

INSTALLATION MANUAL



Dear Installer

Thank you for choosing a **Beretta IDRA N DS** solar storage cylinder, a modern high quality product, providing you with the utmost wellbeing and with a high level of reliability and safety. And this is particularly the case if the storage cylinder is entrusted to a **Beretta** Technical Assistance Centre which is specifically prepared and trained to carry out routine maintenance, to keep it running at maximum efficiency, with low running costs and which has original spare parts if required.

This instruction booklet contains important information and suggestions that should be observed for easy installation and better use of the solar storage cylinder **Beretta IDRA N DS**.

Thank you once again.

Beretta

Range

MODEL	CODE
IDRA N DS 1500	20052790
IDRA N DS 2000	20052791

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In some parts of the booklet, some symbols are used:

MARNING = for actions that require particular caution and adequate preparation

FORBIDDEN = for actions that absolutely SHOULD NOT be carried out

General Instructions

After removing the packaging make sure that everything is there and undamaged, if not contact the Agency that sold you the appliance.

The installation of the solar storage cylinder **IDRA N DS** should be carried out by a company certified pursuant to Law no. 46 of March 5, 1990, which when the work is finished will issue the owner with a <u>declaration of conformity</u> that the installation is up to standard, i.e. in compliance with regulations in force and with the recommendations provided by the instruction booklet.

The solar storage cylinder **IDRA N DS** must only be used for the purpose for which it was specifically designed. THE manufacturer accepts no liability within or without the contract for any damage caused to people, animals and property due to installation, adjustment and maintenance errors or to improper use.



 \underline{N} If necessary, use a pressure reducer for the water input.

Use a safety valve calibrated in the manner shown on the technical data label on the storage cylinder.

Use an expansion tank of a suitable size for the dimensions of the storage cylinder (it is recommended that this calculation be done by a heating engineer).

Before start-up it would be good to check the tightness of the flange screws.

Maintenance of the storage cylinder should be carried out at least once a year.

In the event of a water leak, disconnect the storage cylinder from the main power supply, shut off the water supply and promptly notify the Technical Assistance Centre or else professionally qualified personnel.

Maintenance of the storage cylinder should be carried out at least once a year.

Not using the solar storage cylinder for a long period of time requires that at least the following operations be carried out:

- Empty the solar heating circuit
- Close the shut-off devices of the sanitary system
- Switch off the boiler in the manner described in the appliance's instruction booklet
- Position the system's master switch to off.

Mix the anti-freeze (propylene glycol), available separately, with water in a variable percentage (30÷50%) following the instructions in the operating and maintenance Ir manual.

Always fill the solar system with the water/glycol mixture in the percentage reported in the operating and maintenance manual.

This booklet is an integral part of the appliance and so should be carefully preserved and should ALWAYS accompany the storage cylinder even when it is sold to another owner or user or when transferred to another system. In case of loss or damage, please contact your local Technical Assistance Service for a new copy.

Basic safety rules

Please remember that the use of products using electric power and water involves respect for a few basic safety rules such as:



Children and non-assisted disabled people are not allowed to use the storage cylinder.







Do not modify adjustment devices without the manufacturer's permission and relative instructions.

It is forbidden to pull, disconnect or twist the electric cables coming out of the storage cylinder even if it is disconnected from the main power supply.



It is forbidden to expose the storage cylinder to the elements because it is not designed to function outdoors.



It is forbidden to dispose of the packaging material and keep within children's reach, as it may be a potential source of danger.



It is forbidden, in the event of a drop in pressure of the solar system, to top up only with water as there is a risk of freezing.

It is forbidden to use connection and safety devices that have not been tested or that are not suitable for use in solar equipment (expansion tanks, piping, insulation).

Description of the appliance

The solar storage cylinders **IDRA N DS**, with a double coil and a capacity of 1500 and 2000 litres, can be integrated into solar systems for producing domestic hot water with collectors.

The main technical elements of the design of the solar storage cylinder are:

- the careful study of the geometries of the tank and the coils that allow you to obtain the best performance in terms of stratification, heat exchange and reactivation times
- the internal vitrification, bacteriologically inert, to ensure maximum hygiene of the water processed, to reduce the possibility of limestone deposit and make cleaning easier
- the regulation of the connections to various heights for employing various types of heat generators, without influencing the stratification
- the polyurethane insulation without any CFC and the elegant outer covering to limit dispersion and to improve efficiency the use of the flange to facilitate cleaning and maintenance, and the magnesium anode with an "anti-corrosion" function

The **IDRA N DS** storage cylinders can be equipped with a specific solar regulator and they can easily be inserted into solar equipment where the boilers or thermal systems act as auxiliary producers of heat.

Identification

The IDRA N DS solar storage cylinders can be identified by:



Structure



- 9 Upper coil
- 10 Tank
- 11 Second magnesium anode
- 12 Electric heater socket
 - (not provided)

Water circuit



Ine solar storage cylinder IDRA N DS 1500-2000 is not equipped with load circulators which should be appropriately sized and installed on the system. For the recommended flow rate of the solar heating circuit, see the instructions for assembling the solar collector and the BERETTA operation and maintenance manual of the solar system.

Technical data

DESCRIPTION	IDRA N DS 1500	IDRA N DS 2000	
Cylinder type	Vitrified		
Cylinder layout	Vertical		
Heat exchangers layout	Ver	tical	
Cylinder capacity	1449	2054	I
Cylinder diameter with insulation	1200	1300	mm
Cylinder diameter without insulation	1000	1100	mm
Height with insulation	2185	2470	mm
Insulation thickness	100		mm
First magnesium anode (Ø x length)	32 x 700		mm
Second magnesium anode (Ø x length)	32 x 400		mm
Flange diameter	290/220		mm
Probe socket diameter	8	8	mm
Electric resistor socket (not supplied)	1"1/2	1"1/2	Ø
Lower coil water content	19.4	28.1	I
Upper coil water content	10.4	16.9	I
Lower coil heat exchange surface	3.4	4.6	m ²
Upper coil heat exchange surface	1.8	2.8	m ²
Lower coil absorbed power (*)	88	120	kW
Upper coil absorbed power (*)	47	73	kW
DHW (*) - bottom coil	2200	2900	l/h
DHW (*) - top coil	1200	1800	l/h
Necessary capacity heat exchanger - lower coil (*)	3,8	5,2	m ³ /h
Necessary capacity heat exchanger – upper coil (*)	2,0	3,1	m ³ /h
Storage cylinder maximum operating pressure	8	8	bar
Coils maximum operating pressure	6	6	bar
Maximum operating temperature	99	99	°C
Heat loss (**)	3.93	4.77	kWh/24h
Net weight with insulation	330	544	kg

(*) According to DIN 4708, to get domestic hot water with ΔT 20°C (80°/60°C) on the heat-exchanger, please observe the values showed in the data-sheet concerning absorbed power and necessary capacity heat-exchanger

(**) With room temperature 20 °C and tank medium temperature 60 °C.



Pressure drop **BOTTOM COIL**



Receiving the product

The solar storage cylinders **IDRA N DS** are supplied in a single package, protected by a nylon bag and put on wood pallets.

Model **IDRA N DS 1500** is provided with a foam rubber shock absorbent protective band.



Model IDRA N DS 2000 is supplied in two separate packages:

- the first package is composed of the painted tank, protected by a nylon bag and put on wooden pallets.
- the second package, also protected by a nylon bag, is composed of the polyurethane insulation with an elegant outer covering, the outer trim rings of the pipe coupling, the top cover, the flange covers, the identification labels and the documentation.

The following material is supplied in a plastic envelope inside the package:

- Instruction booklet
- Label with bar code
- Hydraulic test certificate

Supplied with the product is the AD2 magnesium anode to be installed.

The instruction booklet is an integral part of the storage cylinder and it is recommended that it be read and kept safe.

Installation of the AD2 magnesium anode

- Partially remove the cover (1) and, with a wrench, unscrew the anode-carrying plug (2)
- Insert the correct anode, tighten with a wrench and then screw in again the anode-carrying plug (2).
- <u>NOTE:</u> the tightening torque of the anode-carrying plug should be 25-30 Nxm.



Handling

Once the packaging is removed, the handling of the storage cylinder is carried out manually with equipment that is suitable for the weight of the appliance.

To separate the **IDRA N DS 1500 storage cylinder** from the pallet cut the band (1) located under the insulation near the hinges.

To lift the **IDRA N DS 2000** storage cylinders, after removing the insulation, bind the high part of the storage cylinder with a cord that can bear the weight and carefully lift it.

Use suitable accident-prevention protections.

It is forbidden to dispose of the packaging material and keep it within children's reach, as it may be a potential source of danger.



Assembly of the insulation (IDRA N DS 2000)

Once the tank is positioned in its place in the installation room, the insulation and the elements completing the solar storage cylinder can be assembled.

To do this:

- Remove all the material supplied in the second package.
- Assemble the two magnesium anodes on the connections (1) and (2),.
- Wind the insulation around the tank (3) following the direction of the holes already present on the inside of the insulation and secure it with the special zippers (4) located at the ends.
- Pierce the insulation near the holes for the attachments and attach the outer trim rings (5)
- Attach the flange cover (6).
- Lastly apply the upper part (7) of the insulation and in turn place the cover (8) on it







Place of installation

The **IDRA N DS** solar storage cylinders can be installed in all rooms where a level of electrical protection of the appliance above IP X0D is not required.



In order to make the installation, assembly, inspection and ordinary and extraordinary maintenance operations easy, the minimum distances must be maintained and the installation room of the storage cylinder must be easily accessible. In particular, access to the room must allow, among other things, the possible total removal and re-installation at the end of the storage cylinder's useful life. The user is, therefore, responsible for any costs for removal of masonry work or anything else making it impossible or hard to access the installation room of the storage cylinder.

Installation on old appliances or appliances that need to be updated

When the **IDRA DS** solar storage cylinders are installed on appliances that are old or that need to be updated, make sure that:

- The installation comes with the safety and control components in compliance with the specific regulations
- The appliance has been washed, cleaned of mud and grime, de-aerated and the water seals have been checked
- There is a treatment system for when the supply/make-up water is particular (the values in the table can be used as reference values).

REFERENCE VALUES	
рН	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
M alkalinity	less than 50 ppm
Total hardness	less than 35°F
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm

Hydraulic connections

The **IDRA N DS** solar storage cylinders can be connected to heat generators, even those already installed, provided they have adequate heat output and comply with the direction of the water flow. Moreover, they can be easily integrated into **BERETTA** solar equipment which include solar collectors, the fastening system, the hydraulic unit, the expansion tank and the thermostatic mixer valve.

Installation on appliances that are old or that need to be updatedThe **IDRA N DS** storage cylinders include probe holder wells to insert possible probes.



The characteristics of the hydraulic connections are as follows:

	MODEL IDRA N DS		
DESCRIPTION	1500	2000	
UAC - DHW outlet	1"1/2 F	1"1/2 F	Ø
MC - Boiler flow	1"1/4 F	1"1/4 F	Ø
RC - Boiler return	1"1/4 F	1"1/4 F	Ø
M - Solar flow	1"1/4 F	1"1/4 F	Ø
R - Solar return	1"1/4 F	1"1/4 F	Ø
RL - DHW recirculation	1" F	1" F	Ø
EAF (SB) - Domestic cold water inlet (cylinder drain)	1"1/2 F	1"1/2 F	Ø
Psc - Diameter/length boiler probe socket	1/2" F	1/2" F	Ø/mm
Psr - Diameter/length solar regulator probe socket	1/2" F	1/2" F	Ø/mm
RE - Electric resistor socket (not supplied)	1"1/2 F	1"1/2 F	Ø
AD1 - Diameter/length magnesium anode	32 x 700		Ø/mm
AD2 - Diameter/length magnesium anode	32 x 400		Ø/mm
TR - Thermometer	1/2" F	1/2" F	Ø
A	1230	1340	mm
В	1820	2000	mm
C	280	260	mm
D	415	400	mm
E	525	660	mm
F	1125	1205	mm
G	1220	1315	mm
Н	1315	1425	mm
1	1410	1487	mm
L	1720	1870	mm
Μ	1870	1990	mm
Ν	2185	2405	mm
0	1200	1300	mm
Net weight with insulation	330	544	kg

We recommend isolating valves in the outlet and return lines.



- When using unsoftened water, it is recommended that the maximum temperature of the storage cylinder be set at 60°C, since at higher temperature limestone will deposit with the resulting deterioration of the heat exchange.
- Before commissioning the solar equipment, the boiler must be filled with water.
- If a solar storage unit is being used with network pressure greater than 4 bar, plan to use a pressure reducer.
- Be careful not to get burned when opening the vent valves of the solar equipment.

The expansion tank must resist high temperatures and the membrane must not come into contact with the waterglycol mixture.

IT IS OBLIGATORY that the sanitary system include the expansion tank, the safety valve, the automatic vent valve and the storage cylinder discharge tap.

- The safety valve outlet must be connected to a suitable collection and venting system. The manufacturer of the storage cylinder waives all liability for any flooding caused by the intervention of the safety valve.
- To limit the temperature of the domestic hot water use a thermostatic mixer valve.
- If there is a drop of pressure in the solar equipment DO NOT fill with water but with water-glycol mixture: risk of freezing.
- All the piping installed including the collectors, the exchangers and the hydraulic devices, must undergo seal tests.
- The selection and the installation of the components of the system is referred to the expertise of the installer, who must operate according to the rules of good technique and current Legislation.

First commissioning preparation

Before the start-up and before testing the

the storage cylinder, it is absolutely necessary to check that:

- The water supply taps of the domestic water circuit are open
- The water connections to the respective boiler and to the water unit of the solar equipment have been carried out correctly
- The procedure for washing and filling up of the solar heating circuit with the water-glycol has been carried out correctly, and the equipment has been de-aerated at the same time.



Basic solar control box (accessory)

First commissioning

The transfer of heat into the solar heating circuit takes place when the temperature of the solar collector is higher than that of the storage cylinder. Therefore in managing the solar equipment the exact temperature is not important, but rather the temperature difference.

- Set the temperature difference between the collector and the storage cylinder (see the instruction manual of the regulator).
- Commission the boiler for the auxiliary heating of the storage cylinder.

Checks during and after the first commissioning

At the start-up make sure that:

- The flow rate of the solar heating circuit is 30 l/h per m² of collector surface
- The solar heating circuit is completely vented
- The cold pressure of the equipment is about 3 bar
- The safety valves intervenes at 6 bar
- The piping of the hydraulic supply are insulated in full respect of current regulations.

If all conditions have been met, restart the boiler and storage cylinder and check the regulated temperature and the amount of DHW that can be taken.









Deactivation for long periods

Not using the solar storage cylinder for a long period of time requires that the following operations be carried out:

- Empty the solar heating circuit



- Close the intercept devices of the sanitary system
- Switch off the boiler in the manner described in the appliance's instruction booklet
- Position the system's master switch to off.

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

The Technical Assistance Centre is available if the procedure reported above is difficult to do.

Maintenance

Periodic maintenance, which is essential for safety purposes, the efficiency and the life of the solar storage cylinder, provides reduced consumption and keeps the product reliable over time. Remember that the maintenance of the storage cylinder, can be carried out by the Technical Assistance Centre or else by qualified professional personnel and should take place at least once a year.

Before doing any maintenance work:

- Disconnect the storage cylinder's hydraulic unit and the respective generator from the electrical supply, positioning the main switch and that of the control panel to "off"
- Close the intercept devices of the sanitary system
- Empty the storage cylinder's secondary circuit.





Cleaning the storage cylinder and dismantling the internal components

OUTSIDE

Cleaning the cover of the storage cylinder should be carried out with <u>damp</u> cloths and water and soap. In the case of stubborn stains dampen the cloth with a mixture of 50% water and methylated spirit or with specific products for the marks. Once the cleaning is finished, dry the storage cylinder.



Do not use abrasive products, gasoline or trichloroethylene.

INSIDE

Removing and checking the magnesium anode

- Remove the plug (1), the cover (2) and the central insulating disc that covers the anode
- With a 45 mm spanner unscrew the anode holder plug (3).
- Check the state of wear of the magnesium anode and replace it if necessary.

Perform the same operation on the second magnesium anode, using a box wrench.

Once the cleaning operations are finished, reassemble all the components, following the above instructions in the reverse order.





Cleaning the parts inside the storage cylinder

- Remove the flange cover (4).
- Unscrew the fastening nuts (5) of the flange (6) and remove it together with the gasket
- Clean the inside surfaces and remove the residues through the opening.

Once the cleaning operations are finished, reassemble all the components, following the above instructions in the reverse order.

Tighten the bolts (5) of the flange fastening (6) with a "cross-head" system to uniformly distribute pressure on the gasket.

- Load the storage cylinder's secondary circuit and check the seal of the gaskets.
- Carry out a performance test.





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