# AMZAIR ✳

## monobloc premium heat pumps

# Installation and Commissioning Procedure

## OPTIM' (heating)

## & OPTIM' DUO

(heating and domestic hot water production)

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**ASHP monobloc indoor**

OPTIM' and OPTIM'DUO 4kW single phase

OPTIM' and OPTIM'DUO 6kW single phase

OPTIM' and OPTIM'DUO 9kW single phase

*07/04/2018 version*

HEATING, COOLING AND DOMESTIC HOT WATER

## TABLE OF CONTENTS

ASHP OPTIM'

ASHP OPTIM'

## 1- ASHP AND ANCILLARY EQUIPMENTS OVERAL VIEW

### 1-1 Grid



X 1

*Grid + mounting brackets*



X 8

*ISO 4017 M6*20 screw + M6 washer*

### 1-2 Air duct
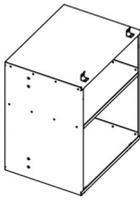


X 1

*Air duct + fixing hooks + rivet nut for fixing brackets*
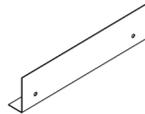


X 2

*Air duct top and bottom frames*



X 2

*Air duct side frames*

### 1-3 ASHP

#### 1 3-1 PAC heating only

**OPTIM 4 and 6 kW**
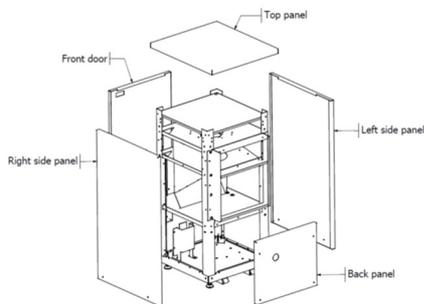


**OPTIM 9 kW**
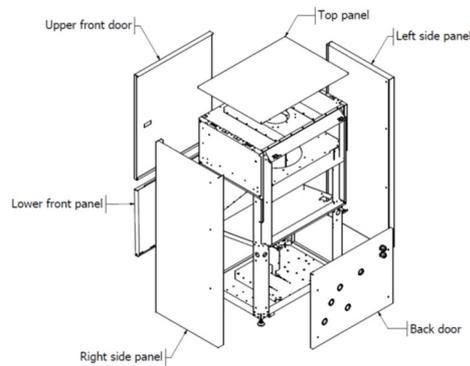


 X 10    Screw DIN7991 M6*40

*body panel fixation screws*

 X 10    Screw DIN7991 M6*40

*body panel fixation screws*

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**OPTIM 4 and 6 kW**



- Tank front door panel
- ASHP front door
- Mounting bracket
- Fixing bar
- Tank left side panel
- Tank right side panel
- ASHP right side panel
- ASHP left side panel
- ASHP back panel
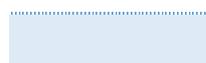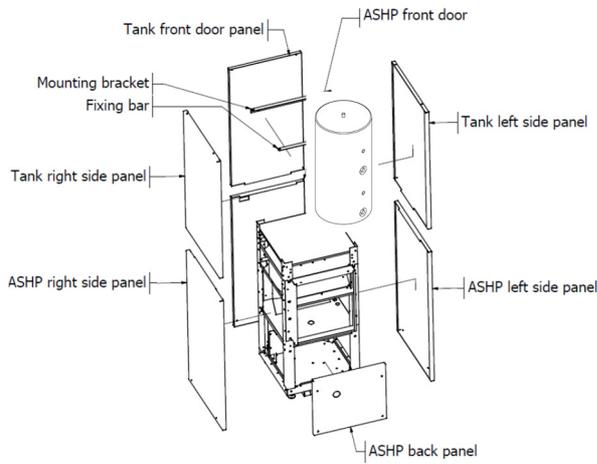
**X 10**

*Screws  DIN7991 M6*40*

*body panel fixation screw*
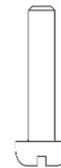
**X 4**

*Flat head, slotted drive screws M6*20*

*body panel fixation screw*

**OPTIM 9 kW**



- Upper front door
- Top panel
- Left side panel
- Lower front panel
- Back door
- Right side panel
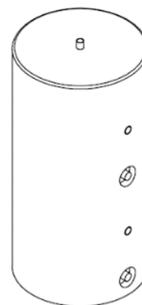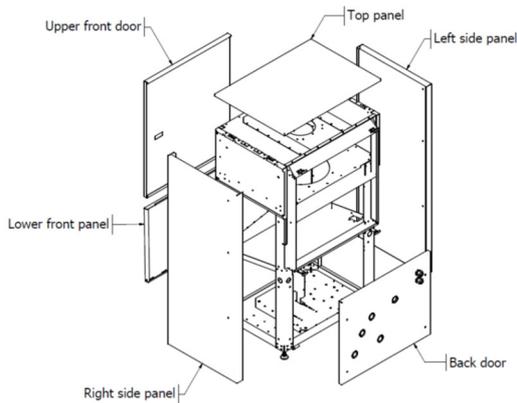
**X 10**

*Vis DIN7991 M6*40*

*body panel fixation screws*

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## 1-3-3 Equipements packaging view

**OPTIM 4 et 6 kW**

Grid and air duct

ASHP + tank packaging (if integrated OPTIM DUO)

Tank Kit

DHW tank *

**+ If OPTIM DUO**

Caution: Have a 19 mm spanner to unscrew the tank to the delivery palette.

**OPTIM 9 kW**

+
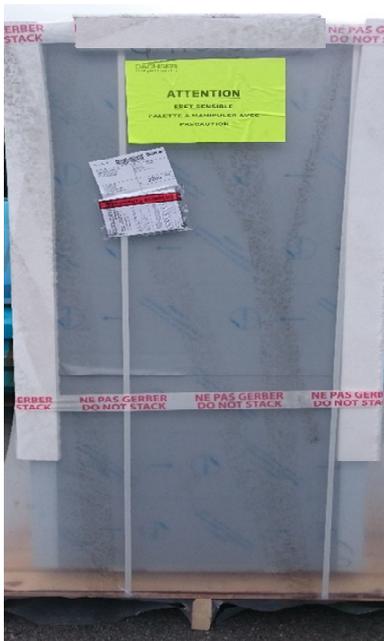
**+ if OPTIM DUO**

Tank 200L or 300L

Grid and air duct

PAC + Tank kit + water distribution kit (if separated water distribution)

*DHW tank :

- If integrated: 170L or 200L
- If separated : 170L, 200L or 300L

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## 1-4 Thermostats

### 1-4-1 DELTA DORE TH RA

X number of zone

### 1-4-1 DELTA DORE TYBOX 5100 and receptor RF6200 *(Option)*

X number of zone

### 1-4-2 DELTA DORE TH FI *(Option)*

X number of zone

## 1-5 Tank Kits

### 1-5-1 Integrated tank (OPTIM' 4 and 6 kW)

X 1

X 1

*Cooper outlet tube for DHW*

*Copper inlet tube (2 parts) + Hose DN20 1m female connector 3/4 ''*

*Gaskets are not provided*

*Gaskets are not provided*

X 1

X 1

X 1

*Security unit 3/4 ''*

*Security unit siphon*

*DHW temperature sensor  6 m*

### 1-5-2 Separated tank (OPTIM' 4, 6 and 9 kW)

X 1

X 1

X 1

*Security unit 3/4 ''*

*Security unit siphon*

*DHW temperature sensor  6 m*

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## 1-6 Separated distribution water kit

### 1-6-1 Not mixed zone

*2 ways valve*

+

*Actuator 2 ways valve+ fixing ring*

*(see page 15 for electric connection)*

X number of zone

### 1-6-1 Two zones, one unmixed

*HEATING*
*Cold water*

*HEATING*
*Hot water*

Temperature sensor

Water pump

3 ways valves

*ASHP*
*Cold water*

*ASHP*
*Hot water*
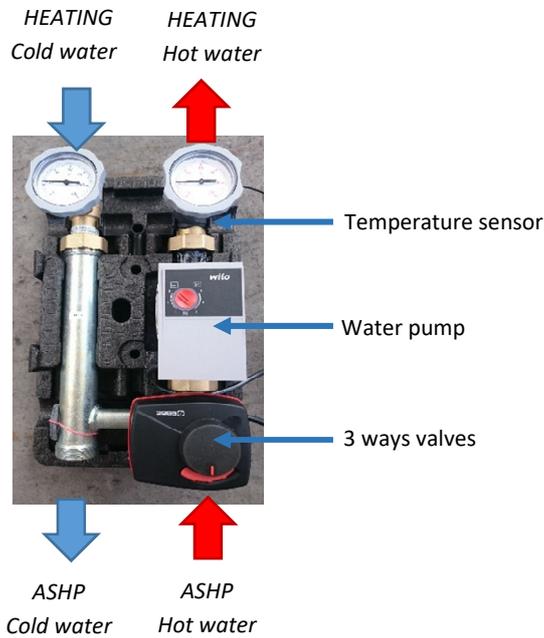
*Mixed zone kit*      X 1

✎ *see page 15 for electric connection*

*2 ways valve*

+

*Actuator 2 ways valve  + fixing ring*

*(see page 15 for electric connection)*

X 1

## 2 WAYS VALVE ACTUATOR SET-UP

15°

ASHP OPTIM'
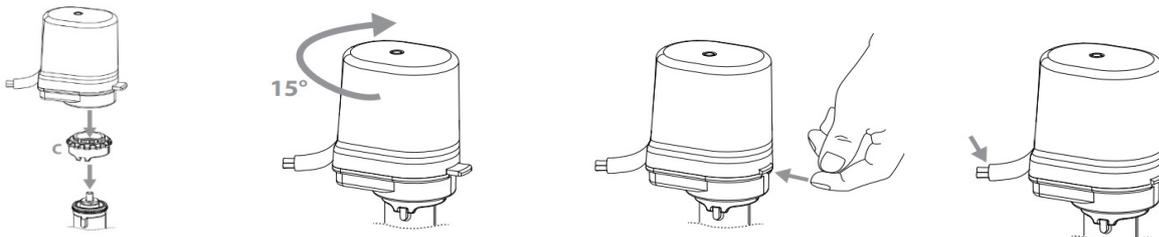
## 2- INSTALLATION PHASES DESCRIPTION

| N° | Main installation phases |
|---|---|
| 1 | Grid installation inside the wall |
| 2 | Air duct installation on the grid |
| 3 | Installation of the ASHP on its footprint |
| 4 | Hydraulic connection |
| 5 | Electric connection |

### Hardware part list to be provided for the project

| Hydraulic hardware parts procurement list and project recommendations | - ASHP and DHW tank shut off valves + flexible pipe between ASHP output and input and the heating installation (to improve installation acoustic)<br>- Isolated heating pipework 3/4'' diameter (internal diameter of 20 mm minimum, including elbow pipe, flexible pipes, valves…) for OPTIM'4 et 6kW and 1'' diameter (internal diameter of 26 mm minimum, including elbow pipe, flexible pipes, valves…) for OPTIM'9kW<br>- **Mandatory minimum installation water volume for appropriate operation: 30L for 4kW / 45L for 6kW / 65L for 9 KW + and at the minimum of 30% of the emitters running at all the time(1)**<br><br>If it is not the case (example:head thermostatic radiator valves) = mixing bottle water (25L mini for 4kW / 40L mini for 6kW / 60L for 9Kw) (2) Or differential pressure valve + ASHP double service and/or back-up electric heater.<br>- Shut-off valve + installation filling valve + automatic air vent shut-off cock (on every high point of the circuit including the mixing bottle in the separated version)<br>- Mandatory magnetic system filter on each circuit of the installation. (in option : integrated system filter)<br>- Drain siphon for the condensate evacuation<br>- Mandatory water cleaning before installation filling (following DTU or the local code of practice guidelines)<br>- Heating water chemical treatment (to prevent scale, oxygen corrosion, rust, condensate corrosion, mineral deposit, bacteria)<br>- Highly recommended in every case and mandatory for the ASHP used in cooling mode : antifreeze treatment at -25°C<br>- **Optional**：Manometer for the end-user(in addition with the inside ASHP manometer)<br>- For the separated DHW tank : ¾" Isolated heating pipework between ASHP (OPTIM' DUO 4 or 6kW) and DHW tank |
|---|---|
| Electric hardware parts procurement list and project recommendations | - Installation must be protected by a 30mA differential circuit breaker<br>- Installation of power cable 3G6 for 4 and 6kW 3G6 + 32 A breaker (curve D)<br>- Cabling between each thermostat and ASHP: 2 wires 9/10 and 2 wires 0,5mm² for the receptors (TYBOX and TH RA).<br>- **For the separated DHW tank version, installation of DHW temperature sensor: 1 pair of 9/10 wires (if DHW away more than 3 meters)**<br>- **For the separated water distribution version (unmixed zone) 2 ways valve connection: 2 wires 0.5mm².**<br>- **For the separated water distribution version (mixed zone) 2 ways valve connection: 2 wires 0.5mm², water pump : 3G1.5mm² power cable, 3 ways valve : 3G0,5mm², and temperature sensor of the mixed zone : 1 pair 9/10 cable.**<br>- **For the mixing bottle installation, water pump installation: 3G1.5mm² power cabling, temperature sensor(s): 1 pair 9/10 wires and 3 ways valve: 3G0.5mm²** |

(1) At minimum 30% of the water flow, through the zone emitters = without head thermostatic radiator valves, motorized electro valve, actuator or other.
(2) Mixing (buffer) bottle wall mounting of 25L for OPTIM-04M (diameter 320/height 800), of 50L for OPTIM-06M (diameter 375/height 1050) and of 80L for OPTIM-09M (diameter 480/hauteur 750).

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## 2-1 Grid installation

### 1- LAY THE WOODEN BLOCKS
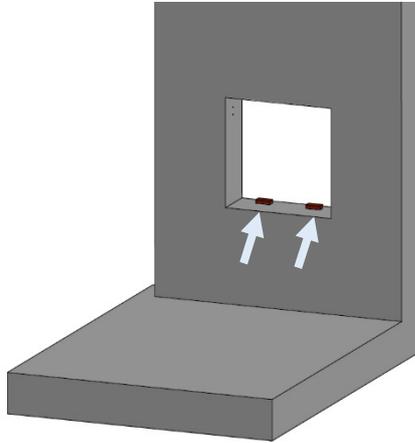


1. Lay the two wooden blocks 20 mm thick (provided with the grid) on the hole base of the wall.

### 2- INSTALL ANDS SECURE THE GRID INSIDE THE WALL
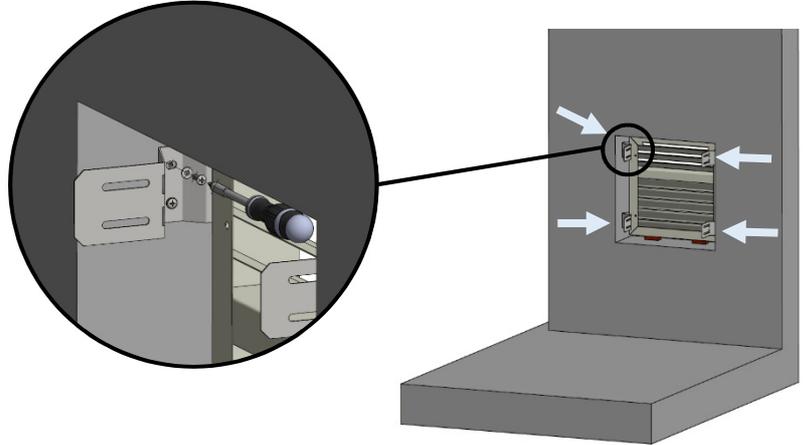


1. Put the grid on the two wooden blocks.
2. Make sure that the grid is horizontal and properly in contact with the wall surface. Then screw the mounting brackets on the wall with proper screws and screws anchor (not provided) see picture above).

## 2-2 Air duct installation

### 3- AIR DUCT FIXING
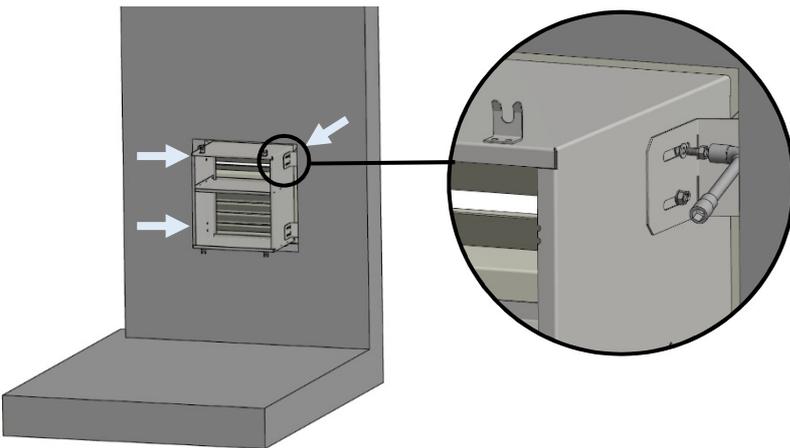


1. Install the air duct to the mounting brackets with 8 screws ISO ISO4017 M6*20 and the M6 washers (provided with the air duct / see above picture).
2. Possibility to make the air tightness with rockwool by filling the space around the air duct. In case of PU expansive foam use, see the next step.

### 4- FRAME AIR DUCT FIXING
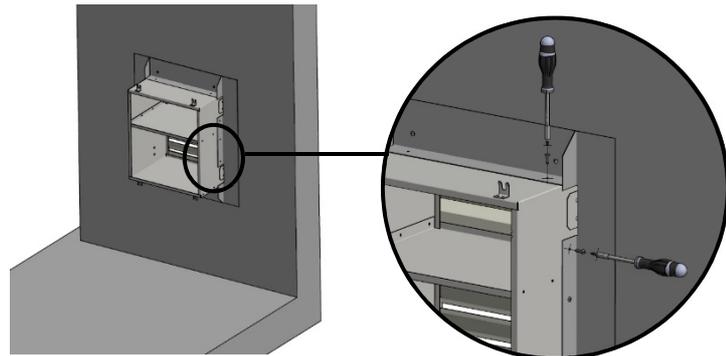


1. Screw the 4 frames part (screw not provided) in the air duct, make sure that they are properly in contact with the wall surface (3 screws / side frame parts and 2 screws / horizontal frame parts / see picture above ).
2. Finalize the air tightness with PU expansive foam. Specific holes are made in the frame part to inject the expansive foam.

## 5- ASHP ALIGNMENT AND POSITIONING
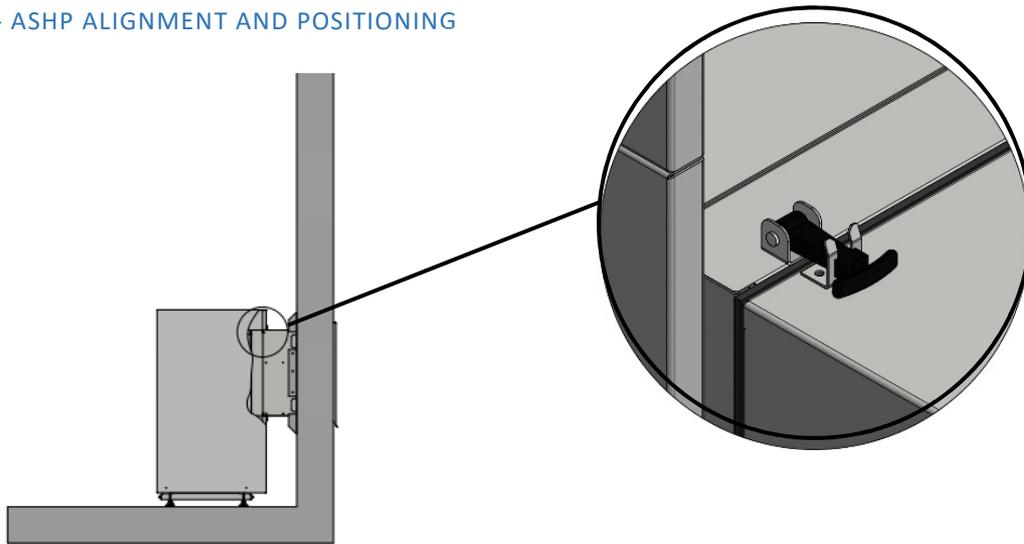


1. Use the ASHP adjustable foot to have the air duct straight to the hole in the wall.
2. Secure the ASHP to the air duct using the four handles (see picture above).

## 6- INSTALL THE TANK ON THE ASHP
### (ONLY FOR OPTIM'DUO 4 AND 6 KW)
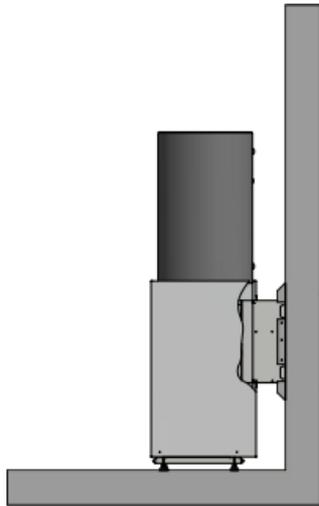


1. Put the inlet / outlet of the tank at approximatively 25° on the left of the ASHP, when you are in the front of the machine, in order to facilitate the hydraulic connections later. (see detail pict. page 13).

## 7- INSTALL THE TANK BODY PANELS
### (ONLY FOR OPTIM'DUO 4 AND 6 KW)
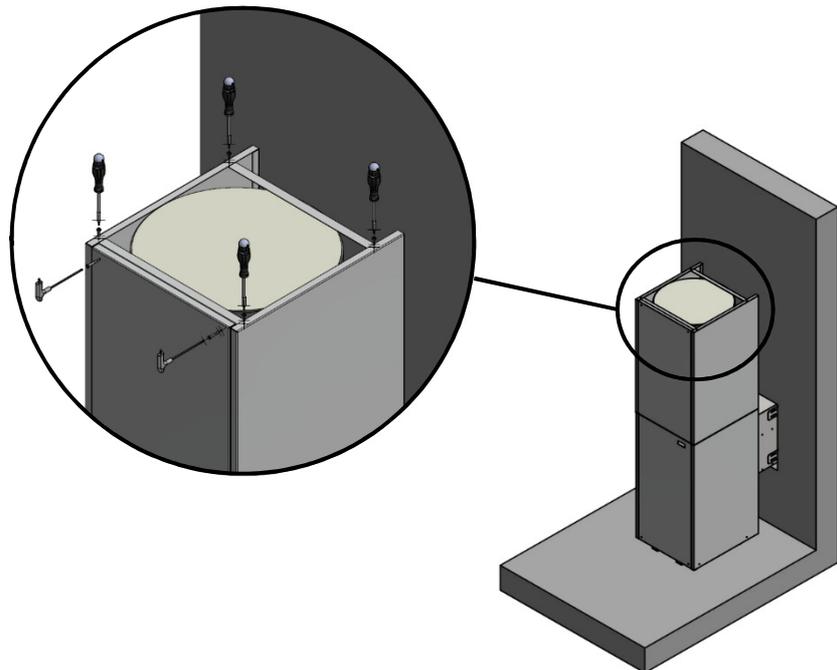


1. Secure the two side body panels with the provided bar, square and the 4 slotted flat screws head M6*20 (see pictures above).
2. Lay the tank side panels you have just assembly, on the ASHP side panels body. Then, on the top of the front body panel(see zoom picture), screw the tank door panel in the fixing square with 2 screws DIN7991 M6*40

ASHP OPTIM'

## 8- OPTIM 9KW DOOR OPENNING
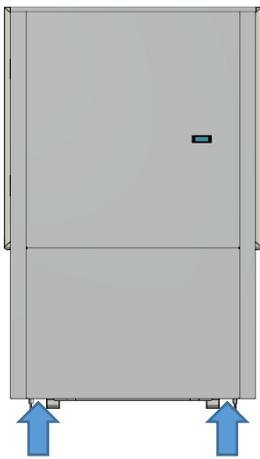
1. Pull in your direction the bottom panel where the arrows are shown in the diagram (no fixation screw)
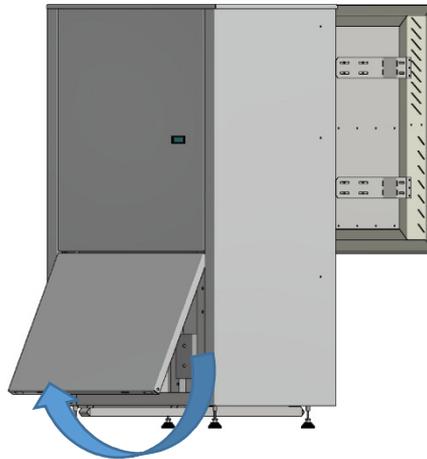
2. Remove the panel
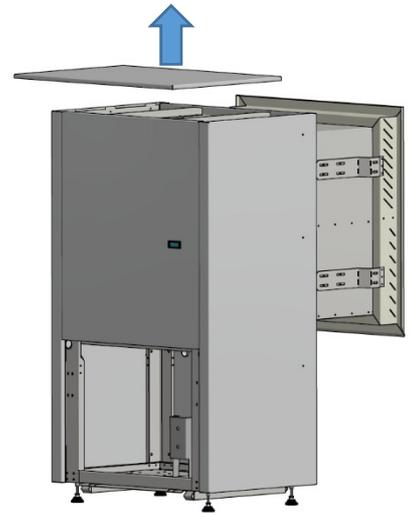
3. Remove the roof (no fixation screw)
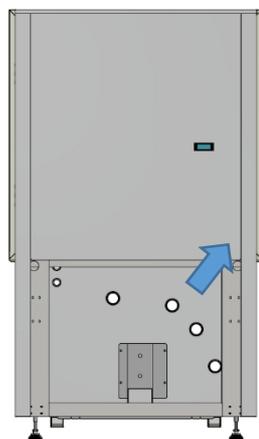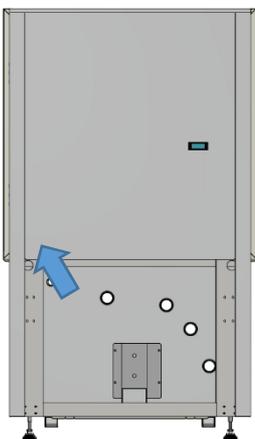
4. Lift the first bolt located at the bottom of the back of the panel (see arrow in the diagram) then remove the panel at the bottom.
5. Do the same on the other side
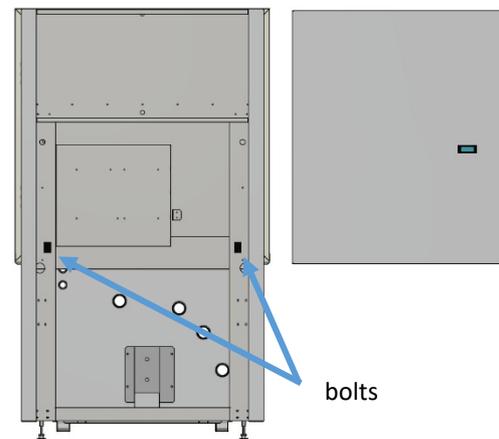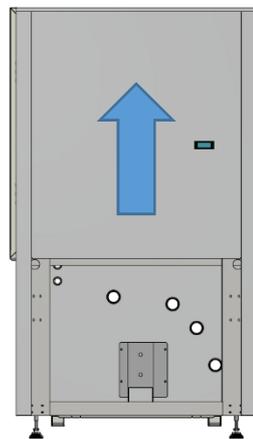
6. Push the panel up to remove it

bolts

See bolts on step 6 at the right.

ASHP OPTIM'

## 2-4 Hydraulic connections

**OPTIM 4 and 6**

Domestic hot water

Connexion Electric
heater (option)

Domestic Cold water

Inlet exchanger for
domestic hot water

Outlet exchanger
for domestic hot
water production

Wall

**Condensate
evacuation 1" M**

**OPTIM 9 kW**

**Cables pass-through**

**Condensate evacuate
ø 40 mm PVC**

**Heating outlet 1" M** →

**Heating inlet 1" M**

**DHW outlet 1" M** →

**DHW inlet 1" M**

ASHP OPTIM'
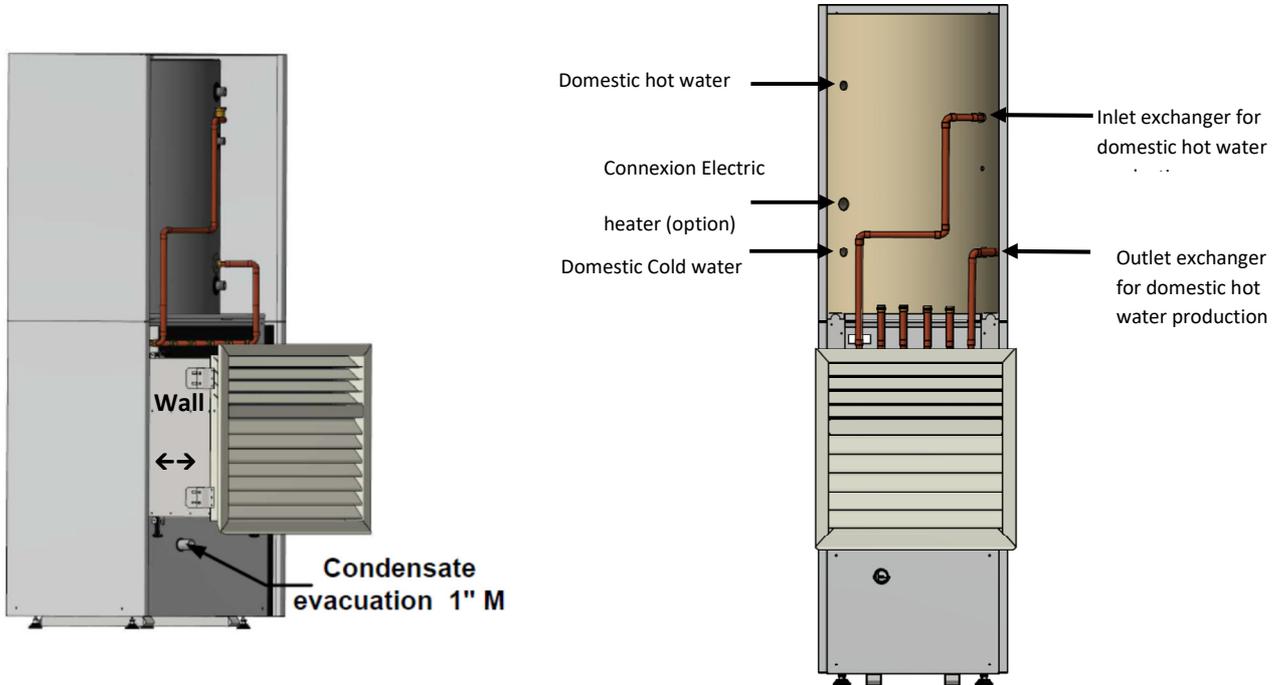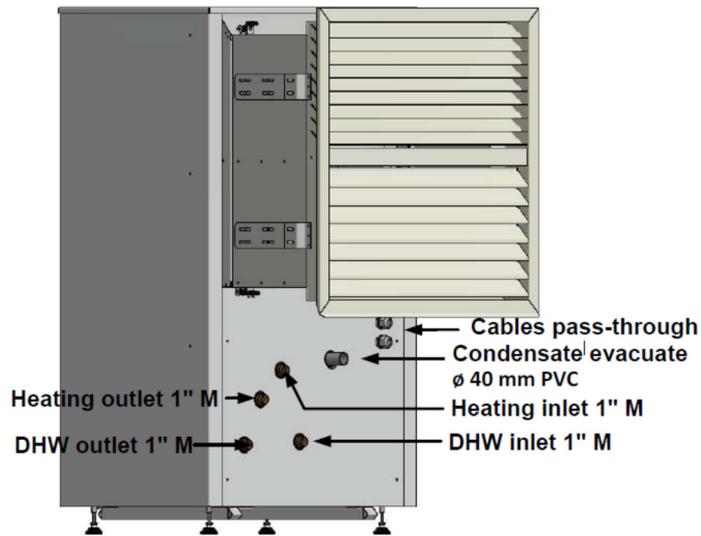
## 2-5 Electrics connections

### 2-5-1 Connecting the power network





| | | | | |
|---|---|---|---|---|
| E0 | E1 | E3 | E5 | |
| C10 | C16 | C16 | C2 | |

230V TBT
230 V Control board
230 V Elec. BU Heaters
24V
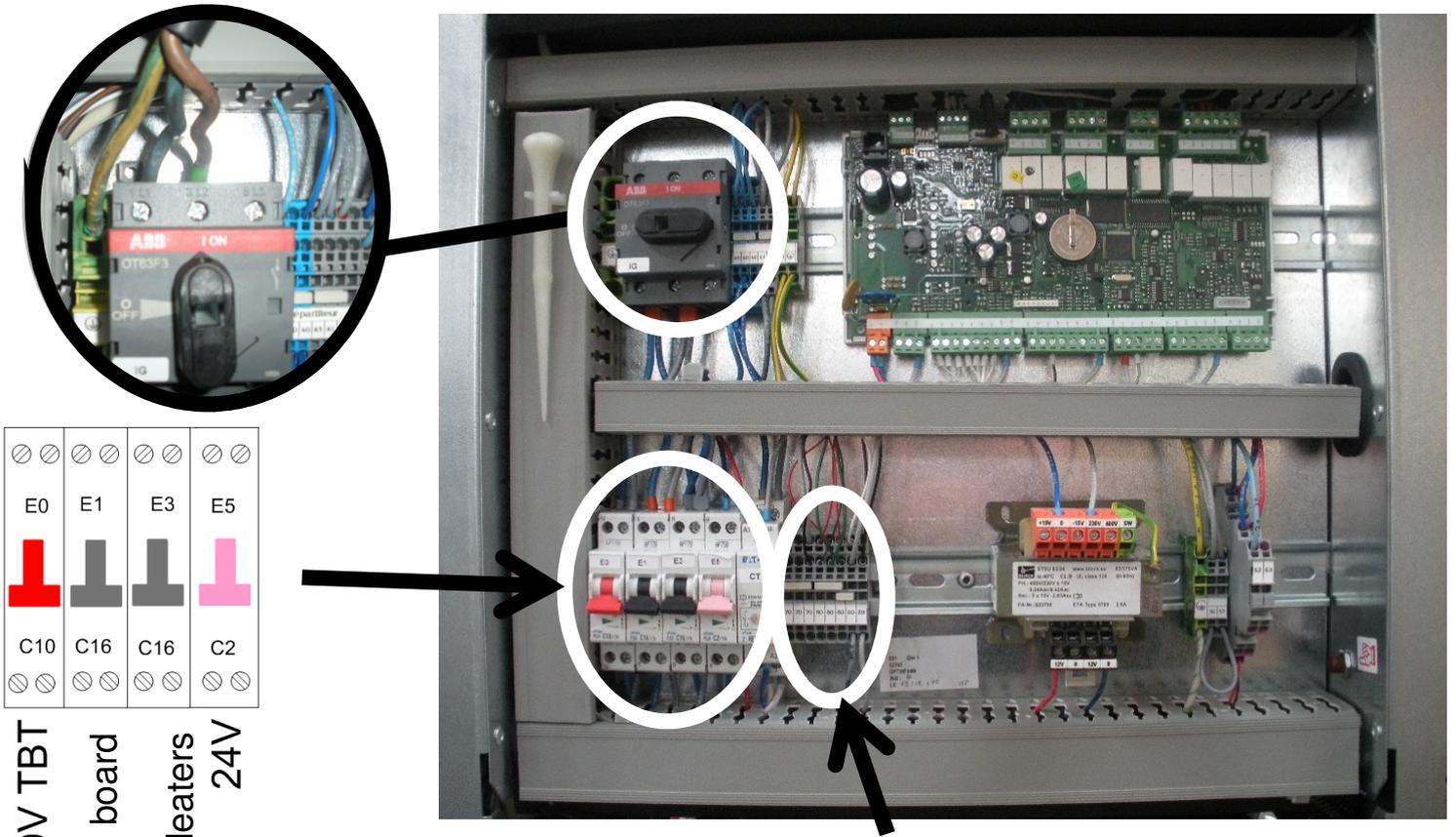
See « 2-5-1-2 THERMOSTAT CONNECTION BLOCKS »

| PAC | Power : Electric ASHP | Power : Duo tank elec. heaters | Mixing tank version | Cabling ASHP-Thermostats |
|---|---|---|---|---|
| **OPTIM'DUO 4kW** | 3G6 / breaker 32A (curve D) | 3G1,5 (only 200L) | Water Pump: 3G1,5<br>DHW sensor: 1 pair 9/10<br>3 ways valve: 3G0,5 | 9/10 |
| **OPTIM'DUO 6kW** | 3G6 / breaker 32A (curve D) | 3G1,5 (200 and 300L) | Water pump: 3G1,5<br>DHW sensor: 1 pair 9/10<br>3 ways valve: 3G0,5 | 9/10 |
| **OPTIM'DUO 9kW** | 3G6 / breaker 32A (curve D) | 3G1,5 (200 and 300L) | Water pump: 3G1,5<br>DHW sensor: 1 pair 9/10<br>3 ways valve: 3G0,5 | 9/10 |

✎ **See commissioning document for the values to register (see sample form at the end of the document).**

## 2-5-2 Sensor temperature connections

Connect the DHW temperature sensor (delivered with the tank) on the block N°80 and block B10 of the control board (see diagram below).

If separated water distribution with mixed zone, the temp. Sensor of the zone must be connected on the block N°80 and the block B8 of the control board (see diagram below).
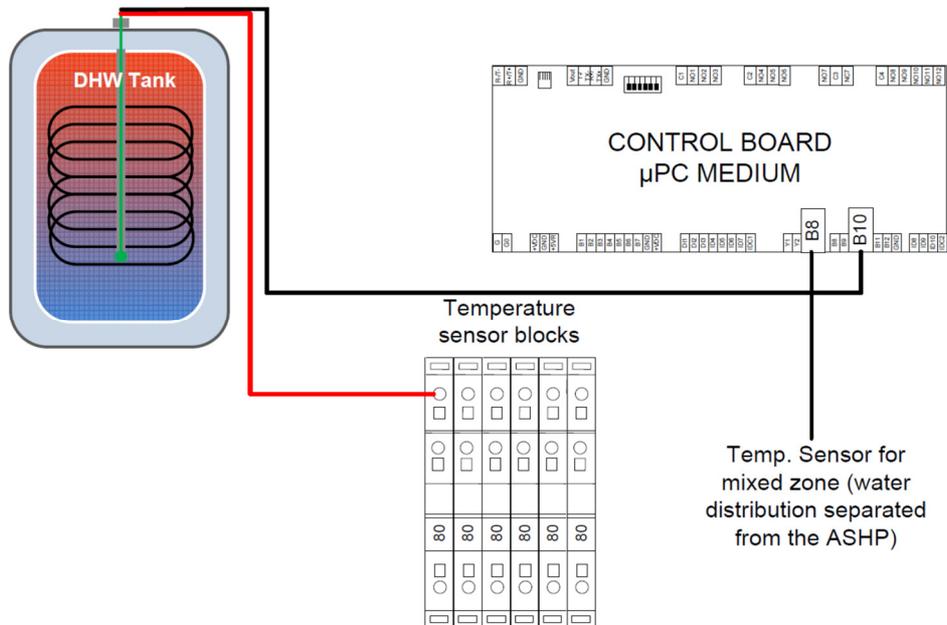


## 2-5-3 Sub zone 2 ways valves connection and sub zone water pumps connection (water distribution separated from the ASHP)
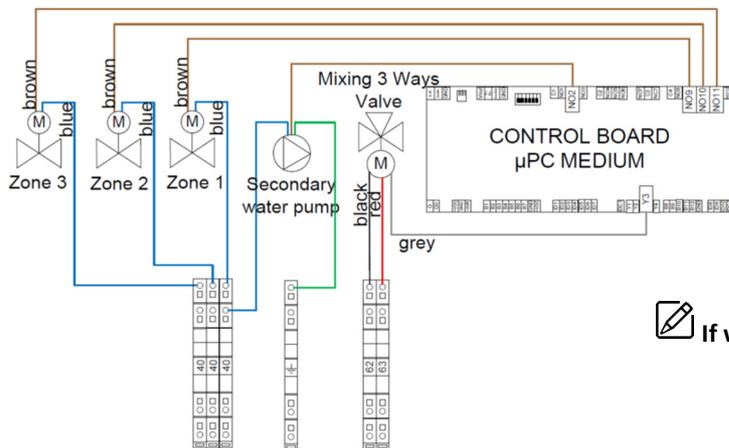


✎ **If water distribution WITH Mixed zone(s) :**

      zone 1 = zone mixed

      zone 2 = zone mixed or direct zone

      zone3 = zone direct

→ Full details: chapter 9 of « Technical Documentation ».

✎ **See 2 ways valves set-up in the ASHP control board page 21**

## 2-5-4 Thermostats connection

### 2-5-4-1 TH FI

1. Connect Thermostat as diagram below
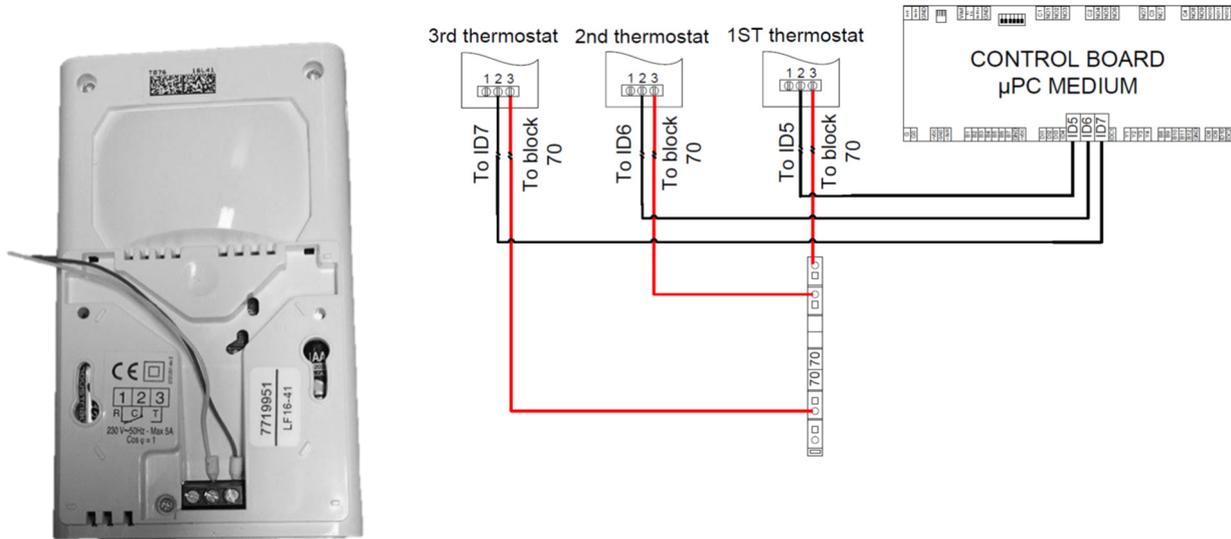


3. Remove the battery power storage protection

2. Remove the cover with a slotted screwdriver



✎ See full details in the thermostat manufacturer manual.

### 2-5-4-2 TYBOX

1. Remove the thermostat cover with a slotted screw driver



2. Remove the battery power storage protection



3. Remove the block cover back to the receptor



4. Connect as diagram below
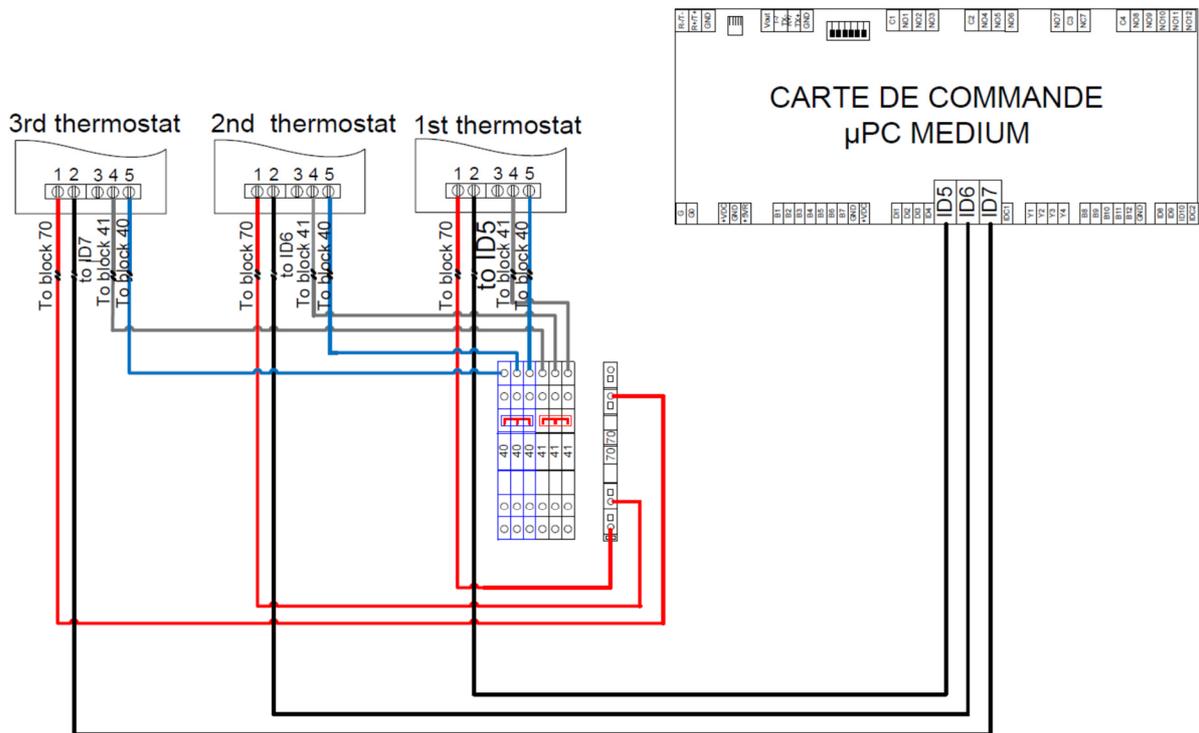




🖉 **Install the receptor outside the ASHP OPTIM**.

🖉 See full details in the thermostat manufacturer manual.

ASHP OPTIM'

## 2-5-4-3 TH RA

2. Remove the block cover back to the receptor



2. Connect as diagram below





3rd thermostat   2nd thermostat   1st thermostat

CONTROL BOARD
µPC MEDIUM
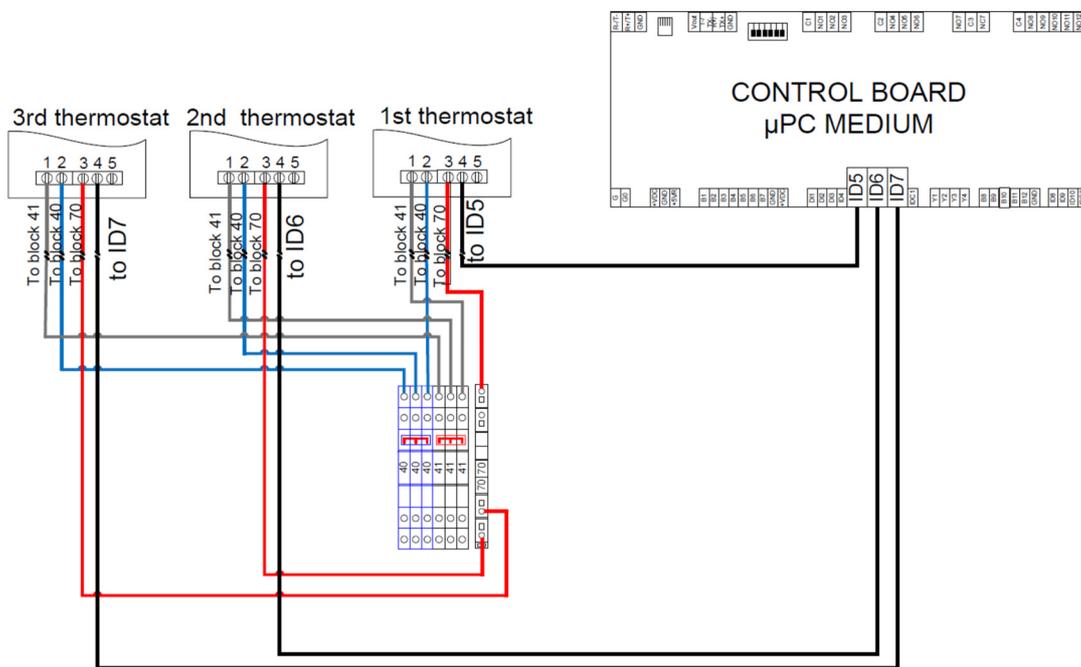
3. Remove the cover with a slotted screw driver



4. Remove the battery power storage protection

ASHP OPTIM'

## 3- START-UP STEPS

| N° | Start-ups steps |
|----|-----------------|
| 1 | Power on the ASHP |
| 2 | Connect the thermostats |
| 3 | Manually check the 3 ways valve closing |
| 4 | Manually start the water pumps(s) |
| 5 | Purge water circuit |
| 6 | Test of water flow efficiency |
| 7 | Define ASHP water set point and set point |
| 8 | ASHP start running |
| 9 | Check input/output values |
| 10 | Heating demand test |

*Water distribution 1 to 2 zones non mixed (P.21)*

*Water distribution 2 zones, included 1 mixed (P.27)*

ASHP OPTIM'

## 3-0 ASHP Control panel & screen terminal function and mode



- Alarm button
- Program button
- Exit button
- Up button
- Enter validation button
- Down button

| Symbol | Meaning |
|--------|---------|
| ⊖ | Compresseur is running |
| ❄ | Defrost on going |
| 🔥 | Heatinge |
| ◑ | Water pump is running |
| 🚰 | Domestic Hot Water production |

Menu screen code meaning :



| First character signification X... | |
|---|---|
| A | On/Off ASHP |
| B | Set point |
| C | Clock/Time program heating |
| D | Input/Output |
| E | Alarms history log |
| F | Board replacement |
| G | Assistance |
| H | Manufacturer |

Example code **Gg01** :

**G**: Assistance menu

**g**: Sub menu « gestion manuelle »

**01**: First screen of the sub menu « Gestion manuelle »

ASHP OPTIM'

## 3-1 ASHP Power on

Place the switch and the breakers at « on »(E0, E1, E3 et E5)



## 3-2 TYBOX thermostat radio synchronization

1- Press the top button of the receptor during 3 seconds (The led must blink 3 times).
2- Press the thermostat « mode » and « + » buttons at the same time, during 3 secondes (screen: rF00).
3- Press 1 time, thermostat « + » button (screen: rF01).
4- Then press one more time on thermostat « mode » and « + » button to exit.

See full details in the thermostat constructor manual.

## 3-2 The 2 Ways valves set-up and commissioning (sub-zone)



**To access to the following menus:**

Menu principal → Assistance → Param. Assistance → Thermoreg.

    **1. Access Gfc55 menu: « Présence vanne V2V »**

If Sub-zone is controlled by a 2 ways valve **(separated from ASHP)** → select « OUI » to declare the V2V.

    **2. Access Gfc56 menu: « Affectation V2V ? » for their assignment**

For each sub-zone (outside ASHP), select the water set point requested:

    → Loi d'eau 1 = Lowest water set point = **mixed zone**
    → Loi d'eau 2 = Highest temp. Water set point

ASHP OPTIM'
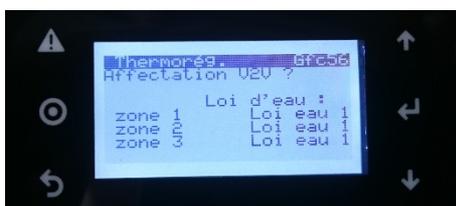
| WATER DISTRIBUTION 1 OR 2 ZONES DIRECTS | | Page n° |
|---|---|---|
| **1** | Manually start the 3 and 2 ways valves | Page 20 |
| **2** | Manually start the water pump | Page 21 |
| **3** | Purge water circuit | Page 21 |
| **4** | Test of water flow efficiency | Page 21 et 22 |
| **5** | Define ASHP water set point and set point | Page 22 |
| **6** | ASHP start running | Page 23 |
| **7** | Check input/output values | Page 23 |
| **8** | Heating demand test | Page 23 |

*Water distribution 1 zone direct :*



3 ways valve
DHW/Heating: Y2

Differential pressure valve
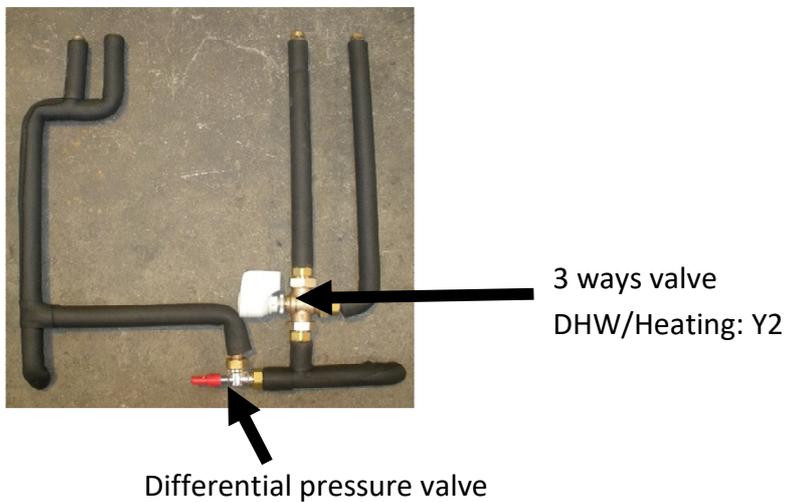
*Water distribution 2 zones direct (Integrated kit or not at the ASHP) :*



2 ways valves
Zone 1 direct: Dout2 (controlled by thermostat on ID5 port)

2 ways valves
Zone 2 direct: Dout6 (controlled by thermostat on ID6 port)

3 ways valve
Domestic Hot
Water/heating: Y2

Differential pressure valve

ASHP OPTIM'
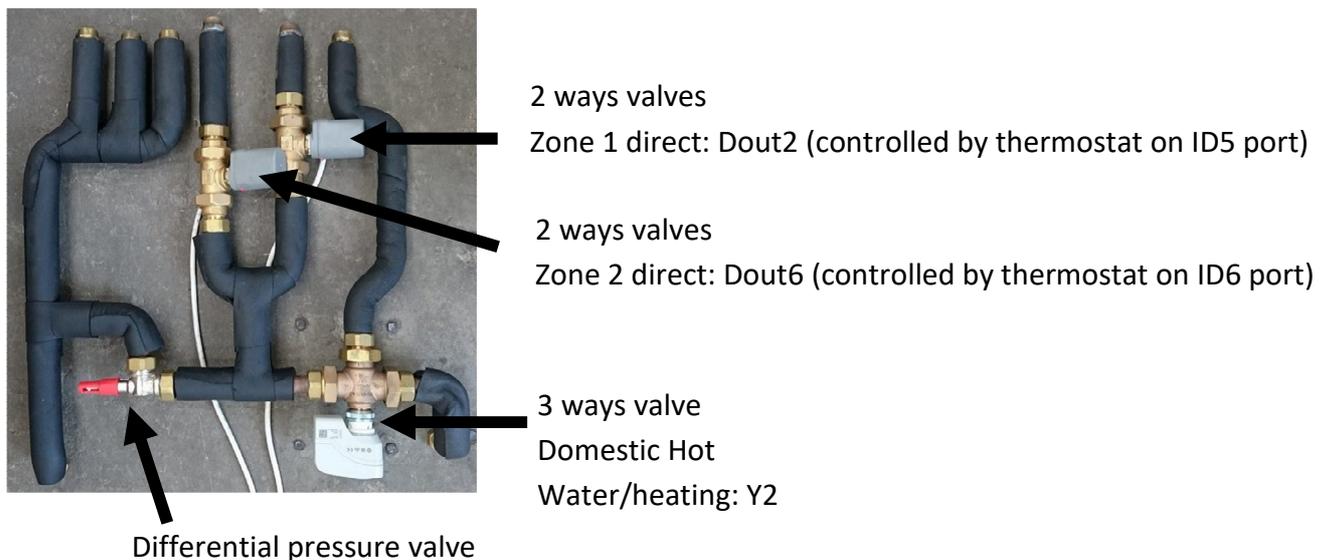
## 3-3 Manual mode to purge the water circuit and test water flow efficiency: 1 à 3 zone(s) direct(s)

✎ In case of alarm code, see the alarms code table (**annex page 34**)

### 3-3-1 Valves start
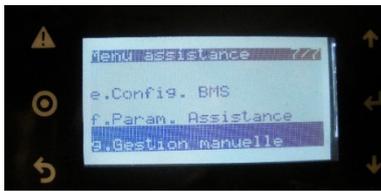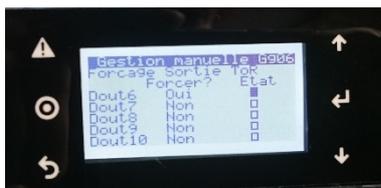


1. **Access to the main menu:**
   Press « Programmation » button ⊙ to go to the main menu. Then press down arrow button ⬇ until menu « G.Assistance », then press enter ↵ button to validate.



2. **Within the assistance menu :**
   Press down arrow button ⬇ until « Gestion manuelle » menu. Then press enter ↵ button to validate.



x

3. **Password : « 1234 »**
   Press enter ↵ button to have the cursor blinking of the first digit Press up arrow ⬆ button until n° « 1 ». Press ↵ enter button to validate the first digit. Do the same for the 3 last digits.



4. **Manual test of the valves (menu « Gestion manuelle »):**

Within the menu Gg08 :

- Press on ↵ return button to have the cursor blinking on the « Y2 » value.
- Change to **« Oui »** and then modify the Y2 value from 0.0 V to **10.0V** by pressing the ⬆ up arrow. Then validate with « enter » button ↵. Verify the 3 ways valve Y2 for DHW/heating is opening at 100% to the circuit A (=heating circuit)

✎ Open up duration of the 3 ways valve is about = 60 sec



Within the Gg05 and Gg06 menu:

- Press on ↵ enter to have the cursor blinking on the **Dout2** value.
- Change to **« Oui »** and change the value of **Dout2** at « ■ » (relay switched on / closed => on going valve opening) press ↵ enter. Then validate, and press on ⬆ Verify that the 2 ways valve of zone 1, is opening slowly (the control metal rod in the middle of the actuator / Motor valve will come up, it takes approximatively 6 mm, to have the rod fully come up .
- Follow the same procedure with zone 2: **Dout6**.
- If 2 other 2 ways valves, follow the same procedure with **Dout9** and/or **Dout10** and/or **Dout11**



✎ Open up duration of the 2 ways valve is about = **360 sec => 6 minutes**

- **When all of the valves are fully open, go to step 5. Otherwise check cabling.**

ASHP OPTIM'

## 3-3-2 ASHP Water pump start
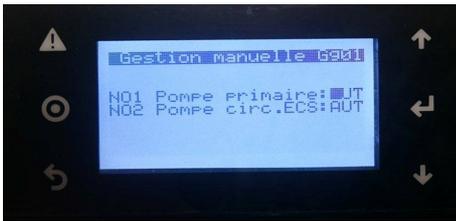


**5. Within the Gg01 menu (Gestion manuelle):**

- Press on ↵ To have the blinking cursor on AUT (see photo)
- Press on ↑ to have «Pompe primaire» in **MAN** (manual).

Press on ↵ to validate.

**Wait for the water pump front panel green led switch on, then go to step 6.**

## 3-3-3 Test of water flow efficiency and water circuit purge

Control that the ASHP water pump is on number « 8 », in « débit constant » mode (constant flow).

⚠️ **CAUTION :** The ASHP water pump is running at « débit constant » (constant flow) and not at « pression constante. » (constant pressure)
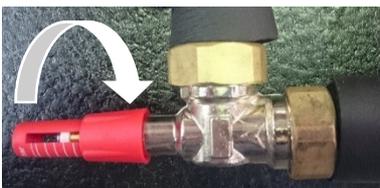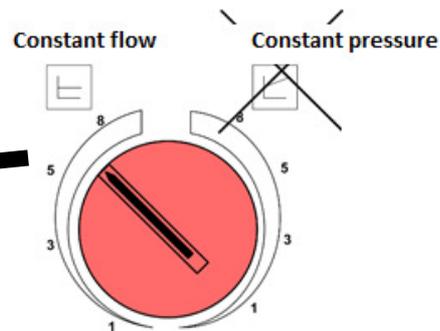




**6. Within the D07 (Entrées/Sorties) menu :**

Water flow test: All of the valves are open and the water pump is started and running

- **Manually shut the differential pressure valve as far as possible** by screwing clockwise (see photo).

- # Purge the water circuit.

- **Check flow within D07 menu D07** ( ■= flow ok /□= flow not ok) :
  - If □→ open differential pressure valve until reach the correct water flow.
  - If ■→ water flow OK, go to next step.

**Example: Water distribution 2 zones direct:**

**Alternate the demand for each zone (Dout2 → valve zone 1, Dout6 → valve zone 2),** only one zone open at the same time.
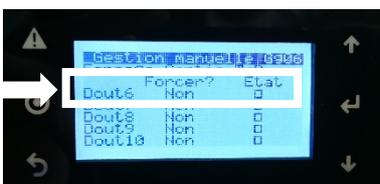
- **Shut off the valve Dout6 (see step 4).** When the valve is completely shut (360sec), **verify the flow** within the menu D07 as above:

  - If □→ Open differential pressure valve until reach the correct water flow.
  - If ■→ Water flow ok, go to next step.

- **Open Dout6 valve and shut off valve Dout2**.
  When the valve is completely shut (360sec), **verify the flow** within menu D07 as above:
  - If ☐ → Open differential pressure valve until reach the correct water flow.
  - Si ■ → Water flow is ok, go to next step.



- **Close Dout6** and **switch Y2 on the DHW circuit with the value 0.0V** (step 4) In order to have a water circulation in the DHW tank hot water coil and so purge it.

⚠ **Caution**: In case of sub zone commissioning, open each zone one by one and adjust the differential pressure valve in relation with the water flow. (same approach than above)



- **Within Gg01 menu → set-up back « pompe primaire » in AUT.**
- **Within Gg06 menu → set-up back Dout9, Dout10 and Dout11 at « NON » (Cancel the relay switched / forced at on) and «☐»**
- **Within Gg08 menu → set-up back the Y2 valve at 0.0V et validate « NON » (Cancel the Y2 switch to DHW circuit) and «☐»**

## 3-3-4 Water set point and set point adjustment



7. **Within Ha04-2 menu**

   Set-up value « Oui » to « Gestion des Lois d'eau » by zone and set-up « ToR » if there is a 2 ways valve or set up « 0-10V » if there is a 3 ways valves installed.
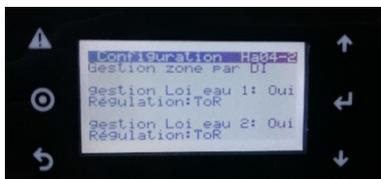


8. **Within Gfc52 et Gfc53 menus (Thermorégulation)**
   Possibility to adjust two water set point:
   « Loi d'eau 1 » → Water set point for the mixed zone (the lowest water set point)
   « Loi d'eau 2 » → Water set point **NOT** mixed (Highest water temp. as radiators emitter)
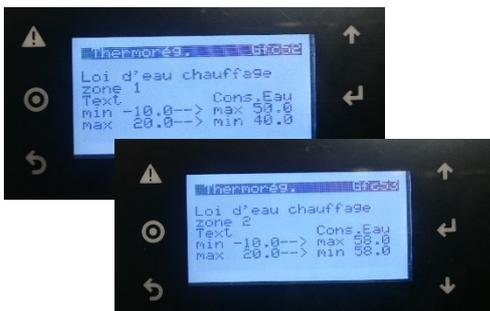
9. **Within B01 menu (Thermorégulation Unité)**
   Define the nominal set points:
   - Refroidissement = Cooling: 15 °C
   - Chauffage = Heating: 50 °C (Heating set point if no thermostat, otherwise the set point calulated from the water set point)
   - Sanitaire = DHW: For testing purpose set-up a set point at 5°C above the DHW current temperature (Temp. given by the ECS sensor, see menu D02).

ASHP OPTIM'
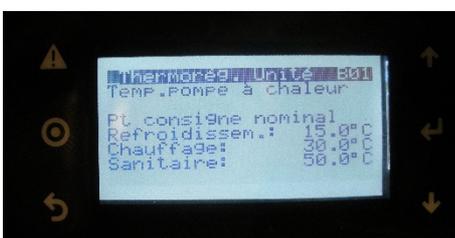
## 3-3-5 Temperature sensors start and control
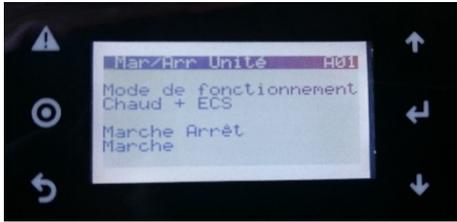


10. **Within A01 menu « Mar/Arr Unité» (On/Off ASHP)**
    Start the ASHP:
    Set-up parameters at « Chaud + ECS » and « Marche »
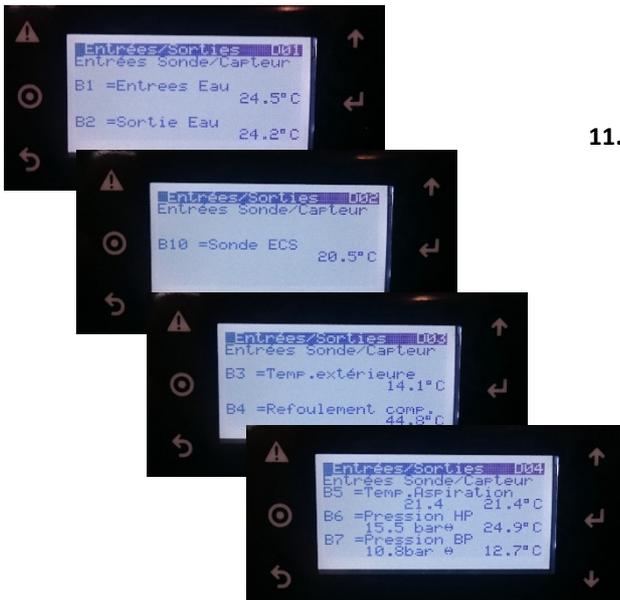


11. **Within the D menu (Input/Output)**
    After several minutes of ASHP running, control all of temperature sensors value and their accuracy:
    <u>Menu D01</u>: B1 Water input / B2 output temp. sensors.
    <u>Menu D02</u>: B10 DHW temp. sensor ECS.
    <u>Menu D03</u>: B3 Outdoor temp. sensor and B4 Discharge output compressor.
    <u>Menu D04</u>: B5 Compressor suction temp., B6 HP High pressure and B7 BP Low pressure.

**11. Heating demand test**

When the DHW set point temporary test is reach, create a demand in the heating zone 1 with the thermostat. Control that the heating zone temp. match the demand zone temp., otherwise control the thermostats cabling. For that, see P.13 to P.15 and/or the hydraulic connection. If the heating zone match the set point demand zone, do the same test with zone 2 and zone 3.

When validated, st-up the Domestic Hot Water set point within the B01 field following the chart below.

| ASHP | 150L Tank | 200L Tank | 300L Tank |
|---|---|---|---|
| **OPTIM'DUO 4kW** | 55°C maxi | 55°C maxi | / |
| **OPTIM'DUO 6kW** | 50°C maxi | 55°C maxi | 55°C maxi |

**FILL THE COMMISSIONNING PROCEDURE FORM WITH COLLECTED RELEVANT DATA**

ASHP OPTIM'

| N° | WATER DISTRIBUTION 2 ZONES,  INCLUDING 1 MIXED | Page n° |
|---|---|---|
| 1 | Manually start the 3 and 2 ways valves | Page 25 |
| 2 | Manually start the water pump | Page 26 |
| 3 | Purge water circuit | Page 26 |
| 4 | Test of water flow efficiency | Page 26 et 27 |
| 5 | Define ASHP water set point and set point | Page 27 |
| 6 | ASHP start running | Page 27 |
| 7 | Check input/output values | Page 28 |
| 8 | Heating demand test | Page 28 |

*Water distribution 2 zones direct, including 1 mixed (Water distribution kit integrated or not to the ASHP):*



Mixed zone water pump: Dout2

2 ways valve
Zone 2 direct: Dout6
→ Water set point 2

3 ways valve
 Zone 1 mixed: Y3
→ Water set point 1

3 ways valve
Domestic hot water/heating: Y2

ASHP OPTIM'
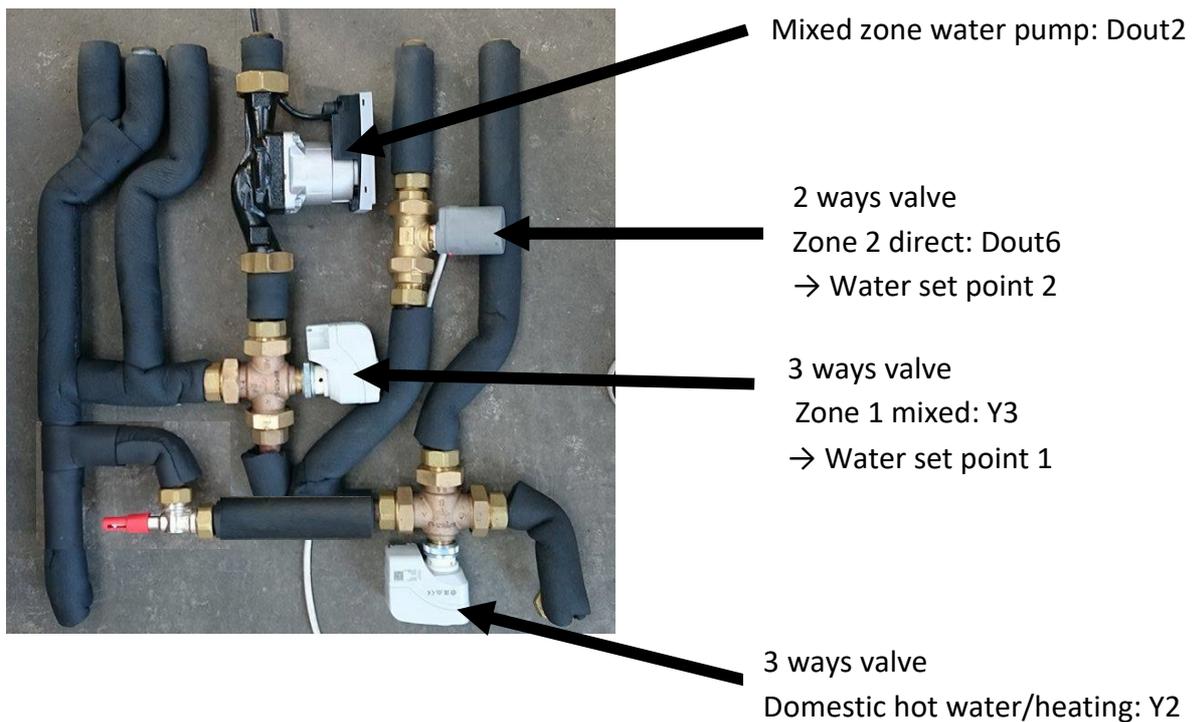
## 3-4 Manual start to purge the water circuit and test of water flow efficiency: 2 ou 3 zones including 1 or 2 mixed

### 3-4-1 Manually start the 3 and 2 ways valves
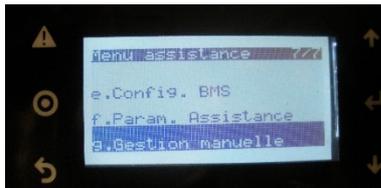
1. **Access to the main menu:**
   Press on the « Programmation » button [⊚] to go to the main menu.
   Then press down arrow button until [↓] « G.Assistance », Then validate with the enter button [↵] .

2. **Within the « assistance » menu :**
   Press down [↓] arrow button until « Gestion manuelle». Then validate with enter button [↵] .

3. **Password: 1234**
   Press on [↵] enter button to have the cursor blinking on the first digit
   Then press on [↑] arrow up until « 1 », validate with [↵] enter button.
   After the first digit repeat the same way for the 3 last digits.

4. **Valves manual test within « Gestion manuelle » menu:**

   Within Gg08 menu :

   - Press enter [↵] button, to have the cursor blinking on the Y2 value.
   - Change from « Non » to **« Oui »** and modify Y2 « Valeur » with arrow up [↑] button, to **10.0 V.   Validate with** [↵] **enter button.** Verify that the 3 ways valve Y2 for DHW/heating is opening at 100% towards the A circuit (=> heating circuit)
   - Follow the same procedure with Y3 valve (100% open = not mixed, 0%=closed. Loop on the heating circuit).

   [✎] Open up duration of the 3 ways valve is about = 60 sec

   Within Gg05 and Gg06 menu:
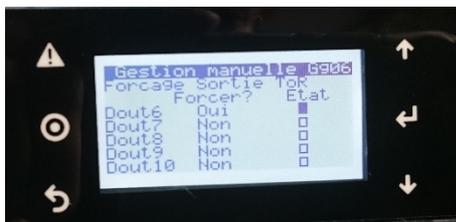
   - Press return [↵] button to have the value Dout6 blinking.
   - Change from « Non » to « Oui » and modify the **Dout6** value at open valve activated by changing the blank box ☐ to the black box ■ by pressing on the arrow up [↑] button. Validate with the [↵] enter button.
   - Verify that the 2 ways valve of zone 1, is opening slowly (the control metal rod in the middle of the actuator / motor of the valve will come up in approximatively 6mn).
     Follow the same procedure if 2 extra valves installed **Dout9** and/or **Dout10** and/or **Dout11**

   [✎] Open up duration of the 2 ways valve is about = **360 sec => 6 minutes**

   - **As far all of the valves are fully open, then go to step 5.**

ASHP OPTIM'

## 3-4-2 Water pumps start
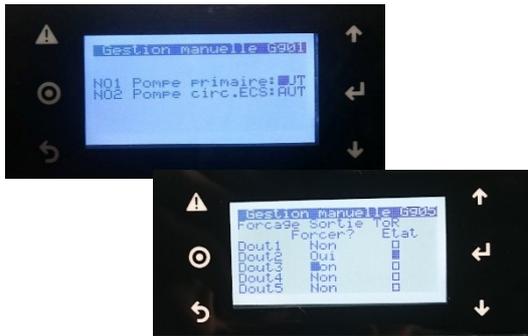


**5.** **Within Gg01 (Gestion manuelle) menu:**

- Press on ↵ To have the cursor blinking on AUT (see photo)
- Press ⬆ to have **«Pompe primaire» in « MAN » (manuelle)** and validate with ↵
- Then in the menu « gestion manuelle **Gg05 »** set-up **« Dout2 » at « Oui » and validate the value ■ (the box must be black)** to switch on the water pump of the mixed zone.

**Control that the water pumps are running. If OK, go to step 6.**

## 3-4-3 Test of water flow efficiency, and circuit purge

Control that the ASHP water pump is set-up at number « 8 », in « débit constant » mode (constant flow).

⚠ **CAUTION:** The ASHP water pump is running at « débit constant » (constant flow) and not at « pression constante. » (constant pressure)
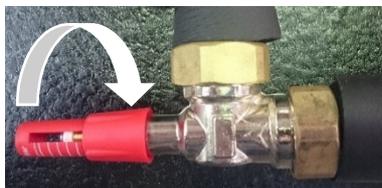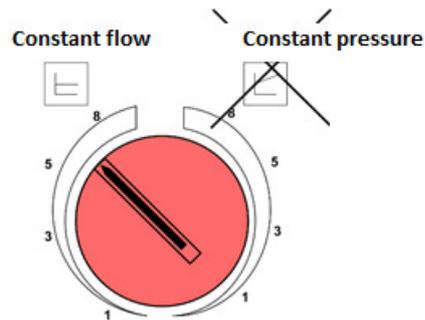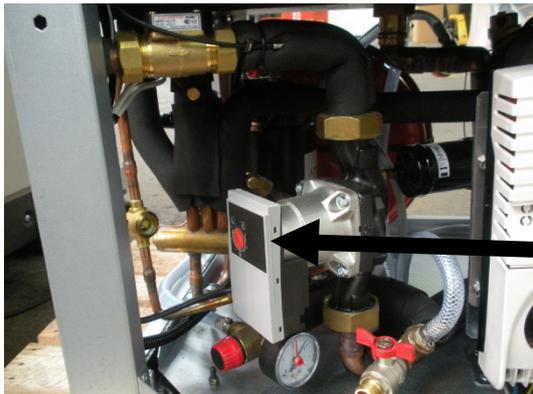




**7.** **Within the « Entrées/Sorties » D07 menu:**

Water flow test: All of the valves are open and the water pump is started and running

- **Manually shut the differential pressure valve as far as possible by screwing clockwise**(see photo).
- # Purge the water circuit.
- **Check flow within D07 menu,03Ctrl. Débit( ■=flow ok / ☐= flow not ok):**
  - If ☐→ open differential pressure valve until reach the correct water flow.
  - If ■→ water flow OK, go to next step.

ASHP OPTIM'
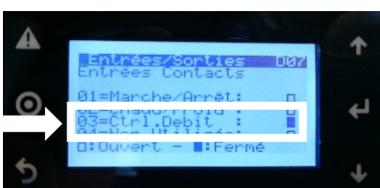
**Alternate the demand on the zones (Dout2 → water pump zone 1, Dout6 → valve zone 2), Only one zone valve open at the same time.**
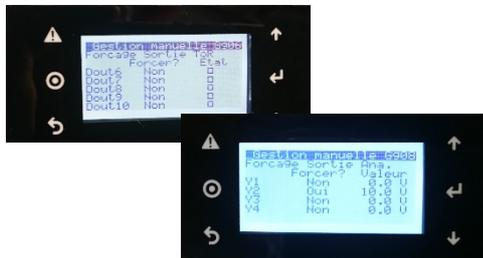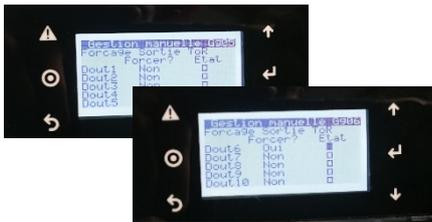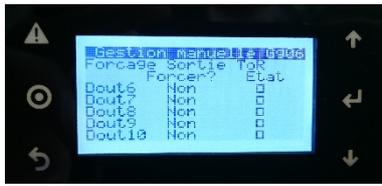
- **Shut valve Dout6 (see step 4).** When the valve is fully shut (360secs), **control the water flow** in the D07 menu like above:
  - If ☐ → Open differential pressure valve, until reach the correct water flow.
  - Si ■ → Water flow is ok, go to next step.
- **Open valve Dout6 and stop water pump Dout2.**
  When the water pump is OFF, **control the water flow** on D07 menu as before :
  - If ☐ → Open differential pressure valve until reach the correct water flow.
  - Si ■ → Water flow is ok, go to next step.
- **Shut valve Dout6** and **open Y2 on the DHW circuit with set-up 0.0V** (setp 4) In order to make water running thru the tank coil and so purge it.

⚠ <u>Caution</u>: In case of sub zone commissioning, open each zone one by one and adjust the differential pressure valve in relation with the water flow.  (same approach than above)

- **Within Gg01 menu → « pompe primaire » menu, set-up « AUT ».**
- **Within Gg06 menu → set-up at « Non » , Dout9, Dout10 and Dout11 (Cancel the relay switched / forced at on) and have a blank box « ☐» back again**
- **Within Gg08 menu → set-up back at 0.0V the Y2 valve and validate « Non » (Cancel the Y2 switch to DHW circuit) and have the box blank « ☐ »**

---

### 3-4-4 Define water set points and set points
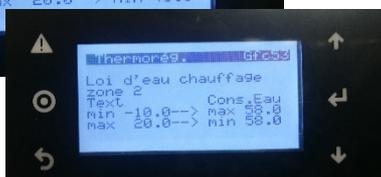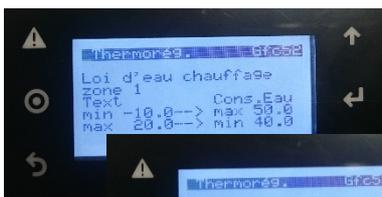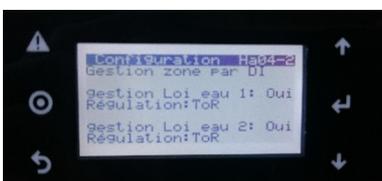
7. **Within Ha04-2 menu**

   Set up « Oui » to the water set point field « gestion loi d'eau » and « ToR » if it is a 2 ways valves or « 0-10V » if it is a 3 ways valve

8. **Within Gfc52 et Gfc53 menu (Thermorégulation)**
   Possibility to adjust two water set point:
   « Loi d'eau 1 » → Water set point for the mixed zone (the lowest water set point)
   « Loi d'eau 2 » → Water set point **NOT** mixed (Highest temp. water like for radiators)

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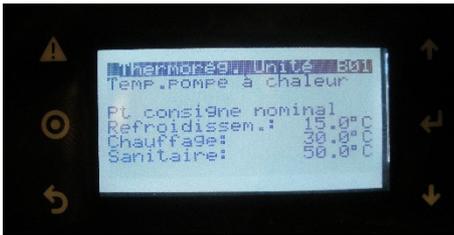
**10. Within B01 menu (Thermorégulation Unité)**

Define the nominal set point:

- Refroidissement = Cooling : 15 °C
- Chauffage = Heating: 50 °C (Heating set point if no thermostat, otherwise the set point is caluclated from the water set point)
- Sanitaire = DHW: For testing purpose put the set point at 5°C above the DHW current temperature (Temp. Given by the ECS sensor, menu D02).

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### 3-4-5 Temperature sensors start and control
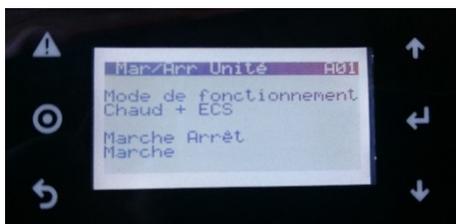
**11. Within A01 menu « Mar/Arr Unité »(On/Off ASHP)**

Start the ASHP:

Set-up select « Marche » et « Chaud + ECS »
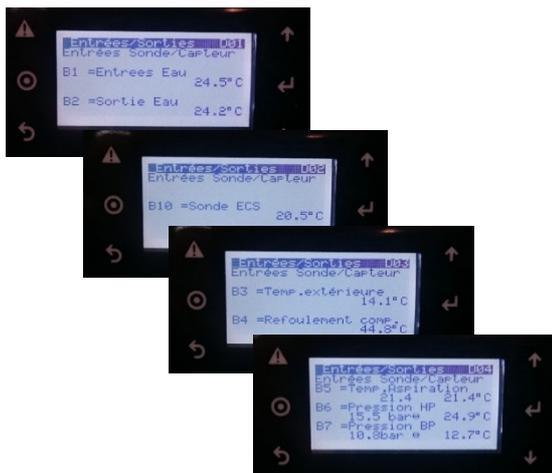
**12. Within the D menu (Input/Output)**

After several minutes of ASHP running, control all of temperature sensors value and their accuracy:

Menu D01: Water input / output temp. sensors.

Menu D02: DHW temp. sensor ECS.

Menu D03: Outdoor temp. sensor and Discharge output compressor.

Menu D04: Compressor suction temp., HP High pressure and BP Low pressure.

**13. Heating demand test**

When the DHW set point temporary test is reach, request a demand in the heating zone 1 with the thermostat. Control that the heating zone temp. match the demand zone, otherwise Control the thermostats cabling. For that, see P.13 to P.18 and/or the hydraulic connections. If the heating zone match the set point demand zone, do the same test with zone 2.

When it is validated, put but the Domestic Hot Water set point within the B01 field following the chart below.

| ASHP | 150L Tank | 200L Tank | 300L Tank |
|---|---|---|---|
| **OPTIM'DUO 4kW** | 55°C maxi | 55°C maxi | / |
| **OPTIM'DUO 6kW** | 50°C maxi | 55°C maxi | 55°C maxi |

✎ **FILL THE COMMISSIONNING PROCEDURE FORM WITH COLLECTED DATA**

## ANNEX : COMMISSIONING AND ACCEPTANCE DOCUMENT

**AMZAIR industrie**

# ASHP OPTIM COMMISSIONING DOC.

| Arriving time : | | | | Départure time : | |
|---|---|---|---|---|---|
| ASHP MODEL : | | SERIAL NUMBER : | | | DATE : |
| **Installer name and address :** | | | **Owner name and address :** | | |
| | | | | | |
| HEATING AREA ZONE ( if it exists) | H1 | H2 | H3 | | |

## Difference of input - Output T° (Winter)=

**1) BREAKER PROTECTION**

| Type = | | Caliber = | |
|---|---|---|---|

**2) ELEC. POWER NETWORK**

| 2) ELEC. POWER NETWORK | Ph1/N = | | Ph2/N = | | Ph3/N = |
|---|---|---|---|---|---|
| Ph1/Ph2 = | | Ph2/Ph3 = | | Ph1/Ph3 = | |

**3) COMPRESSOR**

| Low Pressure | b | °C | High Pressure | b | °C | | | |
|---|---|---|---|---|---|---|---|---|
| Ha 14* | T°ext min | | T°ext max | | Mini. speed | | Max speed | |
| Ha 15* | T°ext min | | T°ext max | | Mini. speed | | Max speed | |
| Ha 16* | T°ext min | | T°ext max | | Mini. speed | | Max speed | |

**4) EXPANSION VALVE**

| Open % | | SHR °K | | High Pres. °T | | Low Pres.T° | |
|---|---|---|---|---|---|---|---|

**5) FAN**

| Voltage | | % Speed | | Current | | | |
|---|---|---|---|---|---|---|---|

**6) WATER PUMP**

| Voltage | | Speed setup | | Current | | | |
|---|---|---|---|---|---|---|---|

## - TEMPERATURE MANAGEMENT -

| SOFT Version = | | TERMOSTAT version = | | THERMOSTAT RADIO Vers.= | |
|---|---|---|---|---|---|
| Delta T water (winter)= | | | Delta water (summer)= | | |

**1) ZONE 1 - Water set point Gfc 52***

| T° ext mini = | | Water T° INPUT min = | |
|---|---|---|---|
| T° ext maxi = | | Water T° OUTPUT max = | |

**2) ZONE 2 - WATER SET POINT Gfc 53***

| T° ext mini = | | Water T° INPUT min = | |
|---|---|---|---|
| T° ext maxi = | | Water T° OUTPUT max = | |

**3) OUTDOOR TEMPERATURE**

| 3) OUTDOOR TEMPERATURE | Outdoor T° = | | | |
|---|---|---|---|---|

## - WATER CIRCUIT -

**1) WATER & CIRCUIT PURGE**

| Lenght & intern. Diam. Pipework (if tank) - mm = | | Antifreeze rate (Y/N) = | | % |
|---|---|---|---|---|
| Number of hydraulic heating zones = | | Buffer tank volume = | | |
| Water pump is poerating : | ☐ | V3V Valve DHW /Home heating is ops. : | ☐ | |
| DHW Option (Yes / No) = | | | | |

AMZAIR Industrie 521, rue Gustave Eiffel ZA Penhoat 29860 PLABENNEC (France)
Tél. +33 (0)2 98 38 42 50 - Fax. : 42 54 - contact@amzair.eu - www.amzair.eu

Procédure IE054
Version 2.1 ; 01 / 09 / 2016

ASHP OPTIM'

## - HYDRAULIC CIRCUIT -

### 2) SENSORS COMMISSIONNING AND TEMPERATURES CONTROL

#### Domestic Hot Water

Recorded after 15 minutes in operation

| T° ext = | Output T° ASHP = | Input T° ASHP = | DHW tank T° = |
|---|---|---|---|

#### Heating zone 1 (CC1)

| Emitters type | Heating floor | Radiators | Fan coil unit |
|---|---|---|---|

V3V valve Zone 1 in operation checking : ☐    Water pump zone 1 in operation checking : ☐

Recorded after 15 minutes in operation

| T° ext = | Output T° ASHP = | Buffer tank T° = | Output T° CC1 (ctrler) = |
|---|---|---|---|
| Input T° ASHP = | Ambient T° zone 1 = | Output T° CC1 (thermometer) = | Input T° CC1 (thermometer) = |

#### Heating zone 2 (CC2)

| Emitters type | Heating floor | Radiators | Fan coil unit |
|---|---|---|---|

V3V valve Zone 2 in operation checking : ☐    Water pump zone 2 in operation checking : ☐

Recorded after 15 minutes in operation

| T° ext = | Output T° ASHP = | Buffer tank T°= | Output T° CC2 (ctrler) = |
|---|---|---|---|
| T° retour PAC = | Ambient T° zone 1 = | Output T° CC2 (thermometer) = | Input T° CC2 (thermometer) = |

### 3) ASHP INPUT/OUTPUT TEMPERATURE

*

| ASHP Output T° = | Input T° ASHP = | Water pump speed set-up : |
|---|---|---|

**COMMENTS :**

**\*** : To be extract from the controler

| ENGINEER NAME : | OWNER NAME : |
|---|---|
| ENGINEER SIGNATURE : | OWNER SIGNATURE : |

## Amzair Indus. commissioning document approvment field

| **CONFORM** ☐ | **NOT CONFORM** ☐ |
|---|---|
| Name and signature : | Cie stamp : |

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## ANNEX : ALARMS CODE TABLE

| Alarm Code | Alarm cause |
|---|---|
| ALA01 | ASHP input temperature sensor (B01) failure or disconnected |
| ALA02 | ASHP output temperature sensor (B02) failure or disconnected |
| ALA03 | Outdoor ASHP temperature sensor (B03) failure or disconnected |
| ALA04 | Compressor discharge temperature sensor (B04) failure or disconnected |
| ALA05 | compressor suction temperature sensor (B05) failure or disconnected |
| ALA06 | HP / High pressure sensor (B06) failure or disconnected |
| ALA07 | BP / Low pressure sensor (B07) failure or disconnected |
| ALA08 | Zone 1 output temperature sensor (BO8) failure or disconnected |
| ALA09 | Zone 2 output temperature sensor (B09) failure or disconnected |
| ALA010 | DHW - ECS - Temperature sensor (B10)  failure or disconnected |
| ALP03 | ID03: Flow switch ASHP water primary circuit → water flow to weak |

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## NOTES

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# monobloc premium heat pumps

**AMZAIR Industrie SAS**

Office, Factory, and show-room at 5 min from the Brest airport

ZI de Penhoat - 521, rue Gustave Eiffel - 29860 PLABENNEC ( France)

**www.amzair.eu** - Tél : 33 (0)2 98 38 42 50 - Fax : 33 (0)2 98 38 42 54 - contact@amzair.eu