

OPERATING AND INSTALLATION MANUAL

WATER HEATER WITH HEAT PUMP

AQUA HP



Družstevní závody Dražice-strojírna s.r.o.
(Works Cooperative - Dražice - Machine Plant, Ltd.)
Dražice 69, 294 71 Benátky nad Jizerou
tel.: +420 / 326 370 911
fax: +420 / 326 370 980
e-mail: export@dzd.cz



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* not included in the delivery

CAREFULLY READ THIS MANUAL BEFORE INSTALLING THE WATER HEATER!

Dear Customer,

The Works Cooperative of Dražice - Machine Plant, Ltd., would like to thank you for your decision to use a product of our brand.



The product is not intended to be controlled by

- a) people (including children) with reduced physical, sensual or mental capacities, or
- b) people with insufficient knowledge and experiences unless supervised by responsible person, or unless properly instructed by such responsible person.

Meaning of pictograms used in the Manual



Important information for heater users.



Abiding by the recommendations of the manufacturer serves to ensure trouble-free operation and the long service life of the product.



Caution!
Important notice to be observed.

1 INTRODUCTION

Water heater with an AQUA HP air-water heat pump certainly fulfils all your expectations, and will comfortably serve you and achieve maximum energy savings for many years. The manufacturer devotes a lot of time, energy and financial resources to the development of innovations that will promote energy savings achieved by using the product. Your choice proved correct sentiment and concern about energy consumption, therefore, a matter that affects the environment. The manufacturer has been committed to constantly come up with innovative and effective products so that the rational use of energy could actively contribute to environmental protection and natural resources of the planet. This manual, the purpose of which is to inform, warn and advise in connection with the use and maintenance of this appliance, should be retained.

1.1 INFORMATION PRIOR TO THE INSTALLATION



The electrical installation must comply with the valid national legislation applicable to electrical installations.

AQUA HP will work only after adding the correct dose of coolant.

The maximum recommended pressure of water supplied into the hydraulic circuit is 0.3 MPa, and the minimum pressure is 0.1 MPa.

Power is AC 230 V, 50 Hz and the power cord must be connected to a grounded receptacle. If the power cord is damaged, it must be replaced by the manufacturer or a trained service technician in order to prevent any risk.

AQUA HP shall only be operated if the water heater is filled with water.

Heating other than potable water is not allowed.

1.2 SAFETY INFORMATION



The appliance can be used by children from 8 years of age, persons with physical, sensory or mental disability or people without experience or knowledge, as long as those people were briefed on the operation of this device in a secure manner, and are familiar with the related dangers.

The appliance cannot be played with by children.

Cleaning and maintenance must not be performed by children without proper supervision

During installation:

- The installation of the water heater with heat pump must be performed by a qualified installer who has been properly trained and qualified to this activity.
- The appliance must not be installed in locations where there is a risk of damage from impact, shock or explosion.
- Do not unpack the appliance from the package until it is located at the installation site and is ready for installation.
- Before connecting the appliance to the power, make sure that all hydraulic connections are watertight.

Maintenance of the appliance:

- Maintenance of the appliance must be performed by a service technician with the exception of regular and continuous cleaning that should be performed by the user him/herself.
- During maintenance, the appliance equipment must be disconnected from service.
- The manufacturer recommends regular annual inspection of the appliance by a qualified technician.
- Cleaning and maintenance must not be performed by children without proper supervision.

High pressure and temperature:

- The principle of operation of this appliance is associated with high temperature and high pressure. Contacting the appliance must be done carefully so as to avoid the risk of burns and injuries by protruding parts.

Coolant

- The coolant used in the cooling circuit is R134a, CFC free, non-flammable and without harmful effects on the ozone layer.
- However, in accordance with the law, the liquid from the appliance must not be discharged freely into the environment.
- The liquid in the appliance may only be handled by a qualified technician.

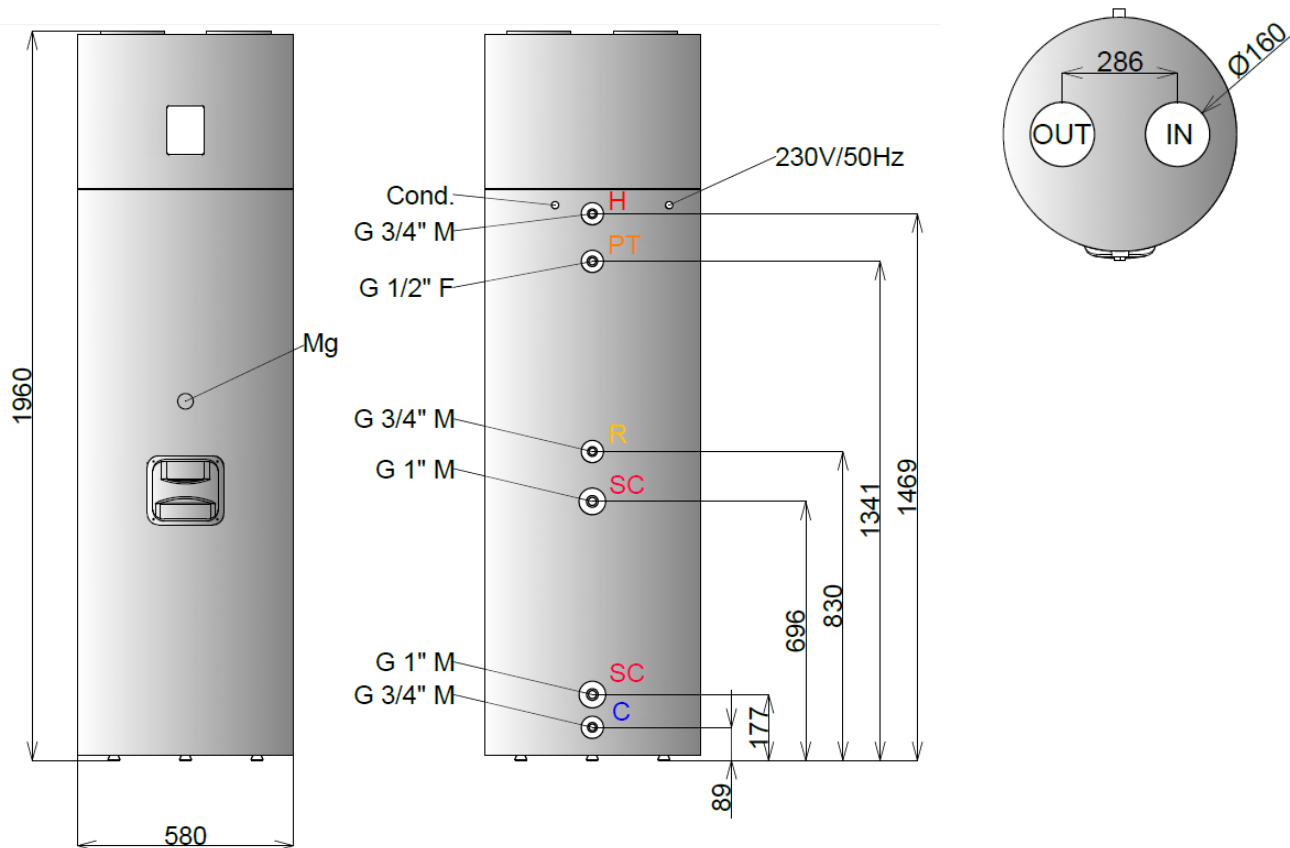
Information for customer

- The installer must inform users about the operation of the appliance, its dangers and responsibilities of the user.

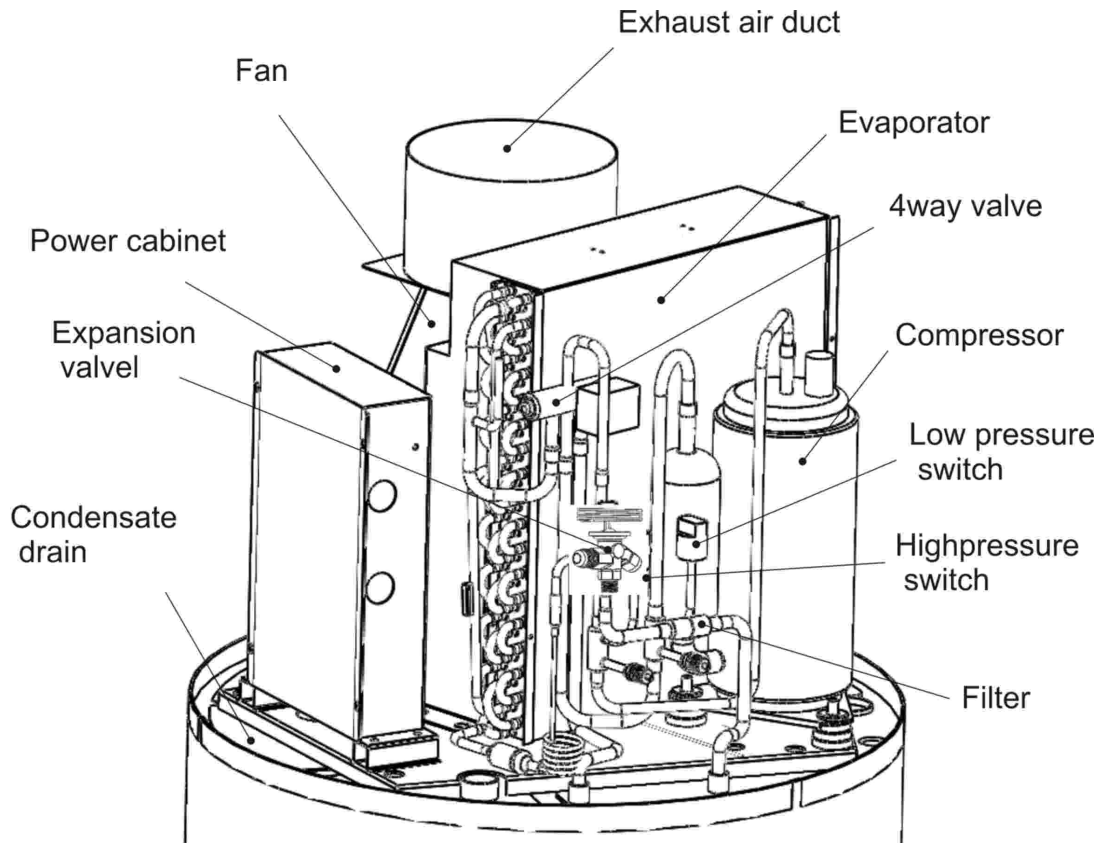
2 SPECIFICATIONS

2.1 COMPONENTS

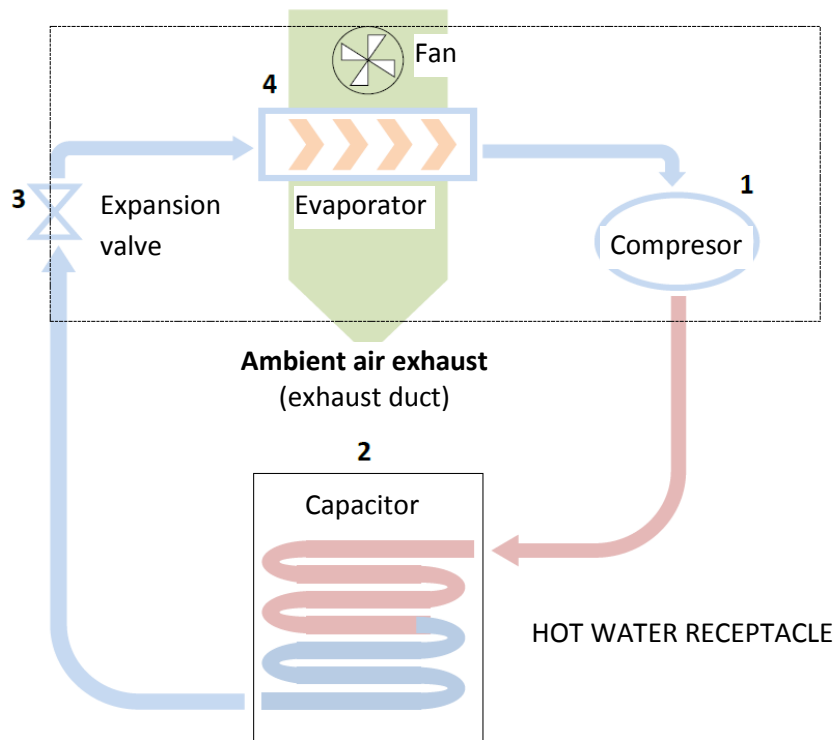
AQUA HP 250 I/IX



The cooling circuit located in the upper part is responsible for the transfer of heat from the ambient air into the water.



2.2 HEAT PUMP PRINCIPLE



1. The coolant R134a is compressed in a highly efficient compressor that increases its pressure and temperature.
2. In a capacitor that is not in direct contact with water, the thermal energy contained in the coolant is transferred to the water in the hot water storage tank.
3. Condensed liquid flows from the expansion valve that is responsible for a drop in its pressure.
4. The fluid absorbs thermal energy from the air flowing through the evaporator with the help of a fan.



R134a is a HFC coolant, and therefore does not damage the ozone layer. It is characterized by excellent chemical and thermal stability, low toxicity, is not flammable and is compatible with most materials.

2.3 TECHNICAL PARAMETERS

	Unit	250 l
Type of appliance		Water heater with heat pump
Hot water volume	L	250
Weight without water	kg	83
Material of upper part	-	Stainless steel
Tank shell material	-	Steel sheet
Insulation	-	Polyurethane foam 50 mm
Mg anode	-	1"
Maximum service temperature	°C	80
Maximum service pressure	MPa (bar)	7
Test pressure	MPa (bar)	10
Heat loss	kWh/ annum	0,99
Tubular heat exchanger (diameter / length)	m	- / -
Exchanger power output ¹⁾	kW	-
IP Protection	-	IPX1
Supply voltage	-	1/N/PE ~ 230V/50Hz
Input (medium / maximum)	W	400 / 700
Output of the electrical heating element	W	1500
Heat pump output	W	1800
Fan input	W	65
Maximum service current	A	3.2 + 6.8 (with backup electrical heating)
Recommended breaker	-	16A (sensitivity 30 mA)
Max temperature of hot water for heat pump	°C	55
Max temperature of hot water for heating element	°C	65
Coolant	-/kg	R 134a / 1.2
Load profile	-	XL
COP ²⁾	-	3.24
Heating time ²⁾	HH:mm	6:48
Volume of usable water 40 °C ²⁾	l	314
Energy efficiency class ²⁾	-	A+
Energy efficiency ²⁾	%	138
Annual energy consumption ²⁾	kWh . a ⁻¹	1251
Ambient temperature limit values	°C	-5 / 40
Acoustic pressure level	dB(A)	51
Airflow	m ³ /h	450
Maximum length of air technical manifold	m	10





- a) Temperature of heating water (90/80 °C); hot water temperature (10/60 °C)
- b) Temperature of heating water (70/60 °C); hot water temperature (10/60 °C)
- 2) A20/W10-54, according to EN16147 and applicable regulation No. 812/2013

3 TRANSPORT



The appliance must be transported to the installation site in the original packaging and must be transferred in an upright position. When handling the appliance, proceed with maximum caution to avoid the collision that could damage any part of the appliance. Make sure that the transport belts or straps do not cause material damage. For transportation, always use suitable means of transport (pallet truck, forklift, etc.).

The packaging contains the following information symbols:

	Fragile, handle with extreme caution
	Make sure that the arrow always points upwards
	Keep the packaging dry
	Do not stack the packaging

4 INSTALLATION

4.1 SAFETY AND CONTROL DEVICE

4.1.1 Low-pressure/high-pressure fuse

In preparation for operation outside the recommended operating pressures defined by the manufacturer, the appliance switches off and the electronic panel displays an error.

4.1.2 Thermal fuse

Thermal fuse is factory set by the manufacturer, and ensures that the water temperature in the hot water tank does not exceed the maximum value. If the temperature exceeds this value, the fuse shuts off backup electric heating. Turning on is performed manually by a service technician after analyzing the reasons for the switching off.

4.1.3 Temperature sensor

Temperature sensor measures the water temperature in the hot water tank to control the entire system.

4.1.4 Corrosion protection

In addition, the top part shell of the hot water heater is corrosion resistant (it is made of stainless steel) and the hot water tank is enamelled and also contains magnesium anode which needs to be checked regularly, as recommended by the installer or service technician.

4.1.5 Expansion tank *

Expansion tank is a device whose purpose is to compensate for the increase and decrease in water volume due to temperature fluctuations.



Installing the expansion tank is recommended to save water. The recommendation of installing an expansion tank is the responsibility of the installer.

It is generally installed on a cold water pipe.

4.1.6 Safety system *

The safety system allows for protection against any non-standard situations: cooling water heater, reverse flow of warm water back into the water main, emptying the hot water heating tank and pressurisation. The safety valve should be calibrated to the opening pressure of 0.6 MPa. To discharge water from the hot water tank it is necessary to close the inlet valve and open the drain valve. The drain pipe of the safety valve should be drained into sewers by transparent hose, since water may drip or even drain off the valve. The safety valve must be regularly opened to remove impurities and to control its patency. The drain pipe must be installed in an area protected from frost.

4.1.7 Pressure control valve*

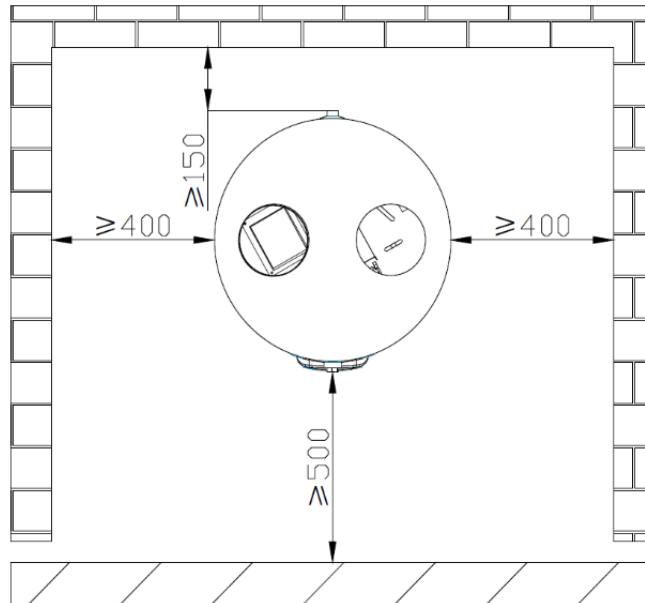
Pressure control valve must be installed in case of high pressure on cold water connection in order to ensure the proper operation of the safety valve. The connection may be provided with a pressure gauge to check the pressure.

*** Parts that are not delivered by the manufacturer. Their delivery and installation must be performed by the installer.**

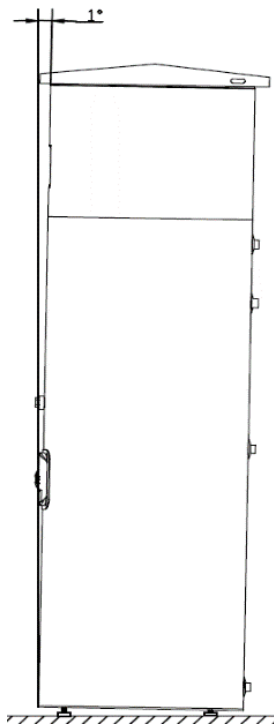
4.2 LOCATION

When placing the appliance to the installation site, keep in mind possible future service calls. To avoid having to leave too much space behind the tank, the magnesium anode is disposed on the front side of the hot water storage tank.

Make sure that the following minimum space is available around the appliance:



Adjust the levelling legs of the appliance. Acceptable is the tilt angle 1° rearward.



If the appliance is tilted in a different direction than backwards, condensates are going to be settled in the appliance.

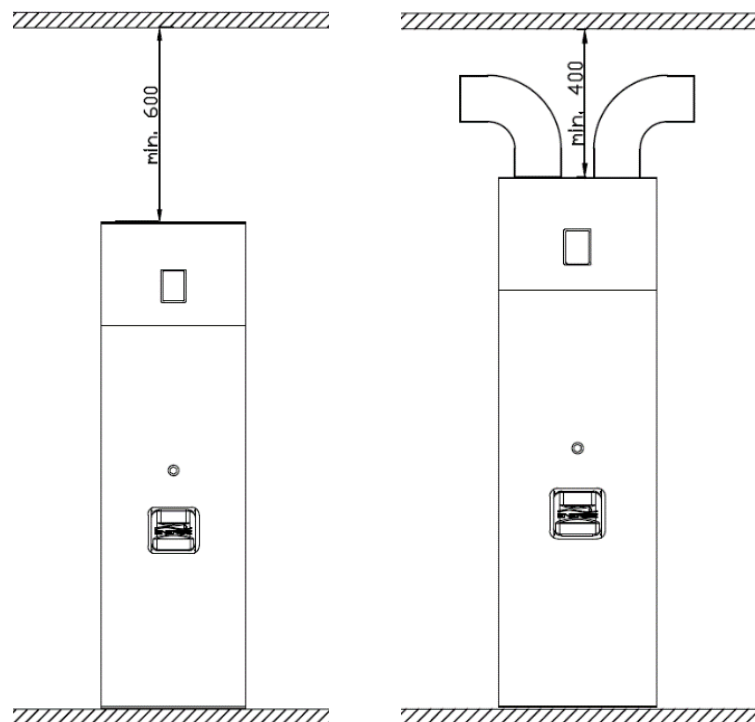
4.3 INSTALLING AIR INTAKE/EXHAUST



Since AQUA HP absorbs heat during operation, it is good to route cooled air (intake/exhaust) to unheated spaces. The appliance will cool the room in which it is located and if it is installed in heated rooms, cooled air should be routed to other rooms or outside.

4.3.1 Installation without air piping

The **AQUA HP** appliance should be installed in a location that is not too heated and can be used for dehumidification and cooling these areas (e.g. laundry rooms, basements, etc.). The distance between the top of the unit and the ceiling should not be less than 600 mm. If the distance between the unit and the ceiling is less than 600 mm, it is necessary to install two elbows, as shown in the figure.

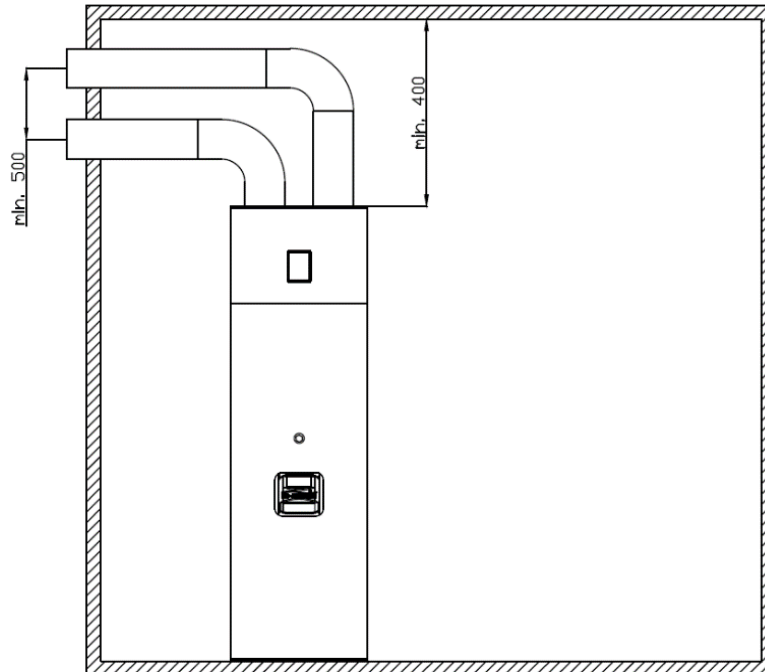


4.3.2 Installation with air piping

If you use piping for airflow into spaces that do not require heating, you can:

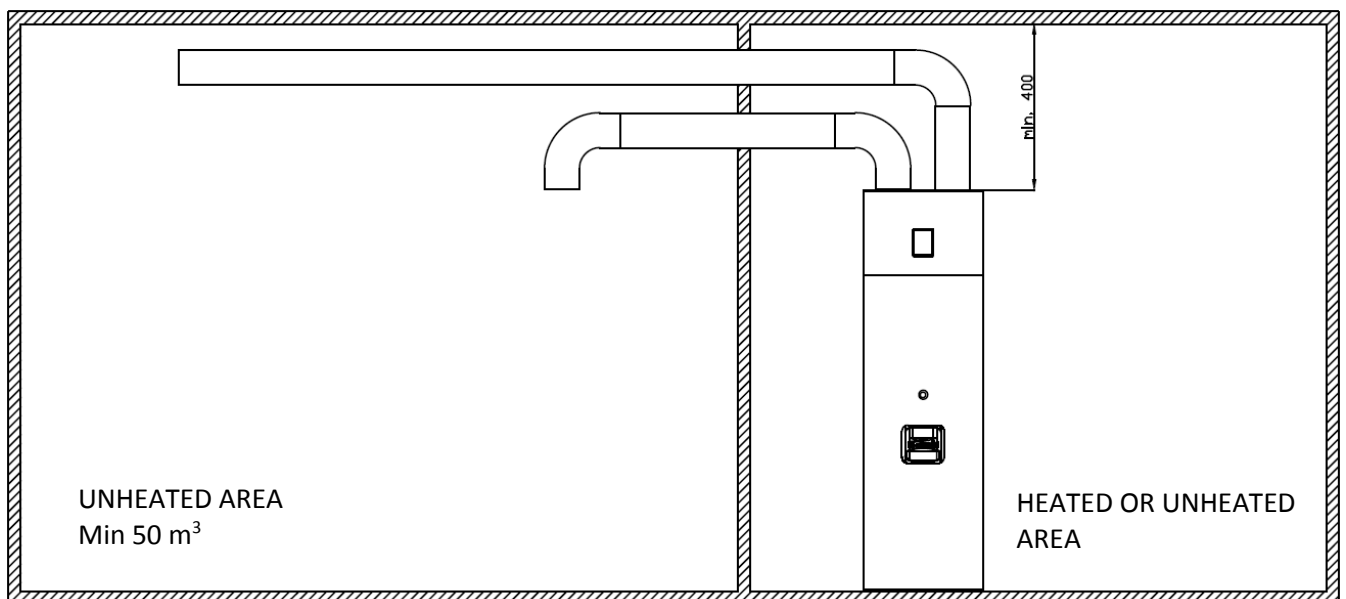
Use the outside air

Using outdoor air, the unit can be placed either in heated or unheated room.



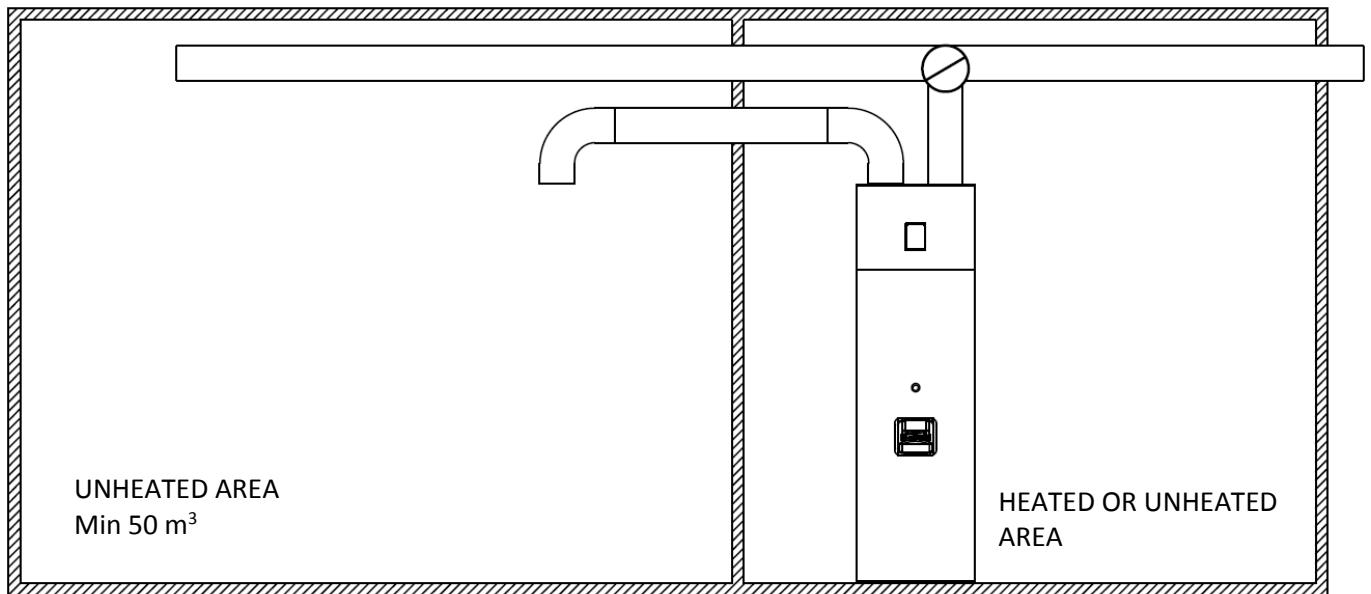
Use air from an adjacent room

The unit can also be placed in a heated room, but airflow should be directed to an unheated room. Keep in mind that because of the air flow, cooling of an unheated room might affect adjacent heated rooms.



Use air from an adjacent room and outside air

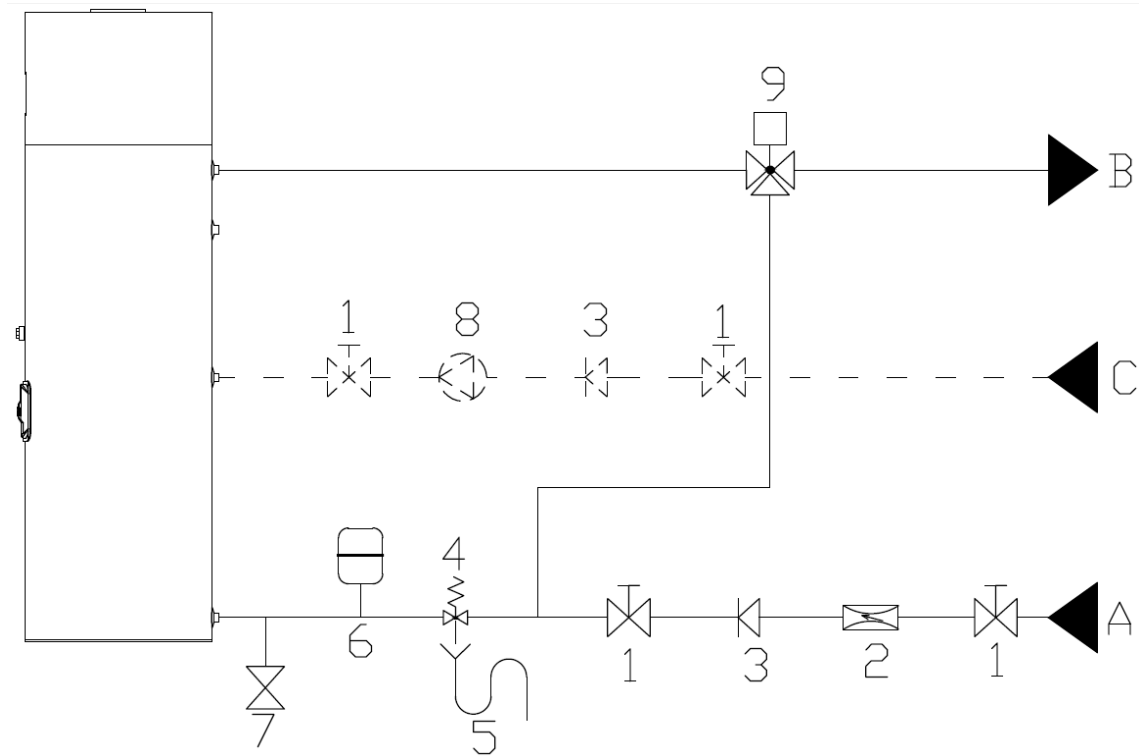
To supply air to the appliance, branched pipe can be used. In summer, you can use hot air from the outside and in winter you can use the air from the unheated area.



Pipes used for air flow is not part of the appliance, and its installation is a matter of the installer; if necessary, follow the recommendations of the manufacturer.

The pipe diameter must be 160 mm. Pipe length should not exceed 8 meters.

4.4 PLUMBING FIXTURE



EXPLANATORY NOTES

- [1] Shutoff valve
- [2] Pressure control valve (3 bar/0.3 MPa)
- [3] Return valve
- [4] Safety valve (6 bar/0.6 MPa)
- [5] Sink drain
- [6] Expansion receptacle
- [7] Drain valve
- [8] Circulation pump
- [9] Thermostatic mixing valve
- [A] Cold water connection
- [B] Hot water outlet
- [C] Circulation



Safety valve has to be installed on the cold water inlet into the appliance. The safety device must comply with EN 1487: 002, maximum pressure of 6 bar (0.6 MPa). No closing armature may be mounted between the safety valve and the tank or check valve that could disable the safety valve.

The safety valve must be connected via a line whose diameter is smaller than the connecting dimension. The drain must be connected to a sewage siphon or, if this is not possible, raised to a distance of at least 20 mm from the pavement to enable visual inspection.

Pressure control valve set to 3 bar (0.3 MPa) must be installed in case of high pressure on the cold water connection.



The manufacturer is not liable for any damages related to failure to observe these recommendations and warnings.



Water you use may contain contaminants or substances damaging the appliance and even harmful to your health. Make sure that you use water with a level of quality equivalent to the consumption in your household. The following table lists some of the parameters that must be chemically treated if exceeded.

Hardness (°dH)	pH	Treatment
3.0 to 20.0	6.5 to 8.5	No
3.0 to 20.0	<6.5 or >8.5	Yes
<3.0 or >20.0	-----	Yes

4.5 CONDENSATE

During operation, condensation may occur. The condensate flows into a drip tray and is discharged through a hole on the back side. The person performing the installation must connect the condensate hose supplied by the manufacturer and direct the condensate into a drainage system or a sewer siphon.



The condensate hose must not be bent or compressed, and must be installed so as to best ensure proper drainage of the condensate.

4.6 WIRING DIAGRAM

Water heater with heat pump can be connected to power only when the tank is filled with water.

Water heater with heat pump is supplied with a cable for connecting to a prepared grounded receptacle (1/N/PE~230 V/50 Hz).

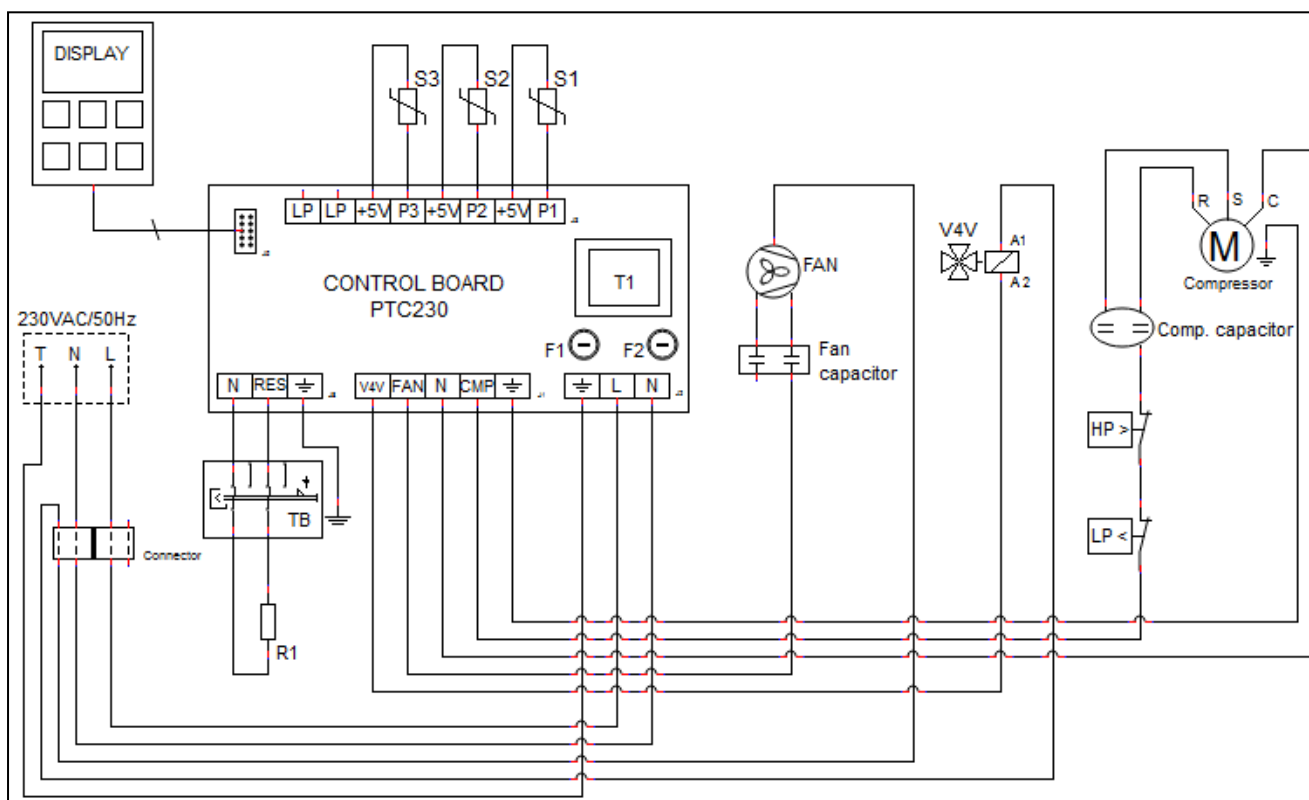
Wiring installation must conform to the standards applicable in the country or territory where the heater with heat pump is installed.

The installation involves:

- Bipolar circuit breaker and Cu-cable with 3 x 2.5 mm² cross-section or greater
- Protective current device 30 mA

If the power cord is damaged, it must be replaced by the manufacturer or a trained service technician with similar qualification.

4.7 ELECTRICAL INSTALLATION DIAGRAM



R1 - Backup electrical heating

HP - High pressure switch

LP - Low pressure switch

M - Compressor

TB - Thermal fuse

F1 - Compressor fuse (10 A)

F2 - Main fuse (10 A)

S1 - Water temperature sensor S2 - Ambient sensor

S3 - Evaporator temperature sensor

Fan – Ventilator

V4V - 4-way valve


5 CONTROL AND PROGRAMMING

5.1 CONTROL PANEL

The Eco control panel of the appliance is simple and intuitive. It allows you to configure several operating parameters according to the operating mode selected by the user.

It includes six control keys (ON/OFF / CANCEL MENU, ▲ COMP, E-HEATER and OK DISINFECT and OK / LOCK) that enable checking the operation of the appliance, monitoring the parameters and their change.

5.2 FUNCTION OF THE KEYS

Key	Function	Description
ON/OFF	ON/OFF Switch	Turning the controller on and off
CANCEL	(CANCEL) Termination	Function of exiting to the end menu, sub-menu or cancel function
OK / 	(OK) Confirmation (LOCK) Locked / Unlocked	Confirming the parameters in the menus or submenus Locking or unlocking the keypad
MENU	MENU	Entering the menu
COMP	Compressor ON/OFF	Pressing the key allows you to turn the compressor on and off
E-HEATER	ON/OFF Electrical resistance	Pressing the key allows you to enable and disable the electrical resistance
▲ ▼	Changing values	Allows you to adjust the parameter value (in menu context)
	Movement across the menus/submenus	Function to browse menus and submenus (inside the menu)
DISINFECT	(DISINFECTION) Anti- Legionella	Press this button and the system automatically creates a thermal shock in water to neutralize the bacteria (Legionella)

5.3 DISPLAY














5.3.1 Display description



5.3.2 Symbols

Symbol	Description
ECO	Appliance in ECO service mode
AUTO	Appliance in AUTO service mode
BOOST	Appliance in BOOST service mode
TCC	Timer clock control ON
LAT	Low ambient temperature protection ON
	Compressor ON
	Fan ON
	Electrical backup ON
4-V	4-way valve ON
	Keypad enabled
	Keypad disabled
	Disinfection function ON
	Defrost function ON
	Holiday mode ON
	Error alert

5.3.3 Symbols in the appliance's operation

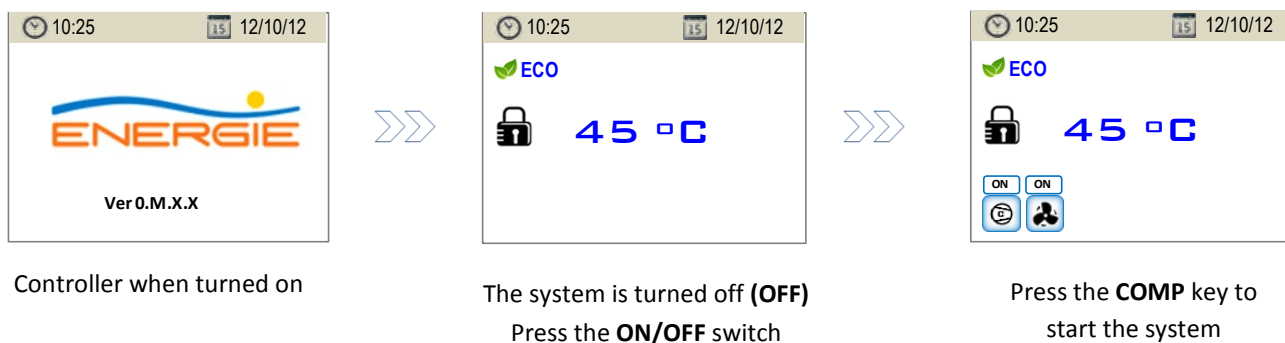
Symbol	Description
	(ON) Compressor ON
	(OK) Compressor ON and setting point achieved
	(TA) Electrical backup ON due to S1 < P08 and/or P07 < Temp. S3 (Auto mode)
	(TA) Electrical backup ON due to compressor ON to more than T05 (Auto mode)
	(MA) Electrical backup ON manually
	(ON) Electrical backup ON
	(OK) Electrical backup ON and setting point achieved
	(ON) Fan ON
	(OFF) Fan OFF
	(ON) Disinfection ON
	(ON) Defrost function ON
	(ON) Holiday mode ON
	Error alert

5.4 PUTTING INTO OPERATION

Before activation, check the entire installation, whether everything is according to the recommendations and make sure everything is in accordance with these instructions; only then you can connect the device to the power outlet.

Once the appliance is connected, you need to wait a few seconds until the data are loaded, and the controller starts.

Then you can start the device by following these instructions:



Note 1: LED on the display indicates the status of the appliance. If it blinks, it means that the device has no operating instructions set up. If the LED is lit and not flashing, the system works according to the given instructions.

Note 2: Restart the unit by switching off and repeated switching on by pressing the **ON/OFF** button.

5.5 OPERATING MODES

AQUA HP is programmed to run in three operating modes - ECO, AUTO and BOOST that are summarized in the following table:

Mode	Symbol	Function
ECO	ECO	Regular mode as heat pump
AUTO	AUTO	Optimised management of heat pump or electrical heating element run
BOOST	BOOST	Run of both the heat pump and the electrical heating element

User can change the operating mode at will, all they need is to simultaneously press the **MENU + OK/LOCK** keys for 3 seconds. Upon entry, use the **COMP ▲** and **E-HEATER ▼** keys to move in the menu and submenus. To confirm the values/parameters press the **OK/LOCK** key. To exit the menu, press the **CANCEL** key.

5.5.1 ECO Mode

In the ECO operation mode, the device operates only as a heat pump heating water in a hot water tank. It is thus possible to achieve greater efficiency and savings for user.

Every time the user deems it necessary, they can turn on a supporting heating element in this mode manually by pressing the (E-HEATER) key. This device automatically changes the operating mode to BOOST and indicates this status on the display (including the heating element indication). If the heating element is turned off manually, the appliance returns to the ECO mode.

5.5.2 AUTO Mode

In the **AUTO** mode, the unit works as a heat pump with the support of the heating element, and the operation of the heating element is optimised in order to maintain the COP of the appliance.

The heating element starts whenever:

- is enabled by the user manually (by pressing **E-HEATER**).
- LP contact opens (low ambient temperature, lack of coolant, leak in the cooling circuit, etc.).
- compressor running time exceeds the T05 parameter*
- water temperature is below P08*

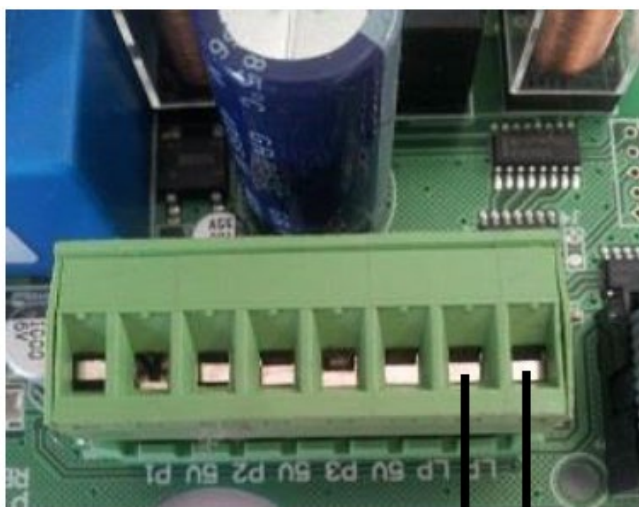
* The parameter is adjustable (**ON/OFF**)

5.5.3 Boost Mode

In the **BOOST** mode, the unit works as a heat pump with the support of the heating element, and the run of the heating element isn't optimised. This mode allows users to achieve sufficiently hot water in a shorter period of time.

5.5.4 TCC Mode

The TCC function provides the ability to achieve higher water temperatures at a time when an alternative source of electric energy (photovoltaic system, etc.) is available.



You just need to connect the control connector between the photovoltaic inverter and the appliance's control panel. This connection to the panel must be made potential-free (no voltage). The voltage on this contact causes irreversible damage to the appliance.

If the contact is K1, it activates the TCC function, and all sources of heat (both the heat pump and the heating element) work according to the new programmed operating parameters.

Note: When the contact K1 is opened, the device operates according to the preset operating mode (Eco, Auto or Boost) and the corresponding parameters.

Contact K1 can be thus used for the tariff control, i.e. to switch according to the "night current". For this purpose, connect potential-free either the timer or the contact controlled according to the HDO signal.

5.5.5 LAT Mode

LAT mode starts automatically at a low temperature of the input air in order to protect the compressor. When this mode is activated, the compressor shuts down and only electric heating activates. When the intake air temperature rises, the device returns to the previously selected mode.

5.6 ADDITIONAL FUNCTIONS

5.6.1 Disinfection Mode

The AQUA HP controller includes a Disinfection (Anti-Legionella) function consisting of a water heating cycle up to 65 °C for a time sufficient to prevent formation of bacteria inside the tank.

The disinfection function can be set automatically or manually. In the automatic mode, user can set the function to every week or every month. Unless the automatic mode is activated, user must be activated manually by pressing Disinfect.

At the end of this function, the system returns to the operating mode set before the activation of this function.

5.6.2 Holiday Mode

To activate the **Holiday** function, it is necessary to enter the menu and set the number of days of the holiday and the appliance automatically enters the **standby** mode and stays there until the last day of the holiday. The last day of the holiday the appliance activates the **disinfection** function to eliminate any formation of bacteria that could emerge in the hot water tank during the periods of user's absence.

Once the holiday is over and the disinfection programme terminates, the appliance returns to the selected mode (ECO, AUTO or BOOST).

Note: If you set the appliance to enter into the holiday mode, but switch it OFF and ON using the ON/OFF switch, the function will not be active. After returning from a holiday, user must not forget to turn on the appliance and cancel the entered holiday days (value = 0). If user fails to do so, the appliance returns to the default mode until the expiration of the specified number of the holiday days.

5.7 MENU

Every time the parameters need to be modified or new ones set during the operation of the device, user must enter the menu.

To access the menu, it is necessary to press the **MENU** button **for 3 seconds**. Upon the entry, use the **COMP** ▲ and **E-HEATER** ▼ keys to navigate the menu and submenus. To confirm the values/parameters press the **OK/LOCK** key. To exit the menu, press the **CANCEL** key.

5.8 CHANGING THE MODE

ECO is set as the default mode for the operation of the device. If at any time the user wants to edit the operation mode they can proceed as follows:

Unlock the keypad and hold the **MENU** key down for **3 seconds**. Use the **COMP ▲** and **E-HEATER ▼** keys to browse the menu and select F03 to enter the submenu and select the operation mode.

Note: To change the operating mode, you do not need to restart the appliance.

6 PROPER OPERATION TEST

To check whether your device works properly, run it and wait about 20 - 30 minutes and then check the following:

- The air temperature at the evaporator outlet should be lower by 3-4 °C compared to the air temperature at the inlet.

7 DESCRIPTION OF PARAMETERS

Code	Type	Description	Min	Max	Setting
F01	Language	Portuguese English French German Italian Spanish Czech			English
F02	Clock	Date and time			
F03	Mode	Eco mode Boost Auto			Eco
F04	Holiday	Holiday mode	1	99	0
F05	Disinfection	Disinfection function inactive Disinfection function active once a week Disinfection function active once a month	---	---	Monthly
F06	Parameters	P01 - required temperature, compressor	5	55	53°C
		H01 - P01 parameter hysteresis	2	10	4°C
		P02 - required temperature, final el. heating	1	60	53°C
		H02 - P02 parameter hysteresis	2	10	4°C
		P01TCC - required temperature, compressor	5	55	55°C

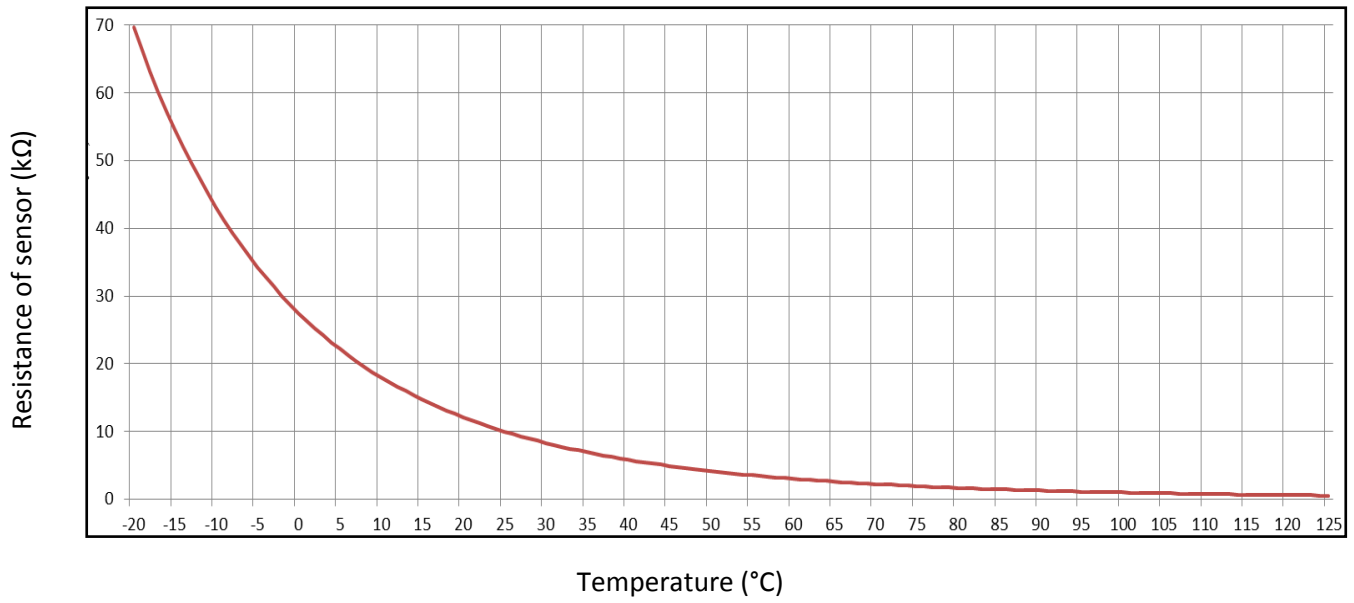
F06	Parameters (continued)	H01TCC - P01TCC parameter hysteresis	2	10	4°C
		P02TCC - required temperature, final el. heating	1	65	60°C
		H02PV - P02 parameter hysteresis	2	20	10°C
		P03 - defrost start	-15	10	-8°C
		P04 - defrost finish	0	25	16°C
		P05 - safe temperature	70	80	70°C
		P06 - Anti-Legionella disinfection temperature	60	69	65°C
		P07 - min evaporator temperature for final el. heating activation	-15	20	-5°C
		P07 - setting	ON	OFF	ON
		P08 - min water temperature for final el. heating activation	1	40	30°C
		P08 - setting	ON	OFF	ON
		P09 - air temperature for defrost	0	15	10°C
		P10 - minimum air temperature	-10	10	-5°C
		H10 - P10 parameter hysteresis	2	10	5°C
		T01 - delay before compressor startup	1	20	2 min
		T02 - min running time before defrost	1	10	1 min
		T03 - max defrost time	2	15	8 min
		T04 - compressor startup delay after defrost	1	10	1 min
		T05 - max compressor runtime	6	15	10 h
		T06 - defrost start time delay	30	360	60 s
		T07 - startup delay after low pressure error	2	20	10 min
T08 - time interval between defrost cycles	10	120	40 min		
T09 - prodleva před vyhlášením LAT	2	20	5 min		
T10 - min defrost time	2	10	4 min		
F07	INFO	List of control parameters			
F08	Level	Installation technician	0022		
		Manufacturer	****		
F09	Output test	CO - contact N.O., compressor			
		RE - contact N.O., final el. heating			
		VE - contact N.O., fan			
		V4V - contact N.O., 4-way valve			
F10	Errors	Elist - list of error messages			
		Ereset - deletion of error messages			
F11	Reset	Restoring default settings			
F12	System	Compressor runtime	hours		

8 ERROR MESSAGES TABLE

Symbol	Description	Trouble / Check
Er01 – S1	Error - temperature sensor 1	<ul style="list-style-type: none"> Damaged temperature sensor - Measure the internal resistance of the sensor which is about 10 KΩ at the temperature of 25 °C. The sensor is disconnected from the controller - Make sure the connector is properly connected to the electronic board and that the connecting terminals are properly secured.
Er02 – S2	Error - temperature sensor 2	
Er03 – S3	Error - temperature sensor 3	
Er04 – TA	Water temperature error	<ul style="list-style-type: none"> The water temperature in the water tank is too high - check for possible damage on the electronic board, such as a damaged relay. The temperature sensor is short-circuited - Measure the internal resistance of the sensor which is about 10 KΩ at the temperature of 25 °C.
Er05 – S1	Probe 1 short circuit	<ul style="list-style-type: none"> Measure the internal resistance of the sensor which is about 10 KΩ at the temperature of 25 °C, check for the correct connection of the connector to the electronic board and the connecting terminals for good condition.
Er06 – S2	Probe 2 short circuit	
Er07 – S3	Probe 3 short circuit	
Er08 – DF	Too many defrost cycles in short period of time	<ul style="list-style-type: none"> Measure the internal resistance of the sensor which is about 10 KΩ at the temperature of 25 °C, check for the correct connection of the connector to the electronic board and the connecting terminals for good condition. Low ambient temperatures Lack of R134a Leakage in the circuit of the fluid
LINK ERROR	Connection failure between the display and the supply board	<ul style="list-style-type: none"> The connection cable between the display and the control panel - Make sure the cable is in good condition and that the cables are properly engaged (on the display and the control panel).

9 TEMPERATURE SENSOR PARAMETERS

— Dependence of sensor's resistance on temperature



10 TROUBLESHOOTING

Trouble	Potential cause	What to do
Failure in the electronic board	Power failure	Check the power supply. Check corresponding circuit breaker.
	Damaged or disconnected cable	Check the integrity (intactness) of the electronic circuit board.
Low water temperature or lack of hot water	Low temperature programmed as a set point	Adjust the temperature set point. 53 °C as default factory setting.
	Error activation	Check the presence of an error on the electronic board and see the error table.
	Damaged or disconnected cable	Check the device connection to the plug. Check corresponding circuit breaker. Check the integrity of cables. Make sure the electrical cord is connected to the power board.
	Holiday mode ON	Switch off the Holiday mode.
	Appliance or compressor OFF	See "5.4 System startup".
	Use a large amount of hot water	For rapid heating of water, change the device mode to "BOOST".
	Hot water return into the cold water circuit (safety device installed incorrectly or damaged)	Close the cold water inlet. Open the hot water tap. Wait 10 minutes, and if the water continues to flow, check the function of the entire safety system. Clean the safety device filter.
	ECO mode selected and ambient temperature very low	Change the device to the AUTO mode to initialize the automatic control of the system. For rapid heating of water, change the device mode to "BOOST".
Water is too hot or steam generates	Electrical heating OFF	Make sure that the backup electrical heating is on.
	Problem with temperature sensor	Check the errors displayed on the screen.
Excessive use of electrical heating as a backup (auto mode)	Problem with thermal fuse	Check the correct function of the thermal fuse.
	Low ambient temperature	The operation of the device depends on the conditions and the weather.
	Low water temperature	The operation of the device depends on the temperature of the inlet water.
	Low voltage installation	Make sure that the installation is powered by the voltage of the value stated on the plate.

	Heat pump failure	Check the errors displayed on the screen.
	Evaporator blocked	Clean the evaporator.
	Fan blocked	Check the fan status (dust, cable, ...).
Low hot water flow	Hydraulic circuit blocked	Check the condition of the hydraulic circuit.
Leaking safety valve	Absence or incorrect size of the expansion tank (unless the leak is continuous)	Installation or correct pressure in the expansion receptacle.
	High water pressure (unless the leak is continuous)	Check the pressure control valve (if installed). Install a pressure control valve (if not installed).
Power consumption is abnormally high and constant	Leak or blockage of the coolant circuit.	Make sure the duct is not damaged. Use a suitable device to check for leaks in the circuit.
	Adverse conditions of the environment	
Final electrical heating does not work	Safety thermostat ON	Check the status of the thermal fuse.
	Faulty electrical heating	Check the electrical heating.
Unpleasant odour	Absence of siphon or no water in the siphon	Install and make sure there is water in the siphon.
Condensate does not drain	Drain circuit clogged	Clean the condenser circuit.
	Drain pipe blocked	Check the drain pipe.
Too fast magnesium anode consumption	Magnesium anode wears in time. This wear is normal and prevents corrosion in the tank. Wear rate varies depending on the water quality. It is advisable to check the condition of the anode <u>at least once every 2 years</u> .	

11 MAINTENANCE OF THE APPLIANCE



Prior to carrying out any maintenance work on the appliance, make sure that the appliance is not powered.

Wait until the fan stops completely.

The liquid in the appliance may **ONLY** be handled by a qualified technician.



Although the coolant in the cooling circuit is ecological, it must not be discharged freely into the environment.

Ecological disposal must be ensured.

11.1 GENERAL MAINTENANCE



The coolant in the device can be handled **ONLY** by a qualified refrigeration technician with valid authorisation.

Over the lifetime of the appliance, user must perform general maintenance and control of the appliance depending on the place of installation:

- Surface cleaning of the appliance and the surrounding area with a wet cloth
- Visual inspection of the entire appliance in order to detect possible leakage and mechanical damage to the appliance.

11.2 DRAINING WATER FROM THE TANK



Remember that the water in the hot water tank **may have a high temperature**, and therefore a risk of scalding may be present.

Before emptying the hot water tank, allow temperature of hot water to drop to a level at which scalding can no longer occur.

Once the water temperature is at a safe level at which scalding can no longer occur, proceed as follows:

- Disconnect the system from power.
- Close the inlet cold water valve and open the hot water tap.
- Open the drain valve of the system.

11.3 MAGNESIUM ANODE

The appliance is equipped with a magnesium anode that, together with the materials used in the receptacle, ensures effective protection against corrosion.

The inner enamel surface of the tank ensures effective protection against corrosion which helps to maintain water quality within the health parameters. However, the characteristics of water vary according to the installation location (see Section 4.4 and warranty).

At the user's installation location the quality of water can be aggressive for the appliance. Therefore a magnesium anode is supplied together with the device that wears over time and protects your appliance. Wear of the anode depends on the characteristics of the water used. Checking the status of the anode is so very important, especially in the early years of the installation:

To check the status of the anode, follow these steps:

- Disconnect the appliance from the electrical outlet.
- Shut off the water supply.
- Reduce the pressure (for example, open a hot water tap) and reduce the water level.
- Unscrew the anode using a suitable tool.
- Check the wear of the anode and replace it if necessary.
- If the diameter of the anode is less than 15 mm, it needs to be replaced.

11.4 CLEANING OF PRESSURE CONTROL VALVE

For regular cleaning of the pressure control valve, proceed as follows:

- Shut off the water supply.
- Turn anti-clockwise until the spring is under tension.
- Remove the handle.
- Remove the filter and clean it.

11.5 CONDENSATE DRAIN

Remember within the routine maintenance and cleaning of the system to check the condensate drain system and the drip tray. Clean the drip tray used because it may contain accumulated dust from outer space, which can block the flow of condensate through the drainage holes. Make sure that the vents and the outlet pipes of the condensate are clear.

11.6 CLEANING THE VENTILATION CIRCUIT

Make sure the suction filters are not clogged. Check them at least once a year.

Dust may settle on the evaporator. Also, clean it; eye on the evaporator fins.



Evaporator fins are very thin; there is a risk of injury.
Be careful not to damage the fins.

11.7 THERMAL FUSE

The thermal fuse is deactivated when any abnormal condition occurs in the system, so every time you want to activate it, you must identify the problem that led to its shutdown.

If you are unable to determine what happened and the thermal fuse is still disabled, contact a service technician to resolve the problem.

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