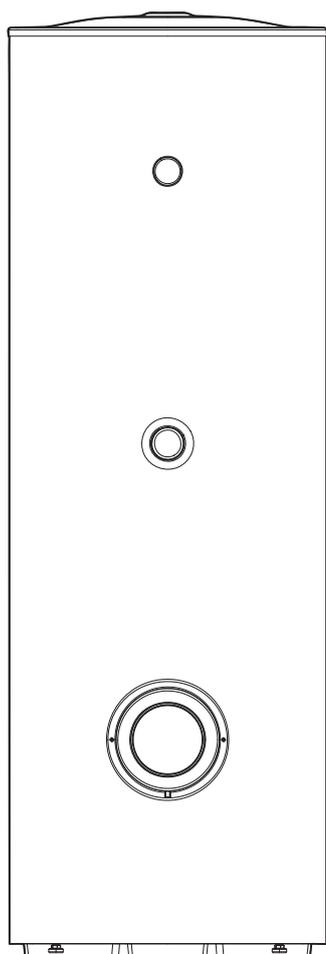


IDRA N DS

Solar | solar storage cylinder



EN Installation and Operation Manual

Dear heating engineer,

We would like to congratulate you on having recommended a **Beretta** solar storage cylinder unit: a modern product that's capable of ensuring a high degree of reliability, efficiency, quality and safety.

While your technical skills and knowledge will certainly be more than sufficient, this booklet contains all the information that we have deemed necessary for the device's correct and easy installation.

Thank you again, and keep up the good work,

Beretta

CONFORMITY

Beretta storage cylinders conform to DIN 4753-3/UNI and UNI EN 10025 standards.

RANGE

MODEL	CODE
IDRA N DS 1500	20136241
IDRA N DS 2000	20136242
IDRA N DS 2600	20086803

ACCESSORIES

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

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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.

1 GENERAL SAFETY INFORMATION

-  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.

2 PRECAUTIONS

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

-  Never attempt to install the system without using suitable personal protection equipment and without following all applicable occupational safety standards.
-  Do not touch the product when barefoot or wet if it has any electrical accessories installed in it.
-  Never clean or service the storage cylinder without first turning the mains power switch OFF to disconnect all electrical accessories (if fitted) from the mains electricity supply.
-  Never pull, disconnect, or twist any electrical cables coming from the appliance even if it is disconnected from the mains electricity supply.
-  Do not expose the storage cylinder to the elements. It is not designed for use outdoors.
-  If solar plant pressure decreases, it is forbidden to top up with only water as there is a danger of freezing and overheating.
-  Do not use connections or safety devices or fittings (expansion vessels, pipes, insulation) that are not specifically designed and tested for use in solar water heating systems.
-  Do not allow children or infirm persons to operate the system unsupervised.
-  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.

3 DESCRIPTION OF THE APPLIANCE

Beretta IDRA N DS solar storage cylinders are double coil units designed for installation in domestic hot water production systems heated by solar collectors. They come in capacities 1500, 2000 and 2600.

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

- The cylinder and coils are specially designed and shaped for optimum performance in terms of stratification, heat exchange and replenishment times
- vitrified cylinder lining, bacteriologically inert for maximum hygiene of the water, reduced lime scale deposits and easy cleaning
- CFC-free polyurethane insulation and an elegant external casing reduce heat loss
- Water fittings are available at different heights, permitting different hot water generators to be used without reducing the stratification effect
- a flange for easy cleaning and maintenance of the anti-corrosion magnesium anode.

Beretta IDRA N DS storage cylinders can be connected to a special solar regulator and can be integrated in solar heating systems in which Beretta boilers or water heaters provide supplementary heat.

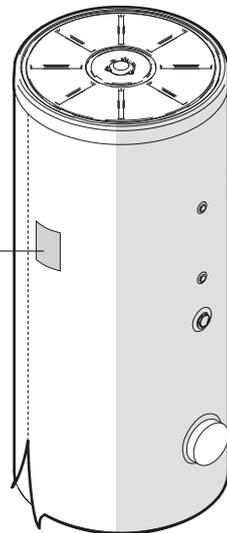
4 IDENTIFICATION

The Beretta IDRA N DS solar heaters can be identified by:

Data plate

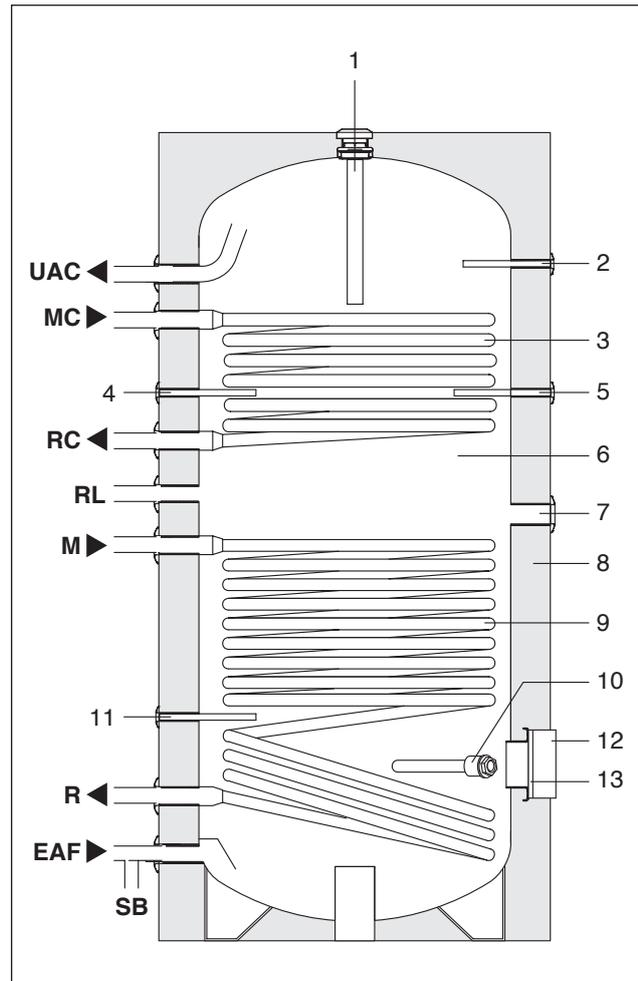
This lists the technical specifications and performance of the product.

			
Il clima di casa			
Model:	IDRA N DS 1500		
Code:	20052790		
Serial Number:	K4LH3800001		
			
20052790K4LH3800001			
Capacità nom. sanitaria	1449 L	PS	8 bar
Materiale costruzione	DD12/SZ35JR		
Treatmento	SMAL GLASS		
Capacità nom. riscaldamento	- L	PS	- bar
Scambiatore superiore	10.4 L	1.8 mq.	PS 6 bar
Potenza serpentino sup. (DIN 4708)	47 kW	1200 L/h	
Coefficiente di resa	45 %		
Scambiatore inferiore	19.4 L	3.4 mq.	PS 6 bar
Potenza serpentino inf. (DIN 4708)	88 kW	2200 L/h	
Temperatura d'esercizio max	99 °C		
Peso a vuoto	330 kg		
Ingombro per raddrizzamento	2280 mm		
Anodo n°	Misure D x L x G.	32 mm	700/700
Beretta Caldaie Via Risorgimento, 13 23900 Lecco (LC) - Italy			



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.

5 SYSTEM LAYOUT



- 1 First magnesium anode
- 2 Boiler temperature sensor socket
- 3 Top coil
- 4 Auxiliary temperature sensor socket (for models 1500)
- 5 Auxiliary temperature sensor socket (for models 2000 - 2600)
- 6 Cylinder body
- 7 Sleeve for electric heating element (not supplied)
- 8 Insulation
- 9 Bottom coil
- 10 Second magnesium anode
- 11 Solar controller temperature sensor socket
- 12 Flange cover
- 13 Cylinder inspection flange

- UAC Domestic hot water outlet
- MC Outlet from boiler
- RC Return to boiler
- M Solar circuit outlet
- R Solar circuit return
- RL DHW circulation
- EAF Domestic cold water inlet
- SB Storage cylinder drain

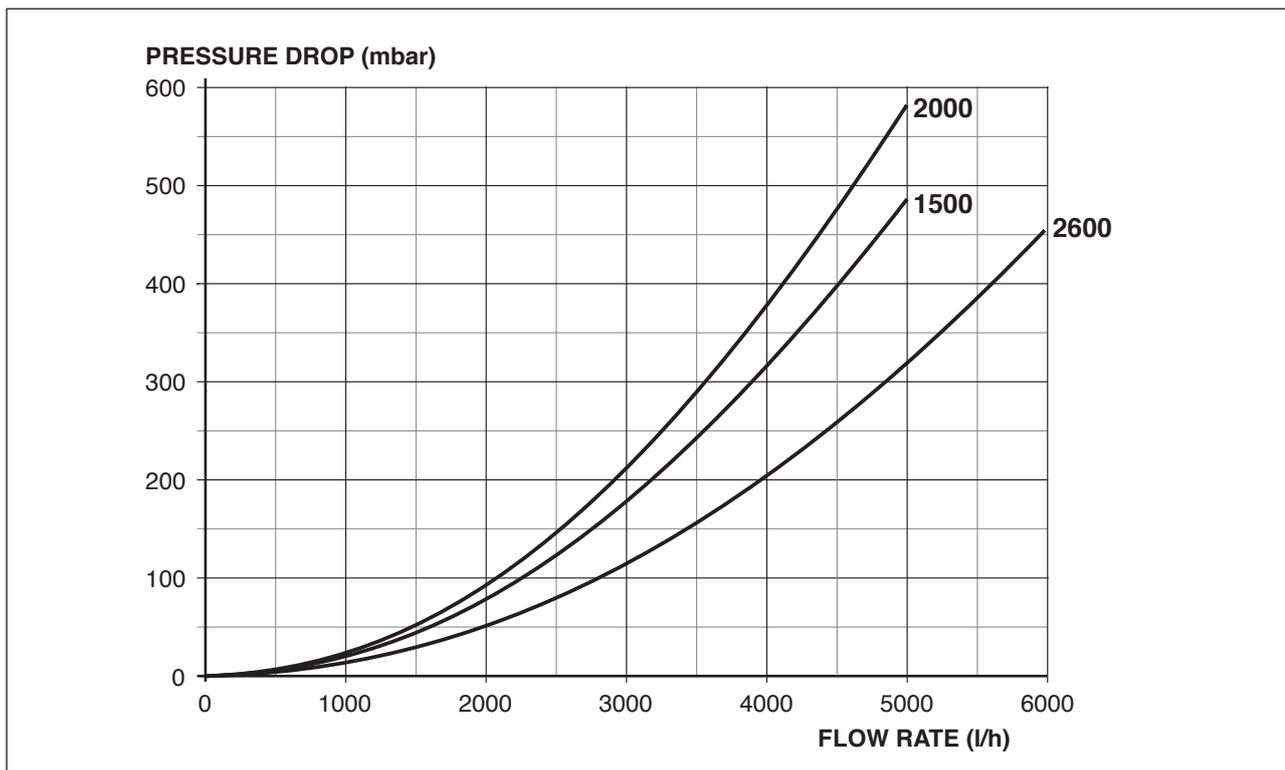
6 TECHNICAL SPECIFICATIONS

DESCRIPTION	IDRA N DS			
	1500	2000	2600	
Type of storage cylinder	Vitrified			
Storage cylinder layout	Vertical			
Heat exchanger layout	Vertical			
Storage cylinder capacity	1390	1950	2572	l
Useful non-solar volume (Vbu)	525	800	1000	l
Diameter with insulation	1200	1300	1450	mm
Diameter of storage cylinder without insulation	1000	1100	1250	mm
Height without insulation	2120	2370	-	mm
Height with insulation	2185	2470	2455	mm
Insulation thickness	100	100	100	mm
Total net weight	325	540	600	kg
First magnesium anode (Ø x length)	32x700			mm
Second magnesium anode (Ø x length)	32x400		32x700	mm
Flange diameter (external/internal)	290/220			mm
Diameter/length of sensor socket	8/200		8/-	mm
Sleeve for electric heating element (**)	1" 1/2			
Coil water capacity	19,4	28,1	28,4	L
Coil heat exchange surface area	3,4	4,6	4,6	m ²
Power absorbed by coil (*)	88	120	110	kW
Domestic hot water production (*)	2200	2900	4700	l/h
Flow required at coil (*)	3,8	5,2	5,9	m ³ /h
Top coil water capacity	10,4	16,9	20,3	l
Top coil heat exchange surface area	1,8	2,8	3,3	m ²
Power absorbed by top coil (*)	47	73	79	kW
Hot water production – top coil (*)	1200	1800	3400	l/h
Flow required at top coil (*)	2	3,1	4,3	m ³ /h
Maximum operating pressure	8			bar
Maximum operating temperature	99			°C
Discharges according to EN 12897:2006 (ΔT=45 °C, ambient 20°C and storage at 65°C)	162	186	-	W
	3,89	4,46	-	kWh/24h
Insulation type	Soft PU shells			
Maximum operating pressure of coil	10		6	bar
Maximum working temperature of coil	110		-	°C
NL performance factor	55	84	-	

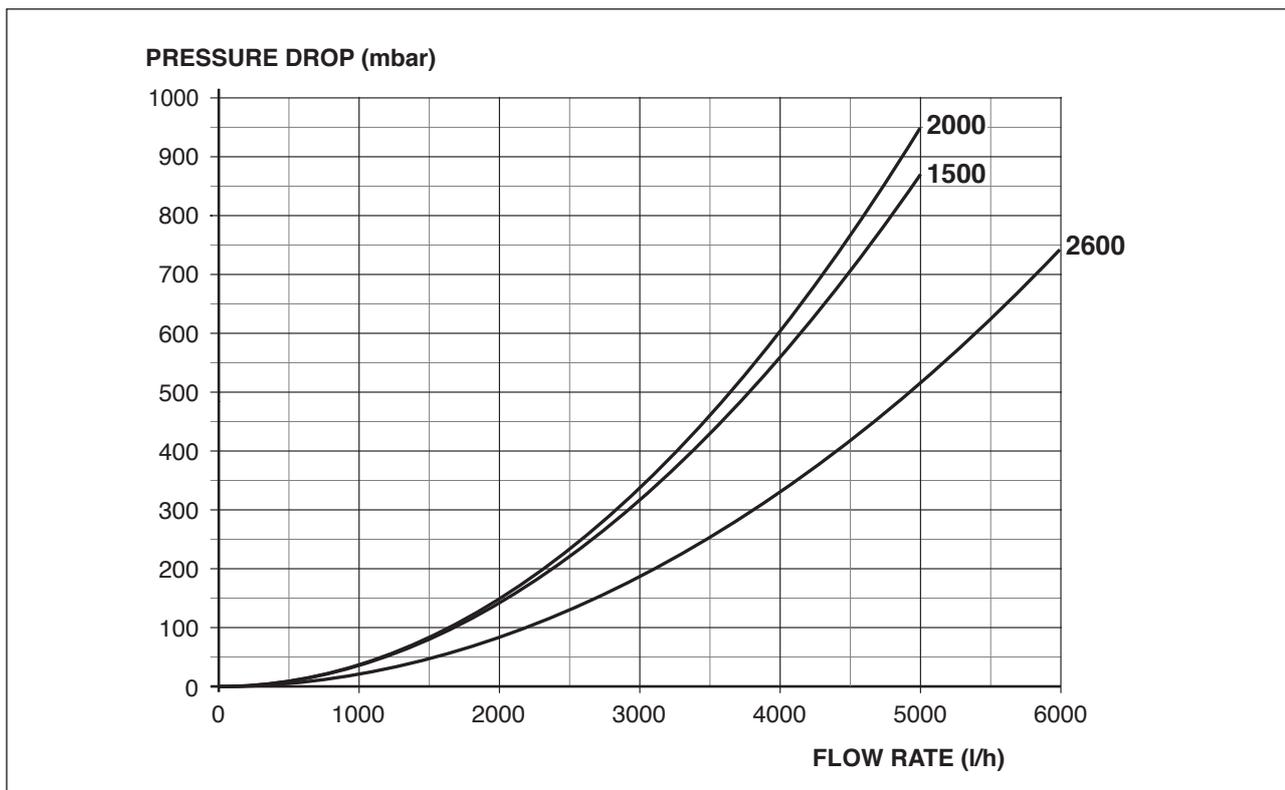
(*) In accordance with DIN 4708 with a ΔT of 20°C (80°/60°C) at the coil.

(**) Electrical heating element (not supplied).

**Pressure drops
TOP COIL**



**Pressure drops
BOTTOM COIL**



7 LOCATION OF SENSORS

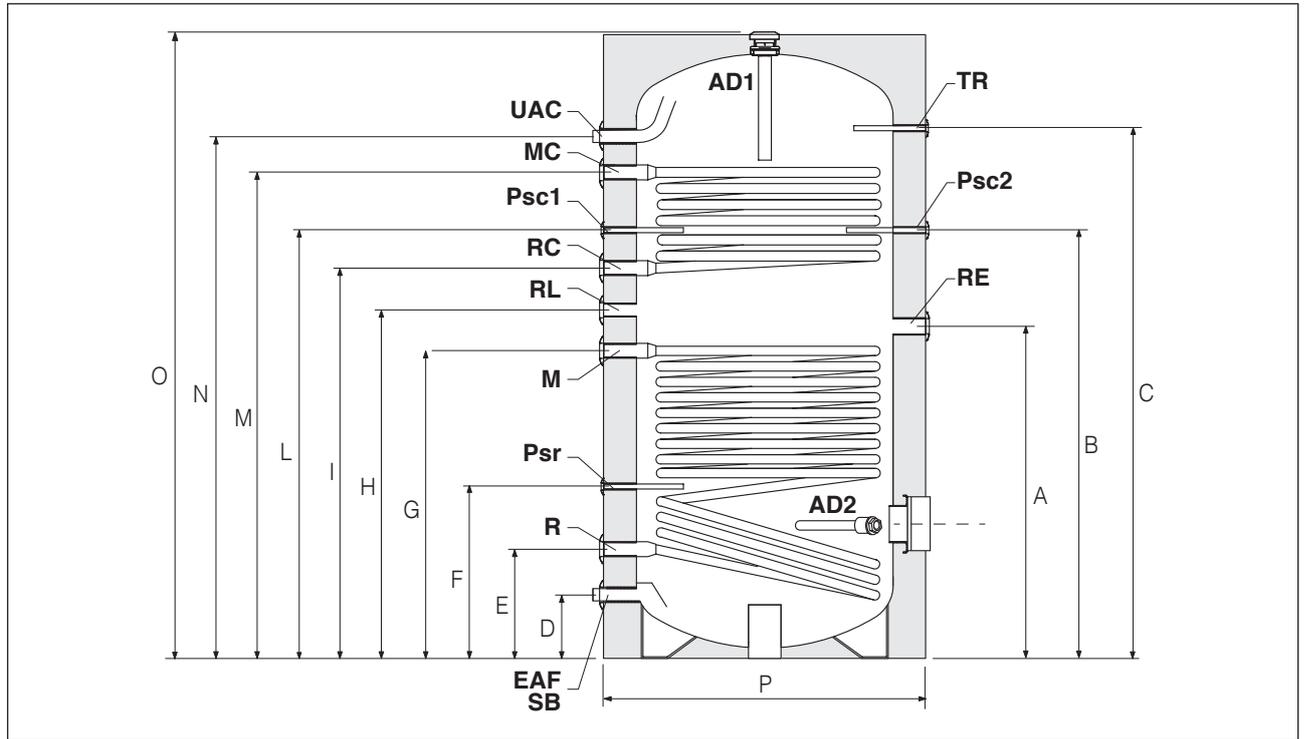
Beretta IDRA N DS storage cylinders are equipped with dedicated sockets for the storage cylinder TEMPERATURE GAUGE or TEMPERATURE SENSOR.

⚠ The installer is responsible for making all necessary connections to the boiler and solar collectors. Installers must use their expertise to ensure proper installation and functioning in compliance with all applicable legislation.

⚠ In case of a probe, any electric junction between probe cable and extensions for the connection to the electric panel must be soldered and protected with a sheath or a suitable electric insulation.

8 OVERALL DIMENSIONS AND WATER FITTINGS

Beretta IDRA N DS storage cylinders can also be connected to previously installed hot water sources provided heat output is suitable and care is taken to ensure correct water flow directions.



DESCRIPTION	IDRA N DS			
	1500	2000	2600	
UAC Domestic hot water outlet	1 1/2" F			Ø
MC Outlet from boiler	1"1/4 F			Ø
RC Return to boiler	1"1/4 F			Ø
M Outlet from solar collector	1"1/4 F			Ø
R Return to solar collector	1"1/4 F			Ø
RL DHW recirculation	1" F			Ø
EAF (SB) Domestic cold water inlet (storage cylinder drain)	1 1/2" F		1"1/4 F	Ø
Psc1 Diameter/length of boiler sensor socket	8/200	-	-	mm
Psc2 Diameter/length of boiler sensor socket	-	8/200		mm
Psr Diameter/length of solar controller sensor socket	8/200			mm
RE Sleeve for electric heating element (not supplied)	1 1/2" F			Ø
AD1 Diameter/length of first magnesium anode	32/700			Ø/mm
AD2 Diameter/length of second magnesium anode	32/400		32/700	Ø/mm
TR Temperature gauge	1/2" F			Ø
A	1230	1340	1310	mm
B	-	1487	1455	mm
C	1775	2000	1950	mm
D	280	250	235	mm
E	415	400	430	mm
F	525	662	655	mm
G	1125	1205	1085	mm
H	1225	1315	1255	mm
I	1325	1425	1425	mm
L	1420	-	-	mm
M	1730	1870	1845	mm
N	1890	1990	1950	mm
O	2120	2045	2455	mm
P	1200	1300	1450	mm

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

⚠ Check the efficiency of the seals when filling/refilling the storage cylinder.

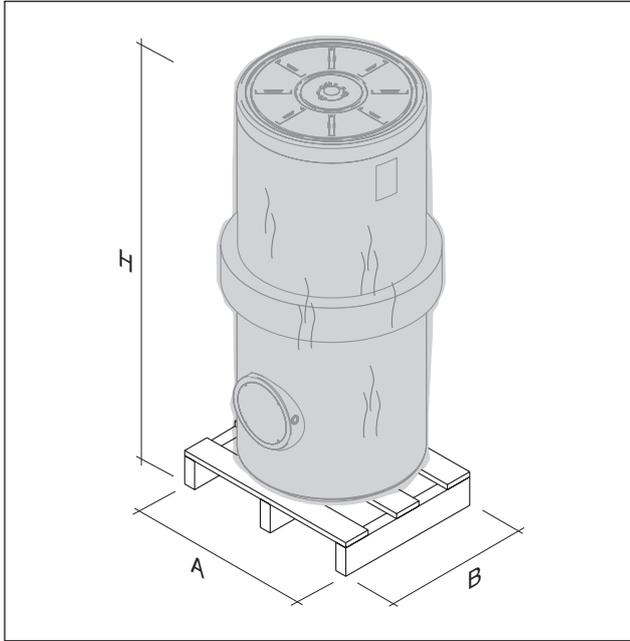
9 UNPACKING THE PRODUCT

MODELS IDRA N DS 1500

Beretta IDRA N DS storage cylinders are delivered in a single package, protected by a plastic bag inside a protective foam rubber wrapping and supported by a wooden pallet. The following items are delivered in a plastic bag inside the packaging:

- Instruction manual
- Bar code label
- Hydraulic test certificate

The two magnesium anodes are supplied in a cardboard box on the pallet.



IDRA N DS	A (mm)	B (mm)	H (mm)	Weight (kg)
1500	1000	1000	2325	340

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

MODELS IDRA N DS 2000

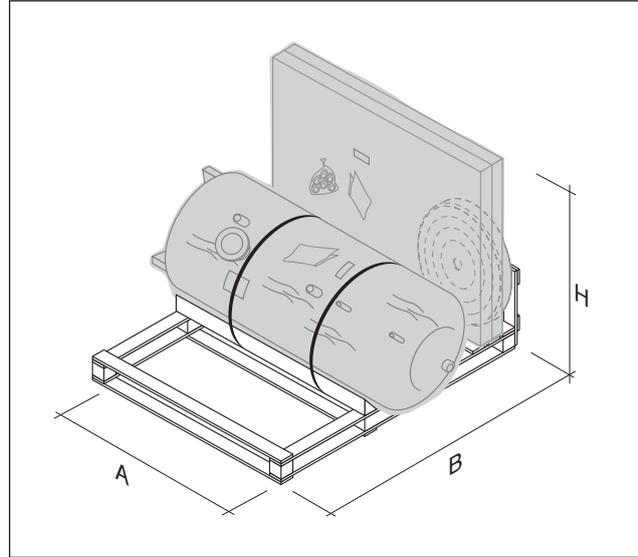
Beretta IDRA N DS storage cylinders come in two separate packages:

- The first contains the painted cylinder, protected by a plastic bag and supported on a wooden pallet.
- The second package, also protected by a plastic bag, contains the polyurethane insulation with its elegant outer covering, fitting insulation sleeves, top cover, flange cover, identification plates and documentation.

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

- Instruction manual
- Bar code labels
- Hydraulic test certificate

The two magnesium anodes are supplied in a cardboard box on the pallet.



IDRA N DS	A (mm)	B (mm)	H (mm)	Weight (kg)
2000	1700	1900	2000	565

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

MODELS IDRA N DS 2600

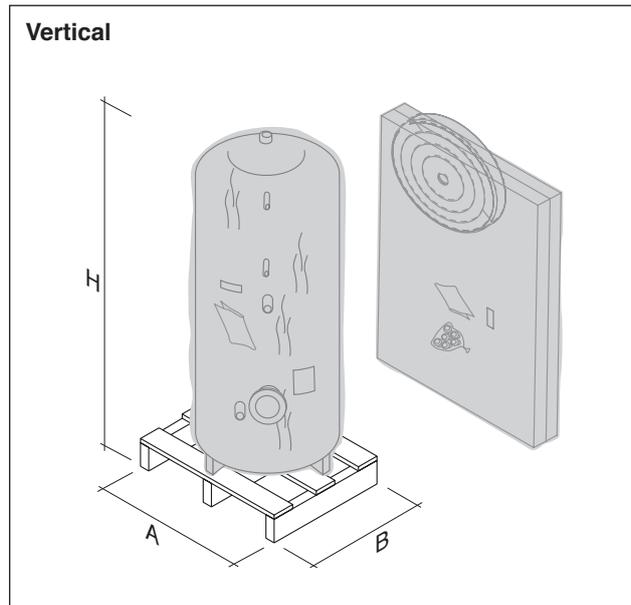
Beretta IDRA N DS storage cylinders come in two separate packages:

- The first contains the painted cylinder, protected by a plastic bag and **arranged vertically** on a wooden pallet.
- The second package, **supplied separately** and also protected by a plastic bag, contains the polyurethane insulation with its elegant outer covering, fitting insulation sleeves, top cover, flange cover, identification plates and documentation.

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

- Instruction manual
- Bar code labels
- Hydraulic test certificate

The two magnesium anodes are supplied in a cardboard box on the pallet.



IDRA N DS	A (mm)	B (mm)	H (mm)	Weight (kg)
2600	1300	1300	2525	620

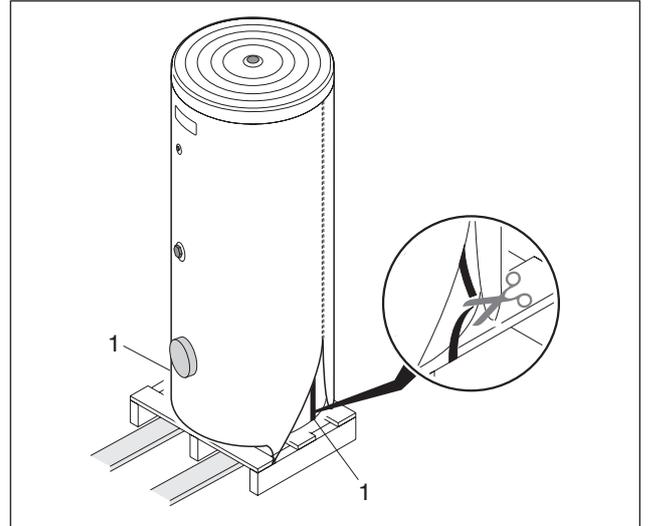
- ⚠ The instruction manual is an integral part of the solar storage cylinder. Once located, read it thoroughly and keep it safe.

10 HANDLING

- ⚠ Wear suitable personal protective equipment and use suitable safety devices.
- ⚠ Make sure that any lifting equipment is of adequate capacity to lift and move the storage cylinder.
- ⊘ 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.

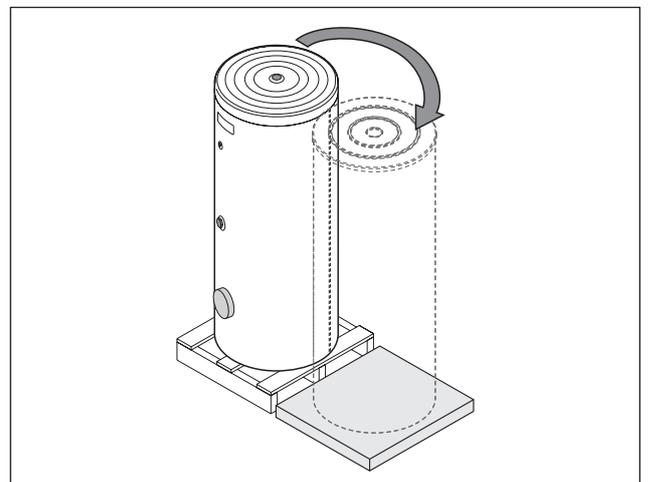
MODELS IDRA N DS 1500

Cut the strap (1) located under the insulation at the zips to remove the cylinder from the pallet.



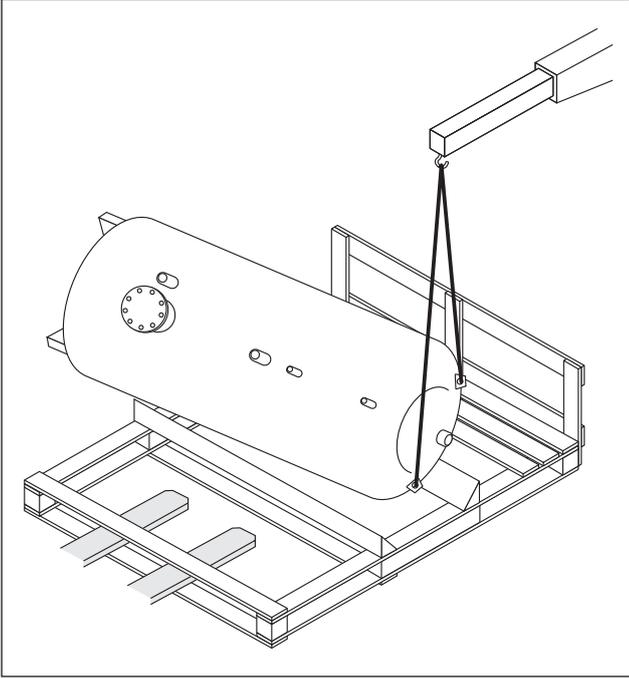
If suitable equipment is not on hand to lift the storage cylinder off the pallet using the eyebolt, proceed as follows.

- 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 strap (1) 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.



MODELS IDRA N DS 2000

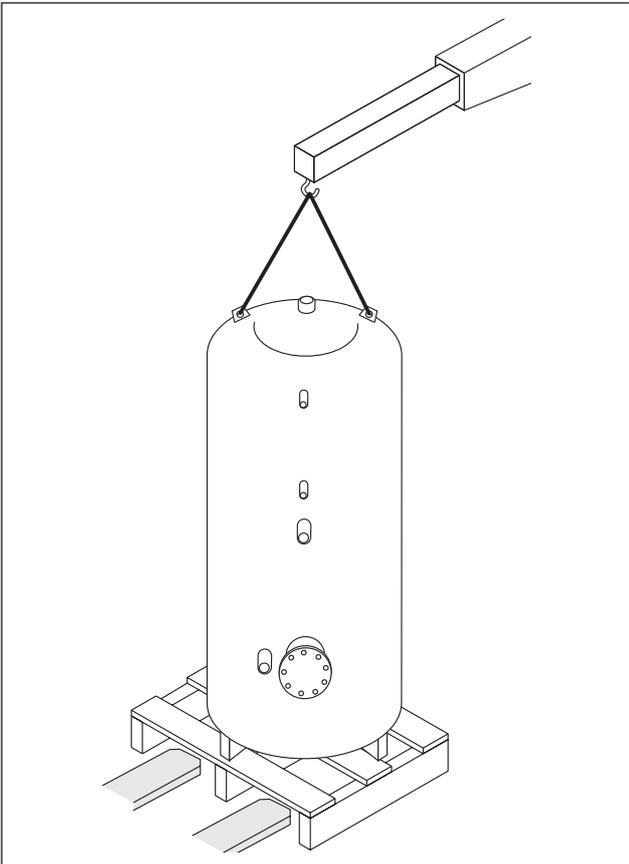
To remove the storage cylinder from the pallet, first remove the insulation then secure lifting cables to the lifting points on the top of the cylinder, and lift with care.



MODELS IDRA N DS 2600

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

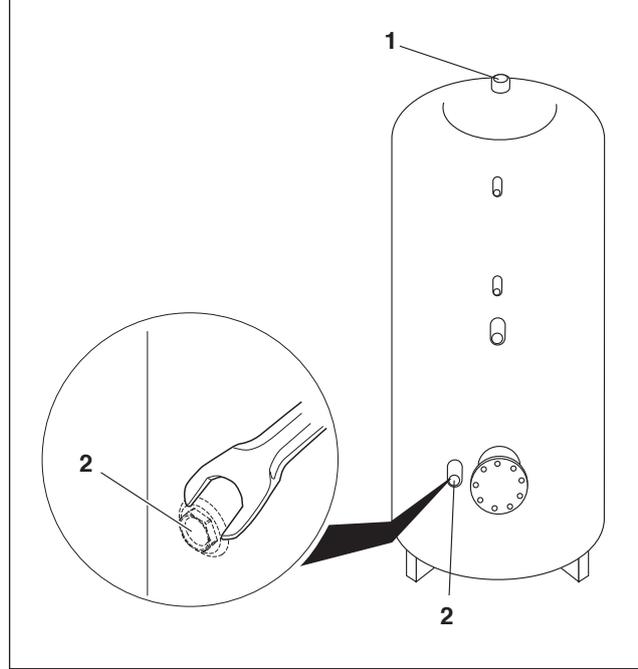
- cut the straps
- secure the lifting cables to the lifting points on the top of the storage cylinder
- carefully lift the storage cylinder and position it as required



11 INSTALLING THE MAGNESIUM ANODES

Proceed as follows to install the magnesium anodes:

- Remove the protective plugs
- Fit the two magnesium anodes in the fittings (1) and (2)
- Screw in the magnesium anodes using a suitable spanner.



NOTE: Tighten to a torque of 25 Nm.

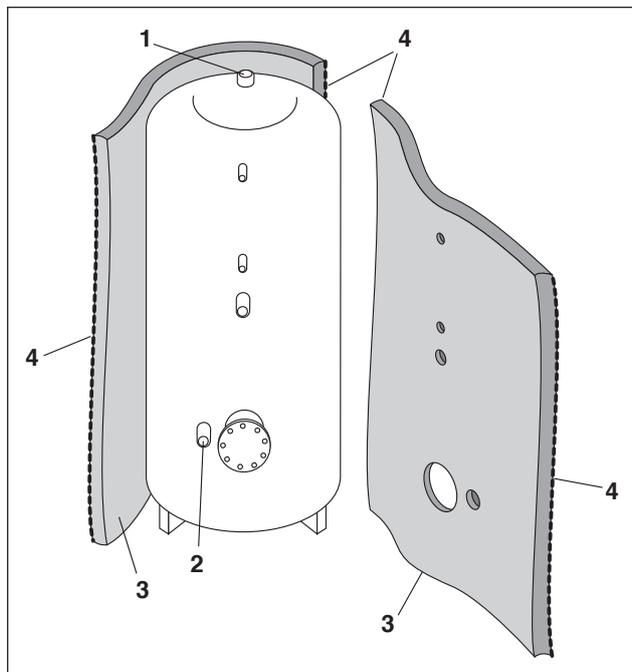
12 FITTING THE INSULATION

MODELS IDRA N DS 2000 to 2600

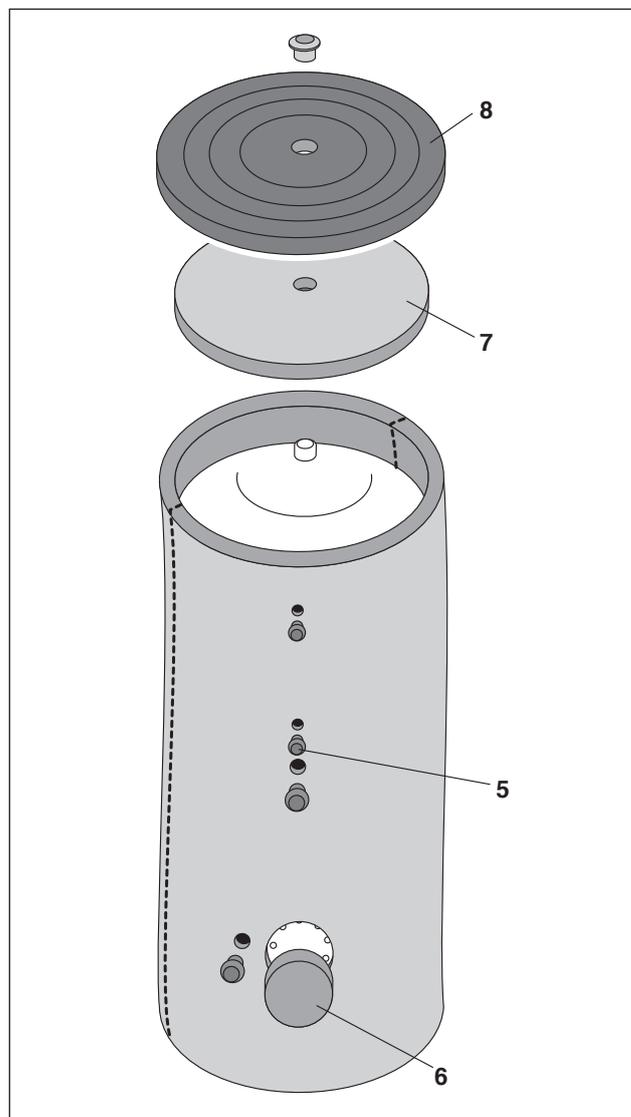
Once the storage cylinder is correctly positioned inside the room where it is to be installed, proceed to fit the insulation and the accessories to complete the cylinder.

Proceed as follows:

- Unpack all the material from the second package
- Wrap the insulation (3) around the storage cylinder, carefully lining up the fittings with the holes on the inside of the insulation. Secure the insulation in place with the zips (4) at the edges of the two sections

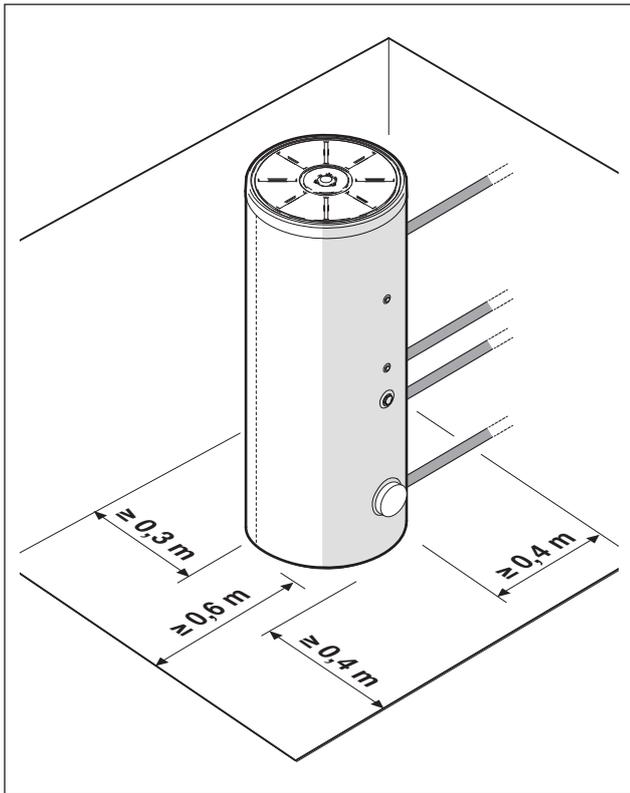


- Perforate the insulation at the fittings and fit the insulation sleeves (5)
- Fit the flange cover (6)
- Finally, fit the insulation top panel (7) and cover it with the thermoformed cover (8).



13 PLACE OF INSTALLATION

Beretta IDRA N DS storage cylinders can be installed in any room where there is no specific requirement for an electrical protection rating higher than IP X0D.



! Specified minimum distances must be respected, and the space in which the 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 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 storage cylinder is to be installed.

14 INSTALLATION IN OLDER SYSTEMS AND SYSTEMS REQUIRING MODERNISATION

When installing Beretta IDRA N DS storage cylinders in old systems or systems requiring modernisation, always perform the following checks.

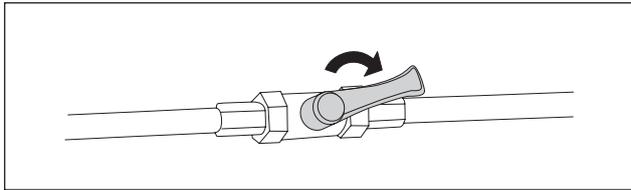
- Make sure that the system is fitted with safety and control devices in accordance with applicable legislation and standards
- Make sure that the central heating circuit has been flushed out to remove all sludge and lime scale, and has been vented and seal tested
- Make sure that a suitable water treatment 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	less than 200 $\mu\text{S}/\text{cm}$ (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm

15 PUTTING INTO SERVICE

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

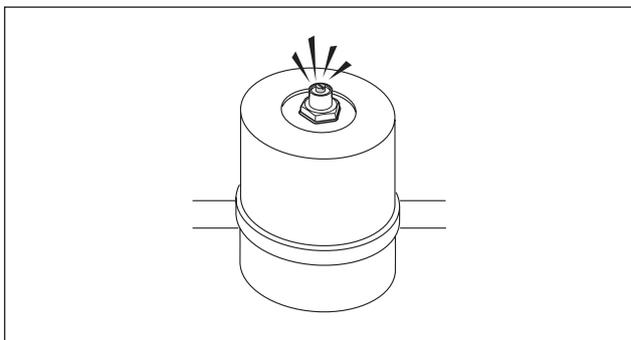
- The supply cocks in the domestic water circuit are all open



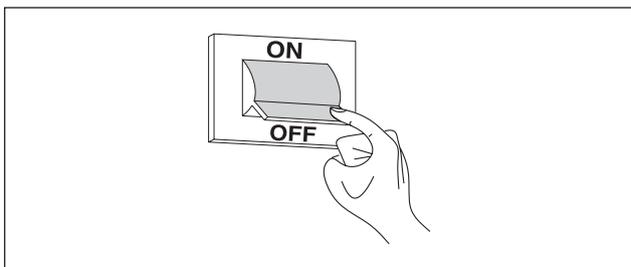
- The water connections to the boiler and solar collectors have been made correctly
- All the pipes in the water circuit have been insulated in conformity to relevant standards
- The electrical connections of all accessories have been made correctly
- The solar collector circuit has been correctly flushed out and filled with water-glycol mix, and all air has been bled out of the circuit (see the manual for the solar collectors)
- Start up the boiler (if installed) as instructed in its own manual.
- Put the solar collectors into service. See the manuals for the solar collectors and associated accessories.

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

- Make sure that all pumps are free and rotate in the right direction
- Make sure that all circuits have been bled.



- Make sure that the boiler and solar collectors connected to the system shut down correctly when their mains power switches are turned OFF.



Provided the above checks have been completed satisfactorily, restart the system and verify its performance.

16 TEMPORARY SHUTDOWN

If you are going away for a short period of time like a weekend or a short holiday, etc., and outdoor temperatures are going to remain above ZERO, proceed as follows.

- Adjust the storage cylinder thermostat to its minimum setting.

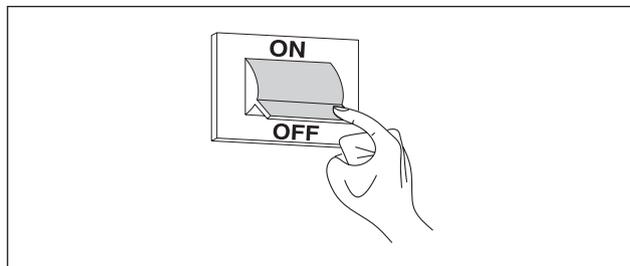


If the temperature to which the heater is exposed can fall below 0°C (frost hazard), perform the operations described in paragraph "Shutdown for extended periods".

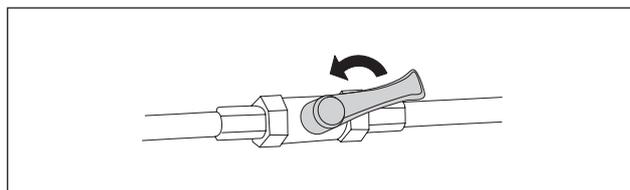
17 PREPARING FOR EXTENDED PERIODS OF DISUSE

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

- 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.



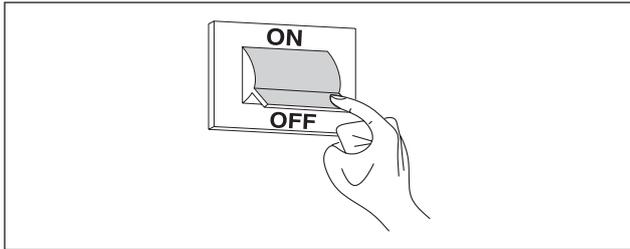
Drain the central heating circuit and domestic hot water circuit if there is any risk of freezing.

18 MAINTENANCE

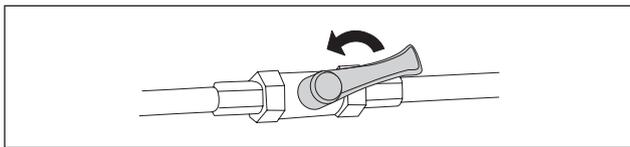
Scheduled maintenance is essential for the safety, efficiency and long working life of your storage cylinder. Proper maintenance also reduces energy consumption and ensures reliability over time. Have your storage cylinder serviced either by the manufacturer's Technical Assistance Centre or by a qualified heating engineer 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 DHW (secondary) water circuit.

19 CLEANING AND REMOVING INTERNAL COMPONENTS

EXTERNAL CLEANING

Clean the outside of the storage cylinder 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 cylinder after cleaning it.

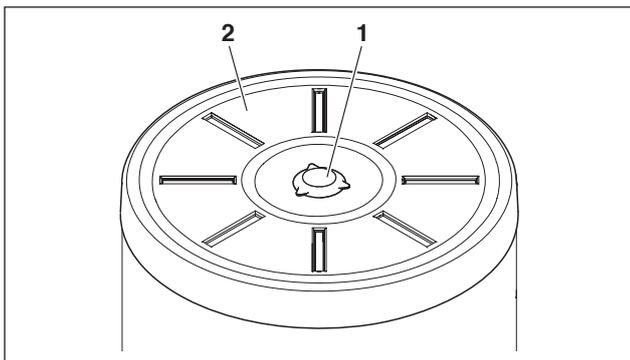


Do not use abrasive products, petrol or triethylene.

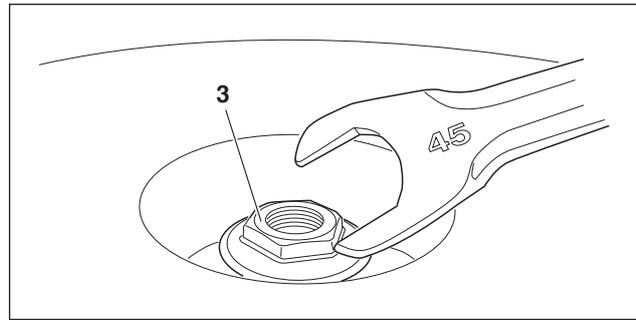
INTERNAL CLEANING

Removing and checking the magnesium anode

- Remove the cap (1), cover (2) and the anode insulator disc.



- Use a 45 mm wrench to unscrew the anode plug (3).

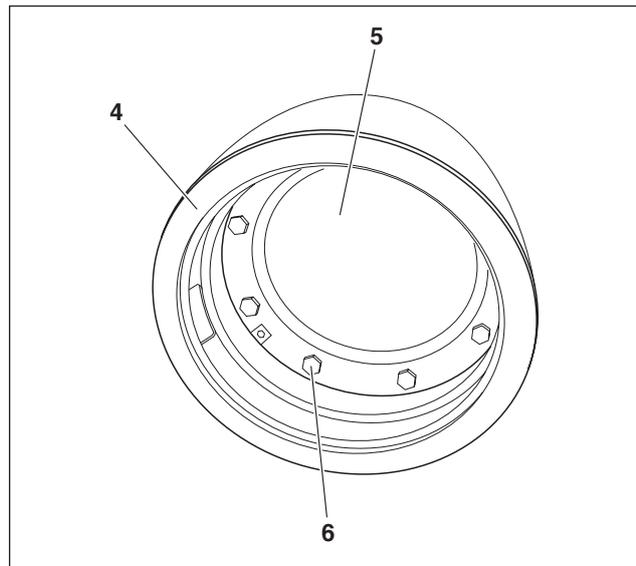


- Check the magnesium anode for wear and replace it if necessary.
- Repeat this operation on the second magnesium anode, using a suitable box spanner to remove it.
- On completion of cleaning, follow the above steps in the reverse order to refit all removed parts.

NOTE: Tighten the anode plug to a torque of 25-30 Nm.

Cleaning inside the storage cylinder

- Remove the flange cover (4)
- Unscrew the bolts (6) securing the flange (5) and remove the flange
- Remove the seal
- Clean inside the storage cylinder and remove any residues through the access hole.



! Check the seal for wear and replace it if necessary. On completion of cleaning, follow the above steps in the reverse order to refit all removed parts.

! Tighten the bolts (6), proceeding diagonally around the flange to apply pressure uniformly around the seal.

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

20 RECYCLING AND DISPOSAL

At the end of its useful working life, do not abandon the storage cylinder in the environment, but dispose of it through the proper channels in accordance with applicable legislation.

21 TROUBLESHOOTING

SUPPLEMENTARY HEATING CIRCUIT

FAULT	CAUSE	SOLUTION
The storage cylinder functions incorrectly or irregularly	Flow rate too high	- Fit a pressure limiter - 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
	The water temperature from the boiler is too low	- Check the temperature setting
	There is air in the primary circuit	- Bleed the circuit

SOLAR COLLECTOR CIRCUIT

FAULT	CAUSE	SOLUTION
The storage cylinder functions incorrectly or irregularly	There is air in the circuit	- Bleed the circuit
	The flow rate is too low or too high	- Check the flow rate of the collector circuit
	Pressure is too low	- Check that circuit pressure is approximately 3 bar when cold
	There is lime scale or sludge in the cylinder	- Check and clean as necessary
The storage cylinder loses a lot of heat overnight	There is natural circulation to the collectors	- Make sure that the non-return valve is efficient and closes properly. Replace if necessary

END USER INSTRUCTIONS

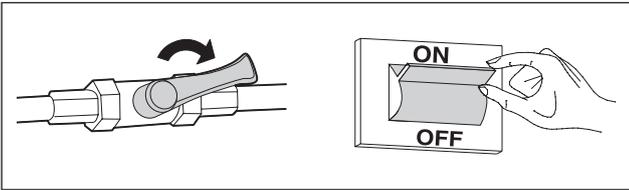
Refer to the **GENERAL SAFETY INFORMATION** and **PRECAUTIONS** section for safety-related information.

22 START-UP

The storage cylinder must be put into service for the first time by personnel from the manufacturer's Technical Assistance Centre.

Under certain circumstances, such as after long periods of disuse, the user may need to re-start it without involving the Technical Assistance Centre. Before doing so, perform the following checks and operations.

- Check that the supply cocks in the domestic water circuit are all open
- Switch the electricity supply ON at the mains power switch and at control panel switch (if fitted).



23 TEMPORARY SHUTDOWN

To reduce to the environmental impact and save energy, in case of brief absences, week-ends, short trips, etc., and with external temperatures above 0°C, set the heater temperature control, where available, to the minimum value.



If the temperature to which the heater is exposed can fall below 0°C (frost hazard), perform the operations described in paragraph "Shutdown for extended periods".

24 PREPARING FOR EXTENDED PERIODS OF DISUSE

If the storage cylinder is not going to be used for an extended period of time, ask the manufacturer's Technical Assistance Centre to make the system safe.

25 EXTERNAL MAINTENANCE

Clean the cover, painted and plastic parts with a cloth damped in soap and water. To remove stubborn marks, use a cloth damped in a 50% mix of water and denatured alcohol or a suitable cleaning product.



Do not use fuels, sponges impregnated with abrasive solutions or powder detergents.

Via Risorgimento, 23 A
23900 - Lecco (LC)

www.berettaboilers.com

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