

# AQUA F

DSDH-P AQ 1 S 100 RANGE

Packaged monobloc heat pump for domestic hot water production



SIZE	100
Heating capacity kW	0,98



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# Features and benefits

## Description of the system

AQUA F is the specialised heat pump system for the production of domestic hot water.

With AQUA F, domestic hot water is produced in a much more cost-effective manner. AQUA F heat pump technology transforms renewable energy in the air into heat that can be used to raise the temperature of the water contained in the storage tank.

All this takes place with minimal use of electricity: AQUA F is four times more efficient than a conventional electric boiler: in economic terms, this means a 75 per cent reduction in electricity costs for the same amount of heat supplied.

The unit is designed and built to be installed indoors, with only the power supply and water pipes needing to be connected.

## TOP efficiency

AQUA F attains the highest levels of efficiency on the market today. Thanks to the careful design of the refrigerant circuit, it achieves class A+ according to the ErP directive.

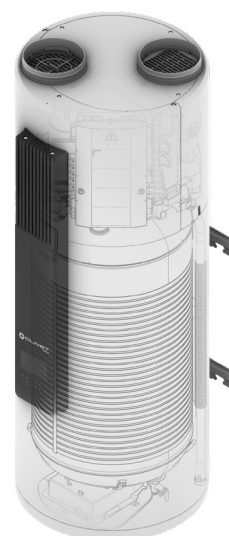
The high COP values allow great savings in terms of energy and operating costs, in addition to an increase in the use of renewable energy.



## Enamelled steel tank with coil-wound heat exchanger

The innovative active electronic anode and the enamelled steel tank guarantee a high level of protection against corrosion. The additional magnesium anode protects the product in the event of a power failure.

The aluminium heat exchanger (condenser) uses microchannel technology to maximise the contact surface area for improved heat exchange. This ensures maximum safety by preventing any contamination between the refrigerant and domestic water.



# Features and benefits

## Wide operating range

The state-of-the-art technology, both in terms of components and control logic, allows AQUA F to be used at extreme temperatures. AQUA F can work in an air temperature range of  $-20^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  in combined operation (heat pump + electric heater) and even  $-7^{\circ}\text{C}$  to  $+43^{\circ}\text{C}$  in heat pump mode.

Domestic water temperatures of over  $65^{\circ}\text{C}$  can also be reached using the heat pump alone.



## Advanced control options

AQUA F has a Modbus connection port for integration with third-party home automation systems.

The unit is also compatible with CONTROL4 NRG, the Clivet supervision system that optimises operation of residential systems.

AQUA F has an input for integration with photovoltaic panels.

The AQUA F unit also comes as standard with a Wi-Fi function: this means it can be controlled remotely, using the App on a smartphone to view and set the main parameters.



## User interface

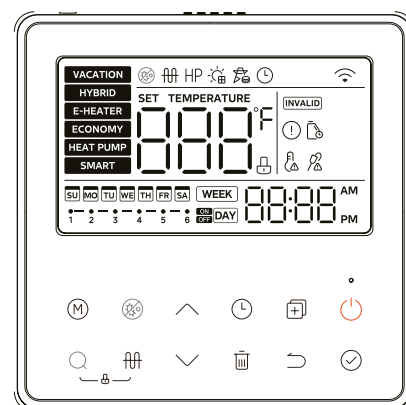
The control panel mounted on the unit can be used to control the AQUA F. The control panel is designed to be extremely user-friendly, with 12 central buttons for accessing all the parameters with ease.

The control unit allows you to view:

- the instantaneous water temperature;
- the operating status of the unit;
- the operating status of the compressor and electric heater;
- the presence of any faults.

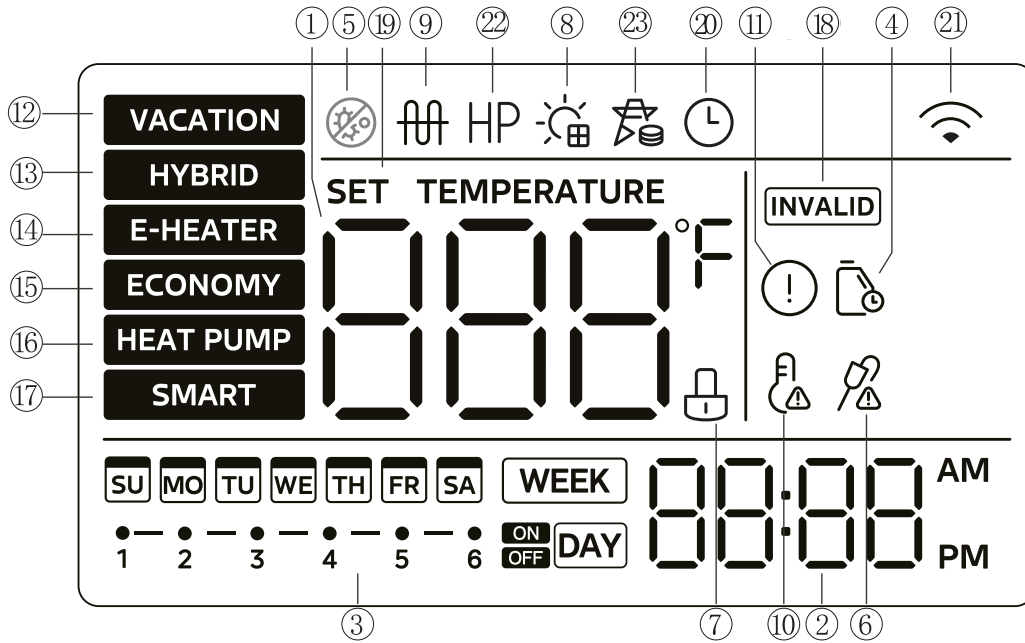
and to set:

- the operation mode
- the SET temperature of the storage tank;
- scheduling of up to six switching on or off times for the unit per day;
- manual activation of the electric heater;
- manual activation of the anti-legionella disinfection cycle;
- switch-on and switch-off of the unit.






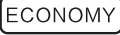






Buttons	Name	Function
	Mode	To select the operating mode
		Manual activation of anti-legionella mode
	Down - Up	To control the domestic hot water temperature and parameter settings
	scheduling	To select the daily or weekly scheduling
	Copy	Installer use - access to parameters
	ON/OFF	Switches the unit on/off
	OK	To unlock the screen and buttons To confirm entered values
	BACK	To go back to the previous menu
	Delete	To cancel the settings
	Button lock	Long press to unlock/lock the keypad

# Features and benefits



1		On: screen unlocked It displays: <ul style="list-style-type: none"> <li>the normal water temperature</li> <li>the remaining days in vacation mode</li> <li>the temperature set during setup</li> <li>the unit's setting/operation parameters</li> <li>the error/protection code in diagnostics mode</li> </ul>
2		Date and time SET TIME: on whenever the time is set
3		scheduling Icon lit: programmed scheduling
4		Source Flashes to remind the user to maintain the water tank
5		Disinfection (anti-legionella)
6		Electronic anode alarm (fault)
7		Keypad lock
8		EVU: the icon lights up when the effective photovoltaic signal is detected, the unit sets the maximum water temperature to produce domestic hot water faster
9		TBH backup

10		High temperature alarm Water temperature above 50°C
11		Unit in error/protection
12		VACATION mode. The water is kept at 15 °C to protect the tank and pipes against freezing and minimise the number of times AQUA F is switched on to maintain the temperature.
13		Default HYBRID mode function. This function allows the heat pump and the electric heater to be used simultaneously: activation of the heater depends on ambient conditions and whether the heat pump alone has difficulty bringing the water temperature up to the setpoint
14		E-HEATER mode Heat pump and electric heater operate simultaneously
15		ECONOMY mode Domestic water heating operation only. This function involves activating the heat pump and the electric heater at different times: in the first phase, the heat pump will bring the water in the tank up to the highest possible temperature, while in the second phase, the electric heater will allow the setpoint to be reached
16		HEAT PUMP mode Heat pump operation only
17		SMART mode The function records the domestic hot water usage habits of the last 7 days and switches on early according to the hours of maximum domestic hot water use. All other hours in which the domestic hot water is not used are in standby mode (it is recommended to activate this function with at least 7 days of regular use so that the product can correctly predict when domestic hot water is used)
18	INVALID	When an invalid button is pressed, the icon flashes for 3 seconds
19	SET TEMP	Water temperature setting
20		Time setting
21		On: WiFi connected Flashing: WiFi setting up
22	HP	HEAT PUMP Operation in domestic hot water production

# Features and benefits

## AQUA F

### Fan

Centrifugal fan with plastic profiled blades, housed in aerodynamically shaped nozzles to increase efficiency and minimise noise level.

### Evaporator

Large surface area finned coil evaporator that improves heat exchange and reduces possible defrosting for the benefit of seasonal efficiency.

### Anode

Electronic anode for maximum protection and durability over time with minimum maintenance.

The unit is also equipped with a magnesium anode that protects against corrosion even in the event of a power failure or if the electronic anode breaks.

### Condenser

Aluminium microchannel condenser wound around the storage tank which prevents the contamination of water due to leaking refrigerant.

The condenser is designed to maximise the contact area with the tank.

### Compressor

ON/OFF rotary compressor with R-290 on vibration dampers to minimise vibration and noise transmission.

### Safety thermostats

Manual reset safety thermostat (TCO: temperature cut off)

### Modbus protocol

Allows serial connection to supervision systems, using Modbus as a communication protocol. It allows access to the entire list of operation variables, controls and alarms. The unit is compatible with CONTROL4 NRG.

### TBH backup

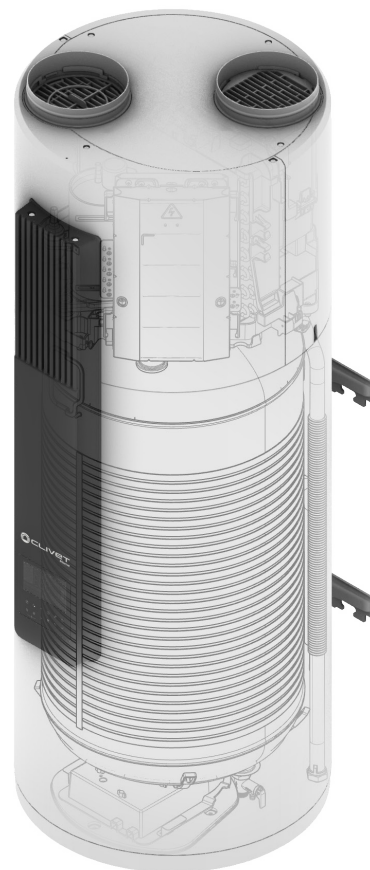
1.5 kW electric heater that can be used as a back-up heater when the temperature drops below  $-7^{\circ}\text{C}$  and/or as an additional one in the case of high setpoint temperatures and especially cold air temperatures.

### Tank

Steel storage tank for domestic water of 100 litres internally vitrified to completely isolate the water from the metal in order to avoid corrosion problems.

### Insulation

Externally insulated with polyurethane (42 mm thick).



## Appearance



**SIZE 100**

# General technical data

Size	100L		
<b>Capacity and efficiency</b>			
Tout 15/12 °C ( DB/WB), Tw,in 15 °C Tw,out 45°C	Heating capacity	kW	0,98
	Total power input	kW	0,26
	COP		3,80
Tout 43/26 °C ( DB/WB), Tw,in 15 °C Tw,out 65°C	Heating capacity	kW	1,444
	Total power input	kW	0,396
	COP		3,65
Electric heater		kW	1,5
Standard power supply		V	1-220 240-50
DHW reheating time	(1)	h/min	3hrs29.5mins
DHW maximum temperature		°C	65 (70)
Sound pressure level (1m)	(5)	dB(A)	/
Sound power level ( $L_{WA}$ )i		dB(A)	54
<b>ErP</b>			
Clima Average (2)	Generator energy class		A+
	Domestic hot water profile		M
	$n_{wh}$	%	111
	AEC annual consumption	kWh	463
	Daily consumption	kWh	2,435
	COP EN 16147		2,61
Climate Warmer (3)	Domestic hot water profile		M
	$n_{wh}$	%	114
	AEC annual consumption	kWh	451
	Daily consumption	kWh	2,133
		COP EN 16147	
Clima Colder (4)	Domestic hot water profile		M
	$n_{wh}$	%	92
	AEC annual consumption	kWh	558
	Daily consumption	kWh	2,631
		COP EN 16147	
<b>Storage tank</b>			
Domestic hot water storage volume		l	98
Storage tank material			Enamel
Insulating material			Cyclopentane
Heat loss		W/K	18,2
Maximum operating pressure		bar	8
Insulation thickness		mm	42
<b>Refrigerant circuit</b>			
Type of compressor			Rotary
Refrigerant gas			R290
Quantity of refrigerant		kg	0,15
GWP		t	3
Tons of equivalent CO <sub>2</sub> *		t <sub>CO2</sub>	0,00045
Oil quantity		ml	140
Expansion valve type			Electric expansion valve

<b>Fan</b>		
Type of fan		Centrifugal Fan
Airflow	m <sup>3</sup> /h	200
Available pressure	Pa	0-60
<b>Integration</b>		
Integration coil surface	m <sup>2</sup>	N/A
Integration coil material		-
Maximum operating pressure	bar	-

1. Inlet water temperature 15°C, storage set 45°C, source air 15°C D.B/12°C W.B.
  2. The product conforms with the European ErP Directives, which include Commission Delegated Regulation (EU) no. 812/2013, Commission Delegated Regulation no. 814/2013, Clima Average, Heat Pump Water Heater
  3. The product conforms with the European ErP Directives, which include Commission Delegated Regulation (EU) no. 812/2013, Commission Delegated Regulation no. 814/2013, Clima Warmer, Heat Pump Water Heater
  4. The product conforms with the European ErP Directives, which include Commission Delegated Regulation (EU) no. 812/2013, Commission Delegated Regulation no. 814/2013, Clima Colder, Heat Pump Water Heater
  5. Data for fully ducted unit.
- \*Contains fluorinated greenhouse gases

# General technical data

## Electrical data

Size		100L
Power supply	(1) V	220-240/1/50
F.L.A. - Absorbed current at maximum admissible conditions	A	9
F.L.I. - Full load power input (at max. admissible condition)	kW	1,95
M.I.C. - Maximum inrush current	A	17

(1) Power supply 220-240/1/50

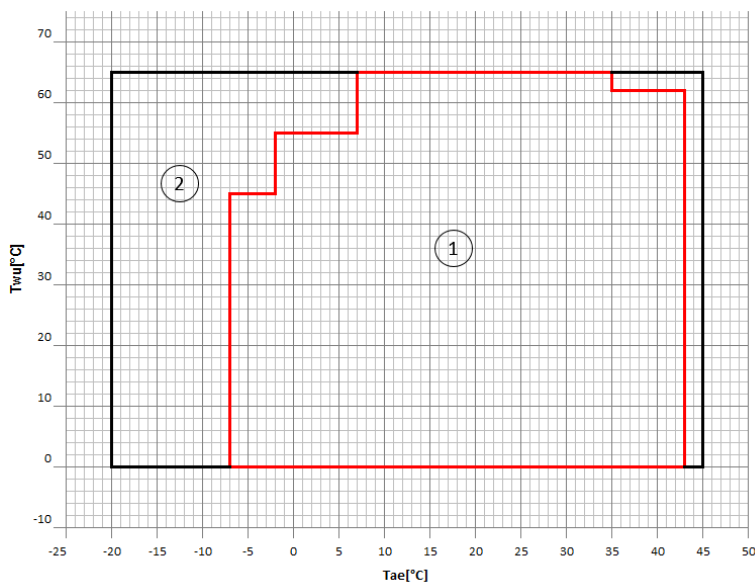
For non standard voltage please contact Clivet technical office

The units comply with the requirements of European standards CEI EN 60204 and CEI EN 60335

⚠ Caution: when defining the size, make sure all absorption values are compliant with current power supply contracts in the country of installation

## Operating limits

AQUA F 100



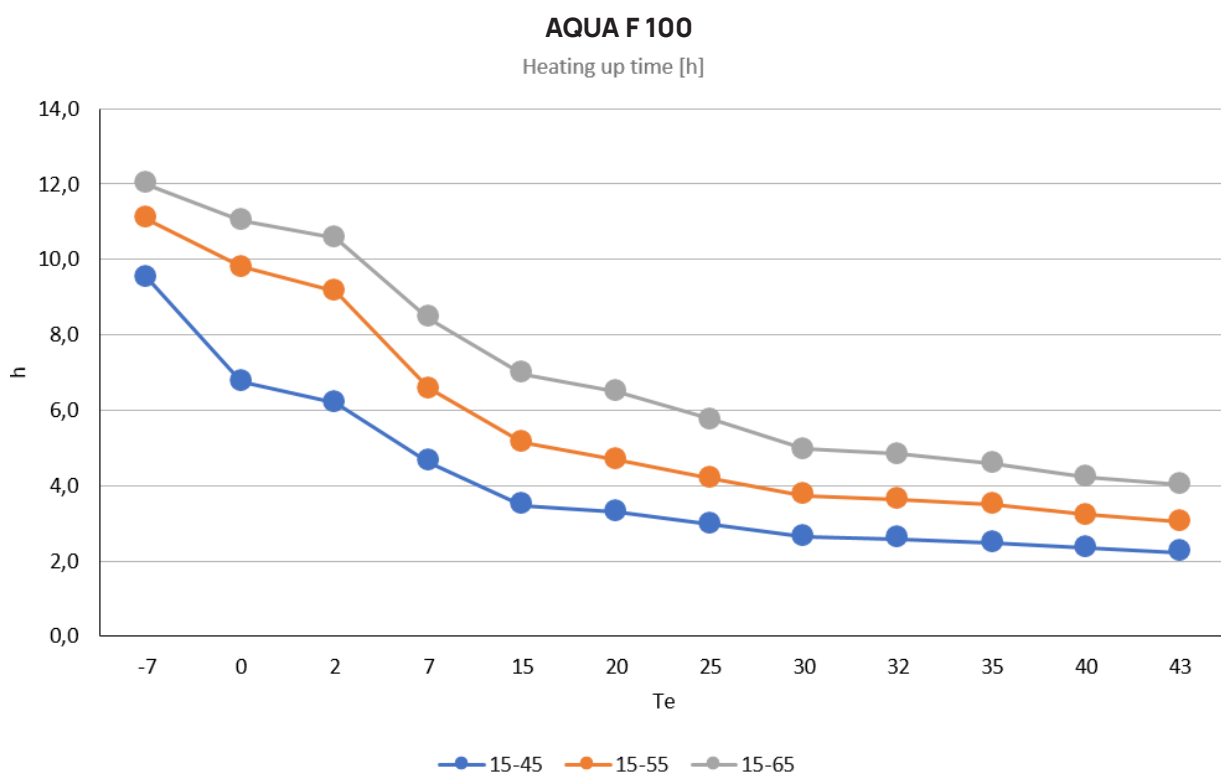
Twu [°C] = storage tank water temperature  
Tae [°C] = exchanger inlet air temperature

1. Utilisation range of heat pump
2. Utilisation range of electric heater

## Performance curves

The following curves are based on the results of dynamic performance tests. The inlet water temperature, which coincides with the initial instant temperature  $t_0$ , is 15 °C. The different curves represent the time needed to heat the water with different temperature settings (45°C - 55°C - 65°C).

## Heat UP



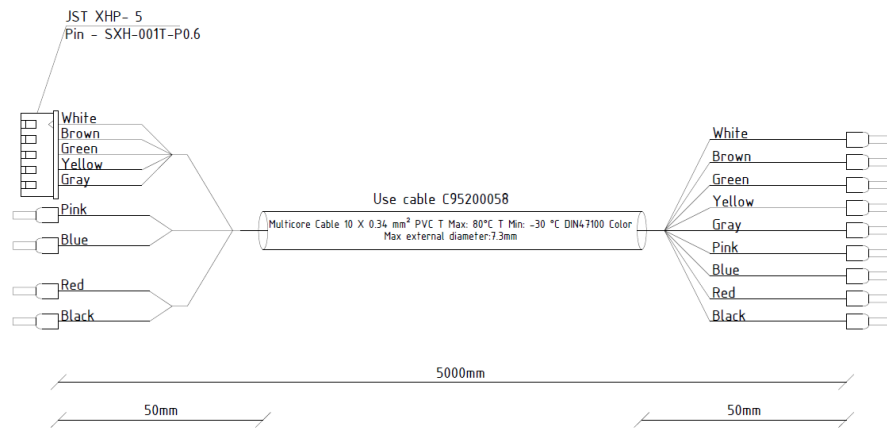
# Accessories separately supplied

## CMPX

### Optional connection cables

The accessory includes cables to facilitate connection to the circuit board for use of the following functions:

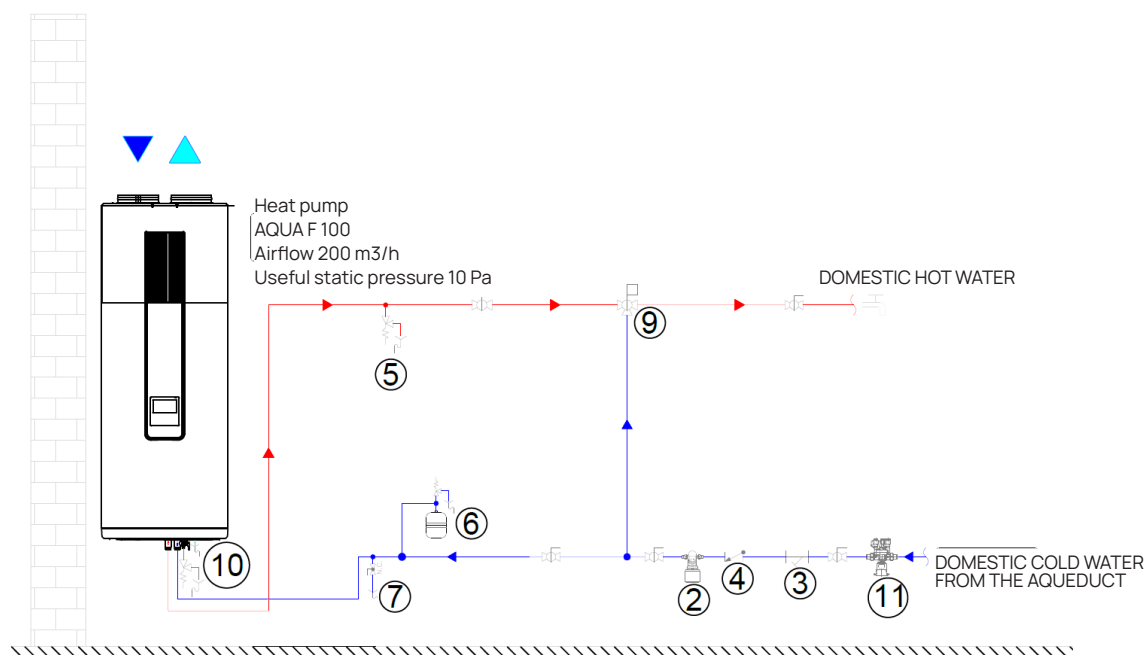
- ON/OFF input: contact for switching on/off the unit by external signal;
- Modbus: connection for RS486 Modbus supervisory system protocol or Control 4NRG;
- Connection to the photovoltaic system;



# Hydraulic connections

Below is an indicative diagram of the hydraulic connections of the AQUA F 100. The connection and design of the system must be carried out in accordance with national regulations in force.

## Size 100

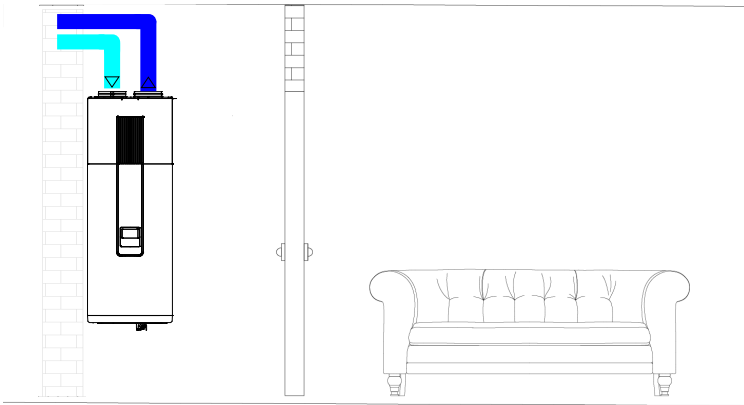


1. Pressure reducing valve
  2. Water treatment devices (softener, etc.)
  3. Y-filter
  4. Non return valve
  5. DHW pressure relief valve with drain
  6. DHW expansion tank
  7. Water tank drain
  8. DHW circulator (recirculation) with non-return valve
  9. Thermostatic mixing valve
  10. Condensate drain
- A - Aqueduct inlet  
B - Domestic hot water  
C - DHW Recirculation

# Hydraulic connections

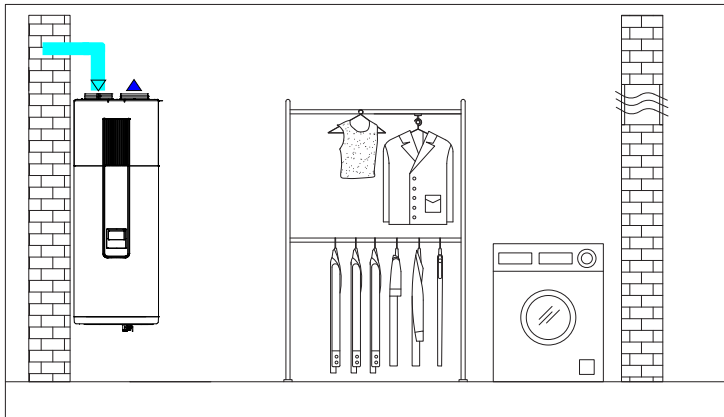
The unit must be installed inside the building, preferably in a technical room, laundry room or garage. However, it is always preferable to avoid installation in the vicinity of bedrooms or rooms to be kept sound insulated. The unit must not be installed outdoors or in areas exposed to the elements.

## DUCTED INTAKE AND EXHAUST (recommended)



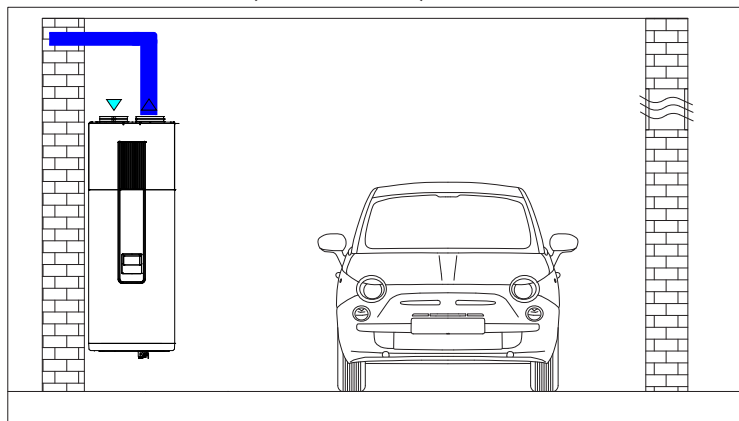
Ducting the intake and exhaust openings allows the unit to work with air drawn in from outside the home. Heat is extracted from this air and used as a source for the heat pump, after which the air is expelled out of the building. Operation of the unit therefore does not increase the thermal load. The ducting system must be sized correctly in relation to the useful pressure provided by the unit.

## DUCTED (conditioned) INTAKE



Installation with ducted intake and free exhaust is recommended if you want to make use of the cold (5-10°C less than the intake air) and dehumidified air expelled from the unit to obtain a cooling effect. The unit should preferably be installed in a room that is not to be heated, as the unit releases cold air into the room which would lead to increased consumption for heating that room. The volume of the room in which the unit is installed must be more than 15 m<sup>2</sup>, the flow of expelled air must be guaranteed and not be obstructed, and the ventilation openings must be sized accordingly.

## DUCTED EXHAUST (conditioned)



In this particular configuration, the unit draws in air from the room in which it is installed, extracts the heat from it and then expels it outside the home. The unit must be installed in a room with appropriate openings to allow the proper flow of air to the unit, avoiding the risk of putting the room under pressure. The volume of the room in which the unit is installed must be more than 15 m<sup>2</sup>.

# Data for calculation UNI/TS 11300

Clivet S.p.A. declares that the data to use for the calculation, in line with UNI/TS 11300 part 4 of the generation performance of heat pumps it manufactures, are the ones reported in the following tables.  
The data contained in this document may be updated by the manufacturer in the event of updates to the range without obligation of prior notice.

## UNI/TS 11300 Part 4

### AQUA F

DHW Data Capacity and COP full load		Te				
	Te	Tm	7	15	20	35
100	Thermal power $\Phi_{H, HP out}$ (W)	55°C	706,6	907	995,8	1332
	COP	55°C	2,97	3,52	4,26	5,08

Terms and definitions

Supply temperature

Te = ambient air temperature

### Wi-Fi function and control via App

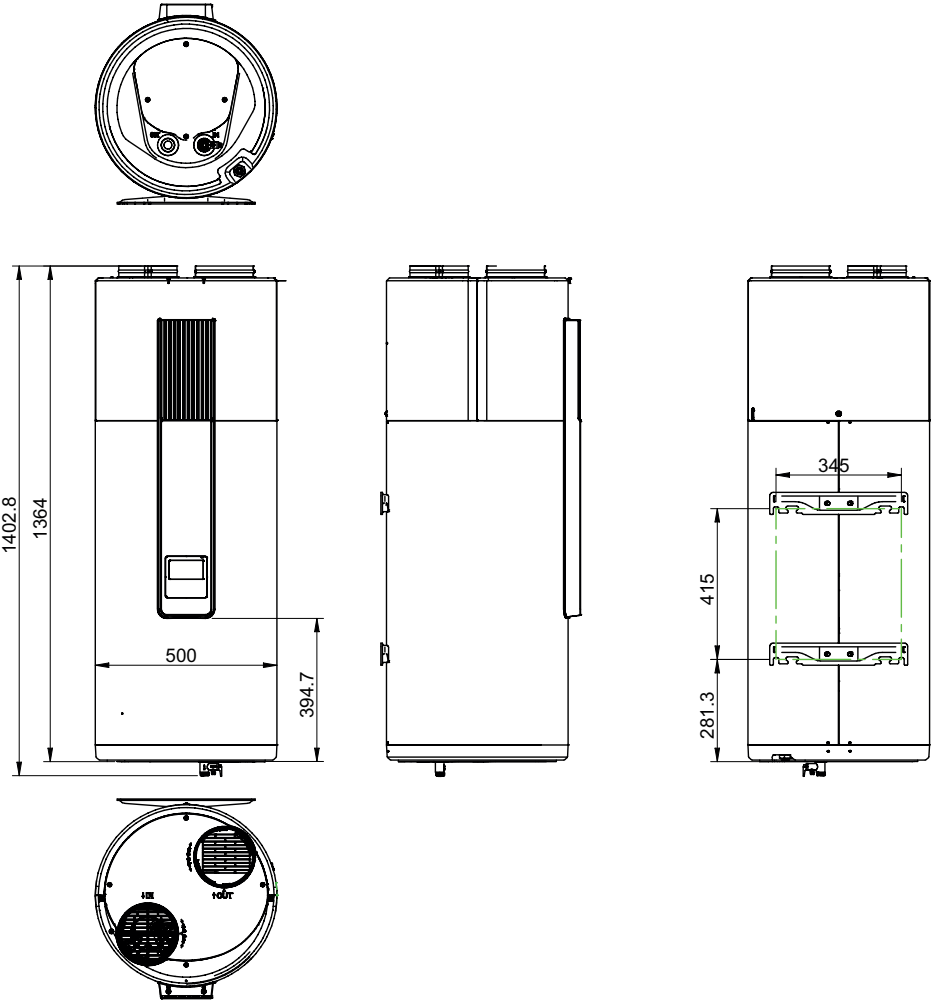
The SmartHome App can be downloaded free of charge for iOS and Android. The user can perform the following operations remotely:

- Switch on/switch off the unit
- View and set the temperature of the tank
- Activate E-Heater mode for fast heating of DHW
- Set schedules (daily, weekly, holiday mode)
- Activate anti-legionella mode (Disinfect)

# Dimensional drawings

DSDH-P AQ 1 S 100

DAADS0000  
DATA/DATE 16/07/2024



WEIGHT DISTRIBUTION		
Operating weight	Kg	161
Shipping weight	Kg	68

The presence of optional accessories may result in significant variation of the weights indicated



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