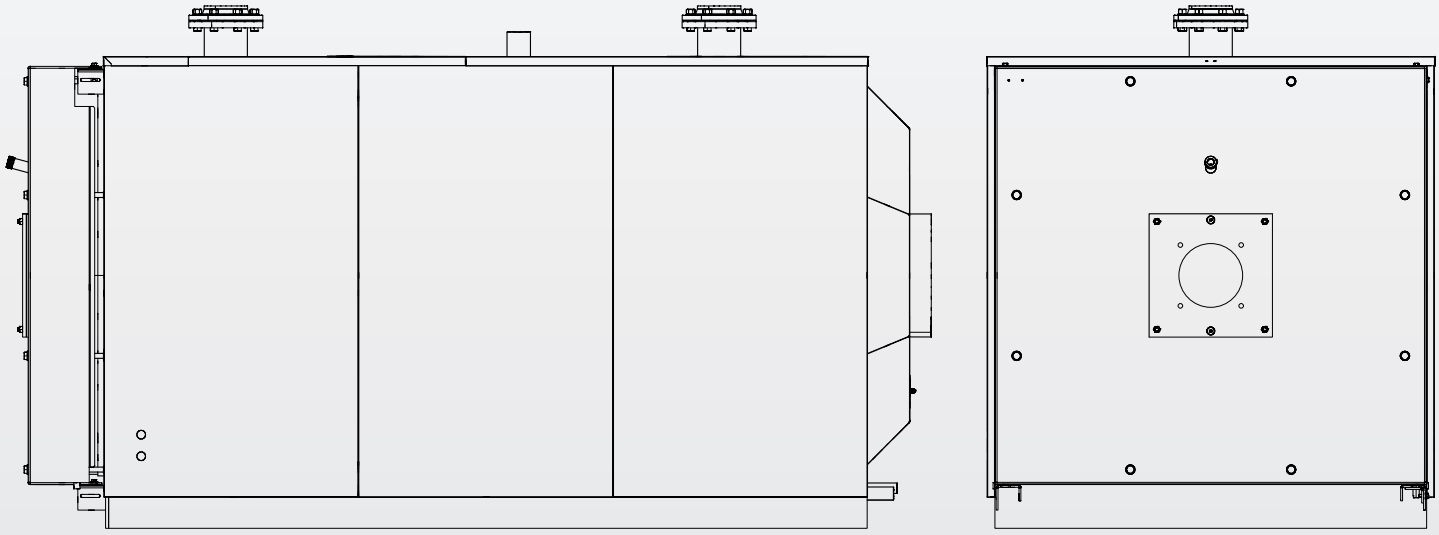
cod. 20220083 rev. 5 05/2026



RTQ 35÷4000 3S

EN INSTRUCTIONS FOR THE SYSTEM MANAGER, INSTALLER AND TECHNICAL ASSISTANCE SERVICE

RIELLO

RANGE

MODEL	CODE
RTQ 35 3S	20025617
RTQ 55 3S	20025618
RTQ 70 3S	20025619
RTQ 91 3S	20024200
RTQ 115 3S	40326060
RTQ 166 3S	40326070
RTQ 217 3S	40326080
RTQ 255 3S	40326090
RTQ 318 3S	40326100
RTQ 349 3S	40326110
RTQ 448 3S	40326130
RTQ 511 3S	40326140
RTQ 575 3S	40326150
RTQ 639 3S	40326160
RTQ 750 3S	20217457
RTQ 766 3S	40326170
RTQ 896 3S	20008436
RTQ 1100 3S	20012427
RTQ 1300 3S	20008435
RTQ 1600 3S	20016656
RTQ 2100 3S	20016657
RTQ 2400 3S	20018817
RTQ 2700 3S	20106515
RTQ 3000 3S	20106514
RTQ 3500 3S	20107462
RTQ 4000 3S	20107467

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

Dear Customer,
Thank you for choosing a **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 Technical Assistance Service **RIELLO**. Their personnel are specially trained to keep your boiler efficient and cheap to run. They 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 efficient functioning of your **RTQ 3S** boiler.

Please accept our renewed thanks for your purchase
Riello S.p.A.

CONFORMITY

RIELLO RTQ 3S boilers conform to:
- Ecodesign Directive 2009/125/CE for energy-related products
- Low Voltage Directive 2014/35/EU
- Models up to 400 kW conform to the Energy-Related Products Directive 2009/125/EC and to the EU Delegated Regulation 813/2013.

When used in conjunction with a CE marked jet burner, they also satisfy the requirements:
- Regulation (EU) 2016/426
- applicable sections of the Electromagnetic Compatibility Directive 2014/30/EU

CE

At the end of its life, the product should be not be disposed of as solid urban waste, but rather it should be handed over to a differentiated waste collection centre.

CONTENTS

The following symbols are used in this manual:

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

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

This manual, Code 20220083 - Rev. 5 (05/2026) comprises 52 pages.

1 GENERAL INFORMATION

1.1 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 **RIELLO** dealer who sold it.

⚠ This product must be installed by a legally qualified heating engineer. On completion of the installation, the installer must issue the owner with a declaration of conformity confirming that the installation has been completed to the highest standards in compliance with the instructions provided by **RIELLO** in this instruction manual, and that it conforms to all applicable laws and standards.

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

⚠ 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**'s Technical Assistance Service 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 Technical Assistance Service **RIELLO** or a professionally qualified heating engineer.

⚠ If the boiler is not going to be used for an extended period of time, perform the following operations:
- Switch the boiler OFF at the control panel
- Turn the main system switch "off"
- Close the fuel cock and heating circuit water cock
- Drain the central heating circuit if there is any risk of freezing.

⚠ The boiler must be serviced at least once a year.

⚠ This instruction manual is an integral part of the boiler. It must be kept safe and must ALWAYS accompany the boiler, even if it is sold to another owner or transferred to another user or to another installation. If you damage or lose this manual, order a replacement immediately from your local **RIELLO**'s Technical Assistance Service.

1.2 Precautions

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

⛔ It is forbidden to use electrical devices or equipment, such as switches, appliances, etc. if there is a smell of gas or unburnt products. If so:
- Ventilate the room, opening doors and windows
- Close the fuel shut-off cock
- Report the fault immediately to the **RIELLO**'s 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 manufacturer.

⛔ Do not plug or block the condensate drain outlet.

⛔ Never pull, disconnect, or twist the electrical cables coming from the appliance even if it is disconnected from the mains electricity supply.

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

⛔ Do not expose the boiler to the elements. It is designed to work indoors.

⛔ 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 allow children or persons with reduced physical, sensorial or mental abilities or with insufficient experience and knowledge to operate this system without proper supervision from the person responsible for its safe use.

⛔ 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.

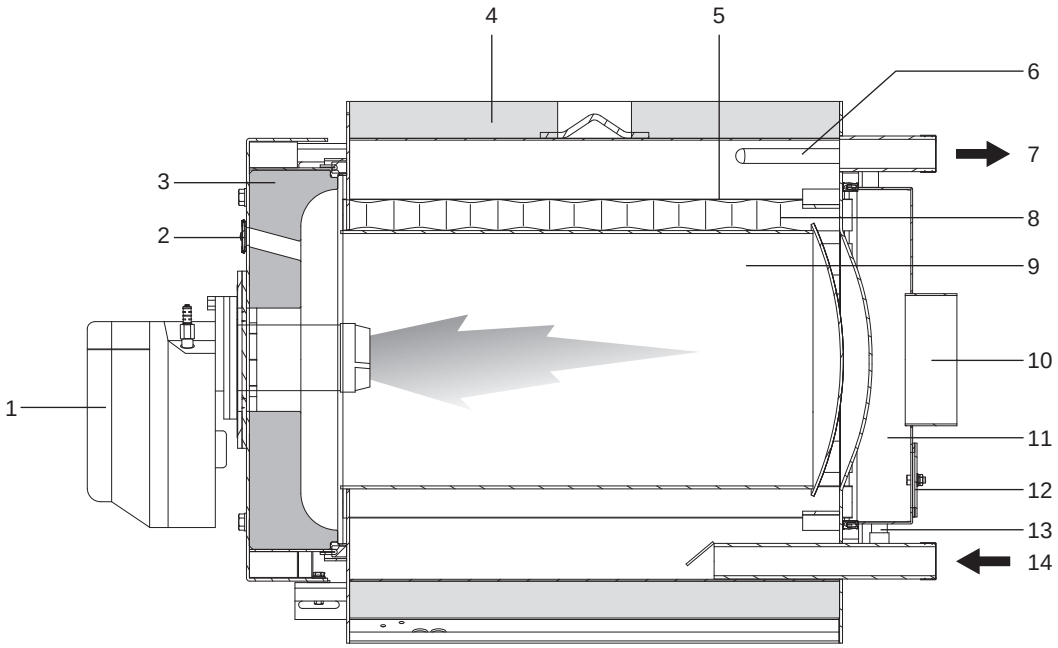
1.3 Description of the appliance

RIELLO RTQ 3S 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.

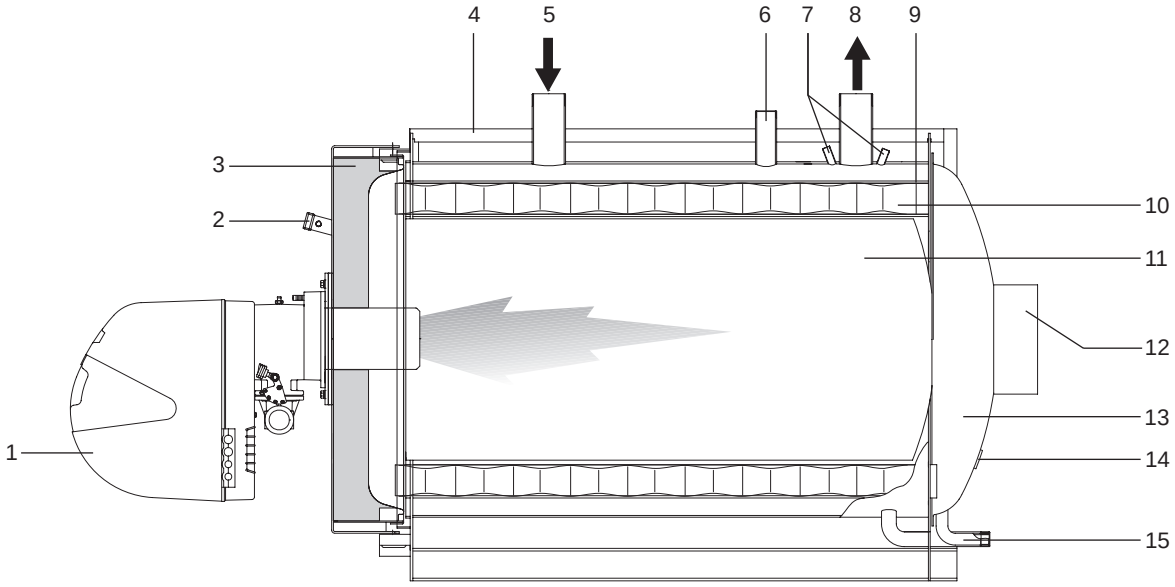
Stainless steel turbulators inside the flue gas pipes establish an ideal pressure inside the combustion chamber and an ideal flue gas temperature. Evenly distributed thermal load optimises the efficiency of the boiler-burner system.
The boiler body is thoroughly insulated with a layer of high density 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.

RTQ 35÷166 3S



1 Burner
2 Flame inspection window
3 Door
4 Casing
5 Flue gas pipes
6 Instrument bulb/sensor sockets
7 Central heating flow
8 Turbulators
9 Combustion chamber
10 Flue gas exhaust
11 Flue gas box
12 Inspection window
13 Condensate outlet
14 Central heating return

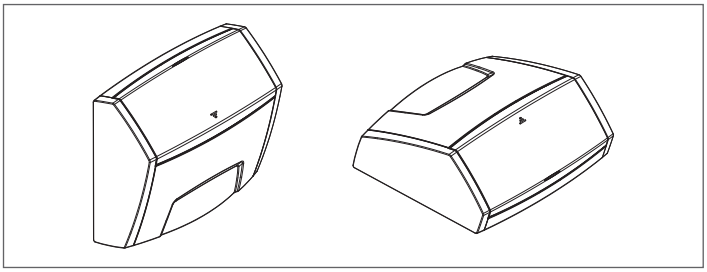
RTQ 217÷4000 3S



1 Burner
2 Flame inspection window with pressure measurement / cooling valve
3 Door
4 Casing
5 Central heating return
6 Safety device fitting
7 Instrument bulb/sensor sockets
8 Central heating flow
9 Flue gas pipes
10 Turbulators
11 Combustion chamber
12 Flue gas exhaust
13 Flue gas box
14 Inspection window
15 Condensate outlet

1.4 Control panels

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.



RIELLOtech CLIMA COMFORT for central heating (1 direct zone and 1 mixed zone) and domestic hot water production with a single stage burner. Also for controlling solar heating system and cascaded boiler systems.

RIELLOtech CLIMA MIX for controlling 1 additional mixed zone.

RIELLOtech PRIME for central heating only (1 direct zone) with a single or two stage burner.

RIELLOtech PRIME ACS for central heating (1 direct zone) and domestic hot water production with a single or two stage burner.

⊖ When the RIELLOtech CLIMA COMFORT control panel is installed, there must be a sheath for fitting the relative sensor on the boiler's return line (cold water). For the accessories codes, refer to the Catalogue.

1.5 Recommended burners

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

BURNERS	BOILER RTQ 3S												Burner plate	Long head *
MODEL	448	511	575	639	750	766	896	1100	1300	1600	2100	2400		
GAS – TWO-STAGE														
RS 50 t.l.	•	•												
RS 70 t.l.			•	•	•									
RS 100 t.l.				•	•	•	•							
RS 130 t.l.								•	•					
GAS – MODULATING														
RS 50/M MZ t.l.	•	•												
RS 70/M t.l.			•	•	•									
RS 100/M t.l.			•	•	•	•	•							
RS 130/M t.l.								•	•					
RS 190/M t.c.										•				Accessory
RS 250/M MZ t.c.											•			
GAS 9 P/M t.l.												•		
LIGHT OIL – TWO-STAGE														
RL 50 t.l.	•	•												
RL 50 t.l.			•										Accessory	
RL 70 t.l.			•	•	•									
RL 100 t.l.				•	•	•	•							
RL 130 t.l.								•	•					
RL 190 t.c.										•				Accessory
RL 250 t.c.											•			Accessory
RL 300/B MZ												•		

(*) Long head REQUIRED.

⚠ Please see the manufacturer's catalogue for the burner code definition and the accessories required.

⚠ See the instruction manual provided with the burner for further information on, burner installation, electrical connections, burner adjustments.

⚠ Long heads and burner plates are required for the correct installation and coupling of the burners.

⚠ To assemble/disassemble the burners equipped with recirculation tube, it might be necessary to remove the latter before carrying out such operations (strictly comply with the use and maintenance manual of the burner).

⚠ 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.

⚠ 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.

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

BURNERS	CALDAIA RTQ 3S				Burner plate
MODEL	2700	3000	3500	4000	
GAS					
RS 300/M	•	•			Accessory
RS 300/E	•	•			Accessory
RS 300/EV	•	•			Accessory
RS 310/M MZ	•	•			Accessory
RS 410/M MZ		•			Accessory
RS 410/M MZ			•	•	as standard
RS 410/M BLU			•		as standard
RS 310/EV BLU	•	•			Accessory
RS 410/EV BLU		•			Accessory
RS 510/M BLU				•	as standard
GAS 9 P/M t.l.	•	•			as standard
GAS 10 P/M t.c.		•			Accessory
GAS 10 P/M t.c.				•	Accessory
GAS 10 P/M t.l.		•			Accessory
GAS 10 P/M t.l.				•	Accessory
MIXED OIL/GAS					
GI/EMME 3000 t.c.	•				Accessory
GI/EMME 4500 t.c.		•			Accessory
RLS 300/E MX	•	•			Accessory
RLS 300/EV MX	•	•			Accessory
RLS 310/M MX	•	•			Accessory
RLS 310/E MX	•	•			Accessory
RLS 410/M MX		•			Accessory
RLS 410/E MX		•			Accessory
RLS 500/M MX			•	•	Accessory
OIL					
RL 300/B MZ	•	•			Accessory
RL 300/B MZ			•		as standard
RL 400/B MZ		•			Accessory

⚠ Please see the manufacturer's catalogue for the burner code definition and the accessories required.

⚠ Burner/boiler combinations have been calculated on the basis of the burner working at 3% O_2.

⚠ See the instruction manual provided with the burner for further information on, burner installation, electrical connections, burner adjustments.

⚠ Long heads and burner plates are required for the correct installation and coupling of the burners.

⚠ To assemble/disassemble the burners equipped with recirculation tube, it might be necessary to remove the latter before carrying out such operations (strictly comply with the use and maintenance manual of the burner).

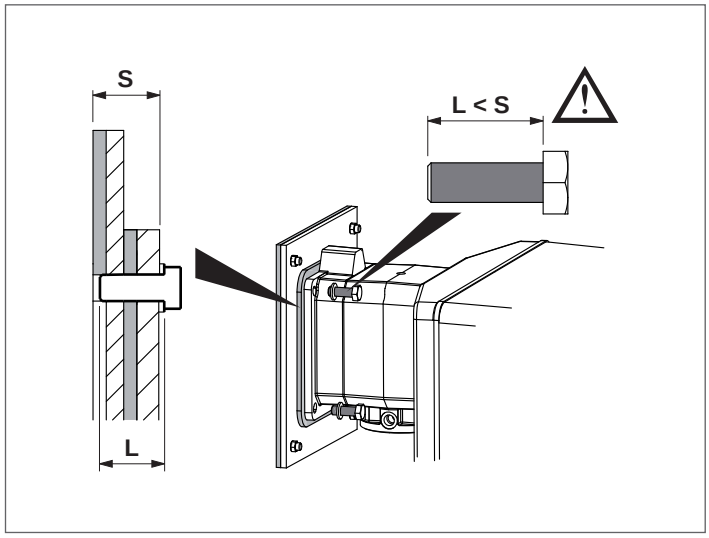
⚠ If a two stage burner is installed, 1st stage heat input must not be less than 70% of total heat input. With liquid fuel burners equipped with 2 nozzles, it is therefore important to choose the correct first stage nozzle.

⚠ 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.

1.5.1 Important notes for fitting the burner

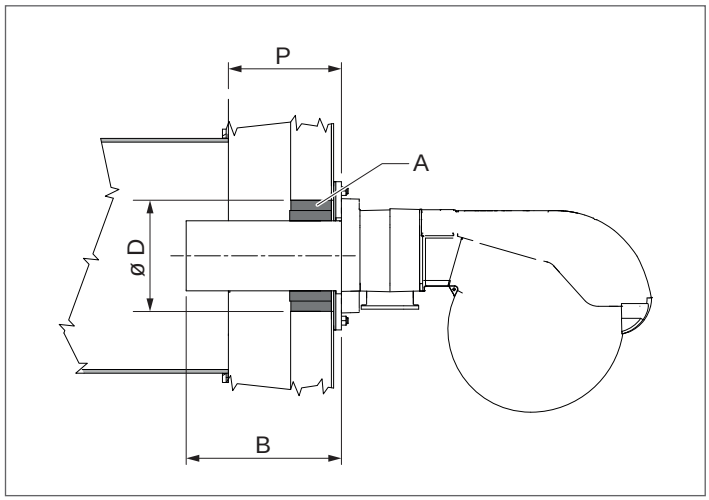
Before fixing the burner to the boiler, make sure that:
- The door opens the right way (see the relevant sections for details on how to reverse the door)
- The length (L) of the burner fixing bolts is less than (S), i.e. the total depth of the seal, plates and washer. **Longer bolts can cause the door 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.



IMPORTANT
If you are installing a new boiler but re-using an old burner, always perform the following checks:
- make sure that the performance of the old burner is adequate for the requirements of the boiler;
- make sure that the length and diameter of the burner's blast tube are 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.



			BOILER RTQ 3S						
			35	55	70	91	115	166	
B	Burner head	min	160	160	180	180	180	190	mm
		max	200	200	225	270	270	300	mm
D	Door hole diameter		110	110	140	140	140	140	ø mm
P	Inspection door depth (including flange)		125	125	145	145	150	160	mm

			BOILER RTQ 3S					
			217	255	318	349	448	
B	Burner head	min	190	190	220	220	260	mm
		max	235	235	350	350	400	mm
D	Door hole diameter		180	180	180	180	185	ø mm
P	Inspection door depth (including flange)		160	160	180	180	205	mm

			BOILER RTQ 3S					
			511	575	639	750	766	
B	Burner head	min	260	275	275	280	280	mm
		max	400	400	400	400	400	mm
D	Door hole diameter		185	205	205	205	205	ø mm
P	Inspection door depth (including flange)		205	215	215	220	220	mm

			BOILER RTQ 3S					
			896	1100	1300	1600	2100	
B	Burner head	min	325	350	375	375	375	mm
		max	400	450	450	525	525	mm
D	Door hole diameter		260	320	320	350	390	ø mm
P	Inspection door depth (including flange)		260	285	310	315	320	mm

			BOILER RTQ 3S					
			2400	2700	3000	3500	4000	
B	Burner head	min	375	400	430	460	460	mm
		max	525	525	525	550	550	mm
D	Door hole diameter		390	390	390	440	480	ø mm
P	Inspection door depth (including flange)		320	290	290	350	350	mm

⛔ The use of burners with a head length shorter than the depth (P) of the inspection door is prohibited.

⚠ In the case of greater burner head lengths, they must not exceed the indicated maximum value **by 20 %**.

1.5.2 Burner plate

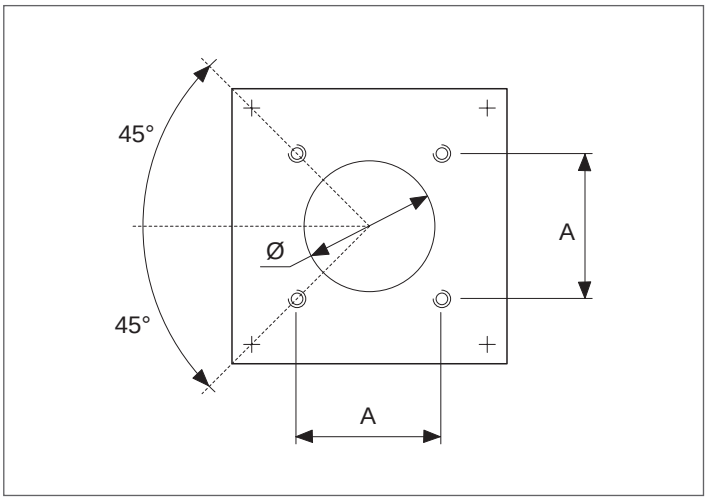
RIELLO RTQ 3S boilers are equipped as standard with drilled burner plates for housing the recommended burners. The table below shows the characteristics of the holes.

	CALDAIA RTQ 3S							
	35	**55**	**70**	**91**	**115**	**166**	**217**	**255**
Ø (mm)	110	110	140	140	130	140	165	165
A (mm)	106	106	120	120	120	131	158,5	158,5
Threads	M8	M8	M8	M8	M8	M8	M8	M8

	CALDAIA RTQ 3S						
	318	**349**	**448**	**511**	**575**	**639**	**750**
Ø (mm)	165	165	165	165	185	185	185
A (mm)	158,5	158,5	158,5	158,5	195	195	195
Threads	M8	M8	M8	M8	M12	M12	M12

	CALDAIA RTQ 3S						
	766	**896**	**1100**	**1300**	**1600**	**2100**	**2400**
Ø (mm)	185	185	205	205	265	230	300
A (mm)	195	195	195	195	260	255	260
Threads	M12	M12	M12	M12	M16	M16	M18

	CALDAIA RTQ 3S			
	2700	**3000**	**3500**	**4000**
Ø (mm)	300	300	350	350
A (mm)	260	260	310	310
Threads	M18	M18	M20	M20

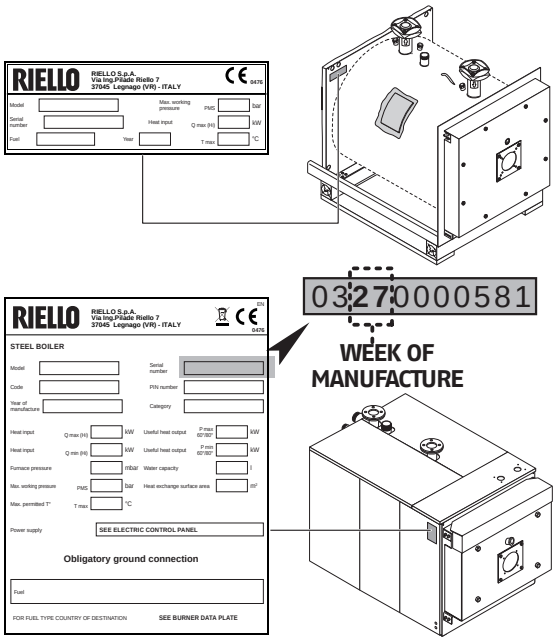


1.6 Identification

The products are identified by:

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, the installer 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.



⚠ 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.

1.7 Technical specifications

DESCRIZIONE		CALDAIA RTQ 3S			
		35	55	70	
Device type		Heating			
		B23			
Fuel		Gas / Oil			
Device category		See Burner			
Max. nominal thermal capacity (Q max)	NCV	34,8	55	69	kW
	GCV Gas	38,6	61,1	76,6	
	GCV Oil	36,9	58,3	73,2	
Min. nominal thermal capacity (Q min)	NCV	25	35	55	kW
	GCV Gas	27,8	38,9	61,1	
	GCV Oil	26,5	37,1	58,3	
Nominal output power (80/60°C) P4	max	32,8	51,6	65,0	kW
Nominal output power (80/60°C) (Pn min)	min	23,6	33,3	51,8	kW
Heat output 30% with return 47°C (P1)		8,4	12,7	17,5	kW
Efficiency at nominal thermal capacity and high temperature operation h4 (80/60°C)	NCV	94,2	93,8	94,2	%
	GCV Gas	84,8	84,5	84,8	
	GCV Oil	88,8	88,5	88,8	
Useful efficiency at Pn min (80/60°C)	NCV	94,2	95,1	94,2	%
	GCV Gas	84,8	85,6	84,8	
	GCV Oil	88,8	89,7	88,8	
Efficiency at 30% nominal thermal capacity with 47°C return	NCV	95,9	95,5	95,9	%
	GCV Gas	86,3	86,0	86,3	
	GCV Oil	90,4	90,1	90,4	
Standby losses (max. Pn)		< 1,5			%
Flue gas temperature		<130(*)			°C
Flue gas mass flow rate (Max. Pn) G20 (*)		0,013	0,021	0,026	kg/s
Flue gas mass flow rate (Max. Pn) DIESEL (*)		0,015	0,024	0,031	
Furnace pressure		0,4	0,9	0,6	mbar
Furnace volume		37,8	45,2	80,2	dm^3
Tot. volume of flue gas side		62,2	73,4	119,1	dm^3
Total surface area for heat exchange		1,90	2,50	3,02	m^2
Volumetric thermal load (max. Pn)		921	1187	872	kW/m^3
Specific thermal load (max. Pn)		17,8	21,3	22,4	kW/m^2
Max. operating pressure		6			bar
Max. admissible temp.		110			°C
Max. operating temp.		95			°C
Min. admissible water return temp.		50			°C
Pressure drops	ΔT 10°C	10,0	19	34,5	mbar
	ΔT 20°C	2	2,5	7	mbar
Water capacity		71	87	103	liters

NCV Net calorific value of fuel
GCV Gross calorific value of fuel
(*) Flue gas temperature with boiler in operation 80/60°C and ambient temperature 20-25°C.

⚠ 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 gas burners **RIELLO** calibrated with CO_2 = 9,7%, λ= 1,2 and with diesel burners **RIELLO** calibrated with CO_2 = 12,5%.

TECHNICAL DATA IN COMBINATION WITH LIGHT OIL BURNERS < 400 KW

DESCRIZIONE		CALDAIA RTQ 3S							
		91 (*)	115 (*)	166 (*)	217 (*)	255 (*)	318 (*)	349 (*)	
Type of Heating		appliance							
		B23							
Fuel		LIGHT OIL							
Device category		see burner							
Max. nominal thermal capacity (Q max)	NCV	90	115	166	217	255	318	348	kW
	GCV	95,4	122	176	230,1	270,4	337,2	369	
Min. nominal thermal capacity (Q min)	NCV	70	90	115	166	217	255	318	kW
	GCV	74,2	95,4	122	176	230,1	270,4	337,2	
Nominal output power (80/60°C) P4	max	84,8	110,2	158,7	206,8	243,0	303,4	332,0	kW
Nominal output power (80/60°C) (Pn min)	min	66,9	86,6	110,4	159,2	208,8	244,3	304,0	kW
Heat output at 30% with return at 37°C (P1)		23,9	30,7	42,0	57,3	70,6	85,8	99,7	kW
Seasonal energy efficiency ηs		89,0	89,0	89,0	89,0	90,0	90,0	90,0	%
Efficiency at nominal thermal capacity and high temperature operation h4 (80/60°C)	NCV	94,2	95,8	95,6	95,3	95,3	95,4	95,4	%
	GCV	88,8	90,3	90,2	89,9	89,9	90,0	90,0	
Useful efficiency at Pn min (80/60°C)	NCV	95,6	96,2	96	95,9	96,2	95,8	95,6	%
	GCV	90,1	90,7	90,5	90,4	90,7	90,3	90,1	
Efficiency at 30% nominal thermal capacity h1 with 37°C return	NCV	99,7	99,7	99,7	99,7	99,7	99,8	99,8	%
	GCV	94,0	94,0	94,0	94,0	94,0	94,1	94,1	
Constant pressure drop		260	330	400	480	550	620	680	W
Flue gas temperature		<130(**)							°C
Flue gas mass flow rate (Pn max)		0,04	0,051	0,074	0,096	0,113	0,141	0,155	kg/s
Furnace pressure		2	1,5	1,3	2,2	2,8	3,2	3,9	mbar
Furnace volume		97,4	91	138,4	199,1	199,1	298,9	298,9	dm^3
Tot. volume of flue gas side		139,7	163,2	234,3	317,2	325,6	457,9	457,9	dm^3
Total surface area for heat exchange		3,62	4,35	6,68	8,59	9,47	12,34	12,34	m^2
Volumetric thermal load (max. Pn)		928	1264	1199	1090	1281	1064	1164	kW/m^3
Specific thermal load (max. Pn)		24,1	25,2	23,8	24,1	25,7	24,6	26,9	kW/m^2
Max. operating pressure		6							bar
Max. admissible temp.		110							°C
Max. operating temp.		95							°C
Min. admissible water return temp.		37							°C
Pressure drops	ΔT 10°C	37	15,1	42,0	76,5	144,0	164	196	mbar
	ΔT 20°C	13,5	3,0	11,2	17,2	45,0	43	51	mbar
Water capacity		126	161	191	268	258	308	308	liters
Consumption at full load (Elmax)		460	460	460	530	660	660	760	W
Consumption at part load (Elmin)		138	138	138	159	198	198	228	W
Electrical consumption in standby mode (PSB)		20	20	20	20	20	20	20	W

NCV Net calorific value of fuel
GCV Gross calorific value of fuel
(*) Gas oil heater compliant with ErP (Regulation (EU) 813/2013) as of April 2016.
(**) Flue gas temperature with boiler in operation 80/60°C and ambient temperature 20-25°C.

⚠ 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 in conjunction with oil burners **RIELLO** calibrated with CO_2 = 12,5%

TECHNICAL DATA IN COMBINATION WITH GAS BURNERS < 400 KW

DESCRIZIONE		CALDAIA RTQ 3S							
		91 (*)	115 (*)	166 (*)	217 (*)	255 (*)	318 (*)	349 (*)	
Type of Heating		appliance							
		B23							
Fuel		GAS							
Device category		see burner							
Max. nominal thermal capacity (Q max)	NCV	90	115	166	217	255	318	348	kW
	GCV	100	127,7	184,4	241	283,2	353,2	386,5	
Min. nominal thermal capacity (Q min)	NCV	70	90	115	166	217	255	318	kW
	GCV	77,7	100	127,7	184,4	241	283,2	353,2	
Nominal output power (80/60°C) P4	max	84,8	110,2	158,7	206,8	243,0	303,4	332,0	kW
Nominal output power (80/60°C) (Pn min)	min	66,9	86,6	110,4	159,2	208,8	244,3	304,0	kW
Heat output 30% with return 47°C (P1)		23,2	29,7	40,8	55,6	68,5	83,1	96,6	kW
Seasonal energy efficiency ηs		89,0	89,0	89,0	89,0	90,0	90,0	90,0	%
Efficiency at nominal thermal capacity and high temperature operation h4 (80/60°C)	NCV	94,2	95,8	95,6	95,3	95,3	95,4	95,4	%
	GCV	84,8	86,3	86,1	85,8	85,8	85,9	85,9	
Useful efficiency at Pn min (80/60°C)	NCV	95,6	96,2	96,0	95,9	96,2	95,8	95,6	%
	GCV	86,1	86,6	86,4	86,4	86,6	86,3	86,1	
Efficiency at 30% nominal thermal capacity and low temperature operation h1 with 47°C return	NCV	96,7	96,7	96,7	96,7	96,7	96,7	96,7	%
	GCV	87,1	87,1	87,1	87,1	87,1	87,1	87,1	
Constant pressure drop		260	330	400	480	550	620	680	W
Flue gas temperature		<130(**)							°C
Flue gas mass flow rate (Pn max)		0,034	0,043	0,062	0,082	0,096	0,120	0,131	kg/s
Furnace pressure		2,0	1,5	1,3	2,2	2,8	3,2	3,9	mbar
Furnace volume		97,4	91,0	138,4	199,1	199,1	298,9	298,9	dm^3
Tot. volume of flue gas side		139,7	163,2	234,3	317,2	325,6	457,9	457,9	dm^3
Total surface area for heat exchange		3,62	4,35	6,68	8,59	9,47	12,34	12,34	m^2
Volumetric thermal load (max. Pn)		928	1264	1199	1090	1281	1064	1164	kW/m^3
Specific thermal load (max. Pn)		24,1	25,2	23,8	24,1	25,7	24,6	26,9	kW/m^2
Max. operating pressure		6							bar
Max. admissible temp.		110							°C
Max. operating temp.		95							°C
Min. admissible water return temp.		50							°C
Pressure drops	ΔT 10°C	37	15,1	42,0	76,5	144,0	164	196	mbar
	ΔT 20°C	13,5	3,0	11,2	17,2	45,0	43	51	mbar
Water capacity		126	161	191	268	258	308	308	liters
Consumption at full load (Elmax)		460	460	460	530	660	660	760	W
Consumption at part load (Elmin)		138	138	138	159	198	198	228	W
Electrical consumption in standby mode (PSB)		20	20	20	20	20	20	20	W

NCV Net calorific value of fuel
GCV Gross calorific value of fuel
(*) Heating appliance intended only for replacement in accordance with the provisions of article 1, paragraph 2, point G of the EU regulation No. 813/2013.
(**) Flue gas temperature with boiler in operation 80/60°C and ambient temperature 20-25°C.

⚠ Values obtained with gas burners **RIELLO** calibrated with CO_2 = 9,7% and λ = 1,2.

BOILER TECHNICAL DATA > 400 KW

DESCRIZIONE		CALDAIA RTQ 3S												
		448	511	575	639	750	766	896	1100	1300	1600	2100	2400	
Device type		Heating												
		B23												
Fuel		Gas / Oil												
Device category		See Burner												
Max. nominal thermal capacity (Q max)	NCV	448	511	575	639	749	766	896	1100	1300	1600	2100	2400	kW
	GCV Gas	497,6	567,5	638,6	709,7	831,9	850,7	995,1	1221,7	1443,8	1777,0	2332,3	2665,5	
	GCV Oil	475,1	541,9	609,8	677,6	794,3	812,3	950,2	1166,5	1378,6	1696,7	2226,9	2545,1	
Min. nominal thermal capacity (Q min)	NCV	348	448	511	575	639	639	766	896	1020	1300	1600	2100	kW
	GCV Gas	386,5	497,6	567,5	638,6	709,7	709,7	850,7	995,1	1132,8	1443,8	1777,0	2332,3	
	GCV Oil	369,0	475,1	541,9	609,8	677,6	677,6	812,3	950,2	1081,7	1378,6	1696,7	2226,9	
Nominal output power (80/60°C) P4	max	427,4	487,5	548,6	609,6	713,8	730,8	854,8	1049,4	1240,2	1526,4	2003,4	2289,6	kW
Nominal output power (80/60°C) (Pn min)	min	334,8	431	491,6	553,2	617,7	614,7	736,9	862	981,2	1250,6	1539,2	2020,2	kW
Heat output 30% with return 47°C (P1)		115,5	139,1	157,5	176,1	201,3	203,8	241,1	289,5	336,5	420,7	536,7	652,7	kW
Efficiency at nominal thermal capacity and high temperature operation h4 (80/60°C)	NCV	95,4	95,4	95,4	95,4	95,4	95,4	95,4	95,4	95,4	95,4	95,4	95,4	%
	GCV Gas	85,9	85,9	85,9	85,9	85,9	85,9	85,9	85,9	85,9	85,9	85,9	85,9	
	GCV Oil	90,0	90,0	90,0	90,0	90,0	90,0	90,0	90,0	90,0	90,0	90,0	90,0	
Useful efficiency at Pn min (80/60°C)	NCV	96,2	96,2	96,2	96,2	96,2	96,2	96,2	96,2	96,2	96,2	96,2	96,2	%
	GCV Gas	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	
	GCV Oil	90,7	90,7	90,7	90,7	90,7	90,7	90,7	90,7	90,7	90,7	90,7	90,7	
Efficiency at 30% nominal thermal capacity h1 with 47°C return	NCV	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	%
	GCV Gas	87,1	87,1	87,1	87,1	87,1	87,1	87,1	87,1	87,1	87,1	87,1	87,1	
	GCV Oil	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	
Standby losses (max. Pn)		< 1,2		< 1										%
Flue gas temperature		<130(*)												°C
Flue gas mass flow rate (Max. Pn) G20 (*)		0,169	0,192	0,216	0,241	0,282	0,288	0,337	0,414	0,489	0,602	0,791	0,904	kg/s
Flue gas mass flow rate (Max. Pn) DIESEL (*)		0,199	0,227	0,255	0,284	0,333	0,340	0,398	0,489	0,578	0,711	0,933	1,066	
Furnace pressure		3,5	4,2	3,4	4,5	5	5,3	6	3,3	5,3	4,7	5,1	7,6	mbar
Furnace volume		410,5	410,5	548	548	695	695	912,1	1097,8	1479,7	1569,7	2066,2	2066,2	dm^3
Tot. volume of flue gas side		676,8	676,8	888,3	888,3	1101,4	1101,4	1388,9	1727,9	2162,7	2531,6	3243,5	3243,5	dm^3
Total surface area for heat exchange		19,04	19,04	23,52	23,52	28,06	28,06	32,87	37,28	42,24	51,37	67,94	67,94	m^2
Volumetric thermal load (max. Pn)		1091	1245	1049	1166	1077,7	1102	982	1002	879	1020	1016	1162	kW/m^3
Specific thermal load (max. Pn)		22,5	25,6	23,3	25,9	25,4	26	26	28,1	29,4	29,7	29,5	33,7	kW/m^2
Max. operating pressure		6												bar
Max. admissible temp.		110												°C
Max. operating temp.		95												°C
Min. admissible water return temp.		50												°C
Pressure drops	ΔT 10°C	175	228,5	42	54	46	48	66	132	189	145	86	111	mbar
	ΔT 20°C	43	56	6,5	9	11	11,7	16	30,5	49	38	23,5	30	mbar
Water capacity		593	593	758	758	839	839	1080	1350	1480	1716	2000	2000	liters

NCV Net calorific value of fuel
GCV Gross calorific value of fuel
(*) Flue gas temperature with boiler in operation 80/60°C and ambient temperature 20-25°C.

⚠ 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 gas burners **RIELLO** calibrated with CO_2 = 9,7%, λ= 1,2 and with diesel burners **RIELLO** calibrated with CO_2 = 12,5%.

DESCRIZIONE		CALDAIA RTQ 3S				
		2700	3000	3500	4000	
Device type		Heating				
		B23				
Fuel		Gas / Oil				
Device category		See Burner				
Max. nominal thermal capacity (Q max)	NCV	2700	3000	3500	4000	kW
	GCV Gas	2998,7	3331,9	3887,2	4442,5	
	GCV Oil	2863,2	3181,3	3711,6	4241,8	
Min. nominal thermal capacity (Q min)	NCV	2401	2701	3001	3501	kW
	GCV Gas	2666,6	2999,8	3333,0	3888,3	
	GCV Oil	2546,1	2864,3	3182,4	3712,6	
Nominal output power (80/60°C) P4	max	2576	2862	3339	3816	kW
Nominal output power (80/60°C) (Pn min)	min	2310	2598	2887	3368	kW
Heat output 30% with return 47°C (P1)		739,9	826,9	943,0	1088,0	kW
Efficiency at nominal thermal capacity and high temperature operation h4 (80/60°C)	NCV	95,4	95,4	95,4	95,4	%
	GCV Gas	85,9	85,9	85,9	85,9	
	GCV Oil	90,0	90,0	90,0	90,0	
Useful efficiency at Pn min (80/60°C)	NCV	96,2	96,2	96,2	96,2	%
	GCV Gas	86,6	86,6	86,6	86,6	
	GCV Oil	90,7	90,7	90,7	90,7	
Efficiency at 30% nominal thermal capacity h1 with 47°C return	NCV	96,7	96,7	96,7	96,7	%
	GCV Gas	87,1	87,1	87,1	87,1	
	GCV Oil	91,2	91,2	91,2	91,2	
Standby losses (max. Pn)		< 0,1				%
Flue gas temperature		<130(*)				°C
Flue gas mass flow rate (Max. Pn) G20 (*)		1,017	1,129	1,318	1,506	kg/s
Flue gas mass flow rate (Max. Pn) DIESEL (*)		1,199	1,333	1,555	1,777	
Furnace pressure		8,0	6,5	7,1	8	mbar
Furnace volume		2729,8	3256,9	3743,0	4235	dm^3
Tot. volume of flue gas side		3648	4464	5140	5847	dm^3
Total surface area for heat exchange		69,36	80,11	94,66	108,3	m^2
Volumetric thermal load (max. Pn)		989	921	935	945	kW/m^3
Specific thermal load (max. Pn)		37,1	35,7	35,3	35,2	kW/m^2
Max. operating pressure		6				bar
Max. admissible temp.		110				°C
Max. operating temp.		95				°C
Min. admissible water return temp.		50				°C
Pressure drops	ΔT 10°C	232	241	183,5	220	mbar
	ΔT 20°C	59	52	44	50	mbar
Water capacity		2700	2750	3650	4075	liters

NCV Net calorific value of fuel
GCV Gross calorific value of fuel
(*) Flue gas temperature with boiler in operation 80/60°C and ambient temperature 20-25°C.

⚠ 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 gas burners **RIELLO** calibrated with CO_2 = 9,7%, λ= 1,2 and with diesel burners **RIELLO** calibrated with CO_2 = 12,5%.

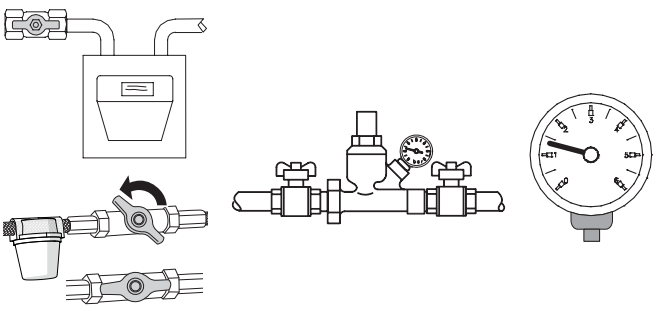
2 SYSTEM MANAGER

2.1 Putting into service

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

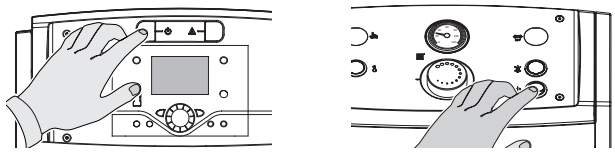
Under certain circumstances, such as after long periods of disuse, the service engineer responsible for the boiler may need to re-start it without involving the Technical Assistance Service. To do so, perform the following checks and operations:

- check that the gas cock and heating water cock are open;
- check that the pressure of the hydraulic circuit when cold is always **greater than 1 bar** and less than the maximum limit permitted for the appliance;



- turn the system's main power switch ON;
- if the system is equipped with a temperature controller or timer thermostat, make sure that it is switched on;

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



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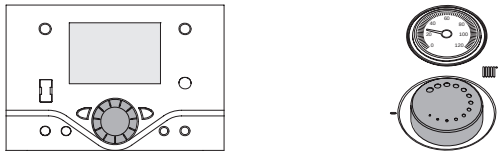
- make the necessary settings as instructed in the instruction manual for your control panel;



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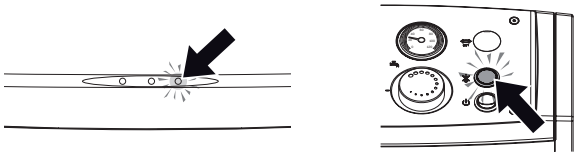
- adjust the timer thermostat/s or temperature controller to the desired temperature (~20°C).

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

Subsequent starts and stops will be made automatically according to the desired temperature without the need for further intervention.

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.



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⚠ 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.

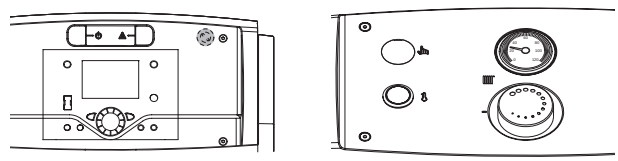
Repeat this operation 2-3 times at the most. If the problem persists after that, call **RIELLO**'s Technical Assistance Service.

If the problem persists, check that the safety thermostat has not tripped.

⚠ If the safety thermostat trips, the boiler shuts down and a warning is displayed on the control panel (if present).

Proceed as follows to reset the safety thermostat:

- Wait until boiler temperature falls below 80°C;
- Remove the safety thermostat cover;
- Press the manual reset button;
- Wait for the complete ignition cycle to be repeated and for the flame to ignite.



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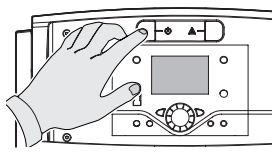
2.2 Temporary shutdown

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;



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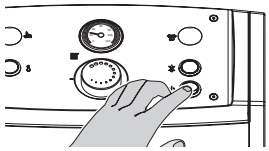

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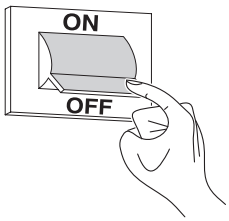
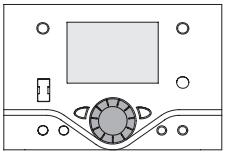
- turn the mains power switch OFF;



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

Then proceed as follows:

- make the necessary settings as instructed in the instruction manual for your control panel;



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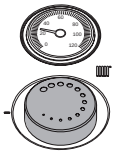

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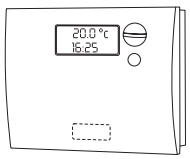
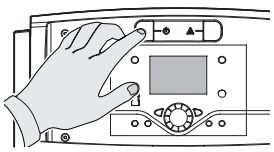
- make sure that the temperature controller or timer / room thermostat is set to "frost protection" mode.



2.3 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



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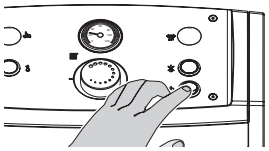

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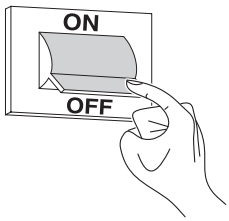
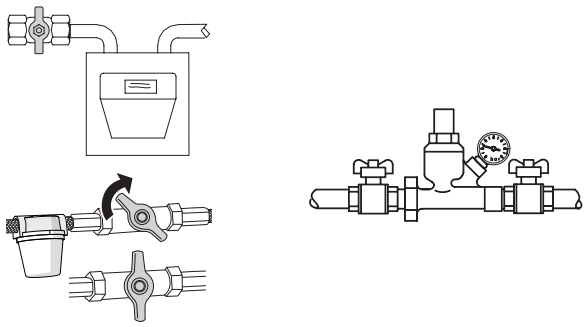
- Turn the main system switch "off"



- Close the fuel cock and heating circuit water cock;



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

⚠ Contact your local **RIELLO** Technical Assistance Service if you encounter any problems in completing the above procedure.

2.4 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 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 mains power switch and the control panel switch OFF.

⚠ The combustion chamber and flue pipes must be cleaned periodically by Technical Assistance Service or by a qualified heating engineer (see page 49).

2.5 Maintenance

Please remember that THE PERSON RESPONSIBLE FOR SYSTEM MANAGEMENT MUST ENSURE THAT PROFESSIONALLY QUALIFIED HEATING ENGINEERS UNDERTAKE PERIODIC MAINTENANCE AND COMBUSTION EFFICIENCY MEASUREMENTS.

RIELLO's Technical Assistance Service is qualified to satisfy these legal requirements and can also provide useful information on MAINTENANCE PROGRAMMES designed to guarantee:

- Greater safety
- Compliance with applicable legislation
- Freedom from the risk of fines in the event of spot checks.

Regular maintenance is essential for the safety, efficiency and durability of the boiler.
Servicing is a legal requirement and must be performed at least once a year by a professionally qualified heating engineer.

2.6 Useful information

Seller:.....
Mr.: .....
Address: .....
Tel.:.....

Installer:.....
Mr.: .....
Address: .....
Tel.:.....

Technical Assistance Service: .....
Mr.: .....
Address: .....
Tel.:.....

Date	Work done

Fuel oil supplier: .....
Mr.: .....
Address: .....
Tel.:.....

Date	Quantity supplied	Date	Quantity supplied	Date	Quantity supplied	Date	Quantity supplied

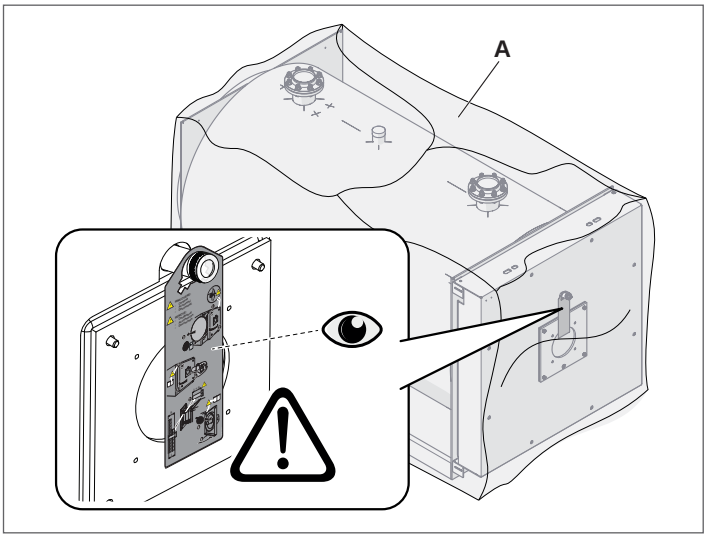
3 INSTALLER

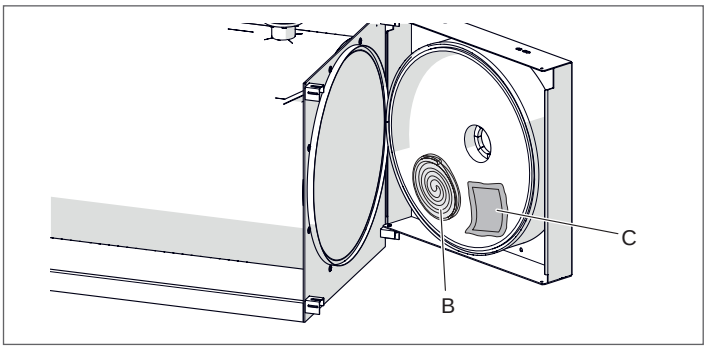
3.1 Unpacking the product

RTQ 3S RIELLO boilers are delivered in **3 separate packages**:

1 **THE BOILER BODY** inside the protective cover (A), includes:
- Ceramic insulation (B);
- Document pouch (C) containing:
  - Instruction manual;
  - Technical data plate adhesive (to be applied to the panelling when installing the boiler);
  - Warranty Certificate and Hydraulic Test Certificate;
  - Labels with Bar Code.

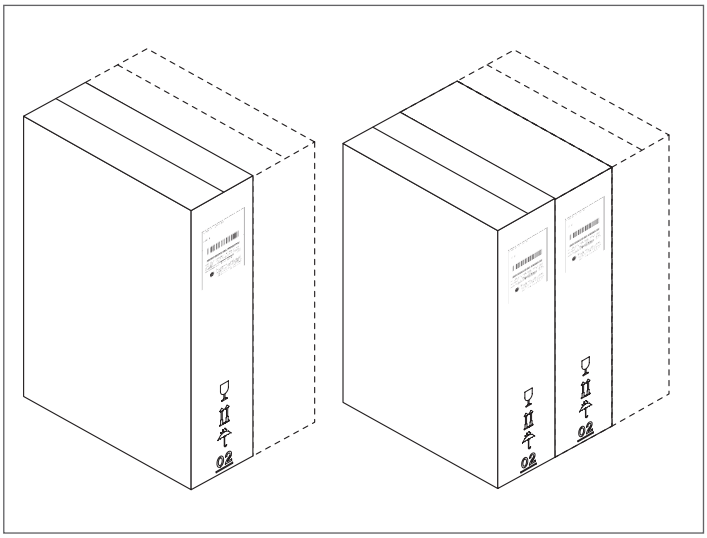
DO NOT START THE BOILER UNTIL THE OPERATIONS INDICATED ON THE RED LABEL ON THE FLAME VIEWER HAVE BEEN CARRIED OUT.



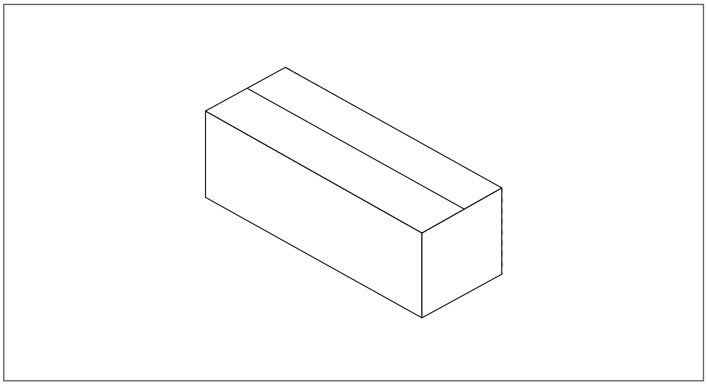


THE INSTRUCTION MANUALS ARE AN INTEGRAL PART OF THE BOILER, THEREFORE WE RECOMMEND TO READ AND KEEP THEM WITH CARE.

2 **PANELLING** complete with assembly accessories:
- 1 package for RTQ 35÷349 3S models
- 2 packages for RTQ 448÷3000 3S models
- 3 packages for RTQ 3500÷4000 3S models



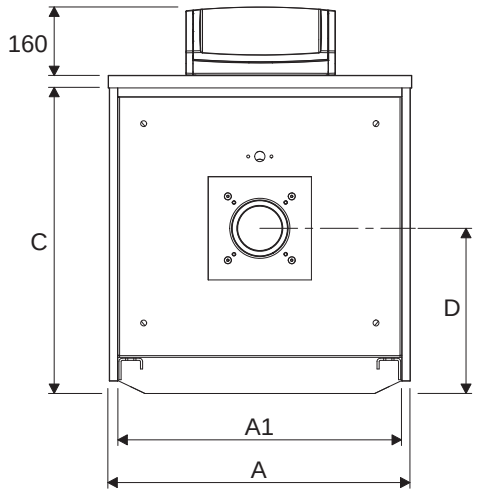
3 **FRONT PANEL** to be applied on the front door.

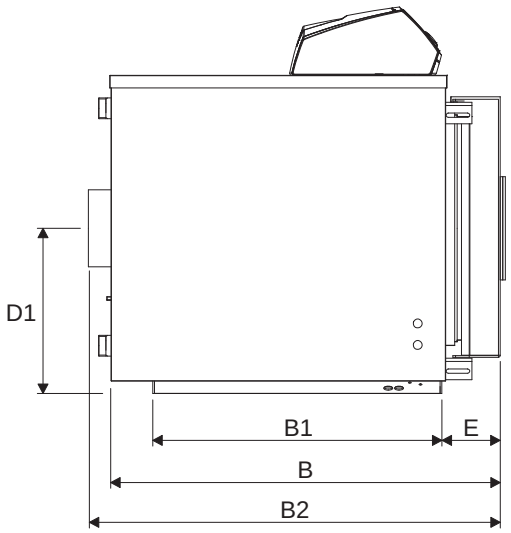


The operation of the **RTQ 3S RIELLO** boilers is conditional on the use of a control panel as indicated in section "Control panels" on page 6.

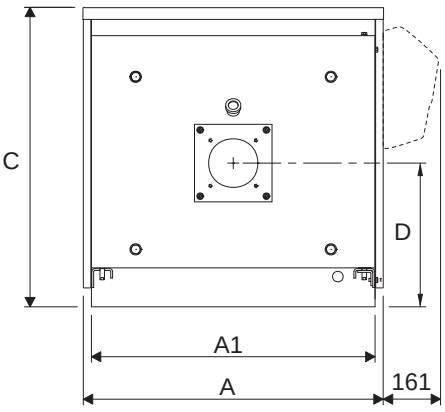
3.2 Overall dimensions and weights

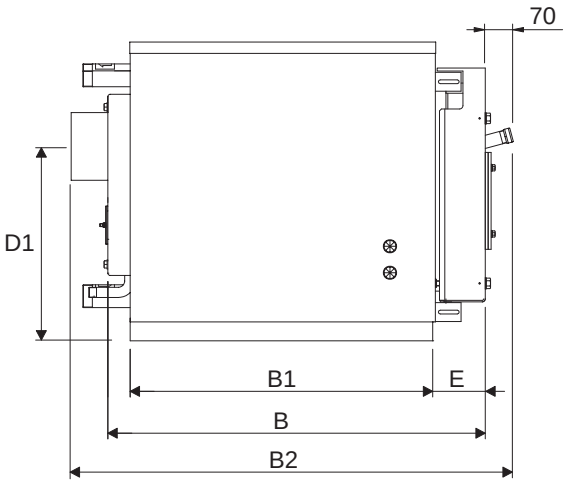
RTQ 35÷91 3S





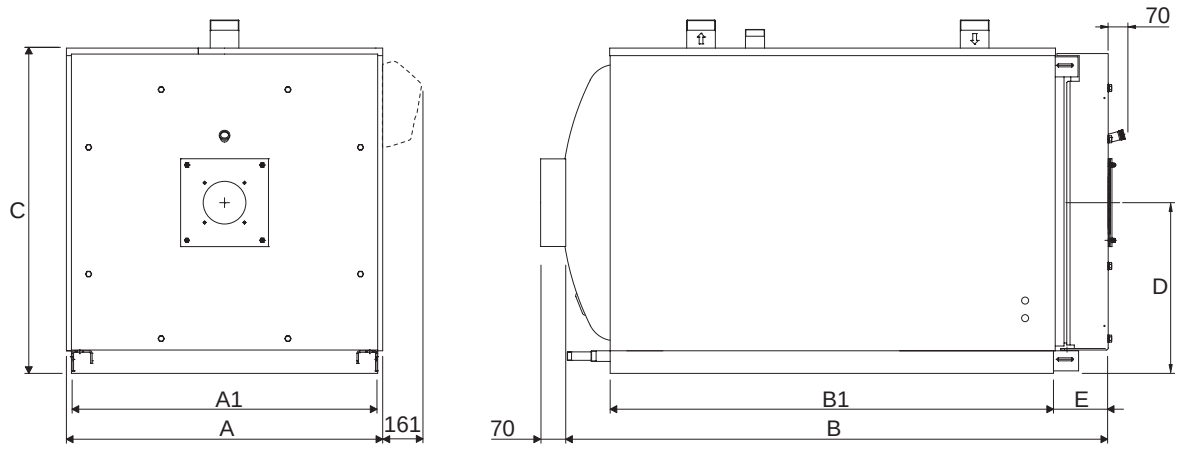
RTQ 115÷166 3S



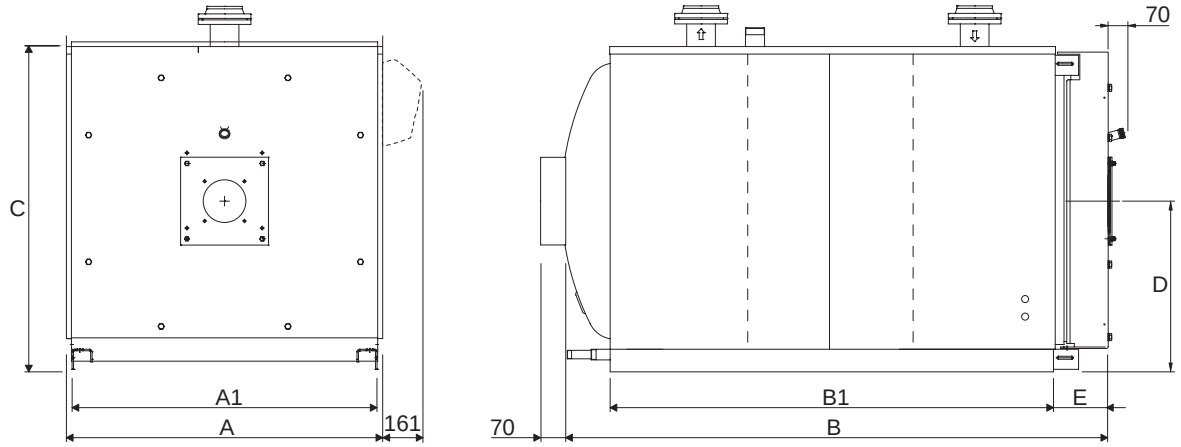


DESCRIZIONE		CALDAIA RTQ 3S						
		35	55	70	91	115	166	
A	Width	605	605	705	705	805	853	mm
A1	Width of baseplate	560	560	660	660	753	803	mm
B	Length	830	980	910	1060	1130	1330	mm
B1	Base depth	623	773	672	822	945	1110	mm
B2	Length (including flue gas outlet)	885	1035	970	1120	1200	1400	mm
C	Height	605	605	740	740	790	840	mm
D	Height of burner plate	310	310	384	384	410	435	mm
D1	Flue-gas stack axis	325	325	384	384	500	525	mm
E	Door weight	110	110	135	135	135	145	mm
Boiler body weight		119	140	177	201	258	352	kg
Weight of casing		18	20	22	24	25	30	kg
Total Boiler Weight (including panelling)		137	160	199	225	283	382	kg

RTQ 217÷349 3S

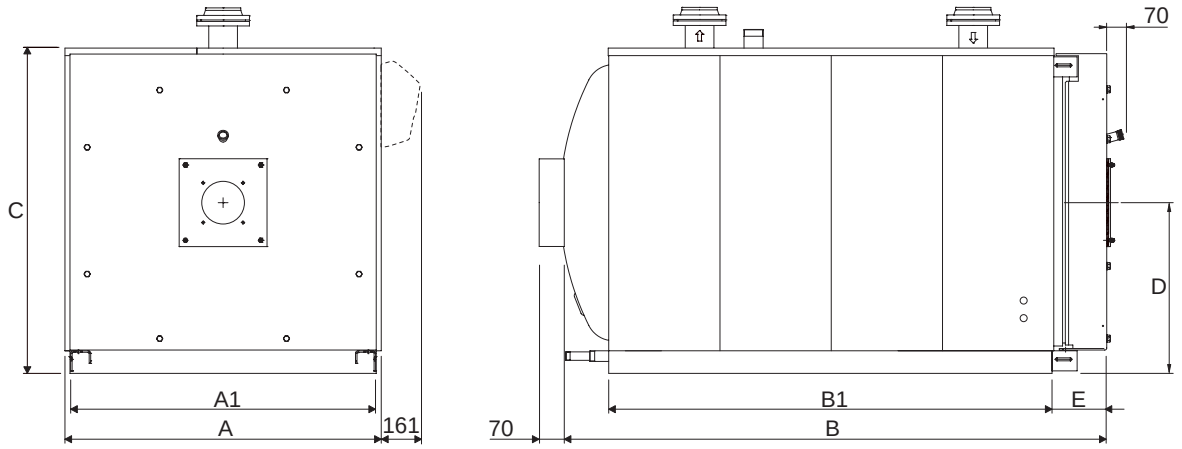


RTQ 448÷575 3S



DESCRIZIONE		CALDAIA RTQ 3S							
		217	255	318	349	448	511	575	
A	Width	925	925	975	975	1150	1150	1220	mm
A1	Width of baseplate	875	875	925	925	1100	1100	1170	mm
B	Length	1480	1480	1710	1710	2045	2045	2310	mm
B1	Base depth	1255	1255	1450	1450	1710	1710	1930	mm
B2	Length (including flue gas outlet)	1550	1550	1780	1780	2115	2115	2380	mm
C	Height	980	980	1030	1030	1210	1210	1280	mm
D	Height of burner plate / Flue-gas stack axis	525	525	550	550	655	655	690	mm
E	Door weight	150	150	180	180	195	195	205	mm
Boiler body weight		420	438	568	568	903	903	1134	kg
Weight of casing		35	35	42	42	50	50	55	kg
Total Boiler Weight (including panelling)		455	473	610	610	953	953	1189	kg

RTQ 639÷4000 3S



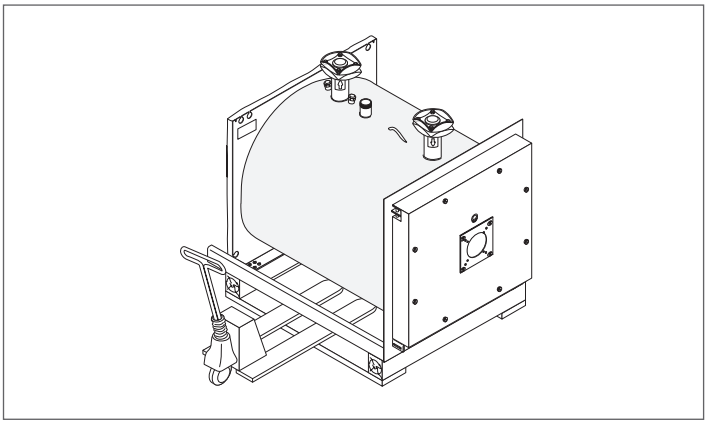
DESCRIZIONE		CALDAIA RTQ 3S													
		639	750	766	896	1100	1300	1600	2100	2400	2700	3000	3500	4000	
A	Width	1220	1285	1285	1360	1450	1535	1605	1715	1715	1865	1935	2040	2070	mm
A1	Width of baseplate	1170	1235	1235	1310	1400	1485	1555	1660	1660	1815	1885	1990	2020	mm
B	Length	2310	2450	2450	2765	2860	3055	3045	3330	3330	3490	3570	3934	4184	mm
B1	Base depth	1960	2110	2110	2375	2470	2580	2630	2890	2890	2940	3040	3332	3560	mm
B2	Length (including flue gas outlet)	2380	2520	2520	2835	2965	3125	3115	3400	3400	3560	3640	4004	4254	mm
C	Height	1280	1335	1335	1430	1530	1610	1680	1850	1850	1995	2055	2165	2170	mm
D	Height of burner plate / Flue-gas stack axis	690	715	715	755	820	865	900	1000	1000	1050	1080	1155	1170	mm
E	Door weight	205	215	215	245	250	290	290	300	300	310	280	325	325	mm
Boiler body weight		1134	1400	1400	1730	2340	2730	3215	4170	4180	4676	5190	6015	6600	kg
Weight of casing		55	70	70	87	95	110	115	122	122	150	156	180	190	kg
Total Boiler Weight (including panelling)		1189	1470	1470	1817	2435	2840	3330	4292	4302	4826	5346	6195	6790	kg

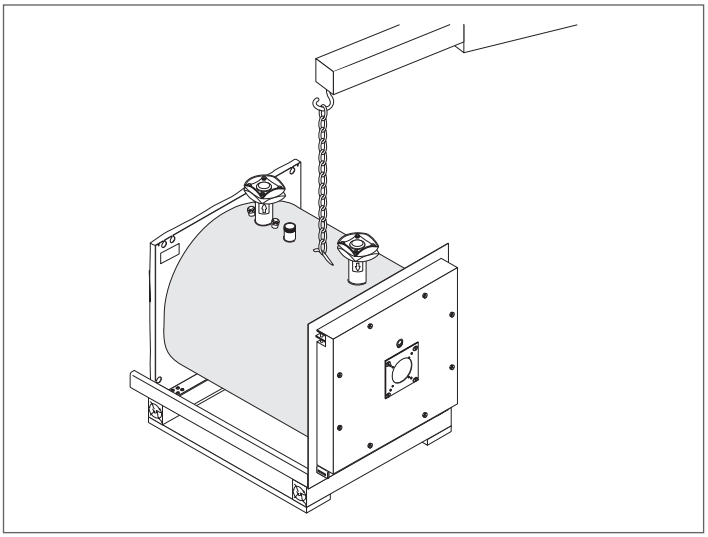
3.3 Handling

RIELLO RTQ 3S 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.





3.4 Place of installation

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

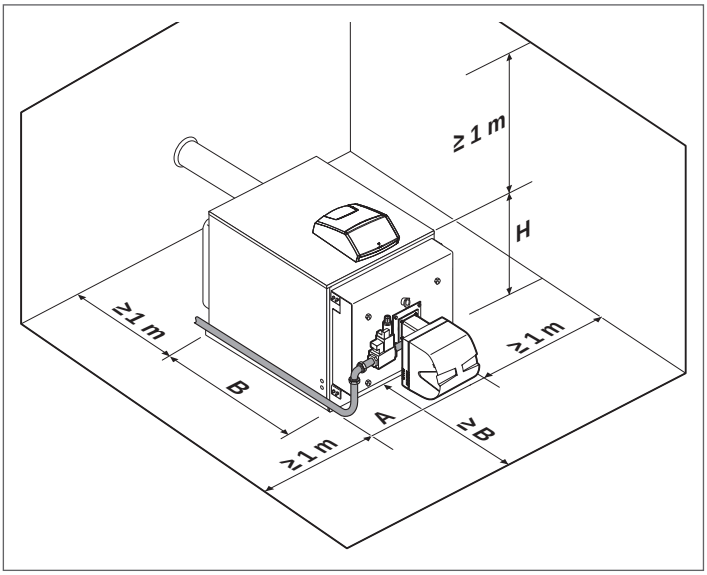
If at all possible, the boiler should be installed on a raised base to prevent the burner fan sucking up dust.

⚠ In Belgium, boilers must be installed according to standards NBN D51.003, NBN D30.003, NBN B61.002 (heat output < 70 kW), and NBN B61.001 (heat output >70 kW).

⚠ 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.



DESCRIZIONE		CALDAIA RTQ 3S														
		35	55	70	91	115	166	217	255	318	349	448	511	575	639	
A	Width	605	605	705	705	805	853	925	925	975	975	975	975	1150	1220	mm
B	Length	830	980	910	1060	1130	1330	1480	1480	1710	1710	1877	1877	2007	2310	mm
H	Total height of boiler	605	605	740	740	790	840	980	980	1030	1030	1030	1030	1210	1280	mm

DESCRIZIONE		CALDAIA RTQ 3S												
		750	766	896	1100	1300	1600	2100	2400	2700	3000	3500	4000	
A	Width	1285	1285	1360	1450	1535	1605	1655	1800	1865	1935	2040	2070	mm
B	Length	2450	2450	2765	2860	3055	3045	3121	3385	3490	3570	3934	4184	mm
H	Total height of boiler	1335	1335	1430	1530	1610	1680	1752	1925	1995	2055	2165	2170	mm

3.4.1 Installation in older systems and systems requiring modernisation

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

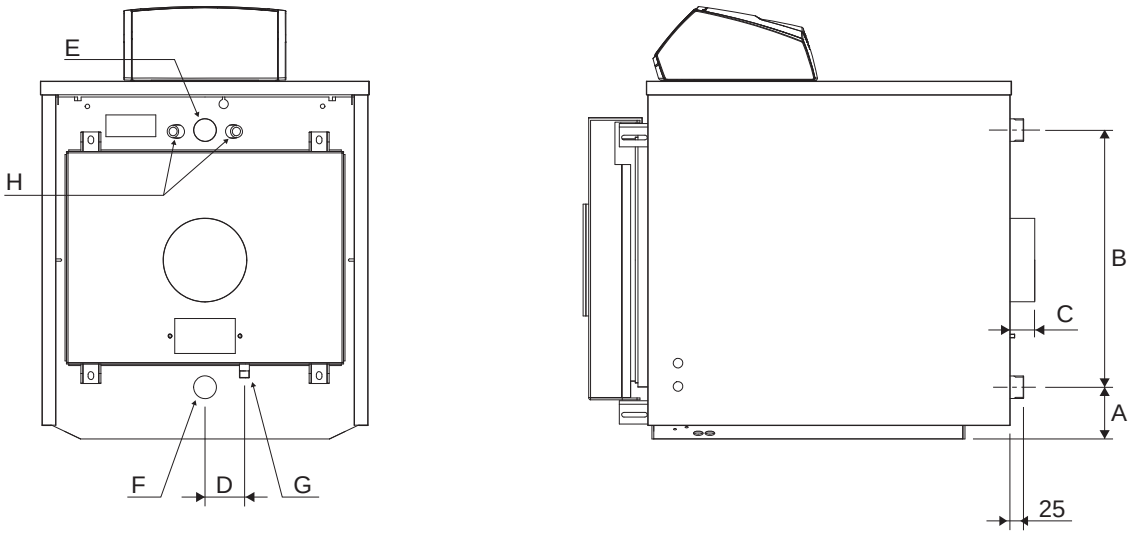
- make sure that the stack is able to withstand the temperature of the combustion gases and that it has been designed and made in compliance with applicable standards. The stack must also be as straight as possible, sealed, insulated and not blocked or choked;
- make sure that the electrical system has 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.

3.5 Water connections

RIELLO RTQ 3S 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.

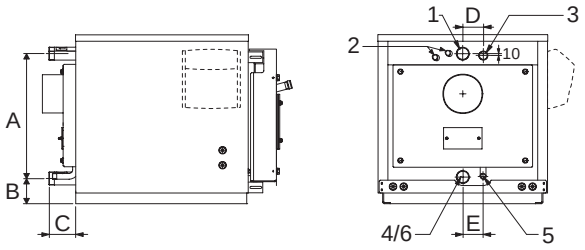
⚠ Allow for the dimensions of the control panel that needs to be installed on top of the boiler.

RTQ 35÷91 3S

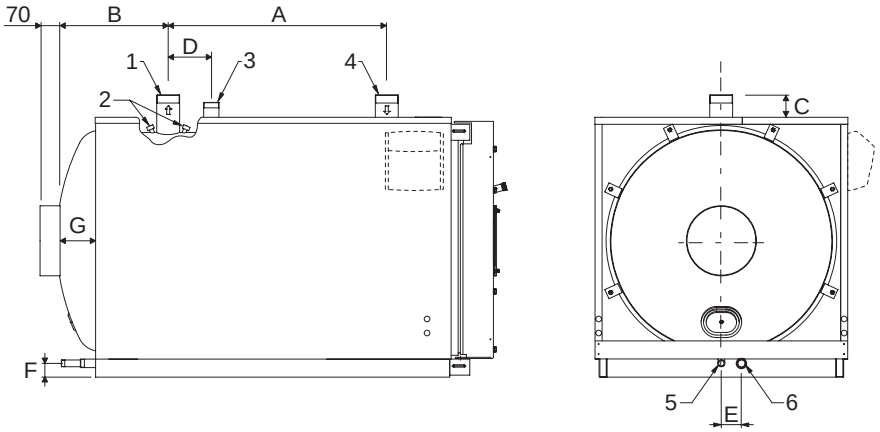


DESCRIZIONE		CALDAIA RTQ 3S				
		35	55	70	91	
A	Return - baseplate distance	85	85	110	110	mm
B	Delivery/Return distance between centres	455	455	552	552	mm
C	Flue gas outlet protrusion	50	50	60	60	mm
D	Flue gas condensate outlet distance between centres	75	75	85	85	mm
E	System Delivery	1" 1/4	1" 1/4	1" 1/2	1" 1/2	Ø
F	System Return	1" 1/4	1" 1/4	1" 1/2	1" 1/2	Ø
G	Flue-gas stack condensate outlet	1/2"	1/2"	1/2"	1/2"	Ø
H	Sensor sheaths	G 1/2" - Ø 16				Ø

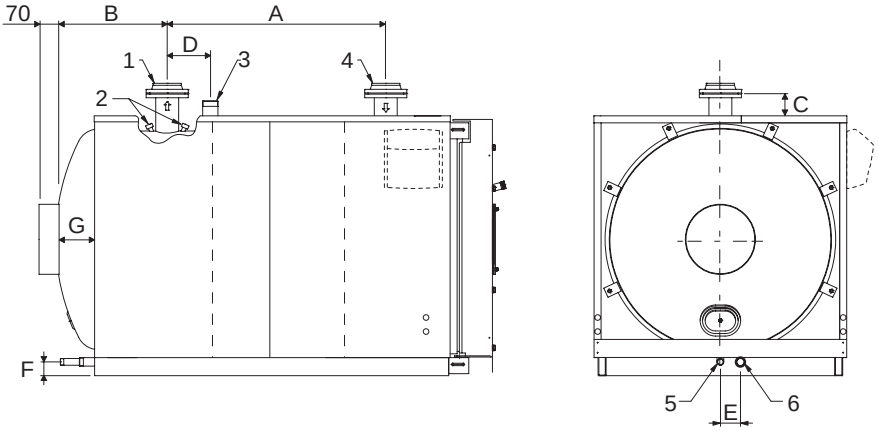
RTQ 115÷166 3S



RTQ 217÷349 3S



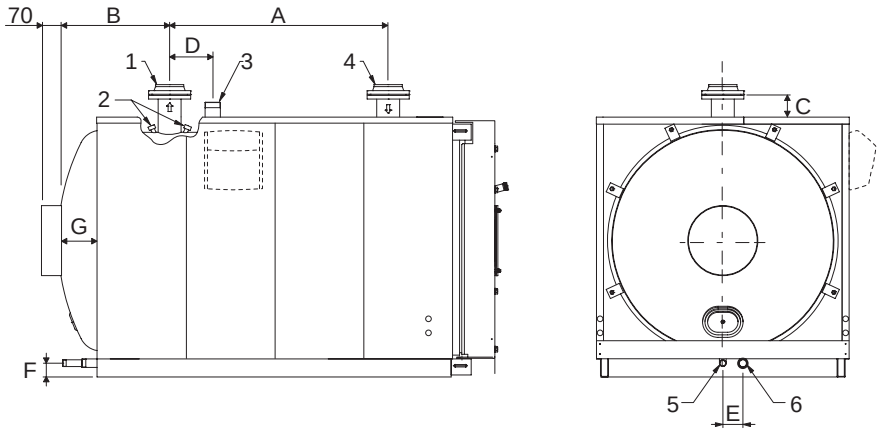
RTQ 448÷575 3S



DESCRIZIONE		CALDAIA RTQ 3S									
		115	166	217	255	318	349	448	511	575	
1	Central heating flow *	G2"	G2"	G2"1/2	G2"1/2	G2"1/2	G2"1/2	DN80	DN80	DN100	Ø
2	Bulb holder / instrument probes	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	Ø
3	Safety fitting	G1"1/4	G1"1/4	G1"1/4	G1"1/4	G1"1/4	G1"1/4	G1"1/2	G1"1/2	G1"1/2	Ø
4	Central heating return *	G2"	G2"	G2"1/2	G2"1/2	G2"1/2	G2"1/2	DN80	DN80	DN100	Ø
5	Condensate outlet	G3/4"	G3/4"	G3/4"	G3/4"	G3/4"	G3/4"	G1"	G1"	G1"	Ø
6	Boiler drain	G2"	G2"	G1"	G1"	G1"	G1"	G1"1/4	G1"1/4	G1"1/4	Ø
A		577	628	750	750	850	850	1000	1000	1250	mm
B		124	124	305	305	395	395	480	480	445	mm
C		115	115	80	80	80	80	75	75	105	mm
D		95	110	205	205	205	205	215	215	300	mm
E		95	120	110	110	110	110	110	110	110	mm
F		-	-	95	95	95	95	95	95	95	mm
G		-	-	85	85	85	85	145	145	180	mm

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

RTQ 639÷4000 3S

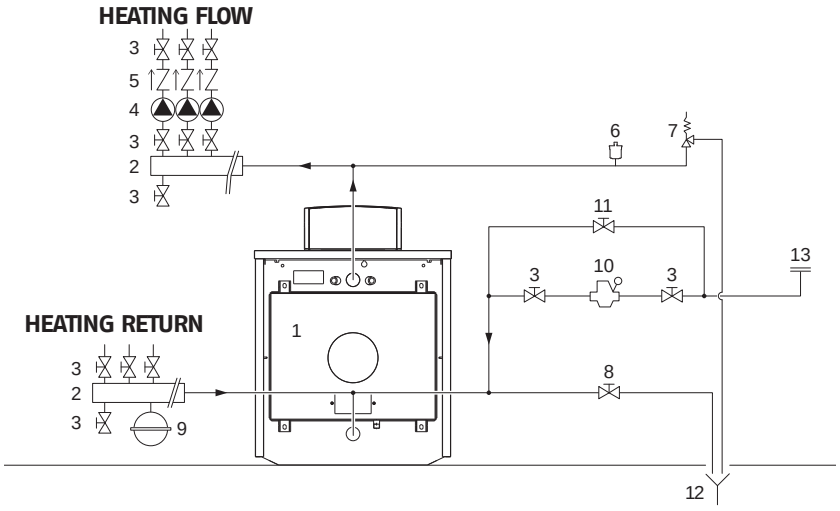


DESCRIZIONE		CALDAIA RTQ 3S								
		639	750	766	896	1100	1300	1600	2100	
1	Central heating flow *	DN100	DN100	DN100	DN125	DN125	DN125	DN150	DN175	Ø
2	Bulb holder / instrument probes	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	Ø
3	Safety fitting	G1"1/2	G2"1/2	G2"1/2	G2"1/2	G2"1/2	DN 80	DN100	DN100	Ø
4	Central heating return *	DN100	DN100	DN100	DN125	DN125	DN125	DN150	DN175	Ø
5	Condensate outlet	G1"	G1"	G1"	G1"	G1"	G1"	G1"	G1"	Ø
6	Boiler drain	G1"1/4	G1"1/4	G1"1/4	G1"1/4	G1"1/4	G1"1/2	G1"1/2	G1"1/2	Ø
A		1250	1300	1300	1540	1600	1650	1650	1910	mm
B		505	580	580	590	655	700	645	745	mm
C		105	105	105	100	115	125	142	122	mm
D		300	250	250	550	650	380	280	510	mm
E		110	110	110	115	110	115	115	120	mm
F		95	95	95	90	115	120	118	155	mm
G		180	125	125	125	170	180	115	225	mm

DESCRIZIONE		CALDAIA RTQ 3S					
		2400	2700	3000	3500	4000	
1	Central heating flow *	DN175	DN175	DN175	DN200	DN200	Ø
2	Bulb holder / instrument probes	G1/2"	G1/2"	G1/2"	G1/2"	G1/2"	Ø
3	Safety fitting	DN100	DN100	DN100	DN125	DN125	Ø
4	Central heating return *	DN175	DN175	DN175	DN200	DN200	Ø
5	Condensate outlet	G1"	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	G1"1/2	Ø
A		1910	2115	2215	2410	2660	mm
B		745	610	610	690	690	mm
C		122	95	107	57	100	mm
D		510	500	500	550	550	mm
E		120	129	137	150	150	mm
F		155	132	125	160	160	mm
G		225	140	140	160	170	mm

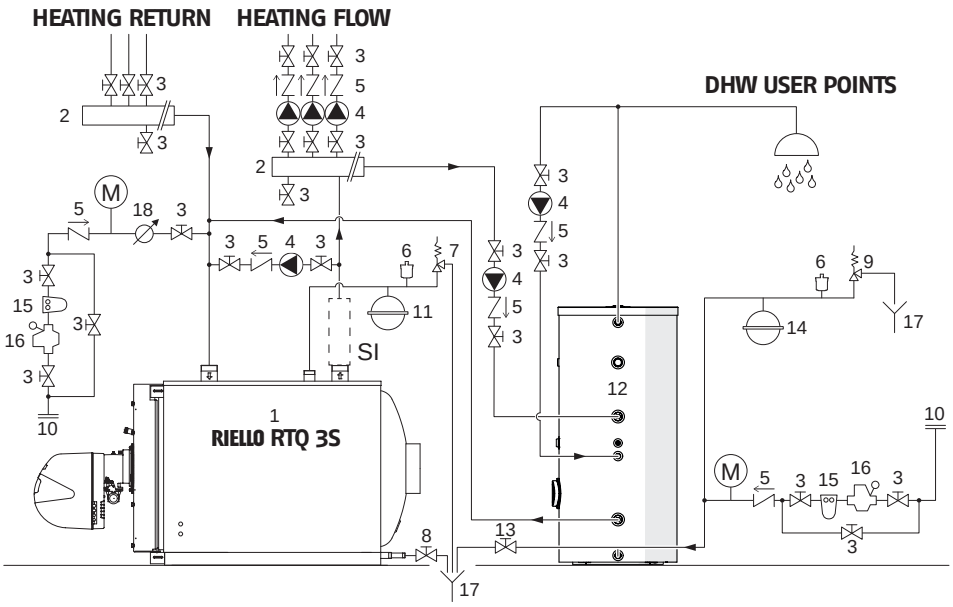
(*) All flanged connections are PN6 according to EN 1092-1.

TYPICAL INSTALLATION SCHEMATIC



Just heating installation

1 boiler
2 Central heating system manifolds
3 Disconnect valves
4 System pumps
5 Non-return valves
6 Automatic vent valve
7 Boiler safety valve
8 Boiler drain cock
9 Expansion tank
10 Pressure reducer
11 Manual fast filling valve
12 Drain
13 System filling cock



Central heating and domestic hot water production

1 Boiler **RIELLO RTQ 3S**
2 Central heating system 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 Remote controlled water tank **RIELLO**
13 Storage cylinder drain cock
14 DHW expansion vessel
15 Water softener filter
16 Pressure reducer
17 Drain
18 Water supply/top-up counter

SI System safety kit (install according to local regulations)
M Pressure gauge

⚠ The selection and the installation of the components of the system is the responsibility of the installer, who must operate in accordance with good practice and current Legislation.

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

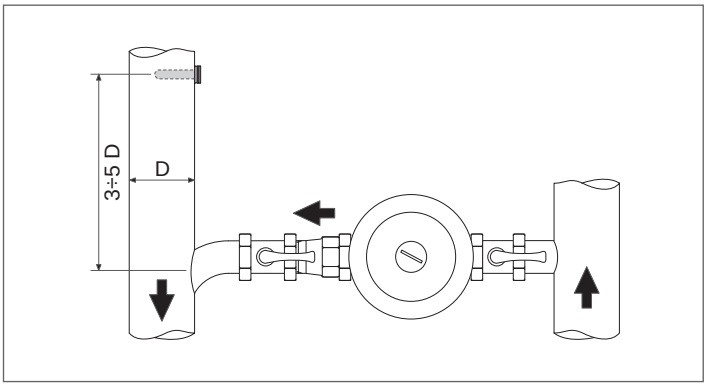
⚠ Special supply/reintegration water should be conditioned with appropriate treatment systems. The values stated in the table on page 29 can be used as a reference.

3.6 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.



3.7 Water in central heating systems

INTRODUCTION

Water used in central heating systems MUST be suitably treated to ensure the correct functioning of those systems and to guarantee an extended working life for boilers and all other system components. This applies not only to existing systems but to newly installed systems too.
Sludge, lime-scale and pollutants present in the water can cause permanent damage to the heating unit, also within a short time and regardless of the quality standards of the materials used.
Contact the Technical Assistance Service for any further information on type and use of additives.

⚠ Always conform to the standards and legislation applicable in the country of installation.

WATER IN CENTRAL HEATING SYSTEMS.
INSTRUCTIONS FOR THE DESIGN, INSTALLATION AND MANAGEMENT OF CENTRAL HEATING SYSTEMS.

1. Chemical and physical characteristics of water
The chemical and physical characteristics of the water must comply with the standards and table below:

European Standards:
- **EN 14868** Protection of metallic materials against corrosion in closed water circulation systems
- **EN 12953-10** Quality requirements for the supply water and the water in the boiler >100°C

National Standards / Leg Dec:
- **UNI 8065:2019** Water treatment for domestic use

STEEL BOILERS			
	U/M	Initial filling water	Regular service water (*)
pH (with aluminium)		7 - 8	7 - 8,5
pH (without aluminium)		8,3 - 9,5	8,3 - 9,5
Hardness	°F	< 15	< 15
Electrical conductivity	µs/cm		< 500
Chlorides	mg/l		< 50
Oxygen (O_2)	mg/l		< 0,1
Iron (Fe)	mg/l	< 0,5	< 0,5 (**)
Copper (Cu)	mg/l	< 0,1	< 0,1 (**)
Aluminium (Al)	mg/l		< 0,1 (**)
Turbidity		Clear	Clear

(*) system water values after 8 weeks of operation;
(**) higher values are due to corrosion, to be eliminated.

General note on water used to top up systems:
- If softened water is used to top up a system, 8 weeks of functioning after topping up, verify that the water in the system respects the above limits, in particular for electrical conductivity
- This check is not necessary if demineralised water is used to top up the system.

2. Central heating systems

⚠ Do not use automatic filling devices to add water to central heating systems. Use a manual device instead and record top-ups in the system service book.

⚠ If there are more than one boiler, they must all be put into service either contemporarily or with a very low rotation time during the initial period of service, so as to evenly distribute the limited quantity of initial lime-scale.

⚠ A flushing cycle must be programmed after the plant has been installed to flush out any installation debris.

⚠ Water used to fill a system for the first time and water used to top it up must always be filtered (using synthetic or metal mesh filters with a filtration rating of no less than 50 microns) to prevent sludge from forming and triggering deposit corrosion.

⚠ The heating system must be flushed out and cleaned with good workmanship before filling up the existing systems. The boiler may not be filled until after the heating system has been flushed out.

2.1 New central heating systems
The system must be filled up slowly the first time; once it is filled and the air expelled it should never need to be topped up again. Systems should also be operated at maximum working temperature the first time they are started up, in order to facilitate de-aeration. (Gas is not released from the water at low temperatures).

2.2 Reconditioning old central heating systems
If a boiler has to be replaced, do not refill the entire central heating circuit if the quality of water in it conforms to requirements. If the quality of water fails to conform to requirements, either recondition the old water or separate the water circuits (water in the boiler circuit must conform to requirements).

3. Corrosion

3.1 Deposit corrosion
Under-deposit corrosion is an electrochemical process, due to the presence of sand, rust, etc., inside the mass of water. These solid substances generally deposit on the bottom of the boiler (sludge), on tube and pipe heads or in the gaps between pipes and tubes.
Micro-corrosion phenomena may be triggered off owing to the difference in electrochemical potential coming to be created between the material in contact with the impurity and the surrounding one.
3.2 Stray current corrosion
Corrosion from stray currents can occur due to the differing electrical potentials between water in the boiler and the metallic mass of the boiler or piping. This process leaves unmistakeable traces i.e. small regular conical holes.

⚠ All metallic parts should be grounded by an efficient earth cable for this reason.

4. Eliminating air and gas from central heating systems
If oxygen enters a circuit continuously or even intermittently (e.g. in under-floor heating systems whose pipes are not protected by impermeable synthetic sheaths, in circuits with open expansion vessels, or in circuits that require frequent top-ups) always separate the boiler's water circuit from the central heating circuit.

Mistakes to avoid and precautions.
From what we have seen it is therefore important to avoid two factors possibly leading to the above mentioned processes i.e. contact between air and water in the installation and regular topping up with fresh water.
To eliminate contact between air and water (and to prevent the latter from becoming oxidized), it is necessary:
- For the expansion system to be a closed vessel type, correctly scaled and with the correct pre-loading pressure (to be regularly checked)
- For the installation to always be at a higher pressure than that of the atmosphere at any point (comprising the pump suction side) and under all running conditions (all the water sealing and couplings in the installation are designed to resist pressure towards outside, but not for depression)
- That the installation will not be made with materials permeable to gas (e.g. plastic pipes for floor systems without anti-oxygen barrier).

⚠ Lastly we would remind you that the warranty does not cover breakdowns incurred by the boiler due to deposits and corrosion.

3.7.1 Use of antifreeze

Do not use automotive silicate-based antifreeze in the heating system.
In areas where freezing may occur, an antifreeze may be added to protect the system water. Please adhere to the specifications provided by the antifreeze manufacturer.
- Use the antifreeze manufacturer's data to determine the right antifreeze ratio for the desired protection temperature.
- Do not exceed 50% antifreeze mix ratio and do not use antifreezes other than those specifically designed for water heating systems.
- the chemical oxidation of the metals in the system also generates hydrogen.

3.7.2 Glycol

The percentage of propylene glycol which can be used is dependent on the maximum delivery temperature and the project ΔT as defined by the generator.

To calculate the freezing temperature associated with the mix and the maximum percentage to be used, please see the technical datasheet for the product used.

⚠ The values given in the tables refer to the **RIELLO** product.

Anti-freeze effect		
Glycol (%)	Temperature (°C)	Temperature (°F)
55	-40,4	-40,7
50	-32,4	-26,3
45	-26,0	-14,8
40	-21,5	-6,7
35	-17,6	0,3
30	-14,0	6,8
25	-10,7	12,7
20	-7,0	19,4
15	-4,0	24,8
10	-2,0	28,4

Mix boiling point								
P (bar)	Glycol (%)							T (°)
	25	30	35	40	45	50	55	
11,0	186,0	187,0	186,0	188,0	189,0	189,0	189,5	°C
	366,8	368,6	366,8	370,4	372,2	372,2	373,1	°F
10,0	181,5	182,0	182,5	183,0	184,0	185,0	186,5	°C
	358,7	359,6	360,5	361,4	363,2	365,0	367,7	°F
9,0	176,5	177,0	177,5	178,0	179,5	181,0	182,5	°C
	349,7	350,6	351,5	352,4	355,1	357,8	360,5	°F
8,0	171,5	172,0	172,5	173,0	174,0	175,0	176,0	°C
	340,7	341,6	342,5	343,4	345,2	347,0	348,8	°F
7,0	166,0	166,5	167,0	167,5	168,0	168,5	170,0	°C
	330,8	331,7	332,6	333,5	334,4	335,3	338,0	°F
6,0	159,0	159,5	160,5	161,0	161,5	162,0	163,5	°C
	318,2	319,1	320,9	321,8	322,7	323,6	326,3	°F
5,0	152,5	153,0	154,0	155,0	156,0	157,0	158,0	°C
	306,5	307,4	309,2	311,0	312,8	314,6	316,4	°F
4,0	144,5	145,0	145,5	146,0	147,0	148,0	149,0	°C
	292,1	293,0	293,9	294,8	296,6	298,4	300,2	°F
3,5	141,5	142,0	142,5	143,0	143,5	144,0	145,0	°C
	286,7	287,6	288,5	289,4	290,3	291,2	293,0	°F
2,0	122,5	123,0	123,5	124,0	125,0	126,0	127,0	°C
	252,5	253,4	254,3	255,2	257,0	258,8	260,6	°F
1,0	100,5	101,0	101,5	102,0	103,0	104,0	105,0	°C
	212,9	213,8	214,7	215,6	217,4	219,2	221,0	°F

IMPORTANT INFORMATION REGARDING HEAT-TRANSFER FLUIDS

Heat-transfer fluids are particularly important for protecting the system: efficient heat exchange, thanks to a good specific heat capacity; anti-freeze properties, important for the life of the system in the winter; and anti-corrosion properties to preserve the heating system components.

When choosing a heat-transfer fluid, consider the following:

- **toxicity** in the event of leakage, contaminating domestic water or water for animal/human use/contact
- **biodegradability** in the event of leakage into the environment

All heat-transfer fluids recommended by **RIELLO** are non-toxic and in large part biodegradable.

⚠ Choose the liquid carefully and manage the heating system correctly to keep monitoring and maintenance work to a minimum, and reduce fluid changes.

⚠ Use propylene glycol-based, non-polluting antifreeze concentrate with corrosion inhibitors for heating systems.

⚠ Do not use the mixture with other antifreeze liquids; always use the same one.

⚠ Use chemically non-hazardous liquid.

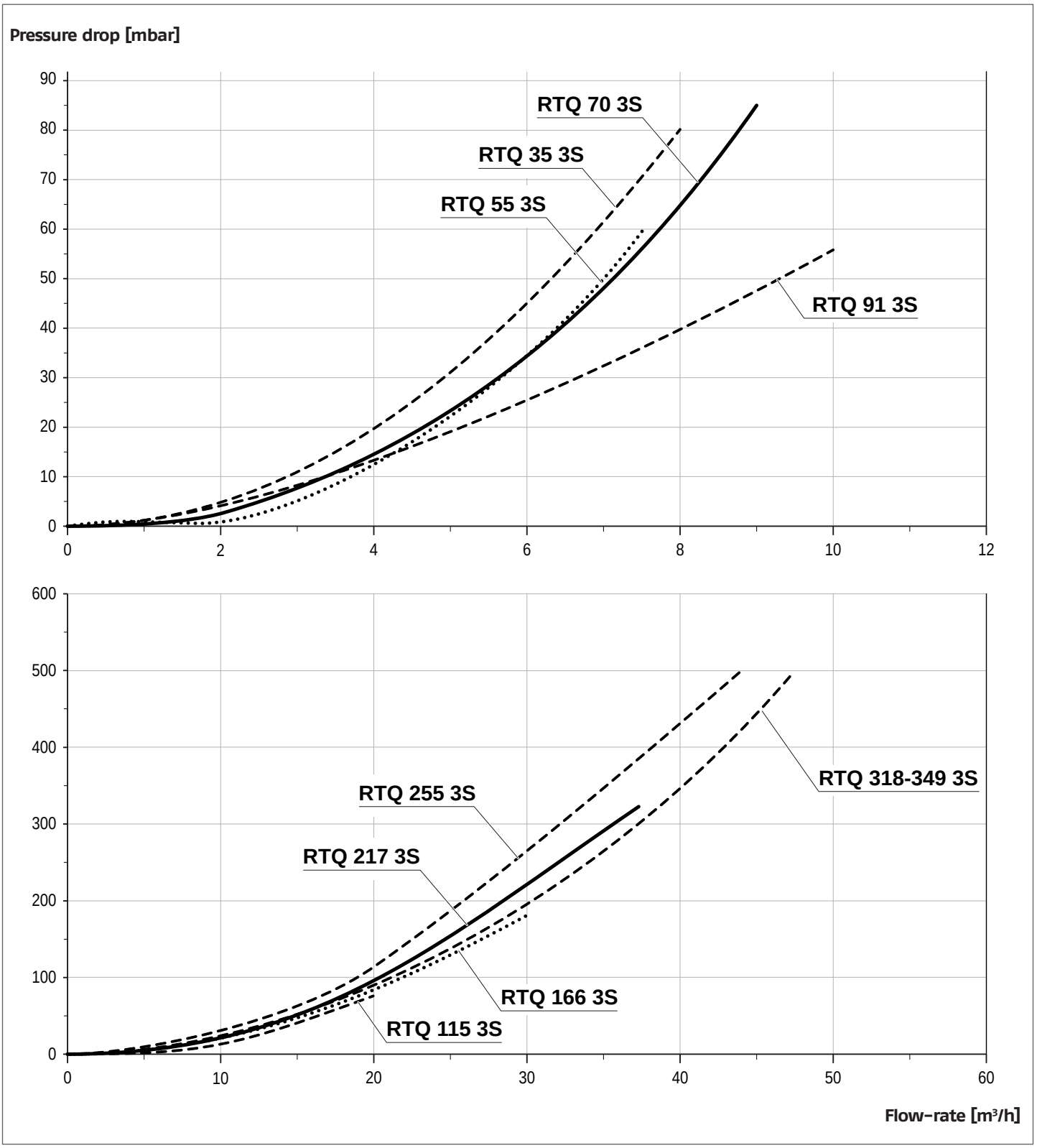
⚠ It is mandatory to check the percentage of glycol according to the antifreeze effect on the data sheet of the purchased product.

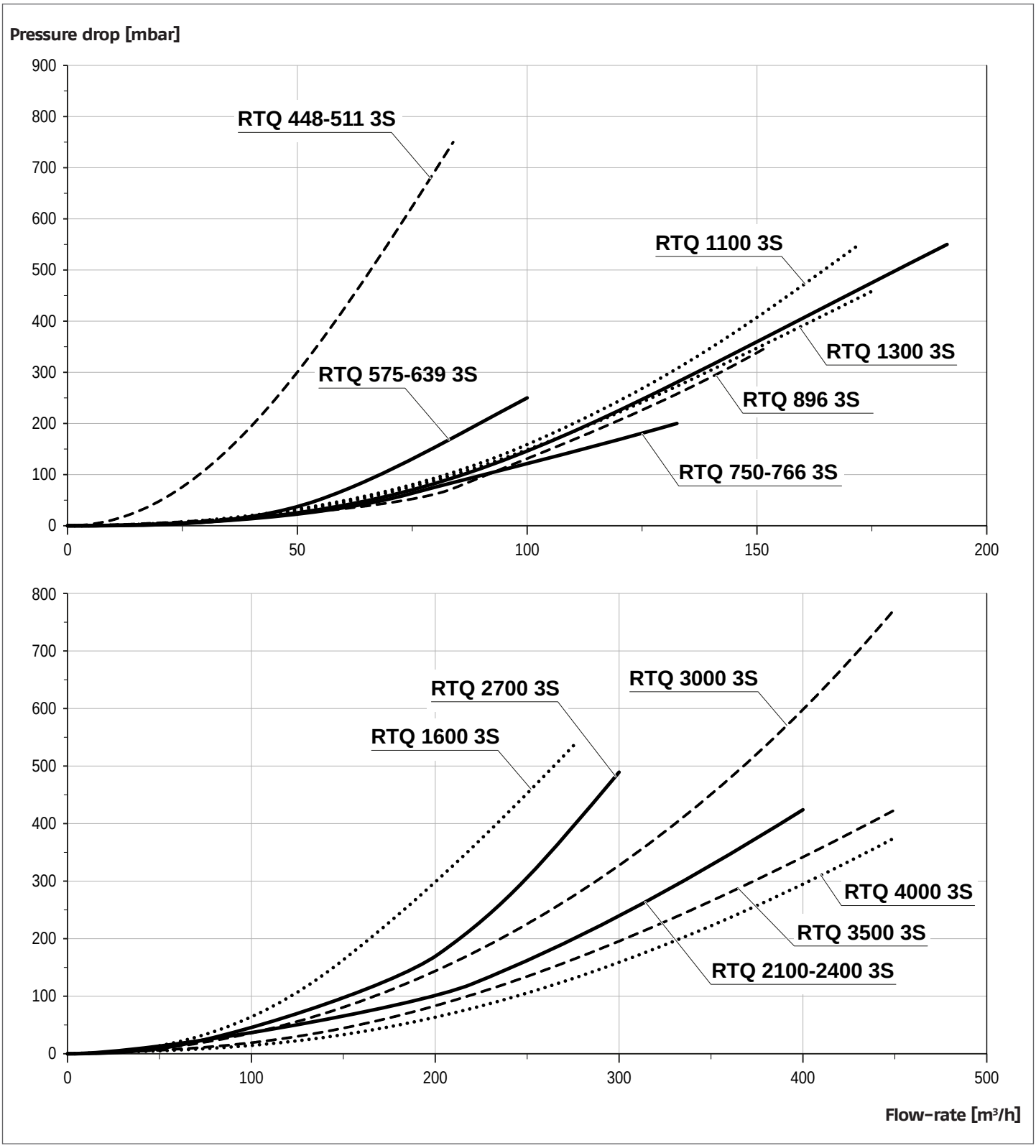
⚠ It is recommended to check the compatibility of the purchased product with the circuit sealing materials, e.g. elastomers or plastics.

⚠ It is recommended to use a filter on the primary circuit to purify the Propylene Glycol.

⚠ The system must not have any galvanised tanks or pipes on the primary side, as zinc can be dissolved by mixtures of propylene glycol and water.

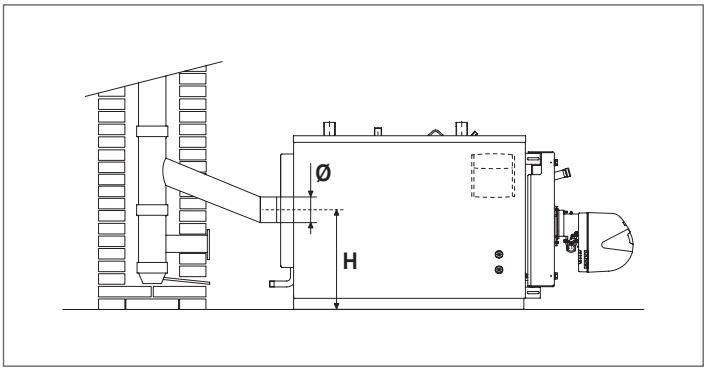
3.8 Water-side pressure drop




Pressure drop [mbar]
900
800
700
600
500
400
300
200
100
0
0
50
100
150
200
RTQ 448-511 3S
RTQ 1100 3S
RTQ 1300 3S
RTQ 575-639 3S
RTQ 896 3S
RTQ 750-766 3S
800
700
600
500
400
300
200
100
0
0
100
200
300
400
500
RTQ 2700 3S
RTQ 3000 3S
RTQ 1600 3S
RTQ 4000 3S
RTQ 3500 3S
RTQ 2100-2400 3S
Flow-rate [m³/h]

3.9 Discharge of combustion products

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



⚠ Uninsulated flues are potentially dangerous and can cause burns.

⚠ The stack must guarantee the minimum draught specified by applicable technical standards, assuming zero pressure at the connection to the flue gas exhaust. Draught at the stack must not exceed 0.2 mbar. Fit a draught limiter if draught exceeds this value.

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

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

⚠ The connection between the horizontal section of flue and the vertical stack must be either straight or at an angle of no more than 45°.

⚠ If more than one boiler is installed in the same utility room, separate flues must be provided for each boiler. If this is not possible, the burners should definitely be equipped with automatic closing of the air damper.

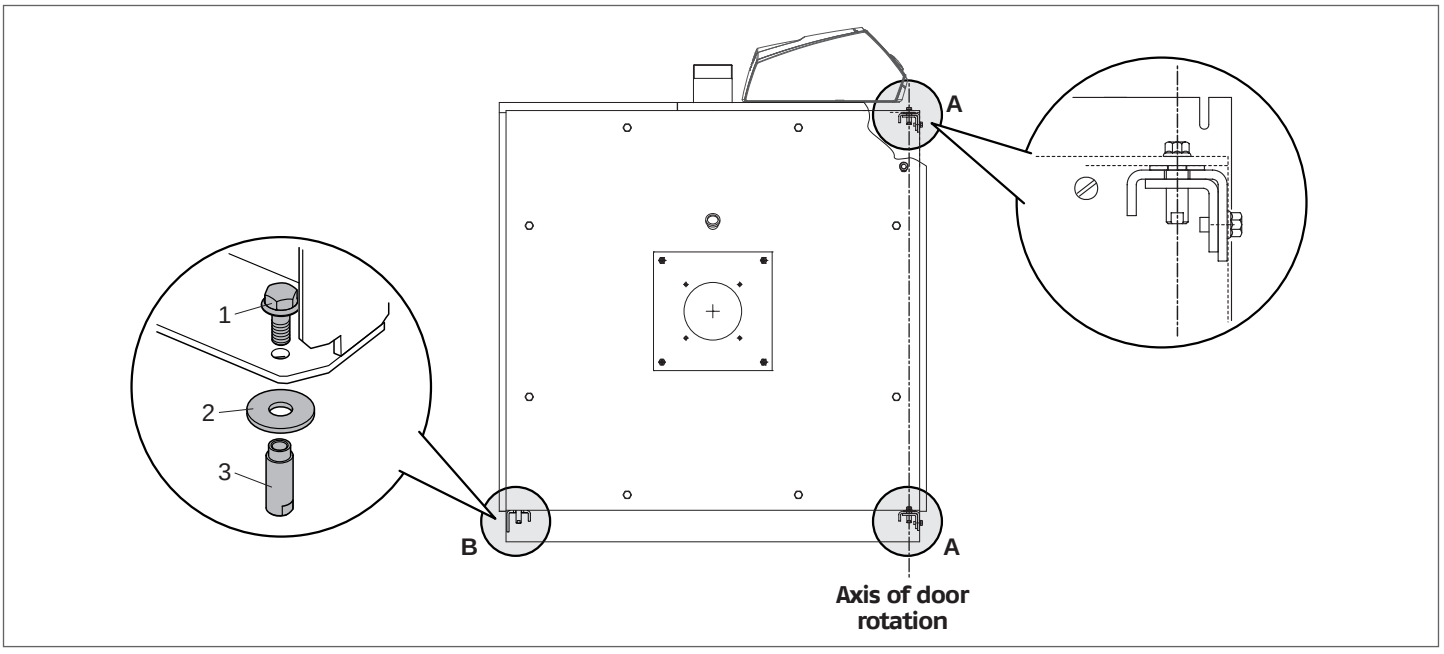
	CALDAIA RTQ 3S												
	35	**55**	**70**	**91**	**115**	**166**	**217**	**255**	**318**	**349**	**448**	**511**	**575**
Ø (mm)	139	139	179	179	180	180	200	200	250	250	250	250	300
H (mm)	325	325	384	384	500	525	525	525	550	550	550	550	655

	CALDAIA RTQ 3S												
	639	**750**	**766**	**896**	**1100**	**1300**	**1600**	**2100**	**2400**	**2700**	**3000**	**3500**	**4000**
Ø (mm)	300	350	350	400	400	450	450	450	450	500	500	550	600
H (mm)	690	715	715	755	820	865	900	925	1015	1050	1080	1155	1170

3.10 Door hinges

Boilers are fitted with three door hinge points in the factory. The doors are initially fitted to open to the right. If you need to change the door to open to the left, make the necessary modifications before performing any tests that require the boiler door to be opened. Proceed as instructed below to change the direction of door opening.

⚠ Once you have decided on the direction of door opening and the door opens successfully, remove the unused hinge assembly B.



3.11 Changing the direction of door opening

⚠ Perform this operation before starting the boiler up for the first time and before opening the door.

⚠ When the door is not fitted correctly to the hinges, it must only be handled using equipment appropriate to its weight and using suitable personal protective equipment.

	CALDAIA RTQ 3S							
	35	**55**	**70**	**91**	**115**	**166**	**217**	
Door weight	21	21	30	30	38,4	45,2	61,5	kg

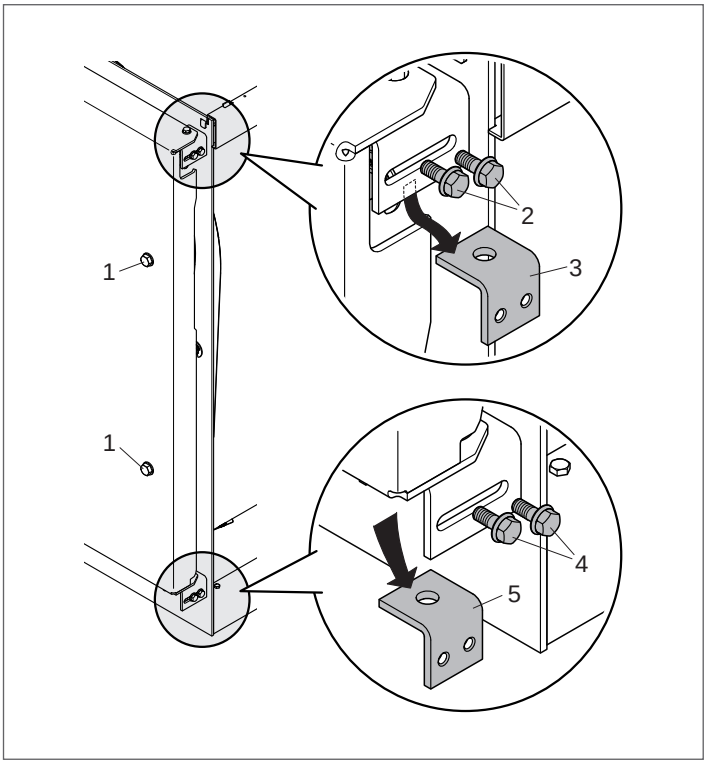
	CALDAIA RTQ 3S							
	255	**318**	**349**	**448**	**511**	**575**	**639**	
Door weight	61,5	77,5	77,5	110	110	119	119	kg

	CALDAIA RTQ 3S						
	750	**766**	**896**	**1100**	**1300**	**1600**	
Door weight	160	160	331	383	412	439	kg

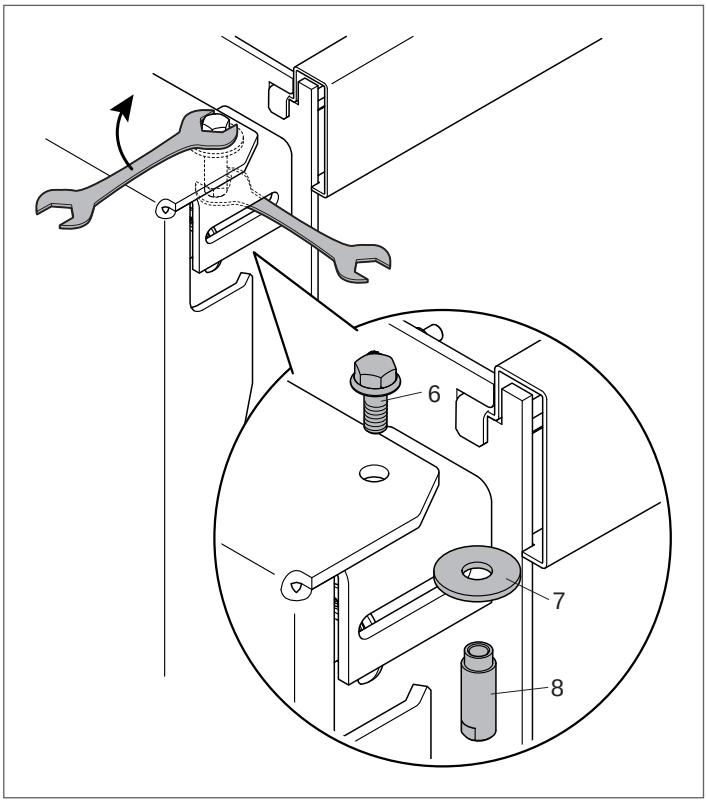
	CALDAIA RTQ 3S						
	2100	**2400**	**2700**	**3000**	**3500**	**4000**	
Door weight	576	576	815	843	960	990	kg

If you wish to modify the door to open to the left, i.e. with the hinges on the left, proceed as follows:

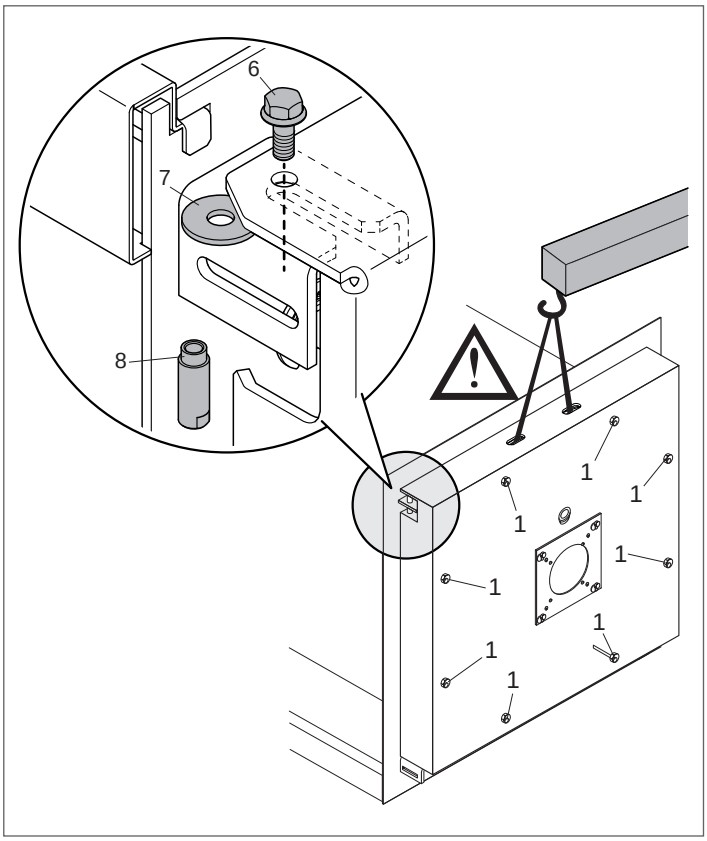
⚠ Make sure that the main door fixing bolts (1) are securely tightened.
- remove the top safety bolts (2) and the door stop bracket (3);
- remove the bottom safety bolts (4) and the door stop bracket (5);



- insert a spanner through the slot in the side of the top door mounting bracket and hold the bushing (8) steady;
- unscrew the top bolt (6), then remove the bushing (8) and washer (7);

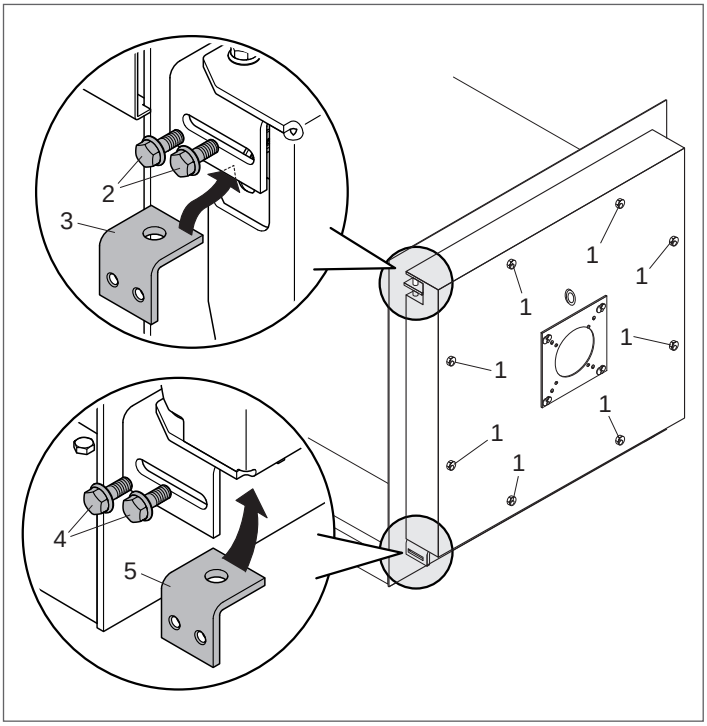


- fit the bushing (8), bolt (6) and washer (7) to the opposite side of the door.



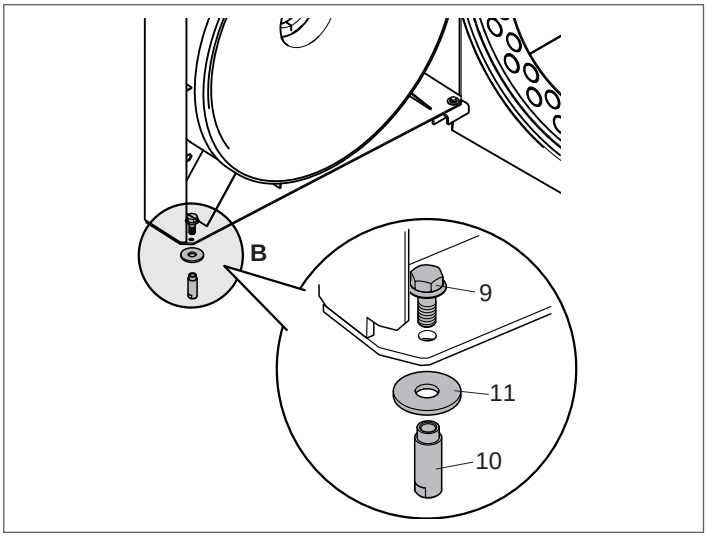
⚠ If it proves difficult to fit the washer (7) or screw the bolt (6) into the bush (8) because the door is not accurately aligned, **attach a hoist of adequate lifting capacity to the door** (see the weights and dimensions table), **slightly loosen** the fixing bolts (1) and lift the door just enough to fit the washer (7) or align the hole in the door with the hole in the hinge. **Once the bolt (6) has engaged the bush, 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.

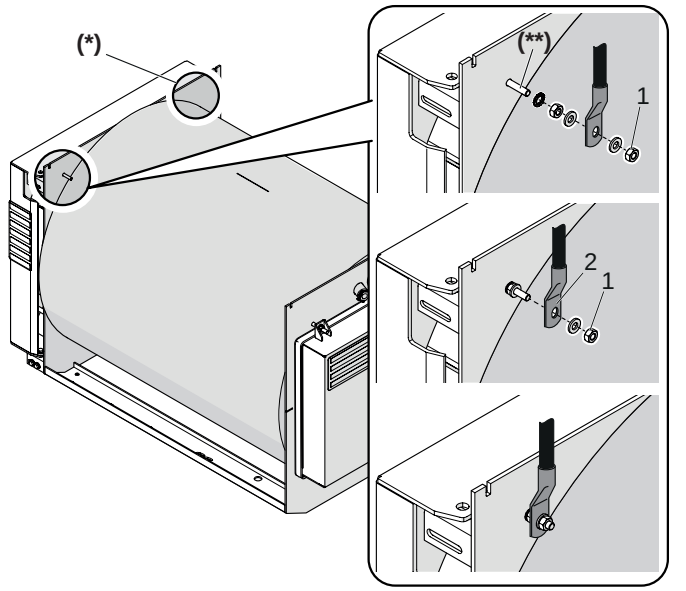
- Completely unscrew the main fixing bolts (1) and open the door (these bolts are captive in the door and cannot be removed);
- remove the spare hinge assembly 'B' [bolt (9), bushing (10), and washer (11)] opposite the hinged side of the door.



3.12 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.



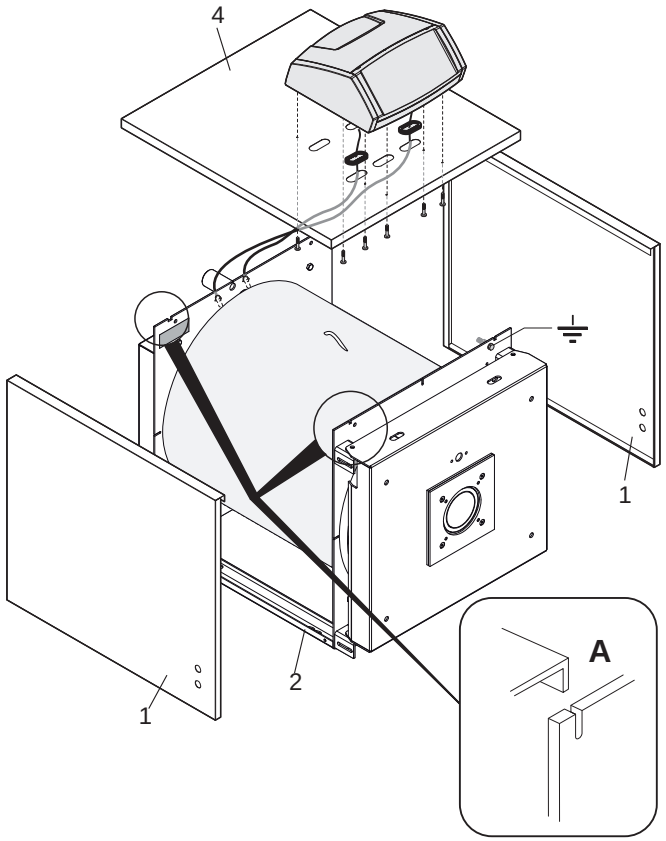
(**) **M6x30 brass**

⚠ 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.

3.13 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;
- 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.

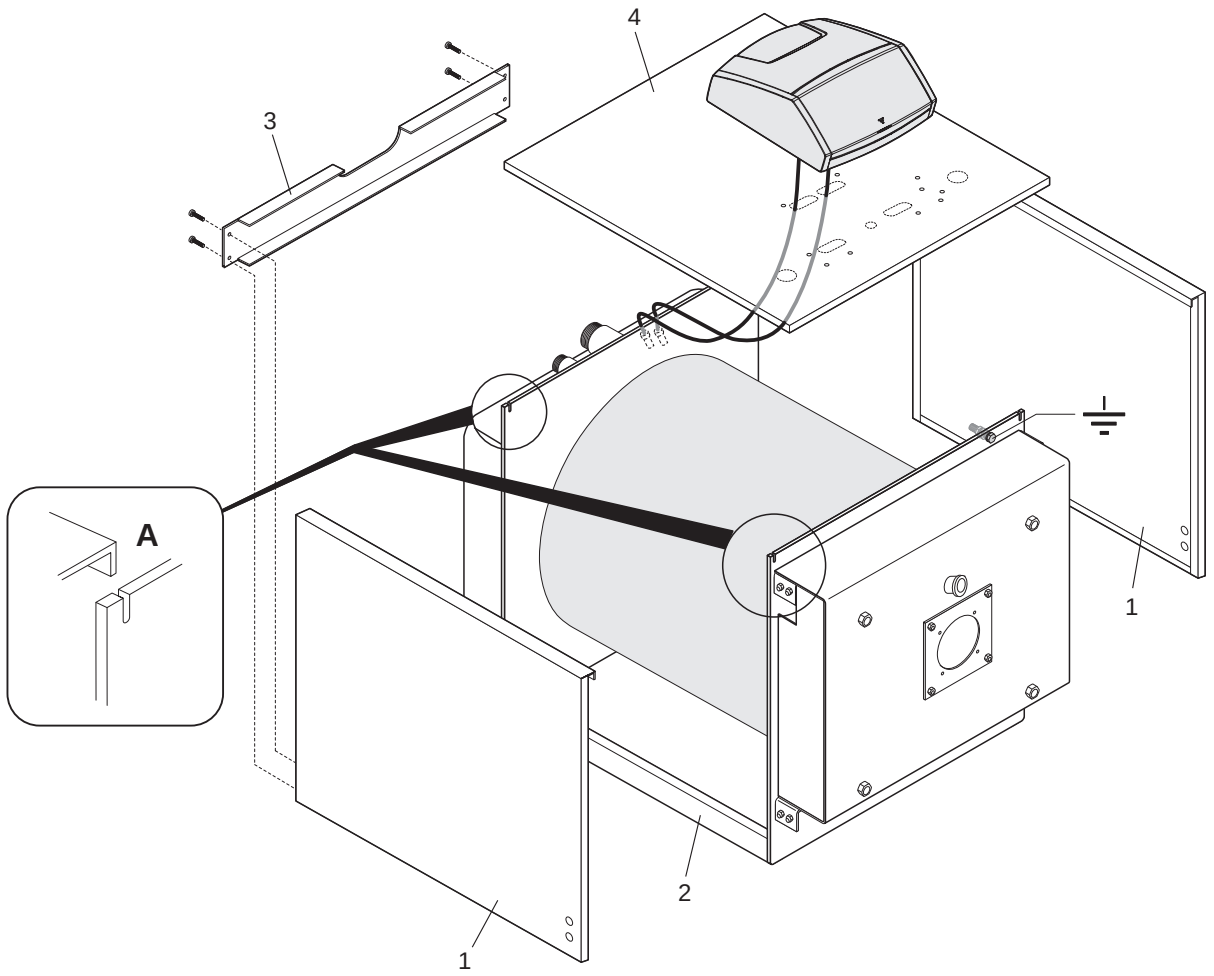
RTQ 35÷91 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

- 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.

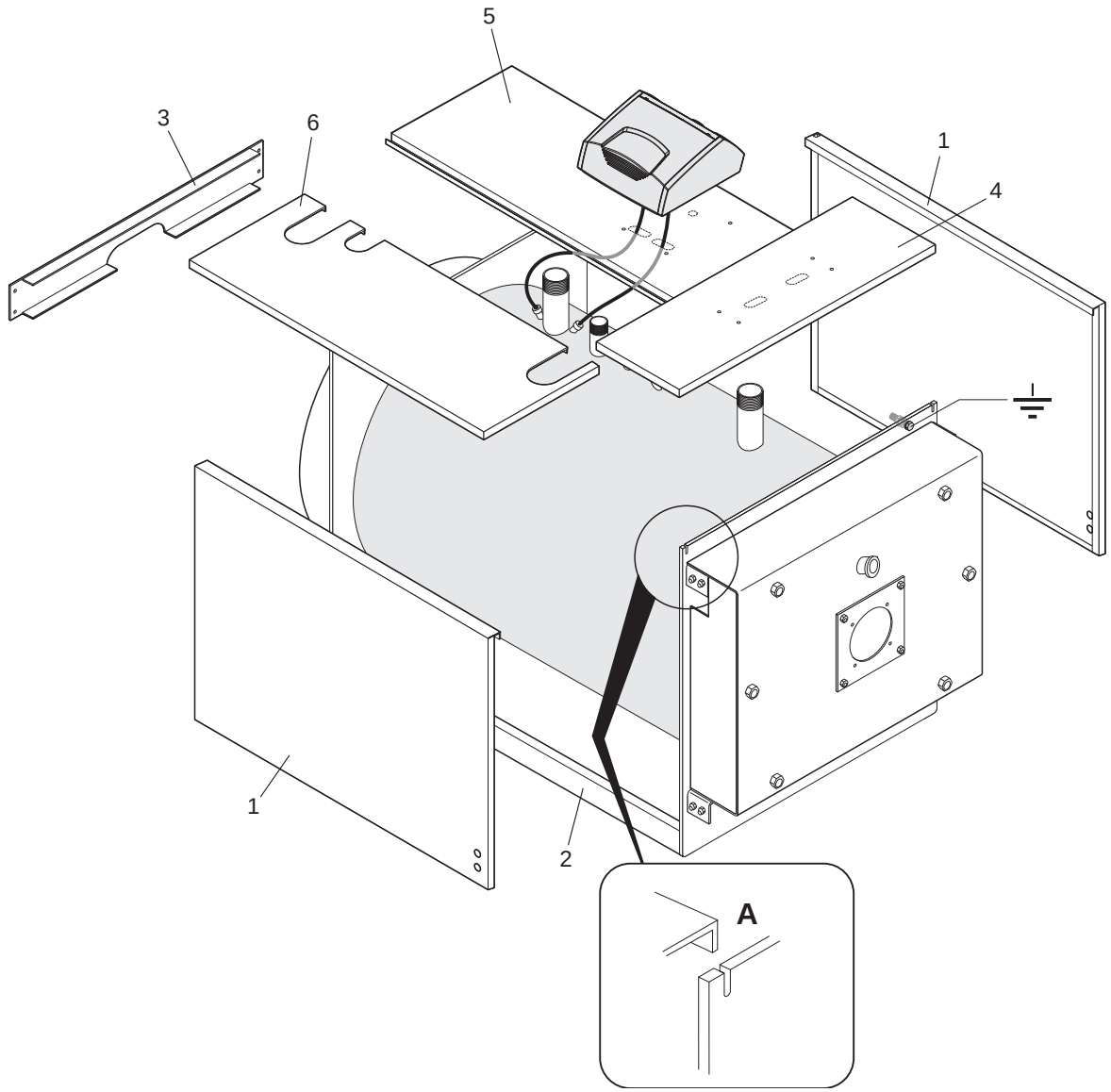
RTQ 115÷166 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

- 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 panels (4), (5) and (6) to close the top of the boiler.

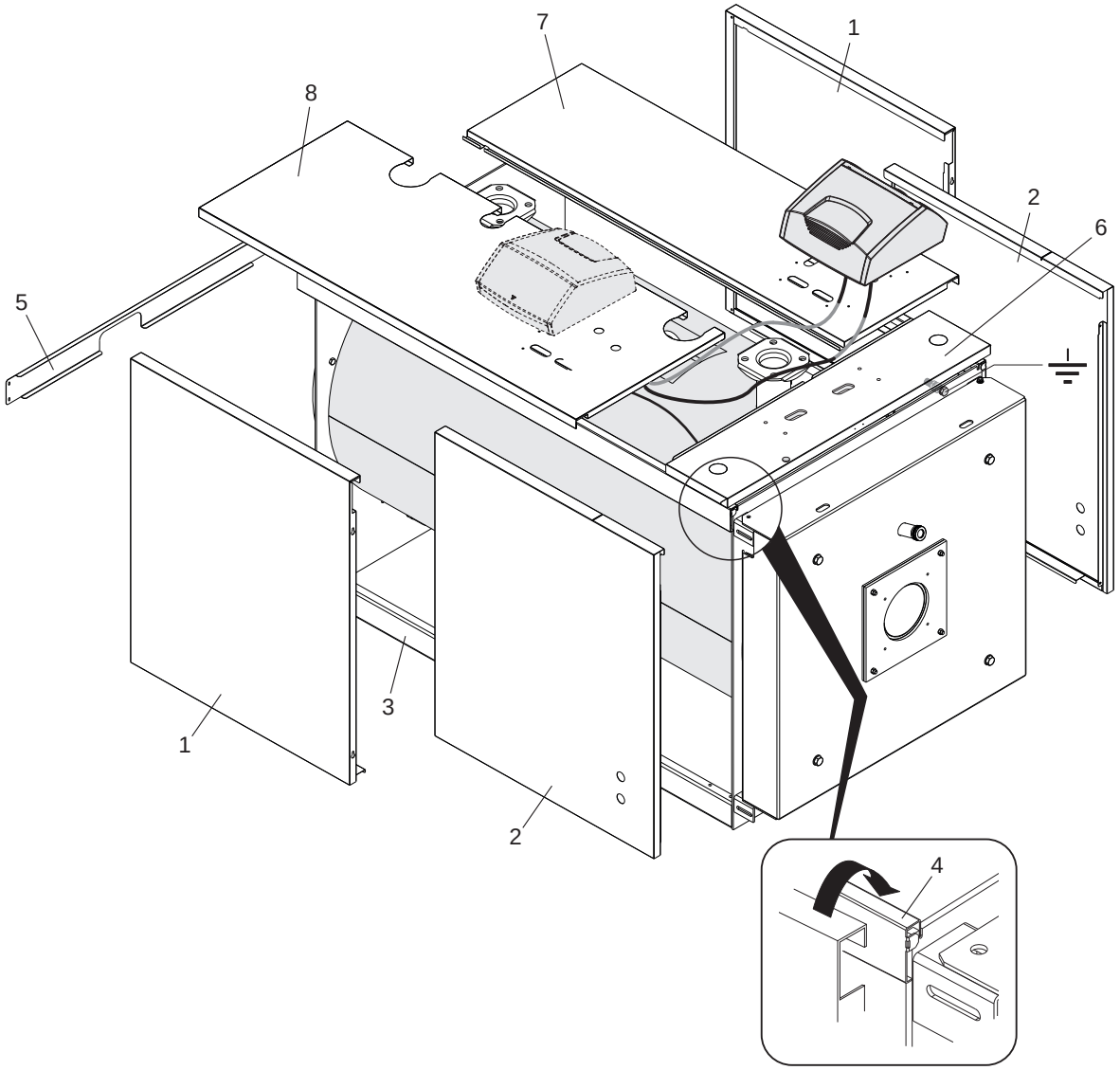
RTQ 217÷349 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

- Engage the bottoms of the rear side panels (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;
- fit your chosen control panel on the top panel (6), 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, in this order, the rear top panel (6) and (7) and the central panel (8), to close the top of the boiler.

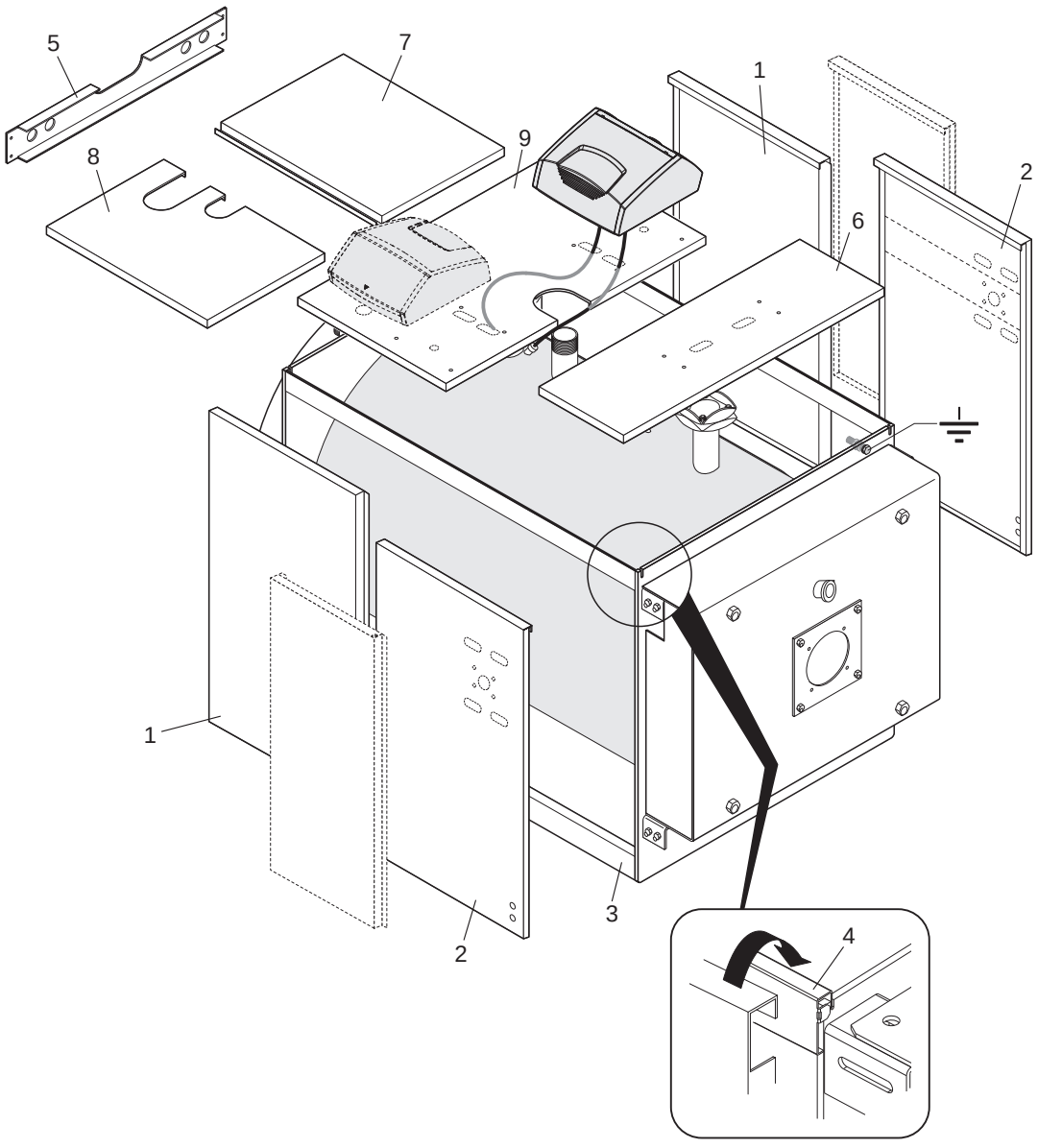
RTQ 448÷511 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

- Engage the bottoms of the rear side panels (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;
- fit your chosen control panel on the top panel (6), 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, in this order, the rear top panel (7) and (8) and the central panel (9), to close the top of the boiler.

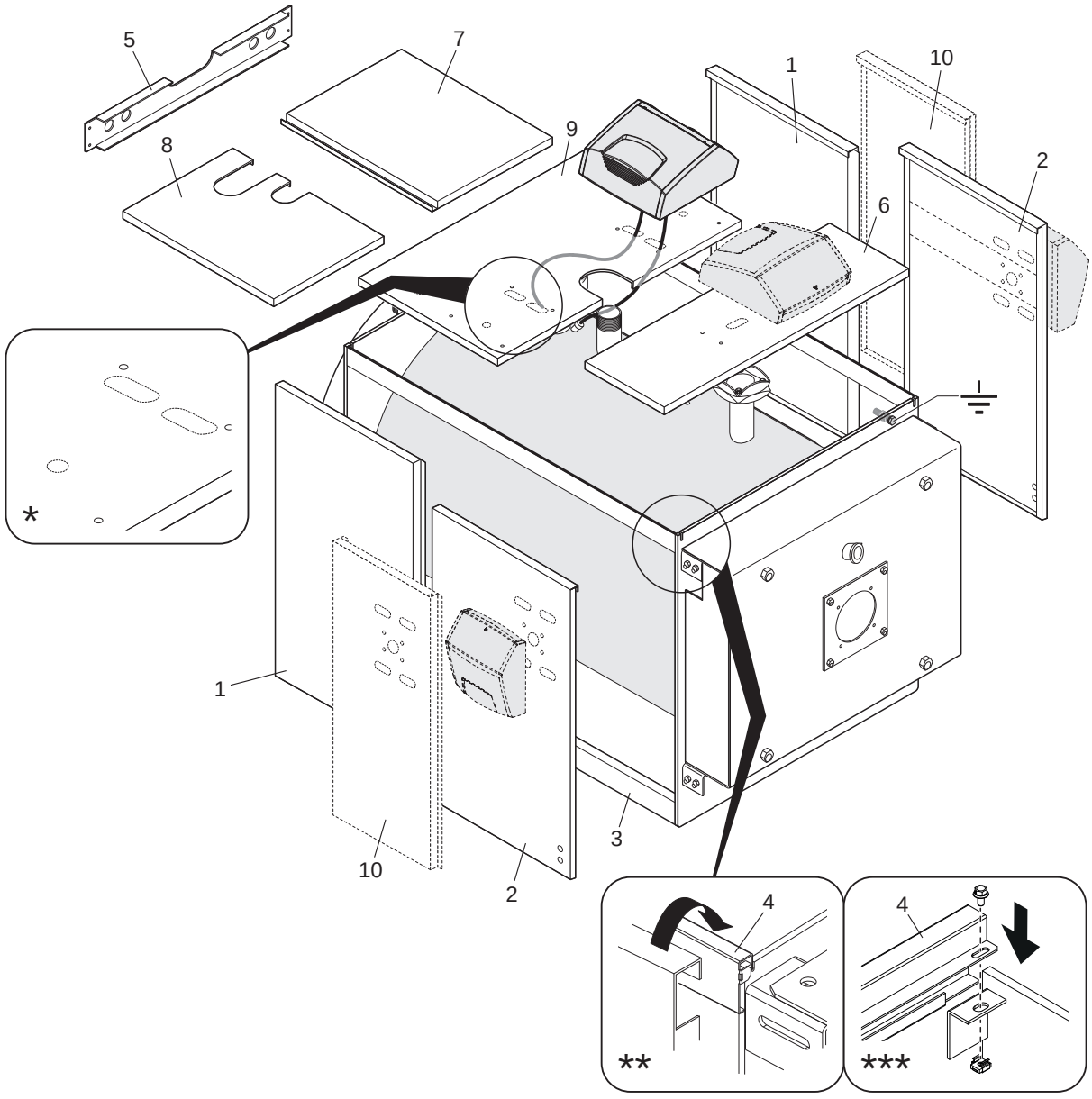
RTQ 575 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

- Engage the bottoms of the rear side panels (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;
- fit your chosen control panel. The control panel can be fitted in different positions based on the boiler model:
  - RTQ 639 3S models on central panel (9) (right side only) or on front upper panel (6)
  - RTQ 766÷1300 3S models on central panel (9) (right or left side) or on front upper panel (6)
  - RTQ 1300÷2700 3S models on right or left front side panel (2)
  - RTQ 3000 3S model on right or left central side panel (10)
- route the electrical cables and insert the bulbs/sensors in their sockets;
- fit the cable grommets provided into their seats in the panels;
- fit, in this order, the rear top panel (7) and (8) and the central panel (9), to close the top of the boiler.

RTQ 639÷3000 3S

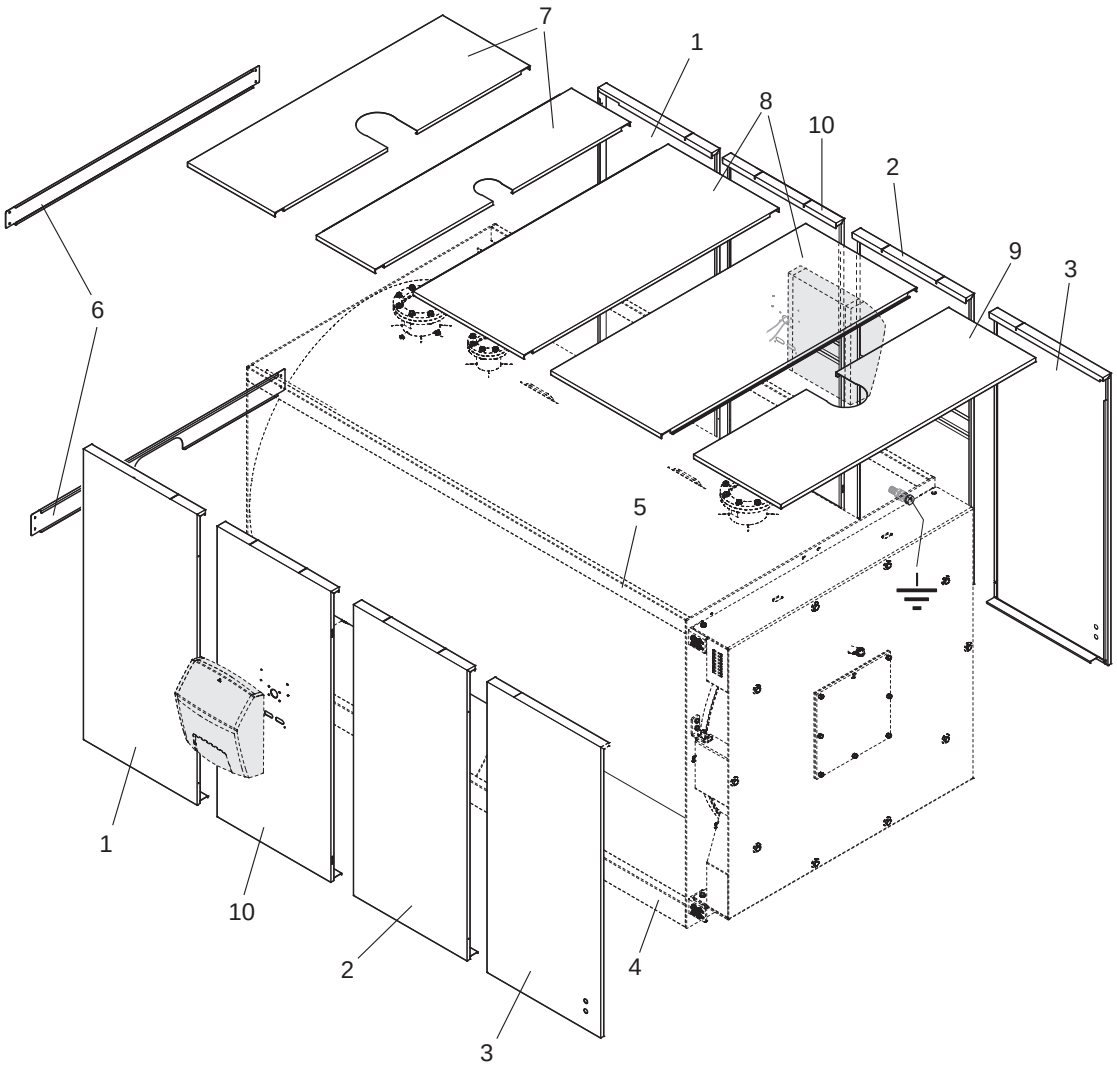


(*) **RTQ 750÷3000 3S (hole for horizontal installation of electrical panel)**
(**) **RTQ 639÷2400 3S**
(***) **RTQ 2700÷3000 3S**

⚠ Refer to the instruction manuals your chosen control panel and burner.

- Engage the bottoms of the rear side panels (1), center panels (2)-(10) and front panels (3) in the bottom rails (4) then hook their top lips over the top rails (5), running between the front and rear heads;
- secure the side panels in place with the top cross beams (6) and the screws provided;
- fit your chosen control panel on one of the side panel (10), 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, in this order, the rear top panel (7), the central one (8), and at the end the front one (9), to close the top of the boiler.

RTQ 3500÷4000 3S



⚠ Refer to the instruction manuals your chosen control panel and burner.

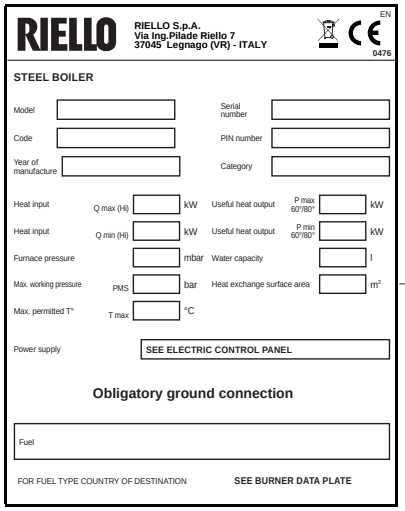
3.13.1 Applying nameplate label

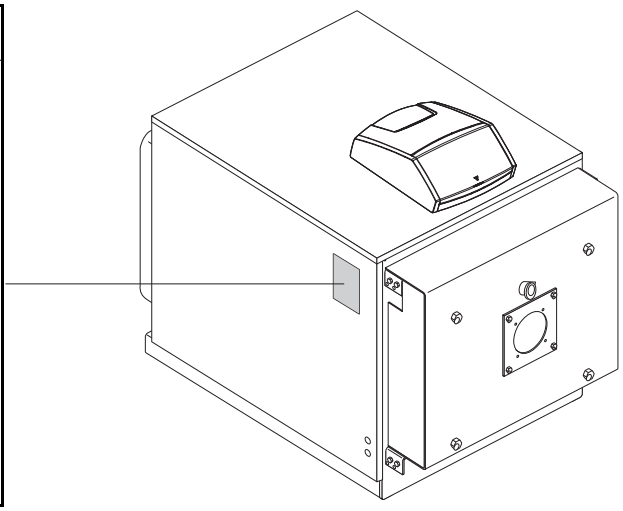
0nce the panelling has been fitted, attach the follow adhesive labels:

1 **Data plate**: this lists the technical specifications and performance of the product. It comes inside the documentation envelope.

It is inside the documentation envelope and MUST BE APPLIED at the end of the installation by the appliance installer in a clearly visible position as shown in the figure.
If the labels are lost, please request new ones from the **RIELLO** Technical Assistance Service.

1



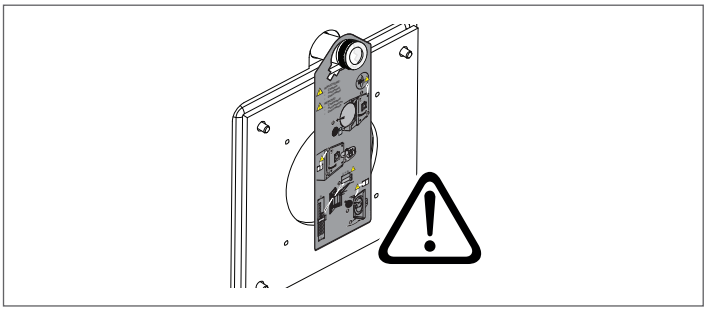


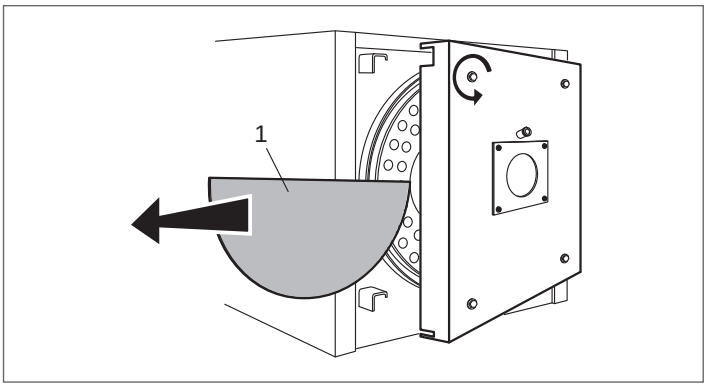
4 TECHNICAL ASSISTANCE SERVICE

4.1 Preparing for initial startup

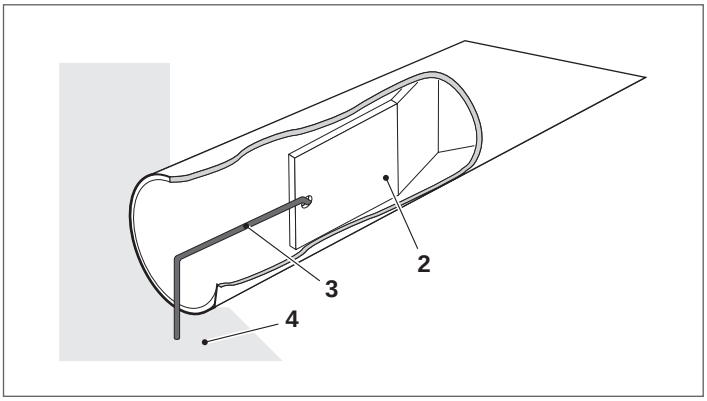
It is essential to perform the following checks before starting up or testing the functioning of your **RIELLO RTQ 3S** boiler. In particular, check that:

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

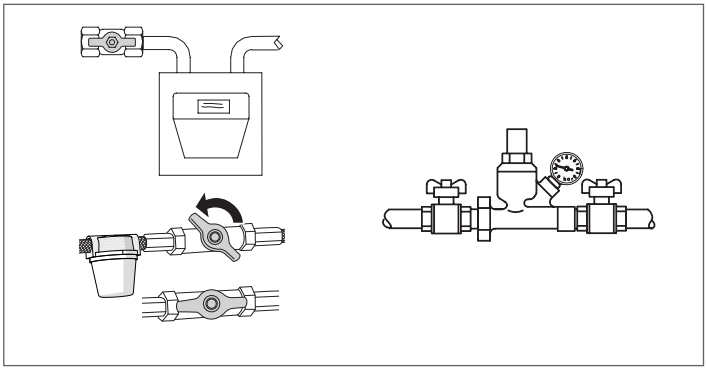




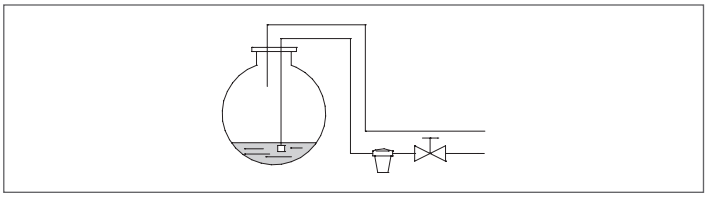
- the turbulators (2) are correctly positioned (vertical position) inside the heat exchanger tubes and the clips (3) are resting against the wall (4) of the heat exchanger;



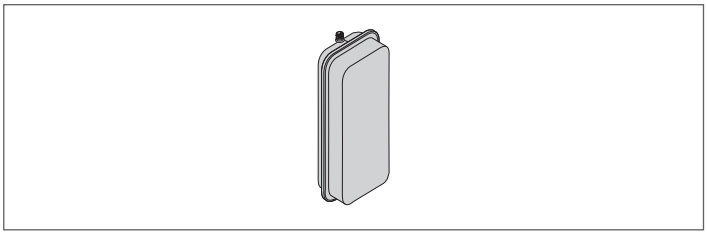
- The water and gas cocks are open



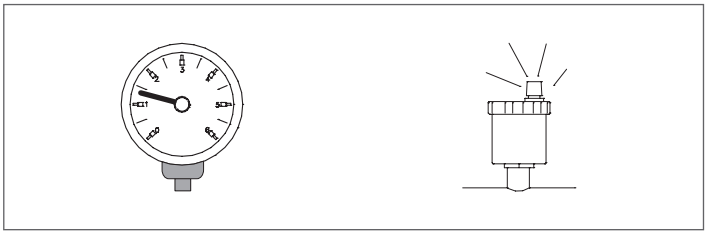
- there is an adequate fuel supply;



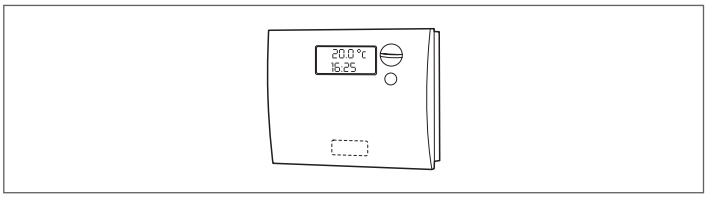
- The expansion vessel is properly charged



- The working pressure in the heating 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.



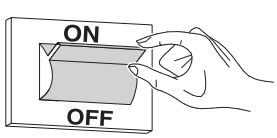
⚠ The phase-neutral polarity has been respected.

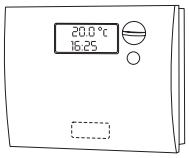
⚠ A ground (earth) connection is obligatory.

4.2 Initial startup

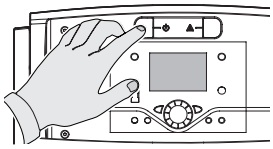
Once you have completed all the preparatory steps, proceed as follows to start up the boiler for the first time:

- turn the system's main power switch ON;
- if the system is equipped with a temperature controller or timer thermostat, make sure that it is switched on;

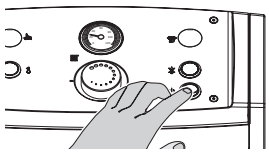




- Turn the control panel power switch ON and make sure that the green power indicator lights;

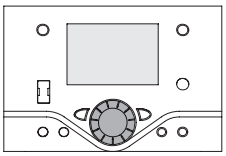


RIELLOtech CLIMA COMFORT
RIELLOtech CLIMA MIX

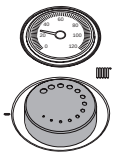


RIELLOtech PRIME
RIELLOtech PRIME ACS

- make the necessary settings as instructed in the instruction manual for your control panel;



RIELLOtech CLIMA COMFORT
RIELLOtech CLIMA MIX



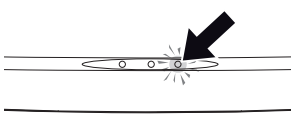
RIELLOtech PRIME
RIELLOtech PRIME ACS

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

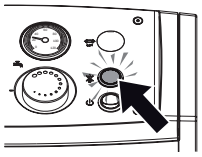
The burner should now ignite and remain in operation until the set temperature is reached.

Subsequent starts and stops will be made automatically according to the desired temperature without the need for further intervention.

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.



RIELLOtech CLIMA COMFORT
RIELLOtech CLIMA MIX



RIELLOtech PRIME
RIELLOtech PRIME ACS

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

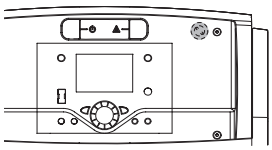
To reset the burner, press the red button light on the burner and wait until the flame ignites.
This operation can be repeated 2 or 3 times at the most. If the problem still persists after that, check:

- 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.

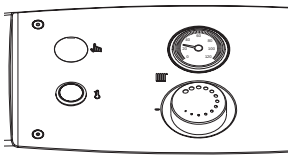
If the problem persists, check that the safety thermostat has not tripped.

⚠ If the safety thermostat trips, the boiler shuts down and a warning is displayed on the control panel (if present).
Proceed as follows to reset the safety thermostat:

- Wait until boiler temperature falls below 80°C;
- Remove the safety thermostat cover;
- Press the manual reset button;
- Wait for the complete ignition cycle to be repeated and for the flame to ignite.



RIELLOtech CLIMA COMFORT
RIELLOtech CLIMA MIX

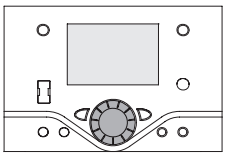


RIELLOtech PRIME
RIELLOtech PRIME ACS

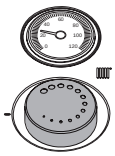
4.3 Checks during and after initial start-up

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

- Set the boiler thermostat to the required setting (making sure that the temperature control is in manual mode)

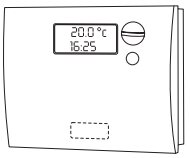


RIELLOtech CLIMA COMFORT
RIELLOtech CLIMA MIX



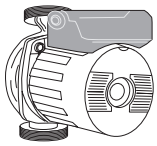
RIELLOtech PRIME
RIELLOtech PRIME ACS

- The control panel is switched OFF
- Set the room thermostat or timer to the required temperature.

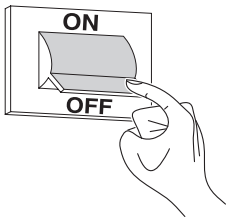


Check that there are no leaks from around the door seal. If there is any leakage of combustion gases, adjust the door as instructed on page 48.

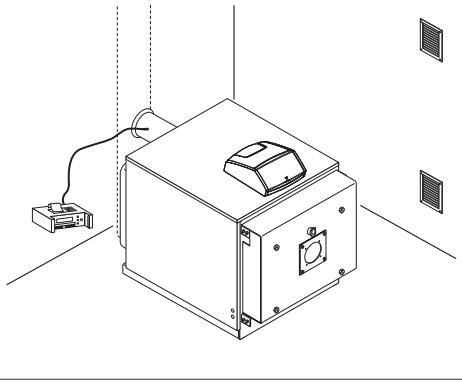
Make sure that all the pumps in the system are free and rotate in the right direction.

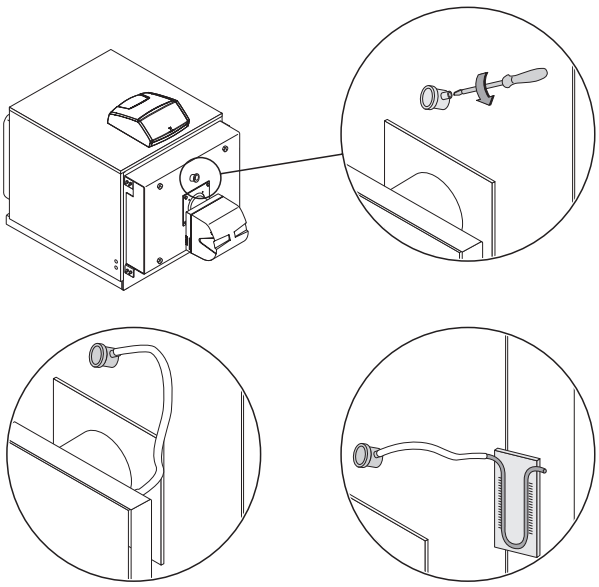


Turn off the main power switch to the boiler and make sure that the boiler shuts down properly.



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.





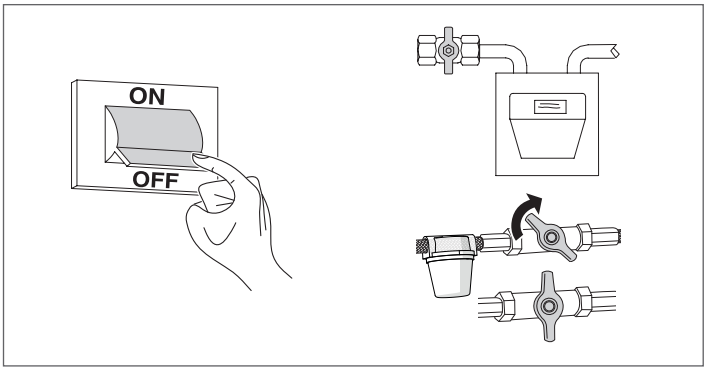
Flame inspection window cooling **Pressure measurement point**

⚠ 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.

4.4 Maintenance

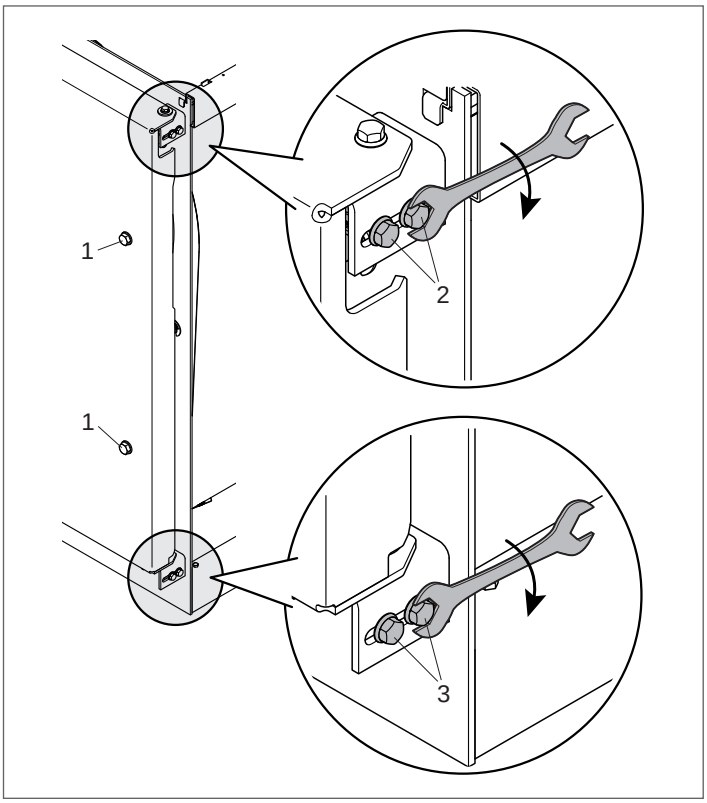
Regular maintenance is a legal requirement. It is also essential for the safety, efficiency and durability of the boiler. Proper maintenance keeps consumption and emissions down, and ensures that the boiler continues to operate reliably over time.
Have your boiler serviced either by **RIELLO**'s Technical Assistance Service or by a qualified heating engineer.
Analyse the combustion fumes before commencing any maintenance. The results of fume analysis can give a clear idea of what servicing or repairs are needed.

- Turn the system's main power switch OFF
- Close all the gas cocks.



4.5 Door opening

- Check that the upper (2) and lower (3) side safety screws and the pin screws are properly tightened;
- Unscrew the main locking screws (1) completely. These are self-supporting on the structure, and open the door.

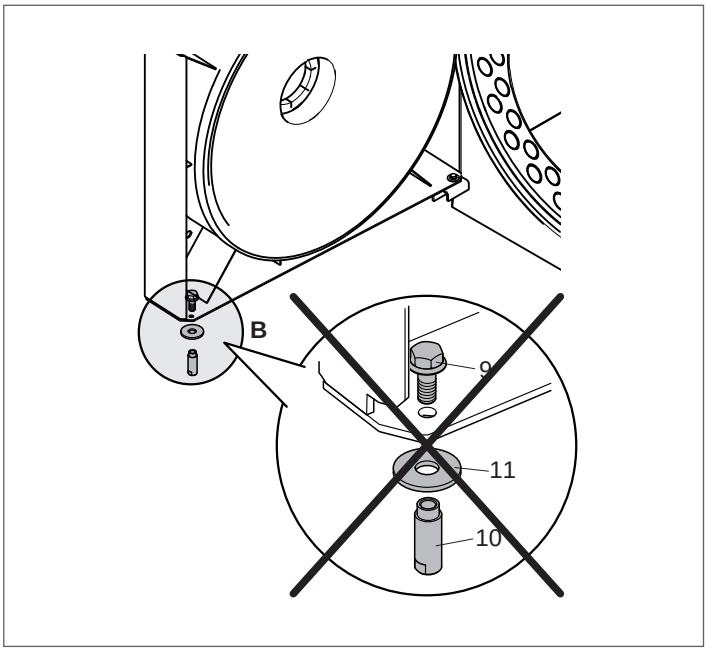


⚠ Make sure that the door is properly adjusted after every maintenance operation.

4.6 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 pressurized furnace. Proceed as follows to adjust the door seals:

- Fit the door and tighten the main fixing bolts (1) until the seals start to compress;
- Loosen the safety screws (2) and (3) and fully tighten the main locking screws (1) of the door;
- Tighten the safety screws (2) and (3).



⚠ 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.

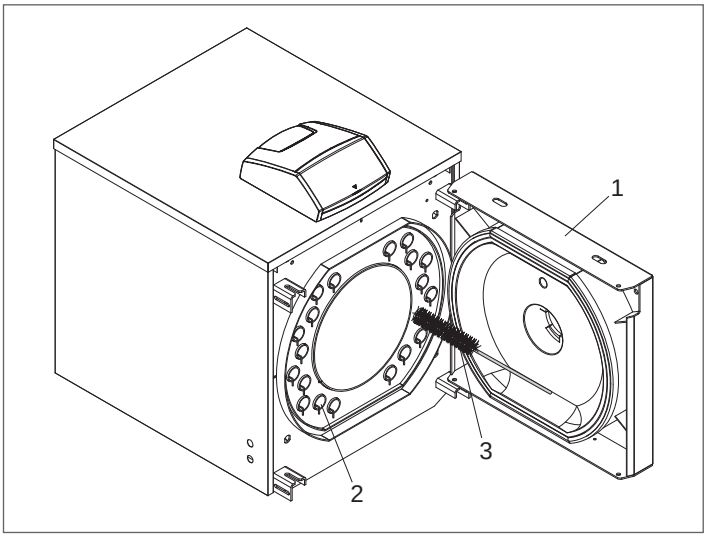
4.7 Cleaning the boiler

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);

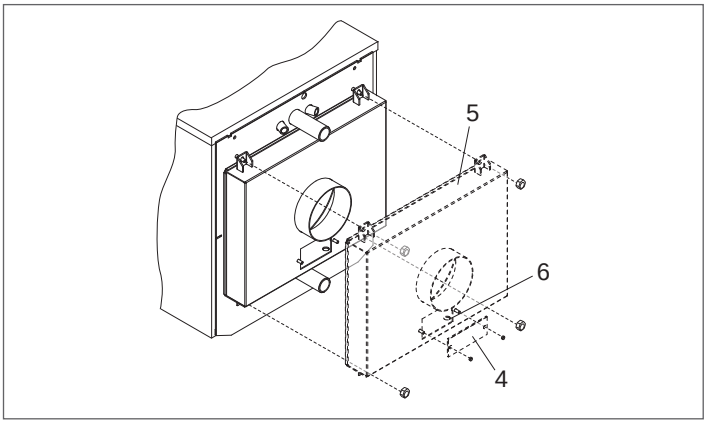
⚠ If you need to replace any turbulators, make sure that the replacements have the characteristics listed in the table below.

- 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.



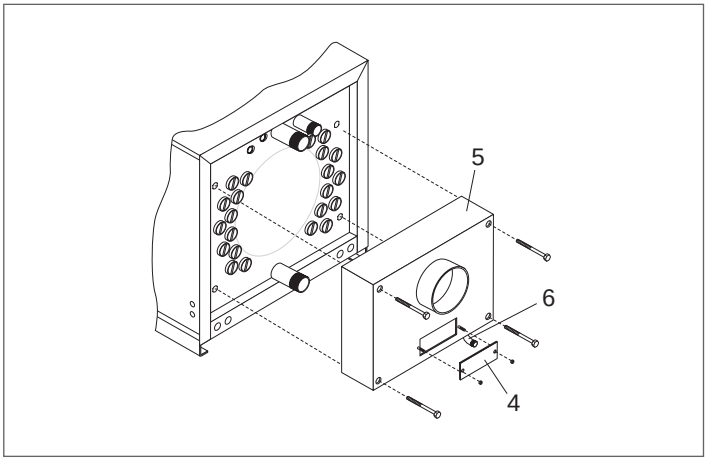
If more thorough cleaning is required, remove the flue gas box cover (5). Fit a new glass fibre seal when fitting the cover again. Check at regular intervals that the condensate drain (6) is not blocked.
On completion of cleaning, follow the above steps in the reverse order to refit all removed parts.

RTQ 35÷91 3S



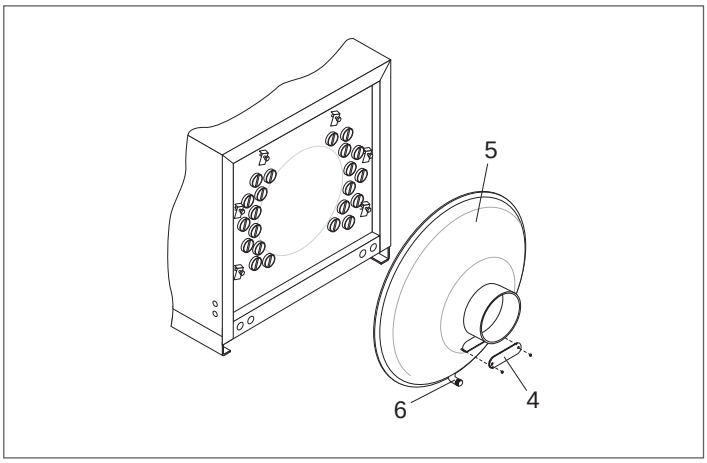
DIMENSIONS (mm)	CALDAIA RTQ 3S			
	35	55	70	91
N° turbulators	14	16	22	22

RTQ 115÷166 3S



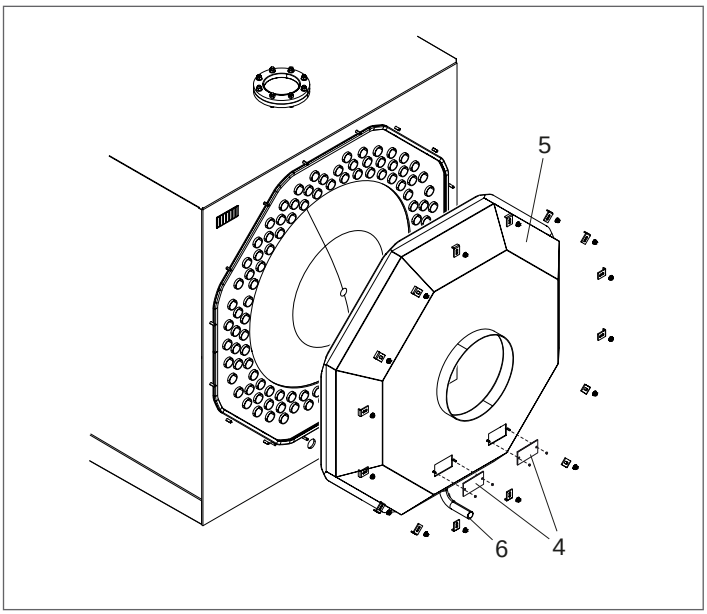
MODEL	CALDAIA RTQ 3S	
	115	166
N° turbulators	22	30

RTQ 217÷575 3S



MODEL	CALDAIA RTQ 3S						
	217	255	318	349	448	511	575
N° turbulators	34	39	44	44	60	60	66

RTQ 639÷4000 3S



MODEL	CALDAIA RTQ 3S						
	639	750	766	896	1100	1300	1600
N° turbulators	66	74	74	76	70	75	93

MODEL	CALDAIA RTQ 3S					
	2100	2400	2700	3000	3500	4000
N° turbulators	114	114	106	119	130	140

⚠ Every 300 hours of operation, the use of light oil burners with a smoke value greater than 3 involves:
- clean the boiler's heat exchange surfaces;
- check and clean the turbulators. Replace if worn or damaged.

4.8 Troubleshooting

FAULT	CAUSE	SOLUTION
The boiler becomes dirty very quickly	Burner badly adjusted	– Check the adjustment of the burner (perform flue gas analysis)
	Blockage in stack	– Clean the flue gas pipes and stack
	Burner air intake dirty	– Clean the burner air intake
The boiler does not reach its temperature setpoint	Boiler dirty	– Clean the flue gas pipes
	Boiler and burner mismatched	– Check specifications and settings
	Insufficient air/fuel flow to burner	– Check and adjust the burner
	Incorrect adjustment	– Check correct functioning – Check the temperature setting
The boiler keeps shutting down, and the control panel warning light comes on	Incorrect adjustment	– Check correct functioning – Check the temperature setting – Check the electrical wiring – Check the sensors
	No water supply	– Check the circuit pressure
	Air in the circuit	– Check the circuit pressure – Check the vent valve
The generator is at temperature but the heating system is cold	Air in the circuit	– Bleed the circuit
	Pump malfunctioning	– Check/unseize the pump
	Problem with minimum temperature thermostat (if present)	– Check the temperature setting
	Problem with minimum temp. thermostat (if present)	– Check the efficiency of the expansion vessel
The generator does not switch on (no fault light signal)	Intervention of the transfer pump auxiliary control safety thermostat	– Check the complete deaeration of the compartmentalised zones of the hydraulic circuit – Check correct functioning – Check operation of the transfer pump activation thermostat or bit thermostat – Check the auxiliary control safety thermostat
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
There is a smell of gas	Gas supply circuit	– Check the seals, possible blockages and fuel quality
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

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