

CSRN-iY

20.2 - 56.4



**Manual for installation,
use and maintenance**



16127160008766-E 03-2026

Keep this manual with the wiring diagram in an accessible place for the operator, for future reference.

Dear Customer,

We congratulate you on choosing this product.

Clivet has been working for years to offer systems able to assure the maximum comfort for a long time with highly-reliable, efficient, high-quality and safe solutions.

The target of the company is to offer advanced systems, that assure the best comfort and reduce energy consumption as well as the installation and maintenance costs for the entire life-cycle of the system.

With this manual, we want to give you information that is useful for all phases: from reception, installation and use to disposal - so that such an advanced system can provide the best performances during installation and use.

Best regards and have a good read.

CLIVET Spa

The original instructions are written in Italian.

All other languages are translations of the original instructions.

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1. Safety considerations

1.1 Safety

Operate in compliance with safety regulations in force.

To carry out the operations use protection devices:

gloves, goggles, helmet, headphones, protective knee pads.

All operations must be carried out by personnel trained on possible risks of a general nature, electrical and deriving from operating with equipment under pressure.

Only qualified personnel can operate on the unit, as required by the regulation in force



BEFORE ANY WORK READ:

⚠ Chapter. SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32



PAY PARTICULAR ATTENTION TO:

⚠ warnings / prohibitions / danger indicating particularly important operations or information, operations that cannot be done, which compromise the functionality of the unit or which may cause damage to things or persons.

1.2 Manual

The manual provides correct unit installation, use and maintenance.

It is advisable to read it carefully so you will save time during operations.

Follow the written indications so you will not cause damages to things and injuries people.

1.3 Risk situations

The unit has been designed and created to prevent injuries to people.

During designing it is not possible to plane and operate on all risk situation.

Read carefully “Residual risk” section where all situation which may cause damages to things and injuries to people are reported.

Installation, starting, maintenance and repair required specific knowledge; if they are carried out by inexperienced personnel, they may cause damages to things and injuries people.

1.4 Intended use

Use the unit only:

- civil air-conditioning

keep to the limits foreseen in the technical schedule and in this manual

The manufacturer accepts no responsibility if the equipment is used for any purpose other than the intended use.

1.5 Installation

Outdoor installation

The positioning, hydraulic system, refrigerating, electrics and the ducting of the air must be determined by the system designer in accordance with local regulations in force.

Follow local safety regulations.

Verify that the electrical line characteristics are in compliance with data quotes on the unit serial number label.

1.6 Maintenance

Plan periodic inspection and maintenance in order to avoid or reduce repairing costs.

Turn the unit off before any operation.

1.7 Modification

All unit modifications will end the warranty coverage and the manufacturer responsibility.

1.8 Breakdown/Malfunction

Disable the unit immediately in case of breakdown or malfunction.

Contact a certified service agent.

Use original spares parts only.

Using the unit in case of breakdown or malfunction:

- voids the warranty
- it may compromise the safety of the unit
- it may increase time and repair costs

1.9 User training

The installer has to train the user on:

- Start-up/shutdown
- Set points change
- Standby mode
- Maintenance
- what to do / what not to do in case of alarm

1.10 Data update

Continuous product improvements may imply manual data changes.

WARNING

 **This product contains fluorinated greenhouse gases covered by the Kyoto protocol.**

 **Do not discharge gas into the atmosphere**

Visit manufacturer web site for updated data.

2. Indications for the User

Keep this manual with the wiring diagram in an accessible place for the operator.

Note the unit data label so you can provide them to the assistance centre in case of intervention (see “Unit identification” section).

Provide a unit notebook that allows any interventions carried out on the unit to be noted and tracked making it easier to suitably note the various interventions and aids the search for any breakdowns.

2.1 In case of breakdown or malfunction

Immediately deactivate the unit

Contact a service centre authorized by the manufacturer

2.2 The installer must train the user, particularly on:

- Start-up/shutdown
- Set points change
- Standby mode
- Maintenance
- What to do / what not to do in case of breakdown

The installer must deliver the manual and wiring diagram to the User.

2.3 Unit identification

The serial number label is positioned on the unit and allows to identify all the unit features.

The matriculation plate shows the indications foreseen by the standards, in particular:

- unit type
- serial number (12 characters)
- year of manufacture
- wiring diagram number
- electrical data
- type of refrigerant
- refrigerant charge
- manufacturer logo and address

The matriculation plate must never be removed.

2.4 Serial number

It identifies uniquely each unit.

Must be quoted when ordering spare parts.

2.5 Assistance request

Note data from the serial number label and write them in the chart on side, so you will find them easily when needed.

3. Information on refrigerant gas

WARNING

⚠ This product contains fluorinated greenhouse gases covered by the Kyoto protocol.

⚠ Do not discharge gas into air.

Refrigerant type: R32

Characteristics of R32 refrigerant:

- minimum environmental impact thanks to the low Global Warming Potential GWP
- low flammability, class A2L according to ISO 817
- low combustion speed
- low toxicity

The refrigerant quantity is indicated on the unit plate

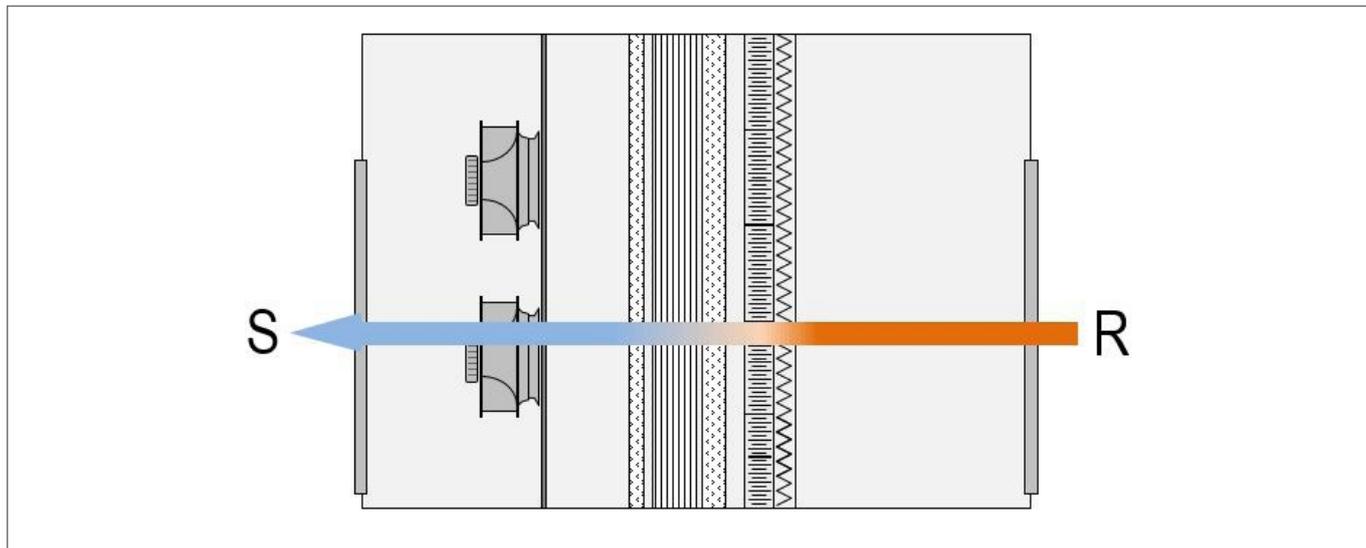
Size	Configuration	Refrigerant (kg)	Equivalent CO ² tons
20.2	CAK / CBK / CBK-G	8 + 8	10,8
	CCK REVO	9,5 + 9,5	12,8
28.2	CAK / CBK / CBK-G	9 + 9	12,2
	CCK REVO	11 + 11	14,9
40.4	CAK / CBK / CBK-G	19 + 19	25,7
	CCK REVO	20 + 20	27
56.4	CAK / CBK / CBK-G	21 + 21	28,4
	CCK REVO	22 + 22	29,7

Physical characteristics of the R32 refrigerant		
Safety class (ISO 817)	A2L	
GWP	675	
LFL Low flammability limit	0.307	kg/m ³ @ 60°C
BV Burning velocity	6,7	cm/s
Boiling point	-52	°C
GWP	675	100 yr ITH
GWP	677	ARS 100 yr ITH
Self-ignition temperature	648	°C

4. Configuration

4.1 CAK configuration

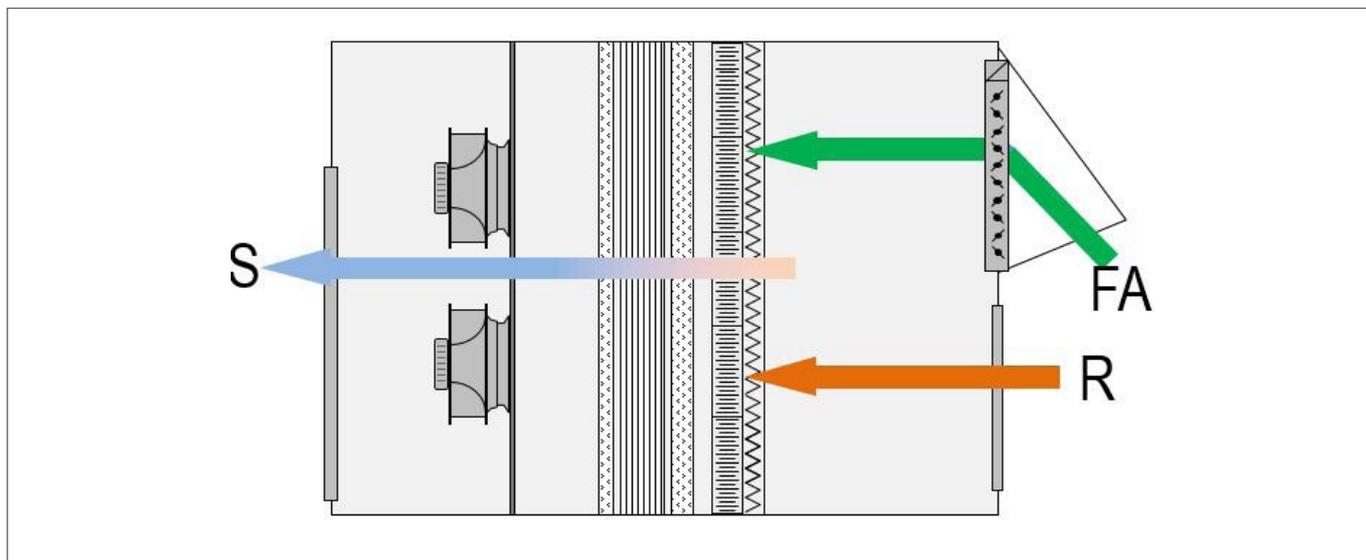
Single fan section for full recirculation



R Return air
S Supply air

4.2 CBK configuration

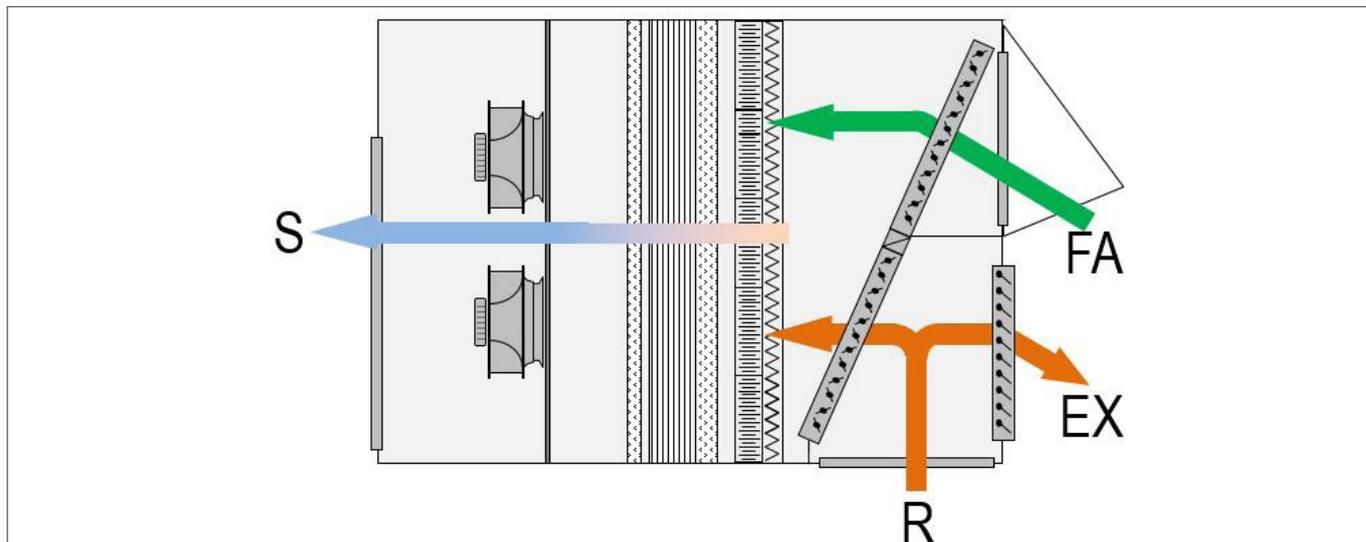
Single fan section for recirculation and fresh air



R Return air
S Supply air
FA Fresh air

4.3 CBK-G configuration

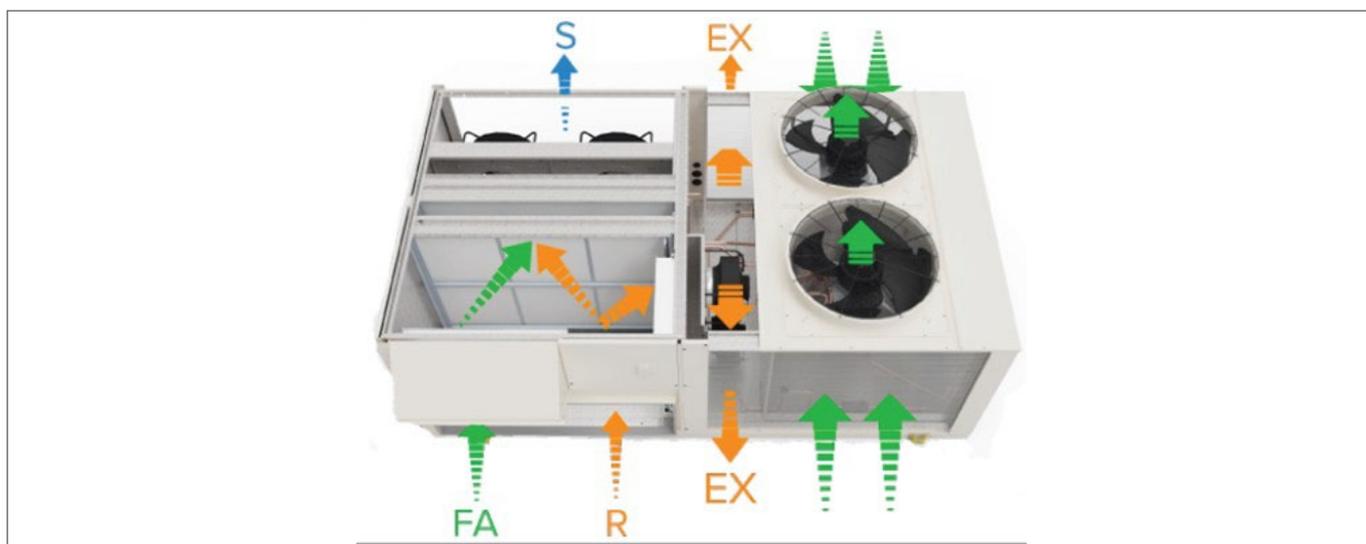
Single fan section for recirculation, fresh and exhaust air



- R Return air
- S Supply air
- FA Fresh air
- EX Exhaust air

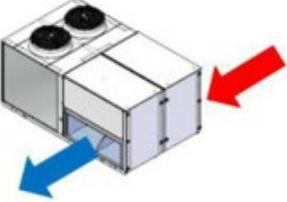
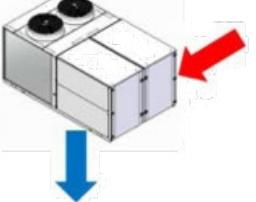
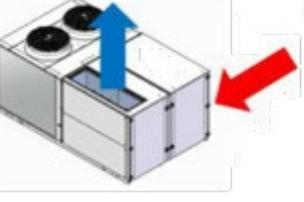
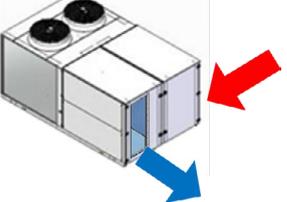
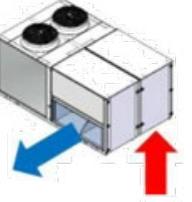
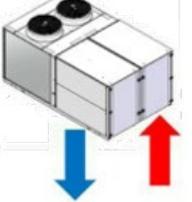
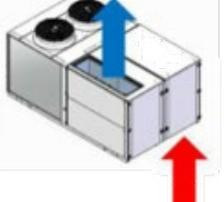
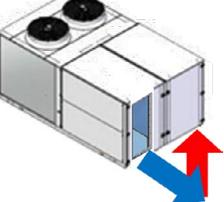
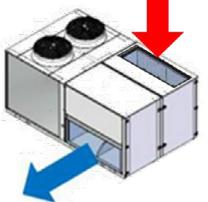
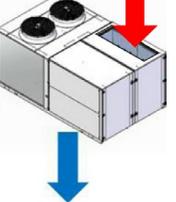
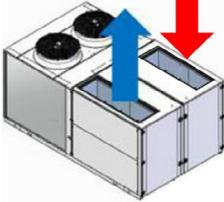
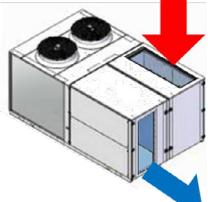
4.4 CCK-REVO configuration

Double fan section with fresh air and REVO thermodynamic recovery



- R Return air
- S Supply air
- FA Fresh air
- EX Exhaust air

Supply and return configuration

M0 - R0	M3 - R0	M5 - R0	ML (1) - R0
Standard unit	Option	Option	Option
			
M0 - R3	M3 - R3	M5 - R3	ML (1) - R3
Option	Option	Option	Option
			
M0 - R5	M3 - R5	M5 - R5	ML (1) - R5
Standard unit	Option	Option	Option
			

Filters nomenclature according to EN ISO 16890

1° filtering stage - standard	G4	ISO 16890 Coarse 60%
2° filtering stage - option	F7	ISO 16890 ePM1 55%
2° filtering stage - option	F9	ISO 16890 ePM1 80%
2° filtering stage - option	iFD (electrostatic filters)	ISO 16890 ePM1 90%

5. Before installation

5.1 Safety

Operate in compliance with safety regulations in force.

For detailed information (dimensions, weight, technical characteristics etc.) please refer to the TECHNICAL INFORMATION section.

Use single protection devices: gloves, glasses etc.

5.2 Reception

You have to check before accepting the delivery:

- That the unit hasn't been damaged during transport
- That the materials delivered correspond with that indicated on the transport document comparing the data with the identification label positioned on the packaging.

In case of damage or anomaly:

write down on the transport document the damage you found and quote this sentence: "Conditional acceptance clear evidence of deficiencies/damages during transport"

Contact by fax and registered mail with advice of receipt to supplier and the carrier.

WARNING

- ⚠ **Any disputes must be made within 8 days from the date of the delivery. Complaints after this period are invalid .**

5.3 Storage

Respect the indications on the outside of the pack.

In particular:

- minimum ambient temperature -10 °C (possible components damages)
- maximum ambient temperature +50 °C (possible safety valve opening)
- maximum relative humidity 95% (possible damage to electrical components)

WARNING

- ⚠ **The unit may not be tilted more than 15° during transport.**

5.4 Removal of packaging

Be careful not to damage the unit.

Recycle and dispose of the packaging material in compliance with local regulations.

5.5 Handling

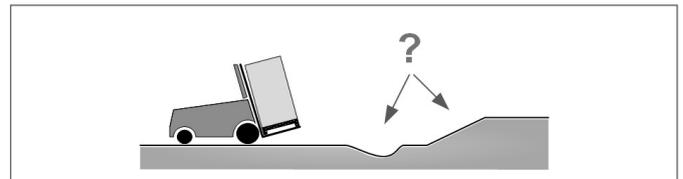
WARNING

- ⚠ **Check that all handling equipment complies with local safety regulations (crane, forklifts, ropes, hooks, etc.).**
- ⚠ **Provide personnel with personal protective equipment suitable for the situation, such as helmet, gloves, accident-prevention shoes, etc.**
- ⚠ **Observe all safety procedures in order to guarantee the safety of the personnel present and the material.**

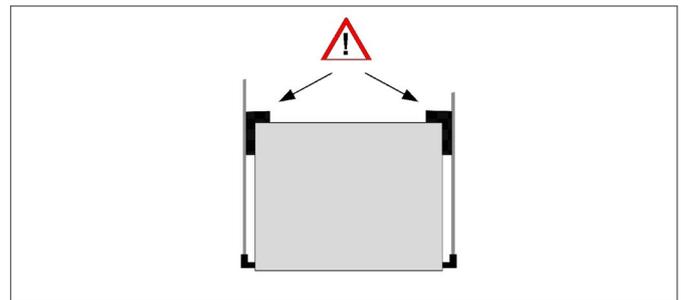
5.6 Lifting



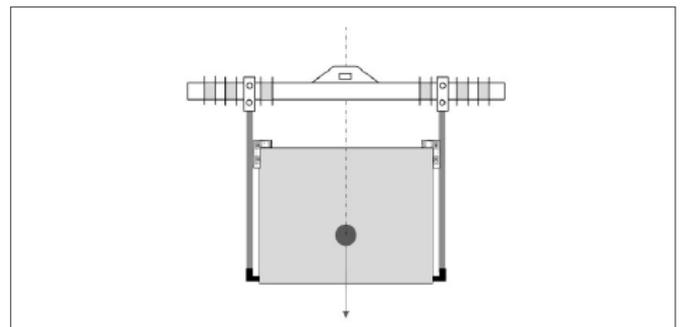
Verify unit weight and handling equipment lifting capacity.



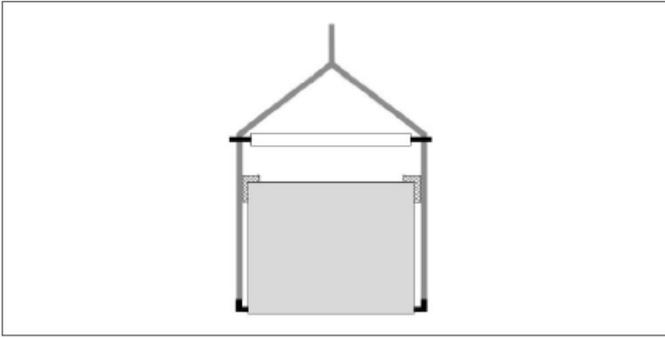
Identify critical points during handling (disconnected routes, flights, steps, doors).



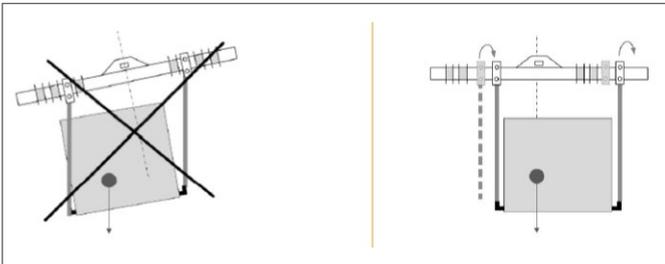
Suitably protect the unit to prevent damage.



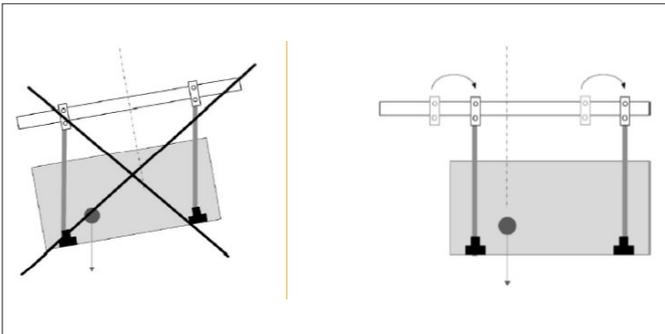
Lifting with balance



Lifting with spacer bar



Align the barycenter to the lifting point



Gradually bring the lifting belts

Before starting the handling, make sure that the unit is stable.

6. Selecting the installation site

6.1 Positioning

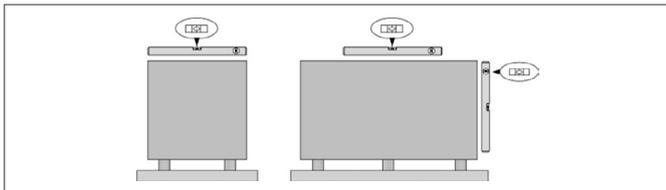
WARNING

⚠ Installation must be in accordance with local regulations. If they do not exist, follow EN378 .

During positioning consider these elements:

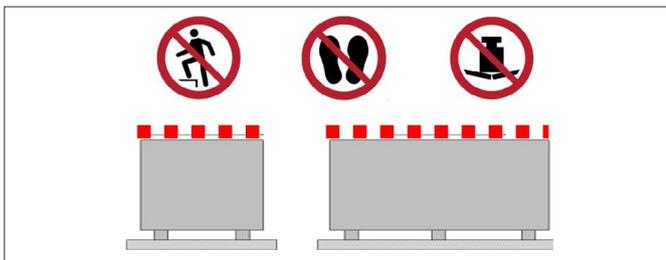
- customer approval
- unit weight and bearing point capacity
- safe accessible position
- functional spaces
- spaces for the air intake/exhaust
- electrical connections
- max. distance allowed by the electrical connections
- water connections

The unit must be level



Do not go up to the surface

Not placing heavy objects



6.2 Functional spaces

Functional spaces are designed to:

- guarantee good unit operation
- carry out maintenance operations
- protect authorized operators and exposed people

⚠ **Respect all functional spaces indicated in the TECHNICAL INFORMATION section.**

6.3 Positioning

Units are designed to be installed:

- EXTERNAL
- in fixed positions

WARNING

⚠ **Put the unit in a position where any leaking gas cannot enter buildings or stagnate in closed areas. In the latter case, observe the rules for machinery rooms (ventilation, leak detection, etc.).**

Installation standards:

- install the unit raised from the ground
- bearing points aligned and leveled
- discharged condensation water must not cause harm/danger to people and property
- the accumulation of snow must not cause clogging of the coils
- avoid installations in places subject to flooding

Limit vibration transmission:

- use anti-vibration devices or neoprene strips on the unit support points
- install flexible joints on the hydraulic and aeraulic connections

The unit must not support the weight of channels, pipes, etc.

Protect the unit with suitable fence in order to avoid access to unauthorised personnel (children, vandals, etc.)

A correct circulation of the air is mandatory to guarantee the good unit operating..

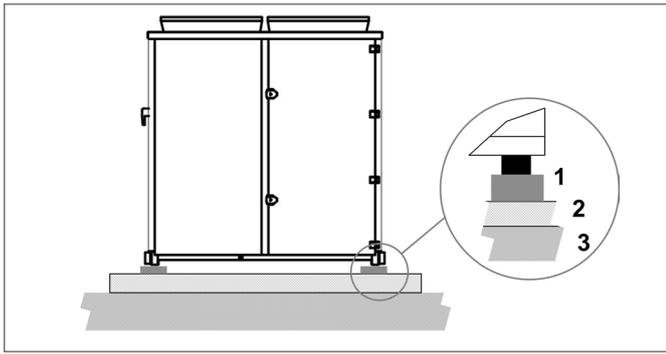
Avoid therefore:

- obstacles to the airflow
- exchange difficulties
- leaves or other foreign bodies that can obstruct the exchange batteries
- winds that hinder or favour the airflow
- heat or pollution sources close to the unit (chimneys, extractors etc)
- stratification (cold air that stagnates at the bottom)
- recirculation (expelled air that is sucked in again)
- positioning below the level of the threshold, close to very high walls, attics or in angles that could give rise to stratification or recirculation phenomenons.

Ignoring the previous indications could:

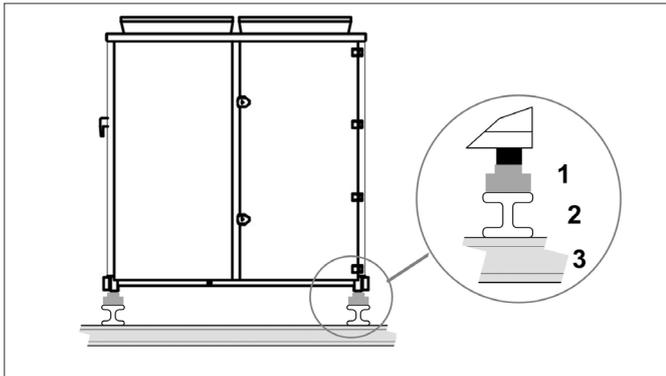
- energy efficiency decrease
- alarm lockout due to HIGH PRESSURE (in summer) or LOW PRESSURE (in winter)
- infiltrations of water in the unit and in the aeraulic system and relative entrainment

Concrete floor



- 1 2 cm thick neoprene strips
- 2 concrete floor
- 3 floor

Steel structure



- 1 2 cm thick neoprene strips
- 2 concrete floor
- 3 floor

CBK, CBK-G, CCK-REVO configurations only

Avoid the accumulations of snow and ice in front of the exhaust air outlet.

Only if iFD filter is present

The most common contaminants for which the filter is designed, are:

- air pollution by PM10, PM 2,5 and PM1

Contaminants that can be filtered:

- dry smokes
- powder (up to 0,3 microns)
- smoke electrostatically charged

CONTAMINANTS THAT CAN NOT BE FILTERED:

- ⚠ water vapors also in low concentration

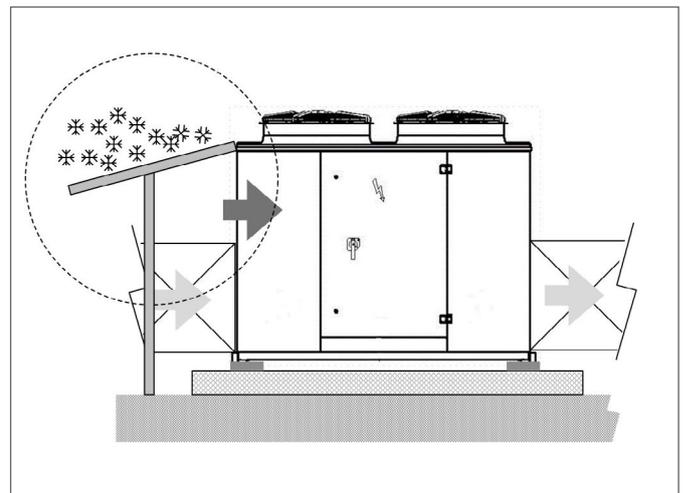
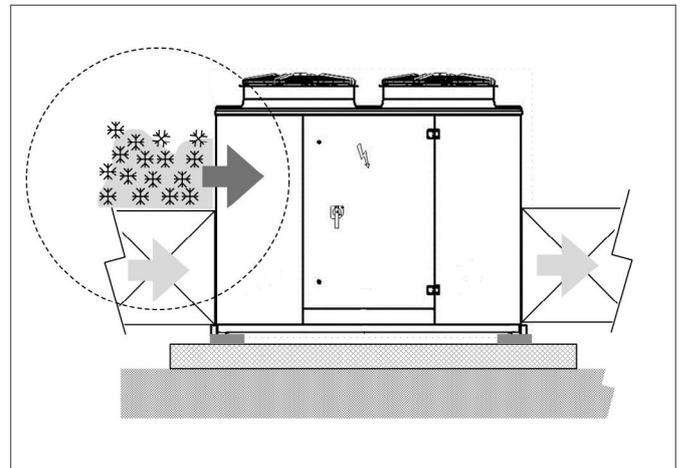
- ⚠ oil vapors
- ⚠ large amounts of dust
- ⚠ metal shavings, iron filing dusts and waste generally
- ⚠ Gas

ABSOLUTELY TO AVOID:

- ⚠ metal dusts also fine
- ⚠ fumes produced by combustion of organic and not materials (wood, coal, gasoline, etc.)

CBK, CBK-G, CCK-REVO only

Avoid snow accumulating

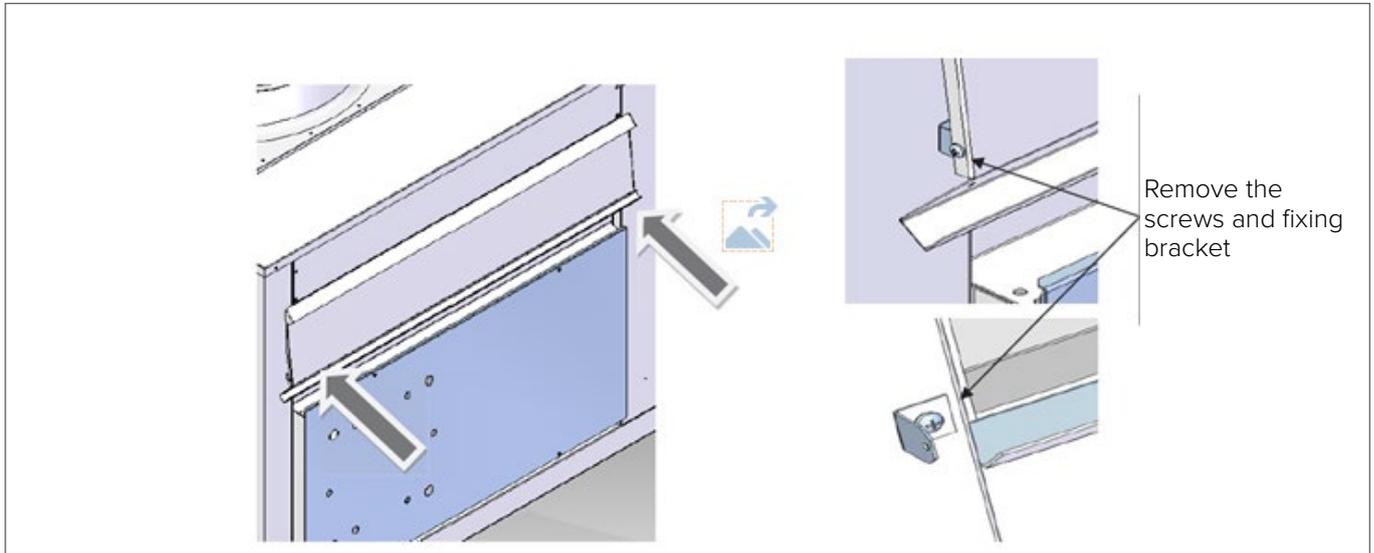


6.4 External air hood

CBK, CBK-G, CCK-REVO configurations

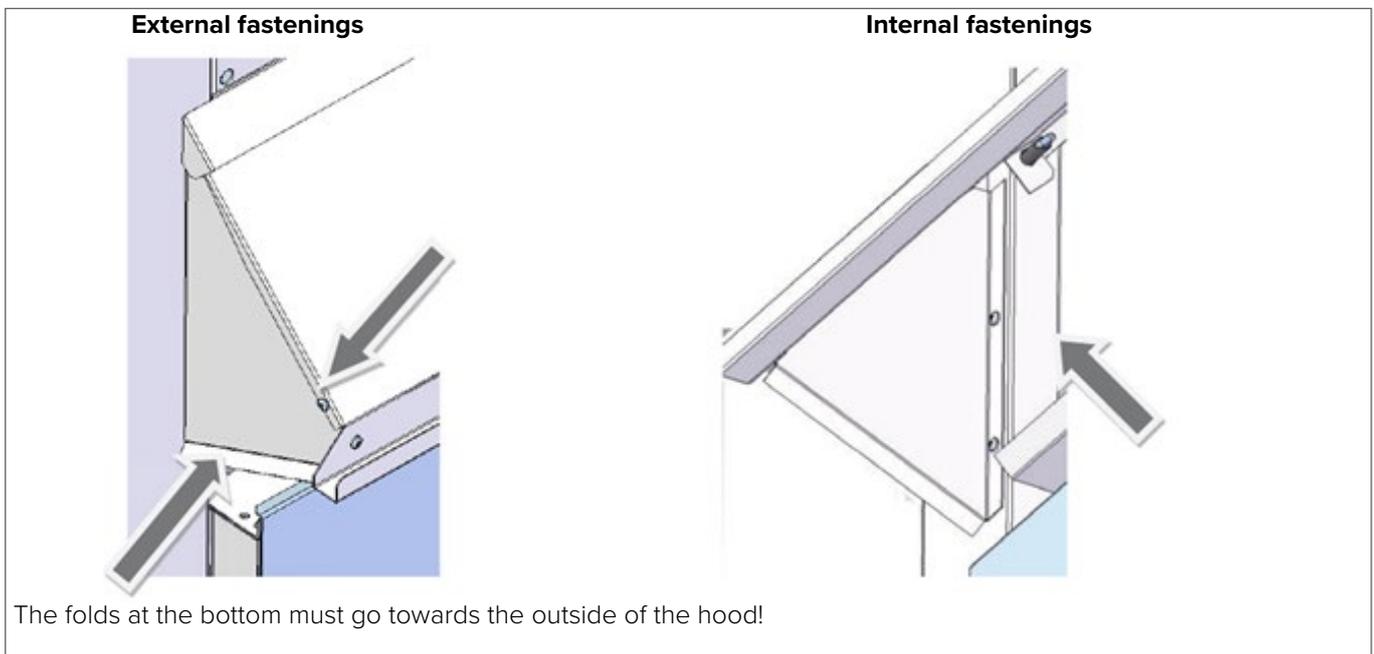
1 Open the outdoor air hood.

Inside are the RH and LH trims, AE mesh + fixing screws.



2 Fix the RH and LH trims.

Externally and internally, using the holes with the screws provided.



6.5 Gas heating module

Option

Burner with low pollutant emissions (NO_x below 80 mg/kWh), in line with Class 5 of the EN 676 European standard is supplied with a gas increase control for methane or LPG.

The heating module with burner includes:

- hot air generator powered with methane
- kit for transformation of power with liquefied petroleum gas (LPG)
- kit of steel chimney for exhaust fumes
- all the control and safety devices

⚠ The component requires gas supply (gas connections to be made by the Customer).

⚠ The location of the unit and the fume drain mode must comply with laws and standards in force in the Country of use.

⚠ The Customer may choose the flue chimney.

⚠ The Customer is responsible for mounting the chimney kit during installation.

⚠ Based on the specific installation requirements, the length of the chimney can be increased with suitable joints and fittings (not supplied by Clivet).

Gas connection

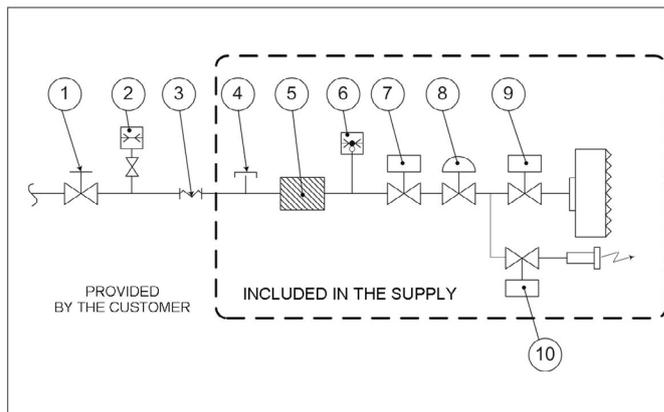
- Read the gas heating module manual.
- Connection must be carried out by qualified personnel.
- use certified components and comply with the local standards in force
- install on the gas connection: tap, large section filter and anti-vibration joint
- check the supply pressure is correct and stable, in particular where more uses are inserted on the same line.

System maintenance booklet

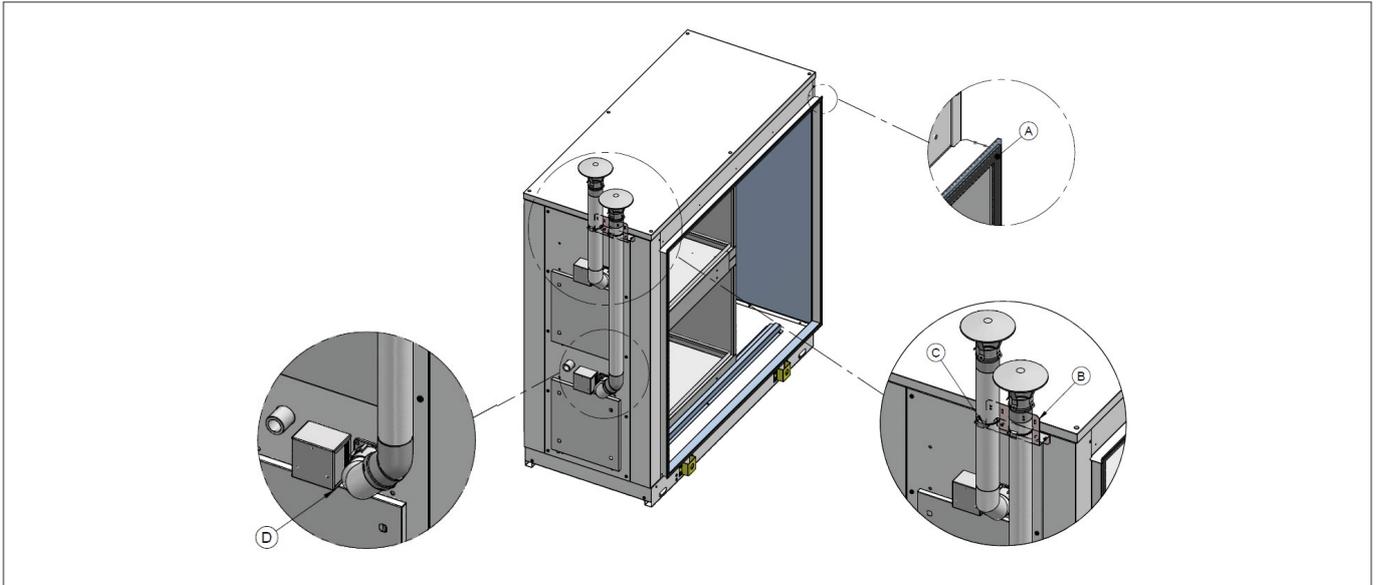
- It must be kept in the place of installation of the unit
- It must be filled-in upon commissioning
- It must be updated with the results of the periodical checks, of the routine and extraordinary maintenance interventions.

Interventions

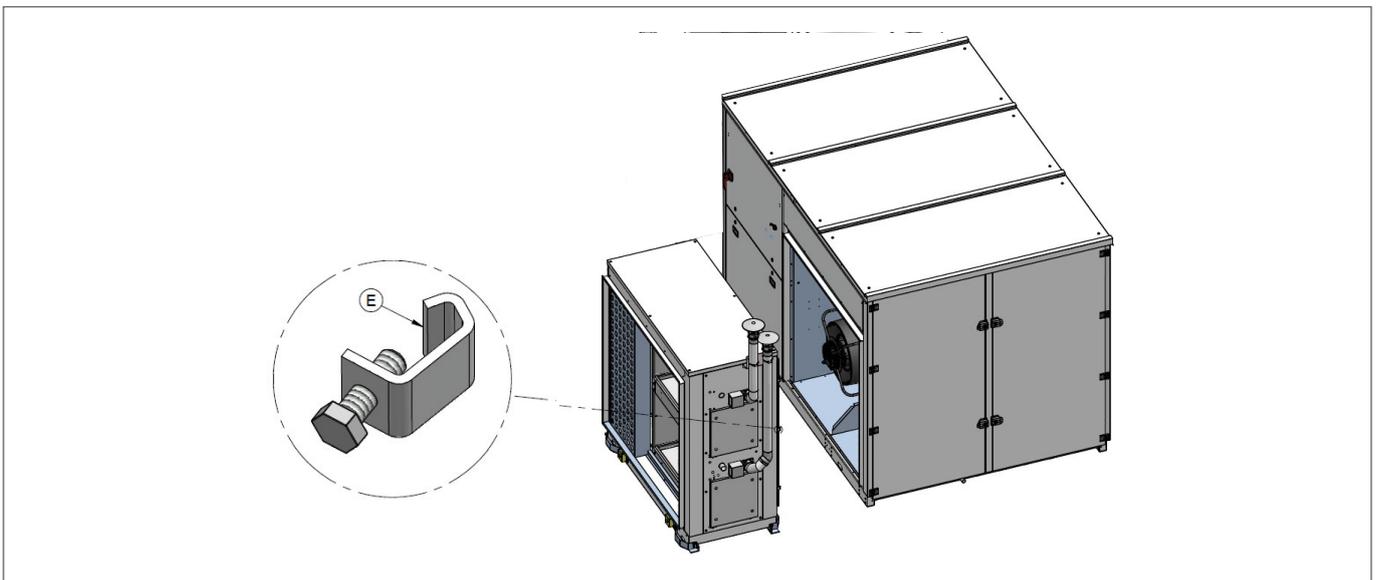
For start-up, ordinary and extraordinary maintenance of the gas module, contact the local technical assistance of the manufacturer of the gas module.



- 1 Gas shut off valve
- 2 Gas filter (large section)
- 3 Anti-vibration joint
- 4 Gas filter (small section)
- 5 Safet gas solenoid valve
- 6 Pressure stabiliser
- 7 Main gas burner solenoid valve
- 8 Pilot burner gas solenoid valve



- A** Apply the flat adhesive gasket 15x5 on the Gas Module flange perimeter to guarantee the absence of air bypass.
- B** Fix with screws the flue supporting bracket to the GM frontal panel
- C** Fix the extensions with clamps to the flue supporting bracket
- D** Fix the suction terminals in ambient and the fuel components (curves, extensions, terminals) by the corresponding gaskets



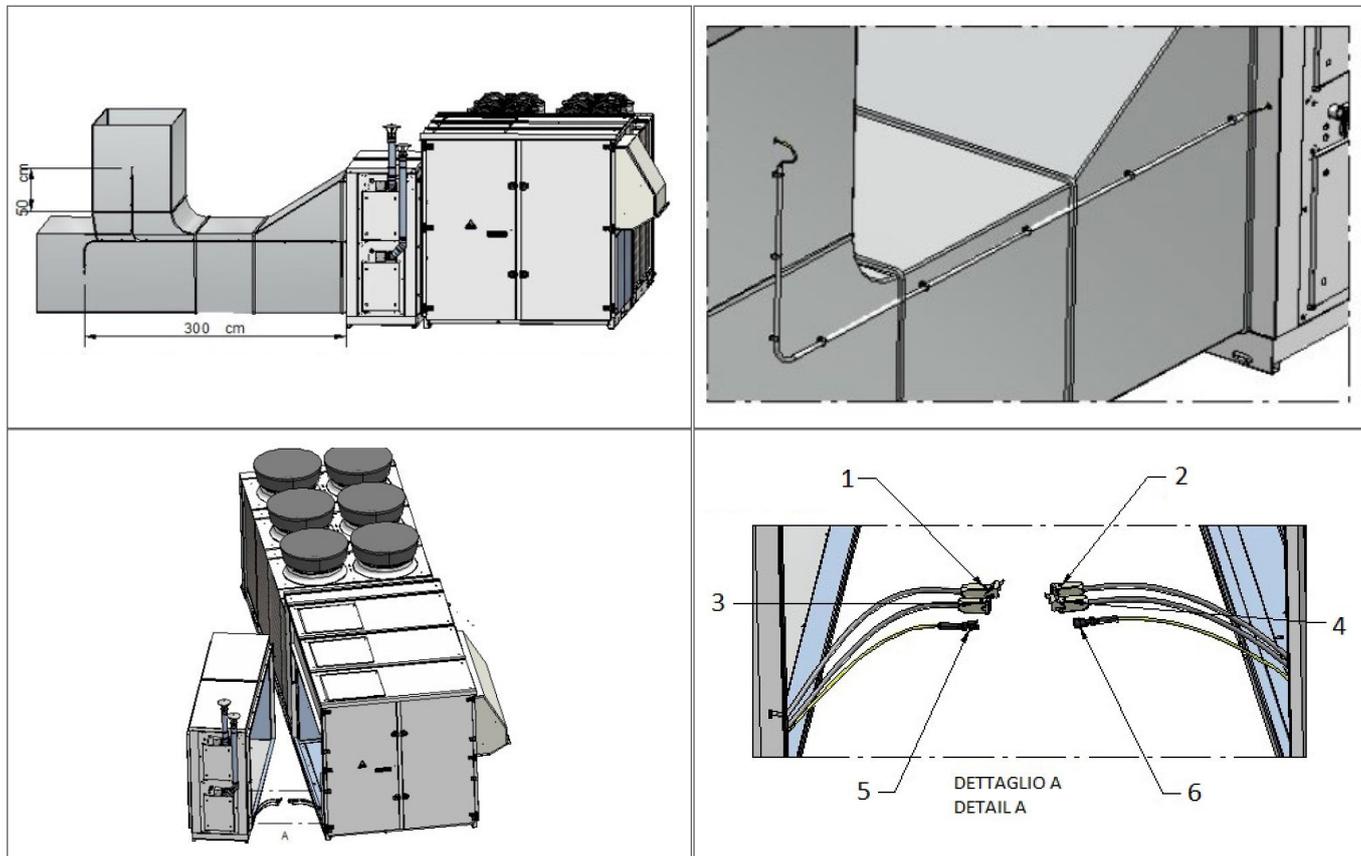
- 1** remove the unit supply flange closing.
- 2** approach the unit to the Gas Module.
- 3** match the supply flanges by means of the supplied terminals.
- 4** tighten screws
- 5** guarantee the absence of air bypass

Connections performed by customer

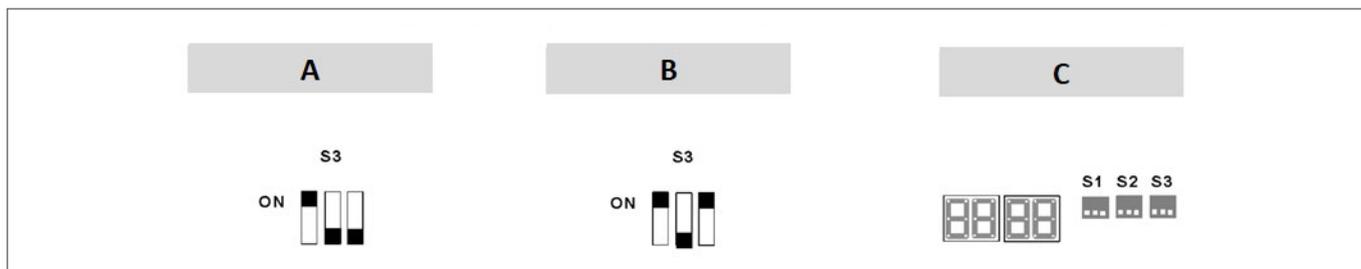
For a correct reading of the flow temperature, install the BT2-TC flow probe at 300cm from the gas module, in the case of a straight section of the duct, or at least 50 cm after the first curve, so that the air temperature is mixed properly.

Install the probe inside a plastic or metal tube to support, repair and ensure safety from bad weather or during maintenance

Inside the treatment area and the gas module there are the interfacing cables between the unit and the gas module (detail A)



- 1 Gas module connection cable 1 CGASP
- 2 Gas module connection cable 1 CGASP
- 3 Gas module connection cable 2 CGASP
- 4 Gas module connection cable 2 CGASP
- 5 Delivery probe BT2 or TC



The gas burner does NOT work with the heat pump

The gas burner CAN work with the heat pump

Main board: DIP SWITCH

Gas use features

Description		35kW		44kW		65kW		82kW		100kW		130kW		160kW	
		min	max	min	max	min	max								
Rated heating capacity	kW	7,6	34,8	8,5	41	12,4	65	16,4	82	21	100	12,4	130	16,4	164
Efficiency Hi (P.C.I.)	%	107	96,3	105,9	96,2	108,1	96,8	108,4	97,6	108,4	97,2	108,1	96,8	108,4	97,6
Efficiency Hs (P.C.S.)	%	96,4	86,8	95,4	86,7	97,4	87,2	97,6	87,9	97,8	87,5	97,4	87,2	97,6	87,9
Max condensation produced	l/h	0,9		1,1		2,1		3,3		2,7		4,2		6,6	
Carbon monoxide CO (0% di (0% di O ₂))	ppm	<5		<5		<5		<5		<5		<5		<5	
Nitrogen oxides - NOx (0% di O ₂)		42 mg / kWh 24 ppm		33 mg / kWh 19 ppm		39 mg / kWh 22 ppm		32 mg / kWh 18 ppm		41 mg / kWh 23 ppm		40 mg / kWh 23 ppm		34 mg / kWh 19 ppm	
Available flue pressure	Pa	120		120		120		120		120		120			
Gas connection diameter	GAS	UNI ISO 228/1 - G 3/4"		UNI ISO 228/1 - G 1 1/2"		UNI ISO 228/1 - G 1 1/2"									
Flue pipe diameter	mm	80		80		80		80		80		2 x 80		2 x 80	
Seasonal space heating energy efficiency [EU Reg./2281/2016] [η _s , h]	%	92,1		90,8		93,2		93,2		93,1		93,9		94	
Emission efficiency [EU Reg./2281/2016] [η _s flow]	%	97,3		97		97,4		97,1		97		98,1		97,9	
Power supply pressure (for gas G20)	mbar	20 [min 17 - max 25]													
Gas consumption @15°C - 1013 mbar (for G20 gas)	m ³ /h	0,8	3,69	0,9	4,44	1,31	6,88	1,74	8,68	1,9	10,58	1,31	13,76	1,74	17,36

6.6 UV-C lamps

Option

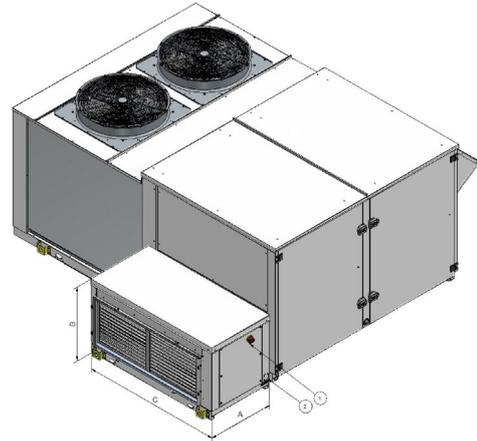
WARNING

- ⚠ **Direct radiation device: causes eye irritation and skin rashes.**
- ⚠ **Any maintenance operation must be carried out with the lamps off.**

UV-C lamps use ultraviolet radiation to purify the air from the development of bacteria, molds, fungi and viruses.

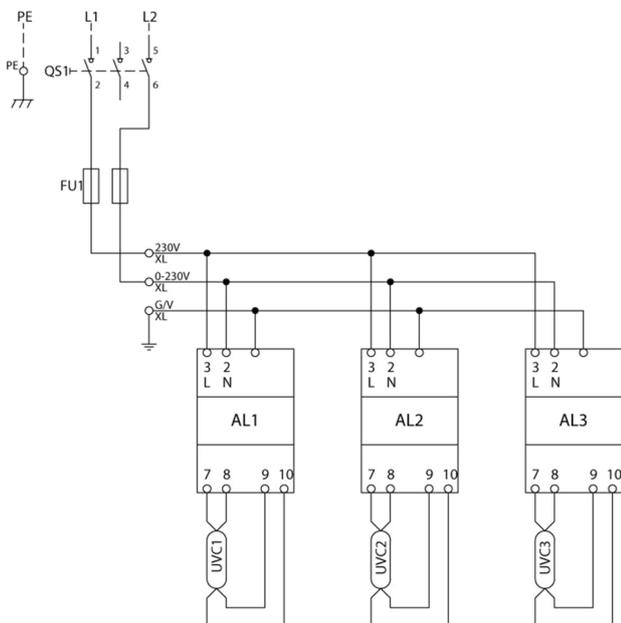
The bactericidal and virucidal action is achieved with low pressure mercury lamps through direct radiation of the air flow with rays of a wavelength of 254 nm.

The option is installed in a separate module, external to the unit, with a dedicated electrical panel and separate power supply and is activated by the machine logic when the supply fans are running.



Size	A (mm)	B (mm)	C (mm)	FLI (kW)	FLA (A)
20.2	780	773	1470	0,3	1,3
28.2	780	773	1895	0,5	2
40.4	1080	1070	1890	0,6	2,6
56.4	1080	1070	1890	0,6	2,6

Please refer to the specific diagram of the accessory.



Components legend

QS1	Sezionatore generale General disconnector Sectionneur général Allgemeiner Trennschalter Seccionador general
FU1	Portafusibile generale General fuse holder Porte-fusible général Allgemeiner Sicherungshalter Portafusibles general
AL1	Alimentatore lampada UV-C 1 UV-C lamp power supply 1 Alimentation lampe UV-C 1 Stromversorgung für UV-C-Lampe 1 Fuente de alimentación de la lámpara UV-C 1
AL2	Alimentatore lampada UV-C 2 UV-C lamp power supply 2 Alimentation lampe UV-C 2 Stromversorgung für UV-C-Lampe 2 Fuente de alimentación de la lámpara UV-C 2
AL3	Alimentatore lampada UV-C 3 UV-C lamp power supply 3 Alimentation lampe UV-C 3 Stromversorgung für UV-C-Lampe 3 Fuente de alimentación de la lámpara UV-C 3
UVC1	Lampada UV-C 1 UV-C lamp 1 Lampe UV-C 1 UV-C-Lampe 1 Lámpara UV-C 1
UVC2	Lampada UV-C 2 UV-C lamp 2 Lampe UV-C 2 UV-C-Lampe 2 Lámpara UV-C 2
UVC3	Lampada UV-C 3 UV-C lamp 3 Lampe UV-C 3 UV-C-Lampe 3 Lámpara UV-C 3

Terminals

XL	
G/V	○
0-230V	○
0-230V	○

6.7 Enthalpy wheel

Option

The enthalpy wheel allows the efficient transfer of sensitive and latent heat from the exhaust air extracted from the environment to the fresh air and vice versa, thanks to the hygroscopic treatment of the exchange surface.

The option is suitable for applications with high percentages of outdoor air and considerable difference between outdoor and indoor temperature conditions.

In free cooling mode, the wheel is stopped automatically.

The option is provided with a separate module that can be easily connected to the unit during installation.

The enthalpy wheel energy recovery module comprises:

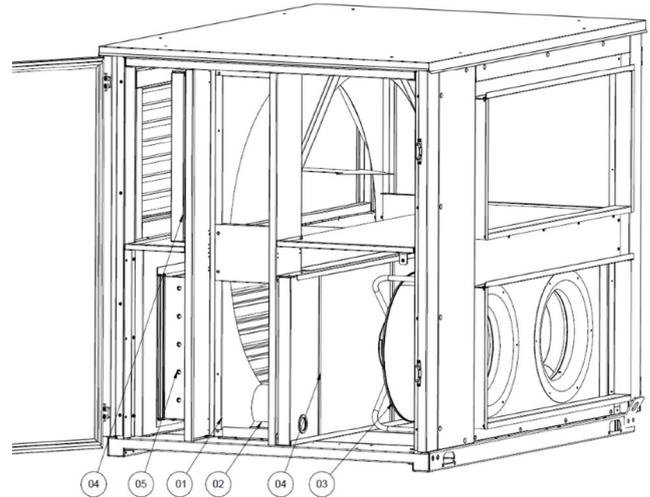
Enthalpy wheel

- Exhaust fans (RAD/EC)
- G4 filters (ISO 16890 Coarse 50%) upstream of the rotor for both flows
- Control and safety devices

The wheel fans and motor must be electrically connected to the unit's control box.

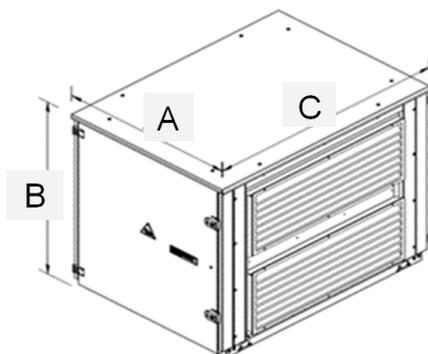
Refer to the wiring diagram for the electrical connection.

The module is only compatible with the CBK-G construction configuration and with the return section in position R3 (from below); it is also compatible with the available heat integration system.



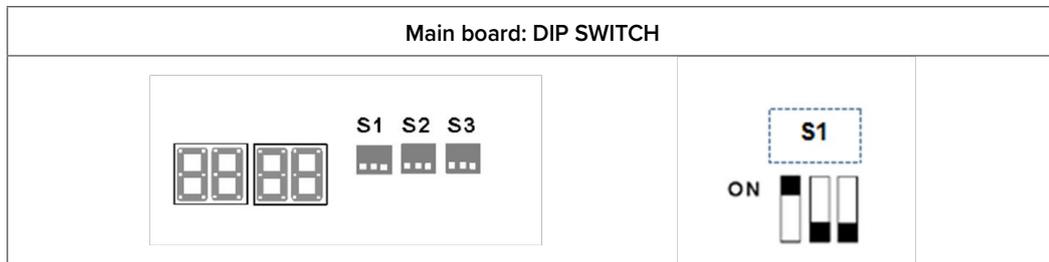
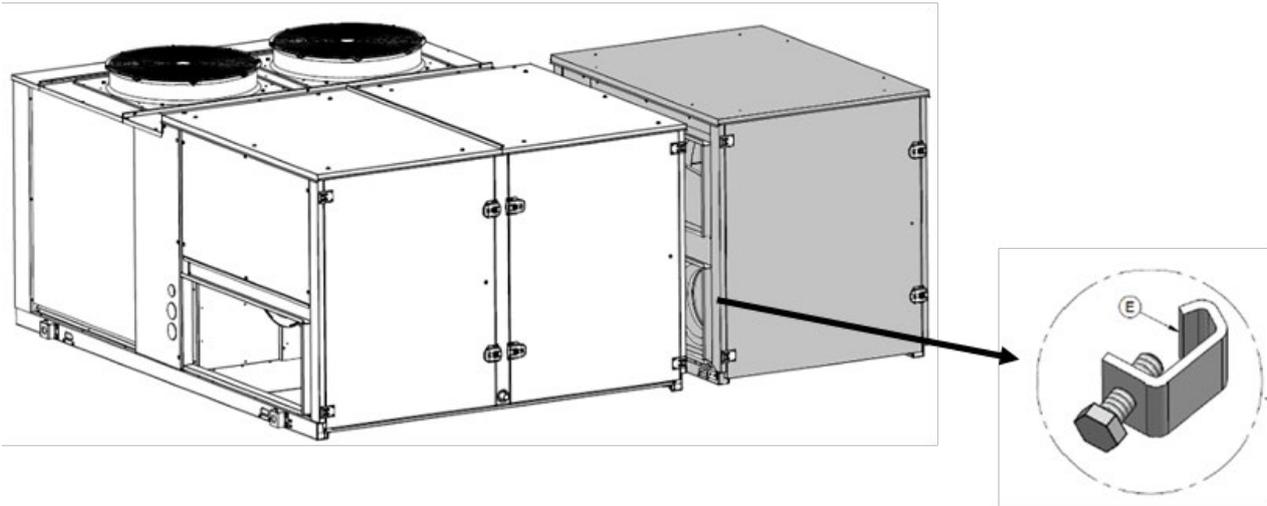
1	Enthalpy wheel
2	Enthalpy wheel motor
3	Extraction fans
4	Filters G4
5	Overpressure damper

Size	A (mm)	B (mm)	C (mm)	FLI (kW)	FLA (A)
20.2	1300	1450	1750	7,92	12,4
28.2					
40.4	1600	1885	2640	8,17	12,8
56.4					



Assembly

- 1 Remove the fasteners on the side flanges of the unit's exhaust port
- 2 Move the enthalpy wheel module closer to the unit
- 3 Electrically connect the enthalpy wheel module
- 4 Couple the flanges
- 5 Attach terminal E shown in the figure
- 6 Ensure the complete absence of air bypass

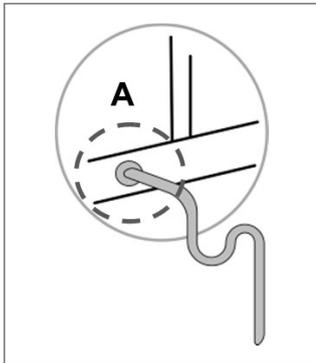


7. Water connections

Condensate drain

The condensate must be disposed in order to avoid damages to people and things.

- Unit discharge fitting: the connection must not transmit mechanical stresses and must be performed taking care not to damage the unit discharge fitting.
- The connection between the attachment and the siphon must be hermetically sealed (A)



- The piping must have adequate slope to allow out flow.
- Anchor the ducting with an adequate number of supports.. Otherwise are generated duct failures and air locks that prevent the runoff.
- Insulate the duct and the siphon to avoid the condensate drippings.
- Connect the condensate discharge to a sewerage drainage network.
- DO NOT use white water or drainage networks to avoid the aspiration of odours in the case of evaporation of water contained in the siphon.
- Check at the end of the work, the regular condensate runoff pouring some water in the tray.

The maximum vacuum in the suction chamber of the treatment fan must not exceed 700 Pa.

In the event that the system provides for a major depression, the condensate drain must be carried out in compliance with the sizing criteria indicated below.

Provide a siphon that, eliminating the negative pressure caused by the fan, prevents the air intake from the discharge duct.

Siphon height calculation

$$T = 2P$$

$$S = T/2$$

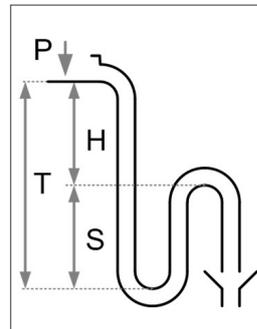
P is the pressure determined by the fan in correspondence of the condensate collection bowl (approx. 1 mm = 9.81 Pa)

Example :

$$P = 300 \text{ Pa} = 30 \text{ mm}$$

$$T = 2P = 60 \text{ mm}$$

$$S = T/2 = 30 \text{ mm}$$



7.1 Condensation in winter operation

When a heat pump is running it produces a considerable amount of water due to the defrosting cycles of the external coil.

The condensate must be disposed in order to avoid damages to people and things.

7.2 Risk of freezing

Prevent the risk of freeze if the unit, drain or plumbing connections can be subject to temperatures close to 0°C.

- isolate the piping
- protect the piping with heating cables laid underneath the insulation

7.3 Immersed electrodes humidifier

Option

The humidification function is only enabled with the unit in heating mode.

Connexion humidificateur: 1" F

Supply water

The humidifier must be supplied with mains water having the following features:

- pressure between 0.1 and 0.8 Mpa (1 – 8 bar)
- temperature between 1 and 40°C

Do not use:

- water treated with softeners: it can corrode the electrodes and form foam with possible faults/malfunctionings

- pit, industrial or potentially polluted (chemically or bacteriologically) water
- disinfectants or anti-corrosive substances mixed with water, as potentially irritating

Supplying the humidifier with water treated with reverse osmosis filtering system gives the following advantages:

- reduces limescale deposits
- reduces energy consumptions
- reduces maintenance costs
- increases humidifier duration

Check that the filter guarantees a water flow rate higher than the flow rate of the installed humidifier.

Limit values for the supply water

Respect the limits indicated in the table

No relation can be demonstrated between water hardness and conductivity.

Limit values for the supply water	conductivity		medium-low		medium-high	
			min	max	min	max
Hydrogen ions	pH		7	8,5	7	8,5
Specific conductivity at 20°C		µS/cm	125	500	300	1250
Total dissolved solids	TDS	mg/l	(1)	(1)	(1)	(1)
Dry residue at 180°C	R ₁₈₀	mg/l	(1)	(1)	(1)	(1)
Total hardness	TH	mg/l CaCO ₃	50 (2)	250	100 (2)	400
Temporary hardness		mg/l CaCO ₃	30 (3)	150	60 (3)	300
Iron + Manganese		mg/l Fe+Mn	0	0,2	0	0,2
Chlorides		ppm Cl	0	20	0	30
Silica		mg/l SiO ₂	0	20	0	20
Residual chlorine		mg/l Cl-	0	0,2	0	0,2
Calcium sulphate		mg/l CaSO ₄	0	60	0	100
Metallic impurities		mg/l	0	0	0	0
Solvents, diluents, soaps, lubricants		mg/l	0	0	0	0

- 1** Values depending on specific conductivity; in general:
 $TDS \cong 0,93 * \sigma_{20}$; $R_{180} \cong 0,65 * \sigma_{20}$
- 2** not lower than 200% of the chloride content in mg/l of Cl⁻
- 3** not lower than 300% of the chloride content in mg/l of Cl⁻

Drainage water

It can reach a temperature of 100°C.

It contains the same substances of the supply water but in higher concentration.

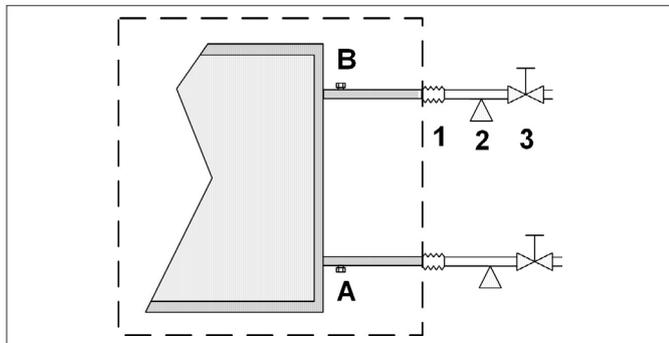
As it is not toxic, it can be disposed of with white waters

7.4 Heating coil

Option

Max. operating pressure = 10 bar

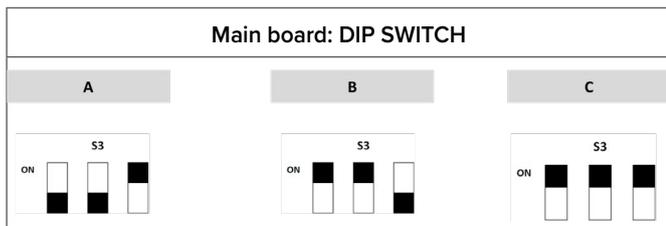
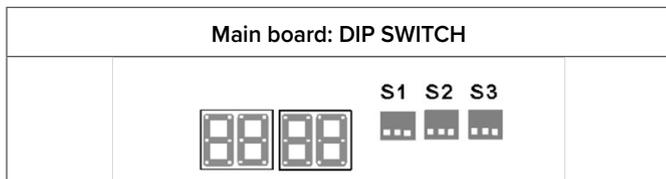
Water flow modulation valve already mounted and wired on the machine



- A** drain valve
- B** vent valve

Provided by the customer:

- 1** anti-vibration devices
- 2** piping supports
- 3** Shut-off valves



- A** The water coil CAN work with the heat pump
- B** The water coil does NOT work with the heat pump
- C** Heat recovery with heat pump and water coil

8. Aeraulic connections

The dimensioning and correct execution of the aeraulic connections are fundamental to guarantee good unit operation and adequate level of silence in the room.

When designing and manufacturing the ducting, consider **LOAD LOSSES, AIR FLOW AND SPEED** that must be consistent with the unit features.

Particularly consider that load losses higher than the unit useful prevalence, lead to reduction in flow rate, with consequent unit blocks.

- the weight of the channels must not burden on the connection flanges
- place anti-vibration joints between channels and unit
- connection to the flanges and between the various sections of the channels must guarantee air seal, avoiding dispersions penalising the overall efficiency of the system
- limit the load losses by optimising the path, the type and number of bends and junctions
- use wide bends evaluating the opportunity of equipping them with deflectors (in particular with high air speed or bends with reduced radius)

8.1 Treated air channelling

The internal surface of the channel must be smooth, enable its washing and must not contaminate the air.

Thermally isolate the channels, flanges and silencers to avoid energy losses and forming of condensation.

DIFFUSERS INLETS GRILLS

A correct diffusion of the air in the room is determining for the level of comfort and correct operation of the unit.

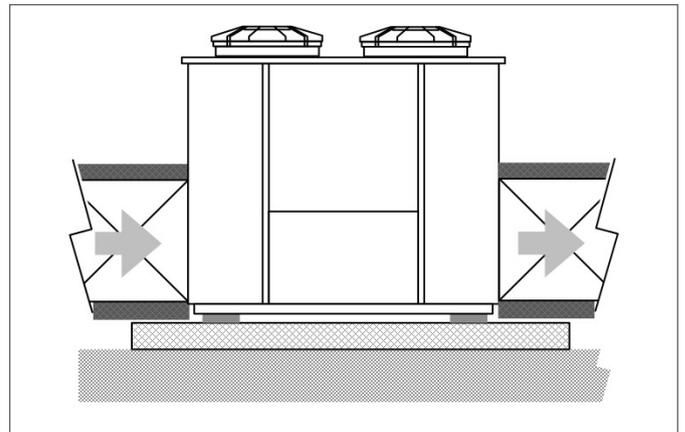
When choosing and positioning the grills, inlets and diffusers, avoid:

- excessive air speed
- forming of stagnant and stratification areas
- cold air delivery in room
- forming of localised currents (also due to uneven distribution of air)
- excessive room temperature variations, vertically and horizontally
- short circuits of the supply air towards the return air

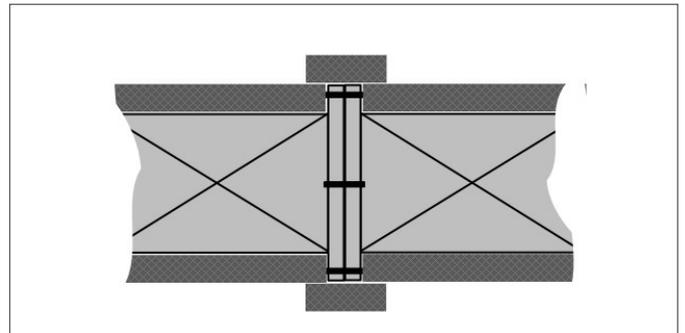
For sound comfort, consider that:

- the air diffusers must be chosen verifying the sound power generated at nominal flow rate conditions
- the cut-off to diffusers must be carried out with flexible elements
- the return grills must be widely dimensioned

Isolate the channels



Isolate the flanges



9. Electrical connections

The characteristics of the electrical lines must be determined by specialized personnel able to design electrical installations; moreover, the lines must be in conformity with regulations in force.

The protection devices of the unit power line must be able to stop the presumed short circuit current, whose value must be determined in function of system features.

The power cables and the protection cable section must be defined in accordance with the characteristics of the protections adopted.

All electrical operations should be performed by trained personnel having the necessary requirements by the regulations in force and being informed about the risks relevant to these activities.

Operate in compliance with safety regulations in force.

9.1 Electrical data

The serial number label reports the unit specific electrical data, included any electrical accessories.

The electrical data indicated in the technical bulletin and in the manual refer to the standard unit, accessories excluded.

The matriculation plate shows the indications foreseen by the standards, in particular:

Voltage

F.L.A.: full load ampere, absorbed current at maximum admitted conditions

F.L.I.: full load input, full load power input at max. admissible condition

Electrical wiring diagram Nr

9.2 Connections

- 1 Refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).
- 2 verify that the network has characteristics conforming to the data shown on the serial number label.
- 3 Before starting work, verify that the sectioning device at the start of the unit power line is open, blocked and equipped with cartel warning.
- 4 Primarily you have to realize the earthing connection.
- 5 Shelter the cables using adequate measure fairleads.
- 6 Prevent dust, insects or rodents from entering the electrical panel as they can damage components and cables.
- 7 Prevent noise from escaping from the compressor compartment; seal any openings made.
- 8 Fix the cables: if vacated may be subject to tearing.
- 9 The cable must not touch the compressor and the refrigerant piping (they reach high temperatures).

- 10 Do not drill holes in the electrical panel.
- 11 Alternatively, restore the IP rating with watertight systems.
- 12 Before power the unit, make sure that all the protections that were removed during the electrical connection work have been restored.

9.3 Power supply network requirements

- 1 The short circuit capacity of the line must be less than 15 kA
- 2 The units can only be connected to TN, TT distribution systems
- 3 Voltage 400-3-50 +/-10%
- 4 Phase unbalance < 2%
- 5 Harmonic distortion less than 12% (THDv<12%)
- 6 Voltage interruptions lasting no longer than 3ms and with at least 1 s between each one
- 7 Voltage dips not exceeding 20% of the RMS value, lasting no longer than a single period (50Hz) and with at least 1 s between each dip.
- 8 Earth cable as specified in the table:

Cross-section of the line conductors (mm ²)	Minimum cross-section of the protective conductor (PE) (mm ²)
$S \leq 16$	S
$16 < S \leq 35$	16
$S > 35$	S/2

9.4 Signals / data lines

Do not overpass the maximum power allowed, which varies, according to the type of signal.

Lay the cables far from power cables or cables having a different tension and that are able to emit electromagnetic disturbances.

Do not lay the cable near devices which can generate electromagnetic interferences.

Do not lay the cables parallel to other cables; cable crossings are possible, only if laid at 90°.

The type of cable must be suitable for serial data communication.

A 3-pole shielded bus cable is required *.

The data transmission bus cable must be verified according to the type of installation in which it will be placed and must comply with local standards.

The bus cable must comply with non-prescribed local electrical standards (e.g. insulation, voltages, flame propagation, etc.).

The cable shield must be grounded at a single point free from disturbances*.

In order to ensure correct communication, the earth connection of the shield can also be configured differently depending on the area and the types of interference.

Allowed topology: daisy-chain (enter and exit)*.

Other topologies such as "ring" or "star" are not allowed*.

Do not use cable lugs on the communication bus.

* (if using RS-485 protocol)

If the unit is the last device in the Modbus network, it may be necessary to install a termination heater (120 Ohm) at the end of the bus between X and Y (Rx/Tx+ and Rx/Tx-).

Maximum line length:

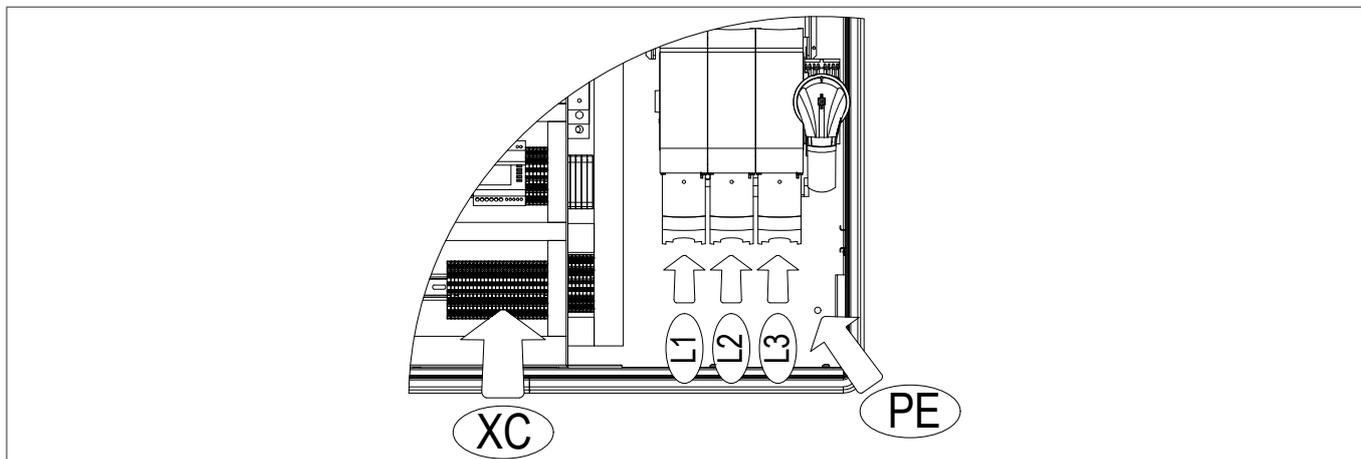
HMI 50 m - 300 m with external power supply

RS-485 1200 m

9.5 Power input

Fix the cables: if vacated may be subject to tearing.

The cable must not touch the compressor and the refrigerant piping (they reach high temperatures).



XC

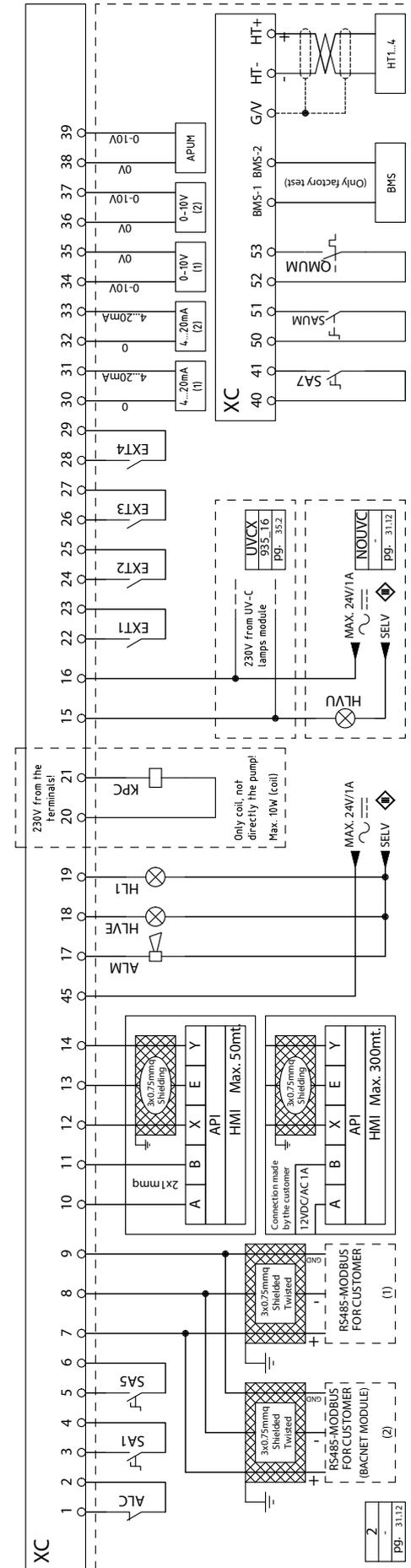
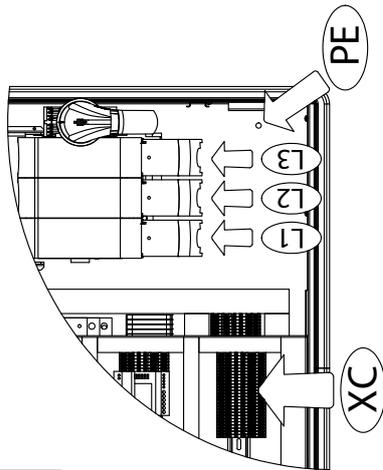
Terminal block connections by the customer

9.6 Power supply cables section

Size	20.2	28.2	40.4		56.4
Options	All	All	Standard Unit	Unit configured with integration heating elements or humidifier	All
Min. cable section Cu (mm ²)	50	70	95	185	185
Max. cable section Cu (mm ²)	95	95	240	240	240
Max. bar Cu width (mm)	25	32	32	45	45
Tightening torque (Nm)	9	20	20	20	20

9.7 Connections performer by customer

ALM	Segnalazione blocco cumulativo Cumulative fault signal Signalisation alarme Signalisation alarme Signalisation alarme	2 Pg. 31.12	4...20mA (1) 4...20mA (2)	Segnale 4...20mA (Estrazione forzata) Signal 4...20mA (Forced extraction) Signal 4...20mA (Zwangsextraktion) Signal 4...20mA (Estracción forzada) Segnale 4...20mA (Modulazione portata aria mandata) Signal 4...20mA (Supply air flow modulation) Signal 4...20mA (Modulation de l'air de soufflage) Signal 4...20mA (Modulation des Zufuhrvolumenstroms) Signal 4...20mA (Modulación del flujo de aire de suministro)	EXFLOWC 998_2 Pg. 35.12
ALC	Contatto pulito da impianto di segnalazione allarme antincendio Free contact from signalling system of fire alarm SchlieBkontakt aus dem Signalanlage der Feuerschutzalarm Contacto libre de instalación de señalización alarma antincendio	EXFLOWC 998_2 Pg. 35.12	0-10V (1)	Segnale 0-10V (Demand limit) Signal 0-10V (Demand limit) Signal 0-10V (Demand limit) Signal 0-10V (Demand limit)	DML 829_1 Pg. 35.2
EXT1 EXT2 EXT3 EXT4	Contatto pulito estrattore ambiente Ambient extractor potential-free contact Potentialfreier Kontakt des Raumabzug Contacto libre extractor ambiente	EXFLOWC 998_2 Pg. 35.12	0-10V (1)	Segnale 0-10V (Segnale sonda CO2) Signal 0-10V (Sonde probe CO2) Signal 0-10V (CO2-Sondesignal) Signal 0-10V (Señal sonda CO2)	PPAOC 449_5 Pg. 33.12
HLVE	Lampada segnalazione stato ventilatore d'estrazione Ventilator status indicator lamp Statusanzeigelampe des Abluftventilators Lámpara indicadora de estado del ventilador de extracción	EXFLOWC 998_4 Pg. 31.12	SA UM	Selettore di abilitazione umidificatore Humidifier enable selector Humidifereur aktivierung des Luftbefeuchters Selektor de activación del humidificador	PUE 447_34 Pg. 33.12
HLVU	Lampada segnalazione stato ventilatore di mandata Indicating light of the supply fan status Lampe de signalisation de l'état ventilateur de refoulement Signalampel des Zustands des Druckventilators Lámpara indicadora estado ventilador de impulsión	EXFLOWC 998_2 Pg. 35.12	SA7	Umidificatore richiesto Humidifier required Humidifereur erforderlich Luftbefeuchter erforderlich	UMV 451_1 Pg. 33.2
HL1	Lampada di segnalazione stato compressore Signal lamp "Verdichtungsstand" Signallampe Verdichtungsstand Lámpara de señalización estado compresor	EXFLOWC 998_2 Pg. 35.12	RS-485 (1)	Modbus per il cliente Modbus pour le client Modbus für den Kunden Modbus para el cliente	QUMUM Pg. 33.12
KPC	Comando pompa/circolatore della batteria integrativa Pump/circulating pump control of the integration coil Commande pompe/pompe de circulation de la batterie supplémentaire Mando bomba/bomba de circulación de la batería complementaria	EXFLOWC 998_2 Pg. 35.12	RS-485 (2)	Comunicazione Modbus del modulo gateway remoto Modbus de passerelle distante Communication Modbus Remote-Gateway-Modul Modbus-Kommunikation Modulo de puerta de enlace remota Comunicación Modbus	CMSC13X 820_40 Pg. 35.2
SA1	Selettore on/off remoto Remote winter/summer selector Féliciteur déposé Winter/Summer Fernwählschalter Ein/Aus Selector on/off remoto	EXFLOWC 998_2 Pg. 35.12	HT1...4	Sonda remota temperatura/umidità Remote temperature/humidity probe Sonde température/humidité à distance Sonda remota de temperatura/humedad	MDMTUX 961_4 Pg. 35.2
SA5	Selettore remoto "estate/inverno" Remote winter/summer selector Féliciteur déposé Winter/Summer Fernwählschalter Winter/Summer Selector remoto "verano/invierno"	EXFLOWC 998_2 Pg. 35.12			MDMADTX 961_6 Pg. 35.12



9.8 Remote ON-OFF

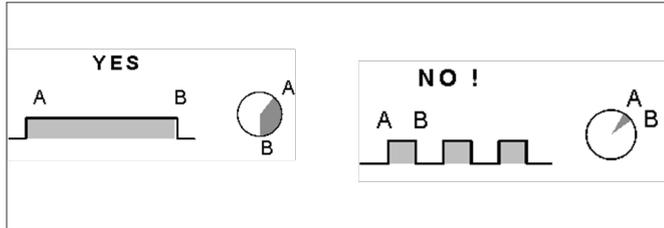
MENU > Assistance setting* >

Operation parameter > P05 EnONOFF

*Assistance setting: password-protected menu access

Do not perform short On-Off cycles.

Do not use the remote On-Off with a thermoregulation function.



P.05 EnOnOff	ON / OFF from:	
= 0	digital input SA1	Unit ON  Unit OFF 
= 1	controller	
= 2	BMS	

9.9 Wall-mounted room control

Before proceeding, check that you have:

Name	Num.	
Control	1	KJRH-120H/BMKO-E
Cross-cut round-headed mounting screw	2	GB950-86 M4X20 For wall mounting
Cross-cut round-headed mounting screw	3	M4X25 GB823-88 For mounting on electrical junction box
Plastic bolt	4	To install the control inside the electrical panel
Plastic expansion pipe	5	For wall assembly

A room control equipped with an internal temperature probe which can be used as a replacement for the return air temperature probe installed in the unit (see the chapter on the follow-me function).

If the temperature control is switched to the room control temperature probe (follow-me function enabled), do not place the room control near sources that can alter the detected internal temperature (radiators, openings to the outside, etc.).

This could cause the room to become too hot or cold and the unit to operate abnormally.

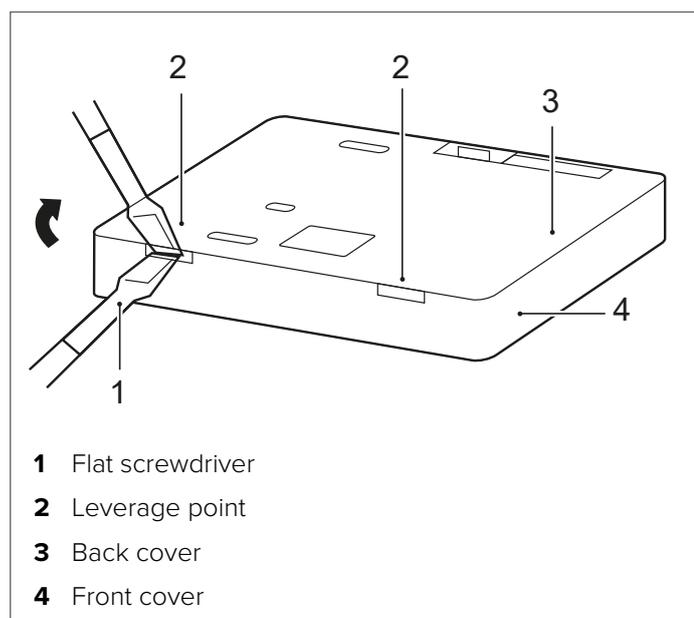
- ⚠ **Do not install in a location prone to flammable gas leaks. Flammable gases that leak out spread around the control and can lead to a fire.**
- ⚠ **Do not place the control near lamps, as these can cause interference with the control signal.**
- ⚠ **Do not install the unit in a place where an excessive amount of oil, steam or sulphide gas is present. Failure to do so may result in deformation and malfunctioning of the product.**

The wiring must be suitable for the current of the control. Otherwise, electrical leakage or overheating could occur and lead to a fire.

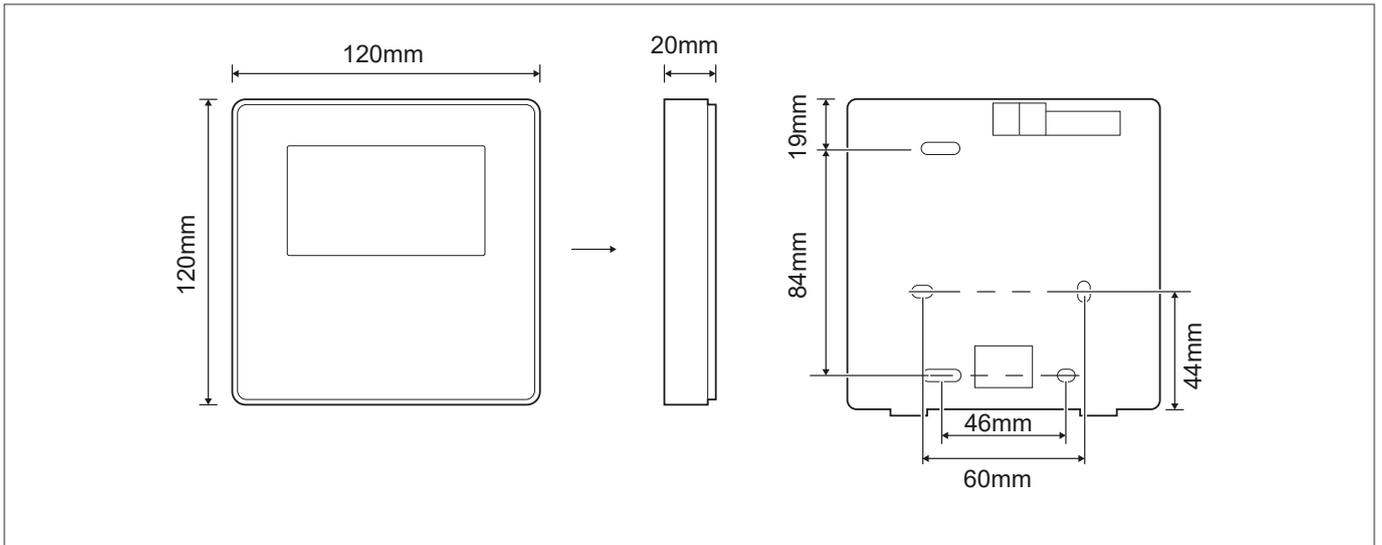
The control circuit is low voltage. Never connect it with a standard 220V/380V circuit or insert it in the same cable gland as the circuit.

The shielded cable must be firmly earthed otherwise transmission may not be possible.

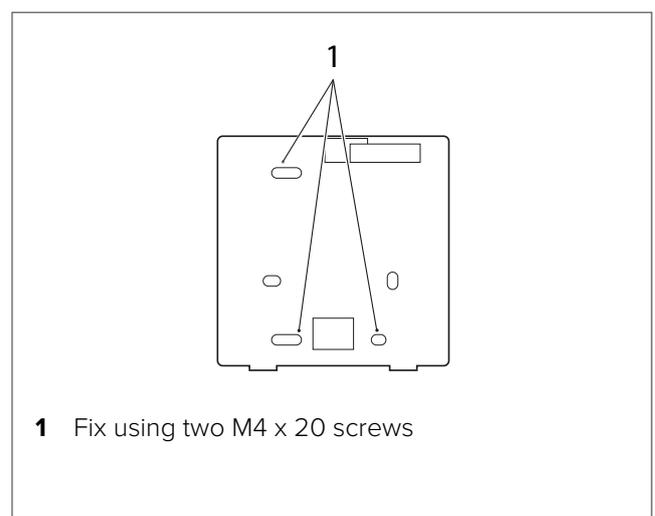
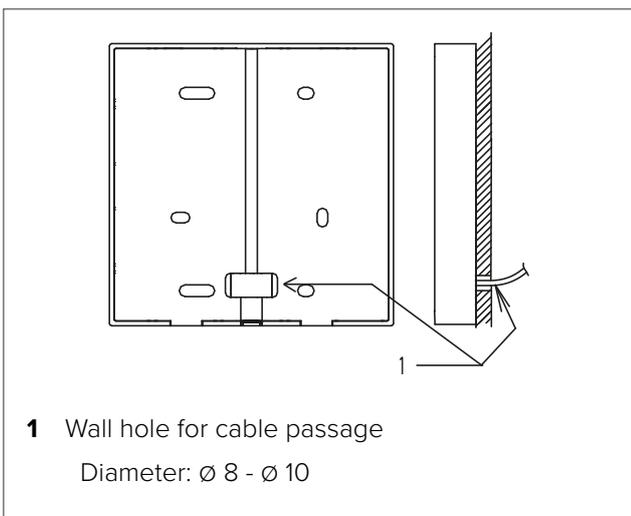
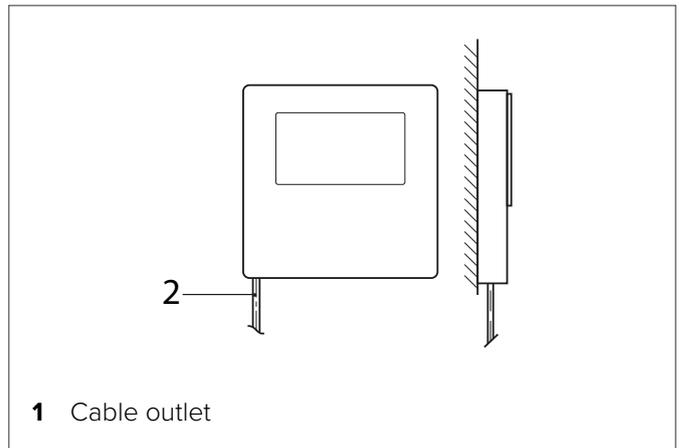
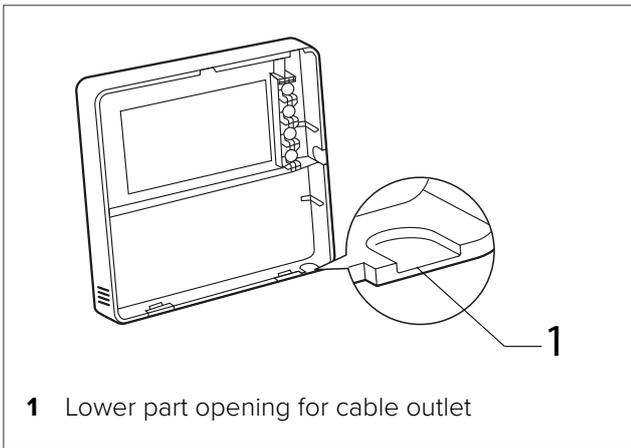
After making the connections, do not use the insulation meter to check the insulation of the signal cable.



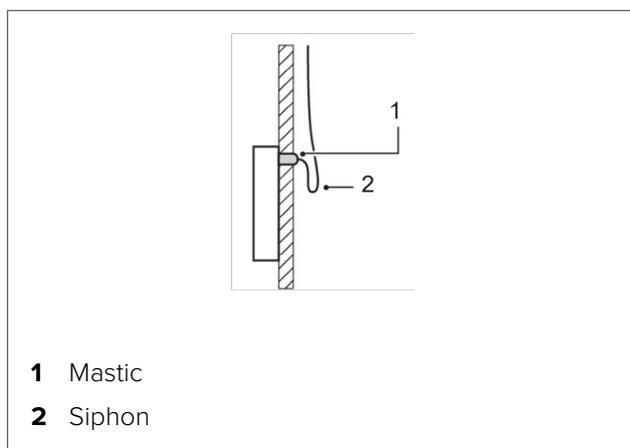
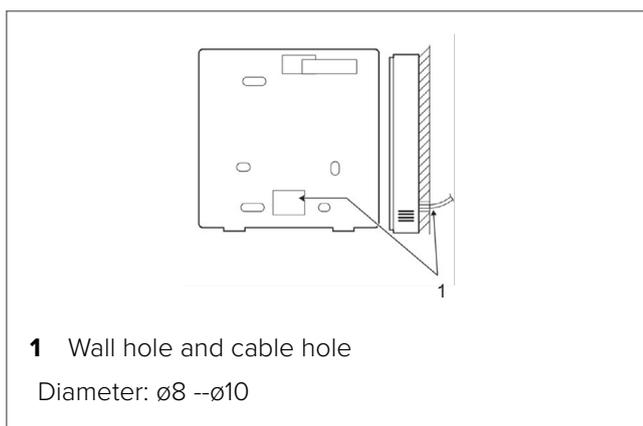
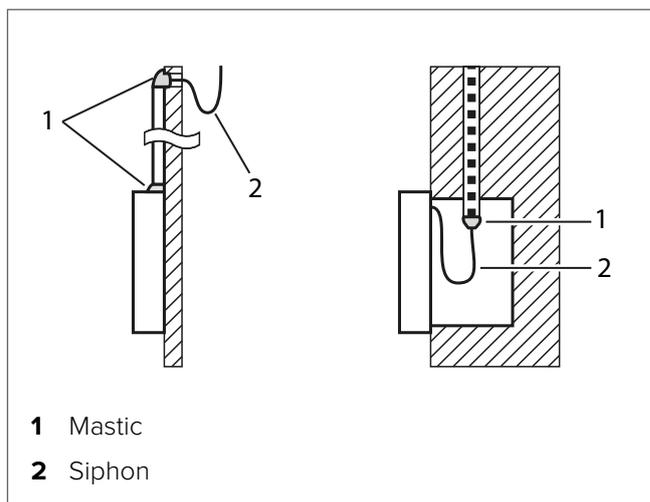
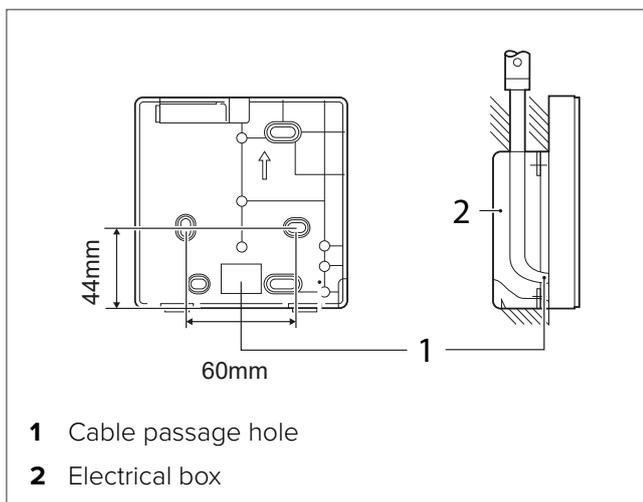
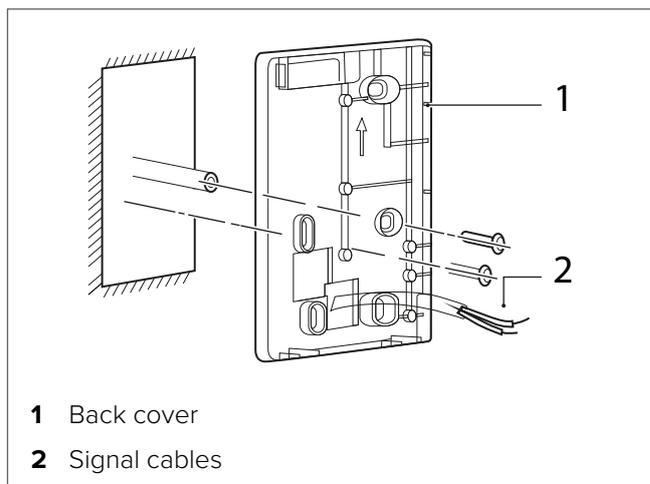
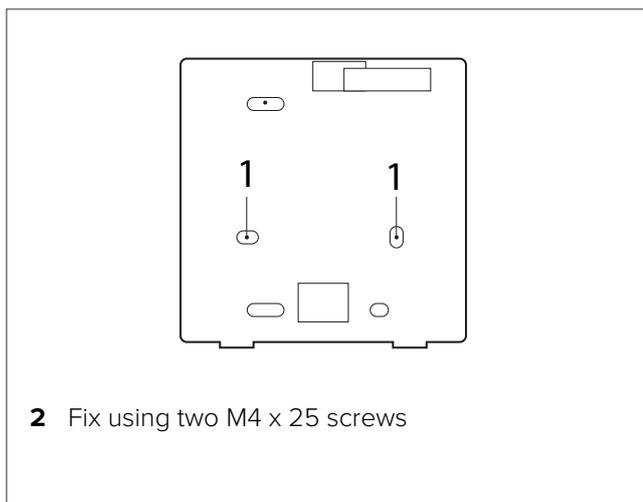
9.10 Dimensions



9.11 Wall-mounted installation

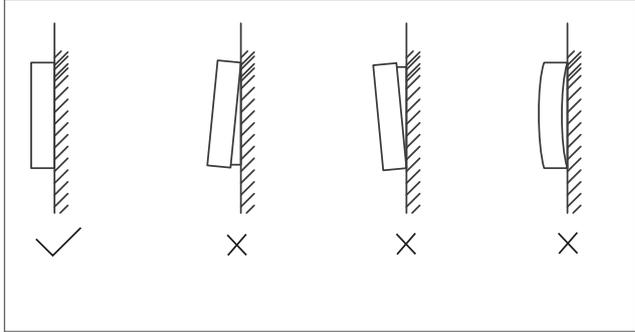
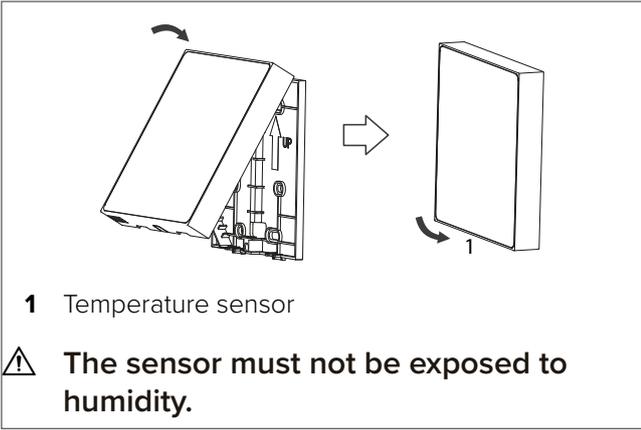


9.12 Installation in an uncased box



⚠ Prevent water from entering the wired controller, use siphons and mastic to seal the wire connectors during installation.

⚠ Do not crush the communication wire during installation.



⚠ Over-tightening the screw will buckle the back cover.

9.13 Management of remote temperature and humidity probes

It is possible to install up to a maximum of 4 remote temperature and humidity sensors (DPWC114000 or PROSENSE), which, if selected, are supplied separately to the unit.

The values recorded by the probe(s) can be viewed from the keypad.

The remote probe can be used for thermoregulation (MDMTX "Management of temperature ambient probes" or MDMTUX "Management of temperature and humidity ambient probes" option); in this case, if several remote sensors are installed, the average temperature and/or humidity value of the remote sensors installed is used for the control.

Refer to the wiring diagram to connect the remote probes.

The remote sensor, if selected, is connected to terminal K1-K2 of the secondary board via Modbus.

The function is enabled in the EnRemoteTH parameter, which is set with the keypad as follows:

- EnRemoteTH=0: the function is off. Thermoregulation is performed by the temperature probe and by the humidity probe (if present) installed on the unit.
- EnRemoteTH=1: the remote temperature control function is on; the temperature is controlled using the temperature value of the remote sensor (DPWC114000 or PROSENSE), while the humidity is controlled (if present) using the humidity sensor installed on the unit.
- EnRemoteTH=2: the remote humidity control function is on; the temperature is controlled using the temperature value of the sensor installed on the unit, while the humidity is controlled using the remote sensor (DPWC114000 or PROSENSE).
- EnRemoteTH=3: the remote temperature and humidity control function is on; both the temperature and humidity are controlled using the values read by the remote sensor (DPWC114000 or PROSENSE).

ModBus addresses

- Module 1 address: 128.
- Module 2 address: 129.
- Module 3 address: 130.
- Module 4 address: 131.
- Communication settings: 9600,8, N,2.
- Communication protocol: Modbus RTU.

Remote probe dip-switch configuration

DPWxxx4xxx
DPDxxx4xxx
DPPxxx4xxx

Optoisolato / Optoinsulated

Optoinsulation

DL1 DL2

+G) M(G0) TxRX- TxRX+ GND

Impostazioni Dip-Switch valide per tutti i modelli

Dip-switch 1 to 5
Address 128 - 159

Baud rate
9600
19200

RS485 protocol		Bit Parity	Stop
ON		CAREL supervisor	8 N 2
OFF		ModBus®	8 N 2
ON		CAREL supervisor	8 N 2
OFF		ModBus® (***)	8 E 1
ON		ModBus®	8 E 1
OFF		ModBus®	8 E 1

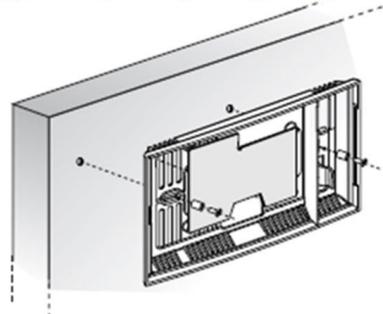
*** con riconoscimento automatico del protocollo.

1

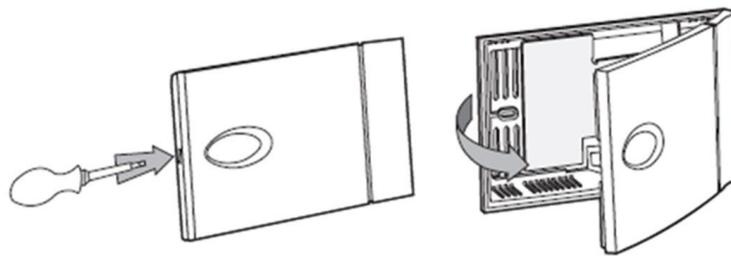
1 See the Service Manual for details



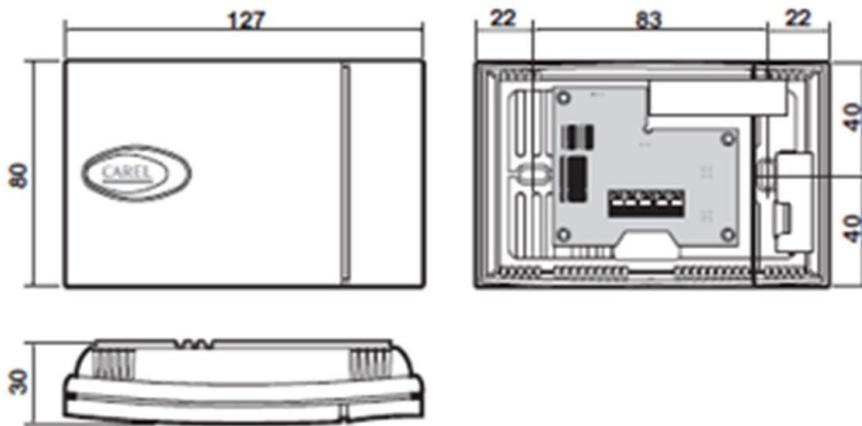
Montaggio / Assembly / Montage / Montage / Montage



Apertura dello sportellino della sonda / Opening the sensor cover / Ouverture du volet de la sonde / Öffnen der Klappe des Fühlers / Apertura de la portezuela de la sonda



Dimensioni sonda da parete (DPW*) (mm) / Wall probe (DPW*) dimensions (mm) / Dimensions sonde murale (DPW*) (mm) / Abmessungen des Wandfühler (DPW*) (mm) / Dimensiones sonda de pared (DPW*) (mm)



10. Start-up

The indicated operations must be carried out by qualified technicians and specifically trained on the product. Upon request, the after-sales assistance centres execute start-up.

The electrical, water connections and the other system works are by the installer.

Agree upon in advance the start-up data with the service centre.

Before checking, please verify the following:

- the unit should be installed properly and in conformity with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no voltage is present

 **After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.**

 **Before accessing check with a multimeter that there are no residual voltage.**

10.1 UV-C lamps

Option

WARNING

 **Direct radiation device: causes eye irritation and skin rashes.**

 **Any maintenance operation must be carried out with the lamps off.**



10.2 Start-up sequence

For details refer to the different manual sections.

	Unit OFF power supply
1	Secure access to the unit.
2	Functional spaces of the unit.
3	External and internal inspection of the unit to check that it is intact.
4	Unit installed according to the requirements on its anti-vibration devices.
5	The rainproof cover of the outdoor air intake is correctly installed. (Only for CBK / CBK-G and CCK-REVO units)
6	The external modules are installed according to the requirements on their anti-vibration devices. (Only for units equipped with gas burner, enthalpy wheel or UV-C lamp module).
7	The air filters are clean and installed correctly.
8	The unit is connected to the aeraulic system with anti-vibration joints.
9	The condensation water drain pipe has a siphon and is heated (in low temperature environment).
10	Visual inspection of the refrigerant circuit to rule out obvious leaks and/or oil stains.
11	Unit connected to power supply consistent with requirements.
12	The unit is properly earthed.
13	The phase sequence is correct (if not, an alarm occurs).
14	If present, the customer's BMS or external signals are correctly wired to the specified terminal.
15	The compressor casing heater must be powered for at least 8 hours before the service appointed by Clivet carries out start-up.
16	The aeraulic system is complete in all its parts.
17	Internal air distribution avoids air stratification and/or bypass between supply air and return air.
18	The user interface (HMI) of the unit is installed and wired correctly.
19	The sensors of the unit placed in the indoor environment are installed and wired correctly (option).

10.3 Start-up sequence

For details refer to the different manual sections.

	Unit ON power supply
1	Make sure that the compressor casing heaters have been powered for at least 8 hours before start-up.
2	Check that all the sensors on the unit are reading the correct and consistent value.
3	Check the correct operation of the unit's HMI.
4	Check and/or calibrate the air flow, starting the unit in FAV (ventilation only) mode
5	Calibrate the setpamb. (Only for CCK-REVO units)
6	Calibrate the minimum and maximum flow of outdoor air. (CBK-G units equipped with Enthalpy Wheel module)
7	Calibrate the minimum and maximum flow of exhaust air. (CBK-G units equipped with Enthalpy Wheel module)
8	Check whether the air conditions (outdoor and indoor T/R.H%/T/R.H) are within the operating range of the unit stated in the Technical Bulletin.
9	Ensure that there is enough thermal load within the treated environment to allow continuous operation of the unit, avoiding frequent compressor starts/stops.
10	Check each refrigerant circuit in a mode (heating or cooling) consistent with the air conditions. If permitted, test the unit in both operating modes.
11	Check the operating status of each refrigerant circuit during its operation.
12	Ensure that there is no air bypass between the inlet and outlet of the external exchanger.
13	Check the stability, within the permitted ranges, of the power supply voltage and electric consumption of each compressor when the unit is at full power (all compressors ON).
14	Ensure that there are no abnormal vibrations/noises on each circuit and/or compressor.
15	Test operation of the auxiliary elements (available only in heating mode). (Only for units with auxiliary elements)
16	Test the humidifier (only available in heating mode). (Only for units with humidifier)
17	In case of connection via BMS, check that the commands are written in the correct registers.
18	Set the logic of the fire alarm digital input.
19	Check correct operation of the analogue/digital inputs reserved for the customer.
21	Set the unit in accordance with the customer's requirements (setpoint, operating mode, scheduler, ECO etc.).
22	Fill in the unit's booklet

10.4 Refrigeration circuit

- 1 Check carefully the refrigerating circuit: the presence of oil stains can mean leakage caused by transportation, movements or other).
- 2 Verify that the refrigerating circuit is in pressure: Using the unit manometers, if present, or service manometers.
- 3 Make sure that all the service outlets are closed with proper caps; if caps are not present a leak of refrigerant can be possible.
- 4 Open the valves of the refrigerant circuit, if there are any.

10.5 Water circuit

Only with options: humidifier - hot water coil and hot water coil for refrigerated cabinet recovery.

- 1 Before realizing the unit connection make sure that the hydraulic system has been cleaned up and the cleaning water has been drained.
- 2 Check that the water circuit has been filled and pressurized.
- 3 Check that the shut-off valves in the circuit are in the "OPEN" position.
- 4 Check that there isn't air in the circuit, if required, evacuate it using the air bleed valve placed in the system high points.
- 5 When using antifreeze solutions, make sure the glycol percentage is suitable for the type of use envisaged.

WARNING

- ⚠ **Neglecting the washing will lead to several filter cleaning interventions and at worst cases can cause damages to the exchangers and the other parts.**

10.6 Electric Circuit

Verify that the unit is connected to the ground plant.

Check the conductors are tightened as: the vibrations caused by handling and transport might cause these to come loose.

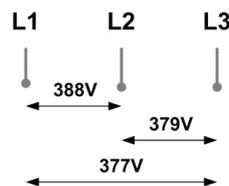
Connect the unit by closing the sectioning device, but leave it on OFF.

Check the voltage and line frequency values which must be within the limits: 400-3-50 +/-10%

Check and adjust the phase balance as necessary: it must be lower than 2%

WARNING

- ⚠ **Working outside of these limits can cause irreversible damages and voids the warranty.**



$$1) \frac{388 + 379 + 377}{3} = 381 \text{ (A)}$$

$$2) \text{MAX} - \text{A} = 388 - 381 = 7$$

$$3) \text{S} = \frac{7}{\text{A}} \times 100 = 1,83 \text{ OK}$$

10.7 Compressor casing heater

The unit manages the crankcase heaters with the following logic:

ON	OFF
<p>$T4 \leq 3^{\circ}\text{C}$ and the compressor has been idle for at least 3 hours</p> <p>or</p> <p>$T4 \leq 3^{\circ}\text{C}$ and the unit has just been powered up</p>	<p>$T4 > 4^{\circ}\text{C}$</p> <p>or</p> <p>The compressor starts</p>

T4 = outdoor air temperature

10.8 Power supply

Check that the air and water temperatures are within the operating limits.

Start the unit.

With unit operating in stable conditions, check:

- Power supply voltage
- Total absorption of the unit
- Absorption of the single electric loads

10.9 Scroll compressors

(28.2-56.4)

The Scroll compressors have only one rotation direction.

In the event it is reversed, the compressor is not immediately damaged but it becomes more noisy and pumping is jeopardised. After a few minutes, the compressor blocks due to intervention of the thermal protection.

In this case, disconnect the power supply and invert the 2 phases in the compressor box.

Avoid the compressor working for a long time with contrary rotation: more than 2-3 of these anomalous start-ups can damage it.

To ensure the rotation direction is correct, measure the compressor's discharge and suction temperature. The temperatures must differ significantly: upon start-up, the suction temperature decreases whereas the discharge one increases.

The phase monitor is standard in these units and intervenes if the phases are not correctly connected.

10.10 Airflow management

Airflow can be managed in 6 different ways:

- 1 Standard mode
- 2 Constant airflow
- 3 Variable airflow
- 4 Constant pressure
- 5 Adjustment with external 4~20 mA signal
- 6 Adjustment with Modbus register FanSpeedOutBMS

1 Standard mode - Airflow calibration

The rotation speed of the supply fan remains constant in all heat load conditions and operation modes

Calibration must be carried out by specialised personnel appointed by Clivet

The actual flow rate of the unit depends on the characteristics of the aeraulic system.

Before carrying out the check, make sure that the system has been completed in all its parts (branches, dampers, grilles, diffusers, etc.).

Check the doors and windows of the serviced room are closed.

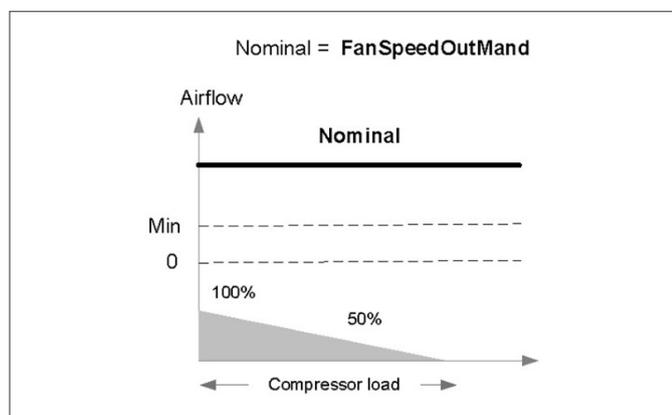
The calibration must be carried out with the unit in full recirculation and with the airflow fairly stable.

The unit is in full recirculation during the first 60 minutes after switch-on.

Set the percentage of operation of the fan:

MENU>Assistance setting*>Supply fan>P02 FanSpeedOutMand [%]

FanSpeedOutMand



2 Constant airflow

Option

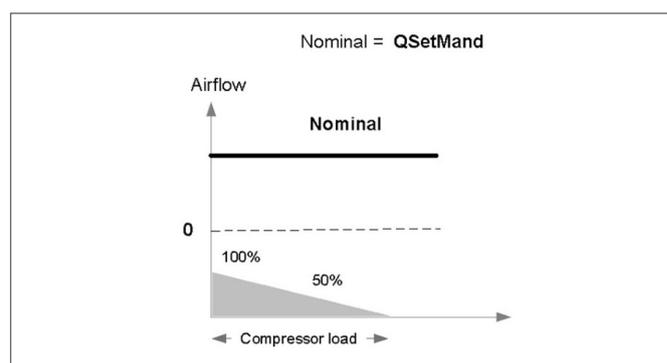
The airflow supply remains constant at varied heat loads and pressure drops of the unit and system.

The ventilation remains active even when the setpoint is fulfilled.

The parameter that defines the setpoint airflow rate is QsetMand which can be found at the following password-protected location:

MENU > Assistance setting* > Supply fan > P18 QSetMandV [m³/h]

The option requires the installation of optional accessories.



3 Variable airflow

Option

The airflow supply varies depending on the heat load, up to a minimum value compatible with the distribution system and the chosen air diffusion.

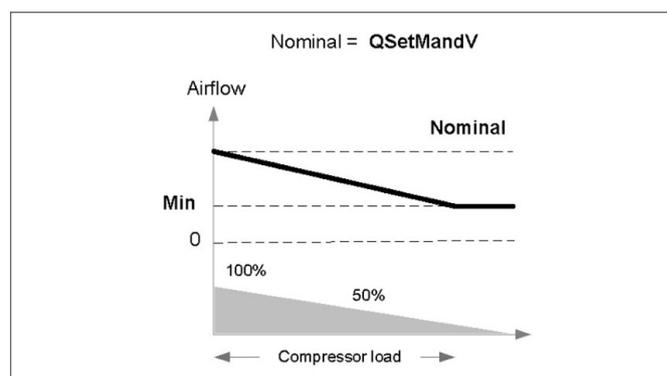
The ventilation remains active even when the setpoint is fulfilled.

The parameter that defines the setpoint airflow rate is QsetMand which can be found at the following password-protected location:

MENU > Assistance setting* > Supply fan > P18 QSetMandV [m³/h]

The airflow rate can be modulated to a minimum value of not less than 60 % of the set QsetMandV.

The option requires the installation of optional accessories



4 Constant pressure

Control of flow to maintain a constant pressure in the supply duct (PVARdP) based on the pressures measured by the differential pressure sensor.

In the event of a change in the system's aeraulic load curve, it automatically varies the airflow so that the useful static pressure set on the display by the user remains constant.

MENU > Assistance setting* > Supply fan > P19 SetSupplyPPlant [Pa]

The connection of the differential pressure sensor is as follows:

(-) atmospheric pressure located below the electrical panel

(+) discharge pressure in the duct, positioned close to the supply fan

The option requires the installation of optional accessories.

5 Control of fan speed based on external 4~20 mA signal

Option

The supply airflow can be modulated within the minimum and maximum range, based on an external signal.

The value of the analogue fan control signal is changed directly

6 Control of fan speed based on Modbus register FanSpeedOutBMS

Option

The supply airflow can be modulated within the minimum and maximum range, depending on the value set via Modbus.

The value of the analogue fan control signal is changed directly.

10.11 “Follow me” function

For setting the probe on which thermoregulation is based.

0 = return probe installed in the unit

1 = room thermostat

Factory default = 0

Only settable via HMI and by technical support.

ASSISTANCE SETTING > OPERATION PARAMETER P22

Follow me

10.12 “Washing” function

Allows you to activate the air purification mode (EnClean parameter), set its duration (TimeClean) and specify its frequency of activation (IntervalClean).

MENU > Assistance setting* > Operation parameter > EnClean / TimeClean / IntervalClean

- EnClean=0: the function is off.

- EnClean=1: the function is enabled once, starting with the manual setting of the parameter AirPurificationOnceEn to value 1.

- MENU > Main parameter > AirPurificationOnceEn

- EnClean=2: the function is enabled on a set basis every IntervalClean hours.

During operation of the 'flushing' function, the outdoor air damper is opened to MaxOpenExt; the extract fan signal is assigned equal to MaxFanEsp; the supply fan adjusts according to its control logic.

10.13 Set-up

When the unit is switched on, the set-up phase begins.

During this phase the exhaust fan is stopped and the outdoor air damper is closed.

If the unit has just been powered on, it will work in ventilation-only mode from that moment for the next 12 minutes, if ON.

Set-up ends when at least one of the following conditions is fulfilled:

- continuous operation of the compressor longer than 60 minutes (the Tregime parameter can only be changed by a Clivet technician);
- if in Cooling mode $T1 < Tset + 2^{\circ}C$;
- if in Heating mode $T1 > Tset - 2^{\circ}C$;
- if the unit receives the OFF command;
- if an alarm blocks the supply ventilation;
- if ECO mode is enabled.

10.14 ECO mode

ECO mode

The air flow supply remains constant at varied heat loads and is shutdown when the setpoint is fulfilled.

To further increase the energy savings in this condition, it is also possible to set less demanding operation setpoints for the unit in respect to the standard mode.

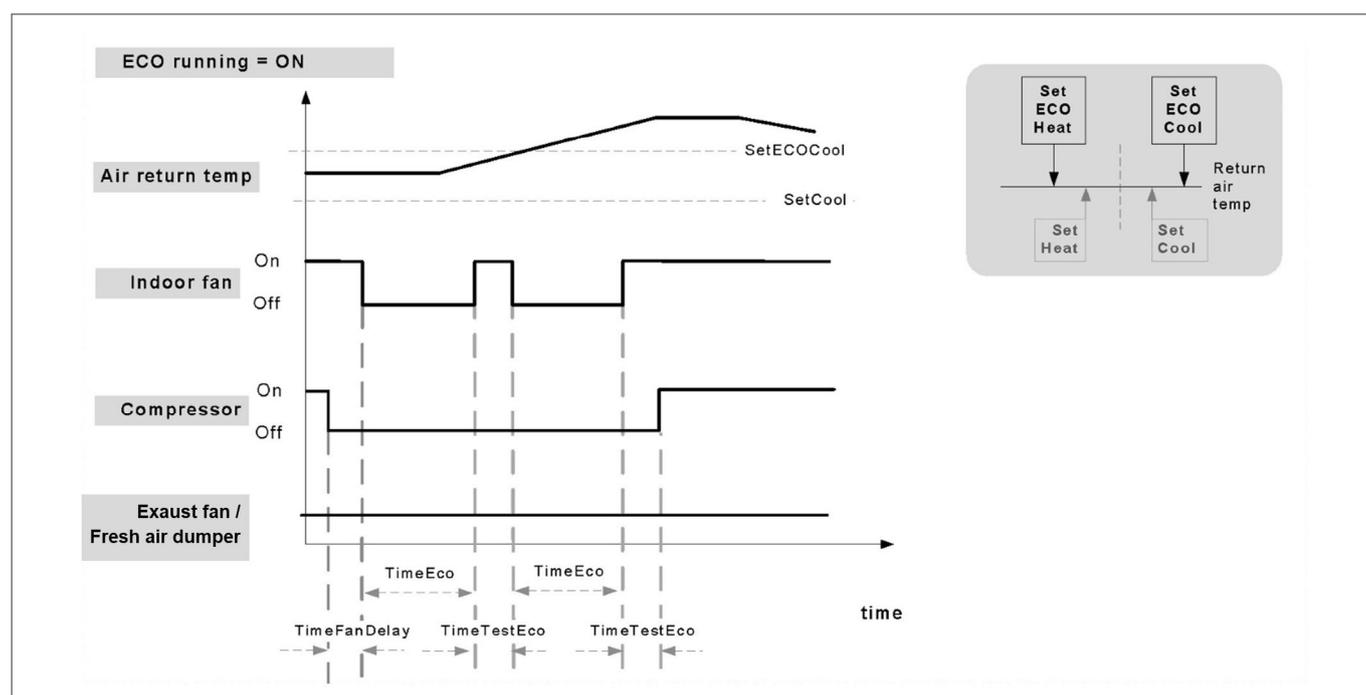
This function is indicated for the thermal maintenance of the area serviced in case it is temporarily not used, which can for example occur at night.

Renewal air is not handled in ECO mode.

ECO mode can be activated from the menu:

ECO e silent mode > RUNNING MODE > ECO

Example in Cooling mode:



MENU > Assistance setting*

> Operation parameter:

P17 Setpoint ECO Heat

P18 Setpoint ECO Cool

P09 TimeEco

indoor fan can NOT be ON

P10 Time TestEco

indoor fan CAN be ON

*Assistance setting: password-protected menu access

Change of AUTO mode is not available In ECO MODE

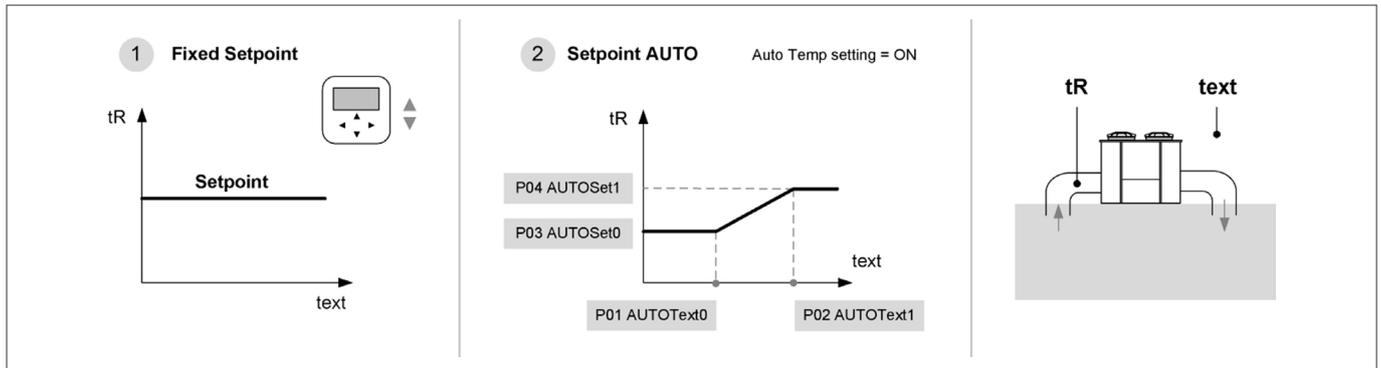
If $T4 < \text{TempAmAuxEn}$ (ASSISTANCE SETTING → OPERATION PARAMETER → P15 TempAmAuxEn (default) = 5°C) → ECO mode is INVALID.

T4: ambient temperature

Type of operation

The setpoint can be fixed (1) or variable depending on the outdoor temperature. (2).

Menu: Autotemp setting



HEAT / COOL mode can be changed:

- manually at the SA5 contact, at the keypad or via BMS
- automatically according to the return temperature.

To choose, set P06EnMode

Menu > assistance setting* > operation parameter >

*Assistance setting: password-protected menu access

Combinations		
P06	Set	P05 EnOnOff = 0 (Digital Input)
EnMode =	0: D.I.	ON/OFF switch and MODE selector from digital input (SA1 / SA5)
EnMode =	1: HMI	Not available
EnMode =	2: BMS	D.I. contact (SA1) CLOSED: Unit remains OFF (always) / D.I contact (SA1) OPEN: ON/OFF contact and MODE switch from BMS
EnMode =	3: AUTO	ON/OFF from D.I (SA1) / AUTOMATIC SWITCHING

Combinations		
P06	Set	P05 EnOnOff = 1 (HMI)
EnMode =	0: D.I.	ON/OFF switch and MODE selector from digital input (SA1 / SA5)
EnMode =	1: HMI	Not available
EnMode =	2: BMS	D.I. contact (SA1) CLOSED: Unit remains OFF (always) / D.I contact (SA1) OPEN: ON/OFF contact and MODE switch from BMS
EnMode =	3: AUTO	ON/OFF from D.I (SA1) / AUTOMATIC SWITCHING

Combinations		
P06	Set	P05 EnOnOff = 3 (BMS)
EnMode =	0: D.I.	ON/OFF switch and MODE selector from digital input (SA1 / SA5)
EnMode =	1: HMI	Not available
EnMode =	2: BMS	D.I. contact (SA1) CLOSED: Unit remains OFF (always) / D.I contact (SA1) OPEN: ON/OFF contact and MODE switch from BMS
EnMode =	3: AUTO	ON/OFF from D.I (SA1) / AUTOMATIC SWITCHING

You can therefore choose between 4 types of operation.

For all types, switching from Heating to Cooling and vice versa is only possible if at least 30 minutes of operation have elapsed since the last mode change.

1 FIXED setpoint - MANUAL mode

Fixed Setpoint

Auto temp setting = OFF

Mode MAN

P06 EnMode	Heat / Cool from:
= 0	A) digital input: ON = heating OFF = cooling B) BMS
= 1	controller

	COOL ⁽¹⁾	HEAT
On	* tR > tset + ReturnCool	* tR < tset - ReturnHeat
Off	* tR < tset - StopCool	* tR > tset + StopHeat

(1) If humidity control (dehumidification) is not present

* Parameters that can be modified from the HMI 'ASSISTANCE SETTING' menu

2 FIXED setpoint - AUTOMATIC mode

1 Fixed Setpoint

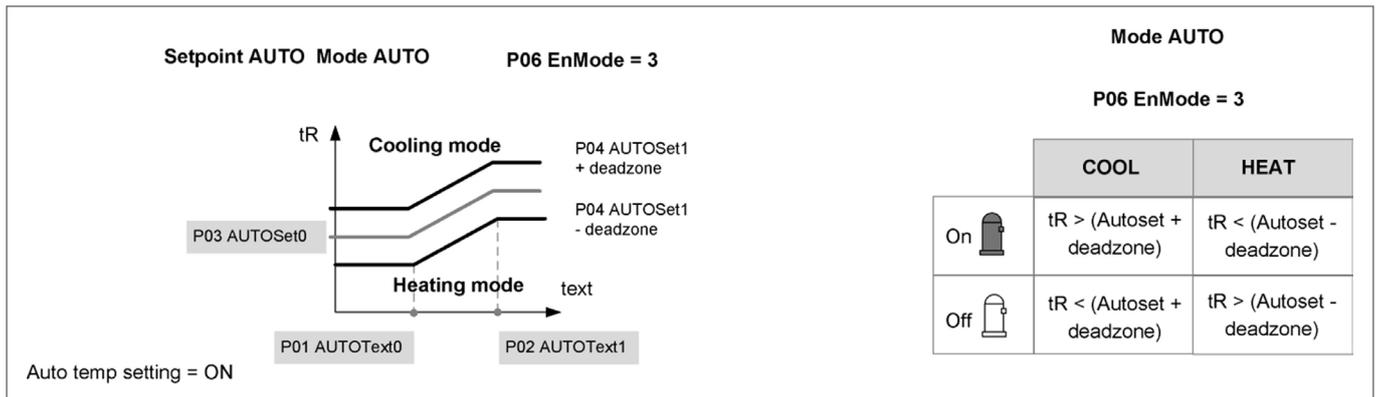
2 Setpoint AUTO Auto Temp setting = ON

3 VARIABLE setpoint - MANUAL mode

1 Fixed Setpoint

2 Setpoint AUTO Auto Temp setting = ON

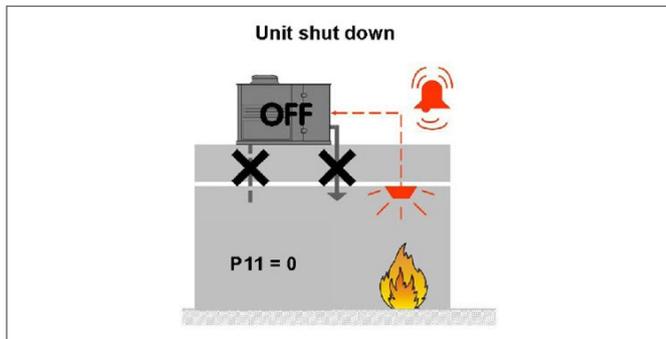
4 AUTOMATIC setpoint - AUTOMATIC mode



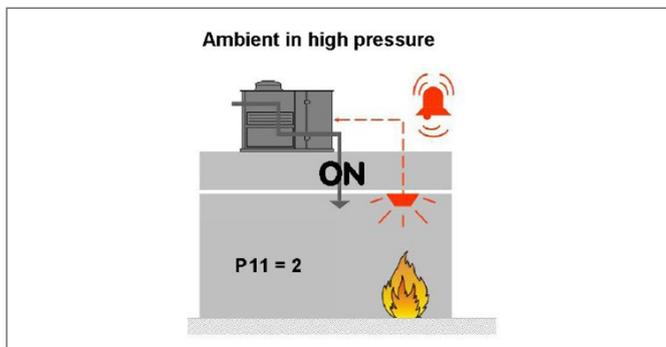
10.15 Fire alarm: configuration

- ⚠ The unit cannot be used as smoke extractor.
- ⚠ Any fire detection devices built-in the unit must be considered as an auxiliary safety system, and, accordingly, must not be a replacement for any fire detection devices in the room.

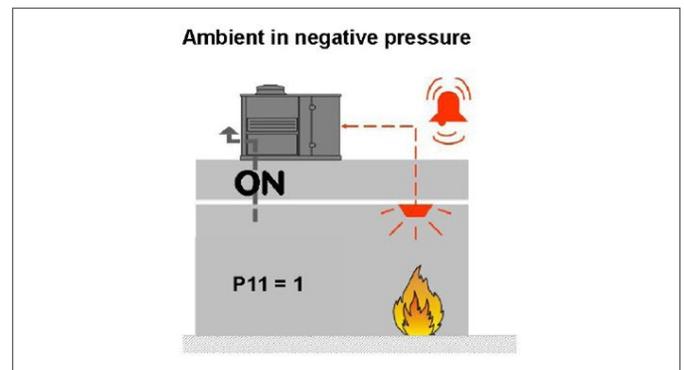
Complete unit shutdown



Pressurised ambient



Space in negative pressure



It is possible to configure the unit behaviour in presence of alarm signal.

Par 11 TypeFireMode

MENU > Assistance setting* > operation parameter > P11 TypeFireMode

*Assistance setting: password-protected menu access

complete stop		supply fan	off
	1	ejection fan	off
	2	outdoor air shutter	closed
pressurised ambient		supply fan	on
	1	ejection fan	off
	2	outdoor air shutter	open
depressurised ambient		supply fan	off
	1	ejection fan	on
	2	outdoor air shutter	closed

- 1) CCK-REVO configuration only
- 2) only available on units with motorised damper

10.16 Room pressure calibration

CCK-REVO configuration only.

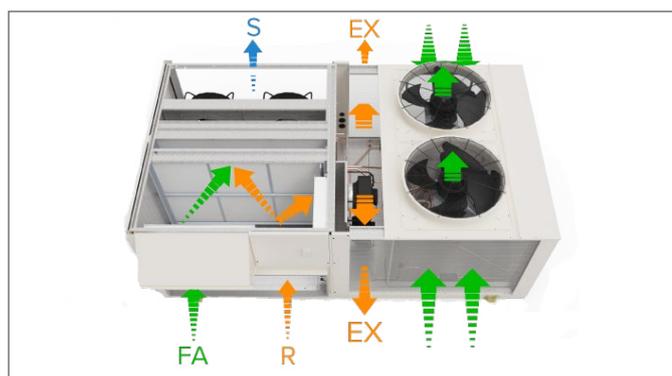
The ambient pressure control device compares the return pressure with the external pressure and offsets any variations by acting on the outdoor air damper.

This way, the unit maintains the room at the relative pressure desired by the user, who can choose between overpressure, depression or equal pressure.

- 1 Check the doors and windows of the serviced room are closed
- 2 calibration must be carried out with the unit in full recirculation mode, with the exhaust fan stopped and the air filters clean and at the nominal supply airflow rate; if the unit is configured as PVAR (variable airflow rate) ensure that the airflow rate is constant and at the nominal value (QSetMandV) before starting calibration
- 3 view the status on the display: Pf2 RETURN AIR PRE
- 4 wait for the pressure value to stabilise and take note of the value
- 5 to maintain the room in neutral pressure, memorise the detected pressure value at P07 SetPAmb
- 6 to maintain the room in overpressure, memorise a value lower than the detected one
- 7 to maintain the room in depression, memorise a higher value

Menu > Assistance setting > Exhaust Fan /Damper > P07 SetPAmb

*Assistance setting: access to the password-protected menu



10.17 Set-up for rooms with variable capacity forced extraction and exhaust section

Option designed for CCK-REVO configuration, to air-condition rooms with active extractor hoods or air extraction systems, such as catering kitchens and laboratories with extractor hoods, where the renewal airflow rate is variable depending on the number of active extractors.

The option involves an electronic device installed on board the unit that receives the activation status of the extractors on appropriate free contacts or via a single 4-20mA signal and modulates the amount of renewal air.

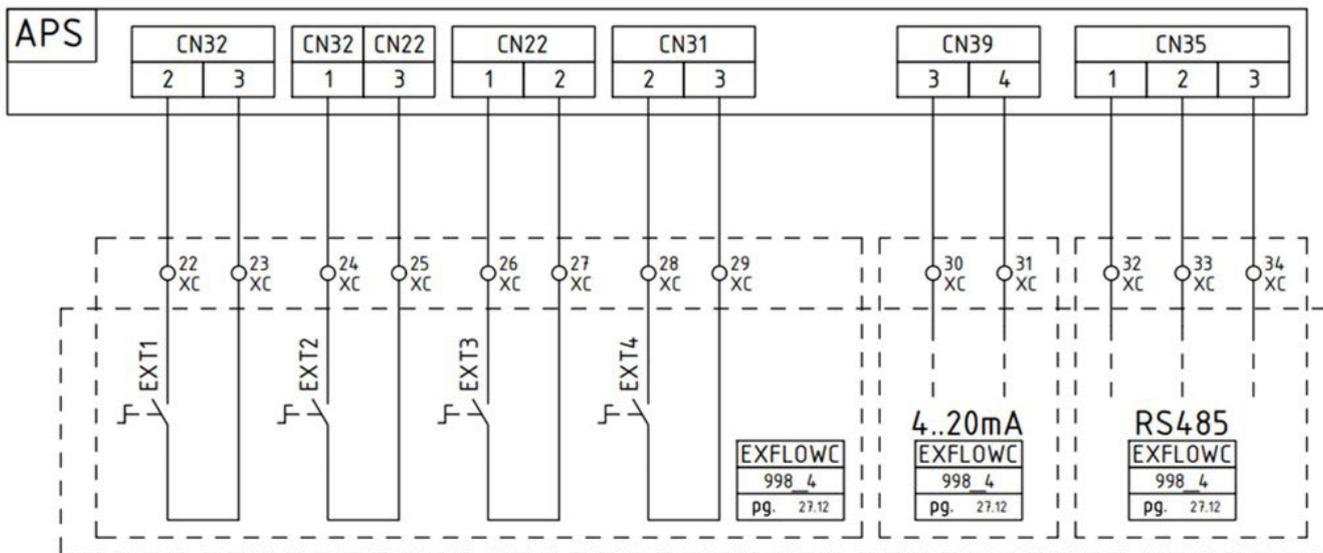
The unit is equipped with an exhaust fan section to allow air renewal even when the extractor hoods are switched off. The exhaust section is equipped with a plug-fan electronically controlled and managed by the machine logic according to the active exhaust hoods and the opening of the outdoor air damper. When sizing the unit, consider 50% of the rated capacity as the maximum extraction capacity of the hoods.

The option can be managed in 3 different ways:

- A** 4 ON-OFF contacts from extraction devices
- B** a single 4-20mA signal (arranged by the customer)
- C** from Modbus register by setting a 0-100% value

The connection wires for the 4-20mA signal or the ON-OFF status do not require shielding.

	Espulsione e tutti gli estrattori spenti	Espulsione e alcuni estrattori accesi	Espulsione e tutti gli estrattori accesi
	Estrattori tutti spenti	Estrattori parzialmente in funzione	Estrattori tutti attivi
	Ventilatore di Espulsione = MaxFanEsp	Ventilatore di Espulsione = modulazione tra Min/MaxFanEsp	Ventilatore di Espulsione = MinFanEsp
A	4 contatti aperti	1~3 contatti aperti	4 contatti chiusi
B	4mA	4~20mA	20mA
C	0%	0%~100%	100%



10.18 Remote controls

Check that the remote controls (ON-OFF etc) are connected and, if necessary, enabled with the respective parameters as indicated in the “electrical connections” section.

Check that probes and optional components are connected and enabled with the respective parameters (“electrical connections” section and following pages).

10.19 Start-up report

The measurements must be kept and made available during maintenance interventions.

10.20 2014/68/UE PED directive

DIRECTIVE 2014/68/UE PED gives instructions for installers, users and maintenance technicians as well.

Refer to local regulations; briefly and as an example, see the following:

Compulsory verification of the first installation:

- only for units assembled on the installer’s building site (for ex. Condensing circuit + direct expansion unit)

Certification of setting in service:

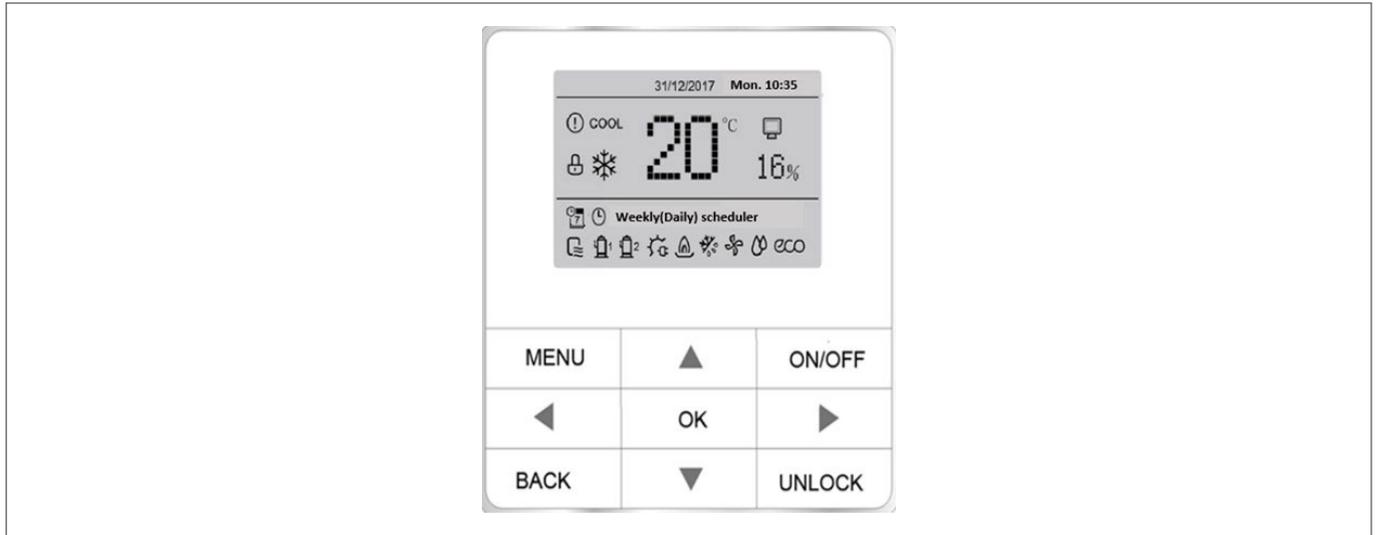
- for all the units

Periodical verifications:

- to be executed with the frequency indicated by the Manufacturer (see the “maintenance inspections” paragraph)

11. Control

11.1 Panel



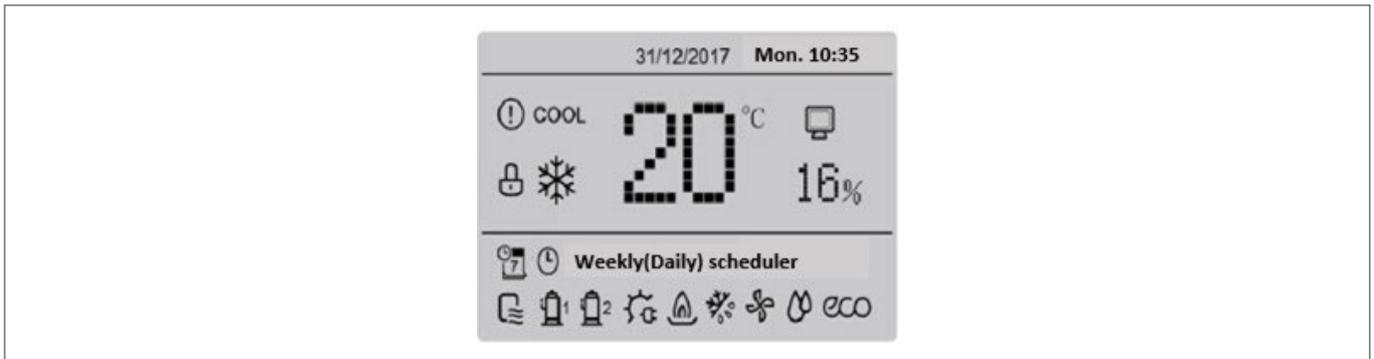
11.2 Buttons

Button	Function
MENU	To open the various menus from the HOME page
▲ ▼ ◀ ▶	▲ Up, ▼ Down, ◀ Left, ▶ Right To move the cursor, change the selection or the set value. The parameter can be quickly changed with a long press of the button.
OK	Confirms an operation.
ON/OFF	To set the ON/OFF function.
BACK	Returns to the previous level/page. Long press to return straight to the HOME screen.
UNLOCK	Press and hold for more than 3 seconds to lock or unlock the buttons of the keypad. If no button on the keypad is pressed for more than 120 seconds, the keypad locks automatically. The lockout time is adjustable between 60-240 seconds. MENU → INTERFACE SETTING → SCREEN LOCK TIME (s)

The wired controller must be connected to the unit.

Otherwise, the unit stops after 120 seconds and alarm E2 is signalled.

11.3 Display



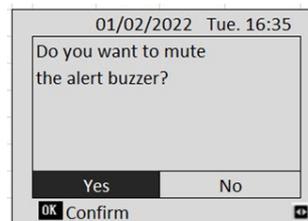
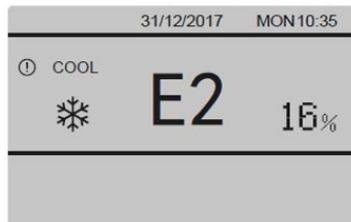
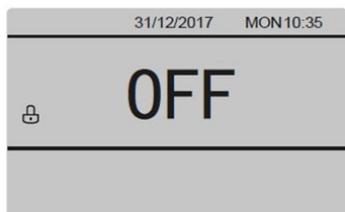
Icon	Meaning
	Mode: indicate respectively heating, cooling and auto
OFF	Controller deactivated (switched off)
	Remote control Appears when the unit is set from the keypad to be controlled by a remote terminal or by a remote switch.
20	Return air temperature. 16: return air humidity value (indicator lit only when humidity control is enabled) Generally, this area displays the actual return air temperature and relative humidity; when the set value is changed, it displays the changed temperature and relative humidity.
	Unit status: the indicator is lit when the unit is running.
	Compressor status: the indicator is visible when at least one compressor is running. The number to the right of the icon indicates the number of the refrigeration circuit.
	Auxiliary electric heater: the indicator is lit when the auxiliary electric heater or H2O coil is active.
	Gas module: the indicator is lit when the gas module is running.
	Defrosting: the indicator is lit when the unit is defrosting the external coil.
	Internal fan: the indicator is lit when the internal fan is running.
	Humidifier: the indicator is lit when the humidifier is running
	Silent / Super silent mode: the icon is visible when the function is active. If the function is active, the icon is displayed in place of the ECO icon.
eco	Eco running: the indicator is lit when the ECO function is set to ON.
	Timer: indicator on when a valid timer (weekly schedule) is set.
	Alarm: indicator on when there is a fault or a protection is tripped.
	Lock: indicator on when the keypad of the controller is locked.

11.3.1 Unlock/lock

Press **UNLOCK** for 3 seconds to lock/unlock the screen.

11.3.2 Switching on / off

Press **ON / OFF** to switch on/off.



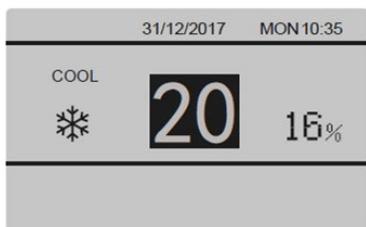
11.3.3 Temperature / humidity control

Press ◀ ▶ to adjust the temperature

Press ▲ ▼ to select

Press ◀ ▶ to adjust the humidity (if the sensor is enabled)

Press **OK** to confirm



WARNING

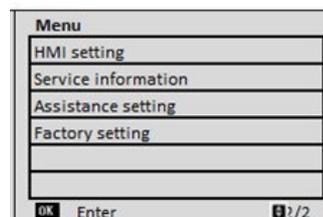
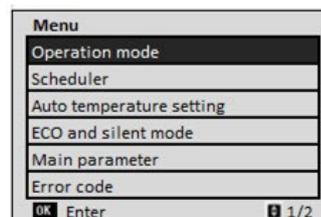
- ⚠ Before resetting an alarm identify and remove the cause that generate it.
- ⚠ Repeated reset can cause irreversible damages as maloperation of the system itself

11.3.5 Settings menu

Press ▲ ▼ to select each menu option.

Press **OK** to open the relevant submenu

Press **BACK** to return to the home page.



If no operations are performed for more than 10 seconds, the system automatically saves the mode setting and returns to the home page.

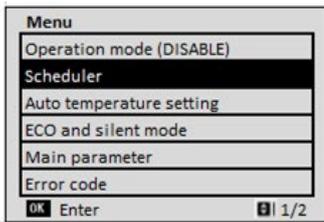
11.3.4 Alarms

If an alarm is triggered, the icon "!" flashes and the error code is displayed. The buzzer sounds 3 times for 180 sec.

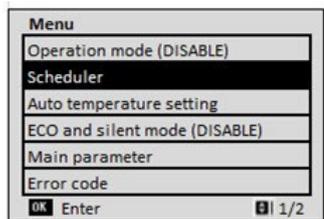
Press **OK**: the buzzer can be muted.

Select with left or right and press **OK**.

If ENMode=0 or =2 (in the ASSISTANCE menu) the operation mode is disabled



If ENMode=3 (in the ASSISTANCE menu) the operation mode and eco mode are disabled

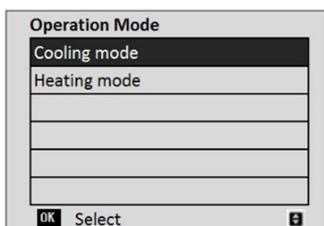
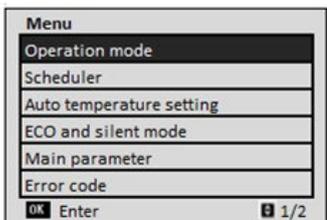


11.3.6 Operating mode

Choose the mode with ▲ ▼.

Confirm with **OK**.

After 10 seconds without any action, the mode is automatically saved.



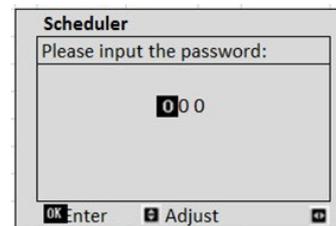
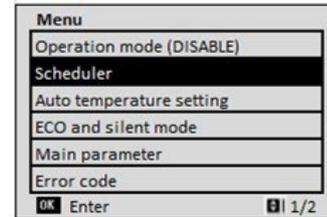
11.3.7 Scheduler

Select SCHEDULER with ▲ ▼ and press **OK**.

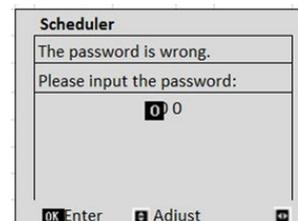
Press ◀ ▶ to select the password value

Press ▲ ▼ to enter the password value.

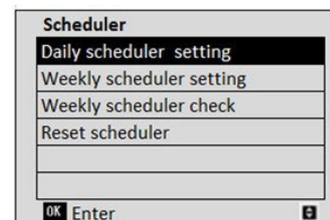
The password is **123** and cannot be changed.



If the password is entered incorrectly, the display shown is as follows:



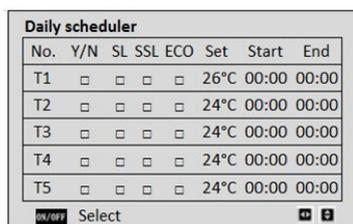
After entering the correct password, the display shown is as follows:



Daily scheduling

Select DAILY SCHEDULER with ▲ ▼ and press **OK**.

If the start time of the time slot is earlier than the current time set and displayed on the HMI, the requested action in that slot will be executed at the next cycle (the next day).



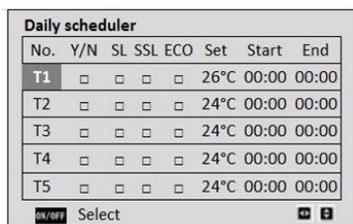
Press ▲ ▼ to select timer T1 - T5.

Press **ON/OFF** to enable/disable the timer selected.

Press ◀ ▶ to select each option to be set.

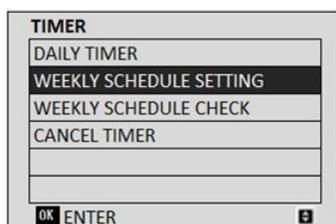
Press ▲ ▼ to adjust the temperature and start and end time parameters.

Press **OK** to confirm the setting and return to the previous page, or press **BACK** to cancel the setting and return to the previous page.



Weekly scheduling

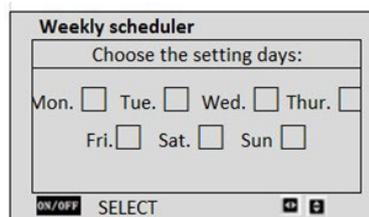
Select WEEKLY SCHEDULE with ▲ ▼ and press **OK**.



Press ◀ ▶, ▲ ▼ to select the days.

Press **ON/OFF** to confirm / delete the days selected.

After making the selection, press **OK** to go to the next screen.



Press ▲ ▼ to select timer T1 - T5.

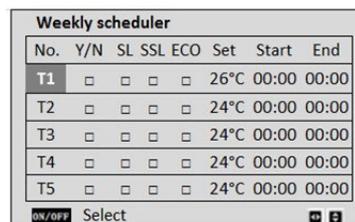
Press **ON/OFF** to enable/disable the timer selected.

Press **ON/OFF** to enable/disable the ECO setting.

Press ◀ ▶ to select each option to be set.

Press ▲ ▼ to adjust the temperature and start and end time parameters.

Press **OK** to confirm the setting and return to the previous page, or press **BACK** to cancel the setting and return to the previous page.

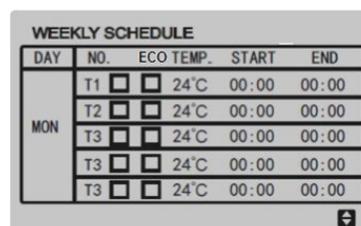


Weekly schedule check

Select WEEKLY SCHEDULE CHECK in the TIMER menu

The WEEKLY CHECK is used to display, but not change, the weekly schedule.

Press ▲ ▼ to move from one week day to the next.

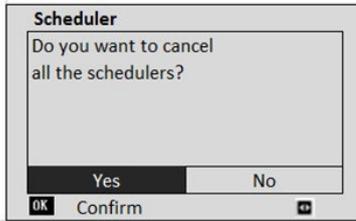


Eliminating Schedules

Select CANCEL TIMER in the TIMER menu

Press ◀ ▶ to select YES.

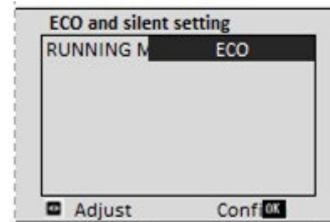
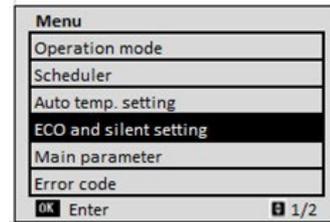
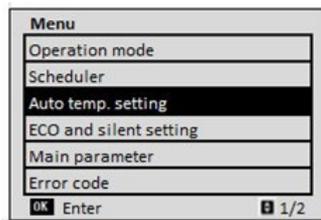
Press **OK** to delete all daily and weekly timer settings.



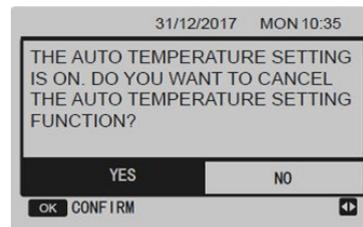
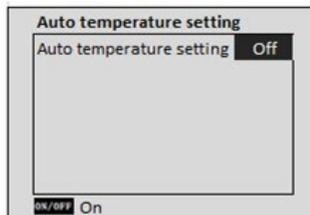
11.3.8 Automatic temperature

Press **ON/OFF** to enable/disable the mode.

Press **OK** to confirm or **BACK** to cancel the operation and return to the previous page.



When RUNNING is set to ECO, the setpoint cannot be changed from the HOME screen; if you try to change it, the following screen appears:



When AUTO TEMP. SETTING = ON, manual temperature control is disabled.

Next is the screen that appears if you try to change the temperature manually.

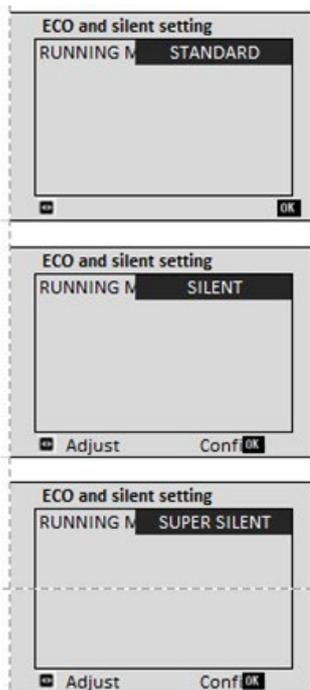
Press **◀ ▶** to select **YES**.

Press **OK** to disable the AUTO TEMP. function and return to the previous page.

If YES is selected, ECO MODE is disabled, if NO is selected, ECO MODE is still active.

11.3.10 Silent operation

It is also possible to set the level of silent operation.



Main parameter	
Ts - Set temperature	20°C
T1 - Return temperature	25°C
SetUR - Set humidity	55%
Urin - Return humidity	55%
QSetMand - Set airflow	3200m3/h
Qair - Airflow	3200m3/h
Adjust 1/3	

Main parameter	
SetCO2	900PPM
CO2	900PPM
Tc - Supply temperature	25°C
AirPurificationOnceEn	--
T1.1 - Return temperatu	25°C
Urin.1 - Indoor humidit	55%
Adjust 1/3	

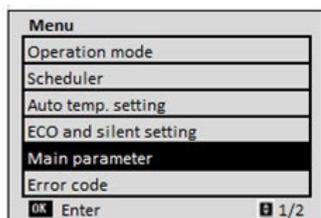
Main parameter	
T1.2 - Return temperature	25°C
Urin.2 - Indoor humidity	55%
T1.3 - Return temperature	25°C
Urin.3 - Indoor humidity	55%
T1.4 - Return temperature	25°C
Urin.4 - Indoor humidity	55%
Adjust 3/3	

11.3.11 Main parameters

Press ▲ ▼ to select the parameter.

Press ◀ ▶ to set the value.

Press **OK** to confirm the value or press **BACK** to cancel and return to the previous page.



If EnURCool = 0 and EnURHeat = 0 are set on the controller, SetUR is disabled; SetUR and URin are displayed as '--'.

If EnDiffMand = 0 is set on the controller, QSetMand is disabled; QSetMand and QAir are displayed as '--'.

If EnProbeCO2 = 0 is set on the controller, SetCO2 is disabled;

SetCO2 and VOC are displayed as '--'.

If the sensor does not run, the current value is displayed as '--'.

Tc = Unit supply temperature

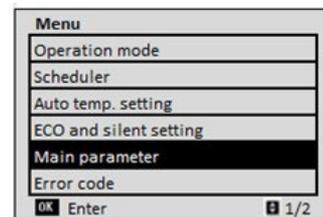
11.3.12 Alarm history

A maximum of 24 faults can be displayed (when 25 faults / protections occur, the fault that occurred first will be deleted).

Press ▲ ▼ to select ERROR CODE.

The time of the error code is the time when the corresponding protection/error occurs.

Press ▲ ▼ to switch to the other alarm history screens.



Error code			
1	E2	08:04	2-2022
2	E2	11:48	02-02-20
3	P0	11:47	01-01-20
4	E2	08:24	05-12-20
5	E2	14:30	06-08-20
6	E2	12:53	06-08-20

OK Enter 1/4

Select an error code and press **OK** to access the detail screen.

The screen is also the same when an error occurs.

Error code	
8:04	02-02-2022 Wed.
E2 Main board and HMI communication error	

OK Confirm

11.3.13 Keyboard settings

The backlight, buzzer, language, date and time can be configured.

Menu	
HMI setting	
Service information	
Assistance setting	
Factory setting	

OK Enter 1/2

HMI setting	
Backlight	On
Buzzer	Off
Language	En
Time	10:32
Date	02-02-2022
Screen lock time	120S

OK/ESC On 1

11.4 Alarms

ID	Description	Reset	Notes
1E0	Failure of EEPROM of Main PCB	A	
2E0	Failure of EEPROM of slave board	A	
E2	Communication error between main board and HMI wired control	A	(1)
xE3	Failure of internal exchanger's intermediate temperature probe T2_1 or T2_2	A	
E4	Failure of integration coil antifreeze temperature probe Tw	A	
xE5	Failure of external exchanger's outlet pipe temperature probe T3_1 or T3_2 (in cooling mode)	A	
E6	Failure of return air temperature probe T1	A	
E7	Failure of outdoor air temperature probe T4	A	
E8	Power supply phase monitor alarm (control from phase monitor in electrical panel)	A	
E9	Compressor type error	M	
EC	Failure of supply air temperature probe Tc	A	
xEd.y	Failure of compressor discharge temperature probe TP1_1 or TP2_1	A	
EP	Fire alarm	M	
EA	Refrigerant gas leakage alarm (displayed on HMI and Main PCB of the unit)	M	
EA	HMI temperature probe alarm (only displayed on HMI)	M	
EU	Supply fan / Electrostatic filter holder safety microswitch alarm	M	
xP0.y	High compressor discharge temperature or high pressure protection (pressure switch)	A/M	(2)
xP1	Low pressure in refrigeration circuit N.1 or N.2 (pressure switch)	A/M	(2)
xP4.y	High compressor current	A/M	(2)
P6	Failure of compressor module L0~L9 (available on display of Main PCB)	A	(2)
xP7	High temperature protection of condenser outlet pipe T3_1 or T3_2 in cooling mode	A/M	(2)
xP9.y	DC source fan protection	M	
Pb	Water coil antifreeze protection determined by Tw probe	A	
xPE	T2 probe temperature too low in Cooling mode	A	
xPF	T2 probe temperature too high in Heating mode	A	
xPL.y	High temperature protection of compressor inverter TF1_1 or TF2_1	A/M	(2)
xH0.y	Communication error between inverter compressor module and main board	A	
H1	High or low supply voltage protection of the unit	A	
xH4	Alarm P6 triggered 3 times in 60 minutes	M	
xH9.y	Alarm P9 triggered 10 times in 120 minutes	M	
xHE	Alarm for disconnection of electronic expansion valve EXV of refrigeration circuit N.1 or N.2	A	
F7	Enthalpy wheel protection	M	
F8	Exhaust fan protection	A	
C0	High temperature alarm of integration electric heaters	M	
C1	Humidifier alarm	A	
C2	Faulty constant pressure transducer in supply duct	A	
C3	Dirty filter alarm from air differential pressure switch	A	
C4	Electrostatic filters alarm	M	
C5	Failure of supply air relative humidity probe Us	A	
C6	Failure of return air relative humidity probe URin	A	
C7	Failure of outdoor air relative humidity probe URout	A	
C8	Failure of supply fan differential pressure transducer Pf1	A	
C9	Failure of return/outdoor air differential pressure transducer Pf2	A	
CA	Failure of CO2 or CO2-VOC air quality probe	A	

xL0.y	Compressor inverter protection	A	(3)
xL1.y	Low DC voltage compressor inverter protection		
xL2.y	High DC voltage compressor inverter protection		
xL4.y	Failure of compressor inverter MCE		
xL5.y	Compressor zero speed protection		
xL7.y	Phase loss from inverter module to compressor		
xL8.y	Compressor frequency variation is greater than 15Hz		
xL9.y	Compressor frequency variation is 15Hz		
HP	Energy meter error	A	
HA	Communication error between remote temperature and humidity probe and main board	A	
A4	Communication protocol version between master and slave boards does not match	M	

Type of alarm

A automatic reset

M manual reset

A/M automatic reset , after N alarm → manual reset

- X = 1 refrigeration circuit No.1 or System A
 2 refrigeration circuit No.2 or System B

- Y = 1 compressor or fan No.1
 2 compressor or fan No.2

- (1) E2, if it lasts for more than 120 seconds, stops the unit
 (2) The alarm has to be reset manually if triggered 10 times in 120 minutes
 (3) Alarm visible only on display of Main PCB. The HMI wired remote control will display generic code P6

11.5 MODBUS registers

Menu Page	Number	Num.	Name	Unit of measurement / value
1	1		Operation mode	OFF/ COOL/HEAT/ AUTO
	2		C1.1 current	A
	3		C1.1 frequency	Hz
	4		C1.2 current	Solo per 40.4 & 56.4
	5		C1.2 frequency	Solo per 40.4 & 56.4
	6		C2.1 current	A
2	7		C2.1 frequency	Hz
	8		C2.2 current	Solo per 40.4 & 56.4
	9		C2.2 frequency	Solo per 40.4 & 56.4
	10		Circuit 1 running time	Tempo funzionamento circuito salvato nell'HMI
	11		Circuit 2 running time	Tempo funzionamento circuito salvato nell'HMI
	12		Circuit 1 start times	Numero partenze circuito salvato nell'HMI
3	13		Circuit 2 start times	Numero partenze circuito salvato nell'HMI
	14		EXV1	Grado di apertura (0°480) valvola espansione
	15		EXV2	Grado di apertura (0°480) valvola espansione
	16		Outdoor fan 1 speed	r/min
	17		Outdoor fan 2 speed	r/min
	18		Indoor fan output	%
4	19		Indoor airflow	Portata aria mandata
	20		Exhaust fan output	%
	21		Damper output	% serranda aria esterna modulante
	22		Aux-heater	Richiesta riscaldatore ausiliario ON/OFF
	23		Aux-heater output	Richiesta riscaldatore ausiliario modulante
	24		Humidifier output	%
5	25		T1 – Return air temp.	Temperatura aria di ripresa ambiente
	26		Tc – Supply air temp.	Temperatura aria di mandata in ambiente
	27		T2_1 - Indoor coil temp.	Temperatura intermedia batteria interna
	28		T2_2 - Indoor coil temp.	Temperatura intermedia batteria interna
	29		T2B_1 - Indoor coil temp.	Non presente
	30		T2B_2 - Indoor coil temp.	°C
6	31		T3_1 - Outdoor coil temp.	Temperatura tubazione uscita condensatore (cooling)
	32		T3_2 - Outdoor coil temp.	Temperatura tubazione uscita condensatore (cooling)
	33		T4 - Outdoor temp.	Temperatura aria esterna
	34		TP1_1 – Discharge temp.	Temperatura scarico compressore
	35		TP1_2 – Discharge temp.	Temperatura scarico compressore (solo 40.4 & 56.4)
	36		TP2_1 – Discharge temp.	Temperatura scarico compressore
7	37		TP2_2 – Discharge temp.	Temperatura scarico compressore (solo 40.4 & 56.4)
	38		TF1_1 – Inverter temp.	Temperatura modulo compressore
	39		TF1_2 – Inverter temp.	Temperatura modulo compressore (solo 40.4 & 56.4)
	40		TF2_1 – Inverter temp.	Temperatura modulo compressore
	41		TF2_2 – Inverter temp.	Temperatura modulo compressore (solo 40.4 & 56.4)
	42		Tw - Water coil temp.	Temperatura acqua batteria integrazione

8	43	Pf1 – Indoor fan pres.	Sonda portata aria di mandata	Pa
	44	Pf2 – Return air pres.	Sonda gestione pressione ambiente	Pa
	45	Pf3 – Constant pres.	Sonda gestione pressione costante mandata	Pa
	46	URin – Return hum.	Umidità relativa aria di ripresa ambiente	%
	47	URout – Outdoor hum.	Umidità relativa aria esterna	%
	48	URs – Supply hum.	Umidità relativa aria di mandata	%
9	49	CO2	Valore CO2 o CO2+VOC	PPM
	50	Outdoor CO2	Valore esterno di CO2	PPM
	51	Power limit	% Demand Limit attiva	%
	52	SV1_1	Valvola solenoide post-riscaldamento a gas caldo	ON/OFF
	53	SV1_2	Valvola solenoide post-riscaldamento a gas caldo	ON/OFF
	54	BMS address	Indirizzo Modbus dell'unità	--
10	55	Capacity		kW
	56	Sensible Capacity		kW
	57	L1 Voltage		V
	58	L2 Voltage		V
	59	L3 Voltage		V
	60	L1 Current		A
11	61	L2 Current		A
	62	L3 Current		A
	63	Active power		kW
	64	Reactive power		kvar
	65	Apparent power		kVA
	66	Power factor		--
12	67	Power consumption		kWh
	68	HMI software		DATE / VERSION
	69	Main software		DATE / VERSION
	70	EEPROM software		VERSION

Information for the service

Select SERVICE INFORMATION

Press ▲ ▼ to move the cursor

<table border="1"> <thead> <tr> <th colspan="2">Service information</th> </tr> </thead> <tbody> <tr><td>Operation mode</td><td>Cool</td></tr> <tr><td>C1.1 current</td><td>19A</td></tr> <tr><td>C1.1 frequency</td><td>103HZ</td></tr> <tr><td>C1.2 current</td><td>18A</td></tr> <tr><td>C1.2 frequency</td><td>101HZ</td></tr> <tr><td>C2.1 current</td><td>19A</td></tr> </tbody> </table> <p style="text-align: right;">1/12 </p>	Service information		Operation mode	Cool	C1.1 current	19A	C1.1 frequency	103HZ	C1.2 current	18A	C1.2 frequency	101HZ	C2.1 current	19A	<table border="1"> <thead> <tr> <th colspan="2">Service information</th> </tr> </thead> <tbody> <tr><td>C2.1 frequency</td><td>103HZ</td></tr> <tr><td>C2.2 current</td><td>18A</td></tr> <tr><td>C2.2 frequency</td><td>101HZ</td></tr> <tr><td>Circuit 1 running time</td><td>8hours</td></tr> <tr><td>Circuit 2 running time</td><td>8hours</td></tr> <tr><td>Circuit 1 start times</td><td>9</td></tr> </tbody> </table> <p style="text-align: right;">2/12 </p>	Service information		C2.1 frequency	103HZ	C2.2 current	18A	C2.2 frequency	101HZ	Circuit 1 running time	8hours	Circuit 2 running time	8hours	Circuit 1 start times	9	<table border="1"> <thead> <tr> <th colspan="2">Service information</th> </tr> </thead> <tbody> <tr><td>Circuit 2 start times</td><td></td></tr> <tr><td>EXV1</td><td>144</td></tr> <tr><td>EXV2</td><td>144</td></tr> <tr><td>Outdoor fan1 speed</td><td>0r/min</td></tr> <tr><td>Outdoor fan2 speed</td><td>0r/min</td></tr> <tr><td>Indoor fan output</td><td>70%</td></tr> </tbody> </table> <p style="text-align: right;">3/12 </p>	Service information		Circuit 2 start times		EXV1	144	EXV2	144	Outdoor fan1 speed	0r/min	Outdoor fan2 speed	0r/min	Indoor fan output	70%
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Main software	15-01-23	V28																																														
EEPROM		V37																																														

12. Communication protocols

Available in English only

MODBUS

Enabling

Menu > Assistance setting > password > operation parameter :

05 EnOnOff = 2

06 EnMode = 2

Communication spec:RS-485

Communication Parameters *	
BaudRate	9600bps
Data Bit	8
Stop Bit	1
Parity	NONE

*cannot be changed

Enabling

The Modbus address can be modified by parameter P31 BMS_Address.

Menu > Assistance setting > password > operation parameter:

P31 BMS_Address

Function Code	
03	Read Holding Registers
06	Write Single Register
16	Write Multiple Registers

Error code		
Exception Code		
01	Illegal function code	Unsupported function code.
02	illegal data address	The address that is sent when query or set, undefined in the online controller.
03	illegal data value	The parameters set are illegal, beyond the reasonable range or not the valid parameter for current state of the wired controller.

Accessed by 03&06&16 command for both HMI and BMS		
Addr	Data	Description
0	Unit mode Set	0: OFF 1: ON Cool 2: ON Heat
1	Temperature Set	14~28°C
2	Humidity Set	0~100%
3	Set air quantity	20.2: 8500~14000 m ³ /h 28.2: 13000~20500 m ³ /h 40.4: 17000~26000 m ³ /h 56.4: 22000~34000 m ³ /h
4	Auto Temperature Set	0:Disable 1:Enable
5	ECO mode	0:Disable 1:Enable
6	Air Quality Setpoint	100~2000 ppm
7	FollowMe_SetTemp. (1)	-25~70°C
8	DemandLimit request (2)	0~100%
9	FanSpeedOutMandBms (3)	30~100%
10	ExFlowBMS (4)	0~100%
11	Clean function	0:Disable 1:Enable
12	SilentMode	0:Disable 1:Silent 2:Super Silent

(1) It is possible to set the FollowMe Set Temp only when the FollowMe function is enabled by parameter on the HMI. This register is still accessible and writable even if the FollowMe function is not enabled but its content will not be taken into consideration and will have no effect.

Unit:0.1°C . 0x8000: HMI temperature sensor Fault

(2) (3) (4) These functions, to be managed by BMS, must be suitably enabled by the HMI by a Clivet qualified technician

NOTE: the registers below are read only

Readable registers by Modbus function "03"		
Addr	Data	Description
200	Modbus address number of the unit	BMS address
202	Rooftop size	60: 20.2 80: 28.2 120: 40.4 160: 56.4
203	Operating mode	0 = OFF, 1 = ON Cooling, 2 = ON Heating
204	Circuit 1 operating status	0: Off 1: On
		BIT0: Unit status (lsb)
		BIT1: C1_1 status
		BIT2: C2_1 status
		BIT3: Electrical Heater status
		BIT4: Other auxiliary heater status
		BIT5: Defrost status
		BIT6: Supply fan status
		BIT7: Humidifier status
		BIT8: ECO mode status
		BIT9: circuit 1 Fault
		BIT10: circuit 1 SV1_1 status
		BIT11: circuit 2 SV1_2 status
BIT12: clean function status		
205	C1_1 operating current	Unit: A
206	C2_1 operating current	Unit: A
207	C1_1 operating frequency	Unit: Hz
208	C2_1 operating frequency	Unit: Hz
209	Circuit 1 EXV opening degree	steps
210	Circuit 1 outdoor fan speed	rpm
211	Supply fan cmd signal	%
212	Supply airflow rate	m ³ /h
213	Exhaust fan cmd signal	%
214	Fresh air damper cmd signal	%
215	Fault code	BIT0-BIT7-Error Code (LSB)
		BIT8-BIT11: Components ID
		BIT12-BIT15: Circuit ID
		Ex:Circuit ID=1, Components ID=3, Error code = E1, Then display:1E13
217	T1 Return Air Temp.	(-25~70°C), Unit:1°C
218	Tc Supplied Air Temp.	(-25~70°C), Unit:1°C
219	T2_1 inner (middle) exchanger temp. probe	(-25~70°C), Unit:1°C
220	T3_1 external (outlet pipe in cooling) exchanger temp. probe	(-25~70°C), Unit:1°C

221	T4 Outdoor Air Temp.	(-25~70°C), Unit:1°C
222	TP1_1 CMP discharge temperature	(-25~70°C), Unit:1°C
223	TP1_2 CMP discharge temperature	(-25~70°C), Unit:1°C
224	TF1_1 CMP inverter heatsink temperature probe	(0~140°C), Unit:1°C
225	TF2_1 CMP inverter heatsink temperature probe	(0~140°C), Unit:1°C
227	Tw Water Coil Antifreeze Temp. Probe	(0~140°C), Unit:1°C
228	Pf1 Sonda portata aria di mandata	Pa (0~2000)
229	Pf2 Ambient pressure management probe	Pa (0~2000)
230	URi Return Air R.H.%	%
231	Uro Outdoor Air R.H.%	%
232	CO2/VOC Return Air	0-2000 ppm
234	Auxiliary Heater cmd signal	%
235	Humidifier cmd signal	%
237	Pf3 differential pressure sensor for constant supply duct pressure control	Pa (0~2000)
237	Outdoor CO2	0-2000 ppm
240	Circuit 2 running state	0: Off 1: On
		BIT0: Unit status (lsb)
		BIT1: C1_2 status
		BIT2: C2_2 status
		BIT3: reserved
		BIT4: reserved
		BIT5: Defrost status circuit 2
		BIT6: reserved
		BIT7: reserved
		BIT8: reserved
BIT9: circuit 2 Fault		
241	Circuit 2 outdoor fan speed	rpm
242	Circuit 2 EXV opening degree	steps
243	T2_2 inner (middle) exchanger temp. Probe	(-25~70°C), Unit:1°C
244	T3_2 external (outlet pipe in cooling) exchanger temp. Probe	(-25~70°C), Unit:1°C
246	TP1_2 CMP discharge temperature	(0~140°C), Unit:1°C
247	TP2_2 CMP discharge temperature	(0~140°C), Unit:1°C
248	TF1_2 CMP inverter heatsink temperature probe	(0~140°C), Unit:1°C
249	TF2_2 CMP inverter heatsink temperature probe	(0~140°C), Unit:1°C
251	C1_2 operating current	Unit: A
252	C2_2 operating current	Unit: A
253	C1_2 operating frequency	Unit: Hz
254	C2_2 operating frequency	Unit: Hz

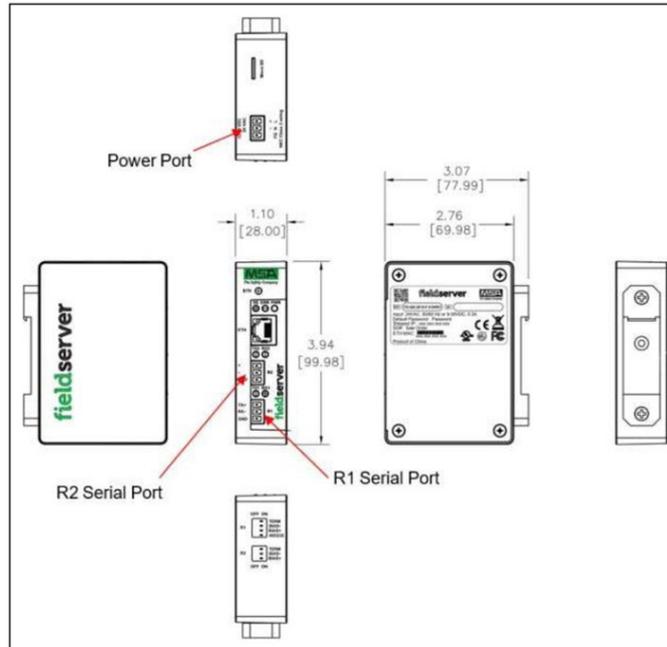
260	History Fault code1	Last error appeared (chronologically)
		BIT0-BIT7: Error Code
		BIT8-BIT11: Components ID
		BIT12-BIT15: Circuit ID
		i.e.: Circuit ID=1, Components ID=3, Error code = E1, Then display:1E1.3 for more information, check the paragraph after this table.
261	History Fault code2	Error that appeared earlier than the one reported in reg. 260 *
262	History Fault code3	Error that appeared earlier than the one reported in reg. 261*
272	T1.1 Return temperature	(-25~70°C), Unit:1°C
273	URin.1 Indoor humidity	%
274	T1.2 Return temperature	(-25~70°C), Unit:1°C
275	URin.2 Indoor humidity	%
276	T1.3 Return temperature	(-25~70°C), Unit:1°C
277	URin.3 Indoor humidity	%
278	T1.4 Return temperature	(-25~70°C), Unit:1°C
279	URin.4 Indoor humidity	%
280	L1Voltage	Unit:0.01V
281	L2Voltage	Unit:0.01V
282	L3Voltage	Unit:0.01V
283	L1Current	Unit:0.001A
284	L2Current	Unit:0.001A
285	L3Current	Unit:0.001A
286	ActivePower	Unit:10W
287	ReactivePower	Unit:10var
288	ApparentPower	Unit:10VA
289	Powerfactor	
290	TotalActEnergyH	kWh
291	TotalActEnergyL	
295	URs supplied air R.H.%	%
296	Capacity	kW
297	Demand Limit Feedback	%
298	Sensible capacity	kW
400	SW version information1	High byte: year low byte: month
401	SW version information2	High byte: day low byte: version
402	Eeprom version	
403	SW version information1 for extension board	High byte: year low byte: month
404	SW version information2 for extension board	High byte: day low byte: version

* the decoding logic is the same used for register 260

12.1 BACNET MSTP, BACNET IP and MODBUS TCP (option)

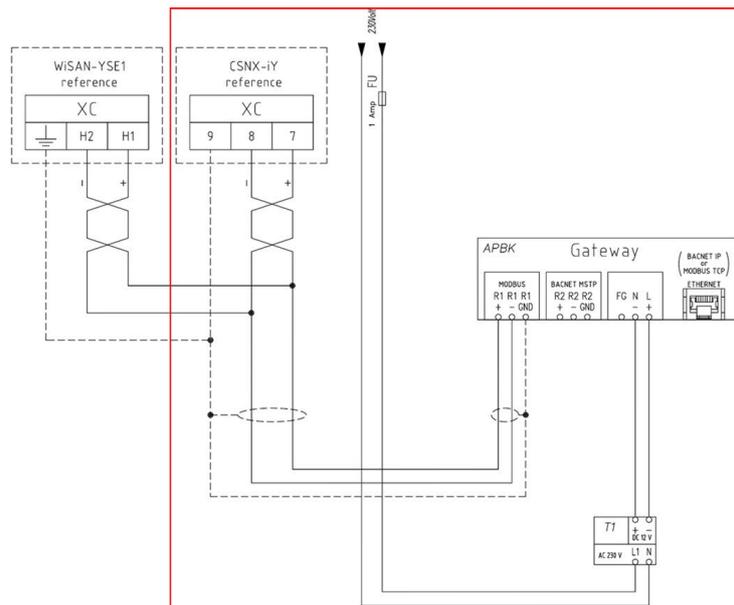
The following communication protocols can be used with a Gateway (option provided separately).

- Modbus TCP
- Bacnet MSTP
- Bacnet IP



Installation of a Gateway requires a power supply unit, which will be supplied with the Gateway itself with code PEBU00009. The power supply and gateway connection cables are the responsibility of the customer.

Below is an excerpt from the instructions on installation of the module and power supply unit on the unit itself. For more information, please refer to the instructions for the accessory (PEBU00009): IA23A041ML.



13. SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32

13.1 Area checks

Before working on systems containing flammable refrigerants, perform safety checks to reduce the risk of combustion to the minimum. Before performing any repair operations on the cooling system, comply with the following warnings.

13.2 Work procedures

Operations must be performed following a controlled procedure so as to reduce the risk of flammable gases or vapours developing.

13.3 General work area

All the personnel in charge with maintenance operations and other operators working in the local area must be instructed and monitored as regards the nature of the intervention.

Avoid working in tight spaces. The area surrounding the working space must be cordoned off. Make sure the area is secured by monitoring the flammable material.

13.4 Check the presence of refrigerant

Both before and during operations, the area must be monitored with a dedicated refrigerant detector to make sure the technician is aware of the presence of potentially-flammable environments.

Make sure the leak detection equipment is suitable for use with flammable refrigerants and therefore without sparks, suitably sealed or intrinsically safe.

13.5 Presence of the fire extinguisher

If hot interventions are not performed on cooling equipment or connected components, suitable fire fighting equipment must be kept at hand.

Keep a dry-powder or CO₂ extinguisher near the loading area.

13.6 No ignition source

It is absolutely forbidden to use ignition sources that may lead to fire or explosion during operations on the cooling system or on pipes that contain or have contained flammable refrigerant.

All possible ignition sources, including cigarettes, must be kept sufficiently away from the installation, repair, removal and disposal site as flammable refrigerant may be released in the surrounding area.

Before starting operations, the area surrounding the equipment must be inspected to guarantee the absence of flammables or combustion risks. "SMOKING IS FORBIDDEN" signs must be affixed.

13.7 Ventilated area

Before intervening on the system or performing any hot intervention, make sure to be in an outdoor or suitably ventilated area.

Ventilation must be maintained during operations. Ventilation must disperse the released refrigerant safely, preferably outdoors in the atmosphere.

13.8 Cooling equipment checks

Should a replacement be necessary, the new components installed must be suitable for the purpose envisaged and compliant with specifications.

Always follow the manufacturer guidelines on maintenance and assistance. In case of doubt, contact the manufacturer technical office for assistance.

The following checks must be performed on systems containing flammable refrigerants:

- the quantity of the charge must comply with the size of the room where the parts containing refrigerant are installed;
- the machine and ventilation intake function correctly and are not obstructed;
- If an indirect cooling circuit is used, the secondary circuits must be checked to verify the presence of refrigerants; the marking on the equipment remains visible and readable;
- Make sure markings and symbols are always readable; cooling pipes or components must be installed in a position that makes improbable their exposure to substances that may corrode the components containing refrigerant, unless they are manufactured with material intrinsically resistant to corrosion or suitably protected against corrosion.

13.9 Electrical device checks

The repair and maintenance of electric components must include initial safety checks and component inspection procedures.

In case of a fault that compromises safety, do not perform any electrical connection to the circuit until said fault is suitably resolved.

If it is not possible to repair the fault immediately and electrical components need to remain functioning, a temporary solution must be adopted. This must be reported to the owner of the equipment so as to keep all parties informed.

Initial safety checks must include:

- that condensers are emptied. This operation must be performed safely to avoid any sparks;
- that electrical components and wiring are not exposed during the charging, recovering or venting phases;
- That the earth conductor is continuous.

13.10 Repairing sealed components

- During the reparation operations of sealed components, disconnect all the equipment before removing sealed casings etc. If, during operations, it is absolutely necessary for the equipment to remain connected, a leak detection device must be placed in the most critical point so as to report any potentially-dangerous situation.
- Pay particular attention to what follows to guarantee that, while intervening on electrical components, the housing is not altered in a way so as to affect the level of protection. This includes damage to cables, an excessive number of connections, terminals not compliance with the original specifications, damage to gaskets, an unsuitable installation of gaskets, etc.
- Make sure the device is installed safely.
- Check that the seals or sealing materials are not altered in such a way that they no longer impede the entry of flammable environments. Spare parts must comply with manufacturer specifications.

WARNING

⚠ Using silicone sealants may inhibit the effectiveness of a few types of leak detection equipment. It is not necessary to isolate intrinsically safe components before performing operations on them.

13.11 Reparation of intrinsically safe components

Do not apply permanent inductive or capacitive loads to the circuit without making sure that they do not exceed the admissible voltage and current allowed for equipment in use.

Intrinsically safe components are the only component type on which operations can be performed in a flammable atmosphere. The testing device must show a correct value. Replace components only with the parts specified by the manufacturer.

Following a leak, other parts could lead to the combustion of the refrigerant in the atmosphere.

13.12 Wires

Make sure wires are not subjected to wear, corrosion, excessive pressure or vibration, that there are no sharp edges and that they do not produce other negative effects on the environment. The inspection must also keep into consideration the effects of time or the continuous vibration caused e.g. by compressors or fans.

13.13 Detection of flammable refrigerants

Under no circumstance is it possible to use potential ignition sources to search or detect refrigerant leaks.

Do not use halide lights (or any other open flame detectors).

13.14 Leak detection methods

The following leak detection methods are considered acceptable for systems containing flammable refrigerants. Electric leak detectors must always be used to identify flammable refrigerants, although they do not present a suitable sensitivity level or require recalibration (detection equipment must be calibrated in an area free from refrigerants).

Check that the detector is not a possible source of ignition and that it is suitable for the refrigerant. Leak detection equipment must always be set to an LFL percentage and calibrated depending on the refrigerant used, so the correct gas percentage (25% max) must be verified.

Leak detection fluids are suitable for most refrigerants, although using detergents containing chlorine should be avoided as this substance may react with the refrigerant and corrode copper pipes.

If a leak is suspected, all open flames must be removed or switched off.

If a leak is identified that requires brazing, all the refrigerant must be recovered from the system or isolated (using interception valves) in a section of the system far away from the leak. Oxygen-Free-Nitrogen (OFN) is then purged through the system both before and during the brazing procedure.

13.15 Removal and evacuation

When intervening on the cooling circuit to perform repair work or any other type of work, always follow the normal procedure. However, considering the risk of flammability, we recommend following the best practices. Comply with the following procedure:

- remove the refrigerant;
- purge the circuit with inert gas;
- evacuate;
- purge again with inert gas;
- interrupt the circuit with interruption or brazing.

The refrigerant charge must be collected in suitable recovery tanks. To make the unit safe, flushing with Oxygen-free-Nitrogen must be performed. This procedure may have to be repeated multiple times. Do not use compressed air or oxygen for this operation.

Flushing is obtained interrupting the system vacuum with OFN and filling until the operating pressure is obtained, then releasing into the atmosphere and restoring the vacuum. This process must be repeated until there is no trace of refrigerant in the system.

When using the final OFN charge, the system must be vented to the atmospheric pressure to allow the intervention. This step is essential to perform brazing operations on the pipes.

Make sure that the vacuum pump intake is not near ignition sources and that there is suitable ventilation.

13.16 Charging operations

In addition to conventional charging operations, the following requirements must be complied with:

- When using charging equipment, make sure that the various refrigerants are not contaminated. Flexible tubes or conduits must be as short as possible to reduce to the minimum the quantity of refrigerant contained.
- Tanks must be kept in a vertical position.
- Before loading the system with refrigerant, check that the cooling system is earthed.
- Label the system when fully charged (unless already labelled).
- Make sure not to fill the cooling system excessively.
- Before recharging the system, the pressure must be tested with OFN. A leak test must be performed after the charging operations but before commissioning. Before leaving the site, perform an additional leak test.

13.17 Dismantling

Before performing this procedure, it is essential that the technician has become familiar with the equipment and the relative details.

We recommend employing good practices for a safe recovery of the refrigerants.

Before performing the operation, take a sample of oil and refrigerant should an analysis be necessary before reusing the regenerated refrigerant. Before performing the operation, check the availability of electricity.

- Become familiar with the equipment and how it functions.
- Electrically isolate the system.

Before attempting the procedure, check that:

- The mechanical manipulation equipment is available, if necessary, to handle refrigerant tanks;
- All the personal protection equipment is available and employed correctly;
- The recovery procedure is monitored at all times by skilled personnel;
- The recovery equipment and tanks comply with suitable standards.
- If possible, pump the cooling system.
- If it is not possible to obtain a vacuum, make sure that a collector removes the refrigerant from various parts of the system.
- Before proceeding with the recovery, check that the tank is located on the scales.
- Start up the recovery machine and use it following the instructions by the manufacturer.
- Do not fill the tanks excessively. (Do not exceed 80% of the liquid volume).
- Do not exceed the tank's maximum operating pressure, not even momentarily.
- Once the tanks are filled correctly and the process is over, make sure that the tanks and equipment are immediately removed from the site and that all insulation valves on the equipment are closed.
- The refrigerant recovered must not be loaded into another cooling system unless it has been cleaned and checked.

13.18 Labelling

Equipment must be labelled reporting the dismantling and emptying of the refrigerant.

Labels must be dated and signed.

Make sure all the equipment is labelled and reporting the presence of flammable refrigerant.

13.19 Recovery

When removing the refrigerant from the system, please adopt good practices to remove all refrigerants safely in case of both assistance or decommissioning operations.

When transferring the refrigerant into the tanks, make sure only suitable tanks are used to recover the refrigerant.

Make sure enough tanks are used.

All the tanks to be used are designated for the recovered refrigerant and are labelled for that specific refrigerant (e.g. special tanks for refrigerant collection).

Tanks must be equipped with a perfectly-functioning safety valve and relative interception valves.

Empty recovery tanks are evacuated and, if possible, cooled before recovery.

Recovery equipment must be perfectly functioning with the respective instruction booklets at hand and they must be suitable to recover flammable refrigerants. A series of perfectly-functioning calibrated scales must also be available.

Flexible tubes must be equipped with leak-proof disconnection fittings in good condition. Before using the recovery machine, make sure it is in good condition, maintained and that all associated electrical components are sealed to avoid combustion in case of a refrigerant leak. Please contact the manufacturer in case of doubt.

The refrigerant recovered must be taken to the supplier in suitable recovery tanks and with the relative waste transfer note suitably filled in.

Do not mix the refrigerants in the recovery units nor in the tanks.

If it is necessary to remove compressors or compressor oils, make sure they are evacuated to an acceptable level to make sure no trace is left of the flammable refrigerant inside the lubricant. The evacuation process must be performed before taking the compressors back to the suppliers.

The electric resistance must be used with the compressor body only to accelerate this process.

Operations to discharge the oil from the system must be performed in full safety.

13.20 Transport, mark and storage

- 1** Transport of equipment containing flammable refrigerants.
Compliance with transport regulations
- 2** Marking of equipment with symbols.
Compliance with local regulations
- 3** Disposal of equipment employing flammable refrigerants.
Compliance with national regulations
- 4** Storage of equipment/devices.
The equipment must be stored in compliance with the instructions provided by the manufacturer.
- 5** Storing packed (unsold) equipment.
Packing must be performed in such a way that mechanical damage to the equipment inside it does not cause refrigerant leaks. The maximum number of elements that can be stored together is determined by local regulations.

14. Maintenance

14.1 Safety

Operate in compliance with safety regulations in force.

To carry out the operations use protection devices:

gloves, goggles, helmet, headphones, protective knee pads.



All operations must be carried out by personnel trained on possible risks of a general nature, electrical and deriving from operating with equipment under pressure.

Only qualified personnel can operate on the unit, as required by the regulation in force

14.2 General

Maintenance must be performed by authorized centres or by qualified personnel

The maintenance allows to:

- maintaining the unit efficient
- reduce the deterioration speed all the equipment is subject to over time
- collect information and data to understand the efficiency state of the unit and prevent possible faults



WARNING

- ⚠ **Before checking, please verify the following:**
 - ⚠ the electrical power supply line should be isolated at the beginning
 - ⚠ the unit isolator is open, locked and equipped with the suitable warning
 - ⚠ make sure no voltage is present
 - ⚠ **After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.**

- ⚠ **Before accessing check with a multimeter that there are no residual voltage.**

14.3 Frequency of interventions

Perform an inspection every 6 months.

However, frequency depends on the type of use.

Pan inspections at close intervals in the event of:

- frequent use (continuous or very intermittent use, near the operating limits, etc)
- critical use (service necessary)

WARNING

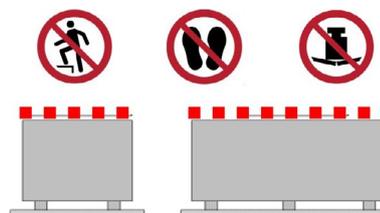
- ⚠ **Before performing any operation, read the warnings found in the Maintenance chapter.**

- ⚠ **SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32**



Do not go up to the surface

Not placing heavy objects



14.4 Recommended periodic checks sheet

		intervention frequency (months)		
		1	6	12
1	presence of corrosions			X
2	panel fixing			X
3	pan fixing		X	
4	coil cleaning		X	
5	bowl cleaning + sanitisation		X	
6	outflow test		X	
7	air filters cleaning / inspection	X		
8	air flow rate measurement			X
9	channelling: anti-vibration devices and fastenings check			X
10	check of the fixing and the insulation of the power lead			X
11	check of the earthing cable			X
12	electric panel cleaning			X
13	power remote controls status			X
14	clamp closure, cable isolation integrity			X
15	voltage and phase unbalancing (no load and on-load)		X	
16	absorptions of the single electrical loads		X	
17	compressor casing heaters test		X	
18	checking for leaks *			*
19	cooling circuit work parameter detection		X	
20	safety valve *			*
21	protective device test: pressure switches, thermostats, flow switches etc..		X	
22	control system test: setpoint, climatic compensations, capacity stepping, air flow-rate variations		X	
23	control device test: alarm signalling, thermometers, probes, pressure gauges etc		X	
24	electrical heaters check - option			X
25	water coil check - option			X
26	inspection/cleaning of the enthalpy wheel module (enthalpy wheel and G4 filters)			

WARNING

⚠ *Refer to the local regulations. Companies and technicians performing installation, maintenance/repair, leak control and recovery operations must be CERTIFIED as set out by the local regulations.

14.5 Unit booklet

It's advisable to create a unit booklet to take notes of the unit interventions.

In this way it will be easier to adequately note the various interventions and aid any troubleshooting.

Report on the booklet:

- date
- intervention description
- carried out measures etc.

14.6 Structure

Check the condition of the parts making up the structure

Paint so as to eliminate or reduce oxidation at the points in the unit where this problem may occur

Check that the panelling is fastened correctly

Poor fastening may give rise to malfunctions and abnormal noise and vibration

14.7 Outdoor air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

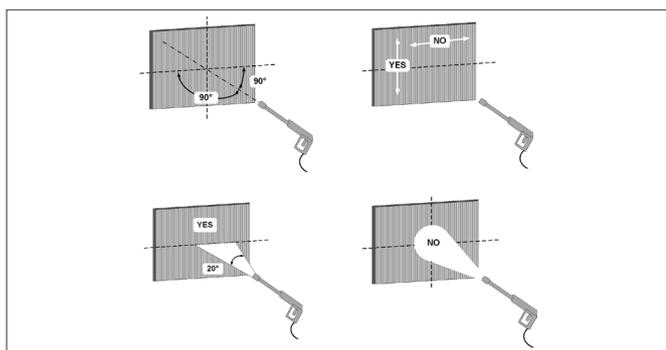
The coil must allow maximum thermal exchange, therefore, the surface must be clear from dirt and scaling.

Clean the air inlet side.

Use a soft brush or aspirator or pressurised air jet or high-pressure water jet machine.

Keep the direction parallel to the flow of the flaps to avoid damages.

Check the aluminium flaps have not been damaged or folded, on the contrary contact an authorised after-sales assistance centre to "comb" the coil for excellent air flow.



14.8 Indoor air coil

Accidental contact with the exchanger flaps can cause injuries from cut: use protective gloves.

The finned surfaces of the cooling coils and, in particular, the condense collection bowls constitute places where microorganisms and moulds greatly flourish. It is very important to foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

It is very important to foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

14.9 Condensation collection basin

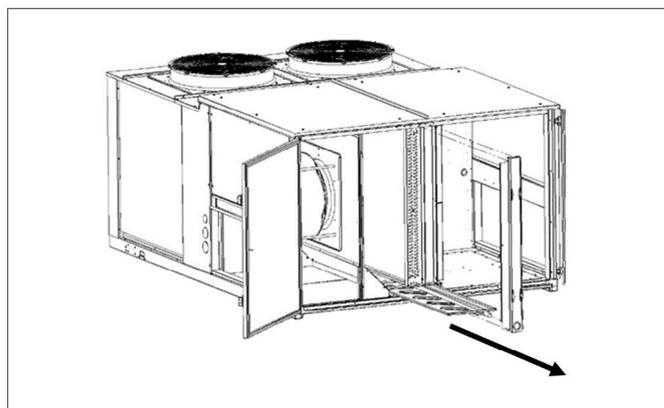
Dirt or scale can give rise to clogging.

Also, microorganisms and mould can flourish in the bowl.

It is very important to foresee periodical cleaning with suitable detergents and, eventually, disinfect with sanitising products.

Once cleaning is completed, pour water inside the bowl to check the regular outflow.

Removable bowl



14.10 G4 (ISO 16890 Coarse 60%) Folded air filters

It is very important for the air treatment coil to offer maximum thermal exchange: the unit must always work with clean and installed filters. Cleaning and replacement of filters are very important from a hygienic-sanitary point of view.

It is very important for the air treatment coil to offer maximum thermal exchange: the unit must always work with clean and installed filters. Cleaning and replacement of filters are very important from a hygienic-sanitary point of view.

Operation with clogged filters leads to a reduction in the air flow rate with malfunctionings and block, up to possible breaks in the unit.

The frequency with which the filters must be checked depends on the quality of the outdoor air, the unit operation hours, the dustiness and crowding of rooms.

Frequency can indicatively vary from WEEKLY to MONTHLY. It is advised to start with frequent checks, subsequently adjusting frequency to degree of detected dirt.

- 1 Remove the closing panels
- 2 Delicately remove the filter avoiding dirtying the area below
- 3 Check the condition, if necessary proceed with the replacement

- 4 Do not wash the filters, washing can compromise their functionality.
- 5 Old filters must be disposed of according to the current standards.

14.11 F7 filters (ISO 16890 ePM1 55%)/F9 (ISO 16890 ePM1 80%)

Option

The filters are not renewable, once dirty they must be replaced.

- 1 open the access panel
- 2 delicately remove the filter avoiding dirtying the area below
- 3 insert the new filters, with the pockets vertically
- 4 close the panel
- 5 dispose of the old filters sending them to specialised recycling or collection centres (keep to the standards in force)

14.12 IFD Electronic filters (ISO 16890 ePM1 90%)

Impurities can cause a decrease in filtration efficiency and also an increase in the load losses of the component which increase the power consumption of the supply fan. For this reason it is mandatory to clean the filter.

⚠ Do not use water hotter than 50°C to clean the filters.

⚠ Do not use air hotter than 50°C to dry the filters.

Below is the sequence to follow:

- 1 Remove the iFd filter cell from the aluminum frame
- 2 First use a soft brush or vacuum cleaner to clean the floating dust on the surface of the filter; then clean the module with water (you can directly put the module on the faucet for washing)
- 3 Then spray the kitchen cleanser evenly on the IFD filter and ensure that the front and back sides and the holes are sprayed with cleanser (But, strong acid and strong alkaline type cleanser is strictly prohibited)
- 4 Wait for 5~10 mins
- 5 Then, use a soft brush to remove the dust on the surface of the filter (be careful not to damage the module)
- 6 Finally, wash the IFD filter with clean water (if part of the IFD filter is not cleaned, it is recommended to repeat the above 1-5 steps)
- 7 It is recommended to dry the filter cell in an open or dry place.

Closed and / or humid places can prevent the filter from completely drying. The entire cell must dry completely before restoring the electrical connections on the machine. Make sure the filter cell electrical connectors are completely dry before making the connections. A connector that is still wet / damp can cause irreversible damage to the entire filter cell.



14.13 Air filter summary tables

CSRN-iY 20.2

Filter type	Size	Quantity
Folded filter (G4)	L592 H592 W48	4
Fine filter (F7)	L592 H592 W96	4
Fine filter (F9)	L592 H592 W98	4
Electrostatic filter IFD	L592 H490 W152	4

CSRN-iY 28.2

Filter type	Size	Quantity
Folded filter (G4)	L592 H592 W48	6
Fine filter (F7)	L592 H592 W96	6
Fine filter (F9)	L592 H592 W98	6
Electrostatic filter IFD	L592 H490 W152	6

CSRN-iY 40.4

Filter type	Size	Quantity
Folded filter (G4)	L592 H592 W48	3
Folded filter (G4)	L592 H490 W48	6
Fine filter (F7)	L592 H592 W96	3
Fine filter (F7)	L592 H490 W96	6
Fine filter (F9)	L592 H592 W98	3
Fine filter (F9)	L592 H490 W98	6
Electrostatic filter IFD	L592 H592 W152	3
Electrostatic filter IFD	L592 H490 W152	6

CSRN-iY 56.4

Filter type	Size	Quantity
Folded filter (G4)	L592 H592 W48	4
Folded filter (G4)	L592 H490 W48	8
Fine filter (F7)	L592 H592 W96	4
Fine filter (F7)	L592 H490 W96	8
Fine filter (F9)	L592 H592 W98	4
Fine filter (F9)	L592 H490 W98	8
Electrostatic filter IFD	L592 H592 W152	4
Electrostatic filter IFD	L592 H490 W152	8

CSRN-iY 20.2 e 28.2 / Ruota Entalpica

Filter type	Size	Quantity
Folded filter (G4)	L592 H592 W48	4

CSRN-iY 40.4 e 56.4 / Ruota Entalpica

Filter type	Size	Quantity
Folded filter (G4)	L592 H5490 W48	4

14.14 Electric heaters

Option

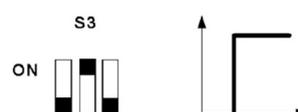
Check:

- cleaning state
- fastening
- presence of corrosion

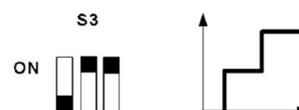
Main board: DIP SWITCH



1 step electric heater



2 step electric heater

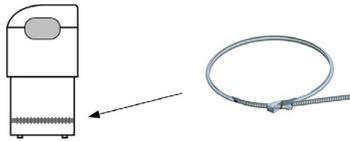


14.15 Compressor casing heater

Check:

- correct fixing
- operation

The operation of the crankcase heaters is controlled by the rooftop controller according to outside air and exhaust temperatures. Please refer to an authorised service centre.



14.16 Immersed electrodes humidifier

Option

⚠ Connexion humidificateur: 1”F

Do not use solvents or detergents to clean the plastic components.

For descaling use a vinegar or acetic acid solution at 20%, subsequently rinsing with water

Periodical checks	
15 days	Cylinder: not over 300 hours of work checking operation, general state, no leaks
90 days	Cylinder: not over 1000 hours of work checking operation, general state, no leaks, any replacement
1 year	Cylinder: not over 2500 hours of work (disposable cylinders) Load solenoid valve replacement: disconnect electric power supply, dismantle valve, clean the drain solenoid valve filter: Drain solenoid valve: disconnect electric power supply, remove reel and dismantle valve body and any impurity and rinse. The power supply bowl, piping: check they are free and without impurities.
5 year	Cylinder: not over 10000 hours of work (inspectional cylinders) replacement

Humidifier cylinder drainage

Cylinder must be drained in these situations:

- cleaning of the cylinder
- emptying of the cylinder to avoid ice forming
- replacement of the cylinder

The manual drainage is carried out by means of selector SA7: see ELECTRIC CONNECTIONS chapter.

Replacement of the cylinder

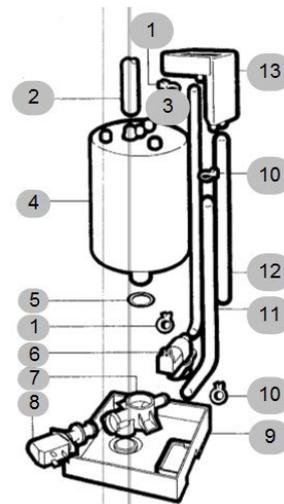
To remove the cylinder:

- completely drain the water
- interrupt power supply voltage of humidifier by means of the unit isolator

- remove the vapour pipe from the cylinder
- disconnect the electric connections of the electrodes and remove the pins from the high level electrodes
- loosen the ring nut to remove the pipe unions and the filter (when filter is outside the cylinder)
- lift the cylinder to remove it

Before mounting it:

- the filter body does not require replacing, wash it with water and remount it on the new cylinder, using the new gasket provided with the latter
- check the seal gasket between the cylinder and the drain unit
- remount the cylinder repeating the operations in reverse order



- 1 pipe fixing spring
- 2 vapour pipe
- 3 load pipe
- 4 vapour cylinder
- 5 seal O-rings
- 6 load valve
- 7 valves support
- 8 drain valve
- 9 bottom tank
- 10 pipe fixing spring
- 11 load pipe
- 12 too full pipe
- 13 fill tank

14.17 UV-C lamps

Option

WARNING

- ⚠ **Direct radiation device: causes eye irritation and skin rashes.**
- ⚠ **Any maintenance operation must be carried out with the lamps off.**
- ⚠ **Do not touch the glass part with your hands.**

The UV-C lamps are on when the supply fans are in operation.

Wipe with a cloth and alcohol to remove dust.

Replace the lamp after 9,000 hours of operation.



14.18 Enthalpy wheel

In order to ensure the best performance, rotary recuperators require simple periodic maintenance as follows:

1 clean the appliance from fibre, dust or other build-ups

The appliances can be cleaned with compressed air (in case of dust deposits), taking care not to damage the plates and seals, or by spraying greasy deposits with a cleaning detergent.

2 check and inspect the motor and rotor

The rotor must be checked regularly to prevent dust and dirt from settling. Even if the treatment unit has filters installed, these can break allowing dirt to pass through and clog the rotor.

If there are dust and dirt deposits on the rotor, they can be removed easily with one of the following methods:

- Vacuum cleaner, for small dry deposits;
- Compressed air, for significant dry deposits; take care not to damage the rotor;
- High-pressure cleaner with hot water (max. 70°C) or a cleaning detergent spray (e.g. decade, nd-150, chem zyme, primasept, poly-det, oakite 86m or similar) to remove greasy deposits, for heavy, non-drying deposits.

Do not use strong alkaline substances or solutions or other substances that can corrode the rotor.

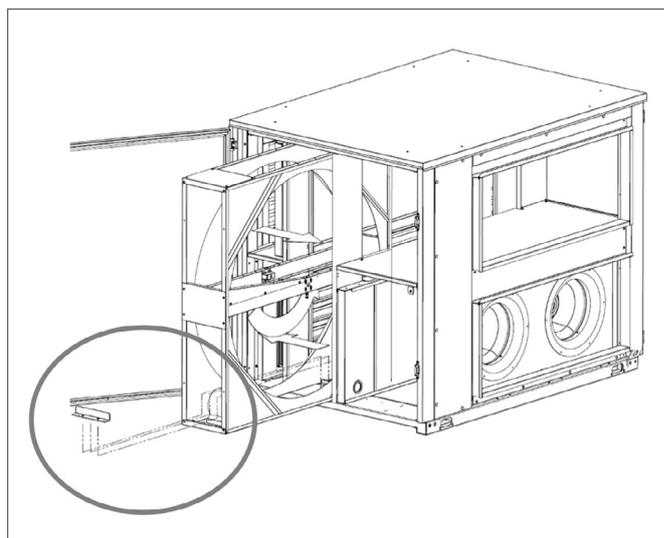
The minimum distance of the nozzle from the rotor should be no less than 30 cm, the maximum pressure is 50 bar (Karcher cleaning device).

After cleaning, blow any water dripped inside out of the rotor.

3 check the condition and tension of the drive belts

For correct operation:

- Check tension of the drive belt after the first 100 hours of operation.
- Regularly check the condition of the drive belt for wear and tension when the wheel is stationary.
- Tension can be increased by shortening the belt
- Ensure that the belt is long enough to transmit rotation correctly, without slipping.



15. Decommissioning

15.1 Disconnection

WARNING

- ⚠ **Before performing any operation, read the warnings found in the Maintenance chapter.**
- ⚠ **SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R32**



Avoid leak or spills into the environment.

Before disconnecting the unit, the following must be recovered, if present:

- refrigerant gas
- Anti-freeze solutions in the hydraulic circuit

Awaiting decommissioning and disposal, the unit can also be stored outdoors, as bad weather and rapid changes in temperature do not harm the environment provided that the electric, cooling and hydraulic circuits of the unit are intact and closed.

15.2 WEEE INFORMATION

The manufacturer is registered on the EEE National Register, in compliance with implementation of Directive 2012/19/EU and relevant national regulations on waste electrical and electronic equipment.

This Directive requires electrical and electronic equipment to be disposed of properly.

Equipment bearing the crossed-out wheelee bin mark must be disposed of separately at the end of its life cycle to prevent damage to human health and to the environment.

Electrical and electronic equipment must be disposed of together with all of its parts.

To dispose of “household” electrical and electronic equipment, the manufacturer recommends you contact an authorised dealer or an authorised ecological area.

“Professional” electrical and electronic equipment must be disposed of by authorised personnel through established waste disposal authorities around the country.

In this regard, here is the definition of household WEEE and professional WEEE:

WEEE from private households: WEEE originating from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Subject to the nature and quantity, where the waste from EEE was likely to have been by both a private household and users of other than private households, it will be classed as private household WEEE;

Professional WEEE: all WEEE which comes from users other than private households.

This equipment may contain:

- refrigerant gas, the entire contents of which must be recovered in suitable containers by specialised personnel with the necessary qualifications;
- lubrication oil contained in compressors and in the cooling circuit to be collected;
- mixtures with antifreeze in the water circuit, the contents of which are to be collected;
- mechanical and electrical parts to be separated and disposed of as authorised.

When machine components to be replaced for maintenance purposes are removed or when the entire unit reaches the end of its life and needs to be removed from the installation, waste should be separated by its nature and disposed of by authorised personnel at existing collection centres.



16. Residual risks

General

In this section the most common situations are indicated, as these cannot be controlled by the manufacturer and could be a source of risk situations for people or things.

Danger zone

This is an area in which only an authorised operator may work.

The danger zone is the area inside the unit which is accessible only with the deliberate removal of protections or parts thereof.

Handling

The handling operations, if implemented without all of the protection necessary and without due caution, may cause the drop or the tipping of the unit with the consequent damage, even serious, to persons, things or the unit itself.

Handle the unit following the instructions provided in the present manual regarding the packaging and in compliance with the local regulations in force.

Should the refrigerant leak please refer to the refrigerant "Safety sheet".

Installation

The incorrect installation of the unit could cause water leaks, condensate accumulation, leaking of the refrigerant, electric shock, poor operation or damage to the unit itself.

Check that the installation has been implemented by qualified technical personnel only and that the instructions contained in the present manual and the local regulations in force have been adhered to.

The installation of the unit in a place where even infrequent leaks of inflammable gas and the accumulation of this gas in the area surrounding the area occur could cause explosions or fires.

Carefully check the positioning of the unit.

The installation of the unit in a place unsuited to support its weight and/or guarantee adequate anchorage may result in consequent damage to things, people or the unit itself.

Carefully check the positioning and the anchoring of the unit.

Easy access to the unit by children, unauthorised persons or animals may be the source of accidents, some serious.

Install the unit in areas which are only accessible to authorised person and/or provide protection against intrusion into the danger zone.

General risks

Smell of burning, smoke or other signals of serious anomalies may indicate a situation which could cause damage to people, things or the unit itself.

Electrically isolate the unit (yellow-red isolator).

Contact the authorised service centre to identify and resolve the problem at the source of the anomaly.

Accidental contact with exchange batteries, compressors, air delivery tubes or other components may cause injuries and/or burns.

Always wear suitable clothing including protective gloves to work inside the danger zone.

Maintenance and repair operations carried out by non-qualified personnel may cause damage to persons, things or the unit itself.

Always contact the qualified assistance centre.

Failing to close the unit panels or failure to check the correct tightening of all of the panelling fixing screws may cause damage to persons, things or the unit itself.

Periodically check that all of the panels are correctly closed and fixed.

If there is a fire the temperature of the refrigerant could reach values that increase the pressure to beyond the safety valve with the consequent possible projection of the refrigerant itself or explosion of the circuit parts that remain isolated by the closure of the tap.

Do not remain in the vicinity of the safety valve and never leave the refrigerating system taps closed.

Electric parts

An incomplete attachment line to the electric network or with incorrectly sized cables and/or unsuitable protective devices can cause electric shocks, intoxication, damage to the unit or fires.

Carry out all of the work on the electric system referring to the electric layout and the present manual ensuring the use of a system thereto dedicated.

An incorrect fixing of the electric components cover may lead to the entry of dust, water etc inside and may consequently electric shocks, damage to the unit or fires.

Always fix the unit cover properly.

When the metallic mass of the unit is under voltage and is not correctly connected to the earthing system it may be a source of electric shock and electrocution.

Always pay particular attention to the implementation of the earthing system connections.

Contact with parts under voltage accessible inside the unit after the removal of the guards can cause electric shocks, burns and electrocution.

Open and padlock the general isolator prior to removing the guards and signal work in progress with the appropriate sign.

Contact with parts that could be under voltage due to the start up of the unit may cause electric shocks, burns and electrocution.

When voltage is unnecessary for the circuit open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

Moving parts

Contact with the transmissions or with the fan aspiration can cause injuries.

Prior to entering the inside of the unit open the isolater situated on the con-nection line of the unit itself, padlock and display the appropriate warning sign.

Contact with the fans can cause injury.

Prior to removing the protective grills or the fans, open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

Refrigerant

The intervention of the safety valve and the consequent expulsion of the gas refrigerant may cause injuries and intoxication.

Always wear suitable clothing including protective gloves and eyeglasses for operations inside the danger zone.

Should the refrigerant leak please refer to the refrigerant "Safety sheet".

Contact between open flames or heat sources with the refrigerant or the heating of the gas circuit under pressure (e.g. during welding operations) may cause explosions or fires.

Do not place any heat source inside the danger zone.

The maintenance or repair interventions which include welding must be carried out with the system off.

Hydraulic parts

Defects in tubing, the attachments or the removal parts may cause a leak or water projection with the consequent damages to people, things or shortcircuit the unit.

17. Technical information

Performance

Standard airflow

SIZE			20.2		28.2		40.4		56.4		
OPERATION			NOM*	MAX**	NOM*	MAX**	NOM*	MAX**	NOM*	MAX**	
COOLING											
Cooling capacity		1	kW	59,7	68,5	79,4	93,7	117	129	157	171
Sensible capacity		1	kW	50,6	54,8	66,9	73,5	90,4	96,1	124	130
Compressor power input		1	kW	18,5	26,5	22,2	34,4	38,7	50,3	50,7	64,9
EER		1	-	3,23	2,59	3,58	2,72	3,02	2,56	3,11	2,64
Cooling capacity (EN14511:2018)	CAK	5	kW	59,0		78,0		116,2		155,2	
EER (EN14511:2018)		5	-	2,86		2,88		2,67		2,73	
SEER		6		4,92		4,72		4,85		4,56	
η _{sc}		6	%	193,8		185,8		191,0		179,4	
Eurovent seasonal efficiency class				A		A		A		B	
Cooling capacity	CBK/CBK-G	2	kW	62,2	71,4	82,7	97,5	122	134	164	178
Sensible capacity		2	kW	53,0	57,2	70,0	76,5	94,4	100	129	135
Compressor power input		2	kW	18,7	27,0	22,3	34,8	39,2	51,1	51,2	65,5
EER		2	-	3,33	2,65	3,70	2,80	3,11	2,63	3,2	2,72
Cooling capacity	CCK-REVO	3	kW	65,9	75,7	87,6	103,0	129	142	174	189
Sensible capacity		3	kW	55,9	60,2	73,7	80,7	99,5	105	159	171
Compressor power input		3	kW	18,1	26,1	21,6	33,7	38	49,6	49,6	63,6
EER		3	-	3,63	2,89	4,05	3,06	3,4	2,87	3,5	2,97
HEATING											
Heating capacity	CAK	1	kW	57,5	78,5	76,1	101,0	119	155	160	201
Compressor power input		1	kW	13,7	24,0	17,2	29,5	32,6	54,7	41,9	67,2
COP		1	-	4,20	3,27	4,43	3,43	3,65	2,83	3,81	2,99
Heating capacity (EN14511:2018)		7	kW	58,0		76,8		119,7		162,3	
COP (EN14511:2018)		7	-	3,73		3,72		3,19		3,38	
SCOP		6		3,91		3,79		3,81		3,92	
η _{sh}		6	%	153,4		148,6		149,4		153,8	
Eurovent seasonal efficiency class				A+		A		A+		A+	
Heating capacity	CBK/CBK-G	2	kW	58,2	79,3	76,4	101,0	120	156	160	199
Compressor power input		2	kW	12,7	22,2	15,8	26,9	30,2	51	38,3	61,3
COP		2	-	4,58	3,56	4,85	3,74	3,97	3,07	4,17	3,25
Heating capacity	CCK-REVO	3	kW	61,0	83,1	80,1	105,0	126	164	167	209
Compressor power input		3	kW	12,6	22,1	15,7	26,7	30,1	50,7	38	61
COP		3	-	4,84	3,76	5,11	3,94	4,18	3,23	4,4	3,43
Recovery efficiency REVO		4	%	82	86	81	83	80	86	82	87

The Product respects European Directive ErP (Energy Related Products), which includes the delegated regulation (EU) No. 2016/2281 of the Commission, also known as Ecodesign Lot21.

Contains fluorinated greenhouse gases (GWP 675)

Performances in cooling: Indoor air temp. 27°C D.B./19°C W.B., Entering external exchanger air temperature 35°C D.B./24°C W.B., EER referred only to compressors

Performance in Heating: Indoor air temp. 20°C D.B./12°C W.B., entering air to the external exchanger 7°C D.B./6°C W.B. COP referred only to compressors

1. Full recirculation performance
2. Performance with 30% outdoor air
3. Performance with 30% outdoor air, including energy recovery on exhaust air
4. Energy recovery efficiency determined on exhaust air. Indoor temperature 20°C DB/12°C WB, outdoor temperature 7°C DB/6°C WB
5. Full recirculation capacity according to EN 14511-2018, indoor air temperature 27°C DB/19°C WB; outdoor temperature 35°C. EER in accordance with EN 14511-2018
6. Data calculated in compliance with EN 14825:2018.
7. Full recirculation capacity according to EN 14511-2018, indoor air temperature 20°C; outdoor temperature 7°C DB/6°C WB COP in accordance with EN 14511-2018

* NOM = data referring to units in operation with inverter frequency optimised for this application.

** MAX = data referring to units in operation with maximum allowed inverter frequency

Construction characteristics

Standard airflow

SIZE			20.2	28.2	40.4	56.4	
COMPRESSOR							
Type of compressors	1		ROT	SCROLL	ROT	SCROLL	
No. of compressors		Nr	2	2	4	4	
Refrigeration circuits		Nr	2	2	2	2	
Control capacity		%	20-100%	20-100%	20-100%	20-100%	
Refrigerant charge (C1)	CAK/CBK/CBK-G	2	kg	8,0	9,0	19	21
Refrigerant charge (C2)		2	kg	8,0	9,0	19	21
Refrigerant charge (C1)	CCK-REVO	2	kg	9,5	11	20	22
Refrigerant charge (C2)		2	kg	9,5	11	20	22
AIR HANDLING SECTION FANS (SUPPLY)							
Type of supply fan/motor	3		RAD/EC	RAD/EC	RAD/EC	RAD/EC	
Fan diameter		mm	630	560	630	560	
No. of supply fans		Nr	1	2	2	3	
Supply airflow		m ³ /h	13000	17000	23000	32000	
Installed unit power		kW	2,38	2,90	2,38	2,90	
Max. static pressure supply fan	4	Pa	330	450	410	300	
Installed unit power	(VENH opt)		kW	3,82	3,50	3,82	3,50
Max. static pressure supply fan		4	Pa	630	810	690	645
FANS (EXHAUST) ONLY CBK-G + EWX CONFIGURATION							
Type of fans/motor			RAD/EC	RAD/EC	RAD/EC	RAD/EC	
No. of fans			2	2	2	2	
Installed unit power			2,6	2,6	2,6	2,6	
FANS (EXHAUST) ONLY CONFIGURATION CCK-REVO							
Type of fans/motor	3		RAD/EC	RAD/EC	RAD/EC	RAD/EC	
No. of fans		Nr	1	2	2	2	
Installed unit power		kW	3,65	1,32	3,65	2,38	
EXTERNAL SECTION FANS							
Type of fans/motor	5		AXIAL/EC	AXIAL/EC	AXIAL/EC	AXIAL/EC	
Fan diameter		mm	750	890	890	750	
No. of fans		Nr	2	2	2	4	
Airflow		m ³ /h	26000	42000	50000	60000	
Installed unit power		kW	0,92	1,5	1,5	0,92	
CONNECTIONS							
Condensate drain		mm	32	32	32	32	
POWER SUPPLY							
Standard power supply		V	400/3~/50	400/3~/50	400/3~/50	400/3~/50	

1. ROT = Rotary compressor; SCROLL = Scroll compressor
2. Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the label of the unit
3. RAD = Radial fan - EC = Electronically Commutated
4. Net pressure available to overcome flow and return pressure losses
5. AXIAL = Axial fan - EC = Electronic Switching

Sound levels

Nominal operation

SIZE	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
20.2	61	75	72	76	80	86	72	64	88	70
28.2	75	79	82	82	85	85	76	68	89	70
40.4	82	81	78	79	83	83	76	71	88	69
56.4	72	74	78	80	86	84	78	65	90	70

Operation at maximum admitted conditions

SIZE	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
20.2	72	81	76	80	85	85	77	68	90	72
28.2	74	83	78	82	87	87	79	70	91	72
40.4	72	77	80	81	85	85	78	73	90	71
56.4	74	74	77	83	87	87	80	68	92	72

Silent

SIZE	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
20.2	62	75	79	80	84	82	75	66	86	68
28.2	62	75	79	80	84	82	75	66	88	69
40.4	69	76	75	78	82	80	74	70	86	68
56.4	75	73	73	81	84	82	78	65	88	68

Supersilent

SIZE	Sound power level (dB)								Sound power level dB(A)	Sound pressure level dB(A)
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
20.2	46	68	68	74	76	84	68	61	85	67
28.2	59	73	78	79	81	80	73	64	86	67
40.4	67	75	73	77	79	79	72	67	84	65
56.4	65	70	70	81	79	77	80	63	86	66

Sound levels referred to ESP as per EN 14511:2018

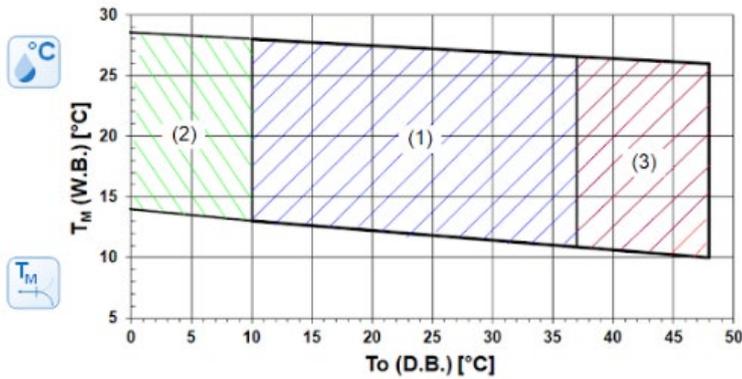
SIZE		20.2	28.2	40.4	56.4
Sound power with casing	dB(A)	88	89	88	90
Available static pressure	Pa	200	200	300	350

Data referring to nominal flow rate

Measurements are performed in accordance with the UNI EN 9614-1 standard, in compliance with the requirements of EUROVENT 8/1 certification, which provides for a 2 dB (A) tolerance on the sound power level - the only data to be considered quite challenging.

Operating range

Cooling



The limits are meant as an indication and they have been calculated by considering:

- general and not specific quantities,
- standard air flow rate,
- unrestricted positioning of the unit and its correct use,
- operation at full load.

To verify the operation field of the operating units with percentages of outdoor air, always calculate the Tm mixing temperature at the internal heat exchanger input.

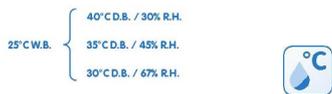
Tm = Inlet air temperature in the internal exchanger
wet bulb temperature (W.B.= WET BULB)

Text = External exchanger inlet air temperature
measured temperature with wet bulb (W.B.=WET BULB)

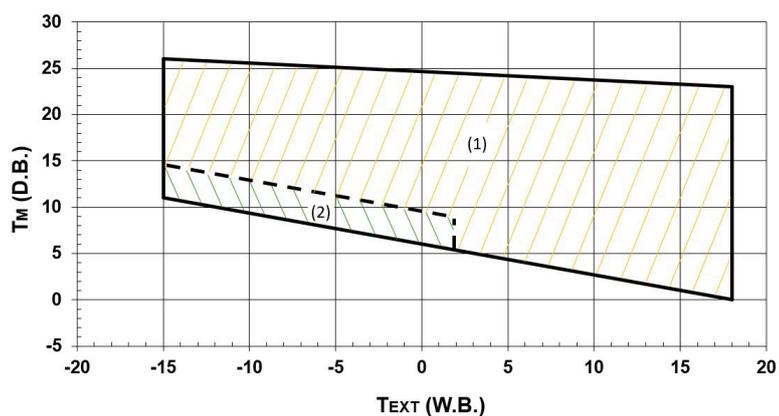
Within its operating range, the unit can work at a partialized load to maximise energy efficiency

1. Standard unit operating range
2. Operating range of the unit in FREE-COOLING mode (CBK-G and CCK-REVO versions)
3. Operating range of the unit in capacity modulation mode

WET BULB TEMPERATURE - EXAMPLE



Heating



The limits are meant as an indication and they have been calculated by considering:

- general and not specific quantities,
- standard air flow rate,
- unrestricted positioning of the unit and its correct use,
- operation at full load.

To verify the operation field of the operating units with percentages of outdoor air, always calculate the T_m mixing temperature at the internal heat exchanger input.

T_m = Inlet air temperature in the internal exchanger
measured temperature with wet bulb (W.B.=WET BULB)

T_{ext} = External exchanger inlet air temperature
wet bulb temperature (W.B.= WET BULB)

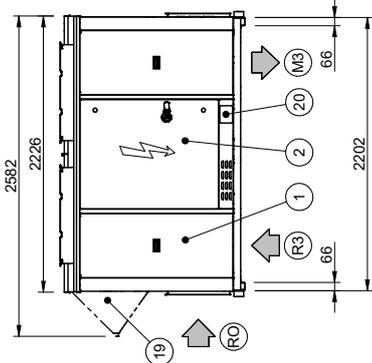
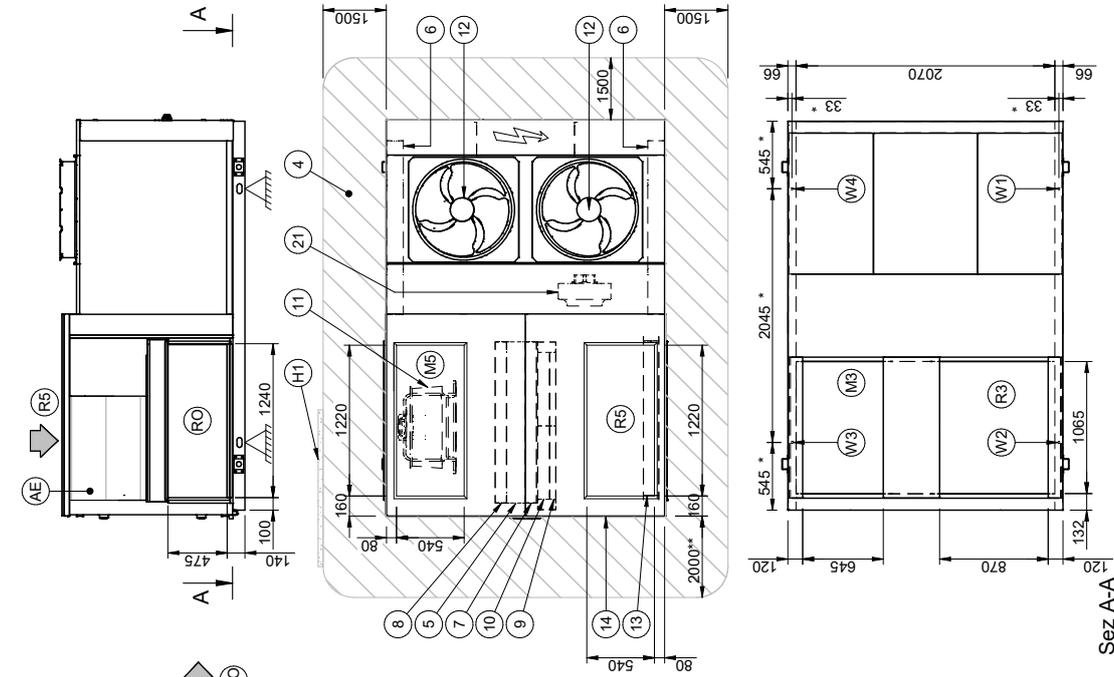
Within its operating range, the unit can work at a partialized load to maximise energy efficiency

1. Standard operating range
2. Range in which the unit operation is allowed only for a limited period (max 1 hour)

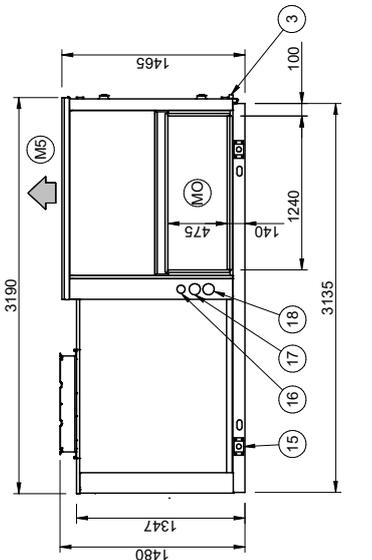
18. Dimensional

CSRN-iY 20.2 - version CAK / CBK / CBK - G / CCK - REVO

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DATA/DATE 13/08/2021



- 20. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
- 21. Power input
- 22. Exhaust electric fan
- (R0) Horizontal air return
- (R3) Air return from the bottom (optional)
- (M0) Horizontal air supply
- (M3) Air supply from the bottom (optional)
- (M5) Vertical air supply (optional)
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H1) Wall with max. height equal to height of unit and on max. 3 sides
- (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)
- (*) Vibration mounts position

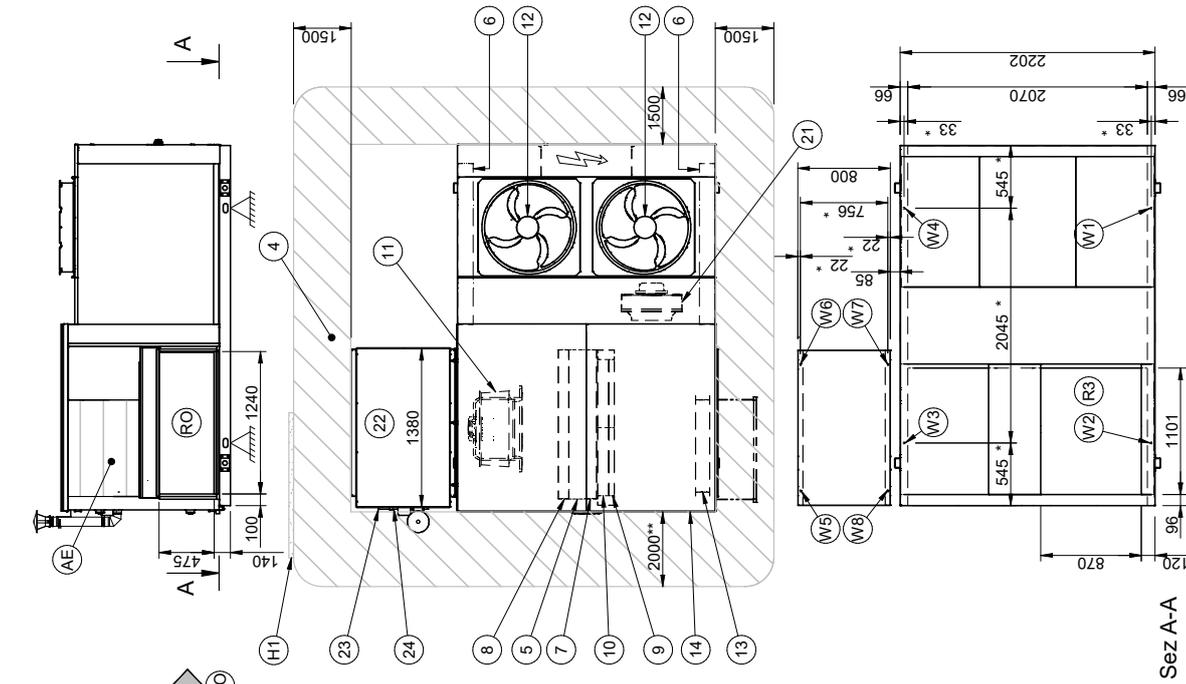


- 3. Electrical panel
- 4. Condensation drain / Removable bowl
- 5. Functional spaces
- 6. Internal exchanger
- 7. External exchanger
- 8. H2O heating coil / food refrig. rec. / electric heaters (optional)
- 9. Post-heating coil (Optional)
- 10. G4 air filter (Standard)
- 11. Electronic IFD F7 / F9 filters (optional)
- 12. Electric fan (Supply-Return)
- 13. External electric fan
- 14. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 15. Access for inspection of coils, filters, electric heaters
- 16. Lifting brackets (removable)
- 17. Humidifier connections
- 18. H2O heating coil inlet Ø 1"1/4 / food refrig. rec. coil inlet Ø 1"1/4 (optional)
- 19. H2O heating coil outlet Ø 1"1/4 / food refrig. rec. coil outlet Ø 1"1/4 (optional)

SIZE	Configuration	CAK	CBK	CBK-G	CCK-REVO
W1	Supporting point	kg 287	287	291	305
W2	Supporting point	kg 233	233	237	251
W3	Supporting point	kg 269	269	273	286
W4	Supporting point	kg 298	298	302	316
	Operation weight	kg 1087	1087	1103	1158
	Shipping weight	kg 1114	1114	1130	1185

The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 20.2 - version CAK / CBK / CBK - G / CCK - REVO GC01X - GC08X - GC09X



Sez A-A

- 1. Compressor compartment
 - 2. Electrical panel
 - 3. Condensation drain / Removable bowl
 - 4. Functional spaces
 - 5. Internal exchanger
 - 6. External exchanger
 - 7. H2O heating coil / food refrig. rec. / electric heaters (optional)
 - 8. Post-heating coil (Optional)
 - 9. G4 air filter (Standard)
 - 10. Electronic IFD F7 / F9 filters (optional)
 - 11. Electric fan (Supply-Return)
 - 12. External electric fan
 - 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
 - 14. Access for inspection of coils, filters, electric heaters
 - 15. Lifting brackets (removable)
 - 16. Humidifier connections
 - 17. H2O heating coil inlet Ø 1"1/4 / food refrig. rec. coil inlet Ø 1"1/4 (optional)
 - 18. H2O heating coil outlet Ø 1"1/4 / food refrig. rec. coil outlet Ø 1"1/4 (optional)
 - 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
 - 20. Power input
 - 21. Exhaust electric fan
 - 22. Gas module
 - 23. Gas connection
 - 24. Condensation drain (only for condensing module)
- (RO) Horizontal air return
(R3) Air return from the bottom (optional)
(MO) Horizontal air supply
(AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
(H1) Wall with max. height equal to height of unit and on max. 3 sides
- (*) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)
(*) Vibration mounts position

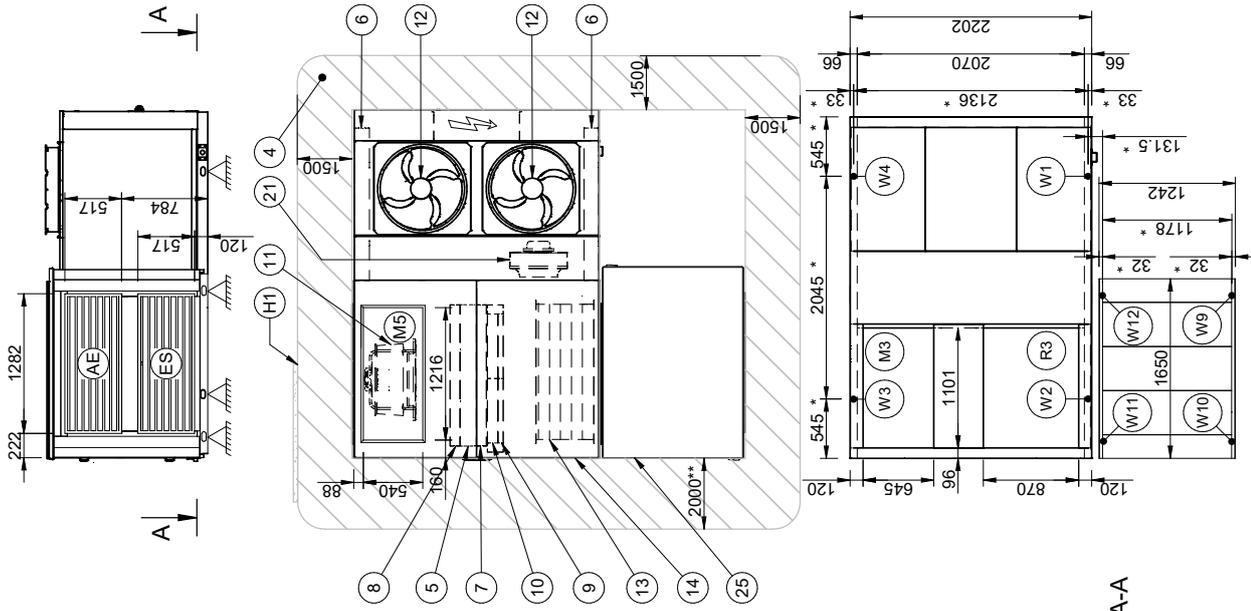
SIZE	GAS MODULE WEIGHT DISTRIBUTION			
	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	287	287	291	305
W2 Supporting point	233	233	237	251
W3 Supporting point	269	269	273	286
W4 Supporting point	298	298	302	316
Operation weight	1087	1087	1103	1158
Shipping weight	1114	1114	1130	1185

SIZE	GAS MODULE WEIGHT DISTRIBUTION			
	CAK	CBK	CBK-G	CCK-REVO
W5 Supporting point	287	287	291	305
W6 Supporting point	233	233	237	251
W7 Supporting point	269	269	273	286
W8 Supporting point	298	298	302	316
Operation weight	1087	1087	1103	1158
Shipping weight	1114	1114	1130	1185

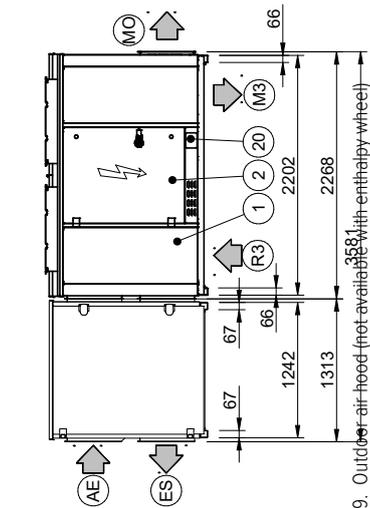
The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 20.2 - version CBK-G + Rotary recovery module

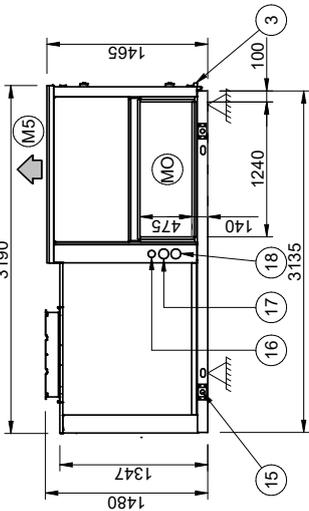
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Sez A-A



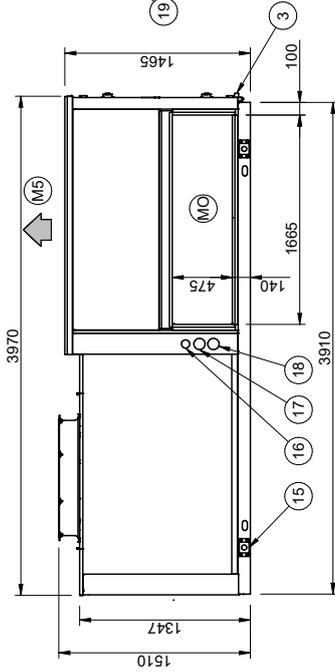
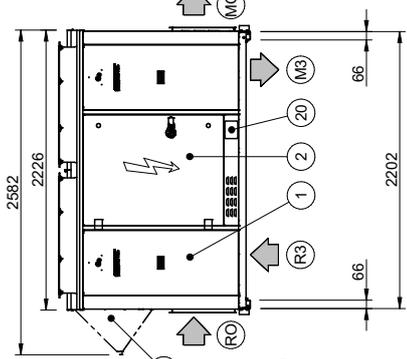
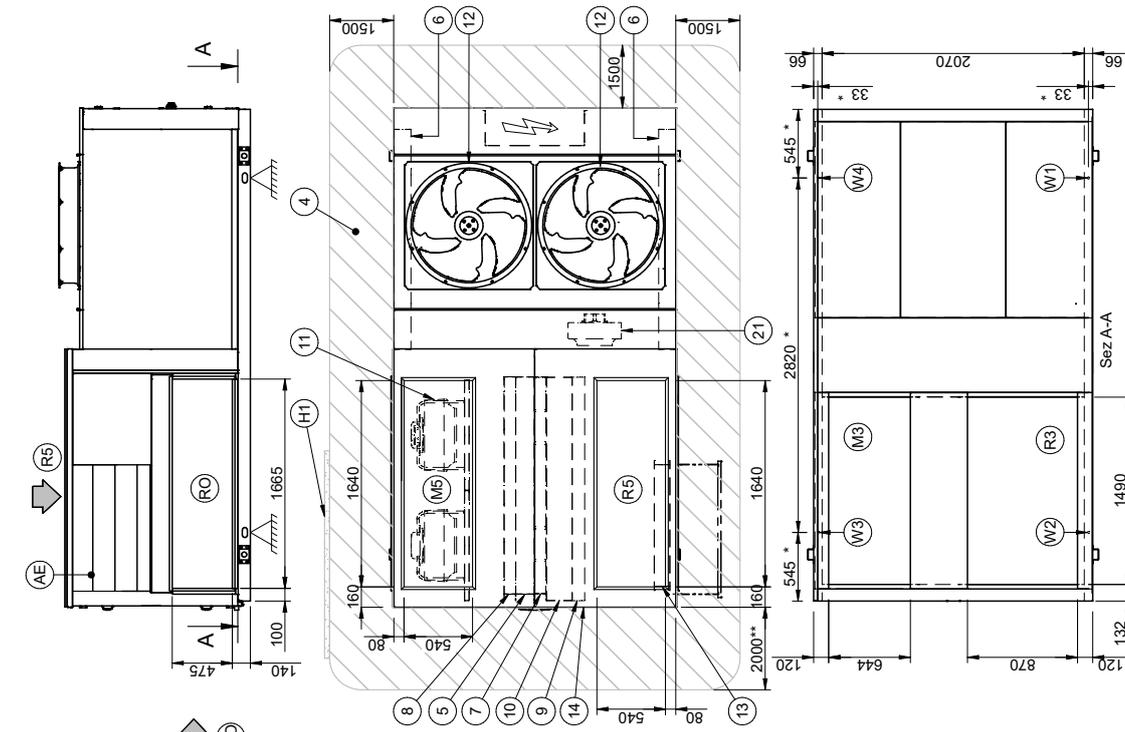
- 19. Outdoor air hood (not available with enthalpy wheel)
 - 20. Power input
 - 21. Exhaust electric fan
 - 22. Gas module (dedicated drawing)
 - 23. Gas connection (dedicated drawing)
 - 24. Condensation drain (dedicated drawing)
 - 25. Enthalpy wheel
- (RO) Horizontal air return (not available with enthalpy wheel)
 (R3) Air return from the bottom (optional)
 (MO) Horizontal air supply
 (M3) Air supply from the bottom (optional)
 (M5) Vertical air supply (optional)
 (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
 (ES) Exhaust air
 (H1) Wall with max. height equal to height of unit and on max. 3 sides
 (*) Vibration mounts position
 (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)



- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet Ø 1"1/4 / food refriger. rec. coil inlet Ø 1"1/4 (optional)
- 18. H₂O heating coil outlet Ø 1"1/4 / food refriger. rec. coil outlet Ø 1"1/4 (optional)

SIZE		ROTARY RECOVERY MODULE WEIGHT DISTRIBUTION	
Configuration	CBK-G		
W1 Supporting point	kg	W9 Supporting point	kg
W2 Supporting point	kg	W10 Supporting point	kg
W3 Supporting point	kg	W11 Supporting point	kg
W4 Supporting point	kg	W12 Supporting point	kg
Operation weight	kg	Operation weight	kg
Shipping weight	kg	Shipping weight	kg

The presence of optional accessories may result in a significant variation of the weights shown in the table.

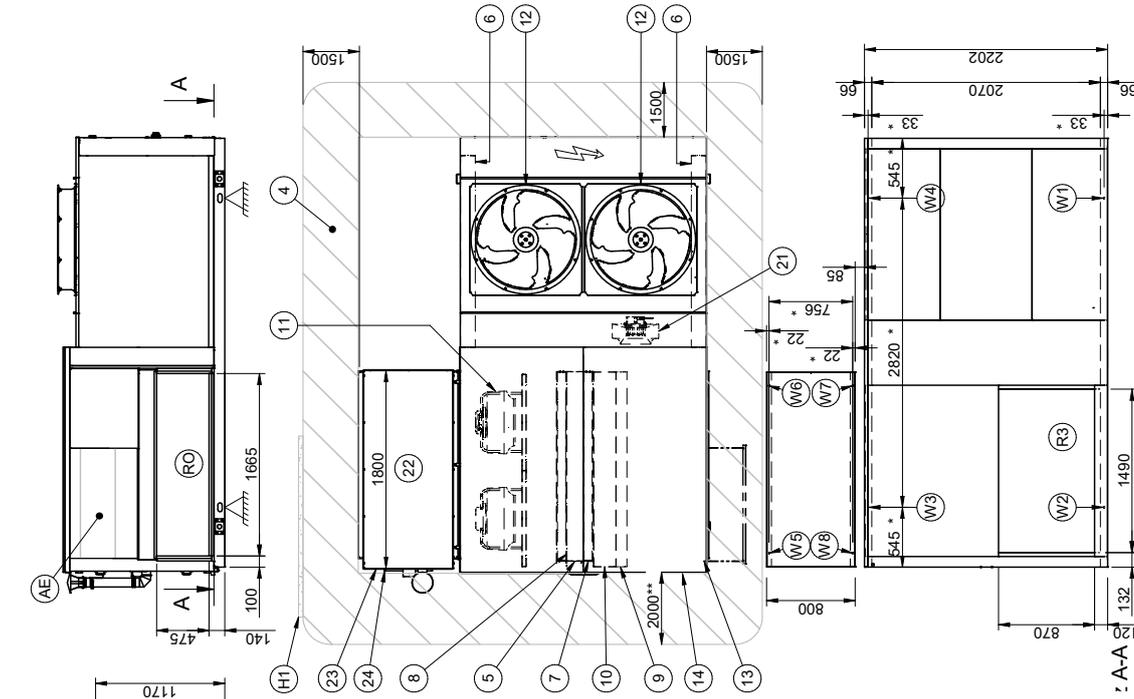


- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refrig. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet Ø 1"1/4 / food refrig. rec. coil inlet Ø 1"1/4 (optional)
- 18. H₂O heating coil outlet Ø 1"1/4 / food refrig. rec. coil outlet Ø 1"1/4 (optional)
- 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
- 20. Power input
- 21. Exhaust electric fan
- (R0) Horizontal air return
- (R3) Air return from the bottom (optional)
- (M0) Horizontal air supply
- (M3) Air supply from the bottom (optional)
- (M5) Vertical air supply (optional)
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H1) Wall with max. height equal to height of unit and on max. 3 sides

SIZE

Configuration	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	kg 312	kg 312	kg 316	kg 330
W2 Supporting point	kg 258	kg 258	kg 262	kg 276
W3 Supporting point	kg 294	kg 294	kg 298	kg 311
W4 Supporting point	kg 323	kg 323	kg 327	kg 341
Operation weight	kg 1187	kg 1187	kg 1203	kg 1258
Shipping weight	kg 1214	kg 1214	kg 1230	kg 1285

The presence of optional accessories may result in a significant variation of the weights shown in the table.



- 18. H2O heating coil outlet Ø 1 1/4 / food refrig. rec. coil outlet Ø 1 1/4 (optional)
- 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
- 20. Power input
- 21. Exhaust electric fan
- 22. Gas module
- 23. Gas connection
- 24. Condensation drain (only for condensing module)

- (RO) Horizontal air return
- (R3) Air return from the bottom (optional)
- (MO) Horizontal air supply
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H1) Wall with max. height equal to height of unit and on max. 3 sides
- (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)
- (*) Vibration mounts position

- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refrig. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet Ø 1 1/4 / food refrig. rec. coil inlet Ø 1 1/4 (optional)

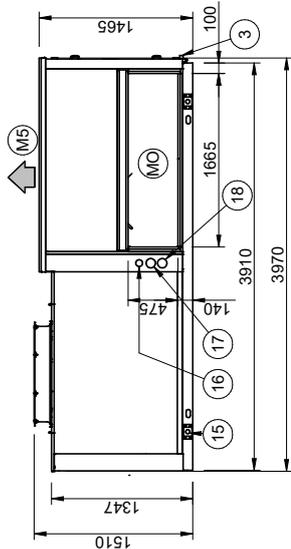
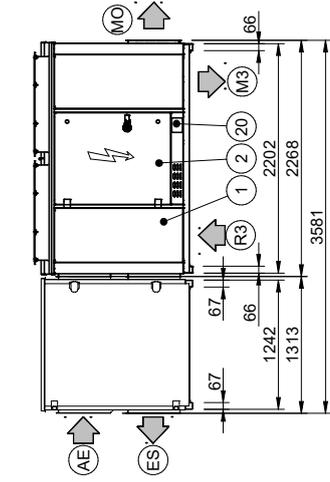
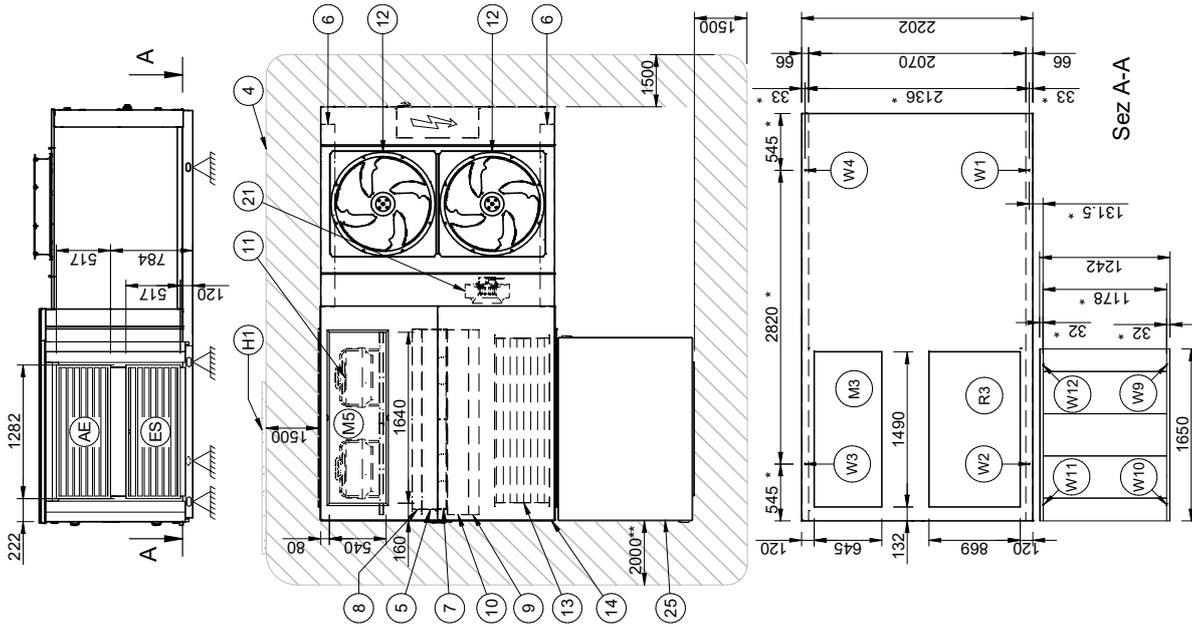
GAS MODULE WEIGHT DISTRIBUTION

Configuration	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	kg 312	kg 312	kg 316	kg 330
W2 Supporting point	kg 258	kg 258	kg 262	kg 276
W3 Supporting point	kg 294	kg 294	kg 298	kg 311
W4 Supporting point	kg 323	kg 323	kg 327	kg 341
Operation weight	kg 1187	kg 1187	kg 1203	kg 1258
Shipping weight	kg 1214	kg 1214	kg 1230	kg 1285

The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 28.2 - version CBK-G + Rotary recovery module

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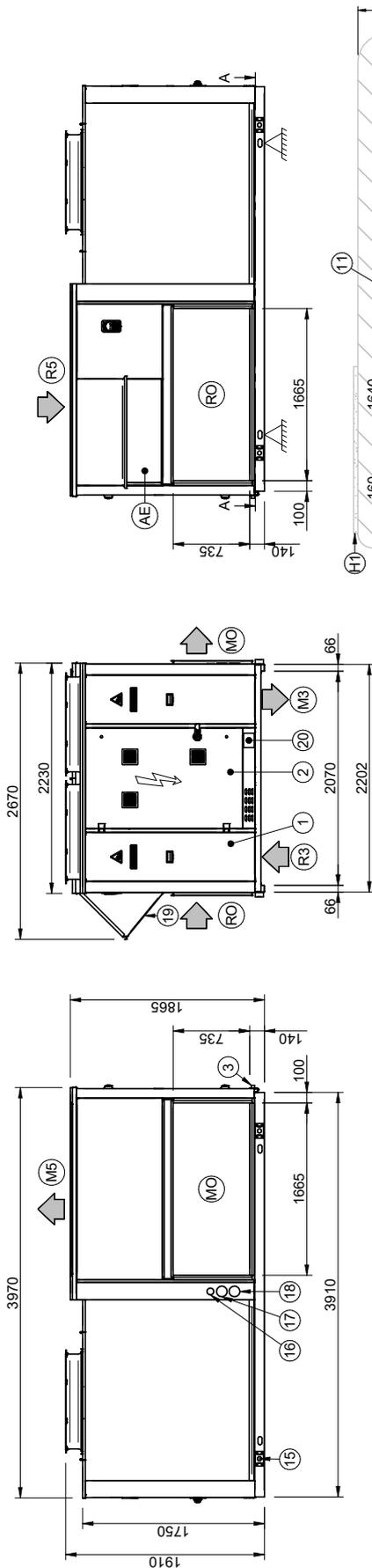
- 20. Power input
 - 21. Exhaust electric fan
 - 22. Gas module (dedicated drawing)
 - 23. Gas connection (dedicated drawing)
 - 24. Condensation drain (dedicated drawing)
 - 25. Enthalpy wheel
- (RO) Horizontal air return (not available with enthalpy wheel)
 (R3) Air return from the bottom (optional)
 (MO) Horizontal air supply
 (M3) Air supply from the bottom (optional)
 (M5) Vertical air supply (optional)
 (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
 (ES) Exhaust air
 (H1) Wall with max. height equal to height of unit and on max. 3 sides
 (*) Vibration mounts position
 (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)

- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet Ø 1"1/4 / food refriger. rec. coil inlet Ø 1"1/4 (optional)
- 18. H₂O heating coil outlet Ø 1"1/4 / food refriger. rec. coil outlet Ø 1"1/4 (optional)
- 19. Outdoor air hood (not available with enthalpy wheel)

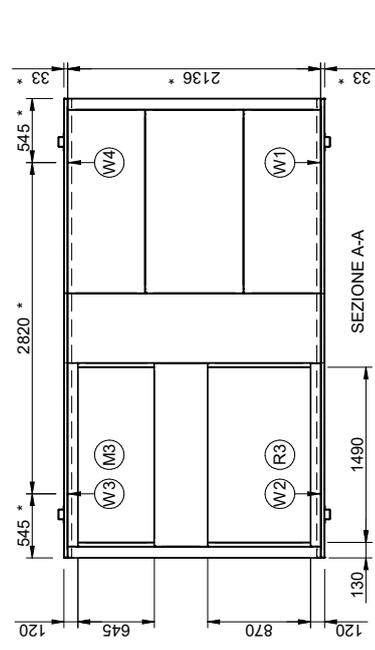
ROTARY RECOVERY MODULE WEIGHT DISTRIBUTION

Configuration	CBK-G	ROTARY RECOVERY MODULE WEIGHT DISTRIBUTION
W1 Supporting point	kg 316	W9 Supporting point kg 135
W2 Supporting point	kg 262	W10 Supporting point kg 135
W3 Supporting point	kg 298	W11 Supporting point kg 120
W4 Supporting point	kg 327	W12 Supporting point kg 120
Operation weight	kg 1203	Operation weight kg 510
Shipping weight	kg 1230	Shipping weight kg 510

The presence of optional accessories may result in a significant variation of the weights shown in the table.



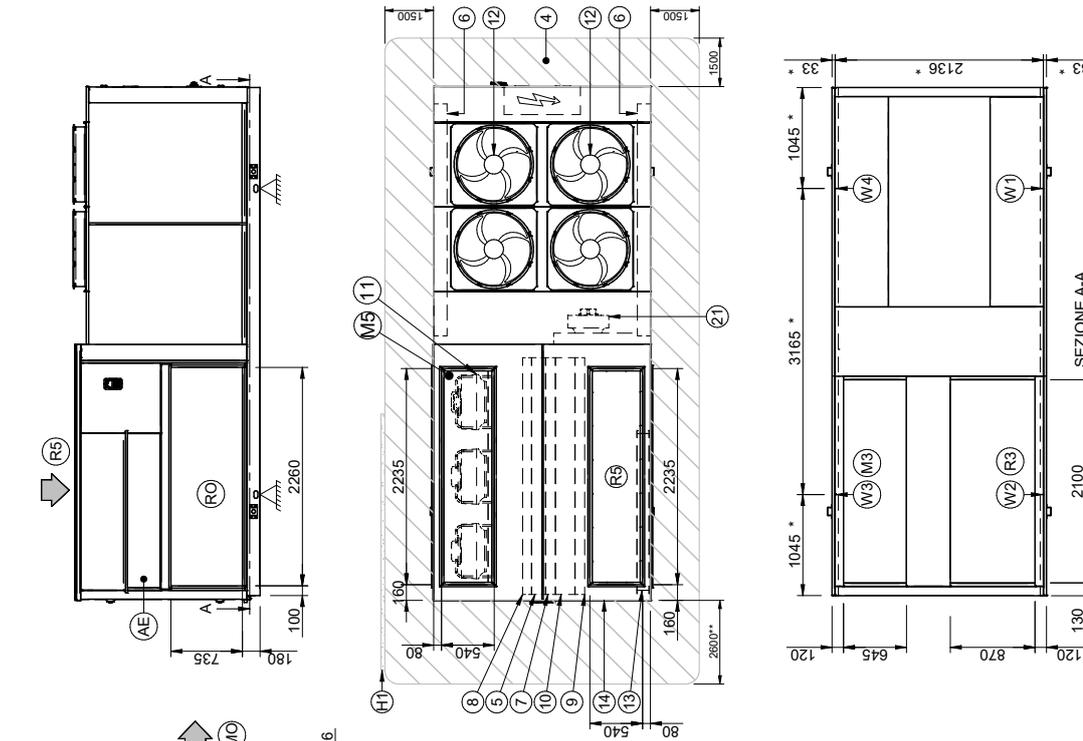
1. Compressor compartment
 2. Electrical panel
 3. Condensation drain / Removable bowl
 4. Functional spaces
 5. Internal exchanger
 6. External exchanger
 7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
 8. Post-heating coil (Optional)
 9. G4 air filter (Standard)
 10. Electronic IFD F7 / F9 filters (optional)
 11. Electric fan (Supply-Return)
 12. External electric fan
 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
 14. Access for inspection of coils, filters, electric heaters
 15. Lifting brackets (removable)
 16. Humidifier connections
 17. H₂O heating coil inlet Ø 1"1/4 / food refriger. rec. coil inlet Ø 1"1/4 (optional)
 18. H₂O heating coil outlet Ø 1"1/4 / food refriger. rec. coil outlet Ø 1"1/4 (optional)
 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
 20. Power input
 21. Exhaust electric fan
- (RO) Horizontal air return
(R3) Air return from the bottom (optional)
(MO) Horizontal air supply
(M3) Air supply from the bottom (optional)
(M5) Vertical air supply (optional)
(AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
(H) Wall with max. height equal to height of unit and on max. 3 sides
- (*) Vibration mounts position
(**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)



SIZE

Configuration	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	kg 439	kg 439	kg 448	kg 457
W2 Supporting point	kg 370	kg 370	kg 379	kg 385
W3 Supporting point	kg 416	kg 416	kg 425	kg 431
W4 Supporting point	kg 453	kg 453	kg 462	kg 471
Operation weight	kg 1678	kg 1678	kg 1714	kg 1744
Shipping weight	kg 1717	kg 1717	kg 1753	kg 1784

The presence of optional accessories may result in a significant variation of the weights shown in the table.



1. Compressor compartment
2. Electrical panel
3. Condensation drain / Removable bowl
4. Functional spaces
5. Internal exchanger
6. External exchanger
7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
8. Post-heating coil (Optional)
9. G4 air filter (Standard)
10. Electronic IFD F7 / F9 filters (optional)
11. Electric fan (Supply-Return)
12. External electric fan
13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
14. Access for inspection of coils, filters, electric heaters
15. Lifting brackets (removable)
16. Humidifier connections
17. H₂O heating coil inlet and food refriger. rec. coil inlet Ø 2" (optional)
18. H₂O heating coil outlet and food refriger. rec. coil outlet Ø 2" (optional)
19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
20. Power input
21. Exhaust electric fan
- (RO) Horizontal air return
- (R3) Air return from the bottom (optional)
- (M0) Horizontal air supply
- (M3) Air supply from the bottom (optional)
- (M5) Vertical air supply (optional)
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H) Wall with max. height equal to height of unit and on max. 3 sides
- (*) Vibration mounts position
- (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)

SIZE

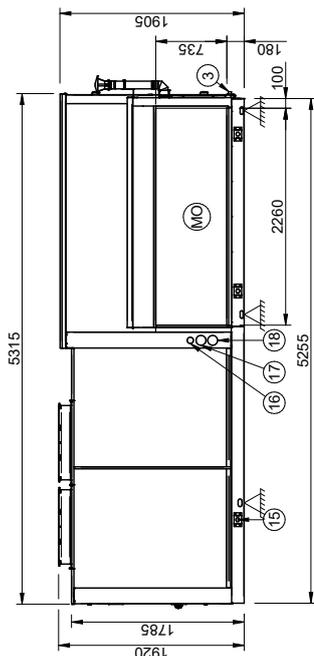
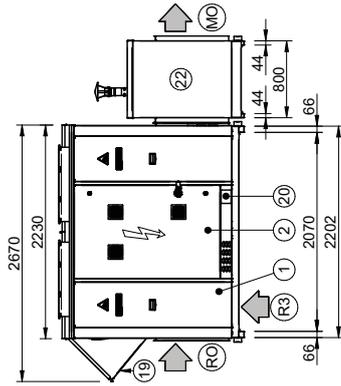
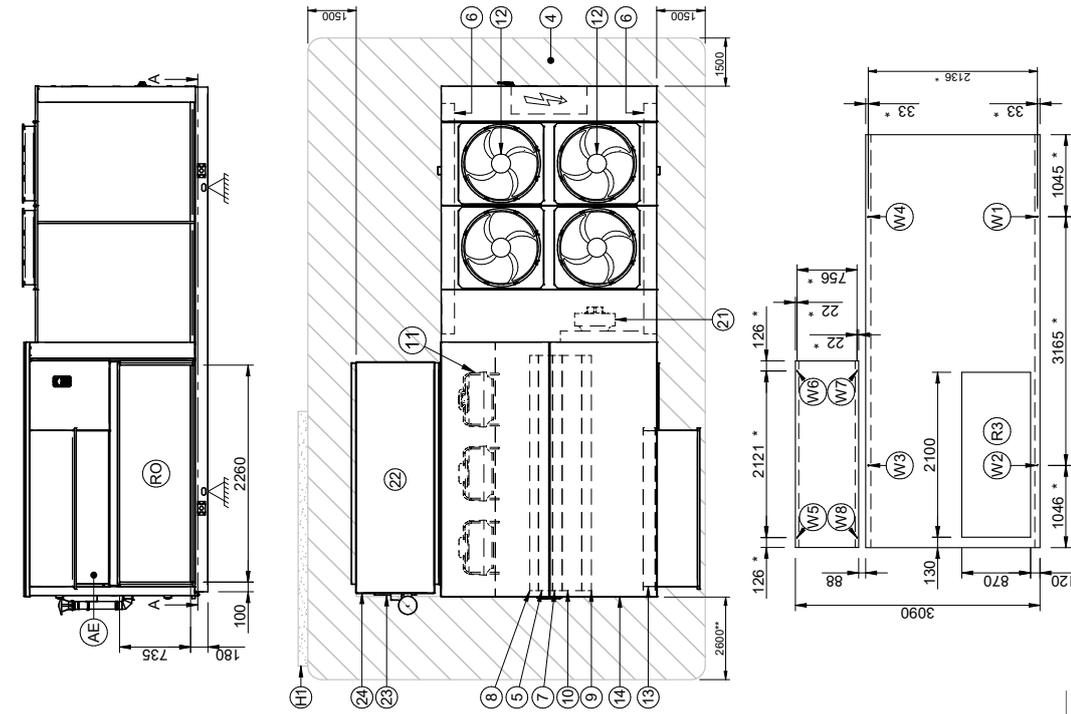
Configuration	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	kg 601	601	613	625
W2 Supporting point	kg 506	506	518	527
W3 Supporting point	kg 569	569	581	590
W4 Supporting point	kg 620	620	632	644
Operation weight	kg 2296	2296	2345	2386
Shipping weight	kg 2349	2349	2398	2441

The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 56.4 - version

CAK / CBK / CBK-G / CCK-REVO + GC10X - GC11X

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DATA/DATE 06/06/2022



- 1. Compressor compartment
 - 2. Electrical panel
 - 3. Condensation drain / Removable bowl
 - 4. Functional spaces
 - 5. Internal exchanger
 - 6. External exchanger
 - 7. H₂O heating coil / food refig. rec. / electric heaters (optional)
 - 8. Post-heating coil (Optional)
 - 9. G4 air filter (Standard)
 - 10. Electronic IFD F7 / F9 filters (optional)
 - 11. Electric fan (Supply-Return)
 - 12. External electric fan
 - 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
 - 14. Access for inspection of coils, filters, electric heaters
 - 15. Lifting brackets (removable)
 - 16. Humidifier connections
 - 17. H₂O heating coil inlet and food refig. rec. coil inlet Ø 2" (optional)
 - 18. H₂O heating coil outlet and food refig. rec. coil outlet Ø 2" (optional)
 - 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
 - 20. Power input
 - 21. Exhaust electric fan
 - 22. Gas module
 - 23. Gas connection
 - 24. Condensation drain (only for condensing module)
- (R0) Horizontal air return
(R3) Air return from the bottom (optional)
(M0) Horizontal air supply
(AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
(H1) Wall with max. height equal to height of unit and on max. 3 sides
(*) Vibration mounts position
(**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)

GAS MODULE WEIGHT DISTRIBUTION

W5 Supporting point	kg	73
W6 Supporting point	kg	62
W7 Supporting point	kg	62
W8 Supporting point	kg	73
Operation weight	kg	270
Shipping weight	kg	270

SIZE

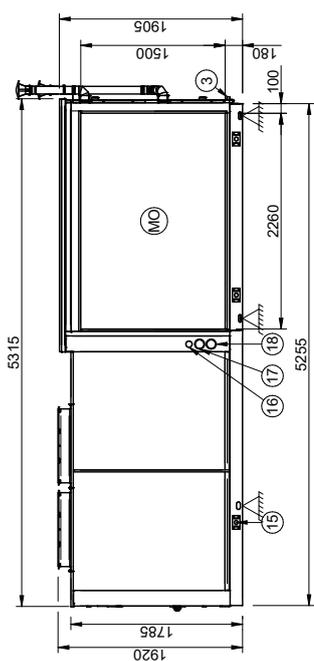
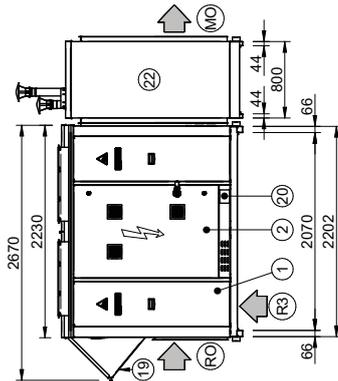
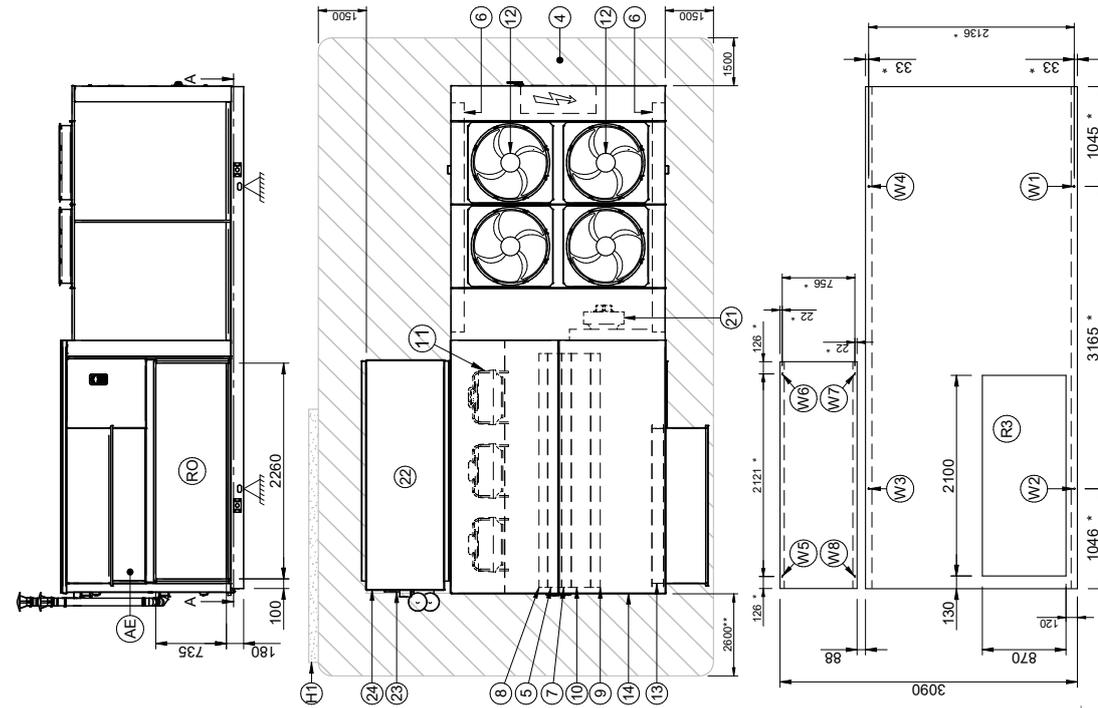
Configuration	CAK	CBK	CBK-G	CCK-REVO
W1 Supporting point	kg	601	613	625
W2 Supporting point	kg	506	518	527
W3 Supporting point	kg	569	581	590
W4 Supporting point	kg	620	632	644
Operation weight	kg	2296	2345	2386
Shipping weight	kg	2349	2398	2441

The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 56.4 - version

CAK / CBK / CBK-G / CCK-REVO + GC12X - GC13X

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DATA/DATE 06/06/2022



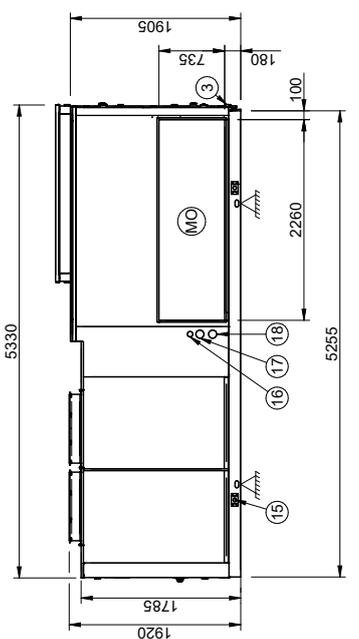
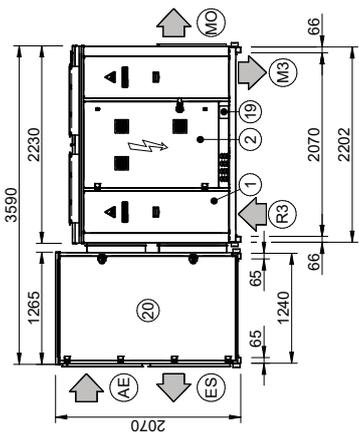
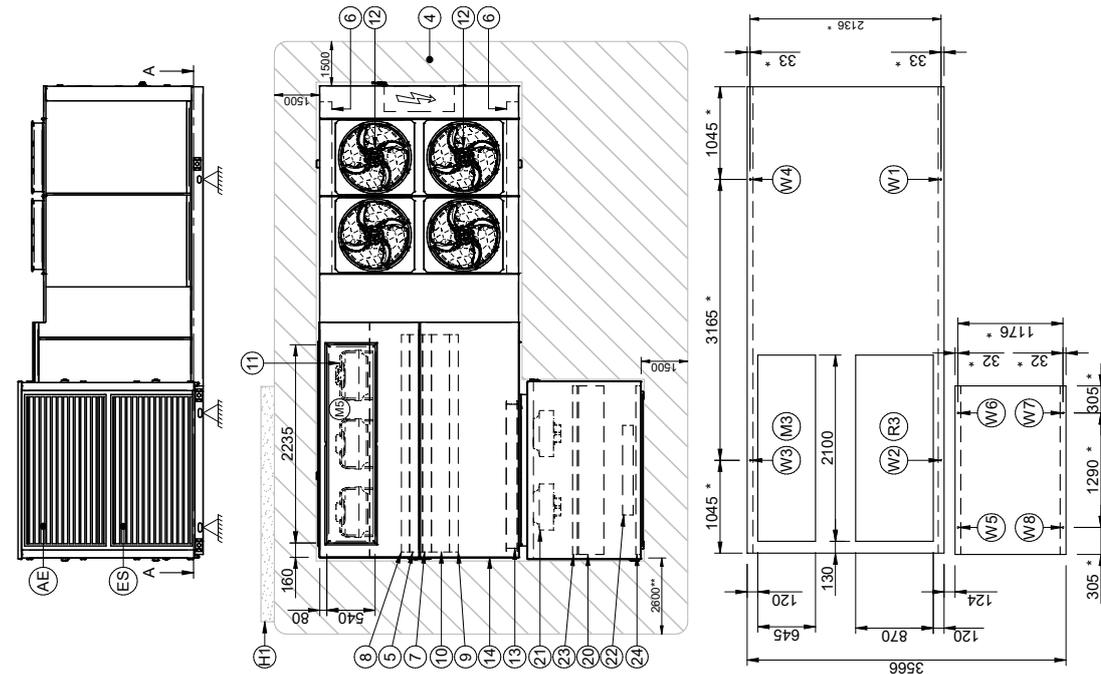
- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor air damper (version CBK / CBK-G / CCK-REVO)
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet and food refriger. rec. coil inlet Ø 2" (optional)
- 18. H₂O heating coil outlet and food refriger. rec. coil outlet Ø 2" (optional)
- 19. Outdoor air hood (only with vers. CBK / CBK-G / CCK-REVO) accessory supplied separately
- 20. Power input
- 21. Exhaust electric fan
- 22. Gas module
- 23. Gas connection
- 24. Condensation drain (only for condensing module)
- (R0) Horizontal air return
- (R3) Air return from the bottom (optional)
- (MO) Horizontal air supply
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H1) Wall with max. height equal to height of unit and on max. 3 sides
- (*) Vibration mounts position
- (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)

SIZE		CAK	CBK	CBK-G	CCK-REVO	GAS MODULE WEIGHT DISTRIBUTION		
W1 Supporting point	kg	601	601	613	625	W5 Supporting point	kg	145
W2 Supporting point	kg	506	506	518	527	W6 Supporting point	kg	100
W3 Supporting point	kg	569	569	581	590	W7 Supporting point	kg	100
W4 Supporting point	kg	620	620	632	644	W8 Supporting point	kg	145
Operation weight	kg	2296	2296	2345	2386	Operation weight	kg	490
Shipping weight	kg	2349	2349	2398	2441	Shipping weight	kg	490

The presence of optional accessories may result in a significant variation of the weights shown in the table.

CSRN-iY 56.4 - version CBK-G + Rotary recovery module

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- 18. H₂O heating coil outlet and food refriger. rec. coil outlet Ø 2" (optional)
- 19. Power input
- 20. Rotary recovery module
- 21. Exhaust electric fan
- 22. Exhaust damper
- 23. G4 filters (exhaust)
- 24. G4 filters (outdoor air return)

- 1. Compressor compartment
- 2. Electrical panel
- 3. Condensation drain / Removable bowl
- 4. Functional spaces
- 5. Internal exchanger
- 6. External exchanger
- 7. H₂O heating coil / food refriger. rec. / electric heaters (optional)
- 8. Post-heating coil (Optional)
- 9. G4 air filter (Standard)
- 10. Electronic IFD F7 / F9 filters (optional)
- 11. Electric fan (Supply-Return)
- 12. External electric fan
- 13. Outdoor / exhaust air damper
- 14. Access for inspection of coils, filters, electric heaters
- 15. Lifting brackets (removable)
- 16. Humidifier connections
- 17. H₂O heating coil inlet and food refriger. rec. coil inlet Ø 2" (optional)

- (R3) Air return from the bottom (optional)
- (MO) Horizontal air supply
- (M3) Air supply from the bottom (optional)
- (M5) Vertical air supply (optional)
- (AE) Outdoor air return (vers. CBK / CBK-G / CCK-REVO)
- (H1) Wall with max. height equal to height of unit and on max. 3 sides
- (*) Vibration mounts position
- (**) Minimum clearance for removal of the condensate collection bowl (1500mm for removal not required)

SIZE	Configuration	CBK-G	ROTARY RECOVERY MODULE WEIGHT DISTRIBUTION
W1	Supporting point	kg 613	W5 Supporting point kg 173
W2	Supporting point	kg 518	W6 Supporting point kg 162
W3	Supporting point	kg 581	W7 Supporting point kg 141
W4	Supporting point	kg 632	W8 Supporting point kg 154
	Operation weight	kg 2345	Operation weight kg 630
	Shipping weight	kg 2398	Shipping weight kg 645

The presence of optional accessories may result in a significant variation of the weights shown in the table.

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