

EN HEAT PUMP for pool
water heating

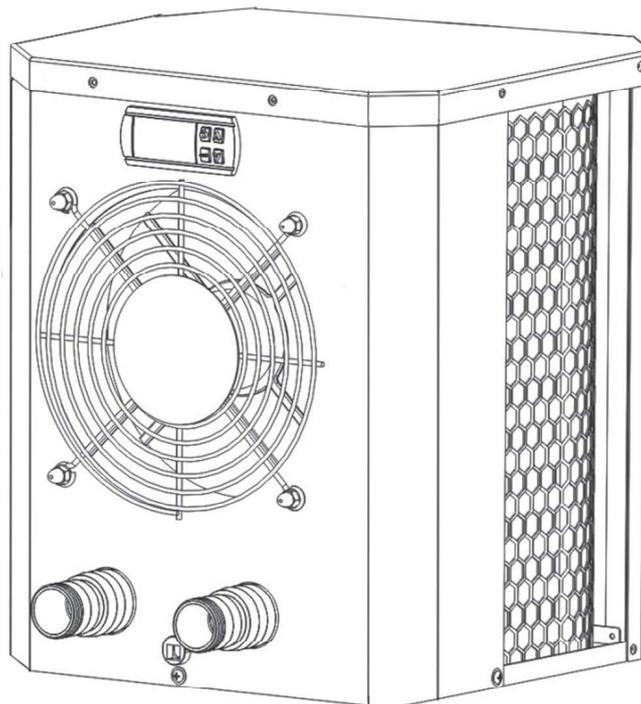
DE WÄRMEPUMPE zur
Schwimmbeckenwassererwärmung

IT POMPA DI CALORE per il riscaldamento
dell'acqua nelle piscine

PL POMPA CIEPŁA do podgrzewania
wody basenowej

Mountfield

AZURO 2.5 kW



Maintenance and User's Manual

3BTE0485
CZ-01/2019-No.: 793-A



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1. INTRODUCTION

Thank you for choosing our heat pump. It is designed to heat water in your pool at the ambient temperature from 12°C to 40°C.

This user's manual contains all necessary information for installation, operation and maintenance of the equipment. Read the user's manual thoroughly before starting any handling or maintenance. The manufacturer takes no responsibility for any injury or damage of property in case of incorrect installation, commissioning and insufficient maintenance.

This document is an integral part of the product and must be kept in the machine room or close to the heat pump.

The heat pump is designed for heating of pool water and for economical maintenance of its temperature at required level. Any other use is considered unintended.

The heat pump has the best efficiency at the air temperatures of 15 ÷ 30 °C. At temperatures below 12 °C the equipment has low efficiency and above +35 °C the equipment may overheat. We do not recommend use of the equipment in ambient temperatures outside the range from 12 ÷ 35°C.

The length of the pipeline between the heat pump and the pool should not exceed 10m and should be fitted with suitable heat insulation to maintain the temperature. Longer and/or thermally uninsulated pipeline has negative influence on the heating efficiency.



ATTENTION:

- **This heat pump must be installed by a professional.**
- **During the operation and maintenance observe the recommendations in this manual.**
- **During repairs use only original spare parts.**



ATTENTION: This manual contains all necessary information for the installation of the heat pump. The installation engineer must first read this manual and strictly adhere to the instructions for installation and subsequent maintenance.

The installation engineer is responsible for the installation of the product and must adhere to all instruction and relevant local regulations. Incorrect installation results in the expiry of the guarantee.

The manufacturer is not responsible for damages caused by persons, objects and error due to failure to adhere to instruction given herein. Any use in violation with the manufacturer's recommendations will be considered incorrect use.





Note: The illustrations and descriptions in this manual are not binding and may differ from the actual supplied product. The manufacturer and the supplier reserve the right for changes without the obligation to update this manual.

2. SAFETY INSTRUCTIONS



ATTENTION: DANGER. Contains flammable gas.

Only qualified professionals may conduct any service of this equipment!



ATTENTION: The equipment contains live electrical parts. Only qualified electrician may open the equipment. Electric shock hazard.

- A.** The equipment is not designed for the use by persons (including children) with reduced physical, sensory or mental capacities, unless a supervision and training by a qualified person is provided; persons not familiar with the operation in the scope of this manual; persons under the influence of drugs, intoxicating substances etc., reducing the capability of quick reaction.
- B.** The placement of the heat pump must comply with ČSN 33 2000-7-702, i.e. min. 2 m from the outer edge of a pool.
- C.** The power-supply circuit of the heat pump must comply with the relevant standard (ČSN 33 2000) and must be fitted with residual current device with breaking current 30mA.
- D.** Only a person with relevant electrical-engineering qualification may perform any interventions on the wiring of the heat pump and its power-supply circuit.
- E.** Do not install the heat pump in places, in which it may be flooded with water.
- F.** Prevent children playing in the operational area of the heat pump. The main switch of the heat pump must be located outside the reach of children.
- G.** Do not leave the heat pump running, if all covers are into in place, and don't insert any objects into the apertures in the covers. The rotating fan may cause a serious injury. The internal pipeline is hot during operation, it may cause burns when touched.
- H.** If you notice any unusual noise, odour or smoke from the heat pump, immediately switch the power supply off and ensure professional inspection of the entire equipment.
- I.** Should you notice any damage on the power-supply cable or on the extension cable, immediately switch the heat pump power-supply fuse off and repair the defect.
- J.** Only person with relevant qualification may perform repairs of the heat pump and interventions in the pressure coolant circuit.
- K.** The maintenance and operation must comply with this user's manual.
- L.** Use only original spare parts. Do not remove or modify any parts of the heat pump. In case on non-compliance with the recommendations herein the guarantee cannot be claimed.





3. SPECIFICATIONS

MODEL		AZURO 2.5kW
TYPE		XP025miniR3
Heating capacity	kW	2.5
Operational absorbed power	kW	0.59
COP (operational)		4.2
Heating capacity	kW	1.9
Operational absorbed power	kW	0.56
COP (operational)		3.4
Electrical specifications		
Power supply	V~ / Hz	230 / 50
Rated current	A	2.6
Recommended protection	A	7.5
Protection level		IP X4
Protection class		I
Pool installation specifications		
Recommended pool capacity	m ³	<11
Max. pool capacity	m ³	18
Recommended water flow	m ³ /h	2
Installation dimension	mm	32/38
General specifications		
Exchanger		titanium in PVC
Compressor		rotating
Air flow direction		horizontal
Fan speed	1/min	2100
Noise level (10m)	dB(A)	48
Noise level (1m)	dB(A)	57
Water pressure drop	kPa	15
Coolant (heat carrier)		R32
Coolant filling weight	g	150
CO ₂ quota	t	0.11
Weight net / gross	kg	18 / 20
Overall dimensions (D x H x V)	mm	310 x 364 x 375

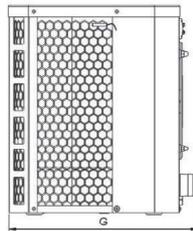
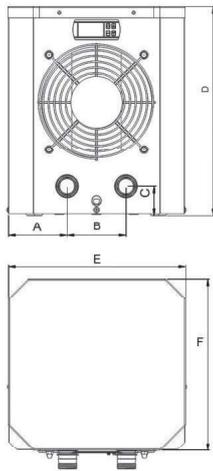
Nota: The values of the thermal power and operational absorbed power may differ according to the climatic and operational conditions.



Pool water specifications

The heat pump is designed for heating of pool water, which meets the specifications for health safety of the water for bathing. Limit values for the heat pump operation: pH value in range 6.8–7.9, total chlorine content may not exceed 3mg/l. Water hardness must be maintained at the lower level of the optimal range, i.e. just above 8°N.

Heat pump dimensions



mm	XP025	mm	XP025
A	90.4	E	310
B	130	F	300
C	50	G	363.5
D	375		

Note: The dimensions are given in millimetres. si

ATTENTION: The manufacturer reserves the right to modify the product, which will not affect its basic properties.

4. Installation

Handling the heat pump

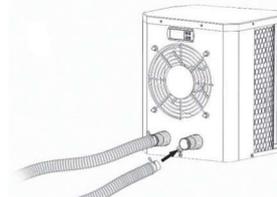
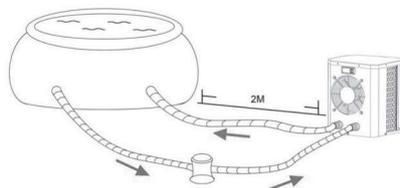
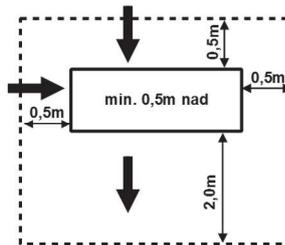
During transport use the original packaging, or package the equipment prior to transport in similar manner.

Do not lift the heat pump by the exchanger coupling. It may damage the equipment.

Installation of heat pump into filtration circuit

1. This heat pump must be installed by a professional. Otherwise there is a risk of damage to the equipment, injury of persons, animals or even death.
2. The equipment is designed for outdoor use with good ventilation. To ensure the optimal efficiency, the placement must meet the following conditions:
 1. Good air ventilation
 2. Stable power supply
 3. Pipeline with pool filtration
3. Avoid installation in places with increased dustiness, which leads to gradual deterioration of the heat exchange, or in places, where the stream of cold air or the noise may be disturbing (windows, terrace, arbour)
4. Do not orient the air output against the direction of prevailing winds.

5. Avoid installation of the equipment in places with limited air circulation or where obstacles to the air flow are present. Obstacles limit continuous supply of fresh air, suction of cool air back into the heat pump significantly degrades its efficiency.
6. During operation, water condenses on the blades of the evaporator and the resulting condensate flows to the bottom part of the heat pump and out of it at the bottom. If the flow of water out is disturbing, collect it into a suitable vessel, or arrange the flow into the sewage.
7. Consult indoor installation of the heat pump with a specialist.
8. In case of bypass installation ensure the flow of no more than 30%.
9. The image on the side shows the requirements for minimal distance of the heat pump from obstacles.
- 10 The distance of the equipment from the edge of the pool may not be shorter than 2m. Installation of the heat pump, so the overall length of connecting hoses doesn't exceed 30m, is recommended. Remember, that the longer the connecting hoses, the greater the heat and pressure losses in the line.
- 11 Optimal heat exchange is ensured with water flow specified on the name plate of the pump and in the specifications.
- 12 The equipment must be placed on a level and solid surface, e.g. on concrete plinth or steel support. The heat pump cabinet must be fastened to the surface (plinth or support) with bolts or screws with anti-vibration inserts. Rubber anti-vibration inserts not only reduce the noise of the heat pump, but also extends its service life.
- 13 During installation, remember the winter decommissioning of the heat pump, which requires timely, before the freezing temperatures occur, disconnection of the heat pump from the filtration circuit and, as other parts of the water circuit, drainage of all water. The guarantee does not cover the damage by frost.
- 14 The heat pump is fitted with connecting branches for connection of the pool hose with diameter of 32 or 38mm.
In case of installation above ground, always use pipes, not hoses. The exchanger threaded coupling cannot support the exchanger's weight and may damage of the exchanger may occur.
- 15 The placement of water treatment equipment (chlorinator, ozonator etc.) has significant impact on the service life of the heat pump. Disinfection dosage equipment must be placed so the dosage outlet is connected downstream from the heat pump. In this part of the line at least an air trap, preventing back flow of water, must be installed.



Note: The manufacturer supplies only the heat pump. Request all other components, including hoses and brackets, from your dealer.



5. Commissioning

Commissioning



IMPORTANT: Always handle the heat pump with the cover oriented up. If you are not sure this instruction was observed, leave the heat pump standing in place for 24 hours before switching it on.

Switch the filtration pump on and check, that sufficient amount of water flows through the heat pump and that no water leaks out.

Connect the heat pump to power supply and switch in on using the ON/OFF switch on the electronic control panel. The heat pump will start with a certain delay (see below).

After several minutes make sure the air flowing out of the heat pump is significantly cooler than the air sucked in.

Switch the filtration pump off and make sure the heat pump stops automatically as well.

Based on the initial temperature of the pool water and the air temperature it may take several days to heat the water to the required temperature. Covering the pool with cover or solar tarpaulin may significantly reduce this time.

Automatic control systems

Heat pump operation control based on the water temperature

The temperature in the exchanger inlet is compared by the control system with the target temperature and based on the result the heat pump is switched on and off. The heat difference is set in the factory to 2 °C, switching off takes place, when the water in the exchanger exceeds the target temperature by 1 °C, switching on takes place when the water temperature in the exchanger drops by 1 °C below the target temperature.

Note: When the temperature for switching the heat pump on is reached, a delay is activated. The heat pump will switch on when it elapses.

Delay

The equipment is fitted with a time-delay device with preset delay to protect the control elements in the circuit and to prevent repeated restarts and contactor flutter. This delay will automatically restart the equipment after app. 3 minutes after each shut down of the heat pump. The delay will be activated even after a short power outage to prevent start before the pressure inside the heat pump is equalized. Power outage during the delay doesn't affect the time interval.

Low ambient temperature

The efficiency of the heat pump operation decreases with the dropping ambient temperature. This heat pump is fitted with a protection against operation at low temperatures. After the ambient temperature drops below the preset value (from factory 12°C) the heat pump automatically stops (with appropriate message on display) and the automatic start will take place, when the ambient temperature rises by min. 1°C.

Safety temperature and pressure systems

The equipment is equipped with temperature sensors and pressure sensor, which automatically switch the equipment off when the temperature and pressure values are exceeded.





In case of a fault of any of the systems (fault on system, disconnect or abnormal value measured), the display will show an error message, see chapter 6. Maintenance, part Error messages, below.

6. Operation and controls

Operational instructions

IMPORTANT:

- The pool heating by the heat pump requires the operation of the filtration pump and water flow through the heat exchanger.
- Never switch the heat pump on, if it contains no water and if the filtration equipment is not working.
- Do not cover the heat pump; the ambient air must flow during operation.
- Protect the heat pump from freezing. Discharge water from the filtration and the heat pump and make the preparation for winter according to the manual before the first frost.

Water condensation

Lower evaporator temperature during the heat pump operation is the cause of air humidity condensation on the evaporator blades and formation of condensate or icing. If the relative humidity of air is very high, several litres of water may condensate in one hour. The water flows from the blades to the bottom of the cabinet and beneath it.

It is very easy to mistake the condensed water for water leakage from inside the heat pump. There are two simple methods to check, whether it is a condensate or not:

1. Switch the equipment off and leave only the pool pump running. If the water stops flowing, it is condensed water.
2. Perform test for chlorine presence in the flowing water (if chlorine is used for pool disinfection) – if the flowing water doesn't contain chlorine, it is condensate.

Note: Eventual ambient humidity is caused by the condensation of the water vapours and it is no problem.

Possible issues caused by external conditions

Under certain external conditions the exchange of heat between the coolant and water on one side, and between the coolant and air on the other, may be insufficient. This can lead to the increase of pressure in the coolant circuit and increased power consumption of the compressor.

The heat pump is fitted with pressure and temperature sensors, which will prevent incorrect operation under the extreme conditions.

The cause may be an insufficient water flow. To increase the heat exchange **coolant › water** close the by-pass valve (if installed) to increase the flow of water through the exchanger.

Notes on the heat pump operation

- The efficiency of the heat pump increases with rising temperature of the ambient air.
- Several days may be required to reach the required temperature. This time is normal and depends especially on the climatic conditions, volume of water in the pool, area of the





water surface, time of operation of the heat pump and thermal losses of the pool (e.g. evaporation from the surface, heat permeation, radiation etc.). In case no adequate measures are taken to reduce the heat losses, maintenance of a high water temperature is not economic and in some cases not possible.

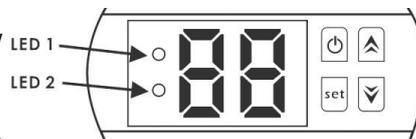
- To reduce the heat losses when the pool is not used, use covering or solar tarpaulin.
- The water temperature in the pool should not exceed 30°C. Warm water is not very refreshing and also creates optimal condition for algae growth. Certain pool components may also have temperature limitations. For example, the foil of foil pools may become softer. Therefore do not set the thermostat to more than 30°C.

5.1 Control panel

If the heat pump is working, the display will show the water temperature.

LED 1 is on, if the compressor is running.

LED 2 is on in case when an error message is issued.



Switching the heat pump on/off

Press the button to switch the heat pump on. The display will briefly show the preset target temperature and then the water temperature on the exchanger inlet.

Press the button again to switch the heat pump off.

Set the target water temperature

Use the and buttons to set the water temperature (range: 10 - 42°C). The temperature value on the display is flashing during setting. The preset temperature is saved after brief inactivity, the temperature value will stop flashing and the display will switch to show the water temperature on the exchanger inlet.

ATTENTION: The heat pump can operate only if a sufficient amount of water flows through it from the filtration system.

Check of specifications

Press the button to enter the parameter control mode. Press the or button to select the code d0 / d1, press the button again to display the measured value. Finally press the button to close the parameter control mode.

Code	Parameter
d0	Ambient temperature
d1	Water temperature on the exchanger inlet

7. Maintenance

Maintenance



ATTENTION: The equipment contains live electrical parts. Only qualified electrician may open the equipment. Electric shock hazard.





 **IMPORTANT: Prior to any intervention on the equipment make sure. that it is disconnected from power supply.**

 **ATTENTION: DANGER. Contains flammable gas.
Only qualified professionals may conduct any service of this equipment!**

- A. Regularly check the water line for water leaks or air suction, which would cause the aeration of the system.
- B. Clean the pool and filtration regularly to prevent any damage of the equipment due to a polluted or clogged filter.
- C. Regularly check the power supply and the condition of the supply cable. If the equipment starts to behave abnormally, switch the equipment off immediately and contact an authorized service.
- D. Regularly check the technical condition of the heat pump and remove any dirt from the evaporator to prevent any reduction of the heat exchange efficiency.
- E. Regularly check the working area of the pump, keep it clean and remove any accumulated dirt, leaves or snow.
- F. If you are not using the heat pump, disconnect it from the grid, discharge the water and cover it with a water resistant tarpaulin or PE sheet.
- G. Wash the heat pump from the outside using normal detergent and clean water.
- H. Regularly clean the external surface of the evaporator from accumulated dirt using a soft brush. Check the evaporator surface for any damage of the blades. The blades can be straightened using a flat, blunt tool. The guarantee does not cover mechanical damage of the blades.
- I. Regularly check the tightening of the bolts, attaching the equipment to the surface, bolts fastening covers and the wear of the power-supply cable. Clean corroded parts with a wire brush and treat them with anti-corrosion coating.
- J. Regularly remove the top cover and clean the inside of the heat pump from dirt.
- K. Only qualified expert can repair any internal parts of the heat pump.

Winter preparation

- A Disconnect the pump from the grid.
- B Discharge water from the pump by disconnecting the pool hoses from both couplings of the filtration circuit.
- C Remove remaining water from the exchanger by tilting it or by evacuation. Make sure there is no water in the exchanger (DANGER OF FREEZING).
- D Connect the pool hoses back to the coupling (do not tighten), to prevent dirt and water from entering the pump. During winter storage prevent water from entering the exchanger.

 **IMPORTANT: Correct winter preparation is very important. The pump exchanger must be free of water. The guarantee does not cover the eventual damage of the exchanger by frost.**





ERROR MESSAGES

MESSAGE	ERROR	Cause	Solution
P0	Ambient temperature too low or too high	1. Ambient temperature is outside the operational range of the heat pump 12 – 42°C 2. Faulty control unit	1. Wait, until the ambient temperature increases above 13°C or drops below 40°C 2. Have the control unit replaced
P1	Water inlet temperature sensor in the exchanger error	Damaged sensor	Check the sensor wiring on the main board, replace the sensor
P2	Ambient temperature sensor error	Damaged sensor	Check the sensor wiring on the main board, replace the sensor
EL	Protection against low coolant pressure	1. Damaged sensor 2. Coolant leakage	1. Check the sensor wiring on the main board, replace the sensor 2. Change the coolant amount

SOLUTION OF OTHER POSSIBLE ISSUES

ERROR	DEMONSTRATION	Possible cause	Solution
	Display shows nothing	Equipment has not power supply	Check the cable, supply, protection etc.
Heat pump doesn't work	Display shows the water temperature	<ol style="list-style-type: none"> 1. Water temperature reached preset value, heat pump is in preset temperature maintenance mode 2. Equipment is preparing for start-up (delay 3min) 	<ol style="list-style-type: none"> 1. Check the preset temperature 2. Wait min. 3 minutes
Short time of operation	The display shows water temperature and no error message	<ol style="list-style-type: none"> 1. Fan is not turning 2. Insufficient air flow 3. Coolant leakage 	<ol style="list-style-type: none"> 1. Have the internal fan wiring checked 2. Check possible obstructions of the air flow, eventually relocate the heat sensor 3. Let a professional check the coolant quantity.
Water sediments	Water sediments present on the heat pump	<ol style="list-style-type: none"> 1. Sediments from the surrounding environment 2. Water leakage 	<ol style="list-style-type: none"> 1. Clean the sediments. 2. Check for water leaks from the exchanger
Icing on evaporator	Icing on evaporator	Coolant leakage	Have a professional check the coolant volume

If problems persist, contact your dealer.

Warranty conditions, service and spare parts

Guarantee conditions apply as described in the guarantee certificate. Service and spare parts are provided by Mountfield a.s. through the outlets and service centres.