ISSUMINVR32-RevA

SUMHEAT FULL INVERTER

SWIMMING POOL HEAT PUMP UNIT

R32

Installation & Instruction Manual

CONTENTS

Please read attentively and save for future consultation.
This document must be given to the pool owner and should be kept in a safe place.

1. PREFACE

Thank you for purchasing the Hayward heat pump for swimming pools. The Hayward SUMHEAT FULL INVERTER heat pump has been designed to strict manufacturing standards meeting the highest levels of quality required.

Hayward heat pumps offer you exceptional performance throughout your bathing season by adapting wattage, power usage and noise levels to the heating requirements of your swimming pool thanks to FULL INVERTER control logic.

Read the instructions in this manual carefully before using the device.

Hayward heat pumps are designed exclusively to heat swimming pool water; do not use this equipment for any other purpose.

This manual includes all the necessary information for installation, trouble-shooting and maintenance.

Read this manual carefully before opening the unit or doing any maintenance work on it. The manufacturer of this product shall on no account accept any liability for injury to a user or damage to the unit further to any errors made during installation, trouble-shooting or unnecessary maintenance. It is particularly important to follow the instructions given in this manual at all times.

Otherwise the guarantee will be voided.

Safety instructions

This device contains R32.

Never use a refrigerant other than R32. Any other gaseous body mixed with R32 could cause abnormally high pressure and lead to a failure or pipes bursting and injuring people.

During repairs or maintenance operations, use copper tubes that comply with Standard EN 12375-1 (May 2020) and the European Pressure Equipment Directive 97/23 / EC.As the heat pump is pressurized, never pierce the pipes or attempt any brazing. There is a risk of explosion.

Never expose the device to flames, sparks or other sources of ignition. It could explode and cause serious or even fatal injuries.

The heat pump is designed exclusively for installation outside buildings.

- If kept in storage, the heat pump should be kept in a well-ventilated room with a floor area of more than A_{min}(m²) as calculated by the following formula: $A_{min} = (M/(2.5 \times 0.22759 \times h0))^2$.
  M is the quantity of refrigerant in the device in kg, and h0 is the storage height. If stored no the floor, h0 = 0.6 m.
- The unit must be installed by qualified personnel.
- Do not install the heat pump on a support that risks intensifying the unit's vibrations.
- Make sure the support provided for the unit is strong enough to bear the weight of the unit.
- Do not install the heat pump anywhere liable to amplify its noise level or anywhere where its noise could disturb neighbours.
- All the electrical connections must be fitted by a professional qualified electrician in accordance with the standards in force in the country of installation, see §3.4.
- Shut off the main power supply and disconnecting switch before doing any electrical work. Forgetting to do so could cause electrocution.
- Before installing the unit, check that the earth cable is not cut or disconnected.

1. PREFACE (continued)

- Connect and properly tighten the power cable. A loose connection could damage electrical components.
- Exposing the heat pump to water or a humid atmosphere could cause electrocution. Be very careful.
- If you detect a fault or any abnormal situation, do not install the heat pump and contact your dealer immediately.
- All maintenance work should be done at the recommended intervals, as specified in this manual.
- Repairs must be carried out by qualified personnel.
- Only use OEM spare parts.
- Never use a cleaning method other than the one recommended in this manual.

Important information concerning the refrigerant used

This makes contains fluorinated greenhouse gases regulated by the Kyoto protocol. Do not release these gases into the atmosphere.

Type of refrigerant: R32

Security unit: A2L

GWP(1) value: 675, based in the 4th report of the IPCC.

The quantity of refrigerant, based on the F-Gas regulation no. 517/2014, is stated on the unit's rating plate.

Period checks for leaks of refrigerant may be required by European or local legislation. Please contact your local dealer for more information.

(1) Global warming potential

2. SPECIFICATIONS

2.1 Technical data for the swimming pool heat pump unit

Models	SUMHEAT Full Inverter	HP5131DT3	HP5171DT3	HP5211DT3	HP5251DT3	HP5301DT3
Supply voltage	V / Ph / Hz	220 V - 240 V ∿ / 1 h / 50 Hz				
Refrigerant	Type	HFC - R32 - (CH2F2)				
Security unit	Type	A2L				
Load	kg	0.65	0,8	1,35	1,65	1,8
Mass in teqCO_2	teqCO_2	0.44	0,54	0,91	1,11	1,22
Leak check frequency	/	Aucune exigence mais conseillé de façon annuelle				
Min--Max heating capacity (a)	kW	3,66 -- 13,48	3,65 -- 17,05	6,35 -- 21,47	5,10 -- 24,30	7,74 -- 30,30
Min--Max electric input power (a)	kW	0,27 -- 1,92	0,24 -- 2,47	0,46 -- 2,80	0,37 -- 3,79	0,59 -- 4,98
Min--Max continuous current rating (a)	A	1,70 -- 8,40	1,58 -- 10,78	2,81 -- 12,24	2,29 -- 16,57	3,48 -- 21,77
Max--Min continuous power (COP) (a)	/	13.35 -- 6,99	15 -- 6,89	13,66 -- 7,65	13,52 -- 6,41	13,03 -- 6,07
Min--Max heating capacity (b)	kW	2,66 -- 10,01	2,87 -- 12,63	4,76 -- 16,49	3,90 -- 18,96	5,53 -- 22,36
Min--Max electric input power (b)	kW	0,43 -- 2,01	0,43 -- 2,41	0,64 -- 2,88	0,62 -- 3,78	0,86 -- 4,67
Max--Min continuous power (COP) (b)	/	6,19 -- 4,98	6,58 -- 5,24	7,49 -- 5,72	6,33 -- 5,01	6,45 -- 4,79
Maximum continuous current	A	12	15,5	17,7	22,6	23
Fuse rating	aM	16	16	20	25	25
Circuit-breaker curve D	D	16	16	20	25	25
Starting current	A	< CMS				
Hydraulic connection	mm	50 mm				
Nominal water flow (a)	m^3/h	5,7	7,2	9,2	10,5	13,1
Max. loss of head on water	kPa	5	8	17	15	46
Compressor	/	Mitsubishi	Mitsubishi	Panasonic	Panasonic	Mitsubishi
Type	/	Double Rotatif				
Quantity	/	1				
Coil resistance at 20°C	Ohm	0,95	0,95	0,88	0,88	0,49
Fan	/	Axial				
Quantity		1				
Diameter	mm	522	522	560	560	600
Number of blades	/	3				
Motor	/	DC Inverter				
Quantity	/	1				
Rotation speed	Tr/min	500 -- 700	600 -- 700	500 -- 700	600 -- 750	500 -- 700
Silent mode speed	Tr/min	400				
Sound pressure level at 1 meter	dB(A)	/	49,3 -- 51,8	55,9 -- 58,3	54,6 -- 59,9	56,8 -- 62,5
Sound pressure level at 10 meters	dB(A)	/	32,8 -- 35,1	40,3 -- 42,5	39,1 -- 44,4	41,7 -- 47,3
Unit's net dimensions (L-W-H)	mm	780 x 730 x 868		797 x 777 x 965		846 x 920 x 1024
Weight	kg	69	75	101	101	123

(a) Dry air 27°C - Relative humidity 78% - Water inlet temperature 26°C.
(b) Dry air 15°C - Relative humidity 71% - Water inlet temperature 26°C

2. SPECIFICATIONS (continued)

Models	SUMHEAT Full Inverter	HP5211ET3	HP5251ET3	HP5301ET3	HP5361ET3
Supply voltage	V / Ph / Hz	380 V - 415 V ∿ / 3 ph / 50 Hz			
Refrigerant	Type	HFC - R32 - (CH2F2)			
Security unit	Type	A2L			
Load	kg	1,35	1,65	1,8	1,9
Mass in teqCO_2	teqCO_2	0,91	1,11	1,22	1,28
Leak check frequency	/	Aucune exigence mais conseillé de façon annuelle			
Min--Max heating capacity [(a)]	kW	6,24 -- 22,10	6,02 -- 24,50	8,12 -- 31,20	7,78--35,45
Min--Max electric input power [(a)]	kW	0,46 -- 3,07	0,41 -- 3,67	0,59 -- 5,08	0,64--6.78
Min--Max continuous current rating [(a)]	A	1,00 -- 5,10	0,90 -- 5,81	1,21 -- 8,23	0,5--11,0
Max--Min continuous power (COP) [(a)]	/	13,70 -- 7,19	14,53 -- 6,68	13,72 -- 6,14	12,16--5,23
Min--Max heating capacity [(b)]	kW	4,84 -- 16,92	4,55 -- 19,55	5,52 -- 23,05	6,40--27,53
Min--Max electric input power [(b)]	kW	0,68 -- 3,10	0,63 -- 3,68	0,79 -- 4,94	0,94--6,65
Max--Min continuous power (COP) [(b)]	/	7,10 -- 5,46	7,18 -- 6,42	6,98 -- 4,66	6,81--4,14
Maximum continuous current	A	8,7	11,7	13,3	14,4
Fuse rating	aM	10	12	16	16
Circuit-breaker curve D	D	10	12	16	16
Starting current	A	< CMS			
Hydraulic connection	mm	50 mm			
Nominal water flow [(a)]	m^3/h	9,1	10,5	12,6	14,6
Max. loss of head on water	kPa	17	15	46	23
Compressor	/	Panasonic	Panasonic	Mitsubishi	Mitsubishi
Type	/	Double Rotatif			
Quantity	/	1			
Coil resistance at 20°C	Ohm	0,88	0,88	0,49	0,49
Fan	/	Axial			
Quantity		1			
Diameter	mm	560	560	600	600
Number of blades	/	3			
Motor	/	DC Inverter			
Quantity	/	1			
Rotation speed	Tr/min	500 -- 700	600 -- 750	500 -- 700	500--750
Silent mode speed	Tr/min	500	400	400	400
Sound pressure level at 1 meter	dB(A)	56,4 -- 61	55,2 -- 59,7	55,6 -- 59,3	/
Sound pressure level at 10 meters	dB(A)	40,9 -- 45,4	40,9 -- 44,2	36,1 -- 42,2	/
Unit's net dimensions (L-W-H)	mm	797 x 777 x 965		846 x 920 x 1024	
Weight	kg	101	101	123	123

(a) Dry air 27°C - Relative humidity 78% - Water inlet temperature 26°C.
(b) Dry air 15°C - Relative humidity 71% - Water inlet temperature 26°C

2. SPECIFICATIONS (continued)

2.2 Operating range

Use the swimming pool heat pump unit within the following ranges of temperature and humidity to ensure safe and efficient operation.

	Heating mode 	Cooling mode 
Outside temperature	-15°C – +43°C	+7°C – +43°C
Water temperature	+12°C – +40°C	+8°C – +40°C
Relative humidity	< 80%	< 80%
Setting range from the set point	+15°C – +32°C	+8°C – +32°C

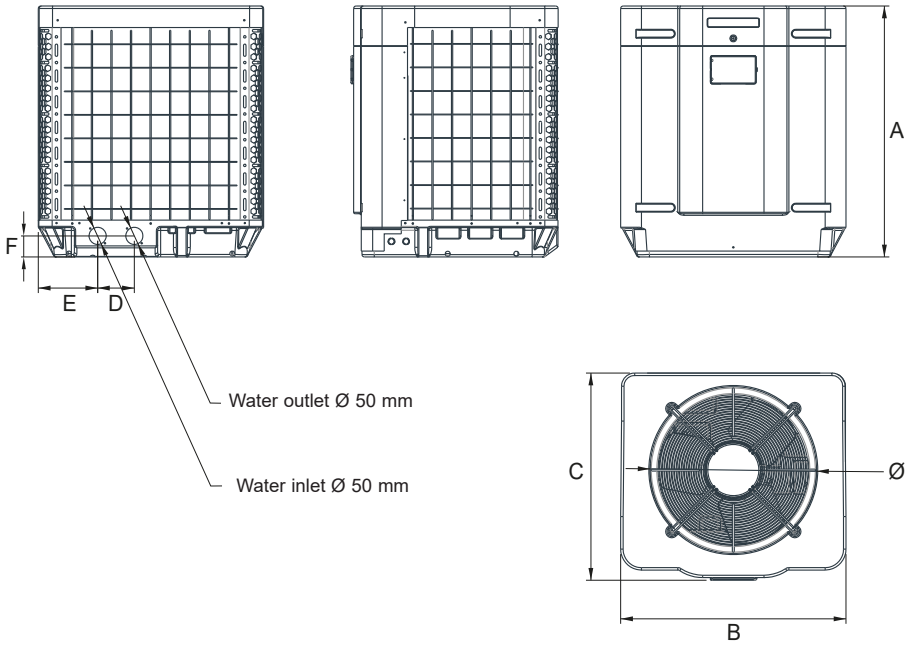
If the temperature or humidity does not correspond to these conditions, the security measures could be activated and the swimming pool heat pump unit may no longer work.

The maximum heating temperature is set at 32°C to prevent damage to the liners. Hayward cannot be held responsible if used at a temperature above +32°C.

2. SPECIFICATIONS (continued)

2.3 Dimensions

Models:
HP5131DT3 / HP5171DT3 / HP5211DT3 / HP5251DT3 / HP5301DT3
HP5211ET3 / HP5251ET3 / HP5301ET3 / HP5361ET3

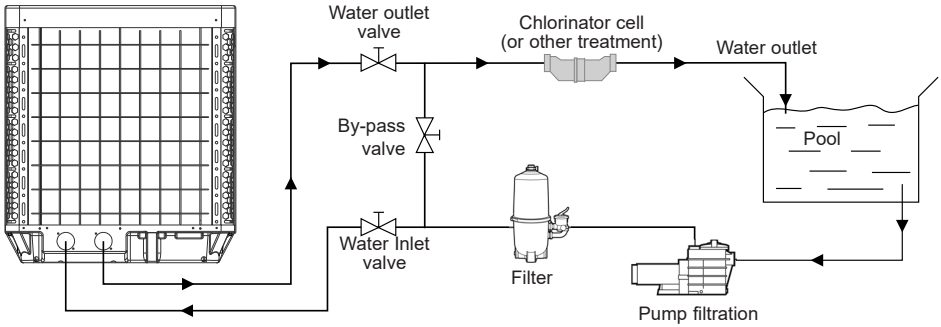


Unit: mm

Model / Mark	HP5131DT3/ HP5171DT3	HP5211DT3	HP5251DT3	HP5301DT3	HP5211ET3	HP5251ET3	HP5301ET3/ HP5361ET3
A	867,5	965	965	1024	965	965	1024
B	730	777	777	920	777	777	920
C	780	797	797	846	797	797	846
Ø	610	650	650	680	650	650	680
D	120	120	120	150	120	120	150
E	204	204	204	242	204	204	242
F	87	85	85	86	85	85	86

3. INSTALLATION AND CONNECTION

3.1 Functional Diagram



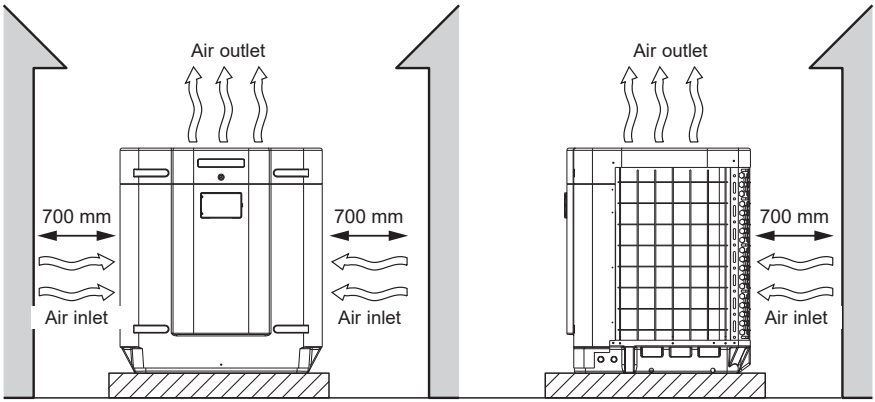
Note: The swimming pool heat pump unit is sold without any treatment or filtration equipment. The components presented in the diagram are spare parts to be supplied by the installer.

3.2 Heat pump unit

Place the heat pump outdoors and away from any enclosed technical space.

Placed in the shade or near an obstacle, the minimum required distances mentioned below must be respected in order to avoid any risk of air recirculation and a deficiency in the unit's overall performance.

Unit: mm



3. INSTALLATION AND CONNECTION (continued)

It is advised to install the unit on a dissociated cement block.

The maximum installation distance between the unit and the swimming pool is 15 metres.

The total length of the piping to and from the unit is 30 metres.

Insulate both the above ground and buried hydraulic piping.

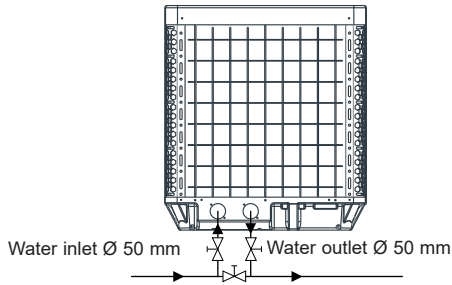
The heat pump must be installed at a minimum distance from the pool in compliance with NF C 15-100 (3.5 m from the water for France) or in compliance with installation standards applicable in other countries.

Do not install the heat pump close to a heat source.

For installation in snowy regions we recommend sheltering the machine to avoid snow accumulating on the evaporator.

3.3 Hydraulic connection

The unit is supplied with two 50 mm Ø union connections. Connect the water inlet to the heat pump coming from the filtration group then connect the water outlet to the heat pump at the water conduit going to the pool. Install a by-pass valve between the heat pump entrance and exit. (see diagram below).



If an automatic distributor or an electrolyser is used, it should be installed imperatively after the heat pump with the goal of protecting the titanium condenser against an elevated concentration of chemicals.

Be sure to install the by-pass valve and the supplied union connections at the water inlet and outlet level in order to simplify purging during the winter period and to facilitate access when disassembling for maintenance.

3. INSTALLATION AND CONNECTION (continued)

3.4 Electrical connection

Electrical installation and wiring for this equipment must be in conformity with local installation standards.

F	NF C15-100	GB	BS7671:1992
D	DIN VDE 0100-702	EW	EVHS-HD 384-7-702
A	ÖVE 8001-4-702	H	MSZ 2364-702/1994/MSZ 10-553 1/1990
E	UNE 20460-7-702 1993, RECBT ITC-BT-31 2002	M	MSA HD 384-7-702.S2
IRL	Wiring Rules + IS HD 384-7-702	PL	PN-IEC 60364-7-702:1999
I	CEI 64-8/7	CZ	CSN 33 2000 7-702
LUX	384-7.702 S2	SK	STN 33 2000-7-702
NL	NEN 1010-7-702	SLO	SIST HD 384-7-702.S2
P	RSIUEE	TR	TS IEC 60364-7-702

Verify that the available electrical power supply and the network frequency correspond to the required operating current taking into account the appliance's specific location, and the current required to supply any other appliance connected to the same circuit.

HP5131DT3
HP5171DT3
HP5211DT3
HP5251DT3
HP5301DT3
} ***230V ∿ +/- 10 % 50 Hz 1 Phase***

HP5211ET3
HP5251ET3
HP5301ET3
HP5361ET3
} ***400V ∿ +/- 10 % 50 Hz 3 Phases***

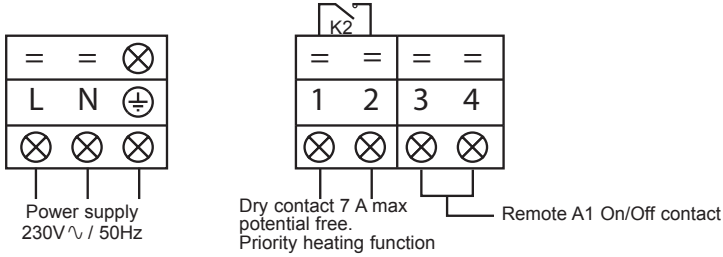
Check that the phases balance does not exceed 2%

See the corresponding wiring diagram in the appendix § 6.1.

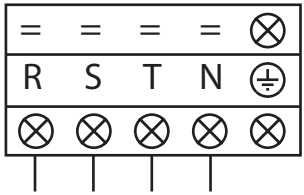
The connection box is behind the front panel.

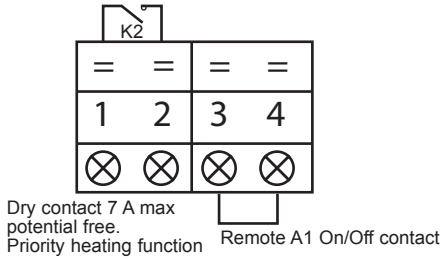
- ***There are three L-N-GND connections for powering single-phase models.***
- ***Five R-S-T-N-GND connections serve for the power supply of the three-phase models.***

Terminals (1-2) are for controlling filter pump (K2 relay). Terminals (3-4), normally closed, are for remote on/off control.



3. INSTALLATION AND CONNECTION (continued)





The electrical power supply must have, when appropriate, a fuse protection device like a feed motor (aM) or D curve circuit breaker as well as a differential circuit breaker 30 mA (see following table).

Models		HP5131DT3	HP5171DT3	HP5211DT3	HP5251DT3	HP5301DT3
Power supply	V/Ph/Hz	230V ∿ 50Hz	230V ∿ 50Hz	230V ∿ 50Hz	230V ∿ 50Hz	230V ∿ 50Hz
aM type fuse calibre	A	16	16	20	25	25
Curve D circuit breaker	A	16	16	20	25	25
Cable section	mm^2	3G2.5	3G2.5	3G4	3G4	3G4

Models		HP5211ET3	HP5251ET3	HP5301ET3	HP5361ET3
Power supply	V/Ph/Hz	400V 3N ∿ 50Hz	400V 3N ∿ 50Hz	400V 3N ∿ 50Hz	400V 3N ∿ 50Hz
aM type fuse calibre	A	10	12	16	16
Curve D circuit breaker	A	10	12	16	16
Cable section	mm^2	5G2.5	5G2.5	5G2.5	5G2.5

Use an RO 2V/R 2V or equivalent power cord.

The cables sections are given for a maximum length of 25 m. They must however be checked and adjusted according to the installation conditions.

Always shut down the main power supply before opening the electrical control box.

3. INSTALLATION AND CONNECTION (continued)

3.5 Initial start-up

Start-up procedure - After installation is complete, follow these steps:

1) Rotate the fans by hand to verify that they can turn freely by hand, and that the turbine is correctly affixed to the motor shaft.

2) Ensure that the unit is connected correctly to the main power supply (see the wiring diagram in the appendix).

3) Activate the filtration pump.

4) Verify that all water valves are open and that the water flows toward the unit before switching on the heating or cooling mode.

5) Verify that the drainage hose is correctly affixed and that it causes no obstructions.

6) Activate the unit power supply, then press the On/Off button  on the control panel.

7) Ensure that the alarm signal (⚠) does not light up red.
If necessary see the troubleshooting guide (see § 6.4).

8) Set the water flow using the by-pass valve (see § 3.6 and 2.1), as provided for by each model, to obtain an Entry/Exit temperature of 2°C.

9) After running for several minutes, verify that the air exiting the unit is cool (between 5 and 10°).

10) With the unit operating, turn off the filter pump. The unit should automatically turn off and display error code E03 (See § 6.4).

11) Allow the unit and the pool pump to run 24 hours per day until the desired water temperature has been reached. When the set water inlet temperature is reached, the unit will turn off. It will automatically restart (as long as the pool pump is running) if the pool temperature is at least 0.5°C below the set temperature.

Water flow switch - The unit is equipped with a flow switch that turns on the heat pump when the pool filtration pump is running, and deactivates it when the filtration pump is out of order. If the water is low, the E03 alarm code will appear on the regulator (See § 6.4).

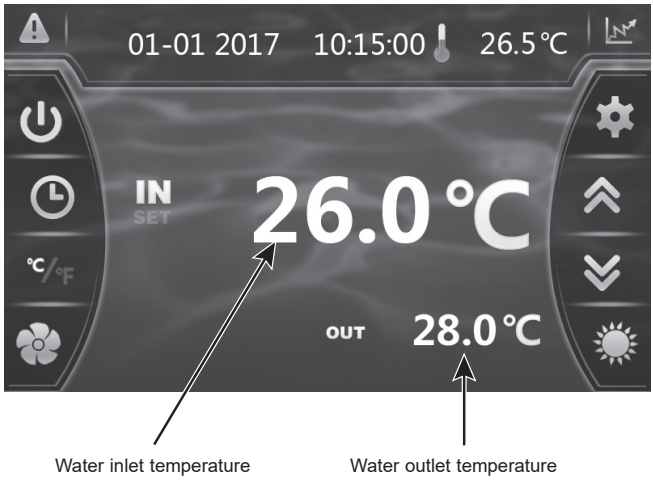
3. INSTALLATION AND CONNECTION (continued)

Time delay - The unit is equipped with a time delay of 3 minutes in order to protect the control circuit components, to eliminate restart cycling and contactor chatter. Thanks to this time delay, the unit automatically restarts approximately 3 minutes after each control circuit interruption. Even a brief power interruption will activate the restart time delay.

3. INSTALLATION AND CONNECTION (continued)

3.6 Water flow setting

With the water entry and exit valves being open, adjust the by-pass valve in order to obtain a difference of 2°C between the inflow and outflow temperature (see principle diagram § 3.1). You can verify the switch by seeing the entry/ exit temperatures directly on the control panel.

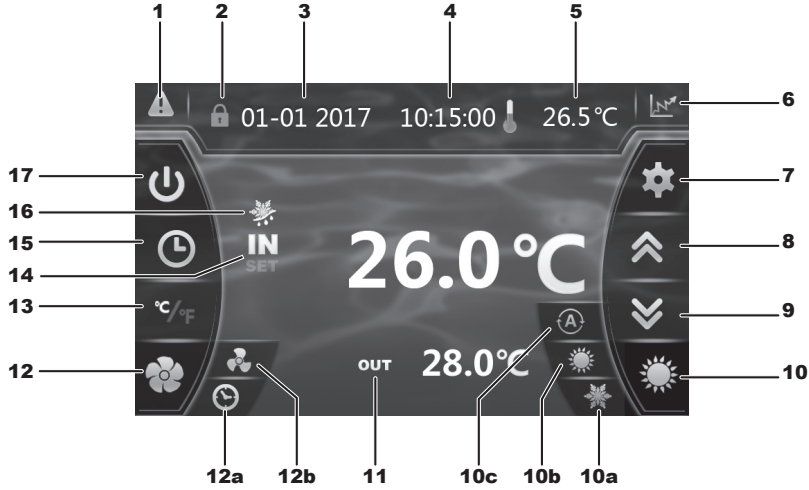


Note: Opening the by-pass valve creates a weaker flow, which leads to an increase in ΔT.
Closing the by-pass valve creates a stronger flow, which leads to a decrease in ΔT.

4. USER INTERFACE

4.1 General presentation

The heat pump is equipped with a digital control panel with a touch screen, electronically connected and pre-set at the factory in heating mode.



Legend

1		Alarm (blinking red)
2		Locked screen
3		Date
4		Hour
5		Outside temperature
6		Recording base (Water temperature and power consumption)
7		Reading settings and saving
8		Scroll up / Increase
9		Scroll down / Decrease
10		Operating mode selection
10a		Cooling mode

10b		Heating mode
10c		Automatic mode
11	OUT	Water Output temperature
12		Selecting silence mode
12a		Setting silence mode timer
12b		Silence mode and activation light
13	°C/°F	Conversion °C / °F
14	IN	Water Input temperature
15		Setting the Timer date and time ON/OFF
16		Defrost mode
17		On / Off

4. USER INTERFACE (continued)

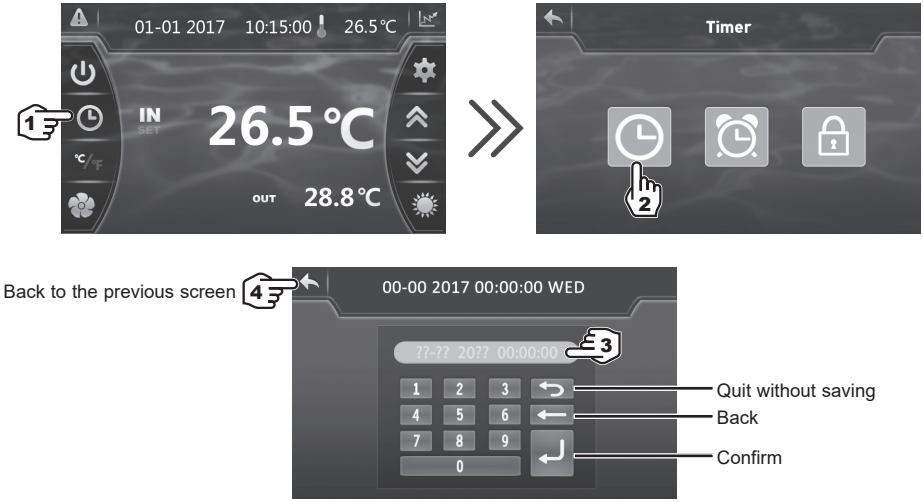
OFF Mode

When the heating pump is in sleep mode (OFF Mode), the button is grey.

ON Mode

When the heating pump is running or regulating (ON Mode), the button lights up green.

4.2 Setting the Date and Time



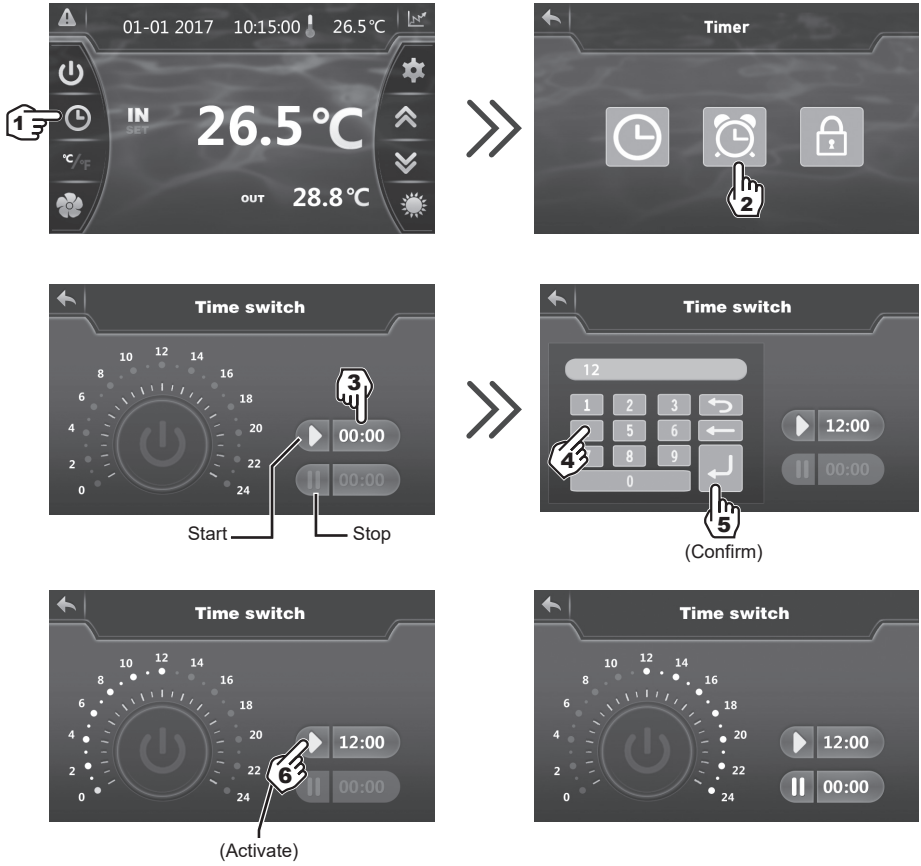
Enter all the fields (Day/Month/Year, Hour/Minute/Second before confirming, otherwise the changes will not be saved.

4.3 Timer function settings

Setting this function is necessary if you would like to run the heat pump for a shorter period than what is defined by the filtration clock. Therefore, you can program a deferred start and an anticipated stop or simply stop a certain timeframe from running (at night, for example).

It is possible to set one Start Timer and one Stop Timers.

4. USER INTERFACE (continued)



Blue highlighting = Activated
Grey = Deactivated

The setting step is "hour to hour".

- Once the start time has been set, press ▶ (step 6) to activate the Timer. The symbol and time now have blue highlighting.
- Repeat steps 3 to 6 to set and activate the stop time (⏸ 00:00)
- When the settings are complete, the operating range of the heat pump is highlighted in green and the highlight range is yellow.
- Press twice on ↩ to return to the main screen.

4. USER INTERFACE (continued)

4.4 Setting and visualisation of the set point

In Mode “OFF” or Mode “ON”

Press the button to display the set point, then press or pour to set the set point you wish.

Confirm by pressing and you will return to the main screen automatically.

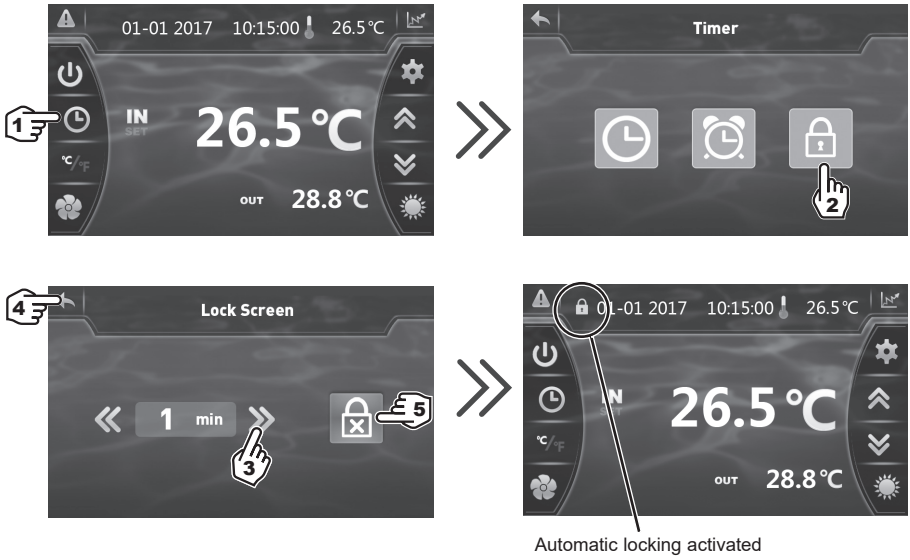
The setting is made with a precision of 0.5 °C.

It is recommended to never exceed 32°C to avoid alteration of the liners.

4. USER INTERFACE (continued)

4.5 Locking and unlocking the touch screen

The control screen locks automatically after one minute (default setting).
It is possible to adjust the time before the screen locks automatically to between 1 and 10 minutes, or simply to cancel this function.

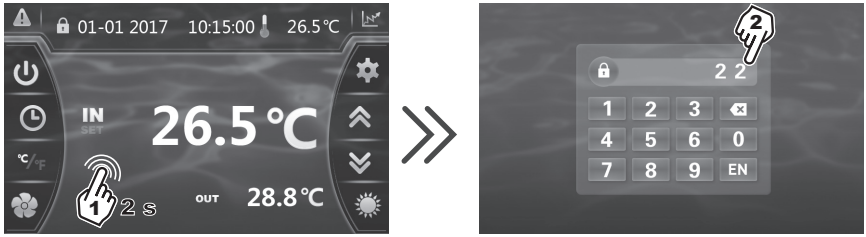


3) Set the time to between 1 and 10 minutes. Saving is automatic.

4) Press twice to return to the main screen.

5) To deactivate automatic locking press .

To unlock the screen, press (anywhere) on the screen for 2s.
Enter the code "**22**" and confirm by pressing EN



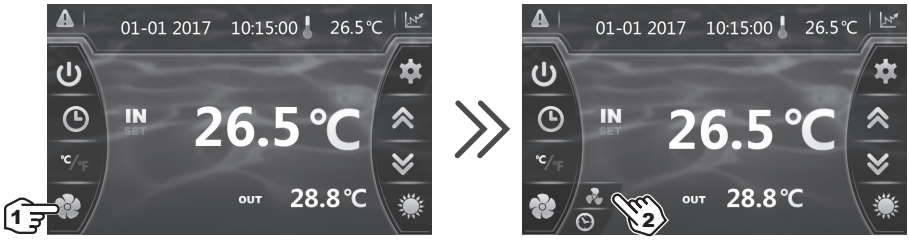
4. USER INTERFACE (continued)

4.6 SILENT function settings

Silence mode enables the heat pump to be used in economic and very silent mode when the heating needs are low (maintaining the pool temperature or need for ultra-silent operation).

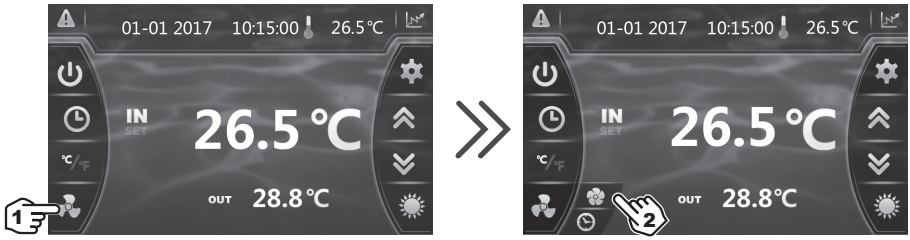
This function can be Activated/Deactivated manually or using a Timer.

Manual Activation

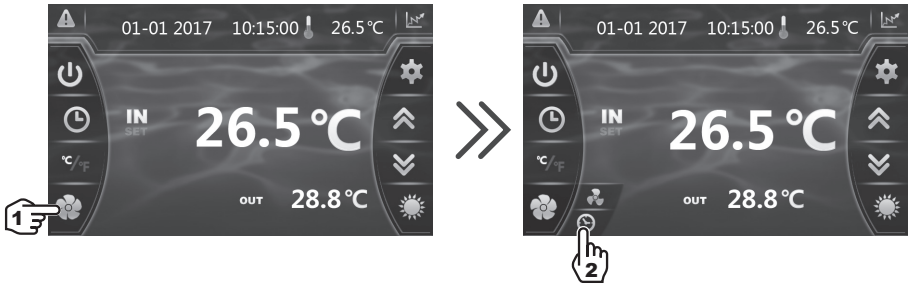


4. USER INTERFACE (continued)

Manual Deactivation

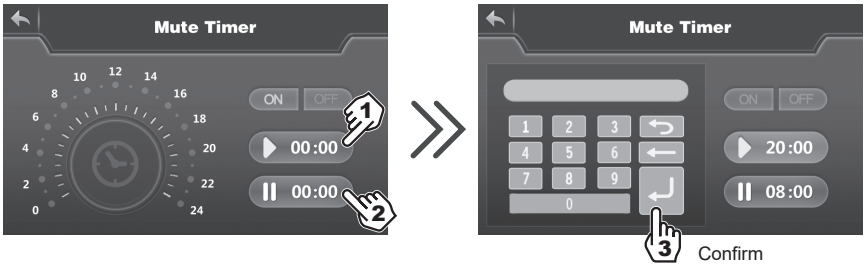


Setting the Timer



4. USER INTERFACE (continued)

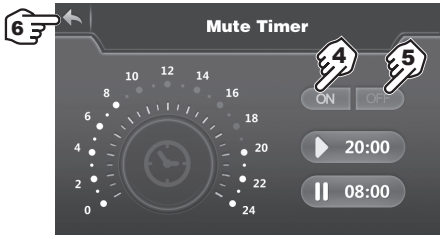
Setting the Timer (continued)



1) Start time, input and confirmation.

2) End time, input and confirmation.

3) Confirm.



4) Activation.

5) Deactivation.

6) Back to the main screen.

The setting step is "hour to hour".
Once the Timer is activated, it is active 7 days a week.

5. MAINTENANCE AND WINTERISING

5.1 Maintenance

These maintenance operations must be carried out once per year in order to guarantee the longevity and the good working condition of the heat pump.

- Clean the coil with the help of a soft brush or jet of air or water (**Warning, never use a high pressure cleaner**).
- Verify that the drains flow well.
- Verify the tightening of the hydraulic and electrical connections
- Verify the hydraulic sealing of the condenser.
- Have the leak-tightness of the cooling circuit to the leak detector checked by an **accredited professional**.

Before any maintenance operation, the heating pump must be disconnected from any electrical current source. The maintenance operations must only be carried out by personnel that is qualified and authorised to handle liquid refrigerants.

5.2 Winterising

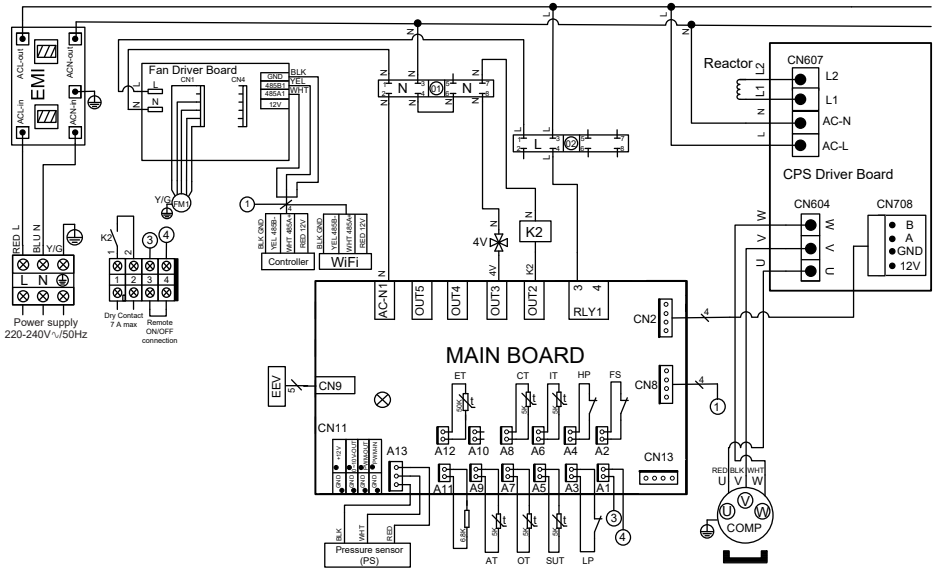
- Put the heat pump in “OFF” mode.
- Cut the power supply to the heat pump.
- Drain the condenser to avoid it being damaged by frost during the winter. To do so, dismantle the water inlet and outlet couplings.
- Close the by-pass valve and unscrew the entry/exit connection unions.
- Eliminate the maximum amount of residual stagnant water from the condenser with the help of an air gun.
- Close the water entry and exit areas of the heating pump to avoid introducing foreign bodies.
- Cover the heating pump with a dedicated winterising case.

Any damage caused by poor winterising maintenance will lead to cancellation of the warranty.

6. APPENDIX

6.1 Electrical diagrams

HP5131DT3 / HP5171DT3

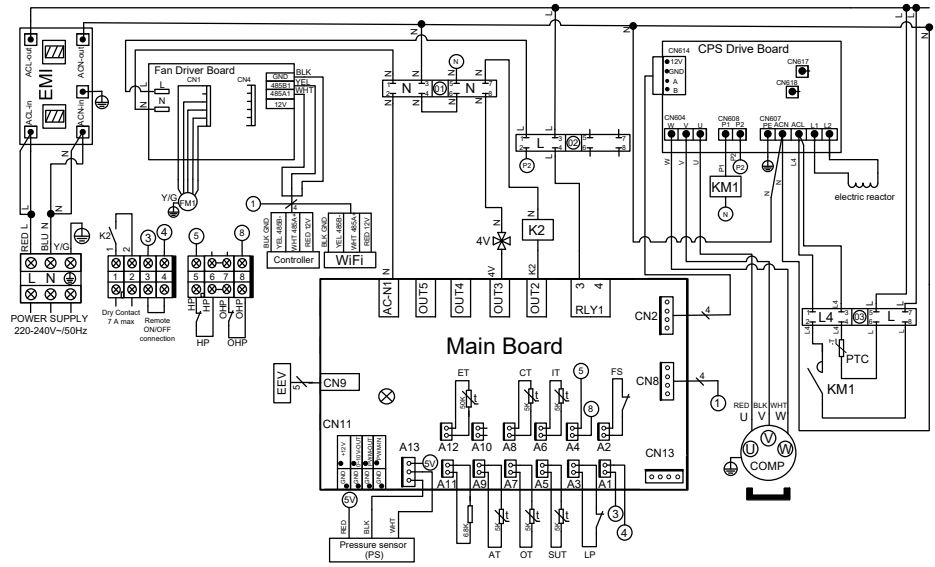


REMARKS:

PS: PRESSURE SENSOR
AT: AIR TEMPERATURE SENSOR
OT: OUTLET WATER TEMPERATURE SENSOR
SUT: SUCTION TEMPERATURE SENSOR
LP: LOW PRESSURE SWITCH
FS: WATER FLOW SWITCH
HP: HIGH PRESSURE SWITCH
IT: WATER INLET TEMPERATURE SENSOR
CT: EVAPORATOR TEMPERATURE SENSOR
ET: DISCHARGE TEMPERATURE SENSOR
EEV: ELECTRONIC EXPANSION VALVE
FM1: DC FAN MOTOR
4V: 4 WAYS VALVE
K2: DRY CONTACT 7 A MAX
COMP: COMPRESSOR

6. APPENDIX (continued)

HP5211DT3 / HP5251DT3



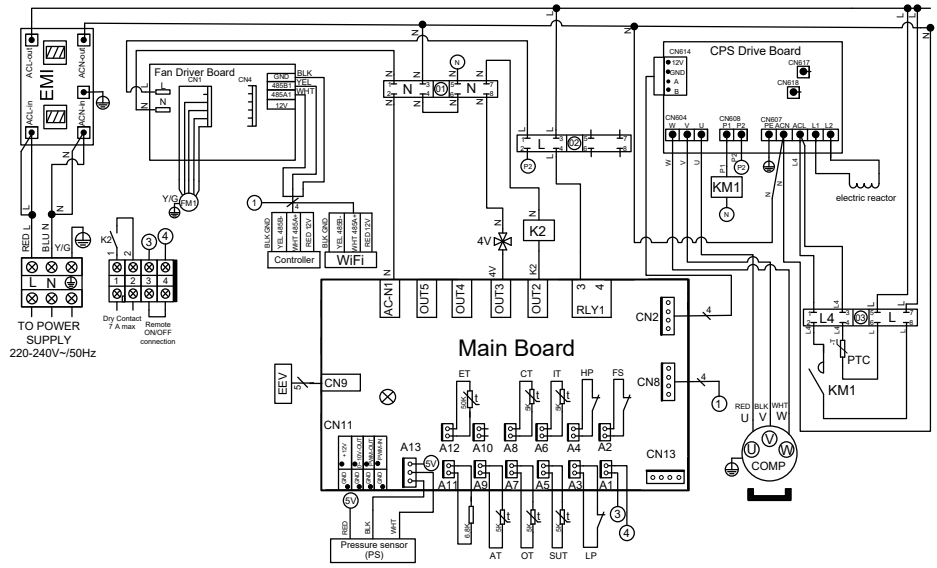
REMARKS:

PS: PRESSURE SENSOR
AT: AIR TEMPERATURE SENSOR
OT: OUTLET WATER TEMPERATURE SENSOR
SUT: SUCTION TEMPERATURE SENSOR
LP: LOW PRESSURE SWITCH
FS: WATER FLOW SWITCH
IT: WATER INLET TEMPERATURE SENSOR
CT: EVAPORATOR TEMPERATURE SENSOR
ET: DISCHARGE TEMPERATURE SENSOR

EEV: ELECTRONIC EXPANSION VALVE
FM1: DC FAN MOTOR
HP: HIGH PRESSURE SWITCH
OHP: THERMAL PROTECTION
4V: 4 WAYS VALVE
K2: DRY CONTACT 7 A MAX.
PTC: THERMISTOR
KM1: COMPRESSOR SWITCH
COMP: COMPRESSOR

6. APPENDIX (continued)

HP5301DT3

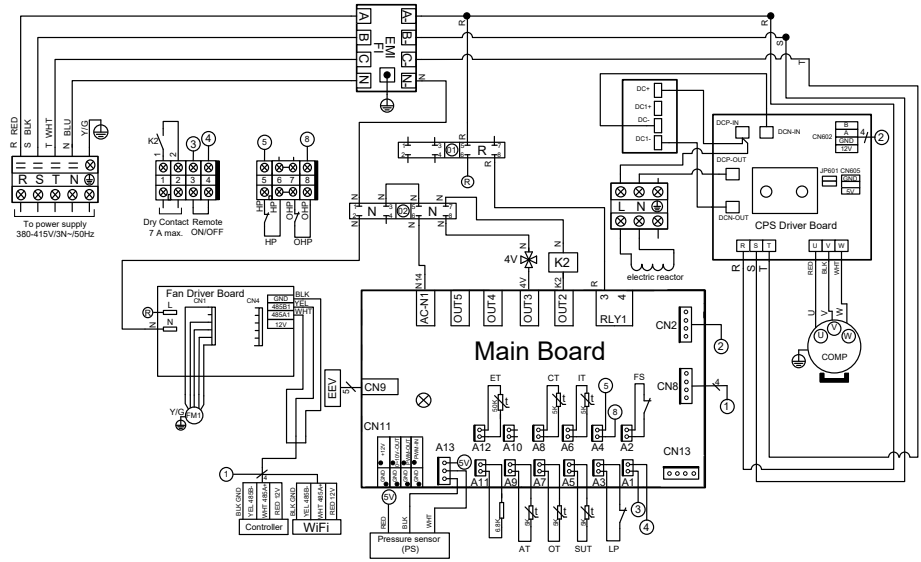


REMARKS:

PS: PRESSURE SENSOR
AT: AIR TEMPERATURE SENSOR
OT: OUTLET WATER TEMPERATURE SENSOR
SUT: SUCTION TEMPERATURE SENSOR
LP: LOW PRESSURE SWITCH
FS: WATER FLOW SWITCH
HP: HIGH PRESSURE SWITCH
IT: WATER INLET TEMPERATURE SENSOR
CT: EVAPORATOR TEMPERATURE SENSOR
ET: DISCHARGE TEMPERATURE SENSOR
EEV: ELECTRONIC EXPANSION VALVE
FM1: DC FAN MOTOR
4V: 4 WAYS VALVE
K2: DRY CONTACT 7 A MAX.
PTC: THERMISTOR
KM1: COMPRESSOR SWITCH
COMP: COMPRESSOR

6. APPENDIX (continued)

HP5211ET3 / HP5251ET3

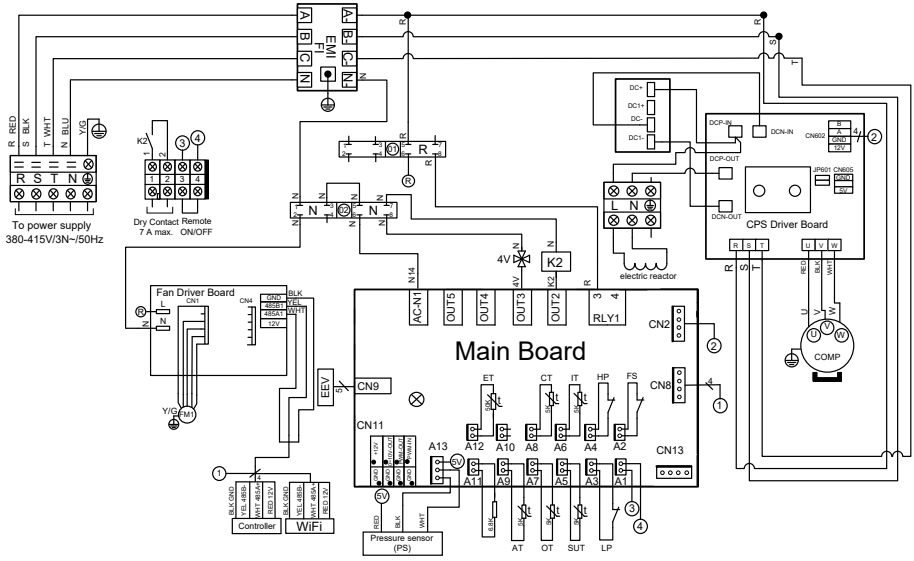


REMARKS:

- **PS:** PRESSURE SENSOR
- **AT:** AIR TEMPERATURE SENSOR
- **OT:** OUTLET WATER TEMPERATURE SENSOR
- **SUT:** SUCTION TEMPERATURE SENSOR
- **LP:** LOW PRESSURE SWITCH
- **FS:** WATER FLOW SWITCH
- **IT:** WATER INLET TEMPERATURE SENSOR
- **CT:** EVAPORATOR TEMPERATURE SENSOR
- **ET:** DISCHARGE TEMPERATURE SENSOR
- **EEV:** ELECTRONIC EXPANSION VALVE
- **FM1:** DC FAN MOTOR
- **HP:** HIGH PRESSURE SWITCH
- **OHP:** THERMAL PROTECTION
- **4V:** 4 WAYS VALVE
- **K2:** DRY CONTACT 7 A MAX.
- **COMP:** COMPRESSOR

6. APPENDIX (continued)

HP5301ET3 / HP5361ET3



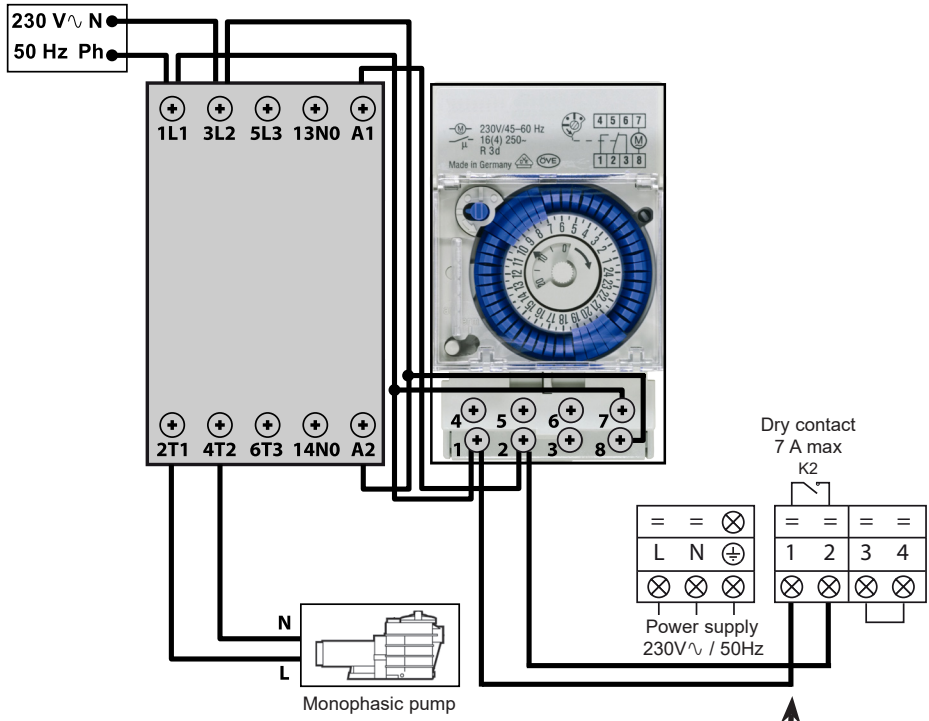
REMARKS:

PS: PRESSURE SENSOR
AT: AIR TEMPERATURE SENSOR
OT: OUTLET WATER TEMPERATURE SENSOR
SUT: SUCTION TEMPERATURE SENSOR
LP: LOW PRESSURE SWITCH
FS: WATER FLOW SWITCH
HP: HIGH PRESSURE SWITCH
IT: WATER INLET TEMPERATURE SENSOR
CT: EVAPORATOR TEMPERATURE SENSOR
ET: DISCHARGE TEMPERATURE SENSOR
EEV: ELECTRONIC EXPANSION VALVE
FM1: DC FAN MOTOR
4V: 4 WAYS VALVE
K2: DRY CONTACT 7 A MAX.
COMP: COMPRESSOR

6. APPENDIX (continued)

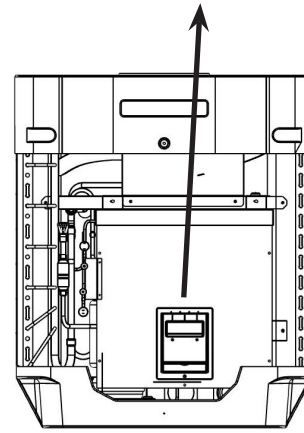
6.2 Heating priority wiring for monophasic pump

⚠ Remove the front panel to access the terminal board.



Terminals 1 and 2 deliver a potential-free dry contact, 230V∿ / 50 Hz, no polarity.

Wire terminals 1 and 2 as indicated in the diagram above, to activate the operation of the filtration pump in 2-minute cycles each hour if the temperature of the pool is lower than the set point.

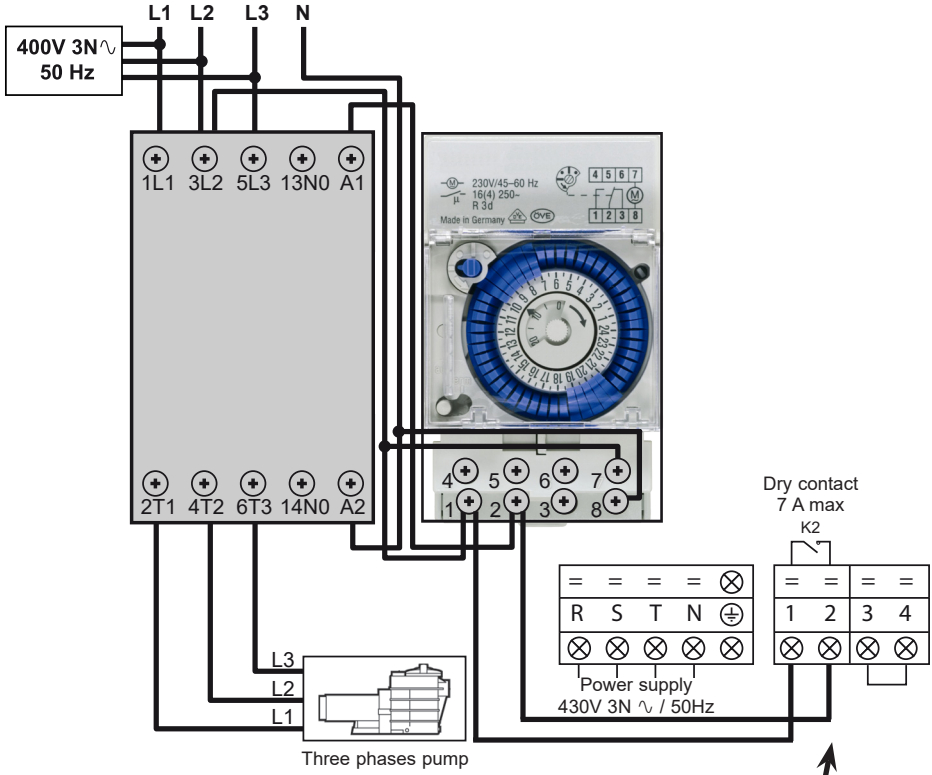


⚠ Never connect the power supply of the filtration pump directly to terminals 1 and 2.

6. APPENDIX (continued)

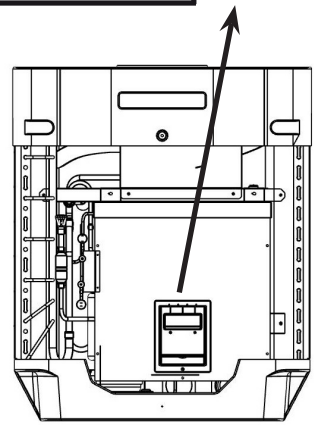
6.3 Heating priority wiring for three phases pump

⚠ Remove the front panel to access the terminal board.



Terminals 1 and 2 deliver a potential-free dry contact, 230V∿ / 50 Hz, no polarity.

Wire terminals 1 and 2 as indicated in the diagram above, to activate the operation of the filtration pump in 2-minute cycles each hour if the temperature of the pool is lower than the set point.



⚠ Never connect the power supply of the filtration pump directly to terminals 1 and 2.

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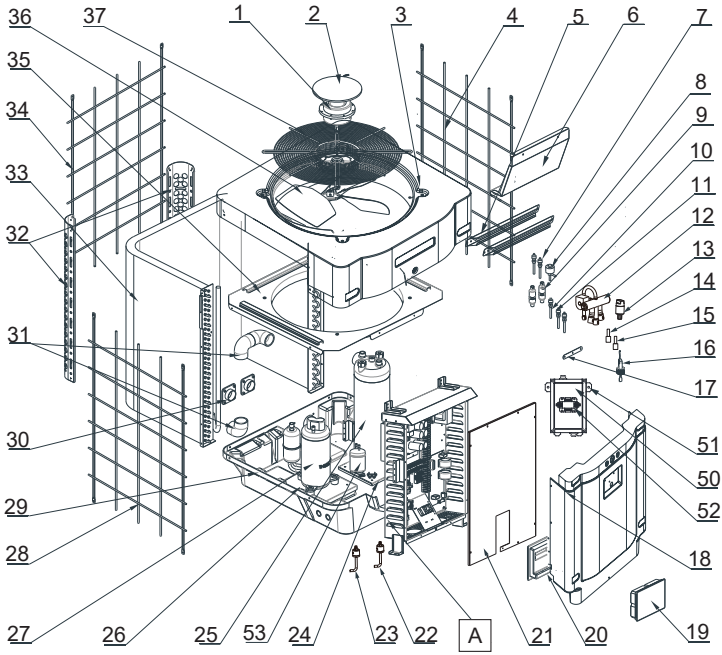
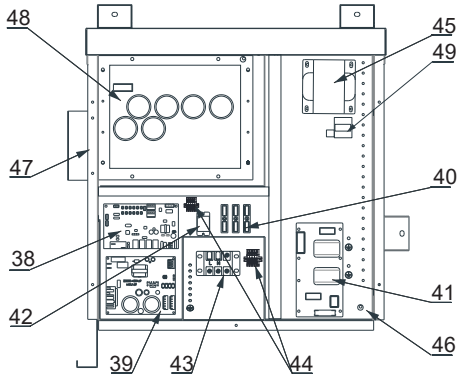
6. APPENDIX (continued)

6.4 Exploded view and spare parts

HP5131DT3 / HP5171DT3 / HP5211DT3 / HP5251DT3 / HP5301DT3



A



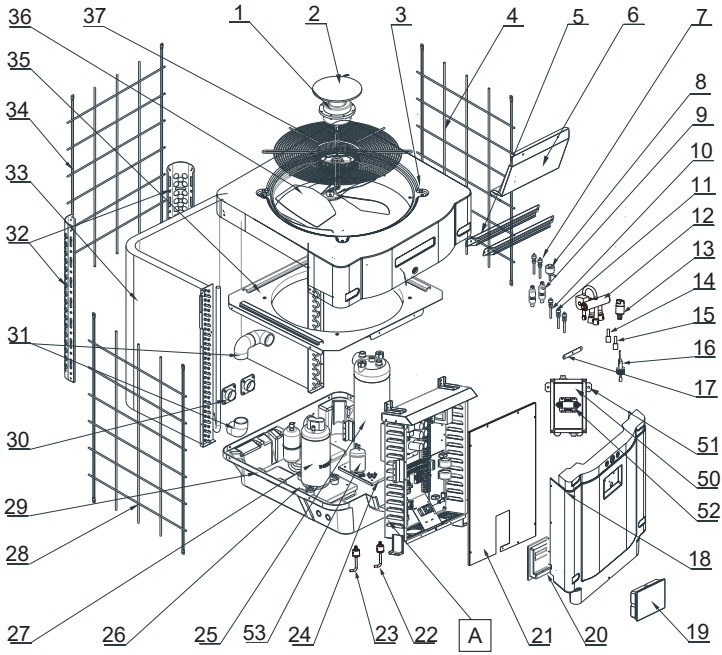
6. APPENDIX (continued)

HP5131DT3 / HP5171DT3 / HP5211DT3 / HP5251DT3 / HP5301DT3

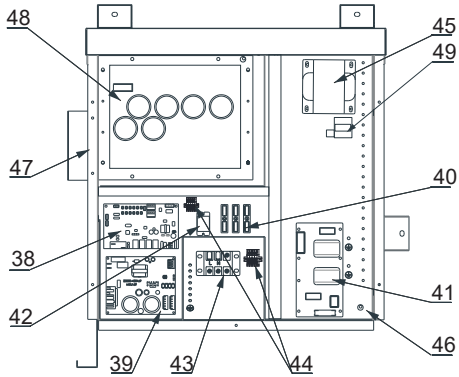
Mark	Description	P/N	HP5131DT3	HP5171DT3	HP5211DT3	HP5251DT3	HP5301DT3
1	Fan Motor	HWX20000330381	✔	✔	✔	✔	n/a
		HWX20000330402	n/a	n/a	n/a	n/a	✔
2	Motor cover	HWX20000220320	✔	✔	✔	✔	✔
3	ABS upper panel	HWX80900736	✔	✔	n/a	n/a	n/a
		HWX80900737	n/a	n/a	✔	✔	n/a
		HWX80900718	n/a	n/a	n/a	n/a	✔
4	Right-hand lateral protection	HWX80704158	✔	✔	n/a	n/a	n/a
		HWX80705113	n/a	n/a	✔	✔	n/a
		HWX80705110	n/a	n/a	n/a	n/a	✔
5	/	/	/	/	/	/	/
6	Guard plate	HWX32012210724	✔	✔	n/a	n/a	n/a
		HWX32002210071	n/a	n/a	✔	✔	n/a
		HWX32004210137	n/a	n/a	n/a	n/a	✔
7	Pressure tap 90 mm 1/2"	HWX20000140153	✔	✔	✔	✔	✔
8	Electronic expansion valve	HWX20000140451	✔	✔	n/a	n/a	n/a
		HWX20000140449	n/a	n/a	✔	n/a	n/a
		HWX20000140442	n/a	n/a	n/a	✔	n/a
		HWX20000140401	n/a	n/a	n/a	n/a	✔
9	Filter Ø12.9-Ø12.9 (Ø28)	HWX20000140027	✔	✔	✔	✔	✔
10	Pressure Tap 95 mm 7/16"	HWX20000140512	✔	✔	✔	✔	✔
11	Pressure Tap 40 mm 1/2"	HWX20000140150	✔	✔	✔	✔	✔
12	4 ways valve	HWX20041437	✔	✔	n/a	n/a	n/a
		HWX20011491	n/a	n/a	✔	✔	✔
13	Pressure sensor	HWX20000360274	✔	✔	✔	✔	✔
14	Coil/air/water temp sensor 5k-800 mm	HWX20003202	✔	✔	✔	✔	✔
15	Compressor discharge probe 50k-600 mm	HWX20000320145	✔	✔	✔	✔	✔
16	Water flow detector	HWX83000069	✔	✔	✔	✔	✔
17	/	/	/	/	/	/	/
18	Front panel	HWX80900738	✔	✔	n/a	n/a	n/a
		HWX80900739	n/a	n/a	✔	✔	n/a
		HWX80900710	n/a	n/a	n/a	n/a	✔
19	Color touchscreen	HWX95005310612	✔	✔	✔	✔	✔
20	Black electric access hatch	HWX20000220247	✔	✔	✔	✔	✔
21	Electrical box cover	HWX80702647	✔	✔	n/a	n/a	n/a
		HWX80702644	n/a	n/a	✔	✔	n/a
		HWX80702645	n/a	n/a	n/a	n/a	x
22	High pressure switch NC 3.2MPa/4.4MPa	HWX20000360187	✔	✔	✔	✔	✔
23	Low pressure switch NO 0.15MPa/0.05MPa	HWX20000360054	✔	✔	✔	✔	✔
24	/	/	/	/	/	/	/
25	Titanium/PVC condenser	HWX32009120085	✔	✔	n/a	n/a	n/a
		HWX32002120023	n/a	n/a	✔	n/a	n/a
		HWX32016120012	n/a	n/a	n/a	✔	n/a
		HWX32016120011	n/a	n/a	n/a	n/a	✔
26	/	/	/	/	/	/	/

6. APPENDIX (continued)

HP5131DT3 / HP5171DT3 / HP5211DT3 / HP5251DT3 / HP5301DT3



A



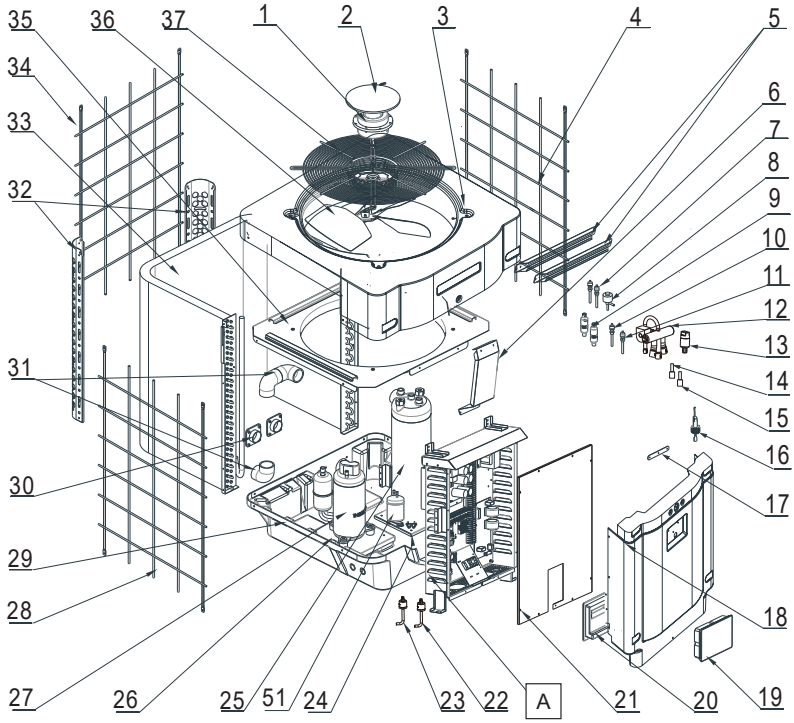
6. APPENDIX (continued)

HP5131DT3 / HP5171DT3 / HP5211DT3 / HP5251DT3 / HP5301DT3

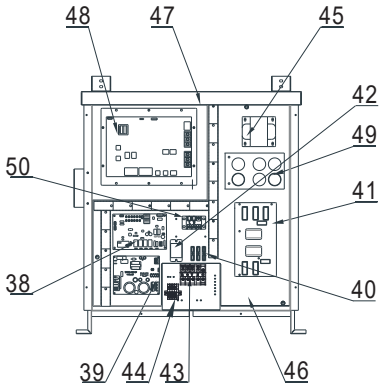
Mark	Description	P/N	HP5131DT3	HP5171DT3	HP5211DT3	HP5251DT3	HP5301DT3
27	Compressor	HWX80100046	✔	✔	n/a	n/a	n/a
		HWX80100069	n/a	n/a	✔	✔	n/a
		HWX30101000006	n/a	n/a	n/a	n/a	✔
28	Left-hand lateral protection	HWX32012210729	✔	✔	n/a	n/a	n/a
		HWX80705114	n/a	n/a	✔	✔	n/a
		HWX80705111	n/a	n/a	n/a	n/a	✔
29	/	/	/	/	/	/	/
30	Square 50 mm threaded connector	HWX20031379	✔	✔	✔	✔	✔
31	PVC elbow Ø 50 mm	HWX20011359	✔	✔	✔	✔	✔
32	Left/right vertical support	HWX32000210086	✔	✔	n/a	n/a	n/a
		HWX80702346	n/a	n/a	✔	✔	n/a
		HWX80702656	n/a	n/a	n/a	n/a	✔
33	Fin coil	HWX32012120155	✔	✔	n/a	n/a	n/a
		HWX80600429	n/a	n/a	✔	n/a	n/a
		HWX32003120028	n/a	n/a	n/a	✔	n/a
		HWX32004120013	n/a	n/a	n/a	n/a	✔
34	Rear protection	HWX32012210730	✔	✔	n/a	n/a	n/a
		HWX80705115	n/a	n/a	✔	✔	n/a
		HWX80705112	n/a	n/a	n/a	n/a	✔
35	/	/	/	/	/	/	/
36	Fan blade Ø 522 mm	HWX20000270062	✔	✔	n/a	n/a	n/a
	Fan blade Ø 560 mm	HWX35072195	n/a	n/a	✔	✔	n/a
	Fan blade Ø 600 mm	HWX20000270057	n/a	n/a	n/a	n/a	✔
37	Fan protection grille	HWX32012210732	✔	✔	n/a	n/a	n/a
		HWX32003210142	n/a	n/a	✔	✔	n/a
		HWX80700160	n/a	n/a	n/a	n/a	✔
38	Motherboard	HWX72200033171D	✔	✔	n/a	n/a	n/a
		HWX72200033211D	n/a	n/a	✔	n/a	n/a
		HWX72200033251D	n/a	n/a	n/a	✔	n/a
		HWX72200033301D	n/a	n/a	n/a	n/a	✔
39	Ventilator Inverter card	HWX20000430228	✔	✔	✔	✔	✔
40	Terminal block 4 connections	HWX20003909	✔	✔	✔	✔	✔
41	Filter board	HWX3020100007	✔	✔	✔	✔	✔
42	K2 relay	HWX20000360297	✔	✔	✔	✔	✔
43	Terminal block L-N-GND	HWX20000390223	✔	✔	✔	✔	✔
44	4-position terminal block	HWX20000390046	✔	✔	✔	✔	✔
45	Reactance coil	HWX82500009	✔	✔	n/a	n/a	n/a
		HWX20000370030	n/a	n/a	✔	✔	✔
46	/	/	/	/	/	/	/
47	/	/	/	/	/	/	/
48	Compressor Inverter card	HWX82300149	✔	✔	n/a	n/a	n/a
		HWX82300019	n/a	n/a	✔	✔	✔
49	PTC 100 Ω resistor	HWX20000320113	n/a	n/a	✔	✔	✔
50	/	/	/	/	/	/	/
51	/	/	/	/	/	/	/
52	Power switch	HWX200003600619	n/a	n/a	✔	✔	✔
53	Bottle of liquid	HWX20000140579	n/a	n/a	n/a	✔	✔

6. APPENDIX (continued)

HP5211ET3 / HP5251ET3 / HP5301ET3 / HP5361ET3



A



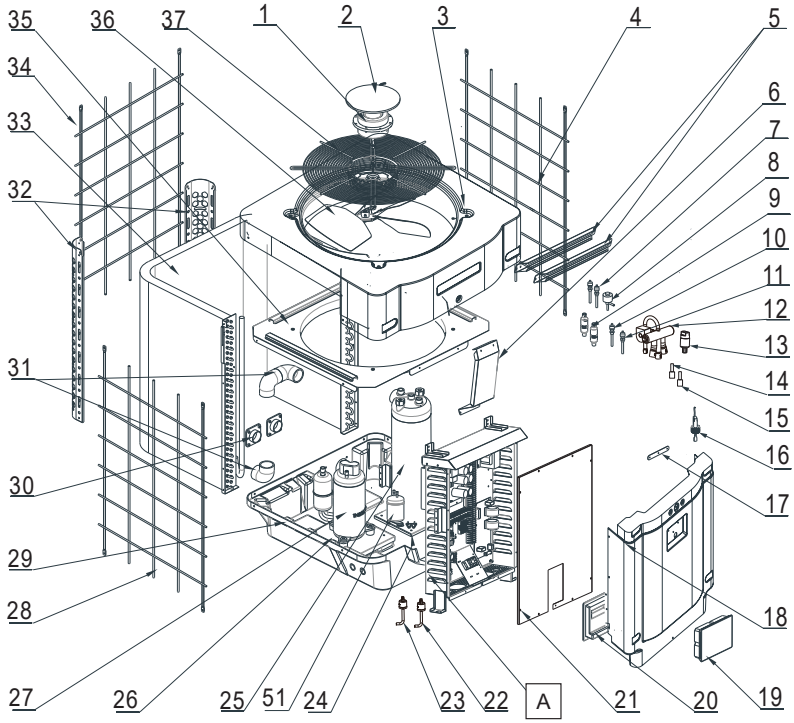
6. APPENDIX (continued)

HP5211ET3 / HP5251ET3 / HP5301ET3 / HP5361ET3

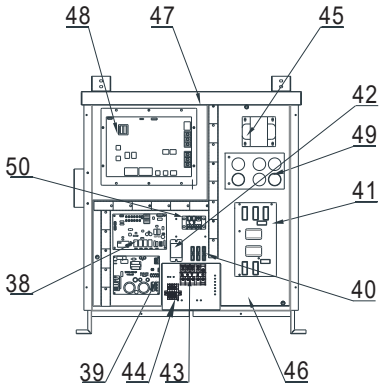
Mark	Descriptio	P/N	HP5211ET3	HP5251ET3	HP5301ET3	HP5361ET3
1	DC Fan Motor	HWX20000330381	✔	✔	n/a	n/a
		HWX20000330402	n/a	n/a	✔	✔
2	Motor cover	HWX20000220320	✔	✔	✔	✔
3	Upper panel	HWX80900737	✔	✔	n/a	n/a
		HWX80900718	n/a	n/a	✔	✔
4	Right-hand lateral protection	HWX80705113	✔	✔	n/a	n/a
		HWX80705110	n/a	n/a	✔	✔
5	/	/	/	/	/	/
6	Guard plate	HWX32002210071	✔	✔	n/a	n/a
		HWX32004210137	n/a	n/a	✔	✔
7	Pressure tap 90 mm 1/2"	HWX20000140153	✔	✔	✔	✔
8	Electronic expansion valve	HWX20000140449	✔	n/a	n/a	n/a
		HWX20000140442	n/a	✔	n/a	n/a
		HWX20000140401	n/a	n/a	✔	✔
9	Filter Ø12.9-Ø12.9 (Ø28)	HWX20000140027	✔	✔	✔	✔
10	Pressure Tap 95 mm 7/16"	HWX20000140512	✔	✔	✔	✔
11	Pressure Tap 40 mm 1/2"	HWX20000140150	✔	✔	✔	✔
12	4 ways valve	HWX20011491	✔	✔	✔	✔
13	Pressure sensor	HWX20000360274	✔	✔	✔	✔
14	Coil/air/water temp sensor 5k-800 mm	HWX20003202	✔	✔	✔	✔
15	Compressor discharge probe 50k-600 mm	HWX20000320145	✔	✔	✔	✔
16	Water flow detector	HWX83000069	✔	✔	✔	✔
17	/	/	/	/	/	/
18	Front panel	HWX80900739	✔	✔	n/a	n/a
		HWX80900710	n/a	n/a	✔	✔
19	Color touchscreen	HWX95005310612	✔	✔	✔	✔
20	Black electric access hatch	HWX20000220247	✔	✔	✔	✔
21	Electrical box cover	HWX80702644	✔	✔	n/a	n/a
		HWX80702645	n/a	n/a	✔	✔
22	High pressure switch NC 3.2MPa/4.4MPa	HWX20000360187	✔	✔	✔	✔
23	Low pressure switch NO 0.15MPa/0.05MPa	HWX20000360054	✔	✔	✔	✔
24	/	/	/	/	/	/
25	Condenseur Titane PVC	HWX32002120023	✔	n/a	n/a	n/a
		HWX32016120012	n/a	✔	n/a	n/a
		HWX32016120011	n/a	n/a	✔	✔
26	/	/	/	/	/	/
27	Compressor	HWX80100069	✔	✔	n/a	n/a
		HWX30101000006	n/a	n/a	✔	✔
28	Left-hand lateral protection	HWX80705114	✔	✔	n/a	n/a
		HWX80705111	n/a	n/a	✔	✔
29	/	/	/	/	/	/
30	Square 50mm threaded connector	HWX20031379	✔	✔	✔	✔
31	PVC elbow Ø 50 mm	HWX20011359	✔	✔	✔	✔
32	Left/right vertical support	HWX80702346	✔	✔	n/a	n/a
		HWX80702656	n/a	n/a	x	x

6. APPENDIX (continued)

HP5211ET3 / HP5251ET3 / HP5301ET3 / HP5361ET3



A



6. APPENDIX (continued)

HP5211ET3 / HP5251ET3 / HP5301ET3 / HP5361ET3

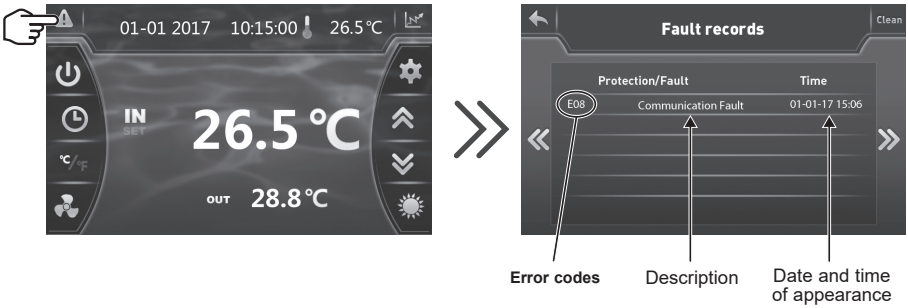
Rep	Désignation	P/N	HP5211ET3	HP5251ET3	HP5301ET3	HP5361ET3
33	Fin coil	HWX80600429	✔	n/a	n/a	n/a
		HWX32003120028	n/a	✔	n/a	n/a
		HWX32004120013	n/a	n/a	✔	✔
34	Protection arrière	HWX80705115	✔	✔	n/a	n/a
		HWX80705112	n/a	n/a	✔	✔
35	/	/	/	/	/	/
36	Fan blade Ø 560 mm	HWX35072195	✔	✔	n/a	n/a
	Fan blade Ø 600 mm	HWX20000270057	n/a	n/a	✔	✔
37	Fan protection grille	HWX32003210142	✔	✔	n/a	n/a
		HWX80700160	n/a	n/a	✔	✔
38	Motherboard	HWX72200033211E	✔	n/a	n/a	n/a
		HWX72200033251E	n/a	✔	n/a	n/a
		HWX72200033301E	n/a	n/a	✔	✔
39	Ventilator Inverter card	HWX20000430228	✔	✔	✔	✔
40	Terminal block 4 connections	HWX20003909	✔	✔	✔	✔
41	Filter board	HWX82300074	✔	✔	✔	✔
42	K2 relay	HWX20000360297	✔	✔	✔	✔
43	Terminal block L-N-GND	HWX20000390180	✔	✔	✔	✔
44	4-position terminal block	HWX20000390046	✔	✔	✔	✔
45	Reactance coil	HWX20000370030	✔	✔	✔	✔
46	/	/	/	/	/	/
47	/	/	/	/	/	/
48	Compressor Inverter card	HWX82300112	✔	✔	n/a	n/a
		HWX302010000012	n/a	n/a	✔	✔
49	Capacitor board	HWX302010000014	✔	✔	✔	✔
50	L-N-GND reactance terminal board	HWX20000390223	✔	✔	✔	✔
51	Bottle of liquid	HWX20000140579	n/a	✔	✔	✔

6. APPENDIX (continued)

6.5 Troubleshooting guide

Certain operations must be carried out by an authorized technician.

If there is a fault on the heat pump, the symbol ⚠ appears blinking red in the left hand corner of the screen.
Press the symbol ⚠ to access the list of errors.
Refer to following table.



Once the problem has been resolved the error is cancelled automatically and the triangle changes to solid grey.

To delete the error list, press on Clean ***then return to the previous screen by pressing on*** ↩.

6. APPENDIX (continued)

Problem	Error codes	Description	Solution
Water inlet sensor fault	**P01**	The sensor is open or has short-circuited.	Check the blue AIN6 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
Water outlet sensor fault	**P02**		Check the red AIN7 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
Outside temperature sensor fault	**P04**		Check the AIN9 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
De-icing sensor fault	**P05**		Check the yellow AIN8 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
Compressor aspiration sensor defect	**P07**		Check the green AIN5 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
Resistance fault 6.8 kΩ	**P09**		Check the AIN11 connector on the board and measure the resistance; replace it if R < 6.8 kΩ
Compressor discharge sensor fault	**P081**		Check the black AIN12 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
Discharge temperature too high	**P082**	Discharge temperature > 120°C	Measure the discharge temperature at the outlet of the compressor; if measured temperature < 120°C, replace the sensor. Perform a non-condensable test
High pressure protection	**E01**	The sensor is open or has short-circuited.	Verify the AIN4 connectors on the card or replace the sensor
			Check the water flow
			Check the water flow detector
			Check the valve opening
			Check the by-pass
			Check the evaporator is not clogged
			Water temperature too hot
			Incondensable problem after maintenance, empty and evacuate the cooling circuit
			Fluid load too high, remove fluid into a liquid bottle
Low pressure protection	**E02**	The sensor is open or has short-circuited.	Check the AIN3 connections on the card or replace the sensor
			Large coolant leak, search for the leak with the detector
			Air flow too low, check the ventilator rotation speed
			Check the evaporator is not clogged, clean its surface

6. APPENDIX (continued)

Problem	Error codes	Description	Solution
Flow sensor fault	**E03**	The sensor is open or has short-circuited.	Check the AIN2 connections on the card or replace the sensor
			Lack of water, check the filtration pump operation
			Check the stop valve opening
			Check the by-pass adjustment
Water outlet temperature fault	**E05**	Applies only in Cold mode, Water outlet temperature < 4°C	Stop the heat pump, serviceability limit reached
Input/Output temperature difference > 13°C	**E06**	Applicable in Cold mode only	Lack of water, check the filtration pump operation
			Check the stop valve opening
			Check the by-pass adjustment
Antifreeze protection Cold mode	**E07**	Water output temperature < 4°C	Check the red AIN7 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
			Stop the heat pump, drain the condenser, high risk of it freezing.
Communication problem	**E08**	No communication between the printed circuit board and the user interface	Check the connectors - see the wiring diagram
Level 1 antifreeze protection	**E19**	2°< Water temperature < 4° and Air temperature < 0°	Stop heat pump operation, empty the condenser to avoid freezing, by default the heat pump starts the filtration pump to avoid icing over
Level 2 antifreeze protection	**E29**	Water temperature < 2° and Air temperature < 0°	Stop heat pump operation, empty the condenser to avoid freezing, by default the heat pump starts the filtration pump and the heat pump to avoid icing over.
DC1 fan motor fault	**F031**	Motor jammed or faulty connection	Check free rotation; check CN1 connectors; replace the motor
The heat pump does not start	**F08**	Possibly an inversion or lack of phase	Reverse two phases on the R-S-T terminal block. Check the connection and tightness of the phases.
Exterior temperature too low	**TP**	Outdoor temperature too low, < H34 (-15°C fault)	Check the AIN9 connector on the board and measure the sensor's resistance; if it is under 100 Ω or over 500 kΩ, replace it.
			Check the value of parameter H34
Pressure sensor fault	**PP**	The sensor is open or short-circuiting	Check the connections see electrical diagram

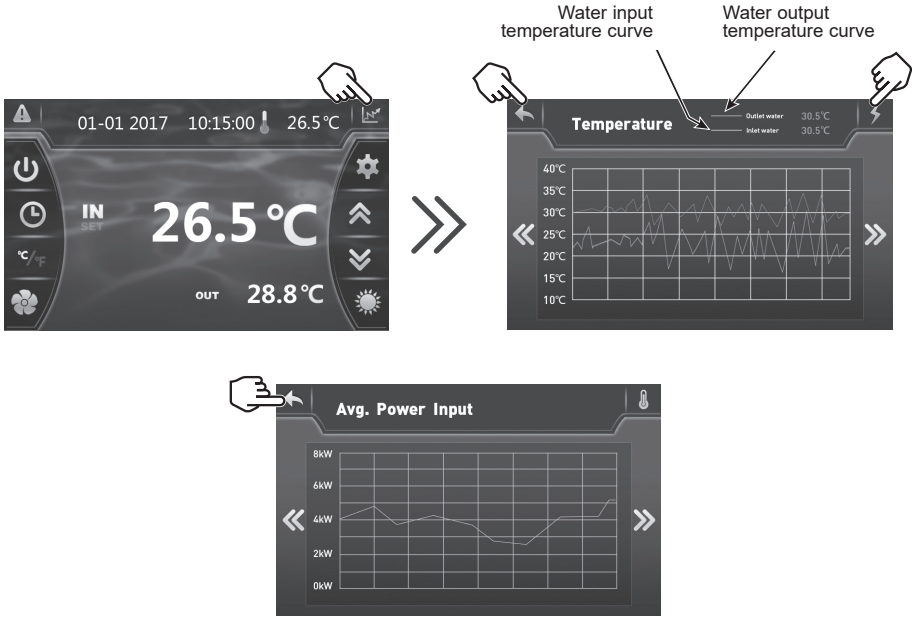
6. APPENDIX (continued)

6.6 Recording base

From the main screen, press on  to access the history of water input and output temperature recordings.

This data is available for 60 days.

Press on  to access the average electric power consumed.



Press on  to return to the main screen.

6. APPENDIX (continued)

6.7 Warranty

WARRANTY CONDITIONS

All HAYWARD products are guaranteed to be free from manufacturing or material faults for a period of two years as from the date of purchase. Any claim made under the terms of the warranty must be accompanied by a dated proof of purchase. We therefore recommend that you keep your invoice.

The HAYWARD warranty is limited to the repair or replacement, at HAYWARD's discretion, of faulty products, provided they have been used under normal conditions, as described in their user guide, and that the product has not been modified in any way and has been used only with HAYWARD components and parts. Frost and chemical damage are not covered.

No other costs (transportation, labour, etc.) are covered by the warranty.

HAYWARD cannot be held liable for any direct or indirect damage caused by the incorrect installation, connection or operation of a product.

Please contact your retailer if you want to make a claim under the terms of the warranty and request the repair or replacement of an item. No equipment returned to our factory will be accepted without our prior written agreement.

Worn parts are not covered by the warranty.

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