

APPLICATION GUIDE

Flexair

by **LENNOX**

FAC - FAG - FAH - FAM

Air cooled rooftop packaged unit

85 → 230 kW



FLEXAIR-AGU-1605-E

FLEXAIR

APPLICATION GUIDE

Ref : FLEXAIR-AGU-1605-E

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Product designed and manufactured under quality management systems certified ISO 9001 and ISO 14001.



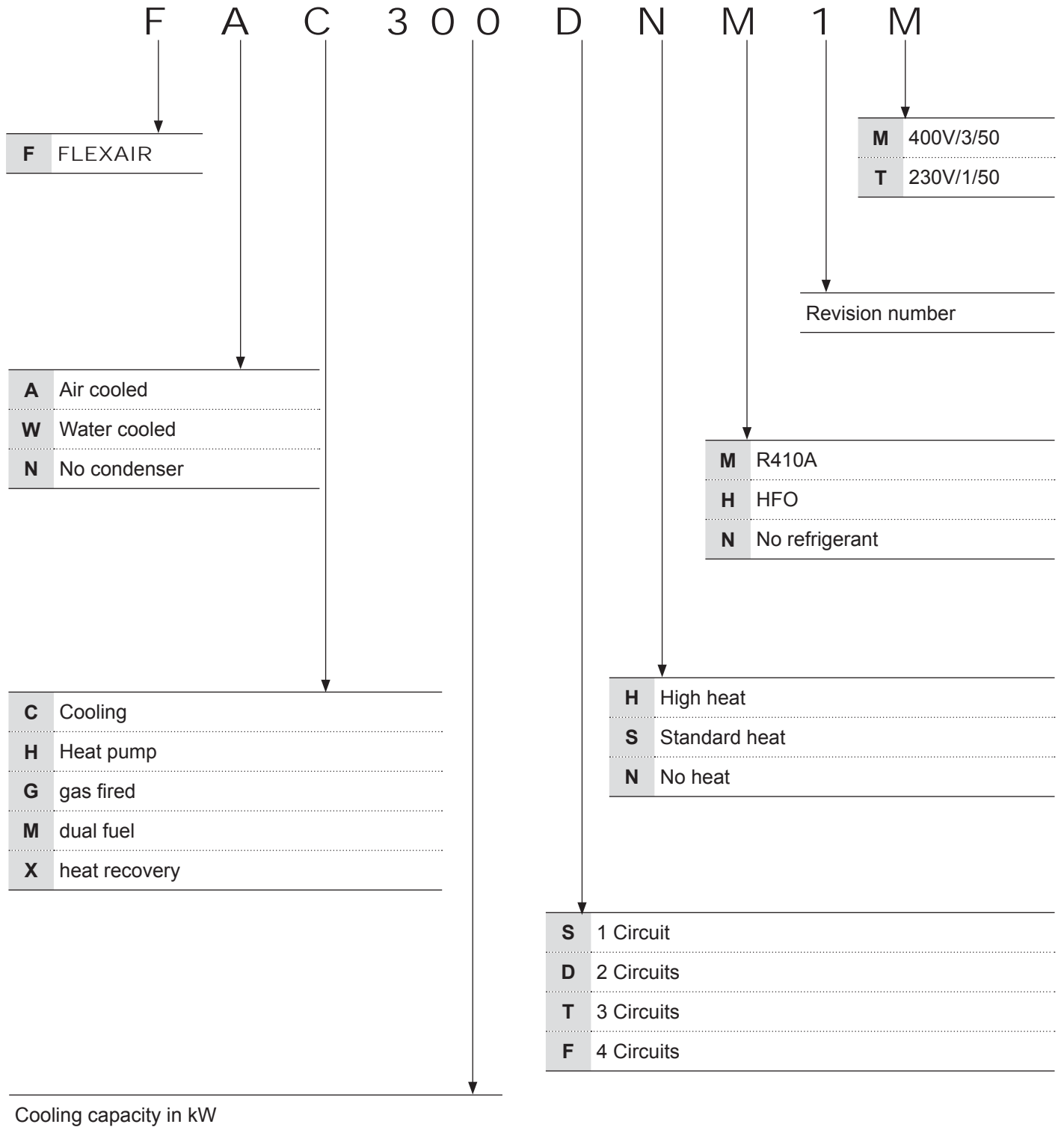
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Our company's products comply with European standards.

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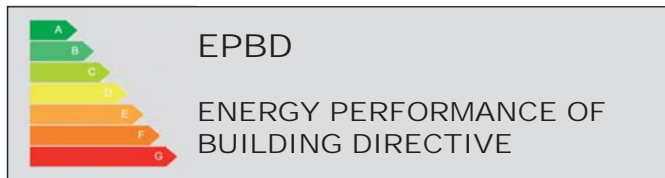
EXAMPLE :



SUSTAINABLE ENERGY DEVELOPMENT CHALLENGES

Faced with challenges relating to competitiveness and climate change, Europe has launched several initiatives for an intelligent energy strategy.

New regulations reflect the European Union's commitments on climate change and its determination to reach 20% efficiency improvement in buildings by 2020.



One of the major requirements of the new EPBD is to set Energy Certificates for buildings which grade the energy efficiency based on the building annual energy consumption. Soon companies will have to display their energy certificates to the public.

THE EXPERIENCE & COMMITMENT OF THE EUROPEAN LEADER TO DRIVE CONTINUOUS ENERGY SAVINGS

Lennox contribution to combat rising energy costs and global warming is to design innovative, efficient and dependable products, while providing best comfort and air quality.

As a major player in the European HVAC market, Lennox is a reference in sustainable development and has been assembling its products in ISO-14001 certified factories since 2007.



eComfort illustrates Lennox commitment towards energy efficiency and environmentally friendly solutions.

Like any other Lennox Rooftop unit, **FLEXAIR** is Eurovent certified.



LENNOX : THE BEST LIFE CYCLE COST IN THE MARKET

FLEXAIR provides the best life cycle cost thanks to high energy efficiency and reduced set up time and maintenance costs.

Low Energy consumption

- For a packaged air conditioner, 90% of the CO2 emissions are indirect emissions caused by the energy consumption.
- 35% energy savings with **FLEXAIR** when compared to a standard rooftop installed on a retail building.
- Innovative solutions for long lasting energy savings:
 - . eDrive Direct transmission variable speed ventilation system
 - . Advanced refrigeration system with multiscroll R410A compressor assemblies, electronic expansion valves, extended heat exchange surface area, alternate and dynamic defrost cycles.
 - . Fresh air and free cooling management.
 - . Optimized operation with eClimatic



Reduced maintenance Costs

- Fully factory tested plug and play packaged system.
- eDRIVE direct transmission plug-fan with zero maintenance and airflow measurement with eFlow.
- eClimatic, eClimatic Wizard, unit remote management and supervision through GPRS with ADALINK Service.

Better recycling management

- Unit assembled in an ISO14001 certified facility.
- Refrigerant R410A to reduce refrigerant charge.
- Reduced material usage with compact packaged design.



1.1 -GENERAL FEATURES

FLEXAIR range constitutes a packaged solution, easy to deliver and quick to install on the roof.

Operating range shall be between 46°C and minus 12°C with 4 versions : cooling, heating, cooling with gas burner or dual heat (heating with gas burner). All units are factory assembled, internally wired, fully charged with refrigerant, and 100% run-tested before leaving the factory.

EC FANS TECHNOLOGY

FLEXAIR units are fitted with EC fans as standard, the variable speed option will save energy and reduce maintenance costs.

HIGH INDOOR AIR QUALITY

Filtration

FLEXAIR offers different filtration levels, ensuring the minimum pressure drop.

The unit is fitted with EU3 filters as standard, but it can be configured with :

- G4 filters
- G4+F7 filter option / efficiency > 85% / 0,4 µm particles

Free cooling

Some times the thermodynamic cooling can be replaced by free cooling by introducing cold outside air into the building.

FLEXAIR saves energy with automatic calibration of fresh air :

- Intelligent Fresh Air Management (patent 03 50616)
- Motorised fresh air damper with enthalpy control (option)
- CO2 sensor to adjust the percentage of fresh air to the Indoor Air Quality (option)

eClimatic ADVANCED CONTROLLER

eClimatic is the new generation controller that improves efficiency and helps set up and service operations to guarantees long lasting performance

HEAT RECOVERY SOLUTIONS

FLEXAIR range includes a heat recovery wheel to recovery energy from the extraction air

This heat recovery wheel is fitted in a separated module to be installed on site

1.2 -CASING

FLEXAIR indoor section is built with precoated galvanized steel panels painted in RAL 9003 color, specially designed for corrosion resistance and to ensure long operation life time. Double skin can be demanded as an option.

Condensing section mounted in a rigid base frame to ensure good support for compressors and giving rigidity to the complete structure.

1.3 - ADVANCED REFRIGERANT CIRCUIT

FLEXAIR presents the most advanced design in the refrigerant pipes, optimizing pipe length and at the same time giving the best access for service and maintenance operations.

The exchangers have been specially designed by Lennox for R410A operation, this copper tube and aluminum fins exchangers have been tested to give the best heat transfer and the best energy ratios.

The refrigeration circuit is responsible for up to 40% of the annual energy consumption of a typical packaged air conditioning unit.

FLEXAIR features high efficiency, environmentally friendly refrigeration circuits with multiscroll R410A compressors, electronic expansion valves and optimized heat exchange surface area.



SAVING ENERGY WITH ADVANCED REFRIGERATION CIRCUIT DESIGN

R410A refrigerant

Efficient systems such as **FLEXAIR** are designed around R410A refrigerant to achieve the best performances.

- Energy efficient refrigerant thanks with pressure drop in the pipes: Higher evaporating pressure and lower condensing pressure improve compressor EER & COP.
- R410A compressors have a better isentropic efficiency.
- Environmentally friendly refrigerant: It contains No Chlorine (ODP=0). Significant refrigerant charge reduction (-40%) that limits the global warming potential of the system. R410A optimized heat exchangers use less material (copper, aluminum ...)



1.4 MULTISCROLL COMPRESSOR TECHNOLOGY

FLEXAIR units are provided with tandem compressors, to profit from the multiscroll compressor technology and giving the highest seasonal performance and the best SEER coefficients.

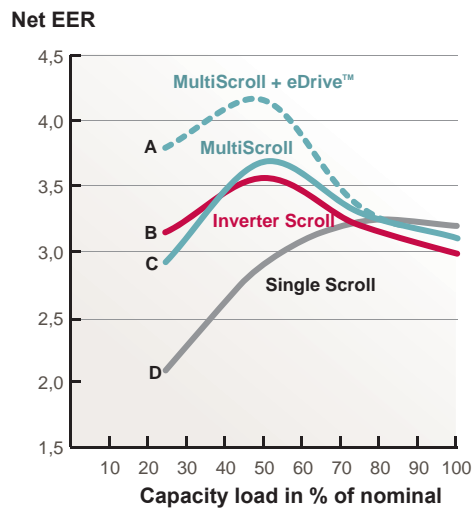
High efficiency multiscroll technology

Air conditioning equipments are sized to cover the need for the most critical weather conditions which most likely will occur only a few days or even a few hours during the year.

Most of the time, in Europe, the external temperature drops below the reference value and consequently systems usually run 96% of the time at part load. It is therefore important to design system around part load performance to achieve the lowest possible annual energy consumption.

FLEXAIR provides high efficiency and best possible part load efficiencies year round with high efficiency multiscroll R410A compressor technology.

Evolution of the net EER with varying capacity load



- | | |
|-------------------------------|------------------------|
| A Multiscroll + eDRIVE | C Multiscroll |
| B Inverter scroll | D Single scroll |

Source: PERSAPAC Study by Cetiat, Eurovent, Armine & EDF
Lennox Europe Laboratory comparative testing on rooftops

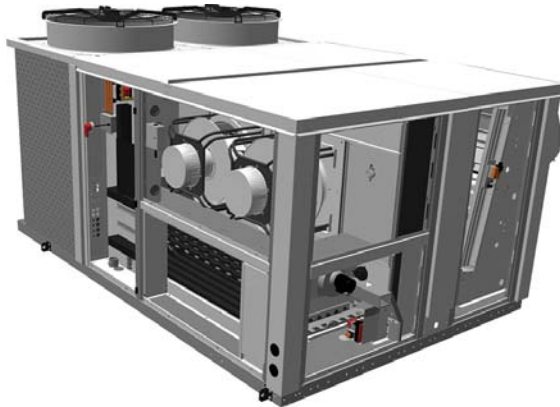
1.5 ELECTRONIC EXPANSION VALVES

Multiscroll™ compressor technology with electronic expansion valves allows energy consumption reduction when compared to “inverter” solutions:

- Multiscroll compressors are always running at their best nominal operating conditions whereas compressors with inverter control usually run at 90 Hz for nominal point down to 30 Hz for low capacities.
- Energy consumption due to inverter electronics for speed variation can reduce efficiency by up to 5%.
- Multiscroll compressor assemblies optimize heat exchanger usage during part load operation. For example, with 50% capacity load, a **FLEXAIR** would only start one compressor on each circuit. The running compressors would then benefit from the whole heat exchange surface area and the whole airflow rate: The EER is then increased to 4.5 in some cases.
- Multiscroll compressor assemblies improve operating limits giving the possibility to unload compressors providing cooling to the building even when the outdoor temperatures are very high. With unloading, **FLEXAIR** can operate and supply cooling operating one compressor with outdoor temperatures reaching 50°C.

The new electronic expansion valves are directly driven by the eClimatic and optimize the performances in both cooling and heating mode and provide reliable and accurate operation in all conditions all year round.

This model of electronic expansion valves ensures also smooth and precise control at low capacities for improved part load performances.



1.6 EC FANS IN SUPPLY AND EXTRACTION

EC fan technology offers the maximum efficiency together with the minimum power consumption. That's why **FLEXAIR** provides EC fans both in indoor and exhaust section.

FLEXAIR will adapt the fan pressure to the different conditions of the unit, and will provide high pressure available in the duct even when all the options have been selected.

The EC plug-fan technology allows:

- Adapting airflow at commissioning
- Varying airflow during unit operation providing progressive inflation of smooth /textile ductworks
- Easy maintenance operations, as there is not pulleys and belts regulation

eClimatic profits about this EC technology by:

- Monitoring the airflow in the service terminal
- Compensating the airflow if the filters are dirty
- Regulating the airflow to arrive to the desired set point temperature.

Optimize the air-flow to the load demand (reduce consumption when possible)

Condensing section mounted in a rigid base frame to ensure good support for compressors and giving rigidity to the complete structure.

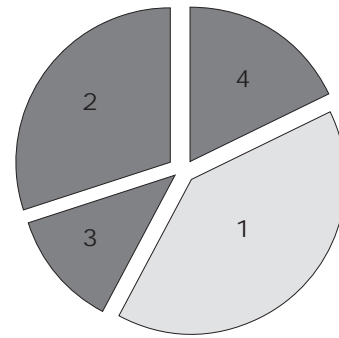
eDRIVE VENTILATION

eDRIVE is a standard feature of Lennox **FLEXAIR** units for ventilation with direct transmission, variable speed drives that saves energy and reduces maintenance costs.



SAVING ENERGY WITH eDRIVE VARIABLE SPEED, DIRECT DRIVE FAN.

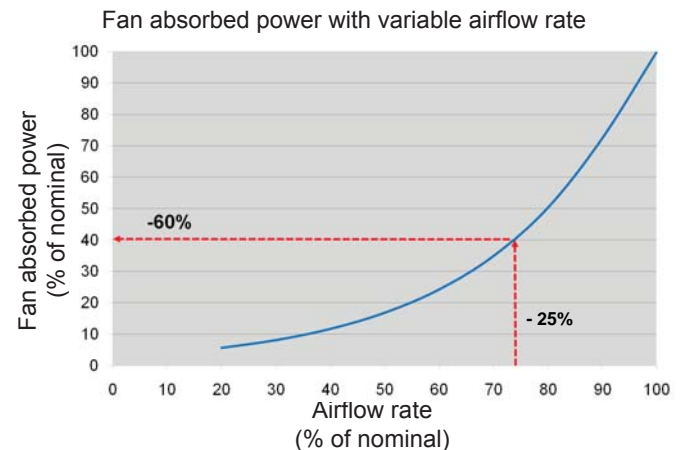
With a rooftop, the blower fan motor is one of the major contributors to annual energy consumption. Fans usually run 97% of the year at full speed to circulate the air inside the building. 42% of the annual energy consumption of an air conditioner is due to the fan motor, which can be more than compressors.



1	Annual compressor consumption	40 %
2	Annual consumption of other electrical systems	18 %
3	Remaining annual fan motor consumption	12 %
4	Energy savings thanks to eDRIVE	30 %

VARIABLE SPEED DRIVE

Airflow reduction during part load operation and dead zone can help save on energy consumption.



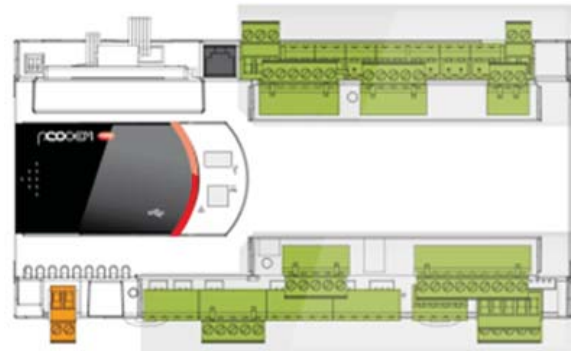
There is no need to reduce airflow rate too much to achieve important energy savings: For example reducing airflow rate by only 25% will save 60% on the fan motor energy usage.

- **FLEXAIR** integrates the new eDRIVE which automatically adjust airflow rate to the needs, saving up to 30% annual rooftop energy consumption.
- Airflow Rate can be easily adjusted to the exact needs, thanks to eFlow the airflow measurement and display system.
- eDRIVE will correct power factor to reduce current.
- eDRIVE integrates soft starter feature as standard, that will reduce inrush current during fan starts and makes the unit fully compatible with flexible ducts air diffusion systems.

1.7 eCLIMATIC NEW CONTROL

Our **FLEXAIR** range includes our New e-climatic control generation. The main features of this control are :

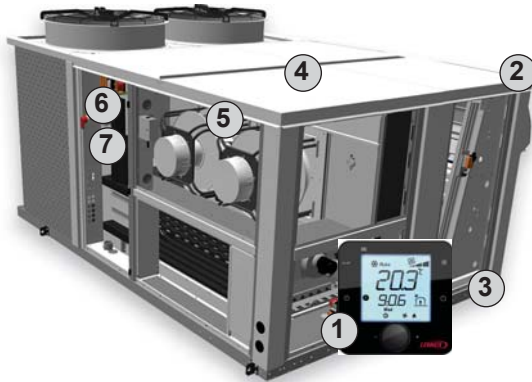
- Plastic cover to protect the circuit board from water entry and humidity and with all the different connection terminals correctly identified.
- Two independent buses, one for display and sensors connection and another one for internal components.
- Possibility of storing all parameterized conditions before an alarm is produced.
- Stronger hardware thanks to the plastic cover which protects the circuit board from water entry and humidity (and at the same time clearly identify all the different connection terminals)
- More reliable hardware thanks to the different communication buses for internal/main devices (compressors, fans, etc.) and for the remote/accessory ones (display, probes), which preserve the regular unit operation even in case of commissioning miswirings
- Enhanced Climatic™ regulation thanks to the better embedded processor and to the new Universal I/O chip, which allows to match better contacts, probes and relays to the controller board.
- Internal log memory to record unit operating trends (e.g. temperatures before alarm occurrence).



Three different platforms are available :

- End customer display DC: with basic configurations, set points, main temperature readings and alarms.
- Multiple display DM: graphic customer display with basic configuration of the end customer display plus schedule programming and set of fresh air %.
- Service display DS: Specially focused to maintain

OPTIMIZED OPERATION AND SETUP SAVES ENERGY



eClimatic is designed to provide the best efficiency throughout unit's lifecycle while ensuring reliable and consistent operation with user-friendly interfaces. This controller monitors more machine parameters than ever to improve energy efficiency and reliability

- 1 Indoor air temperature (humidity and CO2 levels as an option)
- 2 Outdoor air temperature (outdoor humidity as an option)
- 3 Return and supply air temperature
- 4 Filter pressure drop
- 5 Airflow rate with eFlow
- 6 Refrigerant pressures, temperatures & compressor monitoring
- 7 Power energy metering (option)

Refrigeration circuit efficiency management

Climatic control regulation

The Climatic controls the blowing air temperature to achieve the customer comfort in the most efficient way, matching perfectly the cooling/heating load with the optimum unit capacity staging (multiscroll compressors, heat recovery modules, freecooling, gas burners, water coils, etc.).

The unit reliability is ensured by a complete set of protections as compressor envelop control, air-flow and pressure drops check, advanced refrigerant leakage detection, compressor anti short cycling rules.

All these features are designed to optimize the unit performance, but at the same time to increase its life-time and make easier its maintenance.

Dynamic defrost:

It is a standard feature of all Lennox heat pumps. It limits the number and the duration of the defrost cycles in winter to maximize COP. With a smart and proprietary frost-detection system, the lennox rooftops automatically optimize the number and the duration of the defrost cycles to get the best units performances in every environmental conditions.

Free cooling:

It is one of the most important features of this rooftop as it maximise seasonal efficiency by reducing the use of thermodynamic cooling in mid season.

Intelligent fresh air management:

With accurate percentage of fresh air the dampers are regularly calibrated to introduce just the required amount of fresh air in the building to reduce annual energy consumption. The fresh air ratio can also be controlled using the indoor CO2 level as an input.

Intelligent heating priority optimization:

This unique feature on the market, allows the user to program the priority between the different heating elements (thermodynamic, electric pre-heaters or auxiliary heating). This is particularly interesting on dual fuel units or units with electrical pre-heaters. This feature maximizes energy efficiency by optimizing heat pump operation depending on the outdoor temperature.

Full Scheduling

Impressive energy savings can be done with a proper time-scheduling that optimizes the unit operation to the different load scenarios of each installation.

For that reason the Climatic offers a weekly-based calendar with up to 7 time-bands per day and 4 pre-set modes (Unoccupied, Day, Day 1, Day 2).

For each of this pre-set modes, plenty of unit settings can be optimized to the different moments of the day, for example during the unoccupancy periods the comfort setpoints could be relaxed, during the energy-cost peaks hours the hot water coils or gas burners could be preferred to compressor or electrical heaters, fresh-air introduction can be reduced to warm-up the building before customer arrival, etc.



1 Unoccupied mode



2 Day mode



3 Day1 additional mode



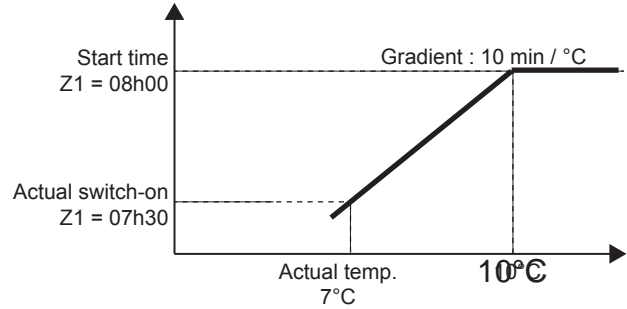
4 Day2 additional mode

Morning anticipation and dynamic set point

The unit can be programmed to switch-on in the morning to reach the occupied zone temperature set point just in time.

The rooftop will start heating the building at a different time in the morning depending on the outdoor temperature: The lower the outdoor temperature, the earlier the rooftop would start to ensure that the set point is reached by the time the first occupied zone (Z1) is starting. This is to avoid early start when outdoor temperature is mild.

Example for a unit programmed to anticipate morning switch-on if outdoor temperature is below 10°C at a rate of 10 minutes/°C.



Dynamic set point can be used in summer to offset the ambient temperature set point according to the outdoor temperature. This is to avoid large temperature difference between indoor and outdoor. The indoor temperature set point would then increase with the outdoor temperature improving comfort and saving large amount of energy.

Communication and unit interlink

Master/slave or cascade control is a standard feature of the FLEXAIR units. It can be used to connect up to 24 rooftops. The units can then be programmed to optimize efficiency and improve reliability following 6 different strategies

Multi rooftops regulation

In case of multi-rooftop installations, The Climatic control of each unit can improve the unit synergies and optimize the total air-conditioning performance, without any additional cost or external dedicated "Building Manager System", but just linking the units together (up to 8) in the same network and applying any of the following smart strategies::

1: Master Slave "total":

The master gives the ventilation order, its set point and its room temperature/humidity/CO2 to all other rooftops.

2: Master Slave "temperature":

The master gives the ventilation order and its room temperature/humidity/CO2 to all other rooftops, but they have their own set point.

3: Master Slave "average":

The master gives the ventilation order and the room temperature/humidity/CO₂ used by all rooftop is the average of all rooftop, each rooftop has its own set point.

4: Master Slave "cooling/heating":

All rooftop are stand-alone but the slaves have to have the same running mode as the master (Cooling or heating).

5: Master Slave "Back-up":

One rooftop is the back-up unit and will operate if any of the other rooftops is stopped due to a major problem.

6: Rolling Back-up mode:

Same as above, except the "back-up" unit will change once a week on Tuesday.

Note that, the outside temperature/humidity/CO₂ given to all rooftops can either be the average of all unit connected or the external humidity/temperature of the master, allowing the use of a single "weather station" for the whole site.

Faults and alarms

eCLIMATIC manages more than 90 different faults and alarms codes and can store the last 32 with time and date. The stored faults and alarms can then be displayed on the DS service display and on the communication bus with the full text detail.

1.8 - CONSTRUCTION, INSTALLATION AND SERVICE

UNIT CONSTRUCTION

FLEXAIR by Lennox is assembled with the highest standards of quality.

FLEXAIR units comply with the PED 97-23 and EN 60204 standard. It is manufactured in ISO 9001 and ISO 14001 factories.

This construction guarantees high corrosion resistance and lower the weight impact, also ensuring that the air leakages are reduced to the minimum. To improve the resistance to anticorrosion, the panels are prepainted in RAL 9003.

TRANSPORT AND HANDLING

To facilitate handling of the unit and minimize the risk of damage, **FLEXAIR** units are provided with lifting lugs located in the base frame of the unit.



For transport and handling, the units are wrapped in a retractable plastic protection

PLUG AND PLAY UNIT

All options are factory installed on the unit, which means that they are ready for use, optimizing the time spent on site for the installation. Bottom entry (through the base) for electrical power and hot water (if option fitted) lines are available as standard. To make installation easier, **FLEXAIR** power supply does not require "neutral" connection. It is powered by 400 V, 3 phases, 50 Hz.

Circuit breakers

To improve safety and extend life time, circuit breakers protect against over-loading, over current and a disconnected supply phase. Maintenance is also improved as there is no requirement to change fuses. The electrical panel is manufactured in accordance with EN60204 electrical directive.

Numbered wires

All wires and connectors are numbered as shown on the electrical drawing to facilitate maintenance and diagnostic

Main disconnect switch

The main switch is used as an emergency cut off.

It is mandatory to guarantee a proper accessibility to this switch. Specific footbridges must be installed if the machine environment is requiring it.

Main disconnect switch is lockable to increase safety around the rooftop unit.

Switching off the unit with the disconnect switch will reset all. Disconnect switch will be sized accordingly to the options picked with the unit.

EASY ACCESS TO THE UNIT COMPONENTS

In **FLEXAIR** we keep the accessibility of all the components to the indoor unit, as well as all the internal refrigerant components

1.9 INDOOR AIR QUALITY

FILTERS

As standard the unit comes with EU3 filters
We can increase the capacity of filtration with an option of G4 and an option of G4+ F7, to arrive offering an average arrestance of synthetic dust above 90% (according to EN779:2012).

DOUBLE SKIN PANEL

As an option, indoor unit of **FLEXAIR**, can be provided by a double skin panel, to avoid the carrying of insulation particles inside the building (25mm of thickness).

EC FANS VENTILATION SYSTEM

FLEXAIR is fitted with EC fans as standard, ensuring that no belt particles can be carried away into building .This ventilation system is compliant with EN 13977 air quality norm.

ANALOGUE FILTER DETECTION

Thanks to this sensor, the filter presence and the proper fan operation is ensured by a pressure drop above the minimum threshold, and at the same time the filter dirtyness is identified by a pressure drop above the maximum threshold.

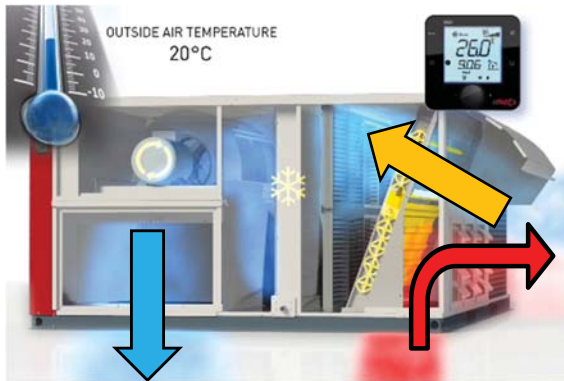
REMOVABLE ALUMINIUM DRAIN PAN

All units are equipped with a sloped removable drain pan in aluminum which can be removed for maintenance, preventing the growth of bacteria an algae in the drain pan.



1.10 FRESH AIR AND FREE COOLING SYSTEM

Freecooling system is a standard feature for all Lennox rooftops, with a two sections damper made in aluminum, and connected with a proportional servomotor commanded by the control e-climatic .



New buildings that comply with EPBD will have good thermal insulation with high internal loads and will require cooling even when outdoor temperatures are low. Managing fresh air is mandatory in a building to control CO2 level and comfort.

Fresh air management and Free Cooling are standard features of **FLEXAIR** that can reduce annual energy consumption.

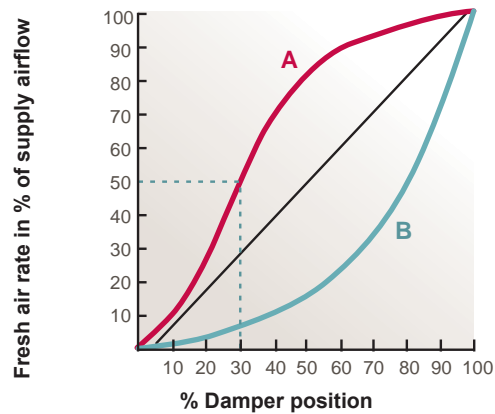


SAVING ENERGY WITH FRESH AIR & FREE COOLING

- Thermodynamic cooling can be replaced by Free Cooling when outdoor temperature is below the building set point saving up to 15% on annual energy consumption.
- Introducing just the required amount of Fresh Air in a building can reduce energy consumption.

Because a fresh air damper curve is not linear, it is not accurate to assume that the percentage of opening of the damper is equal to the percentage of fresh air entering the building. However, this linear control of a damper is by far the most used in the industry

With Indoor air quality and running cost of a building being more important to our customer, **FLEXAIR** can manage the percentage of fresh air more accurately.



Curve A : ΔP return ducts > Fresh air: Too much fresh air

Curve B : ΔP return ducts < Fresh air: Not enough fresh air

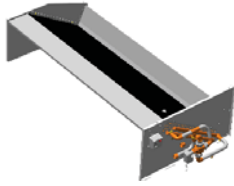
If the pressure drop in return air duct is high, the amount of fresh air actually introduced in the building can be higher than required. This extra fresh air will have to be cooled in summer and heated in winter, increasing energy consumption of the system.

FLEXAIR will periodically recalibrates fresh air dampers to ensure just the required amount of fresh air is introduced in the building. This recalibration is achieved using the return air, outdoor air and supply air sensors.

2.1 AUXILIARY HEATING OPTIONS

HOT WATER COILS

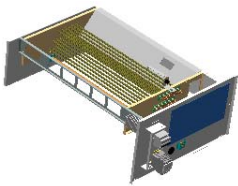
A water coil made of copper pipe and aluminum fins can be installed to answer heating requirements. This water coil can, for example, be connected to a boiler or a heat pump. Two sizes of water coils are proposed to cope with the cooling and heating requirements. The water coil is equipped with a 3-way valve.



To check the different capacities of the water coils, please refer to the section "Heating auxiliary performances" of this application guide.

The hot water coil are protected from freezing by the Climatic, through low environment protections based on low supply and external temperatures, which activates safety procedures (cvc pump starts, valve opening or return air damper opening).

ELECTRIC HEATER



The auxiliary electric heater is made of shielded resistance heaters, which are smooth 6 W/cm² resistances. The heater is protected against high temperature with a thermal overload protection set at 90°C 150mm after the heating elements.

For any rooftop unit size, two sizes of electric heater are available as option, S (standard) and H (high).

F Box: 85 to 120 Kw

Standard heat : 30 kW, 2 stages
 Medium heat : 54 kW, fully modulating (Triac)
 High heat : 72 kW, fully modulating (Triac)

G Box: 150 and 170 kW

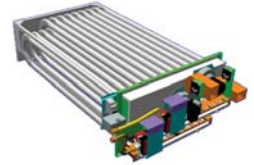
Standard heat : 45 kW, 2 stages
 Medium heat : 72 kW, fully modulating (Triac)
 High heat : 108 kW, fully modulating (Triac)

H Box: 200 and 230 kW

Standard heat : 72 kW, 2 stages
 Medium heat : 108 kW, fully modulating (Triac)
 High heat : 162 kW, fully modulating (Triac)

GAS BURNER

FLEXAIR FAM and FAG units are fitted with a gas burner. It is a safe and reliable atmospheric gas burner made of aluminized steel tube heat exchanger designed to offer maximum heat transfer and 92% efficiency (PCI%). It runs with natural gas 20 mbar and an operating range of 13-26 mbar.



The standard gas module offers 2 stages of control which helps in improving space comfort by avoiding large supply air temperature deviations.

If required, an expansion device can be provided with the unit allowing it to operate with gas pressures of up to 300 mbar.

Gas fired rooftop cannot be installed inside a technical room.

F Box: 85 to 120 Kw

Standard heat (2 stages): 60 kW
 High heat (4 stages): 120 kW

G Box: 150 and 170 kW

Standard heat (2 stages): 120 kW
 High heat (4 stages): 180 kW

H Box: 200 and 230 kW

Standard heat (2 stages) : 180 kW
 High heat (4 stages): 240 kW

2.2 HEAT RECOVERY OPTIONS

FLEXAIR RECOVERY ON EXHAUST AIR (HEAT RECOVERY WHEEL)

To match Lennox commitment to a greener planet and to generate **FLEXAIR** savings **FLEXAIR** by Lennox can be equipped with one system to recover **FLEXAIR** from the extraction air.

Ideal for climates in which the difference between the outdoor temperature and the extraction air temperature is high. This new hybrid rotary wheel will generate very high sensible but also latent transfer.

Fresh air entry is protected with G4 filter.



2.3 FILTRATION OPTIONS

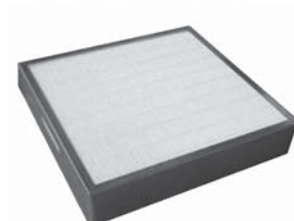
FLEXAIR offer several different levels of filtration that will allow coping with every application and any level of filtration demanded in the installation.

As standard the unit comes with EU3 filters

G4 filters, offered as standard can give an average arrestance of synthetic dust above 90% (according to EN779:2012).

As an option, Lennox can offer :

- G4 50 mm metallic frame with replaceable media, for those environments in which it is expected to change filters more frequently than usual.
- G4 50 mm + F7 100 mm with 90% opacimetric efficiency and low pressure drop.



2.4 ELECTRICAL OPTIONS

ENTHALPY CONTROL AND CO2 SENSOR

This option includes combined temperature and humidity sensors, to ensure that the economizer does not use 100% fresh air if the outside air has a higher enthalpy than the return air.

The CO2 sensor A VOC (Volatile Organic Component) detects the amount of CO2 in the ambient air between 0 and 2000PPM. (This obviously varies depending upon space occupancy levels). The VOC sensor sends a proportional signal (0-20mA) to the controller which will modulate the fresh air.

This option is highly recommended in commercial installations like restaurants, shops, etc., where the CO2 level strongly varies during the day (e.g. depending on the people occupancy). In these installations in fact the energy savings coming from the correct air-renewal air-flow management (depending on CO2 level) can definitively pay back this sensor cost in a very short time.

ENERGY METER

The **FLEXAIR** meter option is a device that measures and displays the following parameters:

- Average, total and maximum current, voltage and frequency for each phase.
- Active & reactive power.
- Power factor (Cosφ).
- Total active & reactive **FLEXAIR** consumption in Wh.

Values for **FLEXAIR**, current and absorbed power can be reset with password.

Some of these data will be collected by the controller and made available in the BMS tables for Modbus, BACnet and Trend protocols (not available for LonWorks).

3 PHASE CONTROL

This phase control device offers the guarantee of the correct phase connection, together with an overvoltage and under voltage protection.

FIRE DETECTOR

It is a thermostat that provides a signal to switch off the unit, close the fresh air damper and open the return damper when the temperature in the return air stream is above an adjustable set point (Factory setting: 70°C).

SMOKE DETECTOR

Located downstream of the filter, the optical head of the smoke detector can detect any type of smoke. When this occurs the unit will stop operating, the return air damper will be fully closed and the fresh air damper will fully open while sending an alarm signal to the unit.

In accordance with the European norm, it is also compliant with the French regulation on public buildings.



2.5 CONTROL OPTIONS

DC™ COMFORT DISPLAY



This is a remote controller for non-technical customer. It is designed to fit aesthetically inside a room and be very easy to use. It has a 24V supply to be connected to the rooftop and can be installed at maximum 30 meters away from the unit.

The graphical display gives information such as running mode of the unit, status of the fan, set point, % of fresh air, outside air temperature.

Customer can set the temperature set point for a given time zone, switch the unit "On" or "Off" and adjust the clock. DC can display fault codes with a reset possibility, ambient, supply and outdoor temperature, fresh air damper position (%), time zone and operating mode pictogram, heating or cooling status. It is also able to display supply fan airflow rate (0-33-66-100%) and component status for compressors, defrost, condenser fans and auxiliary heaters.

DC™ comfort display is equipped with a temperature sensor that can be used as room temperature sensor.

DM™ MULTI-ROOFTOP DISPLAY

This display gives access to more functionality than the DC™



and allows managing up to 8 rooftops on a single Bus-wire. Customer will be able to change the operating time zone and mode. The rooftops can be connected to operate on a Master/Slave principle. Installation up to 1000m from the unit.

DS™ SERVICE DISPLAY

This new plug and play service display and controller allows service personal to set up to read and modify all unit parameters (Unit settings, operating time and number of compressor starts, low and high pressure reading, airflow rate of supply fan, and read the history of last 32 faults...).

This controller has been designed to be very user friendly, with 6 different keys and graphic display. It includes scrolling menus and full text (no codes) explanation. It is available in English or another alternate language.



COMMUNICATION INTERFACES AND SUPERVISION:

The CLIMATIC ModBus interface is required to connect the unit to a BMS using "ModBus protocol". No other hardware than this board is required to have ModBus communication. One board required per rooftop. The ModBus interface is available in two versions to be connected with RS485 or TCP/IP depending on site requirements.

This board is also mandatory for any connection between one or several **FLEXAIR** units and Lennox ADALINK II, Lennox OneWeb, Lennox Cloud service 3G or LennoxVision supervision solutions. One BMS interface required per rooftop.

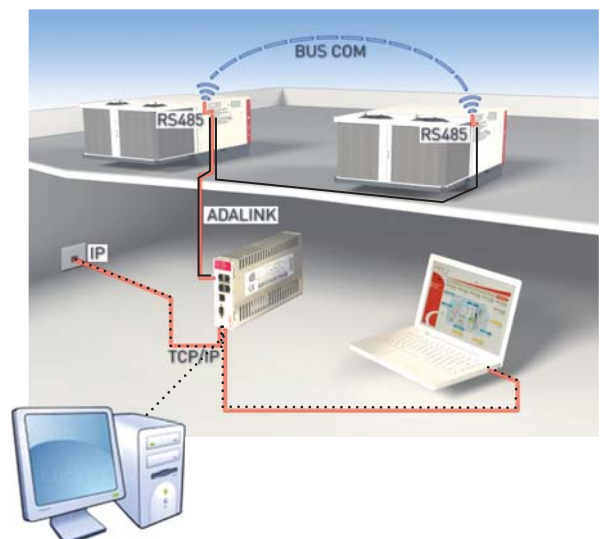
ADALINK II™

Adalink II™ is Lennox's simplest solution for HVAC installation supervision to better control the system and improve reliability and energy efficiency. One ADALINK II™ can control up to 32 Lennox units on the same site (Chillers, rooftop or any other unit using controller and above). It displays a site picture with the status of each unit and allows the user to change set points, access alarm history and plot charts. It is the ideal tool to save time and money on maintenance with an expert mode giving access to all the parameters and set point of the unit.

- Easy local management of important settings
- Possibility to create macro commands to simplify setting and better control the installation
- Easy scheduling by unit or by zone with a smart user friendly drag and drop system
- Preventive maintenance to reduce downtime and improve comfort and energy efficiency at all time.
- Remote connection via LAN or 3G
- Site maintenance planning

ADALINK II™ can also act as a real gateway to the unit, as it can be used locally or via LAN network with ModBus TCP/IP protocol.

Any BMS can read and write information in the rooftops units using ADALINK II™ network. Both systems can run at the same time.



2.6 REFRIGERATION OPTIONS

Low Noise Option

As rooftops are often installed in a noise sensitive area, LENNOX proposes a low noise option on **FLEXAIR**. To achieve low noise level, **FLEXAIR** receives a quieter fan, a compressor jacket and is fully equipped with acoustic isolation in the refrigerating box.

Anti corrosion protection

When the units are installed in potentially aggressive environments, which can often be the case for example in coastal environments, it is often a requirement that the coils are specially treated to protect them against the corrosive effects.

LenGuard™ anti-corrosion treatment is available for condensers, evaporators and hot water coil.

2.7 FRESH AIR OPTIONS

As managing fresh air is becoming mandatory in most buildings economiser is now fitted as standard with the **FLEXAIR**.

Advanced control pack

Where a higher level of controllability is required to make the **FLEXAIR** even more flexible, LENNOX have compiled a pack that includes two advanced control features.

- **"Enthalpy control on economiser"**

The eCLIMATIC and its humidity sensors (return air and fresh air) ensures that the economiser does not use 100% fresh air if the outside air has a higher enthalpy than the return air. This feature is relevant in regions where the relative humidity is high or when the desired room air condition is very dry.

- **"Humidity control"**

The eCLIMATIC and its humidity sensors, analyze dry and wet bulb temperatures to control dehumidification. Humidity control is only available if ambient temperature is in cooling or dead zone. The dehumidification algorithm can dry the air by passing it through the coil in cooling mode.

A specific function in the program can be activated to control the minimum supply air temperature, by maintaining it equal to the heating set point, using auxiliary heaters (Electric, Hot water coil or gas burner).

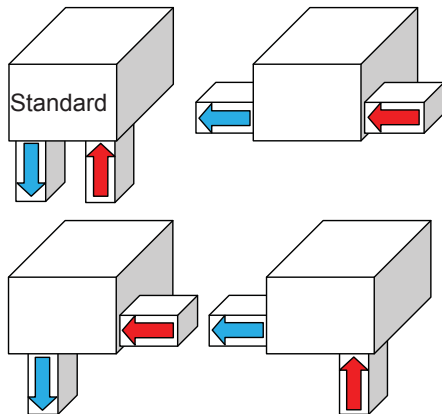
A proportional 0-10V contact is also available to control an external humidifier.

Indoor air quality sensor

Indoor air quality is controlled from the eCLIMATIC main controller. A VOC (Volatile Organic Component) sensor detects the amount of CO₂ in the ambient air between 0 and 2000PPM. (This obviously varies depending upon space occupancy levels). The VOC sensor sends a proportional signal (0-20mA) to the eCLIMATIC controller which will then modulate the fresh air.

2.8 AIRFLOW CONFIGURATIONS AND ROOFCURBS

BASIC AIRFLOW CONFIGURATIONS



Unless specified otherwise when ordered, **FLEXAIR** rooftops are shipped with downflow supply and return configuration. Units can be configured before shipment with the required airflow configurations to suit the building needs.

AIR SOCK CONTROL

A standard feature in **FLEXAIR**, EC fan regulation allow the air socks to be progressively filled with air on start up. It takes one minute to go from 0% of air to Nominal airflow rate

ROOFCURBS

Non adjustable non assembled roofcurb.

A sturdy mounting frame designed for single package units providing an automatic weatherproof sealed rooftop installation. This roofcurb is shipped knocked down and must be assembled on site.

Adjustable roofcurb.

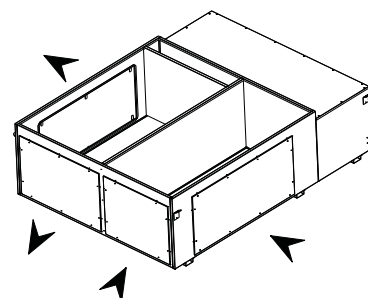
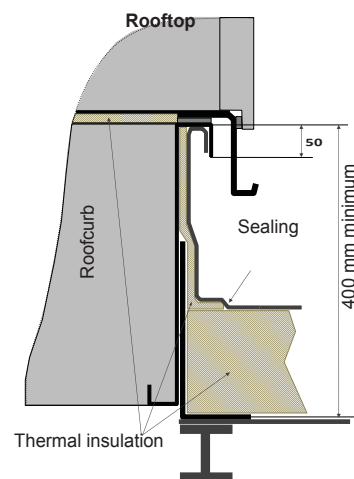
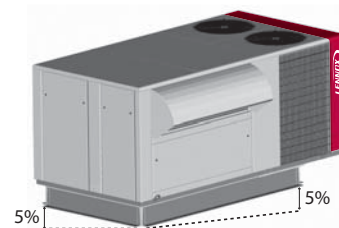
This adjustable and assembled roofcurb is made of galvanized steel with 2.5 mm. This adjustable roofcurb is designed to be installed in roofs with slopes up to 4 to 5% in all directions, enabling **FLEXAIR** to be compatible with most roof profiles.

Downflow roofcurbs are the easiest and the cheapest way to install packaged air conditioning systems to a single volume building.

The frame can be secured directly to the roof structure thanks to its built in adjustable flanges and sealing liner returns

Multidirectional roofcurb

This option is a required when customer wants to have horizontal return and horizontal supply on the same side. It is also required with the power exhaust fan or gravity exhaust damper options combined with horizontal return flow configuration.



2.9 EXTRACTION OPTIONS

UNIT WITH NO EXHAUST AIR OPTION

1 → 2: ESP (external static pressure) given in eLencal (LENNOX units selection tool) corresponds to the static pressure between inlet and outlet of the unit and includes all options and accessories delivered with the unit with the exception of the ductwork. This external static pressure will be used to push the air through the supply and the return ductwork installed on site.

ESP =

Supply duct pressure drop + return duct pressure drop

Example :

With an eLencal ESP = 350 Pa and a return ductwork pressure drop of 150 Pa → Remaining available static pressure for the supply ductwork = 200 Pa

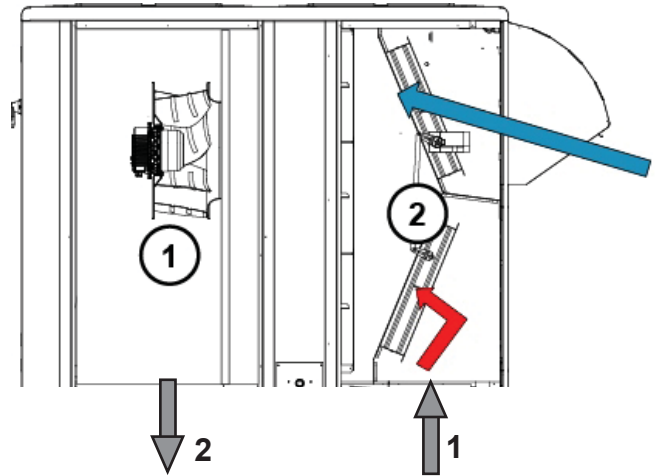
In any case, on a basic unit, the return ductwork pressure drop should be lower than 150 Pa.

The airflow is usually set during start up for a given fresh air rate. During normal operation the fresh air ratio will change and eventually the unit will go to full fresh air during free cooling operation. If the pressure drop in the return ductwork is high, the fan may trip on over current protection when it operates with full fresh air where the pressure drop is much lower.

If the return ductwork pressure drop is higher than 150 Pa :

- Select an extraction roofcurb which will include an extraction fan and the appropriate drive kit for the given airflow and pressure drop.
- **FLEXAIR** with eDRIVE includes constant airflow operation that can control and limit the airflow as the pressure drop reduces.

Building air tightness	Low air tightness
Fresh air & Free cooling	Medium fresh air rate Free cooling possible
Pressure drop in the return ductwork	Medium < 150 Pa
Building pressure control	NO control
Typical applications	Existing hypermarkets and supermarkets (old buildings with high leakage rates)

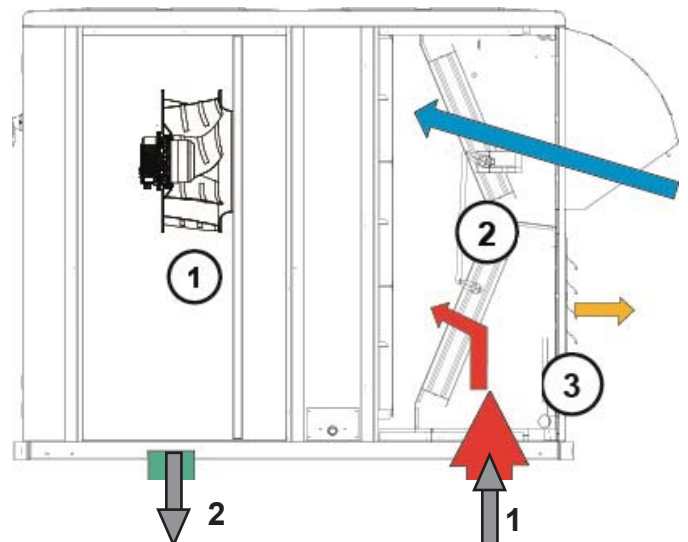


GRAVITY EXHAUST DAMPER

1 → 2: ESP "Supply" in eLencal

Gravity exhaust dampers are used to relief pressure when outside air is being introduced in a building with good air tightness.

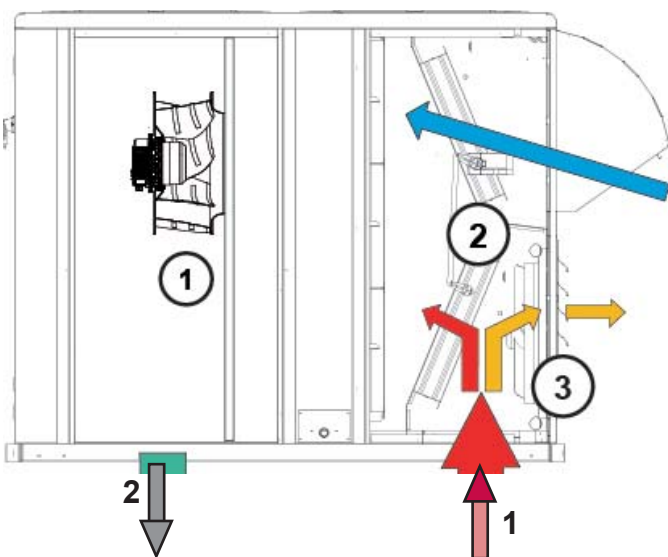
Building air tightness	Medium
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	Low < 50 Pa
Building pressure control	Low control
Typical applications	Warehouses



POWER EXHAUST FAN

1 → 2: ESP "Supply" in eLencal.
 Power exhaust axial fans with gravity exhaust dampers provide exhaust air pressure relief when high levels of outside air are being introduced in the building with good air tightness. It is interlocked to run when return air dampers are being closed and supply air blower is in operation. The power exhaust fan runs when outdoor air dampers are at least 50% open (adjustable by set point). It is also overload protected. A gravity exhaust damper is supplied with this option to prevent air from entering the unit when fan is off.

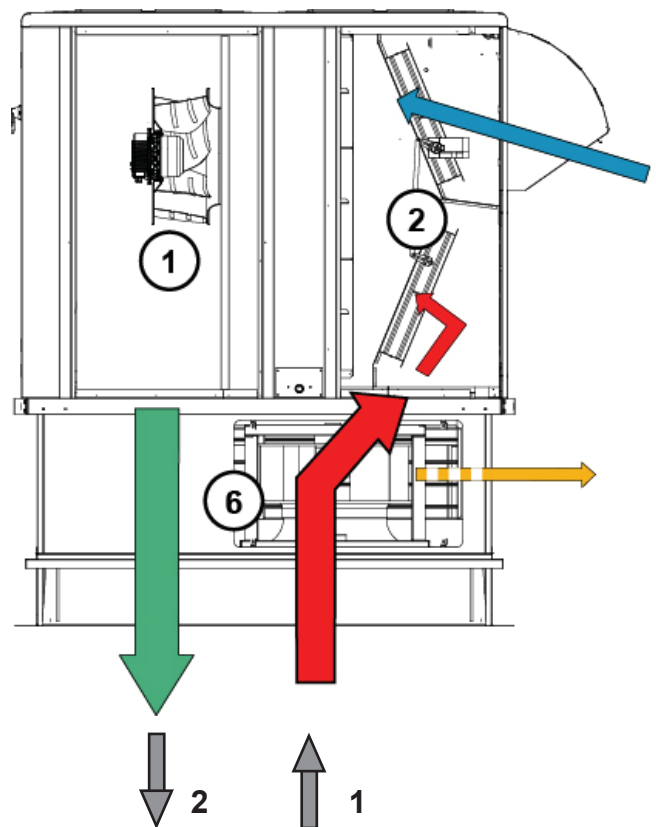
Building air tightness	Medium
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	Medium 50 Pa to 150 Pa
Building pressure control	Low control
Typical applications	Light commercial, petrol stations...



EXTRACTION ROOFCURB

1 → 3: ESP Return in eLencal
 3 → 2: ESP Supply in eLencal
 Where system balancing is critical and return ductwork pressure drop is high, it is recommended to use extraction fan such as the one located in the extraction roofcurb. A plug fan installed with a 3rd damper (1 inside the Roofcurb + 2 inside the rooftop), is able to extract up to 300 Pa with the Nominal airflow rate of the unit. This roof curb can be used in either horizontal or downflow applications.

Building air tightness	High
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	High > 150 Pa
Building pressure control	Pressure balance possible
Typical applications	Theatres, cinemas, data centres, new air tight buildings with long return ductworks



FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

FLEXAIR		085	100	120	
Casing		F BOX			
Nominal airflow rate	m ³ /h	15000	18500	20500	
Cooling mode (FAC - FAG)					
Gross cooling capacity ⁽¹⁾	kW	86,0	101,3	119,3	
Compressor gross power input		20,1	27,1	31,4	
Indoor fan absorbed power		FAC	2,71	4,08	5,28
		FAG	3,26	5,14	6,65
Full load amps ⁽¹⁾	A	67,5	75,5	103,2	
Direct start up amps ratio Id/Ia		209,3	252,3	293,9	
Gross EER ⁽²⁾	FAC	3,56	3,30	3,29	
Global net EER ⁽³⁾	FAC	3,24	2,92	2,85	
	FAG	3,15	2,80	2,73	
Cooling mode (FAH - FAM)					
Gross cooling capacity ⁽¹⁾	kW	85,0	100,0	117,5	
Compressor gross power input		20,6	27,1	31,3	
Indoor fan absorbed power		FAH	2,71	4,08	5,28
		FAM	3,26	5,14	6,65
Gross EER ⁽²⁾	FAH	3,52	3,26	3,24	
Global net EER ⁽³⁾	FAH	3,20	2,88	2,81	
	FAM	3,11	2,76	2,69	
Heating mode (FAH - FAM)					
Net heating capacity	FAH	kW	78,4	94,7	109,0
Compressor gross power input			18,3	22,9	28,6
Indoor fan absorbed power	FAH		2,71	4,08	5,28
	FAM		3,26	5,14	6,65
Gross COP ⁽²⁾	FAH	3,60	3,58	3,26	
Global net COP ⁽³⁾	FAH	3,39	3,32	3,01	
	FAM	3,34	3,24	2,94	
Heating - Gas fired					
Heating capacity	S ⁽⁴⁾	kW	55,2		
	H ⁽⁴⁾		110,4		
Power input	S ⁽⁴⁾	kW	60		
	H ⁽⁴⁾		120		
Thermal efficiency		%	92		
Gas flow (for natural gas at 20 mbar and 15 °C)	S ⁽⁴⁾	m ³ /h	6,3		
	H ⁽⁴⁾		12,5		
Refrigeration circuit					
Number of circuits	1 scroll + 1 scroll				
Compressor type and number					
Expansion valve number					
Refrigerant charge per circuit 1/2	FAC-FAG	kg	9,0 / 9,0	9,1 / 9,1	9,15 / 9,15
	FAH-FAM		9,1 / 9,1	9,2 / 9,2	9,25 / 9,25
Ventilation data					
Nominal airflow rate	m ³ /h	15000	18500	20500	
Minimum airflow rate		12000	14000	15000	
Maximum airflow rate		23000	23000	23000	
External static pressure / Maximum ⁽⁵⁾	Pa	150 / 800	150 / 800	150 / 800	

(1) All data are at Eurovent conditions
 400V/3Ph/50Hz at nominal airflow rate, minimum external static pressure.
Cooling :
 • Outdoor temperature = 35°C DB
 • Entering coil temperature 27°C DB / 19°C WB
Heating :
 • Outdoor temperature = 7°C DB / 6°C WB
 • Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan
 (3) Net COP = Net cooling capacity/Total absorbed power
 (4) S = Standard heat / H = High heat
 (5) At nominal airflow rate

FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

FLEXAIR™			150	170	200	230	
Casing			G BOX		H BOX		
Nominal airflow rate	m ³ /h		26000	30000	35000	39000	
Cooling mode (FAC - FAG)							
Gross cooling capacity ⁽¹⁾	kW		147,2	164,6	190,8	230,7	
Compressor gross power input			44,5	49,5	51,4	61,5	
Indoor fan absorbed power		FAC		5,60	8,20	8,74	10,81
		FAG		6,76	10,00	10,24	12,95
Full load amps ⁽¹⁾	A		109,8	137,4	155,5	194,5	
Direct start up amps ratio Id/Ia			296,1	283,6	341,4	398,6	
Gross EER ⁽²⁾	FAC		3,08	3,04	3,29	3,26	
Global net EER ⁽³⁾	FAC		2,77	2,65	2,89	2,84	
	FAG		2,69	2,54	2,80	2,73	
Cooling mode (FAH - FAM)							
Gross cooling capacity ⁽¹⁾	kW		141,9	161,8	188,1	227,9	
Compressor gross power input			44,3	49,4	51,4	61,5	
Indoor fan absorbed power		FAH		5,60	8,20	8,74	10,81
		FAM		6,76	10,00	10,24	12,95
Gross EER ⁽²⁾	FAH		2,98	3,00	3,24	3,22	
Global net EER ⁽³⁾	FAH		2,68	2,61	2,85	2,80	
	FAM		2,60	2,50	2,76	2,70	
Heating mode (FAH - FAM)							
Net heating capacity	kW	FAH	133,7	155,5	185,2	223,8	
Compressor gross power input			33,5	38,6	43,1	57,9	
Indoor fan absorbed power			FAH	5,60	8,20	8,74	10,81
	FAM	6,76	10,00	10,24	12,95		
Gross COP ⁽²⁾	FAH		3,63	3,60	3,73	3,33	
Global net COP ⁽³⁾	FAH		3,38	3,29	3,43	3,09	
	FAM		3,31	3,21	3,37	3,03	
Heating - Gas fired							
Heating capacity	S ⁽⁴⁾	kW	110,4	110,4	165,6	165,6	
	H ⁽⁴⁾		165,6	165,6	220,8	220,8	
Power input	S ⁽⁴⁾	kW	120	120	180	180	
	H ⁽⁴⁾		180	180	240	240	
Thermal efficiency		%	92	92	92	92	
Gas flow (for natural gas at 20 mbar and 15 °C)	S ⁽⁴⁾	m ³ /h	12,5	12,5	18,8	18,8	
	H ⁽⁴⁾		18,8	18,8	25	25	
Refrigeration circuit							
Number of circuits			1 scroll + 2 scroll	2 scroll + 2 scroll			
Compressor type and number							
Expansion valve number				2			
Refrigerant charge per circuit	FAC-FAG	kg	14,7 / 14,2	14,7 / 14,3	18,5 / 18,5	19,8 / 19,8	
	FAH-FAM		15,0 / 14,5	15,1 / 14,5	18,5 / 18,5	19,8 / 19,8	
Ventilation data							
Nominal airflow rate	m ³ /h		26000	30000	35000	39000	
Minimum airflow rate			18000	21000	24000	27000	
Maximum airflow rate			35000	35000	43000	43000	
External static pressure / Maximum ⁽⁵⁾		Pa	150 / 800				

(1) All data are at Eurovent conditions
 400V/3Ph/50Hz at nominal airflow rate, Minimum external static pressure.
Cooling :
 • Outdoor temperature = 35°C DB
 • Entering coil temperature 27°C DB / 19°C WB
Heating :
 • Outdoor temperature = 7°C DB / 6°C WB
 • Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan
 (3) Net COP = Net cooling capacity/Total absorbed power
 (4) S = Standard heat / H = High heat
 (5) At nominal airflow rate

FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

FLEXAIR		085	100	120
Indoor fan (FAG - FAM)				
Nominal airflow rate	m ³ /h	15000	18500	20500
Minimum airflow rate		12000	14000	15000
Maximum airflow rate		23000		
External static pressure / maximum	Pa	150 / 800		
Fan number		2		
Outdoor fan (axial fan)				
Number		2		
Nominal airflow rate	m ³ /h	35150	35150	44000
Motor power	kW	3,12	3,12	4,5
Filter (standard)				
Efficiency / Filter class		80-85% / G3		
Number of filters		8		
Filter size	mm	625 x 500 x 50		
Acoustic data (Minimum external static pressure)				
Outdoor sound power Standard unit ⁽¹⁾	dB(A)	80,1	91,8	88,8
Outdoor sound power Low noise unit ⁽¹⁾		78,0	89,0	85,6
Indoor blower outlet sound power		86,5	90,2	89,2
Operating limits - Cooling mode				
Maxi. outdoor temperature Indoor 27 °C DB / 19°C WB ⁽²⁾	°C	48		
Maxi. outdoor temperature with unloading		50		
Mini. outdoor temperature Indoor 20°C DB ⁽³⁾		10		
Maxi. outdoor temperature DB/WB with 100% fresh air		38		
Operating limits - Heating mode				
Mini. outdoor temperature Indoor 20 °C DB ⁽²⁾	°C	-15		
Mini. outdoor temperature with unloading		-15		
Mini. entering indoor coil temperature Outdoor 7°C DB		7		
Construction				
Casing material		Aluminium		
Painting		Polyester / RAL 9003		
Insulation class		A2-s1-d0 / M0		
Dimensions				
Length	mm	3348		
Height		1750		
Width with/without fresh air hood ⁽⁴⁾		2290 / 2657		
Weight Standard unit (FAC)	kg	966	1055	1054
Weight Gas unit (FAG-H) ⁽⁵⁾		1083	1187	1178

(1) All data are at Eurovent conditions
 400V/3Ph/50Hz at nominal airflow rate, Minimum external static pressure.

Cooling :

- Outdoor temperature = 35°C DB
- Entering coil temperature 27°C DB / 19°C WB

Heating :

- Outdoor temperature = 7°C DB / 6°C WB
- Indoor temperature = 20°C DB

(2) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

(3) Below this value, "Low ambient kit" option is required

(4) Down return air and down supply air configurations

(5) S = Standard heat / H = High heat

FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

FLEXAIR™		150	170	200	230
Indoor fan					
Nominal airflow rate	m ³ /h	26000	30000	35000	39000
Minimum airflow rate		18000	21000	24000	27000
Maximum airflow rate		35000	35000	43000	43000
External static pressure / maximum	Pa	150 / 800			
Fan number		3			
Outdoor fan (axial fan)					
Number		2	2	4	4
Nominal airflow rate	m ³ /h	38950	49400	69350	88000
Motor power	kW	2,96	4,16	6,24	8,96
Filter (standard)					
Efficiency / Filter class		80-85% / G3			
Number of filters		12	12	10 + 5	10 + 5
Filter size	mm	625 x 500 x 50		500 x 500 + 800 x 500	
Acoustic data (Minimum external static pressure)					
Outdoor sound power Standard unit ⁽¹⁾	dB(A)	87,2	85,9	84,9	85,2
Outdoor sound power Low noise unit ⁽¹⁾		84,9	85,0	82,0	84,0
Indoor blower outlet sound power		93,1	95,2	91,3	92,0
Operating limits - Cooling mode					
Maxi. outdoor temperature Indoor 27 °C DB / 19°C WB ⁽²⁾	°C	46	46	48	48
Maxi. outdoor temperature with unloading		45			
Mini. outdoor temperature Indoor 20°C DB ⁽³⁾		10			
Maxi. outdoor temperature DB/WB with 100% fresh air		38			
Operating limits - Heating mode					
Mini. outdoor temperature Indoor 20 °C DB ⁽²⁾	°C	-15			
Mini. outdoor temperature with unloading		-15			
Mini. entering indoor coil temperature Outdoor 7°C DB		7			
Construction					
Casing material	Aluminium				
Painting	Polyester / RAL 9003				
Insulation class	A2-s1-d0 / M0				
Dimensions					
Length	mm	4385	4385	5230	5230
Height		1885	1885	2235	2235
Width with/without fresh air hood ⁽⁴⁾		2290 / 2753			
Weight Standard unit (FAC)	kg	1454	1550	2027	2143
Weight Gas unit (FAG-H) ⁽⁵⁾		1599	1704	2297	2411

(1) All data are at Eurovent conditions
400V/3Ph/50Hz at nominal airflow rate, Minimum external static pressure.

Cooling :

- Outdoor temperature = 35°C DB
- Entering coil temperature 27°C DB / 19°C WB

Heating :

- Outdoor temperature = 7°C DB / 6°C WB
- Indoor temperature = 20°C DB

(2) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

(3) Below this value, "Low ambient kit" option is required

(4) Down return air and down supply air configurations

(5) S = Standard heat / H = High heat

FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

FLEXAIR			085	100	120	150	170	200	230
Nominal airflow rate	m ³ /h		15000	18500	20500	26000	30000	35000	39000
Heating - electric									
Type of modulation	m ³ /h		Staged on S / Triac on M & H						
Available heating capacity	S ⁽²⁾	kW	30	30	30	45	45	72	72
	M ⁽²⁾		54	54	54	72	72	108	108
	H ⁽²⁾		72	72	72	108	108	162	162
Amps S / M / H			42/75/99			42/75/99		99/149/196	
Heating - hot water coil									
Available heating capacity ⁽¹⁾	S ⁽²⁾	kW	114	126	133	145	156	177	186
	H ⁽²⁾		177	201	212	254	275	295	313
Gas modulating									
Modulation range	H ⁽²⁾	%	40-100			20-100			
Axial exhaust fan									
Number of fans			3						
Heat recovery module									
Type of exchanger			Wheel exchanger						
Protection against frosting on exhaust air			Air differential pressure switch 20 to 300 Pa						
Lenght	mm		2146			2330		2516	
Height			1796			2170		2418	
Width with/without fresh air hood			1422 / 1055			1518 / 1055		1676 / 623	
Weight	kg		525			635		730	
Wheel diameter	mm		1500			1800		2050	
Number of filters Fresh air / Return air			3 / 3			8 / 8		10 / 10	
Filter G4 and G4+F7									
Efficiency (gravimetric) / class EN779 / Eurovent G4			90% / G4 / EU4						
Efficiency (opacimetric) / class EN779 / Eurovent F7			85% / F7 / EU7						
Number of filters			8			12		10 + 5	
Filter size	mm		625 x 500 x 50			625 x 500 x 50		500x500 + 800x500	
Fire class			M1						
Power exhaust fan (axial fan)									
Number of fans			3			3			
Diameter			450			560			

(1) Conditions : entering water temperature 90°C, leaving water temperature 70°C, entering air temperature 20°C,
S = standart heat, H = high heat

(2) not available with FAG and FAM versions

5.1 UNIT PERFORMANCES

FAC Cooling only

FAH Heat pump

FAH 085

COOLING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C					
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA			
Minimum airflow rate 12 000 m³/h	Entering air temperature	16°C	21°C	80,6	53,0	16,9	77,4	51,4	18,7	73,8	49,7	20,6	69,8	48,0	22,8	65,2	46,2	25,2		
			24°C	81,3	65,2	17,0	78,1	63,7	18,7	74,5	62,0	20,7	70,4	60,1	22,9	65,9	58,0	25,3		
			27°C	82,2	77,0	17,0	79,0	75,6	18,8	75,4	74,0	20,7	71,4	71,3	23,0	67,4	67,4	25,5		
		19°C	30°C	85,1	85,1	17,1	82,4	82,4	18,9	79,2	79,2	21,0	75,5	75,5	23,2	71,4	71,4	25,8		
			24°C	88,1	52,6	17,4	84,6	50,9	19,1	80,6	49,2	21,1	76,1	47,4	23,2	71,2	45,6	25,7		
			27°C	88,8	64,9	17,4	85,3	63,3	19,1	81,3	61,6	21,1	76,8	59,7	23,3	71,8	57,7	25,8		
		22°C	30°C	89,7	76,7	17,5	86,2	75,3	19,2	82,2	73,6	21,2	77,7	71,8	23,4	72,7	69,5	25,8		
			33°C	90,8	88,1	17,5	87,3	86,9	19,3	83,9	83,9	21,3	80,1	80,1	23,5	75,7	75,7	26,1		
			27°C	96,1	52,2	17,8	92,1	50,3	19,6	87,7	48,5	21,5	82,8	46,8	23,7	77,5	45,1	26,3		
		Nominal airflow rate 15 000 m³/h	Entering air temperature	16°C	27°C	96,7	64,4	17,9	92,8	62,7	19,6	88,4	61,0	21,6	83,5	59,2	23,8	78,2	57,3	26,3
					30°C	97,6	76,1	17,9	93,7	74,6	19,7	89,3	73,0	21,6	84,4	71,2	23,9	79,1	69,2	26,4
					36°C	98,7	87,3	18,0	94,8	86,1	19,7	90,4	84,7	21,7	85,5	82,9	23,9	80,2	80,2	26,5
19°C	21°C			84,3	58,6	17,2	80,9	57,0	18,9	77,1	55,3	20,8	72,8	53,5	23,0	68,0	51,5	25,4		
	24°C			85,2	73,2	17,2	81,8	71,6	19,0	78,0	69,9	20,9	73,6	67,8	23,1	68,9	65,5	25,5		
	27°C			86,4	86,4	17,3	83,5	83,5	19,1	80,1	80,1	21,1	76,3	76,3	23,3	72,1	72,1	25,8		
22°C	30°C			91,4	91,4	17,6	88,3	88,3	19,4	84,8	84,8	21,4	80,9	80,9	23,6	76,4	76,4	26,1		
	24°C			92,0	58,1	17,6	88,2	56,4	19,3	83,9	54,7	21,3	79,2	52,9	23,4	74,0	51,0	25,9		
	27°C			92,9	72,9	17,7	89,1	71,2	19,4	84,8	69,5	21,3	80,1	67,5	23,5	74,9	65,3	26,0		
Maximum airflow rate 23 000 m³/h	Entering air temperature			16°C	30°C	94,0	87,4	17,7	90,2	85,8	19,5	85,9	84,0	21,4	81,1	81,1	23,6	76,6	76,6	26,1
					33°C	96,8	96,9	17,9	93,6	93,6	19,7	89,8	89,8	21,7	85,6	85,6	23,9	80,9	81,0	26,5
					27°C	100,0	57,5	18,1	95,8	55,7	19,8	91,2	53,9	21,7	86,1	52,2	23,9	80,5	50,4	26,5
		19°C	30°C	100,9	72,4	18,1	96,7	70,7	19,8	92,1	68,9	21,8	86,9	67,0	24,0	81,3	64,9	26,5		
			33°C	102,0	86,8	18,2	97,8	85,2	19,9	93,1	83,5	21,9	88,0	81,5	24,1	82,4	79,1	26,6		
			36°C	103,3	100,8	18,3	99,0	99,0	20,0	95,0	95,0	22,0	90,6	90,6	24,3					
		22°C	27°C	90,7	71,4	17,5	86,6	69,7	19,2	82,1	67,9	21,1	77,1	65,9	23,3	71,6	63,5	25,7		
			24°C	91,9	91,8	17,6	88,2	88,2	19,3	84,2	84,1	21,3	79,6	79,6	23,5	74,6	74,6	26,0		
			27°C	97,3	97,3	17,9	93,5	93,5	19,6	89,3	89,3	21,6	84,6	84,6	23,8	79,4	79,4	26,4		
			30°C	103,1	103,1	18,2	99,2	99,2	20,0	94,8	94,8	22,0	90,0	90,0	24,3					
			24°C	98,6	70,7	18,0	94,2	69,0	19,7	89,2	67,3	21,6	83,8	65,4	23,8	78,0	63,2	26,3		
			27°C	100,0	92,4	18,1	95,6	90,5	19,8	90,6	88,4	21,7	85,0	85,0	23,9	79,7	79,8	26,4		

HEATING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-15°C		
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	
Minimum airflow rate 12 000 m³/h	Entering air temperature Dry bulb	8°C	108,9	18,3	97,2	17,3	97,2	17,3	80,2	15,7	76,2	15,4	67,0	14,5	58,6	13,7	51,0	13,0	48,2	12,7
		11°C	107,3	19,4	95,8	18,3	95,8	18,3	79,1	16,7	75,2	16,3	66,2	15,4	58,0	14,6	50,6	13,9	47,9	13,6
		14°C	105,6	20,5	94,3	19,4	94,3	19,4	78,0	17,6	74,2	17,2	65,4	16,3	57,4	15,5	50,2	14,8	47,6	14,5
		17°C	103,9	21,7	92,8	20,5	92,8	20,5	76,8	18,7	73,1	18,3	64,5	17,3	56,7	16,4	49,8	15,7	47,3	15,5
		20°C	102,1	23,0	91,3	21,7	91,3	21,7	75,6	19,8	72,0	19,4	63,6	18,3	56,1	17,4	49,3	16,7	46,9	16,5
		23°C	100,3	24,4	89,7	23,0	89,7	23,0	74,3	21,0	70,8	20,5	62,7	19,4	55,3	18,5	48,8	17,7	46,4	17,5
Nominal airflow rate 15 000 m³/h	Entering air temperature Dry bulb	26°C	98,5	26,0	88,1	24,4	88,1	24,4	73,1	22,2	69,7	21,7	61,7	20,5	54,6	19,5	48,3	18,8	46,0	18,5
		8°C	111,0	17,1	99,0	16,2	99,0	16,2	81,5	14,8	77,5	14,4	68,0	13,7	59,4	12,9	51,5	12,3	48,6	12,0
		11°C	109,3	18,0	97,6	17,1	97,6	17,1	80,5	15,6	76,5	15,3	67,3	14,5	58,8	13,7	51,2	13,1	48,4	12,9
		14°C	107,7	19,0	96,1	18,0	96,1	18,0	79,4	16,5	75,5	16,1	66,5	15,3	58,2	14,6	50,8	13,9	48,1	13,7
		17°C	106,0	20,1	94,6	19,0	94,6	19,0	78,2	17,4	74,5	17,1	65,6	16,2	57,6	15,5	50,4	14,8	47,8	14,6
		20°C	104,2	21,2	93,1	20,1	93,1	20,1	77,1	18,4	73,4	18,1	64,7	17,2	56,9	16,4	50,0	15,8	47,4	15,6
Maximum airflow rate 23 000 m³/h	Entering air temperature Dry bulb	23°C	102,5	22,4	91,6	21,2	91,6	21,2	75,8	19,5	72,2	19,1	63,8	18,2	56,2	17,4	49,5	16,8	47,0	16,6
		26°C	100,7	23,7	90,0	22,5	90,0	22,5	74,6	20,6	71,1	20,2	62,9	19,2	55,5	18,4	49,0	17,8	46,6	17,6
		8°C	114,7	15,2	102,1	14,5	102,1	14,5	83,6	13,3	79,3	13,1	69,2	12,4	59,9	11,8	51,4	11,3	48,2	11,1
		11°C	113,2	16,0	100,7	15,2	100,7	15,2	82,6	14,1	78,4	13,8	68,5	13,2	59,4	12,6	51,1	12,1	48,0	11,9
		14°C	111,6	16,8	99,4	16,0	99,4	16,0	81,6	14,9	77,4	14,6	67,7	14,0	58,9	13,4	50,8	13,0	47,8	12,8
		17°C	109,9	17,7	97,9	16,9	97,9	16,9	80,5	15,7	76,5	15,5	67,0	14,8	58,3	14,3	50,5	13,9	47,5	13,8
20°C	108,2	18,7	96,5	17,8	96,5	17,8	79,4	16,7	75,4	16,4	66,1	15,8	57,7	15,3	50,1	14,9	47,2	14,9		
	23°C	106,5	19,7	95,0	18,8	95,0	18,8	78,2	17,6	74,3	17,4	65,3	16,8	57,0	16,3	49,6	16,0	46,9	16,0	
	26°C	104,8	20,8	93,4	19,9	93,4	19,9	77,0	18,7	73,2	18,4	64,4	17,9	56,4	17,4	49,2	17,2	46,5	17,2	

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH 3,17
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD 4,0
				1,8

FAC Cooling only

FAH Heat pump

FAC 085

COOLING CAPACITY AND ABSORBED POWER

FAC	Temperatura de aire exterior		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Entering air temperature																
Minimum airflow rate 12 000 m ³ /h	16°C	21°C	81,2	53,3	16,9	78,2	51,8	18,7	74,7	50,2	20,6	70,8	48,5	22,8	66,4	46,8	25,3
		24°C	82,0	65,6	17,0	79,0	64,1	18,7	75,5	62,5	20,7	71,6	60,7	22,9	67,2	58,6	25,3
		27°C	82,9	77,3	17,0	79,9	75,9	18,8	76,4	74,4	20,7	72,3	72,3	22,9	68,5	68,5	25,4
		30°C	85,6	85,6	17,1	83,0	83,0	18,9	79,9	79,9	21,0	76,4	76,4	23,2	72,4	72,4	25,8
	19°C	24°C	88,7	52,9	17,4	85,3	51,2	19,1	81,5	49,5	21,1	77,2	47,9	23,3	72,4	46,1	25,7
		27°C	89,5	65,2	17,4	86,1	63,6	19,1	82,2	62,0	21,1	77,9	60,2	23,3	73,1	58,2	25,8
		30°C	90,5	77,0	17,5	87,0	75,6	19,2	83,2	74,0	21,2	78,8	72,1	23,4	74,0	70,0	25,9
		33°C	91,6	88,3	17,5	88,1	87,0	19,3	84,6	84,7	21,3	80,9	80,9	23,5	76,7	76,7	26,1
	22°C	27°C	96,6	52,3	17,8	92,8	50,5	19,6	88,5	48,8	21,5	83,8	47,1	23,7	78,7	45,4	26,3
		30°C	97,4	64,7	17,9	93,6	63,0	19,6	89,3	61,3	21,6	84,6	59,6	23,8	79,4	57,7	26,3
		33°C	98,4	76,4	17,9	94,5	74,9	19,7	90,3	73,3	21,6	85,5	71,5	23,9	80,3	69,5	26,4
		36°C	99,5	87,5	18,0	95,6	86,2	19,7	91,3	84,8	21,7	86,6	83,0	23,9	81,4	80,9	26,5
Nominal airflow rate 15 000 m ³ /h	16°C	21°C	85,0	58,9	17,2	81,8	57,4	18,9	78,1	55,7	20,9	73,9	54,0	23,0	69,3	52,1	25,4
		24°C	86,0	73,5	17,2	82,7	71,9	19,0	79,0	70,2	20,9	74,8	68,2	23,1	70,1	66,0	25,5
		27°C	87,0	87,0	17,3	84,3	84,2	19,1	81,0	81,0	21,1	77,4	77,4	23,3	73,2	73,2	25,8
		30°C	92,0	92,0	17,6	89,1	89,1	19,4	85,7	85,7	21,4	81,8	81,8	23,6	77,5	77,5	26,1
	19°C	24°C	92,7	58,4	17,6	89,0	56,7	19,3	84,9	55,0	21,3	80,4	53,3	23,5	75,4	51,5	25,9
		27°C	93,6	73,2	17,7	90,0	71,5	19,4	85,8	69,8	21,3	81,3	67,9	23,5	76,2	65,7	26,0
		30°C	94,7	87,5	17,7	91,0	85,9	19,5	86,9	84,1	21,4	82,3	82,0	23,6	77,7	77,7	26,1
		33°C	97,5	97,5	17,9	94,3	94,3	19,7	90,6	90,7	21,7	86,6	86,6	23,9	82,0	82,0	26,5
	22°C	27°C	100,7	57,8	18,1	96,6	56,0	19,8	92,1	54,3	21,7	87,2	52,6	24,0	81,8	50,8	26,5
		30°C	101,6	72,7	18,1	97,6	71,0	19,9	93,1	69,2	21,8	88,1	67,3	24,0	82,7	65,3	26,6
		33°C	102,8	87,0	18,2	98,7	85,4	19,9	94,1	83,6	21,9	89,2	81,6	24,1	83,7	79,3	26,6
		36°C	104,0	100,7	18,3	99,9	99,3	20,0	95,8	95,8	22,0	91,5	91,5	24,3			
Maximum airflow rate 23 000 m ³ /h	16°C	21°C	91,5	71,5	17,5	87,5	69,9	19,2	83,1	68,1	21,2	78,3	66,1	23,3	73,0	63,8	25,8
		24°C	92,8	92,2	17,6	88,9	88,8	19,3	85,0	84,9	21,3	80,6	80,6	23,5	75,8	75,7	26,0
		27°C	98,0	98,0	17,9	94,3	94,3	19,6	90,2	90,2	21,6	85,7	85,7	23,9	80,7	80,7	26,4
		30°C	103,8	103,8	18,2	100,0	100,0	20,0	95,8	95,8	22,0	91,1	91,1	24,3	85,9	85,9	26,9
	19°C	24°C	99,5	71,0	18,0	95,2	69,3	19,7	90,4	67,6	21,6	85,1	65,7	23,8	79,5	63,6	26,3
		27°C	100,8	92,3	18,1	96,5	90,4	19,8	91,7	88,3	21,7	86,4	85,8	23,9	80,8	80,8	26,4
		30°C	104,0	104,1	18,2	100,2	100,2	20,0	95,8	95,8	22,0	91,0	91,1	24,3	85,8	85,8	26,9
		33°C	110,0	110,0	18,6	105,9	105,9	20,4									
	22°C	27°C	107,8	70,3	18,5	103,1	68,6	20,2	97,9	66,9	22,1	92,3	65,1	24,4	86,2	63,2	26,9
		30°C	109,2	92,1	18,6	104,4	90,2	20,3	99,2	88,2	22,2	93,6	85,8	24,4			
		33°C	110,3	110,3	18,6	106,2	106,2	20,4									
		36°C															

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	3,17
	FC/FD	0,5		FC/FD	4,0
			Absorbed power by outdoor fan (kW)	1,8	

FAC Cooling only

FAH Heat pump

FAH 100

COOLING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Entering air temperature																
Minimum airflow rate 14 000 m ³ /h	16°C	21°C	90,4	60,1	20,3	86,8	58,2	22,2	82,7	56,3	24,3	78,2	54,3	26,6	73,1	52,2	29,1
		24°C	91,2	74,1	20,4	87,6	72,3	22,3	83,5	70,4	24,4	79,0	68,3	26,7	74,0	65,9	29,2
		27°C	92,2	87,6	20,5	88,6	86,0	22,3	84,6	84,1	24,4	80,3	80,3	26,8	75,9	75,9	29,5
		30°C	95,5	95,5	20,7	92,5	92,4	22,6	88,9	88,9	24,8	84,8	84,8	27,2	80,3	80,3	29,9
	19°C	24°C	98,6	59,6	20,9	94,5	57,5	22,8	90,0	55,6	24,9	85,0	53,6	27,2	79,5	51,5	29,8
		27°C	99,4	73,7	21,0	95,4	71,9	22,9	90,8	69,9	25,0	85,8	67,9	27,3	80,4	65,6	29,9
		30°C	100,4	87,2	21,1	96,4	85,6	23,0	91,9	83,8	25,0	86,9	81,7	27,4	81,4	79,2	30,0
		33°C	101,7	100,0	21,2	97,9	97,9	23,0	94,1	94,1	25,2	89,7	89,7	27,7	84,9	84,9	30,4
	22°C	27°C	107,1	58,9	21,5	102,6	56,7	23,4	97,6	54,7	25,5	92,1	52,7	27,9	86,2	50,8	30,5
		30°C	107,9	73,0	21,6	103,4	71,1	23,5	98,5	69,2	25,6	93,0	67,2	28,0	87,1	65,0	30,6
		33°C	109,0	86,4	21,7	104,5	84,8	23,6	99,5	83,0	25,7	94,1	81,0	28,1	88,2	78,7	30,7
		36°C	110,3	99,0	21,8	105,8	97,7	23,7	100,8	96,2	25,8	95,4	94,3	28,2	89,8	89,8	30,9
Nominal airflow rate 18 500 m ³ /h	16°C	21°C	95,3	68,0	20,7	91,3	66,1	22,6	86,9	64,2	24,6	82,0	62,2	26,9	76,6	59,9	29,5
		24°C	96,4	85,5	20,8	92,4	83,6	22,7	88,0	81,6	24,7	83,1	79,3	27,0	77,7	76,6	29,6
		27°C	98,5	98,4	20,9	95,1	95,0	22,9	91,1	91,1	25,0	86,7	86,7	27,4	81,8	81,8	30,0
	19°C	24°C	103,6	67,3	21,3	99,2	65,4	23,2	94,3	63,4	25,2	88,9	61,5	27,6	83,1	59,3	30,2
		27°C	104,8	85,1	21,4	100,3	83,2	23,3	95,5	81,2	25,3	90,1	79,0	27,7	84,3	76,4	30,3
		30°C	106,1	102,3	21,5	101,7	100,5	23,4	96,6	96,6	25,5	91,9	91,9	27,9	86,7	86,8	30,6
		33°C	110,1	110,1	21,8	106,2	106,3	23,7	101,9	101,9	25,9	97,0	97,0	28,3	91,6	91,6	31,1
	22°C	27°C	112,2	66,3	21,9	107,4	64,4	23,8	102,0	62,5	25,9	96,2	60,6	28,2	89,9	58,6	30,9
		30°C	113,4	84,3	22,0	108,6	82,4	23,9	103,2	80,5	26,0	97,4	78,4	28,3	91,1	76,0	31,0
		33°C	114,8	101,6	22,1	109,9	99,9	24,0	104,6	97,9	26,1	98,8	95,7	28,5	91,9	91,9	31,1
		36°C	116,5	116,5	22,2	112,3	112,3	24,2	107,6	107,6	26,4						
	Maximum airflow rate 23 000 m ³ /h	16°C	21°C	98,7	74,8	20,9	94,4	73,1	22,8	89,6	71,2	24,8	84,3	69,0	27,1	78,5	66,6
24°C			100,1	95,8	21,1	95,8	93,9	22,9	90,7	90,7	24,9	85,9	85,9	27,3	80,7	80,7	29,9
27°C			104,6	104,5	21,3	100,6	100,6	23,3	96,2	96,2	25,4	91,2	91,2	27,8	85,8	85,8	30,5
30°C			110,6	110,6	21,8	106,5	106,5	23,7	101,9	101,9	25,9	96,8	96,7	28,3	91,1	91,1	31,1
19°C		24°C	107,2	74,0	21,5	102,4	72,2	23,4	97,1	70,4	25,5	91,4	68,4	27,8	85,2	66,1	30,4
		27°C	108,6	95,4	21,7	103,9	93,6	23,5	98,6	91,5	25,6	92,9	89,0	27,9	86,7	86,2	30,6
		30°C	110,9	110,9	21,8	106,7	106,7	23,7	102,0	102,0	25,9	96,7	96,8	28,3	91,0	91,0	31,1
		33°C	117,0	117,0	22,2	112,6	112,6	24,2	107,7	107,7	26,4						
22°C		27°C	116,0	72,9	22,2	110,7	71,1	24,0	105,0	69,4	26,1	98,8	67,5	28,5	92,1	65,4	31,2
		30°C	117,4	94,7	22,3	112,2	92,9	24,2	106,5	90,9	26,3	100,3	88,6	28,6	93,7	86,0	31,4
		33°C	119,1	115,9	22,4	113,0	113,0	24,2	108,0	108,0	26,4						
		36°C	123,7	123,7	22,7												

HEATING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-15°C	
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
		Entering air temperature Dry bulb																	
Minimum airflow rate 14 000 m ³ /h	8°C	121,7	21,2	108,6	19,9	96,5	18,7	89,6	18,0	85,3	17,5	75,0	16,4	65,6	15,4	57,2	14,4	54,1	14,1
	11°C	119,9	22,3	107,0	21,0	95,1	19,7	88,4	19,0	84,1	18,5	74,1	17,4	65,0	16,3	56,8	15,4	53,8	15,0
	14°C	118,1	23,5	105,4	22,1	93,8	20,8	87,2	20,0	83,0	19,5	73,2	18,4	64,3	17,3	56,4	16,4	53,4	16,0
	17°C	116,2	24,7	103,8	23,3	92,4	21,9	85,9	21,1	81,8	20,6	72,3	19,4	63,6	18,3	55,9	17,4	53,1	17,0
	20°C	114,4	26,0	102,2	24,5	91,0	23,0	84,7	22,2	80,7	21,7	71,3	20,4	62,9	19,3	55,4	18,4	52,7	18,1
	23°C	112,5	27,3	100,5	25,7	89,5	24,2	83,4	23,4	79,5	22,8	70,3	21,5	62,1	20,4	54,9	19,4	52,2	19,1
26°C	110,5	28,7	98,8	27,0	88,1	25,4	82,0	24,5	78,2	23,9	69,3	22,6	61,4	21,4	54,3	20,4	51,8	20,1	
Nominal airflow rate 18 500 m ³ /h	8°C	124,6	19,6	111,1	18,5	98,5	17,4	91,5	16,7	86,9	16,3	76,3	15,3	66,5	14,4	57,7	13,5	54,5	13,2
	11°C	122,8	20,6	109,5	19,4	97,2	18,3	90,3	17,6	85,8	17,2	75,4	16,2	65,9	15,3	57,3	14,4	54,2	14,1
	14°C	121,0	21,6	107,9	20,4	95,9	19,2	89,1	18,6	84,7	18,2	74,5	17,1	65,2	16,2	56,9	15,4	53,8	15,1
	17°C	119,1	22,7	106,3	21,4	94,5	20,3	87,8	19,6	83,6	19,1	73,6	18,1	64,6	17,2	56,5	16,4	53,5	16,1
	20°C	117,3	23,8	104,7	22,5	93,1	21,3	86,6	20,6	82,4	20,2	72,7	19,1	63,9	18,2	56,0	17,4	53,1	17,1
	23°C	115,4	25,0	103,1	23,7	91,7	22,4	85,3	21,7	81,2	21,2	71,7	20,2	63,1	19,2	55,5	18,5	52,7	18,2
26°C	113,5	26,2	101,4	24,8	90,2	23,5	84,0	22,8	80,0	22,3	70,7	21,2	62,4	20,3	55,0	19,5	52,3	19,3	
Maximum airflow rate 23 000 m ³ /h	8°C	126,8	18,5	112,9	17,5	100,0	16,5	92,7	15,9	88,0	15,5	76,9	14,6	66,8	13,8	57,6	13,0	54,2	12,7
	11°C	125,0	19,4	111,4	18,3	98,7	17,3	91,5	16,8	86,9	16,4	76,1	15,5	66,2	14,6	57,2	13,9	53,9	13,6
	14°C	123,2	20,4	109,8	19,3	97,3	18,3	90,3	17,7	85,8	17,3	75,2	16,4	65,5	15,6	56,8	14,8	53,6	14,6
	17°C	121,4	21,4	108,2	20,3	96,0	19,3	89,1	18,7	84,7	18,3	74,3	17,4	64,9	16,6	56,4	15,9	53,3	15,6
	20°C	119,6	22,4	106,6	21,3	94,6	20,3	87,9	19,7	83,5	19,3	73,4	18,4	64,2	17,6	55,9	17,0	52,9	16,7
	23°C	117,7	23,6	105,0	22,4	93,2	21,4	86,6	20,7	82,4	20,4	72,5	19,5	63,5	18,7	55,5	18,1	52,5	17,9
26°C	115,8	24,7	103,3	23,6	91,8	22,5	85,3	21,9	81,2	21,5	71,5	20,6	62,8	19,8	55,0	19,3	52,1	19,2	

PT : Gross total cooling/heating capacity in kW
PS : Sensible heating capacity in kW
PA : Compressor absorbed power
xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	4,97
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD	6,15

FAC Cooling only

FAH Heat pump

FAC 100

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Minimum airflow rate 14 000 m ³ /h	16°C	21°C	91,2	60,5	20,3	87,7	58,7	22,2	83,8	56,8	24,3	79,5	54,9	26,6	74,6	52,9
24°C			92,1	74,6	20,4	88,6	72,8	22,3	84,7	70,9	24,3	80,3	68,9	26,7	75,5	66,6	29,2
27°C			93,1	88,1	20,4	89,7	86,5	22,3	85,7	84,6	24,4	81,4	81,4	26,8	77,1	77,1	29,4
30°C			96,5	96,4	20,7	93,5	93,4	22,6	90,0	90,0	24,8	86,0	86,0	27,2	81,6	81,6	29,9
19°C		24°C	99,4	60,0	20,9	95,5	58,0	22,8	91,1	56,1	24,9	86,3	54,2	27,2	81,0	52,2	29,8
		27°C	100,3	74,1	21,0	96,4	72,3	22,9	92,0	70,4	25,0	87,2	68,4	27,3	81,9	66,2	29,9
		30°C	101,4	87,6	21,0	97,4	86,0	22,9	93,1	84,1	25,0	88,2	82,1	27,4	82,9	79,7	30,0
		33°C	102,6	100,5	21,1	98,9	98,9	23,0	95,2	95,2	25,2	90,9	90,9	27,6	86,2	86,2	30,4
22°C		27°C	107,9	59,2	21,5	103,6	57,1	23,4	98,8	55,2	25,5	93,5	53,3	27,9	87,8	51,4	30,6
		30°C	108,9	73,4	21,6	104,5	71,5	23,5	99,7	69,6	25,6	94,4	67,7	28,0	88,7	65,6	30,7
		33°C	110,0	86,8	21,7	105,6	85,1	23,6	100,7	83,3	25,7	95,5	81,4	28,1	89,7	79,1	30,8
		36°C	111,2	99,4	21,8	106,9	98,0	23,7	102,0	96,4	25,8	96,7	94,6	28,2	91,1	91,1	30,9
Nominal airflow rate 18 500 m ³ /h	16°C	21°C	96,2	68,4	20,7	92,4	66,5	22,6	88,1	64,6	24,6	83,3	62,7	26,9	78,1	60,5	29,5
		24°C	97,3	85,9	20,8	93,5	84,0	22,7	89,2	82,0	24,7	84,4	79,7	27,0	79,2	77,1	29,6
		27°C	99,4	99,3	20,9	96,1	96,0	22,9	92,3	92,2	25,0	88,0	88,0	27,4	83,2	83,2	30,0
		30°C	105,0	105,0	21,3	101,5	101,5	23,3	97,5	97,5	25,4	93,0	93,0	27,8	88,1	88,1	30,6
	19°C	24°C	104,6	67,6	21,3	100,3	65,7	23,2	95,5	63,9	25,3	90,3	61,9	27,6	84,7	59,8	30,2
		27°C	105,7	85,4	21,4	101,4	83,5	23,3	96,7	81,5	25,3	91,5	79,4	27,7	85,8	76,9	30,3
		30°C	107,1	102,6	21,5	102,8	100,8	23,4	97,7	97,7	25,4	93,2	93,2	27,8	88,1	88,1	30,5
		33°C	111,0	111,0	21,8	107,2	107,3	23,7	103,0	103,0	25,9	98,3	98,3	28,3	93,0	93,0	31,1
	22°C	27°C	113,3	66,7	21,9	108,6	64,8	23,8	103,4	62,9	25,9	97,7	61,0	28,3	91,6	59,1	30,9
		30°C	114,5	84,7	22,0	109,7	82,8	23,9	104,5	80,8	26,0	98,9	78,8	28,4	92,7	76,4	31,1
		33°C	115,8	101,9	22,1	111,1	100,2	24,0	105,8	98,2	26,1	100,2	96,0	28,5	94,1	93,3	31,2
		36°C	117,4	117,4	22,2	113,3	113,3	24,2	108,8	108,8	26,4	103,8	103,8	28,9			
Maximum airflow rate 23 000 m ³ /h	16°C	21°C	99,8	75,2	21,0	95,5	73,4	22,8	90,8	71,5	24,9	85,7	69,4	27,1	80,1	67,0	29,7
		24°C	101,2	96,1	21,1	96,9	94,2	22,9	92,2	92,0	25,0	87,2	87,1	27,3	82,1	82,1	29,9
		27°C	105,4	105,4	21,3	101,6	101,6	23,3	97,3	97,3	25,4	92,5	92,6	27,8	87,3	87,3	30,5
		30°C	111,5	111,5	21,8	107,5	107,5	23,7	103,0	103,0	25,9	98,1	98,1	28,3	92,6	92,6	31,1
	19°C	24°C	108,3	74,4	21,6	103,6	72,5	23,4	98,5	70,7	25,5	92,9	68,7	27,8	86,9	66,5	30,5
		27°C	109,7	95,8	21,7	105,0	93,8	23,5	99,9	91,7	25,6	94,3	89,3	27,9	88,2	86,5	30,6
		30°C	111,7	111,7	21,8	107,7	107,7	23,7	103,1	103,1	25,9	98,0	98,1	28,3	92,5	92,5	31,1
		33°C	117,8	117,9	22,2	113,6	113,6	24,2	108,8	108,9	26,4	103,6	103,6	28,8			
	22°C	27°C	117,2	73,3	22,2	112,1	71,5	24,1	106,5	69,7	26,2	100,5	67,9	28,5	94,0	65,9	31,3
		30°C	118,6	95,1	22,3	113,5	93,2	24,2	107,9	91,2	26,3	101,9	88,9	28,7	95,4	86,3	31,4
		33°C	120,2	116,3	22,4	115,1	114,4	24,3	109,2	109,2	26,4	103,8	103,8	28,9			
		36°C	124,5	124,5	22,7												

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	4,97
	FC/FD	0,5		FC/FD	6,15
			Absorbed power by outdoor fan (kW)	1,8	

FAC Cooling only

FAH Heat pump

FAC 120

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Entering air temperature																
Minimum airflow rate 15 000 m ³ /h	16°C	21°C	106,3	69,0	26,6	101,9	66,4	29,4	96,8	63,9	32,6	91,1	61,3	36,0	84,8	58,6	39,7
		24°C	107,3	84,3	26,7	102,8	81,8	29,5	97,8	79,3	32,6	92,0	76,5	36,1	85,7	73,5	39,8
		27°C	108,4	98,8	26,7	103,9	96,5	29,6	98,8	94,1	32,7	93,1	91,2	36,2	86,9	86,8	40,0
		30°C	110,4	110,4	26,9	106,7	106,7	29,8	102,4	102,4	33,0	97,3	97,3	36,6	91,6	91,6	40,4
	19°C	24°C	115,6	68,3	27,3	110,7	65,6	30,1	105,1	62,9	33,2	98,8	60,4	36,6	91,9	57,8	40,4
		27°C	116,7	83,7	27,4	111,7	81,2	30,2	106,0	78,6	33,3	99,7	75,9	36,7	92,8	72,9	40,5
		30°C	117,9	98,2	27,5	112,8	95,9	30,3	107,2	93,4	33,4	100,9	90,7	36,8	93,9	87,5	40,6
		33°C	119,2	111,8	27,6	114,1	109,8	30,4	108,4	107,5	33,5	102,6	102,6	37,0	96,5	96,6	40,9
	22°C	27°C	125,4	67,4	28,0	119,9	64,5	30,8	113,7	61,8	33,9	106,8	59,3	37,4	99,4	56,8	41,1
		30°C	126,5	82,8	28,1	120,9	80,1	30,9	114,7	77,6	34,0	107,9	75,0	37,5	100,3	72,2	41,2
		33°C	127,7	97,1	28,2	122,1	94,8	31,0	115,9	92,4	34,1	109,0	89,8	37,6	101,5	86,8	41,4
		36°C	129,1	110,4	28,3	123,5	108,5	31,1	117,2	106,3	34,2	110,3	103,8	37,7	102,8	100,8	41,5
Nominal airflow rate 20 500 m ³ /h	16°C	21°C	113,2	78,5	27,1	108,2	76,0	29,9	102,5	73,5	33,0	96,2	70,9	36,4	89,2	68,0	40,1
		24°C	114,5	98,1	27,2	109,4	95,6	30,0	103,7	92,9	33,1	97,4	89,9	36,5	90,4	86,4	40,2
		27°C	115,8	115,7	27,3	111,4	111,4	30,2	106,4	106,4	33,3	100,7	100,7	36,8	94,3	94,3	40,6
		30°C	121,9	121,9	27,8	117,4	117,4	30,6	112,2	112,2	33,8	106,3	106,3	37,3	99,7	99,7	41,2
	19°C	24°C	122,9	77,5	27,9	117,3	74,9	30,6	111,0	72,4	33,7	104,1	69,9	37,1	96,6	67,2	40,8
		27°C	124,2	97,4	28,0	118,6	94,8	30,7	112,3	92,2	33,8	105,4	89,3	37,2	97,8	86,0	40,9
		30°C	125,6	116,4	28,1	120,0	114,0	30,8	113,7	111,3	33,9	106,6	106,6	37,3	99,9	99,9	41,2
		33°C	128,8	128,8	28,3	123,9	123,9	31,2	118,3	118,4	34,3	112,1	112,1	37,8	105,2	105,2	41,7
	22°C	27°C	132,9	76,1	28,6	126,7	73,6	31,4	119,9	71,1	34,4	112,4	68,8	37,9	104,3	66,2	41,6
		30°C	134,3	96,2	28,7	128,1	93,7	31,5	121,2	91,2	34,6	113,7	88,5	38,0	105,6	85,4	41,8
		33°C	135,8	115,4	28,8	129,6	113,0	31,6	122,7	110,5	34,7	115,2	107,5	38,1	107,0	104,0	42,0
		36°C	137,4	133,5	29,0	130,6	130,6	31,7	124,7	124,7	34,9	118,1	118,1	38,4	110,8	110,8	42,3
Maximum airflow rate 23 000 m ³ /h	16°C	21°C	115,6	82,3	27,3	110,3	79,9	30,1	104,3	77,4	33,1	97,7	74,7	36,5	90,4	71,7	40,2
		24°C	117,0	103,8	27,4	111,6	101,3	30,2	105,6	98,5	33,2	99,0	95,4	36,6	91,7	91,6	40,3
		27°C	119,6	119,6	27,6	114,9	114,9	30,4	109,5	109,5	33,6	103,4	103,4	37,0	96,6	96,7	40,9
		30°C	126,1	126,1	28,1	121,2	121,2	30,9	115,6	115,6	34,1	109,3	109,3	37,6	102,4	102,3	41,5
	19°C	24°C	125,3	81,1	28,0	119,4	78,7	30,8	112,9	76,3	33,8	105,7	73,8	37,2	97,9	71,0	41,0
		27°C	126,8	103,1	28,1	120,8	100,6	30,9	114,3	97,9	34,0	107,1	94,9	37,4	99,2	91,4	41,1
		30°C	128,3	124,3	28,3	122,4	121,8	31,0	116,0	116,0	34,1	109,6	109,6	37,6	102,4	102,5	41,4
		33°C	133,2	133,2	28,6	127,9	127,9	31,5	122,0	122,0	34,6	115,4	115,4	38,1	108,1	108,0	42,1
	22°C	27°C	135,5	79,7	28,8	129,0	77,2	31,5	121,9	74,9	34,6	114,1	72,6	38,0	105,7	70,1	41,9
		30°C	137,0	101,9	28,9	130,5	99,5	31,7	123,3	96,9	34,7	115,6	94,2	38,2	107,1	91,0	42,0
		33°C	138,6	123,3	29,0	132,1	120,9	31,8	124,9	118,2	34,9	117,1	115,1	38,3	108,4	108,4	42,1
		36°C	140,5	140,5	29,2	134,9	134,9	32,0	128,6	128,6	35,2	121,6	121,6	38,8			

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	5,99
	FC/FD	0,5		FC/FD	7,87
			Absorbed power by outdoor fan (kW)	2,0	

FAC Cooling only

FAH Heat pump

FAC 150

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow rate 18 000 m ³ /h	16°C	21°C	124,6	81,8	31,8	119,0	78,5	35,2	112,7	75,5	38,9	105,6	72,4	43,0	97,8	69,1	47,4
		24°C	125,6	99,8	31,9	120,1	96,9	35,2	113,7	93,8	39,0	106,6	90,6	43,1	98,8	86,9	47,5
		27°C	126,9	117,3	32,0	121,4	114,7	35,4	115,0	111,8	39,1	107,7	107,7	43,2	100,8	100,8	47,8
		30°C	130,7	130,6	32,2	125,9	125,9	35,7	120,3	120,3	39,6	113,8	113,8	43,8	106,5	106,5	48,4
	19°C	24°C	135,6	80,9	32,8	129,3	77,4	36,1	122,3	74,2	39,7	114,4	71,1	43,8	105,8	68,0	48,2
		27°C	136,6	99,1	32,8	130,3	96,0	36,2	123,3	92,9	39,8	115,4	89,6	43,9	106,8	86,1	48,3
		30°C	137,9	116,6	32,9	131,6	113,9	36,3	124,6	111,0	40,0	116,7	107,7	44,0	108,1	103,9	48,5
		33°C	139,5	133,6	33,1	133,2	131,3	36,4	127,0	127,0	40,2	120,1	120,1	44,4	112,3	112,3	49,0
	22°C	27°C	147,1	79,8	33,8	140,0	76,2	37,0	132,2	72,9	40,7	123,6	69,8	44,8	114,3	66,8	49,2
		30°C	148,1	98,0	33,8	141,1	94,8	37,1	133,2	91,6	40,8	124,6	88,5	44,9	115,3	85,1	49,4
		33°C	149,4	115,4	33,9	142,4	112,6	37,3	134,5	109,7	40,9	125,9	106,6	45,0	116,5	103,0	49,5
		36°C	151,0	132,1	34,1	143,9	129,8	37,4	136,1	127,3	41,1	127,5	124,2	45,2	118,3	118,3	49,8
Nominal airflow rate 26 000 m ³ /h	16°C	21°C	133,6	95,8	32,6	127,3	92,7	35,9	120,2	89,6	39,6	112,3	86,3	43,6	103,6	82,7	47,9
		24°C	135,0	120,3	32,8	128,7	117,2	36,1	121,6	113,8	39,7	113,7	110,1	43,7	104,9	104,9	48,2
		27°C	137,9	137,9	33,0	132,5	132,4	36,4	126,2	126,2	40,2	119,1	119,1	44,3	111,1	111,1	48,8
		30°C	145,8	145,8	33,7	140,0	140,0	37,1	133,3	133,3	40,8	125,7	125,7	45,0	117,3	117,3	49,5
	19°C	24°C	144,8	94,7	33,6	137,8	91,4	36,8	129,9	88,3	40,5	121,3	85,1	44,5	111,9	81,7	48,8
		27°C	146,3	119,6	33,7	139,2	116,4	37,0	131,3	113,1	40,6	122,7	109,4	44,6	113,3	105,2	49,0
		30°C	148,0	144,1	33,9	140,2	140,2	37,1	133,5	133,5	40,8	125,9	125,9	45,0	117,4	117,4	49,5
		33°C	154,0	154,0	34,4	147,7	147,7	37,8	140,5	140,6	41,5	132,5	132,6	45,7	123,7	123,7	50,3
	22°C	27°C	156,5	93,3	34,6	148,7	89,9	37,8	140,1	86,8	41,4	130,7	83,7	45,5	120,6	80,5	49,9
		30°C	158,0	118,6	34,7	150,1	115,3	38,0	141,5	112,0	41,6	132,1	108,5	45,6	122,0	104,5	50,1
		33°C	159,7	143,2	34,8	151,9	140,1	38,1	143,2	136,8	41,8	133,8	132,9	45,8			
		36°C	162,4	162,4	35,1	155,6	155,7	38,5	148,0	148,0	42,3						
Maximum airflow rate 35 000 m ³ /h	16°C	21°C	140,0	109,3	33,2	132,8	106,2	36,4	124,8	103,0	40,0	116,1	99,5	43,9	106,6	95,4	48,3
		24°C	141,9	141,1	33,3	134,6	134,5	36,5	127,5	127,5	40,2	119,5	119,5	44,3	110,7	110,7	48,8
		27°C	149,3	149,3	33,9	142,6	142,6	37,3	135,1	135,1	41,0	126,8	126,8	45,1	117,6	117,6	49,6
		30°C	157,8	157,9	34,7	150,8	150,8	38,0	142,9	142,9	41,7	134,1	134,1	45,9			
	19°C	24°C	151,5	108,0	34,1	143,6	104,9	37,3	134,9	101,8	40,9	125,3	98,5	44,9	115,1	94,6	49,3
		27°C	153,5	140,6	34,3	145,5	137,2	37,5	136,7	133,5	41,1	126,9	127,0	45,1	117,7	117,7	49,6
		30°C	158,1	158,1	34,7	151,0	151,0	38,0	143,0	143,0	41,8	134,2	134,2	45,9			
		33°C	166,7	166,7	35,4	159,1	159,2	38,8									
	22°C	27°C	163,5	106,4	35,1	154,8	103,3	38,4	145,3	100,4	42,0	135,0	97,3	46,0			
		30°C	165,4	139,7	35,3	156,7	136,4	38,6	147,2	132,9	42,2	136,9	128,8	46,2			
		33°C	167,1	167,1	35,5	159,5	159,5	38,8									
		36°C															

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	6,40
	FC/FD	0,5		FC/FD	7,81
			Absorbed power by outdoor fan (kW)	4,6	

FAC Cooling only

FAH Heat pump

FAC 170

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C			
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	
	Minimum airflow rate 21 000 m³/h	16°C	21°C	147,6	96,3	36,2	141,8	92,8	40,0	135,0	89,3	44,3	127,3	85,8	49,1	118,7	82,1	54,4
24°C			148,9	117,6	36,3	143,0	114,4	40,1	136,2	111,0	44,4	128,5	107,3	49,2	119,9	103,2	54,5	
27°C			150,4	138,1	36,4	144,5	135,2	40,2	137,7	131,9	44,5	130,0	128,2	49,3	121,5	121,5	54,8	
19°C		30°C	153,7	153,6	36,6	148,8	148,8	40,6	143,0	142,9	45,1	136,1	136,1	50,0	128,2	128,2	55,6	
		24°C	161,0	95,4	37,3	154,3	91,6	41,1	146,7	88,1	45,4	138,2	84,6	50,2	128,8	81,0	55,5	
		27°C	162,3	116,9	37,4	155,6	113,5	41,2	148,0	110,0	45,5	139,4	106,4	50,3	130,0	102,4	55,7	
22°C		30°C	163,8	137,3	37,5	157,1	134,3	41,4	149,5	131,1	45,6	140,9	127,4	50,4	131,5	123,1	55,9	
		33°C	165,7	156,8	37,7	159,0	154,3	41,5	151,4	151,4	45,8	143,9	143,9	50,8	135,5	135,5	56,4	
		27°C	174,9	94,1	38,5	167,4	90,1	42,3	159,0	86,5	46,6	149,7	83,0	51,4	139,5	79,6	56,9	
Nominal airflow rate 30 000 m³/h		16°C	30°C	176,2	115,5	38,6	168,7	112,0	42,4	160,3	108,5	46,7	150,9	105,0	51,5	140,7	101,2	57,1
			33°C	177,8	135,7	38,7	170,3	132,7	42,5	161,8	129,5	46,8	152,5	126,1	51,7	142,2	122,1	57,3
			36°C	179,7	154,8	38,9	172,1	152,3	42,7	163,7	149,6	47,0	154,3	146,3	51,9	144,0	142,2	57,5
	19°C	21°C	158,5	111,6	37,1	151,7	108,3	40,9	144,0	104,9	45,1	135,3	101,4	49,8	125,8	97,4	55,1	
		24°C	160,2	140,4	37,3	153,4	137,1	41,1	145,7	133,4	45,3	137,0	129,3	50,0	127,5	124,5	55,3	
		27°C	163,0	162,9	37,5	157,2	157,1	41,4	150,3	150,3	45,8	142,5	142,5	50,7	133,7	133,8	56,2	
	22°C	30°C	171,8	171,9	38,2	165,8	165,8	42,2	158,7	158,7	46,6	150,6	150,6	51,5	141,5	141,5	57,1	
		24°C	172,1	110,2	38,3	164,5	106,8	42,0	156,0	103,5	46,2	146,5	100,0	51,0	136,2	96,3	56,4	
		27°C	173,9	139,5	38,4	166,3	136,1	42,2	157,7	132,6	46,4	148,3	128,6	51,2	137,9	124,1	56,6	
	22°C	30°C	176,0	167,8	38,6	168,4	164,6	42,4	159,4	159,4	46,6	151,0	151,0	51,6	141,6	141,6	57,1	
		33°C	181,9	182,0	39,1	175,2	175,3	43,0	167,6	167,6	47,4	158,9	158,9	52,4	149,2	149,2	58,1	
		27°C	186,4	108,3	39,4	178,0	104,8	43,2	168,6	101,5	47,5	158,3	98,3	52,3	147,1	94,9	57,9	
Maximum airflow rate 35 000 m³/h	16°C	30°C	188,2	137,9	39,6	179,7	134,5	43,4	170,4	131,1	47,7	160,1	127,4	52,5	148,9	123,2	58,1	
		33°C	190,3	166,4	39,8	181,8	163,2	43,6	172,4	159,8	47,9	162,1	155,7	52,8	149,8	149,8	58,2	
		36°C	192,4	192,4	39,9	185,1	185,1	43,9	176,8	176,8	48,4	167,5	167,5	53,4				
	19°C	21°C	162,8	119,2	37,5	155,5	116,0	41,2	147,2	112,6	45,4	138,1	109,0	50,1	128,0	104,8	55,4	
		24°C	164,8	152,0	37,6	157,5	148,7	41,4	149,2	144,9	45,6	139,9	139,8	50,4	130,7	130,6	55,8	
		27°C	170,2	170,1	38,0	163,7	163,7	41,9	156,2	156,2	46,3	147,7	147,7	51,2	138,2	138,2	56,7	
	22°C	30°C	179,6	179,6	38,8	172,9	172,9	42,8	165,1	165,1	47,2	156,3	156,3	52,2	146,5	146,5	57,8	
		24°C	176,6	117,5	38,6	168,5	114,3	42,3	159,4	111,1	46,6	149,5	107,7	51,3	138,6	103,8	56,8	
		27°C	178,7	151,1	38,8	170,5	147,8	42,5	161,5	144,2	46,8	151,5	140,0	51,6	140,6	135,0	57,1	
	22°C	30°C	180,7	180,7	38,9	173,6	173,6	42,8	165,5	165,5	47,2	156,4	156,5	52,2	146,3	146,4	57,8	
		33°C	190,0	190,0	39,7	182,6	182,6	43,6	174,2	174,2	48,1	164,9	164,9	53,2	154,5	154,5	59,0	
		27°C	191,1	115,3	39,8	182,1	112,1	43,6	172,2	109,1	47,8	161,4	105,9	52,7	149,7	102,5	58,4	
22°C	30°C	193,1	149,5	40,0	184,2	146,2	43,8	174,3	142,8	48,1	163,5	138,9	53,0	151,7	134,4	58,7		
	33°C	195,5	182,7	40,2	186,5	179,5	44,0	176,6	175,8	48,3	165,5	165,5	53,2	154,8	154,8	59,0		
	36°C	200,7	200,7	40,6	192,7	192,7	44,6	183,8	183,7	49,1								

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH 8,99
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD 10,56
				4,6

FAC Cooling only

FAH Heat pump

FAC 200

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow rate 24 000 m ³ /h	16°C	21°C	173,2	112,3	40,3	166,8	108,5	44,2	159,5	104,7	48,4	151,2	100,8	53,0	141,9	96,8	58,2
		24°C	174,6	136,9	40,4	168,2	133,3	44,2	160,8	129,6	48,5	152,5	125,6	53,1	143,2	121,1	58,3
		27°C	176,5	160,4	40,5	170,0	157,2	44,4	162,6	153,6	48,6	154,2	149,6	53,3	144,9	144,8	58,5
		30°C	180,0	179,9	40,7	174,6	174,6	44,7	168,2	168,2	49,1	160,9	160,9	54,0	152,5	152,5	59,4
	19°C	24°C	189,1	111,3	41,5	181,8	107,1	45,3	173,5	103,2	49,5	164,3	99,4	54,2	154,1	95,5	59,5
		27°C	190,5	136,1	41,6	183,1	132,3	45,4	174,8	128,5	49,7	165,6	124,5	54,4	155,4	120,2	59,7
		30°C	192,3	159,5	41,7	184,9	156,2	45,5	176,6	152,6	49,8	167,3	148,7	54,5	157,1	144,1	59,8
		33°C	194,6	181,8	41,9	187,2	179,0	45,7	178,8	175,8	50,0	170,2	170,3	54,8	161,3	161,4	60,4
	22°C	27°C	205,7	109,7	42,7	197,5	105,4	46,5	188,4	101,5	50,8	178,3	97,7	55,6	167,2	93,9	61,0
		30°C	207,1	134,5	42,8	198,9	130,6	46,6	189,7	126,9	50,9	179,6	123,0	55,7	168,5	118,9	61,2
		33°C	209,0	157,8	42,9	200,7	154,4	46,8	191,5	150,9	51,1	181,3	147,2	55,9	170,2	142,9	61,4
		36°C	211,3	179,6	43,1	202,9	176,9	46,9	193,7	173,8	51,2	183,5	170,2	56,1	172,4	165,9	61,6
Nominal airflow rate 35 000 m ³ /h	16°C	21°C	187,0	131,6	41,4	179,5	127,9	45,2	171,1	124,1	49,3	161,7	120,2	54,0	151,3	115,9	59,1
		24°C	189,1	165,0	41,6	181,6	161,3	45,3	173,1	157,3	49,5	163,7	152,8	54,1	153,4	147,6	59,3
		27°C	192,1	192,0	41,8	185,7	185,6	45,7	178,3	178,2	50,0	169,9	169,9	54,8	160,5	160,5	60,2
		30°C	202,9	202,9	42,5	196,1	196,1	46,5	188,4	188,4	50,8	179,6	179,6	55,7	169,8	169,8	61,2
	19°C	24°C	203,4	129,9	42,6	195,0	126,1	46,3	185,6	122,4	50,5	175,3	118,6	55,2	164,1	114,5	60,5
		27°C	205,5	164,0	42,7	197,1	160,3	46,5	187,7	156,3	50,7	177,4	152,0	55,4	166,1	147,1	60,8
		30°C	208,0	197,0	42,9	199,6	193,4	46,7	190,2	189,4	50,9	180,0	180,0	55,7	170,0	170,1	61,2
		33°C	214,7	214,7	43,4	207,4	207,4	47,3	199,0	199,1	51,7	189,8	189,8	56,7	179,5	179,5	62,3
	22°C	27°C	220,6	127,7	43,8	211,3	123,9	47,6	201,0	120,3	51,8	189,8	116,7	56,6	177,7	112,9	62,1
		30°C	222,7	162,3	43,9	213,4	158,5	47,7	203,1	154,7	52,0	191,9	150,6	56,8	179,7	146,1	62,3
		33°C	225,2	195,5	44,1	215,9	191,9	47,9	205,6	188,1	52,2	194,3	183,7	57,0	182,2	178,5	62,5
		36°C	228,2	227,4	44,3	218,9	218,9	48,2	210,0	210,0	52,7	200,2	200,2	57,7	189,4	189,4	63,4
Maximum airflow rate 43 000 m ³ /h	16°C	21°C	193,7	143,8	41,9	185,4	140,2	45,6	176,1	136,4	49,7	166,0	132,3	54,4	154,8	127,7	59,6
		24°C	196,3	183,7	42,1	188,0	179,8	45,8	178,7	175,5	50,0	168,5	168,4	54,6	158,5	158,5	60,0
		27°C	203,6	203,5	42,5	196,1	196,1	46,4	187,7	187,7	50,7	178,3	178,4	55,5	167,9	168,0	61,0
		30°C	215,3	215,3	43,4	207,5	207,5	47,3	198,8	198,7	51,7	189,0	189,0	56,6	178,2	178,2	62,2
	19°C	24°C	210,4	141,9	43,1	201,2	138,3	46,8	191,1	134,7	51,0	180,0	130,9	55,7	168,0	126,6	61,1
		27°C	213,0	182,8	43,3	203,8	179,0	47,0	193,7	174,8	51,2	182,6	170,1	56,0	170,5	164,6	61,4
		30°C	215,8	215,8	43,4	207,9	207,9	47,3	198,9	199,0	51,6	189,0	189,0	56,6	178,1	178,1	62,2
		33°C	227,7	227,7	44,3	219,4	219,4	48,2	210,0	210,1	52,6	199,7	199,7	57,6	188,4	188,4	63,4
	22°C	27°C	228,0	139,3	44,3	217,9	135,8	48,1	206,8	132,4	52,3	194,9	128,9	57,1	182,0	125,1	62,7
		30°C	230,6	181,0	44,5	220,5	177,3	48,3	209,4	173,5	52,5	197,4	169,1	57,4	184,5	164,1	63,0
		33°C	233,7	221,6	44,7	223,6	217,9	48,5	210,4	210,4	52,6	200,0	200,0	57,6	188,5	188,5	63,4
		36°C	240,3	240,3	45,2	231,5	231,4	49,1	221,6	221,6	53,6						

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH 8,95
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD 10,81
				4,1

FAC Cooling only

FAH Heat pump

FAH 230

COOLING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C					
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA			
Minimum airflow rate 27 000 m ³ /h	Entering air temperature	16°C	21°C	200,7	129,2	52,9	192,3	124,1	58,7	182,5	119,1	65,1	171,4	114,0	72,1	158,8	108,6	79,6		
			24°C	202,5	156,6	53,0	194,1	152,0	58,8	184,2	147,2	65,2	173,0	141,9	72,2	160,3	135,9	79,7		
			27°C	204,5	183,0	53,1	195,9	178,9	58,9	186,0	174,3	65,3	174,7	168,9	72,3	161,9	161,8	80,1		
		19°C	30°C	207,8	207,7	53,3	200,4	200,4	59,2	191,6	191,6	65,8	181,6	181,6	72,9	170,1	170,2	80,7		
			24°C	218,8	128,2	54,2	209,3	122,7	59,9	198,4	117,5	66,3	186,0	112,4	73,3	172,3	107,2	80,8		
			27°C	220,8	155,6	54,4	211,3	150,7	60,1	200,2	145,8	66,4	187,8	140,6	73,4	174,0	134,8	81,0		
		22°C	30°C	223,0	181,9	54,5	213,3	177,6	60,2	202,2	173,0	66,6	189,7	167,8	73,6	175,8	161,6	81,2		
			33°C	225,2	206,8	54,7	215,4	203,3	60,4	204,2	199,2	66,7	192,2	192,2	73,8	179,9	179,9	81,7		
			27°C	237,6	126,8	55,6	226,9	120,9	61,3	214,9	115,6	67,6	201,4	110,5	74,6	186,5	105,5	82,3		
		Nominal airflow rate 39 000 m ³ /h	Entering air temperature	16°C	27°C	239,8	154,0	55,8	229,1	148,8	61,5	216,9	143,8	67,8	203,4	138,8	74,8	188,4	133,3	82,5
					30°C	242,2	179,7	56,0	231,3	175,4	61,6	219,1	170,9	68,0	205,4	166,0	75,0	190,4	160,2	82,7
					36°C	244,5	204,0	56,1	233,6	200,6	61,8	221,3	196,8	68,1	207,6	192,1	75,2	192,4	186,1	83,0
19°C	21°C			217,2	150,2	54,1	207,2	145,3	59,8	195,7	140,4	66,0	182,8	135,1	72,9	168,6	129,2	80,4		
	24°C			219,6	187,7	54,3	209,5	182,9	60,0	198,0	177,6	66,2	185,0	171,5	73,1	170,7	164,3	80,6		
	27°C			222,2	222,1	54,5	213,3	213,2	60,3	203,0	202,9	66,6	191,3	191,4	73,7	178,4	178,4	81,5		
22°C	30°C			233,3	233,4	55,3	224,2	224,2	61,1	213,7	213,7	67,5	201,9	201,9	74,7	188,7	188,7	82,5		
	24°C			236,0	148,3	55,5	224,8	143,2	61,1	212,2	138,3	67,3	198,1	133,3	74,2	182,7	127,7	81,8		
	27°C			238,6	186,3	55,7	227,3	181,4	61,3	214,6	176,2	67,5	200,5	170,5	74,4	185,0	163,7	82,1		
Maximum airflow rate 43 000 m ³ /h	Entering air temperature			16°C	30°C	241,3	223,2	55,9	229,9	218,6	61,5	217,1	213,3	67,7	202,9	202,9	74,7	189,1	189,1	82,5
					33°C	247,2	247,3	56,4	237,2	237,3	62,1	225,8	225,9	68,5	213,1	213,2	75,7	199,1	199,1	83,6
					27°C	255,4	145,9	56,9	243,1	140,7	62,5	229,3	135,9	68,7	214,1	131,1	75,7	197,5	125,9	83,5
		19°C	30°C	258,2	184,1	57,1	245,8	179,2	62,7	231,9	174,2	69,0	216,7	168,8	75,9	200,0	162,6	83,7		
			33°C	261,1	221,1	57,3	248,6	216,6	62,9	234,6	211,6	69,2	219,3	205,7	76,2	202,5	198,6	84,0		
			36°C	264,0	256,7	57,6	250,9	250,9	63,2	238,6	238,7	69,6	225,1	225,1	76,8	210,2	210,2	84,8		
		Maximum airflow rate 43 000 m ³ /h	Entering air temperature	16°C	21°C	221,1	156,3	54,4	210,5	151,5	60,0	198,5	146,6	66,2	185,1	141,2	73,1	170,2	135,0	80,6
					24°C	223,7	197,1	54,6	213,0	192,2	60,2	200,9	186,8	66,4	187,4	180,4	73,3	172,2	172,1	81,0
					27°C	228,3	228,2	54,9	218,8	218,7	60,6	207,9	207,9	67,0	195,7	195,7	74,1	182,2	182,2	81,9
				19°C	30°C	240,1	240,1	55,8	230,4	230,4	61,5	219,3	219,3	68,0	206,9	206,9	75,1	193,1	193,1	83,1
					24°C	240,1	154,2	55,8	228,3	149,3	61,4	215,1	144,5	67,6	200,6	139,4	74,5	184,6	133,7	82,2
					27°C	242,9	195,7	56,0	231,0	190,8	61,6	217,8	185,6	67,8	203,1	179,5	74,7	187,0	172,4	82,4
22°C	30°C			245,7	236,3	56,2	233,8	231,5	61,8	220,5	220,6	68,0	207,5	207,5	75,1	193,1	193,1	83,0		
	33°C			254,2	254,3	56,9	243,6	243,6	62,6	231,7	231,7	69,0	218,4	218,4	76,2	203,8	203,8	84,2		
	27°C			259,7	151,5	57,2	246,8	146,6	62,8	232,5	142,0	69,0	216,8	137,2	76,0	199,6	132,0	83,9		
22°C	30°C			262,7	193,4	57,5	249,7	188,6	63,0	235,3	183,6	69,3	219,5	178,1	76,3	202,3	171,5	84,1		
	33°C			265,8	234,2	57,7	252,7	229,6	63,3	238,2	224,4	69,5	222,3	218,2	76,5	204,7	204,7	84,2		
	36°C			269,0	269,0	58,0	257,5	257,5	63,7	244,7	244,7	70,1	230,6	230,6	77,3					

HEATING CAPACITY AND ABSORBED POWER

FAH	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-15°C		
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	
Minimum airflow rate 27 000 m ³ /h	Entering air temperature Dry bulb	8°C	289,9	62,2	261,2	58,4	234,3	54,9	219,0	52,9	209,1	51,6	185,7	48,5	163,9	45,7	143,9	43,1	136,3	42,2
		11°C	285,0	65,8	257,0	61,8	230,8	58,1	215,8	55,9	206,2	54,6	183,4	51,4	162,2	48,5	142,9	45,9	135,6	44,9
		14°C	280,1	69,7	252,7	65,4	227,1	61,4	212,5	59,2	203,2	57,7	181,0	54,4	160,5	51,4	141,8	48,8	134,7	47,8
		17°C	275,1	74,0	248,4	69,3	223,4	65,0	209,2	62,6	200,1	61,1	178,5	57,6	158,7	54,4	140,6	51,7	133,8	50,8
		20°C	270,0	78,5	243,9	73,4	219,5	68,8	205,8	66,2	196,9	64,6	176,0	60,8	156,8	57,5	139,3	54,8	132,8	53,8
		23°C	264,8	83,4	239,4	77,8	215,6	72,8	202,2	70,0	193,6	68,2	173,4	64,2	154,8	60,7	138,0	57,8	131,7	56,8
Nominal airflow rate 39 000 m ³ /h	Entering air temperature Dry bulb	26°C	259,5	88,6	234,7	82,5	211,6	76,9	198,6	73,9	190,3	71,9	170,6	67,6	152,7	63,8	136,5	60,7	130,5	59,7
		8°C	302,5	53,9	272,0	51,0	243,2	48,2	226,8	46,5	216,1	45,5	190,8	43,0	167,2	40,6	145,3	38,4	137,0	37,6
		11°C	297,8	56,8	267,9	53,7	239,8	50,8	223,7	49,2	213,3	48,1	188,6	45,5	165,6	43,2	144,4	41,0	136,3	40,2
		14°C	293,0	59,9	263,7	56,7	236,2	53,7	220,5	52,0	210,4	50,9	186,4	48,3	164,0	45,9	143,4	43,8	135,6	43,1
		17°C	288,1	63,3	259,5	59,9	232,6	56,8	217,3	55,0	207,4	53,8	184,0	51,2	162,3	48,8	142,3	46,8	134,8	46,1
		20°C	283,1	66,9	255,1	63,3	228,9	60,0	214,0	58,2	204,4	57,0	181,6	54,3	160,5	51,9	141,2	49,9	133,9	49,2
Maximum airflow rate 43 000 m ³ /h	Entering air temperature Dry bulb	23°C	278,0	70,8	250,7	67,0	225,1	63,5	210,6	61,5	201,2	60,3	179,1	57,5	158,7	55,1	139,9	53,1	132,9	52,5
		26°C	272,9	75,0	246,2	70,9	221,2	67,1	207,1	65,1	198,0	63,8	176,5	60,9	156,7	58,4	138,6	56,5	131,9	55,9
		8°C	305,9	52,1	274,7	49,3	245,3	46,7	228,5	45,1	217,6	44,1	191,7	41,7	167,4	39,5	144,9	37,4	136,4	36,6
		11°C	301,2	54,9	270,7	52,0	241,9	49,3	225,5	47,7	214,9	46,7	189,5	44,3	165,9	42,0	144,0	40,0	135,8	39,3
		14°C	296,4	57,8	266,6	54,9	238,4	52,1	222,4	50,5	212,0	49,4	187,3	47,0	164,4	44,8	143,1	42,8	135,1	42,1
		17°C	291,6	61,1	262,4	58,0	234,9	55,1	219,2	53,4	209,1	52,4	185,0	49,9	162,7	47,7	142,1	45,9	134,3	45,2
Maximum airflow rate 43 000 m ³ /h	Entering air temperature Dry bulb	20°C	286,6	64,5	258,0	61,3	231,2	58,3	215,9	56,6	206,1	55,5	182,6	53,0	160,9	50,8	141,0	49,1	133,5	48,5
		23°C	281,6	68,3	253,7	64,8	227,4	61,7	212,5	59,9	202,9	58,8	180,2	56,3	159,1	54,2	139,8	52,1	132,5	52,0
		26°C	276,5	72,3	249,2	68,6	223,6	65,3	209,1	63,5	199,7	62,3	177,6	59,8	157,2	57,6	138,5	56,1	131,5	55,6

PT : Gross total cooling/heating capacity in kW
 PS : Sensible heating capacity in kW
 PA : Compressor absorbed power
 xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH	11,34
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD	14,01

FAC Cooling only

FAH Heat pump

FAC 230

COOLING CAPACITY AND ABSORBED POWER

FAC	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Entering air temperature																
Minimum airflow rate 27 000 m³/h	16°C	21°C	202,7	129,8	52,9	194,5	124,7	58,7	185,0	119,8	65,1	174,2	114,9	72,1	162,0	109,7	79,6
		24°C	204,4	157,4	53,0	196,2	152,8	58,8	186,6	148,0	65,2	175,7	142,8	72,2	163,5	137,0	79,7
		27°C	206,4	183,8	53,1	198,1	179,7	58,9	188,5	175,2	65,3	177,6	169,9	72,3	165,3	163,7	79,9
		30°C	209,5	209,4	53,3	202,2	202,2	59,2	193,7	193,7	65,8	183,9	183,9	72,9	172,9	172,9	80,7
	19°C	24°C	220,9	128,6	54,3	211,6	123,2	60,0	201,0	118,1	66,3	189,0	113,1	73,3	175,7	108,1	80,8
		27°C	222,7	156,3	54,4	213,3	151,4	60,1	202,7	146,5	66,4	190,6	141,4	73,4	177,2	135,8	81,0
		30°C	224,8	182,6	54,5	215,4	178,3	60,2	204,7	173,8	66,6	192,6	168,7	73,6	179,1	162,7	81,2
	22°C	33°C	227,2	207,6	54,7	217,8	204,1	60,4	207,0	200,0	66,8	194,6	194,6	73,9	182,7	182,7	81,7
		27°C	240,0	126,9	55,7	229,6	121,2	61,4	217,8	116,0	67,7	204,7	111,1	74,6	190,2	106,2	82,3
		30°C	241,8	154,5	55,8	231,3	149,3	61,5	219,5	144,4	67,8	206,3	139,5	74,8	191,8	134,2	82,5
		33°C	244,0	180,4	56,0	233,5	176,0	61,7	221,6	171,6	68,0	208,4	166,7	75,0	193,8	161,1	82,8
	Nominal airflow rate 39 000 m³/h	16°C	24°C	246,5	204,8	56,2	235,9	201,3	61,8	224,0	197,4	68,2	210,7	192,8	75,2	196,1	187,1
21°C			219,1	150,6	54,2	209,4	145,8	59,8	198,3	141,0	66,1	185,9	135,9	73,0	172,1	130,2	80,4
24°C			221,5	188,3	54,3	211,7	183,5	60,0	200,6	178,3	66,2	188,1	172,5	73,1	174,3	165,6	80,6
27°C			224,0	223,8	54,5	215,2	215,1	60,3	205,1	205,1	66,7	193,8	193,8	73,7	181,3	181,3	81,5
19°C		30°C	235,1	235,2	55,3	226,2	226,2	61,1	215,9	216,0	67,5	204,5	204,5	74,6	191,7	191,8	82,5
		24°C	238,0	148,5	55,5	227,1	143,6	61,1	214,9	138,7	67,4	201,3	133,8	74,3	186,4	128,5	81,9
		27°C	240,4	186,8	55,7	229,5	181,9	61,3	217,2	176,8	67,6	203,6	171,2	74,5	188,6	164,8	82,1
22°C		30°C	243,2	223,8	55,9	232,2	219,2	61,5	219,9	214,0	67,8	205,7	205,7	74,8	192,2	192,3	82,5
		33°C	248,9	249,0	56,4	239,1	239,2	62,1	228,0	228,1	68,5	215,7	215,7	75,7	202,1	202,1	83,6
		27°C	257,6	145,8	57,0	245,6	140,8	62,6	232,2	136,0	68,8	217,5	131,4	75,8	201,5	126,5	83,6
		30°C	260,1	184,4	57,2	248,1	179,5	62,8	234,7	174,6	69,0	219,9	169,4	76,0	203,8	163,4	83,8
Maximum airflow rate 43 000 m³/h		16°C	33°C	263,0	221,5	57,4	250,9	217,0	63,0	237,4	212,1	69,3	222,6	206,4	76,3	206,4	199,6
	36°C		266,2	257,3	57,6	254,0	253,3	63,2	240,9	240,9	69,6	227,7	227,7	76,8	213,2	213,2	84,8
	21°C		223,1	156,7	54,4	212,8	152,0	60,0	201,2	147,2	66,3	188,3	142,0	73,1	174,0	136,1	80,7
	24°C		225,7	197,7	54,6	215,4	192,9	60,2	203,7	187,6	66,5	190,7	181,4	73,4	176,4	174,1	80,9
	19°C	27°C	230,1	230,0	54,9	220,8	220,7	60,6	210,2	210,2	67,0	198,3	198,3	74,1	185,1	185,2	81,9
		30°C	242,0	242,1	55,8	232,5	232,5	61,6	221,7	221,7	68,0	209,7	209,7	75,1	196,4	196,3	83,1
		24°C	242,1	154,4	55,8	230,7	149,6	61,4	218,0	144,9	67,6	203,9	140,0	74,5	188,4	134,5	82,2
		27°C	244,8	196,2	56,0	233,4	191,3	61,6	220,6	186,1	67,8	206,4	180,3	74,8	190,9	173,5	82,5
	22°C	30°C	247,8	236,9	56,3	236,3	232,1	61,8	223,0	223,0	68,1	210,3	210,3	75,2	196,3	196,4	83,0
		33°C	256,0	256,1	56,9	245,6	245,7	62,6	234,0	234,0	69,0	221,1	221,1	76,2	206,9	206,9	84,2
		27°C	262,0	151,4	57,3	249,4	146,6	62,9	235,6	142,0	69,1	220,3	137,5	76,1	203,7	132,5	84,0
		30°C	264,7	193,7	57,5	252,1	188,9	63,1	238,2	184,0	69,3	222,9	178,6	76,4	206,3	172,3	84,2
22°C	33°C	267,8	234,6	57,7	255,2	230,0	63,3	241,2	224,9	69,6	225,8	218,9	76,6	208,2	208,2	84,3	
	36°C	270,8	270,8	58,0	259,5	259,5	63,7	247,0	247,0	70,2	233,3	233,2	77,4	218,3	218,2	85,5	

PT : Gross total cooling/heating capacity in kW

PS : Sensible heating capacity in kW

PA : Compressor absorbed power

xxx : Data according to Eurovent standard conditions

Absorbed power by control device (kW)	FC/FH	0,3	Supply fan absorbed power (kW)	FC/FH 11,34
	FC/FD	0,5	Absorbed power by outdoor fan (kW)	FC/FD 14,01
				4,1

5.2 PERFORMANCES AT PART LOAD OPERATION

PERFORMANCES AT PART LOAD OPERATION (*)Eurovent conditions

(*) Part load data according to ANSI/ARI Standard 340/360 conditions

Cooling mode : Outdoor temperature = 29,7 °C DB / Indoor temperature : 26,7 °C DB / 19,4 °C WB

Heating mode : Outdoor temperature = 7 °C DB / Indoor temperature = 6 °C WB / 20 °C DB

		085		100		120		
FAC	Nominal airflow rate at full load (m³/h)	15000		18500		20500		
	Nominal ESP at full load (Pa)	250		250		250		
	Outdoor temperature* (°C)	Part load ratio* (%)	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER
	30	74	62,3	3,47	72,7	3,10	85,2	3,05
	25	47	41,7	3,67	49,3	3,37	57,3	3,34
20	21	39,9	3,44	47,1	3,19	55,7	3,23	
FAH	Nominal airflow rate at full load (m³/h)	15000		18500		20500		
	Nominal ESP at full load (Pa)	250		250		250		
	Outdoor temperature* (°C)	Part load ratio* (%)	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER
	30	74	61,5	3,44	71,8	3,06	83,9	3,01
	25	47	41,3	3,63	48,9	3,33	56,7	3,30
20	21	39,6	3,41	46,7	3,16	55,2	3,19	

		150		170		200		230		
FAC	Nominal airflow rate at full load (m³/h)	26000		30000		35000		39000		
	Nominal ESP at full load (Pa)	300		350		350		350		
	Outdoor temperature* (°C)	Part load ratio* (%)	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER
	30	74	106,1	3,35	117,5	3,43	136,7	3,49	165,0	3,54
	25	47	67,4	3,55	74,6	3,82	86,9	3,82	104,8	3,88
20	21	53,1	4,09	50,7	3,75	57,8	3,72	72,4	3,81	
FAH	Nominal airflow rate at full load (m³/h)	26000		30000		35000		39000		
	Nominal ESP at full load (Pa)	300		350		350		350		
	Outdoor temperature* (°C)	Part load ratio* (%)	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER	Cooling capacity (Kw)	EER
	30	74	102,1	3,26	115,4	3,40	134,7	3,46	162,9	3,51
	25	47	64,9	3,58	73,3	3,79	85,6	3,77	103,5	3,85
20	21	52,6	4,03	50,4	3,72	57,3	3,69	71,9	3,78	

6.1 INDOOR SUPPLY FAN PERFORMANCES

FAC Cooling only

FAG Cooling only with gas fired heating

FAH Heat pump

FAM Heat pump rooftop with gas fired heating

F085 F100	F120	Airflow	100		150		200		250		300		350		400		450		500		550		600		650		700		750		800	
			KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
FAC/FAH 85-120																																
		12000	LP	1.19	LP	1.42	LP	1.63	LP	1.86	LP	2.11	LP	2.36	LP	2.62	LP	2.90	LP	3.19	LP	3.49	LP	3.81	LP	4.14	LP	4.46	LP	4.77	LP	5.08
		13000	LP	1.39	LP	1.63	LP	1.87	LP	2.11	LP	2.36	LP	2.62	LP	2.90	LP	3.18	LP	3.48	LP	3.79	LP	4.11	LP	4.44	LP	4.79	LP	5.14	LP	5.51
		14000	LP	1.63	LP	1.87	LP	2.14	LP	2.39	LP	2.65	LP	2.92	LP	3.21	LP	3.50	LP	3.81	LP	4.12	LP	4.45	LP	4.79	LP	5.14	LP	5.51	LP	5.95
		15000	LP	1.89	LP	2.15	LP	2.43	LP	2.71	LP	2.98	LP	3.26	LP	3.56	LP	3.86	LP	4.18	LP	4.51	LP	4.84	LP	5.18	LP	5.54	LP	5.93	LP	6.39
		16000	LP	2.20	LP	2.47	LP	2.75	LP	3.05	LP	3.35	LP	3.64	LP	3.95	LP	4.26	LP	4.59	LP	4.92	LP	5.27	LP	5.63	LP	6.16	LP	6.51	LP	6.87
		17000	LP	2.54	LP	2.82	LP	3.12	LP	3.43	LP	3.76	LP	4.07	LP	4.38	LP	4.71	LP	5.04	LP	5.39	LP	5.92	LP	6.29	LP	6.67	LP	7.05	LP	7.42
		18000	LP	2.93	LP	3.21	LP	3.52	LP	3.85	LP	4.19	LP	4.54	LP	5.20	LP	5.55	LP	5.95	LP	6.06	HP	6.43	HP	6.81	HP	7.20	HP	7.59	HP	8.00
		19000	LP	3.36	LP	3.66	LP	3.97	LP	4.31	LP	4.67	LP	5.03	HP	5.88	HP	6.24	HP	6.60	HP	6.98	HP	7.37	HP	7.77	HP	8.18	HP	8.60	HP	9.00
		20000	LP	3.84	LP	4.15	LP	4.48	LP	4.83	HP	5.34	HP	5.70	HP	6.07	HP	6.45	HP	6.83	HP	7.21	HP	7.60	HP	7.99	HP	8.40	HP	8.82	HP	9.25
		21000	LP	4.36	LP	4.69	HP	5.23	HP	5.57	HP	6.29	HP	6.67	HP	7.06	HP	7.47	HP	7.87	HP	8.27	HP	8.67	HP	9.09	HP	9.52	HP	9.96	HP	10.41
		22000	HP	5.16	HP	5.49	HP	5.84	HP	6.20	HP	6.56	HP	6.94	HP	7.33	HP	7.73	HP	8.15	HP	8.58	HP	9.00	HP	9.42	HP	9.84	HP	10.28	HP	10.73
		23000	HP	5.81	HP	6.15	HP	6.51	HP	6.88	HP	7.26	HP	7.65	HP	8.05	HP	8.46	HP	8.88	HP	9.32	HP	9.78	HP	10.22	No kit	No kit	No kit	No kit	No kit	No kit

F150	F170	Airflow	100		150		200		250		300		350		400		450		500		550		600		650		700		750		800	
			KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
FAC/FAH 150-170																																
		18000	LP	1.70	LP	2.04	LP	2.37	LP	2.71	LP	3.07	LP	3.45	LP	3.84	LP	4.25	LP	4.68	LP	5.13	LP	5.60	LP	6.09	LP	6.58	LP	7.04	LP	7.51
		19000	LP	1.89	LP	2.24	LP	2.59	LP	2.94	LP	3.31	LP	3.69	LP	4.10	LP	4.52	LP	4.95	LP	5.40	LP	5.88	LP	6.37	LP	6.89	LP	7.42	LP	7.92
		20000	LP	2.10	LP	2.45	LP	2.84	LP	3.19	LP	3.57	LP	3.96	LP	4.37	LP	4.81	LP	5.25	LP	5.70	LP	6.18	LP	6.68	LP	7.20	LP	7.74	LP	8.29
		21000	LP	2.33	LP	2.69	LP	3.08	LP	3.47	LP	3.85	LP	4.25	LP	4.67	LP	5.11	LP	5.57	LP	6.03	LP	6.52	LP	7.02	LP	7.54	LP	8.08	LP	8.64
		22000	LP	2.58	LP	2.95	LP	3.35	LP	3.76	LP	4.16	LP	4.57	LP	5.00	LP	5.44	LP	5.91	LP	6.39	LP	6.88	LP	7.39	LP	7.91	LP	8.46	LP	9.17
		23000	LP	2.85	LP	3.22	LP	3.63	LP	4.07	LP	4.49	LP	4.91	LP	5.35	LP	5.80	LP	6.28	LP	6.77	LP	7.28	LP	7.79	LP	8.32	LP	8.88	LP	9.61
		24000	LP	3.14	LP	3.53	LP	3.95	LP	4.39	LP	4.85	LP	5.28	LP	5.73	LP	6.19	LP	6.67	LP	7.17	LP	7.69	LP	8.23	LP	8.79	LP	9.35	LP	10.08
		25000	LP	3.46	LP	4.21	LP	4.28	LP	4.74	LP	5.21	LP	5.67	LP	6.13	LP	6.61	LP	7.10	LP	7.61	LP	8.13	LP	8.64	LP	9.17	LP	9.75	LP	10.60
		26000	LP	3.80	LP	4.51	LP	4.64	LP	5.11	LP	5.60	LP	6.10	LP	6.57	LP	7.06	LP	7.56	LP	8.08	LP	8.60	LP	9.14	LP	9.68	LP	10.26	LP	11.14
		27000	LP	4.17	LP	4.59	LP	5.03	LP	5.51	LP	6.01	LP	6.53	LP	7.04	LP	7.53	LP	8.05	LP	8.80	LP	9.34	LP	9.91	LP	10.48	LP	11.07	LP	11.68
		28000	LP	4.57	LP	5.00	LP	5.45	LP	5.94	LP	6.45	LP	6.99	LP	7.53	LP	8.04	LP	8.78	LP	9.31	LP	9.87	LP	10.44	LP	11.02	LP	11.62	LP	12.24
		29000	LP	4.99	LP	5.44	LP	5.91	LP	6.40	LP	6.93	LP	7.47	LP	8.21	LP	8.77	LP	9.32	LP	9.86	LP	10.42	LP	11.00	LP	11.59	LP	12.20	LP	12.83
		30000	LP	5.45	LP	5.92	LP	6.39	LP	6.89	LP	7.43	LP	8.20	LP	8.74	LP	9.30	LP	9.89	LP	10.44	LP	11.01	LP	11.60	LP	12.20	LP	12.82	LP	13.45
		31000	LP	5.94	LP	6.42	LP	6.91	LP	7.42	LP	8.22	LP	8.75	LP	9.30	LP	9.87	LP	10.46	LP	11.06	LP	11.64	LP	12.24	LP	12.85	LP	13.48	LP	14.12
		32000	LP	6.46	LP	6.96	LP	7.76	LP	8.28	LP	8.80	LP	9.34	LP	9.89	LP	10.47	LP	11.07	LP	11.70	LP	12.31	LP	12.91	LP	13.53	LP	14.17	LP	14.82
		33000	LP	7.02	LP	7.85	LP	8.35	LP	8.88	LP	9.41	LP	9.96	LP	10.53	LP	11.11	LP	11.72	LP	12.35	LP	13.01	LP	13.63	LP	14.26	LP	14.90	LP	15.56
		34000	HP	7.97	HP	8.46	HP	8.97	HP	9.51	HP	10.06	HP	10.62	HP	11.20	HP	11.80	HP	12.41	HP	13.05	HP	13.71	HP	14.39	HP	15.02	HP	15.68	HP	No kit
		35000	HP	8.61	HP	9.11	HP	9.63	HP	10.18	HP	10.75	HP	11.32	HP	11.91	HP	12.52	HP	13.14	HP	13.79	HP	14.46	HP	15.15	HP	No kit	No kit	No kit	No kit	No kit

F200	F230	Airflow	100		150		200		250		300		350		400		450		500		550		600		650		700		750		800	
			KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
FAC/FAH 200-230																																
		24000	LP	2.37	LP	2.79	LP	3.23	LP	3.67	LP	4.16	LP	4.67	LP	5.16	LP	5.67	LP	6.21	LP	6.76	LP	7.34	LP	7.94	LP	8.52	LP	9.11	LP	9.68
		25000	LP	2.59	LP	3.01	LP	3.48	LP	3.91	LP	4.41	LP	4.93	LP	5.46	LP	5.98	LP	6.52	LP	7.08	LP	7.66	LP	8.27	LP	8.90	LP	9.53	LP	10.10
		26000	LP	2.81	LP	3.24	LP	3.72	LP	4.18	LP	4.67	LP	5.20	LP	5.76	LP	6.30	LP	6.86	LP	7.43	LP	8.01	LP	8.63	LP	9.30	LP	9.96	LP	10.55
		27000	LP	3.05	LP	3.50	LP	3.98	LP	4.48	LP	4.96	LP	5.50	LP	6.06	LP	6.65	LP	7.21	LP	7.79	LP	8.39	LP	9.01	LP	9.65	LP	10.31	LP	11.00
		28000	LP	3.31	LP	3.77	LP	4.25	LP	4.80	LP	5.27	LP	5.81	LP	6.39	LP	6.99	LP	7.59	LP	8.18	LP	8.79	LP	9.40	LP	10.03	LP	10.70	LP	11.39
		29000	LP	3.59	LP	4.07	LP	4.55	LP	5.10	LP	5.62	LP	6.15	LP	6.73	LP	7.34	LP	7.97	LP	8.59	LP	9.18	LP	9.80	LP	10.45	LP	11.11	LP	11.80
		30000	LP	3.88	LP	4.38	LP	4.87	LP	5.42	LP	5.98	LP	6.51	LP	7.09	LP	7.71	LP	8.36	LP											

6 - FAN PERFORMANCES

FAC Cooling only
FAG Cooling only with gas fired heating

FAH Heat pump
FAM Heat pump rooftop with gas fired heating

F085	F100	F150	F200	F250	F300	F350	400		450		500		550		600		650		700		750		800	
							KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)
		LP 1.56	LP 1.78	LP 2.02	LP 2.27	LP 2.53	LP 2.81	LP 3.09	LP 3.39	LP 3.70	LP 4.03	LP 4.36	LP 4.66	LP 4.98	LP 5.30	LP 5.63								
		LP 1.86	LP 2.10	LP 2.35	LP 2.61	LP 2.89	LP 3.17	LP 3.46	LP 3.77	LP 4.09	LP 4.43	LP 4.77	LP 5.13	LP 5.50	LP 5.83	LP 6.19								
		LP 2.21	LP 2.46	LP 2.72	LP 3.00	LP 3.28	LP 3.59	LP 3.89	LP 4.21	LP 4.54	LP 4.88	LP 5.24	LP 5.60	LP 6.04	LP 6.40	LP 6.76								
		LP 2.60	LP 2.87	LP 3.15	LP 3.44	LP 3.74	LP 4.05	LP 4.37	LP 4.71	LP 5.05	LP 5.40	LP 5.76	LP 6.24	LP 6.60	LP 6.97	LP 7.35								
		LP 3.04	LP 3.34	LP 3.63	LP 3.93	LP 4.25	LP 4.57	LP 4.91	LP 5.26	LP 5.62	LP 6.15	LP 6.50	LP 6.86	LP 7.23	LP 7.61	LP 8.00								
		LP 3.54	LP 3.86	LP 4.17	LP 4.49	LP 4.82	LP 5.16	LP 5.51	LP 6.04	LP 6.42	LP 6.80	LP 7.17	LP 7.54	LP 7.93	LP 8.31	LP 8.71								
		LP 4.10	LP 4.45	LP 4.78	LP 5.12	LP 5.46	LP 5.96	LP 6.33	LP 6.71	LP 7.09	LP 7.49	LP 7.90	LP 8.30	LP 8.69	LP 9.10	LP 9.51								
		LP 4.73	LP 5.10	LP 5.59	LP 5.94	LP 6.30	LP 6.67	LP 7.05	LP 7.44	LP 7.84	LP 8.25	LP 8.67	LP 9.10	LP 9.54	LP 9.96	LP 10.38								
		HP 5.56	HP 5.93	HP 6.31	HP 6.69	HP 7.06	HP 7.45	HP 7.84	HP 8.25	HP 8.66	HP 9.09	HP 9.52	HP 9.96	HP 10.42	HP 10.88									
		HP 6.32	HP 6.70	HP 7.10	HP 7.51	HP 7.91	HP 8.30	HP 8.71	HP 9.13	HP 9.56	HP 10.00	HP 10.45												
		HP 7.17	HP 7.56	HP 7.97	HP 8.40	HP 8.83	HP 9.24	HP 9.67	HP 10.10	HP 10.55														
		HP 8.09	HP 8.50	HP 8.93	HP 9.37	HP 9.83	HP 10.27	no kit 0.00	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit

F150	F170	F230	F200	F250	F300	F350	400		450		500		550		600		650		700		750		800	
							KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)	KIT	Pa(kw)
			LP 2.19	LP 2.52	LP 2.87	LP 3.23	LP 4.02	LP 4.44	LP 4.87	LP 5.33	LP 5.82	LP 6.32	LP 6.78	LP 7.25	LP 7.72	LP 8.21								
			LP 2.46	LP 2.80	LP 3.16	LP 3.54	LP 4.35	LP 4.77	LP 5.22	LP 5.69	LP 6.17	LP 6.68	LP 7.21	LP 7.73	LP 8.22	LP 8.76								
			LP 2.75	LP 3.11	LP 3.48	LP 3.87	LP 4.28	LP 4.71	LP 5.15	LP 5.60	LP 6.07	LP 6.57	LP 7.08	LP 7.61	LP 8.17	LP 8.74	LP 9.27							
			LP 3.06	LP 3.45	LP 3.84	LP 4.24	LP 4.65	LP 5.09	LP 5.55	LP 6.01	LP 6.49	LP 7.00	LP 7.52	LP 8.06	LP 8.62	LP 9.27	LP 9.81							
			LP 3.41	LP 3.82	LP 4.22	LP 4.63	LP 5.06	LP 5.51	LP 5.98	LP 6.46	LP 6.96	LP 7.46	LP 7.99	LP 8.54	LP 9.24	LP 9.80	LP 10.34							
			LP 3.78	LP 4.22	LP 4.63	LP 5.06	LP 5.51	LP 5.97	LP 6.44	LP 6.94	LP 7.45	LP 7.97	LP 8.51	LP 9.06	LP 9.64	LP 10.21								
			LP 4.19	LP 4.65	LP 5.08	LP 5.53	LP 5.98	LP 6.46	LP 6.95	LP 7.46	LP 7.99	LP 8.52	LP 9.03	LP 9.55	LP 10.09	LP 10.67								
			LP 4.63	LP 5.10	LP 5.57	LP 6.03	LP 6.50	LP 6.99	LP 7.49	LP 8.01	LP 8.55	LP 9.07	LP 9.63	LP 10.17	LP 10.74	LP 11.32								
			LP 5.11	LP 5.60	LP 6.10	LP 6.57	LP 7.06	LP 7.56	LP 8.08	LP 8.66	LP 9.21	LP 9.80	LP 10.41	LP 11.02	LP 11.63	LP 12.26								
			LP 5.63	LP 6.13	LP 6.66	LP 7.15	LP 7.65	LP 8.17	HP 8.93	HP 9.48	HP 10.04	HP 10.62	HP 11.22	HP 11.83	HP 12.43	HP 13.02								
			LP 6.18	LP 6.71	LP 7.25	LP 7.78	HP 8.50	HP 9.03	HP 9.58	HP 10.14	HP 10.71	HP 11.31	HP 11.91	HP 12.54	HP 13.17	HP 13.81	HP 14.42							
			LP 6.78	LP 7.32	LP 7.88	HP 8.62	HP 9.17	HP 9.71	HP 10.27	HP 10.84	HP 11.43	HP 12.04	HP 12.66	HP 13.29	HP 13.94	HP 14.61	HP 15.27							
			LP 7.43	HP 8.19	HP 8.73	HP 9.30	HP 9.88	HP 10.44	HP 11.01	HP 11.60	HP 12.20	HP 12.82	HP 13.45	HP 14.10	HP 14.76	HP 15.44	HP 16.13							
			HP 8.36	HP 8.89	HP 9.45	HP 10.02	HP 10.62	HP 11.21	HP 11.80	HP 12.40	HP 13.01	HP 13.64	HP 14.29	HP 14.95	HP 15.63	HP 16.32								
			HP 9.09	HP 9.64	HP 10.21	HP 10.80	HP 11.41	HP 12.04	HP 12.64	HP 13.25	HP 13.88	HP 14.52	HP 15.18	HP 15.86										
			HP 9.87	HP 10.43	HP 11.02	HP 11.62	HP 12.25	HP 12.90	HP 13.53	HP 14.15	HP 14.79	HP 15.45												
			HP 10.70	HP 11.28	HP 11.88	HP 12.49	HP 13.14	HP 13.80	HP 14.47	HP 15.11	HP 15.77													
			HP 11.58	HP 12.18	HP 12.79	HP 13.42	HP 14.08	HP 14.76	HP 15.45	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit

F200	F230	F200	F250	F300	F350	F400	F450	F500	F550	F600	F650	F700	F750	F800		
															KIT	Pa(kw)
		LP 2.98	LP 3.40	LP 3.87	LP 4.37	LP 4.87	LP 5.37	LP 5.89	LP 6.43	LP 6.99	LP 7.58	LP 8.18	LP 8.77	LP 9.34	LP 9.92	LP 10.51
		LP 3.25	LP 3.70	LP 4.17	LP 4.68	LP 5.22	LP 5.73	LP 6.26	LP 6.82	LP 7.39	LP 7.98	LP 8.60	LP 9.26	LP 9.83	LP 10.41	LP 11.01
		LP 3.55	LP 4.03	LP 4.50	LP 5.02	LP 5.57	LP 6.12	LP 6.66	LP 7.23	LP 7.81	LP 8.41	LP 9.07	LP 9.73	LP 10.35	LP 10.94	LP 11.55
		LP 3.87	LP 4.38	LP 4.85	LP 5.38	LP 5.94	LP 6.53	LP 7.09	LP 7.66	LP 8.26	LP 8.87	LP 9.51	LP 10.17	LP 10.85	LP 11.51	LP 12.12
		LP 4.21	LP 4.75	LP 5.23	LP 5.76	LP 6.34	LP 6.94	LP 7.54	LP 8.13	LP 8.74	LP 9.34	LP 9.98	LP 10.64	LP 11.33	LP 12.04	LP 12.73
		LP 4.58	LP 5.13	LP 5.65	LP 6.18	LP 6.76	LP 7.38	LP 8.01	LP 8.62	LP 9.21	LP 9.84	LP 10.48	LP 11.15	LP 11.84	LP 12.56	LP 13.30
		LP 4.98	LP 5.54	LP 6.09	LP 6.62	LP 7.21	LP 7.84	LP 8.49	HP 9.13	HP 9.73	HP 10.36	HP 11.02	HP 11.69	HP 12.39	HP 13.06	HP 13.86
		LP 5.40	LP 5.97	LP 6.56	LP 7.10	LP 7.70	LP 8.34	HP 8.98	HP 9.63	HP 10.28	HP 10.92	HP 11.59	HP 12.27	HP 12.97	HP 13.70	
		LP 5.86	LP 6.43	LP 7.07	LP 7.61	LP 8.21	HP 8.87	HP 9.51	HP 10.17	HP 10.86	HP 11.51	HP 12.19	HP 12.88	HP 13.59		
		LP 6.34	LP 6.93	LP 7.57	LP 8.16	HP 8.81	HP 9.42	HP 10.07	HP 10.74	HP 11.43	HP 12.14	HP 12.82	HP 13.52			
		LP 6.86	LP 7.45	LP 8.11	HP 8.78	HP 9.38	HP 10.01	HP 10.66	HP 11.34	HP 12.05	HP 12.78	HP 13.49				
		LP 7.40	HP 8.10	HP 8.74	HP 9.38	HP 9.99	HP 10.62	HP 11.29	HP 11.98	HP 12.69	HP 13.43					
		HP 8.06	HP 8.67	HP 9.33	HP 10.01	HP 10.63	HP 11.28	HP 11.95	HP 12.65	HP 13.36						
		HP 8.65	HP 9.29	HP 9.96	HP 10.67	HP 11.31	HP 11.96	HP 12.65	HP 13.36							
		HP 9.29	HP 9.93	HP 10.62	HP 11.34	HP 12.02	HP 12.69	HP 13.38								
		HP 9.96	HP 10.62	HP 11.32	HP 12.05	HP 12.77										
		HP 10.66	HP 11.34	HP 12.05	HP 12.80											
		HP 11.40	HP 12.10													
		HP 12.18	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit
		43000	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit	No kit

LP Low Pressure

HP High Pressure

6.2 EXHAUST FAN PERFORMANCES

FAC Cooling only

FAG Cooling only with gas fired heating

FAH Heat pump

FAM Heat pump rooftop with gas fired heating

F085	F100	F120	150		200		250		300		350		400		450		500		550		600	
			KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
85-120																						
FAC/FAH/FAG/FAM			LP	1.02	LP	1.26	LP	1.51	LP	1.76	LP	2.04	LP	2.33	LP	2.61	LP	2.91	LP	3.23	LP	3.56
			LP	1.13	LP	1.37	LP	1.64	LP	1.91	LP	2.19	LP	2.48	LP	2.79	LP	3.10	LP	3.42	LP	3.75
			LP	1.25	LP	1.51	LP	1.78	LP	2.07	LP	2.36	LP	2.66	LP	2.97	LP	3.30	LP	3.64	LP	3.97
			LP	1.39	LP	1.67	LP	1.93	LP	2.23	LP	2.55	LP	2.86	LP	3.17	LP	3.51	LP	3.85	LP	4.22
			LP	1.55	LP	1.82	LP	2.12	LP	2.41	LP	2.73	LP	3.07	LP	3.40	LP	3.74	LP	4.09	LP	4.46
			LP	1.72	LP	2.00	LP	2.31	LP	2.62	LP	2.93	LP	3.28	LP	3.64	LP	4.00	LP	4.36	LP	4.73
			LP	1.91	LP	2.21	LP	2.51	LP	2.86	LP	3.16	LP	3.51	LP	3.88	LP	4.27	LP	4.64	LP	5.03
			LP	2.14	LP	2.43	LP	2.74	LP	3.08	LP	3.44	LP	3.77	LP	4.14	LP	4.53	LP	4.94	LP	5.35
			LP	2.38	LP	2.67	LP	3.00	LP	3.33	LP	3.70	LP	4.07	LP	4.43	LP	4.82	LP	5.24	LP	5.68
			LP	2.65	LP	2.94	LP	3.27	LP	3.62	LP	3.99	LP	4.39	LP	4.76	LP	5.15	LP	5.57	LP	6.00
			LP	2.94	LP	3.24	LP	3.57	LP	3.94	LP	4.30	LP	4.70	LP	5.14	LP	5.52	LP	5.95	LP	6.37
			LP	3.26	LP	3.58	LP	3.89	LP	4.27	LP	4.66	LP	5.05	LP	5.53	LP	5.95	LP	6.35	LP	6.77

F150	F170	150		200		250		300		350		400		450		500		550		600	
		KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
150-170																					
FAC/FAH/FAG/FAM		LP	1.61	LP	1.98	LP	2.36	LP	2.75	LP	3.16	LP	3.60	LP	4.03	LP	4.48	LP	4.97	LP	5.47
		LP	1.74	LP	2.11	LP	2.51	LP	2.91	LP	3.33	LP	3.77	LP	4.23	LP	4.68	LP	5.17	LP	5.67
		LP	1.88	LP	2.25	LP	2.66	LP	3.08	LP	3.50	LP	3.95	LP	4.42	LP	4.90	LP	5.39	LP	5.90
		LP	2.02	LP	2.40	LP	2.82	LP	3.26	LP	3.69	LP	4.15	LP	4.62	LP	5.13	LP	5.63	LP	6.14
		LP	2.16	LP	2.57	LP	2.98	LP	3.44	LP	3.90	LP	4.36	LP	4.84	LP	5.35	LP	5.88	LP	6.41
		LP	2.33	LP	2.76	LP	3.17	LP	3.63	LP	4.12	LP	4.59	LP	5.08	LP	5.59	LP	6.12	LP	6.68
		LP	2.51	LP	2.94	LP	3.37	LP	3.83	LP	4.33	LP	4.83	LP	5.33	LP	5.85	LP	6.39	LP	6.95
		LP	2.70	LP	3.13	LP	3.60	LP	4.04	LP	4.55	LP	5.08	LP	5.60	LP	6.13	LP	6.67	LP	7.24
		LP	2.90	LP	3.34	LP	3.84	LP	4.28	LP	4.78	LP	5.32	LP	5.88	LP	6.42	LP	6.98	LP	7.55
		LP	3.12	LP	3.57	LP	4.06	LP	4.55	LP	5.04	LP	5.58	LP	6.15	LP	6.73	LP	7.30	LP	7.88
		LP	3.35	LP	3.82	LP	4.30	LP	4.84	LP	5.32	LP	5.86	LP	6.44	LP	7.04	LP	7.64	LP	8.23
		LP	3.60	LP	4.08	LP	4.57	LP	5.11	LP	5.63	LP	6.16	LP	6.74	LP	7.35	LP	7.99	LP	8.60
		LP	3.86	LP	4.36	LP	4.85	LP	5.39	LP	5.96	LP	6.49	LP	7.06	LP	7.68	LP	8.33	LP	8.97
		LP	4.16	LP	4.65	LP	5.16	LP	5.70	LP	6.30	LP	6.84	LP	7.41	LP	8.03	LP	8.69	LP	9.32
		LP	4.47	LP	4.96	LP	5.49	LP	6.03	LP	6.62	LP	7.23	LP	7.79	LP	8.40	LP	9.07	LP	9.71
		LP	4.81	LP	5.28	LP	5.83	LP	6.38	LP	6.97	LP	7.62	LP	8.20	LP	8.85	LP	9.47	LP	10.12
		LP	5.16	LP	5.63	LP	6.19	LP	6.76	LP	7.35	LP	7.99	LP	8.68	LP	9.28	LP	9.90	LP	10.55
		LP	5.53	LP	6.01	LP	6.58	LP	7.16	LP	7.75	LP	8.47	LP	9.13	LP	9.73	LP	10.35	LP	11.01

F200	F230	150		200		250		300		350		400		450		500		550		600	
		KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)	KIT	Pa (kw)
200-230																					
FAC/FAH/FAG/FAM		LP	2.50	LP	2.93	LP	3.37	LP	3.82	LP	4.32	LP	4.83	LP	5.33	LP	5.84	LP	6.38	LP	6.94
		LP	2.70	LP	3.13	LP	3.59	LP	4.04	LP	4.54	LP	5.07	LP	5.59	LP	6.12	LP	6.67	LP	7.23
		LP	2.90	LP	3.33	LP	3.83	LP	4.28	LP	4.78	LP	5.32	LP	5.88	LP	6.41	LP	6.97	LP	7.54
		LP	3.12	LP	3.56	LP	4.05	LP	4.54	LP	5.03	LP	5.57	LP	6.15	LP	6.72	LP	7.29	LP	7.87
		LP	3.35	LP	3.81	LP	4.29	LP	4.83	LP	5.31	LP	5.85	LP	6.43	LP	7.03	LP	7.63	LP	8.22
		LP	3.59	LP	4.07	LP	4.56	LP	5.10	LP	5.62	LP	6.15	LP	6.73	LP	7.34	LP	7.98	LP	8.59
		LP	3.86	LP	4.35	LP	4.84	LP	5.38	LP	5.95	LP	6.48	LP	7.05	LP	7.67	LP	8.32	LP	8.95
		LP	4.15	LP	4.64	LP	5.15	LP	5.69	LP	6.29	LP	6.83	LP	7.40	LP	8.02	LP	8.67	LP	9.31
		LP	4.47	LP	4.95	LP	5.48	LP	6.02	LP	6.61	LP	7.22	LP	7.78	LP	8.39	LP	9.05	LP	9.70
		LP	4.80	LP	5.27	LP	5.82	LP	6.37	LP	6.96	LP	7.61	LP	8.19	LP	8.84	LP	9.46	LP	10.10
		LP	5.15	LP	5.62	LP	6.18	LP	6.75	LP	7.33	LP	7.98	LP	8.67	LP	9.26	LP	9.88	LP	10.53
		LP	5.52	LP	6.00	LP	6.56	LP	7.15	LP	7.74	LP	8.45	LP	9.12	LP	9.71	LP	10.34	LP	10.99
		LP	5.91	LP	6.40	LP	6.96	LP	7.56	LP	8.24	LP	8.87	LP	9.54	LP	10.19	LP	10.82	LP	11.47
		LP	6.32	LP	6.83	LP	7.38	LP	8.06	LP	8.68	LP	9.31	LP	9.98	LP	10.69	LP	11.33	LP	11.99
		LP	6.76	LP	7.34	LP	7.88	LP	8.51	LP	9.14	LP	9.78	LP	10.45	LP	11.17	LP	11.87	LP	12.53
		LP	7.24	LP	7.79	LP	8.35	LP	8.97	LP	9.62	LP	10.27	LP	10.95	LP	11.67	LP	12.42		
		LP	7.70	LP	8.27	LP	8.85	LP	9.46	LP	10.12	LP	10.79	LP	11.48	LP	12.19				
		LP	8.19	LP	8.78	LP	9.36	LP	9.97	LP	10.65	LP	11.34	LP	12.03						
		LP	8.71	LP	9.30	LP	9.91	LP	10.52	LP	11.20	LP	11.90	LP	12.60						
		LP	9.24	LP	9.85	LP	10.47	LP	11.10	LP	11.78	LP	12.48	LP	13.18						

7.1 ROTARY WHEEL HEAT RECOVERY SYSTEM

ENERGY RECOVERY MODULE
Heating and cooling mode
Conditions : 27°C / 47% HR
35°C / 50 % HR

Fresh air %	COOLING MODE		Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m ³ /h)	15000	18500	20500	26000	30000	35000	39000
20%	Heat recovery cooling capacity	kW	14,2	17,1	18,8	24,2	27,4	32,4	35,7
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	84	82	81	83	81	82	81
60%	Heat recovery cooling capacity	kW	35,7	41,6	44,6	59,0	65,1	78,6	84,6
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	71	67	64	67	64	67	64
90%	Heat recovery cooling capacity	kW	47,5	54,0	57,2	76,8	83,3	101,9	108,3
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	62	58	55	58	55	58	55
100%	Heat recovery cooling capacity	kW	50,7	57,3	60,4	81,6	88,0	108,1	114,4
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	60	55	52	56	52	55	52

Conditions :
20°C / 70% HR / -7°C

Fresh air %	HEATING MODE		Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m ³ /h)	15000	18500	20500	26000	30000	35000	39000
20%	Heat recovery cooling capacity	kW	16,5	19,9	21,7	28,1	31,8	37,6	41,3
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	87	85	84	85	84	85	84
60%	Heat recovery cooling capacity	kW	40,8	47,2	50,5	67,0	73,6	89,2	95,7
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	72	67	65	68	65	67	65
90%	Heat recovery cooling capacity	kW	53,5	60,4	63,8	86,1	92,9	114,1	120,8
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	63	57	55	58	54	57	54
100%	Heat recovery cooling capacity	kW	57,0	63,9	67,1	91,1	97,7	120,6	127,0
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	60	55	52	55	51	54	51

ENERGY RECOVERY MODULE

Heating and cooling modes

Conditions :
20°C / 70% HR / 7°C

Fresh air %	HEATING MODE		Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m ³ /h)	15000	18500	20500	26000	30000	35000	39000
20%	Heat recovery cooling capacity	kW	32,9	39,6	43,3	55,9	63,3	75,0	82,3
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	88	86	85	86	85	86	85
60%	Heat recovery cooling capacity	kW	80,7	93,1	99,5	132,2	145,1	176,0	188,6
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	72	67	65	68	65	67	65
90%	Heat recovery cooling capacity	kW	105,4	118,7	125,0	169,1	182,0	224,1	236,7
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	63	57	55	58	54	57	54
100%	Heat recovery cooling capacity	kW	112,0	125,2	131,4	178,7	191,2	236,4	248,7
	Heat recovery cooling absorbed power	kW	0,18	0,18	0,18	0,18	0,18	0,18	0,18
	Efficiency	%	60	54	52	55	51	54	51

8.1 HOT WATER COIL PERFORMANCES

FCM Cooling only

FHM Heat pump

Return air at 0°C

SIZE	Type ⁽¹⁾	Airflow rate m ³ /h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h
85	S	12000	142	109	33	6	123	83	28	5	104	59	24	4
	H		217	90	50	9	189	69	44	8	160	50	37	7
	S	15000	160	137	30	7	138	104	26	6	116	74	22	5
	H		249	118	46	11	216	90	40	9	183	65	34	8
	S	23000	-	-	-	-	170	156	21	7	143	111	17	6
	H		318	191	38	14	275	145	33	12	232	103	28	10
100	S	14000	154	127	31	7	133	97	26	6	112	69	22	5
	H		239	109	47	10	207	83	41	9	175	60	35	8
	S	18500	178	168	27	8	154	127	23	7	129	91	19	6
	H		282	151	42	12	244	114	37	11	206	83	31	9
	S	23000	-	-	-	-	170	156	21	7	143	111	17	6
	H		318	191	38	14	275	145	33	12	232	103	28	10
120	S	15000	160	137	30	7	138	104	26	6	116	74	22	5
	H		249	118	46	11	216	90	40	9	183	65	34	8
	S	20500	187	185	25	8	161	140	22	7	136	100	18	6
	H		298	169	40	13	258	128	35	11	218	92	29	9
	S	23000	-	-	-	-	170	156	21	7	143	111	17	6
	H		318	191	38	14	275	145	33	12	232	103	28	10
150	S	18000	172	50	26	7	148	37	23	6	123	26	19	5
	H		286	70	44	12	249	54	38	11	211	40	33	9
	S	26000	206	72	22	9	177	53	19	8	147	37	16	6
	H		356	107	38	15	309	82	33	13	262	60	28	11
	S	35000	236	94	19	10	202	69	16	9	169	49	13	7
	H		420	147	33	18	364	113	29	16	308	83	24	13
170	S	21000	186	59	25	8	159	43	21	7	133	30	18	6
	H		314	84	41	14	273	65	36	12	231	48	31	10
	S	30000	220	82	20	10	189	60	17	8	158	42	15	7
	H		386	125	36	17	335	96	31	14	283	70	26	12
	S	35000	236	94	19	10	202	69	16	9	169	49	13	7
	H		420	147	33	18	364	113	29	16	308	83	24	13
200	S	24000	208	62	24	9	178	46	21	8	149	32	17	6
	H		335	78	39	14	290	60	34	13	246	44	28	11
	S	35000	251	91	20	11	215	67	17	9	180	47	14	8
	H		414	118	33	18	359	91	28	15	304	66	24	13
	S	43000	277	110	18	12	237	81	15	10	198	57	13	9
	H		461	147	30	20	400	112	26	17	338	82	22	15
230	S	27000	221	70	23	10	189	52	19	8	158	36	16	7
	H		358	89	37	15	311	68	32	13	263	50	27	11
	S	39000	264	101	19	11	227	74	16	10	189	52	13	8
	H		438	133	31	19	380	101	27	16	322	74	23	14
	S	43000	277	110	18	12	237	81	15	10	198	57	13	9
	H		461	147	30	20	400	112	26	17	338	82	22	15

(1) S Standard heat H High heat

(2) Pressure drop = Internal coil + 3-way valve

Water without glycol

Reminder : 10 kPa=1mCe = 1mH₂O

FCM Cooling only

FHM Heat pump

Return air at 10°C

SIZE	Type ⁽¹⁾	Airflow rate m ³ /h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h
85	S	12000	121	80	29	5	102	57	25	4	83	39	20	4
	H		185	66	44	8	157	48	38	7	129	33	31	6
	S	15000	137	100	26	6	115	72	22	5	94	49	18	4
	H		213	87	41	9	180	63	34	8	147	43	28	6
	S	23000	168	151	21	7	142	108	18	6	115	73	14	5
	H		271	140	34	12	229	101	29	10	187	68	23	8
100	S	14000	132	94	27	6	111	67	23	5	90	46	19	4
	H		204	80	42	9	173	58	35	7	141	39	29	6
	S	18500	152	123	24	7	128	88	20	6	104	60	16	4
	H		240	110	37	10	203	80	32	9	166	54	26	7
	S	23000	168	151	21	7	142	108	18	6	115	73	14	5
	H		271	140	34	12	229	101	29	10	187	68	23	8
120	S	15000	137	100	26	6	115	72	22	5	94	49	18	4
	H		213	87	41	9	180	63	34	8	147	43	28	6
	S	20500	160	136	22	7	134	97	19	6	109	66	15	5
	H		255	124	36	11	215	90	30	9	175	60	25	8
	S	23000	168	151	21	7	142	108	18	6	115	73	14	5
	H		271	140	34	12	229	101	29	10	187	68	23	8
150	S	18000	146	36	23	6	122	26	20	5	99	17	16	4
	H		244	52	39	11	208	38	33	9	170	26	27	7
	S	26000	175	52	19	8	147	37	16	6	118	24	13	5
	H		304	79	34	13	258	58	28	11	211	40	23	9
	S	35000	201	68	16	9	168	48	14	7	135	31	11	6
	H		358	109	29	15	304	80	25	13	248	54	20	11
170	S	21000	158	42	22	7	132	30	18	6	106	20	15	5
	H		268	62	37	12	228	46	31	10	187	31	26	8
	S	30000	187	59	18	8	157	42	15	7	126	27	12	5
	H		329	92	32	14	279	68	27	12	229	46	22	10
	S	35000	201	68	16	9	168	48	14	7	135	31	11	6
	H		358	109	29	15	304	80	25	13	248	54	20	11
200	S	24000	176	45	21	8	148	32	18	6	119	21	14	5
	H		286	58	34	12	242	42	29	10	199	29	24	9
	S	35000	213	65	18	9	178	46	15	8	143	30	12	6
	H		353	87	29	15	300	64	25	13	245	43	20	11
	S	43000	235	79	16	10	197	56	13	8	158	36	11	7
	H		394	108	26	17	334	79	22	14	273	54	18	12
230	S	27000	187	51	20	8	157	36	17	7	126	23	13	5
	H		306	66	33	13	259	48	28	11	213	33	23	9
	S	39000	225	72	17	10	188	51	14	8	151	33	11	7
	H		374	98	28	16	317	72	23	14	260	49	19	11
	S	43000	235	79	16	10	197	56	13	8	158	36	11	7
	H		394	108	26	17	334	79	22	14	273	54	18	12

(1) S	Standard heat	H	High heat
(2)	Pressure drop = Internal coil + 3-way valve		
Water without glycol			
Reminder : 10 kPa=1mCe = 1mH ₂ O			

FCM Cooling only

FHM Heat pump

Return air at 20°C

SIZE	Type ⁽¹⁾	Airflow rate m ³ /h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h	Heating capacity kW	Pressure drop ⁽²⁾ kPa	Δ Air temperature	Water flow rate m ³ /h
85	S	12000	101	56	25	4	83	38	20	4	64	23	16	3
	H		155	47	38	7	127	32	31	5	99	20	25	4
	S	15000	114	70	23	5	93	48	18	4	72	29	14	3
	H		177	61	35	8	145	41	29	6	113	26	22	5
	S	23000	140	106	18	6	114	71	15	5	88	43	11	4
	H		226	98	29	10	185	66	24	8	143	41	19	6
100	S	14000	110	65	23	5	90	44	19	4	69	27	15	3
	H		170	56	36	7	139	38	30	6	109	24	23	5
	S	18500	126	86	20	5	103	58	17	4	79	35	13	3
	H		201	78	32	9	164	52	26	7	127	32	20	6
	S	23000	140	106	18	6	114	71	15	5	88	43	11	4
	H		226	98	29	10	185	66	24	8	143	41	19	6
120	S	15000	114	70	23	5	93	48	18	4	72	29	14	3
	H		177	61	35	8	145	41	29	6	113	26	22	5
	S	20500	133	95	19	6	108	64	16	5	83	39	12	4
	H		212	87	31	9	174	59	25	7	135	36	20	6
	S	23000	140	106	18	6	114	71	15	5	88	43	11	4
	H		226	98	29	10	185	66	24	8	143	41	19	6
150	S	18000	121	25	20	5	98	17	16	4	75	10	12	3
	H		204	37	34	9	168	25	28	7	132	16	22	6
	S	26000	145	36	17	6	117	24	13	5	89	14	10	4
	H		254	56	29	11	209	38	24	9	163	24	19	7
	S	35000	167	47	14	7	135	31	11	6	102	18	9	4
	H		300	77	25	13	246	53	21	11	191	33	16	8
170	S	21000	131	29	19	6	106	19	15	5	81	11	11	3
	H		224	44	32	10	184	30	26	8	144	19	20	6
	S	30000	156	41	15	7	126	27	12	5	95	16	9	4
	H		275	65	27	12	226	45	22	10	176	28	17	8
	S	35000	167	47	14	7	135	31	11	6	102	18	9	4
	H		300	77	25	13	246	53	21	11	191	33	16	8
200	S	24000	146	31	18	6	118	20	15	5	90	12	11	4
	H		239	41	30	10	196	28	24	8	154	18	19	7
	S	35000	177	45	15	8	143	30	12	6	108	17	9	5
	H		295	62	25	13	242	42	21	10	189	26	16	8
	S	43000	195	55	14	8	157	36	11	7	119	21	8	5
	H		330	76	23	14	270	52	19	12	210	32	15	9
230	S	27000	156	35	17	7	126	23	14	5	96	13	11	4
	H		256	47	28	11	210	32	23	9	164	20	18	7
	S	39000	186	50	14	8	150	33	11	6	114	19	9	5
	H		313	69	24	14	257	47	20	11	200	29	15	9
	S	43000	195	55	14	8	157	36	11	7	119	21	8	5
	H		330	76	23	14	270	52	19	12	210	32	15	9

(1) S Standard heat H High heat

(2) Pressure drop = Internal coil + 3-way valve

Water without glycol

Reminder : 10 kPa=1mCe = 1mH₂O

8.2- ELECTRICAL HEATERS

SIZE	AIRFLOW m ³ /h	TYPE	Available Capacity	Type of Modulation	Stages	Temp. Rise
			KW			°C
85	15000	S	30	2 stages	Stage 1:	2,9
					Stage 2:	5,7
		M	54	0-100%	50%-->	5,2
					100%-->	10,3
		H	72	0-100%	50%-->	6,9
					100%-->	13,8
100	18500	S	30	2 stages	Stage 1:	2,3
					Stage 2:	4,6
		M	54	0-100%	50%-->	4,2
					100%-->	8,4
		H	72	0-100%	50%-->	5,6
					100%-->	11,2
120	20500	S	30	2 stages	Stage 1:	2,1
					Stage 2:	4,2
		M	54	0-100%	50%-->	3,8
					100%-->	7,6
		H	72	0-100%	50%-->	5,0
					100%-->	10,1
150	26000	S	45	2 stages	Stage 1:	2,5
					Stage 2:	5,0
		M	72	0-100%	50%-->	4,0
					100%-->	7,9
		H	108	0-100%	50%-->	6,0
					100%-->	11,9
170	30000	S	45	2 stages	Stage 1:	2,2
					Stage 2:	4,3
		M	72	0-100%	50%-->	3,4
					100%-->	6,9
		H	108	0-100%	50%-->	5,2
					100%-->	10,3
200	35000	S	72	2 stages	Stage 1:	2,9
					Stage 2:	5,9
		M	108	0-100%	50%-->	4,4
					100%-->	8,8
		H	162	0-100%	50%-->	6,6
					100%-->	13,3
230	39000	S	72	2 stages	Stage 1:	2,6
					Stage 2:	5,3
		M	108	0-100%	50%-->	4,0
					100%-->	7,9
		H	162	0-100%	50%-->	6,0
					100%-->	11,9

8.3- GAS BURNER PERFORMANCES

SIZE	Airflow rate m ³ /h	TYPE	Gas power input	Gas power input	Electrical absorbed power	Number of stages
			KW	KW	KW	
85	15000	S	60	55.2	0.16	4
		H	120	110.4	0.25	
100	18500	S	60	55.2	0.16	
		H	120	110.4	0.25	
120	20500	S	60	55.2	0.16	
		H	120	110.4	0.25	
150	26000	S	120	110.4	0.25	
		H	180	165.6	0.25	
170	30000	S	120	110.4	0.25	
		H	180	165.6	0.25	
200	35000	S	180	165.6	0.25	
		H	240	220.8	0.25	
230	39000	S	180	165.6	0.25	
		H	240	220.8	0.25	

OUTDOOR NOISE LEVEL - STANDARD

Spectrum per octave band

FAC/FAH FAG/FAM	Airflow rate (m ³ /h)	ESP (Pa)	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	15000	125	57,0	58,1	64,4	70,9	74,7	74,6	73,7	67,2	80,1	49,2
100	18500	125	60,2	67,1	72,2	82,4	82,5	86,8	79,8	87,4	91,8	60,8
120	20500	125	56,8	61,9	74,7	78,4	79,4	83,8	77,4	84,4	88,8	57,8
150	26000	150	52,0	57,7	68,3	76,1	77,8	82,0	79,9	82,0	87,2	56,2
170	30000	175	57,1	58,8	73,3	74,1	77,6	78,8	80,8	79,4	85,9	54,9
200	35000	175	59,5	63,0	69,9	75,0	79,2	80,9	76,2	73,0	84,9	53,9
230	39000	175	57,3	60,3	69,2	75,7	78,2	78,5	81,0	73,4	85,2	54,2

Spectrum per octave band

FAC/FAH FAG/FAM	Airflow rate (m ³ /h)	ESP (Pa)	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	15000	500	57,0	58,3	65,8	71,1	75,0	74,3	74,7	62,6	80,3	49,3
100	18500	500	60,2	65,2	72,7	82,5	82,5	87,1	80,4	87,6	92,0	61,0
120	20500	500	56,7	61,6	67,7	78,1	79,0	83,6	78,4	84,4	88,6	57,6
150	26000	500	52,0	56,6	72,4	75,9	78,3	81,8	80,4	82,8	87,6	56,6
170	30000	500	60,1	65,4	70,2	82,2	82,1	86,7	79,5	87,4	91,6	60,6
200	35000	500	59,5	61,5	70,4	75,3	79,6	80,7	76,0	73,1	85,0	54,0
230	39000	500	57,3	60,3	74,4	76,5	79,4	79,5	82,2	78,7	86,9	55,9

OUTDOOR NOISE LEVEL - LOW NOISE

Spectrum per octave band

FAC/FAH FAG/FAM	Airflow rate (m ³ /h)	ESP (Pa)	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	15000	250	53,9	56,6	64,0	69,8	70,1	71,2	73,2	67,3	78,0	47,0
100	18500	250	58,9	65,7	71,4	79,2	78,0	77,4	72,9	87,4	89,0	58,0
120	20500	250	55,9	59,7	74,5	76,1	75,0	74,1	72,3	83,4	85,6	54,6
150	26000	300	58,0	58,6	68,4	74,2	72,8	76,3	79,0	81,2	84,9	53,9
170	30000	350	54,1	57,5	73,2	73,5	74,7	76,3	80,5	79,4	85,0	54,0
200	35000	350	56,5	61,7	69,5	73,6	74,1	77,4	74,0	73,0	82,0	51,0
230	39000	350	56,5	59,1	68,7	74,7	74,5	76,0	80,9	73,3	84,0	53,0

Spectrum per octave band

FAC/FAH FAG/FAM	Airflow rate (m ³ /h)	ESP (Pa)	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	15000	500	54,0	56,8	65,5	70,0	71,0	70,5	74,4	62,7	78,3	47,3
100	18500	500	58,9	62,6	72,0	79,4	78,0	79,1	75,2	87,6	89,3	58,3
120	20500	500	55,7	59,3	66,5	75,5	73,6	72,7	74,9	83,4	85,2	54,2
150	26000	500	58,0	57,8	72,4	73,8	74,1	75,3	79,6	82,1	85,5	54,5
170	30000	500	58,8	63,0	68,7	78,7	76,8	75,5	70,7	87,4	88,6	57,6
200	35000	500	56,5	59,6	70,2	73,9	75,3	77,1	73,6	73,1	82,2	51,2
230	39000	500	56,6	59,1	74,3	75,7	76,9	77,7	82,1	78,6	86,1	55,1

(1) Total outdoor power levels

(2) Global outdoor sound pressure levels 10 m

INDOOR NOISE LEVEL - STANDARD & LOW NOISE

Spectrum per octave band

FAC/FAH	Airflow rate (m3/h)	ESP (Pa)	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	15000	125	41,3	55,2	69,0	77,8	81,0	80,8	80,5	73,1	86,5	85
100	18500	125	50,2	70,2	77,1	82,4	86,7	84,0	78,4	73,8	90,2	90
120	20500	125	50,3	58,9	79,6	80,6	85,9	81,7	78,3	72,1	89,2	89
150	26000	150	47,8	62,1	75,6	84,5	87,7	87,6	86,8	79,9	93,1	91
170	30000	175	50,1	59,6	77,1	85,8	90,8	87,7	88,8	85,1	95,2	94
200	35000	175	50,1	64,0	75,9	83,9	84,8	87,7	80,7	78,6	91,3	86
230	39000	175	47,4	59,7	74,7	83,2	86,2	85,7	87,1	78,1	92,0	88

Spectrum per octave band

FAC/FAH	Airflow rate (m3/h)		63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	15000	500	44,9	57,8	71,8	78,8	82,1	80,6	82,3	70,0	87,4	87
100	18500	500	48,1	60,2	75,2	83,7	87,1	86,3	80,2	78,2	91,4	89
120	20500	500	41,8	54,2	68,7	76,1	79,3	78,0	79,7	67,9	84,7	90
150	26000	500	50,0	59,1	76,3	85,0	90,5	87,1	87,9	83,5	94,5	92
170	30000	500	44,3	62,0	71,4	78,4	81,7	79,8	74,3	69,8	85,6	95
200	35000	500	49,6	61,5	76,6	85,2	88,5	87,8	81,6	79,8	92,8	91
230	39000	500	50,1	58,9	76,2	84,6	90,3	86,8	87,4	82,2	94,1	92

INDOOR NOISE LEVEL - STANDARD & LOW NOISE

Spectrum per octave band

FAG/FAM	Airflow rate (m3/h)		63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	15000	250	41,3	55,2	69,0	77,8	81,0	80,8	80,5	73,1	86,5	84
100	18500	250	50,2	70,2	77,1	82,4	86,7	84,0	78,4	73,8	90,2	87
120	20500	250	50,3	58,9	79,6	80,6	85,9	81,7	78,3	72,1	89,2	89
150	26000	300	47,8	62,1	75,6	84,5	87,7	87,6	86,8	79,9	93,1	88
170	30000	350	50,1	59,6	77,1	85,8	90,8	87,7	88,8	85,1	95,2	90
200	35000	350	50,1	64,0	75,9	83,9	84,8	87,7	80,7	78,6	91,3	88
230	39000	350	47,4	59,7	74,7	83,2	86,2	85,7	87,1	78,1	92,0	90

Spectrum per octave band

FAG/FAM	Airflow rate (m3/h)		63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	15000	500	44,9	57,8	71,8	78,8	82,1	80,6	82,3	70,0	87,4	90
100	18500	500	48,1	60,2	75,2	83,7	87,1	86,3	80,2	78,2	91,4	91
120	20500	500	41,8	54,2	68,7	76,1	79,3	78,0	79,7	67,9	84,7	93
150	26000	500	50,0	59,1	76,3	85,0	90,5	87,1	87,9	83,5	94,5	94
170	30000	500	44,3	62,0	71,4	78,4	81,7	79,8	74,3	69,8	85,6	95
200	35000	500	49,6	61,5	76,6	85,2	88,5	87,8	81,6	79,8	92,8	93
230	39000	500	50,1	58,9	76,2	84,6	90,3	86,8	87,4	82,2	94,1	94

10.1 ELECTRICAL TABLES

		085			100			120			
		PA	FLA	SUA	PA	FLA	SUA	PA	FLA	SUA	
		kW	A	A	kW	A	A	kW	A	A	
With (not cumulative):											
Transformer		0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8	
Compressor		31,1	50,6	183,3	34,8	58,6	226,3	46,6	75,6	252,8	
Condensing fan		3,9	7,8	16,9	3,9	7,8	16,9	5,0	10,3	23,7	
Condensing fan (EC fan)		3,7	5,7	5,7	3,7	5,7	5,7	4,2	6,4	6,4	
Indoor supply kit	Ø500 Aluminium	LP	5,7	8,6	8,6	5,7	8,6	8,6	5,7	8,6	8,6
		HP	11,0	16,8	16,8	11,0	16,8	16,8	11,0	16,8	16,8
	Ø560 Aluminium	LP	6,0	9,2	9,2	6,0	9,2	9,2	6,0	9,2	9,2
		HP	9,4	14,6	14,6	9,4	14,6	14,6	9,4	14,6	14,6
	Ø500 Composite material	LP	5,2	8,0	8,0	5,2	8,0	8,0	5,2	8,0	8,0
		LP	5,8	8,9	8,9	5,8	8,9	8,9	5,8	8,9	8,9
ELECTRICAL											
Electric heater	S	30,0	41,2	41,2	30,0	41,2	41,2	30,0	41,2	41,2	
	M	54,0	74,2	74,2	54,0	74,2	74,2	54,0	74,2	74,2	
	H	72,0	99,0	99,0	72,0	99,0	99,0	72,0	99,0	99,0	
Gas burner	S	0,16	0,40	0,40	0,16	0,40	0,40	0,16	0,40	0,40	
	H	0,25	0,63	0,63	0,25	0,63	0,63	0,25	0,63	0,63	
POWER AXIAL FAN VERTICAL											
		1,0	1,8	5,1	1,0	1,8	5,10	1,0	1,8	5,1	
EXTRACTION											
Axial extraction fan (Vertical or horizontal)	Aluminium	LP	5,7	8,6	8,6	5,7	8,6	8,6	5,7	8,6	8,6
	Composite material	LP	5,8	8,9	8,9	5,8	8,9	8,9	5,8	8,9	8,9
	Aluminium	HP	11,0	16,8	16,8	11,0	16,8	16,8	11,0	16,8	16,8
ENERGY RECOVERY											
Rotary wheel motor		0,09	0,29	1,16	0,09	0,29	1,16	0,09	0,29	1,16	

PA Absorbed power (kW)

S Standard heat

FLA Full load amps (A)

M Medium heat

SUA Start up amps (A)

H High heat

LP Low pressure

HP High pressure

10.1 ELECTRICAL TABLES

			150			170			200			230		
			PA	FLA	SUA	PA	FLA	SUA	PA	FLA	SUA	PA	FLA	SUA
			kW	A	A	kW	A	A	kW	A	A	kW	A	A
With (not cumulative):														
Transformer			0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8
Compressor			54,4	88,4	265,6	62,2	101,2	233,9	69,5	117,2	284,9	93,2	151,2	328,4
Condensing fan			3,9	7,8	16,9	5,0	10,3	23,7	7,8	15,6	33,8	9,9	20,6	47,5
Condensing fan (EC fan)			3,7	5,7	5,7	4,2	6,4	6,4	7,4	11,4	11,4	8,4	12,8	12,8
Indoor supply kit	Ø500 Aluminium	LP	8,5	12,9	12,9	8,5	12,9	12,9	9,0	13,8	13,8	9,0	13,8	13,8
		HP	16,5	25,2	25,2	16,5	25,2	25,2	14,1	21,9	21,9	14,1	21,9	21,9
	Ø560 Aluminium	LP	9,0	13,8	13,8	9,0	13,8	13,8	11,3	17,2	17,2	11,3	17,2	17,2
		HP	14,1	21,9	21,9	14,1	21,9	21,9	22,0	33,6	33,6	16,5	25,2	25,2
	Ø500 Composite material	LP	7,8	12,0	12,0	7,8	12,0	12,0	8,7	13,3	13,3	8,7	13,3	13,3
		LP	8,7	13,3	13,3	8,7	13,3	13,3	10,4	16,0	16,0	10,4	16,0	16,0
ELECTRICAL														
Electric heater	S	45,0	61,8	61,8	45,0	61,8	61,8	72,0	99,0	99,0	72,0	99,0	99,0	
	M	72,0	99,0	99,0	72,0	99,0	99,0	108,0	148,5	148,5	108,0	148,5	148,5	
	H	108,0	148,5	148,5	108,0	148,5	148,5	162,0	195,3	195,3	162,0	195,3	195,3	
Gas burner	S	0,25	0,63	0,63	0,25	0,63	0,63	0,25	0,63	0,63	0,25	0,63	0,63	
	H	0,25	0,63	0,63	0,25	0,63	0,63	0,25	0,63	0,63	0,25	0,63	0,63	
POWER AXIAL FAN VERTICAL														
			1,02	1,83	5,10	1,02	1,83	5,10	1,02	1,83	5,10	1,02	1,83	5,10
EXTRACTION														
Axial extraction fan (Vertical or horizontal)	Aluminium	LP	8,5	12,9	12,9	8,5	12,9	12,9	9,0	13,8	13,8	9,0	13,8	13,8
	Composite material	LP	8,7	13,3	13,3	8,7	13,3	13,3	8,7	13,3	13,3	8,7	13,3	13,3
	Aluminium	HP	16,5	25,2	25,2	16,5	25,2	25,2	14,1	21,9	21,9	14,1	21,9	21,9
ENERGY RECOVERY														
Rotary wheel motor			0,18	0,58	2,32	0,18	0,58	2,32	0,18	0,58	2,32	0,18	0,58	2,32

PA Absorbed power (kW)

S Standard heat

FLA Full load amps (A)

M Medium heat

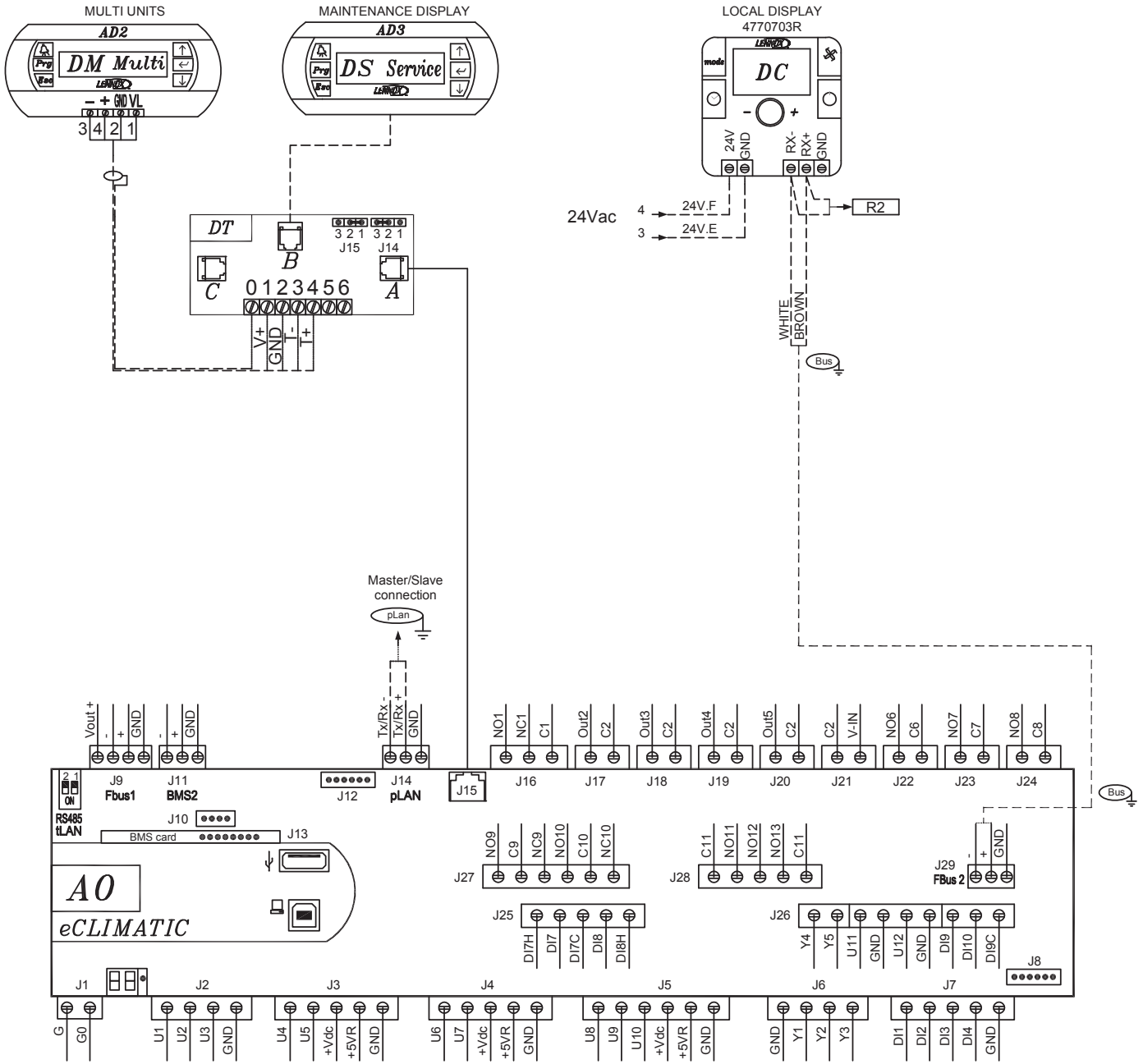
SUA Start up amps (A)

H High heat

LP Low pressure

HP High pressure

10.2 CONTROL TERMINAL CONNECTION

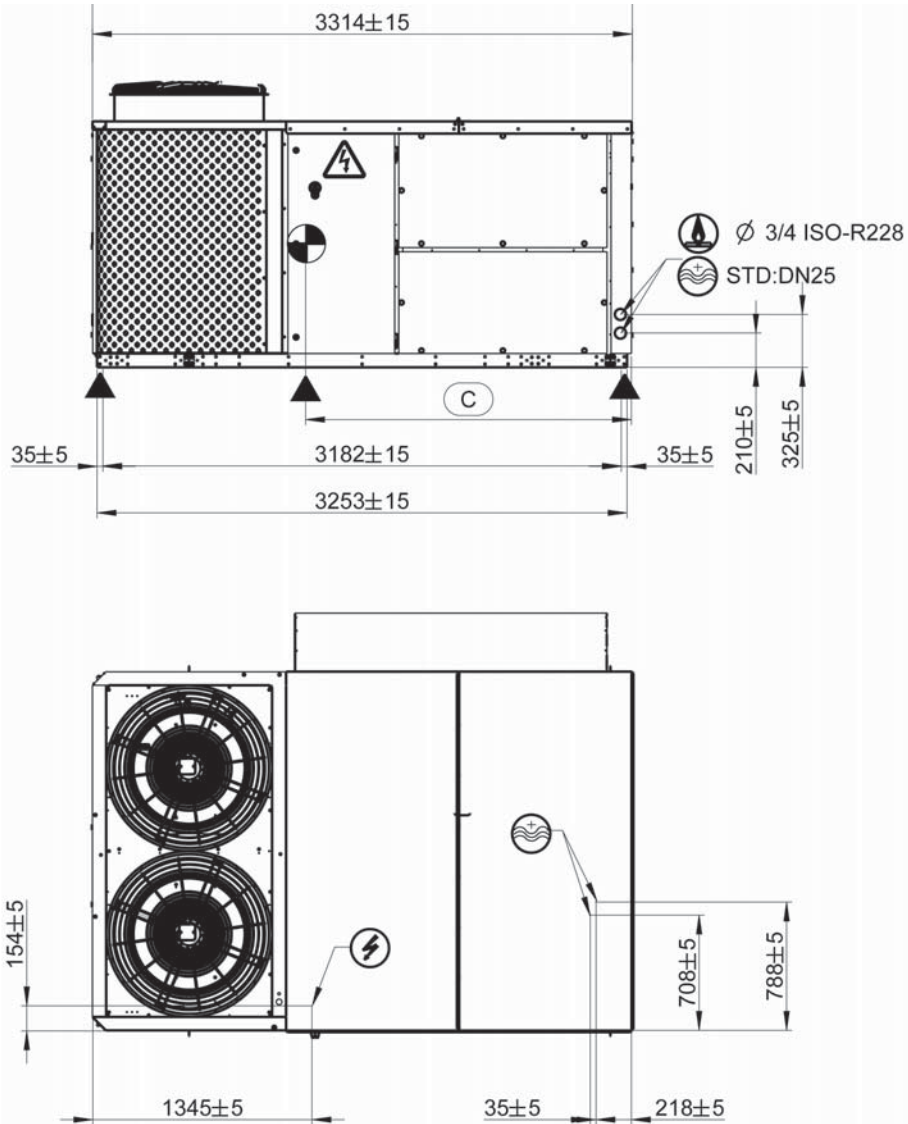


----- Customer connections

11.1 UNIT DIMENSIONS

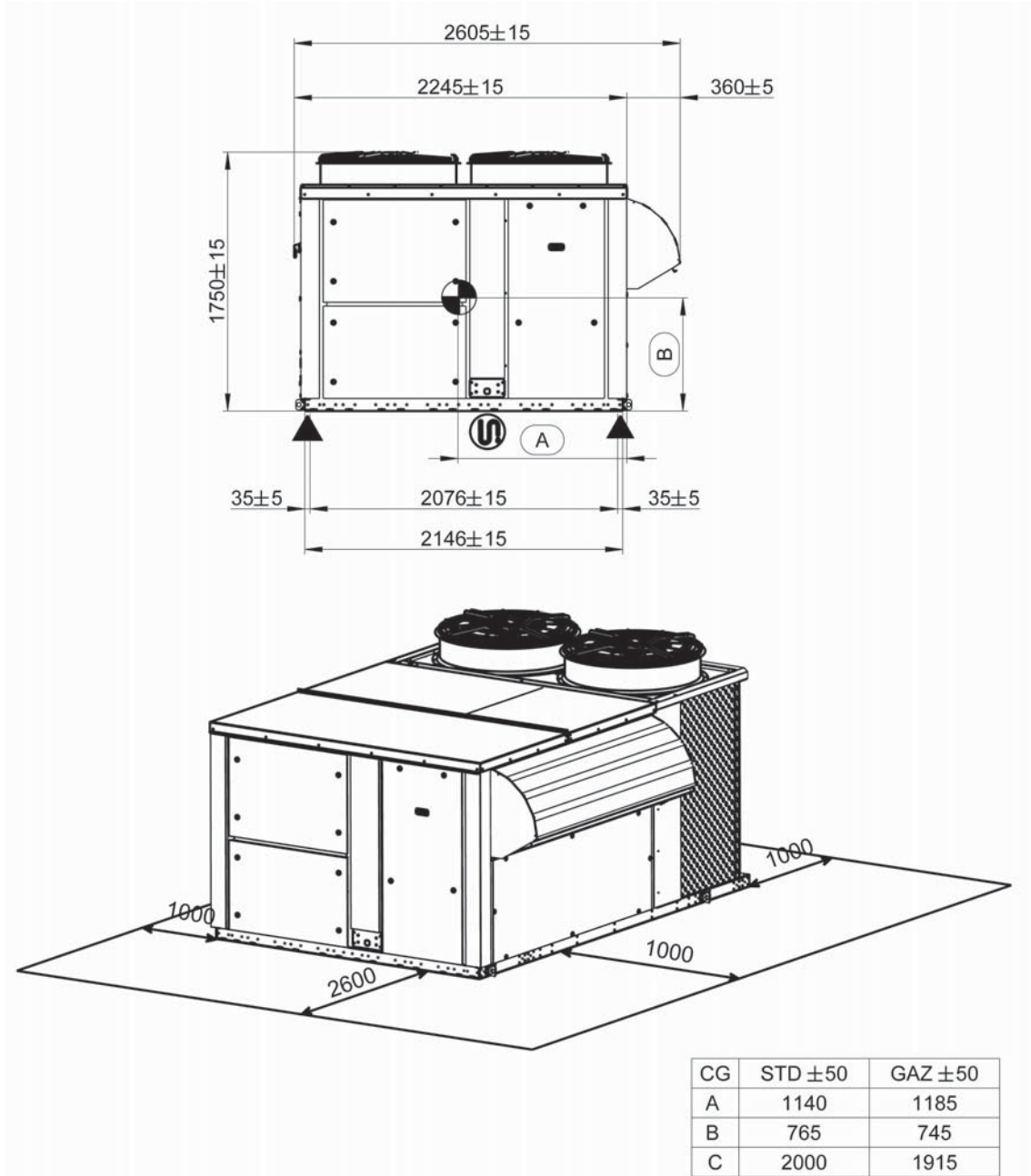
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
85/100/120



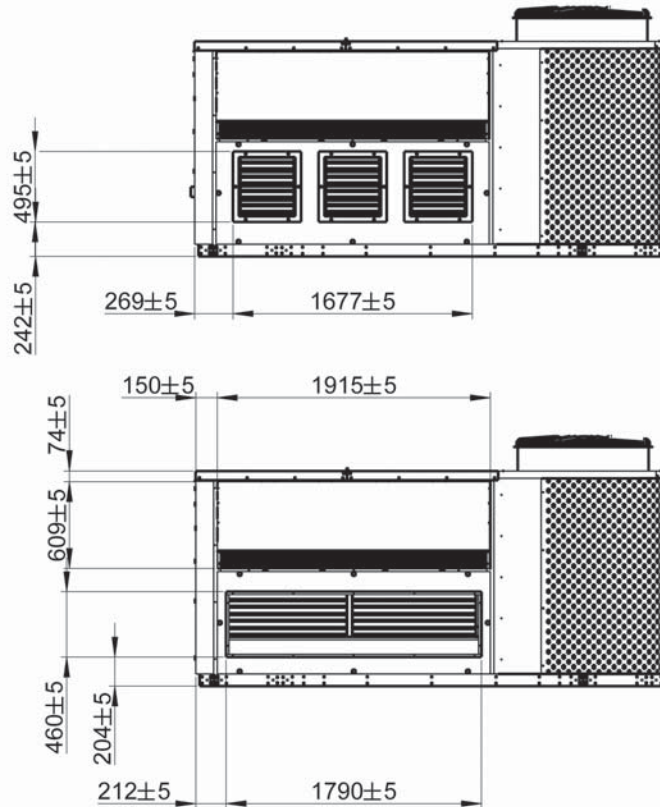
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
085/100/120



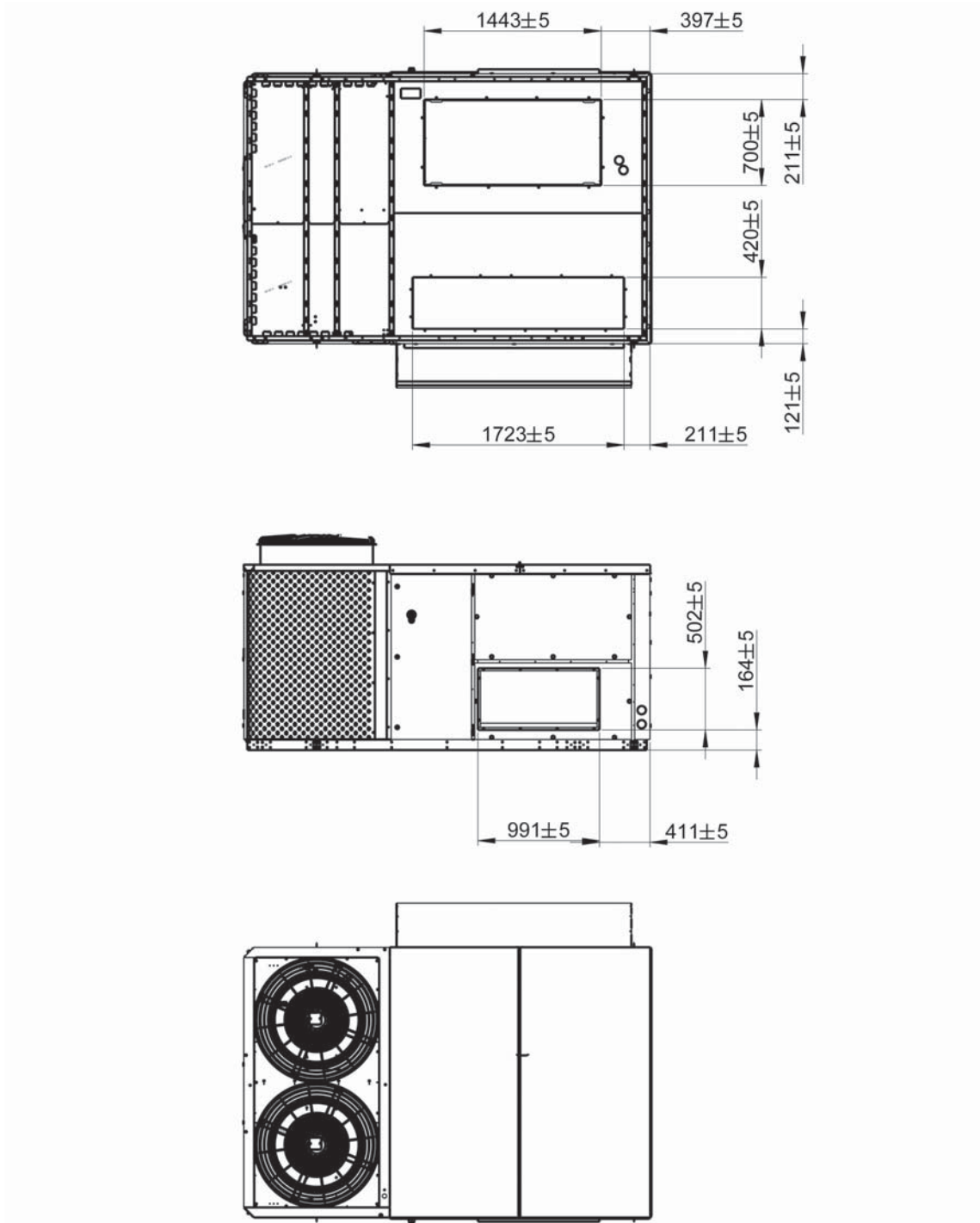
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
85/100/120



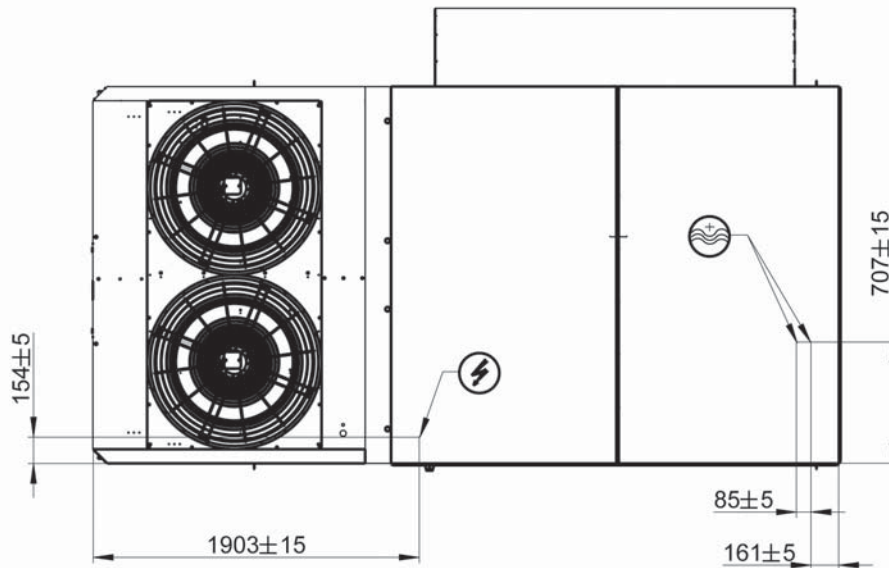
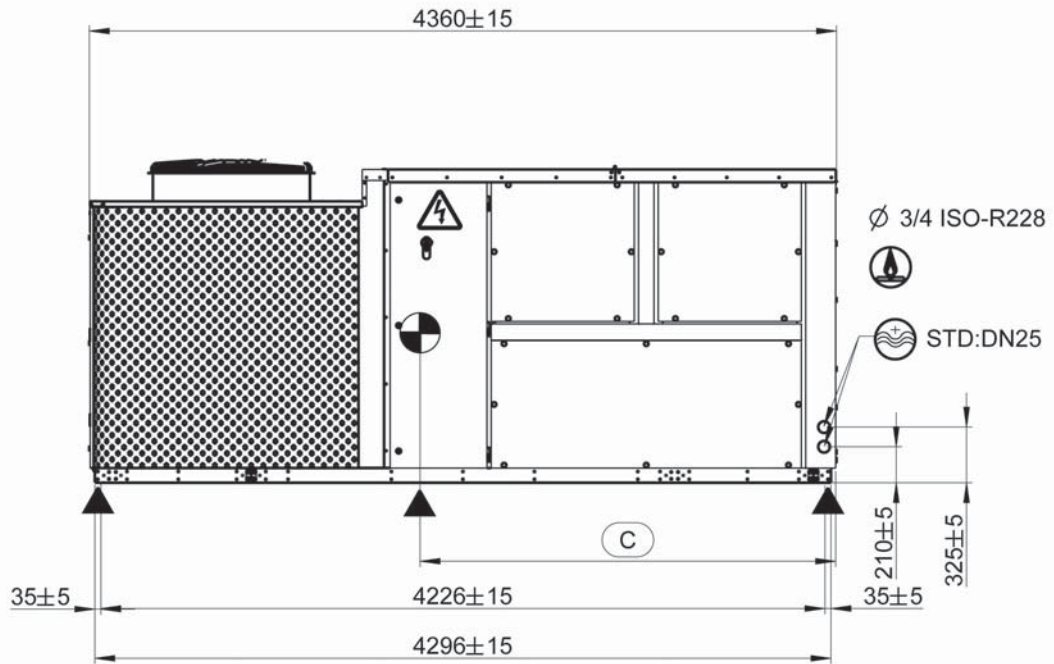
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
085/100/120



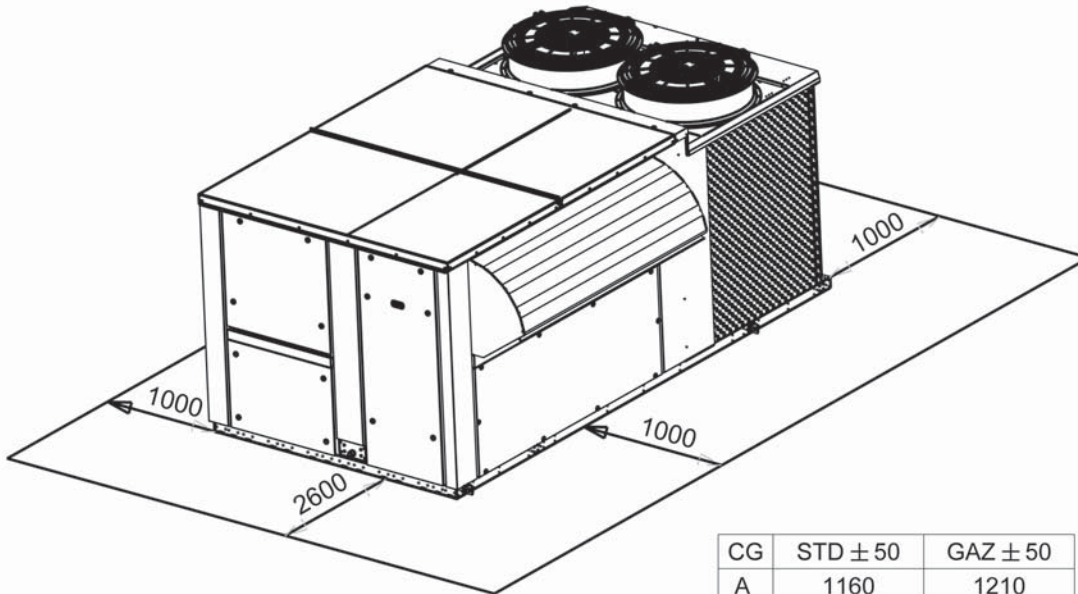
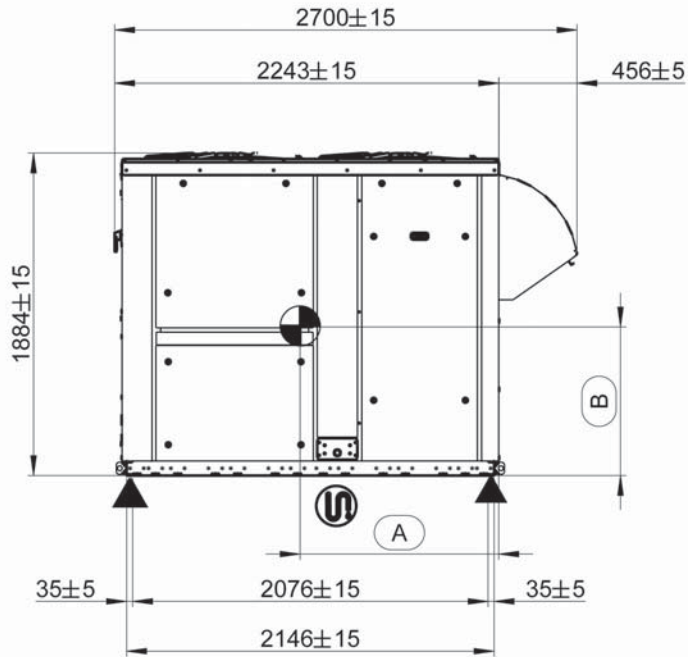
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
150/170



GENERAL ARRANGEMENTS DRAWINGS

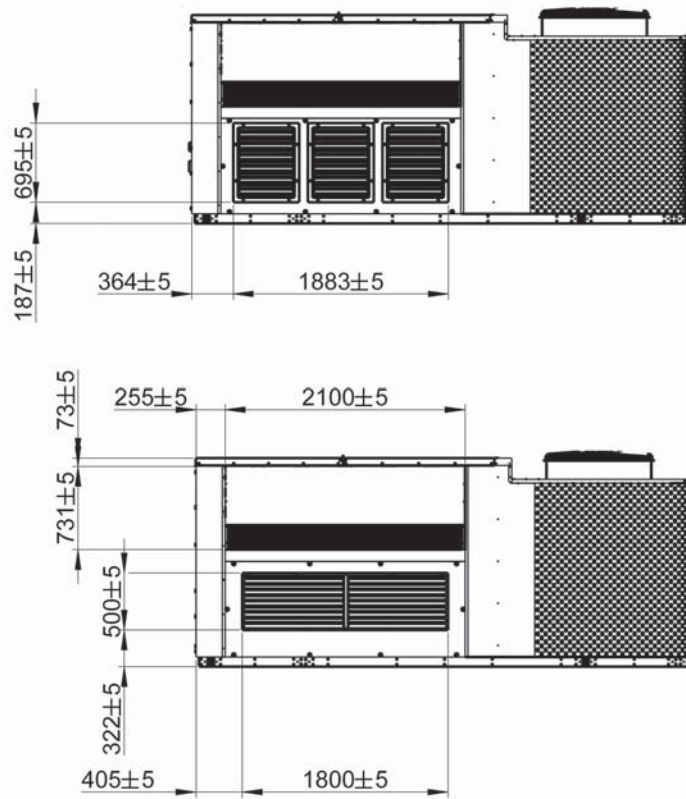
FAC/FAH/FAG/FAM
150/170



CG	STD ± 50	GAZ ± 50
A	1160	1210
B	865	835
C	2425	2250

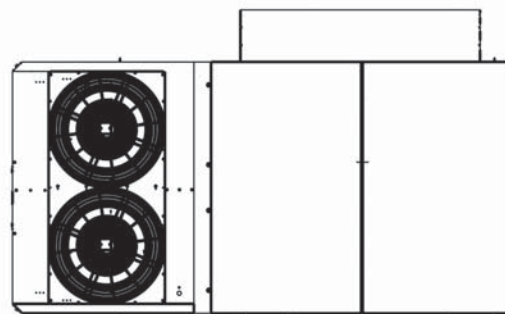
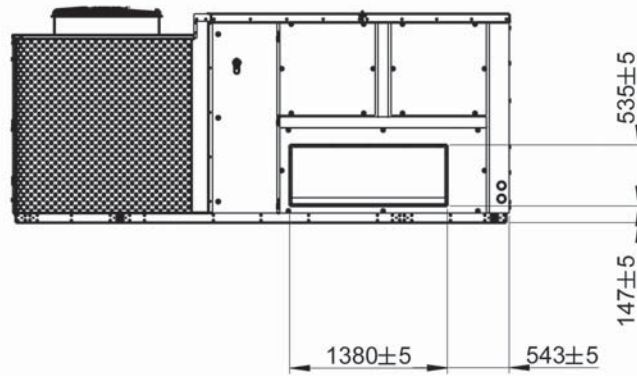
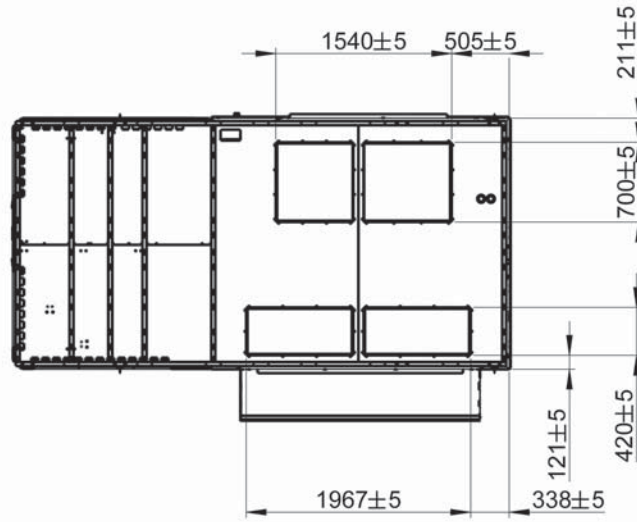
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
150/170



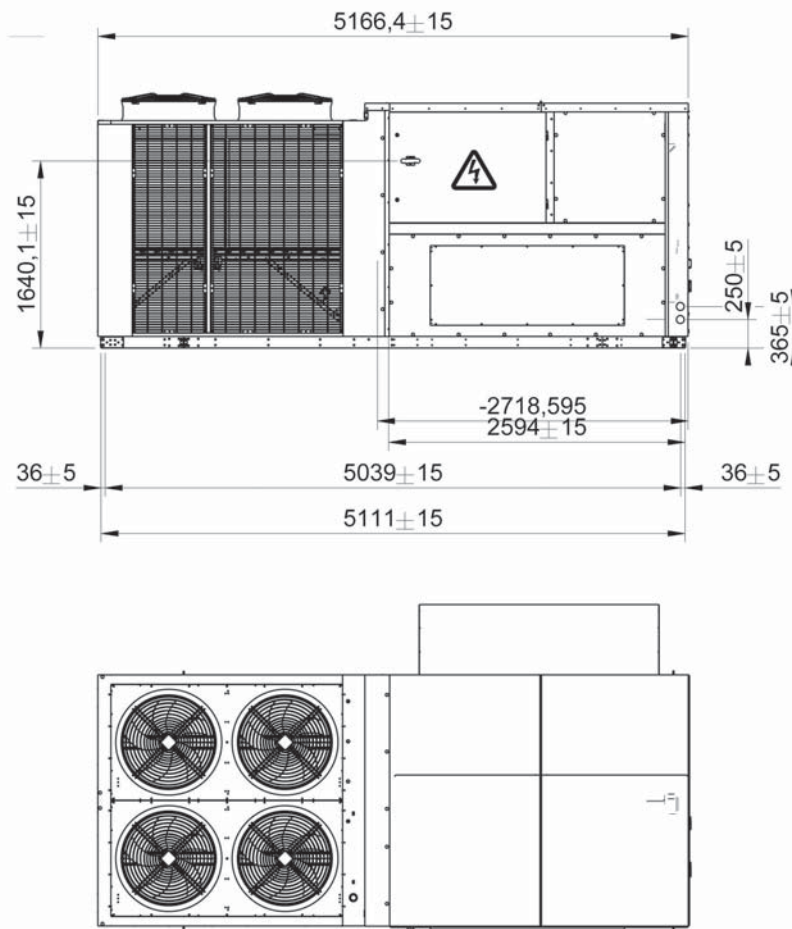
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
150/170



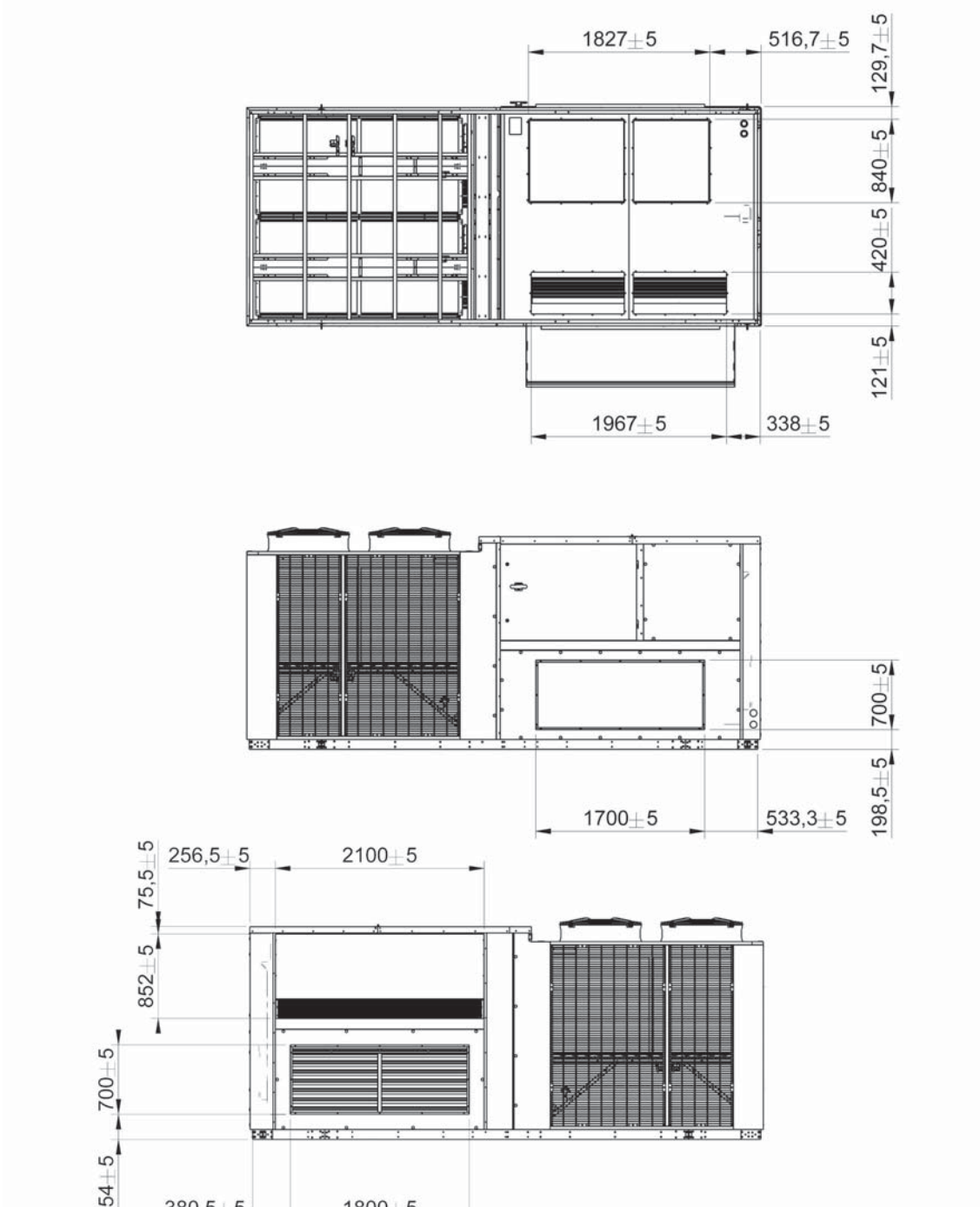
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
200/230



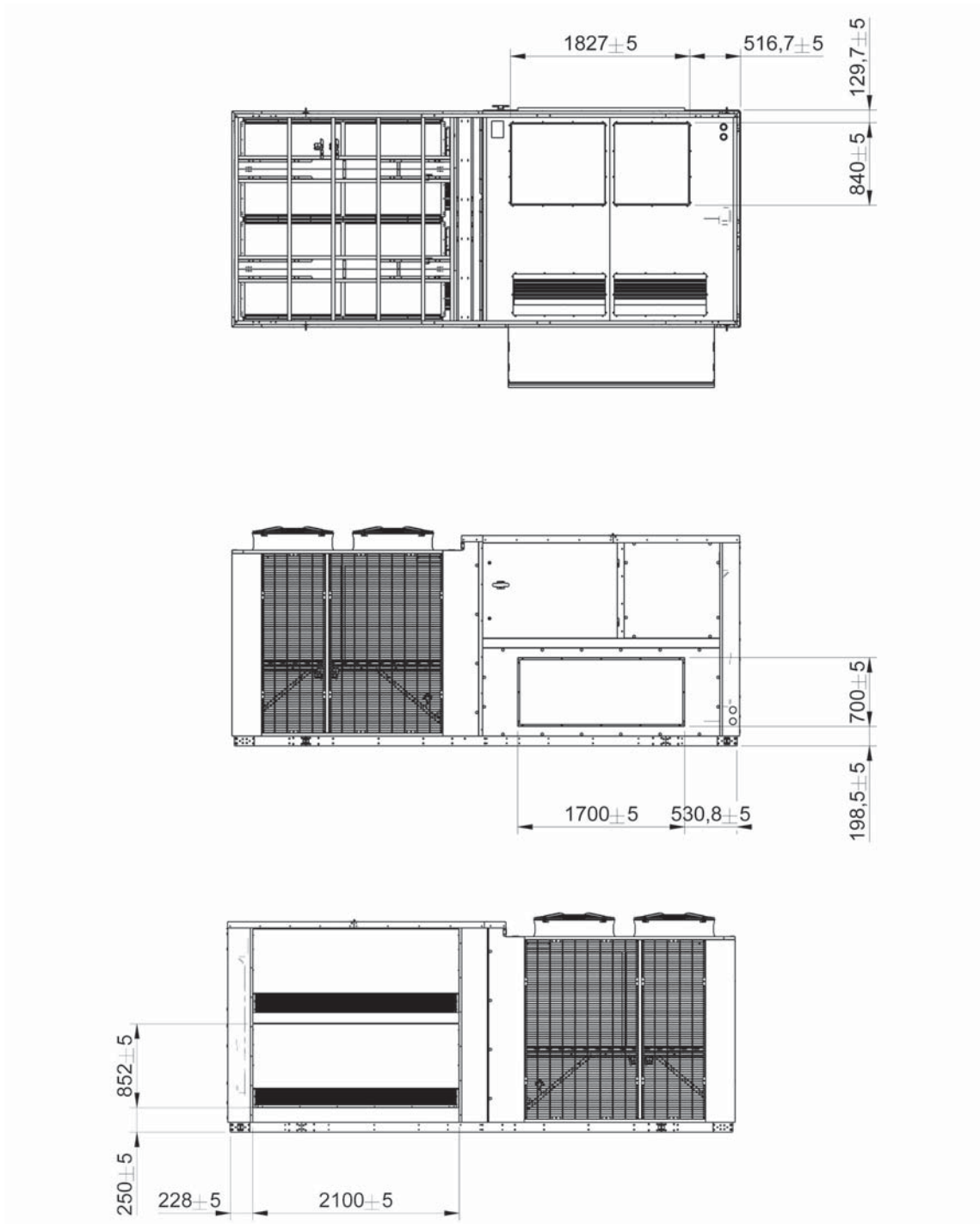
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
200/230



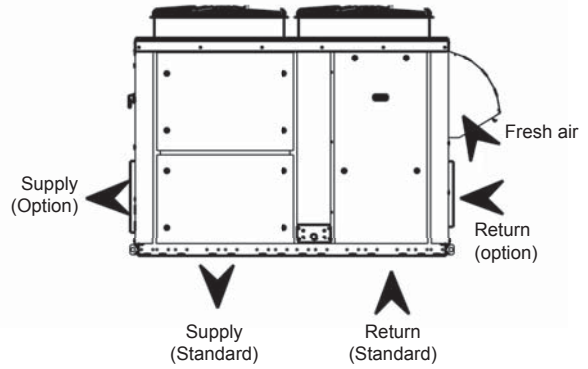
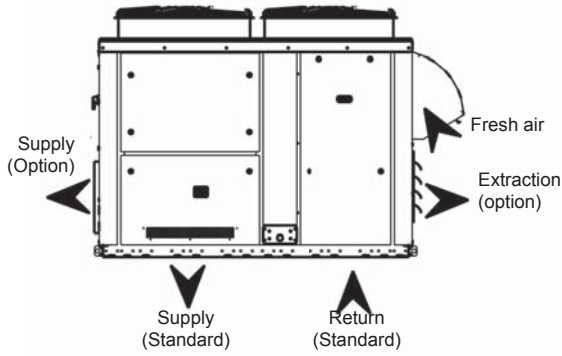
GENERAL ARRANGEMENTS DRAWINGS

FAC/FAH/FAG/FAM
200/230

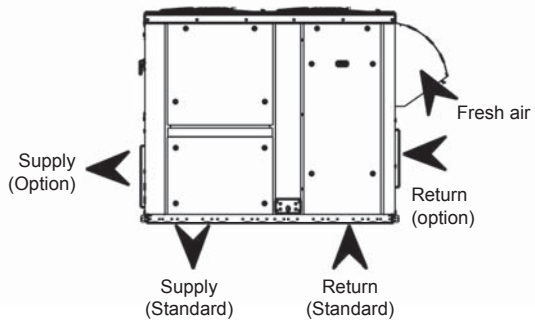
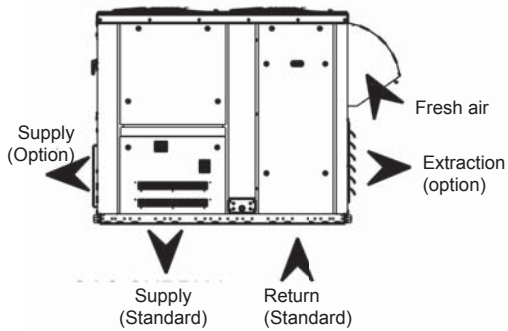


11.2- AIRFLOW CONFIGURATION

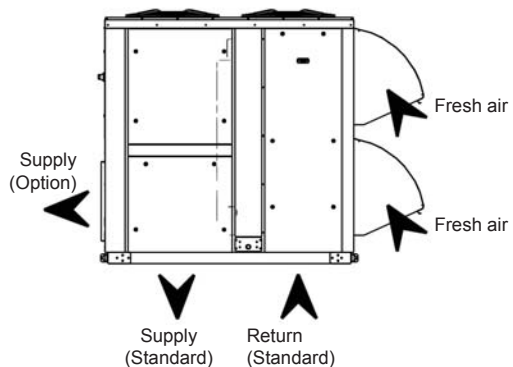
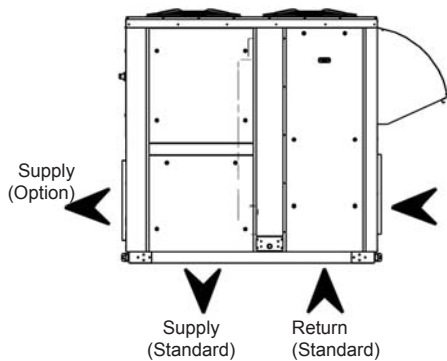
FAC/FAH/FAG/FAM
85/100/120



FAC/FAH/FAG/FAM
150/170



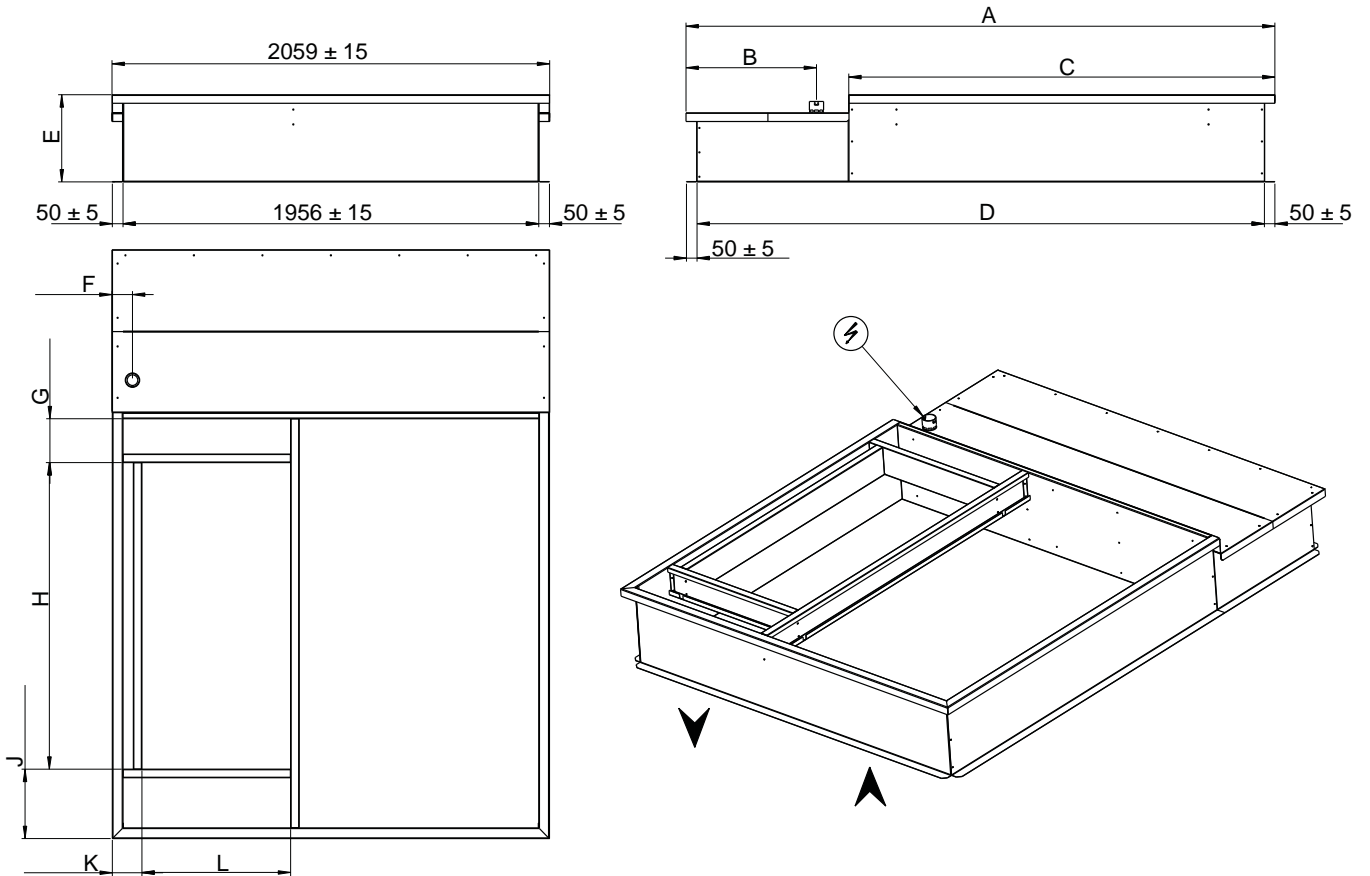
FAC/FAH/FAG/FAM
200/230



11.3- ROOFCOURB DIMENSIONS

NON ADJUSTABLE ROOFCOURB

FAC/FAH/FAG/FAM

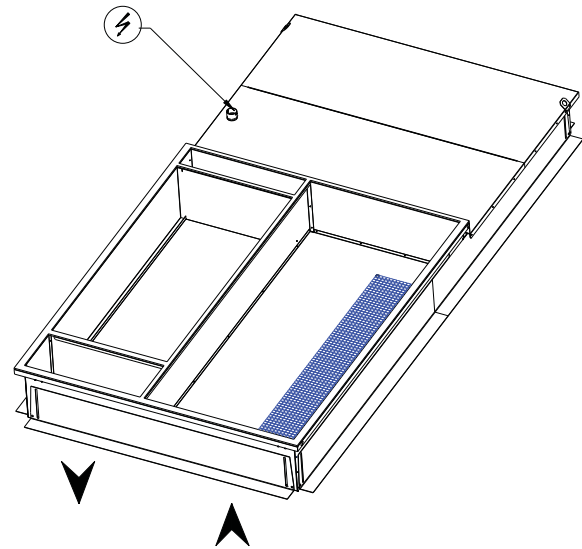
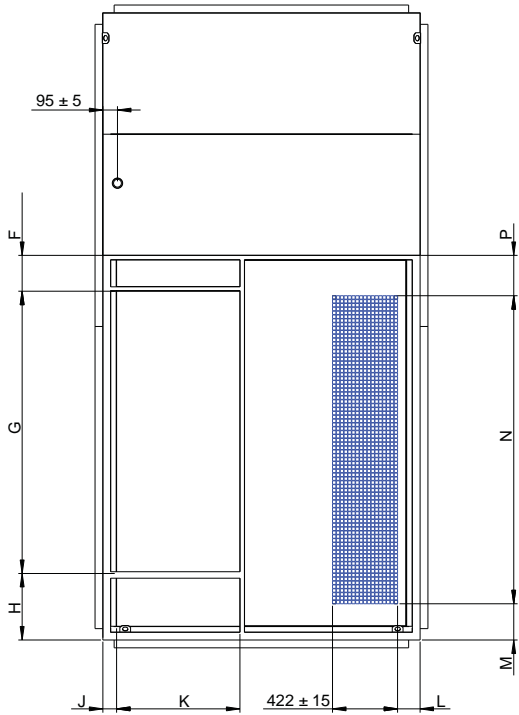
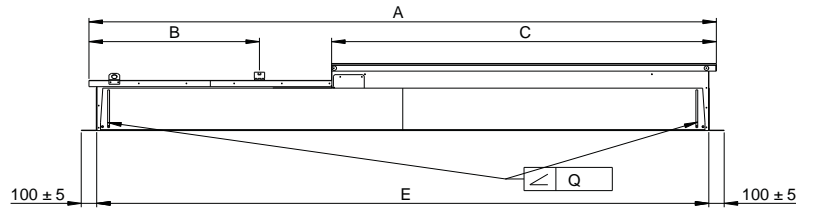
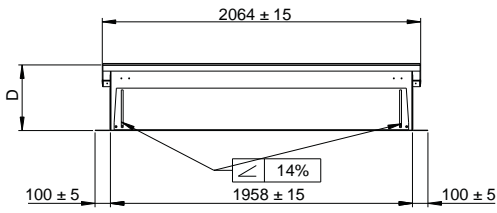


DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L
85-100-120	2771	614	2005	2669	410	96	207	1443	326	139	700
150-170	3466	800	2493	3365	410	95	491	1540	433	139	700
200-230	4066	1106	2493	3965	425	95	233	1830	432	89	800

ADJUSTABLE ROOFCURB

FAC/FAH/FAG/FAM

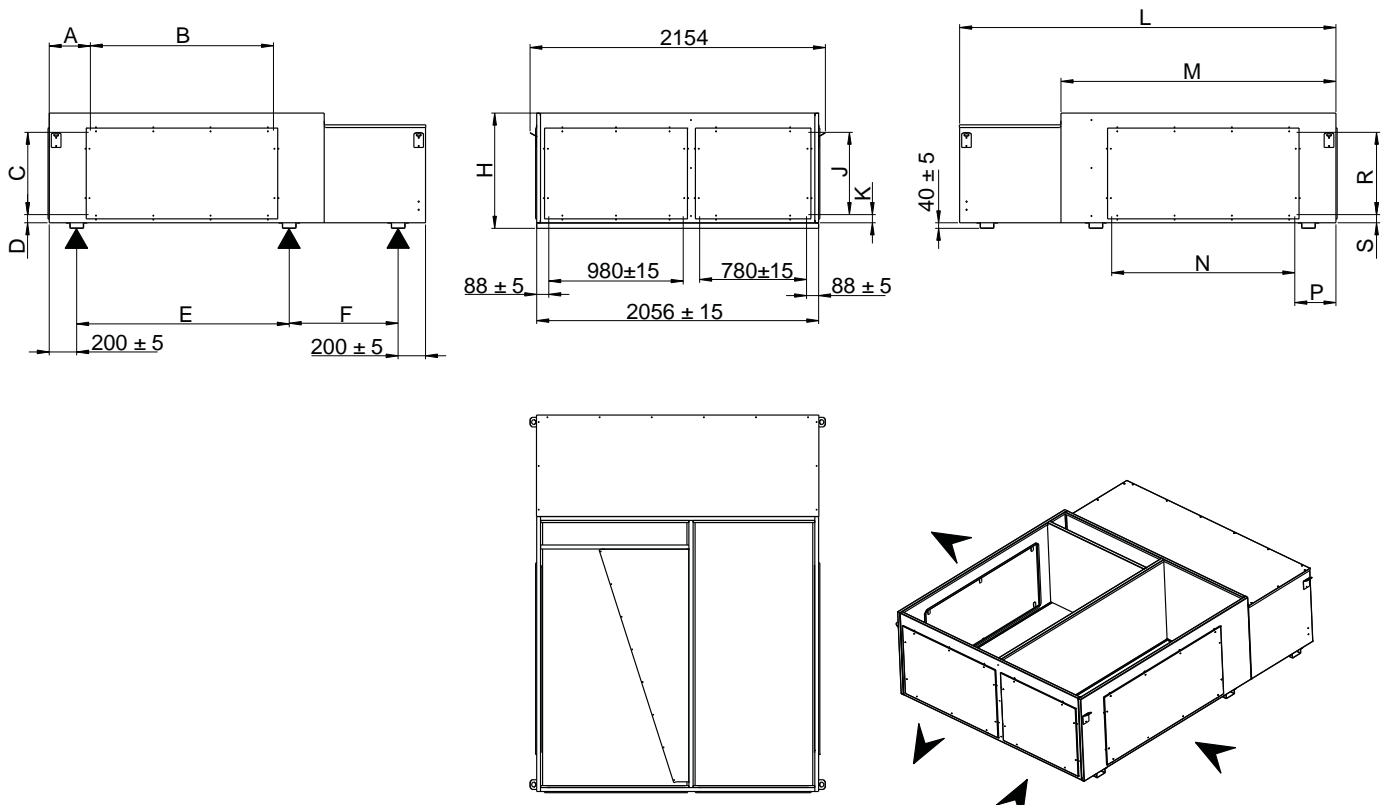


DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
85-100-120	2771	614	2006	400	2672	237	1443	326	140	700	145	131	1747	128	10 %
150-170	3467	800	2494	400	3368	520	1540	433	140	700	146	235	1997	230	8 %
200-230	4067	1105	2494	425	3968	232	1830	432	89	800	146	235	1997	262	6,6 %

MULTIDIRECTIONAL ROOFCURB

FAC/FAH/FAG/FAM



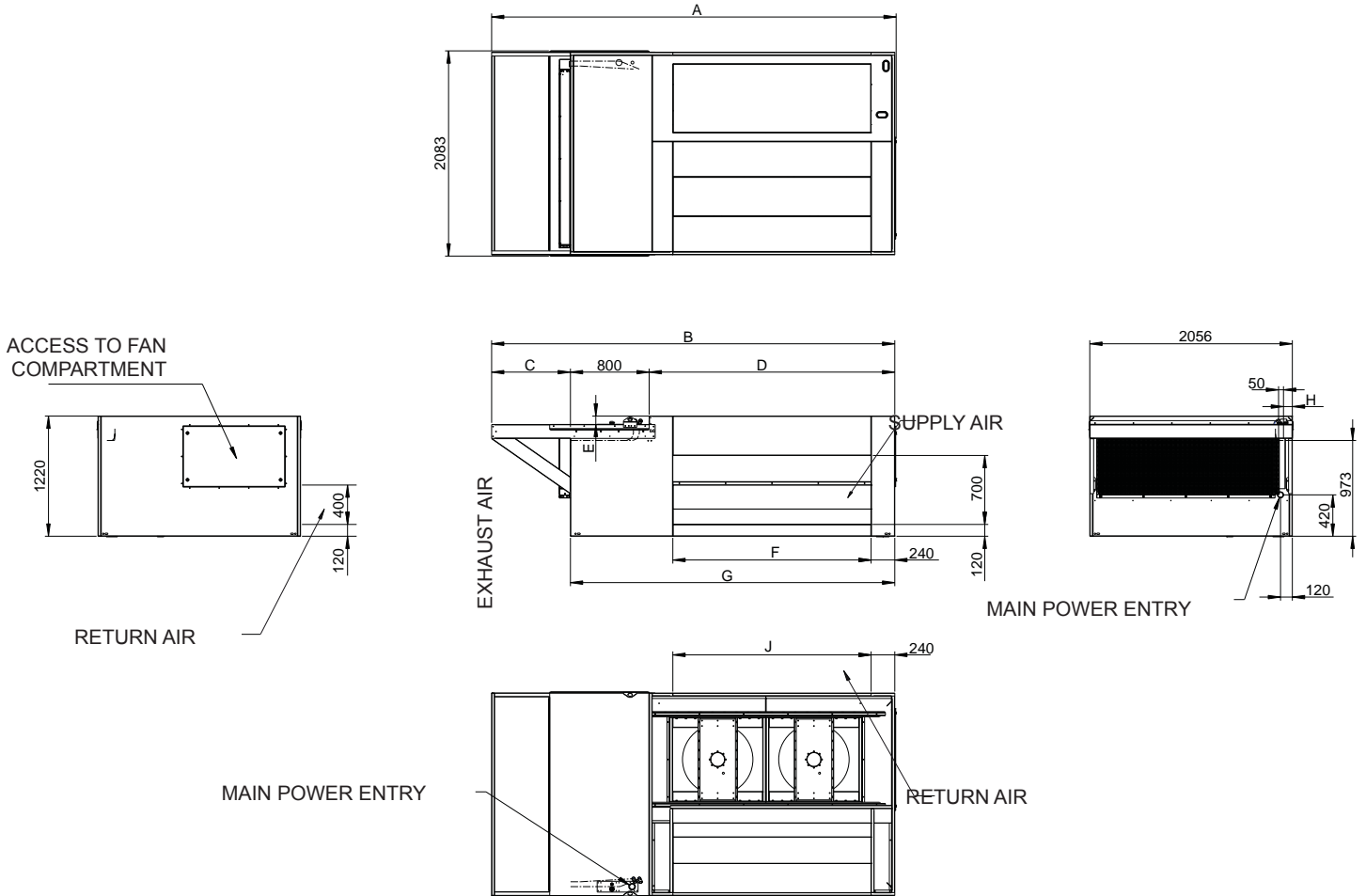
DIMENSIONS

	A	B	C	D	E	F	H	J
85-100-120	300	1335	600	60	1550	794	840	600
150-170	229	1540	600	60	1799	1241	1140	900
200-230	322	1850	700	162	2093	1572	1340	1100

	K	L	M	N	P	R	S
85-100-120	60	2744	2005	1335	300	600	60
150-170	60	3440	2493	1540	229	600	60
200-230	100	4067	2493	1850	332	700	160

HORIZONTAL EXHAUST ROOFCURB

FAC/FAH/FAG/FAM

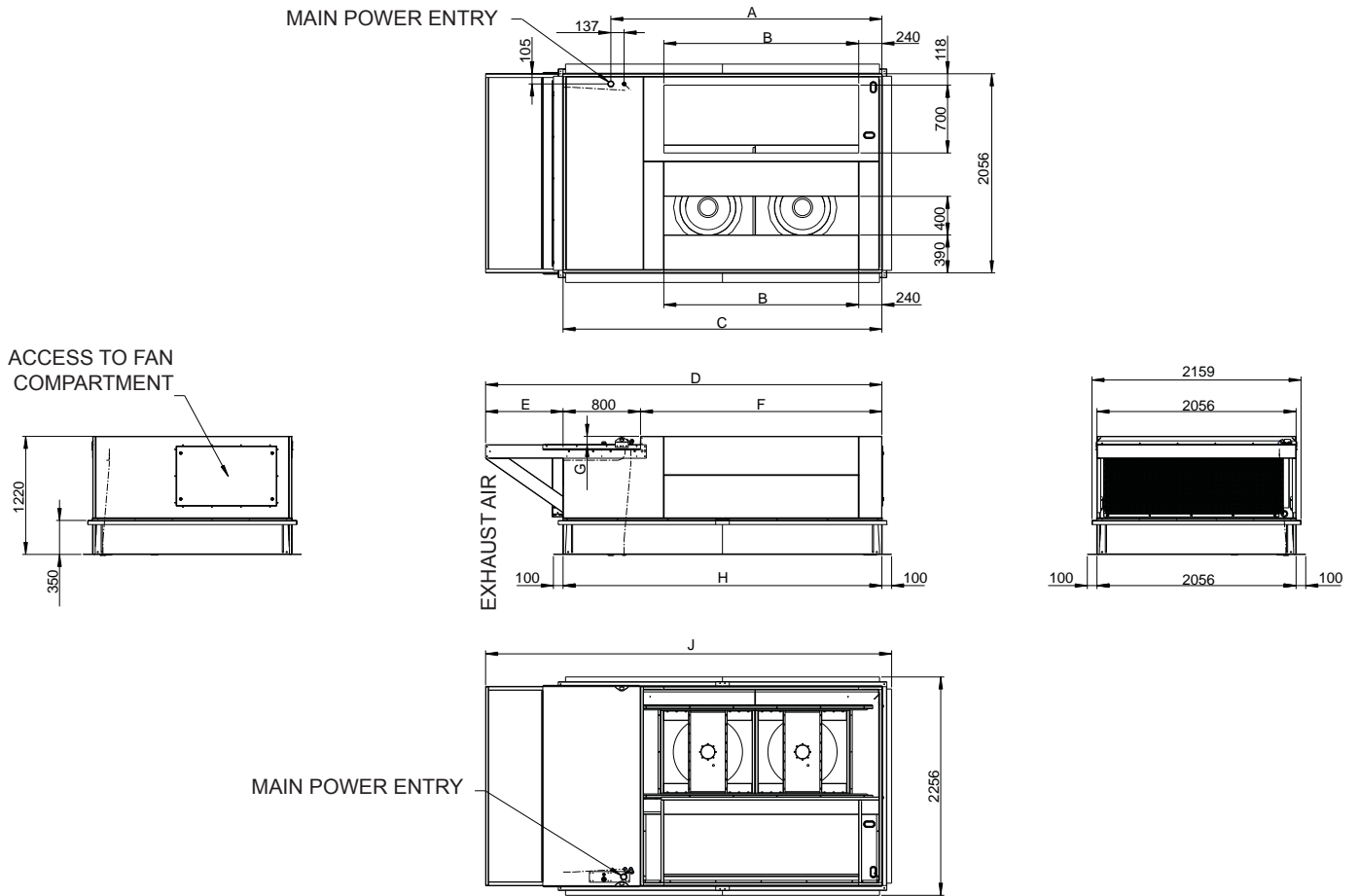


DIMENSIONS

	A	B	C	D	E	F	G	H	J
85-100-120	3041	3016	-	2005	85	1525	2805	95	1525
150-170	4107	4093	800	2493	85	2013	3293	90	2013
200-230	4107	4093	800	2493	100	2013	3293	90	2013

VERTICAL EXHAUST ROOFCURB

FAC/FAH/FAG/FAM



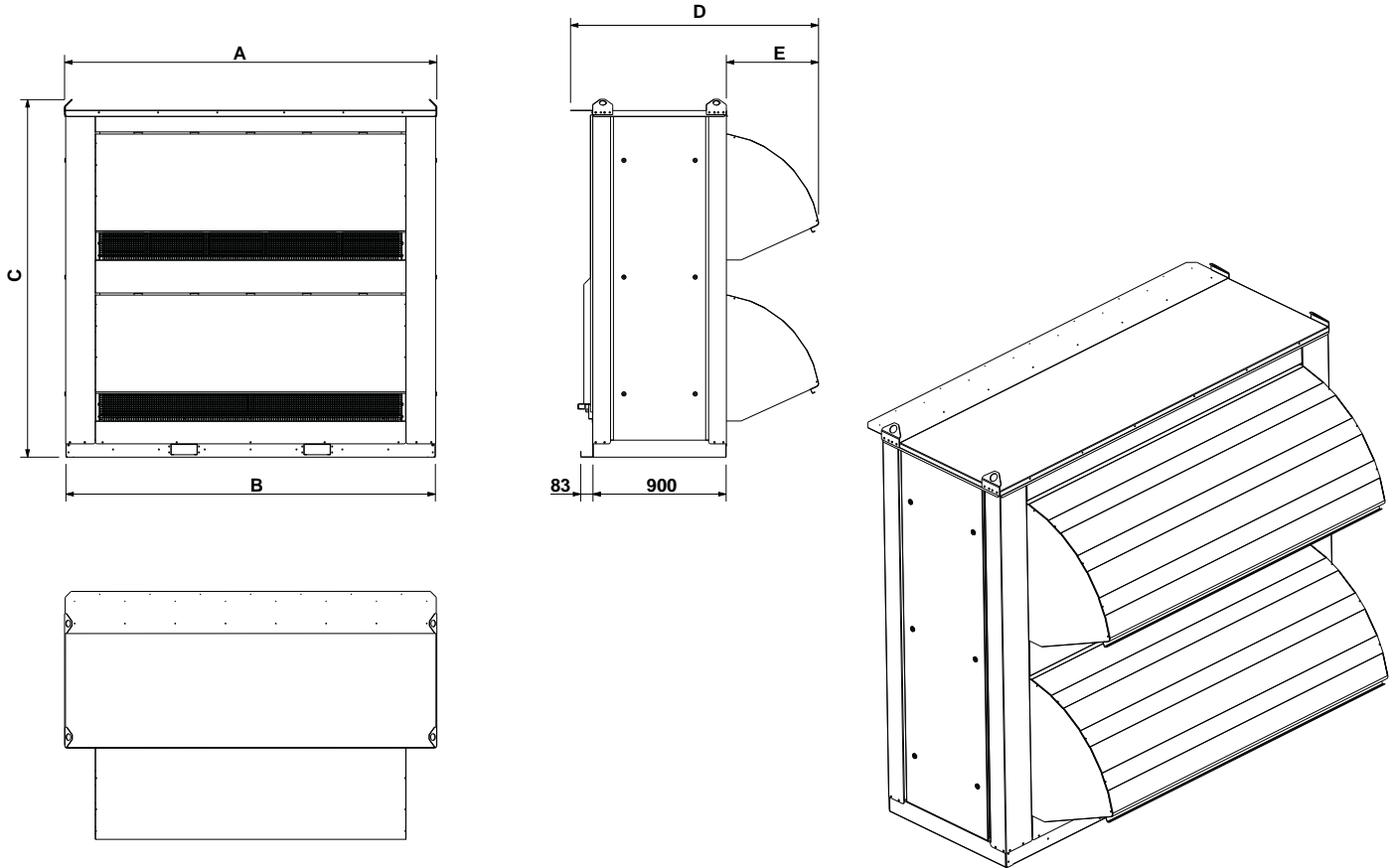
DIMENSIONS

	A	B	C	D	E	F	G	H	J
85-100-120	2312	1525	2805	3016	211	2005	85	2805	3127
150-170	2800	2013	3293	4093	800	2493	85	3293	4193
200-230	2800	2012	3293	4093	800	2493	100	3293	4193

11.4 HEAT RECOVERY OPTION DIMENSIONS

ENERGY RECOVERY OPTION

FAC/FAH/FAG/FAM



DIMENSIONS

	A	B	C	D	E
85-100-120	2146	2063	1796	1422	367
150-170	2330	2247	2170	1676	463
200-230	2516	2497	2418	1518	623

SIZE		85	100	120	150	170	200	230
Basic unit	FAC	966	1055	1054	1454	1550	2027	2143
	FAH	981	1070	1069	1484	1580	2057	2173
	FAG (S)	1013	1117	1108	1576	1681	2257	2371
	FAG (H)	1083	1187	1178	1599	1704	2297	2411
	FAM (S)	1028	1132	1123	1606	1711	2287	2401
	FAM (H)	1098	1202	1193	1629	1734	2327	2441
Airflow configuration								
High pressure EC Plug Fan		27	27	27	41	41	45	45
Exhaust air options								
Gravity exhaust damper for downflow return		14	14	14	19	19	21	21
Power exhaust fan axial + gravity exhaust damper (downflow return)		41	41	41	63	63	67	67
Heat recovery module (downflow and horizontal flow)		525	525	525	635	635	730	730
EC Low Pressure return roofcurb Downflow		654	654	654	775	775	775	775
EC Low Pressure return roofcurb Horizontalflow		586	586	586	698	698	698	698
Filtration option								
G4 metallic frame, washable filter		36	36	36	44	44	61	61
F7 Filters / G4 Prefilters		6	6	6	11	11	19	19
G4 Refilable filters		6	6	6	11	11	19	19

Heating options versus FAC or FAG								
2 steps electric heater	S	47	47	47	57	57	78	78
Modulating electric heater	M	64	64	64	78	78	103	103
	H	78	78	78	103	103	143	143
Hot water coil	S	34	34	34	52	52	63	63
	H	62	62	62	96	96	116	116
Other Options								
Non adjustable non assembled roofcurb		94	94	94	108	108	128	128
Adjustable assembled roofcurb		197	197	197	229	229	272	272
Multi direction horizontalflow curb		237	237	237	332	332	395	395

S Standard heat

M Medium heat

H High heat

FAC Cooling only

FAG Cooling only with gas fired heating

FAH Heat pump

FAM Heat pump rooftop with gas fired heating

Size	Airflow rate	Filters		Hot water coil	
	m³/h	G4	F7	S	H
85	12000	1	75	9	15
	15000	7	105	13	22
	23000	28	199	26	44
100	14000	5	94	11	19
	18500	15	143	18	31
	23000	28	199	26	44
120	15000	7	105	13	22
	20500	21	167	21	37
	23000	28	199	26	44
150	18000	1	75	6	10
	26000	12	130	12	19
	35000	29	204	19	33
170	21000	5	94	8	14
	30000	19	161	15	25
	35000	29	204	19	33
200	24000	3	88	7	11
	35000	18	154	13	22
	43000	31	211	19	31
230	27000	7	105	8	14
	39000	24	182	16	26
	43000	31	211	19	31

Size	Airflow rate	Electric heater			Heating gas fired	Adjustable roofcurb	Multidirectional roofcurb	Heat recovery module Fresh air
	m³/h	S	M	H	H			
85	12000	3	5	6	14	17	22	161
	15000	6	7	7	23	27	33	201
	23000	7	9	11	53	63	73	309
100	14000	6	7	8	20	23	30	187
	18500	8	10	11	34	41	51	248
	23000	11	14	16	53	63	78	309
120	15000	7	8	9	23	27	35	201
	20500	10	12	13	42	50	62	276
	23000	12	15	17	53	63	78	309
150	18000	4	5	7	16	30	35	167
	26000	9	10	13	33	62	72	241
	35000	15	18	23	59	112	131	325
170	21000	8	9	10	21	40	49	194
	30000	10	13	15	44	82	95	278
	35000	17	19	21	59	112	131	325
200	24000	16	15	14	21	53	67	171
	35000	22	21	20	44	112	133	250
	43000	24	26	29	66	169	195	307
230	27000	18	18	17	26	67	84	192
	39000	24	24	25	55	139	163	278
	43000	24	26	29	66	169	195	307



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