



# KOMBI

EN INSTALLATION, OPERATION AND MAINTENANCE MANUAL

# RIELLO

## RANGE

MODEL	CODE
KOMBI 800	20145308
KOMBI 1000	20145313

*Dear Installer,*

*Thank you for choosing a **RIELLO KOMBI**, combination storage cylinder. You have purchased a modern, 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 combination storage cylinder to be serviced regularly by an authorised **RIELLO** Technical Assistance Centre. Their personnel are specially trained to keep your storage cylinder efficient and cheap to run. Technical Assistance Centres also stock any original spare parts that might be required.*

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

*Please accept our renewed thanks for your purchase.*

*Riello S.p.A.*

Ask your Technical Assistance Centre for further information on how to get the best from your new combination storage cylinder.

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The following symbols are used in this manual:












**CAUTION!** = Indicates actions that require caution and adequate preparation



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










This manual, Code 20145353 - Rev. 1 (05/2018) is made up of 24 pages.

## SAFETY PRECAUTIONS

-  As soon as you open the packaging, check immediately that the contents are all present and undamaged. Contact the **RIELLO** reseller from whom you purchased the product if you notice any problems.
-  This **RIELLO KOMBI** combination storage cylinder must be installed by a qualified installer. On completion of the installation, the installer must issue the owner with a declaration of conformity confirming that the installation has been completed to the highest standards in compliance with the instructions provided by **RIELLO** in this instruction manual, and that it conforms to all applicable laws and standards.
-  This **RIELLO KOMBI** combination storage heater must only be used for the purpose specified by **RIELLO** and for which it is designed. The manufacturer declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.
-  If you notice any water leaking from the cylinder, disconnect it immediately from the mains electricity supply, shut off the water supply, and notify your **RIELLO** Technical Assistance Centre or a qualified technician immediately.
-  This combination storage cylinder must be serviced at least once a year.
-  If the combination storage cylinder is not going to be used for an extended period of time, prepare it for shut-down as follows:
  - Turn the system's main power switch OFF
  - Drain the solar water circuit
  - Close the fuel cock and heating water cock
  - Drain the central heating circuit and domestic hot water circuit if there is any risk of freezing
-  Anti-freeze (propylene glycol) is available separately and must be mixed with water in a percentage varying from 30% to 50% as instructed in the relevant **RIELLO** di messa in servizio e manutenzione.
-  Only fill the solar heating system with water and glycol premixed in the percentages specified in the **RIELLO** installation and maintenance manual.
-  This instruction manual is an integral part of the appliance. It must be kept safe and must ALWAYS accompany the appliance, even if it is sold to another owner or transferred to another user or to another installation. If you damage or lose this manual, order a replacement immediately from your local **RIELLO** Technical Assistance Centre.

## GENERAL SAFETY INFORMATION

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

-  Do not allow children or infirm persons to operate the combination storage cylinder unsupervised.
-  Do not touch the combination storage cylinder when barefoot or wet.
-  Never clean or service the combination storage cylinder without first disconnecting it from the mains electricity supply by turning the main power switch and the control panel switch OFF.
-  Do not interfere with any control devices without specific authorisation and instructions from the manufacturer.
-  Never pull, disconnect, or twist the electrical cables coming from the appliance even if it is disconnected from the mains electricity supply.
-  Do not expose the combination storage cylinder to the elements. It is not designed for use outdoors.
-  Do not leave packaging material within the reach of children, since it can become a potential hazard.
-  If the pressure in the solar heating circuit drops, do not top up with water alone, since this increases the risk of damage from freezing.
-  Do not use connections or safety devices or fittings (expansion vessels, pipes, insulation) that are not specifically designed and tested for use in solar heating installations.

## PRODUCT DESCRIPTION

**RIELLO KOMBI** combination storage cylinders consist of a domestic hot water tank immersed in an inertial storage cylinder. They are specifically designed for domestic hot water production and heat integration in heating systems incorporating **RIELLO CS25** solar collectors:

The most important technical features of these combination storage cylinders are:

- The cylinder and coil are specially designed and shaped for optimum performance in terms of stratification, heat exchange and replenishment times
- The vitrified lining of the domestic hot water tank is bacteriologically inert for maximum hygiene, reduced lime scale deposits and easy cleaning

- Water fittings are available at different heights, permitting different hot water generators to be used without reducing the stratification effect
- CFC-free polyurethane insulation and an elegant external casing reduce heat loss and improve efficiency
- A flange is provided for easy cleaning and maintenance and a magnesium anode is provided to prevent corrosion
- Excellent flexibility permits use in both high and low temperature systems
- Dimensions are extremely compact thanks to the clever combination of an inertial storage cylinder and domestic hot water tank.

**RIELLO KOMBI** combination storage cylinders can be connected to a special solar controller and can be integrated in solar heating systems in which **RIELLO** boilers or water heaters serve as auxiliary heat generators.

## IDENTIFICATION

**RIELLO KOMBI** combination storage cylinders are identified by three plates:

### – Data plate

This lists the technical specifications and performance of the product.

RIELLO		RIELLO S.p.A. Via Ing. Pilade Riello 7 37045 Legnago (VR) - ITALY		CE
ACCUMULO COMBINATO - PRÉPARATEUR SOLAIRE MIXTE				
Modello		Matricola		
Modèle		N° fabrication		
Codice		Anno fabbricazione		
Code		Année de fabrication		
Capacità serpentino sanitario				l
Capacité du serpent sanitaire				l
Capacità accumulo inerziale				l
Capacité du préparateur inertiel				l
Potenza assorbita serpentino sup. [T° Primario 80°C]				kW
Puissance absorbée serpent sup. [T° Primaire 80°C]				kW
Produzione ACS prelievo continuo [Δ T 35°C]				l/h
Production ECS prélèvement continu [Δ T 35°C]				l/h
Press. max. esercizio sanitario				bar
Press. maxi service sanitaire				bar
Temp. max. esercizio sanitario				°C
Temp. maxi service sanitaire				°C
Press. max. esercizio accumulo inerziale				bar
Press. maxi service préparateur inertiel				bar
Temp. max. esercizio accumulo inerziale				°C
Temp. maxi service préparateur inertiel				°C
Pot. elett. assorbita				W
Puiss. élect. absorbée				W
Aliment. elettrica				V-Hz
Alimentation électrique				V-Hz
Dispersioni secondo EN 12897				kWh/24h
Dépense selon EN 12897				kWh/24h
Collegamento di terra obbligatorio - Raccordement à la terre obligatoire				

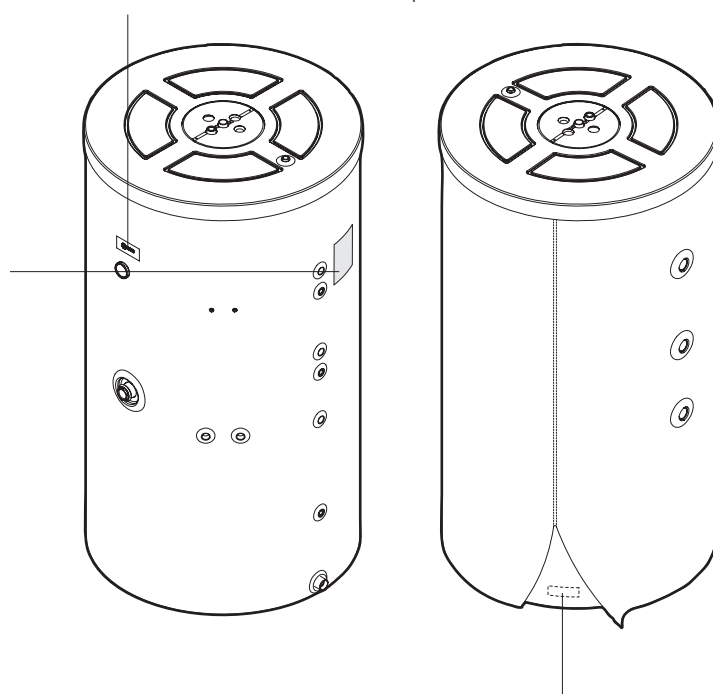
RIELLO		RIELLO S.p.A. Via Ing. Pilade Riello 7 37045 Legnago (VR) - ITALY		CE
Matricola		Pot. ass. serp. sup.		kW
N° fabrication		Puiss. abs. serp. sup.		kW
Modello		Prod ACS prel. cont.		l/h
Modèle		Prod ECS prél. continu		l/h

### – Serial number plate

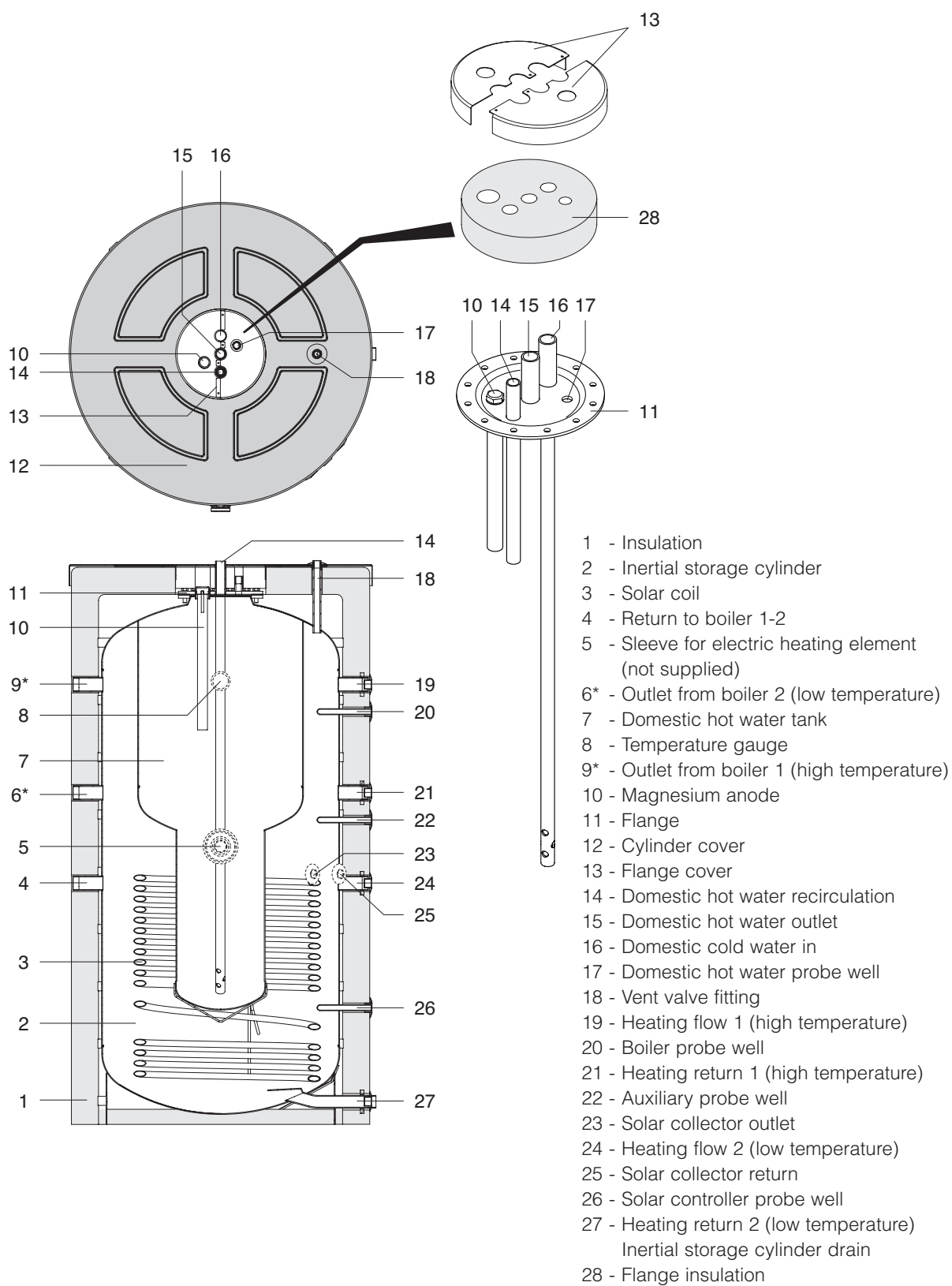
This specifies the serial number, model, consumption and capacity.

### – Product identification plate

This states the name of the product.



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



## TECHNICAL SPECIFICATIONS

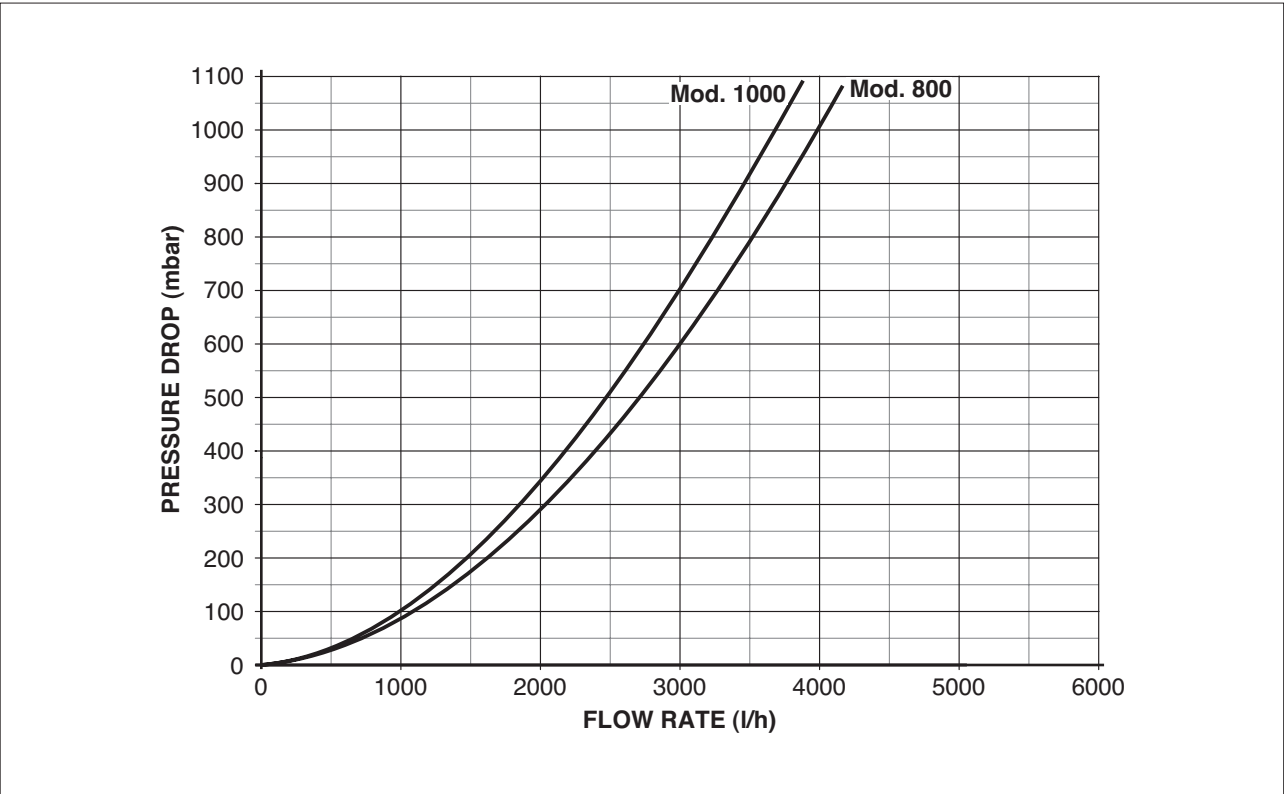
DESCRIPTION	MODEL		
	KOMBI 800	KOMBI 1000	
Type of domestic hot water tank	vitrified		
Type of inertial storage cylinder	non vitrified		
Domestic hot water tank layout	vertical		
Heat exchanger layout	vertical		
Inertial storage cylinder capacity	560	695	l
Domestic hot water tank capacity	240	285	l
Diameter with insulation	1000		mm
Diameter without insulation	790		mm
Height	1870	2196	mm
Insulation thickness	100		mm
Magnesium anode	32x460		Øxmm
Flange diameter (external/internal)	280/205		mm
Probe well diameter	1/2"		Ø
Coil water capacity	16	19	l
Coil heat exchange surface area	2,80	3,16	m <sup>2</sup>
Power absorbed by coil (*)	76	92	kW
Continuous production of domestic hot water (*)	800	1000	l/h
Water draw in 10 minutes with mean $\Delta T$ of 35° and main buffer tank at:	80°C	515	l
	70°C	500	l
	60°C	415	l
Maximum working pressure of domestic hot water tank	6		bar
Maximum working temperature of domestic hot water tank	99		°C
Maximum working pressure of inertial storage cylinder	3		bar
Maximum working temperature of inertial storage cylinder	99		°C
Maximum working pressure of coil	6		bar
Maximum working temperature of coil	99		°C
Net weight	210	265	kg
Gross weight (with packaging)	225	281	kg
Heat loss according to EN 12897:2006 at $\Delta T=45$ °C	123	143	W
Energy efficiency class	C		
Useful non-solar volume (Vbu)	220	255	l

(\*) With  $\Delta T = 35^{\circ}\text{C}$  and primary temperature = 80-60°C.

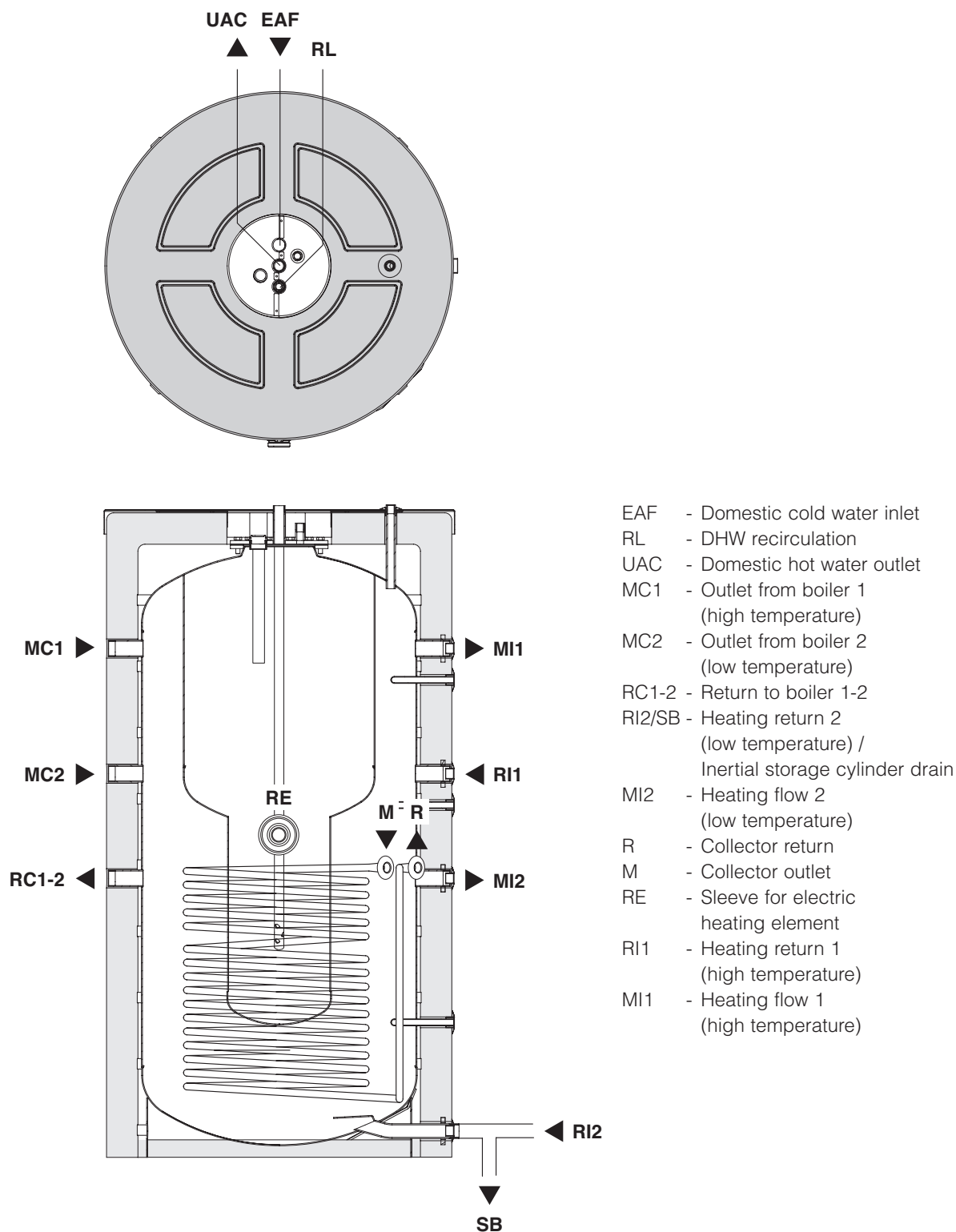
Performance achieved with heat generator of suitable power, adjusted for a flow rate of 4 m<sup>3</sup>/h for model 800 and 5 m<sup>3</sup>/h for model 1000.



**COIL pressure drop**



## WATER CIRCUIT



**!** **RIELLO KOMBI** combination storage cylinders are delivered without a filling pump. A suitably rated pump must be provided and installed separately.  
For further information on the recommended solar heating circuit flow rate, see the installation instructions for the water outlet and return kit.

## UNPACKING THE PRODUCT

**RIELO KOMBI** combination cylinders are supplied in a single package on a wooden pallet.

The insulation and the lining components of the models 800 and 1000 are supplied separately from the structural work and are to be assembled upon receiving the product as described in the paragraph "Assembly of the insulation and the lining".

The following items are delivered in a plastic bag inside the packaging:

- Instruction manual
- Certificate of warranty and label with bar code
- Hydraulic test certificate
- 4 adjustable feet

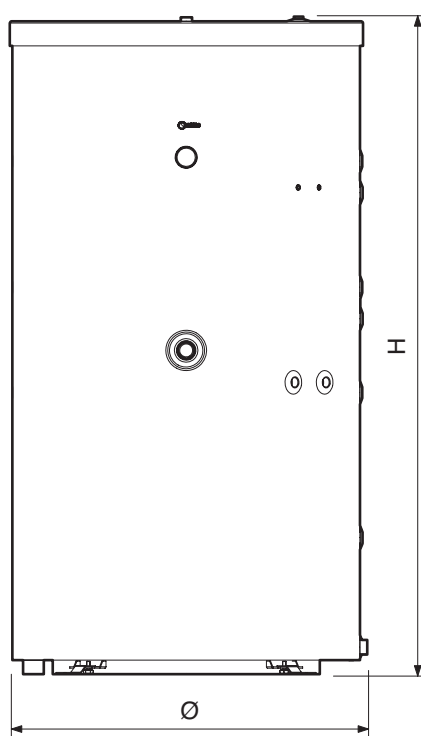


The instruction manual is an integral part of the solar storage cylinder. Once located, read it thoroughly and keep it safe.



For handling operations, thoroughly follow the instructions on device package label.


## DIMENSIONS AND WEIGHT




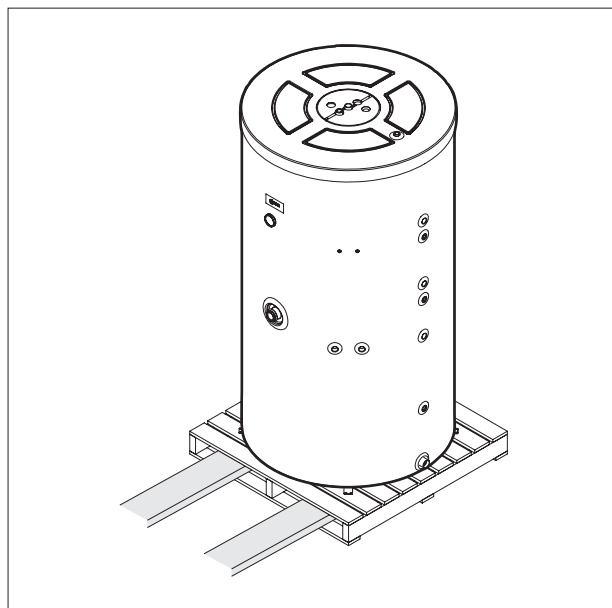
DESCRIPTION	MODEL		
	KOMBI 800	KOMBI 1000	
H - Height	1870	2196	mm
Ø - Diameter	990	990	mm
Net weight	210	265	Kg
Gross weight (with packaging)	225	281	Kg

## HANDLING

Once you have removed the outer packaging, proceed as follows to unpack and handle the combination storage cylinder.

 Wear suitable personal protective equipment and use suitable safety devices.

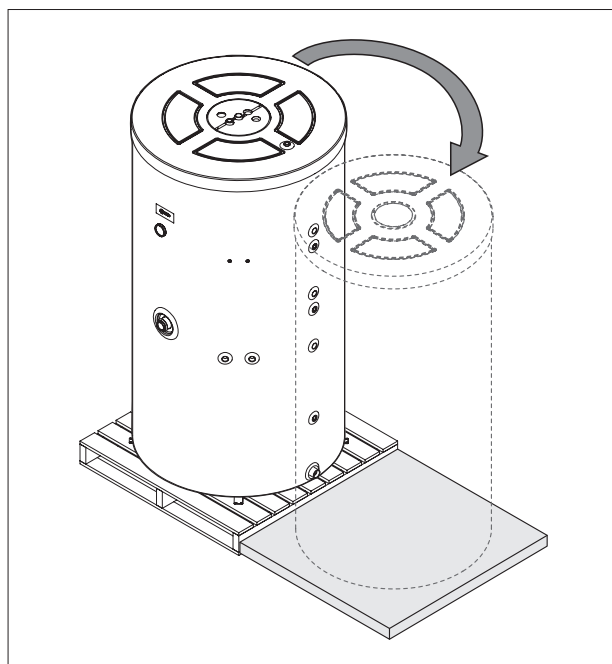
 Do not leave packaging material within the reach of children, since it can become a potential hazard.



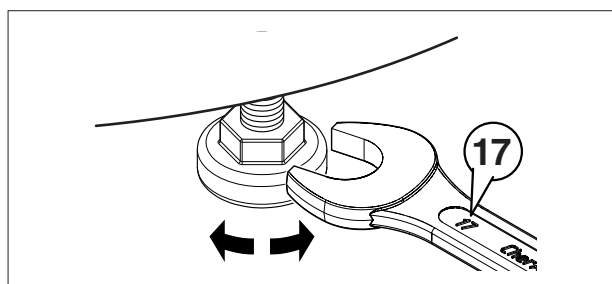
Make sure that any lifting equipment is of adequate capacity to lift and move the storage cylinder.

Proceed as follows to remove the storage cylinder from the pallet.

- Place a platform of about half the height of the pallet near the storage cylinder. Make sure the platform is able to support the weight of the storage cylinder.
- Remove the brackets then carefully rotate and slide the storage cylinder off the pallet on to the platform.
- Make sure that the storage cylinder is perfectly stable, and then remove the pallet.
- Carefully rotate and slide the storage cylinder off the platform on to the floor.
- Remove the platform. Position the storage cylinder as required.

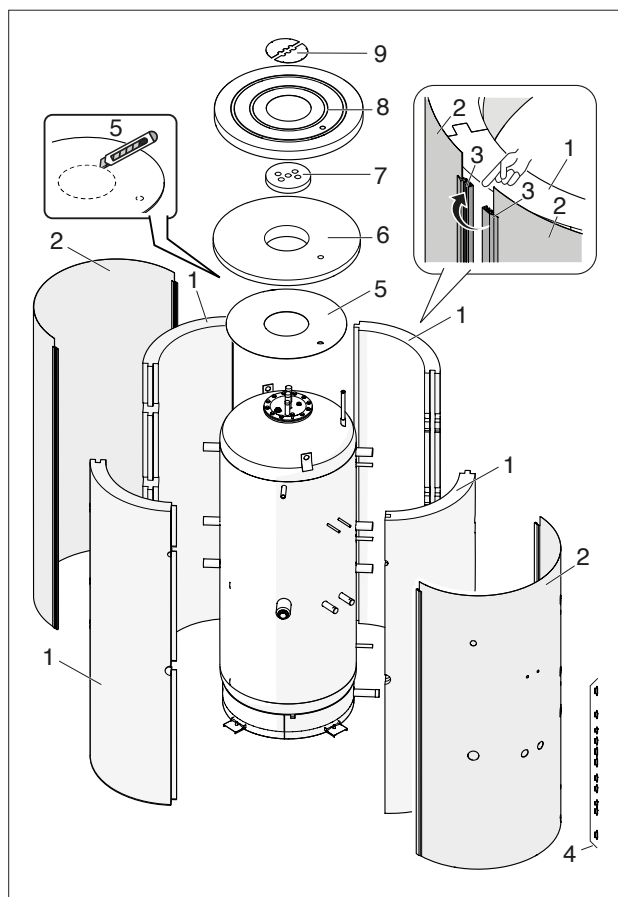


Fit the feet provided into the holes in the bottom of the storage cylinder and adjust as necessary to compensate for any unevenness in the floor.



## ASSEMBLY OF THE INSULATION AND THE LINING

The assembly of the insulation and lining components must be performed at the site of installation to facilitate passage through any doors and/or entries to the room.



Proceed as follows:

- Assemble the insulating covers (1) around the body of the heater, making sure that the engagement points on the edges are positioned correctly. The edges are not required to be closed completely
  - Place the front protection plate (2) correctly on the attachments
  - Place the rear protection plate by closing the interlocking flaps (3) without closing completely (leave one tooth open)
  - Put the washers on the attachments (4)
  - Cut the top insulation (5) and apply it
  - Apply the insulation (6)
  - Close the interlocking flaps (3) completely, which were previously left with an open tooth
  - Apply the upper insulation (7) and the upper cover (8) (in order to insert the cover, exert a light and homogeneous pressure)
  - Secure the top half-discs (9) with the screws supplied
  - Apply the technical data plate and serial number plate
- If disassembling is required, proceed in reverse order.



Wear suitable personal protective equipment and use suitable safety devices.



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

## PLACE OF INSTALLATION

**RIELLO KOMBI** combination storage cylinders can be installed in any room where there is no specific requirement for an electrical protection rating higher than IP X0D.



The room where the appliance is installed must, however, be dry to prevent the formation of rust.



Specified minimum distances must be respected, and the space in which the combination storage cylinder is to be installed must be easily accessible in order to permit easy installation and assembly and subsequent inspection, maintenance and repair. In particular, access must permit the combination storage cylinder to be removed without disassembly at the end of its useful life, and another unit to be installed in its place. Users are therefore responsible for any costs incurred to demolish masonry or other structures preventing or impeding free access to the space where the combination storage cylinder is to be installed.

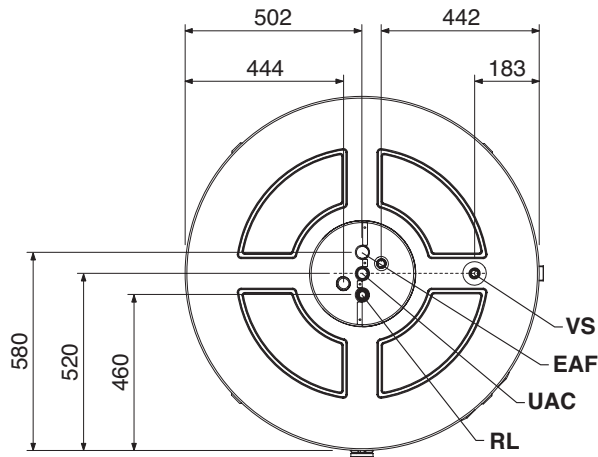
## INSTALLATION IN OLDER SYSTEMS AND SYSTEMS REQUIRING MODERNISATION

When installing **RIELLO KOMBI** combination storage cylinders in old systems or systems requiring modernisation, always perform the following checks:

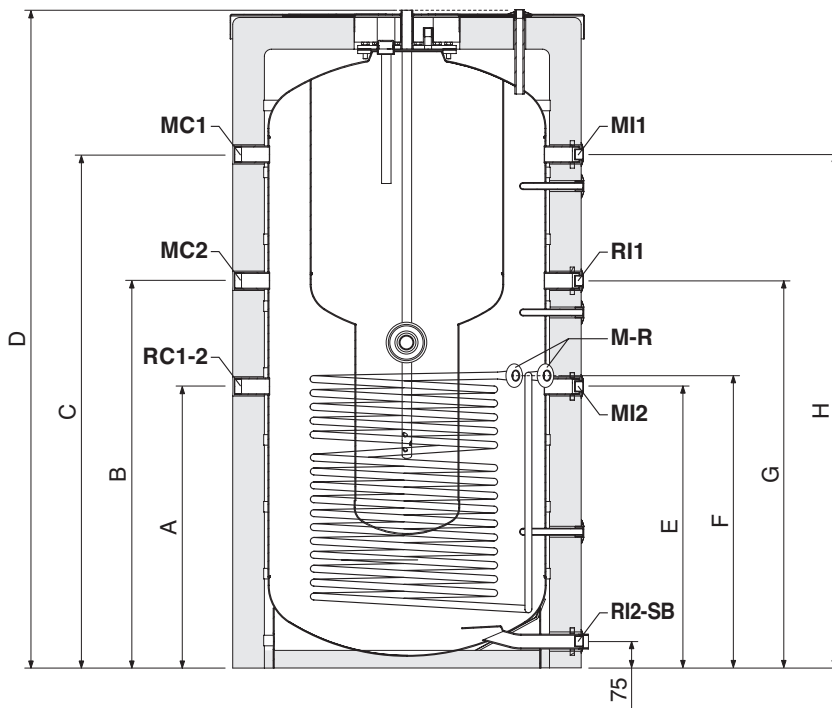
- Make sure that the system is fitted with safety and control devices in accordance with applicable legislation and standards.
- Make sure that the circuit has been flushed out to remove all sludge and lime scale, and has been vented and seal tested.
- Make sure that a suitable water treatment system is installed if the quality of the supply/recirculation water so demands. (Refer to the reference values listed in the table alongside).

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

**RIELO KOMBI** combination storage cylinders can be connected to even previously installed hot water generators provided they are of adequate output power, but care must be taken to ensure correct water flow directions. They can also be easily integrated in **RIELO** solar heating systems based on CS 25 R solar collectors with their corresponding fixing system, water control group, expansion vessel and thermostatic mixer valve. Water fittings have the following specifications:





- MC1 - Outlet from boiler 1 (Ø 1"1/4 F)
- MC2 - Outlet from boiler 2 (Ø 1"1/4 F)
- RC1-2 - Return to boiler 1-2 (Ø 1"1/4 F)
- RI2/SB - Heating return 2 (Ø 1"1/4 M)/  
(Inertial storage cylinder drain)
- MI2 - Heating flow 2 (Ø 1"1/4 F)
- M - Collector outlet (Ø 1" M)
- R - Collector return (Ø 1" M)
- RI1 - Heating return 1 (Ø 1"1/4 F)
- MI1 - Heating flow 1 (Ø 1"1/4 F)
- EAF - Domestic cold water in (Ø 1" M)
- UAC - Domestic hot water out (Ø 1" M)
- RL - DHW recirculation (Ø 3/4" M)
- VS - Vent valve fitting (Ø 3/8" F)





DESCRIPTION	MODEL		
	KOMBI 800	KOMBI 1000	
A	800	960	mm
B	1100	1260	mm
C	1460	1785	mm
D	1870	2196	mm
E	800	960	mm
F	830	925	mm
G	1100	1260	mm
H	1460	1785	mm


We recommend that you install isolating valves in the outlet and return lines.


 **The domestic hot water tank must be filled and pressurised before the inertial storage cylinder is filled.**


 In very hard water areas, use suitably treated water to fill the inertial storage cylinder.


 Make sure that the combination storage cylinder is full of water before starting up the solar heating system.


 If the combination storage cylinder is installed in systems that operate at pressures in excess of 4 bar, fit a pressure reducer.


 A non-return valve must be fitted at the top of the inertial storage cylinder to prevent natural circulation developing.


 Take care when opening the solar heating circuit's vent valves. Risk of burns!


 Make sure that the solar circuit's expansion vessel is able to withstand high temperatures and that its membrane is resistant to the water-glycol mix.


 The domestic hot water system **MUST INCLUDE** an expansion vessel, safety valve, automatic vent valve and combination storage cylinder drain cock.


 The safety valve must be connected to a suitable collection and drain system. The manufacturer declines all responsibility for damage caused by water escaping from the safety valve.


 Use a thermostatic mixer valve to limit the domestic hot water outlet temperature.


 If the pressure in the solar heating circuit drops, do NOT top up with water but use the proper water-glycol mix. Risk of freezing!


 All piping, collectors, heat exchangers and other devices in the circuit must be subjected to proper hydraulic seal testing.

 The choice of system components and the method of their installation are left up to the installer. Installers must use their expertise to ensure proper installation and functioning in compliance with all applicable legislation.

 The lower the temperature of the heating return (<40°C), the greater the efficiency of the solar heating system.

 Make sure that all components chosen for use with the system are able to withstand the thermal load involved. In the summer months, when the solar heating system is not used for the central heating, steam can form inside the collectors, and temperatures can exceed 120°C even near the combination storage cylinder.

 The size of the combination storage cylinder must be chosen to suit the solar heating system. It must be big enough to store excess heat after the domestic hot water tank has been heated without being too big. Water temperature in the inertial storage cylinder should be about 10°C higher than the return from the low temperature heating system.

 Insulate the pipes from the inertial storage cylinder to avoid heat loss.

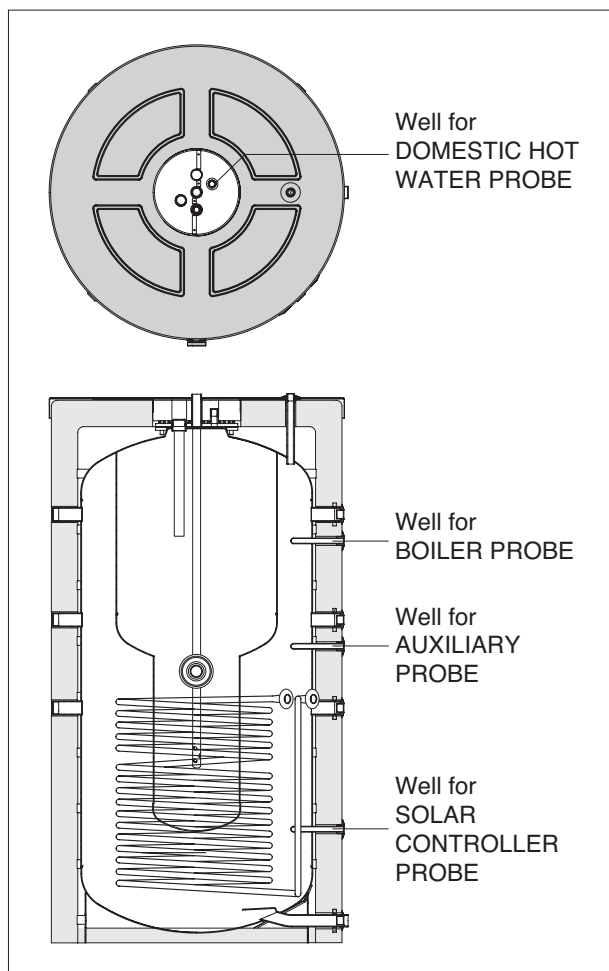


## LOCATION OF PROBES

**RIELO KOMBI** combination storage cylinders incorporate probe wells for fitting the solar controller and boiler probes. Make sure that these probes are inserted all the way.

**⚠ To access the well for the domestic hot water probe, you must remove the two flange covers. (Drill a hole for the cable if necessary).**

**⚠ Installers are responsible for all connections to the boiler or hot water generator. Installers must ensure proper installation and functioning in compliance with all applicable legislation.**

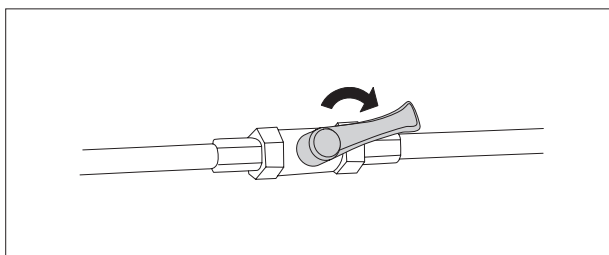


## PREPARING FOR INITIAL START-UP

It is essential to perform the following checks before starting up or testing the functioning of the combination storage cylinder. In particular, check that:

- The supply cocks are all open in the domestic water circuit.
- The water connections to the boiler and solar heating system have been made correctly.
- The solar heating circuit has been correctly flushed out and filled with water-glycol mix, and all air has been bled out of the circuit.

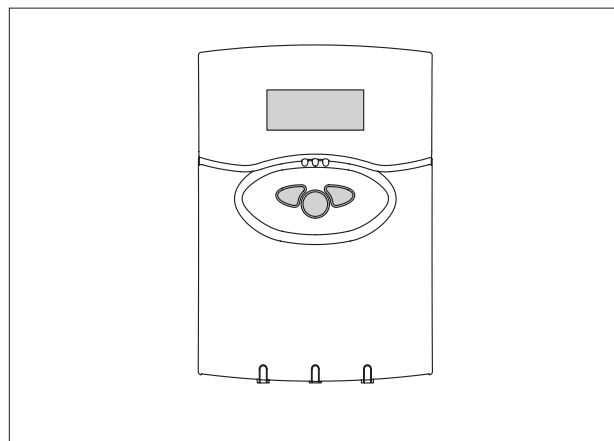
**⚠ The domestic hot water tank must be filled and pressurised before the inertial storage cylinder is filled.**



## INITIAL START-UP

Heat is only transferred from the solar heating circuit to the combination storage cylinder when the temperature of the solar collectors exceeds that in the combination storage cylinder. It is therefore temperature differential rather than absolute temperature that is important in controlling solar water heating systems.

- Set the required temperature differential between the collector and combination storage cylinder (see the instruction manual for the controller).
- Start up the boiler to provide auxiliary heating for the combination storage cylinder.

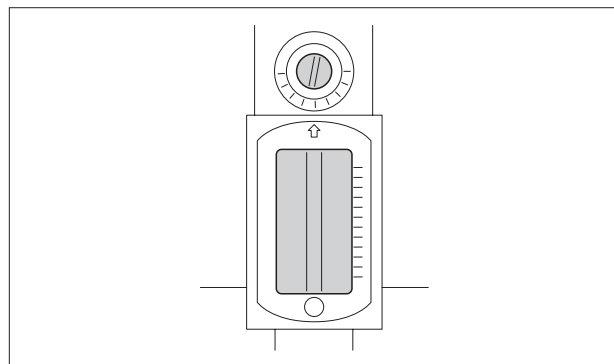


## CHECKS DURING AND AFTER INITIAL START-UP

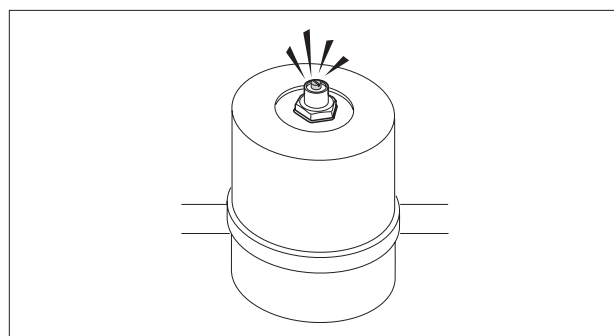
Once the system has been started up, perform the following checks:

### **Solar heating circuit**

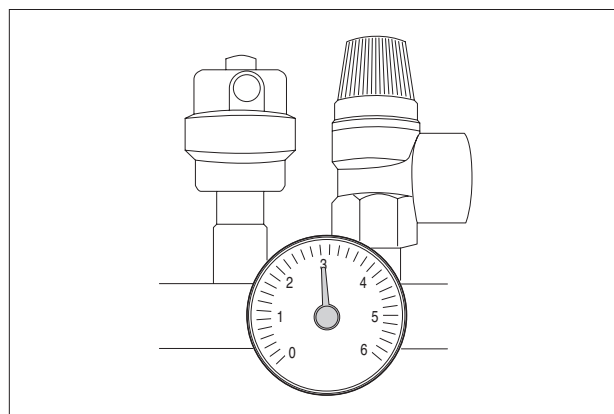
- Check that the flow rate in the solar heating circuit is equivalent to 30 l/h for each m<sup>2</sup> of collector area



- Check that the solar heating circuit has been properly bled



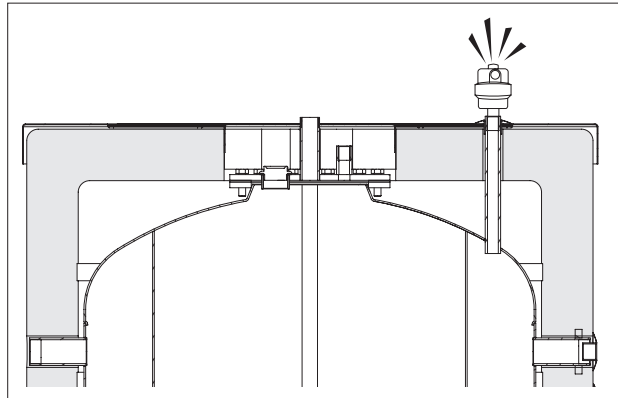
- Check that the cold pressure of the system is approximately 3 bar
- Check that the safety valve operates at 6 bar
- Check that all pipes in the water circuit have been insulated in conformity to relevant standards.



### **Heating circuit**

- Check that the heating circuit has been properly bled

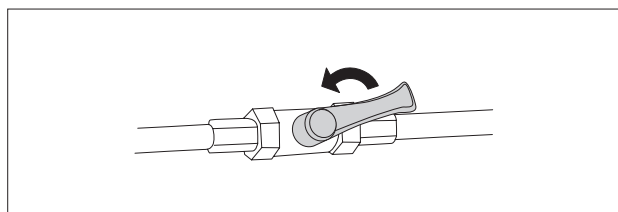
Provided all the above checks have been completed successfully, re-start the boiler and the storage cylinder and check the temperature settings and domestic hot water draw rate.



## **PREPARING FOR EXTENDED PERIODS OF DISUSE**

If the combination storage cylinder is not going to be used for an extended period of time, prepare it for shut-down as follows:

- Shut down the boiler as instructed in its own manual
- Turn the system's main power switch OFF
- Drain the solar water circuit
- Close the fuel cock and heating water cock.



**⚠ Drain the domestic hot water (and central heating) circuit if there is any risk of freezing.**

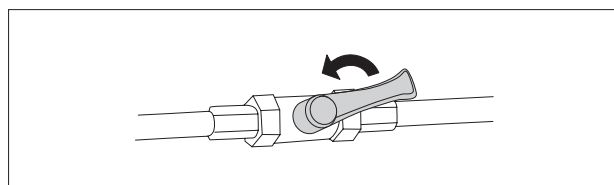
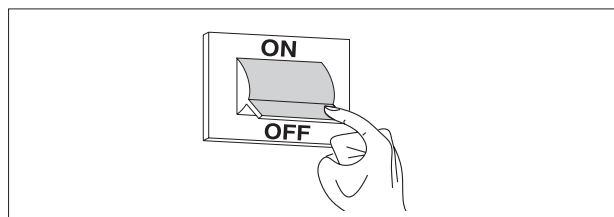
Contact your local **RIELLO** Technical Assistance Centre if you encounter any problems in completing the above procedure.

## MAINTENANCE

Scheduled maintenance is essential for the safety, efficiency and long working life of your combination storage cylinder. Proper maintenance also reduces energy consumption and ensures reliability over time. Have your combination storage cylinder serviced either by a **RIELLO** Technical Assistance Centre or by a qualified professional at least once a year.

Perform the following operations before beginning any maintenance:

- Switch the electricity supply to the storage cylinder's valve group and to any associated boiler OFF at the main switch and at the control panel
- Close the shut-off cocks for the domestic hot water circuit
- Drain the storage cylinder's secondary water circuit.



## CLEANING AND REMOVING INTERNAL COMPONENTS

### EXTERNAL CLEANING

Clean the outside of the combination storage cylinder's insulation with a soft cloth damped in soapy water. To remove stubborn marks, use a cloth damped in a 50% mix of water and denatured alcohol or a suitable cleaning product. Dry the combination storage cylinder after cleaning it.



Do not use abrasive products, petrol or triethylene.

### INTERNAL CLEANING

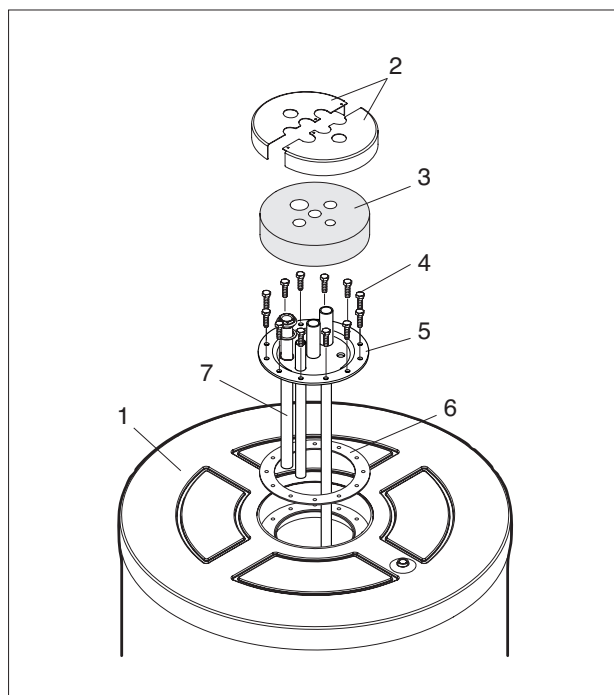
- Unscrew the fixing screws, then remove the flange insulation (3), top cover (1) and the flange covers (2).
- Use a wrench to unscrew the bolts (4) fixing the flange (5) in place, and remove the flange taking care not to damage the seal (6) and magnesium anode (7).
- Clean inside the domestic hot water tank and remove any residues through the access hole.
- Check the magnesium anode (7) for wear and replace it if necessary.

Once the cleaning operations have been completed refit all components, following the above steps in the reverse order.



Tighten the bolts (4) fixing the flange (5), proceeding diagonally around the flange to apply pressure uniformly around the seal.

- Fill the combination storage cylinder's secondary circuit and check that there are no leaks from the seals.
- Check the performance of the storage cylinder.



## PROBLEM

## CAUSE

## CORRECTIVE ACTION

***Little hot water is produced***

The supply pressure is too high

Fit a pressure limiter

The flow rate is too high

Fit a flow reducer

There are blockages or deposits in the domestic hot water circuit

Check and clean as necessary

The pump is malfunctioning

Check the pump

***Water temperature is low***

The water temperature is low in the heat generator or solar heating system

Check the setting and condition of the thermostat

There are problems with the storage cylinder's thermostat

Check the setting and condition of the thermostat

The pump is malfunctioning

Check the pump

There is lime scale or sludge in the tank

Check and clean as necessary

There is air in the primary circuit

Bleed the circuit

***Replenishment times are too long***

The water temperature in the heat generator or solar heating system is low

Check the setting of the thermostat

The filling pump is malfunctioning

Check the pump

There is air in the circuit

Bleed the circuit

PROBLEM	CAUSE	CORRECTIVE ACTION
<b>Solar heating system is inefficient</b>	There is air in the circuit	Bleed the circuit
	The flow rate is too low or too high	Make sure that the flow rate corresponds to about 30l/h per m <sup>2</sup> .
	Pressure is low	Check that the cold pressure of the system is approximately 3 bar
<b>The storage cylinder does not reach the set temperature</b>	The solar controller needs programming	Make sure that the $\Delta T$ between the collector and the storage cylinder is not too high or too low Set a $\Delta T$ of 8-10°C
	There is lime scale or sludge in the tank	Check and clean as necessary
	The flow rate is too high	Reduce pump speed and turn the flow rate adjustment screw on the valve group to set a flow rate of 30l/h per m <sup>2</sup> of collector area
<b>The pump does not work, even if the collector probe detects a collector temperature higher than that in the storage cylinder</b>	Maximum temperature has been exceeded in the collector or in the storage cylinder	The solar controller has reached maximum temperature and stopped the pump The pump will start working again as soon as the temperature drops in the collectors
	There is no electrical power	Check the safety devices and electrical connections
	The temperature differential is too great for the pump to operate, or the controller is not working	Check the controller and the temperature sensor, or reduce the temperature differential setting
<b>The storage cylinder loses a lot of heat overnight</b>	There is natural circulation to the collectors	Make sure that the non-return valve is sealed and closes properly Replace it if necessary



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