

KlimaTeknik Swimming Pool Heat Pumps Owner's Manual

KTX Models
KTY Models

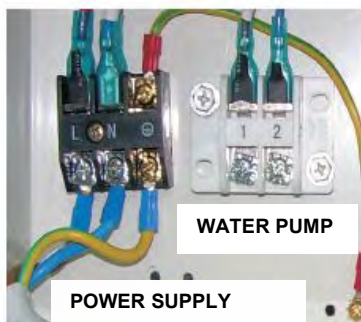


Warning:

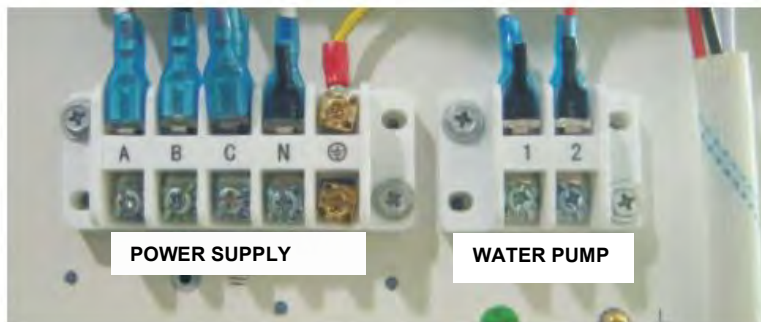
- Do not place your hand or any other objects into the air outlet and fan. It could damage the heat pump and cause injuries;
- In case of any abnormality with the heat pump, cut off the power immediately and contact a professional technician;

It is strongly advised to place a protective guard around the unit to keep children away from the heat pump.

An authorized electrician must connect the Heat Pump to the power. (230V 1ph or 400V 3ph)



230V / 1ph / 50Hz

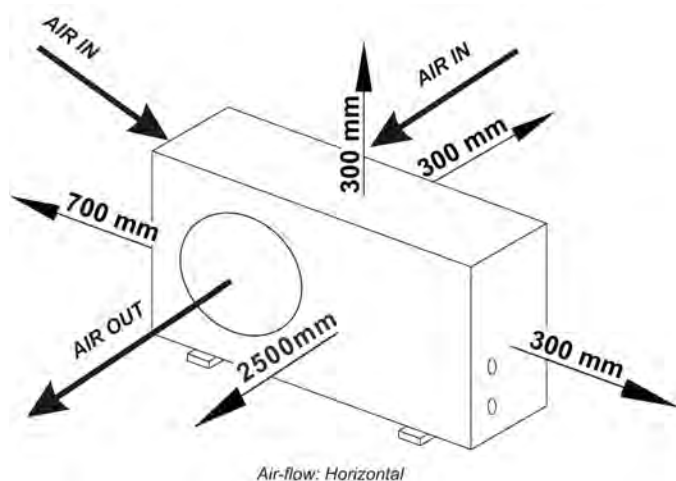


380-400V / 3ph / 50Hz

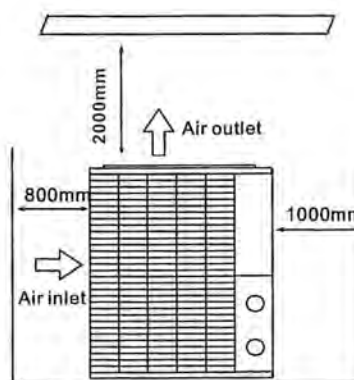
Remarks: Make sure that you have enough power.

Single Phase	Voltage Min 220 V at Heat Pump	FUSE - T3 (Slow Blow) Min. A	Running Current A +/- 10% Min 220 V	Average input kW	Recommended Cable Diameter (mm2). For max length of 20 m	3 Phase	Voltage Min 380 V at Heat Pump	FUSE - T3 (Slow Blow) Min. A	Running Current - A +/- 10% Min 380 V	Average input kW	Recommended Cable Diameter (mm2). For max length of 20 m
KT5Y / KT6X	230-240	10	4.5	1.0	2 x 1.5 mm2 + Ground	KT5Y3 / KT6X3	380-400	10	1.7	1.0	4 x 1.5 mm2 + Ground
KT6Y / KT8X	230-240	10	5.0	1.1	2 x 1.5 mm2 + Ground	KT6Y3 / KT8X3	380-400	10	1.8	1.1	4 x 1.5 mm2 + Ground
KT8Y / KT10X	230-240	13	7.3	1.6	2 x 2.5 mm2 + Ground	KT8Y3 / KT10X3	380-400	10	2.7	1.6	4 x 1.5 mm2 + Ground
KT10Y / KT13X	230-240	16	8.2	1.8	2 x 2.5 mm2 + Ground	KT10Y3 / KT13X3	380-400	13	3.0	1.8	4 x 2.5 mm2 + Ground
KT13Y / KT15X	230-240	16	9.5	2.1	2 x 2.5 mm2 + Ground	KT13Y3 / KT15X3	380-400	13	3.5	2.1	4 x 2.5 mm2 + Ground
KT15Y / KT17X	230-240	20	11.4	2.5	2 x 2.5 mm2 + Ground	KT15Y3 / KT17X3	380-400	13	4.2	2.5	4 x 2.5 mm2 + Ground
KT17Y / KT20X	230-240	20	15.9	3.5	2 x 4 mm2 + Ground	KT17Y3 / KT20X3	380-400	13	5.2	3.1	4 x 2.5 mm2 + Ground
KT21Y	230-240	25	16.8	3.7	2 x 4 mm2 + Ground	KT25X3	380-400	16	7.1	4.2	4 x 2.5 mm2 + Ground
KT25X	230-240	25	7.1	4.2	2 x 4 mm2 + Ground	KT25Y3 / KT30X3	380-400	16	8.4	5.0	4 x 2.5 mm2 + Ground
						KT35X3	380-400	20	10.1	6.0	4 x 4 mm2 + Ground

(See page 15 Cable table)



Air-flow: Horizontal



Air-flow: Vertical (Air-flow: Upwards)

See diagram above for minimum distance from the wall







1. First-time start-up

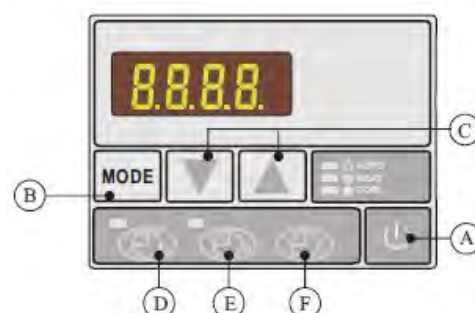
Note: in order for the unit to heat the pool (or spa), the filter pump must be running so that the water can circulate through the heat pump. Without this circulation, the heat pump will not start.

When all connections have been made and checked, the following steps should be followed:


- 1). Turn on the filter pump. Check for leaks.
- 2). Turn on the electrical power supply to the unit, then press the ON/OFF key on the electronic control panel.
- 3). When the unit has been running for a couple of minutes, check if the air leaving the unit is cooler than the ambient temp.
- 4). Check the performance of the flow switch as follows: with the unit running turn the filter pump off. The unit should also switch off automatically.
- 5). The unit and the filter pump should run 24 hours a day until the desired pool water temperature has been reached. Once the set temperature is reached, the unit will switch itself off. As long as the filter pump is running, the unit will restart automatically when the temperature of the pool water drops more than 1°C below the set temperature.

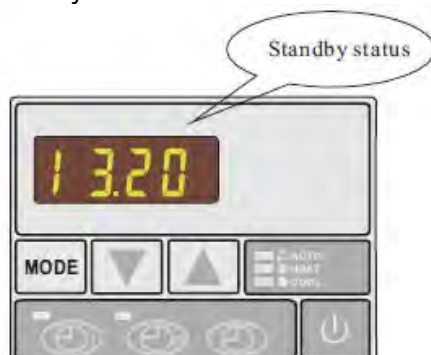
2. Controller diagram

- A. : Switch heat pump on or off
- B. MODE: Select auto, heating or cooling mode.
Corresponding indicator light will go on when selected
- C.  or : Press to change digits.
- D. : 'Timer start' setting button
- E. : 'Timer stop' setting button
- F. : Time setting button



3. How to start heat pump

When connected with power, the controller will display the time. This means that the unit is in standby. Press  to start the heat pump. The display will show the inlet water temperature.



4. How to change mode

Press MODE to select auto, heating or cooling mode: the indicator light on the right side of the controller will indicate the mode selected.



5. How to set the desired water temperature

1). *The unit has a unique temperature controlling system to satisfy any requirement.*

Heating Only Mode : (+ 1/ - 1°C “ from set point ”)

In Heating Mode the heat pump will only heat.

It will heat up to 1°C higher than the "Set" Temp. The heat pump will then stop, but it will continue to monitor the temperature in your pool.

(The filter pump must be running to enable the heat pump to measure the temperature).

When the temperature in the pool is 1°C lower than the "Set" Temp.

the heat pump will start again.

Cooling Only Mode : (+ 2/ - 0°C “ from set point ”)

This works the same way, but will only cool when the temperature exceeds the cooling "Set" Temp. by 2°C and it will cool down to the "Set" Temp.

Remember that the highest Cooling "Set" Temperature is 37°C.

Auto Mode : (“Automatically Heating Mode or Cooling Mode”)

In Auto Mode your heat pump will try to keep your desired pool temperature at all times.

Example :

If you want your pool to be 30°C:

A: If the pool-water is below 29°C the heat pump will start heating.

B: When the temperature reaches 31°C the heat pump will stop.

C: If the temperature in your pool continues to rise, and passes 32°C, the heat pump will start again, BUT in Cooling Mode, and cool down to 30°C.

D: If now the temperature continues to drop, and it drops below 29°C, the heat pump will start again, BUT in Heating Mode.

In Auto Mode the heat pump will try to keep the temperature within 2°C higher and 1°C lower than your "Set" Point.

(Remember that the filter pump has to run in order for the heat pump to work)

2). *How to set using the display controller :*

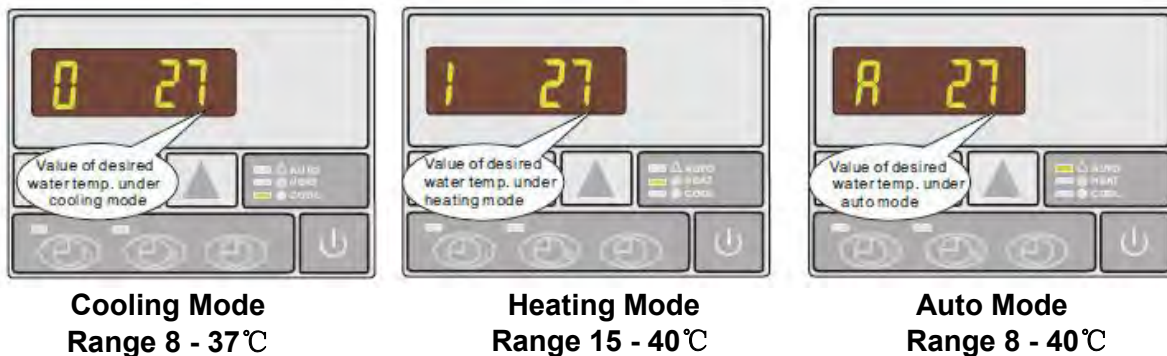
a. First select the desired mode: auto, heating or cooling

b. Regardless if the heat pump is "running" or in "standby" press ▲ or ▼.

The display will show the currently set water temperature of the selected mode with a flashing number: while it is blinking you can change the water temperature by pressing ▲ or ▼ to the temperature you want.

(Before you select the desired temperature, make sure you are in the correct mode: Heating / Cooling / Auto.)

After you see the desired temperature blinking, wait 5 sec. and the temperature is stored.



6. How to check parameter settings and measured values of current status

Regardless whether the heat pump is "running" or in "standby" press MODE for 5 sec.

The display will start to blink (both digits)

The first digit indicates the "parameter"

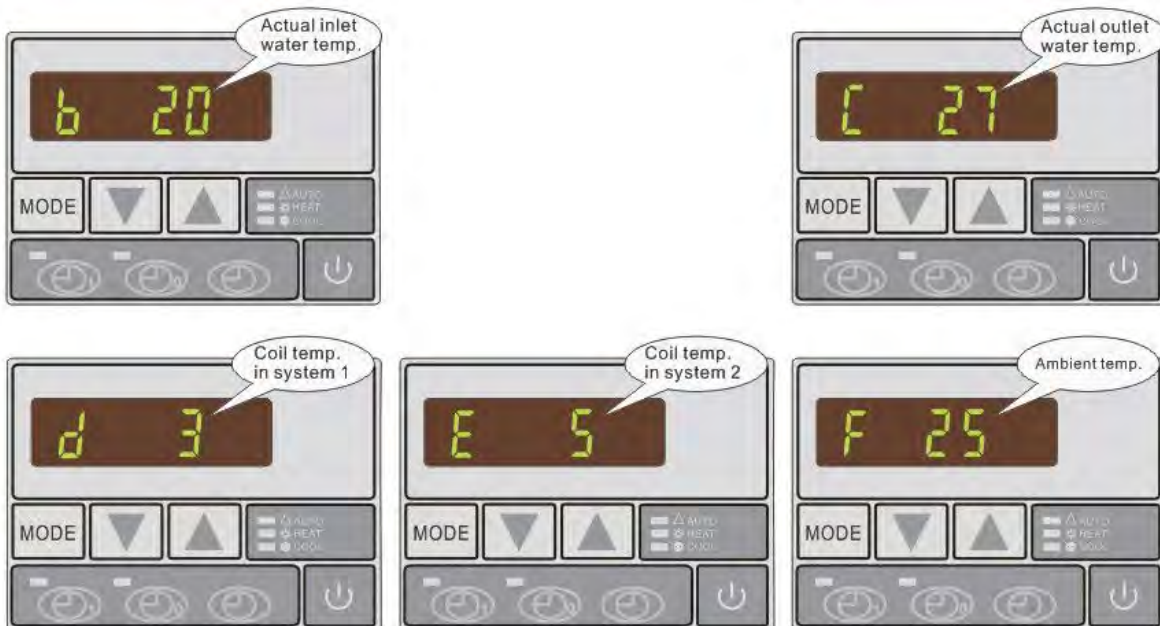
The second digit(s) indicate the value of the "parameter"

This "reading mode" will be deactivated if you do not press a button for 10 sec.

By pressing ▲ or ▼ you will see parameters from 0 to F (one by one)

Make a note of each parameter (for your records.)




Wait 10 sec. and this function is deactivated (you are back to normal)



Parameters overview







Parameter	Definition	Range	Default	Remark
0	Desired water temperature in cooling mode	8~37°C	12°C	Ajusted by Technicians
1	Desired water temperature in heating mode	15~40°C	28°C	Ajusted by Technicians
2	Defrosting cycle	30~90Min	45Min	Ajusted by Technicians
3	Evaporator temperature set point for starting defrosting	-30~0°C	-7°C	Ajusted by Technicians
4	Evaporator temperature set point for stopping defrosting	2~30°C	13°C	Ajusted by Technicians
5	Maximum duration for defrosting	1~12Min	8Min	Ajusted by Technicians
6	Number of compressor in the system	1~2	1	Ajusted by Technicians
7	Restart after power failure	0~1	1(Yes)	Ajusted by Technicians
8	Type: Cooling only 0/ Heating & cooling 1/ Heating & cooling + Auxiliary heating 2/ Heating only 3/	0~3	1	Ajusted by Technicians
9	Different working mode of water pump; water pump keeps working always 0/ water pump works in accordance with heat pump 1/	0~1	0	Ajusted by Technicians
A	Desired water temperature in auto mode	8~40°C	28°C	Ajusted by Technicians
B	Actual inlet water temp	-9~90°C		Measured Value
C	Actual outlet water temp	-9~90°C		Measured Value
D	Coil temp. in system 1	-9~90°C		Measured Value
E	Coil temp. in system 2	-9~90°C		Measured Value
F	Ambient temp	-9~90°C		Measured Value

7. How to set the clock

1. In standby, press  : hour digits will flash to indicate that they can be modified by pressing ▲ or ▼
2. Press  again: minute digits will flash to indicate that they can be modified by pressing ▲ or ▼
3. Press  again for final confirmation of time setting

Once time has been set, LED display will show time when heat pump is on standby.




8. How to set timer start and timer stop

- Press  to activate 'timer start' setting: hour and minute digits will be flashing together.
- Press  again to modify the hour setting: the hour digits will flash meaning they are ready to be modified by pressing ▲ or ▼.
- Press  again to modify the minute setting: the minute digits will flash meaning they are ready to be modified by pressing ▲ or ▼.
- Press  to confirm setting - display will return to standby status. 'Timer start' green indicator light will light up to show the starting time has been set.
- Repeat the same procedure using  instead of  to set 'timer stop'. 'Timer stop' red indicator light will light up to show the stopping time has been set.

Note: 'timer start' and 'timer stop' can be set together or separately (i.e. it is possible to set 'timer start' only and then stop the unit manually or set 'timer stop' only and start the unit manually).



9. How to cancel 'timer start' and 'timer stop

Press  to activate 'timer start' or  to activate 'timer stop': the corresponding indicator light will be flashing. Press  to cancel 'timer start' or 'timer stop'.

INFO:

The parameter can be changed by a skilled person. A code is needed to do so.

The procedure for this is in the "Main Manual".

The keypad can be locked to prevent unauthorized use or changes of the heat pump.

The procedure for this is in the "Main Manual".

If the control panel is locked, your dealer can advise you how to unlock it.

10. Recommendations

Important: failure to comply with these recommendations will invalidate the warranty

Note: non-compliance with one or more of these recommendations can damage the heat pump beyond repair. Always install water-treatment equipment (e.g. chemical dosing systems) after the water outlet of the heat pump, especially if the chemicals are automatically added to the water (e.g. automatic chemical dosing systems).

A check valve should also be installed between the outlet of the heat pump and the water-treatment equipment to prevent products from flowing back into the heat pump if the filter pump stops.

11. Heat pump winterizing

Important: failure to take necessary precautions for winterising can damage the heat pump, which will invalidate the warranty.

The heat pump, filter pump, filter and conduits must be protected in areas where the temperature can drop below freezing point. Evacuate all water from the heat pumps as follows:

1. Disconnect the electrical power supply to the heat pump.
2. Close the water supply to the heat pump completely.
3. Disconnect water inlet and outlet coupling fittings of the heat pump and let the water drain out of the unit. Make sure all water is out of the heat pump. **(if necessary, tilt the heat pump until all water has been drained from the heat exchanger). Damage caused to the heat exchanger due to freezing will not be covered by the warranty.**
4. Loosely re-attach water inlet and outlet coupling fittings of the heat pump in order to prevent dirt from getting into the conduits.

12. Restarting the pump after winter

If you emptied the heat pump for winterising, follow the steps below to restart it in spring:

1. First check that there is no dirt in the conduits and that there are no structural problems.
2. Check that the water inlet and outlet fittings are adequately fastened. Check that "water inlet" and "water outlet" are correct according to the labels on the heat pump (water out from the filter unit = water inlet on heat pump)
3. Start the filter pump to start the water flow to the heat pump. Adjust the by-pass so there is enough water running through the heat pump. Normally on a small filter system the by-pass can be closed, so all circulated water goes through the heat pump.
4. Reconnect the electrical power supply to the heat pump and turn the heat pump ON.

13. Check-up

Our heat pumps have been built and developed to last long if they have been installed correctly and can operate in normal conditions. Regular check-ups are important if you want your heat pump to function efficiently for many years. Below are some recommendations to ensure optimal working conditions for your heat pump.

- 1). Make sure that the service panel is easily accessible.
- 2). Keep the area surrounding the heat pump free of organic waste.
- 3). Prune any vegetation around the heat pump so that there is sufficient free space around the pump.
- 4). Remove any water sprinklers that are near the heat pump as they could cause damage to it.
- 5). Prevent rain from running directly onto the heat pump from a roof. Install proper drainage.
- 6). Do not use the heat pump if it has been flooded. Immediately contact a qualified technician to inspect the heat pump and carry out necessary repair.

Condensation can occur when the heat pump is running. This condensation water can flow away through an opening in the base pan of the unit. The amount of condensation water will increase when humidity is high. Remove any dirt that could block the water outlet on the

bottom pan. 5 to 20 liters per day of condensation water can be produced while the unit is running. If more condensation is produced, stop the heat pump and wait for one hour before checking for water leakage (keep the filter pump running).

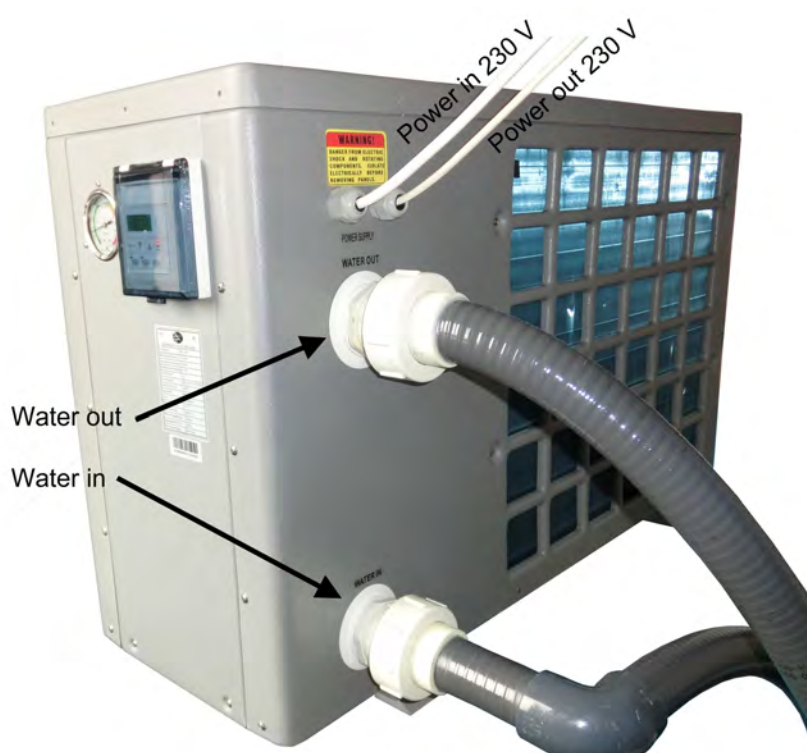
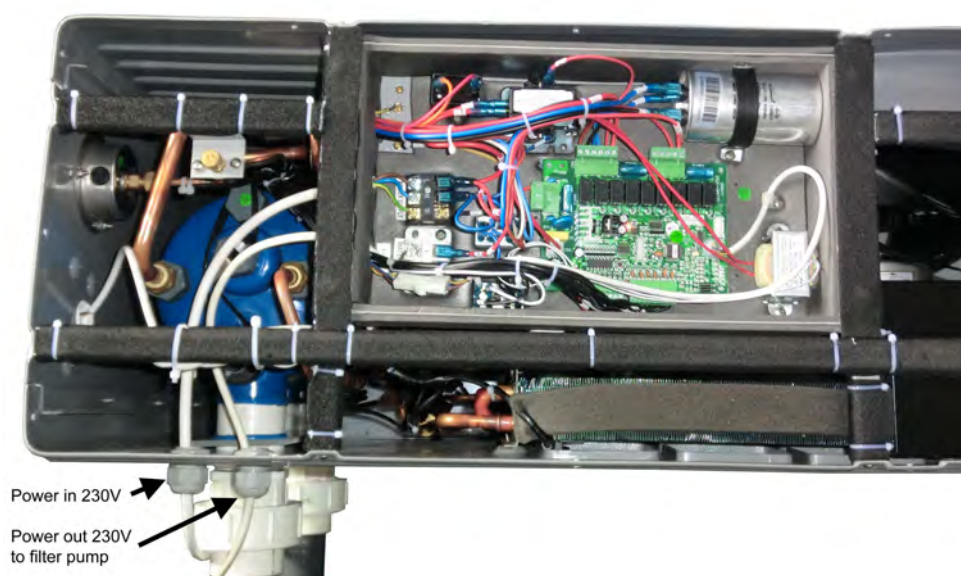
Note: a quick way to verify that the water running is because of the condensation. Shut off the unit and keep the pool pump running. If the water stops running out, it is condensation. AN EVEN QUICKER WAY IS TO TEST THE DRAIN WATER FOR CHLORINE. If no chlorine is detected, the drain water is a result of condensation.

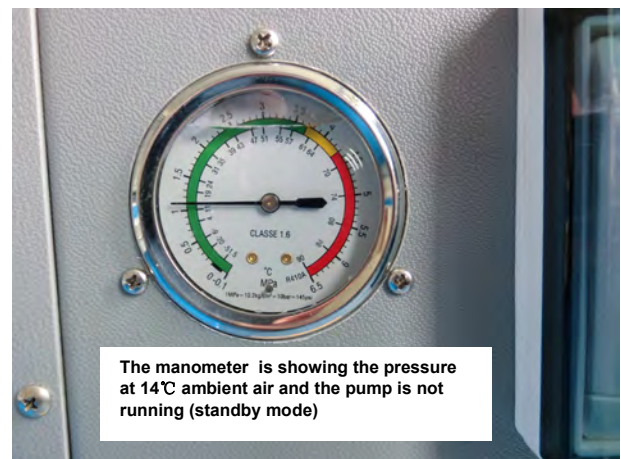
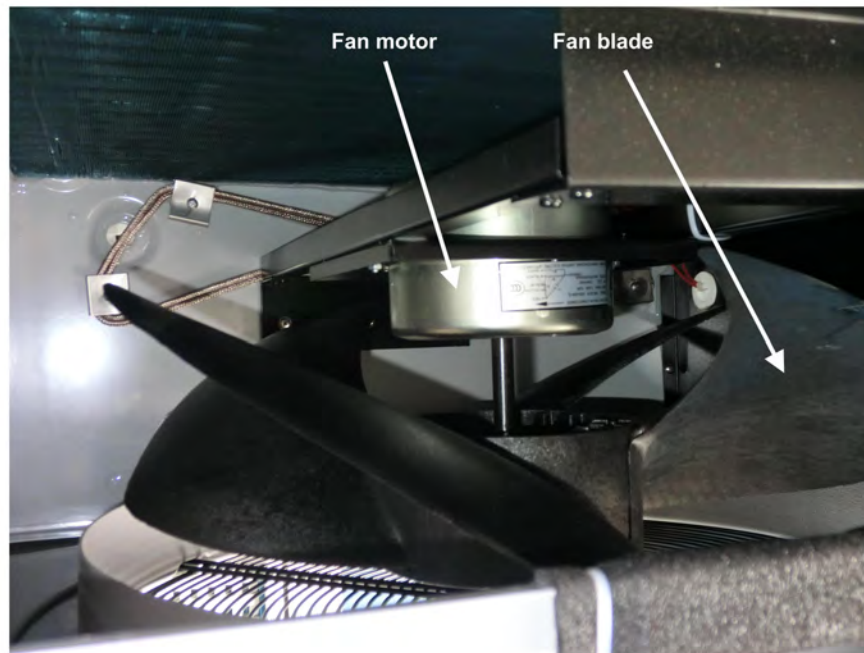
Also make sure that the air in and out passages are free, and prevent air out from immediately re-entering to the air in. (It is important to have min. 2.5m free space at the air out side of the heat pump).

14. Maintenance and Inspection

The picture below shows a heat pump with lid (top panel) off.

Do not open the Lid (Top panel) when the electrical power is connected to the heat pump.





15. Troubleshooting guide

Incorrect installation may result in an electrical charge that could lead to death or serious injury of users, installers or others by electrical shock and it may also cause damage to heat pump.

DO NOT attempt to modify the internal configuration of the heat pump.

1. Keep your hands and hair clear of the fan blades to avoid injury.
2. If you are not familiar with your pool filtration system and heat pump:
 - a. **Do not** attempt to carry out any adjustment or service without consulting your dealer, pool professional or air conditioning contractor.
 - b. Read the entire installation manual before attempting to use, service or make adjustments to the unit.
 - c. Wait for 24hours after the installation before starting the heat pump to prevent damage to the compressor. (If the heat pump has been transported and carried all the time with the feet down, it can be started immediately).

Note: Switch off the power before carrying out any maintenance or repairs.

IMPORTANT REMARK: if a malfunction cannot be resolved immediately, in order to analyse the problem we will need to know the message (error code) that is showing on the display controller as well as the values for the settings (parameters 0-A). We also need to know the status of the heat pump: the ambient temperature, water inlet / outlet temperature, if there is cold air coming out from the heat pump, if the grill (evaporator) is cold, or if there is ice on the heat pump.

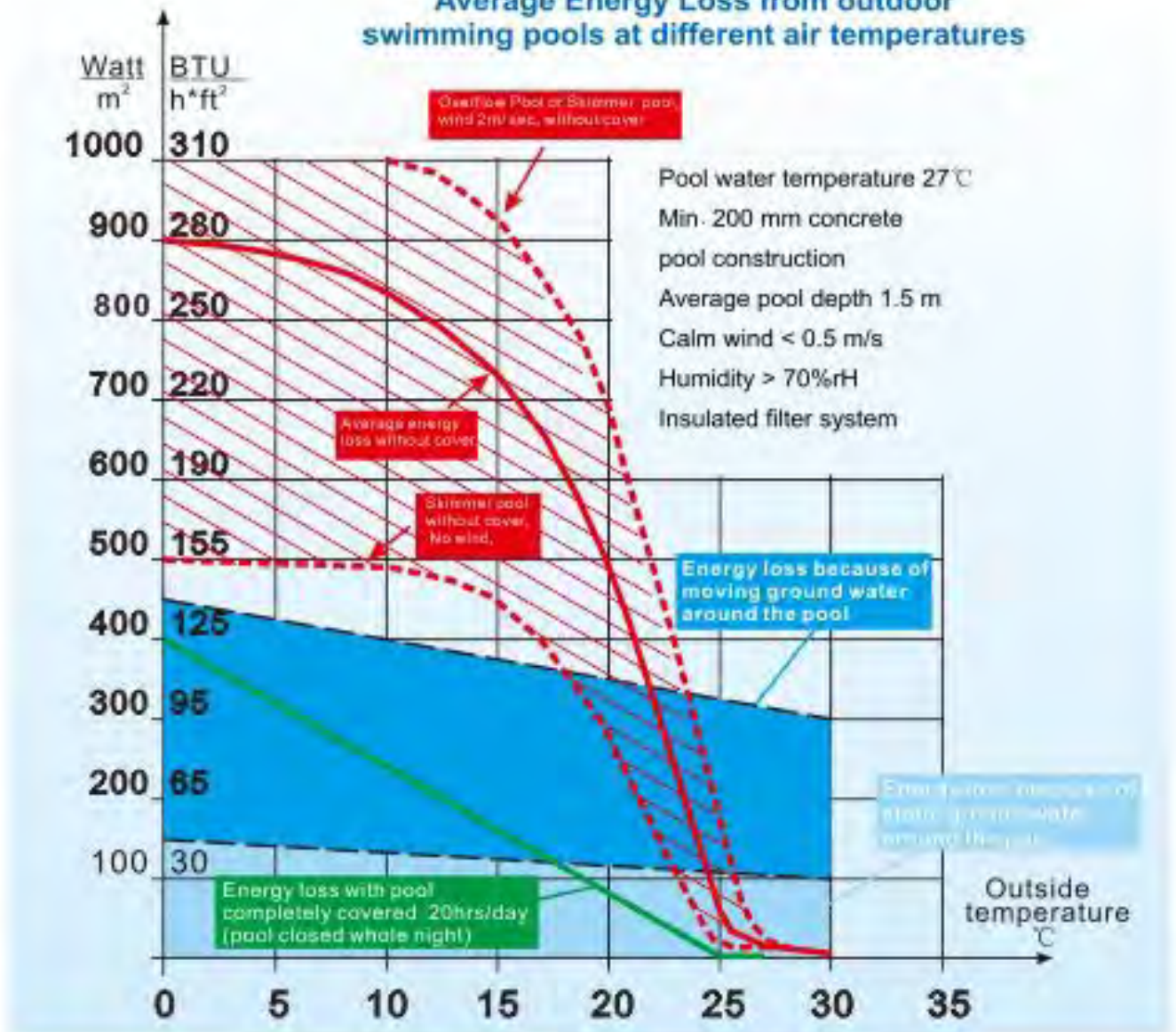
Please keep this information at hand when calling customer service (describe the issue).

On the following pages you will find an overview of the different types of failure problems that can occur together with instructions on how to solve them.

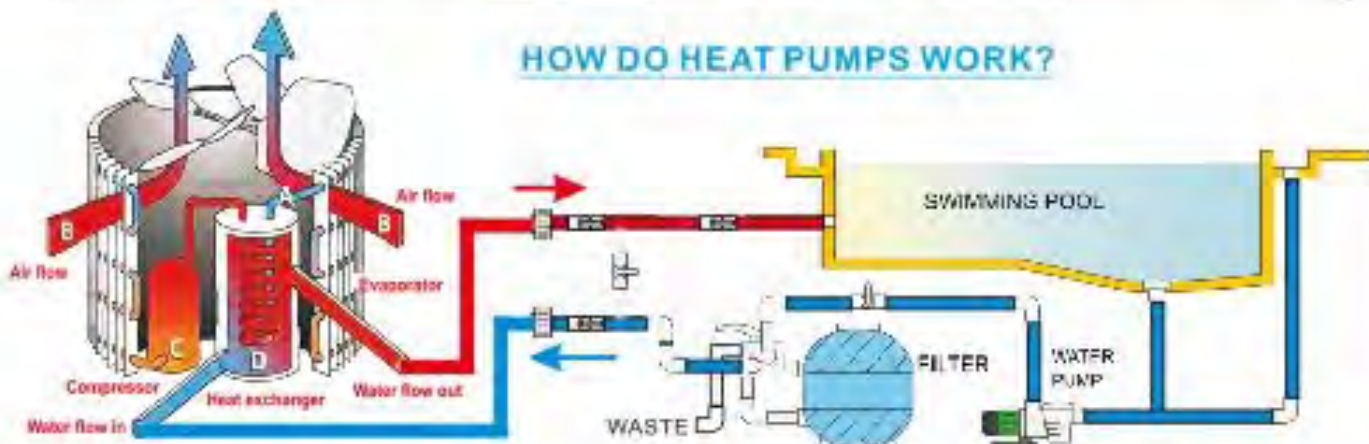
16. Overview of failure code on Display (LED controller)

Wire controller	Protection/Failure	Check	Solution
PP01/PP1	Inlet water temp. sensor failure	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP02/PP2	Outlet water temp. sensor failure	1. Check the connection of outlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP03/PP3	Coil 1 temp. sensor failure	1. Check the connection of coil 1 temperature sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP04/PP4	Coil 2 temp. sensor failure	1. Check the connection of coil 2 temperature sensor. temperature 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP05/PP5	Ambient temp. sensor failure	1. Check the connection of ambient temperature sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
PP06/PP6	Protection for excessive temp. difference between water inlet & outlet	1. Check if there is any blockage in the water circuit. 2. Check if the water flow volume is enough. 3. Check if the water pump is working.	1. Remove the cause of the blockage. 2. Increase the water flow volume. 3. Repair or replace the water pump.
PP07/PP7	Anti-freeze protection for cooling	Refer to PP06.	Refer to PP06.
PP07/PP7	Winter anti-freeze protection I	No action required	
PP07/PP7	Winter anti-freeze protection II	No action required	
EE03/EE3	Water flow switch failure	1. Check if wiring connection of flow switch is in correct position. 2. Check water flow. 3. Check if flow switch is broken. 4. Check if water pump is working.	1. Reconnect the wiring. 2. Increase water flow. 3. Replace flow switch. 4. Repair or replace water pump.
EE04/EE4	Order of phases incorrect (only for 3 phase model)	Order of phases incorrect	Reconnect the phases in right order.
EE01/EE1 EE06/EE6	High / Low pressure protection	1. Check if high or low pressure switch is broken. 2. Check if lack refrigerant level is low (for low pressure). 3. Ambient temp. and water inlet temp. is too low (for low pressure). 4. Check if there is a blockage in water circuit or if water flow is not enough (for high pressure). 5. Check if there is a blockage in refrigerant circuit (for high pressure).	1. Replace pressure switch. 2. Fill up with enough refrigerant. 3. Decrease water flow. 4. Remove cause of blockage or increase water flow. 5. Send heat pump to dealer for detailed check.
EE05/EE5	Failure of excessive temp. difference protection between water inlet & outlet	1. Check if there is enough water flow volume. 2. Check if inlet / outlet water temp. sensor is working.	1. Increase water flow. 2. Replace sensor.
No display	Defrosting		
EE08/EE8	Communication failure	Check the connection	Reconnect the connection wire.

Average Energy Loss from outdoor swimming pools at different air temperatures



HOW DO HEAT PUMPS WORK?



If you suspect something is wrong with your Heat Pump?

Before you call for service, fill out below. (Reg. Card is sent to **NICO Norge** __)
Send to your Dealer and keep a copy in front of you when you call.

Model written on Heat Pump: _____ Serial No: _____

Delivered from Company: _____

Installation date: _____ Installed: Outside __ Inside__ inside in a shed __

Distance to obstacles: Front __ m Back __ m Top __ m

Pool Surface Area _____ m² Pool is: Covered __ Uncovered __

Other Heating system for the Pool: Yes __ No __ Desired Pool temp ____C

Normal Air Temperature: ____C Normaly: Dry Air __ Humid Air __

Pool Filter Pump: _____ kW. Filter is Clean __ Pressure on filter: _____

Max Pool Temperature reached ____ C° Desired Pool Temp ____C°.

Is there Ground Water around the pool? YES__ NO__ DON'T KNOW__

Any Failure Code on Display _____. Check Settings. See Default Settings:

Observed Settings: _____

Is the heat pump: Running __ Running sometimes __ Not running at all __

Is the heat pump: Heating __ Not Heating enough __ Not heating at all __

Is the fan running? YES__ NO__ Is there ice on "Radiator" YES__ NO__

Is there Cold Air coming out from Radiator: YES__ NO__ DON'T KNOW__

Are there leaves or dirt on the fins on the "Radiator" YES__ NO__

Gas Pressure on heat pump? Running _____Pa Not running _____ Pa

Do Following:

Switch Main Power OFF. Wait 3 min. Power ON, Heat Pump ON. > Listen:

Does the **fan** start within 2 Min? YES__ NO__

Does the **compressor** start within next 2 Min? YES__ NO

Check:

Voltage on Heat Pump connections: Standby __V. ON__V. Running __V

Fuse for Heat Pump _____A Cable size from Fuse to Heat Pump _____mm²

Are the Fuse if Type: Slow Blow / Motor Fuse / Yes__ No__

Parameter Settings

If Possible read, and Note all parameter settings. (See Page 6)

0 = _____ 1 = _____ 2 = _____ 3 = _____ 4 = _____ 5 = _____

6 = _____ 7 = _____ 8 = _____ 9 = _____ A = _____ B = _____

C = _____ D = _____ E = _____ F = _____

NOTES _____

Potential Failures.

a. Ice on the “radiator” (Evaporator).

Wrong parameter settings.

Too low air temperature. PCB defect.

b. Too little heating.

Energy loss from pool too big. Obstacles in front of the heat pump. Heat Pump installed inside a shed. Recirculation of air through the heat pump. “Radiator” is filled with leaves and dirt.

c. The heat pump stops. (Error code EE3)

Too little water flow, Check Filter and filter Pump. Air in the Filter system. Water Flow Switch defect.

d. The heat pumps stops and starts frequently

Too little water flow. Air leakage in pipes on suction side. Check Filter and filter Pump. Air in the Filter system. Water Flow Switch defect.

e. Heat pump does not work periodically

Weak power Supply. Too long Supply Cable. Too small cable, Wrong Fuse

f. Problem to start the compressor.

Starting / running Capacitor defect.

To low voltage

To thin Cable

Single Phase	Voltage Min 220 V at Heat Pump	FUSE - T3 (Slow Blow) Min. A	Running Current - A +/- 10% Min 220 V	Average input kW	Recommended Cable Diameter (mm ²). For max length of 20 m
KT5Y / KT6X	230-240	10	4.5	1.0	2 x 1.5 mm ² + Ground
KT6Y / KT8X	230-240	10	5.0	1.1	2 x 1.5 mm ² + Ground
KT8Y / KT10X	230-240	13	7.3	1.6	2 x 2.5 mm ² + Ground
KT10Y / KT13X	230-240	16	8.2	1.8	2 x 2.5 mm ² + Ground
KT13Y / KT15X	230-240	16	9.5	2.1	2 x 2.5 mm ² + Ground
KT15Y / KT17X	230-240	20	11.4	2.5	2 x 2.5 mm ² + Ground
KT17Y / KT20X	230-240	20	15.9	3.5	2 x 4 mm ² + Ground
KT21Y	230-240	25	16.8	3.7	2 x 4 mm ² + Ground
KT25X	230-240	25	7.1	4.2	2 x 4 mm ² + Ground

3 Phase	Voltage Min 380 V at Heat Pump	FUSE - T3 (Slow Blow) Min. A	Running Current - A +/- 10% Min 380 V	Average input kW	Recommended Cable Diameter (mm ²). For max length of 20 m
KT5Y3 / KT6X3	380-400	10	1.7	1.0	4 x 1.5 mm ² + Ground
KT6Y3 / KT8X3	380-400	10	1.8	1.1	4 x 1.5 mm ² + Ground
KT8Y3 / KT10X3	380-400	10	2.7	1.6	4 x 1.5 mm ² + Ground
KT10Y3 / KT13X3	380-400	13	3.0	1.8	4 x 2.5 mm ² + Ground
KT13Y3 / KT15X3	380-400	13	3.5	2.1	4 x 2.5 mm ² + Ground
KT15Y3 / KT17X3	380-400	13	4.2	2.5	4 x 2.5 mm ² + Ground
KT17Y3 / KT20X3	380-400	13	5.2	3.1	4 x 2.5 mm ² + Ground
KT25X3	380-400	16	7.1	4.2	4 x 2.5 mm ² + Ground
KT25Y3 / KT30X3	380-400	16	8.4	5.0	4 x 2.5 mm ² + Ground
KT35X3	380-400	20	10.1	6.0	4 x 4 mm ² + Ground

How to choose KT Heat Pumps for your pool

