



TECNOLOGIA MADE IN ITALY

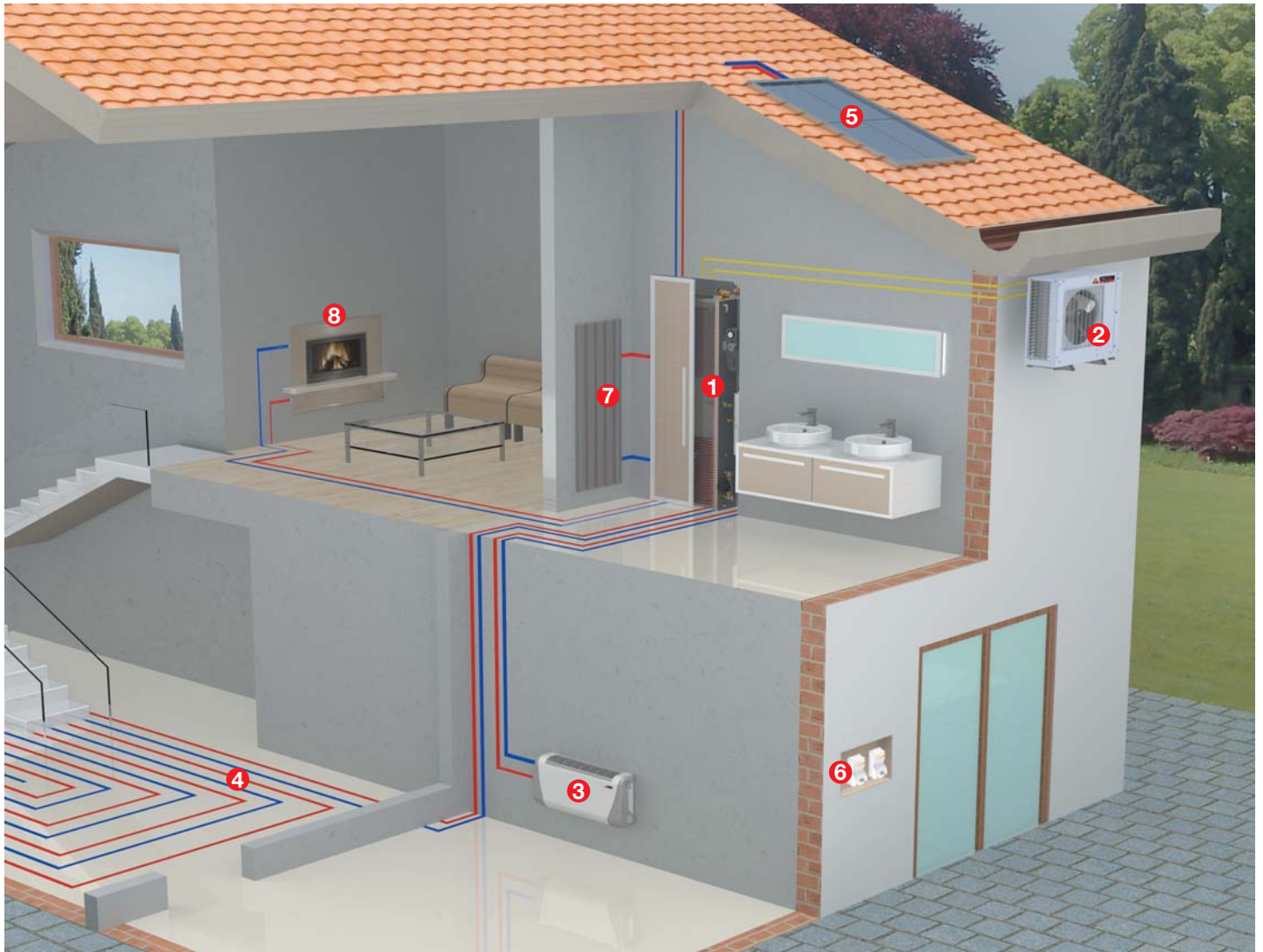


**In the new era
of energy saving
and the use of renewable
sources led to the patent**

HUB RADIATOR[®]

HUB RADIATOR GENERAL PRINCIPLES

Patented high-efficiency heat pump direct exchange refrigerant/water to produce heating, cooling and domestic hot water



Example of installation of a HUB RADIATOR in a residential building

- | | |
|--|---|
| 1 SOLAR HUB RADIATOR | 5 Solar thermal collector SELECTIVE 2.0 |
| 2 Outdoor moto-evaporating BOOSTER HR 8.3 | 6 Second electricity counter for heat pump at a reduced fee |
| 3 Fan coil FIJI 200 | 7 Radiator furniture with natural circulation |
| 4 Radiant floor system EASY COMFORT copper | 8 BIO FIREPLACE hydro wood/pellet |

HUB RADIATOR patented System

The current energy policies are changing the world of construction, placing as the ultimate goal NET ZERO ENERGY BUILDING, the building on zero energy.

To achieve these standards the only way is energy efficient heating systems, air conditioning and production of sanitary hot water.

In this perspective, AIR CONDITIONING ON AIR/WATER HEAT PUMP WITH DIRECT EXCHANGE HUB RADIATOR, patented by us, is the best solution for upgrading the energy efficiency of existing buildings, or the design of new ones.

The principle of operation of the heat pump RADIATOR HUB is very simple:

The internal refrigerant R410A is used as a means to transfer heat from one environment, using the outside air, to another environment (the house) that we heat in winter or cool in summer.

Using the free renewable energy from the ambient air, the heat pump HUB RADIATOR is able to achieve much higher performance than traditional systems.

Increased performance reduces the use of fossil energy and the emissions of CO₂ into the environment and especially the cost of system management is lower.

The inspiring model of this project is the ENERGY SAVING, obtained by using a thermodynamic refrigeration cycle on heat pump with direct exchange refrigerant / water.

More than 75% of the energy that the heat pump uses is free because it comes from the sun and is accumulated in the air.

Even the European Union has recognized the Heat Pump as one of the most efficient systems through the RES Directive of 23 April 2009 where the heat from outside air drawn through heat pump is recognized as RENEWABLE ENERGY.

HUB RADIATOR GENERAL PRINCIPLES

Patented high-efficiency heat pump direct exchange refrigerant/water to produce heating, cooling and domestic hot water

The basic elements of the patent HR are two:

1) The unit Moto-evaporating (Booster) electronically controlled built to produce hot and cold and domestic hot water (DHW). It ensures compact size, energy efficiency, lower noise and easy installation. This unit has been specially designed to work with high-conductivity copper exchangers immersed directly into the technique water tank. Moto-evaporating units can be supplied in 2 different versions:

- 1 Outdoor version
- 2 Built-in version inside

This system, in direct exchange, significantly improves yields and defrosting operations are more effective and much shorter than traditional systems.



2) The high performance hot water accumulators HR keeps completely separated technical water from sanitary water which always flows in a separate circuit.

Upon starting up the tank, working in an open circuit, is filled with technical water used in the "heating mode" directly and in the "hot water operation" in an indirect manner through the coil.

The technical water is used as the carrier fluid between the energy released (INPUT) and the use of heating and domestic hot water (OUTPUT).

The contents of the accumulator are of 125 l. in the standard or 300 l. in a single accumulation larger version.

By doing so, you combine the advantages of instantaneous water heaters with those of a heat storage tank.

Thanks to the particular construction of the copper circuit with direct exchange refrigerant/water, **connected directly to the Moto evaporating external unit, and of the DHW circuit with the method FIRST IN - FIRST OUT, you can ensure maximum efficiency of health and hygiene by eliminating the problem of legionella.**

The energy saving is guaranteed by 4 layers of insulation in cross linked polyethylene foam with closed cells of the total thickness of 40 mm that allows to minimize thermal losses.

The construction and positioning of the exchangers in the radiator patented accumulator is designed to obtain a high degree of stratification and high production of sanitary hot water.

For large withdrawals contemporaries recommends the installation of n. 2 radiators parallel accumulators, that offer the possibility of producing a greater amount of hot water and heating more.

The high efficiency HUB RADIATOR can be further increased due

to the configuration with the solar thermal system provided with SOLAR HR solutions to dial with or integrated solution with built-in rechargeable battery.

Another important characteristic is that the radiator water storage can be easily connected with fireplaces or biomass boilers.

The patent HUB RADIATOR today represents the most innovative and flexible solution in the heating and DHW production because it proposes, in a unique packet, all the components of the system by ensuring maximum efficiency.

This new system produces hot water in heat pump with a higher annual average COP of 4.1.

This open circuit system offers the possibility to extract energy from the air consuming less than 1/4 of the electrical energy needed to heat the water compared to a conventional electric water heater.

The HUB RADIATOR on heat pump uses R410A as refrigerant fluid which, by means of state changes and cycles of compression and expansion, picks up the heat contained in the outside air and transfers it directly to the storage tank.

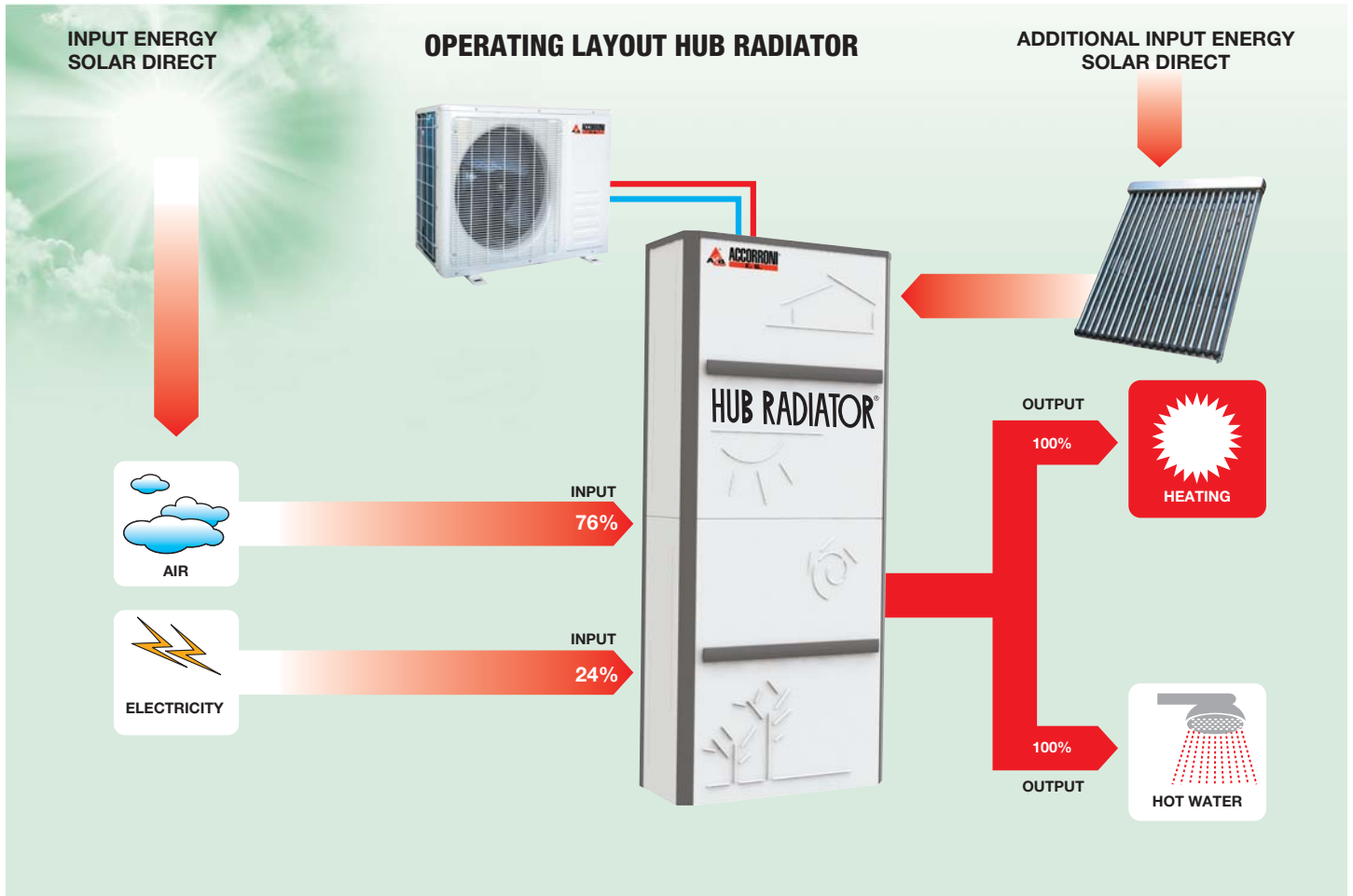
An electric resistance back-up may be required as an accessory.

A special additional internal heat exchanger also allows producing a hot air direct from the environment through a 3-speed fan.

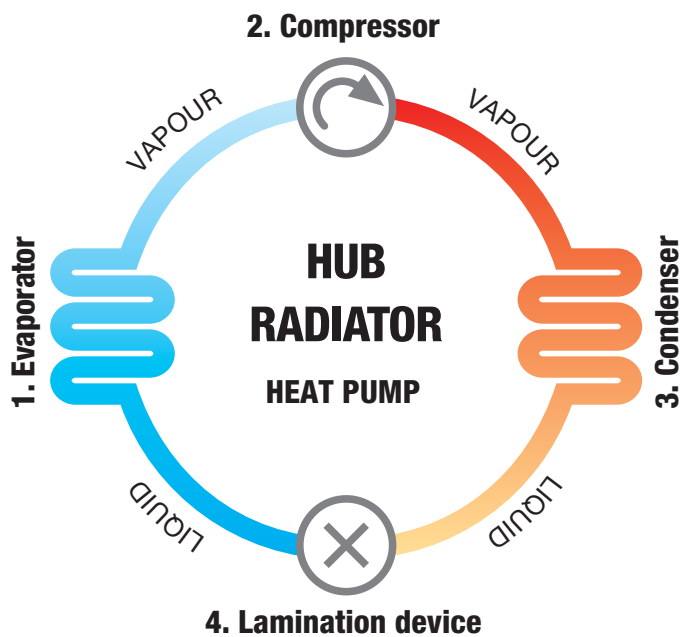


HUB RADIATOR GENERAL PRINCIPLES

Patented high-efficiency heat pump direct exchange refrigerant/water to produce heating, cooling and domestic hot water



HEAT PUMP: HOW IS IT MADE AND HOW IT WORKS

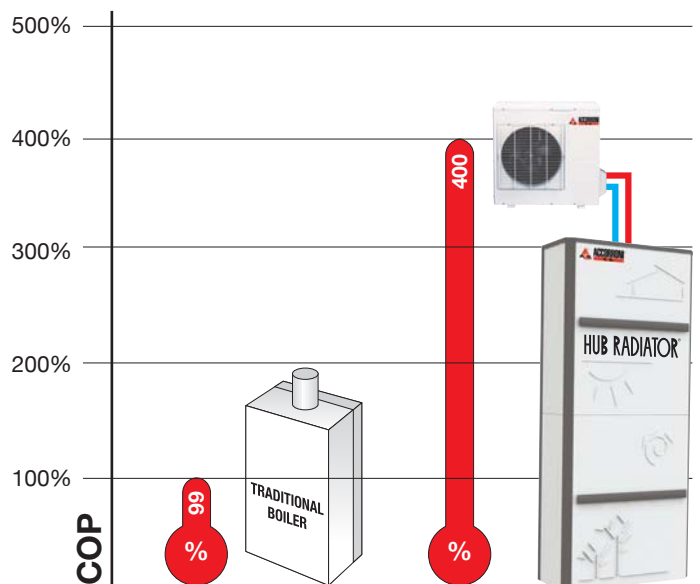


1. Evaporator - outdoor air supplies heat to the liquid refrigerant which evaporates
2. Compressor - it compresses the gas by increasing the temperature
3. Condenser - it yields heat to the water heating plant during the condensing phase
4. Lamination device - it lets liquid expand by reducing the temperature

COMPARISON OF ENERGY HUB RADIATOR AND CONVENTIONAL SYSTEM GAS POWERED

For every kWh of primary energy consumption of a heat pump makes available more than 4 kWh of useful thermal energy providing the user with a coefficient of performance (COP) of over 400%. On the other hand the performance of a good gas boiler can reach about 99%.

All this means that the boilers typically use more primary energy than they make available in the form of thermal energy and heat pumps of the latest generation quadruple the final result in the energy comparison of performance.



HUB RADIATOR

Patented high-efficiency heat pump direct exchange refrigerant/water to produce heating, cooling and domestic hot water for the home

This innovative renewable energy is spread over different platforms:

1) HUB RADIATOR TAGLIACOSTI DHW (p. 11)

for the production of hot water with the possibility of heating of an adjacent room through traditional radiator with natural circulation (without pump, max distance 1.5 meters).



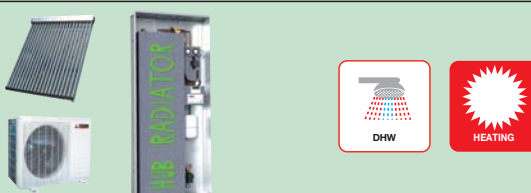
2) HUB FULL RADIATOR (p. 17)

for the simultaneous production of domestic hot water and heating via direct distribution of radiant floor heating, fan coils, or classic radiators in the apartments of small size.



3) HUB RADIATOR SOLAR (p. 25)

for the simultaneous production of domestic hot water and heating integration kit with solar panel, controller, expansion vessel and heat exchanger supplementary on board.



4) HUB SUPER RADIATOR (p. 32)

for the simultaneous production of domestic hot water and heating for medium and large utilities (camping, sports facilities, hotels, multi- property, condominiums centralized system, etc.).



5) HUB RADIATOR TOP (p. 43)

For the simultaneous production of heating, cooling and domestic hot water in the apartments of small or medium size.



6) MINI- HUB CHILLER RADIATOR (p. 48)

For the production of heating and air conditioning of any type of environment without the production of sanitary hot water.



7) HUB RADIATOR HYBRID (p. 54)

For the production of heating and hot water and to meet the low and high temperature with the aid of stoves DOMUS / KING PELLETS, DOMUS / KING WOOD, BIO FIREPLACE, condensing boilers CS 35 or biomass boilers.



8) HUB RADIATOR PRE-HEATING (p. 71)

For the production of hot water by heating, preheating heat pump water technique that returns from the plant before the inside of the existing boiler which is operated only when necessary.



9) HUB RADIATOR ELEGANCE (p. 76)

Born more than that to provide heating, cooling and hot water also to create a new scenario aesthetic in home, by making available to architects new technological and aesthetic expressions.



HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home



**EXAMPLE OF TRADITIONAL WATER HEATERS
WARM WATER ONLY**

The HUB RADIATOR TAGLIACOSTI DHW, a hot water heater works as a classic and is capable of producing hot water in quantities with very little power consumption as it works by absorbing the heat free and environmentally friendly renewable sources.

This system uses a Moto- evaporating external (Booster, connected to a heat exchanger/condenser, to heat the water inside the apartment accumulator technique of the radiator (125 or 300 l.).

The Booster can be selected either in the external version in the model for indoor recessed.

The refrigerant contained in the system transfers heat directly to the water through a heat exchanger of the accumulation technique in copper.

Another main feature of HUB RADIATOR TAGLIACOSTI DHW, is the ability to directly heat of the room in which it is installed in static or dynamic mode.

In a static mode - direct connection between the accumulation of technical water and the classics radiators that will work with natural



**EXAMPLE OF HUB RADIATOR TAGLIACOSTI
DHW WARM WATER AND HEATING**

circulation (max 1.5 m) in adjacent rooms;

in a dynamic mode - with the accumulation of technical water equipped with an air duct and centrifugal fan on more speeds to produce hot air at desired temperature (see models C.A.).

The fan speeds allows you to select appropriate temperature and air flow rate for different levels of well-being.

The HUB RADIATOR TAGLIACOSTI DHW can be installed in any room of the apartment also built into the wall with a maximum thickness of 24 cm.

In the figure above, it may be installed in a bathroom, where producer becomes instantaneous hot water and at the same time, radiator or fan coil for rapid heating of the room with the further advantage of reducing the ambient humidity.

This system can also be combined with solar thermal (available as an accessory), which increases even more energy's efficiency.

You can install solar panels up to about 4 m2 together with different types of external Booster powers ranging from of 3.0 to 15.6 kW.

Example of installation of a water heater HUB RADIATOR TAGLIACOSTI DHW for the production of hot water and dynamic heating through convection fan



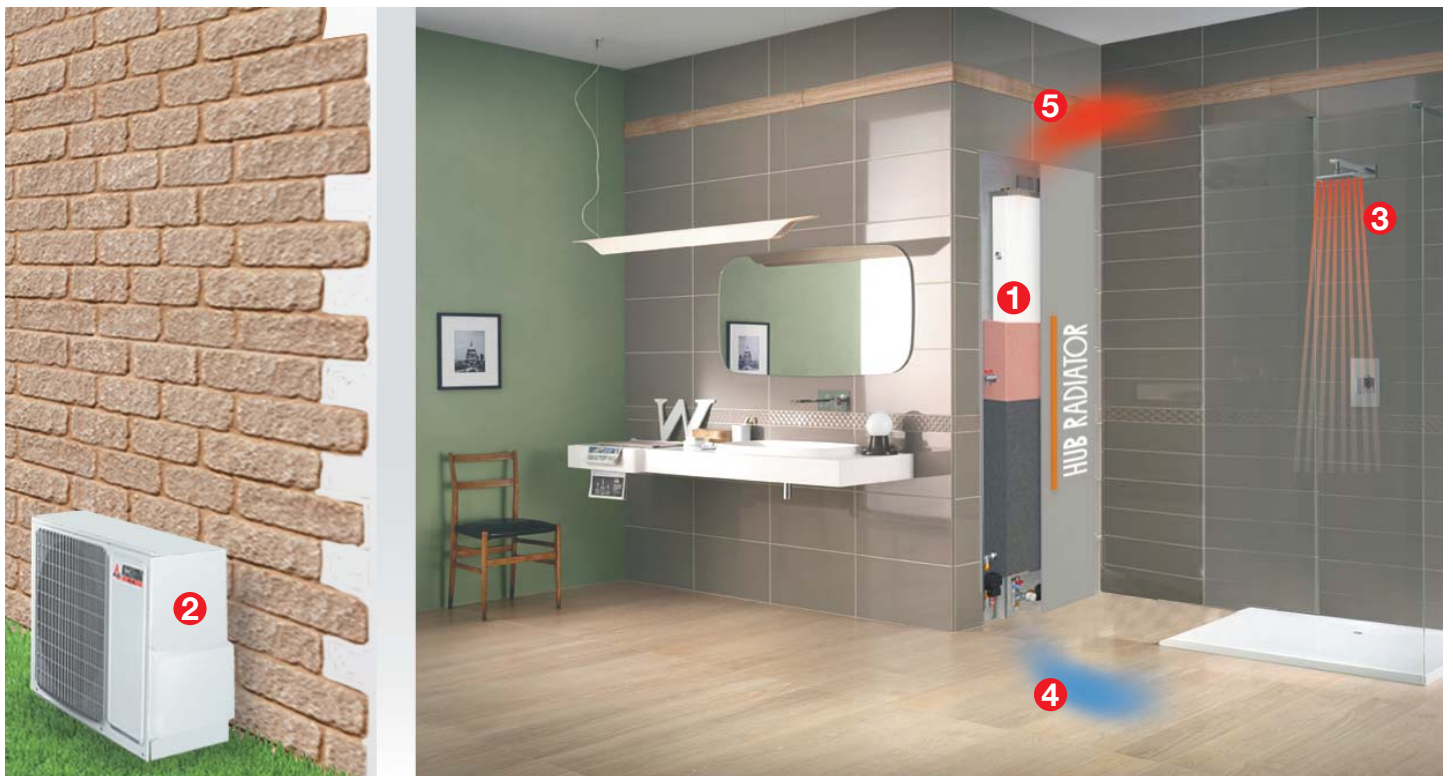
HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home

EXAMPLE OF TRADITIONAL WATER HEATERS WARM WATER ONLY



EXAMPLE OF HUB RADIATOR TAGLIACOSTI DHW WARM WATER AND ENVIRONMENTS



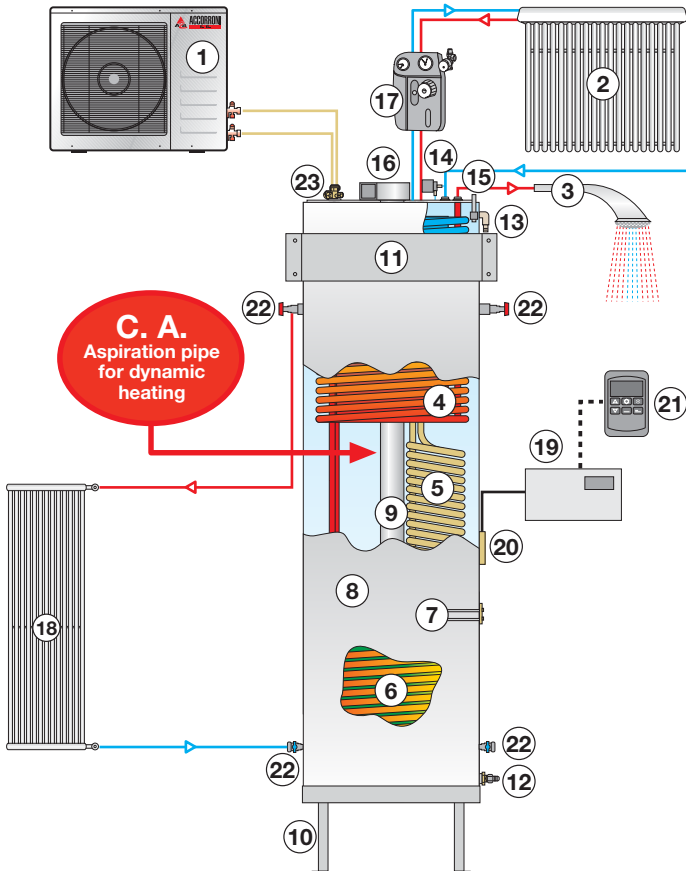
- 1 Radiator water storage
- 2 Moto-evaporating external (Booster)
- 3 Supply hot water
- 4 Aspiration ambient air

- 5 Warm air supply through the convective 3 speeds fan that allows to heat in dynamic mode
- 6 Classic radiator natural circulation

HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home

Wiring diagram HUB RADIATOR TAGLIACOSTI DHW



Technical drawing:

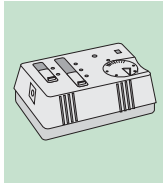
- 1 Unit Moto- evaporating external (Booster) in heat pump
- 2 Solar thermal collector (as an accessory)
- 3 Flow DHW
- 4 Exchanger quickly DHW
- 5 Solar heat exchanger (as accessory)
- 6 Exchanger refrigerant / water unit Moto- evaporating external
- 7 Additional electric resistance 1.5 kW
- 8 Radiator water storage technique in an open vessel
- 9 Duct of hot air (for models CA)
- 10 Support Base H 25 cm (as accessory)
- 11 Anti-vibrant bracket
- 12 Drain tap
- 13 " Overflow " exhaust
- 14 Solenoid filling
- 15 Level technical water
- 16 Fan convective (for models CA)
- 17 Solar station lifting UNIT 2 (as accessory)
- 18 Example of radiator with natural circulation (max 1,5 meters)
- 19 Electric control panel
- 20 Water temperature sensor
- 21 Remote control (as accessory)
- 22 Taps 3/4 "
- 23 Taps for R410A connecting outdoor unit

MODEL		VOLUME U.I. I	THERMAL POWER kW	ABSORBMENT MAX W	€
HUB RADIATOR TAGLIACOSTI DHW 3.0/125	cod. 75112528	125	3,0	915	2.630,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/125 C.A.	cod. 75212528	125	3,0	915	3.110,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/300	cod. 75130028	300	3,0	915	3.530,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/300 C.A.	cod. 75230028	300	3,0	915	4.020,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/125 O.U. built-in	cod. 75112530	125	3,0	953	6.260,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/125 C.A. O.U. built-in	cod. 75212530	125	3,0	953	6.740,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/300 U.E. built-in	cod. 75130030	300	3,0	953	7.160,00
HUB RADIATOR TAGLIACOSTI DHW 3.0/300 C.A. O.U. built-in	cod. 75230030	300	3,0	953	7.710,00
HUB RADIATOR TAGLIACOSTI DHW 5.2/125	cod. 75112545	125	5,1	1580	4.680,00
HUB RADIATOR TAGLIACOSTI DHW 5.2/125 C.A.	cod. 75212545	125	5,1	1580	5.090,00
HUB RADIATOR TAGLIACOSTI DHW 7.8/125	cod. 75112578	125	7,8	2510	4.884,00
HUB RADIATOR TAGLIACOSTI DHW 7.8/125 C.A.	cod. 75212578	125	7,8	2510	5.366,00
HUB RADIATOR TAGLIACOSTI DHW 7.8/300	cod. 75130078	300	7,8	2510	5.788,00
HUB RADIATOR TAGLIACOSTI DHW 7.8/300 C.A.	cod. 75230078	300	7,8	2510	6.336,00
HUB RADIATOR TAGLIACOSTI DHW 8.3/125	cod. 75112583	125	8,3	2492	7.102,00
HUB RADIATOR TAGLIACOSTI DHW 8.3/125 C.A.	cod. 75212583	125	8,3	2492	7.590,00
HUB RADIATOR TAGLIACOSTI DHW 8.3/300	cod. 75130083	300	8,3	2492	8.010,00
HUB RADIATOR TAGLIACOSTI DHW 8.3/300 C.A.	cod. 75230083	300	8,3	2492	8.558,00
HUB RADIATOR TAGLIACOSTI DHW 3.0+3.0/300 O.U. built-in	cod. 75330030	300	6,0	1906	12.124,00
HUB RADIATOR TAGLIACOSTI DHW 7.8+7.8/300	cod. 75330078	300	15,6	5020	8.264,00

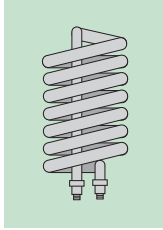
HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home

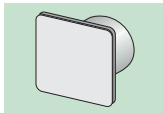
Accessories HUB RADIATOR TAGLIACOSTI DHW



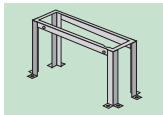
wall thermostat
for on-off control
and for three speeds
convection fan control
cod. 16205210
€ 56,00



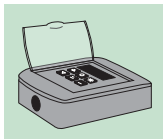
**supplementary solar
heat exchanger**
mod. 0,75 m²
cod. 75100002
€ 360,00
mod. 1,50 m²
cod. 75101002
€ 620,00



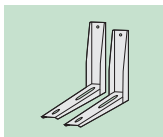
In/outlet grille
cod. 75100006
€ 100,00



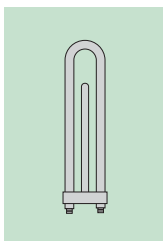
base support
H 25 cm
cod. 75100004
€ 100,00



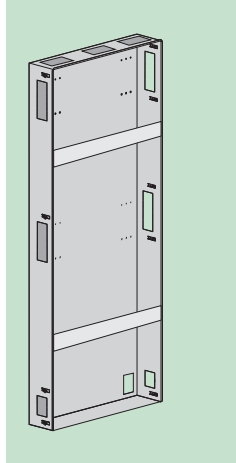
**control panel
and remote control**
on wall or built-in
cod. 75100005
€ 220,00



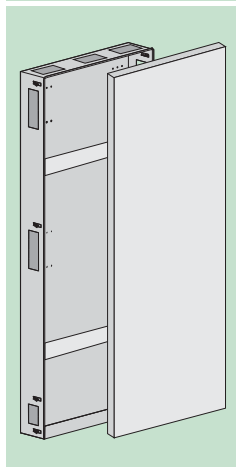
anchoring bracket
for external units
mod. 3.0 - 7.8
cod. 37081060
€ 42,00



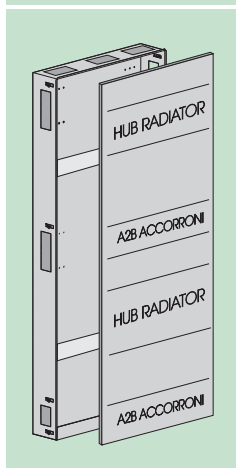
**supplementary
electrical resistance
da 3,0 kW**
cod. 75150003
€ 58,00



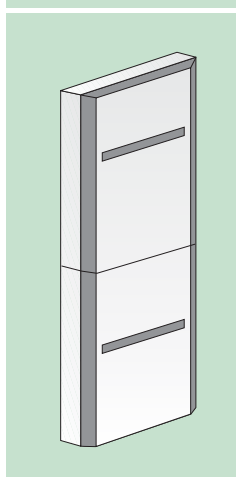
**Recessed template
mod. 125 litres**
galvanized
H 242 - L 85 - P 25
cod. 75000125
€ 320,00



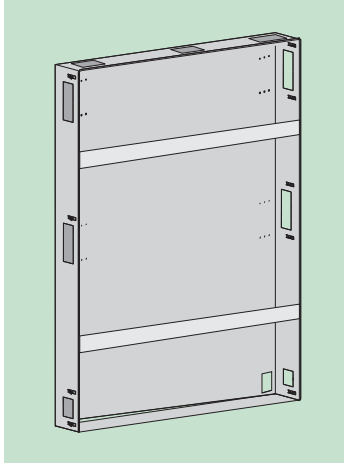
**Recessed template
mod. 125 litres**
galvanized
H 242 - L 85 - P 25
completed with
panel
self-supporting
recessed wall fitting
MDF powder painted
cod. 75101125
€ 460,00



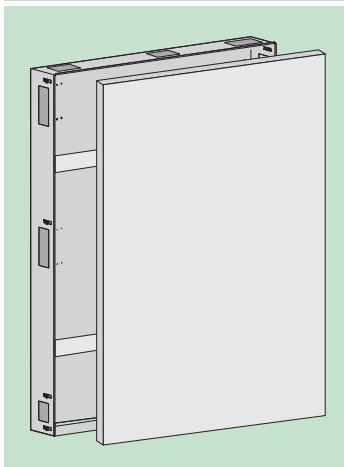
**Recessed template
mod. 125 litres**
galvanized
H 242 - L 85 - P 25
completed with
closure panel
galvanized
cod. 75102125
€ 420,00



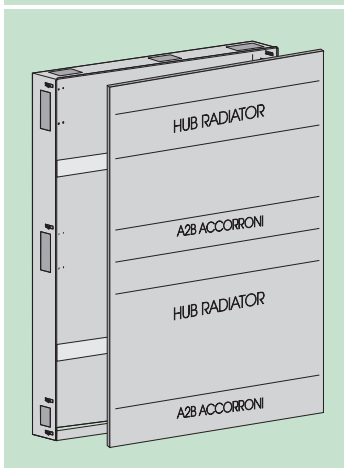
**AIR BOX wardrobe
external**
mod. 125 litres
sheet repainted
white RAL 7030
H 222 - L 85 - P 28,5
cod. 75060200
€ 570,00



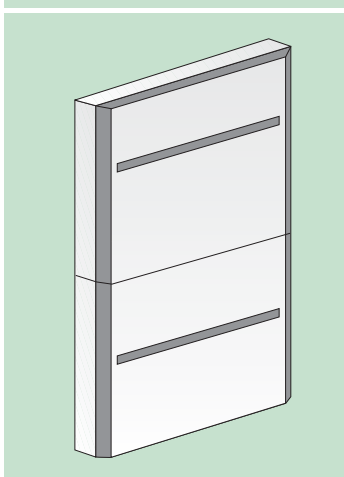
**Recessed template
mod. 300 litres**
galvanized
H 242 - L 150 - P 25
cod. 75000300
€ 450,00



**Recessed template
mod. 300 litres**
galvanized
H 242 - L 150 - P 25
completed with
panel
self-supporting
recessed wall fitting
MDF powder painted
cod. 75101300
€ 620,00



**Recessed template
mod. 300 litres**
galvanized
H 242 - L 150 - P 25
completed with
closure panel
galvanized
cod. 75102300
€ 590,00

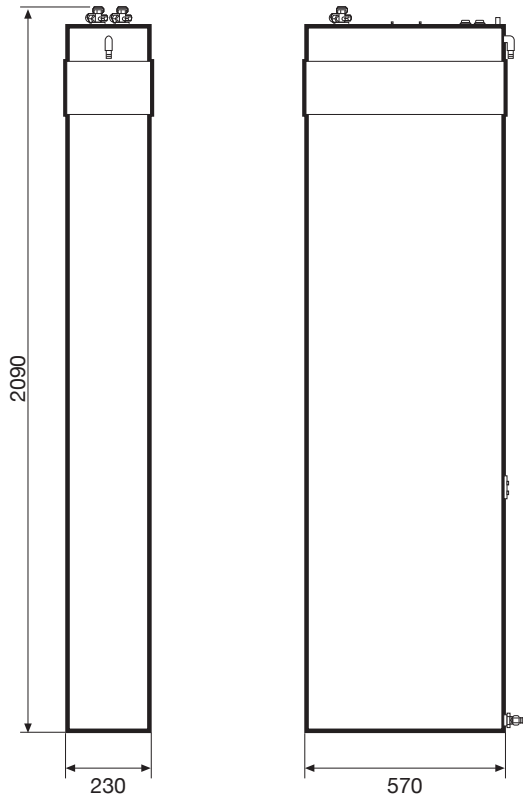


**AIR BOX wardrobe
external**
mod. 125 litres
sheet repainted
white RAL 7030
H 222 - L 85 - P 28,5
cod. 75060201
€ 1.040,00

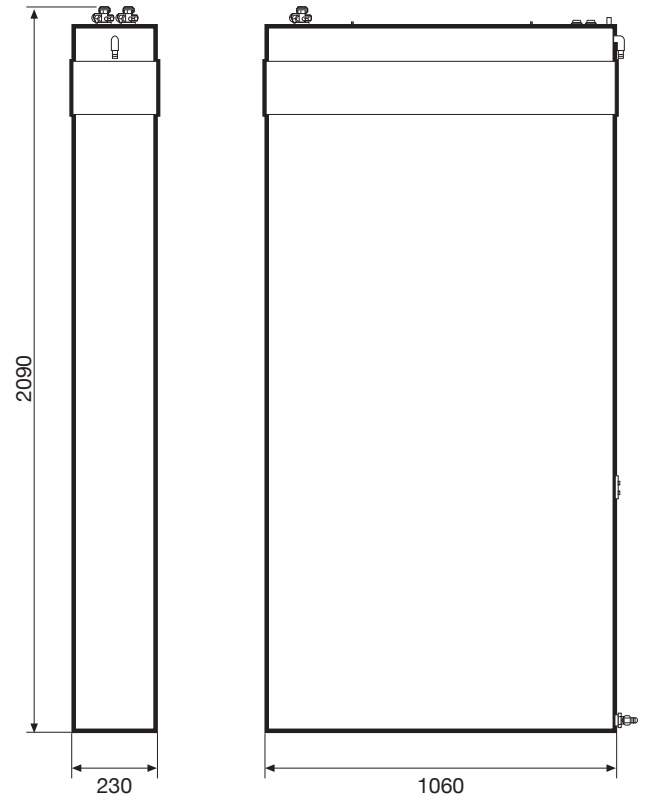
HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home

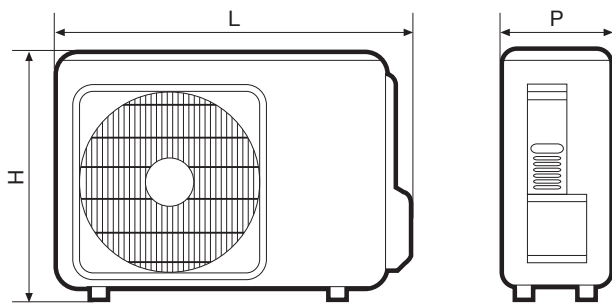
Dimensions radiator tank 125 liters



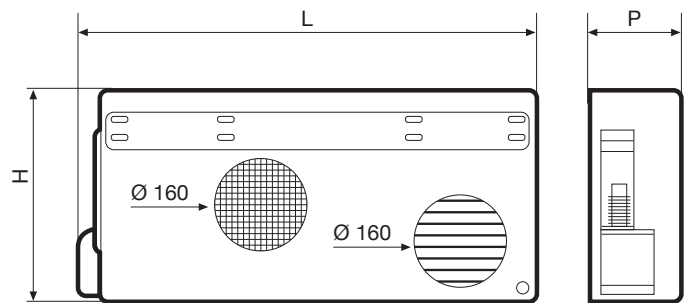
Dimensions radiator tank 300 liters



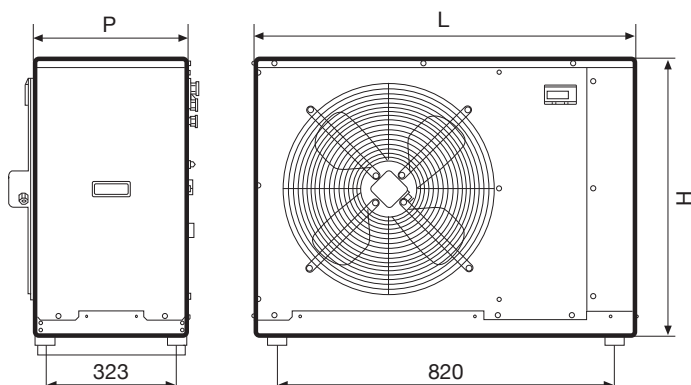
Dimensions Booster external HR 3.0 - 7.8



Dimensions Booster built-in HR 3.0



Dimensions Booster external HR 5.2 - 8.3



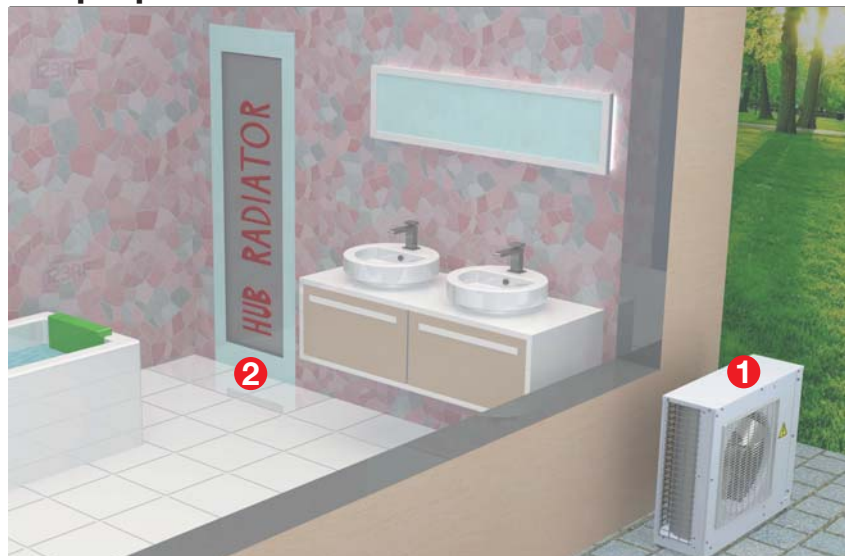
Booster	L	H	P	kg
HR 3.0 external	700	552	256	33
HR 3.0 built-in	900	395	225	35
HR 5.2 external	925	670	256	50
HR 7.8 external	902	650	307	55
HR 8.3 external	925	872	368	76

values given in mm

HUB RADIATOR TAGLIACOSTI DHW

Patented high-efficiency heat pump direct exchange refrigerant/water to produce hot water and static or dynamic heating for home

Heat pump water heaters HUB RADIATOR TAGLIACOSTI DHW



- 1 Moto- evaporating external (Booster) HR 3.0
- 2 Radiator water storage tank 125 liters (built into the wall 25 cm thick)

Technical data table HUB RADIATOR TAGLIACOSTI DHW

DESCRIPTION	U.M.	HR 3.0	HR 5.2	HR 7.8	HR 8.3	HR 3.0 INC.
Thermal power air 7 ° C / 30-35 ° C water *	kW	2,97	5,12	7,75	8,26	2,98
COP		3,76	3,24	3,59	3,54	3,75
Thermal power air 7 ° C / 40-45 ° C water *	kW	2,79	4,87	7,21	7,60	2,79
COP		3,05	3,08	2,87	3,05	3,04
Maximum water temperature	°C	58				
Absorption in heating 30-35 ° C	W	792	1460	2160	2330	798
Absorption in heating 40-45 ° C	W	915	1580	2510	2492	953
fans	n.	1				
Air temperature						
max	°C	45				
min	°C	-7				
Type of compressor		Rotary				
refrigerant		R410A				
power Supply		230V/1/50Hz				
Absorbed current in heating	A	4,19	7,20	11,49	11,41	4,20
Degree of protection		IP 24				
Connecting the water plant		3/4"				
Hydraulic connection for filling		1/2"				
Connect hot water		1/2"				
Connecting refrigerant						
liquid	"	1/4	1/4	3/8	3/8	1/4
gas	"	3/8	1/2	5/8	5/8	1/2
Maximum length of refrigerant pipes	m	10		15	15	10
sound pressure	dB(A)	50	40	58	57	52
Water tank content HR 125	l	125				
Water tank content HR 300	l	300				
Pressure drop DHW circuit with flow rate 10 l / m	kPa	38				
Quantity of water in single drawdown at 40 ° C - HR 125 l	l	69	71	73		69
Quantity of water in single drawdown at 40 ° C - HR 300 l	l	130		132		130
Recovery time from 10 to 58 ° C - HR 125 l	h	2,62	1,78	1,02	0,96	2,62
Recovery time from 10 to 58 ° C - HR 300 l	h	5,21	3,51	2,06	1,98	5,18
Recovery time from 46 to 58 ° C - HR 125 l	h	0,90	0,61	0,34	0,31	0,88
Recovery time from 46 to 58 ° C - HR 300 l	h	1,81	1,23	0,72	0,65	1,81
Shipping Weight unit 125	kg	87				
Shipping Weight unit 300	kg	122				
Operating weight unit 125	kg	202				
Operating weight unit 300	kg	422				

Data referred to the following operating conditions: * Winter heating: external air temperature 7 ° C d.b., 6 ° C h.b.