.

| DIMENSIONS (mm) | RTQ 3S | | | |
|--------------------|--------|-----|-----|-----|
| | 35 | 55 | 70 | 91 |
| Depth | 440 | 675 | 675 | 560 |
| N° waves | 7 | 11 | 11 | 9 |
| N° turbulators | 14 | 16 | 22 | 22 |
| Depth clip | 89 | 48 | 48 | 89 |

- 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.

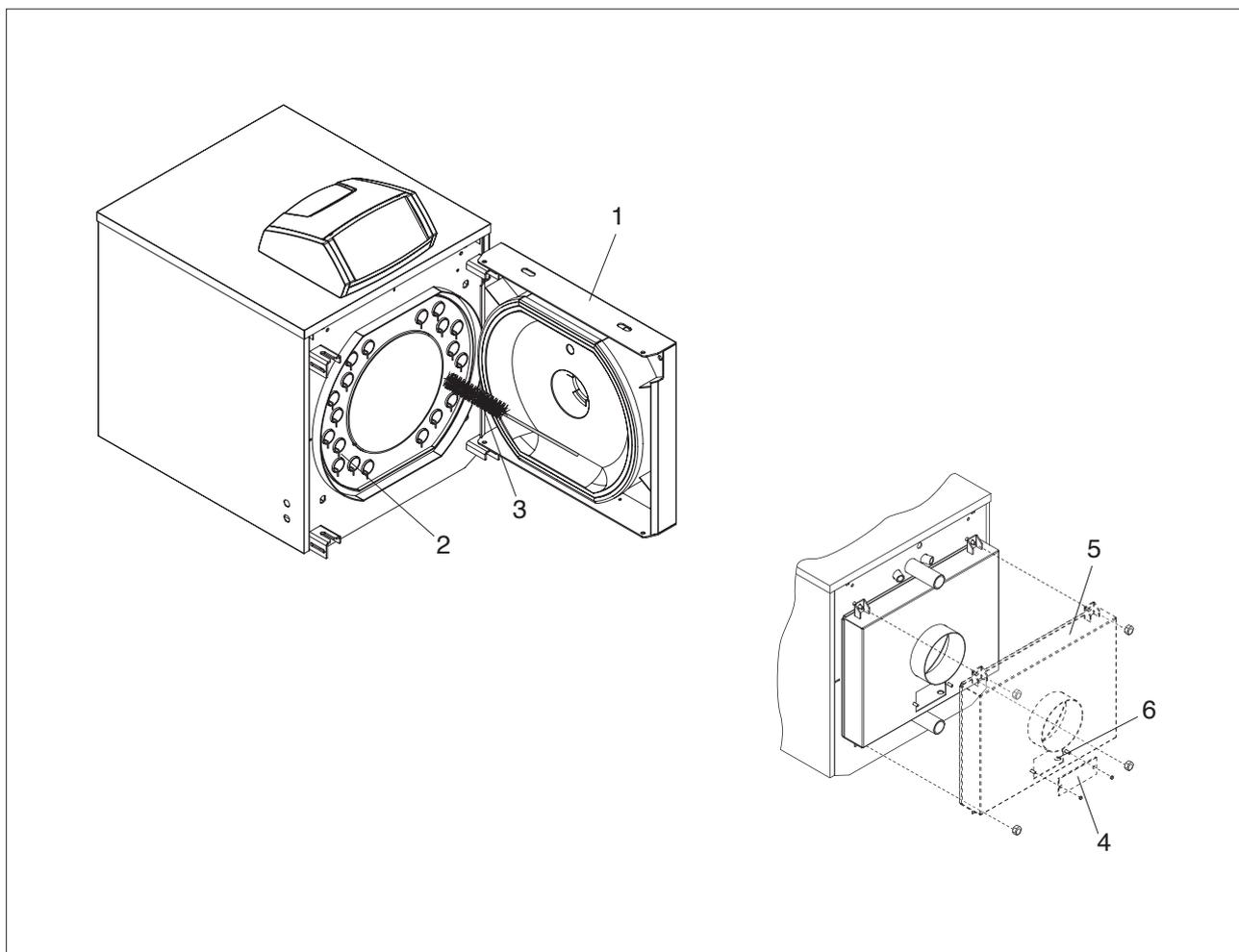
If more thorough cleaning is required, remove the flue gas box cover (5). Fit a new glass fibre seal when fitting the cover again.

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.



| 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

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the appearance, dimensions, technical data, equipment and accessories
may be subject to variation.**