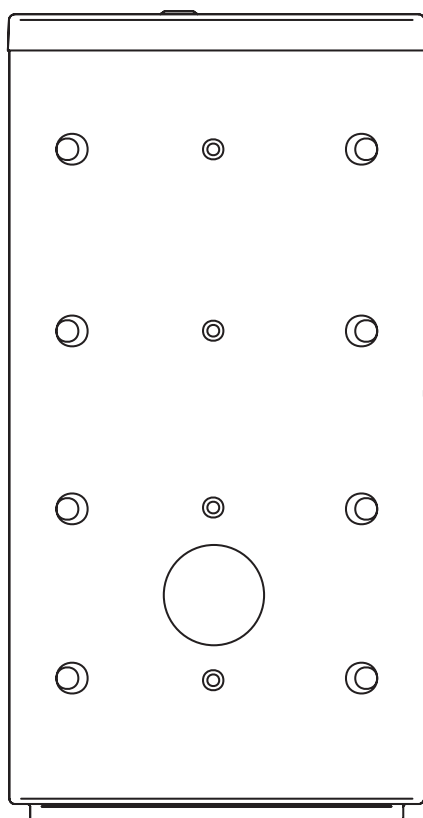


STOR - STOR M

Solar | Solar Storage

EN Installation Manual



Dear Installer,

*Thank you for choosing a **STOR** solar storage tank. You have purchased a modern, quality product that is designed to give dependable and safe service and to provide comfort for many years to come. Arrange for the storage tank to be serviced regularly by an authorised **BERETTA** Technical Assistance Centre. Their personnel are specially trained to keep your storage tank 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 **STOR** solar storage tank.*

Please accept our renewed thanks for your purchase.

BERETTA

Range

MODEL	CODE
STOR 300 M	20055207
STOR 500 M	20055208
STOR 1000 M	20136264
STOR 1500 M	20136265
STOR 2000	20136258
STOR 3000	20001409
STOR 5000	20001410

Contents

GENERAL

Safety precautions	page 5
General safety information	“ 5
Product description	“ 6
Identification	“ 6
Design	“ 7
Technical specifications	“ 8
Pressure drops	“ 8
Dimensions and weight	“ 10

INSTALLATION

Unpacking the product	page 10
Handling	“ 11
Place of installation	“ 11
Installation in older systems and systems requiring modernisation	“ 11
Fitting the insulation	“ 12
Preparing for initial start-up	“ 13

TECHNICAL ASSISTANCE

Maintenance	page 13
Cleaning and removing internal components	“ 13
Troubleshooting	“ 14

The following symbols are used in this manual:












CAUTION! = Indicates actions that require caution and adequate preparation



STOP! = Identifies actions that you MUST NOT do.

This manual, Code Doc-0085952 - Rev. 5 (10/17) s made up of 16 pages.











Safety precautions

-  Check that the product is complete, undamaged and as ordered as soon as you receive it. Report any discrepancies or damage to the **BERETTA** 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 **BERETTA** 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 **BERETTA**. **BERETTA** declines all responsibility, contractual or other, for damage to property or injury to persons or animals caused by improper installation, adjustment, maintenance or use.
-  The product must be serviced at least once a year. Servicing must be arranged in advance with the **BERETTA** Technical Assistance Centre.
-  All servicing and repairs must be performed by a qualified heating engineer.
-  If water leaks from the storage cylinder, turn off the water supply and contact **BERETTA's** Technical Assistance Centre or a qualified heating engineer immediately.
-  If the product is not going to be used for an extended period of time, contact the manufacturer's Technical Assistance Centre to have at least the following operations performed:
 - Close the shut-off cocks for the domestic hot water circuit
 - Shut down the boiler connected to the storage cylinder as instructed in its own manual
 - Switch the storage cylinder OFF at the control panel (if fitted) and at the mains power switch
 - Drain the central heating circuit and domestic hot water circuit if there is any risk of freezing.
-  This instruction manual is an integral part of the product. It must be kept safe and must ALWAYS accompany the product, even if it is sold to another owner or transferred to another user or to another installation. If you lose this manual, order a replacement immediately. Keep the product purchase documents to be presented to the **BERETTA** authorised Technical Assistance Centre to request a service call under warranty.
-  Size the solar expansion tank so as to ensure complete absorption of the expansion of the fluid contained within the system, with reference to the prevailing regulations on the matter. In particular, consider fluid characteristics, considerable fluctuation of service temperature and vapour that might be generated during solar collector stagnation stage. Proper size of expansion tank ensures setting off of all volume changes of the heat transfer fluid, avoiding excessive pressure increase. Limited pressure changes avoid reaching safety valve opening pressure and the consequent fluid drainage.

5

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 storage tank unsupervised.
-  Do not touch the storage tank when barefoot or wet.
-  Never clean or service the storage tank 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 storage tank 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

Solar storage tanks are specifically designed for integration in central heating systems (not for DHW use).

The most important technical features of these storage tanks are:

- The tank and coils (only for models where provided) are specially designed and shaped for optimum performance in terms of stratification, heat exchange and replenishment times.
- 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 coating reduce heat loss and improve efficiency.

- A flange is provided for easy cleaning and to allow an extra heat exchanger to be added (only for models where provided).


Storage tanks 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

STOR solar storage tanks are identified by three plates. (On models STOR 2000 - 3000 - 5000 these must be applied by the installer after the insulation has been fitted, see page 12).

– Data plate

This lists the technical specifications and performance of the product.

		Via Risorgimento, 13 23900 Lecco (LC)		CE
ACCUMULO INERZIALE				
Modello	<input type="text"/>	Matricola	<input type="text"/>	
Codice	<input type="text"/>	Anno fabbricazione	<input type="text"/>	
Massima potenza assorbita sup. [T° Primario 80°C]	<input type="text"/>	kW		
Portata specifica sup. [ΔT 35°C]	<input type="text"/>	litri/h		
Massima potenza assorbita inf. [T° Primario 80°C]	<input type="text"/>	kW		
Portata specifica inf. [ΔT 35°C]	<input type="text"/>	litri/h		
Pres. esercizio max.	<input type="text"/>	bar		
Capacità bollitore	<input type="text"/>	litri		
Pot. elet. assorbita	<input type="text"/>	W		
Aliment. elettrica	<input type="text"/>	V-Hz		
Collegamento di terra obbligatorio				

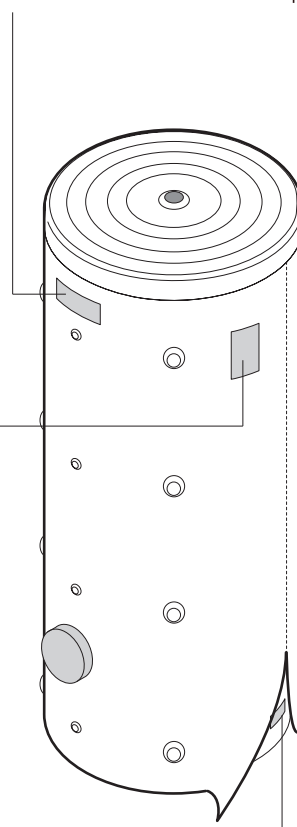
– Serial number plate


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

		Via Risorgimento, 13 23900 Lecco (LC)		CE
Matricola	<input type="text"/>	Pot. ass. sup. max.	<input type="text"/>	kW
Modello	<input type="text"/>	Pot. ass. inf. max.	<input type="text"/>	kW

– Product identification plate

This bears the name of the product.



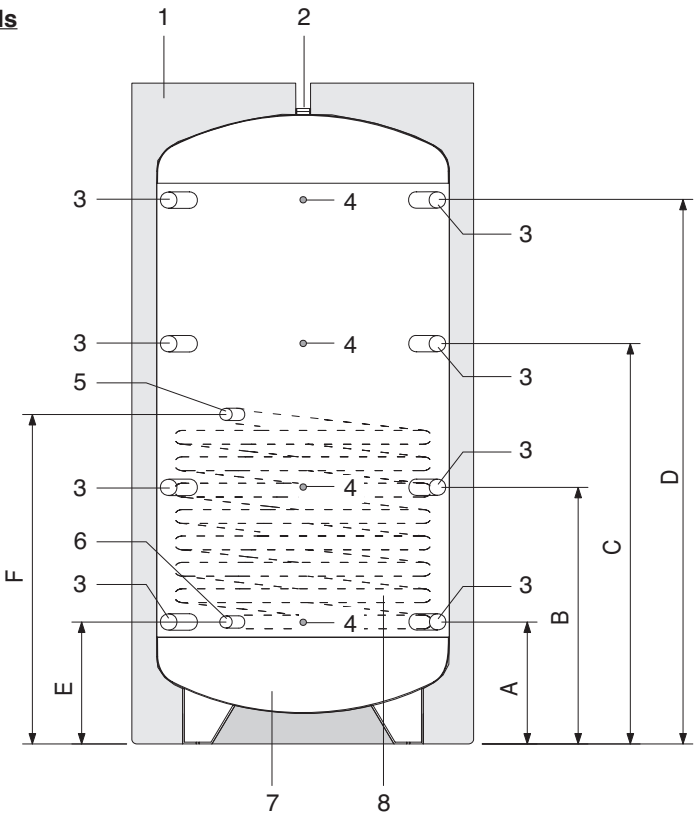
 If these plates or any other means of clearly identifying the product are defaced, removed or lost, proper installation and servicing may be rendered difficult.

Design

STOR 300 M - 500 M - 1000 M - 1500 M models

- 1 - Soft polyurethane insulation (100 mm)
- 2 - Vent flow connection (Ø1"1/4F)
- 3 - Flow/return connection (Ø 1"1/2F)
- 4 - Probes sockets (Ø 8 mm)
- 5 - Solar collector flow connection (Ø 1" F)
- 6 - Solar collector return connection (Ø 1" F)
- 7 - Tank
- 8 - Coil

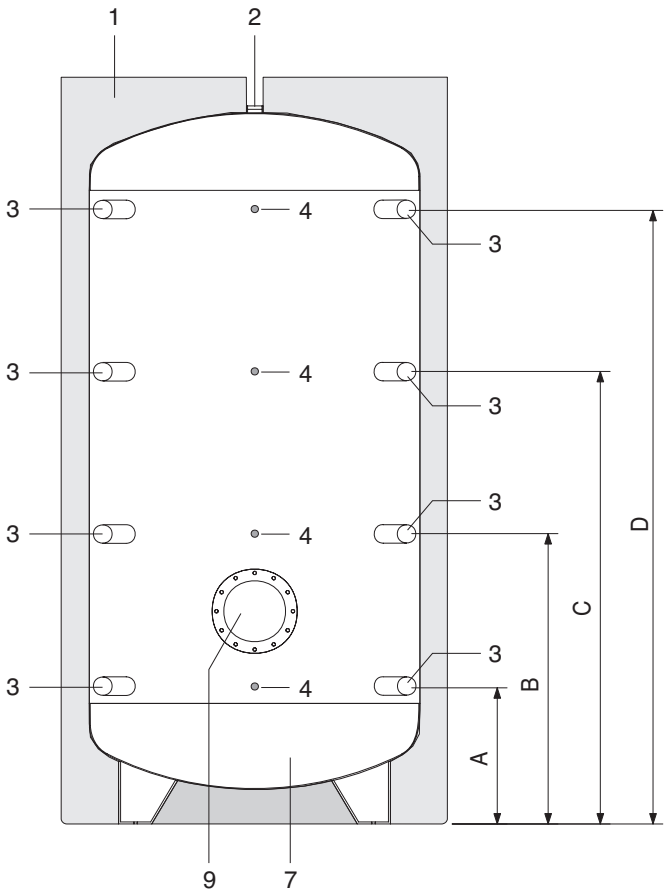
	STOR M				
	300	500	1000	1500	
A	215	330	280	390	mm
B	595	710	805	850	mm
C	975	1090	1335	1310	mm
D	1355	1470	1860	1770	mm
E	215	330	280	390	mm
F	815	930	990	1290	mm



STOR 2000 - 3000 - 5000 models

- 1 - Soft polyurethane insulation (100 mm)
- 2 - Vent flow connection (Ø 1"1/4F)
- 3 - Flow/return connection (Ø 1"1/2F)
- 4 - Probes sockets (Ø 8 mm)
- 7 - Tank
- 9 - Tank inspection flange

	STOR 2000	STOR 3000	STOR 5000	
A	390	390	465	mm
B	950	1020	1095	mm
C	1510	1650	1725	mm
D	2070	2280	2355	mm



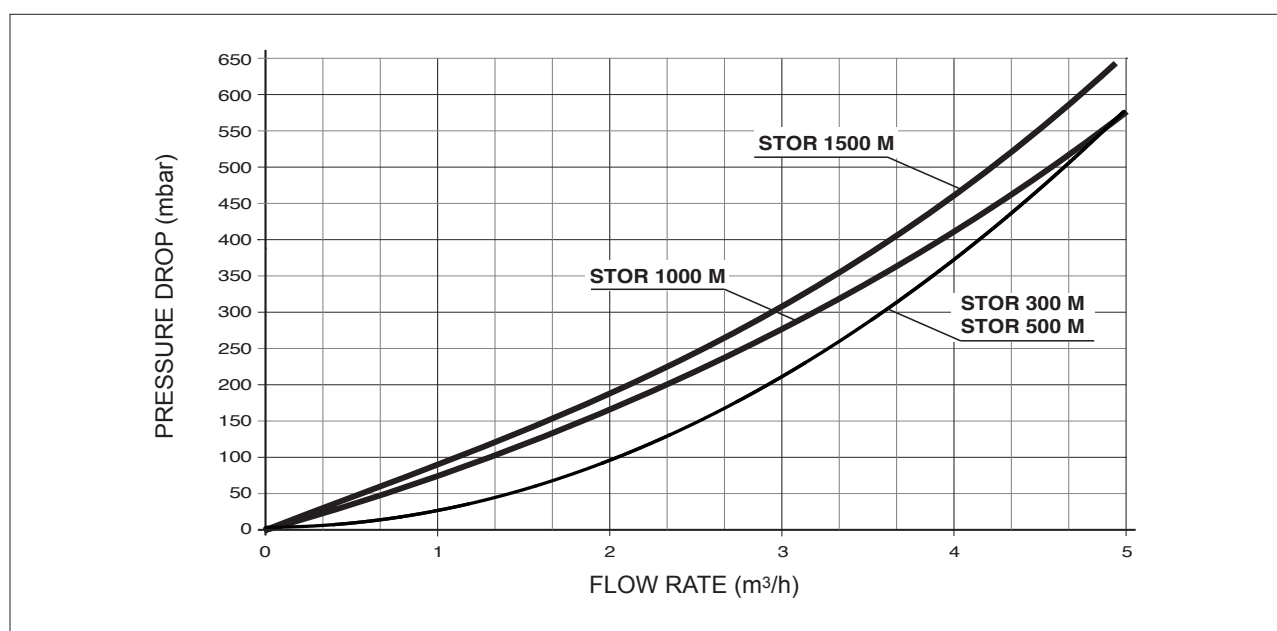
Technical specifications

DESCRIPTION	STOR 300 M	STOR 500 M	STOR 1000 M	STOR 1500 M	STOR 2000	STOR 3000	STOR 5000	
Storage tank type	non vitrified							
Tank layout	Vertical							
Coil layout	Vertical	Vertical	Vertical	Vertical	-	-	-	
Storage tank capacity	283	489	920	1410	2010	2959	5055	l
Diameter with insulation	700	850	990	1200	1300	1450	1800	mm
Diameter without insulation	-	-	790	1000	1100	1250	1600	mm
Height with insulation	1635	1775	2190	2165	2480	2720	2870	mm
Height without insulation	-	-	2115	2090	2405	2645	2795	mm
Insulation thickness	100							mm
Flange diameter (external/internal)	-	-	-	-	290/220	290/220	290/220	mm
Maximum operating pressure	3							bar
Maximum operating temperature	99							°C
Net weight with insulation	115	140	180	245	290	415	570	kg
Probe sockets diameter	8							mm
Coil water capacity	10,4	10,4	14,6	21,6	-	-	-	l
Coil heat exchange surface area	1,8	1,8	2,6	3,8	-	-	-	m ²
Coil absorbed power (*)	43	45	68	99	-	-	-	kW
Necessary capacity heat - exchanger (*)	1,9	1,9	2,9	4,2	-	-	-	m ³ /h
Coil maximum working temperature	99	99	110	110	-	-	-	°C
Coil maximum working pressure	6	6	6	6	-	-	-	bar
Discharges according to EN 12897:2006 (ΔT=45 °C, ambient 20°C and storage at 65°C)	93	110	143	167	190	344	646	W
	2,232	2,64	3,43	4,01	4,56	8,256	15,504	kWh/24h
Insulation type	Soft PU							

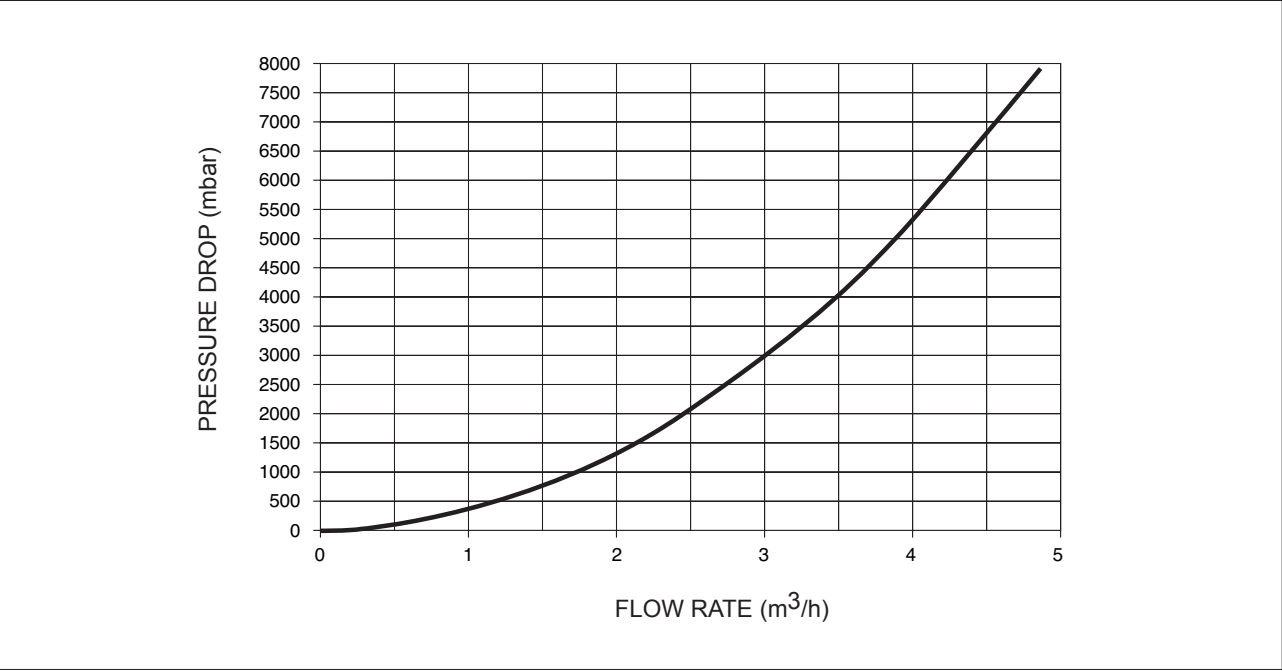
(*) In accordance with DIN 4708 with a ΔT of 20°C (80°/60°C) at the coil.

Pressure drops

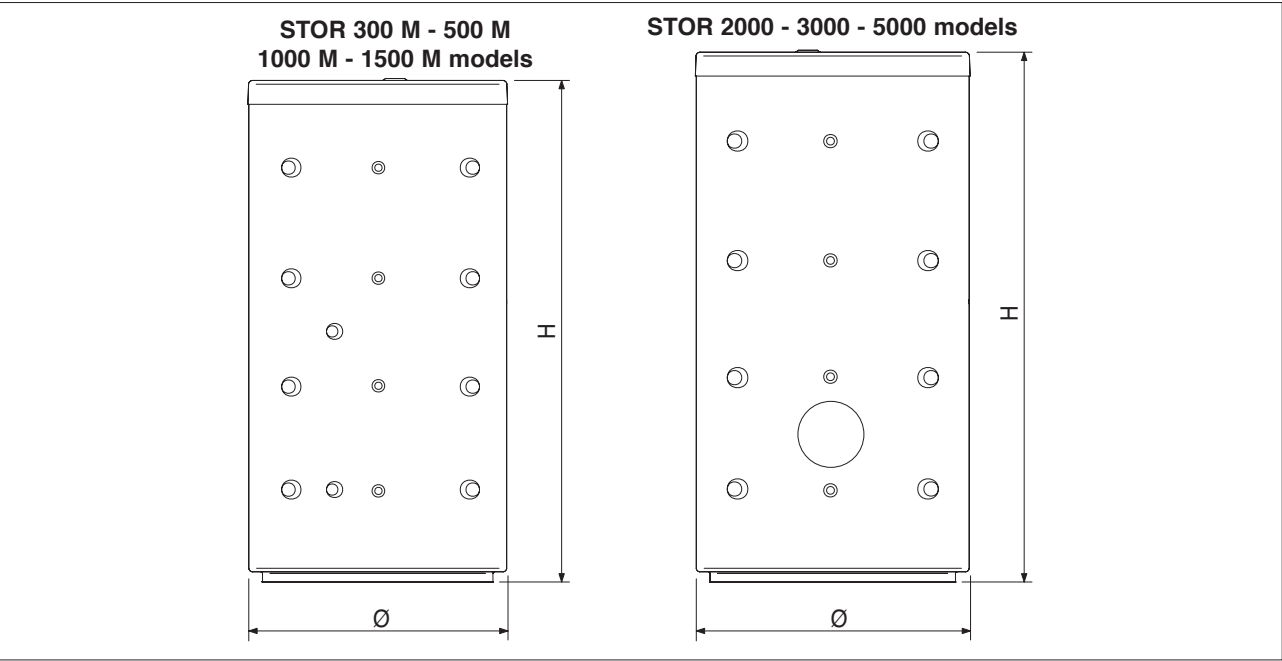
COIL pressure drop (STOR 300 M - 500 M - 1000 M -1500 M models only)



Heat exchanger coil KIT PRESSURE DROP (STOR 2000 - 3000 - 5000 models only)



Dimensions and weight

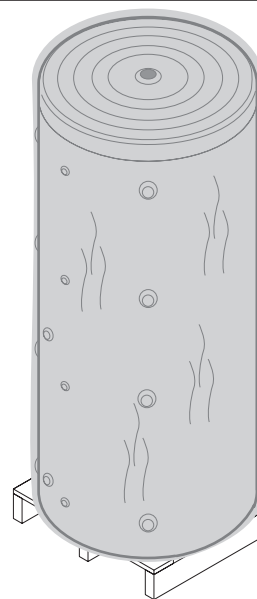


DESCRIPTION	STOR 300 M	STOR 500 M	STOR 1000 M	STOR 1500 M	STOR 2000	STOR 3000	STOR 5000	
H - Height	1635	1775	2190	2165	2480	2720	2870	mm
Ø - Diameter	700	850	990	1200	1300	1450	1800	mm
Net weight with insulation	115	140	225	285	345	415	570	kg

Unpacking the product

STOR 300 M - 500 M - 1000 M - 1500 M solar storage tanks are delivered in a single package, protected by a plastic bag and supported by a wooden pallet.

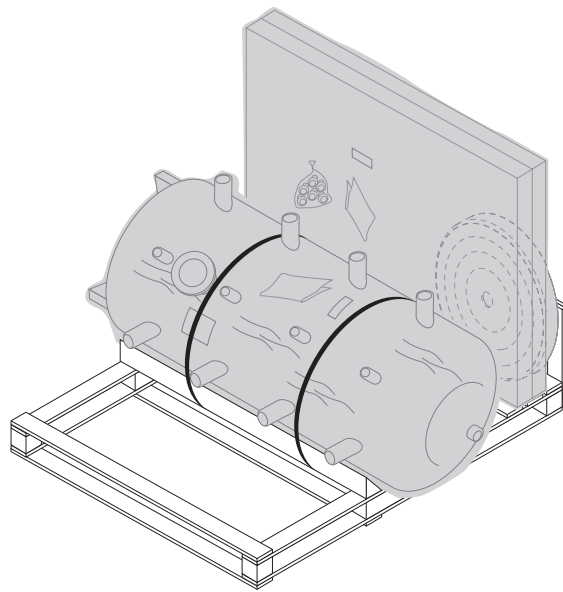
STOR 300 M - 500 M - 1000 M - 1500 M



STOR 2000 - 3000 - 5000 solar storage tanks are delivered in two separate packages:

- The first contains the painted tank, protected by a plastic bag and supported on a wooden pallet. The tank is complete with four probe sockets fitted in special sleeves. (All other sleeves are covered with protective caps.) The counter-flange comes ready bolted to the tank's flange and fitted with a seal.
- The second package contains another plastic bag with the elegantly finished polyurethane insulation, connection sleeves for the insulation, thermoformed cover, flange cover, identification plates and documentation.

STOR 2000 - 3000 - 5000



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

- instruction manual
- data plate and label with bar code
- hydraulic test certificate.



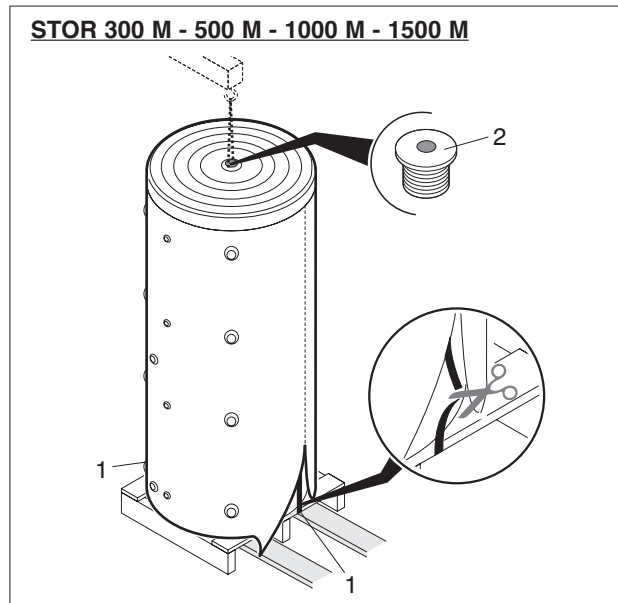
The instruction manual is an integral part of the solar storage tank. Once located, read it thoroughly and keep it safe.

Handling

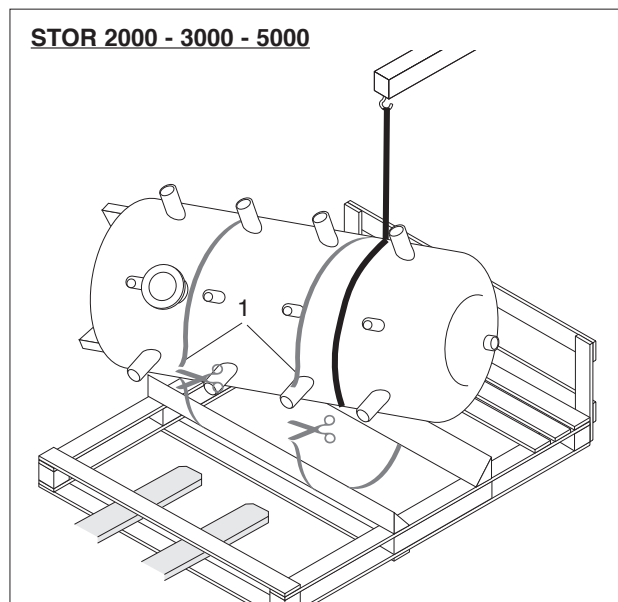
Make sure that any lifting equipment is of adequate capacity to lift and move the storage tank.


Cut the straps (1) to remove the tank from the pallet. On **STOR 300 M - 500 M - 1000 M - 1500 M** models the straps are located under the insulation at the hinges.


The storage tanks are fitted with a plug (2) into which you can screw a lifting eyebolt (Ø 10 mm). Make sure that the eyebolt is strong enough to lift the weight of the tank.



To lift **STOR 2000 - 3000 - 5000** storage tanks, first remove the insulation, then attach a rope of adequate strength to the top of the tank before proceeding to lift with great care.




 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.

11

Place of installation

STOR solar storage tanks 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.

 Respect the minimum specified installation distances to ensure correct installation and access for maintenance.

Installation in older systems and systems requiring modernisation

When installing STOR solar storage tanks 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 system has been flushed out to remove all sludge and lime scale, and has been vented and seal tested.

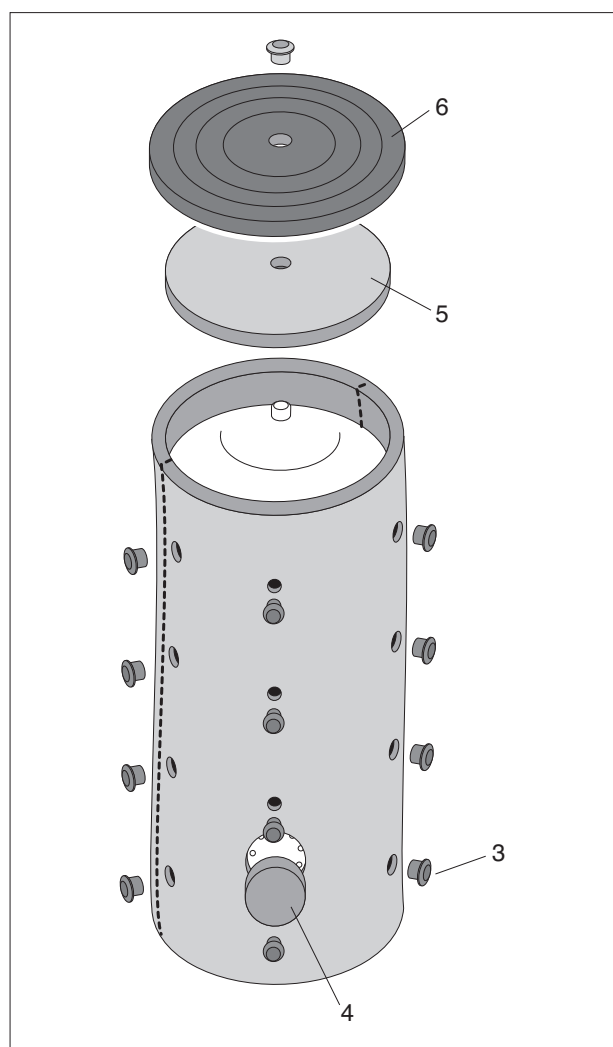
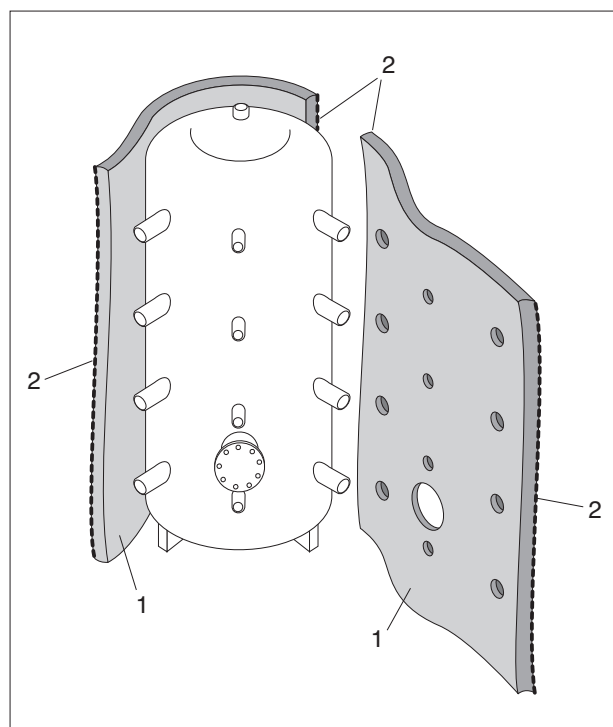
Fitting the insulation (STOR 2000 - 3000 - 5000)

Once the storage tank is correctly positioned inside the room where it is to be installed, proceed to fit the insulation and the accessories to complete the tank.

Proceed as follows:

- Unpack all the material from the second package
- Wrap the insulation (1) around the storage tank, carefully lining up the fittings with the holes on the inside of the insulation. Secure the insulation in place with the zips (2) at the edges of the two sections
- Perforate the insulation at the fittings and fit the insulation sleeves (3).
- Fit the flange cover (4).
- Finally, fit the insulation top panel (5) and cover it with the cover (6).

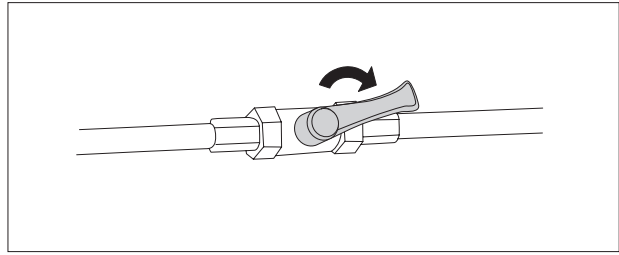
 With all the insulation in place, apply the serial number plate, data plate and product identification plate to ensure that the storage tank can be accurately identified (see the plate positions on page 6).



Preparing for the initial start-up

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

- The supply cocks are all open in the heating water circuit.
- The water connections to the boiler and to the valve group of the 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.

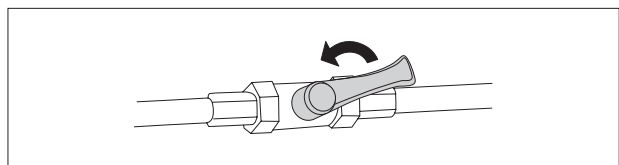
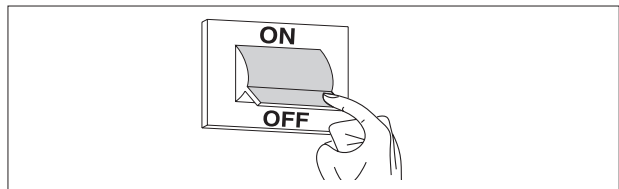


Maintenance

Scheduled maintenance is essential for the safety, efficiency and long working life of your solar storage tank. Proper maintenance also reduces energy consumption and ensures reliability over time. Have your storage tank serviced either by a **BERETTA** 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 all the devices in the storage tank's water circuit and to any associated boiler OFF at the main switch and at the control panel.
- Close the shut-off cocks for the heating water circuit.
- Drain the storage tank, or its secondary circuit if a primary circuit is connected.



13

Cleaning and removing internal components

EXTERNAL CLEANING

Clean the outside of the storage tank'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 storage tank after cleaning it.



Do not use abrasive products, petrol or triethylene.

INTERNAL CLEANING

(STOR 2000 - 3000 - 5000 models only)

- Use a wrench to unscrew the flange fixing bolts and remove the counter-flange complete with the seal.
- Clean inside the tank and remove any residues through the access hole.

Once cleaned, refit all components, following the above steps in the reverse order.



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

- Fill the storage tank circuit and check that there are no leaks from any of the seals.
- Check the performance of the storage tank.

Troubleshooting

PROBLEM	CAUSE	CORRECTIVE ACTION
<i>Little hot water is produced</i>	The supply pressure is too high	Fit a pressure limiter
	The flow rate is too high	Fit a flow reducer
	Blockages or deposits are present	Check and clean as necessary
	The pump is malfunctioning	Check the pump
<i>Water temperature is low</i>	The water temperature is low in the heat generator or solar heating system	Check the setting and condition of the thermostat
	The storage cylinder thermostat is set badly	Check the setting and condition of the thermostat
	The pump is malfunctioning	Check the pump
	There is lime scale or sludge in the cylinder	Check and clean as necessary
	There is air in the primary circuit	Bleed the circuit
<i>Replenishment times are too long</i>	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
Solar heating system is inefficient	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 ² .
	Pressure is low	Check that the cold pressure of the system is approximately 3 bar
The storage cylinder does not reach the set temperature	The solar controller needs programming	Make sure that the ΔT between the collector and the storage cylinder is not too high or too low Set a ΔT 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 ² of collector area
The pump does not work, even if the collector probe detects a collector temperature higher than that in the storage cylinder	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
The storage cylinder loses a lot of heat overnight	There is natural circulation to the collectors	Make sure that the non-return valve is sealed and closes properly Replace it if necessary

Via Risorgimento, 23 A
23900 - Lecco (LC)

www.berettaboilers.com

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

