IMMERGAS

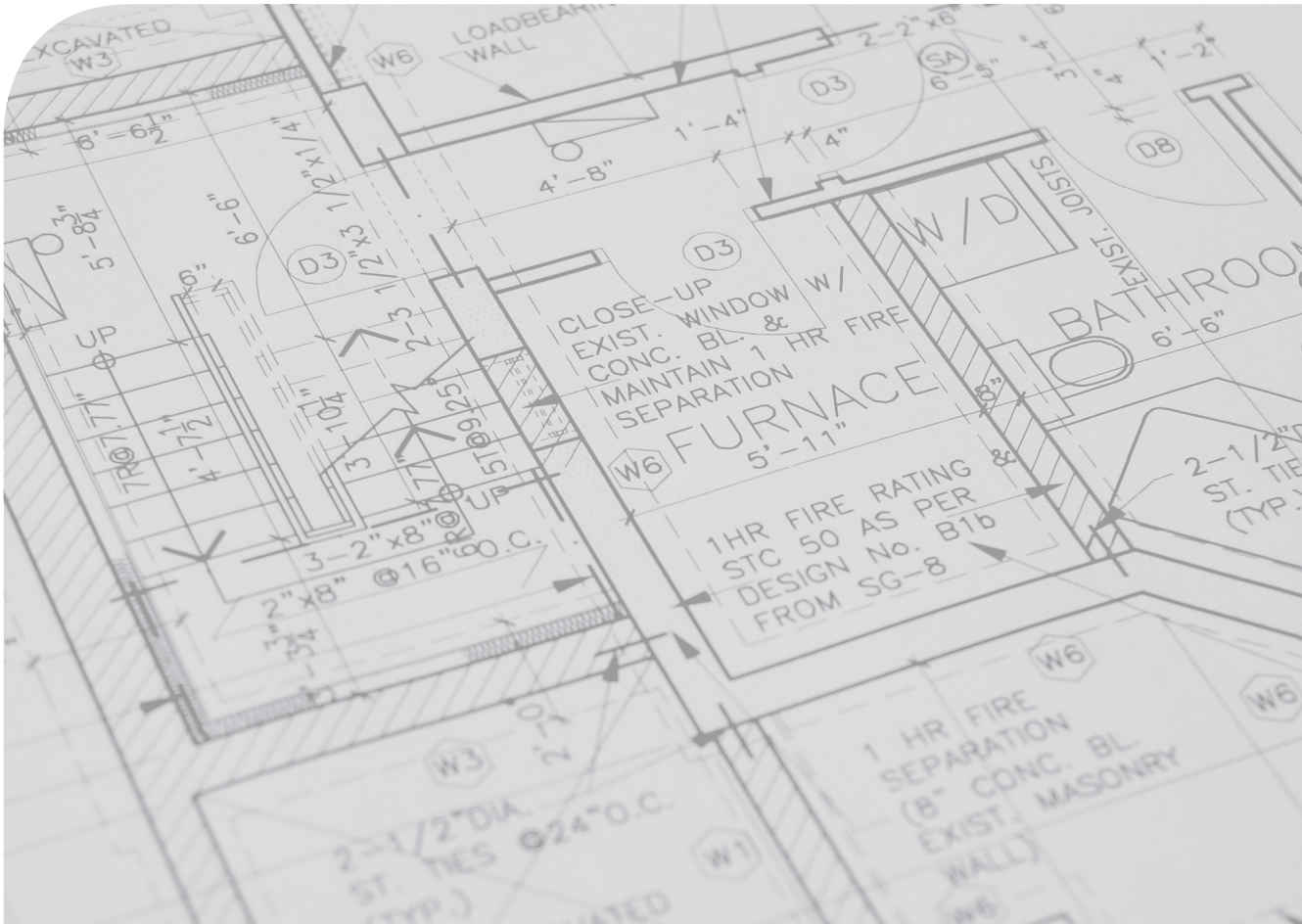
USER'S MANUAL

HYDRO FS

IE

Instruction booklet and warning

1.051156ENG



We would first of all like to thank you for having chosen one of our products.

We are sure you will be happy with it because it represents the state of the art in the technology of home air conditioning.

By following the suggestions contained in this manual, the product you have purchased will operate without problems, giving you optimum room temperatures with minimum energy costs.

Symbols

The pictograms in the next chapter provide the necessary information for correct, safe use of the appliance in a rapid, unmistakable way.

Safety pictograms

⚠ Warning
The operation described may cause physical harm if not carried out in accordance with safety regulations.

⚠ Dangerous electrical current
Make personnel aware that the operation described may lead to electrical shocks if not carried out in accordance with safety regulations.

⚠ High temperature danger
Of safety regulations, the risk of burns caused by contact with components with high temperatures.

⛔ Prohibition
Refers to prohibited actions.

Summary

1. GENERAL

1.1 General warnings

- ⚠ This instruction is an integral part of the booklet of the appliance on which the kit is installed. Please consult this booklet for general warnings and fundamental safety rules.

- ⚠ This manual is designed only for the qualified and authorised installation technician, who must be sufficiently trained and in possession of all psycho-physical requirements as per the law.
- All operations must be carried out with care and according to best practices, and in compliance with workplace safety regulations.

- ⚠ After unpacking, check that the contents are intact and that all parts are included. If not, contact the agent who sold the appliance to you.

- ⚠ It is forbidden to modify the safety or adjustment devices without authorisation from and indications of the manufacturer.

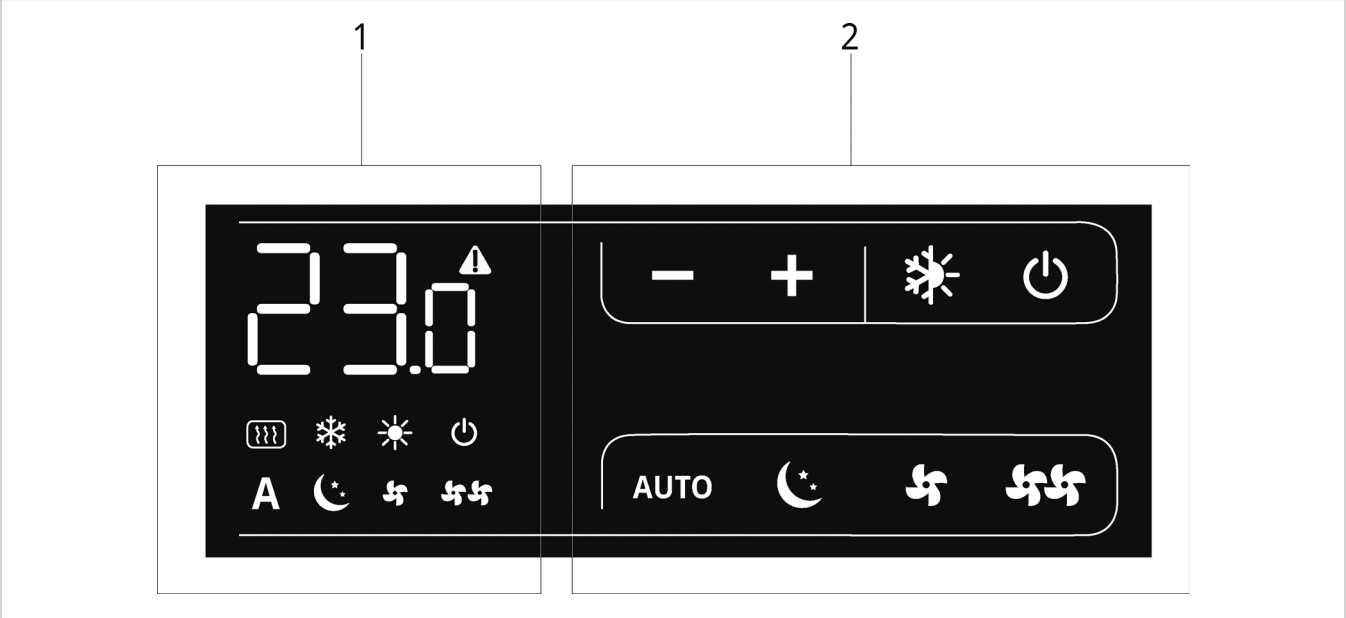
- ⚠ It is forbidden to dispose of, or leave in the reach of children, the packaging materials which could become a source of danger.

- ⚠ Repairs or maintenance must be performed by the Technical Assistance Service or by qualified personnel in accordance with this manual. Do not modify or tamper with the appliance as this could create dangerous situations and the manufacturer will not be liable for any damage caused.

2. MODULATING TEMPERATURE CONTROLLER KIT

2.1 Interface

1.	Display area
2.	Keys area



2.2 Description

Electronic control on-board the unit

⚠ The control can control up to a maximum of 30 units.

The electronic controls on-board on the unit with a continuously modulating thermostat ECA644 - EWF644 - ECA647 - EWF647 have two independent voltage-free contacts arranged for:

- the control of a fan coil unit or boiler
- input presence contact

The 2-pipe versions have a 230 V output for the control of the summer and winter solenoid valve.

The 4-pipe versions have two independent 230 V outputs for the control of the summer solenoid valve and the winter solenoid valve.

Through the water temperature probe (10 kΩ) located in the thermowell on the unit's coil, the temperature setpoints for fan stop are controlled:

- minimum temperature in heating mode (30 °C)
- maximum temperature in cooling mode (20 °C)

⚠ The printed circuit board provides for operation without a water probe. In this case, the fan stop thresholds are ignored.

2.3 Set-up of auxiliary dip-switch functions B and C

⚠ There are two dip-switches on the control circuit board for configuring the operation of the device as required.

Dip-switch B

- changes ventilation in cooling mode
- in the ON position, continuous ventilation at minimum speed is enabled even after the setpoint has been reached to allow more regular operation of the temperature probe and avoid air stratification
- in OFF position, ventilation takes place cyclically, 4 min ON - 10 min OFF

Dip-switch C

- changes the logic of night-time operation in heating mode
- in the ON position, ventilation is inhibited, allowing the appliance to heat rooms by radiation and natural convection as in traditional radiators
- in OFF position the fan operates normally

2.4 CP presence contact input connection

The presence contact (CP) input connection is to be made with:

- open contact the unit is active
- closed contact the unit is switched off

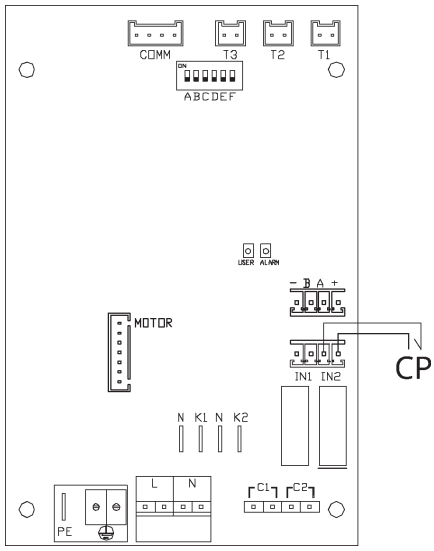
Press any button on the display and the ⚠ symbol flashes.

When the contact connected to input CP is closed, the control is put on stand-by.

⚠ It is not possible to connect the input in parallel with other electronic printed circuit boards.

⚠ Use separate contacts.

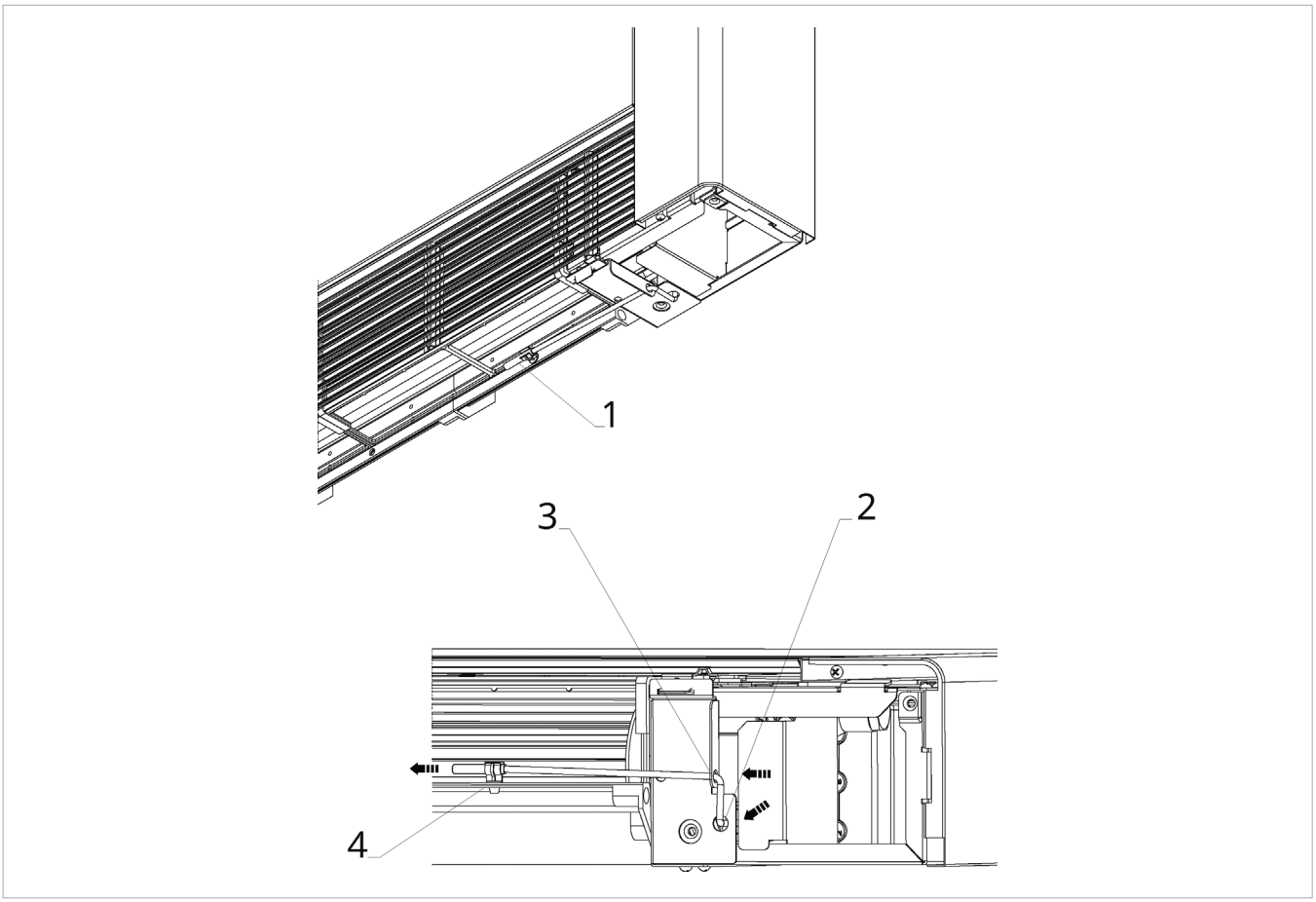
CP	Presence contact



2.5 Air temperature probe assembly

- position the temperature probe
- pass the probe through the hole in the shoulder of the appliance
- pass the probe through the lower hole
- fix the temperature probe to the relevant hook

1.	Air temperature probe
2.	Prepared hole in the shoulder of the appliance
3.	Lower hole
4.	Hook for temperature probe



2.6 Setting automatic cooling and heating mode

⚠ **Setting only available for 4-pipe units.**

⚠ This control system may only be activated by a qualified and authorised installation technician.

⚠ This type of regulation allows the electronic control to automatically switch between Cooling and Heating operation.

To activate automatic Heating and Cooling switching

- press the key for 10 seconds
  The symbols and light up at the same time.

To return to manual switching

- press the key for 10 seconds
  Both symbols and are switched off.
- press the key again to select the desired function
  One of the two symbols lights up.
- press the key to change operation

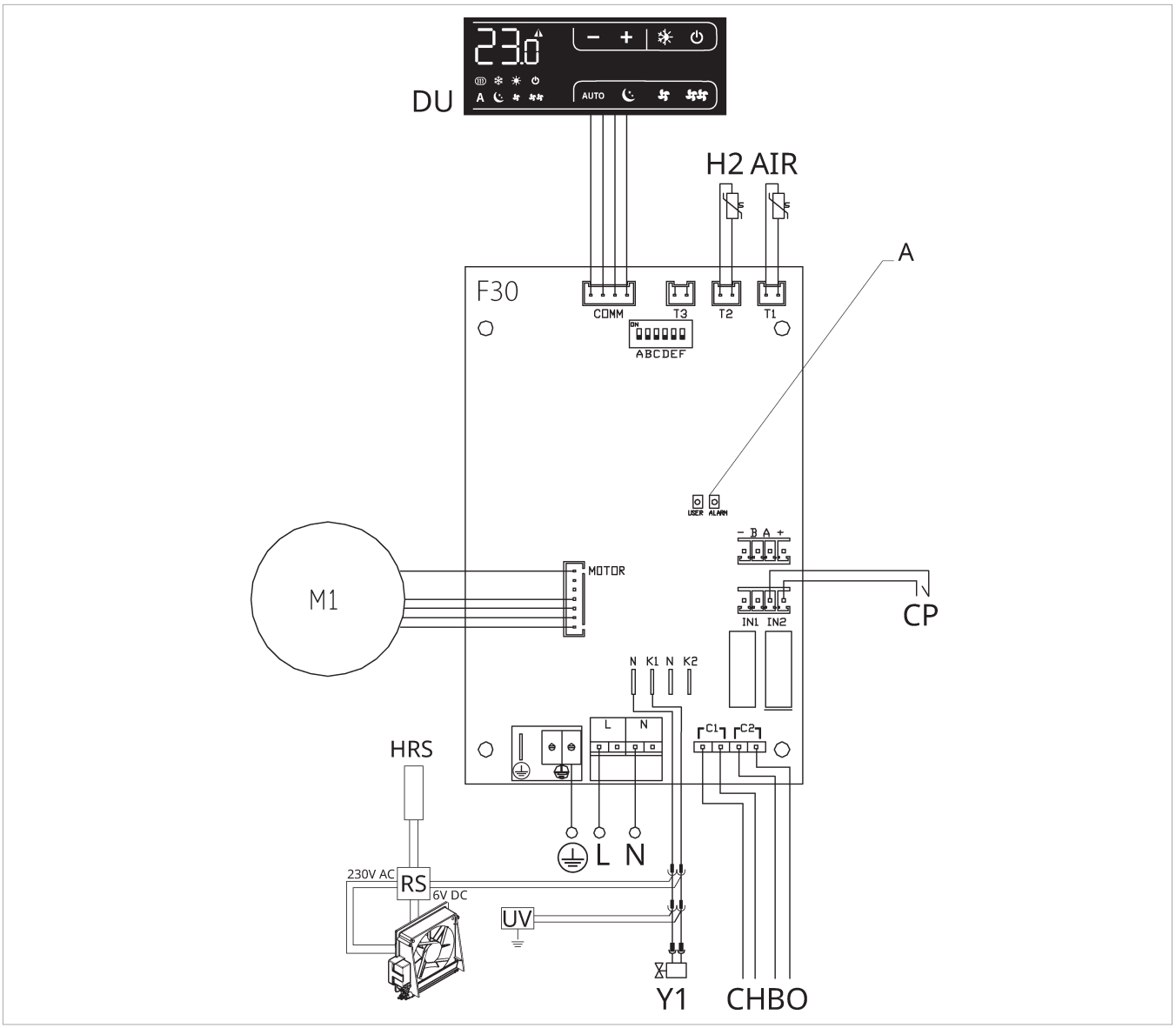
Check:

- operation of the heating symbol (on with setpoint higher than room temperature, off with lower setpoint)
- operation of the cooling symbol (on with setpoint lower than room temperature, off with higher setpoint)

⚠ This selection is saved even if the power is switched off.

2.7 Connection

M1	DC fan motor
HRS	Water temperature probe 10 kΩ for RS models (only for 3.028509)
RS	Wiring for RS models (only for 3.028509)
UV	UV lamp connection (optional)
Y1	Water electrovalve (voltage output 230 V / 50 Hz / 1 A)
⏚	Earth connection
L-N	Power supply connection 230 V / 50 Hz / 1 A
BO/ C2	Heating request contact (for example boiler or heat pump). Activated in parallel with the output of the solenoid valve (Y1) with 1 minute delay when the fancoil is in heating mode and is on call (potential-free contact max. 1 A)
CH/ C1	Cooling request contact (for exemple chiller or reversible heat pump). Activated in parallel with the solenoid valve output (Y1) with 1 minute delay when the fancoil is in cooling mode and is on call (potential-free contact max. 1 A)
CP	Presence contact (normally open)
AIR/ T1	Water temperature probe
H2/T2	2-pipe water temperature probe (only for 3.028509 controls)
RS	RS version wiring
HRS	Water probe RS version (10 kΩ)
COMM	Connection for on-board control display
DU	On-board display
A	Led



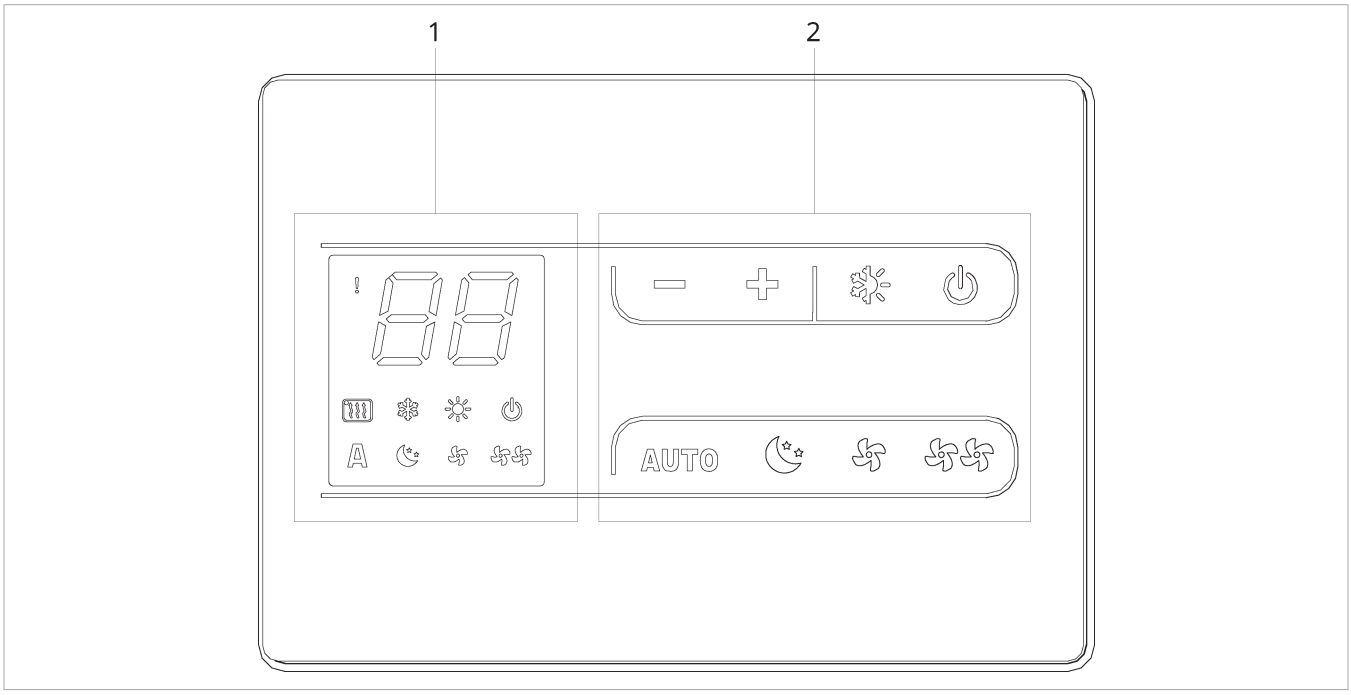
⚠ For models with hydraulic connections on the right hand side, please refer to "Models with right-hand hydraulic connections" to make the connections.

⚠ For radiant panel (RS) versions, please refer to the "Version configurations" section to make the connections.

3. REMOTE CONTROL 3.030876

3.1 Interface

1.	Display area
2.	Keys area



3.2 Description

The wall-mounted control panel is a thermostat with possibility of control on several device equipped with electronic control for remotization.

⚠ The control can control up to a maximum of 30 units.

⚠ The temperature probe can be remoted in one of the connected device.

⚠ Ensure that:

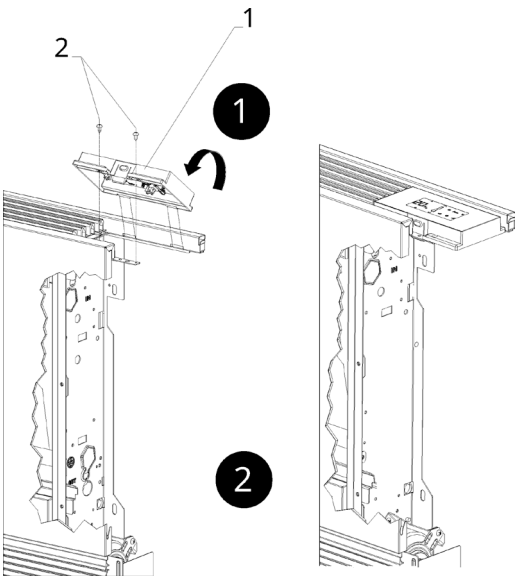
- the wall supports the weight of the appliance;
- the section of the wall does not contain piping or electrical lines;
- the functionality of load-bearing elements is not compromised.

3.3 Assembly

To install the on-board control

- place the on-board control at the top of the unit;
- fix with the screws provided.

1.	On board display
2.	Screws



3.4 Set-up of auxiliary dip-switch functions B and C

⚠ There are two dip-switches on the control circuit board for configuring the operation of the device as required.

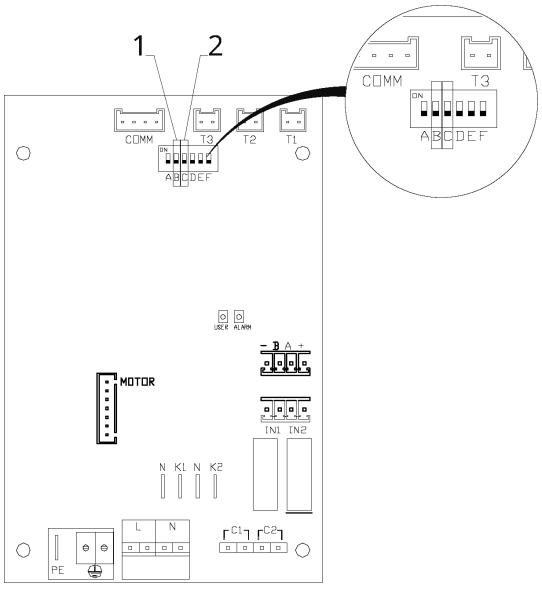
Dip-switch C

- changes the logic of night-time operation in heating mode;
- in the ON position, ventilation is inhibited, allowing the appliance to heat rooms by radiation and natural convection as in traditional radiators;
- in OFF position the fan operates normally.

Dip-switch B

- changes ventilation in cooling mode;
- in the ON position, continuous ventilation at minimum speed is enabled even after the setpoint has been reached to allow more regular operation of the temperature probe and avoid air stratification;
- in OFF position, ventilation takes place cyclically, 4 min ON - 10 min OFF.

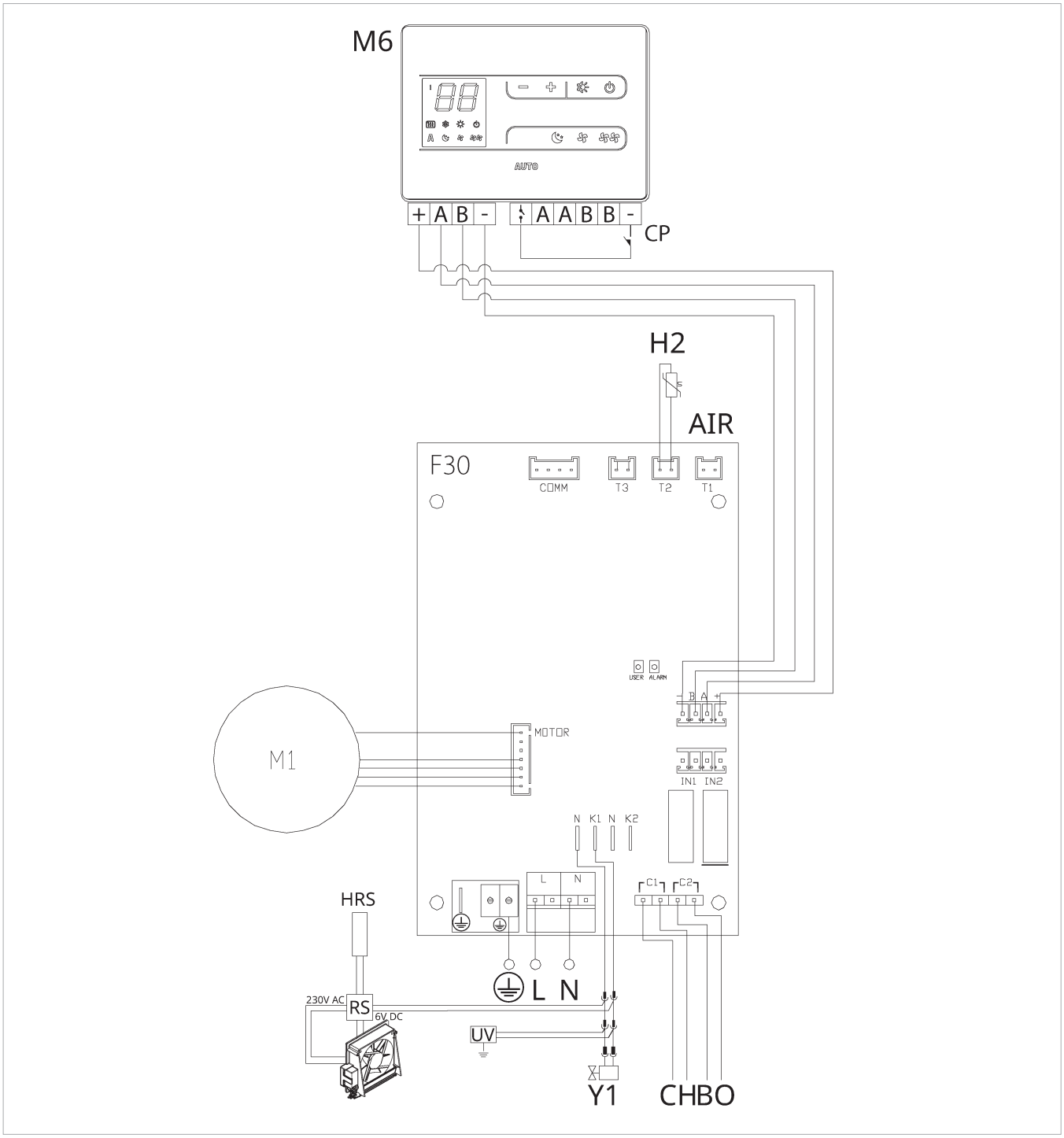
1.	Dip-switch B
2.	Dip-switch C



3.5 3.030876 connections single connection diagram

M1	DC fan motor
⏚	Earth connection
L-N	Power supply connection 230 V / 50 Hz / 1 A
Y1	Water electrovalve (voltage output 230 V / 50 Hz / 1 A)
CH/ C1	Cooling request contact (for exemple chiller or reversible heat pump). Activated in parallel with the solenoid valve output (Y1) with 1 minute delay when the fancoil is in cooling mode and is on call (potential-free contact max. 1 A)

BO/ C2	Heating request contact (for example boiler or heat pump). Activated in parallel with the output of the solenoid valve (Y1) with 1 minute delay when the fancoil is in heating mode and is on call (potential-free contact max. 1 A)
CP	Presence contact (normally open)
-BA+	Serial connection for wall-mounted remote control (respect the AB polarization)
H2/T2	2-pipe water temperature probe
RS	RS version wiring
HRS	Water probe RS version (10 kΩ)
M6	SMART TOUCH Wall Control Panel



⚠ In the case of a single generator for heating and cooling (for example heat pump), simply connect the two contacts C1 and C2 in parallel and lead 2 wires to the generator.

⚠ For models with hydraulic connections on the right hand side, please refer to “Models with right-hand hydraulic connections” to make the connections.

⚠ For radiant panel (RS) versions, please refer to the “Version configurations” section to make the connections.

⚠ Check the correct matching PCB/control with the combinability table.

3.6 Version configurations

RS versions
In RS versions to control the radiant effect of the front panel make the connections.

To make the connections
- connect the appropriate connector to the expansion board and the output of the Y1 solenoid valve.

⚠ Refer to the “Electrical Connections” sections of the specific printed circuit boards for connections.

3.7 Models with right-hand hydraulic connections

The fancoils in the AirLeaf range are designed with:
- hydraulic coil connections on the left side of the unit
- electrical connections on the right side of the unit.

⚠ Should it be necessary to invert the position of the coil’s hydraulic connections from the left (default) side to the right side, the hydraulic Hydraulic connection reversal kit must be used to make the electrical connections to the fan motor and the grille safety microswitch.

3.8 Connections

Preliminary warnings

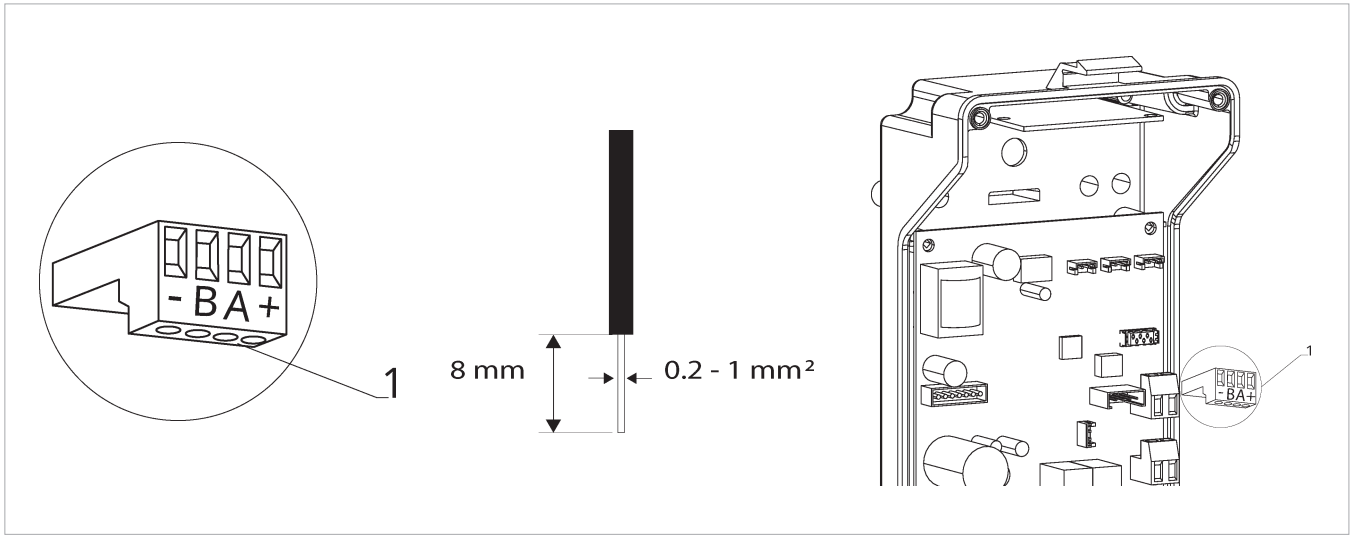
⚠ The terminals for connecting the control panel and the presence contact CP are placed in a plastic bag and positioned inside the cover of the electrical box.

The terminals accept:
- rigid or flexible wires with a 0.2 to 1 mm² cross-section;
- rigid or flexible wires with 0,5 mm² cross-section if two wires are connected to the same terminal block;
- rigid or flexible wires with 0,75 mm² cross-section If the wires have wire end ferrules with a plastic collar.

To connect the cables:
- strip 8 mm of the wire;
- if the wire is rigid, you can insert it easily whereas;
- if it is flexible, use appropriate crimp terminals;
- push the wire in completely;
- check the right fixing by pulling it gently.

To connect the wall control panel to the board:
- connect the power supply cables to the + - terminals;
- connect the ModBus serial connection cables to terminals A and B.

1.	Terminal blocks



3.9 Presence contact CP

Through this device it is possible to connect an external control signal that inhibits the operation of the control signal, for example:
- opening window contact
- remote on/off
- infrared presence sensor
- activation badge
- remote change of season

Function
- The contact is normally open (NO).
- when closing the CP contact, connected to a potential-free contact, the device switches to stand-by mode
- CP appears on the display.
- At the touch of a button on the display the symbol ⚠ flashes.

⛔ It is forbidden connect in parallel the CP input to one of another electronic board. Use separate contacts.

The CP presence contact can be configured for heating and cooling operation via the “Select Digital Input” settings menu item (digital input).

3.10 RS485 Serial Connection

The wall-mounted remote control can be connected through a RS485 serial line to one or more device, for a maximum of 30.
The devices must be equipped with an electronic board suitable for remote control.

For the connection:
- follow the indication on the connection diagram
- connect respecting the indication “A” and “B”

⚠ Use a two core cable shielded cable suitable for the RS485 serial connection with a minimum section of 0,35 mm^2.

⚠ Keep the two core cable separate from power supply cable by a minimum of 50 mm.

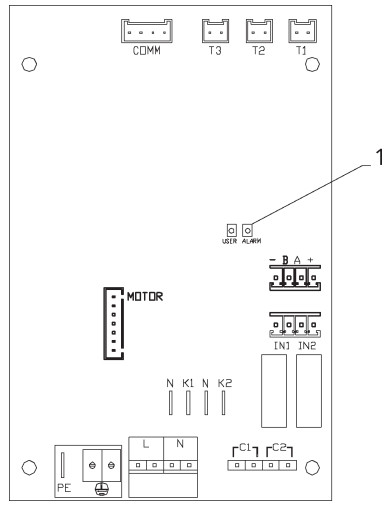
⚠ Create a wire path in order to minimize the length of the lead wire.

⚠ Complete the line with the 120 Ω resistor.

⛔ It is forbidden make star connections.

3.11 Continuous modulation circuit board for connecting remote thermostat

- The circuit board for remote control is for all functions of the fan coil system from the wall-mounted remote control 3.030877/3.030878.
- A remote control can be connected to a maximum of 30 fan coils that will be controlled in broadcast mode (simultaneous commands to all fan coils).
- It can be installed on all versions, the board has a green LED that indicates the operational state and any anomalies.
- The main operational parameters, the set point and the room temperature are transmitted from the wall-mounted remote control 3.030877/3.030878 to all terminals connected to the network, allowing unified operation.
- Refer to the instructions for this control for use of the fan coils.
- The 10 kΩ water temperature probe positioned in the device battery regulations the minimum level when heating (30°C) and the maximum level when cooling (20°C).



3.12 LED Indications (ref. 1) (3.030876)

The PCB has a status LED.

LED signals

- LED off
  Device switched off or without power supply.
- LED on
  Normal operating of the device
- LED 1 flash / pause
  Water request detected by temperature probe H2/T2 not fulfilled (above 20 °C in cooling and below 30 °C in heating). It causes the fan to stop until the temperature reaches a value suitable to satisfy the request. (*)
- LED 2 flashes / pause
  Motor alarm (for example jamming due to foreign bodies or fault in the rotation sensor).
- LED 3 flashes / pause
  H2/T2 water temperature probe disconnected or faulty. Check that the probe installed is 10 kΩ.
- LED 4 flashes / pause
  Water request detected by temperature probe H3/T3 not fulfilled (above 20 °C in cooling). It causes the fan to stop until the temperature reaches a value suitable to satisfy the request.
- LED 5 flashes / pause
  T3/H4 probe for cooling water temperature faulty or disconnected.
- LED 6 flashes / pause
  Communication error caused by lack of continuous information exchange on the serial line. If the exchange of information lasts for more than 5 minutes, the error is displayed.

(*) In case of a operation without water probe H2/T2, the fan stop thresholds will be ignored.

Error messages

⚠ The symbol ⚠ is displayed to indicate alarms on the wall control panel.
Displayed alarms

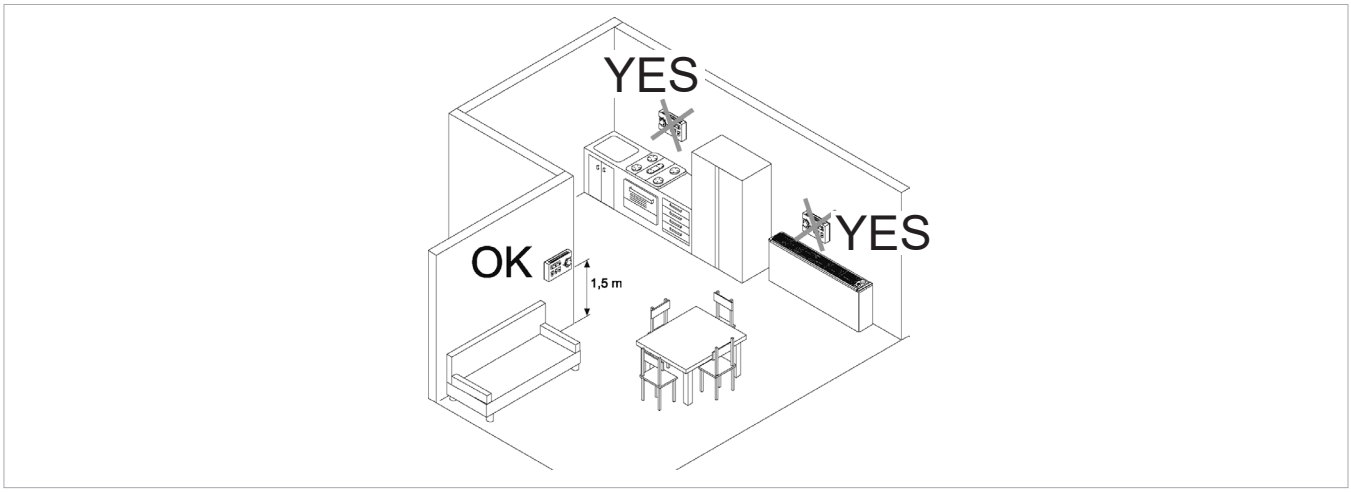
- E1 Room temperature probe disconnected or faulty
  None of the modes can be activated.
- E2 Fault or connection of a remote double room sensor on one of the fan coil units
  None of the modes can be activated.
- E3 Humidity probe disconnected or faulty
  None of the modes can be activated.
- E4 Air quality probe disconnected or faulty
  None of the modes can be activated.

4. REMOTE CONTROL 3.030877/3.030878

4.1 3.030877/3.030878 wall-mounted remote control panel assembly

The wall control must be installed:
- on internal walls
- at a height of about 1,5 m from the floor
- Should the control be located in an area utilised by persons with reduced physical capabilities, please refer to local regulations.
- away from doors or windows
- away from heat sources (heaters, convectors, stoves, direct sunlight)

⚠ The wall-mounted remote control is provided inside the package already assembled.

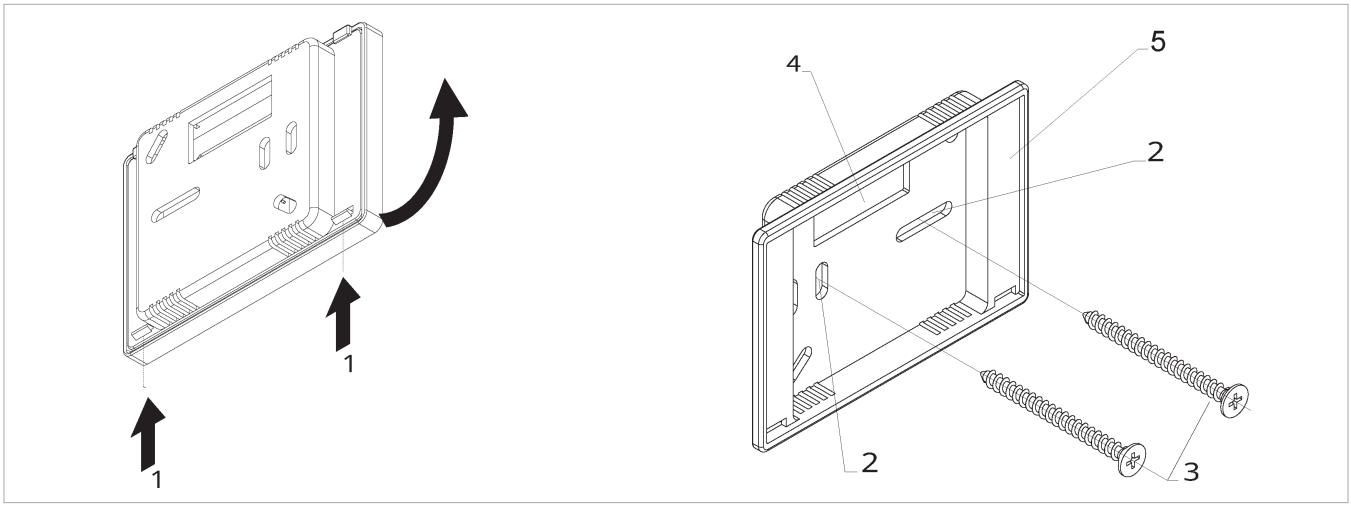


Before wall installation:
- Unhook the protruding notches on the back side of the control.
- separate the base from the control
- use the base of the control to trace the fixing point on the wall.

For the remote control wall mounting:
- drill holes in the wall
- pull the electric wires through the hole provided
- fix the base of the control to the wall using suitable screw and plugs
- connect the electrical wiring
- close the control

⚠ Pay attention not to crush the conductors when you close the control.

1.	Notches
2.	Holes for the wall mounting
3.	Screw
4.	Hole for the passage of the electrical connections
5.	Back plate



4.2 -AB+ and CP spring-loaded terminal connections

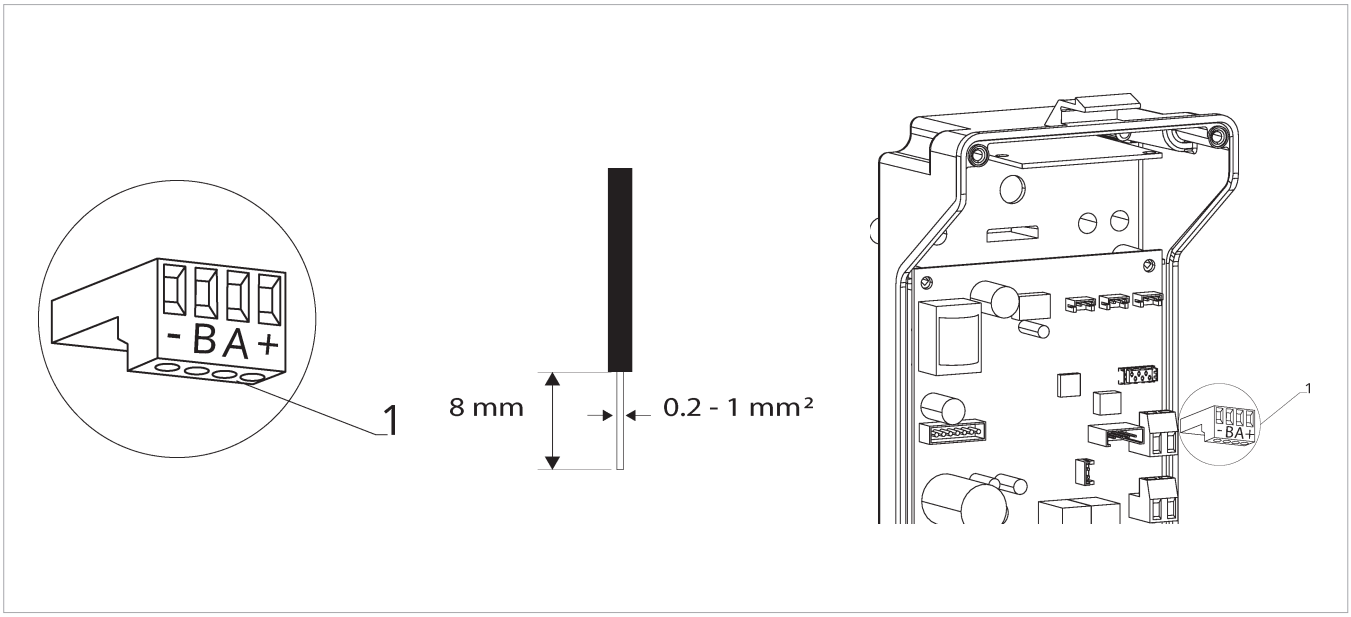
The terminals accept:

- rigid or flexible wires with a 0.2 to 1 mm² cross-section;
- rigid or flexible wires with 0,5 mm² cross-section if two wires are connected to the same terminal block;
- rigid or flexible wires with 0,75 mm² cross-section If the wires have wire end ferrules with a plastic collar.

To connect the cables:

- strip 8 mm of the wire;
- if the wire is rigid, you can insert it easily whereas;
- if it is flexible, use appropriate crimp terminals;
- push the wire in completely;
- check the right fixing by pulling it gently.

1.	Terminal blocks



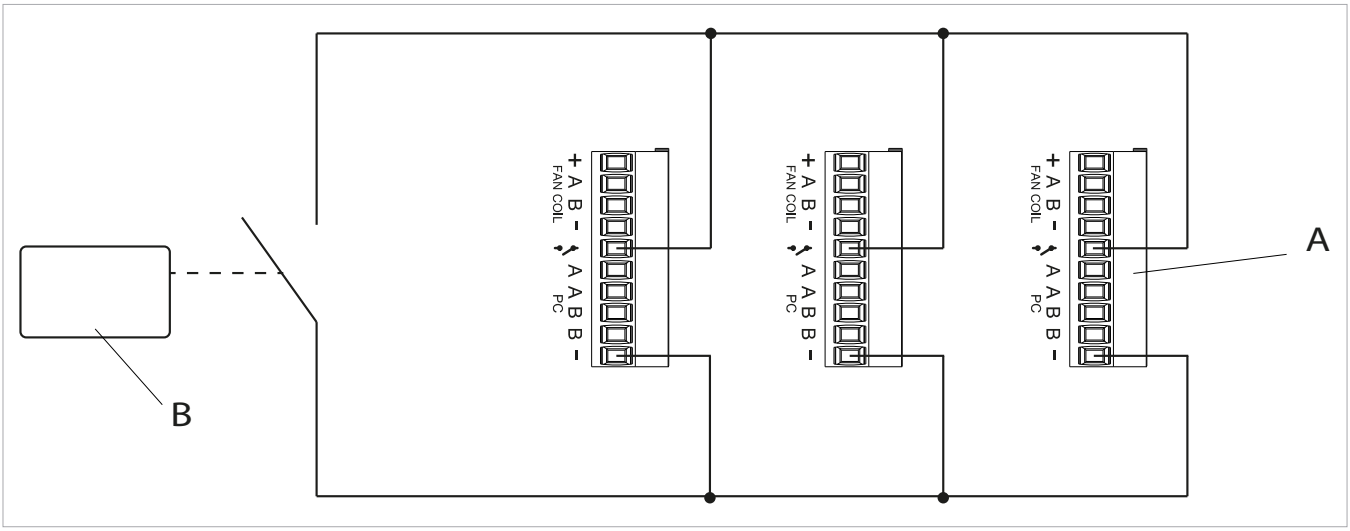
4.3 CP occupancy contact input connection

On closing the contact connected to the CP input (ref. A) the panels are placed into stand-by. If the contact is open the units are active, if the contact is closed they are deactivated when a key is pressed ⚠ symbol flashes.

N.B.: the input cannot be connected in parallel to that of other electronic boards (use separate contacts).

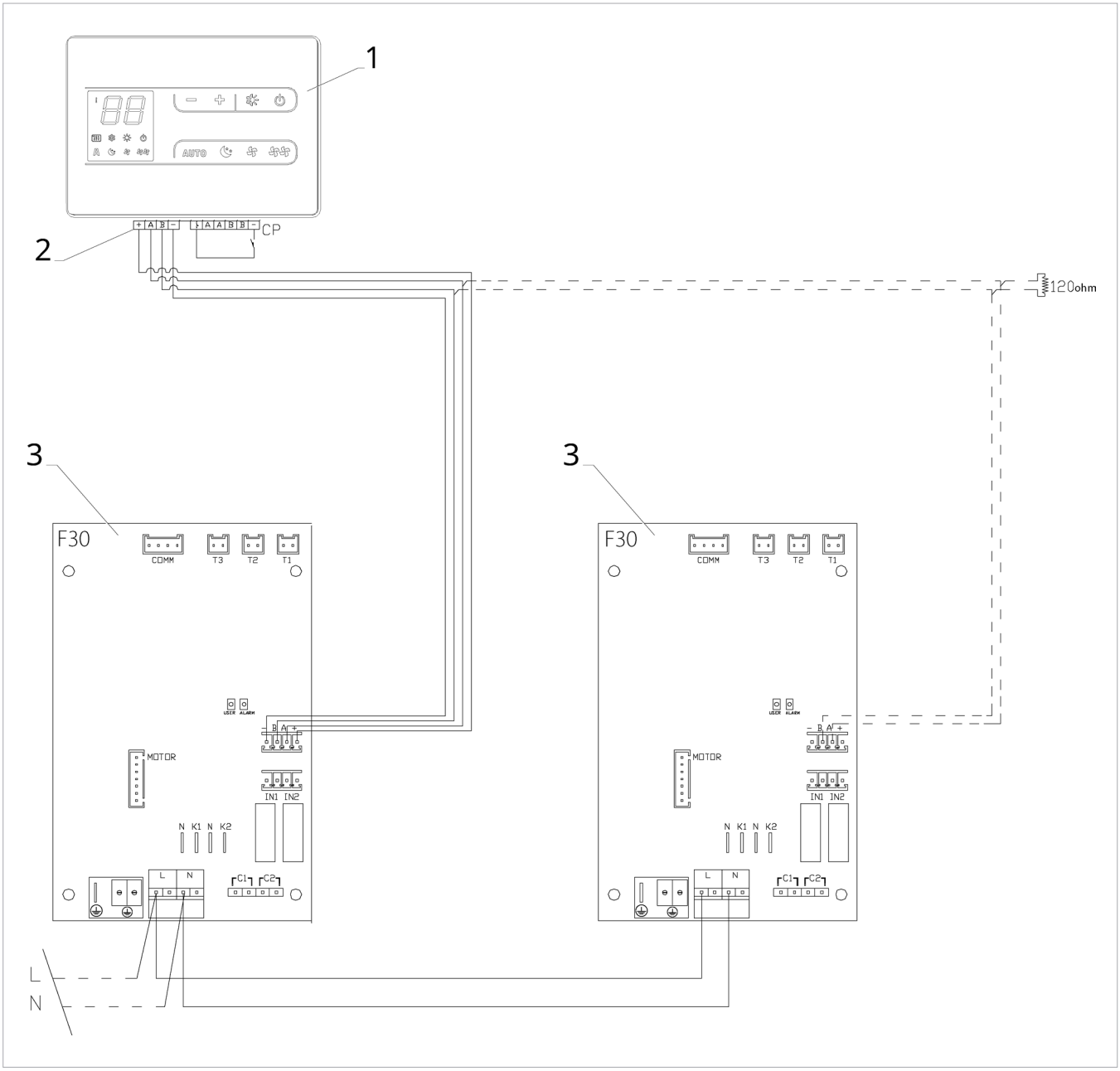
	contact CP
-	contact -

A	remote control terminal block
B	auxiliary relay



4.4 3.030877/3.030878 connections multiple connection diagram

1.	M6 series wall control panel
2.	Terminal block for device connection
3.	PCB



5. 4-SPEED TEMPERATURE CONTROLLER KIT

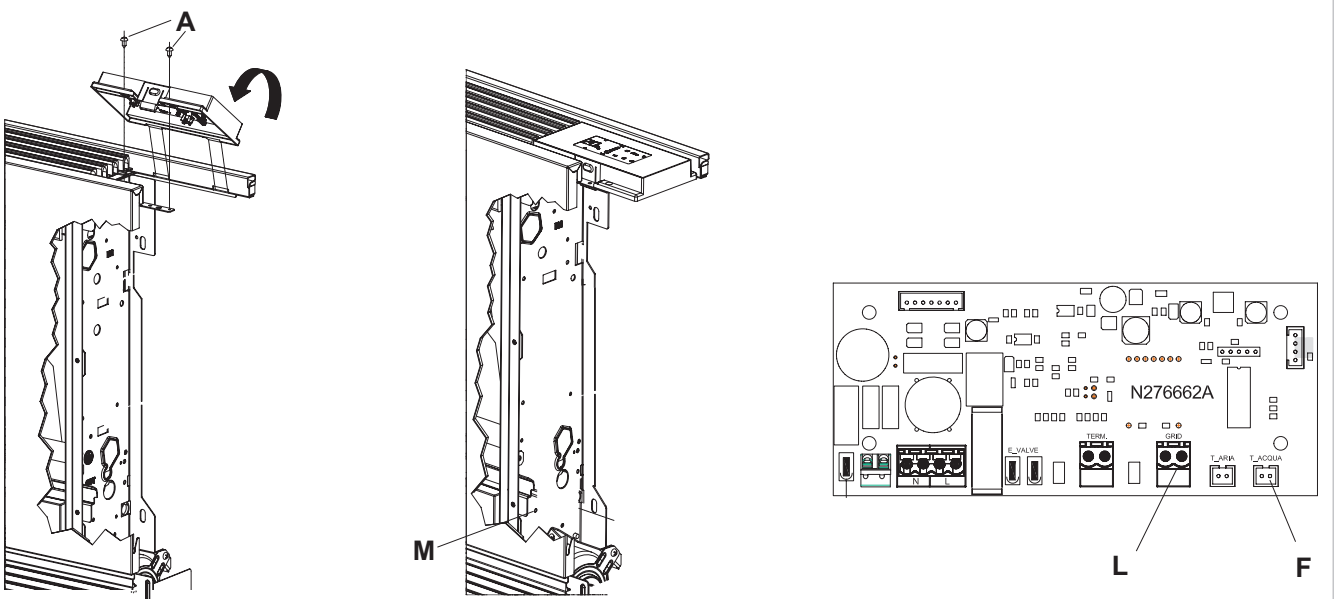
5.1 Assembly and connections

The on-board controller with speed selector and ON/OFF key, room thermostat adjustable from 5 to 40°C, winter summer selector and minimum winter temperature function (30°C) and maximum summer temperature (20°C) is suitable for fitting on board the unit and has a 230V - 1A output for controlling a solenoid valve.

5.2 Assembly

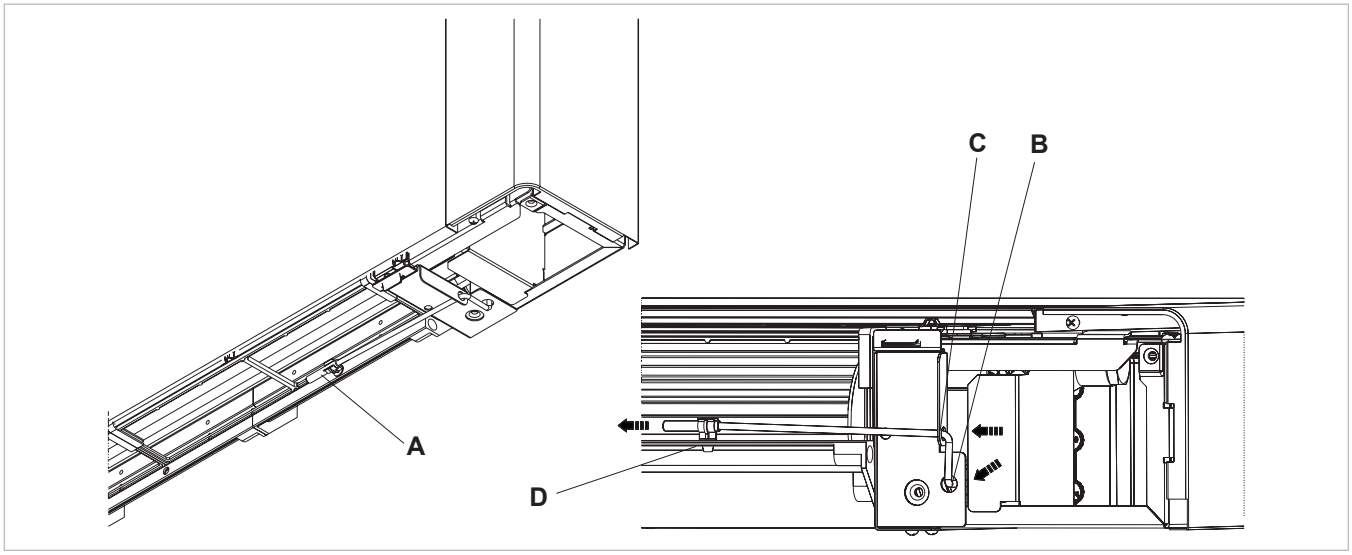
Slide the control panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).
To install the board:

- connect the grounding cable to the unit structure (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- connect the fast connector of the MOTOR to the other on the board (ref. I) *;
  N.B.: should the board not be fitted in the factory, the fan motor must be rotated 180° due to the length of the standard fan coil cable.
- on the two GRID block terminals (ref. L) there is a bridge which must not be removed.
- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch;
  N.B.: should the two brown terminals on the unit be too short, replace them with those included in the kit packaging.
- connect the water probe connector H2 (ref. F) on the unit.
  The water temperature probe controls the temperature inside the batteries and determines when the fan starts according to pre-set parameters (minimum operation in winter and maximum in summer). Check that they are correctly inserted into the compartment on the battery.
- make the electrical connections, tidy the cabling;
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the control panel;
- place the screw head covers in their housing on the control panel;
- * For versions with hydraulic connections on the right, refer to the relevant paragraph.



5.3 Air temperature probe assembly

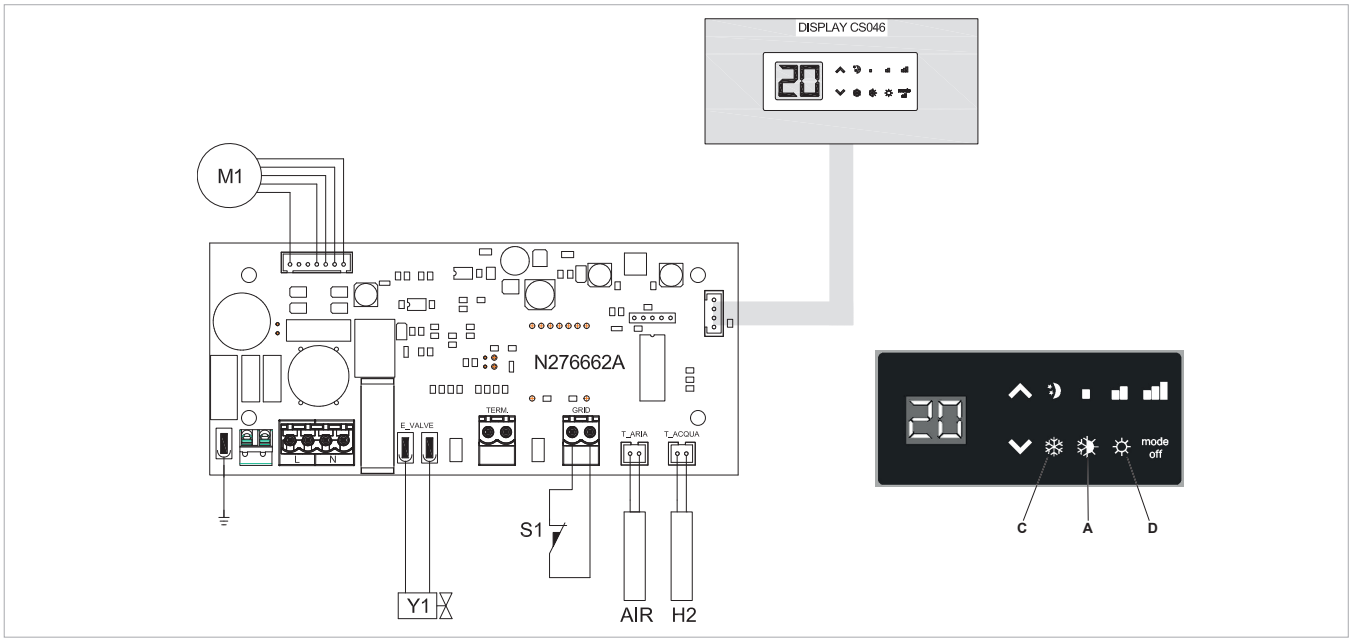
- To position the temperature probe (ref. A):
- pass the probe through the hole on the shoulder (ref. B)
- insert the probe into the lower hole (ref. C)
- fix the probe on the relevant hook (ref. D)



5.4 Connections

H2	water temperature probe 10 kΩ
M1	DC inverter fan motor
S1	grill safety micro-switch

Y1	water solenoid valve (230V/ 50Hz 1A output voltage)
L-N	230V/50Hz electrical power supply
AIR	air temperature probe 10 kΩ



5.5 Water probe kit management

If the board detects the water temperature detecting probe on the device positioned in the relevant compartment of the battery, it starts in normal conditions. If the probe is not connected, its absence is indicated by the blue and red LEDs flashing together, and operation stops.
To confirm operation without the probe, press and hold the summer/winter button for 5 seconds (ref. A).
This condition is saved by the board for future start-ups.

In any case, as and when the probe is connected, the unit returns to normal operation with temperature thresholds.
If the unit operates with the probe connected and the water temperature is not suitable for active functioning (over 20°C when cooling, under 30°C when heating) the fan will stop and the anomaly will be indicated by the corresponding LED flashing (cooling: blue C or heating: red D).

6. UNIVERSAL CARD KIT FOR COMMERCIAL TEMPERATURE CONTROLLER

6.1 Assembly and connections

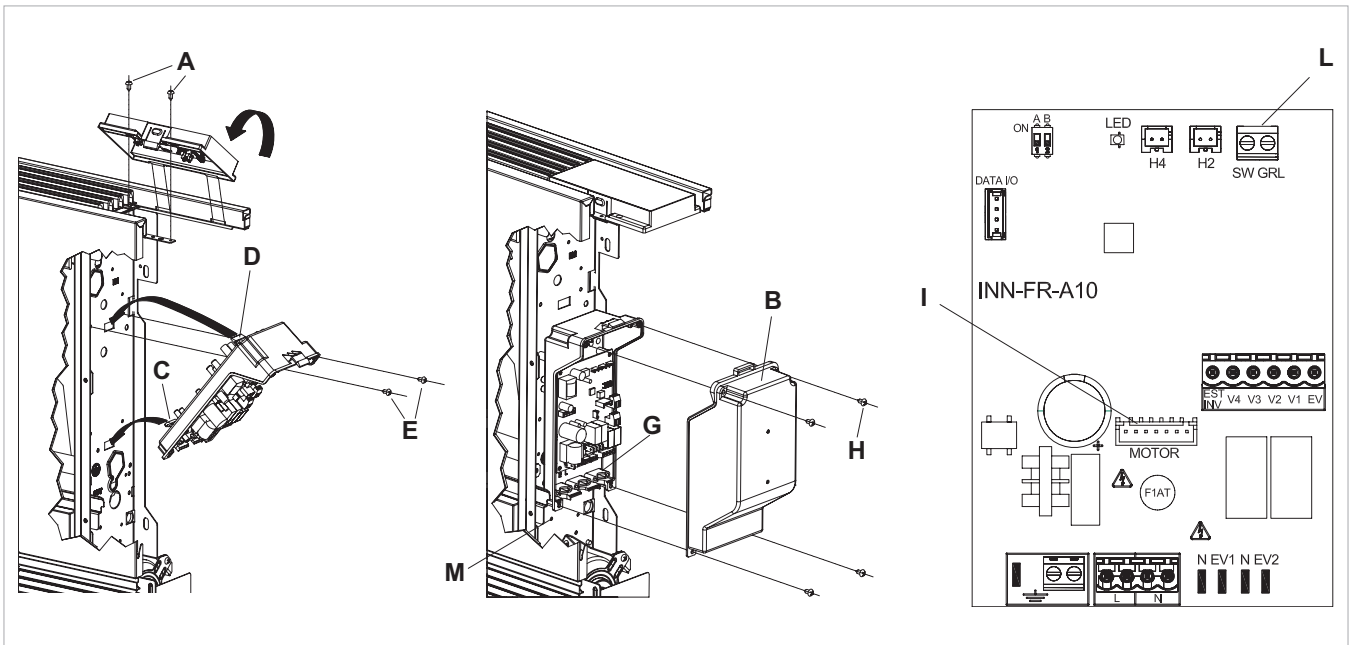
Assembled on-board the unit, this card allows the regulation of the motor with fixed speeds; it can be combined with control panels with thermostat and with all control panels available in the market.
It has a 230 V output to pilot the summer and winter solenoid valve.

6.2 Assembly

Slide the blanking panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).
To install the connection box:

- open the box (ref. B);
- lock the lower tooth into its hole (ref. C) on the side of the device;
- hook the upper part of the box to the side (ref. D);
- fix it with the two fixing screws (ref. E);
- connect the grounding cable to the unit body (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- on the two SW GRL block terminals (ref. L) there is a bridge which must not be removed.
- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch*;
- connect the fast connector of the MOTOR to the other on the board (ref. I);
- Connect the electrics, tidy cables and fix them with the three clevises supplied (ref. G);
- close the box with the 4 screws (ref. H);
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the blanking panel;
- place the screw head covers in their housing on the blanking panel;

* For versions with hydraulic connections on the right, refer to the relevant paragraph.

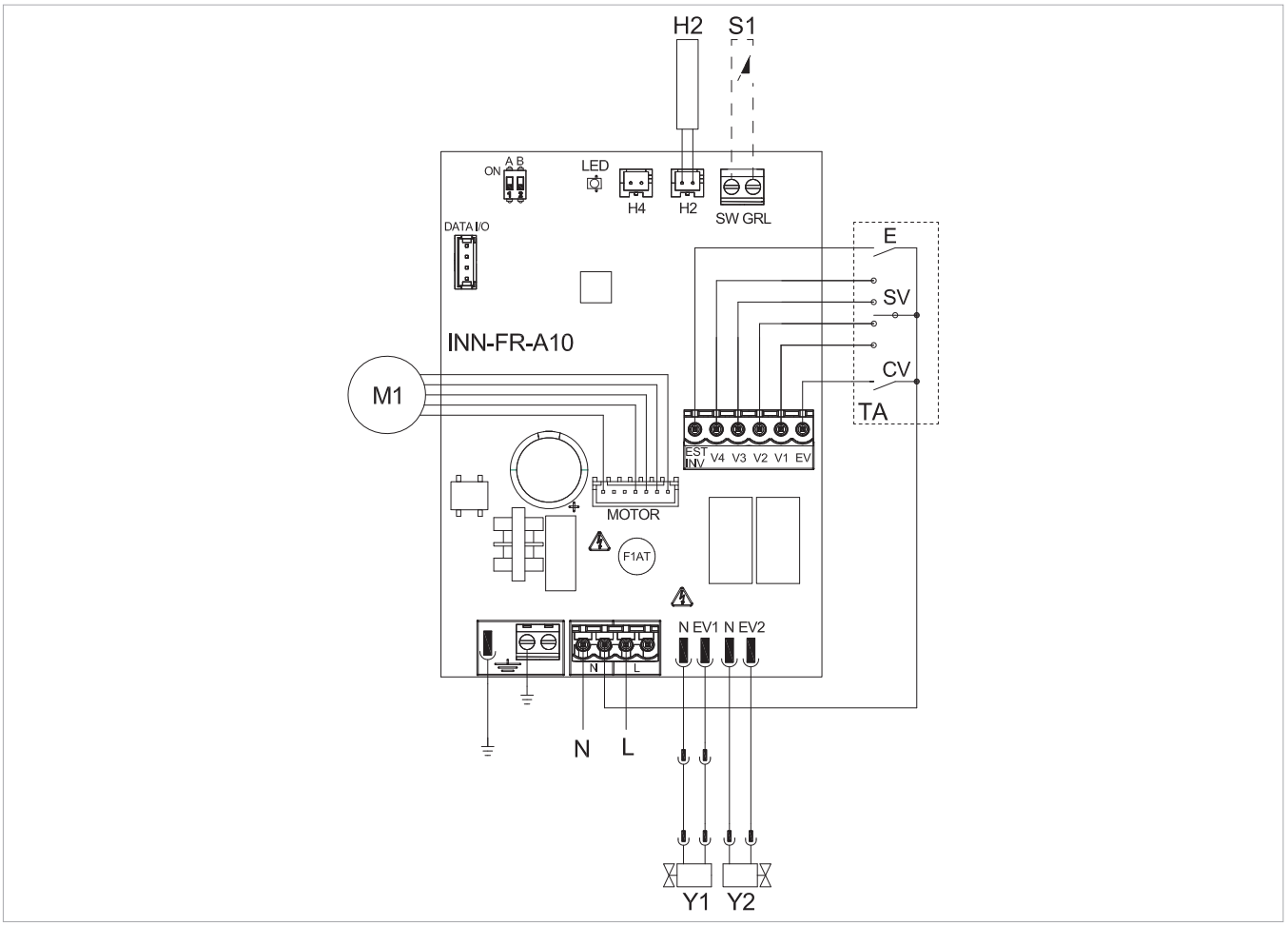


6.3 Connection diagram with 3-speed thermostat

Make the electrical connections to a thermostat fit for use according to the diagram.

L-N	electrical supply 230V-50Hz
EV	solenoid valve permission input
V1	maximum fan speed
V2	medium fan speed
V3	minimum fan speed
V4	supersilent speed
E	heating selection input, cooling See paragraph on Water Probe Management
Y2	output for mobile suction panel servo (power output 230V/ 50Hz 1A)
Y1	water solenoid valve (230 V/ 50 Hz 1A output voltage)

M1	DC inverter fan motor
S1	safety micro-switch for grill
TA	3-speed room thermostat (to be purchased, installation and connection to be made by installer)
CV	thermostat permission
SV	speed selector
H2*	water temperature probe (10 kΩ)
*	positioned in the on-board battery. See paragraph on Water Probe Management



6.4 Connections with 3-speed thermostats

The CV input is the board ON/OFF which when open puts the board in stand-by. It must be bridged to the L terminal on the 230V power supply to activate solenoid valve Y1.
The 4 speed inputs V1, V2, V3 and V4, when bridged to the L terminal on the 230V power supply, activate the fan if the S1 input to which the grill safety microswitch is connected is closed. The sequence is: maximum speed (1400 rpm on terminal V1), medium speed (1100 rpm on terminal V2), minimum speed (680 rpm on terminal V3) and supersilent speed (400 rpm on terminal V4).
Connect the three thermostat speeds to 3 out of the 4 available inputs as per the characteristics and use of the room: connect, for example, medium speed V2, minimum V3 and supersilent V4 for residential applications, when greater silence is required, whereas V1, V2 and V3 can be connected for commercial applications where the thermal yield is more important.
If multiple inputs are simultaneously closed, the motor will run at a number of revs equal to that of the connection with the highest speed.
Multiple cards can be connected in parallel to a single thermostat, also using different speeds.

6.5 LED signals

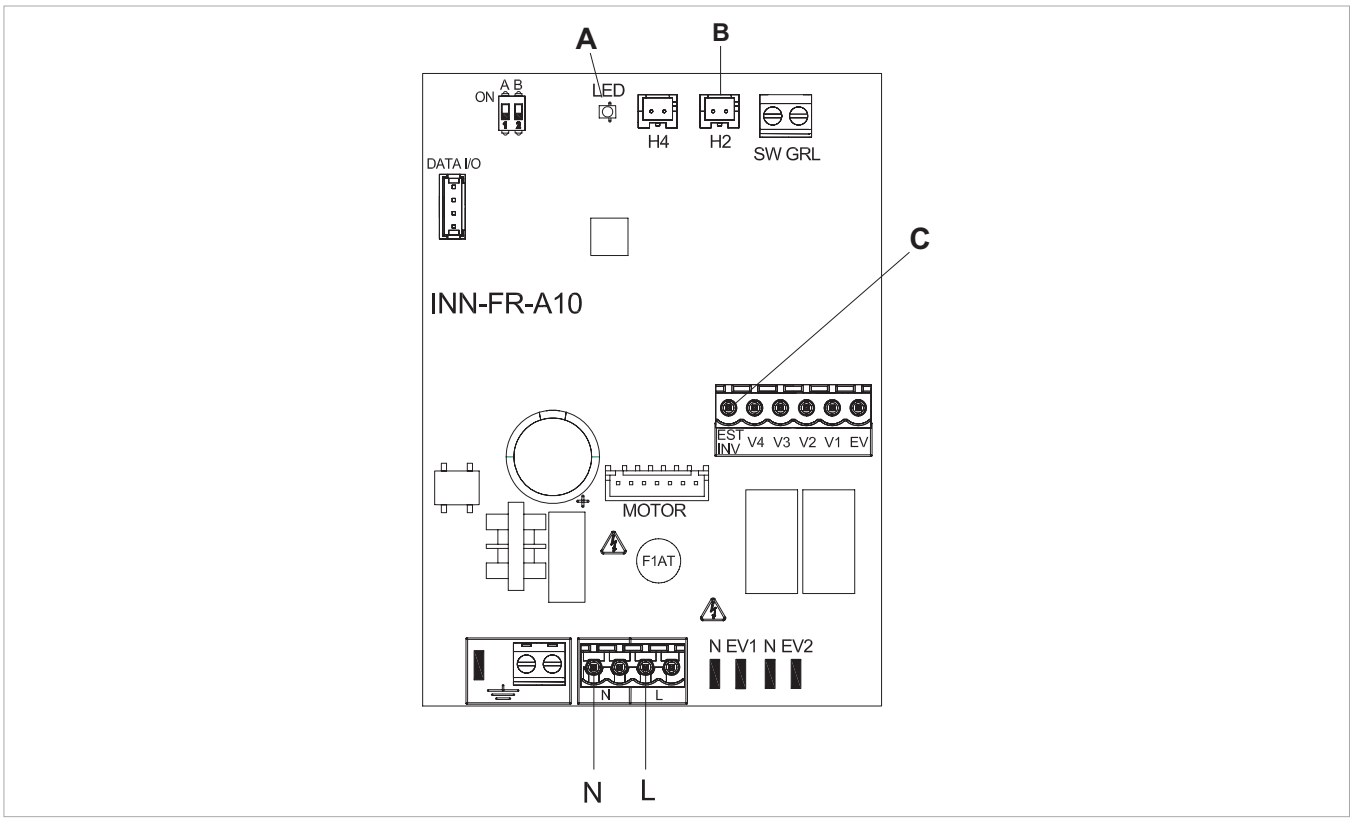
The LED (ref. A) is off if the CV input is not closed (stand-by condition).
It turns on when the CV contact is closed and indicates normal operation.

- Flashes frequently if the grille microswitch S1 is activated due to the filter cleaning operation
- 1 flash + pause indicates a fan stoppage alarm due to unsuitable water (with H2 water probe connected).
- 2 flashes + pause due to a motor alarm (e.g. blockage caused by foreign objects, faulty rotation sensor).
- 3 flashes + pause indicates a disconnected or faulty water probe alarm.

6.6 Water probe management with 3-speed thermostat

If the board is used with electromechanical thermostats, or with other commercial controllers with water probe, the on-board probe H2 should not be connected and the fan is controlled by the remote control.
If on the other hand the controller is not set up for managing the water probe, this function can be performed by the board, by connecting the 10 kΩ probe on the battery to the H2 connector on the board (ref. B).
In this case the board carries out the minimum temperature function for heating operations and maximum temperature function for cooling. Therefore, if the water temperature is not suitable for active operation (above 20°C when cooling, under 30°C when heating) the fan is stopped and the anomaly is signalled by a single flash + pause of the LED (ref. A).

The discrimination between heating/cooling is actuated via the Summer-Winter (ref. C) input of the board: leaving it open the board activates heating, closed activates cooling.
If after having connected the probe it is disconnected or measures incorrect values (e.g. installation of 2 kΩ probe in the place of the 10 kΩ probe) the anomaly is signalled by 3 flashes + pause of the LED (ref. A) and operation is stopped.
To confirm operation without a probe, turn the power to the board off and then on again.
This condition is saved by the board for future start-ups.
In any case, as and when the probe is connected, the unit returns to normal operation with temperature thresholds.



7. 0-10 V DEMAND BOARD KIT

7.1 Description

On-board electronic printed circuit board for control from systems with 0-10 V DC analogue output.
Mounted on the unit, it allows the motor to be managed with modulating speed.
Motor regulation can be made through a 0-10 V analogue input with an input impedance of 25 kΩ.

⚠ Consider the impedance value, especially when controlling several units in parallel.

It has a 230 V output for controlling a solenoid valve.

7.2 Connections with 0-10V thermostats

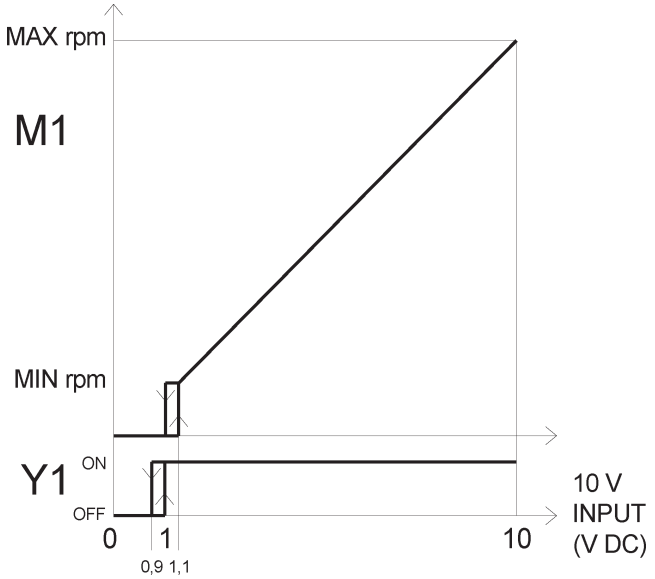
The 10 V input

- activates solenoid valve Y1
- regulates the fan speed

Linear speed regulation is possible, from a minimum value (400 rpm) to a maximum value (1500 rpm) for voltage values ≥ 1.1 V to 10 V DC.

⚠ The motor is switched off for values below 1 V.

⚠ The Y1 solenoid valve is switched on for voltage values greater than 1 V. The Y1 solenoid valve is switched off at values below 0.9 V.



7.3 LED signals

The PCB has a status LED.

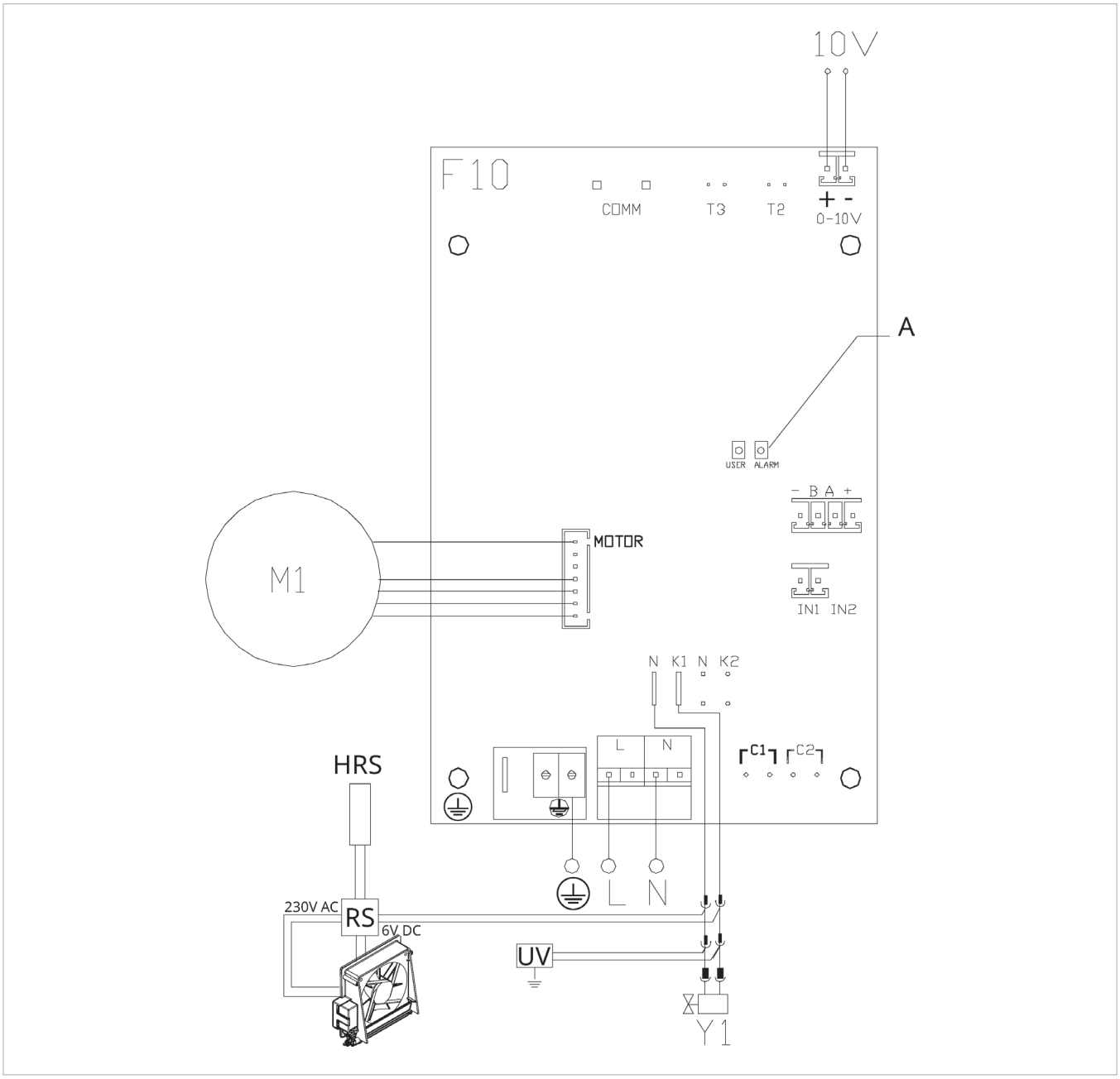
LED signals

- LED off
  Input signal below 0.9 V. Device switched off or without power supply.
- LED on
  Input signal more than 1 V. Normal operation of the device.
- LED frequent flashing
  Activation of grille safety microswitch S1, due to the filter cleaning operation.
- LED 2 flashes / pause
  Motor alarm (for example jamming due to foreign bodies or fault in the rotation sensor).

7.4 Connection diagram with 0-10V DC thermostats / signals

M1	DC fan motor
⏚	Earth connection
L-N	Power supply connection 230 V / 50 Hz / 1 A
Y1	Water electrovalve (voltage output 230 V / 50 Hz / 1 A)

10V	Input 0-10 V
F10	Electronic board on the machine
A	Led



⚠ For models with hydraulic connections on the right hand side, please refer to “Models with right-hand hydraulic connections” to make the connections.

⚠ For radiant panel (RS) versions, please refer to the “Version configurations” section to make the connections.

8. FEET KIT

8.1 Assembly

⚠ This instruction is an integral part of the booklet of the appliance on which the kit is installed. Please consult this booklet for general warnings and fundamental safety rules.

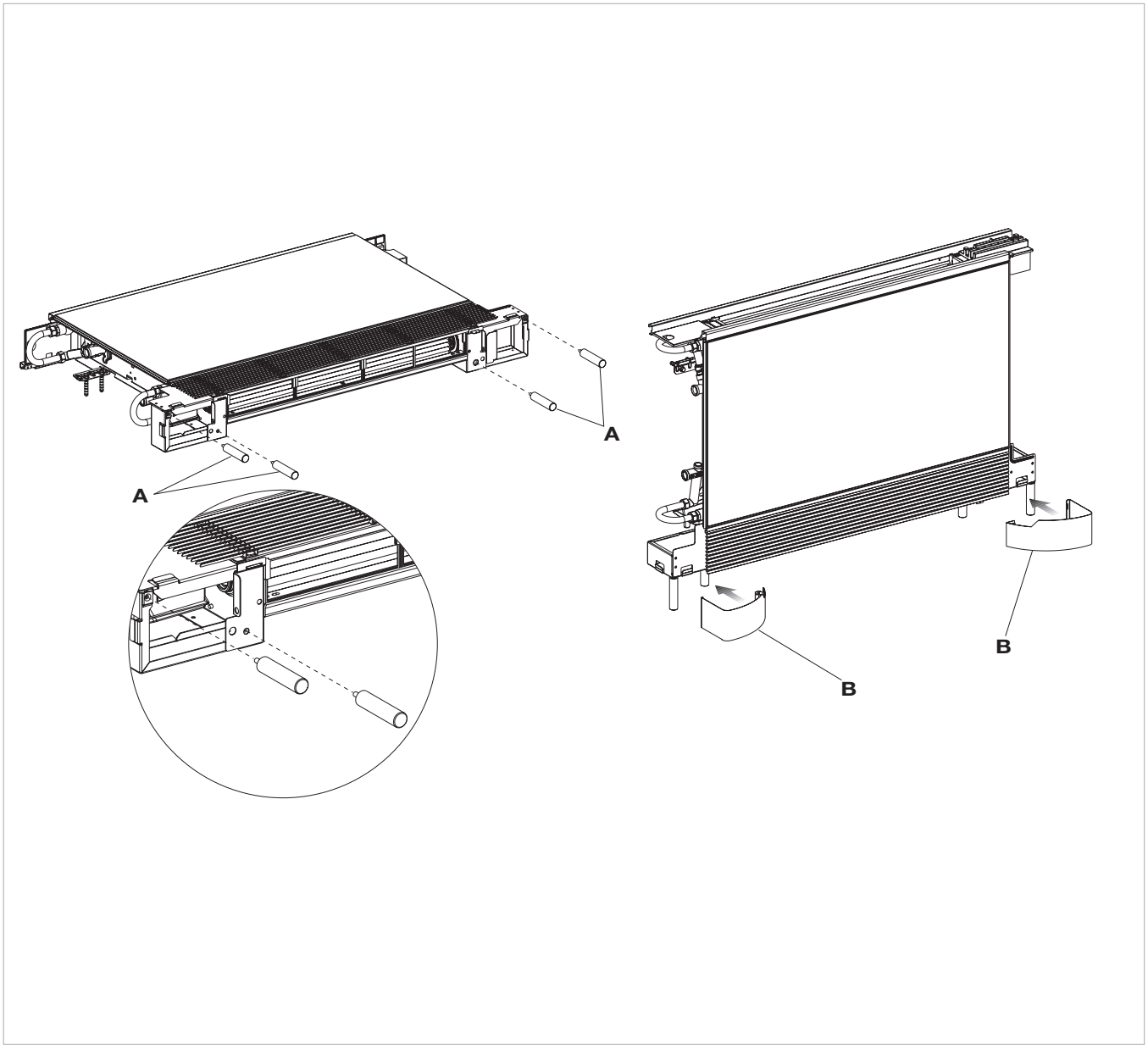
These accessories cover the hydraulic pipes coming up through the floor. They should be fitted on Hydro FS appliances anchored to the back wall.
They have a sleek design and are also easy to remove for maintenance or cleaning.

These Feet should not be used to anchor the terminal to the ground.

- Rest the back of the appliance on a horizontal surface;
- screw the four threaded supports provided to the structure;
- stand the appliance up again and fasten it to the wall;
- fit the two covers to the supports.

A	threaded supports

B	supports cover



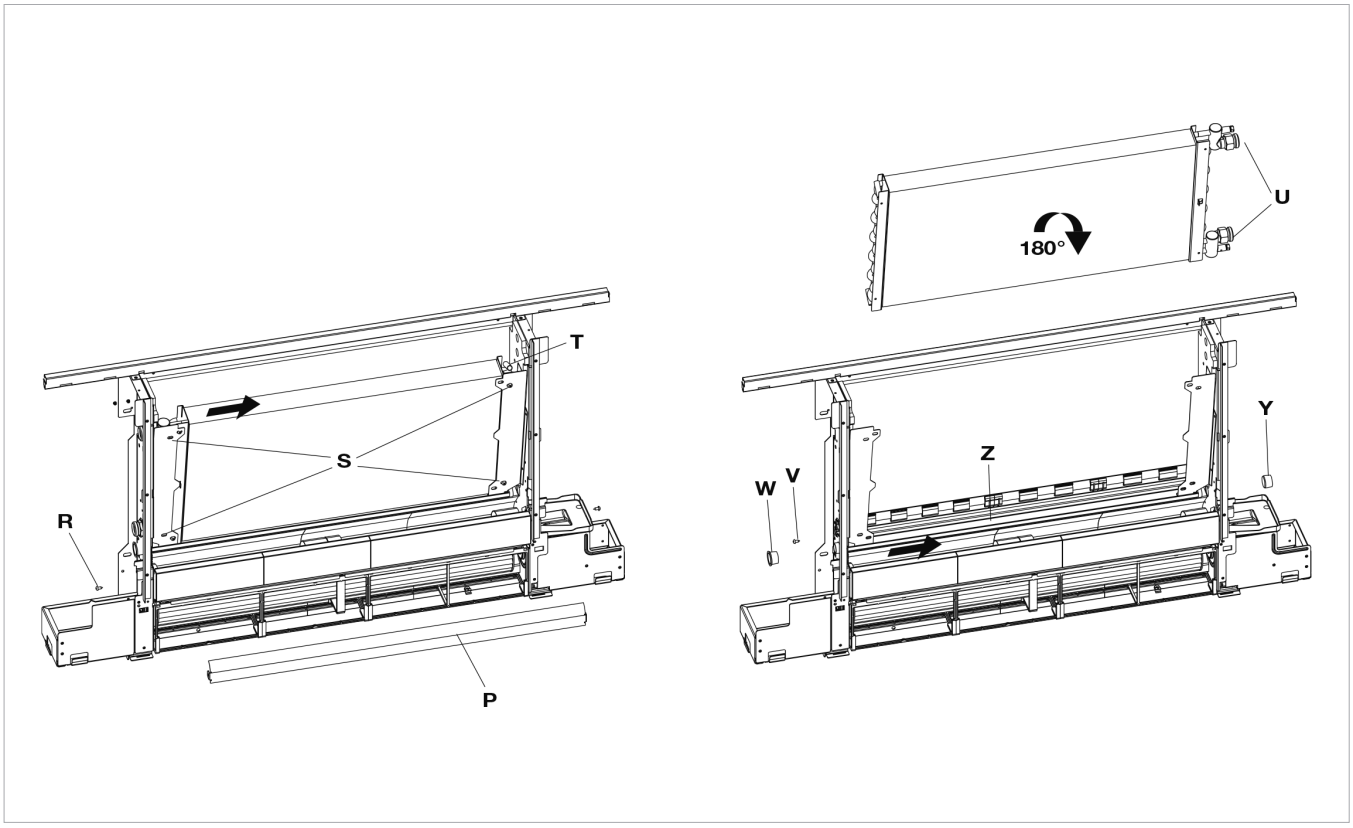
9. WATER CONNECTIONS ROTATION

Hydro FS are ready for the inversion of the water connections on the field.
In the event one needs to invert the position of the hydraulic battery connections from the left side to the right side of the device, the electric connections box is also inverted, but since the fan motor and the grid safety microswitch are constrained in the original position, one must use the special kit 3.029834, available as an accessory.

- Access internal parts as described in related chapter.
- Remove the air interceptor (fixed to the shoulders with a screw on each side).
- Loosen the four screws that fix the coil to the front brackets support.
- Remove the water probe from the hole on the coil.
- Open the pre-cut hexagonal holes on the right side insulation.
- Move the coil to the right to remove it from the shoulder's hex attacks, then pull it out.
- Turn of 180° the coil, insert it again in the frame and translate it to the right to introduce the connections inthe hexagonal holes of the shoulder. Then fix it with the screws previously removed.
- Close the hexagons holes on the left side with a common insulating adhesive.
- Remove the screw of the central drain pan.
- Translating drain pan to the right side, taking care to remove the cap from the right hole for evacuation and extension drip from the left reversing them to each other.
- Fix the pan on the right shoulder with the screw previously removed.
- Remount the air interceptor.
- Insert the coil water probe into the hole on the water coil.
- Remount the front panel taking care to correctly insert the coil upper insulating so as to avoid air bypass.
- Reassemble the valve access flap on the right part of the unit with the two screws previously removed.
- Make sure you have reassembled all the components and hydraulic and electrical accessories then close also the left and right side panels.

N.B.: the water connections must always be positioned on the opposite side of the control panel.

P	Air interceptor
R	Air interceptor fixing screws
S	Coil fixing screwsl
T	Water probe coil
U	Coil connections
V	Central drain pan fixing screw
Y	Central drain pan cap
W	Extension drip
Z	Central drain pan



10. 2-WAY/3-WAY VALVE UNIT KIT

⚠ To avoid penalising the performance of the system the water inlet and outlet must be as indicated in the various figures.
⚠ For a rapid and correct assembly of the components follow carefully the sequences described in the various sections.

⚠ This instruction is an integral part of the booklet of the appliance on which the kit is installed. Please consult this booklet for general warnings and fundamental safety rules.

10.1 List of hydraulic accessories

- 2-way valve unit with thermo-electric head kit.
- 3-way deviator valve unit with thermo-electric head deviator valve kit.

10.2 Pipeline diameter

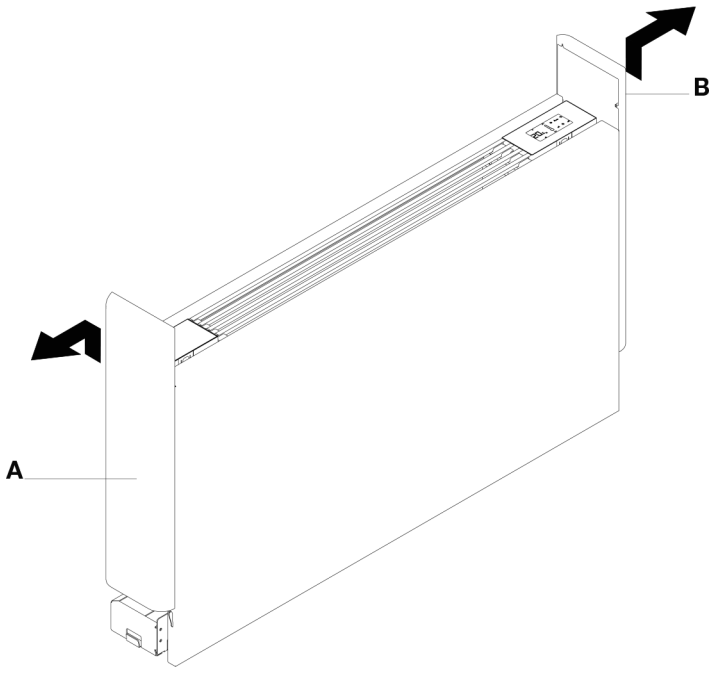
The minimum internal diameter that must be respected for the pipelines of the hydraulic connections varies according to the model:

	U.M.	200	400	600	800	1000
support covers	mm	12	14	16	18	20

10.3 Access to inner parts

- Lift it up the side panels.
- Move orizzontally to remove.

A	Left panel
B	Right panel



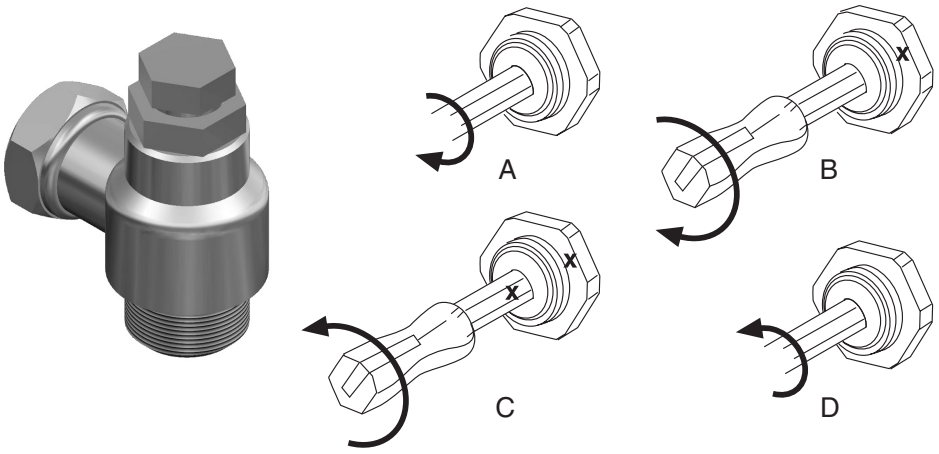
10.4 Lockshield adjustment

The lockshields supplied with the hydraulic kits provide an adjustment that balances the system load losses. To ensure a correct adjustment and balancing of the circuit, follow the procedure indicated below:

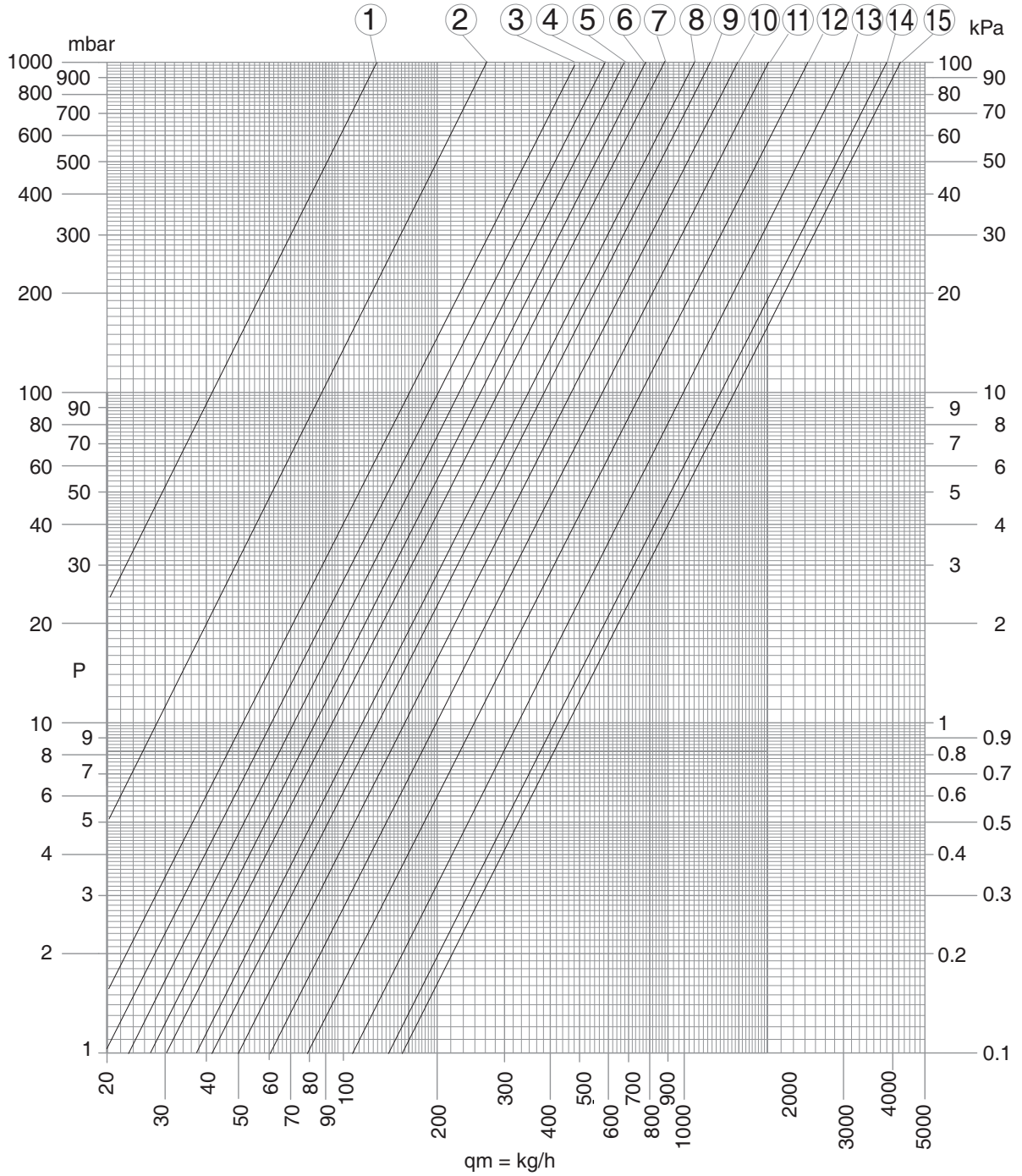
- With a screwdriver, loosen and remove the slotted grub screw inside the hexagonal head.
- Close the adjustment screw using a 5 mm Allen key (A)
- Re-tighten the slotted grub screw then mark the reference point for the adjustment with an “x” (B).
- Align the screwdriver with the “x”, then open with a number of turns (C) according to diagram Äp-Q shown on page 22.

⚠ The number of turns refers to the micrometric screw

Then fully open the screw (D). Now the pre-adjustment has been set and will not change if there are repeated openings or closings with the Allen key.



Load losses based on the adjustment of the lockshield present in all kits.

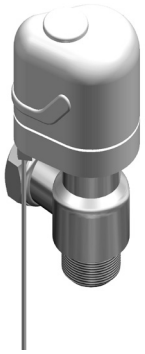


POS.	1	2	3	4	5	6	7	8	10	11	12	13	14	15
ADJ	1 2/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 2/4	4	4 1/2	5	6	8	T.A.
Kv	0.13	0.28	0.49	0.62	0.70	0,82	0,95	1,33	1,57	1,95	2,47	3,34	4,18	4,52

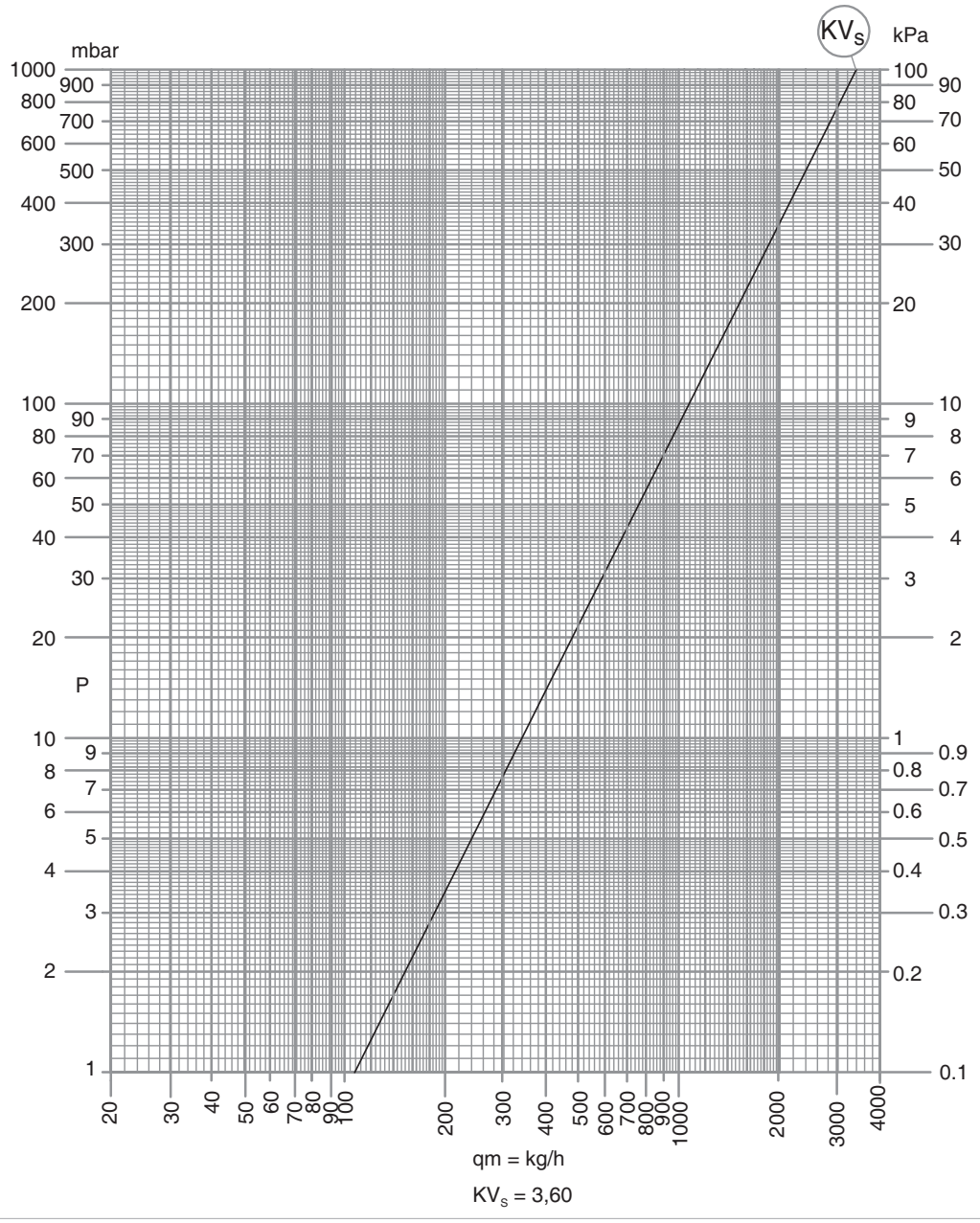
10.5 Way valve with thermo-electric head kit

Consists of an automatic valve with thermo-electric head and a lockshield, fitted with micrometric adjustment, capable of balancing the system load losses.

The kit contains the insulation to be mounted on the valve and on the lockshield.



load losses in completely open position of 2-way valve present in kits.



10.6 Way valve with thermo-electric head deviator valve kit

Consists of a 3-way deviator valve with thermo-electric head and a lockshield, fitted with micrometric adjustment, capable of balancing the system load losses).

The kit contains the insulation to be mounted on the valve and on the lockshield.

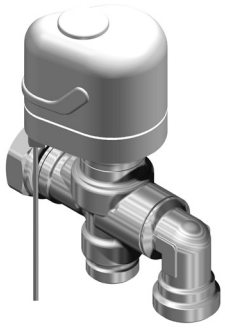


Diagram of load losses of deviator valve, present in kit, in completely open position.

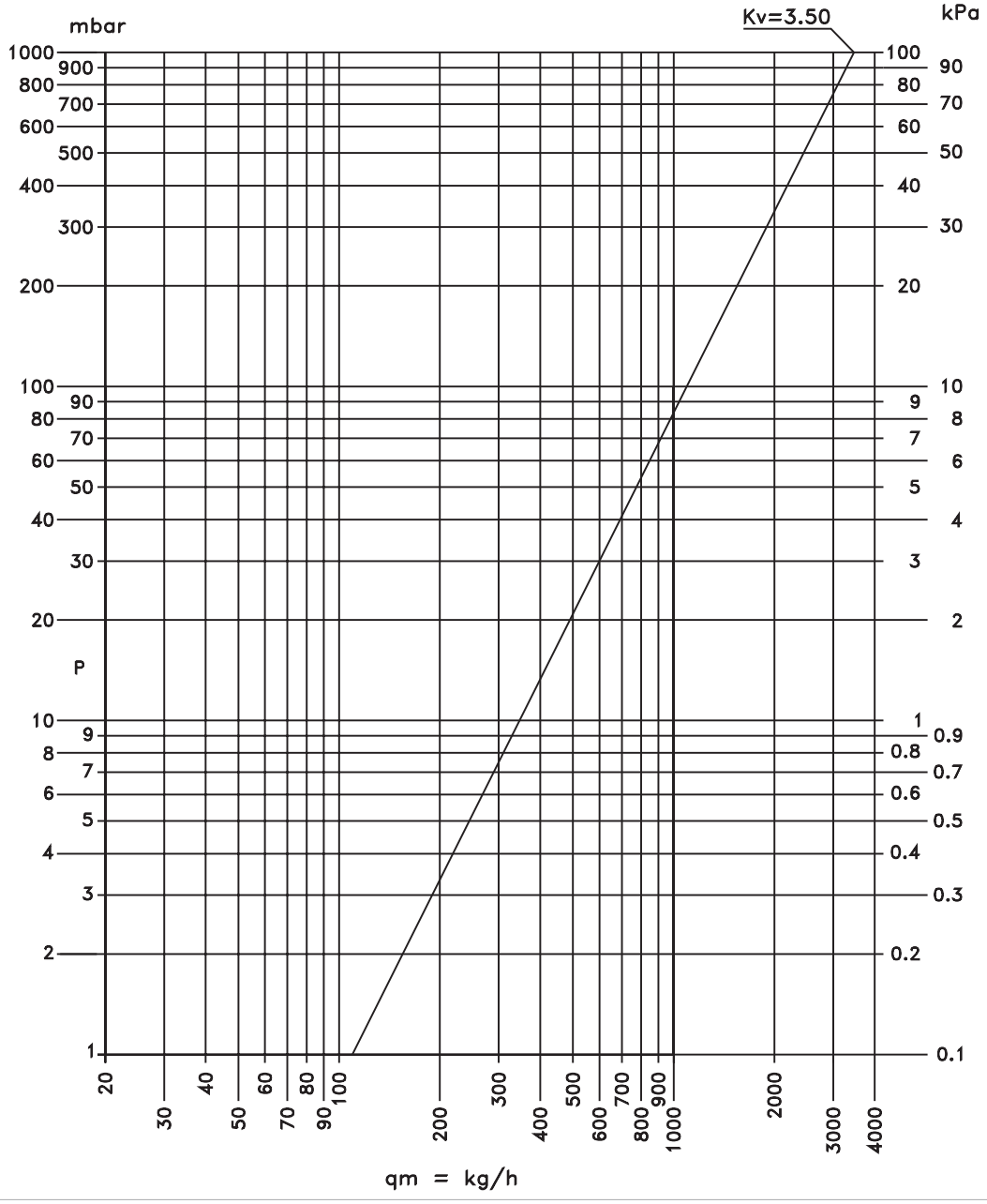
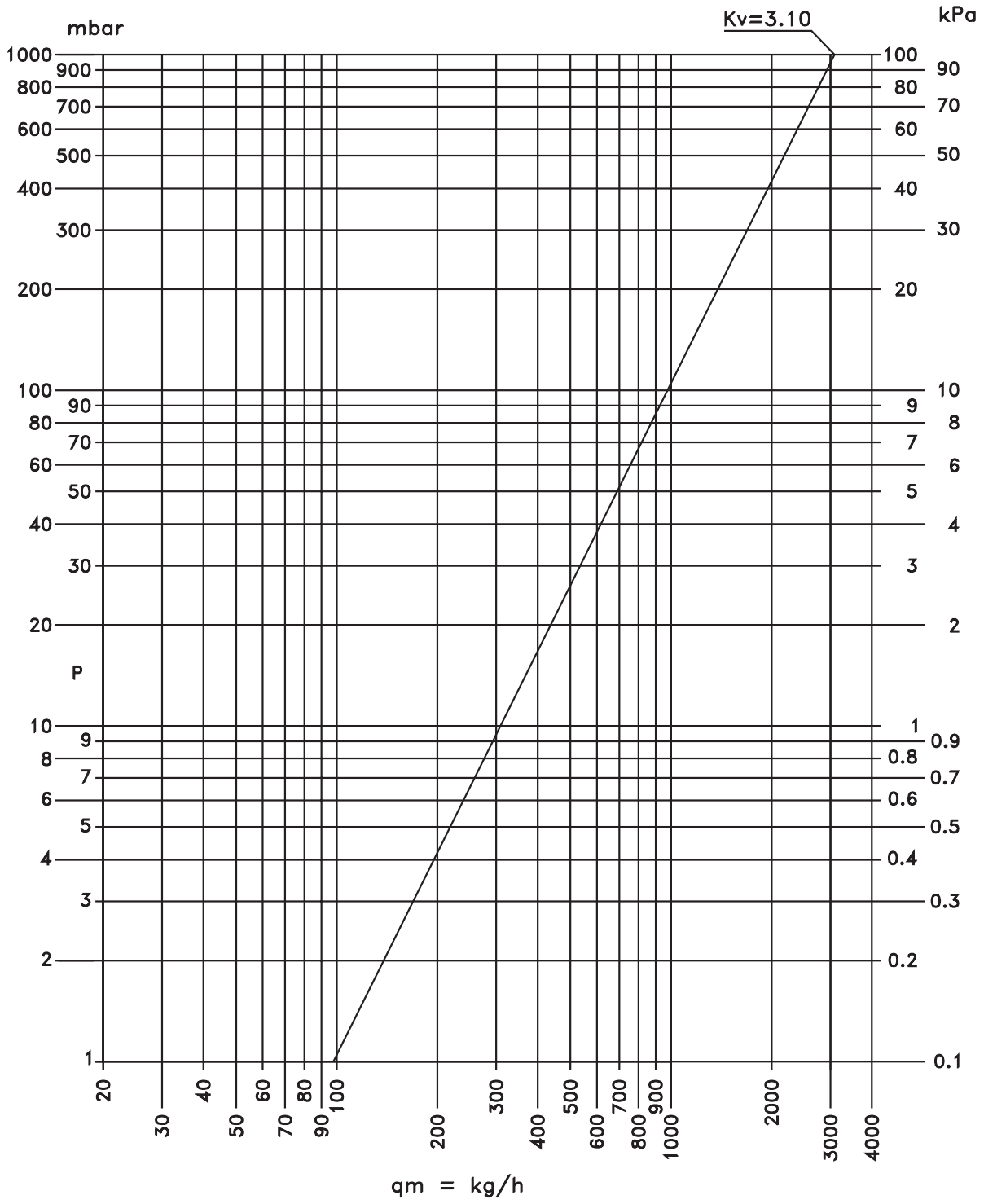


Diagram of load losses of deviator valve, present in kit, in completely closed position.



10.7 Connections

The choice and sizing of the hydraulic lines must be made by an expert who must operate according to the rules of good technique and the laws in force.

To make the connections:
- position the hydraulic lines
- tighten the connections using the “spanner and counter spanner” method
- check for any leaks of liquid
- coat the connections with insulating material

The hydraulic lines and joints must be thermally insulated.

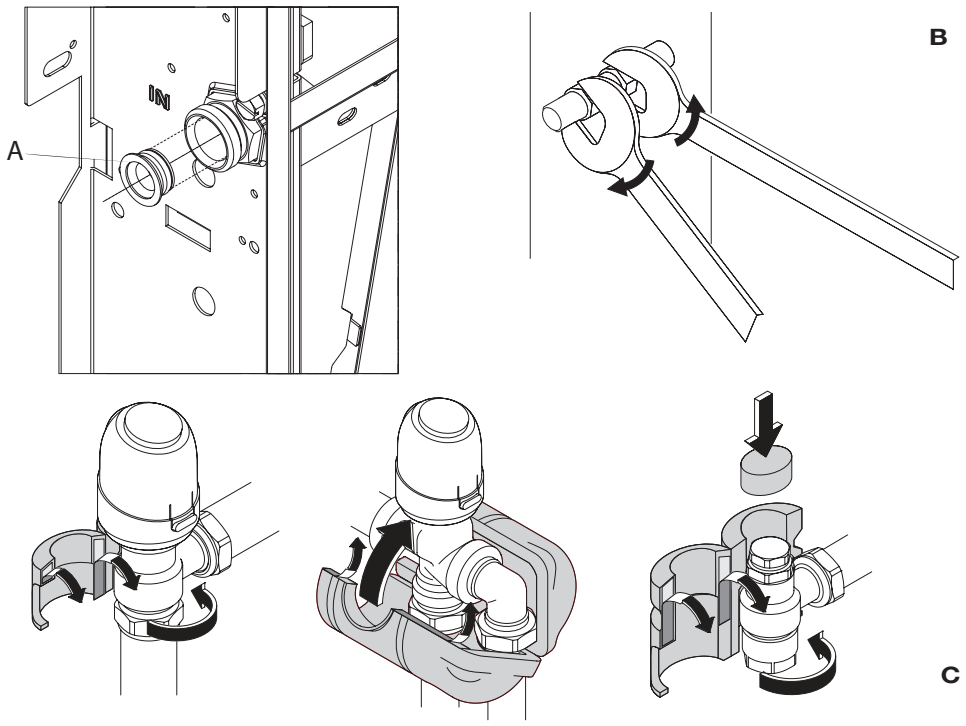
Avoid partially insulating the pipes.

Do not over-tighten to avoid damaging the insulation.

Use hemp and green paste to seal the threaded connections; the use of Teflon is advised when there is anti-freeze in the hydraulic circuit.

A	Eurokonus adapter
B	Spanner and counter spanner

C	Coat the connections with insulating material



10.8 2-way valve unit kit

Consists of an automatic valve with thermo-electric head and a lockshield, fitted with micrometric adjustment, capable of balancing the system load losses.

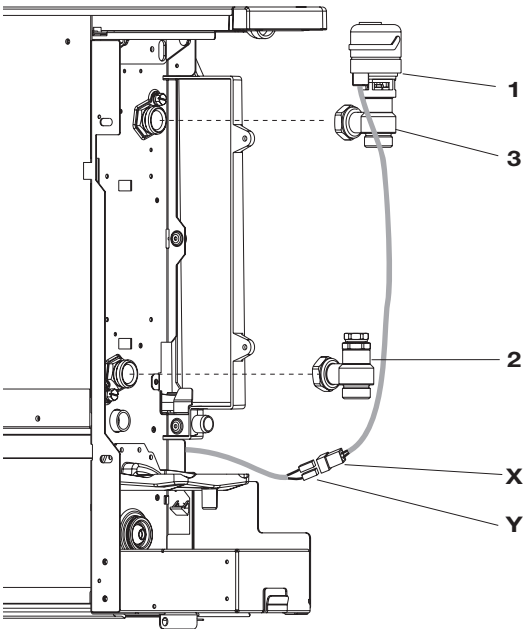
- Remove the side panel as indicated in paragraph Side opening.
- Assemble the components as indicated in figure
- Apply the supplied insulation.

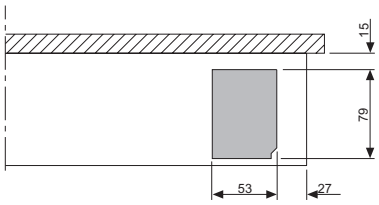
1	thermo-electric head (n.1)
2	lockshield (n.1)
3	2-way valve (n.1)

The kit contains the insulation to be mounted on the valve and on the lockshield.

⚠ When the hydraulic components have been mounted, connect the thermo-electric head connectors with the wiring connectors on the machine.

X	thermo-electric head connectors
Y	wiring connectors





10.9 3-way valve unit kit

Consists of an automatic 3-way diverter valve with thermo-electric head and a lockshield, fitted with micrometric adjustment, capable of balancing the system load losses. The kit contains the insulation to be mounted on the valve and on the lockshield.

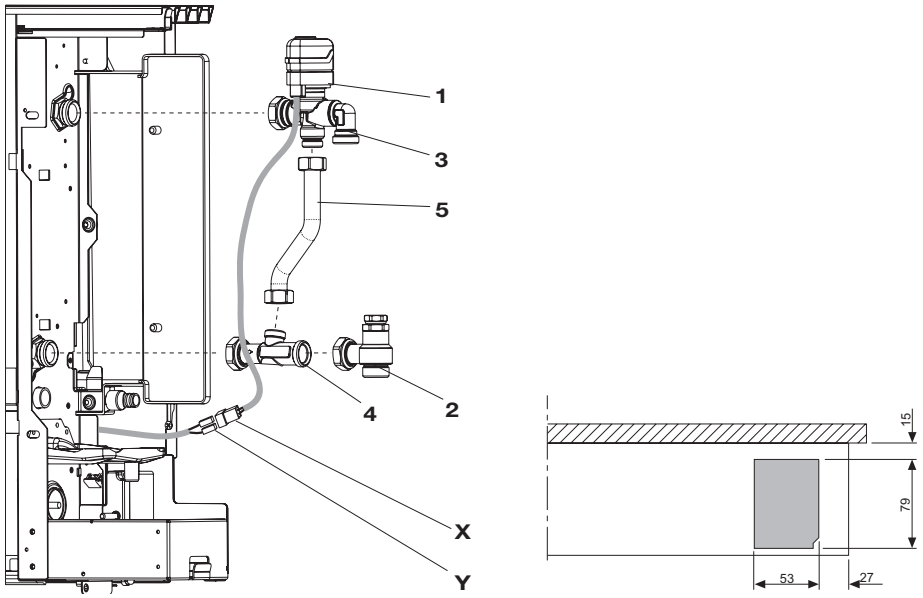
- Remove the side panel as indicated in paragraph Side opening.
- Assemble the components as indicated in figure
- Apply the supplied insulation.

⚠ When the hydraulic components have been mounted, connect the thermo-electric head connectors with the wiring connectors on the machine.

Floor mounted version

1	thermo-electric head (n.1)
2	lockshield (n.1)
3	3-way valve (n.1)
4	outlet union (n.1)

5	1/2" flexible tube 230 (n.1)
X	thermo-electric head connectors
Y	wiring connectors



11. COOLER-CONVECTOR, HEATING, COOLING AND DEUMIDIFICATION

11.1 Fundamental safety rules

⛔ Do not allow children or unassisted disabled people to use the unit.

⛔ Do not open the access covers and carry out technical or cleaning activities before disconnecting the unit from the power grid by positioning the system's main switch in the "off" position.

⛔ It is forbidden to modify the safety or regulation devices without the authorisation and directions of the manufacturer.

⛔ Do not stand, sit and/or place objects on the unit.

⛔ Do not pull, detach or twist the electrical wires coming out of the unit, even when the unit is disconnected from the power grid.

⛔ Do not spray or throw water directly on the unit.

⛔ Do not dispose of, abandon or leave the potentially hazardous packaging materials within the reach of children.

⛔ It is strictly forbidden to touch any moving parts, interfere with them or introduce pointed objects through the grids.

⛔ Do not touch the unit while barefoot and/or partially wet.

11.2 Description

The device is a terminal facility that contains in a single device the best solution for the heating, cooling and dehumidification. Allows you to achieve energy efficiency very high for the possibility of being coupled with generators of heat at low temperature such as: heat pumps, condensing boilers integrated systems withsolar collectors. Thanks to a sophisticated temperature controller, the device, providing excellent thermal comfort in every season. Heats and cools very rapidly and once it reaches the desired temperature, keeps it very precisely in utter silence. In heating mode, the device develops an effective natural convective effect (similar to that of a radiator) which greatly reduces the need to activate the ventilation. Its harmonious design and exceptionally low depth of only 15 cm make it integrated into any type of environment for all furnishing needs.

⛔ The unit combined with different control panels on board have the factory settings with parameters for maximum speed to 1700 rpm. To modify these parameters follow the procedures contained in instructions supplied with the control panel.

11.3 Identification

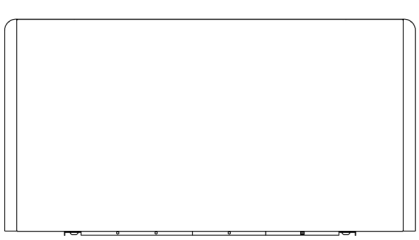
Technical Tag

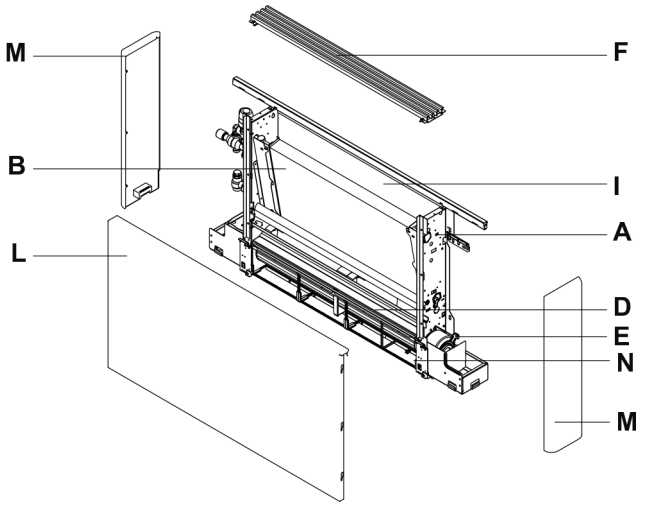
⚠ The technical tag shows all technical and performance data of the unit. Should the tag get lost, please ask for a duplicate tag from the Technical Service.

⚠ Any tampering with, the removal or the lack of the Technical Tag or of any other element whose absence prevents certain identification of the product makes it more difficult to install and maintain the product.

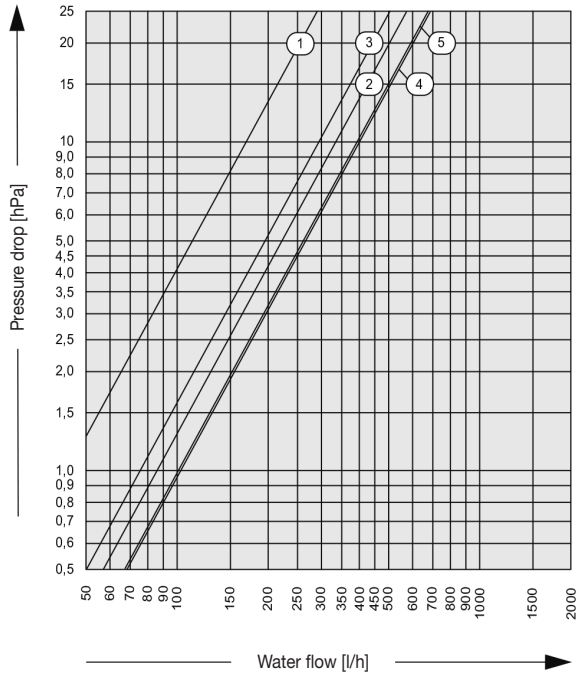
Main components:

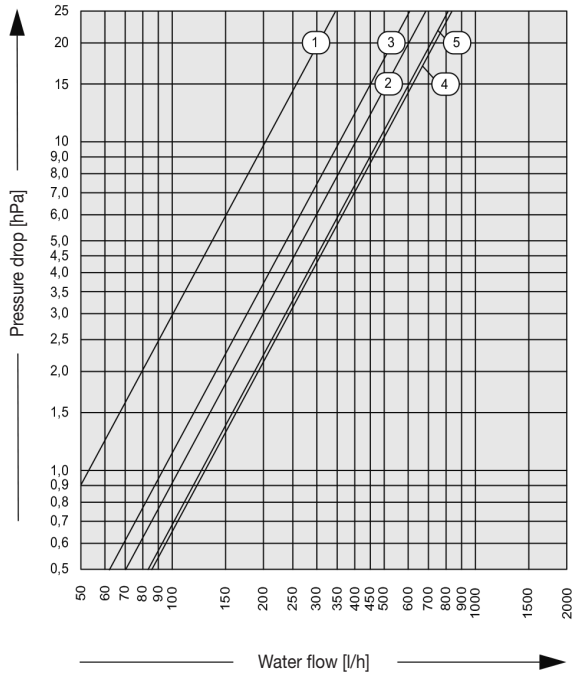
A	Structure
B	Heat exchanger
D	Fan unit
E	Electric motor controlled by INVERTER
F	Supply air grille reversible
H	Drain pan
I	Back structural
L	Front cover
M	Removable side panels
N	Air filter





11.4 Charts of Water flow - Pressure drop





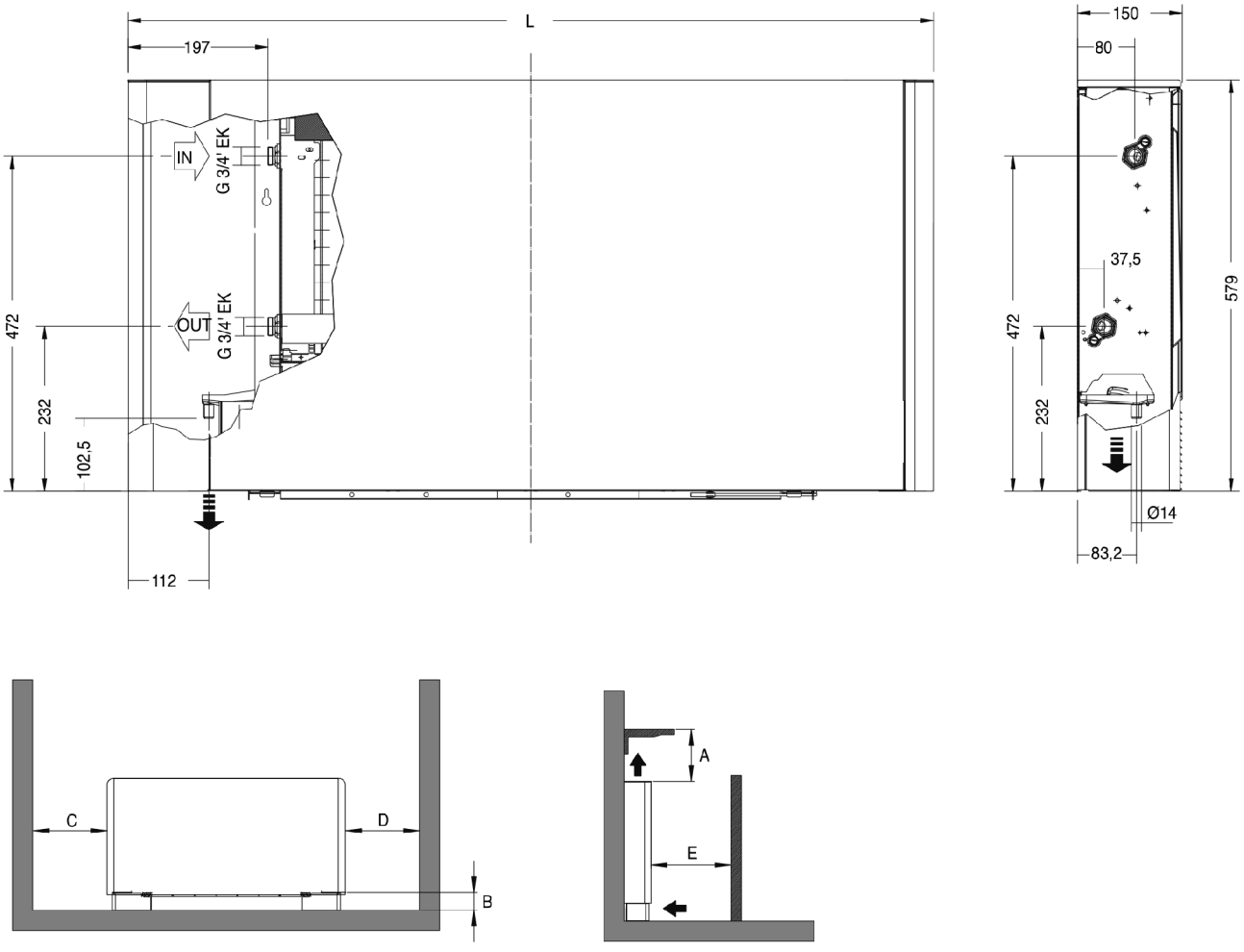
11.5 Nominal technical features

TECHNICAL DATA (DC)						
POWER		**200**	**400**	**600**	**800**	**1000**
Total output in cooling [a]	kW	0,91	2,12	2,81	3,30	3,71
Sensible output in cooling	kW	0,71	1,54	2,11	2,65	2,90
Water flow rate	L/h	157	365	483	568	638
Water head loss	kPa	12,1	8,2	17,1	18,0	21,2
Output in heating with water at 45/40 °C [b]	kW	1,02	2,21	3,02	3,81	4,32
Water flow rate (45/40 °C)	L/h	175	380	519	655	743
Water head loss (45/40 °C)	kPa	9,1	9,2	19,1	21,2	23,3
Output in heating without ventilation (45/40 °C)	W	185	236	285	358	436
Output in heating with water at 70/60 °C [c]	kW	1,25	2,66	3,60	4,60	5,17
Water flow rate (70/60 °C)	L/h	108	229	310	396	445
Water head loss (70/60 °C)	kPa	7,3	7,2	18,1	17	20,3
Output in heating without ventilation (70 °C)	W	322	379	447	563	690
Maximum water inlet temperature	°C	80	80	80	80	80
Minimum inlet water temperature	°C	4	4	4	4	4
HYDRAULIC FEATURES						
Battery water contents	L	0,47	0,8	1,13	1,46	1,8
Maximum working pressure	bar	10	10	10	10	10
Hydraulic fixtures	Inches	Eurokonus 3/4	Eurokonus 3/4	Eurokonus 3/4	Eurokonus 3/4	Eurokonus 3/4
AERAULIC DATA						
Maximum air flow rate [d]	m^3/h	146	294	438	567	663
Air flow rate at medium speed (AUTO mode)	m^3/h	90	210	318	410	479
Air flow rate at ventilation speed	m^3/h	49	118	180	247	262
maximum available static pressure	Pa	10	10	13	13	13
ELECTRICAL DATA						
Power supply	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Maximum power absorbed	W	11	19	20	29	33
Maximum current absorbed	A	0,11	0,16	0,18	0,26	0,28
Electrical power absorbed at minimum speed	W	5	4	6	5	5
SOUND LEVEL						
Sound power at maximum speed	dB(A)	51	53	54	55	57
Sound power at maximum air flow rate [g]	dB(A)	41	42	44	46	47
Sound pressure at average air flow rate [g]	dB(A)	33	34	34	35	38
Sound pressure at minimum air flow rate [g]	dB(A)	24	25	26	26	28
Sound pressure at temperature setpoint [g]	dB(A)	19	20	22	23	24
DIMENSIONS AND WEIGHTS						
Total height (without support feet)	mm	579	579	579	579	579
Total depth	mm	150	150	150	150	150
Net weight	kg	17	20	23	26	29

(a) Battery water temperature 7/12°C, room air temperature 27°C d.b. and 19 ° C w.b. (EU regulation 2016/2281)
(b) Battery water temperature 45/40°C, room air temperature 20°C (EU regulation 2016/2281)
(c) Battery water temperature 70/60°C, room air temperature 20°C
(d) Air flow rate measured with clean filters
(g) Sound pressure measured in a semi-anechoic chamber according to ISO standard 7779 (distance 1 m)

11.6 Dimensions

Size		HYDRO FS 200	HYDRO FS 400	HYDRO FS 600	HYDRO FS 800	HYDRO FS 1000
Dimensions						
A	mm	140				
B	mm	80				
C	mm	20				
D	mm	20				
E	mm	400				
Dimensions: Tivano - Tivano R						
L	mm	735	935	1135	1335	1535
Net weight	Kg	17	20	23	26	29



11.7 Product delivery

Preliminary instructions

⚠ We suggest to take the equipment out of its packaging only when it has been placed in position at the installation point.

⚠ Carefully remove any adhesive strips positioned on the unit.

Scope of supply

Also supplied:

Do not dispose of, abandon or leave the potentially hazardous packaging materials within the reach of children.

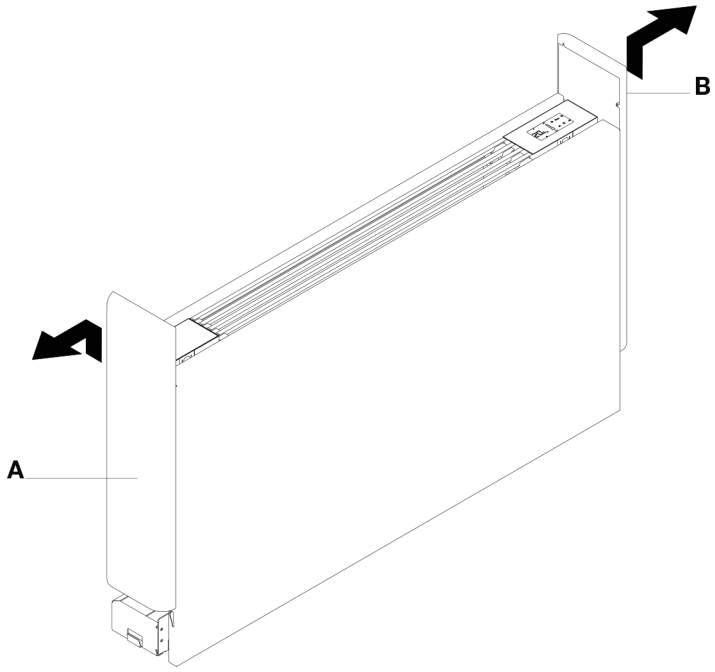
11.8 Handling and transportation

⚠ The unit must be handled by skilled technicians, appropriately equipped and with the appropriate tools to manage the unit's weight in compliance with the accident prevention regulations.

11.9 Access to inner parts

- Lift it up the side panels.
- Move orizzontally to remove.

A	Left panel
B	Right panel



11.10 Installation

Preliminary instructions

⚠ The place of installation must be determined by the system's designer or by an expert in the field and must take into account the technical requirements and the current standards and legislation.

⚠ Before starting installation, decide the placement of the unit taking into account the minimum required distances.

⚠ Detailed information on the unit (measurements, dimensions, fastenings, required distances, etc.) are shown in the "Technical Data" chapter.

⚠ The unit is designed for vertical installation on the floor.

⚠ In order to guarantee the correct operation of the equipment, the units must be installed so that the air outlet and inlet shall remain unobstructed.

⚠ In case of concealed installation a detachable section cut into the suspended ceiling is required in order to access the unit.

⚠ The unit must be mounted so as to guarantee the circulation of the processed air throughout the whole environment.

⚠ Check that:

- The support wall can support the weight of the unit.
- The wall section does not include bearing elements, pipes or electric lines.

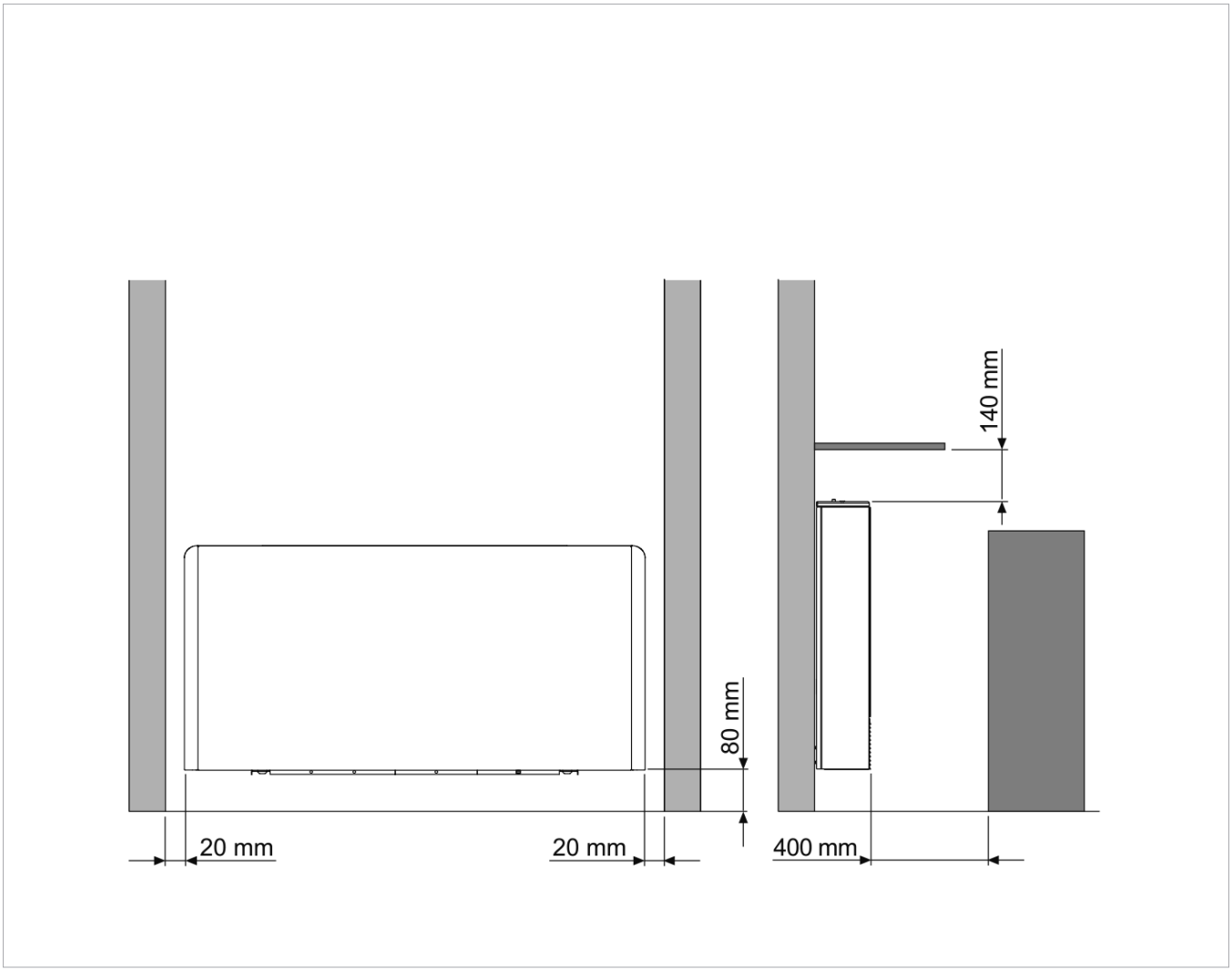
⚠ We suggest to avoid:

- Sunbeams and nearness to heat sources.
- Damp environments and locations where the unit might come into contact with water.
- Environment containing oil vapours
- Environment contaminated by high frequencies

⚠ The following descriptions of the various phases of assembly and the related drawings refer to a version of the machine with connections on the left.

11.11 Minimum installation distances

Figure indicates the minimum mounting distances between the wall-mounted cooler-convector and furniture present in the room.



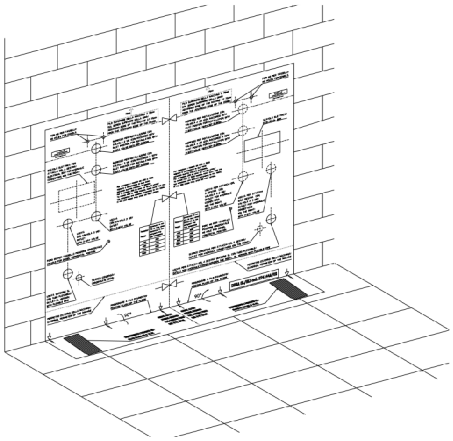
11.12 Vertically mounted

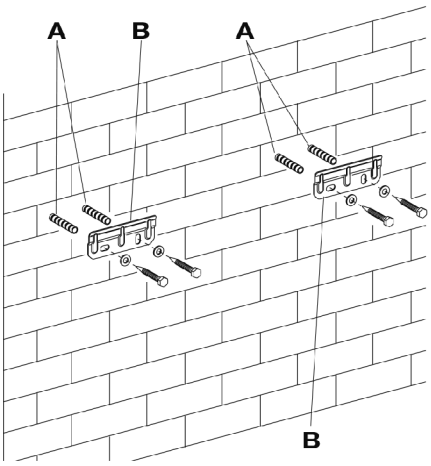
⚠ When mounting on the floor with support feet, refer to the individual instructions leaflets supplied and the relative manual for the mounting of the feet.

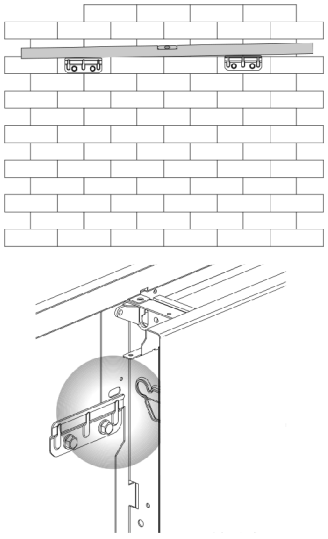
- Using the paper template, trace the position of the two fixing brackets on the wall.
- Use a suitable drill to make the holes with and insert the toggle bolts (2 for each bracket); fix the two brackets. Do not over-tighten the screws so that the brackets can be adjusted with a spirit level.
- Fully tighten the four screws to block the two brackets.
- Check the stability by manually moving the brackets to the right and to the left, up and down.
- Mount the unit, checking that it fits correctly onto the brackets and checking that it is stable.

A	Toggle bolts

B	Brackets







11.13 Hydraulic connections

Size		200	400	600	800	1000
Pipes						
Diameter	mm	12	14	16	18	20

The choice and sizing of the hydraulic lines must be made by an expert who must operate according to the rules of good technique and the laws in force.

To make the connections:
- Position the hydraulic lines
- Tighten the connections using the “spanner and counter spanner” method
- Check for any leaks of liquid
- Coat the connections with insulating material.

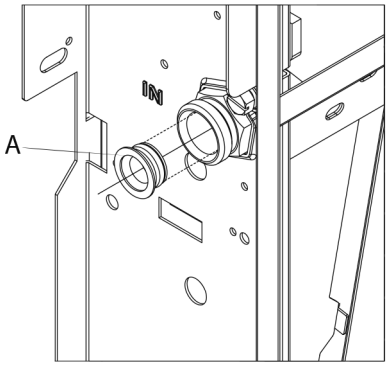
Accompanying this unit there are two adapters to transform the 3/4” Eurokonus connections in 3/4” BSP. In this case use hemp and green paste or similar to seal the threaded connections; the use of Teflon is advised when there is anti-freeze in the hydraulic circuit.

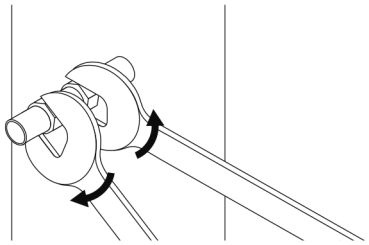
⚠ The hydraulic lines and joints must be thermally insulated.

⚠ Avoid partially insulating the pipes.

⚠ Do not over-tighten to avoid damaging the insulation.

A	Eurokonus adapter





11.14 Condensation discharge

The condensation discharge network must be suitably sized and the pipeline positioned so that it keeps a constant inclination, never less than 1%.

In the vertical installation, the discharge pipe (16 mm diameter) is connected directly to the discharge tray, positioned at the bottom of the side shoulder underneath the hydraulic fixtures.

- If possible, make the condensation liquid flow directly in a gutter or a “rainwaters” discharge.
- When discharging directly into the main drains, it is advisable to make a siphon to prevent bad smells returning up the pipe towards the room. The curve of the siphon must be lower than the condensation collection bowl.
- If the condensation needs to be discharged into a container, it must be open to the atmosphere and the tube must not be immerged in water to avoid problems of adhesiveness and counter-pressure that would interfere with the normal outflow.
- If there is a height difference that could interfere with the outflow of the condensation, a pump must be mounted:
- In a vertical installation mount the pump under the lateral drainage tray;

Such pumps are commonly found in commerce.

However, on completion of the installation it is advisable to check the correct outflow of the condensation liquid by slowly pouring about ½ l of water into the collection tray in about 5-10 minutes.

Mounting the condensation discharge pipe in the vertical version

Connect to the condensation collection tray discharge union a pipe for the outflow of the liquid blocking it adequately. Check that the drip-collector extension is present and correctly installed.

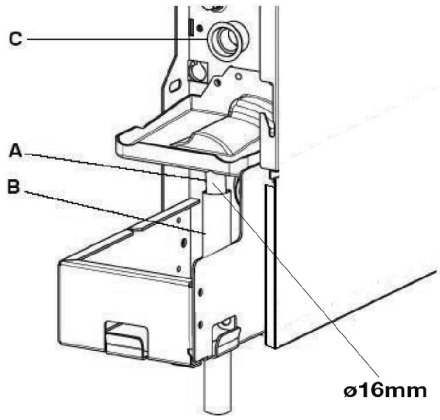
⚠ Make sure that the machine is installed perfectly level or with a slight inclination towards the condensation discharge;

⚠ Insulate carefully the inflow and outflow pipes up to the machine union to prevent any drops of condensation outside the same collection bowl;

⚠ Insulate the bowl condensation discharge pipe along all of its length.

A	Discharge fitting
B	Pipe for the flow of liquid

C	Extension drip



11.15 Electrical connections

Preliminary instructions

⚠ Detailed information on the unit (measurements, dimensions, fastenings, required distances, etc.) are shown in the “Technical Data” chapter.

⚠ The manufacturer waives all liability for damages caused by lack of grounding or departure from the electrical diagrams.

⚠ Check that:

- The characteristics of the power supply network shall be appropriate for the unit’s power requirements, taking into account also other equipment which might be operated in parallel.
- Electrical voltage shall be equal to the nominal value +/- 10%, with a maximum phase unbalance of 3%.

⚠ Mandatory items:

- The use of an omnipolar magnetothermic switch, lockable line disconnector, compliant with CEI-EN standards (contacts open by at least 3 mm), with adequate disconnection power and differential protection in compliance with the electrical data table below, installed next to the unit.
- Ground the unit thoroughly.

⛔ Do not use gas and water pipes to ground the unit.

Connection

⚠ Make electrical connections according to the requirements set out in sections General Warnings and Foundamental Safety Rules by reference to the patterns present in the installation and accessories manuals.

⚠ Before doing any work, make sure the power is switched off.

11.16 Filling the system

When starting up the system, make sure that the hydraulic unit lockshield is open. If there is no electric power and the thermo-valve has already been powered use the special cap to press the valve stopper to open it.

11.17 Evacuation of air when filling system

- Open all the system interception devices (manual or automatic);
- Start the filling by slowly opening the system water filling tap;
- For the installed in a vertical position, take a screwdriver and act on the highest breather of the battery.
- When water starts coming out of the breather valves of the appliance, close them and continue filling until reaching the nominal value for the system.

⚠ Check the hydraulic seal of the gaskets.

⚠ It is advisable to repeat these operations after the appliance has been running for a few hours and periodically check the pressure of the system.

11.18 First commissioning

Preliminary instructions

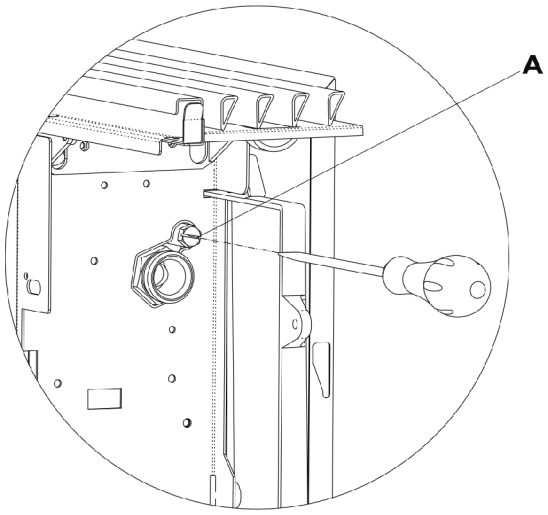
Check that:
- All safety conditions have been fulfilled
- All connections have been made correctly
- The hydraulic test of the circuit and condensate discharge has been done successfully.
- Grounding has been done correctly.
- All connections have been fastened well.

Start

- Position the unit's main switch in the "on" position.
- Turn the unit on with the control.
- Check performance in the various modes.

⚠ Please consult the instructions for information on how to use the control.

A	Venting of the battery



12. MODULATING TEMPERATURE CONTROLLER KIT

12.1 SMART TOUCH electronic control panel

These controls make room temperature adjustment (with offset settable from the keyboard) completely autonomous through the AUTO, SILENT, NIGHT and MAX programmes by means of a probe located in the lower part of the device, ensuring anti-freeze safety even when set to stand-by.
The control panel has a memory, so settings will not be lost if the appliance is switched off or in the power supply is cut.

⚠ After 20 seconds from the last action the panel brightness will be reduced for improved night-time comfort, and the room temperature will appear on the display. Press any key to restore maximum brightness.
The 10 kΩ water temperature probe positioned in the device battery regulations the minimum level when heating (30°C) and the maximum level when cooling (20°C).

A	Display
B	Keys

12.2 Display

Any statuses and alarms are also shown on the display by using 8 specific symbols:

A	Automatic operation
	Silent operation
	Maximum ventilation speed
	Night-time operation
	Heating on

	Cooling on
	Supervision on Flashing with presence switch CP closed.
	Alarm indicator (solid light)
	Panel off indicator
	Resistance active indicator

12.3 Key function

The various functions are set using 8 backlit keys:

+	Temp + is for increasing the set temperature
−	Temp - is for decreasing the set temperature
	Heating / Cooling: for changing the operation mode between heating and cooling
AUTO	Sets the regulation ventilation speed between a minimum and maximum value to an entirely automatic mode

	Night-time operation: limits ventilation speed to a contained level and the set temperature is adjusted automatically.
	Maximum speed operation: Allows for the maximum ventilation speed to be set
	ON/Stand-By: for activating the device or for putting it in stand-by.
	Silent: limits ventilation speed to a more contained value

12.4 General On Switch

In order to manage the device via the control panel, this must be connected to the mains electricity.
If a general switch is installed on the power line, this must also be switched on.
- Turn the device on by activating the general switch.

12.5 Activation

- To activate the device

Key	Operation	Display
	Press the ON Stand-by key	From off to on
AUTO   	Select one of the 4 operating modes by pressing the relative key.	

12.6 Heating/cooling operation modes setting

Key	Operation	Display
	Keep the Heating / Cooling key pressed for approx. 2 seconds to change the mode between heating and cooling, which is indicated by the 2 symbols that appear if heating or cooling is active.	
	When heating, the symbol displays when the set point is higher than ambient temperature, both are off when the set point is lower.	
	When cooling, the symbol displays when the set point is lower than ambient temperature, both are off when the set point is higher.	

One of the two symbols flashing means that the water temperature (hot or cold) is not sufficient, and stops the fan until the temperature reaches a level suitable for reaching the required temperature.
If after switching the power on the board detects the H2 probe, start-up occurs in normal conditions with the minimum and maximum thresholds.
The board also has a function when there is no H2 probe, in such cases the fan stop thresholds are ignored.

12.7 Stand By

Key	Operation	Display
	Press and hold the ON Stand-By key for approx. 2 seconds. No illuminated signals on the display at all means that the system is in stand-by (no operation).	Off

When the control is in this operating mode, anti freezing is in any case guaranteed. If the ambient temperature drops below 5°C, the solenoid valves on the hot water output and the boilers are opened.

12.8 Temperature selection

Key	Operation	Display
+ −	Set the required room temperature using the two increase/decrease keys to set the temperature value on the 3-digit display.	20.5

The adjustment range is from 16 to 28°C in intervals of 0.5°C, but out-of-range values are also accepted, from 5°C to 40°C (unless in auto mode).
Only set these values for brief periods, and then set a intermediate value.
The controller is very precise - set it to the required value and wait for the controller to regulate itself according to the actual room temperature detected.

12.9 Automatic operation

Key	Operation	Display
AUTO	Press and hold the AUTO key. The function being activated is indicated by the relevant symbol appearing on the display.	A

Ventilation speed adjustment is carried out automatically between the minimum and maximum values, according to the distance of the actual room temperature from the set point, according to a PI-type algorithm.

12.10 Silent operation

Key	Operation	Display
	Press and hold the Silent key. The function being activated is indicated by the relevant symbol appearing on the display.	

Ventilation speed is limited to a contained maximum value.

12.11 Night-time operation

Key	Operation	Display
	Press and hold the Night-time operation key. The function being activated is indicated by the relevant symbol appearing on the display.	

By selecting this mode, ventilation speed is limited to a very contained level and the set temperature is adjusted automatically, as follows:
- decreases by 1°C after one hour and by another degree after two hours in heating mode;
- increases by 1°C after one hour and by another degree after two hours in cooling mode;

12.12 Operation at maximum ventilation speed

Key	Operation	Display
	Press and hold the Max Operation key. The function being activated is indicated by the relevant symbol appearing on the display.	

In this operation mode, the maximum possible power level is activated whether heating or cooling.
Once the desired room temperature is reached, we recommend selecting one of the other 3 operation modes for increased comfort and sound levels.

12.13 Key lock

Key	Operation	Display
+	By pressing both the + and - keys for 3 seconds, all keys are locked locally, and this is indicated by "bL" appearing on the display. All actions are disabled to the user and whenever any key is pressed, "bL" will appear. To unlock the keys, repeat the sequence.	bL
−		

12.14 Reduce brightness to minimum

After 20 seconds from the last action, the panel brightness will be reduced for improved night-time comfort, and the room temperature will appear on the display.

If this brightness is still disturbing, the display can be switched off completely.

Key	Operation	Display
+	With the display off, press and hold the + key for 5 seconds until "01" is displayed. Use the - key to change the value to 00 and wait 20 seconds to check the setting has been accepted.	00

12.15 Deactivation

Key	Operation	Display
⏻	Press and hold the ON Stand-By key for approx. 2 seconds. No illuminated signals on the display at all means that the system is in stand-by (no operation).	Off

The controller also ensures anti freezing when in stand-by.

12.16 Room temperature probe regulation offset

As the detection probe is towards the bottom of the device, the temperature detected may at times differ from the actual room temperature.
By using this function, the value displayed can be adjusted in a range from -9/+12 K in intervals of 0.1°C.
Use this adjustment with care, and only after having actually detected a discrepancy compared with the actual room temperature using a reliable device!

Key	Operation	Display
−	With the display off, press and hold the - key for 5 seconds to access the menu which allows adjustment (using the + and - keys) of the AIR probe offset displayed, from -9 to +12 K in 0.1 K intervals. After 20 seconds from the last action, the panel switches off and the setting is stored.	00.0

12.17 Switching off for long periods

When switching off for a season or for holidays, proceed as follows:

- Deactivate the device
- Turn the general unit switch to off.
- ⚠ The antifreeze function is not active.

12.18 Error signals

Error	Display
Faulty room temperature (AIR) probe	⚠ E1
Problem with fan motor (e.g. blockage caused by foreign objects, faulty rotation sensor).	⚠ E2
Water temperature probe fault for 2-tube versions (H2). In this case, ensure that the probe installed is 10 kΩ.	⚠ E3
Engaging of grill microswitch S1 due to filter cleaning operation	⚠ GR

13. 4-SPEED TEMPERATURE CONTROLLER KIT

13.1 LCD electronic control panel

The electronic control on the unit with 4 fixed speeds and thermostat allows:
- room temperature control
- management of the main functions of the device

It is fitted with:
- internal memory with data saving even in case of shut-down or power outage

Through the water temperature probe (10 kΩ) positioned in the compartment on the unit's coil, the functions can be regulated:
- minimum temperature in heating mode (30 °C)
- maximum temperature in cooling mode (20 °C)

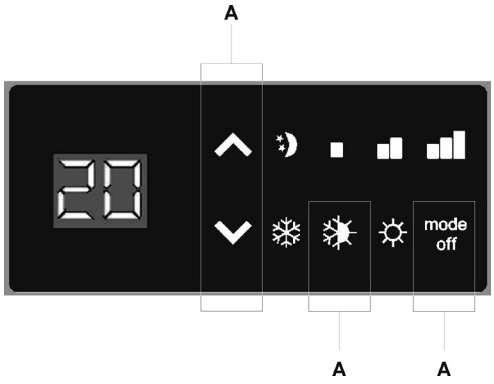
⚠ After 20 seconds after the last action the panel brightness is reduced, only the room temperature is seen on the display. The maximum brightness is restored to the pressure of any key.

13.2 LED indications

Statuses and active alarms on display.

A	Display area
B	Led area
▪	Minimum speed active
▪▪	Medium speed active
▪▪▪	Maximum speed active

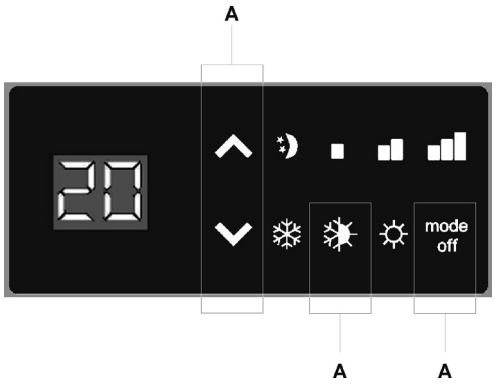
	Super Silent function active
	Heating function on
	Cooling function on



13.3 Key function

A	Keys area
^	Up key
v	Down key

	This can be used to select the operating mode (Cooling or Heating)
mode off	Allows you to switch the unit on or off and select operating modes



13.4 General On Switch

Before the activation:

⚠ Make sure that the remote control is connected to the mains.

⚠ In case of a master switch on the power supply line, switch on the system by inserting the switch.

To activate the control

- press the mode off key
  The control turns on.
  The text On appearing on the display.

13.5 Heating/cooling operation modes setting

To switch the operating mode

- Press the ☀ key for about 2 seconds.
  The symbol ☼ on indicates the Heating function enable.
  The symbol ❄ on indicate the Cooling function enable.

⚠ In heating function the symbols is alight with setpoint higher than the room temperature.

⚠ In cooling function the symbols is alight with setpoint lower than the room temperature.

⚠ In the case of an incorrect setpoint, the symbol of the activated function flashes and ventilation stops until the appropriate value is reached.

13.6 Stand By

To put in stand-by the control

- press the mode off key for about 2 seconds.
  The control goes out.

13.7 Temperature selection

To set-up the temperature

- operate the ∧ ∨ keys to decrease or increase the desired value.
  The displayed value change.

⚠ The temperature adjustment range is from 15 to 30°C, with a resolution of 0.5°C.

⚠ Off-scale values of 5°C (Lo) and 40°C (Hi) are possible, except in automatic mode. Only set these values for short periods.

13.8 Ventilation speed regulation

To select the fan speed control

- press the key mode off
  The symbol ✣ on indicates the Silent function enable.

⚠ The ventilation speed is limited at a more reduced maximum value.

- press the ☀ key for about 2 seconds
  The symbol ☼ on indicates the Heating function enable.
  The symbol ❄ on indicate the Cooling function enable.

⚠ In heating function the symbols is alight with setpoint higher than the room temperature.

⚠ In cooling function the symbols is alight with setpoint lower than the room temperature.

13.9 Key lock

To set-up the key locking

- press both keys ∧ ∨ for 10 seconds
  The text bL appearing on the display.

⚠ All settings are inhibited by the user.

⚠ Repeat the sequence to unlock the control.

13.10 Reduce brightness to minimum

To reduce the display brightness

- press the ☀ key for 10 seconds
  The text Lo appearing on the display.

To restore normal display brightness

- press the ☀ key for 10 seconds
  The text Hi appearing on the display.

⚠ After 20 seconds from the last action the panel brightness will be reduced to increase the comfort during night use. On the display will appear only the room temperature.

13.11 Deactivation

To deactivate the display

- press the key mode off for about 2 seconds
  All the light signals go off.

⚠ In stand-by mode, the control guarantees antifreeze protection.

13.12 Switching off for long periods

For seasonal shutdowns or for long periods:

- disable the device
- set the main system switch to Off

13.13 Error signals

- E1 and flashing of all LEDs
  Room temperature probe disconnected or faulty (automatic reset alarm)
  None of the modes can be activated.
- E2 and flashing of LEDs ☼ ❄
  Motor alarm (e.g., jamming due to foreign matter or rotation sensor failure) (automatic reset alarm)
- E3 and flashing of LEDs
  Failure of water temperature detection probe located in the main battery
- Flashing of LED ☼
  Water temperature alarm, water demand not met (<30 °C in heating). Temporary stop of ventilation until the appropriate value is reached
- Flashing of LED ❄
  Water temperature alarm, water demand not met (>20 °C in cooling). Temporary stop of ventilation until the appropriate value is reached

⚠ Check that the probe is correctly positioned in the compartment on the coil.

⚠ The printed circuit board provides for operation without a water probe. In this case, the fan stop thresholds are ignored.

14. SETTINGS MENU 3.030877/3.030878

14.1 Smart Touch electronic control panel

Smart Touch wall control panels with thermostat and room temperature and relative humidity probe are electronic thermostats with the possibility of control over several appliances with electronic remote control.
Allow:
- room temperature control
- management of the main functions of the device

They are fitted with:
- temperature probe
- internal memory with data saving even in case of shut-down or power outage

⚠ The control can control up to a maximum of 30 units.

⚠ The room temperature probe ensures an antifreeze safety even when the control is in stand-by

⚠ After 20 seconds after the last action the panel brightness is reduced, only the room temperature is seen on the display. The maximum brightness is restored to the pressure of any key.

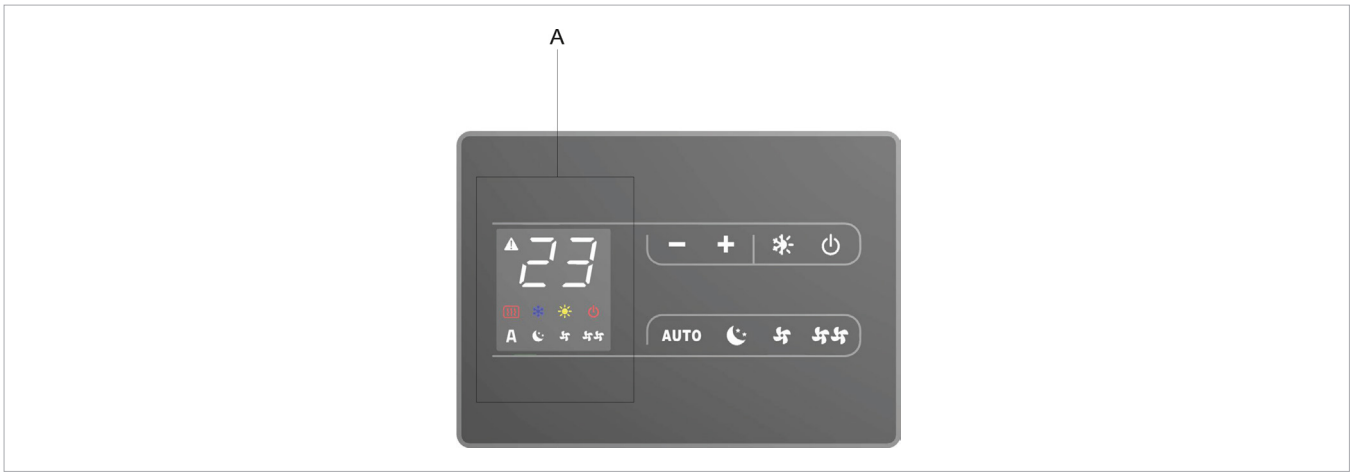
⚠ Any faults of the connected individual terminals are not indicated by the wall panel.

14.2 Display

Statuses and active alarms on display.

A	Display area
A	Automatic function active
	Silent function active
	Maximum ventilation speed active
	Night function active
	Heating function on

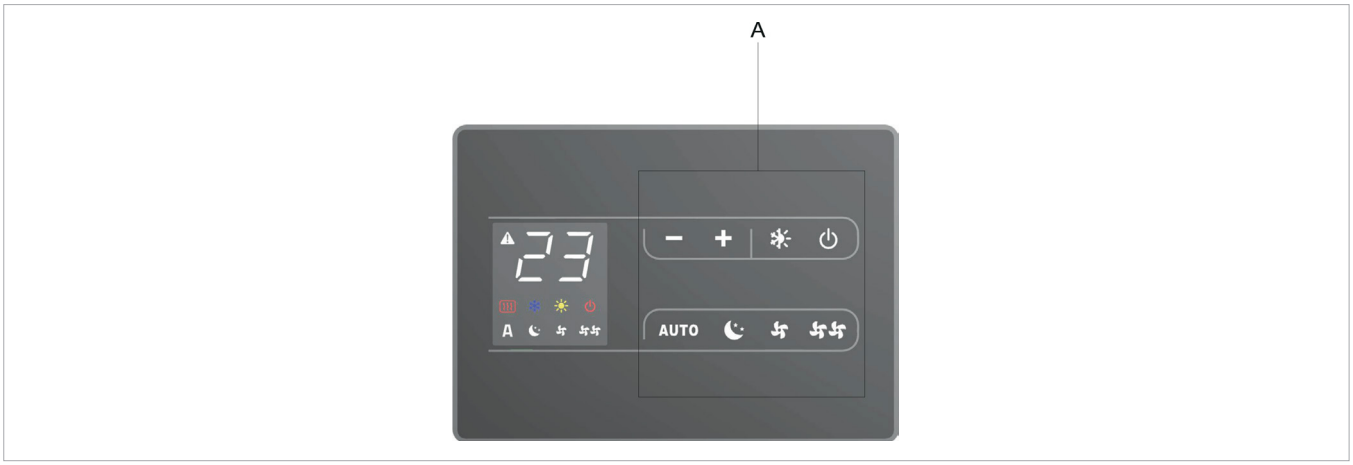
	Cooling function on
	Alarm active with fixed icon
	Supervision active with flashing icon and CP contact closed
	The appliance is in stand-by mode
	Resistance enabled indication



14.3 Key function

A	Keys area
+	Up key
−	Down key
	This can be used to select the operating mode (Cooling or Heating)
AUTO	Enables Automatic function
	Consente di attivare la funzione Notturno con limitazione della velocità di ventilazione e variazione automatica della temperatura

	Enables Maximum ventilation speed function
	This can be used to switch the unit on or off
	Enables the Silent function with ventilation speed limitation to a low maximum value



14.4 General On Switch

Before the activation:

⚠ Make sure that the remote control is connected to the mains.

⚠ In case of a master switch on the power supply line, switch on the system by inserting the switch.

To activate the control

- press the ⏻ key
  The symbol ⏻ lights up.

14.5 Heating/cooling operation modes setting

To switch the operating mode

- press the key for about 2 seconds
  The symbol on indicates the Heating function enable
  The symbol on indicate the Cooling function enable

⚠ In heating function the symbols is alight with setpoint higher than the room temperature.

⚠ In cooling function the symbols is alight with setpoint lower than the room temperature.

⚠ In the case of an incorrect setpoint, the symbol of the activated function flashes and ventilation stops until the appropriate value is reached.

4 pipes versions

In 4-pipe versions, with automatic Cooling/Heating regulation active, the simultaneous switching on of the symbols indicates that the set-point has been reached.

14.6 Stand By

To put in stand-by the control

- press the ⏻ key for about 2 seconds
  The control goes out.

⚠ In stand-by mode the control ensures an antifreeze safety. In case of temperature <5 °C, the hot water solenoid valve outputs and boiler consent are activated automatically.

14.7 Temperature selection

To set-up the temperature

- operate the − + keys to decrease or increase the desired value
  The displayed value change.

⚠ The adjustment range goes from 16 °C to 28 °C, with a resolution of 0,5 °C.

⚠ Out of range values from 5 °C and 40 °C are allowed, except in automatic mode. These value should be set only for short periods of time.

14.8 Automatic operation

Per selezionare il funzionamento Automatico

- tenere premuto il tasto **AUTO** per circa 2 secondi
  Il simbolo **A** *acceso indica la funzione Automatico attivata.*

⚠ The ventilation speed is automatically adjusted between a minimum value and a maximum value based on an algorithm type PI, according to the actual distance from the room temperature set-point.

14.9 Silent operation

To select the Silent operation

- press the key for about 2 seconds
  The symbol on indicates the Silent function enable

⚠ The ventilation speed is limited at a more reduced maximum value.

14.10 Night function

To select the Night function

- press the key for about 2 seconds
  The symbol on indicate the Night function enable.

⚠ The ventilation speed is limited at a very low value.

⚠ The set temperature is automatically changed:

- in Heating mode, decreases by - 1 °C after one hour and by another - 1 °C after two hours
- in Cooling mode, increases by 1 °C after one hour and by another + 1 °C after two hours

14.11 Maximum ventilation speed

To select the operation at the maximum ventilation speed

- press the key for about 2 seconds
  The symbol on indicates the maximum speed function enable.

⚠ Maximum power output is immediately obtained both in heating and cooling.

⚠ After reaching the desired room temperature, select a different function to increase the thermal and acoustic comfort.

14.12 Key lock

To set-up the key locking

- press both keys − + for 10 seconds
  The text appearing on the display.

⚠ All settings are inhibited by the user.

⚠ Repeat the sequence to unlock the control.

14.13 Reduce brightness to minimum

To reduce the display brightness

- with thee display off, press the + key for 5 seconds
  The text appearing on the display.
- press the − key to decrease the value
- wait 20 seconds
  The brightness is reduced.

⚠ After 20 seconds from the last action the panel brightness will be reduced to increase the comfort during night use. On the display will appear only the room temperature.

14.14 Deactivation

To deactivate the display

- press the key for about 2 seconds
  All the light signals go off.

⚠ In stand-by mode, the control guarantees antifreeze protection.

14.15 Room temperature probe offset adjustment

To adjust the room temperature probe offset

- from display off, press the — key for about 5 seconds
  Access to the variation menu of the AIR probe offset displayed on the display.
- press the — + keys to edit
  T*he displayed value change.*

⚠ Since the room temperature probe is located at the bottom of the unit, it is possible that in some cases the measurement may differ from the actual temperatura.

⚠ Use this adjustment carefully.

⚠ This adjustment must be carried out only after having found actual deviations from the room temperature using a reliable tool.

⚠ Adjust the value in a range of - 9/+ 12, at variations of 0.1 °C.

⚠ After 20 seconds from the last action the control goes out and the settings is memorized.

14.16 WiFi network On, Off and Reset

To activate the WiFi network

- from the display on, press the key for about 10 seconds
  T*he text "On" appearing on the display*.
- do not touch any keys for another 10 seconds
  T*he WiFi network is active and remains visible and usable with the last configured name.*

To reset and restore the WiFi network to its original configuration

- from the display on, press the key for about 10 seconds
  T*he text "On" appearing on the displa*y.
- press again the key
  The *text "rSt" appearing* on the display.
- do not touch any keys for another 10 seconds, switch off and on the power supply of the control.
  WiF*i network is re*set.

To turn off the WiFi network

- from the display on, press the key for about 10 seconds
  The *text "On" appearing* on the display.
- press again the key again until "OFF" appears
  The t*ext "OFF" appe*aring on the display.
- do not touch any keys for another 10 seconds
  The W*iFi network is turned off and will not be displayed on your smartphone o*r tablet.

14.17 Switching off for long periods

For seasonal shutdowns or for long periods:

- disable the device
- set the main system switch to Off

⚠ The antifreeze function is not on.

14.18 Visualization of alarms on display

Displayed alarms

- ⚠ E1 Room temperature probe disconnected or faulty
  None *of the mode*s can be activated.
- ⚠ E2 Fault or connection of a remote double room sensor on one of the fan coil units
  None *of the mo*des can be activated.
- ⚠ E3 Humidity probe disconnected or faulty
  None *of the modes* can be activated.
- ⚠ E4 Air quality probe disconnected or faulty
  None *of the modes* can be activated.

15. MAINTENANCE

Periodic maintenance is essential to keep the fan coil always efficient, safe and reliable over time. It must be done at least once a year by a qualified service engineer Service.

15.1 Cleaning the outside

⚠ Before every cleaning and maintenance intervention, disconnect the appliance from the mains by switching off the master switch.

⚠ Wait until the parts have cooled down to avoid the risk of burns.

⚠ Do not use abrasive sponges or abrasive or corrosive detergents to avoid damaging the painted surfaces.

When necessary, clean the outer surfaces of the cooler-convector with a soft cloth damp cloth.

15.2 Cleaning air suction filter

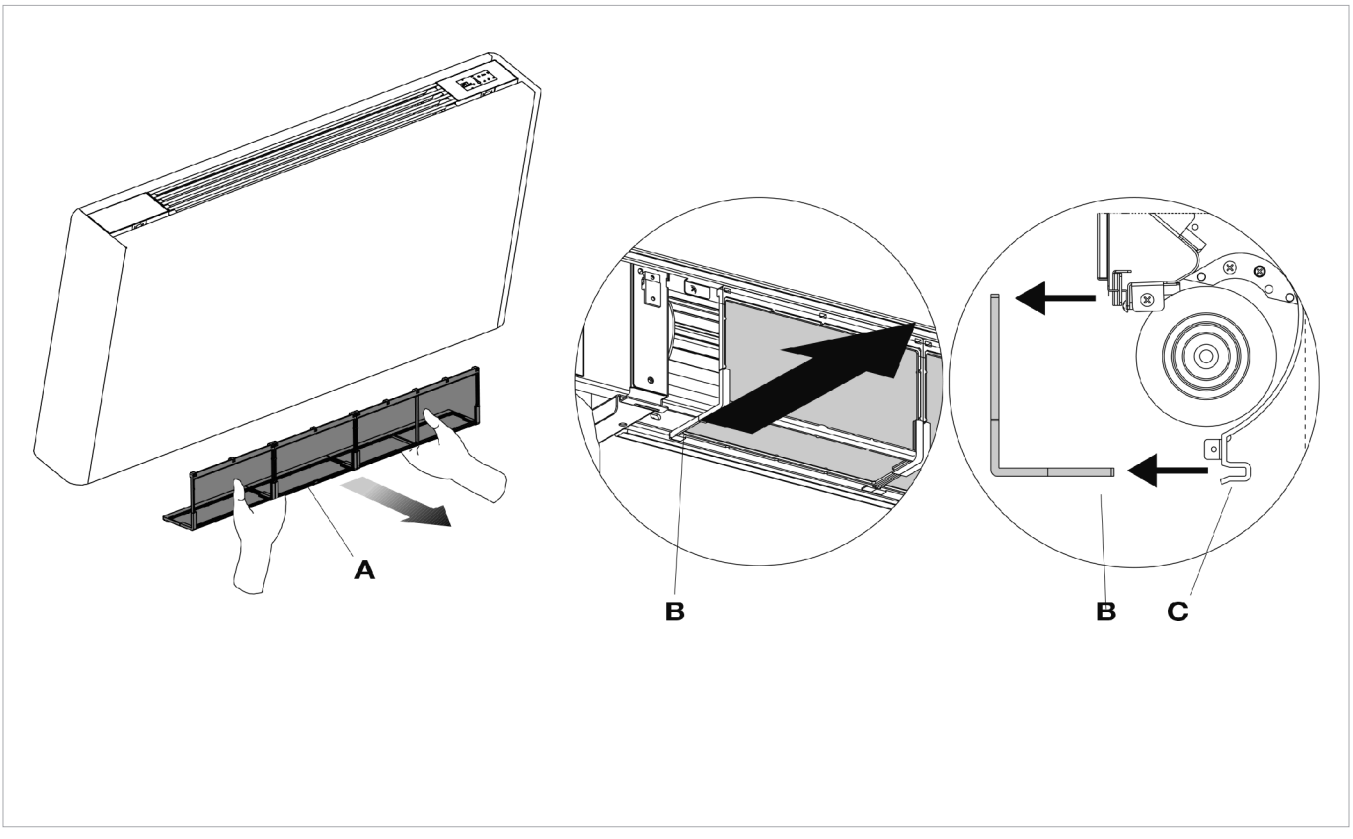
After a period of continuous operation and in consideration of the concentration of impurities in the air, or when he intends to restart the plant after a period of inactivity, proceed as described. The periodicity is twice yearly in normally clean environment.

Extraction of filter cells

- Extract the filter, pulling it horizontally outwards.

A	Filter
B	Lower edge

C	Filter housing



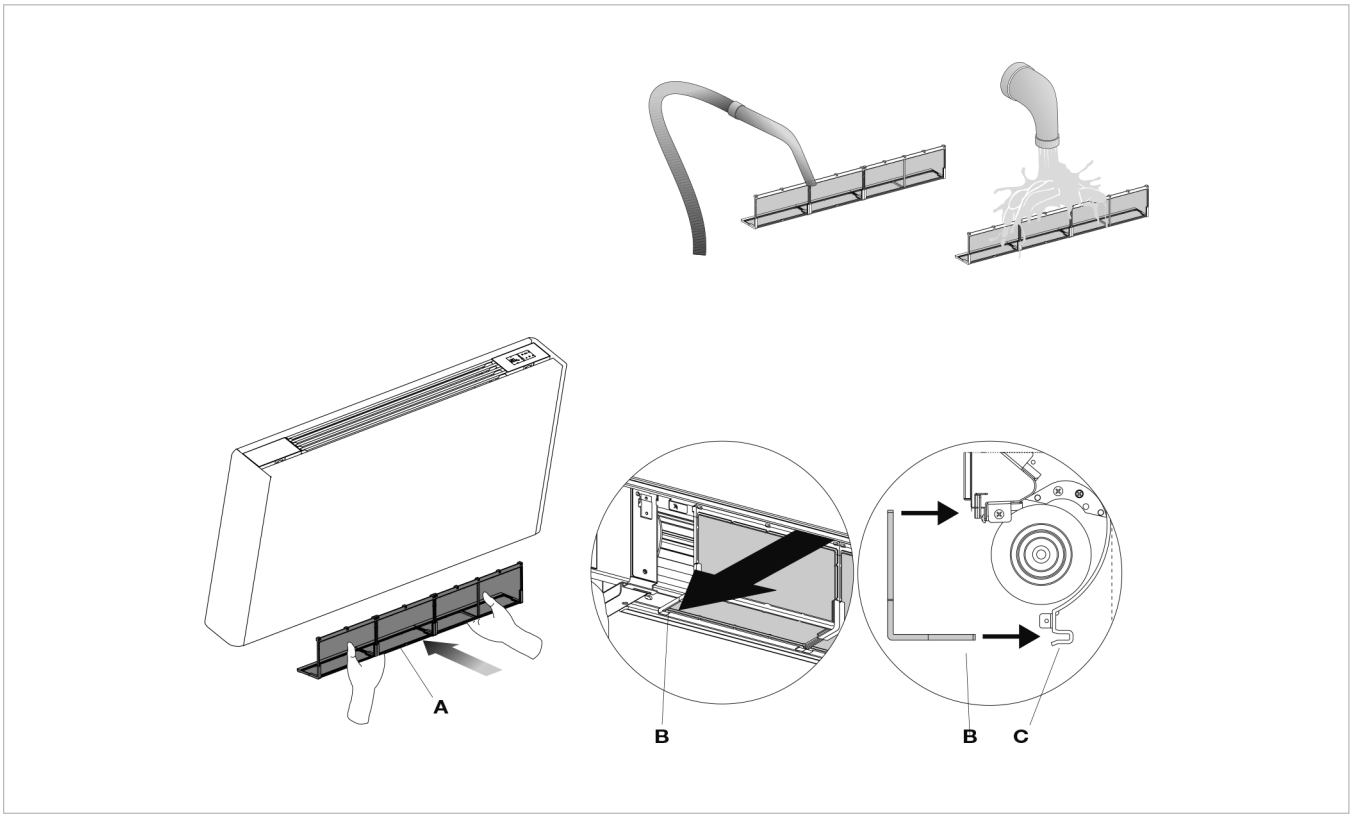
Cleaning filtering seats

- Suck up the powder with a vacuum cleaner
- Wash the filter with running water without using detergents or solvents, and leave to dry.
- Remount the filter on the cooler-convector, taking care to insert the lower flap into its seat.

⛔ It is forbidden to use the unit without the net filters.
⚠ After finishing the cleaning of the filter, check that the panel is mounted correctly.

A	Filter
B	Lower edge

C	Filter housing



15.3 Energy saving tips

- Always keep the filters clean;
- When far possible, keep the doors and windows closed in the room being conditioned;
- Limit where possible the effect of direct sun rays in the rooms being conditioned (use curtains, shutters etc.)

16. TROUBLESHOOTING

⚠ In case of water leaks or anomalous functioning immediately cut off the power supply and close the water taps.
⚠ Should one of the following anomalies occur, contact Technical Service Assitant or an authorised qualified person, but do not intervene personally.

- The ventilation does not activate even if there is hot or cold water in the hydraulic circuit.
- The appliance leaks water during the heating function.
- The appliance leaks water only during the cooling function.
- The appliance makes an excessive noise.
- There are formations of dew on the front panel.

16.1 Table of anomalies and remedies

Out of warranty repairs and maintenance can be performed by Technical Service Assitant or by qualified personnel.

EFFECT	CAUSE	REMEDY
A delayed activation of the ventilation respect to the new temperature or function settings.	The circuit valve needs some time to open and as a result the hot or cold water takes time to circulate in the appliance.	Wait for 2 or 3 minutes to open the circuit valve.
The appliance does not activate the ventilation.	No hot or cold water in the system.	Check that the water boiler or cooler are functioning correctly.
The ventilation does not activate even if there is hot or cold water in the hydraulic circuit.	The hydraulic valve remains closed	Dismount the valve body and check if the water circulation is restored.
		Check the working efficiency of the valve by powering it separately with 230V. If it activates the problem could be the electronic control.
	The fan motor is blocked or burnt out.	Check the windings of the motor and thefree rotation of the fan.
	The micro-switch that stops the ventilation when the filter grill is opened does not close correctly.	Check that by closing the grill the micro-switch contact is activated.
	The electrical connections are not correct.	Check the electrical connections.
The appliance leaks water during the heating function.	Leaks in the hydraulic connections of the system.	Check the leak and fully tighten the connections.
	Leaks in the valve unit.	Check the state of the gaskets.
There are formations of dew on the front panel.	Thermal insulation unstuck.	Check the correct positioning of the thermoacoustic insulation paying attention to that in the front above the finned battery.
There are drops of water on the air outlet grill.	In situations of high humidity (>60%) condensation could form, especially at the minimum ventilation speeds.	As soon as the humidity starts falling the phenomenon disappears. In any case the presence of a few drops of water in the appliance does not indicate a malfunction.
The appliance leaks water only during the cooling function.	The condensation bowl is blocked.	Slowly pour a bottle of water in the low part of the battery to check the drainage; if necessary, clean the bowl and/or increase the inclination of the drainage pipe.
	The condensation discharge does not need an inclination for correct drainage.	
	The connection pipes and the valve unit are not insulated well.	Check the insulation of the pipes.
The appliance makes a strange noise.	The fan touches the structure.	Check the clogging of filters and clean them if necessary.
	The fan is unbalanced.	The unbalancing causes excessive vibrations of the machine; replace the fan.
	Check the clogging of filters and clean them if necessary.	Clean the filters.

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This instruction booklet is made of ecological paper.