OPERATING INSTRUCTIONS

1. GENERAL INFORMATION

This document is intended for the installer and final user. Therefore after installing and starting the system it is necessary to make sure it is given to the final user or the person responsible for managing the system.

The Thermal storage tanks of the “RYTN” and “RYTNSH” series are designed to be used in systems to produce domestic hot water, where technical water is stored, rather than domestic hot water (possibly powered by heat sources that need to separate heat-transfer fluids).

If the product is used for purposes other than the one indicated in this document, this releases the manufacturer from any liability and voids any form of warranty.

The Thermal Storage Accumulators of the “RYTN” and “RYTNSH” series are made up of a cylindrical carbon steel tank with a thick insulation (70mm thick rigid insulation for capacities up to 300 l, 100mm thick soft insulation for greater capacities) with all the necessary connections and an internal exchanger with a continuous spiral made with a corrugated stainless steel (AISI 316L) pipe to produce DHW. The “RYTNSH” series has also two exchangers made with a carbon steel pipe in the shape of a spiral. These can be connected, for instance, to solar panels and an integration generator. The special design of the stainless steel internal exchanger intended for the production of DHW removes any issues associated with storing domestic hot water (deposits, standing water, colonies of bacteria, etc.) and ensures an excellent performance in terms of heat exchange. Indeed, as the internal exchanger is made up of a continuous conduit in the form of a spiral-like pipe, every time domestic hot water is collected, this ensures the change of domestic water inside the exchanger with clear benefits in terms of hygiene.

Identification of the category (Directive 97/23/EC).
The values of the full range of Thermal Storage Tanks of the “RYTN” and “RYTNSH” series are below the limit values reported below:

- Container intended to contain water (group 2) with a vapour pressure at the maximum allowed temperature below 0.5 bar beyond the normal atmospheric pressure (1033 mbar), maximum operating pressure PS > 10 bar , product PS*V > 10,000 bar*L, PS > 1000 bar.
- Pipes intended to contain water (group 2) with a vapour pressure at the maximum allowed temperature below 0.5 bar beyond the normal atmospheric pressure (1033 mbar), maximum operating pressure PS > 10 bar, diameter DN > 200 and product PS*DN < 5000 bar*mm.

Therefore all the thermal storage tanks of the “RYTN” and “RYTNSH” series, in accordance with Art. 3.3 and the requirements reported in annex II tables 4 and 5, cannot have the CE marking. However, the Manufacturer ensures that, as required by the directive, their sound engineering practice, which guarantees they are safe to use and identify.

2. CONNECTIONS

- The indications related to connections to the systems reported here below are only meant as a guide and are not binding, as the designer of the system on which the thermal storage tank will be installed is required to assess, in compliance with current installation standards, the best-suited layout of the system to use it by following the limits set by the data declared by the manufacturer.
- We strongly recommend installing two “disconnectors” with manual valves at the domestic water inlet and outlet to use during the premilinary washing stage of the domestic exchanger on a regular basis.
- Based on the operating principle of the Thermal Storage Tanks of the “RYTN” and “RYTNSH” series, it is not possible to check the temperature of domestic water with a thermostat. If the domestic water is not collected, it will tend to reach the temperature of the storage tank (heating circuit). **Therefore, in order to prevent potentially dangerous circumstances leading to burns and scalds and comply with the limits set by regulations on the top temperatures to distribute domestic hot water, it is necessary to install a suitable thermostatic mixer on the DHW outlet connection.** If it is necessary to allow for an immediate supply of hot water even on utilities that are relatively far away from the thermal storage tank, we recommend providing for a circuit recirculation loop.

3. INSTALLATION

The Thermal Storage Tanks must always be installed in a place protected from the elements and on a solid base. Before conducting the connections, make sure there is enough space to check the appliance and take out the electric heating element, if there is one. The wooden platform, which only used for transport purposes, must be removed.

- Make sure the areas where the Thermal Storage Tanks are installed have openings with a size that allows to easily pass the tanks through them towards the outside with no need to conduct any kind of works.
- Appliances weighing more than 30 kg need to be handled with suitable hoisting equipment and means of transport. When they are handled, the containers must be empty. Use the designated platforms.
- The Thermal Storage Tanks must be installed and operated in accordance with the laws in force in the country of use. *In Italy, based on the Ministerial Circular Letter no. 829571 dated 23/03/03, the installation of boilers on the domestic water mains (in principle Thermal Storage Tanks are special boilers) must be conducted through an hydraulic safety unit. This must consists of a shut-off valve, a check valve, a check valve control device, a safety valve (features described in the next section), a device to interrupt the hydraulic load. These are all necessary accessories to be able to operate the boilers safely.*
- *Moreover, always provide for an expansion system both on the storage tank side and on the domestic circuit side. Based on the requirements contained file R-1 of the regulation called "Raccolta R" applying to water heaters where the temperature of the primary fluid*

• *is lower or equal to the boiling temperature of the secondary fluid at atmospheric pressure (100°C for water). This expansion system can simply consists of a safety valve, either a counterweight or a spring valve, with an opening whose diameter (mm) is not smaller than:*

$$\sqrt{\frac{V}{5}}$$

where V is the volume in litres of the internal domestic exchanger, with a minimum of 15 mm/at least. The pressure of the valve must not be higher than the boiler's maximum operating pressure. To prevent them from constantly opening, along with the valves we recommend installing closed expansion vessels with a non-toxic membrane designed to dampen the water hammers (on the domestic side).

- Please remember that the maximum temperatures in terms of storage and distribution of domestic hot water are subject to the limits required by law. *In Italy refer to the requirements contained in law no.10/91 and the Decree of the President of Republic no.412 dated 23/08/1993 and its subsequent amendments and integrations.*
- If the values of the domestic water system are higher than the allowed valued, install a pressure reduce as far away as possible from the thermal storage tank.
- In order to prevent the effects of any stray galvanic currents, it is necessary to always make sure the systems are EARTHED CORRECTLY.

4. PUTTING THE APPLIANCE INTO SERVICE

Please remember that before putting a new water system into service for the first time it is necessary to thoroughly wash the inside of the pipes and appliances in order to prevent residues of various manufacturing processes, dirt, etc. from circulating and lead to problems and malfunctions at a later stage. Use suitable detergents that prevent corrosion on the heating side and just make them flow though the domestic circuit with water from the mains at a high flow rate for at least 10 minutes.

5. USE

- When using the thermal storage tank, do not exceed the pressure and temperature limits reported in this document and on the data plate.
- In general, in systems that produce domestic hot water it is necessary to comply with the requirements contained in the UNI CTI 8065 standard, which involves various types of water treatment processes depending on the water's properties. The warranty does not cover any damage caused by failure to meet the requirements contained in the UNI CTI 8065 standard.

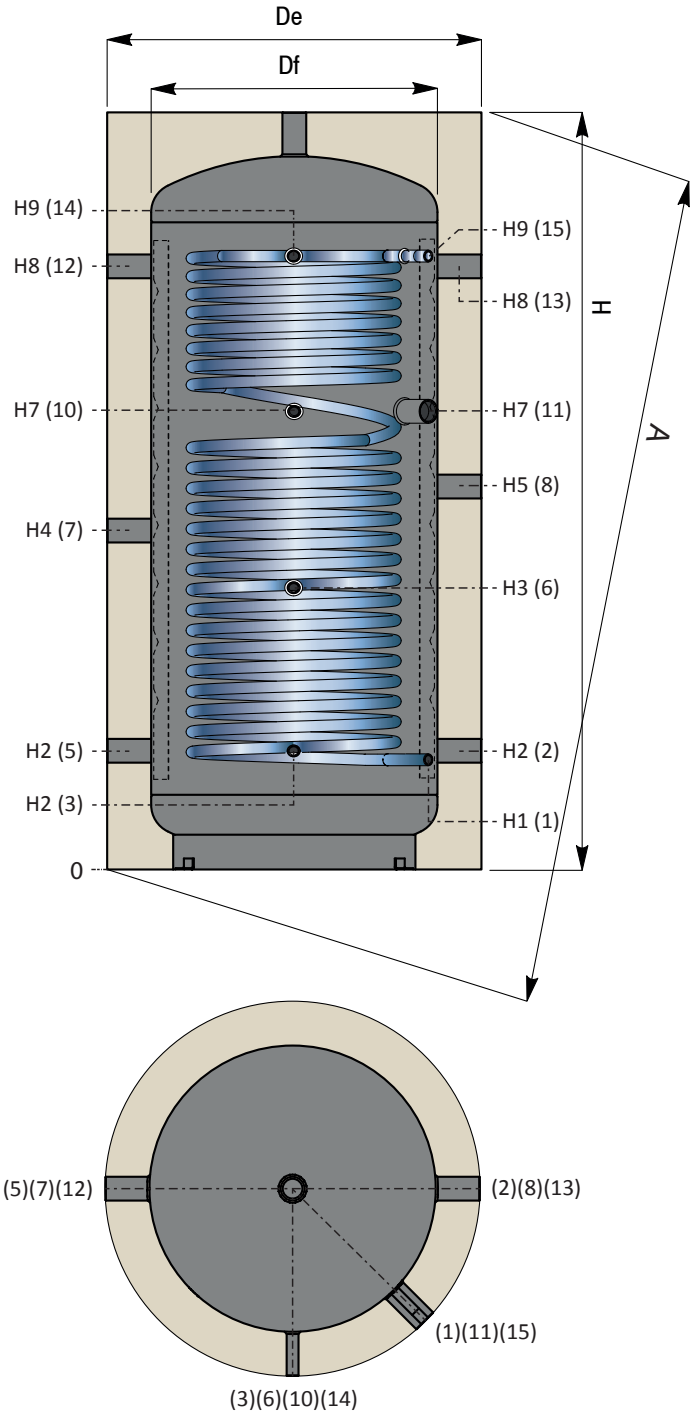
6. MAINTENANCE

The special design of the domestic exchanger of the thermal storage tanks of the “RYTN” and “RYTNSH” series prevents limescale deposits on the exchanger itself. However, with untreated hard water, limescale may reach the utilities. Therefore in these cases we recommend cleaning through the upper connection on a regular basis and conduct chemical cleaning cycles on the domestic exchanger with adequate products against limescale at least once every two years. Clearly this must be done by disconnecting the domestic exchanger from the mains.

7. DISPOSAL

At the end of the product's technical life cycle, its metal parts must be given to operators authorised to collect metal material for the purposes of recycling it, while non-metal parts must be given to operators authorised to dispose of them. If the products are disposed of by the end client, they must be treated as urban waste and therefore comply with the regulations established by the coucil the client belongs to. It must not be treated as household waste under any circumstances.

RYTN 300

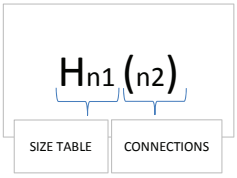


	CONNECTIONS
1	Domestic water inlet - 1/2" Gas F
2-5	Return to heat pump - 1"1/2 Gas F
3	Probe - 1/2" Gas F
6	Probe - 1/2" Gas F
7	Inlet for technical water to heat pump* - 1"1/2 Gas F
8	Return to Generator* - 1"1/2 Gas F
10	Probe - 1/2" Gas F
11	Backup heating element - 1"1/2 Gas F
12-13	Inlet for technical water from heat pump / from Generator* - 1"1/2 Gas F
14	Probe - 1/2" Gas F
15	Domestic water outlet - 1/2" Gas F

* in the presence of a second high temperature generator that works directly on the top of the storage tank

We suggest not to use the connection on the top of the tank as the heat pump outlet (or other high temperature heat generator) as this will ruin the stratification.

We recommend to use this tank only for domestic hot water production and not for heating the technical water of the plant, which should have a dedicated storage.

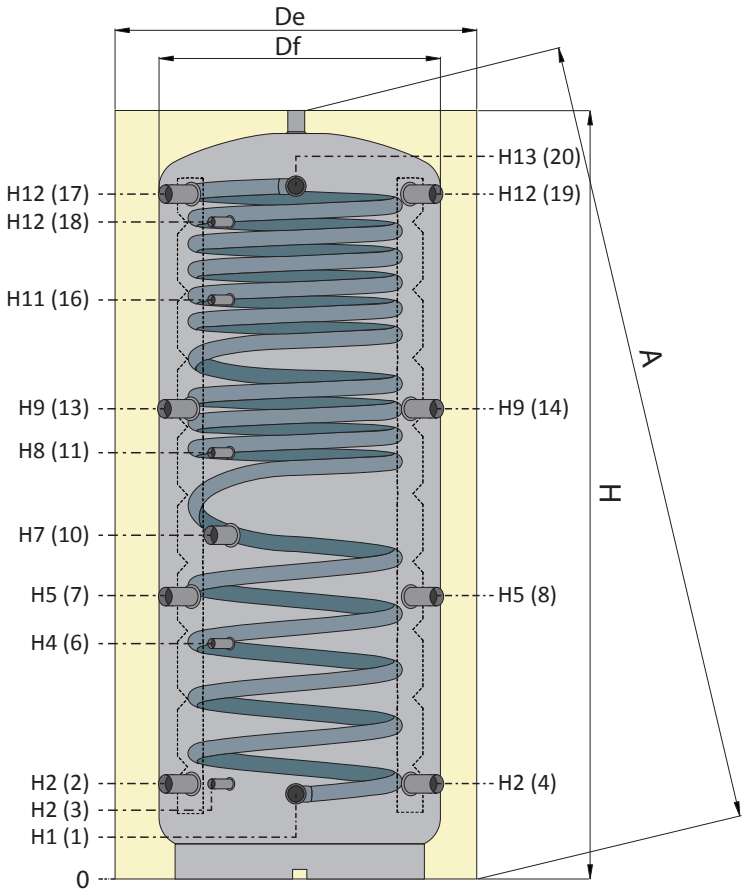


SIZE TABLE

Capacity	Df	De	H	A	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13
[litri]	[mm]																
300	550	690	1521	1670	233	266	581	766	866	-	906	1216	1251	-	-	-	-

This series of thermal storage tanks, fruit of a partnership combining the experience of Galletti and Cordivari, was specifically conceived for pairing with heat pumps.

RYTN 600 - RYTN 800

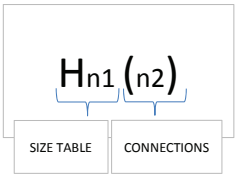


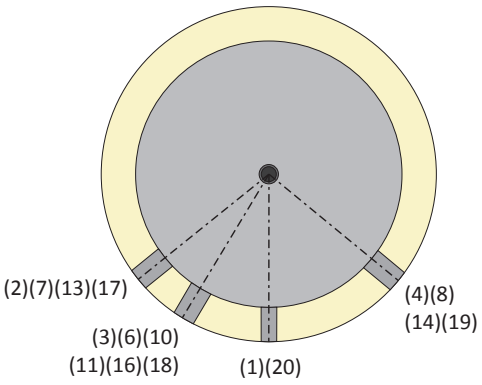
	CONNECTIONS
1	Domestic water inlet - 1" Gas M
2-4	Return to heat pump - 1"1/2 Gas F
3	Probe - 1/2" Gas F
6	Probe - 1/2" Gas F
7-8	Inlet for technical water from heat pump* - 1"1/2 Gas F
10	Backup heating element - 1"1/2 Gas F
11	Probe - 1/2" Gas F
13-14	Return to Generator* - 1"1/2 Gas F
16	Probe - 1/2" Gas F
17-19	Inlet for technical water from heat pump / from Generator* - 1"1/2 Gas F
18	Probe - 1/2" Gas F
20	Domestic water outlet - 1" Gas M

* in the presence of a second high temperature generator that works directly on the top of the storage tank

We suggest not to use the connection on the top of the tank as the heat pump outlet (or other high temperature heat generator) as this will ruin the stratification.

We recommend to use this tank only for domestic hot water production and not for heating the technical water of the plant, which should have a dedicated storage.





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600	650	850	1920	1945	230	247	-	582	695	-	915	1060	1144	-	1382	1593	1610
800	790	990	1890	1925	248	265	-	584	690	-	838	988	1115	-	1332	1541	1558

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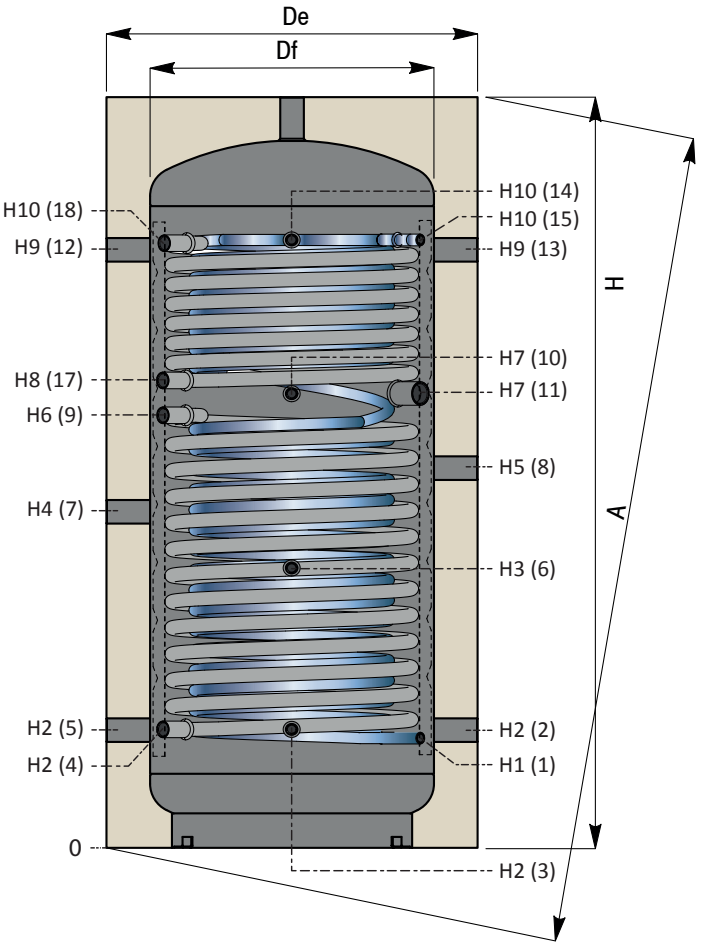
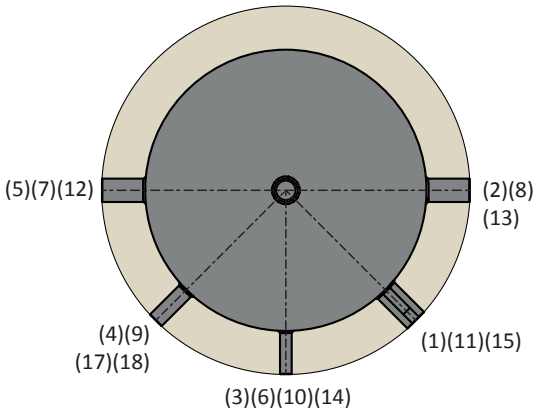
RYTNSH 300



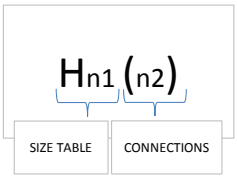


	CONNECTIONS
1	Domestic water inlet - 1/2" Gas F
2-5	Return to heat pump - 1"1/2 Gas F
3	Probe - 1/2" Gas F
4	Lower fixed coil outlet - 1" Gas F
6	Probe - 1/2" Gas F
7	Inlet for technical water to heat pump* - 1"1/2 Gas F
8	Return to Generator* - 1"1/2 Gas F
9	Lower fixed coil outlet - 1" Gas F
10	Probe - 1/2" Gas F
11	Backup heating element - 1"1/2 Gas F
12-13	Inlet for technical water from heat pump / from Generator* - 1"1/2 Gas F
14	Probe - 1/2" Gas F
15	Domestic water outlet - 1/2" Gas F
17	Upper fixed coil outlet - 1" Gas F
18	Upper fixed coil inlet - 1" Gas F

* in the presence of a second high temperature generator that works directly on the top of the storage tank

We suggest not to use the connection on the top of the tank as the heat pump outlet (or other high temperature heat generator) as this will ruin the stratification.

We recommend to use this tank only for domestic hot water production and not for heating the technical water of the plant, which should have a dedicated storage.



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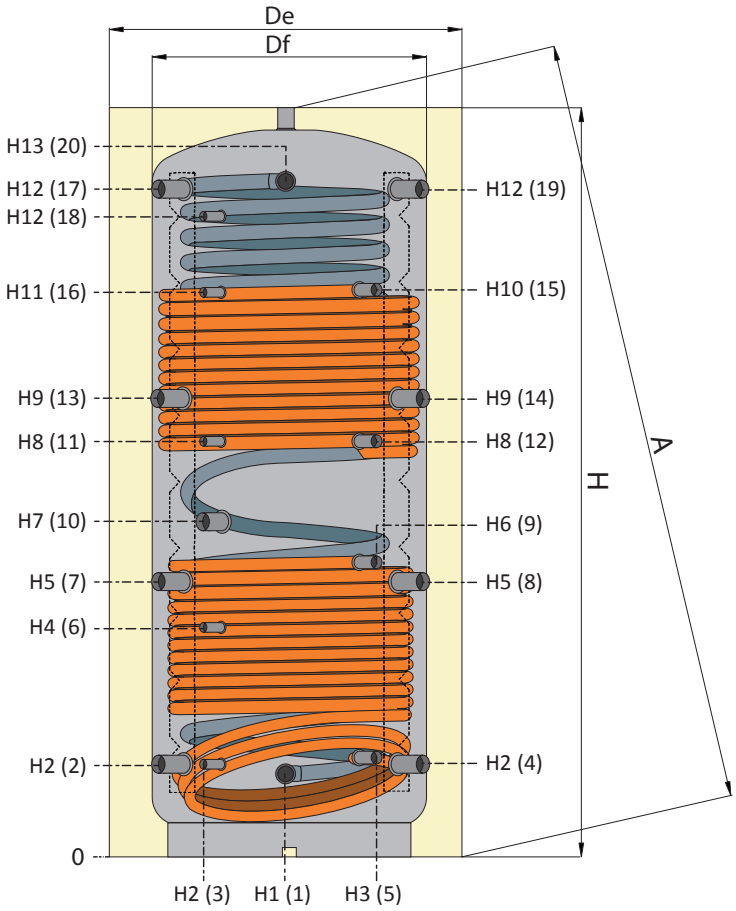
RYTNSH 600 - RYTNSH 800



	CONNECTIONS
1	Domestic water inlet - 1" Gas M
2-4	Return to heat pump
3	Probe - 1/2" Gas F
5	Lower fixed coil outlet - 1" Gas F
6	Probe - 1/2" Gas F
7-8	Inlet for technical water from heat pump* - 1"1/2 Gas F
9	Lower fixed coil intlet - 1" Gas F
10	Backup heating element - 1"1/2 Gas F
11	Probe - 1/2" Gas F
12	Upper fixed coil outlet - 1" Gas F
13-14	Return to Generator* - 1"1/2 Gas F
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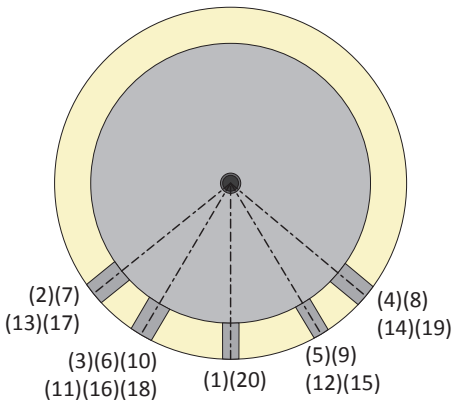

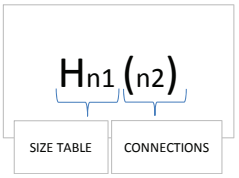

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