Packaged high efficiency direct expansion Rooftop air conditioner.

CLIVETPack^3

CSRN-Y 60.4-120.4 RANGE

TECHNICAL BULLETIN

SIZE	60.4	70.4	80.4	90.4	100.4	120.4
COOLING CAPACITY KW	208	232	261	294	322	374
HEATING CAPACITY KW	200	222	252	286	311	367

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Features

CLIVETPack³ for medium attendance applications

The CSRN-Y units are high-efficiency stand-alone air conditioners designed for medium and large commercial areas with air renewal. They are specifically designed for medium crowded environments such as: shopping centers, shopping galleries, supermarkets, hypermarkets, railway stations, airports and industrial warehouses.
The series features a double refrigeration circuit with scroll compressors connected in Tandem on each individual circuit.
This solution makes it possible to follow the trend of the thermal load even in mid-seasons, reaching very high seasonal performance and by far exceeding the minimum requirements set by the ErP 2021 regulations.

Thanks to the single-block design of the unit, all of the plant engineering parts are contained inside the unit, already assembled and tested.

Four configurations available, from the full recirculation version, with minimum fresh air, to versions with renewal and energy recovery on the exhaust air. Each one can be integrated with a broad range of accessories that customise the product according to the application

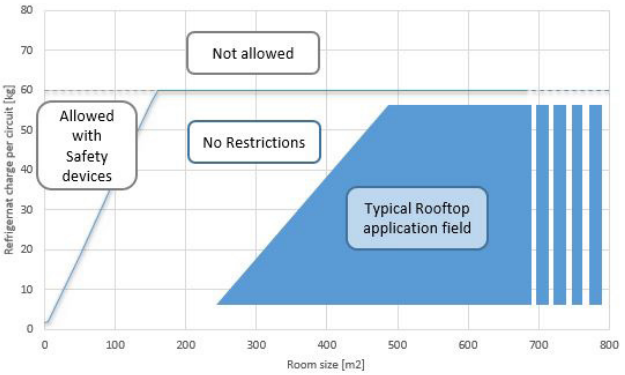
- ✓ Double refrigeration circuit with two scroll compressors connected in parallel that allow for up to 3 partialisation steps per circuit.
- ✓ Radial fans directly coupled to EC brushless motors (plug fans) allow to adjust the airflow acording to the characteristics of the aeraulic system. On both the supply and the exhaust section.
- ✓ Filtration of air in several stages, from the efficiency class G4 to classes of absolute filtration (electronic filters with iFD technology).
- ✓ UV-C lamps with active germicidal action against fungal spores, bacteria and viruses, for maximum air quality, effective against SARS-CoV-2.
- ✓ Innovative and patented REVO thermodynamic recovery.
- ✓ Energy recovery via enthalpy wheel available for CBK-G version
- ✓ Constant or variable control of the flow of supply air.
- ✓ Automatic and variable control of the amount of fresh air based on the actual occupants requirement, with air quality probe.
- ✓ Freecooling function when it is possible to use outdoor air directly to meet the internal loads.
- ✓ Great air distribution flexibility, with the option of connecting a roofcurb for supply and/or return from below.
- ✓ Summer dehumidification function with hot-gas post-heating to increase comfort even with high latent loads.
- ✓ Heating solutions that can be used together with or instead of the heat pump: electric heaters, hot water coil, modulating gas module with condensation technology.
- ✓ Humidification systems integrated in the unit.
- ✓ Possibility of connection to the main supervision systems wtih Modbus communication protocol supplied as standard.

All the accessories are cabled and supplied on board the unit unless specified otherwise.

Clivet's choice towards a green evolution

New R32 refrigerant

European regulation EC 517/2014 envisages a reduction in the use of HFC (F-gas) refrigerants with the aim of reducing their environmental impact, measured through the GWP (Global Warming Potential) parameter.
Clivet, which has always placed a strong focus on the development of technological solutions aimed at protecting the environment, introduces R32 refrigerant with a low GWP (675) on Rooftop units as well.
The environmental impact is thereby reduced by up to 80% not only thanks to the low GWP of R32, but also thanks to the reduction and optimisation of the refrigerant charge ensured through the careful design of each individual component.
The use of this A2L refrigerant (mildly flammable) is in line with the EN 378 standard, which defines its correct application based on the refrigerant charge and the surface of the rooms serviced.

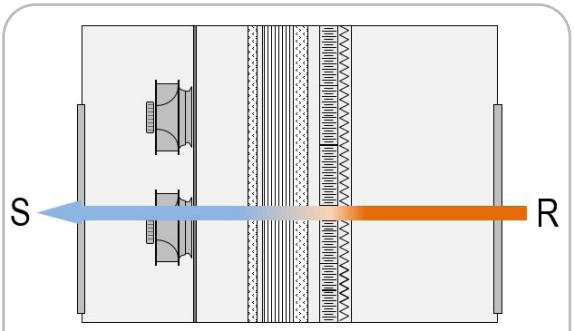


Limit line calculated with room height equal to 6m

Configurations

CAK - Configuration with single fan section for full recirculation

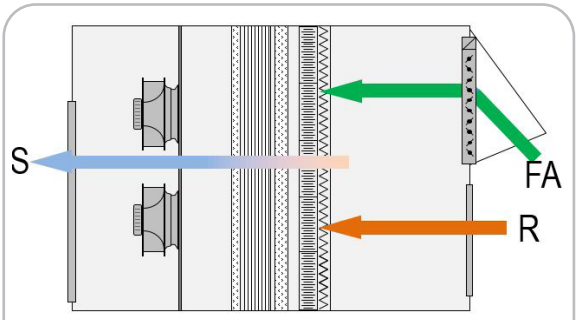
For air conditioning applications only, without the need for fresh air renewal.
The supply fan section provides the required static supply and return head.



R= Return air **S** = Supply air

CBK - Configuration with single fan section for recirculation and fresh air

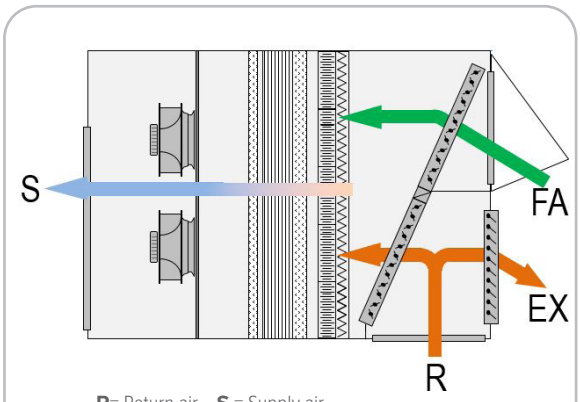
For applications where there is the need to keep the room in over-pressure, with the option of controlling a particular fresh air flow.
As for the CAK configuration, the supply fan section provides the supply and return available static pressure



R = Return air **S** = Supply air **FA** = Fresh air

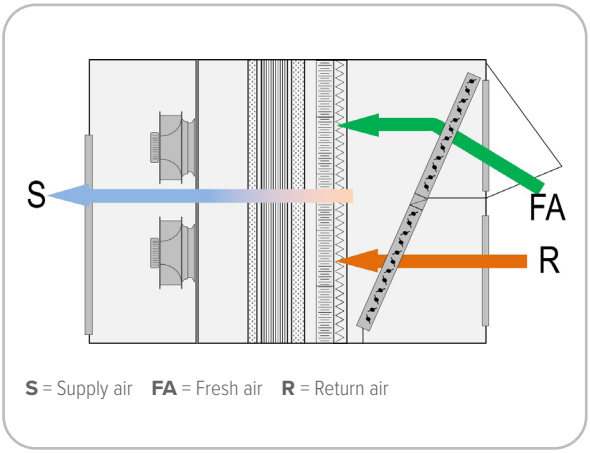
CBK-G - Configuration with single fan section for recirculation, renewal and exhaust

It ensures the renewal of ambient air and the simultaneous exhaust of stale air through a dedicated section.
In addition to the configuration with modulating renewal damper and return from below (R3), the unit is fitted with a modulating recirculation damper and a gravity exhaust damper.
The control logic automatically manages the renewal and exhaust of air directly on board the unit, activating Freecooling when possible up to 100% in proportion to the load to be fulfilled.
The solution with gravity damper ensures the correct operation of the unit for installations with pressure drops on the return channel up to 50 Pa and is compatible only with the return section in position R3 (from the bottom).
The following accessories are available for configuration CBK-G:



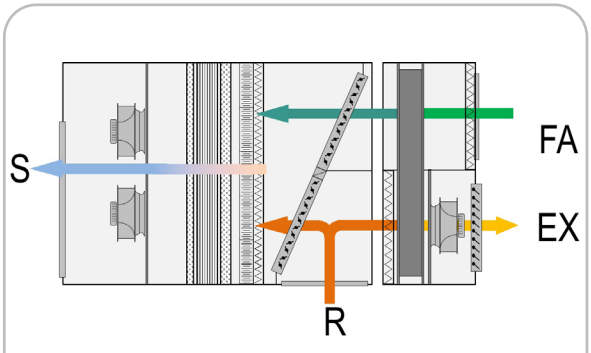
R= Return air **S** = Supply air
FA = Fresh air **EX** = Exhaust air

NSERG - Gravity exhaust air damper not required



S = Supply air **FA** = Fresh air **R** = Return air

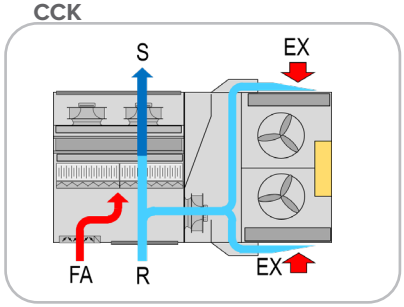
EWX - Enthalpy Wheel Energy Recovery Module



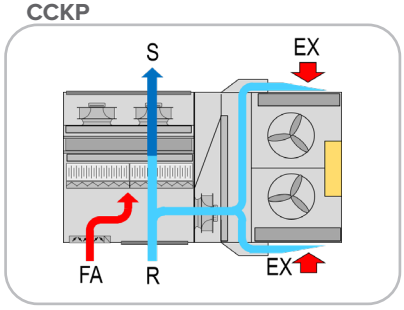
R= Return air **S** = Supply air
FA = Fresh air **EX** = Exhaust air

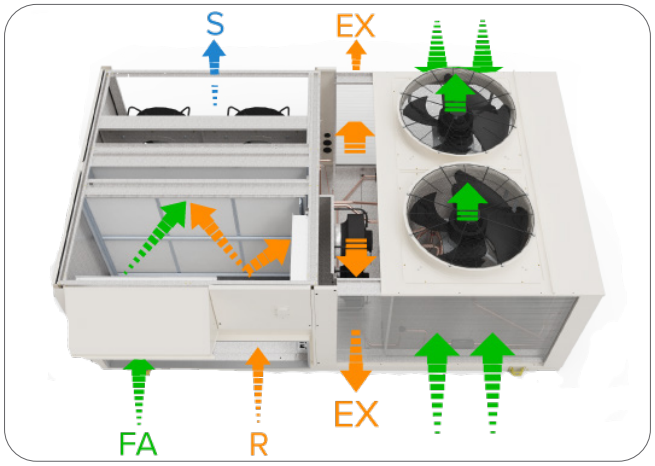
CCK-REVO - Dual ventilating section with renewal air and REVO thermodynamic recovery

CCK



CCKP





R = Return air **S** = Supply air **FA** = Fresh air **EX** = Exhaust air

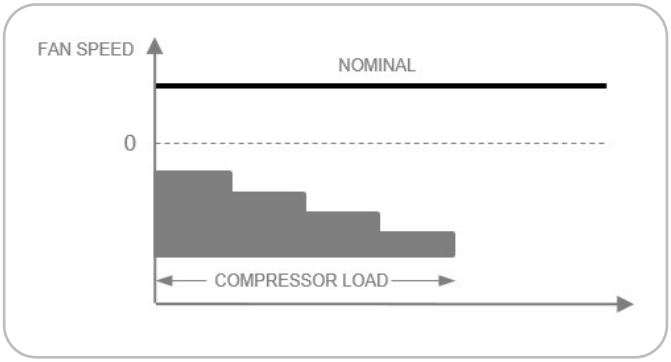
A new concept of thermodynamic recovery is introduced, which combines in a single version the benefits and performance of the previous CCK and CCKP configurations.
For applications with automatic air renewal and FREE-COOLING function control.
The unit is fitted with an exhaust section featuring an innovative and patented REVO thermodynamic recovery for exhaust air (Recovery EVOlution).
The innovative REVO recovery is always included in the CCK-REVO configuration and uses the technology of the refrigeration circuit with direct expansion.
The energy contained in the flow of exhaust air is recovered in a dedicated sector of the direct expansion source coil.
The amount of energy recovered can be easily measured, as in the case of static heat recovery.
Here below are the main benefits of energy recovery:

- Increased power delivered to the conditioned room.
- Increased overall efficiency of the unit for significant energy savings and guaranteed investment payback.
- Unit length reduced by 5%, ensuring a compact design and easy positioning.
- Refrigerant charge reduced by 50% compared to CCKP version, for a lower environmental impact of the unit and greater safety for users.
- Optimised industrialisation and reliability thanks to the removal of the additional recovery exchanger and consequent refrigerant circuit simplification.
- Elimination of higher electrical consumption for the ventilation of passive recovery devices, thereby reducing the total energy absorbed.
- In winter mode with heat pump operation, it reduces the formation of ice on the exchanger and therefore the defrosting frequency. The operation continuity and overall efficiency of the system are enhanced.
- Also effective for cooling operations, especially in continental and temperate climates where the output of traditional passive recovery devices is essentially negligible due to a low temperature and enthalpy difference between the outdoor and indoor environment.

Automatic management of the air flow

Standard mode

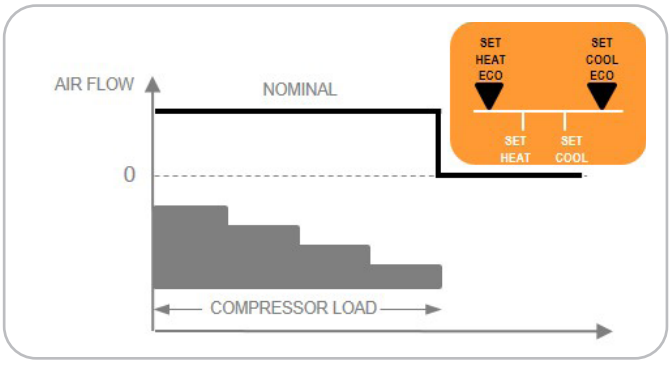
The supply airflow is managed with 0-10V signal.
The signal remains constant and keeps the fan speed consistent in all thermal load conditions and operating mode.



ECO mode (standard function)

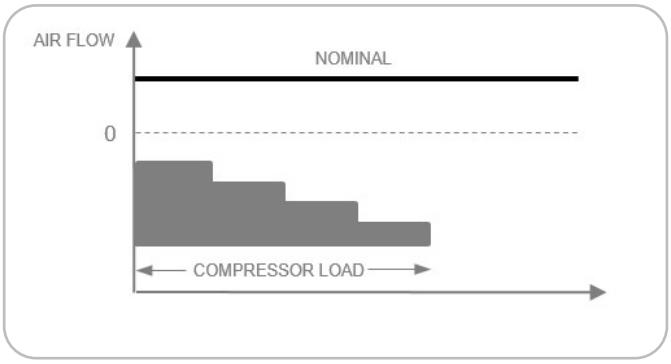
The air flow supply remains constant at varied heat loads and is shutdown when the load is fulfilled.
To further increase the energy savings in this condition, it is also possible to set less demanding operation setpoints for the unit in respect to the standard mode.
This function is indicated to thermally mantain a served area when it is temporarily not used, which can for example occur at night.
The ECO mode can be activated:

- manually
- automatically by means of the Clivet supervision System



Constant air flow (PCOSM option)

Supply airflow rate remains constant even with the progressive fouling of the filters compensating for the increased pressure drops.

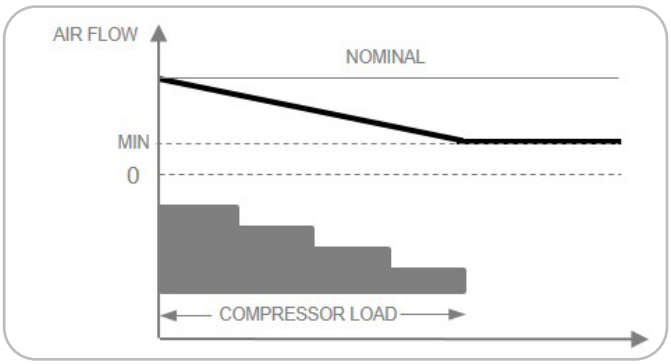


Variable airflow (PVAR option)

The air flow 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 load is fulfilled.
This option allows a important energy savings as:

- The movement of the air determines an annual energy consumption comparable or even greater than the compressors.
- The reduction of 20% of the flow generates a saving of 50% on energy absorbed by the ventilators.
- With a reduction of the flow equal to 40%, the saving for ventilation exceeds 70%.

The variable airflow can therefore lead to a saving of 30% on the overall electrical consumption of the unit.



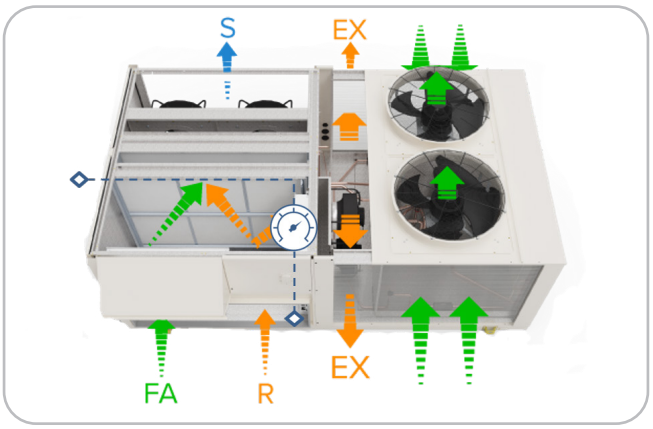
Moreover, the flow rate of the unit can be controlled as follows:

- PVARDP - Variable airflow with pressure probe on the unit
- SPVAR - 0-10 V signal for air flow modulation
- BMS supervision system (not available with Standard mode management of the air flow)

Smart management of defrosts

The automatic defrosting cycles on surfaces of the external exchanger are managed in a predictive manner, which reduces both the frequency and the duration.
The on-board electronic regulation analyses not only the external conditions but also the changes of the evaporating pressure in the exchanger.
The standard defrosting cycle management involves the stop of the ventilation.
This reduces the time required for defrosting and prevents the introduction of too cold air in the served area, maintaining comfortable conditions for the users.
A specific design of the frame base of the exchanger promotes the outflow of condensation water during defrosting, thereby avoiding the formation of ice at the bottom of the external exchanger.

Ambient pressure control

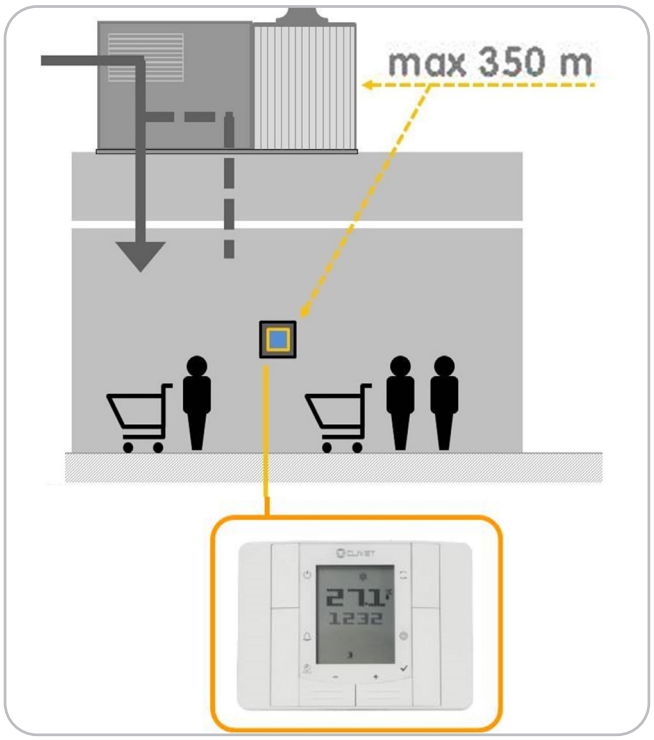


The ambient pressure control device compares the return pressure with the external pressure and offsets any variations by acting on the outdoor air damper.

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

The ambient pressure control device is available and supplied as standard in the unit in the configuration with extraction and exhaust (Clivet reference CCK-REVO).

Simple and intuitive user interface



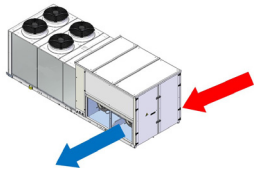
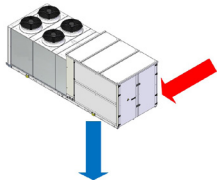
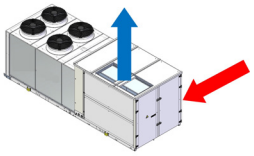
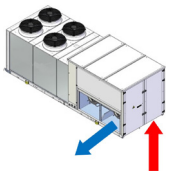
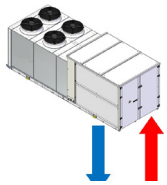
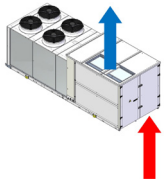
The remote control with user interface (for wall mounting) is supplied as standard and it can be easily used also by not specialized personnel. The connecting cable (not supplied) has a double function of serial communication and power supply.
Among the main functions it allows to:

- unit switching on and off;
- daily/weekly start-up or power-off programming of the unit and the Comfort or ECO (energy saving) or Ventilation-only mode;
- display the alarm code and the unit statuses;
- management of the main operating parameters (password-protected);
- selective key lock, unlocked with password.

The temperature and humidity measurement is made by probes into the unit: the remote control can therefore be installed also inside the technical control compartment. When the centralised supervision system or an other remote control device is provided, the unit can be supplied without the remote control with the user interface.

Unit configuration

Supply and return configurations

	SIZE 60.4 - 70.4 - 80.4 - 90.4 - 100.4 - 120.4		
	M0 - R0	**M3 - R0**	**M5 - R0**
	Standard Unit	Option	Option
SUPPLY AND RETURN OF AIR			
	M0 - R3	**M3 - R3**	**M5 - R3**
	Option	Option	Option
			

Filter nomenclature in accordance with EN ISO 16890

The classification of air filters is based on the ability to retain airborne particulate matter.
To make it possible and easier to select appropriate filters according to different applications, a new global standard for filtration has been recently introduced: EN ISO 16890.
It defines a new and alternative classification for air filters based on their ability to retain dispersed airborne particulate matter (PM10, PM2.5 and PM1) through new, more stringent and specific test methods.
The previous standards in force, such as EN 779-2012, ASHRAE 52.2 and other local standards, are thus unified for all countries worldwide.
Below, the correlation between the traditional nomenclature and the new standard for filters used in Clivet units. For easier reading, both names have been kept in the text.

1st stage of filtration (standard)	ISO 16890 Coarse 60%	G4
2st stage of filtration (optional)	ISO 16890 ePM1 55%	F7
2st stage of filtration (optional)	ISO 16890 ePM1 80%	F9
2st stage of filtration (optional)	ISO 16890 ePM1 90%	FIFD (electronic filter iFD)

CSRN-Y	60.4	CCK-REVO	M0	R0	SFCM	CHW2	PCOSM	CREFB	EWX
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1. Configuration
CAK - Single fan section for full recirculation
CBK - Single fan section for recirculation and fresh air
CBK-G - Single fan section for recirculation, renewal and exhaust
CCK-REVO - Dual ventilating section with renewal air and REVO thermodynamic recovery

2. Air supply
M0 - Horizontal supply
M3 - Downflow supply
M5 - Upward supply air

3. Air return
R0 - Horizontal return
R3 - Downflow return

4. Outdoor air damper
SER - Manual outdoor air damper (std for CBK configuration)
SERM - Outdoor air on/off motorized damper (only configuration CBK)
SFCM - Modulating motorised free-cooling damper (optional for CBK, std for CBK-G and CCK-REVO)

5. Auxiliary heating
not required (Std)
EH - Electric heaters
CHW2 - Two-rows hot water coil
GCX - Condensig gas heating module with modulating control
CHWER - Energy recovery from the food refrigeration

6. Airflow
not required (Std)
PCOSM - Supply constant airflow
PVAR - Variable airflow
PVARDP - Variable airflow with pressure probe on the unit
SPVAR - 0-10 V signal for air flow modulation

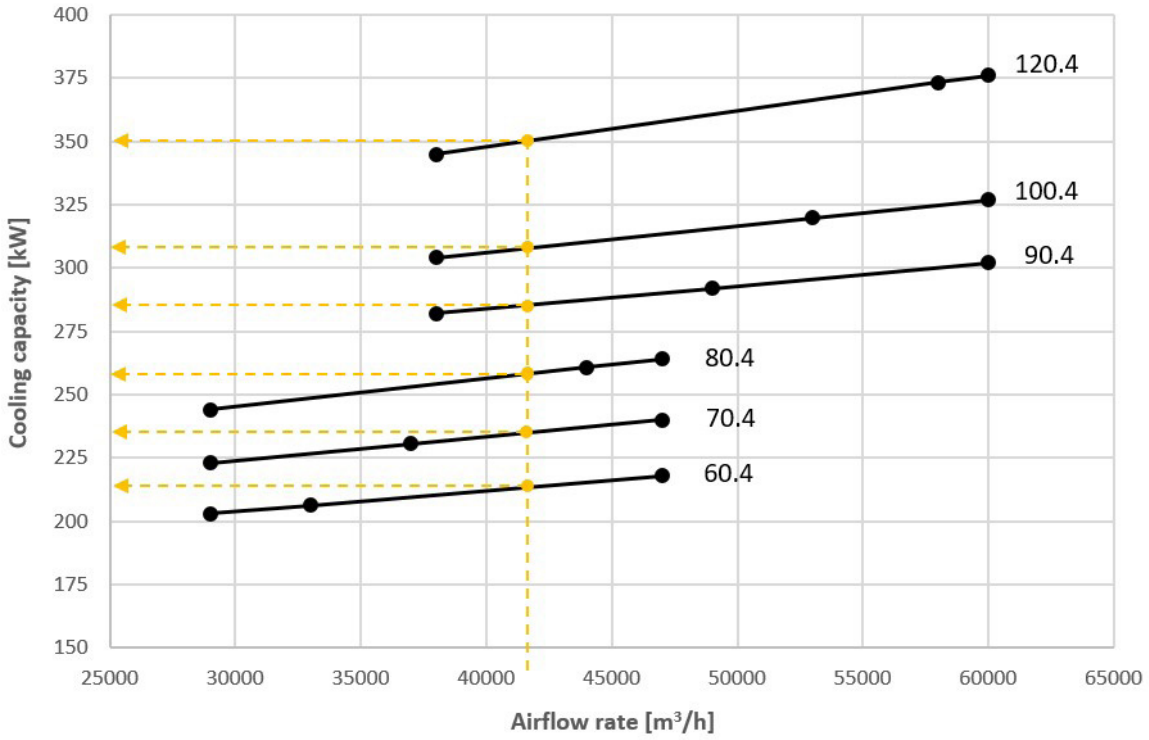
7. External section fan
CREFP - Device for consumption reduction of the external section at variable speed (phase-cutting) (Std)
CREFB - Device for fan consumption reduction of the external section, ECOBREEZE type

8. Passive energy recovery
EWX - Enthalpy wheel energy recovery Module (only available with CBK-G options)

Unit configuration

How to choose the unit

With the same air flow, a different heating-cooling treatment is available based on the size selected.



Performance in CCK-REVO configuration, nominal summer conditions and 30% outdoor air

Compressor
Hermetic orbiting Scroll compressor, equipped with motor protection device for overtemperatures, overcurrents and excessive temperatures of the supply gas. It is installed on antivibration mounts and comes with a full oil charge.
A guard heater with automatic insertion prevents the refrigerant from diluting the oil when the compressor stops.
The compressors are connected in TANDEM on a single refrigeration circuit and have a biphasic oil equalisation.

Structure
The base is assembled with a painted and hot-dip galvanised steel frame. The internal structure is a load-bearing frame made of shaped Zinc-Magnesium sheet steel. The Zn-Mg alloy improves the features in terms of corrosion resistance due to the galvanic protection typical of the Zinc-Magnesium combination.

Panelling
Double-walled sandwich panels in the air handling zone made of sheet steel with polyurethane insulation (40 kg/m3), 6/10 mm thick external sheet galvanised and painted with RAL 9001 polyester powder, 30 mm thick polyurethane with thermal conductivity coefficient of 0.022W/mK, 5/10 mm thick hot-dip galvanised internal sheet. The panel also has a PVC profile for thermal insulation with an EPDM rubber gasket inserted to ensure an airtight seal.
All panelling can easily be removed to allow complete accessibility to internal components.

Internal exchanger
Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

External exchanger
Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.
A correct dimensioning of the exchanger power supplies and the geometry of the structure at the base, prevents the formation of ice at the base of the heat exchanger during winter operation.

Fan
Internal section
Plug fans without scroll with reverse blades driven by electronically-controlled “brushless” DC motors with direct coupling. No transmission sizing is needed.
External section
Helical fans with profiled blades made of reinfoced plastic, directly coupled to three-phase electric motor with external rotor with built-in thermal overload protection, IP 54 execution.

Refrigeration circuit
Double refrigeration circuit with:
- refrigerant charge R32
- high pressure safety pressure switch
- filter dryer
- Steel mesh strainer
- electronic expansion valve
- 4-way reverse cycle valve
- liquid receiver
- liquid separator
- high pressure safety valve
- low pressure safety valve

Filtration
Fresh air intake and ambient air return
Folded filter for a larger filtering surface, made of a galvanised sheet metal frame with a galvanised and electro-welded protective mesh and a regenerable filter media made of polyester fibres primed with synthetic resins. ISO 16890 efficiency Coarse 60% (G4). Self-extinguishing type (class 1 flame resistance - DIN 53438).

Drain pan
Internal section
Inox steel AISI 304 condensate collection tray with anti-condensate insulation, welded, fitted with drain pipe and UV-resistant silicon siphon.

Electrical panel
The Power Section includes:
- main door lock isolator switch;
- phase monitor;
- auxiliary circuit protection fuse;
- fan motor thermal protections of internal and extraction section;
- circuit breaker to protect the auxiliary circuit transformer and options.

The microprocessor control section includes:
- treated air temperature control;
- limit supply temperature probe;
- temperature set point and unit switch-on/off daily, weekly programmer;
- compressor timing and protection;
- self-diagnosis system with immediate display of the failure code;
- clean contacts for ON-OFF remote, cumulative alarm, fan mode, compressor mode, summer/winter mode;
- serial communication module for Modbus supervisor.

Remote control with user interface
- Unit switch-on and switch-off;
- daily/weekly switch-on or switch-off schedule for the unit and for the Comfort, ECO (energy saving) or ventilation-only mode;
- manual change of the operating mode (heat or cool) and/or of the temperature set-point;
- display of the alarm code and unit statuses;
- management of the main operating parameters (password-protected);
- selective key lock, unlocked with a password.

IoT integration (optional):
- Connectivity to the Clivet Eye IoT platform to avail of the cloud based services related to remote control, maintenance and optimization.
- Remote accessibility available via smartphone, tablet and PC by means of responsive interface.

Test
Unit manufactured to ISO 9001 standard and commissioned upon production completion.

Standard unit technical features

Options available

- FC - Thermal FREE-COOLING
- FCE - Enthalpy FREE-COOLING
- CREFB - Device for fan consumption reduction of the external section, ECOBREEZE type
- CHW2 - Two-rows hot water coil
- CHWER - Energy recovery from the food refrigeration
- 2WVM - Modulating 2-way valve
- 3WVM - Modulating 3-way valve
- EH - Electric heaters
- PGFC - Finned coil protection grilles
- PGCCH - Anti-hail protection grilles
- PCM0 - Sandwich panels of the handling zone in M0 fire reaction class
- CPHG - Hot gas re-heating coil
- M0 - Horizontal supply
- M3 - Downflow supply
- M5 - Upward supply air
- R0 - Horizontal return
- R3 - Downflow return
- SER - Outdoor air damper manually set
- SERM - Outdoor air motorised ON/OFF damper
- SFCM - Modulating motorised FREE-COOLING damper
- NSERG - Gravity exhaust air damper: not required
- VENH - High static pressure supply fans
- PVAR - Variable airflow
- PCOSM - Supply constant airflow
- PVARDP - Variable airflow with pressure probe on the unit
- SPVAR - 0-10 V signal for air flow modulation
- PAQC - Air quality probe for CO_2 rate check
- PAQCV - Air quality probe for CO_2 and VOC rate check
- PAQC2 - Double air quality probe for CO_2 rate check
- PAQCV2 - Double air quality probe for CO_2+VOC rate check
- PPAQC - External CO_2 signal management
- F7 - F7 high efficiency air filter (ISO 16890 ePM1 55%)
- F9 - F9 high efficiency air filter (ISO 16890 ePM1 80%)
- FIFD - Electronic filters with iFD technology (ISO 16890 ePM1 90%)
- PSAF - Differential pressure switch for dirty air filters
- HSE - Immersed electrodes steam humidifier
- PUE - External Humidifier management with 0-10V external signal
- LTEMP1 - Application for low outdoor temperature
- EXFLOWC - Application in spaces with forced air exhaust at variable flow and exhaust section
- BRCI - Sloping drain pan
- LON - TP/FT 10 serial port with LonWorks protocol
- BACIP - BACnet-IP serial communication module
- BACMSTP - BACnet-MSTP serial communication module
- SFSTR - Starting current reduction device
- NCRC - Remote control with user interface: not required
- CSOND - Ambient humidity and temperature control with probes on board the unit
- PFCC - Power factor correction capacitors (cosfi > 0.95)
- DESM - Smoke detector
- CONTA2 - Energy meter
- CHMET - Heating and cooling capacity measuring device
- PTCO - Set up for shipping via container

Accessories separately supplied

GCX - Condensig gas heating module with modulating control
EWX - Enthalpy wheel energy recovery module
AMRX - Rubber antivibration mounts
AMRMX - Rubber antivibration mounts for unit and gas module
AMRUVX - Rubber antivibration mounts for unit and UV-C lamp module
AMREWX - Rubber antivibration mounts for unit and enthalpy wheel module
RCX - Roof curb
UVCX - UV-C lamp module with germicidal effect (supplied separately)
MDMTX - Management of ambient temperature probes
MDMTUX - Management of ambient temperature and humidity probes
MDMADX - Advanced monitoring and management ambient probes
CLMX - Clivet Master System
IOTX - IoT industrial module for cloud based interoperability & services
SIX - Service interface (1.5 metre cable)

All the handling coils can be provided with coated aluminium - Fin Guard - copper/copper

Configuration with single fan section for recirculation, renewal and exhaust (CBK-G)

Same technical features as the structural configuration with a single fan section for all recirculation (CAK) and a single fan section for recirculation and fresh air (CBK), plus:

- **Modulating motorised outdoor air damper for renewal and FREE-COOLING**
- **Gravity exhaust air damper**

Double ventilation section configuration with air renewal and energy recovery via enthalpy wheel (EWX)

Same technical features as the structural configuration with a single fan section for recirculation, fresh air and exhaust air (CBK-G), plus:

- **Energy recovery of the exhaust air with the EWX enthalpy wheel**
  Additional module envisaged on the ambient return section and fresh air intake.
  Includes enthalpy wheel, ISO 16890 Coarse 50% filters (G4) and reverse-blade screwless plug-fan exhaust fans driven by EC brushless DC motors.
  The module allows to recover the energy content of the exhaust air and reduce the thermal load required by the refrigeration circuit.

Configuration with dual ventilating section with fresh air and REVO thermodynamic recovery (CCK-REVO)

Same technical features as the structural configuration with a single fan section for all recirculation (CAK) and a single fan section for recirculation and fresh air (CBK), plus:

- **Modulating motorised outdoor air damper for renewal and FREE-COOLING**
- **Exhaust fan**
  Reverse-blade screwless plug-fan driven by EC brushelss DC motors with direct coupling
- **REVO exhaust air thermodynamic energy recovery (CCK-REVO)**
  The energy contained in exhaust air is recovered on a portion of the external exchanger, through a dedicated ventilating section.
  The purpose of the recovery is to improve the thermal level of the refrigerant fluid circulating in the exchanger, by varying in a useful way the temperature at which the condensation or evaporation of the operating fluid is completed.
  As a result, the favourable air temperature on the source side increases the output and efficiency of the unit.
  Clivet has filed a patent on this innovative recovery.

Performances - Standard airflow

Size				60.4	70.4	80.4	90.4	100.4	120.4
Cooling									
Cooling capacity	CAK	1	kW	190	213	240	269	295	343
Sensible capacity		1	kW	146	164	189	208	227	259
Compressor power input		1	kW	50,0	62,8	75,1	78,2	86,4	109,0
EER		1	-	3,81	3,39	3,19	3,44	3,41	3,13
Cooling capacity (EN14511:2018)		5	kW	191,0	213,9	240,7	270,3	296,0	344,0
EER (EN14511:2018)		5	-	3,40	3,40	3,20	3,45	3,42	3,14
SEER		6		4,76	4,70	4,37	4,45	4,33	4,17
ηsc		6	%	187	185	172	175	170	164
Cooling capacity	CBK/ CBK-G	2	kW	198	222	249	280	307	356
Sensible capacity		2	kW	152	171	197	217	237	269
Compressor power input		2	kW	50,5	63,7	76,2	79,3	87,6	111,0
EER		2	-	3,92	3,48	3,27	3,54	3,50	3,21
Cooling capacity	CCK-REVO	3	kW	208	232	261	294	322	374
Sensible capacity		3	kW	158	177	204	225	245	279
Compressor power input		3	kW	49,3	62,2	74,4	77,4	85,5	108,0
EER		3	-	4,21	3,74	3,51	3,80	3,76	3,44
Heating									
Heating capacity	CAK	1	kW	192	213	242	274	299	352
Compressor power input		1	kW	55,7	62,0	70,0	78,1	86,9	110,0
COP		1	-	3,44	3,44	3,46	3,50	3,44	3,20
Heating capacity (EN14511:2018)		7	kW	191,8	213,5	242,7	274,0	298,8	352,5
COP (EN14511:2018)		7	-	3,44	3,44	3,46	3,50	3,43	3,19
SCOP		6		3,41	3,47	3,41	3,42	3,39	3,37
ηsh		6	%	133	136	133	134	133	132
Heating capacity	CBK/ CBK-G	2	kW	193	215	243	276	301	354
Compressor power input		2	kW	51,5	57,3	64,7	72,3	80,4	102,0
COP		2	-	3,75	3,74	3,76	3,82	3,74	3,49
Heating capacity	CCK-REVO	3	kW	200	222	252	286	311	367
Compressor power input		3	kW	51,2	57,0	64,3	71,8	79,9	101,0
COP		3	-	3,91	3,90	3,92	3,98	3,90	3,63
Recovery efficiency REVO		4	%	86	86	84	77	78	80

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, 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

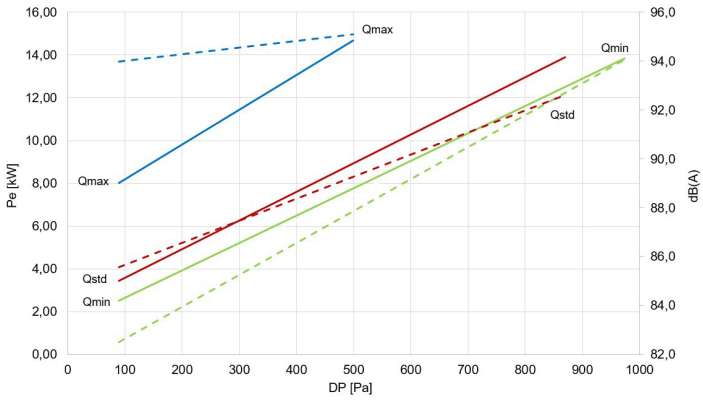
Construction - Standard airflow

Size				60.4	70.4	80.4	90.4	100.4	120.4
Compressor									
Type of compressors				SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
No. of compressors			No.	4	4	4	4	4	4
Refrigeration circuits			No.	2	2	2	2	2	2
Std capacity control steps			No.	4	6	6	6	4	6
Refrigerant charge (C1)		1	kg	28	30	32,5	40	42	47
Refrigerant charge (C2)		1	kg	28	30	32,5	38	40	48
Air Handling Section Fans (Supply)									
Type of supply fan/motor		2		RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC
Fan diameter			mm	560	560	560	560	560	560
No. of supply fans			No.	4	4	4	6	6	6
Supply airflow			m^3/h	33000	37000	44000	49000	53000	58000
Installed unit power			kW	3,5	3,5	3,5	3,5	3,5	3,5
Max. static pressure supply fan		3	Pa	870	760	580	860	810	740
Installed unit power	(VENH opt)		kW	5,8	5,8	5,8	5,8	5,8	5,8
Max. static pressure supply fan	(VENH opt)	3	Pa	1395	1230	945	1420	1285	1120
Fans (Exhaust) only configuration CBK-G + EWX									
Type of fans/motor		2		RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC
No. of fans				2	2	2	2	2	2
Installed unit power				3,5	3,5	3,5	3,5	3,5	3,5
Fans (Exhaust) only configuration CCK-REVO									
Type of fans/motor		2		RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC	RAD/EC
No. of fans				2	2	2	2	2	2
Installed unit power				2,67	2,67	2,67	3,95	3,95	3,95
External Section Fans									
Type of fans/motor		4		AXIAL/AC	AXIAL/AC	AXIAL/AC	AXIAL/AC	AXIAL/AC	AXIAL/AC
Fan diameter			mm	800	800	800	800	800	800
No. of fans			No.	4	4	4	6	6	6
Airflow			m^3/h	84000	84000	84000	126000	126000	126000
Installed unit power			kW	1,72	1,72	1,72	1,72	1,72	1,72
Connections									
Condensate drain			mm	30	30	30	30	30	30
Power supply									
Standard power supply			V	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50	400/3~/50

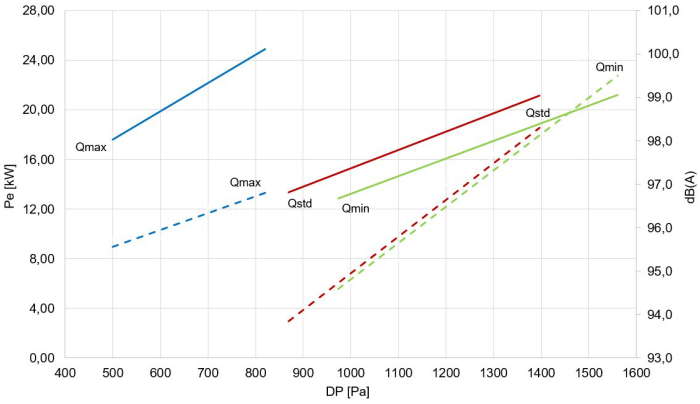
1. Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the label of the unit
2. RAD = Radial fan - EC = Electronically Commutated
3. Net pressure available to overcome flow and return pressure losses
4. AXIAL = Axial fan - AC = Alternating current

Fan performances

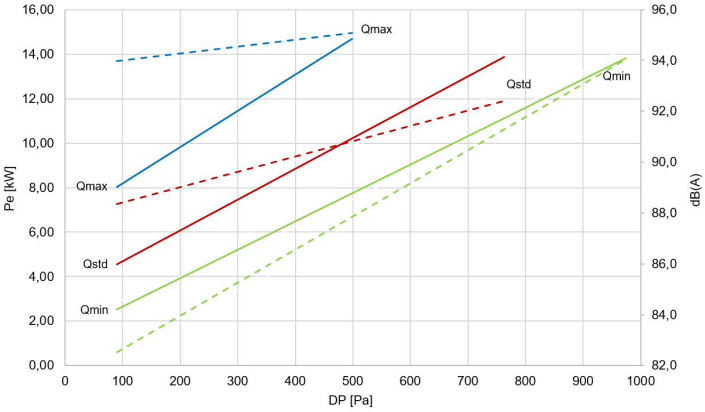
Size 60.4
Standard fans



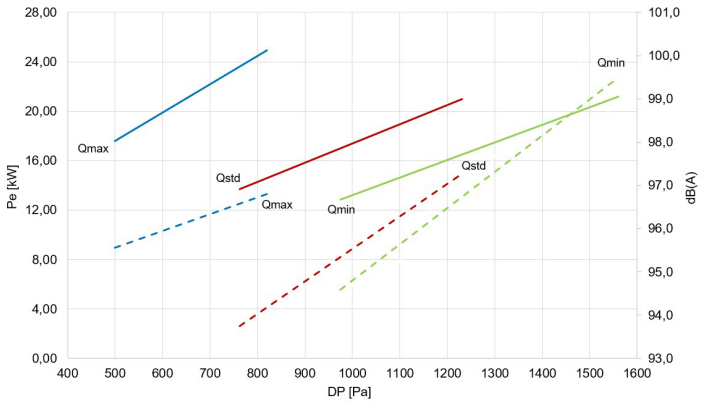
High static pressure fans



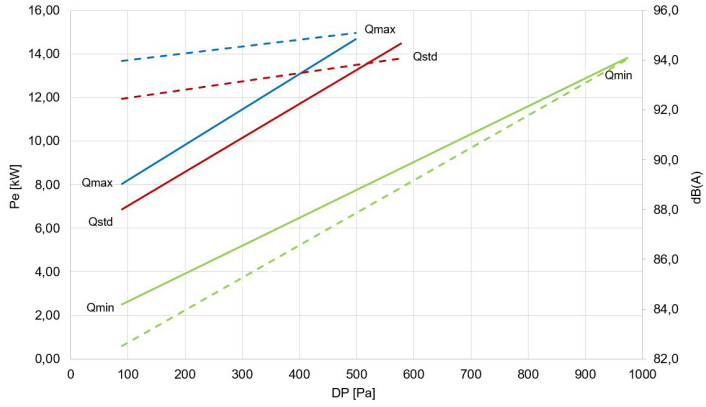
Size 70.4
Standard fans



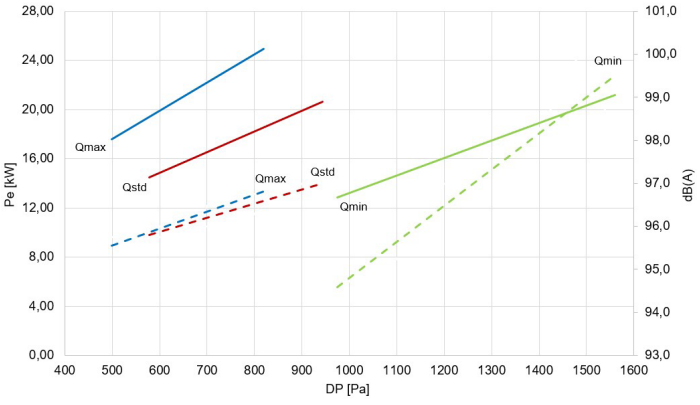
High static pressure fans



Size 80.4
Standard fans



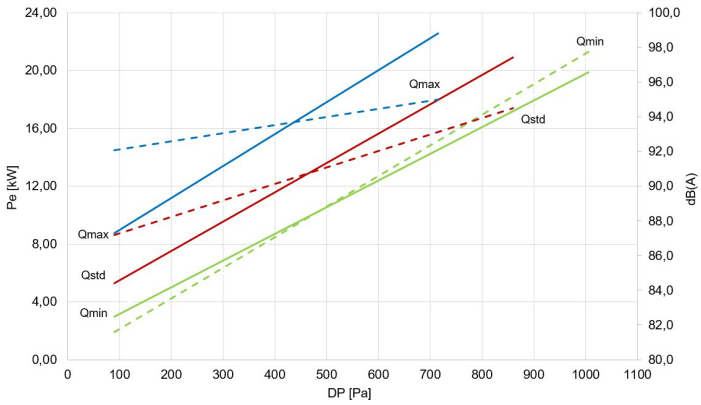
High static pressure fans



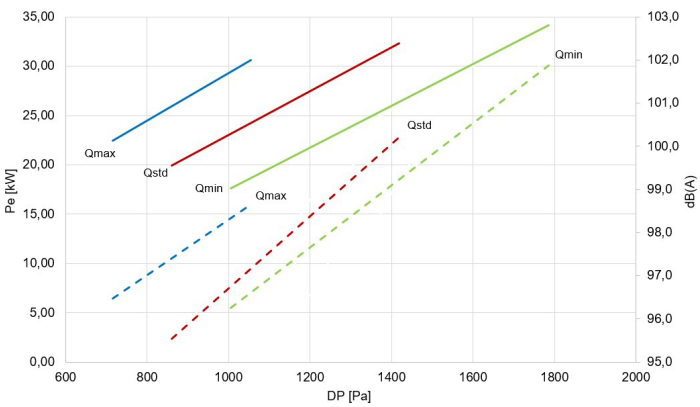
$Q_{min/std/max}$ =Extracted air flow
DP = Static supply pressure
——— = Pe = Total absorbed electrical power
- - - - - - = dB(A) = Sound power at the supply section

The performance takes into account the internal pressure drops of the std unit in CAK configuration (handling coil pressure drops, standard filters, etc.).
To determine the required performance of the supply fans, the pressure drops of any accessories must be added to the desired available static pressure.

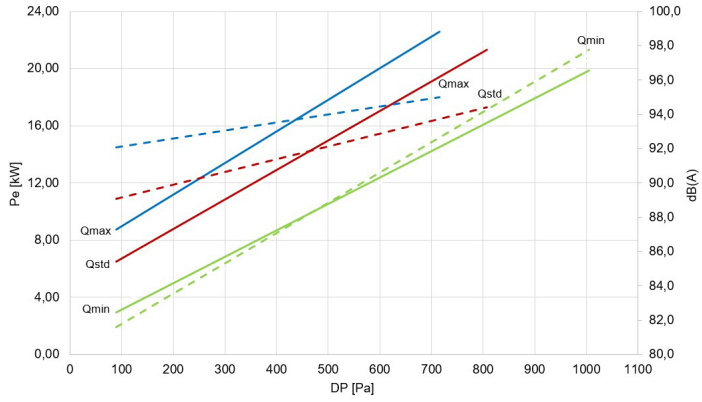
Size 90.4
Standard fans



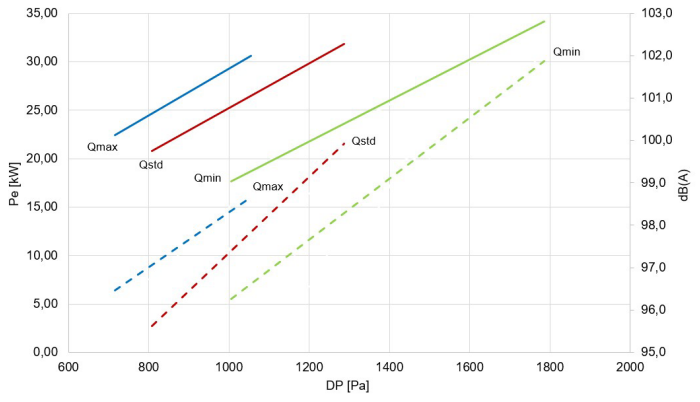
High static pressure fans



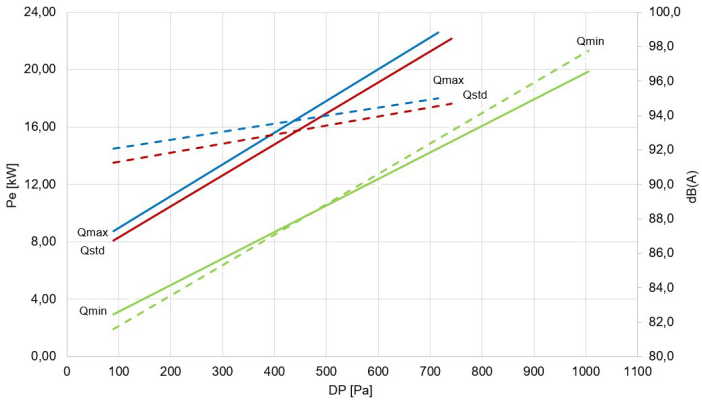
Size 100.4
Standard fans



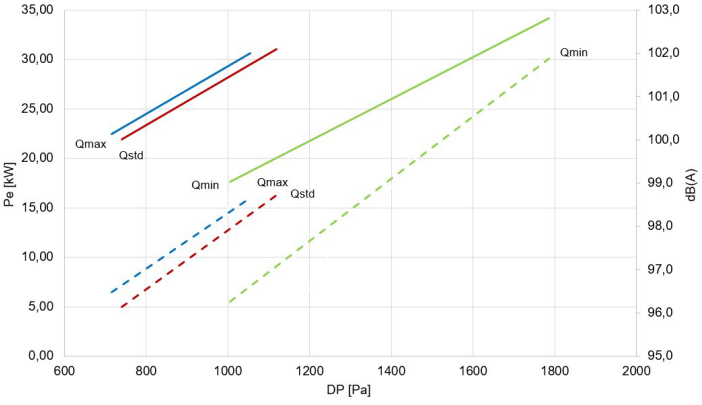
High static pressure fans



Size 120.4
Standard fans



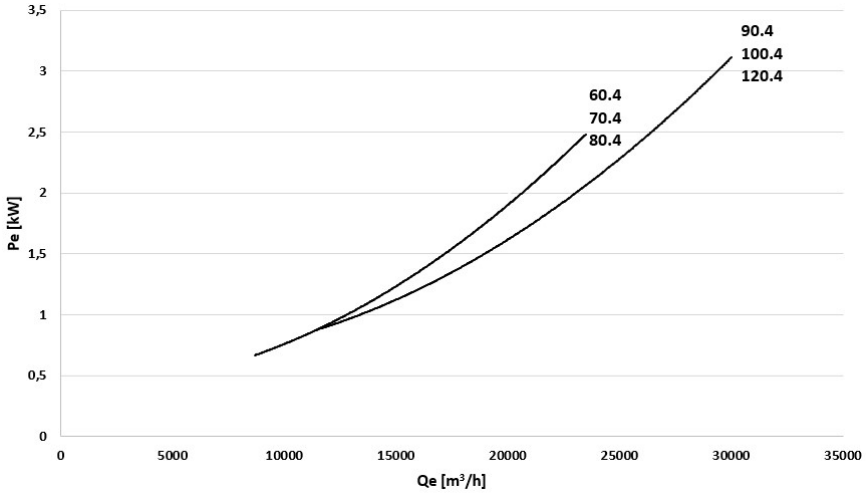
High static pressure fans



$Q_{min/std/max}$ =Extracted air flow
DP = Static supply pressure
——— = Pe = Total absorbed electrical power
- - - - - - = dB(A) = Sound power at the supply section

The performance takes into account the internal pressure drops of the std unit in CAK configuration (handling coil pressure drops, standard filters, etc.).
To determine the required performance of the supply fans, the pressure drops of any accessories must be added to the desired available static pressure.

Extraction fans



Qe = Extracted air flow rate
Pe = Total electrical power absorbed

Size		60.4	70.4	80.4	90.4	100.4	120.4
Qmin	m³/h	29000	29000	29000	38000	38000	38000
Qstd	m³/h	33000	37000	44000	49000	53000	58000
Qmax	m³/h	47000	47000	47000	60000	60000	60000

Sound levels - Standard mode

SIZE	Sound power level (dB) Octave band (Hz)								Sound power level	Sound pressure level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
60.4	111	98	93	88	86	79	73	84	92	72
70.4	113	99	95	90	88	85	79	82	94	74
80.4	116	102	98	94	91	91	81	83	97	77
90.4	112	100	95	89	88	88	81	75	95	74
100.4	113	101	96	91	89	89	81	76	96	75
120.4	114	102	98	93	93	93	83	76	98	77

The sound levels are referred to unit operating at nominal load in nominal conditions. The sound pressure level is referred at a distance of 1 m from the ducted unit surface operating in free field conditions. External static pressure 50 Pa. (standard UNI EN ISO 9614-2)

Measurements are carried out accordingly to UNI EN ISO 9614-2, as required by Eurovent Certification EUROVENT 8/1. It requires a 2 dB(A) tolerance on sound power level, only acoustic value to be certified.

Please note that when the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general), the sound levels may undergo substantial variations.

Specific sound performance according to different configuration are available on demand.

Sound levels referred to ESP as per EN 14511:2018

SIZE		60.4	70.4	80.4	90.4	100.4	120.4
Sound power with casing	dB(A)	92	94	97	95	96	98
Sound power in the duct	dB(A)	87	89	93	89	90	92
Available static pressure	Pa	200	200	250	250	300	300

Data referred to nominal air flow rate.
Measurements are carried out accordingly to UNI EN ISO 9614-2, as required by Eurovent Certification EUROVENT 8/1. It requires a 2 dB(A) tolerance on sound power level, only acoustic value to be certified.

Pressure drops of optional components

The value of static pressure available on the supply and return duct is obtained by subtracting from the available net maximum pressure (see general table of technical data) the pressure drops of any accessories.

SIZE			60.4	70.4	80.4	90.4	100.4	120.4
CHW2 - Two-rows hot water coil		Pa	31	39	52	43	49	58
CPHG - Hot gas re-heating coil		Pa	19	21	25	22	24	27
CHWER - Energy recovery from the food refrigeration		Pa	59	73	100	84	95	109
F7 - F7 high efficiency air filter (ISO 16890 ePM1 55%)	1	Pa	128	137	152	146	155	167
F9 - F9 high efficiency air filter (ISO 16890 ePM1 80%)	1	Pa	168	177	192	186	195	207
FIFD - Electronic filters with iFD technology (ISO 16890 ePM1 90%)	1	Pa	81	104	153	118	141	172
UVCX - UV-C germicidal lamps module		Pa	80	90	100	110	117	126
EWX - Enthalpy wheel energy recovery module	1 , 2	Pa	113	128	120	134	123	135
GCX - Condensing gas heating module		Pa	80	90	100	110	117	126

1. Pressure drops with filters with average dirtiness
2. Pressure drops referring to 30% of outdoor air compared to a standard air flow

The values shown are to be considered approximate for units operating power in normal use with standard air flow rate.

Elecrical data

Configuration with direct ductable return (CAK) and outdoor air recirculation (CBK/CBK-G)

SIZE		60.4	70.4	80.4	90.4	100.4	120.4
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS							
F.L.A. - Total	A	163,1	176,8	195,1	230,3	248,7	284,6
F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS							
F.L.I. - Total	kW	94,5	103,4	114,6	135,5	146,7	171,5
M.I.C. MAXIMUM INRUSH CURRENT							
M.I.C. - Value	A	319,3	380,1	436,3	471,5	489,9	619,7
M.I.C. WITH SOFT START MAXIMUM STARTING CURRENT OF THE UNIT							
M.I.C. with soft start- Value	A	243,3	265,1	305,3	340,5	358,9	441,7

Configuration with recirculation, exhaust and fresh air and recovery (CCK-REVO)

SIZE		60.4	70.4	80.4	90.4	100.4	120.4
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS							
F.L.A. - Total	A	176,1	259,1	277,5	312,7	331	367
F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS							
F.L.I. - Total	kW	102,5	159,4	170,6	191,5	202,7	227,5
M.I.C. MAXIMUM INRUSH CURRENT							
M.I.C. - Value	A	332,3	462,5	518,7	553,9	572,2	702
M.I.C. WITH SOFT START MAXIMUM STARTING CURRENT OF THE UNIT							
M.I.C. with soft start- Value	A	256,3	347,5	387,7	422,9	441,2	524

Data refer to standard units. Power supply: 400/3~/50 Hz. Voltage variation: max. +/-10%
Voltage unbalance between phases: max 2 %

3. Values not including the accessories. To obtain the value of F.L.A. including accessories, add to the total F.L.A. value that of any accessories (see electrical data of accessories)
4. Values not including the accessories. To obtain the value of F.L.I. including accessories, add to the total F.L.I. value that of any accessories (see electrical data of accessories)

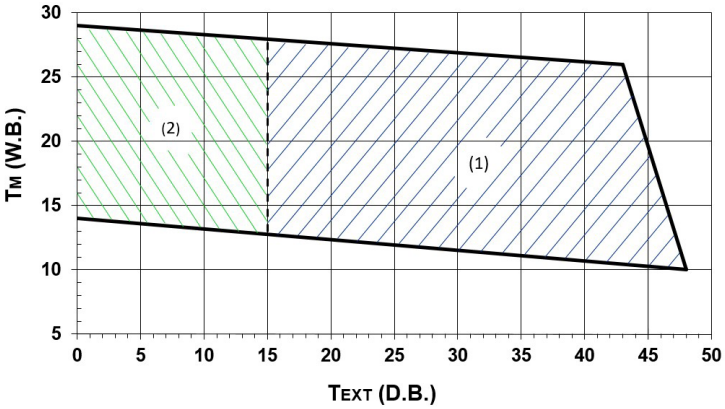
Electrical input of optional components

To obtain the electrical input of the unit including accessories, add the standard data in Electrical Data table to those for the selected accessories.

SIZE			60.4	70.4	80.4	90.4	100.4	120.4
F.L.A. ABSORBED CURRENT								
F.L.A. EH20 - 24 kW electric elements		A	34,7	34,7	34,7	34,7	34,7	34,7
F.L.A. EH24 - 36 kW electric elements		A	52	52	52	52	52	52
F.L.A. EH28 - 48 kW electric elements		A	69,4	69,4	69,4	69,4	69,4	69,4
F.L.A. HSE8 - Immersed electrodes steam humidifier of 8 kg/h		A	8,7	8,7	8,7	8,7	8,7	8,7
F.L.A. HSE9 - Immersed electrodes steam humidifier of 15 kg/h		A	16,2	16,2	16,2	16,2	16,2	16,2
F.L.A. LTEMP1 -Application for low outdoor temperature		A	1,5	1,5	1,5	1,5	1,5	1,5
F.L.A. VENH - High static pressure supply fans	1	A	13,4	13,4	13,4	20	20	20
F.L.A. EWX - Enthalpy wheel energy recovery module		A	14	14	14	14	14	14
F.L.I. POWER IMPUT								
F.L.I. EH20 - 24 kW electric elements		kW	24	24	24	24	24	24
F.L.I. EH24 - 36 kW electric elements		kW	36	36	36	36	36	36
F.L.I. EH28 - 48 kW electric elements		kW	48	48	48	48	48	48
F.L.I. HSE8 - Immersed electrodes steam humidifier of 8 kg/h		kW	6	6	6	6	6	6
F.L.I. HSE9 - Immersed electrodes steam humidifier of 15 kg/h		kW	11,3	11,3	11,3	11,3	11,3	11,3
F.L.I. LTEMP1 -Application for low outdoor temperature		kW	0,6	0,6	0,6	0,6	0,6	0,6
F.L.I. VENH - High static pressure supply fans	1	kW	7	7	7	10,4	10,4	10,4
F.L.I. EWX - Enthalpy wheel energy recovery module		kW	8,27	8,27	8,27	8,27	8,27	8,27

1. The absorption value that needs to be added on takes into account the difference between the optional high head fans and the standard fans.

Operating range (Cooling)



The limits are meant as an indication and they have been calculated by considering:
- general and non specific sizes,
- standard airflow,
- non-critical positioning of the unit and correct operating and maintenance of the unit,
- operating at full load

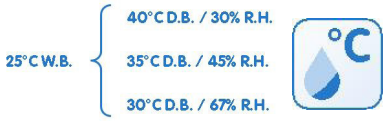
To verify the operation field of the operating units with percentages of outdoor air, always calculate the Tm mixing temperature at the internal heat exchanger input.

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

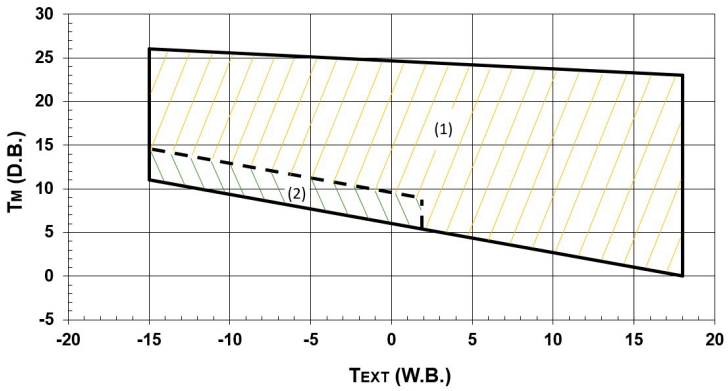
Text = External exchanger inlet air temperature
measured temperature with wet bulb (D.B.= DRY BULB)

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)

WET BULB TEMPERATURE - EXAMPLE



Operating range (Heating)



The limits are meant as an indication and they have been calculated by considering:
- general and non specific sizes,
- standard airflow,
- non-critical positioning of the unit and correct operating and maintenance of the unit,
- operating 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
measured temperature with wet bulb (W.B.=WET BULB)

Text = External exchanger inlet air temperature
wet bulb temperature (D.B.= DRY 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)

In prolonged heat pump mode with an ambient temperature below 6°C, the unit carries out defrosting cycles with cycle inversion to eliminate the ice that forms on the surfaces of the external exchanger. Moreover, in the event of negative temperatures, it is important to promote the evacuation of water produced by defrosting to avoid the accumulation of ice near the base of the unit. Ensure this does not pose a hazard to property or persons.

With outdoor air temperatures between -10°C and -25°C, the following options will be required:
- Hot water coil / Gas heating module
- Application for low outdoor temperature

NAME	DESCRIPTION	CAK	CBK	CBK-G	CCK-REVO
	VERSION				
FC	Thermal FREE-COOLING	-	-	√	√
FCE	Enthalpy FREE-COOLING	-	-	0	0
REVO	Exhaust air thermodynamic energy recovery (CCK-REVO)	-	-	-	√
	CONFIGURATIONS				
CREFP	Device for consumption reduction of the external section at variable speed (phase-cutting)	√	√	√	√
CREFB	Device for fan consumption reduction of the external section, ECOBREEZE type	0	0	0	0
CHW2	Two-rows hot water coil	0	0	0	0
CHWER	Energy recovery from food refrigeration	0	0	0	0
3WVM	Modulating 3-way valve	0	0	0	0
2WVM	Modulating 2-way valve	0	0	0	0
EH	Electric heaters	0	0	0	0
GCX	Condensig gas heating module with modulating control	◊	◊	◊	◊
EWX	Enthalpy wheel energy recovery module	-	-	◊	-
AMRX	Rubber antivibration mounts	◊	◊	◊	◊
AMRMX	Rubber antivibration mounts for unit and gas module	◊	◊	◊	◊
AMRUVX	Rubber antivibration mounts for unit and UV-C lamp module	◊	◊	◊	◊
AMREWX	Rubber antivibration mounts for unit and enthalpy wheel module	-	-	◊	-
RCX	Roof curb	◊	◊	◊	◊
PGFC	Finned coil protection grilles	0	0	0	0
PGCCH	Anti-hail protection grilles	0	0	0	0
PCM0	Sandwich panels of the handling zone in M0 fire reaction class	0	0	0	0
	REFRIGERATION CIRCUIT				
EVE	Electronic expansion valve	√	√	√	√
CPHG	Hot gas re-heating coil	0	0	0	0
	AERAULIC CIRCUIT				
M0	Front air outlet	√	√	√	√
M3	Downward air supply	0	0	0	0
M5	Upflow air supply	0	0	0	0
R0	Horizontal air return	√	√	0	√
R3	Downward air return	0	0	√	0
SER	Manual outdoor air damper	-	√	-	-
SERM	ON/OFF motorised outdoor air damper	-	0	-	-
SFCM	Modulating motorised FREE-COOLING damper	-	0	√	√
SERG	Gravity exhaust air damper	-	-	√	-
NSERG	Gravity exhaust air damper: not required	-	-	0	-
VENH	High static pressure supply fans	0	0	0	0
PVAR	Variable airflow	0	0	0	0
PCOSM	Constant supply airflow	0	0	0	0
PVARDP	Variable airflow with pressure probe on the unit	0	0	0	0
SPVAR	0-10 V signal for air flow modulation	0	0	0	0
PAQC	Air quality probe for CO_2 rate check	-	0	0	0
PAQCV	Air quality sensor for CO_2 and VOC rate check	-	0	0	0
PAQC2	Double air quality probe for CO_2 rate check	-	0	0	0
PAQCV2	Double air quality probe for CO_2+VOC rate check	-	0	0	0
PPAQC	External CO_2 signal management	-	0	0	0
FPG4	Pleated air filter class G4 (ISO 16890 Coarse 60%)	√	√	√	√
F7	High efficiency F7 air filter (ISO 16890 ePM1 55%)	0	0	0	0
F9	High efficiency F9 air filter (ISO 16890 ePM1 80%)	0	0	0	0
FIFD	Electronic filters with iFD technology (ISO 16890 ePM1 90%)	0	0	0	0
PSAF	Clogged filter differential pressure switch air side	0	0	0	0
HSE	Immersed electrodes steam humidifier	0	0	0	0
PUE	External Humidifier management with 0-10V signal	0	0	0	0
LTEMP1	Application for low outdoor temperature	0	0	0	0
EXFLOWC	Application in spaces with forced air exhaust at variable flow and exhaust section	-	-	-	0
UVCX	UV-C germicidal lamps module	◊	◊	◊	◊
BRCI	Sloping drain pan	0	0	0	0

Option compatibility

NAME	DESCRIPTION	CAK	CBK	CBK-G	CCK-REVO
	ELECTRIC CIRCUIT				
MOB	RS485 serial port with Modbus protocol	√	√	√	√
LON	TP/FT 10 serial port with LonWorks protocol	O	O	O	O
BACIP	BACnet-IP serial communication module	O	O	O	O
BACMSTP	BACnet-MSTP serial communication module	O	O	O	O
SFSTR	Disposal for inrush current reduction	O	O	O	O
CRC	Remote control with user interface	√	√	√	√
NCRC	Remote control with user interface: not required	O	O	O	O
CTEM	Ambient temperature control with probes on board the unit	√	√	√	√
CSOND	Ambient temperature control with built-in probes	O	O	O	O
MDMTX	Management of temperature ambient probes	◊	◊	◊	◊
MDMTUX	Management of temperature and humidity ambient probes	◊	◊	◊	◊
MDMADX	Advanced monitoring and management ambient probes	◊	◊	◊	◊
CLMX	Clivet Master System	◊	◊	◊	◊
IOTX	IoT industrial module for cloud based interoperability & services	◊	◊	◊	◊
SIX	Service interface (1.5 metre cable)	◊	◊	◊	◊
PM	Phase monitor	√	√	√	√
PFCC	Power factor correction capacitors (cosfi > 0.95)	O	O	O	O
DESM	Smoke detector	O	O	O	O
CONTA2	Energy meter	O	O	O	O
CHMET	Heating and cooling capacity measuring device	O	O	O	O
DML	Demand Limit	√	√	√	√
	VARIOUS				
PTCO	Set up for shipping via container	O	O	O	O

√ Standard component
O Optional component
◊ Accessory supplied separately (optional)
- Not available

The temperature of the unit is controlled as standard with the temperature probe installed in the return section of the unit.
In the case of configuration with options such as FCE “Enthalpy Free-cooling”, HSE “Immersed electrodes steam humidification”, PUE “External humidifier control with 0-10V signal” and CPHG “Hot gas post-heating coil”, additional humidity probes are installed in the unit.
Thermoregulation can also be carried out with the remote probes available as optional components.
To thermoregulate with remote probes, at least three devices must be selected.

FC	**Thermal FREE-COOLING** Standard option for CBK-G and CCK-REVO configurations. It reduces energy consumption and wear of the compressor by using outdoor air as an energy source to reduce thermal loads in the indoor environment. The thermoregulation compares the temperature of the outdoor environment and the environment served by defining the contribution of fresh air required to guarantee the temperature set-point while keeping the compressors off or at reduced load.
CREFP	**Device for consumption reduction of the external section at variable speed (phase-cutting)** The fan speed is controlled by varying the supply voltage using the phase cutting principle. The source fans operate at variable speed depending on the actual operating conditions of the refrigeration circuit.
CTEM	**Ambient temperature control with probes on board the unit** Thermoregulation is carried out on the conditions of the return airflow.
SER	**Manual outdoor air damper** Standard for CBK configuration. The damper on the outdoor section does not change position depending on the operating state and it is opened at the predefined position both when the unit is switched on and when the unit is switched off.
SFCM	**Modulating motorised FREE-COOLING damper** The modulating motorised free-cooling damper is standard for CBK-G and CCK-REVO configurations and available as an option for the CBK configuration. When the external conditions are favourable, the FREE-COOLING mode is activated and the external air damper is modulated to meet the internal set-point.
MOB	**RS485 serial port with Modbus protocol** Allows serial connection to supervision systems, using Modbus as a communication protocol. Provides access to the entire list of operation variables, controls and alarms. The device is installed and wired on the unit. ⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in bus type (input/output).
PM	**Phase monitor** The phase monitor allows verifying the proper phase connection and their unbalance in the units powered by the three-phase system. The monitor communicates with the control circuit and orders the switch-off of the unit should one of the following cases occur: improper phase connection; the limit value referring to the unbalance between the phases is exceeded; over/undervoltage for a certain amount of time. As soon as the nominal line conditions are restored, the unit is automatically reset. The device is installed and wired on the unit.
DML	**Demand limit** Partial or total activation of the compressors - and electric heaters where present - can be disabled to limit the overall power input. Through BMS or the remote control it is possible to set a percetage of the electric power absorbed. The greater the percentage, the lower the power that the unit is enabled to deliver, activating the compressors and the electric heaters. The Demand Limit function does not affect the control, the ventilation or the energy recovery from food refrigeration, which are therefore always guaranteed. Any other auxiliary heating system (if present) is instead switched off.

Accessories

FCE

Enthalpy FREE-COOLING

This option is used to reduce energy consumption and compressor wear by using the outdoor air as an energy source to lower the thermal loads and ambient humidity. The temperature control compares the temperature and the humidity between the outdoor environment and the served environment and decides the amount of fresh air needed to guarantee the correct temperature and humidity set-points in the environment, keeping the compressors off or at a reduced load.
The air humidity, both outside and inside the environment, is measured by means of humidity probes on the outdoor and return air intake, which are provided already installed and wired on the unit.

CREFB

Device for fan consumption reduction of the external section, ECOBREEZE type

Option indicated to reduce the ventilation electric energy consumption considerably and limit sound emissions inside the external section of the unit. ECOBREEZE logic allows the external axial fans to operate at a variable rotation speed, according to the operating conditions of the cooling circuit. Reducing the speed at which the thermal load decreases ensures clear benefits in terms of noise emissions especially at night when people can be most sensitive to noise.
During summer operation, fans can further increase their speed, to respond to situations in which operation limits are temporarily exceeded. ECOBREEZE option uses special fans powered by brushless electrical motors, with complete electronic control, and distinguished by a very high efficiency.
To ensure continuous cooling operation even at temperatures below 15°C, the option is necessary to maintain correct condensation on the external heat exchanger.

BRCI

Sloping drain pan

Option to fit a sloping drain pan under the handling coil. Thanks to the easy condensate drainage, washing is facilitated and the proliferation of viruses and bacteria is prevented.

⚠ For the condensate to drain correctly, the unit must be raised.

LON

TP/FT 10 serial port with LonWorks protocol

Allows serial connection to supervision systems, using LonWorks as a communication protocol. Provides access to a list of operation variables, controls and alarms compliant with the Echelon standard. The device is installed and wired on the unit.

⚠ The configuration and operation of the LonWorks network is provided by the Customer.
⚠ LonWorks technology uses the LonTalk® protocol for communicating between the network nodes. Contact the service supplier for further information.
⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in bus type (input/output).

BACIP

BACnet-IP serial communication module

Allows connection to supervision systems, using BACnet-IP as a communication protocol. Provides access to the entire list of operation variables, controls and alarms. The device is installed and wired on the unit.

⚠ The configuration and management activities for the BACnet networks are the responsibility of the client
⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in bus type (input/output).

BACMSTP

BACnet-MSTP serial communication module

Allows connection to supervision systems, using BACnet/MSTP as a communication protocol. Provides access to the entire list of operation variables, controls and alarms. The device is installed and wired on the unit.

⚠ The configuration and management activities for the BACnet networks are the responsibility of the client
⚠ The total length of each individual serial line must not exceed 1000 m and the line must be connected in “input/output” type.

NCRC

Remote control with user interface: not required

Choosing this option results in the unit being supplied without a graphical control user interface, although it retains all the features. Option that can be chosen when a supervision system or other remote management device is provided.

⚠ Remote control with user interface can still be used in conjunction with a supervision system and more generally with a serial connection

PFCC **Power factor correction capacitors (cosfi > 0.95)**

Component required to lower the phase shift between the current and voltage in the unit's electromagnetic components (e.g. asynchronous motors). By correcting the power factor, it is possible to reduce the line current intensity by reducing a portion of power from the grid (reactive power). This results in savings on costs acknowledged by the energy supplier to the end user. The component makes it possible to raise the cosfi power factor to values on average greater than 0.95.
The device is installed and wired on the unit.

SFSTR **Disposal for inrush current reduction**

This option is also called 'Soft starter'. An electronic device that automatically starts the compressors gradually, reducing the unit's starting current by approximately 40% of the nominal value. As a result, the electrical power system and related protection devices can be designed with lower parameters and therefore with a lower initial investment cost.
The device is installed and wired on the unit.

VENH **High static pressure supply fans**

A higher capacity fan section is available for applications requiring high supply and return head. The option is comprised of radial fans coupled directly to electronically controlled motors (brushless).
When you select a unit on the www.clivet.com website, choosen the air flow, the available supply and return pressure, and the accessories that determine the head loss on the air side, you will be automatically shown a selection of high head fans, when required.
This option involves variation of the main electrical data of the unit.

PSAF **Clogged filter differential pressure switch air side**

It detects and signals when the maximum level of clogging of the air filters has been reached. This alerts the machine operator when maintenance of the filters is required. The detection device is installed in the unit and already connected to the electrical panel of the machine and pre-calibrated in the factory. The calibration can be modified by authorised personnel.

F7 **High efficiency F7 air filter (ISO 16890 ePM1 55%)**
F9 **High efficiency F9 air filter (ISO 16890 ePM1 80%)**

Class F7/F9 filters are additional filtration components along with the standard G4 filters for more efficient filtration. They are widely used in civil air conditioning systems and in industrial applications requesting an adequate yield with respect to fine dust and particles larger than 1 µm. Class F7/F9 filters are made of folded fibreglass paper with constant calibrated spacing, mounted on a metal frame; the large filtering surface is designed to keep air side pressure drops low. Class F7/F9 filters must be replaced after reaching clogging limits with scheduled periodic maintenance. It is possible to provide, as an option, the differential pressure switch for dirty filters to inform the user that the permissible clogging limit has been reached to avoid an excessive reduction in the airflow rate compared to the rated value.

⚠ This option reduces the available static pressure (supply air side).

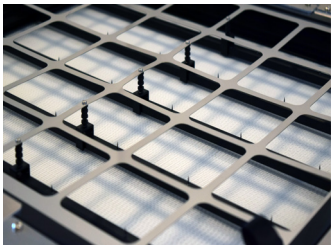
SERM **ON/OFF motorised outdoor air damper**

Option available for CBK configuration.
The position of the external air damper is closed when the unit is switched off to avoid leakage, and during the start-up phase to reach the set-point more quickly. When the unit is switched on and running, it opens and allows the passage of the set flow of outdoor air.

Accessories

FIFD

Electronic filters with iFD technology (ISO 16890 ePM1 90%)

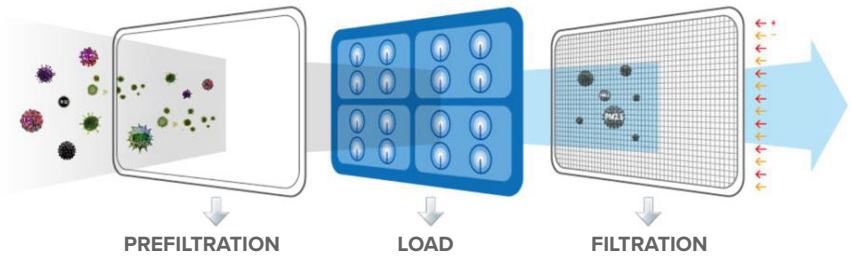


High efficiency filters with active electrostatic system with an intense dielectric field are additional filtration components to standard ISO 16890 Coarse 60% filters (G4). They are effective on a wide range of pollutants, including pollen, dust, microdust and nanodust, toners, moulds, smog, bacteria and viruses with a typical efficiency up to 99.99%.
The air filtration process follows the most advanced air purification technologies and consists of these phases:

- First pre-filtration phase
- Second ionisation phase, in which the particles are charged by passing through a thin perforated metal plate with needle electrodes in the centre of each hole.
- Third absorption phase, in which the charged dust particles are captured by a strong and intense dielectric field formed by a honeycomb tube.

The iFD electronic filters have a very high filtration efficiency with low pressure drops and therefore reduced ventilation consumption compared to traditional filters. The typical air crossing speeds reached in Clivet units ensure filtration efficiencies higher than ISO 16890 ePM1 90% (equivalent to class E10 of absolute filters in accordance with EN 1822).
For this result to be guaranteed and the microbicidal action against bacteria and viruses to be kept steady over time while ensuring minimum load drops, the filters require proper maintenance. This is extremely simple and is done by washing them with a standard kitchen degreaser. This means that the filter cell does not need replacing, just washing.
Filters must be cleaned at least every six months; we recommend quarterly or more frequent cleaning if the units are located in excessively polluted areas. Intervention on the filters during the unit's routine maintenance includes washing the electronic cells on site.
The higher initial cost, compared to a traditional mechanical filter, can be amortised in a short time. Indeed, the lifecycle of the electrostatic filters is the same as that of the unit, whereas mechanical filters need to be replaced preiodically.

⚠ This option reduces the available static pressure (supply air side).
⚠ iFD electronic filters are not suitable for filtering water vapours even in low concentrations, oily vapours, large quantities of dust, shavings and iron filing dust, residues in general and gases.
⚠ All the following substances must be absolutely avoided with electronic filters: metallic material dust, even if very fine; fumes produced by the combustion of organic and non-organic materials; flour dust; dust and vapours from potentially explosive atmospheres.



NSERG

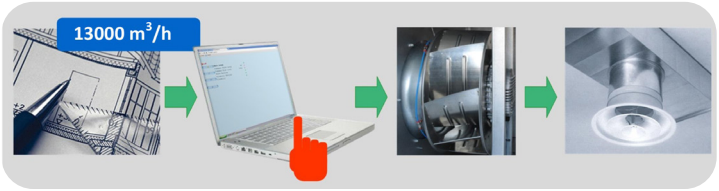
Gravity exhaust air damper not required

Option that allows configuration of the unit in CBK-G version without gravity exhaust air damper.
It is suitable for applications that require the expulsion of air directly into the building. This solution is compatible with the return section in position R0 (Horizontal).

PCOSM

Constant supply airflow

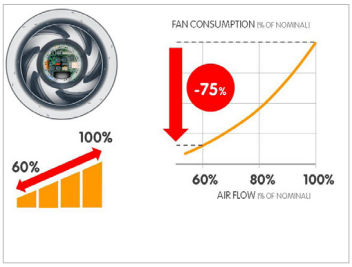
The technology used avoids the need for on-site calibration of traditional fans, as well as time and costs associated to do it.
The required flow rate is set on the display and maintained automatically by the unit, which controls the speed of the ventilating sections. During the installation and start-up phase, the unit controls to the effective pressure drop in the air distribution and diffusion system. Furthermore, during its entire operating life, the progressive fouling of the air filters is automatically compensated.



PVAR

Variable airflow

Option that enables the automatic variation of the treated air flow, according to the effective load. This allows great energy saving, thanks to the reduction of ventilation electrical consumptions. The minimum flow value equal to 60% of the nominal one occurs during the partial load and satisfied set-point operation. As a result, the supply temperature remains unchanged either during full load operation or partial load operation. The device also includes the functions to configure the nominal flow directly on the unit display, and its automatic control to compensate the dirtying of the air filters.



⚠ This option already includes the device for controlling the airflow, called 'PCOSM - Supply constant airflow', which must not be selected

⚠ When sizing the distribution and diffusion of the air, keep into consideration that the airflow varies from the nominal value (at full load, in FREE-COOLING mode and during the defrosting phases) to the minimum value, equal to 60% of the nominal flow (at partial load)

PVARDP

Variable airflow with pressure probe on the unit

This option is recommended in applications for multi zone where is required the variability of the air flow, actual conditions of use of certain rooms. Suitable for aeraulic system equipped with VAV/CAV dampers.
In case of variation of the aeraulic load profile of the system, it allows to automatically change the air flow rate to maintain the set external static pressure.

⚠ For effective control, the set external static pressure must be higher than 100 Pa

⚠ Supply air flow rate must result inside the admitted air flow range specific for each size

PAQC

Air quality probe for the CO_2 rate check

This option is recommended for areas with highly variable crowding. The probe measure the amount of CO_2 in the environment and initiates a proportional signal. Based on the received signal, the controller regulates amount of outdoor air necessary for IAQ ventilation and thus minimises energy used for treatment.
The probe is installed and wired built-in the unit and is located in the return air duct of the unit.

⚠ This solution can only be provided in combination with 'SFCM Modulating motorised FREE-COOLING damper'

PAQCV

Air quality probe for the CO_2 and VOC rate check

The option is recommended in areas with tobacco smoke, formaldehyde (from solvents, deodorants, glues, paints, detergents, food preparation, etc. The probe measures the rate of CO_2 and VOC (volatile organic compounds) in the environment and initiates a proportional signal. Based on the received signal, the controller regulates amount of outdoor air necessary for IAQ ventilation and thus minimises energy used for treatment.
The probe is installed and wired built-in the unit and is located in the return air duct of the unit.

⚠ This solution can only be provided in combination with 'SFCM Modulating motorised FREE-COOLING damper'

PAQC2

Double air quality probe for CO_2 rate check

Option suitable for environments with highly variable crowding and outdoor pollution.
The option entails two CO_2 probes: one on board the unit and one outside the building. Depending on the two concentrations recorded, the unit logic intervenes to introduce the correct air flow or no fresh air at all.

⚠ This solution can only be provided in combination with 'SFCM Modulating motorised FREE-COOLING damper'

PAQCV2

Double air quality probe for CO_2+VOC rate check

Option suitable for environments with highly variable crowding and outdoor pollution and containing tobacco smoke, formaldehyde (e.g. from solvents, deodorants, glues, paints, detergents), cooking food, etc.
The option entails two CO_2+VOC (Volatile Organic Compound) probes: one on board the unit and one outside the building. Depending on the two concentrations recorded, the unit logic intervenes to introduce the correct air flow or no fresh air at all.

⚠ This solution can only be provided in combination with 'SFCM Modulating motorised FREE-COOLING damper'

PPAQC

External CO_2 signal management

The unit is configured with a 0-10V input available for the proportional control of the amount of fresh air according to a signal from a CO_2 detection system to be taken care of by the customer.

⚠ This solution can only be provided in combination with 'SFCM Modulating motorised FREE-COOLING damper'

Accessories

CSOND — **Temperature and humidity ambient control with built-in probes**

This option makes it possible to measure the temperature and humidity of the ambient directly on the airflow entering the unit. The automatic thermal regulation is done using the on-board probes, whereas the probes on the remote control are inhibited.

PGFC — **Finned coil protection grilles**

Protection grilles on the external exchangers (source side) are provided.
The grilles have a protective and safety functions, in order to prevent vandalism and accidental impacts without altering the heat exchange. It consists of a rigid wire mesh with 25 mm mesh pitch and grey RAL7073 protective coating.

PGCCH — **Anti-hail protection grilles**

Option to install protective grilles on the external exchangers (source side). The grille has a protective function to prevent vandalism and to protect against atmospheric agents such as hail, without altering heat exchange.
It consists of a rigid wire mesh with a 12.5 mm mesh pitch and RAL7073 grey protective paint.

CONTA2 — **Energy meter**

Allows to display and record the unit's main electrical parameters.
The data can be displayed with the user interface on the unit or via the supervisor through the specific Modbus protocol. It is possible to control:

- voltage (V),
- absorbed current (A),
- frequency (Hz),
- phase shifting cos φ
- power input (kW),
- absorbed energy (kWh),
- harmonic components (%)

⚠ The device is installed and wired on the unit.
⚠ This device is an accurate meter with CE certification; not suitable for legal metrology findings.

CHMET — **Cooling and Heating Capacity Meter**

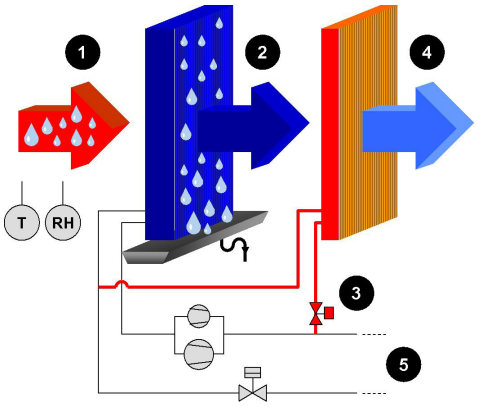
System to calculate the heating and cooling capacity by measuring the enthalpy of the supply and return air and the outdoor environment, as well as the indirect measurement of the supply and fresh airflow.
The data can be read directly on the device or through the supervision system with a ModBus communication protocol.

⚠ The device is installed and wired on the unit.
⚠ The capacities detected are to be considered indicative of the operation and the actual work point of the unit and are not comparable to the accuracy of the precise laboratory performance data declared in the Technical Bulletin.

CPHG

Hot gas re-heating coil

This option is recommended during the summer when the intake air dehumidification is required.
The air flow to enter the room may contain a higher level of humidity than desired. The dehumidification process is used to reduce it. The air flow is first cooled in the handling coil with separation of condensation. It is then freely re-heated to maintain the desired condition of comfort in the served room.
The re-heat coil is located after the handling coil and is activated by diverting a flow of hot refrigerant gas downstream from the compressors through the action of a dedicated solenoid valve.
The process starts operating based on the humidity set-point established by the user.
With respect to traditional devices, such as electrical electric elements or hot water coils, use of the re-heat coil does not consume any extra energy. It also lowers refrigerant condensation temperature, which provides two positive effects: power absorbed by the compressors is considerably reduced, and at the same time, cooling capacity is increased, resulting in greater efficiency (EER).
Ambient humidity is measured by means of a return humidity probe, which is provided already assembled and wired built-in the unit.



1. Outdoor air and humidity / temperature probe
2. Chilled and dehumidified air in the internal exchanger (evaporator)
3. Automatic hot gas pump valve
4. Air treated by the post-heating exchanger
5. External exchanger (condenser)

Indicative scheme - not in scale

⚠ This option reduces the available static pressure (supply air side).

SIZE			OUTDOOR AIR TEMPERATURE [°C]														
			25	27	30	32	35	25	27	30	32	35	25	27	30	32	35
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
60.4	Qo [m³/h]				29000					33000					47000		
	Qo [l/s]				8056					9167					13056		
	Ta [°C]	10	89,2	96,2	106,8	113,7	124,2	96,3	103,9	115,3	122,8	134,1	118,6	127,9	142,0	151,2	165,1
		12	84,2	91,2	101,7	108,6	119,1	90,9	98,5	109,8	117,3	128,6	112,0	121,3	135,3	144,4	158,4
		14	79,2	86,2	96,7	103,6	114,0	85,5	93,1	104,4	111,9	123,1	105,3	114,6	128,6	137,8	151,6
		16	74,0	81,0	91,5	98,4	108,8	79,9	87,5	98,9	106,3	117,5	98,4	107,7	121,7	130,9	144,7
		18	69,4	76,4	86,8	93,6	103,9	75,0	82,5	93,7	101,1	112,2	92,3	101,6	115,4	124,5	138,2
		20	64,7	71,6	82,0	88,7	98,9	69,9	77,3	88,6	95,8	106,8	86,1	95,2	109,1	118,0	131,5
70.4	Qo [m³/h]				29000					37000					47000		
	Qo [l/s]				8056					10278					13056		
	Ta [°C]	10	94,4	101,4	112,0	118,9	129,3	109,5	117,6	129,9	137,9	150,0	125,6	134,9	149,0	158,1	171,9
		12	89,7	96,7	107,2	114,0	124,4	104,1	112,2	124,4	132,2	144,3	119,3	128,6	142,6	151,6	165,5
		14	85,2	92,1	102,5	109,3	119,6	98,8	106,8	118,9	126,8	138,7	113,3	122,5	136,3	145,4	159,1
		16	80,3	87,2	97,7	104,4	114,6	93,1	101,2	113,3	121,1	133,0	106,7	116,0	129,9	138,9	152,5
		18	76,1	82,9	93,1	99,8	110,0	88,3	96,2	108,0	115,8	127,6	101,2	110,3	123,8	132,7	146,3
		20	71,7	78,4	88,5	95,2	105,3	83,2	90,9	102,7	110,4	122,1	95,4	104,3	117,7	126,6	140,0
80.4	Qo [m³/h]				29000					44000					47000		
	Qo [l/s]				8056					12222					13056		
	Ta [°C]	10	100,1	107,1	117,7	124,5	134,9	128,2	137,1	150,7	159,4	172,7	133,2	142,5	156,6	165,6	179,4
		12	95,8	102,7	113,2	120,0	130,3	122,7	131,5	144,9	153,6	166,8	127,5	136,6	150,5	159,6	173,3
		14	91,6	98,4	108,7	115,5	125,8	117,2	125,9	139,1	147,8	161,0	121,8	130,9	144,6	153,6	167,3
		16	87,3	94,0	104,1	110,9	121,1	111,7	120,4	133,2	142,0	155,0	116,1	125,1	138,4	147,5	161,0
		18	83,0	89,7	99,8	106,5	116,7	106,2	114,8	127,7	136,3	149,3	110,4	119,3	132,7	141,7	155,2
		20	78,7	85,4	95,4	102,1	112,2	100,7	109,3	122,1	130,7	143,6	104,6	113,6	126,9	135,8	149,2
90.4	Qo [m³/h]				38000					49000					60000		
	Qo [l/s]				10556					13611					16667		
	Ta [°C]	10	114,6	123,7	137,3	146,1	159,5	132,9	143,4	159,3	169,5	185,0	148,9	160,8	178,5	189,9	207,4
		12	108,2	117,3	130,8	139,6	152,9	125,6	136,0	151,7	161,9	177,4	140,7	152,5	170,0	181,5	198,8
		14	101,9	110,9	124,4	133,1	146,5	118,2	128,6	144,2	154,4	169,9	132,5	144,2	161,7	173,1	190,4
		16	95,5	104,4	117,7	126,5	139,8	110,7	121,1	136,6	146,8	162,2	124,1	135,7	153,0	164,5	181,7
		18	89,2	98,1	111,5	120,2	133,5	103,5	113,8	129,3	139,5	154,8	116,0	127,6	144,9	156,3	173,5
		20	82,9	91,8	105,2	113,9	127,1	96,2	106,5	122,0	132,1	147,4	107,8	119,3	136,8	148,1	165,2

Ta = Leaving air temperature from the handling coil and entering the post-heating coil
Qo = airflow (l/s and m3/h)
kWt = Heating capacity (kW)
The reheating coil is powered by the hot gas bled from the condensing coil.
As the condensation hot gas temperature is linked to the outdoor air temperature, the indicative potentials of the post-heating coil are expressed according to the outdoor air temperature

CPHG

SIZE			OUTDOOR AIR TEMPERATURE [°C]														
			25	27	30	32	35	25	27	30	32	35	25	27	30	32	35
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
100.4	Qo [m³/h]		38000					53000					60000				
	Qo [l/s]		10556					14722					16667				
	Ta [°C]	10	119,9	128,9	142,5	151,3	164,7	146,2	157,3	173,8	184,6	200,9	155,8	167,6	185,2	196,7	214,0
		12	113,7	122,7	136,3	145,1	158,4	138,8	149,7	166,3	177,0	193,2	147,9	159,5	177,2	188,6	205,9
		14	107,8	116,7	130,1	138,9	152,1	131,5	142,4	158,7	169,4	185,5	140,1	151,7	169,1	180,5	197,7
		16	101,3	110,3	123,8	132,5	145,7	123,6	134,5	151,0	161,6	177,7	131,7	143,4	160,9	172,2	189,4
		18	95,9	104,7	117,8	126,5	139,5	116,9	127,7	143,7	154,3	170,2	124,6	136,0	153,1	164,4	181,4
		20	90,2	98,8	111,7	120,4	133,3	110,0	120,5	136,3	146,8	162,7	117,3	128,4	145,3	156,5	173,3
120.4	Qo [m³/h]		38000					58000					60000				
	Qo [l/s]		10556					16111					16667				
	Ta [°C]	10	131,5	140,6	154,2	162,9	176,1	168,3	179,9	197,3	208,5	225,4	170,9	182,7	200,4	211,7	228,9
		12	126,1	135,0	148,5	157,1	170,3	161,4	172,9	190,0	201,1	218,0	163,9	175,6	193,0	204,3	221,4
		14	120,6	129,5	142,8	151,5	164,6	154,4	165,8	182,8	193,9	210,7	156,8	168,4	185,6	196,9	213,9
		16	115,2	123,9	136,9	145,6	158,6	147,5	158,6	175,2	186,3	203,0	149,8	161,0	177,9	189,3	206,1
		18	109,7	118,5	131,5	140,1	153,2	140,5	151,6	168,3	179,4	196,0	142,7	154,0	171,0	182,2	199,1
		20	104,3	113,0	126,0	134,6	147,6	133,5	144,6	161,3	172,3	189,0	135,6	146,9	163,8	175,0	191,9

Ta = Leaving air temperature from the handling coil and entering the post-heating coil
Qo = airflow (l/s and m3/h)
kWt = Heating capacity (kW)
The reheating coil is powered by the hot gas bled from the condensing coil.
As the condensation hot gas temperature is linked to the outdoor air temperature, the indicative potentials of the post-heating coil are expressed according to the outdoor air temperature

EXFLOWC

Application in spaces with forced air exhaust at variable flow and exhaust section

Option indicated for CCK-REVO configuration, for conditioning buildings with hoods or active air exhaust systems, for example catering kitchens, labs with suction hoods, where the fresh airflow is variable in function of the number of active extractors.
The option involves an electronic device installed built-in the unit that receives the activation status of the extractors on appropriate potential-free, through a single 4-20 mA signal or from a BMS signal. The amount of fresh air is modulated according to these inputs.
The unit is equipped with an exhaust fan section to allow air renewal even with the hoods off. The exhaust section is equipped with a plug-fan fan electronically controlled and managed by the unit logic according to the active suction hoods and the fresh air damper opening. To dimension the unit consider as max. exhaust airflow of the hoods the 50% of the nominal airflow. The air quality probe for controlling the rate of CO_2 / CO_2 and VOC, and the EXFLOWC can be simultaneously selected.
Where necessary, the unit will be integrated with further pre-heating options of which “Electrical heating resistance”, “two-rows hot water coil” or “Gas heating module” to guarantee the operation of the unit with 50% of the fresh air in every operating situation, even at low outdoor air temperature.

- The electronic device is installed and wired built-in the unit.
- The option allows to manage up to 4 ON-OFF contacts from the exhaust devices or one 4-20 mA or via BMS signal (by Customer).
- The connection cables for the 4-20 mA signal or the ON-OFF status do not require shielding.
- The EXFLOWC option is not compatible with the ‘PVARDP Variable air flow with pressure probe on the unit’, ‘SPVAR 0-10V signal for air flow modulation’ and ‘PPAQC External CO_2 signal management’ options.
- With minimum fresh air temperatures between 0°C and –8°C foresees the option “Electrical heating resistance” or “two-rows hot water coi” whereas for minimum temperatures between –8°C e –30°C foresees the “two-rows hot water coil” or “Gas heating module” option.

EH

Electric elements

This option is suggested for cold climates, allows the integration of heating capacity from the heat pump. The electrical heaters are placed before the treatment coil and perform the air preheating function, extending the operating range of the unit and helping quickly to reach the comfort in the room.
Ideal for climate areas in applications with low outside temperature where it is required to active the heaters only for short time in the year. In these cases the resulting system simplification (no water supply) compensates the energy costs.
The fins are made of aluminum, of suitable dimension to ensure high efficiency and maintain low power density on the surfaces to limit overheating. The low temperature of the heating elements increases the lifespan and limits the effect of air ionization.

Matching of the electric elements

SIZE	60.4	70.4	80.4	90.4	100.4	120.4
24 kW	√	√	√	√	√	√
36 kW	√	√	√	√	√	√
48 kW	√	√	√	√	√	√

⚠ This operation involves variation of the main electrical data of the unit.
⚠ "Heating elements", "Condensig gas heating module with modulating control", "Energy recovery from food refrigeration" and "Two rows hot water coil" cannot be fitted at the same time.

Operation field extension with electric heaters DT [°C]

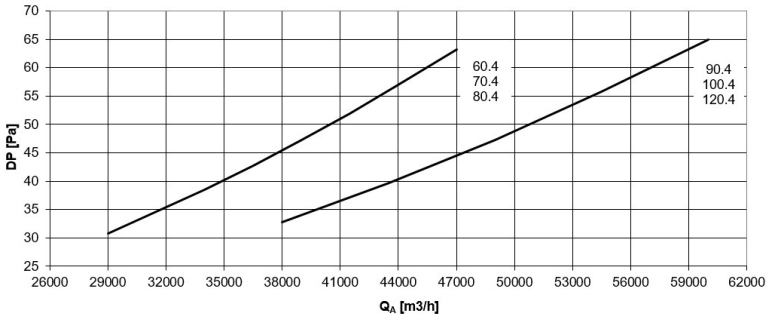
SIZE	Portata aria [m^3/h]	24 kW	36 kW	48 kW
60.4	33000	2,3	3,3	4,2
70.4	37000	2,1	3,0	3,8
80.4	44000	1,8	2,4	3,1
90.4	49000	1,6	2,1	3,2
100.4	53000	1,5	1,9	2,9
120.4	58000	1,3	1,7	2,6

The minimum operating temperature of the heat pump with electric heater change and depends on the series and the power of the electric heater. The minimum temperature is easily to reckon subtracting the DT value (previous table) to the entering internal exchanger air temperature TM(D.B.) for standard unit, at the desired conditions.

CHW2 **Two-rows hot water coil**

Option indicated for very cold climates, as it allows to heat up the area served. The exchanger comes with a thermostat for the antifreeze function, which is always active even when the unit is in stand-by, as long as it is operated electrically. If required, force the opening of the valve to the maximum value allowed to allow the air to pass through the exchanger and prevent frost from forming.
The hot water coil allows the integration of the heat pump capacity, as being placed before the treating coil, it pre-heats the air, extending the operation limits of the unit. If the water coil operates as integration to the heat pump, the control logic reduces the potential at a pre-determined limit value, which prevents to make the compressors work at too high condensation temperatures. On the other hand, if the water coil is used as main resource (i.e. availability of the compressors) the potential supplied will be the highest.
In the event laws or local standards encourage the use of the district heating, and so the use of hot water coil heating with the obligation to recover the energy contained inside the exhaust air flow, a turning point can be set, that is an outside air temperature, below which the unit uses the water coil as main resource and operates also as thermodynamic recuperator at very high efficiency, using the nominal capacity of the heat pump circuit only partially.
With the option is available a potential-free contact for the water circulator start-up (provided by the Installer).

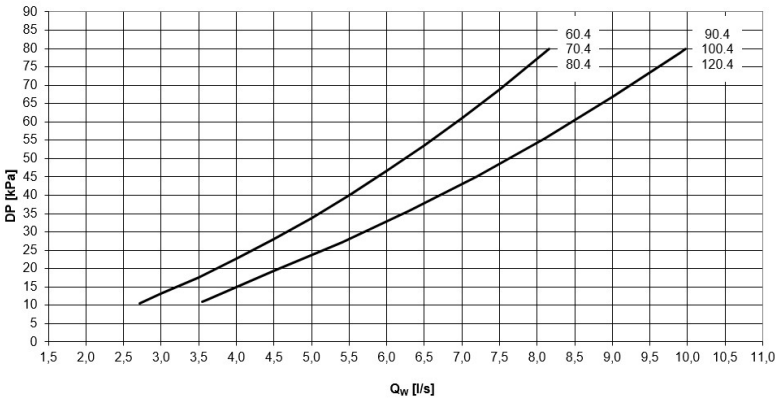
Hot water coil pressure drops: AIR side



The air side pressure drops are relative to the medium air temperature of 20°C and are to be added to the pressure drops due to ducts, terminal devices and any other component that causes a drop in working discharge head.

QA [m^3/h] = Airflow
DP [Pa] = Pressure drops

Hot water coil pressure drops: WATER side



Pressure drops on the water side are calculated considering an average water temperature of 65°C

Qw [l/s] = Water flow-rate
DP = Pressure drops [kPa]

Qw [l/s] =P / (4.186 x DT)

P = Water coil heating capacity in KW
DT = Temperature difference between inlet / outlet water

This option reduces the available static pressure (supply air side).

⚠ The component requires connection to the hot water plumbing system (to be provided for by the client).
⚠ "'2 range hot water coil' , 'Electric elements', "Condensig gas heating module with modulating control" and "energy recovery from food refrigeration" cannot be assembled simultaneously

CHW2 Two-rows hot water coil

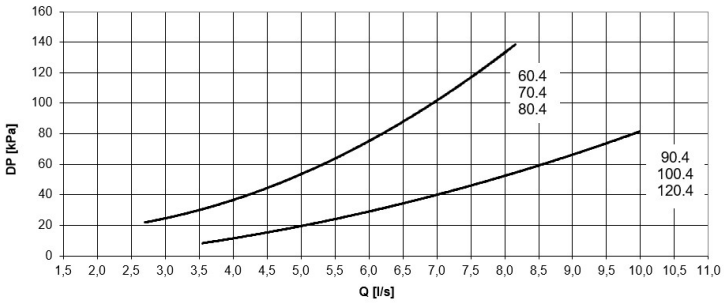
			Ti/To [°C]											
			60/40	70/55	70/60	80/65	60/40	70/55	70/60	80/65	60/40	70/55	70/60	80/65
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
60.4	Qo [m³/h]		29000				33000				47000			
	Qo [l/s]		8055				9167				13055			
	TM [°C]	-10	257,9	312,8	330,4	370,3	279,7	339,4	358,9	401,9	351,7	427,2	453,1	506,7
		-5	228,4	283,0	300,7	340,4	247,7	307,1	326,6	369,5	311,5	386,8	412,5	465,9
		0	205,1	259,7	277,0	316,7	222,3	281,7	301,0	343,8	279,6	354,7	380,3	433,6
		5	193,5	247,8	265,3	304,9	209,8	268,9	288,2	331,0	263,6	338,7	364,0	417,5
		10	182,0	236,4	253,8	293,2	197,2	256,4	275,7	318,3	247,6	322,8	348,1	401,4
		15	170,4	224,8	242,2	281,4	184,7	243,9	263,1	305,6	231,9	306,7	332,3	385,5
70.4	Qo [m³/h]		29000				37000				47000			
	Qo [l/s]		8055				10278				13055			
	TM [°C]	-10	257,9	312,8	330,4	370,3	300,5	364,8	386,2	432,3	351,7	427,2	453,1	506,7
		-5	228,4	283,0	300,7	340,4	266,2	330,2	351,5	397,4	311,5	386,8	412,5	465,9
		0	205,1	259,7	277,0	316,7	238,9	302,9	323,9	369,8	279,6	354,7	380,3	433,6
		5	193,5	247,8	265,3	304,9	225,4	289,1	310,1	356,0	263,6	338,7	364,0	417,5
		10	182,0	236,4	253,8	293,2	211,8	275,6	296,6	342,4	247,6	322,8	348,1	401,4
		15	170,4	224,8	242,2	281,4	198,3	262,1	283,1	328,7	231,9	306,7	332,3	385,5
80.4	Qo [m³/h]		29000				44000				47000			
	Qo [l/s]		8055				12222				13055			
	TM [°C]	-10	257,9	312,8	330,4	370,3	337,0	409,3	433,9	485,3	351,7	427,2	453,1	506,7
		-5	228,4	283,0	300,7	340,4	298,5	370,5	395,0	446,2	311,5	386,8	412,5	465,9
		0	205,1	259,7	277,0	316,7	267,9	339,8	364,1	415,3	279,6	354,7	380,3	433,6
		5	193,5	247,8	265,3	304,9	252,6	324,4	348,5	399,8	263,6	338,7	364,0	417,5
		10	182,0	236,4	253,8	293,2	237,3	309,2	333,3	384,4	247,6	322,8	348,1	401,4
		15	170,4	224,8	242,2	281,4	222,2	293,9	318,2	369,2	231,9	306,7	332,3	385,5
90.4	Qo [m³/h]		38000				49000				60000			
	Qo [l/s]		10555				13611				16666			
	TM [°C]	-10	337,3	412,6	434,6	487,8	398,0	487,4	514,4	576,9	452,2	554,3	585,8	656,5
		-5	298,9	373,9	395,6	448,6	352,7	441,7	468,5	530,6	400,6	502,4	533,6	603,9
		0	268,4	343,2	364,8	417,3	316,6	405,5	432,1	493,6	359,6	461,1	492,2	561,8
		5	253,3	327,9	349,6	402,0	298,5	387,4	414,0	475,4	339,2	440,6	471,6	541,2
		10	238,2	312,7	334,3	386,7	280,7	369,5	396,0	457,4	318,8	420,1	451,1	520,6
		15	223,1	297,6	319,2	371,4	262,9	351,5	378,0	439,3	298,3	399,7	430,7	500,1
100.4	Qo [m³/h]		38000				53000				60000			
	Qo [l/s]		10555				14722				16666			
	TM [°C]	-10	337,3	412,6	434,6	487,8	416,7	510,5	539,1	604,4	452,2	554,3	585,8	656,5
		-5	298,9	373,9	395,6	448,6	369,2	462,7	491,0	555,9	400,6	502,4	533,6	603,9
		0	268,4	343,2	364,8	417,3	331,4	424,7	452,9	517,2	359,6	461,1	492,2	561,8
		5	253,3	327,9	349,6	402,0	312,6	405,8	433,9	498,2	339,2	440,6	471,6	541,2
		10	238,2	312,7	334,3	386,7	293,9	387,0	415,0	479,2	318,8	420,1	451,1	520,6
		15	223,1	297,6	319,2	371,4	275,1	368,2	396,2	460,3	298,3	399,7	430,7	500,1
120.4	Qo [m³/h]		38000				58000				60000			
	Qo [l/s]		10555				16111				16666			
	TM [°C]	-10	337,3	412,6	434,6	487,8	442,8	542,7	573,5	642,7	452,2	554,3	585,8	656,5
		-5	298,9	373,9	395,6	448,6	392,3	491,9	522,4	591,2	400,6	502,4	533,6	603,9
		0	268,4	343,2	364,8	417,3	352,2	451,5	481,8	550,0	359,6	461,1	492,2	561,8
		5	253,3	327,9	349,6	402,0	332,1	431,4	461,6	529,8	339,2	440,6	471,6	541,2
		10	238,2	312,7	334,3	386,7	312,2	411,4	441,6	509,7	318,8	420,1	451,1	520,6
		15	223,1	297,6	319,2	371,4	292,2	391,4	421,6	489,6	298,3	399,7	430,7	500,1

TM = air inlet temperature of water coil (°C)
Ti/To = water inlet/outlet temperature (°C)
Qo = airflow (l/s and m3/h)
kWt = Provided heating capacity (kW)
Thermal yields referred to the max. water coil capacity. The thermo regulator choke the 3-way modulating valve limiting the inlet air temperature at desired values.

2WVM **Modulating 2-way valve**
3WVM **Modulating 3-way valve**

To be combined with hot water coil (optional). It is managed by the built-in microprocessor via a 0-10V signal and allows the fully automatic control of the water coil. The valve with modulating actuator is provided already assembled and wired built-in the unit.

Valve pressure drops



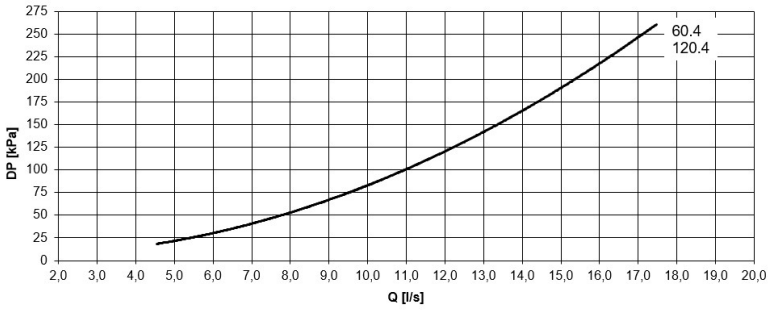
Q [l/s] = water flow-rate
DP [kPa] =pressure drops

⚠ This accessory has to be coupled to the “CHW2 - Two-row hot water coil” option

3WVM **Modulating 3-way valve for energy recovery from food refrigeration**

To be combined with water coil for the energy recovery from food refrigeration. It is managed by the built-in microprocessor via a 0-10V signal and allows the fully automatic control of the water coil. The valve with modulating actuator is provided already assembled and wired built-in the unit.

Valve pressure drops



Q [l/s] = water flow-rate
DP [kPa] =pressure drops

⚠ This accessory has to be coupled to the “CHWER - Energy recovery from food refrigeration” option.

SPVAR **0-10 V signal for air flow modulation**

Option to control the supply and exhaust air flow via a single external 0-10V signal. A suitable solution in systems serving several rooms with a similar heat load profile, but separated from each other and occupied in a discontinuous way.
In periods of domestic hot water emergency, it is suitable for managing a lower air flow than the nominal one, as well as keeping the system on at night, thereby ensuring that internal pollutants are continuously diluted. The air flow can vary linearly according to the signal received between two air flow levels set in the unit selected within the admissible air flow range for the selected model (values shown in the fans section).

⚠ The SPVAR option is not compatible with the ‘PCOSM Constant supply air flow’ and ‘PVAR Variable air flow’ options

HSE

Immersed electrodes steam humidifier

This device is suitable for winter operation when humidity is required for the ambient without cooling the air flow. The automatic modulating control allows you to adjust the steam production and its relative management costs to the actual requirements.
Available in different capacities, the device is suitable for using soften water having medium conductivity and is equipped with: water load solenoid valve, disposable cylinder, water drainage solenoid valve, distribution nozzle, control electronic board to verify the water level, conductivity, anti-foam device, water drainage manual forcing. To ensure maximum hygiene, the cylinder can automatically empty after a determined period of stand-by.
The accessory is installed inside the unit and is connected to the electrical panel of the unit.
Ambient humidity is measured by means of a return humidity probe, which is provided already assembled and wired built-in the unit.
With the option is available a potential-free contact for the water emptying during the period in which the unit is not used (connection provided by the Customer).

Matching of immersed electrode and steam humidification module

SIZE	60.4	70.4	80.4	90.4	100.4	120.4
8 kg/h	√	√	√	√	√	√
15 kg/h	√	√	√	√	√	√

⚠ This operation involves variation of the main electrical data of the unit.
⚠ This accessory requires connection to a water supply network and discharge water circuit. Installation provided by the Customer.
⚠ Operation is available in heating mode

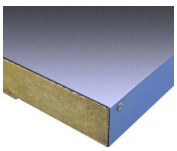
PUE

External Humidifier management with 0-10V signal

Solution suitable for applications where there is a humidification section external supplied by a third party. The external humidifier is operated with the 0-10V signal coming from the unit.

PCM0

Sandwich panels of the handling zone in M0 fire reaction class



Option indicated when, by law, the air treatment area must have metallic internal walls made with fire-proof insulating material. Sandwich panels with dual walls made of steel sheet metal with fire-proof insulation made of Rockwool (90 kg/m^3) comply with the French standards, which require “M0” reaction to fire class.

LTEMP1

Application for low outdoor temperature

Option indicated for very cold climates, where the outside temperature can be between -10°C and –25°C.

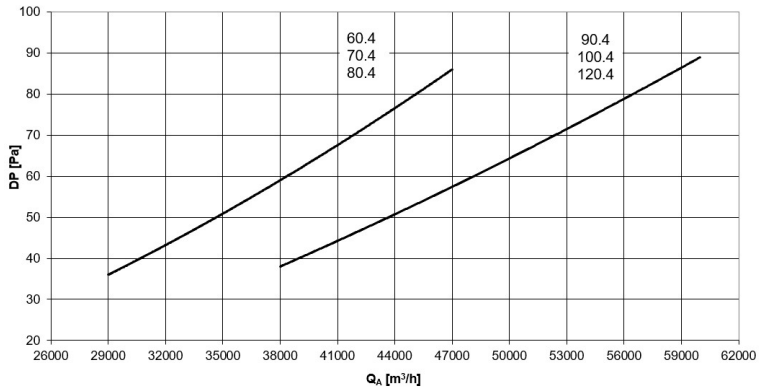
A. The option includes self-regulating heaters with thermostats that can protect the electrical panel from freezing to make sure it operates correctly.
B. The outdoor air damper is made of anti-seize devices that ease the correct control of the fresh air in every climatic situation, thanks to the teflon supporting bushings, aluminium flaps, PVC end gaskets and steel leverages to compensate expansion
C. The motorised actuator is suitable for operating with low outdoor temperatures.
D. Electrical connection cables suitable for outdoor low temperatures

⚠ This operation involves variation of the main electrical data of the unit.
⚠ This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be connected.
⚠ It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations.

CHWER **Energy recovery from food refrigeration**

This option makes it possible, during the winter season, to recover the heating energy produced by food storage in supermarkets, hypermarkets or food factories. It is a technical solution that recovers a significant heating resource, which is otherwise normally released outdoors.
The unit logic assigns a priority value to this function based on the heating availability of the resource, and integrates the overall output of the unit.
The option is comprised of a water exchanger, which is automatically controlled by a dedicated valve. With electrically powered units, the frost function is enabled, which forces the valve open when required.

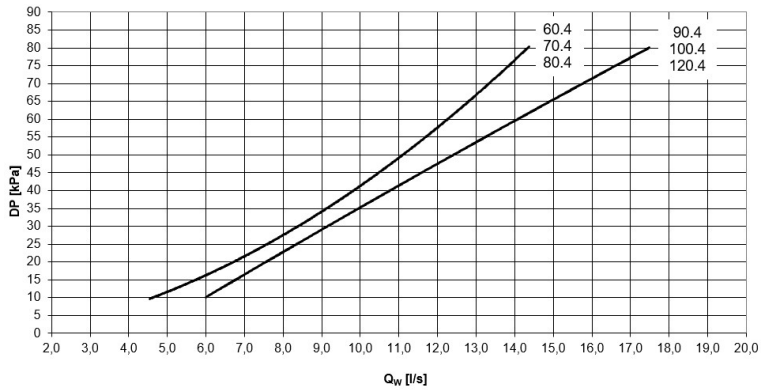
Hot water coil pressure drops: AIR side



The air side pressure drops are relative to the medium air temperature of 20°C and are to be added to the pressure drops due to ducts, terminal devices and any other component that causes a drop in working discharge head.

QA [m³/h] = Airflow
DP [Pa] = Pressure drops

Hot water coil pressure drops: WATER side



Pressure drops on the water side are calculated considering an average water temperature of 65°C

Qw [l/s] = Water flow-rate
DP [kPa] = Pressure drops

Qw [l/s] =P / (4.186 x DT)

P = Water coil heating capacity in KW
DT = Temperature difference between inlet / outlet water

This option reduces the available static pressure (supply air side).

⚠ The component requires connection to the hot water plumbing system (to be provided for by the client).
⚠ “2 range hot water coil”, “Electric heaters”, “Gas heating module” and “Energy recovery from food refrigeration” cannot be fitted at the same time.

CHWER Energy recovery from food refrigeration

			Ti/To [°C]								
			45/40	40/35	35/30	45/40	40/35	35/30	45/40	40/35	35/30
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
60.4	Qo [m³/h]			29000			33000			47000	
	Qo [l/s]			8055			9167			13055	
	TM [°C]	5	265,1	228,9	192,5	290,2	250,5	210,6	373,9	322,5	270,7
		10	227,5	191,6	155,6	249,1	209,7	170,1	321,2	269,9	218,5
		14	198,0	162,2	126,5	216,8	177,5	138,2	279,3	228,3	177,3
		16	183,3	147,7	112,0	200,7	161,5	122,4	258,6	207,7	156,8
		18	168,8	133,2	97,6	184,8	145,7	106,6	237,9	187,1	136,4
		20	154,8	118,9	83,3	169,2	130,0	90,9	217,4	166,8	116,0
70.4	Qo [m³/h]			29000			37000			47000	
	Qo [l/s]			8055			10278			13055	
	TM [°C]	5	265,1	228,9	192,5	314,4	271,3	228,0	373,9	322,5	270,7
		10	227,5	191,6	155,6	269,9	227,1	184,1	321,2	269,9	218,5
		14	198,0	162,2	126,5	234,9	192,2	149,5	279,3	228,3	177,3
		16	183,3	147,7	112,0	217,4	174,9	132,3	258,6	207,7	156,8
		18	168,8	133,2	97,6	200,1	157,7	115,2	237,9	187,1	136,4
		20	154,8	118,9	83,3	183,1	140,6	98,2	217,4	166,8	116,0
80.4	Qo [m³/h]			29000			44000			47000	
	Qo [l/s]			8055			12222			13055	
	TM [°C]	5	265,1	228,9	192,5	356,7	307,7	258,4	373,9	322,5	270,7
		10	227,5	191,6	155,6	306,4	257,5	208,6	321,2	269,9	218,5
		14	198,0	162,2	126,5	266,5	217,9	169,3	279,3	228,3	177,3
		16	183,3	147,7	112,0	246,7	198,2	149,7	258,6	207,7	156,8
		18	168,8	133,2	97,6	227,0	178,6	130,3	237,9	187,1	136,4
		20	154,8	118,9	83,3	207,4	159,2	110,9	217,4	166,8	116,0
90.4	Qo [m³/h]			38000			49000			60000	
	Qo [l/s]			10555			13611			16666	
	TM [°C]	5	348,3	301,1	253,7	418,8	361,7	304,5	482,6	416,5	350,6
		10	299,3	252,4	205,4	359,8	303,2	246,4	414,7	349,3	283,5
		14	260,6	214,0	167,2	313,3	257,0	200,5	361,0	295,9	230,5
		16	241,5	195,0	148,3	290,2	234,1	177,6	334,6	269,4	204,2
		18	222,5	176,0	129,5	267,4	211,2	155,0	308,1	243,1	177,9
		20	203,5	157,2	110,7	244,5	188,5	132,3	281,7	216,9	151,8
100.4	Qo [m³/h]			38000			53000			60000	
	Qo [l/s]			10555			14722			16666	
	TM [°C]	5	348,3	301,1	253,7	441,0	380,7	320,6	482,6	416,5	350,6
		10	299,3	252,4	205,4	378,9	319,3	259,3	414,7	349,3	283,5
		14	260,6	214,0	167,2	329,9	270,5	210,9	361,0	295,9	230,5
		16	241,5	195,0	148,3	305,7	246,4	186,9	334,6	269,4	204,2
		18	222,5	176,0	129,5	281,6	222,3	162,9	308,1	243,1	177,9
		20	203,5	157,2	110,7	257,5	198,4	139,1	281,7	216,9	151,8
120.4	Qo [m³/h]			38000			58000			60000	
	Qo [l/s]			10555			16111			16666	
	TM [°C]	5	348,3	301,1	253,7	471,5	407,0	342,6	482,6	416,5	350,6
		10	299,3	252,4	205,4	405,1	341,3	277,1	414,7	349,3	283,5
		14	260,6	214,0	167,2	352,7	289,1	225,3	361,0	295,9	230,5
		16	241,5	195,0	148,3	326,9	263,3	199,6	334,6	269,4	204,2
		18	222,5	176,0	129,5	301,0	237,6	173,9	308,1	243,1	177,9
		20	203,5	157,2	110,7	275,2	212,0	148,4	281,7	216,9	151,8

TM = air inlet temperature of water coil (°C)
Ti/To = water inlet/outlet temperature (°C)
Qo = airflow (l/s and m3/h)
kWt = Provided heating capacity (kW)
Thermal yields referred to the max. water coil capacity. The thermo regulator choke the 3-way modulating valve limiting the inlet air temperature at desired values.

Accessories

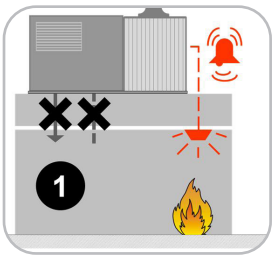
DESM

Smoke detector

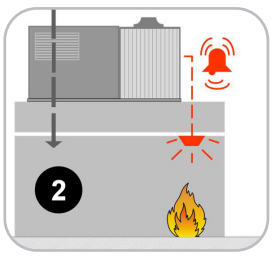
This option allows detection of smoke in the room by analyzing the return air. The Tyndal-effect increased sensitivity smoke detector is perfect for ventilation ducts since it is able to detect rarefied smoke in high-speed air flows. Smoke detection occurs using a photo-optical system with a labyrinth chamber. The alarm signal is processed by a built-in micro-processor which verifies the condition and sends a message to the unit controller such as smoke alarm or failure. The device is installed inside the unit and it is made up of a sensor, installed inside the return piping, and of a controller that is located on the outside duct.

Control logics in the event of alarm signal

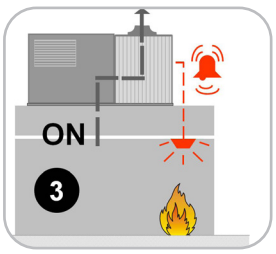
COMPLETE UNIT SHUTDOWN



SPACE IN OVERPRESSURE



SPACE IN UNDER PRESSURE

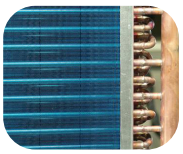


The unit is able to manage the signal coming from a fire detection system activating one of the logics illustrated, which can be set by parameters. In presence of alarm signal, the compressors are always switched off; moreover, the remote ON-OFF is disabled together with the switch on/off control from keypad. The unit is manually reset. Rooftop units cannot be used as fume 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.

CCCA

Copper / aluminium coil with acrylic lining



Coils with copper pipes and aluminium fins with acrylic lacquering. Can be used in settings with air with low saline concentrations or other moderately aggressive chemical agents. Attention!
- Cooling capacity variation -2.7%.
- Compressor power input variation +4.2%.
- Operating range reduction -2.1°C.

⚠ Configurable coating for all the coils of the refrigerant circuit (Handling, Source, Hot gas post-heating - CPHG).
⚠ Water coil treatment (CHW2 and CHWER) available on request

CCCA1

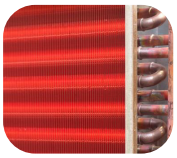
Copper/aluminum coil with Fin Guard (Silver) treatment

A treatment which offers an optimal thermal exchange and guarantees and protects the finned coil exchangers from corrosion over time. Can be used in settings with very aggressive saline concentrations and other chemical agents in the air thus maintaining the performance of the coils over time.

⚠ Option available on request.

CCCC

Copper / copper coil

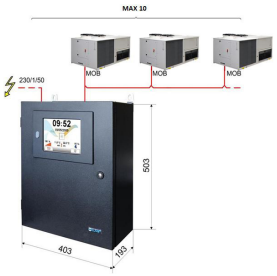


Coils with copper pipes, copper fins and brass structure. Can be used in settings with air with low saline concentrations or other chemical agents. The options are available for:
- external coil;
- internal coil;
- hot water coil;
- re-heating coil.

⚠ This option is not suitable for application in sulphuric environments.
⚠ Option available on request.

CLMX

Clivet Master System



CLIVET MASTER SYSTEM is the ideal system for remote and centralised control of CLIVETPack[3] and SMARTPack[2] air conditioning units. It can manage up to 10 units connected with a serial connection. It includes a wall-mounted box that, in addition to containing the electronic power supply and serial communication devices, houses a controller with touch screen display and front USB port for alarm history export.
The device allows to easily and intuitively access all the information on the status of the system and the climate control units. It also provides:

- auto-detection of units connected;
- setting all unit parameters;
- setting of the zone set-point;
- unit status display;
- control and management of the alarms and creation of an alarm log;
- hourly operation scheduling (ON / OFF / ECO);
- rotation of the units even for individual areas;
- temperature, humidity and air quality trends;
- automatic language management (English, Italian, French, Spanish and German).

⚠ The component must be combined with the RS485 serial port option with Modbus protocol built-in of each rooftop.
⚠ Operating temperature from 0°C to 50°C with relative humidity lower than 90% without condensate.
⚠ Installation provided by the Customer.

IOTX

IoT industrial module for cloud based interoperability & services

This device allows the monitoring and the remote control the unit via Clivet Eye, the supervision cloud system for Clivet units.
With IoT module (i-LINK) it will be possible to monitor and manage the unit through the mobile app Clivet Eye and the dedicated web page.
Among the main functions, for all monitored units they allow to:

- display the main working parameters;
- display the alarms;
- switch on/off the unit;
- change the setpoint;
- change the operating mode;
- set the daily/weekly start-up or power-off programming of the unit (via web interface);
- create charts of main system parameters trend (via web interface);
- display in a map the units monitored by Clivet Eye (via web interface).

Web interface at www.cliveteye.com.
Clivet Eye app available in Google Play and Apple Store

⚠ IoT module to be provided for each unit to be remotely monitored.
⚠ Internet ethernet connection in charge of customer.
⚠ Clivet Eye management is alternative to an external BMS supervision system.
⚠ Installation provided by the Customer.

SIX

Service interface (1.5 metre cable)

The device allows full control of the unit for start-up and maintenance operations by authorised technical personnel. It must be connected to the outside of the unit via the RJ45 connector and the 1.5m connection cable that can be further extended. The device can be easily attached to the unit's surface by the magnetic mount. It is weatherproof thanks to the IP68 protection rating. The controller has a backlit screen, convenient buttons, a graphic interface with menus and submenus for navigation.

⚠ All the features of the device can be replicated with a normal laptop connected to the unit with an Ethernet network cable and an Internet browser.

Accessories separately supplied

AMRX **Rubber antivibration mounts**
AMMRX **|a|Rubber antivibration mounts for unit and gas module**
AMRUVX **Rubber antivibration mounts for unit and UV-C lamp module**
AMREWX **Rubber antivibration mounts for unit and enthalpy wheel module**

The rubber antivibration mounts must be fixed to designated housings on the support stringers and are used to dampen vibrations produced by the unit, thereby reducing the noise transmitted to the support structures. They are flexible bodies able to dampen axial and tangential stresses and maintain the mechanical properties almost constant over time thanks to high resistance materials of which they are made.
Alternatively, rubberized neoprene anti-vibration strips may be used on the unit longitudinal support members (not supplied by Clivet).

⚠ Installation provided by the Customer.

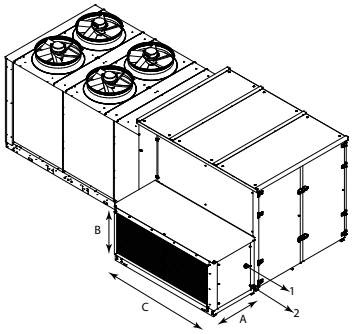
RCX **Roof curb**

Option to connect the unit to the roof of the building, ideal when the air supply and return is downward.
Once the frame is assembled, it will be necessary to insulate and seal the roof curb to the roof to guarantee the resistance to atmospheric agents, later it will be necessary only to place the unit.

⚠ If the gas module is selected, provide for an appropriate support structure, the supply air can only be horizontal.
⚠ Option available on request.

UVCX **UV-C germicidal lamps module**

The UV-C lamp module is a well-established technology in HVAC applications and it is realized to be effective on viruses such as SARS-CoV-2 and main bacteria such as Legionella, etc.
UV-C lamps use ultraviolet radiation to purify the air from the development of bacteria, moulds, fungi and viruses. Recent Italian and Japanese studies have demonstrated the effectiveness on Coronavirus SARS CoV2 (known as Covid-19) by defining the dose of UV-C rays required to deactivate it.
The bactericidal and virucidal action is achieved with low pressure mercury lamps through the direct radiation of the air flow with a wavelength of 254 mm.
In rooftop systems, UV-C lamps are installed downstream of the handling coil and act directly in the air flow.



1. Isolator switch
2. Power input

The option is installed in a separate module, outside the unit, with a dedicated electrical panel and separate power supply. It is activated by the unit's logic when the supply fans are running.
The radiation is completely contained and shielded inside the unit to avoid accidental contact with people; in fact, exposure to the rays without the necessary safety devices can cause skin burns and damage vision.

SIZES		60.4	70.4	80.4	90.4	100.4	120.4
A	mm	1095	1095	1095	1095	1095	1095
B	mm	1206	1206	1206	1204	1204	1204
C	mm	2508	2508	2508	3096	3096	3096
F.L.A.	A	2,65	2,65	2,65	3,95	3,95	3,95
F.L.I.	kW	600	600	600	900	900	900

⚠ The component requires a 230/1 ~ / 50 power supply to be provided by the customer.
⚠ Installation provided by the Customer.

MDMTX **Management of temperature ambient probes**

By selecting this option it is possible to provide from 1 to 4 remote room temperature probes. The values recorded by the probes can be consulted on the remote control and with the available supervision systems.
The average of the values recorded by the probes can be used for thermoregulation.

⚠ Place the probes in a position that represents the conditions of the environment served.
⚠ To thermoregulate with remote probes, at least three MDMTX probes must be selected.

MDMTUX **Management of temperature and humidity ambient probes**

By selecting this option it is possible to provide from 1 to 4 remote room temperature and humidity probes. The values recorded by the probes can be consulted on the remote control and with the available supervision systems.
The average of the values recorded by the probes can be used for thermoregulation.

⚠ Place the probes in a position that represents the conditions of the environment served
⚠ To thermoregulate with remote probes, at least three MDMTUX probes must be selected.

MDMADX **Advanced monitoring and management ambient probes**

Selecting this option provides the advanced ambient condition monitoring system with a designer ambient interface. The remote probes are able to measure many parameters and provide a full picture of ambient conditions in terms of:

- Temperature and humidity
- Concentration of Carbon Dioxide (CO_2)
- Concentration of Volatile Organic Compounds (VOC)
- Concentration of Carbon Monoxide (CO)
- Concentration of Nitrogen Dioxide (NO_2)
- Concentration of Methane (CH_4)
- Sound level
- Atmospheric pressure

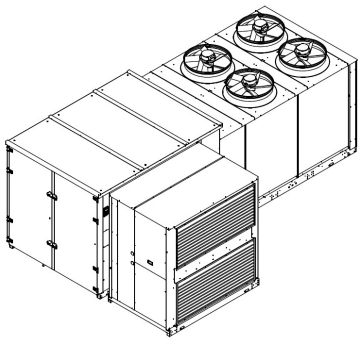
The parameters are recorded by the software and can be consulted via BMS or the Clivet Eye platform for PCs. Using the latter, in addition to accessing to each probe in detail, it is possible to visualize the trend of the recorded data of the last month and export the data of the 24 hours before a selected day.
The advanced monitoring devices comply with the requirements of LEED, WELL and Fitwell certifications.
The average of the values recorded by the probes (temperature and humidity) can be used for thermoregulation.

⚠ Place the probes in a position that represents the conditions of the environment served
⚠ To thermoregulate with remote probes, at least three MDMADX probes must be selected.

Accessories separately supplied

EWX

Enthalpy wheel energy recovery module



Thanks to the hygroscopic treatment of the exchange surface, the enthalpy wheel allows the efficient transfer of sensitive and latent heat from the exhausted air extracted from the building to the fresh air and vice versa.
Option suitable for applications with high percentages of outdoor air and considerable difference between outdoor and indoor temperature conditions.
The fixed-speed rotary recuperator combines a high exchange surface with overall compactness of the module.
The recovery of latent and sensitive energy is greater under extreme conditions, reducing the capacity required for the refrigeration circuit and any auxiliary systems.
During free-cooling operation the enthalpy wheel is automatically turned off.
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
- Extraction fans (RAD/EC)
- ISO 16890 Coarse 50% filters (G4) upstream of the rotor for both flows
- Control and safety devices

Option compatible with available thermal integration systems

⚠ This option is only compatible with the return section in position R3 (Downward air return) and CBK-G configuration.
⚠ This option involves variation of the main electrical data of the unit.
⚠ This option reduces the available static pressure (supply air side).

Enthalpy wheel combinations

	60.4	70.4	80.4	90.4	100.4	120.4
EW18X	√	√	-	-	-	-
EW20X	-	-	√	√	-	-
EW22X	-	-	-	-	√	√

				60.4	70.4	80.4	90.4	100.4	120.4
Airflow rate		m^3/h		9900	11100	13200	14700	15900	17400
Wheel diameter		mm		1800	1800	2000	2000	2200	2200
Cooling	Recovered power	kW	1	34,9	38	45,9	49,5	55	58,6
	Efficiency	%	1	71,1	69,7	70,4	69,0	70,1	69,0
Heating	Recovered power	kW	2	32,4	35,7	42,8	46,9	51,4	55,4
	Efficiency	%	2	73,4	72,1	72,8	71,5	72,5	71,5
	Recovered power	kW	3	86,4	94,9	114,0	124,4	136,9	147,2
	Efficiency	%	3	73,4	72,1	72,8	71,5	72,5	71,5

Flow rate corresponding to 30% of the nominal air flow rate.
(1) Outdoor temperature 35°C DB/24°C WB, indoor temperature 27°C DB/19°C WB
(2) Outdoor temperature 7°C DB/6°C WB, indoor temperature 20°C DB/12°C WB
(3) Outdoor temperature -7°C DB/-8°C WB, indoor temperature 20°C DB/12°C WB

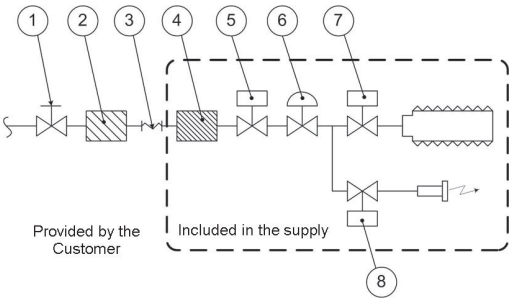
GCX

Condensig gas heating module with modulating control

Option consisting of a combustion chamber and condensation burner with modulating control. It is available in various capacities and heats the environment served. The module can be chosen to integrate the heat pump or as an alternative to it. In this case, its heating capacity must be at least equal to the capacity envisioned in the project.
Thanks to the condensation technology with pre-mix and extremely efficient modulation (up to 105% depending on the lower heat value), consumption is very contained and considerably reduced during operation at partial load. The burner with low polluting emissions (NOx lower than 80mg/kWh) in accordance with Class 5 of European standard EN 676.
The option is provided with a separate module that can be easily connected to the unit during installation.
The gas module presence needs the horizontal supply.
The heating module includes:

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

Gas connection diagram



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

Matching of the condensing gas heating module

	Capacity	60.4	70.4	80.4	90.4	100.4	120.4
GC10X	82 kW	√	√	√	-	-	-
GC11X	100 kW	√	√	√	-	-	-
GC12X	130 kW	-	-	-	√	√	√
GC13X	164 kW	√	√	√	√	√	√
GC06X	200 kW	√	√	√	√	√	√
GC07X	300 kW	-	-	-	√	√	√

This option reduces the available static pressure (supply air side).

⚠ 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 assembly of the chimney kit must be performed on site by the Customer. According to specific requirements of installation, the chimney length can be increased by means of appropriate joints and fittings (not supplied by Clivet). For further details, refer to the Installation, use and maintenance manual.

⚠ "2 range hot water coil", "Electric heaters", "Gas heating module" and "Energy recovery from food refrigeration" cannot be fitted at the same time.

Gas use features

		82KW		100KW		130KW		164KW		200KW		300KW	
Description		min	max	min	max	min	max	min	max	min	max	min	max
Rated heating capacity	kW	16,4	82,0	21,0	100,0	12,4	130,0	16,4	164,0	21,0	200,0	21,0	300,0
Efficiency Hi (P.C.I.)	%	108,4	97,6	108,6	97,2	108,1	96,8	108,4	97,6	108,6	97,2	108,6	97,2
Efficiency Hs (P.C.S.)	%	97,6	87,9	97,8	87,5	97,4	87,2	97,6	87,9	97,8	87,5	97,8	87,5
Max condensation produced	l/h	3,3		2,7		4,2		6,6		5,4		8,1	
Carbon monoxide CO (0% di O_2)	ppm	<5		<5		<5		<5		<5		<5	
Nitrogen oxides - NOx (0% di O_2)		41 mg / kWh 23 ppm		39 mg / kWh 22 ppm		39 mg / kWh 23 ppm		41 mg / kWh 23 ppm		39 mg / kWh 22 ppm		39 mg / kWh 22 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 3/4"		UNI ISO 228/1 - G 1/2"		UNI ISO 228/1 - G 1/2"		UNI ISO 228/1 - G 1/2"		UNI ISO 228/1 - 1xG 1 1/4" and 1xG3/4"	
Flue pipe diameter	mm	80		80		2 x 80		2 x 80		2 x 80		3 x 80	
Seasonal space heating energy efficiency [EU Reg./2281/2016] [ηs, h]	%	93,2		93,1		93,9		94,0		94,0		94,2	
Emission efficiency [EU Reg./2281/2016] [ηsflow]	%	97,1		97,0		98,1		97,9		97,9		98,1	
Power supply pressure (for gas G20)	mbar	20 [min 17 -max 25]											
Gas consumption @15°C - 1013 mbar (for G20 gas)	m^3/h	1,74	8,68	2,22	10,58	2,62	13,76	3,48	17,36	4,44	21,16	6,66	31,74

Performance

The performance data of all configurations are available on www.clivet.com.

Size 60.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

FLOW RATE AIR	Ta [°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
29000 m³/h	20/15	185	134	5,38	190	129	4,90	192	127	4,43	188	130	3,91	183	136	3,44
	23/17	194	140	5,61	198	135	5,06	199	133	4,55	196	136	4,04	190	142	3,54
	26/18	198	151	5,71	202	146	5,15	203	145	4,62	200	148	4,10	193	154	3,58
	27/19	202	150	5,79	206	146	5,23	207	145	4,69	203	149	4,14	197	155	3,63
	30/22	216	148	6,14	220	144	5,51	220	144	4,92	216	148	4,34	209	155	3,79
33000 m³/h	20/15	190	141	5,51	195	135	5,00	196	133	4,51	193	137	4,00	187	144	3,50
	23/17	199	147	5,72	203	142	5,17	204	140	4,65	200	144	4,10	194	151	3,59
	26/18	203	160	5,82	207	155	5,25	208	154	4,72	204	158	4,15	197	165	3,63
	27/19	207	159	5,91	211	154	5,33	212	154	4,79	208	158	4,22	201	165	3,69
	30/22	222	157	6,27	225	153	5,61	225	153	5,00	220	158	4,39	213	165	3,84
47000 m³/h	20/15	201	163	5,78	206	155	5,23	206	153	4,68	202	159	4,12	195	168	3,60
	23/17	210	171	5,98	214	164	5,39	214	163	4,82	210	170	4,25	203	180	8,22
	26/18	215	188	6,11	218	182	5,46	218	182	4,89	214	188	4,31	206	199	3,75
	27/19	219	187	6,20	223	182	5,58	222	182	4,94	218	189	4,37	210	199	3,80
	30/22	234	184	6,55	237	180	5,85	236	181	5,19	230	189	4,53	222	199	3,95

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

Size 60.4 - CCK-REVO confifguration

Heating performance with 30% of outdoor and exhaust air

FLOW RATE AIR	Ta [°C] DB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
29000 m³/h	10	112	3,84	128	3,90	147	4,02	147	4,02	177	4,16	201	4,26	201	4,26
	15	112	3,58	128	3,66	147	3,76	147	3,76	177	3,90	200	3,97	200	3,97
	18	112	3,44	128	3,51	147	3,61	147	3,61	176	3,73	199	3,80	199	3,80
	20	112	3,33	128	3,41	147	3,52	147	3,52	176	3,64	199	3,70	199	3,70
	22	112	3,25	128	3,32	146	3,40	146	3,40	176	3,55	199	3,61	199	3,61
	25	112	3,11	128	3,19	146	3,27	146	3,27	146	3,27	146	3,27	146	3,27
33000 m³/h	10	112	3,96	128	4,04	147	4,18	147	4,18	178	4,38	202	4,50	202	4,50
	15	112	3,68	128	3,78	147	3,91	147	3,91	177	4,08	201	4,19	201	4,19
	18	112	3,54	128	3,63	147	3,75	147	3,75	177	3,92	200	4,02	200	4,02
	20	112	3,45	128	3,54	147	3,66	147	3,66	177	3,82	200	3,91	200	3,91
	22	112	3,35	128	3,44	147	3,56	147	3,56	176	3,71	199	3,79	199	3,79
	25	112	3,21	128	3,31	146	3,40	146	3,40	146	3,40	146	3,40	146	3,40
47000 m³/h	10	113	4,28	129	4,40	148	4,58	148	4,58	179	4,90	204	5,14	204	5,14
	15	112	3,96	128	4,08	148	4,28	148	4,28	178	4,55	203	4,75	203	4,75
	18	112	3,80	128	3,91	147	4,08	147	4,08	178	4,36	202	4,54	202	4,54
	20	112	3,70	128	3,82	147	3,98	147	3,98	178	4,26	202	4,42	202	4,42
	22	112	3,59	128	3,71	147	3,88	147	3,88	177	4,12	201	4,29	201	4,29
	25	112	3,45	128	3,57	147	3,73	147	3,73	147	3,73	147	3,73	147	3,73

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only

Size 70.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
29000 m³/h	20/15	203	145	4,75	208	139	4,31	210	137	3,90	207	140	3,46	201	145	3,04
	23/17	212	150	4,91	217	145	4,44	219	143	4,02	215	146	3,55	208	152	3,10
	26/18	217	162	4,99	221	157	4,49	223	155	4,07	219	158	3,60	212	164	3,15
	27/19	221	161	5,05	226	156	4,57	227	155	4,11	223	158	3,64	216	164	3,19
	30/22	237	159	5,31	241	155	4,78	241	154	4,29	237	158	3,79	229	164	3,31
37000 m³/h	20/15	213	159	4,92	218	152	4,45	220	150	4,03	216	154	3,56	209	161	3,12
	23/17	223	166	5,09	227	159	4,59	228	158	4,12	224	162	3,65	217	170	3,20
	26/18	227	180	5,15	232	174	4,66	233	173	4,19	228	177	3,69	221	185	3,24
	27/19	232	179	5,23	236	173	4,70	237	172	4,24	232	177	3,73	225	185	3,28
	30/22	248	176	5,49	251	172	4,91	251	171	4,40	246	177	3,88	238	185	3,40
47000 m³/h	20/15	222	175	5,07	227	167	4,59	228	165	4,13	223	170	3,64	216	180	3,19
	23/17	232	183	5,24	236	176	4,71	236	174	4,22	232	181	3,74	224	191	3,27
	26/18	237	200	5,31	241	194	4,78	241	193	4,29	236	199	3,78	228	209	3,30
	27/19	242	199	5,39	245	193	4,83	245	193	4,33	240	199	3,82	232	209	3,34
	30/22	258	195	5,65	260	191	5,03	260	192	4,51	254	199	3,96	245	210	3,46

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

Size 70.4 - CCK-REVO configuration

Heating performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C DB/WB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
29000 m³/h	10	124	3,73	142	3,82	163	3,91	163	3,91	197	4,01	223	4,03	223	4,03
	15	124	3,49	142	3,58	163	3,66	163	3,66	196	3,74	222	3,76	222	3,76
	18	124	3,36	142	3,44	163	3,52	163	3,52	196	3,59	221	3,60	221	3,60
	20	124	3,27	142	3,35	163	3,42	163	3,42	196	3,50	221	3,51	221	3,51
	22	124	3,19	142	3,26	163	3,34	163	3,34	195	3,40	220	3,41	220	3,41
	25	124	3,06	142	3,13	163	3,21	163	3,21	163	3,21	163	3,21	163	3,21
37000 m³/h	10	124	3,96	142	4,08	163	4,22	163	4,22	198	4,42	224	4,48	224	4,48
	15	124	3,70	142	3,83	163	3,95	163	3,95	197	4,11	223	4,18	223	4,18
	18	124	3,56	142	3,68	163	3,80	163	3,80	197	3,96	223	4,02	223	4,02
	20	124	3,47	142	3,59	163	3,70	163	3,70	196	3,84	222	3,89	222	3,89
	22	124	3,39	142	3,49	163	3,60	163	3,60	196	3,73	222	3,79	222	3,79
	25	124	3,25	142	3,36	163	3,47	163	3,47	163	3,47	163	3,47	163	3,47
47000 m³/h	10	124	4,15	142	4,30	164	4,52	164	4,52	198	4,76	226	4,92	226	4,92
	15	124	3,89	142	4,03	163	4,19	163	4,19	198	4,44	225	4,57	225	4,57
	18	124	3,73	142	3,88	163	4,03	163	4,03	197	4,25	224	4,38	224	4,38
	20	124	3,64	142	3,78	163	3,93	163	3,93	197	4,14	224	4,26	224	4,26
	22	124	3,54	142	3,68	163	3,83	163	3,83	197	4,03	223	4,13	223	4,13
	25	124	3,41	142	3,54	163	3,68	163	3,68	163	3,68	163	3,68	163	3,68

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only

Size 80.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
29000 m³/h	20/15	222	156	4,40	227	149	3,98	229	147	3,61	226	150	3,21	219	155	2,80
	23/17	232	161	4,53	237	156	4,10	238	154	3,70	234	157	3,27	227	162	2,87
	26/18	236	173	4,58	242	168	4,16	243	166	3,75	239	169	3,32	232	174	2,91
	27/19	242	173	4,66	247	168	4,22	248	166	3,80	244	169	3,37	236	174	2,94
	30/22	259	170	4,89	263	166	4,39	263	165	3,94	258	168	3,48	250	174	3,05
44000 m³/h	20/15	242	183	4,66	247	175	4,22	248	172	3,80	243	177	3,36	235	186	2,94
	23/17	252	191	4,79	257	183	4,33	257	181	3,89	252	187	3,43	243	196	3,00
	26/18	257	207	4,85	262	200	4,38	262	199	3,93	257	204	3,48	248	213	3,04
	27/19	263	206	4,93	267	200	4,44	267	199	3,98	261	204	3,51	252	213	3,07
	30/22	280	202	5,14	283	197	4,59	282	197	4,12	276	204	3,63	266	213	3,17
47000 m³/h	20/15	244	188	4,68	249	179	4,23	250	176	3,82	245	182	3,37	237	192	2,95
	23/17	255	196	4,83	259	188	4,35	260	186	3,92	254	192	3,45	246	202	3,03
	26/18	260	213	4,89	264	206	4,40	265	205	3,97	259	211	3,49	250	220	3,05
	27/19	266	212	4,97	270	206	4,47	270	205	4,01	264	211	3,53	255	221	3,09
	30/22	283	208	5,17	286	203	4,63	285	203	4,14	279	210	3,66	269	221	3,19

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

Size 80.4 - CCK-REVO configuration

Heating performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
29000 m³/h	10	140	3,56	161	3,63	185	3,71	185	3,71	222	3,74	251	3,72	251	3,72
	15	141	3,36	161	3,40	185	3,46	185	3,46	222	3,50	250	3,47	250	3,47
	18	141	3,22	161	3,27	185	3,33	185	3,33	221	3,35	249	3,33	249	3,33
	20	141	3,14	161	3,19	185	3,25	185	3,25	221	3,26	249	3,24	249	3,24
	22	141	3,06	162	3,12	185	3,16	185	3,16	221	3,18	249	3,16	249	3,16
	25	141	2,93	162	3,00	185	3,04	185	3,04	185	3,04	185	3,04	185	3,04
44000 m³/h	10	140	3,94	161	4,09	185	4,22	185	4,22	224	4,42	254	4,50	254	4,50
	15	140	3,69	161	3,82	185	3,96	185	3,96	223	4,11	253	4,20	253	4,20
	18	140	3,55	161	3,68	185	3,81	185	3,81	223	3,96	252	4,03	252	4,03
	20	140	3,46	161	3,59	185	3,71	185	3,71	222	3,84	252	3,92	252	3,92
	22	141	3,40	161	3,49	185	3,61	185	3,61	222	3,74	251	3,80	251	3,80
	25	141	3,26	161	3,36	185	3,48	185	3,48	185	3,48	185	3,48	185	3,48
47000 m³/h	10	140	3,99	161	4,14	185	4,30	185	4,30	224	4,51	255	4,62	255	4,62
	15	140	3,74	161	3,88	185	4,03	185	4,03	223	4,20	253	4,30	253	4,30
	18	140	3,60	161	3,74	185	3,88	185	3,88	223	4,04	253	4,13	253	4,13
	20	140	3,51	161	3,64	185	3,78	185	3,78	223	3,94	252	4,01	252	4,01
	22	140	3,41	161	3,55	185	3,68	185	3,68	222	3,82	252	3,91	252	3,91
	25	141	3,31	161	3,41	185	3,54	185	3,54	185	3,54	185	3,54	185	3,54

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only

Size 90.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
38000 m³/h	20/15	255	182	4,78	263	174	4,37	265	171	3,96	261	175	3,50	254	183	3,08
	23/17	267	188	4,94	273	182	4,48	276	180	4,07	271	184	3,59	263	191	3,15
	26/18	272	203	5,01	279	197	4,55	281	195	4,12	277	199	3,65	268	207	3,19
	27/19	279	202	5,10	285	196	4,62	287	195	4,18	282	200	3,70	273	207	3,23
	30/22	298	199	5,34	303	194	4,82	304	194	4,34	299	199	3,84	290	207	3,37
49000 m³/h	20/15	269	200	4,97	275	191	4,50	278	189	4,09	273	194	3,62	264	204	3,16
	23/17	281	208	5,13	287	201	4,64	288	199	4,19	283	205	3,70	274	215	3,24
	26/18	286	227	5,19	292	220	4,69	294	218	4,25	288	224	3,75	279	235	3,28
	27/19	293	226	5,28	298	219	4,76	299	218	4,30	294	225	3,80	285	235	3,33
	30/22	312	222	5,51	317	217	4,97	317	217	4,46	311	224	3,95	301	235	3,45
60000 m³/h	20/15	278	217	5,09	284	207	4,60	286	204	4,17	281	212	3,69	272	225	3,23
	23/17	290	227	5,24	296	218	4,74	297	217	4,28	291	225	3,77	282	238	3,31
	26/18	296	248	5,31	301	241	4,79	302	240	4,33	296	248	3,81	287	261	3,34
	27/19	302	247	5,39	307	240	4,86	308	240	4,38	302	248	3,87	292	261	3,38
	30/22	322	243	5,63	327	237	5,07	326	238	4,55	319	248	4,01	308	262	3,50

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

Size 90.4 - CCK-REVO configuration

Heating performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
38000 m³/h	10	158	3,74	182	3,89	210	4,01	210	4,01	253	4,09	286	4,09	286	4,09
	15	159	3,54	182	3,65	209	3,74	209	3,74	252	3,82	285	3,82	285	3,82
	18	159	3,41	182	3,51	209	3,60	209	3,60	251	3,66	284	3,66	284	3,66
	20	159	3,33	182	3,43	209	3,51	209	3,51	251	3,57	283	3,56	283	3,56
	22	159	3,25	182	3,34	209	3,43	209	3,43	251	3,48	282	3,46	282	3,46
	25	159	3,14	182	3,22	209	3,30	209	3,30	209	3,30	209	3,30	209	3,32
49000 m³/h	10	158	3,96	182	4,16	210	4,32	210	4,32	254	4,50	289	4,58	289	4,58
	15	158	3,72	182	3,90	210	4,05	210	4,05	253	4,20	287	4,26	287	4,26
	18	159	3,61	182	3,75	210	3,90	210	3,90	253	4,04	286	4,09	286	4,09
	20	159	3,53	182	3,66	209	3,78	209	3,78	252	3,93	286	3,98	286	3,98
	22	159	3,44	182	3,57	209	3,69	209	3,69	252	3,83	285	3,87	285	3,87
	25	159	3,31	182	3,43	209	3,55	209	3,55	209	3,55	209	3,55	209	3,55
60000 m³/h	10	158	4,10	182	4,33	210	4,55	210	4,55	255	4,80	291	4,94	291	4,94
	15	158	3,86	182	4,06	210	4,26	210	4,26	254	4,47	289	4,59	289	4,59
	18	158	3,72	182	3,91	210	4,09	210	4,09	254	4,30	288	4,40	288	4,40
	20	158	3,63	182	3,82	210	3,99	210	3,99	253	4,17	287	4,27	287	4,27
	22	159	3,57	182	3,72	210	3,89	210	3,89	253	4,07	287	4,16	287	4,16
	25	159	3,44	182	3,58	209	3,73	209	3,73	209	3,73	209	3,73	209	3,73

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only

Size 100.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
38000 m³/h	20/15	275	194	4,86	283	186	4,28	286	183	3,89	282	186	3,45	274	193	3,03
	23/17	288	200	4,86	295	193	4,41	297	191	3,99	293	195	3,54	284	202	3,10
	26/18	294	215	4,92	301	209	4,47	303	207	4,04	298	211	3,58	289	218	3,13
	27/19	301	214	5,01	307	208	4,53	309	206	4,09	304	211	3,62	295	218	3,18
	30/22	322	211	5,24	327	206	4,72	328	205	4,25	322	210	3,76	312	218	3,29
53000 m³/h	20/15	295	220	4,93	302	210	4,47	304	206	4,05	299	213	3,59	289	223	3,13
	23/17	308	228	5,08	314	220	4,59	316	218	4,16	310	224	3,67	300	235	3,21
	26/18	314	248	5,15	320	240	4,65	322	239	4,21	316	245	3,72	306	256	3,26
	27/19	321	247	5,22	327	240	4,72	328	238	4,26	322	245	3,77	311	256	3,29
	30/22	343	243	5,46	347	237	4,90	347	237	4,41	340	245	3,89	329	256	3,41
60000 m³/h	20/15	301	231	5,00	308	220	4,54	310	217	4,10	304	224	3,62	294	236	3,17
	23/17	315	240	5,16	321	231	4,67	322	229	4,21	316	237	3,72	305	250	3,25
	26/18	321	262	5,23	327	254	4,72	328	252	4,26	321	260	3,75	311	273	3,29
	27/19	328	261	5,30	333	253	4,78	334	252	4,31	327	260	3,80	316	273	3,32
	30/22	350	256	5,54	354	250	4,97	353	251	4,46	346	260	3,94	334	273	3,44

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

Size 100.4 - CCK-REVO configuration

Heating performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
38000 m³/h	10	173	3,63	199	3,74	229	3,83	229	3,83	275	3,87	311	3,85	311	3,85
	15	173	3,41	199	3,52	229	3,59	229	3,59	274	3,61	309	3,58	309	3,58
	18	174	3,31	199	3,39	228	3,44	228	3,44	274	3,48	308	3,44	308	3,44
	20	174	3,23	199	3,31	228	3,36	228	3,36	273	3,38	308	3,36	308	3,36
	22	174	3,15	199	3,23	228	3,28	228	3,28	273	3,29	307	3,26	307	3,26
	25	174	3,04	199	3,10	228	3,16	228	3,16	228	3,16	228	3,16	228	3,16
53000 m³/h	10	173	3,92	199	4,09	229	4,25	229	4,25	277	4,41	315	4,49	315	4,49
	15	173	3,69	199	3,84	229	3,98	229	3,98	276	4,12	313	4,17	313	4,17
	18	173	3,55	199	3,71	229	3,84	229	3,84	276	3,97	312	4,01	312	4,01
	20	173	3,47	199	3,61	229	3,74	229	3,74	275	3,86	311	3,89	311	3,89
	22	173	3,39	199	3,52	229	3,65	229	3,65	275	3,76	311	3,79	311	3,79
	25	174	3,28	199	3,40	228	3,50	228	3,50	228	3,50	228	3,50	228	3,50
60000 m³/h	10	173	4,01	199	4,21	229	4,38	229	4,38	278	4,60	316	4,70	316	4,70
	15	173	3,77	199	3,95	229	4,11	229	4,11	277	4,29	314	4,37	314	4,37
	18	173	3,63	199	3,80	229	3,96	229	3,96	276	4,12	313	4,20	313	4,20
	20	173	3,55	199	3,71	229	3,86	229	3,86	276	4,02	313	4,09	313	4,09
	22	173	3,47	199	3,62	229	3,76	229	3,76	275	3,90	312	3,97	312	3,97
	25	174	3,36	199	3,49	229	3,63	229	3,63	229	3,63	229	3,63	229	3,63

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only

Size 120.4 - CCK-REVO configuration

Cooling performance with 30% of outdoor and exhaust air

AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB														
		20/12			25/18			30/22			35/24			40/25		
		kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER	kWf	kWs	EER
38000 m³/h	20/15	313	216	4,33	322	207	3,93	325	204	3,55	320	207	3,14	310	213	2,72
	23/17	328	223	4,46	335	215	4,02	338	212	3,64	332	216	3,19	322	222	2,80
	26/18	334	238	4,51	342	231	4,08	344	229	3,68	339	232	3,26	328	238	2,83
	27/19	342	238	4,58	349	231	4,13	351	228	3,72	345	232	3,29	335	238	2,86
	30/22	365	234	4,77	372	228	4,30	373	227	3,86	366	231	3,39	355	238	2,98
58000 m³/h	20/15	345	253	4,61	352	241	4,15	354	237	3,74	347	243	3,30	336	254	2,87
	23/17	360	262	4,73	366	252	4,25	367	249	3,82	360	256	3,36	348	267	2,92
	26/18	367	284	4,79	373	274	4,30	374	272	3,87	367	279	3,40	354	290	2,97
	27/19	375	282	4,85	381	274	4,36	381	272	3,91	374	279	3,46	361	290	3,01
	30/22	399	277	5,03	404	270	4,51	404	270	4,05	395	278	3,56	381	290	3,10
60000 m³/h	20/15	347	256	4,63	354	244	4,16	356	240	3,76	349	247	3,29	337	258	2,88
	23/17	362	266	4,75	368	256	4,26	370	253	3,85	362	260	3,38	350	271	2,94
	26/18	369	288	4,80	375	278	4,32	376	276	3,88	369	283	3,42	356	295	2,97
	27/19	377	286	4,86	383	278	4,37	383	276	3,92	376	283	3,45	363	295	3,00
	30/22	402	281	5,06	406	274	4,52	406	274	4,06	397	282	3,58	383	295	3,11

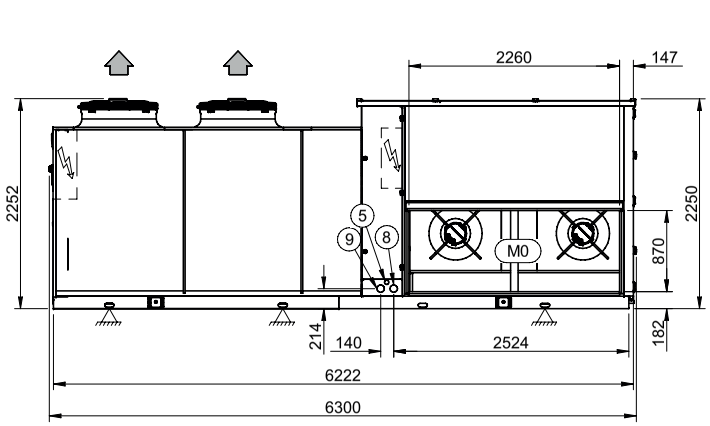
Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
EER referred only to compressors
All cooling and thermal capacities do not take into account the heat dissipated by the fan motors

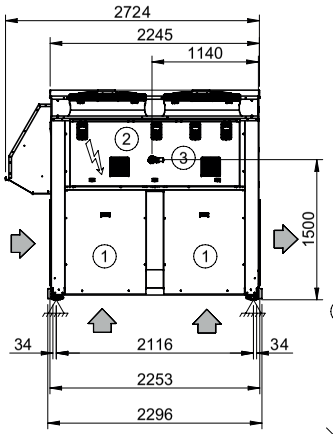
Size 120.4 - CCK-REVO configuration

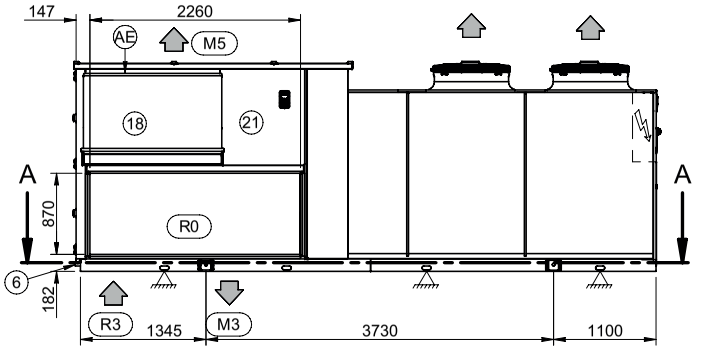
Heating performance with 30% of outdoor and exhaust air

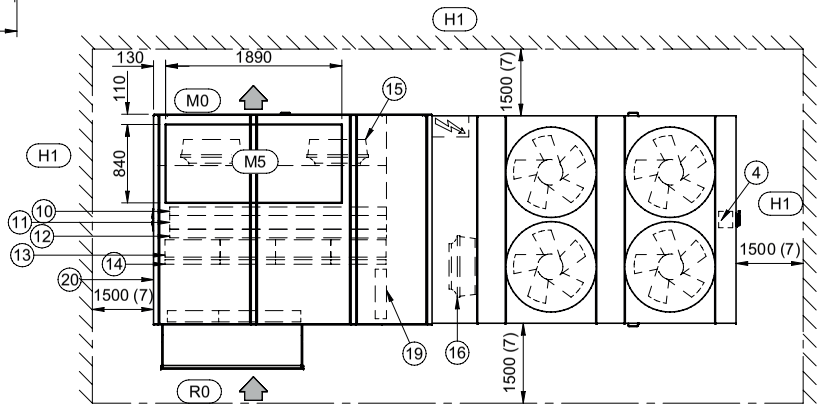
AIR FLOW	Ta[°C] DB/WB	Outdoor temperature [°C] DB/WB													
		-15/-16		-10/-11		-5/-6		0/1		2/1		7/6		12/11	
		kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP	kWt	COP
38000 m³/h	10	208	3,41	238	3,45	272	3,47	272	3,47	325	3,43	365	3,35	365	3,35
	15	208	3,19	238	3,22	272	3,24	272	3,24	324	3,18	364	3,11	364	3,11
	18	209	3,07	239	3,11	272	3,11	272	3,11	324	3,06	363	2,98	363	2,98
	20	209	2,99	239	3,03	272	3,02	272	3,02	323	2,96	362	2,90	362	2,90
	22	210	2,92	239	2,94	273	2,95	273	2,95	323	2,88	362	2,81	362	2,81
	25	210	2,80	240	2,83	273	2,83	273	2,83	273	2,83	273	2,83	273	2,83
58000 m³/h	10	208	3,85	238	3,97	272	4,07	272	4,07	327	4,17	370	4,20	370	4,20
	15	208	3,60	238	3,71	272	3,80	272	3,80	326	3,89	368	3,90	368	3,90
	18	208	3,46	238	3,57	272	3,66	272	3,66	326	3,73	367	3,74	367	3,74
	20	208	3,37	238	3,48	272	3,56	272	3,56	325	3,63	367	3,63	367	3,63
	22	208	3,29	238	3,39	272	3,46	272	3,46	325	3,53	366	3,52	366	3,52
	25	208	3,16	238	3,25	272	3,33	272	3,33	272	3,33	272	3,33	272	3,33
60000 m³/h	10	208	3,88	238	4,01	272	4,11	272	4,11	327	4,22	370	4,26	370	4,26
	15	208	3,63	238	3,75	272	3,85	272	3,85	326	3,94	369	3,96	369	3,96
	18	208	3,49	238	3,60	272	3,70	272	3,70	326	3,78	368	3,80	368	3,80
	20	208	3,40	238	3,51	272	3,59	272	3,59	325	3,67	367	3,69	367	3,69
	22	208	3,31	238	3,41	272	3,50	272	3,50	325	3,58	367	3,60	367	3,60
	25	208	3,18	238	3,28	272	3,37	272	3,37	272	3,37	272	3,37	272	3,37

Ta = Indoor ambient temperature DB/WB
DB = Dry bulb
kWt = Heating capacity supplied (kW)
COP referred to compressors only





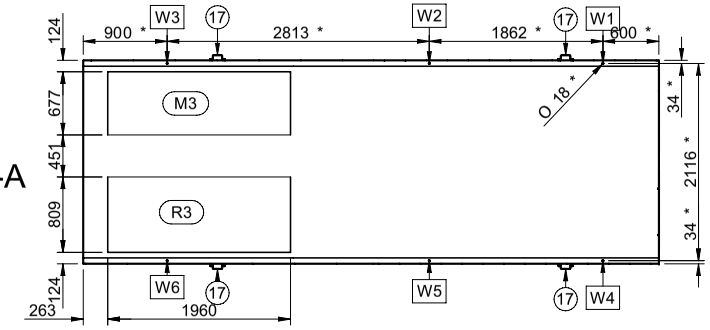




1. Compressor compartment
2. Electrical panel
3. Connector for keyboard or PC connection
4. Power input
5. Humidifier connections 1/2"M
6. Condensate drain with siphon
7. Functional clearances
8. Heating coil inlet H_2O Ø 2"
9. Heating coil outlet H_2O Ø 2"
10. Post-heating coil
11. Treatment coil
12. Heating coil H_2O
13. Filters F7 - Filters F9 - Electrostatic filters
14. Filters G4
15. Electric fan (supply-return)
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
18. Fresh air damper
19. Over pressure damper discharge (CCK REVO Version)
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(M3) Downward air supply
(M5) Vertical air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position

SEZ A-A

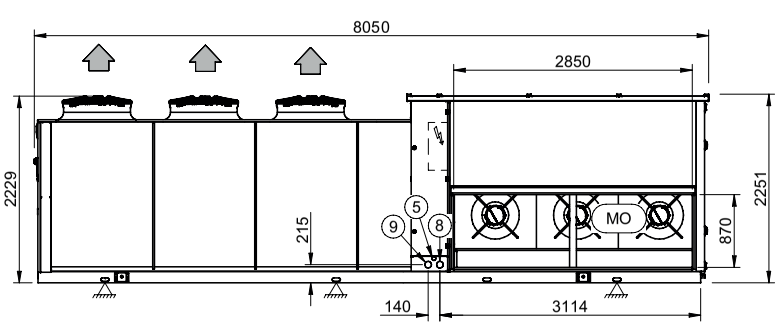


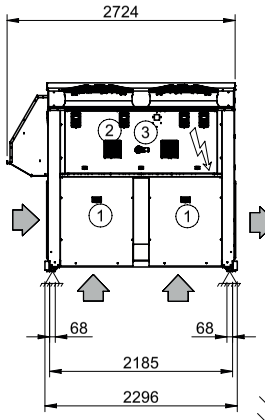
WEIGHT DISTRIBUTION

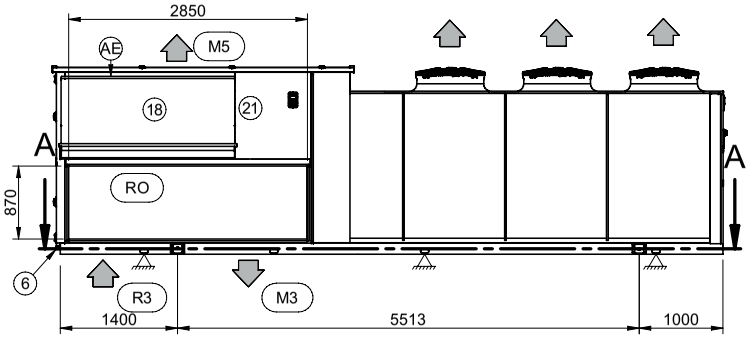
SIZE		60.4	60.4	70.4	70.4	80.4	80.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	413	407	423	417	423	417
W2 Support point	kg	495	530	506	541	506	541
W3 Support point	kg	451	458	450	457	450	457
W4 Support point	kg	409	392	419	402	419	402
W5 Support point	kg	474	575	483	584	483	584
W6 Support point	kg	363	383	362	383	362	383
Operation weight	kg	2605	2745	2643	2783	2643	2783
Shipping weight	kg	2605	2745	2643	2783	2643	2783

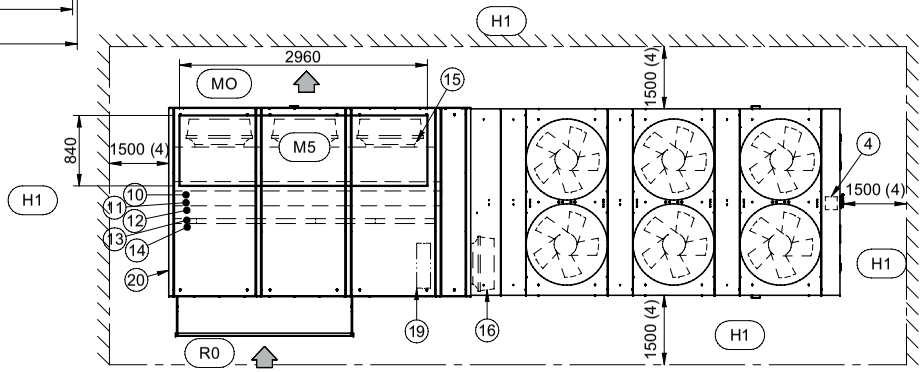
Optional accessories may result in a substantial variation of the weight show in table

Dimensional drawings









1. Compressor compartment
2. Electrical panel
3. Connector for keyboard or PC connection
4. Power input
5. Humidifier connections 1/2"M
6. Condensate drain with siphon
7. Functional clearances
8. Heating coil inlet H_2O Ø 2"
9. Heating coil outlet H_2O Ø 2"
10. Post-heating coil
11. Treatment coil
12. Heating coil H_2O
13. Filters F7 - Filters F9 - Electrostatic filters
14. Filters G4
15. Electric fan (supply-return)
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
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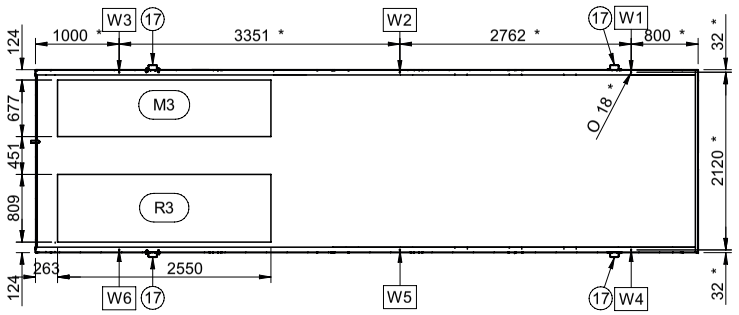
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(M3) Downward air supply
(M5) Vertical air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position

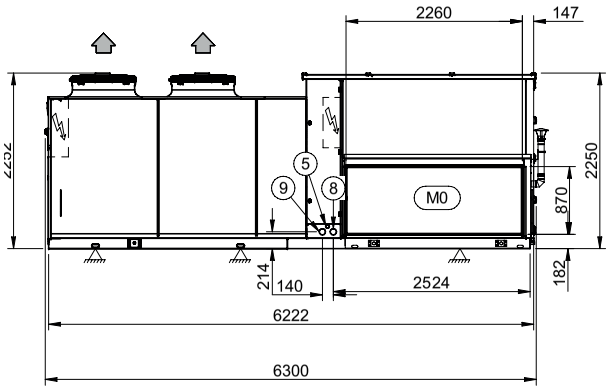


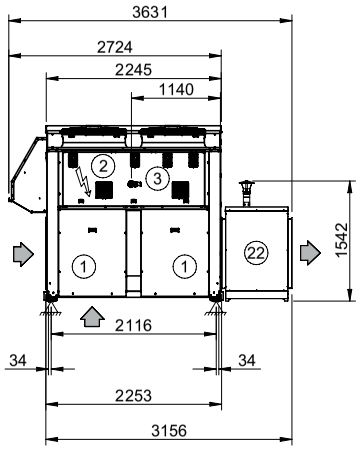
SEZIONE A-A

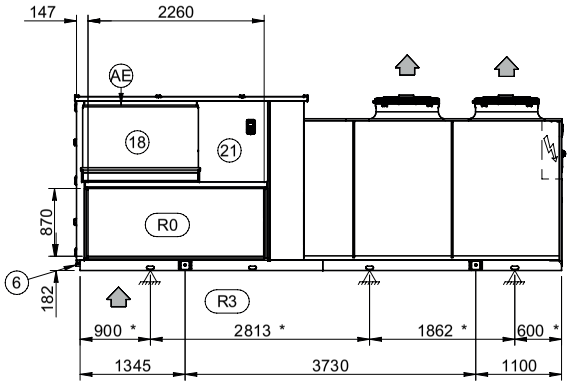
WEIGHT DISTRIBUTION

SIZE		90.4	90.4	100.4	100.4	120.4	120.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	569	558	569	558	640	628
W2 Support point	kg	686	767	686	767	734	815
W3 Support point	kg	582	603	582	603	576	597
W4 Support point	kg	541	529	541	529	598	586
W5 Support point	kg	691	782	691	782	740	831
W6 Support point	kg	467	490	467	490	461	484
Operation weight	kg	3536	3728	3536	3728	3750	3942
Shipping weight	kg	3536	3728	3536	3728	3750	3942

Optional accessories may result in a substantial variation of the weight show in table







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4. Power input
5. Humidifier connections 1/2"M
6. Condensate drain with siphon
7. Functional clearances
8. Heating coil inlet H_2O Ø 2"
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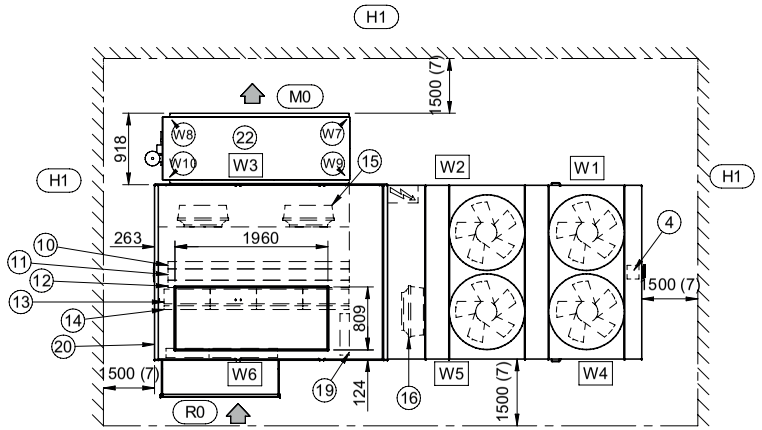
11. Treatment coil
12. Heating coil H_2O
13. Filters F7 - Filters F9 - Electrostatic filters
14. Filters G4
15. Electric fan (supply-return)
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
18. Fresh air damper
19. Over pressure damper discharge (CCK REVO Version)
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied
22. Gas module (be connected to the unit a pose in operations)

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position



WEIGHT DISTRIBUTION

SIZE		60.4	60.4	70.4	70.4	80.4	80.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	413	407	423	417	423	417
W2 Support point	kg	495	530	506	541	506	541
W3 Support point	kg	451	458	450	457	450	457
W4 Support point	kg	409	392	419	402	419	402
W5 Support point	kg	474	575	483	584	483	584
W6 Support point	kg	363	383	362	383	362	383
Operation weight	kg	2605	2745	2643	2783	2643	2783
Shipping weight	kg	2605	2745	2643	2783	2643	2783

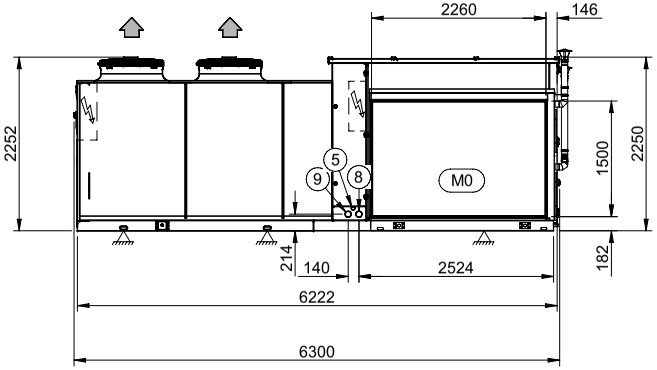
Optional accessories may result in a substantial variation of the weight show in table

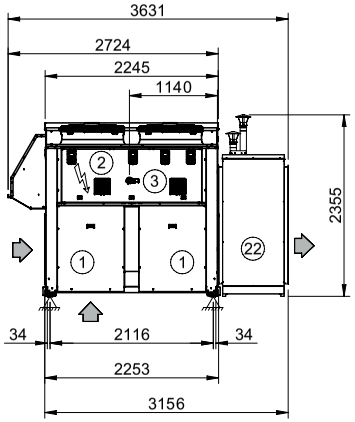
GAS MODULE WEIGHT DISTRIBUTION

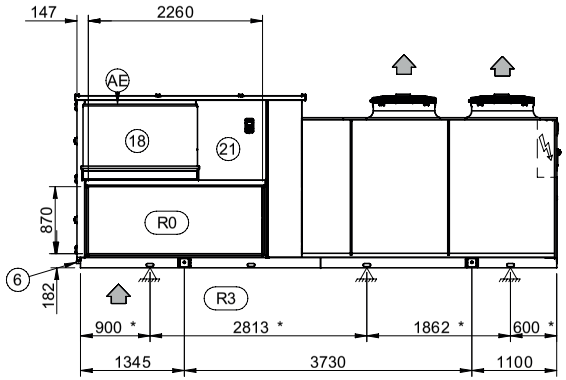
SIZE		60.4 - 70.4 - 80.4
W7 Support point	kg	85
W8 Support point	kg	75
W9 Support point	kg	75
W10 Support point	kg	85
Operation weight	kg	320
Shipping weight	kg	320

Dimensional drawings

Size 60.4 - 70.4 - 80.4 CAK / CBK / CBK-G / CCK-REVO with gas module GC13X - GC06X







1. Compressor compartment
2. Electrical panel
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7. Functional clearances
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12. Heating coil H_2O
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14. Filters G4
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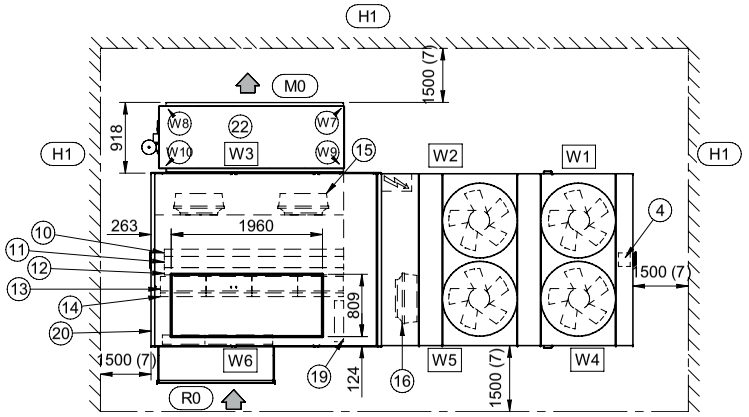
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
18. Fresh air damper
19. Over pressure damper discharge (CCK REVO Version)
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied
22. Gas module (be connected to the unit a pose in operations)

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position



WEIGHT DISTRIBUTION

SIZE		60.4	60.4	70.4	70.4	80.4	80.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	413	407	423	417	423	417
W2 Support point	kg	495	530	506	541	506	541
W3 Support point	kg	451	458	450	457	450	457
W4 Support point	kg	409	392	419	402	419	402
W5 Support point	kg	474	575	483	584	483	584
W6 Support point	kg	363	383	362	383	362	383
Operation weight	kg	2605	2745	2643	2783	2643	2783
Shipping weight	kg	2605	2745	2643	2783	2643	2783

Optional accessories may result in a substantial variation of the weight show in table

GAS MODULE WEIGHT DISTRIBUTION

SIZE		60.4 - 70.4 - 80.4
W7 Support point	kg	145
W8 Support point	kg	100
W9 Support point	kg	145
W10 Support point	kg	400
Operation weight	kg	490
Shipping weight	kg	490

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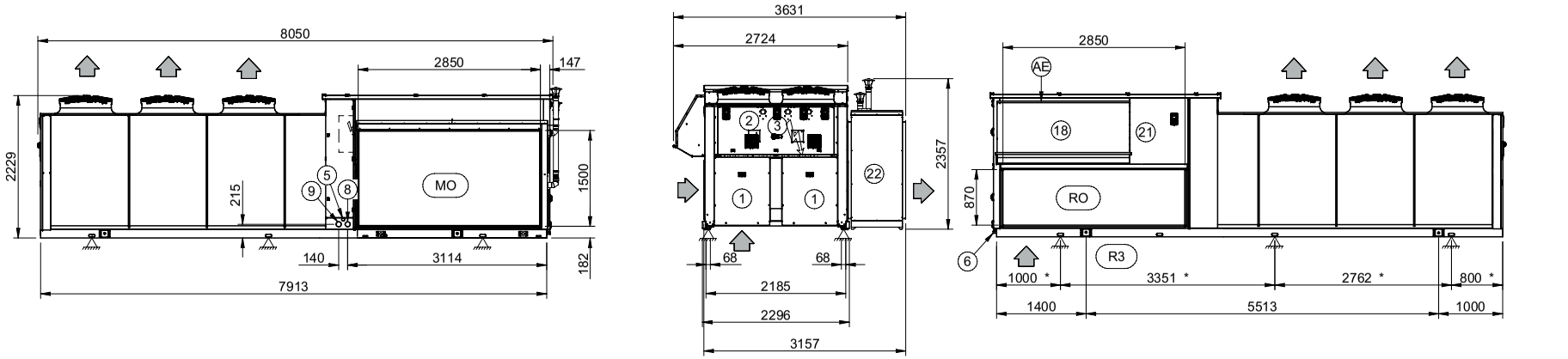

1. Compressor compartment
2. Electrical panel
3. Connector for keyboard or PC connection
4. Power input
5. Humidifier connections 1/2"M
6. Condensate drain with siphon
7. Functional clearances
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11. Treatment coil
12. Heating coil H_2O
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14. Filters G4
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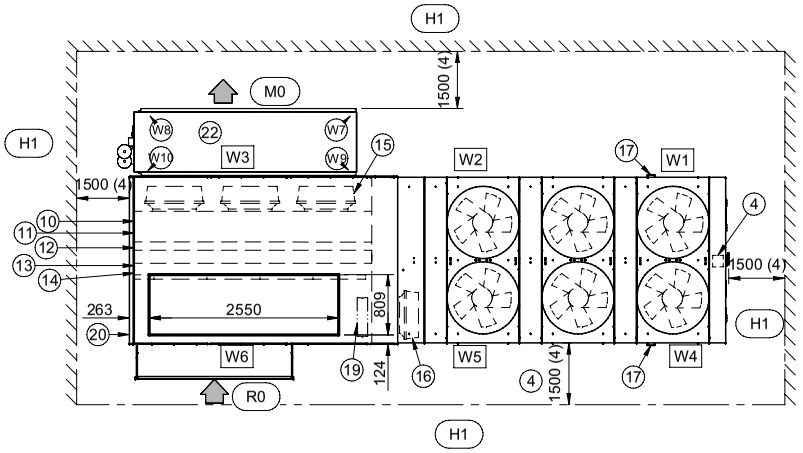
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
18. Fresh air damper
19. Over pressure damper discharge (CCK REVO Version)
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied
22. Gas module (be connected to the unit a pose in operations)

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position



WEIGHT DISTRIBUTION

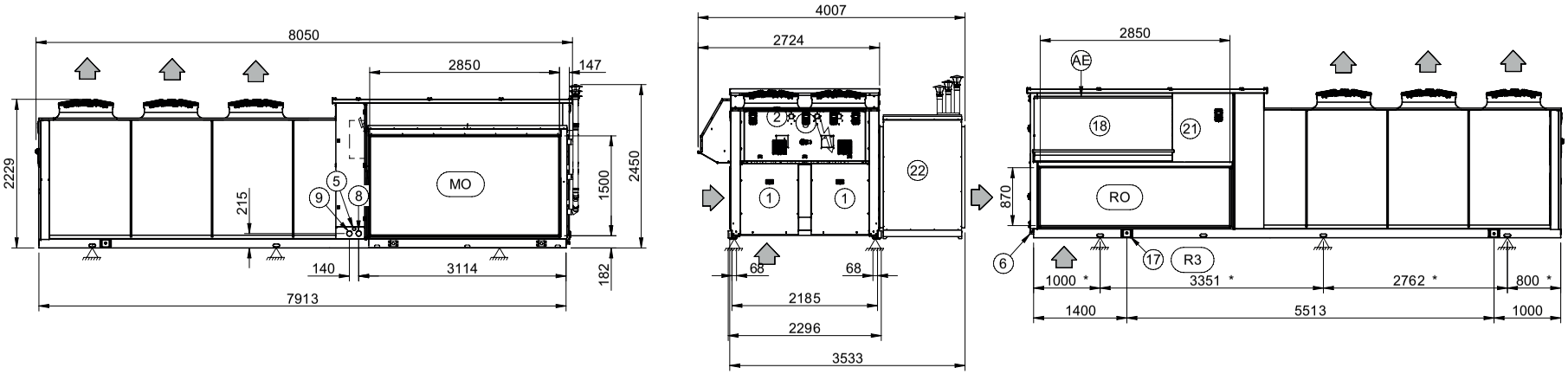
SIZE		90.4	90.4	100.4	100.4	120.4	120.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	569	558	569	558	640	628
W2 Support point	kg	686	767	686	767	734	815
W3 Support point	kg	582	603	582	603	576	597
W4 Support point	kg	541	529	541	529	598	586
W5 Support point	kg	691	782	691	782	740	831
W6 Support point	kg	467	490	467	490	461	484
Operation weight	kg	3536	3728	3536	3728	3750	3942
Shipping weight	kg	3536	3728	3536	3728	3750	3942

Optional accessories may result in a substantial variation of the weight show in table

GAS MODULE WEIGHT DISTRIBUTION

SIZE		90.4 - 100.4 - 120.4
W7 Support point	kg	110
W8 Support point	kg	155
W9 Support point	kg	110
W10 Support point	kg	155
Operation weight	kg	530
Shipping weight	kg	530

Size 90.4 - 100.4 - 120.4 CAK / CBK / CBK-G / CCK-REVO with gas module GC07X



1. Compressor compartment
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6. Condensate drain with siphon
7. Functional clearances
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12. Heating coil H_2O
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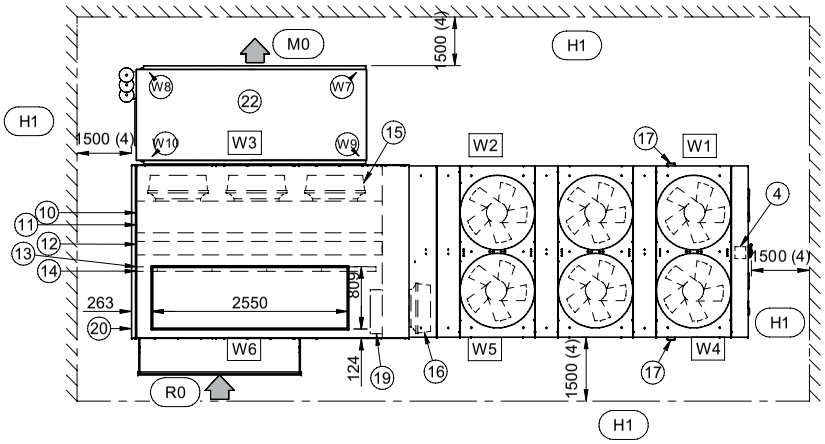
14. Filters G4
15. Electric fan (supply-return)
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
18. Fresh air damper
19. Over pressure damper discharge (CCK REVO Version)
20. Coil-filters-heaters inspection
21. Outdoor air return cap, accessory disassembled supplied
22. Gas module (be connected to the unit a pose in operations)

(RO) Horizontal air return
(R3) Downward air return
(M0) Horizontal air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position



WEIGHT DISTRIBUTION

SIZE		90.4	90.4	100.4	100.4	120.4	120.4
Configuration		CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO	CAK/CBK/ CBKG	CCK-REVO
W1 Support point	kg	569	558	569	558	640	628
W2 Support point	kg	686	767	686	767	734	815
W3 Support point	kg	582	603	582	603	576	597
W4 Support point	kg	541	529	541	529	598	586
W5 Support point	kg	691	782	691	782	740	831
W6 Support point	kg	467	490	467	490	461	484
Operation weight	kg	3536	3728	3536	3728	3750	3942
Shipping weight	kg	3536	3728	3536	3728	3750	3942

Optional accessories may result in a substantial variation of the weight show in table

GAS MODULE WEIGHT DISTRIBUTION

SIZE		90.4 - 100.4 - 120.4
W7 Support point	kg	165
W8 Support point	kg	190
W9 Support point	kg	165
W10 Support point	kg	190
Operation weight	kg	710
Shipping weight	kg	710

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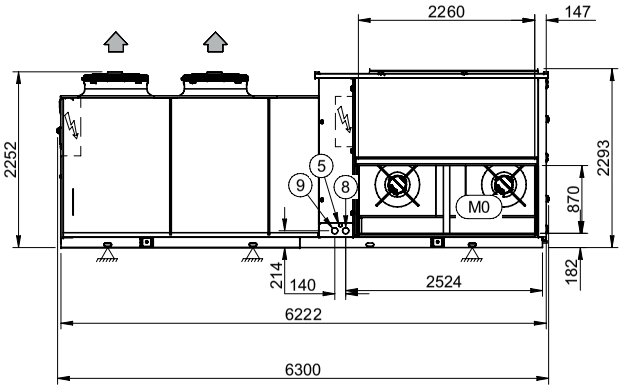

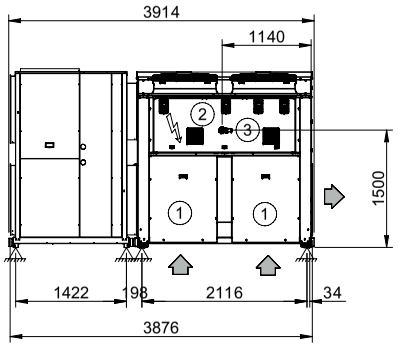

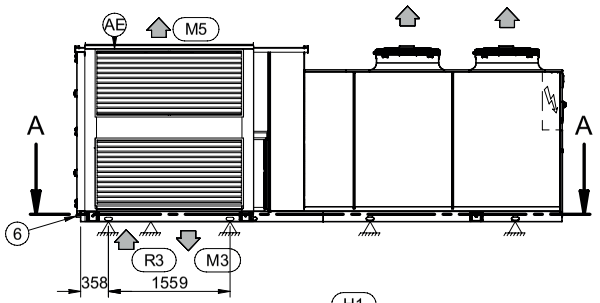

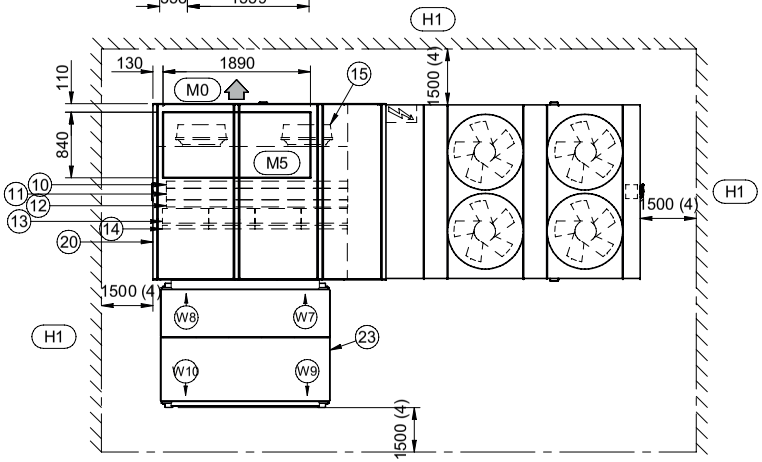

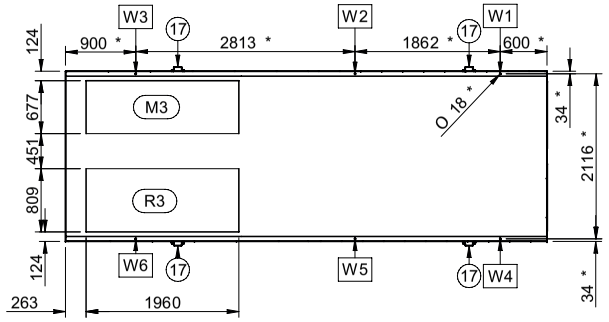

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13. Filters F7 - Filters F9 - Electrostatic filters
14. Filters G4
15. Electric fan (supply-return)
16. Discharge fun (CCK REVO version)
17. Liftin bracket (Removable)
20. Coil-filters-heaters inspection
23. Enthalpy wheel

(R3) Downward air return
(M0) Horizontal air supply
(M3) Downward air supply
(M5) Vertical air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position

SEZ A-A

WEIGHT DISTRIBUTION

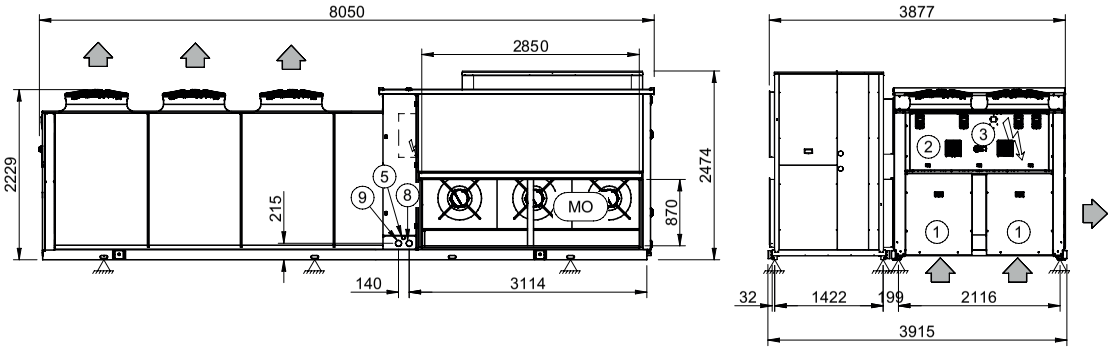
SIZE		60.4	70.4	80.4
Configuration		CBK-G	CBK-G	CBK-G
W1 Support point	kg	413	423	423
W2 Support point	kg	495	506	506
W3 Support point	kg	451	450	450
W4 Support point	kg	409	419	419
W5 Support point	kg	474	483	483
W6 Support point	kg	363	362	362
Operation weight	kg	2605	2643	2643
Shipping weight	kg	2605	2643	2643

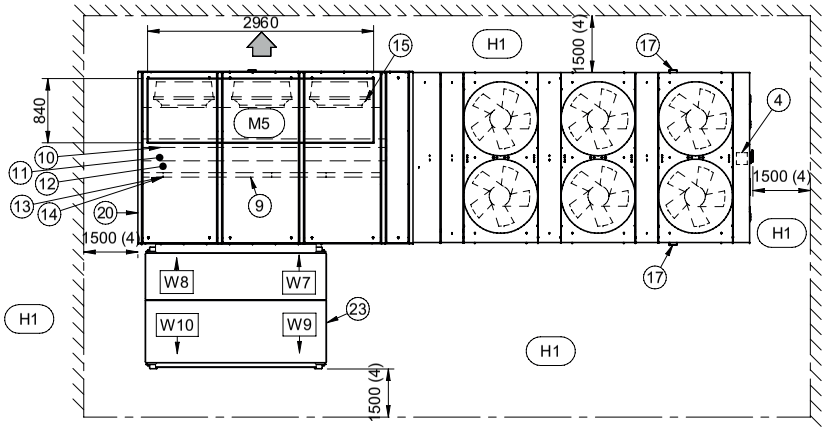
WEIGHT DISTRIBUTION - ROTARY RECOVERY MODULE

SIZE		60.4 - 70.4	80.4
W7 Support point	kg	176	186,5
W8 Support point	kg	176	186,5
W9 Support point	kg	176	186,5
W10 Support point	kg	176	186,5
Operation weight	kg	704	746
Shipping weight	kg	704	746

Optional accessories may result in a substantial variation of the weight show in table

Dimensional drawings





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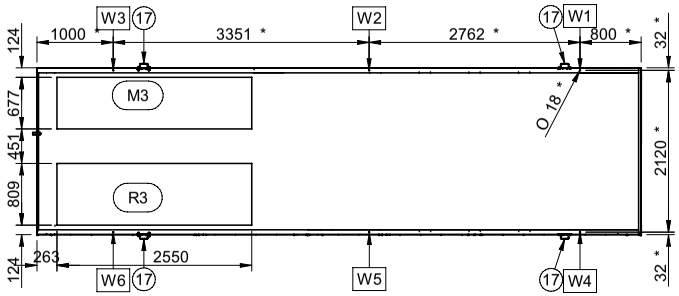
23. Enthalpy wheel

(R3) Downward air return
(M0) Horizontal air supply
(M3) Downward air supply
(M5) Vertical air supply
(AE) Outdoor air return (CBK / CBK-G / CCK-REVO version)
(H1) Wall with same height as unit on a maximun of three sides
(*) Vibration mounts position



SEZIONE A-A

WEIGHT DISTRIBUTION

SIZE		90.4	100.4	120.4
Configuration		CBK-G	CBK-G	CBK-G
W1 Support point	kg	569	569	640
W2 Support point	kg	686	686	734
W3 Support point	kg	582	582	576
W4 Support point	kg	541	541	598
W5 Support point	kg	691	691	740
W6 Support point	kg	467	467	461
Operation weight	kg	3536	3536	3750
Shipping weight	kg	3536	3536	3750

WEIGHT DISTRIBUTION - ROTARY RECOVERY MODULE

SIZE		90	100.4 - 120.4
W7 Support point	kg	196	204
W8 Support point	kg	196	204
W9 Support point	kg	196	204
W10 Support point	kg	196	204
Operation weight	kg	784	816
Shipping weight	kg	784	816

Optional accessories may result in a substantial variation of the weight show in table

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