

Application guide

FLEXY II

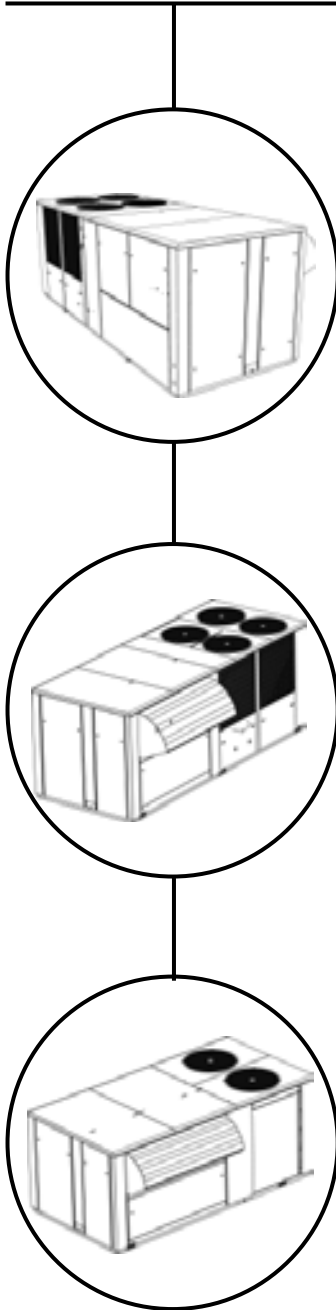


- Providing indoor climate comfort



APPLICATION GUIDE

Ref : FLEXY II-AGU-0708-E



FLEXY II™

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Our company is a member of the Eurovent Certification Programme. The FLEXY II © Lennox rooftops are tested and rated in accordance with Eurovent certification program.

Our products comply with the European standards.

Product designed and manufactured under a quality management system certified to AFAQ ISO 9001 by AFAQ.





All data are at Eurovent conditions.
<http://www.eurovent-certification.com/>

PROGRAM : AC3-A-P-C& AC3-A-P-R

FLEXY	FCM-FGM	85
Cooling mode		
Net cooling capacity	kW	82,8
Absorbed power	kW	29
EER		2,86
Acoustic		
Outside sound power	dB(A)	87
Indoor blower sound power	dB(A)	85

FLEXY	FHM-FDM	85
Cooling mode		
Net cooling capacity	kW	82
Absorbed power	kW	29,6
EER		2,77
Heating mode		
Net heating capacity	kW	82,9
Absorbed power	kW	26,3
COP		3,16
Acoustic		
Outside sound power	dB(A)	87
Indoor blower sound power	dB(A)	85

LIFE CYCLE COST

- Compliant with EUROVENT certification program
- Copeland SCROLL compressor for maximum efficiency, reliability and low noise
- Thermostatic expansion valves
- Tandem assembly for improved part load efficient and increased operating limits
- Alternate defrost: Heat pump have independent defrost. When one circuit is in defrost cycle, the second is still in heat pump mode
- Dynamic defrost : using a set of sensors, Climatic™50 detects when coils are frozen and starts defrost cycle only when needed
- Low speed air in the air treatment section for reduced pressure drop and lower noise
- Extra high efficiency variable plug fan option for life cycle cost reduction (energy + maintenance)
- Modulating gas burner option for comfort improvement

LIFE CYCLE COST COMPARATOR (L3C)

- The **Life Cycle Cost Comparator** is a **unique** software program developed by LENNOX Europe.
- Life Cycle Costs are Initial- (*unit price and installing costs*), Service- and *Running* costs.
- With the L3C program we are able **to assist our customers** in making the **right choice of units and options** required for a new project.
- The **L3C program compares different Lennox units**, in order to make the best decision. It **assists the choice of optimum economical options** in the units based on life cycle costs.
- Our sales engineers are more than willing to assist you in your choice based on the best suitable solution calculated by our L3C program.



EASY TO INSTALL AND SERVICE

- Aluminium body for very low weight and maximum corrosion resistance
- Numbered wires , all wires and connectors are numbered as shown on the electrical drawing to facilitate maintenance and diagnostic

INDOOR AIR QUALITY AND ENVIRONMENT FRIENDLY

- R410A refrigerant
- Removable and washable condensing (drain pan for improved indoor air Quality)
- Fireproof (M0) insulation
- IAQ kit (UV light) and Double Skin wall options for more demanding application in Indoor Air Quality
- F7 filtration (for improved Indoor air quality)

“FLEXY” BILITY

- From 85 to 230 kW to cover wide range of application
- Cooling only (C) , Heat pump (H) , Cooling and gas fired (G) or heat pump and gas fired (D)
- Variable drive pulley as a standard feature
- External static pressure up to 600 Pa
- Plug and play unit, all units have factory fitted options, fully tested and wired

SAFETY

- Compliant with EN 60204-1
- Compliant with PED 97-23 directive
- All electrical components are protected by circuit breakers

The FLEXY II range has been designed to perfectly match applications such as Supermarkets, Cinemas, Retail buildings, Factories and Warehouses.

FLEXY II is available in cooling only, heat pump, gas fired or dual fuel (gas fired and heat pump), the FLEXY II range operates with environmentally friendly R410A HFC, providing cooling capacities from 85 kW up to 234 kW in 3 different Box sizes.

The FLEXY II range has been designed to be very flexible for our customer, when first cost is the main driver the Flexy II can be extremely competitive and simple, but many options can be added to make the FLEXY II a Premium product.

The FLEXY II range is a new generation rooftop where LIFE CYCLE COST and IAQ (Indoor Air Quality) have been looked at in detail.



Description specific to heat recovery unit (double path) FXK

Part of the FLEXY range, the FLEXY FX is an air/air heat pump rooftop optimising applications using a high volume of fresh air by recovering some of the energy from the exhaust air. A system of 4 motorised dampers and 2 centrifugal fans (supply/exhaust) allow full modulation of the fresh air + exhaust air mix, which means that the room is never under or over-pressurised and a perfect pressure balance is achieved. This is ideal for cinemas or any application where the fresh air requirement is important. Although the energy saving capability, providing lower running costs is the main feature of the FX, our customers also appreciate the fact that the unit can be fully ducted (supply, exhaust, fresh air and condenser fan air), and can therefore be located inside the building.

Cinema owners appreciate the fact that FX perfectly controls the pressure inside the building with the 4 damper system. Adjustable grids and pressure taps allow very accurate balancing of the system. This ensures, there is no risk of doors opening due to pressure differences. FX has been designed to maintain a constant supply air temperature, which is achieved using a multiple number of circuit/compressor, special sensor and control algorithm on our CLIMATIC™ 50.

Available in heat pump version only with R407C, the FX has a range of capacity from 25 to 170 kW. Numerous options enable this very flexible rooftop to be adapted to every application. A 100% fresh air option extends the application of the FX down to -10°C outside air.

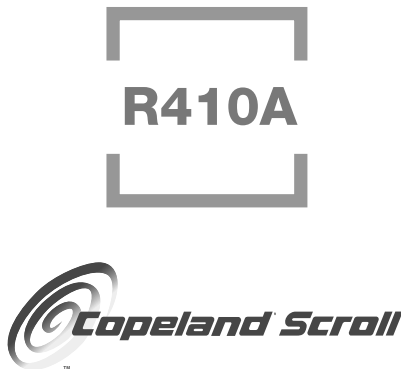


LIFE CYCLE COST

STANDARD FEATURES

Scroll compressors / Refrigeration Circuits / R410 A for maximum efficiency

Scroll compressors with R410A are used on the FLEXY II for maximum efficiency and reliability, having overload protection. Refrigerant circuits include compressors with crankcase heaters, condenser coils and direct-drive and evaporator coil, expansion valves, filter dryers, high and low pressure switches, full refrigerant charge. In addition you will find check valves, defrost control, reversing valve on FHM heat pump models. Specific circuiting for heat pump operation optimised on Lennox laboratory. The coil dimensions have been generously oversized compare to older generation rooftop in order to improve operating limits and coefficient of performance. Small diameter tube optimizes use of R410A refrigerant.



Dual circuits and tandem

To insure maximum safety, all FLEXY II rooftop are equipped with 2 separated refrigeration circuits. To improve part load efficiency, Lennox has chosen to use tandem assembly of compressor as often as possible. Starting from the fact that rooftop works at PART LOAD most the time, tandems improve considerably the efficiency. For example, when only 50% of the load is needed, one of the 2 compressors in the tandem stops and the remaining compressor has proportionally twice more exchanger surface to play with. The gross COP can go from 2,7 at full load to 3,8 at part load for size FCM 150. (ARI standard 340.360-2000)

The second advantage of tandem is the improvement of operating limits with unloading. In extreme weather conditions, FLEXY II will continue to supply warm or cold air in unloading compressors. For example size 170 can go up to 50°C outside temperature.

Thanks to combination of compressors, size 85 will have 3 steps of modulation. size 100 will have 3 steps of modulation. size 120 will have 2 steps of modulation. size 150 will have 3 steps of modulation. Other sizes will have 4 steps of modulation.

Thermostatic Expansion Valves

As it is important that the units operate as efficiently as possible and achieve maximum performance at any running conditions, the thermostatic expansion valves optimize the superheat of the rooftop and, therefore, its overall performance efficiency.



Alternate defrost

Because, this new rooftop has been designed to reduce life cycle cost, the alternate defrost is a standard feature. When one circuit is in defrost the other is still running in heat-pump mode reducing the use of costly electric heater. This unique feature on the market place comfort the FLEXY II as leader in terms of low life cycle cost.



Dynamic defrost (Under patent)

FLEXY II is featuring the «dynamic defrost» concept. In general rooftop start defrost cycle when the outside temperature is bellow a certain value and repeat the cycle periodically. This results sometimes in starting an expensive defrost cycle when it is very cold outside but very dry, in other words when the coil is not frozen. After many tests in the Lennox laboratory, it was found that it is possible to exactly know if the coil is frozen, by analyzing the temperature difference between the coil and the outside temperature.

With this built-in feature of the CLIMATIC™ 50, Lennox insures to start a defrost cycle only when necessary, hence saving energy.

Optimized airflow path

Because fan motor is a big part of the energy absorbed by the rooftop, Lennox has designed a rooftop which breathes better. At nominal airflow, the airspeed is 10%-15% lower than in the previous range resulting in lower internal pressure drop. Thanks to R410A, it has been possible to use a smaller diameter fin coil with a very low air pressure drop.

OPTIONAL

Economiser

«Free cooling» is provided through the use of fresh air when it's appropriate rather than cooling the return air. The use of an economiser is the easiest and most efficient way to modulate fresh volumes and reduce running costs for a rooftop application, as well as improving air quality. Fully controlled by the CLIMATIC™ 50, it is also able to ensure that minimum fresh air is provided in line with Indoor Air Quality Regulations. Economiser operates using a «sensible» control. It is possible to prevent the economiser from supplying air below a certain temperature (adjustable set point, 10°C as default).

The economiser is factory fitted and tested, prior to shipment and includes 2 dampers operating from a 24V actuator. It includes a rain hood factory fitted. This hood will be folded during transportation to limit risk of damage and is unfolded on site.

On FLEXY II the size of the economiser has been increased to allow lower speed air resulting in lower pressure drop and quieter operation.



High efficiency variable air volume Electronic Commutation Motor PLUG FAN

In monitoring installed rooftop, we have found out that the biggest energy cost on a rooftop is the supply fan.

This is why, in designing the new FLEXY II, we have looked for a more efficient motor. The EC plug-fan, not only absorb 50% less energy than a normal centrifugal fan, but it is as well variable air volume fan. In dead zone, the Climatic 50 can manage to reduce the amount of air into the building to the fresh air requirement (with the limit of supply air temperature). This feature, dramatically decrease the energy consumption of the rooftop.

No need to say, that the plug fan is direct-drive and maintenance free, reducing further more the life cycle cost of the unit.



Recovery module



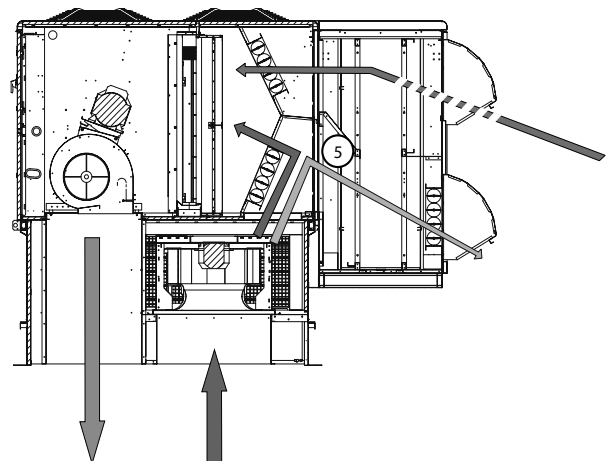
Based on the market trend to use more and more fresh air, Lennox had to offer the possibility to recover the energy of the exhaust air.

Made of a rotative wheel exchanger, the heat recovery module is fully controlled by the Climatic50. It has been designed to handle free-cooling (when heat recovery shouldn't apply) by stopping the wheel and the exchanger is protected against freezing of the exhaust air.

This module is fitted as a standard with G3 filters on the fresh air section. This will protect the exchanger against outdoor dust and increase the global filtration capacity of the machine.

The Analogic blower pressure sensor and dirty filter indication is mandatory with that option. This will guaranty a supply airflow control and will indicate the dirtiness of Heat recovery module fresh air filter.

This option, in addition to match Lennox commitment to a greener planet, is a real money saving feature for the customer.



EASY TO INSTALL AND SERVICE

STANDARD FEATURES

Super light FLEXY II

Combining the use of Aluminium and a very compact design, FLEXY II is the lightest rooftop of the market. Imagine a 170 kw rooftop which only weight 1450 kg and can use the most economical helicopter/crane for transportation, a rooftop which helps reducing the structural cost of the building... this is the FLEXY II.

PLUG and PLAY Unit

All options are factory installed on the unit, which means that they are ready for use on installation, ensuring that the time spent on site is minimised, reducing the installation effort, which can result in cost savings.

Bottom entry (through the base) for electrical power and Hot Water lines are available as standard.

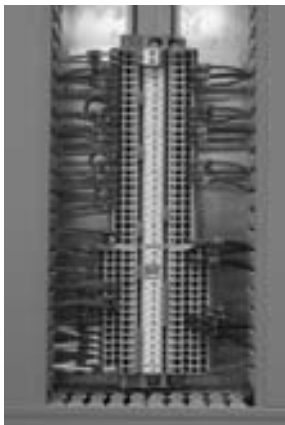
FLEXY II should be powered by 400 V, 3phases, 50 Hz. (no neutral needed).

Circuit breakers

To improve the safety of the FLEXY II and extend its life, circuit breakers protect against over-loading, over intensity 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 EN60204-1 (1998) electrical directive.

Numbered wires

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



Air flow configuration

Unless specified otherwise when ordered, the FLEXY II rooftops are shipped with down flow configuration and with 150 Pa external static pressure at nominal air flow, and 100% return air. However, the air flow and pressure characteristics can be set up at the factory to your particular project requirements, that will help reducing time spent on site.

Variable Pulley

For cases where the actual external static pressure or air flow on a particular project is different from what is specified on an order, LENNOX has enhanced the FLEXY II rooftop by providing an adjustable pulley. The installer can easily and quickly adjust the air flow within a 20% window without moving the mounted fan motors. This variable pulley provides flexibility and peace of mind during commissioning.

Easy to access (under patent)

External panels are easily removed providing clear access to all components.

On size 85 – 100 – 120 – 150 and 170, the compressor’s box opens thanks to the LENNOX patented system «Hinged Access coil». This very unique feature is giving a very good access to the compressors meantime increasing the machine compactness.



External access to the pressure gauges

Measuring the low-pressure and high-pressure on a rooftop is a basic and normal operation that Lennox wanted to make as simple and as easy as possible for service technicians.

This is why, remote pressure taps have been made accessible from the outside (on a post), without entering the refrigeration section of the unit.



EU3 / G3 grade - Disposable Filters

Ensuring easy service and maintenance. On start-up we recommend that you change the throwaway filters for replaceable washable filters, with metal frames.

BE CAREFUL TO THE FILTER FIRE CLASS RELATED TO THE LOCAL RULES

**EXTENDED LIFE CYCLE
STANDARD FEATURES**

Assembly quality, compliance to PED 97-23, EN 60204-1, CE, made in an ISO 9001v2000 Factory

What probably make the difference are those small details which have given LENNOX its reputation.

Electrical components are selected to the highest standards, refrigeration components are generously sized to ensure maximum performance and reliability.

Quality manufacturing procedures together with a culture of continuous improvement at all LENNOX factories ensure the products are built to the highest standards.

FLEXY II complies with EN60204 norms, PED 97-23 directive, is CE compliant and is built in an ISO9001v2000 certified Factory. It is also equipped with fixings protected from corrosion and an anti-corrosive lining on the body (guaranteed 10 years)

Aluminium made FLEXY II

To insure a level of anticorrosion protection as good as Aluzinc, while making the rooftop lighter, Lennox has chosen to build the FLEXY II in Aluminium.

To improve the resistance to corrosion of the Aluminium, FLEXY is painted with a RAL 9002 powdered polyester paint, UV resistant.

These standard features allow LENNOX to offer a 10 year warranty against corrosion (*).

(* Corrosion LENNOX policy : Nevertheless the LENNOX rooftop is highly resistant to corrosion, the warranty will not be applied for Rooftop installed at less than 1000 m away from the sea.

More reliable refrigeration circuit

To minimise the risk of leaks, refrigeration circuit has been drastically simplified to reduce the number joints (potential cause of leak). All joints and all pipes are located in the refrigeration section. This includes evaporator collector located in the same compartment. Technician only have only one door to open to access the whole circuit.

Grid on condenser coils :

Condenser coils are fitted in standard with protection grid. This protects against vandalism or handling damages.

OPTIONAL

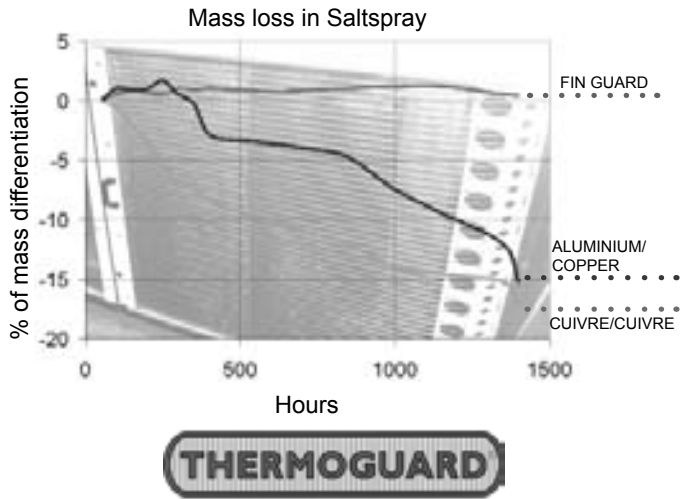
Anti-Corrosion Protection

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 .

After extensive testing, Lennox has chosen to use Thermoguard anticorrosion cleaning for the FLEXY II. The results of Thermoguard® on saline test were so good, that coil can be guaranteed against corrosion during 3 years (provided regular maintenance is performed).

Thermoguard® treatment is available on Condensing coil, evaporator coil and hot water coil.

(* see corrosion LENNOX policy.



INDOOR AIR QUALITY AND ENVIRONMENT FRIENDLY

STANDARD FEATURES

Quiet FLEXY II

LENNOX believes that an innovating and environment friendly rooftop should be quiet. Even without the Low Noise option, the Flexy II is a reference on the market for standard low level of noise.

INDOOR AIR QUALITY DOES MATTER

Fire proof (M0) insulation

Because, for LENNOX, health and safety issues cannot be compromised, in all rooftops fire insulation (M0 fire Class) is fitted as standard. 65 kg/m3 insulation is mechanically fitted to the unit.

This feature improves the safety of the rooftop against fire, as the specification suggests, the insulation will not burn and smoke will not be generated.

Edges of insulation are protected to perfectly seal the Roc-wool.

Removable Aluminium Drain Pan

This gives the drain pan a longer life. The underside of the unit is insulated to prevent from condensation. The bent drain traps are shipped in a kit form. Drain pan is sloped to prevent stagnation of water. It slides out and can be easily cleaned, preventing growth of bacteria in the drain pan.



Accurate percentage of fresh air (under patent)

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, Lennox wanted to pilot the % of fresh air more accurately.

The CLIMATIC™ 50 can now periodically recalibrate the dampers, by calculating the real percentage of fresh air entering the building for the each different positions of the damper.

This recalibration is achieved using the return air sensor, the outdoor sensor and supply air sensor. When all heating or cooling elements are off, the percentage of fresh air actually entering the rooftop is the result of the following equation :

$$\text{"%Fresh Air"} = \frac{\text{"Supply Air Temperature"} - \text{"Return Air Temperature"}}{\text{"Fresh air Temperature"} - \text{"Return Air Temperature"}}$$

For example, CLIMATIC™ 50 would accurately adjust the damper position to get 20% fresh air and not 30% or 10%.

Therefore, this feature either saves a lot of energy cost by not bringing more fresh air than needed or makes sure that air quality is at the expected level.

This allows CLIMATIC™ 50 to send an alarm when damper can not be calibrated (faulty damper)

Specific case of high pressure drop in the return air duct: The problem becomes even more critical, when the return air duct pressure drop is greater than 50 Pa.

In this case, due to the difficulty of the return air to go back to the rooftop, it is usual to have a lot more fresh air entering the building than wanted, resulting in high running cost.

OPTIONAL

Low Noise Option

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



Analogical Blower sensor and dirty filter indication

A differential pressure sensor measures the pressure drop across the evaporator coil and filters. If this pressure drop is above 25Pa, the rooftop is considered to be operating. The exact pressure drop can be seen through the Intelligent CLIMATIC™ 50 board. This option further improves security and reliability of the FLEXY II rooftops. It prevents overheating of any device if the fan belt is broken.

Using the same pressure sensor as the «Blower On Sensor», pressure drop information is interpreted by the CLIMATIC™ 50 board to determine whether filter are dirty or not. This information is available with all CLIMATIC™ 50 controllers.

The set point between «dirty» and «clean» is fully adjustable by the installer/users. (Default value is approximately 250Pa).

BE CAREFUL TO THE FILTER FIRE CLASS RELATED TO THE LOCAL RULES

Panel filters with metal frames and disposable filter media (EU4 / G4)

When units are installed in an environment when it is expected that filters will be changed more frequently than usual, it is advisable that the end user includes metallic frame with washable filter (classified EU4/G4) media. This is a more cost-effective answer to disposable filters.

Refillable G4 filters

In some circumstances when filters have to be changed frequently, refillable filters are a good cost saving solution. Instead of replacing the whole filter frame, only the media has to be changed.

EU7 / F7 Panels filters

As different applications have differing needs, it is more and more important that LENNOX can provide various options for a mixed range of requirements. The EU7/F7 filter capability with EU4/G4 pre-filters is available to add additional flexibility for specific projects, where Indoor Air Quality is particularly important.

Indoor Air Quality Sensor

Indoor air quality is controlled from the CLIMATIC™ 50 boards. A VOC (Volatile Organic Component) sensor will detect the amount of CO2 in the air between 0 and 2000PPM. (This obviously varies depending upon space occupancy levels). The VOC sensor will then send a proportional signal (0-20mA) to the CLIMATIC™ 50 controller which will then modulate the fresh air damper.

Double skin 25 mm :

To prevent bacteria development on porous surface Lennox provides double skin panels option. This double skin panels give a smooth inside the unit and allow an easy cleaning of the panel.

IAQ Kit : Germicidal light package

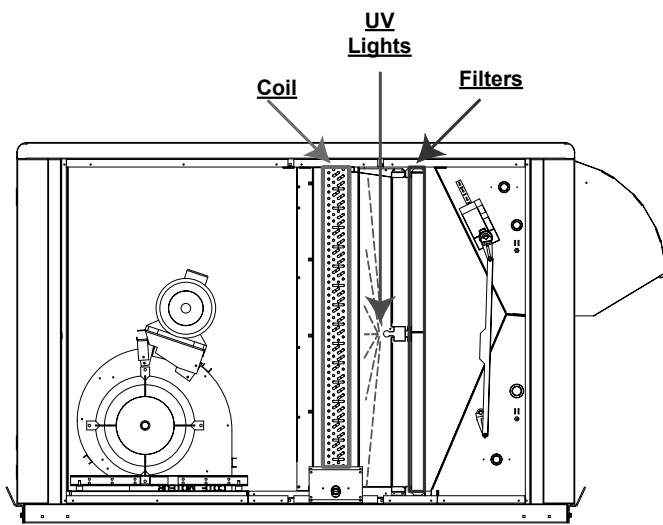
This kit is made of UV-C lights, safety locks and sight glass to protect maintenance technicians, a F6 Filter and an anti-microbiocidal treatment on evaporator coil and condensate drain pan.

The Germicidal Lights are installed in front of the air conditioner evaporator coil and kills biofilm microorganisms on the coil surface. As an effective weapon against mold and bacteria, the UV light comes in contact with a contaminant and penetrates the cell. In few seconds, it damages the cell's DNA, preventing growth and ultimately killing the cell.

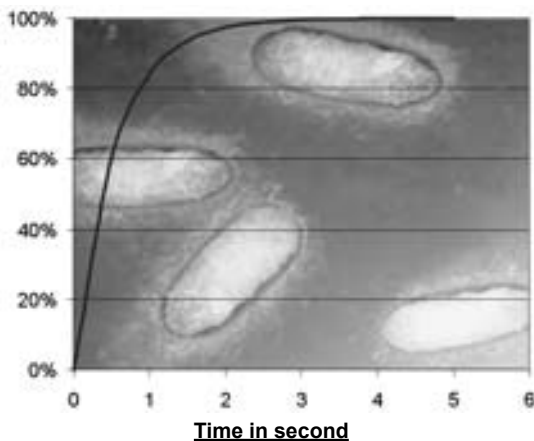
The UV lights sterilize the surface of the cooling coil. In addition UV lights prevent from unwanted odors.

By the destruction of microorganism, the UV light keep clean the coil and allow constant air pressure drop on the coil, so less energy consumption.

Note: never expose your eyes to UV-C rays even during a few seconds.



Elimination's rate of bacteria



Calculation's conditions:

- * UV-C power per light: 25W
- * Number of light: 2
- * Treated surface: 2.2m²
- * Calculation coefficient = average of the coefficients of the most present bacteria (*Cretotrix polyspora*, *Spirillum voltens*, *Bacillus stearothermophilus*, *Clostridium tetani*, *Staphylococcus aureus*, *Bacillus globiiqii*, *Escherichia coil...*)

“FLEXY” BILITY

TO ADAPT TO DIFFERENT SITUATIONS, A SERIES OF OPTION ARE PROPOSED ON FLEXY II.

OPTIONAL

Galvanized steel option:

When weight is not an issue and when the rooftop is installed in a non-corrosive environment, galvanised body construction is available. This option reduces the first cost of the unit.

LOW AMBIENT KIT

This option allows the FLEXY II to work in cooling mode with an outside temperature down to 0°C (instead of 10°C in the standard unit). This is specifically needed when free-cooling operation is not possible.

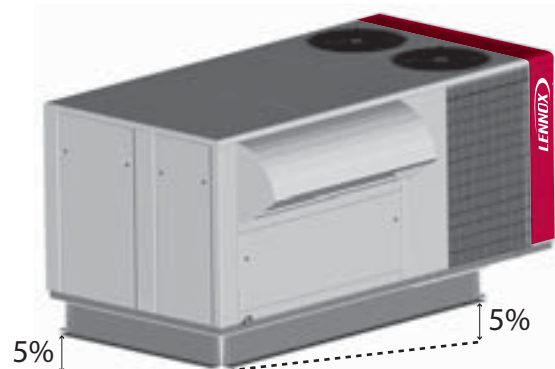
ROOFCURB AND AIRFLOW

Non adjustable, non assembled roofcurb

A sturdy mounting frame mates to the single package unit and provides an automatic weatherproof sealed rooftop installation. Shipped knocked down for ease of shipping and handling, it is easily field assembled.

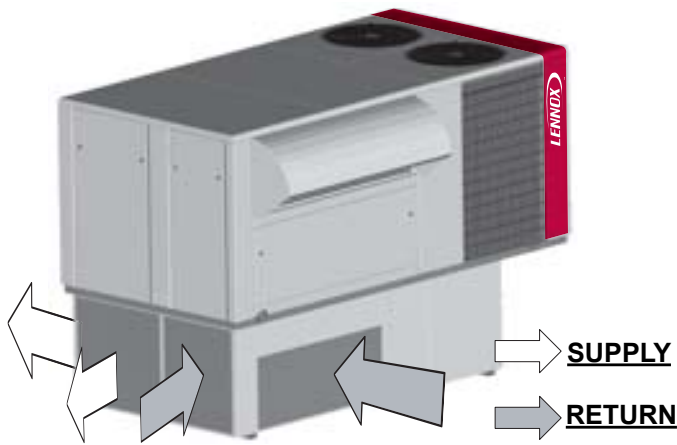
Adjustable Roofcurb

Aluzinc construction with mounting flange in 25/10° plate. This adjustable roofcurb can be installed on a roof with up to 4-5% slope in all directions enabling the FLEXY II to be adapted to most roof profiles. Each roofcurb has its supply and return openings specifically designed to ensure that resistance and hence pressure drop through the curb are minimised. This may allow a smaller supply fan to be selected due to the fact that there may be less resistance through the unit and the roof mounting frame, compared to more traditional ones. Lennox has specialised in adjustable roofcurb when retrofit is needed. Contact Lennox representative for further details.



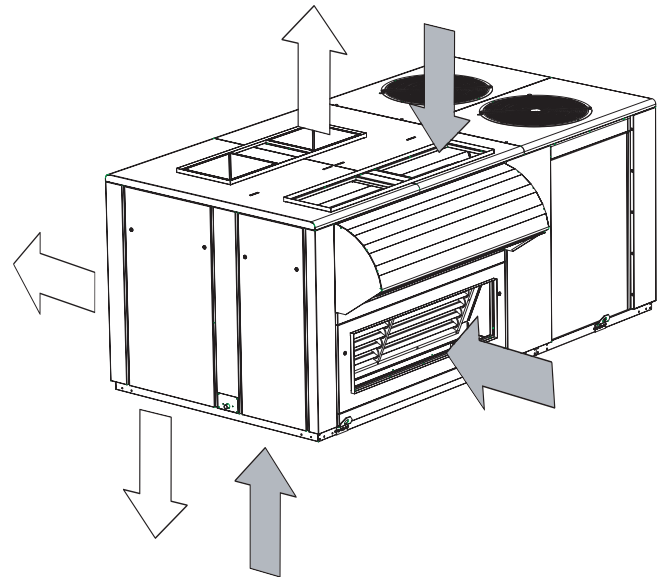
Multidirectional flow roofcurb

Made of treated steel sheet, it is fitted with flanges. It is a necessary option when customer wants to have horizontal return and horizontal supply on the same side of the rooftop. It is also required with exhaust fan or gravity exhaust damper combined with horizontal flow configuration.



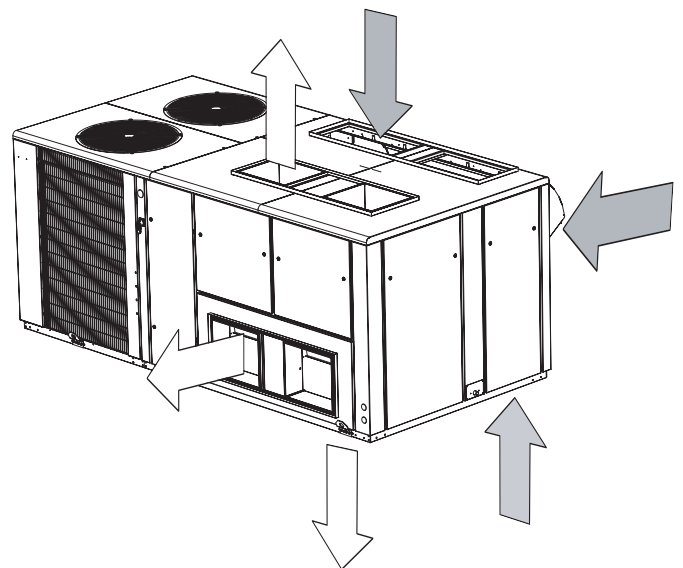
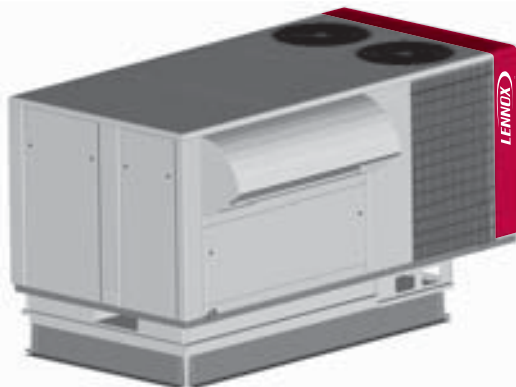
Horizontal / vertical Air Flow

Lennox believes that rooftops should be adaptable to specific design requirements, this is why a variety of downflow, upflow and horizontal supply and return are offered.



Transition Curb

According to the French regulation CH40 (Public buildings), which says, that rooftop can not be installed in France directly on a roofcurb. Lennox has made approved by the French minister of interior a special transition curb including a free air ventilation of 20 cm high underneath the Rooftop floor, located between the standard roofcurb and the rooftop.



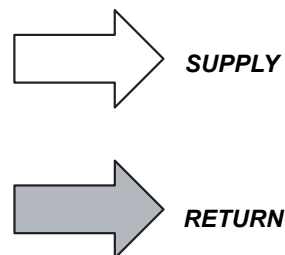
Air Sock Control

The use of air socks for space conditioning allows high air volumes to be distributed at low velocity and is becoming a common feature in many applications. To accommodate this trend, Air sock control is offered which allows the air socks to be progressively filled with air on start up. It takes 1 minute to go from 0% of air to full air flow.

Drive Kit up to 600 Pa

As all systems are different, it is useful to have the ability to adapt to different air flow conditions and this can be achieved through the selection of various choices of motors and drives that can provide up to 600Pa at nominal air flow. This means that commissioning on site can be done easily and quickly, helping you to keep your installation costs to a minimum (*).

(* In order to minimize energy consumption and reliability, it is highly recommended by LENNOX not to oversize the ESP (external static pressure) of the Rooftop during the selection.



Gravity exhaust damper

Installed with economiser assembly, gravity exhaust damper relief pressure when outside air is being introduced in the system. It is a cheap and smart way to avoid overpressure in a building.

NOTE : When horizontal flow configuration is required, the multi-directional roofcurb must be installed.

Axial Power Exhaust Fans:

Installed with economiser assembly, it provides exhaust air pressure relief when high levels of fresh air are being introduced in the system.

Interlocked to run when return air dampers are being closed and supply air blower is in operation. The extraction fans run when outdoor air dampers are at least 50% open (adjustable). It is also overload protected. A gravity exhaust damper is supplied with this option to prevent air from entering the unit during shutdown.

The power exhaust fans have been size to exhaust 50 % of the nominal airflow of the unit.



Return Roofcurb (plug fan)

Where system balancing is critical, it is recommended that an exhaust fans are installed in the system. Instead of including the exhaust fans inside the rooftop, LENNOX has designed a special roofcurb that incorporates return fans and handles the exhaust function.

A plug fan installed with a 3rd damper (1 inside the Roofcurb + 2 inside the rooftop), is able to exhaust up to the nominal air flow of the unit with a maximum of 300Pa static pressure available. This roof curb can be used in either horizontal or downflow applications.

The use of a plug fan instead of traditionally used centrifugal fan, improve energy and maintenance cost.

Consistent with life cycle cost reduction theme, Lennox has smartly positioned the return curb opening below the condensing coil in order to have natural energy recovery.

Customised colour

The unit can be supplied in various colours to suit any application or requirement. The units colour must, however, be identified with a RAL number.

HEATING POSSIBILITIES

OPTIONAL

Electric Heater

The electric heater comprises of shielded resistance heaters, which are smooth stainless steel tubes 6 W/cm2 capacity.

High temperature limit control offers overload protection and is set to 90°C and located at less than 150mm after electric heaters.

This is provided as a standard feature on the electric heater, with the electric power supply cables made of reticulated silicon rubber, resistant to temperatures up to 200°C. For any rooftop unit size, three sizes of electric heater are available, S (standard), M (Medium) and H (high).

FLEXY II 85, 100 and 120 have :

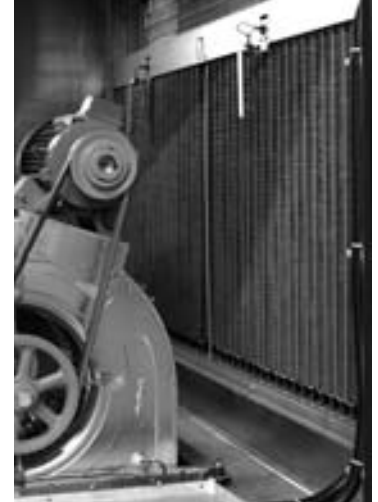
Standard heat : 30 kW , 2 stages
 Medium Heat : 54 kW, Fully modulating (Triac)
 High Heat : 72 kW, Fully modulating (Triac)

FLEXY II 150 and 170 have :

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

FLEXY II 200 and 230 have :

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



Capacity of the medium and high heat heater can be limited electronically to an exact value through the CLIMATIC™ 50. To reduce installation time and hence cost, electric heaters are always factory fitted, fully wired and tested, prior to shipment.

Hot Water Coil

Hot water coils offer fully modulating control through the use of a 3 way valve. The hot water coil, connections and valves are all tested at pressure of 15 bars. Frost protection is provided by forcing the opening the 3 way valve when supply temperature from hot water coil falls below 8°C and by stopping the outdoor fan when that supply temperature falls below 6°C. In addition to that, the 3 way valve is also opened at 10% value if the outdoor temperature falls below an adjustable value.

Hot water coils are always factory fitted, wired and fully tested, prior to shipment.

Hot water coil includes automatic purge system.

92% high efficiency Gas Burner Option

The standard gas burner is designed to work with 20 mbar (with an operating range of 13-26 mbar) .

Gas module offers 2 stages of control (60kW burner) and 4 stages (120, 180, 240 kW burners). This assists in improving space comfort levels by avoiding large supply air temperature deviations.

The aluminized steel tube heat exchanger is designed to offer maximum heat transfer efficiency.

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

A «propane gas» option at 37 mbar is also available.

Gas fired rooftop can not be installed inside a technical room.

Modulating Gas Burner Option (under patent INPI)

On high heat gas burner, Lennox offer the possibility to have a modulating gas valve and modulating exhaust system, the burner maintains a constant gas/air mixture and a much optimized efficiency whatever the combustion air ratio is. This burner modulates from 20 to 100% (120, 180, 240 kW burners).

CONTROL



STANDARD FEATURES

CLIMATIC™™ 50 Software (RT50)

The new generation of microprocessor based control, CLIMATIC™ 50 will equip the FLEXY II rooftop range.

LENNOX has found the latest hardware technology available on the market place and developed a software specifically designed for rooftop applications, maximising the LENNOX rooftops efficiency and performance.

CLIMATIC™ 50 has been thought to be more user-friendly than CLIMATIC™ 2 and easier to understand. However CLIMATIC™ 50 has been designed to be as powerful and even more flexible.

CLIMATIC™ 50 provides flexibility and the ability to control multiple rooftops on a single job site.

Enhanced with a 16 bit processor at 14mhz and a 2 Megabytes flash memory, CLIMATIC™ 50 has been designed to save energy and to extend the operational life of the FLEXY II product range. It will, for example, optimise the running time of each compressor, automatically switch between compressors from those that start first and have an anti short-cycle program. It is able to control 34 fault signals and manage security algorithms generating various fault signals.

In terms of comfort, CLIMATIC™ 50 provides an innovative PID control.

CLIMATIC™ 50 looks at difference between set point and room temperature and calculates the time needed to reach the set point and determines the capacity required.

This innovative control, will guaranty better temperature accuracy, while saving energy in not bringing the full capacity when not needed.

As cooling is often not the only requirement, hot water coils, electric heaters and gas burner can be provided with proportional control and heat pump with multi step regulation is available as well.

As a standard feature, CLIMATIC™50 provides 4 scheduling time zones per day on 7 days. This allows energy consumption management according to the building use.

On each of the 4 time zones, heating set point, cooling set point, minimum fresh air, humidity set point high and up, and even the different authorisations for cooling and heating can be adjusted. CLIMATIC™ 50 provides a choice of different remote displays depending on customer requirement and application of the system.

As a standard feature, it is possible to set alarms (adjustable value low and high) on room temperature and humidity.

Step of heating priority

Unique feature on the market, CLIMATIC™ 50 allows the user to

decide which heating element will come first.

This works perfectly on dual fuel unit, it is possible to prioritize heat pump mode down to an adjustable set point (for example 0°C) and switch to gas fired mode below this value.

This gives the benefits of the excellent heat pump COP when outside temperature is not too cold and allows to use gas heating when temperature is lower.

Flexibility

CLIMATIC™ offers incredible flexibility. For example, advanced user can go in the heart of the regulation in deciding reactivity of the PI algorithm or by setting supply temperature limits. They might even decide to authorize or not some heating or cooling device depending of the outside temperature.

Automatic summer/winter time change

CLIMATIC™ 50 offers an automatic time switch from winter to summer. This had always been a problem in the past for customer to keep there rooftop at the right time, jeopardising all their efforts to optimize energy consumption by smart scheduling.

Noise reduction feature

During unoccupied timezone, FLEXY II rooftop can work on half of its capacity by using only half of the compressors and half of the condensing fans. Therefore it may cycle more often but would be quieter when running.

This option is very often used at night when capacity needed is lower and when noise matters more.

Last 32 faults stored in the mother board

Part of the new features of CLIMATIC™50 is the storage in the main mother board of the last 32 faults with time, date and fault code. This can be seen with DS50 Service Display or Adalink even if those were not connected when the fault occurred.

Staggered start feature

If there is a general power shortage, when the power returns, units will not restart at the same time. To make this feature available, units have to be addressed with a different number between 1 and 12. The unit will start a number of minutes after power return depending on its address (Address * 10 seconds).

Example, unit number 3 will start 30 seconds after power is back.

This is a very important feature to avoid peaks of current.

Inter unit link

Rooftops can now be connected together (up to 12) via a double shielded pair of wire (not supplied by Lennox) and use different running modes, with no cost increase. For example, a group of rooftop can be controlled by a master rooftop; the set point used can be coming from the master, same for indoor temperature/humidity and outdoor temperature/humidity.

On top of this, a "back-up" mode can be proposed for sensitive application, the "back-up" rooftop will rescue any rooftop not functioning correctly.

Available dry contact (2 Input)

As a standard features, an ON/OFF and a RESET Input dry contacts are available as well as a GENERAL FAULT output.

On top of this, 2 programmable logical inputs are available for the customer.

With TCB (Thermostat Control Board) option or Advanced Control Pack option, many more input/output analogical or digital are available.

Output could be programmed to energize any customer device or send different fault information.

Input can, for example, be programmed to disable compressor or electric heater or receive a running status from any devices from the customer.

OPTIONAL

Advance control pack (control of humidity and enthalpy control on economizer)

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

->«*Enthalpy control on economiser*».

Software and its sensors will ensure 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*» software and its sensors, are able to analyze dry and wet bulb temperatures, and therefore can control a dehumidification algorithm. This will dehumidify the air in cooling mode as it passes through the coil, then reheating it with either electric heater or hot water coil. If there is a need to humidify the air, a proportional signal is now available to control a humidifier that will be provided by the customer.

DC 50 : Comfort Display

This is a remote controller for non-technical customer. It has been wanted to aesthetically fit inside a room and be very easy to use. It can be installed at maximum 500 meters from the unit.



This 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 change the scheduling of the different time zone, can modify temperature set point and % of fresh air for each zone. Customer can also override the scheduling in either changing the set point for 3 hours or in forcing the rooftop to unoccupied mode for 1 to 7 days. ON/OFF key is also available.

DC50 Comfort display shows faults number when rooftop is in the failure mode. Customer can reset fault thanks to a combination of keys.

Time and day of the rooftop can be seen and modified easily through the DC50.

DM 50 : Multi rooftop Display

The DM 50 display has the exact same features of the DC50, but it can manage up to 12 rooftops on a single Bus. On a multirooftop site it makes the installation less expensive because, not only because of DM50 price, but because only one bus-wire has to be connected down to the DM50.



DS 50 : Service Display

This service display controller directly plugs on the unit.

This allows service personal to set up to 207 settings, read up to 188 variables, up to 45 faults and read the history of the last 32 faults.

This controller has been designed to be very user friendly, with 6 different keys, a 4 lines display and this controller includes scrolling menus and true language (no codes). It will be in English or another alternate language. (12 different languages are available today)



TCB (Thermostat Control Board)

This board has been developed for any customer who wants to take over the control of the unit. With 6 logical inputs (Compressor stage 1 and stage 2, heating step 1 and 2, change-over compressor and fan), this board will replace the control algorithm. However CLIMATIC™ 50 controller will stay in charge of all safety algorithm, defrost operation or free cooling operation. All Input is volt free contact.

This is the perfect board, to have FLEXY II rooftop managed by a zoning system, a universal thermostat or even a BMS system.

Communication interface / Modbus interface

Electronic board needed for ADALINK use. One board required per rooftop.

This board is a well a modbus interface, which is needed for anyone who would like a BMS system to talk to the FLEXY II with «Modbus protocol» with RS485. No other hardware than this board is required to have modbus dialog. One board required per rooftop.

This board is required when ADALINK is used.

LonTalk® interface

This board is a **LonTalk®** interface, which is needed for anyone who would like a BMS system to talk to the FLEXY II with «Lon protocol» with FTT10. No other hardware than this board is required to have **LonTalk®** dialog. One board required per rooftop.

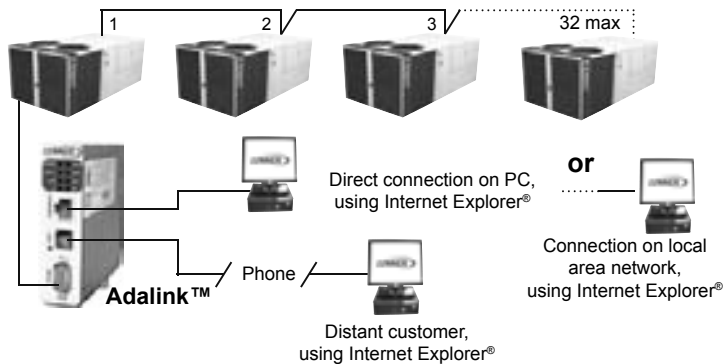
Bacnet® interface

This board is a **Bacnet®** interface, which is needed for anyone who would like a BMS system to talk to the FLEXY II with «Bacnet protocol» RS485.

ADALINK

Adalink is the solution for HVAC installation monitoring. It can control up to 32 units on the same site. Real gateway to the unit, Adalink can be used locally, via LAN network or directly plugged. It can be used remotely via modem.

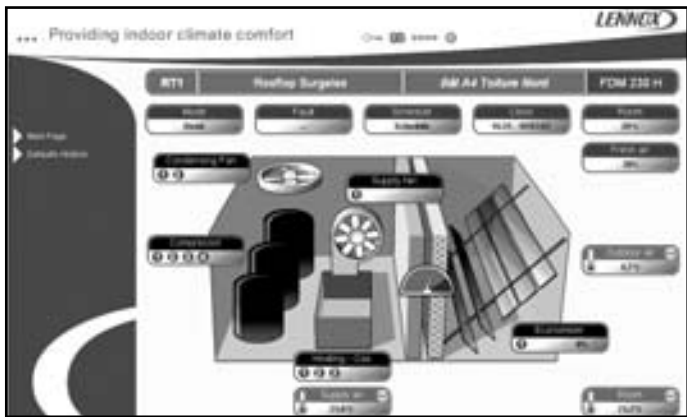
The DWC 50 display is equipped with a battery (5 yrs consumption) and a embedded sensor. This wireless display wall-mount, desk-top or hand-held. In addition if you want a more accurate ambient temperature measure in big volume, additional wireless sensor are available and in this case the display will communicate the average temperature of the sensors.



Adalink can show the whole site map showing status of the different units, zoom on each unit and allow the user to graphically change set point, access alarm list, look at trend curves. It is the ideal tools for maintenance specialist with an expert mode giving access to all the parameters and set point of the unit.

SAFETY

OPTIONAL DEPENDING OF LOCAL REGULATION AND CODES



Fire-Stat

This is a thermostat that provides a signal which switches off the unit, closes the fresh air damper and open the return damper when the temperature in the return air stream is above an adjustable set point (70°C standard).

Disconnect Switch

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.

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.

Finally, yearly scheduling is possible with a very smart and user-friendly drag and drop system.

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 be fully opened 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.

Wireless

Following customer request and last technologies development, LENNOX is able to provide you a wireless customer display DWC 50 for your Roof Top. A repeater connected to the main board of the CLIMATIC 50 with a RS 485 connection, communicate through a ZIGBEE protocol to the wireless customer display located in the ambient.



F G M 100 H 3 M

Series

F = FLEXY™ range
B = BALTIC range

Electrical Characteristics

M = 400 V/3 ph/50 Hz

Type of rooftop

- C = cooling only rooftop
- H = heat pump rooftop
- G = gas fired rooftop
- D = dual fuel rooftop (heat pump+gas fired)
- X = heat recovery units

Revision number

Type of gas heating

- H = high heat
- S = standard heat
- N = no Gas heat

Refrigerant

- K = R407C
- M = R410a

Size

Rounded gross cooling capacity in kW

FCM = Cooling only rooftop

FDM = Heat pump rooftop with gas fired heating

FGM = Cooling only with gas fired heating

FHM = Heat pump rooftop

Table 1.1

Performance	Size	85	100	120
Nominal Airflow	m ³ /h	15000	18500	20500
Cooling FCM-FGM				
Gross Cooling capacity (1)	kW	85,2	105	119
Power input FCM	kW	29,0	38,3	44,5
Power Input FGM	kW	29,8	39,5	46,4
Full load amps	A	68,0	75,6	89,4
Direct start up amps ratio Id / Ia	-	3,0	4,0	3,0
COP gross FCM (2)	-	2,94	2,74	2,68
COP net global FCM (3)	-	2,86	2,64	2,57
COP net global FGM (3)	-	2,78	2,56	2,47
Cooling FHM-FDM				
Gross Cooling capacity (1)	kW	84,4	103	117
Power input FHM	kW	29,6	39,3	45,7
Power Input FDM	kW	30,4	40,5	47,6
COP gross FHM (2)	-	2,85	2,63	2,57
COP net global FHM (3)	-	2,77	2,53	2,46
COP net global FDM (3)	-	2,70	2,45	2,37
Heating FHM-FDM				
Net heating capacity (1)	kW	82,9	103	117
Power input FHM	kW	26,3	33,4	37,7
Power input FDM	kW	27,1	34,6	39,6
COP gross FHM(2)	-	3,06	2,98	2,97
COP net global FHM (3)	-	3,16	3,10	3,10
COP net global FDM (3)	-	3,06	2,99	2,95
Part Load FHM-FDM				
PART Load	%	55%	60%	50%
COP gross cooling at part load (11)	-	3,10	3,10	3,00
COP gross heating at part load (11)	-	2,95	3,10	3,10
Heating - gaz fired				
Heating capacity	kW (S / H) ⁽⁵⁾	55,2 / 110,4	55,2 / 110,4	55,2 / 110,4
Input (std heat / high heat)	kW(S / H) ⁽⁵⁾	60 / 120	60 / 120	60 / 120
Thermal efficiency	%	92	92	92
GAZ flow (for G20 natural gaz at 20mbar gage and 15°C)	m ³ /h (S / H) ⁽⁵⁾	6,3 / 12,5	6,3 / 12,5	6,3 / 12,5
Refrigeration circuit				
Nb of Circuits x Compressor type	nb x type	1 scroll + 1 scroll	1 scroll + 1 scroll	1 scroll + 1 scroll
Expansion	nb x type	2 TXV	2 TXV	2 TXV
Refrigerant charge per circuit FCM-FGM / FHM-FDM	kg	10,5+10,5/10,5+10,5	10,5+10,6/10,5+10,6	10,6+10,6/10,6+10,6
Coils				
Indoor Coil : Face area/nb of rows/Fin per inch	m ² / nb / FPI	2,4 / 4 / 14	2,4 / 4 / 14	2,4 / 4 / 14
Outdoor Coil : Face area/nb of rows/Fin per inch	m ² / nb / FPI	4,4 / 3 / 16	4,4 / 3 / 16	4,4 / 3 / 16
Ventilation data				
Nominal Airflow	m ³ /h	15000	18500	20500
Minimum Airflow	m ³ /h	12000	14000	15000
Maximum Airflow	m ³ /h	23000	23000	23000
External static pressure / maximum (4)	Pa	150 / 600	150 / 600	150 / 600

Note :

- (1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
- Summer** : Outdoor temperature 35°C DB/ Entering coil temperature 27°C DB / 19°C WB
- Winter** : Outdoor temperature 7°C DB, 6°C WB/Entering coil temperature 20°C DB
- (2) including the compressor and outdoor fan (axial) and indoor fan (centrifugal)
- (3) COP net = Net Cool Cap./ Pabs total
- (4) At nominal Airflow
- (5) S = Small, H = Hight
- (6) at down return air and down supply air configuration
- (7) below this value, option «Low ambient kit» is required
- (8) Except if galvanised steel option choosen
- (9) the cooling and heating operating limits are given for steady state running condition with noted temperature condition
- (10) Heating capacity of FHM
- (11) These values at part load are given according to temperature conditions defined in ANSI/ARI Standard 340/36
Cooling : dry bulb ext : 26.7°C, dry bulb int : 19.4°C, wet bulb int : 19.4°C
Heating : dry bulb ext : 7°C, wet bulb int : 6°C, dry bulb int : 20°C

FCM = Cooling only rooftop
FDM = Heat pump rooftop with gas fired heating

FGM = Cooling only with gas fired heating
FHM = Heat pump rooftop

Table 1.2

Performance		Size	85	100	120
Nominal Airflow			15000	18500	20500
Indoor fan (Centrifugal fan FCM/FHM)					
Number x Drive type	type		1 x AT 15-15 G2L	1 x AT 15-15 G2L	1 x AT 15-15 G2L
Mechanical Power Input (1)	kW		1 x 3	1 x 5,5	1 x 5,5
Rotation speed	RPM		744	811	853
Indoor fan (Centrifugal fan FGM/FDM)					
Number x Drive type	type		2 x ADH 355 L	2 x ADH 355 L	2 x ADH 355 L
Mechanical Power Input gas (1)	kW		2 x 2,2	2 x 3	2 x 4
Rotation speed (S / H)	RPM		859 / 895	949 / 980	1022 / 1050
Outdoor fan (axial)					
Number	nb		2	2	2
Nominal Airflow	m ³ /h		2 x 15000	2 x 15000	2 x 15000
Motor power	kW		1,8	1,8	2,0
Rotation speed	RPM		900	900	950
Filter (furnished standard)					
Type	Eurovent		80-85% / G3	80-85% / G3	80-85% / G3
Nb of filter	nb		8	8	8
Filter size	mm x mm		625 x 500 x 50	625 x 500 x 50	625 x 500 x 50
Dimensions					
Lenght	mm		3348	3348	3348
Height	mm		1510	1510	1510
Width with/without fresh air hood (6)	mm		2290/2705	2290/2705	2290/2705
Weight standard unit FCM	kg		934	1009	1085
Weight gas unit Small/ High	kg		1041 / 1111	1116 / 1186	1192 / 1262
Acoustic @ 150 Pa					
Outside sound power on FCM FHM FGM FDM	dB(A)		87	88	87
Outside sound power on Low Noise N unit FC-FH-FG-FD	dB(A)		82	82	82
Indoor blower outlet sound power on FCM FHM	dB(A)		85	90	89
Indoor blower outlet sound power on FGM FDM	dB(A)		84	87	89
Indoor blower outlet sound power on FCM FHM (HE)	dB(A)		76	78	80
Indoor blower outlet sound power on FGM FDM (HE)	dB(A)		78	80	82
Construction					
Casing material (8)				Aluminium	
Painting	type/RAL			Polyester / 9002	
Airflow side wall Insulation Class	type		M0	M0	M0
Cooling mode operating limits					
Max. outdoor temp. at indoor 27°C DB/ 19°C WB (9)	°C		46	44	44
Max outdoor temp with unloading	°C		50	50	44
Min. outdoor temp. at indoor 20°C DB (7)	°C		10	10	10
Max. outdoor temp DB/WB at 100% fresh air	°C		38	38	38
Heat pump mode operating limits					
Min. outdoor temp. at indoor 20°C DB (9)	°C		-14	-12	-12
Min outdoor temp with unloading	°C		-15	-15	-12
Min. entering indoor coil temp. at outdoor 7°C DB	°C		7	7	7

Note :

- (1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
Summer : Outdoor temperature 35°C DB/ Entering coil temperature 27°C DB / 19°C WB
Winter : Outdoor temperature 7°C DB, 6°C WB/Entering coil temperature 20°C DB
- (2) including the compressor and outdoor fan (axial) and indoor fan (centrifugal)
- (3) COP net = Net Cool Cap./ Pabs total
- (4) At nominal Airflow
- (5) S = Small, H = Hight

- (6) at down return air and down supply air configuration
- (7) below this value, option «Low ambient kit» is required
- (8) Except if galvanised steel option choosen
- (9) the cooling and heating operating limits are given for steady state running condition with noted temperature condition
- (10) Heating capacity of FHM
- (11) These values at part load are given according to temperature conditions defined in ANSI/ARI Standard 340/36
Cooling : dry bulb ext : 26.7°C, dry bulb int : 19.4°C, wet bulb int : 19.4°C
Heating : dry bulb ext : 7°C, wet bulb int : 6°C, dry bulb int : 20°C

Table 1.3

Performance	Size	150	170	200	230
Nominal Airflow	m³/h	26000	30000	35000	39000
Cooling FCM-FGM					
Gross Cooling capacity (1)	kW	148	170	197	234
Power input FCM	kW	52,4	65,9	65,9	88,1
Power Input FGM	kW	53,8	67,5	67,7	90,8
Full load amps	A	114,3	138,5	149,7	178,1
Direct start up amps ratio Id / Ia	-	2,0	2,0	2,0	2,1
COP gross FCM (2)	-	2,83	2,58	2,99	2,66
COP net global FCM (3)	-	2,73	2,47	2,88	2,56
COP net global FGM (3)	-	2,66	2,42	2,80	2,48
Cooling FHM-FDM					
Gross Cooling capacity (1)	kW	146	168	195	230
Power input FHM	kW	53,4	67,3	67,8	89,7
Power Input FDM	kW	54,8	68,9	69,6	92,4
COP gross FHM (2)	-	2,74	2,50	2,88	2,56
COP net global FHM (3)	-	2,64	2,39	2,78	2,47
COP net global FDM (3)	-	2,58	2,34	2,70	2,39
Heating FHM-FDM					
Net heating capacity (10)	kW	142	168	188	226
Power input FHM	kW	46,0	56,4	58,2	74,4
Power input FDM	kW	47,4	58,0	60,0	77,1
COP gross FHM(2)	-	2,99	2,86	3,12	2,92
COP net global FHM (3)	-	3,10	2,98	3,24	3,04
COP net global FDM (3)	-	3,00	2,90	3,14	2,94
Part Load FHM-FDM					
PART Load	%	(33%) + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
COP gross cooling at part load (11)	-	3,80	3,70	3,70	3,60
COP gross heating at part load (11)	-	3,50	3,50	3,50	3,40
Heating - gaz fired					
Heating capacity	kW (S / H) ⁽⁵⁾	110,4 / 165,6	110,4 / 165,6	165,6 / 220,8	165,6 / 220,8
Input (std heat / high heat)	kW(S / H) ⁽⁵⁾	120 / 180	120 / 180	180 / 240	180 / 240
Thermal efficiency	%	92	92	92	92
GAZ flow (for G20 natural gaz at 20mbar gage and 15°C)	m³/h (S / H) ⁽⁵⁾	12,5 / 18,8	12,5 / 18,8	18,8 / 25	18,8 / 25
Refrigeration circuit					
Nb of Circuits x Compressor type	nb x type	1 scroll + 2 scroll		2 scroll + 2 scroll	
Expansion	nb x type	2 TXV	2 TXV	2 TXV	2 TXV
Refrigerant charge per circuit FCM-FGM / FHM-FDM	kg	15,8+16/15,8+16	16+16/16+16	22+22/21+21	23,5+23,5/22,5+22,5
Coils					
Indoor Coil : Face area / nb of rows / Fin per inch	m² / nb / FPI	3,8 / 4 / 14	3,8 / 4 / 14	4,6 / 4 / 14	4,6 / 4 / 14
Outdoor Coil : Face area / nb of rows / Fin per inch	m² / nb / FPI	6,8 / 3 / 16	6,8 / 3 / 16	8,8 / 3 / 16	8,8 / 3 / 16
Ventilation data					
Nominal Airflow	m³/h	26000	30000	35000	39000
Minimum Airflow	m³/h	18000	21000	24000	27000
Maximum Airflow	m³/h	35000	35000	43000	43000
External static pressure / maximum (4)	Pa	150 / 600	150 / 600	150 / 600	150 / 600

Note :

- (1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
 - Summer :** Outdoor temperature 35°C DB/ Entering coil temperature 27°C DB / 19°C WB
 - Winter :** Outdoor temperature 7°C DB, 6°C WB/Entering coil temperature 20°C DB
- (2) including the compressor and outdoor fan (axial) and indoor fan (centrifugal)
- (3) COP net = Net Cool Cap. / Pabs total
- (4) At nominal Airflow
- (5) S = Small, H = High
- (6) at down return air and down supply air configuration
- (7) below this value, option «Low ambient kit» is required
- (8) Except if galvanised steel option choosen
- (9) the cooling and heating operating limits are given for steady state running condition with noted temperature condition
- (10) Heating capacity of FHM
- (11) These values at part load are given according to temperature conditions defined in ANSI/ARI Standard 340/36
 - Cooling : dry bulb ext : 26.7°C, dry bulb int : 19.4°C, wet bulb int : 19.4°C
 - Heating : dry bulb ext : 7°C, wet bulb int : 6°C, dry bulb int : 20°C

Table 1.4

Performance	Size	150	170	200	230
Nominal Airflow	m³/h	26000	30000	35000	39000
Indoor fan (Centrifugal fan FCM/FHM)					
Number x Drive type	type	2 x AT 18-18 S	2 x AT 18-18 S	2 x ADH 500 L	2 x ADH 500 L
Mechanical Power Input (1)		2 x 3	2 x 4	2 x 4	2 x 5,5
Rotation speed	RPM	632	692	613	658
Indoor fan (Centrifugal fan FGM/FDM)					
Number x Drive type	type	2 x ADH 450 L	2 x ADH 450 L	2 x ADH 500 L	2 x ADH 500 L
Mechanical Power Input gas (1)		2 x 4	2 x 5,5	2 x 5,5	2 x 7,5
Rotation speed (S / H)	RPM	728 / 755	794 / 817	702 / 724	759 / 779
Outdoor fan (axial)					
Number	nb	2	2	4	4
Nominal Airflow		2 x 23000	2 x 23000	4 x 15000	4 x 15000
Motor power	kW	4,6	4,6	4,1	4,1
Rotation speed		920	920	950	950
Filter (furnished standard)					
Type	Eurovent	80-85% / G3	80-85% / G3	80-85% / G3	80-85% / G3
Nb of filters	nb	12	12	10 + 5	10 + 5
Filter size		625 x 500 x 50	625 x 500 x 50	500 X 500 + 800 X 500	500 X 500 + 800 X 500
Dimensions					
Lenght		4385	4385	5530	5530
Height		1830	1830	2130	2130
Width with/without fresh air hood (6)		2290/2705	2290/2705	2290/2705	2290/2705
Weight standard unit FCM		1367	1430	1650	1950
Weight gas unit Small/ High		1608 / 1631	1671 / 1694	1914 / 1954	2214 / 2254
Acoustic @ 150 Pa					
Outside sound power on FCM FHM FGM FDM		92	92	88	89
Outside sound power on LOW NOISE unit FCM FHM		84	86	85	85
Indoor blower outlet sound power on FCM FHM		91	94	86	88
Indoor blower outlet sound power on FGM FDM		88	90	88	90
Indoor blower outlet sound power on FCM FHM (HE)		79	82	85	87
Indoor blower outlet sound power on FGM FDM (HE)		81	84	87	89
Construction					
Casing material (8)			Aluminum		
Painting	type/RAL		polyester / 9002		
Airflow side wall Insulation Class	type	M0	M0	M0	M0
Cooling mode operating limits					
Max. outdoor temp. at indoor 27°C DB/ 19°C WB (9)		44	46	46	44
Max outdoor temp with unloading		50	50	50	50
Min. outdoor temp. at indoor 20°C DB (7)		10	10	10	10
Max. outdoor temp DB/WB at 100% fresh air		38	38	38	38
Heat pump mode operating limits					
Min. outdoor temp. at indoor 20°C DB (9)		-12	-12	-14	-12
Min outdoor temp with unloading		-15	-15	-15	-15
Min. entering indoor coil temp. at outdoor 7°C DB		7	7	7	7

Note :

- (1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
Summer : Outdoor temperature 35°C DB/ Entering coil temperature 27°C DB / 19°C WB
Winter : Outdoor temperature 7°C DB, 6°C WB/Entering coil temperature 20°C DB
- (2) including the compressor and outdoor fan (axial) and indoor fan (centrifugal)
- (3) COP net = Net Cool Cap./ Pabs total
- (4) At nominal Airflow
- (5) S = Small, H = High

- (6) at down return air and down supply air configuration
- (7) below this value, option «Low ambient kit» is required
- (8) Except if galvanised steel option choosen
- (9) the cooling and heating operating limits are given for steady state running condition with noted temperature condition
- (10) Heating capacity of FHM
- (11) These values at part load are given according to temperature conditions defined in ANSI/ARI Standard 340/36
 Cooling : dry bulb ext : 26.7°C, dry bulb int : 19.4°C, wet bulb int : 19.4°C
 Heating : dry bulb ext : 7°C, wet bulb int : 6°C, dry bulb int : 20°C

FXK = Heat recovery unit

Table 1.5

		SIZE	25	30	35	40	55	70
Cooling R407C								
Performances	Gross cooling capacity (1)	kW	24,8	30,5	34,5	40,5	49,5	68,8
	Nominal air flow	m ³ /h	4000	5000	6000	7200	9000	10800
	Power supply install (2)	kW	13	16	16	22	26	31
	Full load amps (2)	A	23	29	29	38	44	50
	COP (brut) (3)	kW	2,7	2,7	3	2,7	2,8	3
Heating - Heat pump R407C								
Performances	Net heating capacity (1)	kW	23,6	30,4	31	37,7	44,8	64,7
	COP (brut) (3)	kW	3,4	3,5	3,7	3,6	4	4
Circuit								
Refrigerant circuit data	Number of circuits	Nr	2	2	2	2	2	2
	Compressor R407C	Nr/type	2 / MTZ50	2 / MTZ64	2 / MTZ64	2 / MTZ80	2 / MTZ100	2 / MTZ125
	Expansion R407C	type	2 / TDEZ4	2 / TDEZ6	2 / TDEZ6	2 / TDEBZ8	2 / TDEBZ11	2 / TDEBZ11
	Refrigerant charge per circuit	type/kg	2 x 4	2 x 4	2 x 5	2 x 6	2 x 6	2 x 10
Indoor Coil								
Refrigerant circuit data	Face area	m ²	0,7	0,7	2,1	2,1	2,1	2,8
	Nr rows and fin per inch	Nr/fpi	R=4 F=12	R=4 F=12	R=3 F=12	R=3 F=12	R=4 F=12	R=4 F=12
Condensing coil								
Refrigerant circuit data	Face area	m ²	0,9	0,9	2,1	2,1	2,1	2,8
	Nr rows and fin per inch	Nr/fpi	R=4 F=12	R=4 F=12	R=3 F=12	R=3 F=12	R=4 F=12	R=4 F=12
Indoor fan (centrifugal fan FC)								
Ventilation data	Number	Nr	1	1	1	1	1	1
	Drive type	type	AT12-12S	AT12-12S	AT15-15S	AT15-15S	AT15-15S	AT18-18S
	Nominal air flow	m ³ /h	4000	5000	6000	7200	9000	10800
	Minimum air flow	m ³ /h	3200	4000	4800	5800	7200	8600
	Maximum air flow	m ³ /h	4500	5500	6600	8100	9900	12200
	External static pressure	Pa	300	300	300	300	300	300
	Motor power (total)	kW	1,1	1,5	1,5	2,2	3	3
	Rotation speed fan	rpm	1088	1132	827	835	873	734
Condensing fan (centrifugal fan FC)								
Ventilation data	Number	Nr	1	1	1	1	1	1
	Nominal air flow	m ³ /h	5000	6250	7500	9000	11250	13500
	External static pressure	Pa	150	150	150	150	150	150
	Motor power (total)	kW	1,1	1,5	1,5	2,2	3	3
	Rotation speed fan	rpm	868	946	658	702	785	624
	Filter (furnished standard)							
Operating limits	Type	type	PGAR300	PGAR300	PGAR300	PGAR300	PGAR300	PGAR300
	Efficiency/filter class/Eurovent	type	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4
	Nr of filter (supply and exhaust air)	Nr	6	6	16	16	16	16
	Filter size	mmxmm	(x4)600x400x50	(x4)600x400x50	500x500x50	500x500x50	500x500x50	660x500x50
			(x4)600x500x50	(x4)600x500x50				
	Max. outdoor temp. in cooling mode		40	39	42	41	42	42
Minimum outdoor temp. in heat pump mode		-15	-15	-15	-15	-15	-15	
Minimum entering coil temperature in heat pump mode		10	10	10	10	10	10	
Physical data								
Physical data	Length	mm	3970	3970	4750	4750	4750	5050
	Height	mm	940	940	1290	1290	1290	1610
	Width without roofcurb	mm	1610	1610	2250	2250	2250	2250
	Weight	kg	950	980	1400	1450	1600	1800
Acoustic								
Physical data	Outside sound power (1)	dB(A)	85	87	83	84	89	90
	Indoor sound power (1)	dB(A)	80	83	78	80	83	84
Casing material/thickness	mm	Aluzinc/1,5						
Painting	type/RAL	polyester 9002						
Insulation type	type	M0	M0	M0	M0	M0	M0	

(1) Gross cooling capacity with 25% fresh air, 35°C DB outdoor, 27°C indoor.

(2) Net heating capacity with 25 % fresh air, 4°C DB outdoor, 23° C indoor.

(3) COP gross given at 0% fresh air

FXK = Heat recovery unit

Table 1.6

		SIZE	85	100	110	140	170
Cooling R407C							
Performances	Gross cooling capacity (1)	kW	84,3	100,9	112	140,7	165,3
	Nominal air flow	m ³ /h	13500	17300	19000	24000	27000
	Power supply install (2)	kW	40	50	51	66	86
	Full load amps (2)	A	65	86	87	106	140
	COP (brut) (3)	kW	3	3,73	3,37	3,23	3
Heating - Heat pump R407C							
	Net heating capacity (1)	kW	80,4	83,1	106,4	136,1	166,8
	COP (brut) (3)	kW	3,9	4,3	3,9	3,8	3,5
Circuit							
Refrigerant circuit data	Number of circuits	Nr	2	2	4	4	4
	Compressor R407C	Nr/type	2 / MTZ160	2 / SZ185	4 / MTZ100	4 / MTZ125	4 / MTZ160
	Expansion R407C	type	2 / TDEBZ16	2 / TDEZ16	4 / TDEZ11	4 / TDEBZ11	4 / TDEBZ16
	Refrigerant charge per circuit	type/kg	2 x 11	2 x 12	4 x 7	4 x 7,5	4 x 8,5
Indoor Coil							
	Face area	m ²	2,8	2,8	3,7	3,7	3,7
	Nr rows and fin per inch	Nr/fpi	R=4 F=12	R=6 F=12	R=6 F=12	R=6 F=12	R=6 F=12
Condensing coil							
	Face area	m ²	2,8	2,8	3,7	3,7	3,7
	Nr rows and fin per inch	Nr/fpi	R=4 F=12	R=6 F=12	R=6 F=12	R=6 F=12	R=6 F=12
Indoor fan (centrifugal fan FC)							
Ventilation data	Number	Nr	1	1	2	2	2
	Drive type	type	AT18-18S	AT18-18S	AT18-18S	AT18-18S	AT18-18S
	Nominal air flow	m ³ /h	13500	17300	19000	24000	27000
	Minimum air flow	m ³ /h	10800	13800	15200	19200	24000
	Maximum air flow	m ³ /h	15400	18200	21500	25500	30000
	External static pressure	Pa	300	300	300	300	300
	Motor power (total)	kW	4	7,5	3 + 3	4 + 4	5,5 + 5,5
	Rotation speed fan	rpm	764	850	796	843	874
Condensing fan (centrifugal fan FC)							
	Number	Nr	1	2	2	2	2
	Nominal air flow	m ³ /h	16900	21700	23800	30000	33800
	External static pressure	Pa	150	150	150	150	150
	Motor power (total)	kW	4	4+4	3 + 3	4 + 4	5,5 + 5,5
	Rotation speed fan	rpm	701	709	681	764	835
Filter (furnished standard)							
Operating limits	Type	type	PGAR300	PGAR300	PGAR300	PGAR300	PGAR300
	Efficiency/filter class/Eurovent	type	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4
	Nr of filter (supply and exhaust air)	Nr	16	16	16	16	16
	Filter size	mmxmm	660x500x50	660x500x50	800x500x50	800x500x50	800x500x50
	Max. outdoor temp. in cooling mode		42	44	44	43	41
	Min. outdoor temp. in heat pump mode		-15	-15	-15	-15	-15
Min. entering coil temp. in heat pump mode		10	10	10	10	10	
Physical data							
Physical data	Length	mm	5050	5050	5650	5650	5650
	Height	mm	1610	1610	2000	2000	2000
	Width without roofcurb	mm	2250	2250	2250	2250	2250
	Weight	kg	1900	2000	2300	2400	2600
Acoustic							
	Outside sound power (1)	dB(A)	94	95	92	96	98
	Indoor sound power (1)	dB(A)	88	93	87	91	93
	Casing material/thickness	mm	Aluzinc/1,5	Aluzinc/1,5	Aluzinc/1,5	Aluzinc/1,5	Aluzinc/1,5
	Painting	type/RAL	polyester 9002	polyester 9002	polyester 9002	polyester 9002	polyester 9002
	Insulation type	type	M0	M0	M0	M0	M0

(1) Gross cooling capacity with 25% fresh air, 35°C DB outdoor, 27°C indoor.

(2) Net heating capacity with 25 % fresh air, 4°C DB outdoor, 23° C indoor.

(3) COP gross given at 0% fresh air

FCM = Cooling only rooftop
FDM = Heat pump rooftop with gas fired heating

FGM = Cooling only with gas fired heating
FHM = Heat pump rooftop

Table 2.1

	Size	85	100	120	150	170	200	230	
Nominal Airflow	m³/h	15000	18500	20500	26000	30000	35000	39000	
Heating - electric									
Type of modulation		Staged on S / Triac on M & H							
Heating capacity available	kW S (2)	30	30	30	45	45	72	72	
Heating capacity available	kW M (2)	54	54	54	72	72	108	108	
Heating capacity available	kW H (2)	72	72	72	108	108	162	162	
Amps S / M / H	A	42/75/100			63/100/150		100/150/226		
Heating - hot water coil									
Heating capacity available (1)	kW S (2)	112	124	130	140	149	177	199	
Heating capacity available (1)	kW H (2)	175	197	209	251	272	296	313	
GAS modulating									
Modulation Range	% H	20-100							
High efficiency supply fan									
Nb of fans		2	2	2	3	3	3	3	
Type		PLUG FAN EC							
Fan reference		K3G 630							
Electrical Power at nominal conditions	kW	2,1	2,8	3,3	3,7	4,7	5,1	6,0	
Max available pressure	Pa	600	600	600	600	550	550	450	
Axial fan exhaust									
Nb of fans		2	2	3	3	3	3	3	
Fan reference		TRT6 560/35							
Centrifugal fan exhaust									
Nb of fans		2	2	2	2	2	3	3	
Type		PLUG FAN							
Fan reference		CRBT6/710 327							
UV light									
Type		UV-C							
Electrical Power	W	2 X 75 W	2 X 75 W	4 X 75 W	4 X 75 W	4 X 75 W	4 X 75 W	4 X 75 W	
Light Power	W	2 X 25 W	2 X 25 W	4 X 25 W	4 X 25 W	4 X 25 W	4 X 25 W	4 X 25 W	
Efficiency (3)	%	98	98	99	99	99	98	98	
ENERGY RECOVERY module									
Type of exchanger	ref	Wheel Exchanger							
Protection against frosting on exhaust air		Air differential pressure switch 20 to 300Pa							
Lenght	mm	2210	2210	2210	2400	2400	2600	2600	
Height	mm	1915	1915	1915	2200	2200	2400	2400	
Width with/without Fresh air hood (6)	mm	1715/1300	1715/1300	1715/1300	2060/1615	2060/1615	2340/1925	2340/1925	
Weight	kg	478	478	478	600	600	725	725	
Wheel diameter	mm	1500	1500	1500	1800	1800	2050	2050	
HEATING capacity IDDB=23°C ODDB=0°C	kW	68	77	82	111	120	148	156	
Outlet temperature before rooftop indoor coil	°C	14	13	12	13	12	12	12	
Heating Efficiency (on fresh air)	%	59	54	52	55	52	55	52	
COOLING capacity IDDB=25°C50% ODDB=35°C 40%	kW	34	38	40	54	59	72	76	
Outlet temperature before rooftop indoor coil in cooling	°C	31	30	30	30	30	30	30	
Cooling Efficiency (on fresh Air)	%	64	59	56	59	56	58	56	
Fresh air filter number / Return Air	mm	3/3	3/3	3/3	4/4	4/4	6/6	6/6	
Filter G4 and G4+F7									
Efficiency (gravimetric) / class EN779 / Eurovent G4	type	90% / G4 / EU4							
Efficiency (opacimetric) / class EN779 / Eurovent F7	type	85% / F7 / EU7							
Nb of filter	nb	8	8	8	12	12	10 + 5	10 + 5	
Filter size	mm	625x500x50					500x500+800x500		
Fire class	type	M1							
Dynamic Defrost									
Axial fan number	nb	2	2	2	2	2	4	4	
Motor power (total)	kW	1,8	1,8	2,0	4,6	4,6	4,1	4,1	

(1) Condition entering water 90°C, leaving water 70°C, entering air 20°C, S = standart heat, H = high heat
 (2) not available with FG and FD version
 (3) Bacteria elimination rate after 2 seconds of UV-C exposure

PERFORMANCES AT PART LOAD (*) Eurovent conditions

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

CLIM : DRY BULB EXT: 26.7°C, DRY BULB INT : 19.4°C, WET BULB INT : 19.4°C

PAC : DRY BULB EXT: 7°C, WET BULB INT : 6°C, DRY BULB INT : 20°C,

		FHM085N1M	FHM100N1M	FHM120N1M
CLIM	FULL LOAD (100%)	45% + 55%	40% + 60%	50% + 50%
	gross cooling cap. [kW]	84,4	103	117
	Electrical Power [kW]	29,6	39,3	45,7
	gross COP	2,8	2,6	2,6
	PART LOAD 1 (*)	55%	60%	50%
	gross cooling cap. [kW]	48,4	65,5	67,2
	Electrical Power [kW]	15,4	20,8	22,1
	COP gross	3,1	3,1	3,0
	α	0,15	0,27	0,15
	β	0,04	0,06	-0,03
	PART LOAD 2 (*)	x	x	x
	gross cooling cap. [kW]	-	-	-
	Electrical Power [kW]	-	-	-
	COP gross	-	-	-
	α	-	-	-
β	-	-	-	
PAC	FULL LOAD (100%)	45% + 55%	40% + 60%	50% + 50%
	net heating cap. [kW]	82,9	103	117
	Electrical Power [kW]	26,3	33,4	37,7
	COP net	3,2	3,1	3,1
	PART LOAD 1 (*)	55%	60%	50%
	net heating cap. [kW]	46,4	61,8	64,0
	Electrical Power [kW]	15,7	20,1	20,9
	COP net	3,0	3,1	3,1
	α	0,12	0,20	0,09
	β	0,19	0,20	0,11
	PART LOAD 2(*)	x	x	x
	net heating cap. [kW]	-	-	-
	Electrical Power [kW]	-	-	-
	COP net	-	-	-
	α	-	-	-
β	-	-	-	

		FHM150N1M	FHM170N1M	FHM200N1M	FHM230N1M
CLIM	FULL LOAD (100%)	33% + (33% + 33%)	(27%+23%)+(27%+23%)	(25%+25%)+(25%+25%)	(25%+25%)+(25%+25%)
	gross cooling cap. [kW]	146	168	195	230
	Electrical Power [kW]	53,4	67,3	67,8	89,7
	gross COP	2,7	2,5	2,9	2,6
	PART LOAD 1 (*)	33% + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
	gross cooling cap. [kW]	122	116	132	166
	Electrical Power [kW]	31,8	31,2	35,4	45,5
	COP gross	3,8	3,7	3,7	3,6
	α	0,66	0,38	0,36	0,44
	β	0,19	-0,07	0,04	0,01
	PART LOAD 2 (*)	33%	23%	25%	25%
	gross cooling cap. [kW]	60,8	55,5	66,3	82,9
	Electrical Power [kW]	18,1	17,7	21,7	28,2
	COP gross	3,4	3,1	3,1	2,9
	α	-0,17	-0,34	-0,32	-0,28
β	-0,32	-0,47	-0,36	-0,37	
PAC	FULL LOAD (100%)	33% + (33% + 33%)	(25%+25%)+(25%+25%)	(25%+25%)+(25%+25%)	(25%+25%)+(25%+25%)
	net heating cap. [kW]	142	168	188	226
	Electrical Power [kW]	46,0	56,4	58,2	74,4
	COP net	3,1	3,0	3,1	2,9
	PART LOAD 1 (*)	33% + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
	net heating cap. [kW]	106,8	101,5	115,5	145,6
	Electrical Power [kW]	30,1	28,9	33,3	25,8
	COP net	3,5	3,5	3,5	3,4
	α	0,50	0,21	0,23	0,29
	β	0,31	0,02	0,14	-0,31
	PART LOAD 2(*)	33%	25%	25%	25%
	net heating cap. [kW]	55,6	51,1	61,8	78,4
	Electrical Power [kW]	17,3	16,6	20,6	26,9
	COP net	3,2	3,1	3,0	2,9
	α	-0,22	-0,39	-0,34	-0,31
β	-0,25	-0,41	-0,29	-0,28	

ENERGY RECOVERY MODULE IN COOLING MODE

085 - 0100 - 120

Fresh air ratio			Airflow	ODDB	25/16			27/17			30/20			33/22			
F085	F100	F120			IDDB	EFF	CC	Out DB/ WB	EFF	CC	Out DB/ WB	EFF	CC	Out DB/ WB	EFF	CC	Out DB/ WB
20%	16%	15%	3000	18	90	6,2	24/15	91	8,0	26/15	91	10,6	28/16	92	13,3	31/17	
				21	90	3,5	24/16	90	5,3	26/17	91	8,0	29/17	92	10,6	31/18	
				24	89	0,9	25/17	90	2,7	27/18	91	5,3	29/19	91	7,9	32/20	
				27							90	2,6	30/20	91	5,3	32/21	
				30										91	2,6	33/23	
				33													
				36													
40%	32%	29%	6000	18	81	11,2	23/14	81	14,4	25/15	82	19,1	27/16	83	24,0	29/16	
				21	81	6,4	24/16	81	9,6	26/16	82	14,3	28/17	83	19,1	30/18	
				24	80	1,6	25/17	81	4,8	26/18	82	9,5	29/19	82	14,3	31/19	
				27							81	4,8	29/20	82	9,5	32/21	
				30										82	4,7	32/23	
				33													
				36													
60%	49%	44%	9000	18	73	15,2	23/14	74	19,5	24/15	74	26,1	26/15	75	32,6	28/16	
				21	73	8,7	24/16	74	13,0	25/16	74	19,5	27/17	75	26,0	29/18	
				24	73	2,2	25/17	73	6,5	26/18	74	13,0	28/19	75	19,5	30/19	
				27							74	6,5	29/20	75	13,0	31/21	
				30										75	6,5	32/23	
				33													
				36													
80%	65%	59%	12000	18	67	18,5	23/14	67	23,8	24/14	68	31,8	26/15	69	39,8	28/16	
				21	67	10,6	24/16	67	15,9	25/16	68	23,8	27/17	69	31,8	29/17	
				24	67	2,6	25/17	67	7,9	26/18	68	15,9	28/18	69	23,8	30/19	
				27							68	7,9	29/20	69	15,9	31/21	
				30										68	7,9	32/23	
				33													
				36													
100%	81%	73%	15000	18	62	21,3	22/14	62	27,4	23/14	63	36,6	25/15	63	45,9	27/16	
				21	62	12,1	23/15	62	18,2	25/16	63	27,4	26/17	63	36,7	28/17	
				24	61	3,0	25/17	62	9,1	26/18	63	18,3	28/18	63	27,5	29/19	
				27							63	9,1	29/20	63	18,3	31/21	
				30										63	9,1	32/23	
				33													
				36													
	100%	90%	18500	18	56	24,0	22/14	57	30,9	23/14	57	41,3	24/15	58	51,8	26/15	
				21	56	13,7	23/15	57	20,6	24/16	57	31,0	26/16	58	41,4	27/17	
				24	56	3,4	25/17	57	10,3	26/18	57	20,6	27/18	58	31,0	29/19	
				27							57	10,3	29/20	58	20,7	30/21	
				30										58	10,3	32/22	
				33													
				36													
	100%		20500	18	54	25,3	22/14	54	32,6	23/14	55	43,6	24/15	55	54,7	26/15	
				21	54	14,5	23/15	54	21,7	24/16	55	32,7	26/16	55	43,8	27/17	
				24	54	3,6	25/17	54	10,9	26/18	55	21,8	27/18	55	32,8	29/19	
				27							55	10,9	29/20	55	21,9	30/21	
				30										55	10,9	32/22	
				33													
				36													
			23000	18	51	26,8	21/14	51	34,5	22/14	52	46,2	24/14	52	58,0	25/15	
				21	51	15,3	23/15	51	23,0	24/16	52	34,7	25/16	52	46,4	27/17	
				24	51	3,8	25/17	51	11,5	25/18	52	23,1	27/18	52	34,8	28/19	
				27							52	11,6	29/20	52	23,2	30/20	
				30										52	11,6	32/22	
				33													
				36													

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OUT DB / WB : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m³/h

ENERGY RECOVERY MODULE IN COOLING MODE

085 - 0100 - 120

Fresh air ratio			Airflow	35/24			38/26			40/27			43/30			
F085	F100	F120		EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	
20%	16%	15%	3000	18	92	15,1	32/17	93	17,7	35/18	94	19,5	36/19	94	22,1	38/19
				21	92	12,4	33/19	93	15,0	35/20	93	16,8	37/20	94	19,4	39/21
				24	92	9,7	33/20	93	12,3	36/21	93	14,1	37/21	94	16,7	40/22
				27	92	7,0	34/22	92	9,6	36/22	93	11,4	38/23	94	14,1	40/23
				30	91	4,4	34/23	92	7,0	37/24	93	8,7	39/24	93	11,4	41/25
				33	91	1,7	35/25	92	4,3	37/26	92	6,1	39/26	93	8,7	42/27
				36				91	1,7	38/27	92	3,5	40/28	93	6,1	42/28
40%	32%	29%	6000	18	83	27,2	31/17	84	32,0	33/18	85	35,2	34/18	86	40,1	36/19
				21	83	22,3	32/18	84	27,1	34/19	85	30,4	35/20	85	35,2	37/20
				24	83	17,5	33/20	84	22,3	35/21	84	25,5	36/21	85	30,4	38/22
				27	83	12,7	33/21	84	17,5	36/22	84	20,7	37/22	85	25,5	39/23
				30	82	7,9	34/23	83	12,7	36/24	84	15,9	38/24	85	20,7	40/25
				33	82	3,2	35/25	83	7,9	37/25	84	11,1	39/26	85	15,9	41/26
				36				83	3,1	38/27	83	6,3	39/28	84	11,1	42/28
60%	49%	44%	9000	18	76	37,0	30/17	77	43,7	32/17	77	48,1	33/18	78	54,9	35/18
				21	76	30,4	31/18	76	37,0	33/19	77	41,5	34/19	78	48,3	36/20
				24	75	23,9	32/20	76	30,5	34/20	77	34,9	35/21	78	41,6	37/21
				27	75	17,3	33/21	76	23,9	35/22	77	28,3	36/22	78	35,0	38/23
				30	75	10,8	34/23	76	17,3	36/24	77	21,7	37/24	78	28,4	39/24
				33	75	4,3	34/25	76	10,8	37/25	76	15,2	38/26	77	21,8	40/26
				36				76	4,3	37/27	76	8,6	39/28	77	15,2	41/28
80%	65%	59%	12000	18	69	45,2	29/16	70	53,4	31/17	71	58,9	32/17	72	67,2	33/18
				21	69	37,2	30/18	70	45,3	32/18	71	50,8	33/19	72	59,1	35/19
				24	69	29,2	31/19	70	37,3	33/20	71	42,7	34/20	72	51,0	36/21
				27	69	21,2	32/21	70	29,2	34/22	71	34,7	35/22	71	42,9	37/23
				30	69	13,2	33/23	70	21,2	35/23	70	26,6	37/24	71	34,8	38/24
				33	69	5,3	34/25	70	13,2	36/25	70	18,6	38/26	71	26,7	40/26
				36				70	5,3	37/27	70	10,6	39/28	71	18,7	41/28
100%	81%	73%	15000	18	64	52,1	28/16	65	61,5	30/17	65	67,9	31/17	66	77,7	32/17
				21	64	42,9	29/18	65	52,3	31/18	65	58,7	32/18	66	68,3	34/19
				24	64	33,7	31/19	65	43,0	32/20	65	49,3	33/20	66	59,0	35/21
				27	64	24,5	32/21	65	33,8	34/22	65	40,1	35/22	66	49,6	36/22
				30	64	15,3	33/23	65	24,5	35/23	65	30,8	36/24	66	40,3	38/24
				33	64	6,1	34/25	64	15,3	36/25	65	21,5	37/26	66	30,9	39/26
				36				64	6,1	37/27	65	12,3	38/28	66	21,6	40/28
	100%	90%	18500	18	59	58,8	27/16	59	69,6	29/16	60	76,8	30/17	61	87,9	31/17
				21	59	48,5	29/17	59	59,2	30/18	60	66,4	31/18	61	77,4	33/19
				24	59	38,1	30/19	59	48,7	32/20	60	55,9	33/20	61	66,8	34/20
				27	59	27,7	31/21	59	38,3	33/21	60	45,4	34/22	61	56,3	36/22
				30	59	17,3	33/23	59	27,8	34/23	60	34,9	36/24	61	45,7	37/24
				33	58	6,9	34/25	59	17,4	36/25	60	24,4	37/25	61	35,1	39/26
				36				59	6,9	37/27	60	13,9	38/27	61	24,5	40/28
	100%	100%	20500	18	56	62,2	27/15	57	73,6	28/16	57	81,3	29/16	58	93,1	31/17
				21	56	51,2	28/17	57	62,5	30/18	57	70,2	31/18	58	81,9	32/19
				24	56	40,3	30/19	57	51,5	31/19	57	59,1	32/20	58	70,7	34/20
				27	56	29,3	31/21	57	40,5	33/21	57	48,0	34/22	58	59,6	35/22
				30	56	18,3	33/23	57	29,4	34/23	57	36,9	35/23	58	48,4	37/24
				33	56	7,3	34/25	57	18,4	36/25	57	25,8	37/25	58	37,2	38/26
				36				57	7,3	37/27	57	14,8	38/27	58	26,0	40/28
	100%	100%	23000	18	53	65,9	26/15	54	78,1	28/16	54	86,3	28/16	55	98,8	30/17
				21	53	54,3	28/17	54	66,4	29/18	54	74,5	30/18	55	87,0	32/18
				24	53	42,7	29/19	54	54,7	31/19	54	62,8	32/20	55	75,2	33/20
				27	53	31,1	31/21	54	43,0	32/21	54	51,0	33/21	55	63,3	35/22
				30	53	19,4	33/23	54	31,3	34/23	54	39,2	35/23	55	51,4	37/24
				33	53	7,8	34/25	54	19,5	36/25	54	27,5	37/25	55	39,5	38/26
				36				54	7,8	37/27	54	15,7	38/27	55	27,7	40/28

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OUT DB / WB : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN COOLING MODE

0150 - 170

Fresh air ratio		Airflow	25/16			27/17			30/20			33/22			
F150	F170		EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	
23%	20%	6000	18	86	11,9	24/14	87	15,3	25/15	88	20,4	28/16	88	25,5	30/17
			21	86	6,8	24/16	87	10,2	26/16	87	15,3	28/17	88	20,4	31/18
			24	86	1,7	25/17	86	5,1	27/18	87	10,1	29/19	88	15,2	31/20
			27							87	5,1	30/20	87	10,1	32/21
			30										87	5,0	33/23
			33												
38%	33%	10000	18	78	18,1	23/14	79	23,2	25/15	80	31,0	27/16	80	38,7	29/16
			21	78	10,3	24/16	79	15,4	26/16	79	23,2	28/17	80	30,9	30/18
			24	78	2,6	25/17	78	7,7	26/18	79	15,4	29/19	80	23,1	31/19
			27							79	7,7	29/20	80	15,4	32/21
			30										80	7,7	32/23
			33												
54%	47%	14000	18	72	23,1	23/14	72	29,8	24/15	73	39,7	26/15	74	49,7	28/16
			21	72	13,2	24/16	72	19,8	25/16	73	29,7	27/17	74	39,7	29/18
			24	71	3,3	25/17	72	9,9	26/18	73	19,8	28/18	73	29,7	30/19
			27							73	9,9	29/20	73	19,8	31/21
			30										73	9,9	32/23
			33												
69%	60%	18000	18	66	27,4	22/14	67	35,3	24/14	67	47,1	26/15	68	59,0	27/16
			21	66	15,6	24/16	66	23,5	25/16	67	35,3	27/17	68	47,1	29/17
			24	66	3,9	25/17	66	11,7	26/18	67	23,5	28/18	68	35,3	30/19
			27							67	11,7	29/20	68	23,5	31/21
			30										68	11,7	32/23
			33												
81%	70%	21000	18	62	30,2	22/14	63	38,8	23/14	64	51,9	25/15	64	65,0	27/16
			21	62	17,2	23/16	63	25,9	25/16	63	38,9	26/17	64	52,0	28/17
			24	62	4,3	25/17	63	12,9	26/18	63	25,9	28/18	64	39,0	29/19
			27							63	12,9	29/20	64	25,9	31/21
			30										64	12,9	32/23
			33												
100%	87%	26000	18	57	34,1	22/14	57	44,0	23/14	58	58,8	25/15	59	73,7	26/15
			21	57	19,5	23/15	57	29,3	24/16	58	44,1	26/16	59	59,0	28/17
			24	57	4,9	25/17	57	14,6	26/18	58	29,4	27/18	59	44,2	29/19
			27							58	14,7	29/20	59	29,5	30/21
			30										59	14,7	32/22
			33												
	100%	30000	18	53	36,8	22/14	54	47,4	23/14	54	63,4	24/15	55	79,6	26/15
			21	53	21,0	23/15	54	31,6	24/16	54	47,6	26/16	55	63,7	27/17
			24	53	5,3	25/17	54	15,8	26/18	54	31,7	27/18	55	47,8	29/19
			27							54	15,9	29/20	55	31,9	30/21
			30										55	15,9	32/22
			33												
		35000	18	49	39,7	21/13	50	51,1	22/14	50	68,4	24/14	51	85,9	25/15
			21	49	22,7	23/15	50	34,1	24/16	50	51,4	25/16	51	68,8	27/17
			24	49	5,7	24/17	50	17,1	25/18	50	34,3	27/18	51	51,6	28/19
			27							50	17,1	28/20	51	34,4	30/20
			30										51	17,2	31/22
			33												

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 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN COOLING MODE

0150 - 170

Fresh air ratio		Airflow	35/24				38/26			40/27			43/30		
F150	F170		EFF	CC		EFF	CC		EFF	CC		EFF	CC		
23%	20%	6000	18	89	28,9	32/17	90	34,0	34/18	90	37,5	35/19	91	42,6	38/19
			21	89	23,8	32/19	89	28,9	35/19	90	32,3	36/20	91	37,4	38/20
			24	88	18,6	33/20	89	23,7	35/21	90	27,1	37/21	90	32,2	39/22
			27	88	13,5	34/22	89	18,6	36/22	89	22,0	38/23	90	27,1	40/23
			30	88	8,4	34/23	88	13,4	37/24	89	16,8	38/24	90	21,9	41/25
			33	87	3,3	35/25	88	8,4	37/26	89	11,7	39/26	90	16,8	41/27
			36				88	3,3	38/27	88	6,7	39/28	89	11,7	42/28
38%	33%	10000	18	81	43,9	31/17	82	51,8	33/18	82	57,0	34/18	83	65,0	36/19
			21	81	36,1	31/18	82	43,9	34/19	82	49,2	35/19	83	57,1	37/20
			24	81	28,3	32/20	81	36,1	34/20	82	41,3	36/21	83	49,2	38/21
			27	80	20,5	33/21	81	28,3	35/22	82	33,5	37/22	83	41,3	39/23
			30	80	12,8	34/23	81	20,5	36/24	82	25,7	38/24	82	33,5	40/25
			33	80	5,1	35/25	81	12,8	37/25	81	17,9	38/26	82	25,7	41/26
			36				80	5,1	38/27	81	10,2	39/28	82	17,9	41/28
54%	47%	14000	18	74	56,4	29/17	75	66,6	31/17	76	73,4	33/18	77	83,7	35/18
			21	74	46,4	31/18	75	56,5	33/19	76	63,3	34/19	76	73,6	36/20
			24	74	36,4	32/20	75	46,4	34/20	75	53,2	35/21	76	63,5	37/21
			27	74	26,4	33/21	75	36,4	35/22	75	43,2	36/22	76	53,3	38/23
			30	74	16,5	34/23	75	26,4	36/24	75	33,1	37/24	76	43,3	39/24
			33	73	6,6	34/25	74	16,5	37/25	75	23,1	38/26	76	33,2	40/26
			36				74	6,6	37/27	75	13,2	39/28	76	23,2	41/28
69%	60%	18000	18	69	67,0	29/16	69	79,1	30/17	70	87,2	32/17	71	99,7	33/18
			21	68	55,1	30/18	69	67,2	32/18	70	75,3	33/19	71	87,6	35/19
			24	68	43,2	31/19	69	55,2	33/20	70	63,3	34/20	71	75,6	36/21
			27	68	31,4	32/21	69	43,3	34/22	70	51,4	35/22	71	63,6	37/23
			30	68	19,6	33/23	69	31,5	35/23	70	39,5	36/24	71	51,6	38/24
			33	68	7,8	34/25	69	19,6	36/25	69	27,6	38/26	70	39,6	39/26
			36				69	7,8	37/27	69	15,7	39/28	70	27,7	41/28
81%	70%	21000	18	65	73,9	28/16	66	87,3	30/17	66	96,3	31/17	67	110,1	32/18
			21	65	60,8	29/18	66	74,1	31/18	66	83,1	32/19	67	96,8	34/19
			24	65	47,7	31/19	66	61,0	32/20	66	69,9	34/20	67	83,6	35/21
			27	65	34,7	32/21	65	47,9	34/22	66	56,8	35/22	67	70,3	37/22
			30	65	21,6	33/23	65	34,8	35/23	66	43,6	36/24	67	57,1	38/999
			33	64	8,6	34/25	65	21,7	36/25	66	30,5	37/26	67	43,8	39/26
			36				65	8,7	37/27	66	17,4	39/28	67	30,6	40/28
100%	87%	26000	18	59	83,8	27/16	60	99,0	29/16	61	109,4	30/17	62	125,1	31/17
			21	59	69,0	29/17	60	84,2	30/18	61	94,4	31/18	62	110,1	33/19
			24	59	54,2	30/19	60	69,3	32/20	61	79,5	33/20	62	95,1	34/20
			27	59	39,4	31/21	60	54,4	33/21	61	64,6	34/22	62	80,0	36/22
			30	59	24,6	33/23	60	39,6	35/23	61	49,6	36/24	62	65,0	37/24
			33	59	9,8	34/25	60	24,7	36/25	61	34,7	37/25	61	50,0	39/26
			36				60	9,9	37/27	60	19,8	38/28	61	34,9	40/28
	100%	30000	18	56	90,5	27/15	56	107,1	28/16	57	118,3	29/16	58	135,4	30/17
			21	56	74,6	28/17	56	91,0	30/18	57	102,2	31/18	58	119,2	32/19
			24	56	58,6	30/19	56	75,0	31/19	57	86,1	32/20	58	103,0	34/20
			27	56	42,6	31/21	56	58,9	33/21	57	69,9	34/22	58	86,7	35/22
			30	56	26,6	33/23	56	42,8	34/23	57	53,8	35/23	58	70,4	37/24
			33	56	10,6	34/999	56	26,8	36/25	57	37,6	37/25	58	54,2	38/26
			36				56	10,7	37/27	57	21,5	38/27	58	37,9	40/28
		35000	18	51	97,8	26/15	52	115,7	27/16	53	127,9	28/16	54	146,5	30/17
			21	51	80,6	28/17	52	98,4	29/17	53	110,5	30/18	54	129,1	31/18
			24	52	63,3	29/19	52	81,1	31/19	53	93,1	32/20	54	111,5	33/20
			27	52	46,1	31/21	52	63,7	32/21	53	75,7	33/21	54	93,9	35/22
			30	52	28,8	32/23	52	46,4	34/23	53	58,2	35/23	54	76,3	36/24
			33	52	11,5	34/25	52	29,0	35/25	53	40,8	36/25	54	58,7	38/26
			36				52	11,6	37/27	53	23,3	38/27	54	41,1	40/28

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OUT DB / WB : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN COOLING MODE

0200 - 0230

Fresh air ratio		Airflow	ODDB	25/16			27/17			30/20			33/22			
F200	F230			IDDB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB
23%	21%	8000	18	86	15,9	24/14	87	20,4	25/15	87	27,1	28/16	88	33,9	30/17	
			21	86	9,0	24/16	86	13,5	26/16	87	20,3	28/17	88	27,0	31/18	
			24	85	2,3	25/17	86	6,7	27/18	87	13,5	29/19	87	20,2	31/20	
			27							86	6,7	30/20	87	13,4	32/21	
			30										87	6,7	33/23	
			33													
			36													
34%	31%	12000	18	80	22,1	23/14	80	28,4	25/15	81	37,8	27/16	82	47,3	29/16	
			21	80	12,6	24/16	80	18,9	26/16	81	28,3	28/17	82	37,7	30/18	
			24	79	3,1	25/17	80	9,4	26/18	81	18,8	29/19	81	28,2	31/19	
			27							80	9,4	29/20	81	18,8	32/21	
			30										81	9,4	32/23	
			33													
			36													
51%	46%	18000	18	72	29,8	23/14	72	38,4	24/15	73	51,2	26/15	74	64,1	28/16	
			21	72	17,0	24/16	72	25,5	25/16	73	38,3	27/17	74	51,2	29/18	
			24	72	4,3	25/17	72	12,7	26/18	73	25,5	28/18	74	38,3	30/19	
			27							73	12,7	29/20	74	25,5	31/21	
			30										73	12,7	32/23	
			33													
			36													
69%	62%	24000	18	65	36,2	22/14	66	46,6	24/14	67	62,2	25/15	67	77,9	27/16	
			21	65	20,7	24/16	66	31,0	25/16	67	46,6	27/17	67	62,3	29/17	
			24	65	5,2	25/17	66	15,5	26/18	67	31,0	28/18	67	46,7	30/19	
			27							66	15,5	29/20	67	31,1	31/21	
			30										67	15,5	32/23	
			33													
			36													
86%	77%	30000	18	60	41,5	22/14	60	53,4	23/14	61	71,4	25/15	62	89,5	27/15	
			21	60	23,7	23/15	60	35,6	24/16	61	53,5	26/17	62	71,6	28/17	
			24	60	5,9	25/17	60	17,8	26/18	61	35,6	28/18	62	53,6	29/19	
			27							61	17,8	29/20	62	35,7	31/21	
			30										62	17,8	32/23	
			33													
			36													
100%	90%	35000	18	56	45,2	22/14	57	58,2	23/14	57	77,9	24/15	58	97,7	26/15	
			21	56	25,8	23/15	57	38,8	24/16	57	58,4	26/16	58	78,1	27/17	
			24	56	6,5	25/17	57	19,4	26/18	57	38,9	27/18	58	58,6	29/19	
			27							57	19,5	29/20	58	39,0	30/21	
			30										58	19,5	32/22	
			33													
			36													
100%	100%	39000	18	53	47,9	22/14	54	61,7	23/14	54	82,5	24/15	55	103,5	26/15	
			21	53	27,4	23/15	54	41,1	24/16	54	61,9	26/16	55	82,8	27/17	
			24	53	6,8	25/17	54	20,5	26/18	54	41,2	27/18	55	62,1	29/19	
			27							54	20,6	29/20	55	41,4	30/21	
			30										55	20,7	32/22	
			33													
			36													
100%	100%	43000	18	51	50,2	21/14	51	64,7	22/14	52	86,6	24/14	52	108,7	25/15	
			21	51	28,7	23/15	51	43,2	24/16	52	65,0	25/16	53	87,0	27/17	
			24	51	7,2	25/17	51	21,6	26/18	52	43,3	27/18	53	65,3	28/19	
			27							52	21,7	29/20	53	43,5	30/20	
			30										53	21,8	32/22	
			33													
			36													

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OUT DB / WB : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN COOLING MODE

0200 - 0230

Fresh air ratio		Airflow	35/24				38/26			40/27			43/30		
F200	F230		EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	EFF	CC	OUT DB/ WB	
23%	21%	8000	18	88	38,4	32/17	89	45,2	34/18	90	49,8	35/19	91	56,6	38/19
			21	88	31,5	32/19	89	38,3	35/19	90	42,9	36/20	90	49,7	38/20
			24	88	24,7	33/20	89	31,5	35/21	89	36,0	37/21	90	42,8	39/22
			27	88	17,9	34/22	88	24,6	36/22	89	29,2	38/23	90	36,0	40/23
			30	87	11,1	34/23	88	17,9	37/24	89	22,4	38/24	90	29,1	41/25
			33	87	4,4	35/25	88	11,1	37/26	88	15,6	39/26	89	22,3	41/27
			36				87	4,4	38/27	88	8,9	39/28	89	15,6	42/28
34%	31%	12000	18	82	53,6	31/17	83	63,2	33/18	84	69,6	34/18	85	79,3	36/19
			21	82	44,1	32/18	83	53,6	34/19	84	60,0	35/19	84	69,7	37/20
			24	82	34,5	32/20	83	44,0	35/20	83	50,4	36/21	84	60,0	38/22
			27	82	25,0	33/21	83	34,5	35/22	83	40,8	37/22	84	50,4	39/23
			30	81	15,6	34/23	82	25,0	36/24	83	31,3	38/24	84	40,8	40/25
			33	81	6,2	35/25	82	15,6	37/25	83	21,9	38/26	84	31,3	41/26
			36				82	6,2	38/27	82	12,4	39/28	83	21,9	41/28
51%	46%	18000	18	74	72,8	30/17	75	85,8	31/17	76	94,6	33/18	77	108,0	35/18
			21	74	59,8	31/18	75	72,9	33/19	76	81,6	34/19	77	94,9	36/20
			24	74	46,9	32/20	75	59,9	34/20	76	68,6	35/21	77	81,8	37/21
			27	74	34,1	33/21	75	47,0	35/22	76	55,7	36/22	76	68,8	38/23
			30	74	21,2	34/23	75	34,1	36/24	75	42,7	37/24	76	55,8	39/24
			33	74	8,5	34/25	75	21,3	37/25	75	29,8	38/26	76	42,8	40/26
			36				74	8,5	37/27	75	17,0	39/28	76	29,9	41/28
69%	62%	24000	18	68	88,5	29/16	69	104,5	30/17	69	115,3	31/17	70	131,7	33/18
			21	68	72,8	30/18	69	88,8	32/18	69	99,5	33/19	70	115,8	34/19
			24	68	57,2	31/19	69	73,0	33/20	69	83,7	34/20	70	99,9	36/21
			27	68	41,5	32/21	69	57,3	34/22	69	67,9	35/22	70	84,1	37/23
			30	68	25,9	33/23	68	41,6	35/23	69	52,2	36/24	70	68,2	38/24
			33	67	10,3	34/25	68	26,0	36/25	69	36,5	38/26	70	52,4	39/26
			36				68	10,4	37/27	69	20,8	39/28	70	36,6	41/28
86%	77%	30000	18	62	101,7	28/16	63	120,1	29/16	64	132,6	30/17	65	151,6	32/17
			21	62	83,7	29/17	63	102,1	31/18	64	114,5	32/18	65	133,4	33/19
			24	62	65,7	30/19	63	84,0	32/20	64	96,4	33/20	65	115,2	35/21
			27	62	47,8	32/21	63	66,0	33/21	64	78,2	35/22	65	96,9	36/22
			30	62	29,8	33/23	63	47,9	35/23	64	60,1	36/24	65	78,7	38/24
			33	62	11,9	34/25	63	29,9	36/25	64	42,0	37/26	64	60,5	39/26
			36				63	11,9	37/27	63	24,0	38/28	64	42,3	40/28
100%	90%	35000	18	58	111,0	27/16	59	131,3	29/16	60	145,0	30/17	61	165,9	31/17
			21	58	91,4	29/17	59	111,6	30/18	60	125,2	31/18	61	146,0	33/19
			24	58	71,8	30/19	59	91,9	32/20	60	105,4	33/20	61	126,1	34/20
			27	58	52,2	31/21	59	72,2	33/21	60	85,6	34/22	61	106,2	36/22
			30	58	32,6	33/23	59	52,5	34/23	60	65,8	36/24	61	86,2	37/24
			33	58	13,0	34/25	59	32,8	36/25	60	46,0	37/25	61	66,3	39/26
			36				59	13,1	37/27	60	26,3	38/27	61	46,3	40/28
100%	100%	39000	18	56	117,7	27/15	56	139,2	28/16	57	153,8	29/16	58	176,1	30/17
			21	56	96,9	28/17	56	118,3	30/18	57	132,9	31/18	58	155,0	32/19
			24	56	76,2	30/19	56	97,5	31/19	57	111,9	32/20	58	133,9	34/20
			27	56	55,4	31/21	56	76,6	33/21	57	90,9	34/22	58	112,7	35/22
			30	56	34,6	33/23	56	55,7	34/23	57	69,9	35/23	58	91,6	37/24
			33	56	13,8	34/25	56	34,8	36/25	57	48,9	37/25	58	70,4	38/26
			36				56	13,9	37/27	57	27,9	38/27	58	49,3	40/28
100%	100%	43000	18	53	123,7	26/15	54	146,3	28/16	54	161,7	29/16	55	185,2	30/17
			21	53	101,9	28/17	54	124,4	29/18	54	139,7	30/18	55	163,1	32/18
			24	53	80,1	29/19	54	102,5	31/19	54	117,7	32/20	55	140,9	33/20
			27	53	58,2	31/21	54	80,6	32/21	54	95,7	33/21	55	118,7	35/22
			30	53	36,4	33/23	54	58,6	34/23	54	73,6	35/23	55	96,4	37/24
			33	53	14,6	34/25	54	36,6	36/25	54	51,5	37/25	55	74,2	38/26
			36				54	14,6	37/27	54	29,4	38/27	55	51,9	40/28

EFF : Efficiency of the ENERGY RECOVERY in %
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 OUT DB / WB : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

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 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

085 - 0100 - 120

Fresh air ratio			Fresh Airflow	20			15			10			5					
F085	F100	F120		EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT			
20%	16%	15%	3000	8										88	2,8	7,6		
				11							88	0,9	10,9	88	5,8	10,2		
				14								88	3,6	13,5	89	9,0	12,8	
				17						88	1,8	16,8	89	6,3	16,1	89	12,4	15,3
				20						89	4,5	19,4	89	8,9	18,6	89	16,0	17,8
				23	89	2,7	22,7	89	7,1	22,0	89	13,5	21,2	90	19,7	20,3		
				26	89	5,3	25,3	90	9,7	24,5	90	17,2	23,7	91	23,7	22,7		
40%	32%	29%	6000	8										78	5,2	7,3		
				11							78	1,7	10,8	79	10,8	9,6		
				14								79	7,0	13,1	79	16,7	11,9	
				17						79	3,4	16,6	79	12,7	15,4	80	23,0	14,1
				20						79	8,9	18,9	80	18,7	17,7	80	29,6	16,4
				23	80	5,2	22,4	80	14,7	21,2	80	25,1	20,0	80	36,6	18,6		
				26	80	10,8	24,7	81	20,8	23,5	80	31,9	22,2	81	43,9	20,8		
60%	49%	44%	9000	8										70	7,2	7,1		
				11							70	2,3	10,7	71	14,9	9,2		
				14								71	9,7	12,8	71	23,1	11,2	
				17						71	4,8	16,4	72	17,6	14,9	72	31,8	13,2
				20						72	12,3	18,5	72	25,9	17,0	72	40,9	15,3
				23	72	7,2	22,2	72	20,3	20,6	73	34,8	19,0	72	50,6	17,3		
				26	73	14,9	24,3	73	28,8	22,7	73	44,1	21,1	73	60,7	19,3		
80%	65%	59%	12000	8										64	8,8	6,9		
				11							64	2,9	10,6	64	18,2	8,8		
				14								65	11,9	12,6	65	28,2	10,6	
				17						65	5,8	16,3	65	21,5	14,5	65	38,8	12,5
				20						65	15,0	18,2	66	31,7	16,3	66	49,9	14,3
				23	66	8,8	22,0	66	24,8	20,1	66	42,4	18,2	66	61,7	16,2		
				26	66	18,2	23,9	67	35,2	22,0	67	53,8	20,0	66	74,0	18,0		
100%	81%	73%	15000	8										58	10,0	6,7		
				11							59	3,3	10,6	59	20,7	8,4		
				14								59	13,5	12,3	59	32,0	10,2	
				17						60	6,6	16,2	60	24,4	14,1	60	44,0	11,9
				20						60	17,1	18,0	60	36,0	15,8	60	56,6	13,5
				23	61	10,0	21,8	61	28,2	19,7	61	48,1	17,5	60	69,9	15,3		
				26	61	20,7	23,6	61	39,9	21,5	61	61,0	19,2	61	83,7	16,9		
	100%	90%	18500	8										53	11,0	6,6		
				11							53	3,6	10,5	53	22,6	8,1		
				14								54	14,8	12,1	54	34,9	9,7	
				17						54	7,2	16,1	54	26,6	13,7	54	47,9	11,2
				20						55	18,6	17,7	55	39,1	15,3	55	61,5	12,8
				23	55	11,0	21,7	55	30,7	19,3	55	52,3	16,9	55	75,8	14,3		
				26	56	22,6	23,3	56	43,5	20,9	56	66,2	18,4	55	90,8	15,9		
		100%	20500	8										50	11,2	6,5		
				11							51	3,7	10,5	51	23,2	8,0		
				14								51	15,1	12,0	51	35,7	9,5	
				17						52	7,4	16,0	52	27,3	13,5	52	49,0	10,9
				20						52	19,1	17,6	52	40,1	15,0	52	62,9	12,4
				23	53	11,2	21,6	53	31,5	19,1	53	53,5	16,5	53	77,4	13,8		
				26	53	23,2	23,1	53	44,5	20,6	53	67,6	18,0	53	92,6	15,3		
			23000	8										47	11,4	6,4		
				11							48	3,7	10,5	48	23,3	7,8		
				14								48	15,3	11,9	48	36,0	9,2	
				17						49	7,5	16,0	49	27,5	13,3	49	49,2	10,6
				20						49	19,3	17,4	49	40,3	14,7	49	63,1	12,0
				23	50	11,4	21,5	50	31,7	18,9	50	53,8	16,2	50	77,6	13,3		
				26	50	23,3	23,0	50	44,7	20,3	50	67,9	17,6	50	92,8	14,7		

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

085 - 0100 - 120

Fresh air ratio			Fresh airflow	ODDB	0			-5			-10			-15		
F085	F100	F120			IDDB	EFF	HC	OT:	EFF	HC	OT:	EFF	HC	OT:	EFF	HC
20%	16%	15%	3000	8	88	7,9	6,9	88	13,5	6,1	89	19,7	5,1	89	26,5	3,9
				11	89	11,2	9,4	89	17,2	8,5	89	23,7	7,5	90	30,8	6,3
				14	89	14,7	11,9	89	21,0	10,9	90	27,9	9,8	90	35,3	8,6
				17	89	18,5	14,4	90	25,1	13,3	90	32,3	12,1	91	40,0	10,8
				20	90	22,4	16,8	91	29,3	15,7	91	36,8	14,4	91	44,9	13,0
				23	91	26,5	19,2	91	33,8	18,0	92	41,6	16,7	92	50,0	15,2
				26	91	30,8	21,5	92	38,4	20,3	92	46,6	18,8	92	55,3	17,4
40%	32%	29%	6000	8	78	14,7	6,1	78	25,1	4,8	78	36,6	3,3	79	49,1	1,7
				11	79	20,8	8,3	79	31,9	7,0	79	43,9	5,4	79	57,0	3,8
				14	79	27,3	10,6	79	39,0	9,1	80	51,7	7,5	80	65,3	5,8
				17	79	34,2	12,8	80	46,5	11,3	80	59,7	9,6	80	74,0	7,8
				20	80	41,5	15,0	80	54,3	13,4	81	68,2	11,7	81	83,0	9,8
				23	81	49,1	17,1	81	62,5	15,5	81	77,0	13,7	81	92,4	11,8
				26	81	57,0	19,2	81	71,1	17,6	82	86,1	15,7	82	102,2	13,8
60%	49%	44%	9000	8	70	20,3	5,5	70	34,8	3,7	70	50,6	1,9	70	67,7	-0,1
				11	71	28,8	7,5	70	44,1	5,7	71	60,7	3,8	71	78,7	1,8
				14	71	37,8	9,5	71	53,9	7,7	71	71,3	5,7	71	90,1	3,6
				17	71	47,3	11,5	72	64,2	9,6	72	82,4	7,6	72	102,0	5,5
				20	72	57,3	13,5	72	75,0	11,5	72	94,0	9,4	72	114,4	7,3
				23	73	67,7	15,4	72	86,2	13,5	73	106,1	11,3	73	127,3	9,1
				26	73	78,7	17,4	73	98,0	15,3	73	118,7	13,1	73	140,7	10,9
80%	65%	59%	12000	8	64	24,8	4,9	64	42,4	2,9	63	61,7	0,8	63	82,5	-1,5
				11	64	35,2	6,8	64	53,8	4,7	64	74,0	2,5	64	95,8	0,2
				14	65	46,1	8,6	64	65,7	6,5	64	86,9	4,2	64	109,6	1,8
				17	65	57,7	10,4	65	78,2	8,2	65	100,3	5,9	65	124,1	3,5
				20	65	69,8	12,2	65	91,3	10,0	65	114,4	7,7	65	139,1	5,2
				23	66	82,5	14,0	66	104,9	11,8	66	129,0	9,4	66	154,7	6,8
				26	66	95,8	15,8	66	119,2	13,5	66	144,2	11,0	65	170,9	8,7
100%	81%	73%	15000	8	58	28,2	4,5	58	48,1	2,2	58	69,9	-0,2	58	93,4	-2,7
				11	59	39,9	6,2	59	61,0	3,8	58	83,7	1,4	58	108,3	-1,2
				14	59	52,3	7,9	59	74,4	5,5	59	98,3	3,0	59	123,9	0,4
				17	60	65,4	9,5	59	88,5	7,1	59	113,4	4,6	59	140,1	1,9
				20	60	79,0	11,2	60	103,3	8,7	60	129,2	6,2	60	157,0	3,5
				23	60	93,4	12,8	60	118,6	10,4	60	145,7	7,7	60	174,5	5,0
				26	61	108,3	14,5	61	134,7	11,9	61	162,8	9,2	59	192,7	6,9
	100%	90%	18500	8	53	30,7	4,1	53	52,3	1,5	53	75,8	-1,2	52	101,1	-3,9
				11	53	43,5	5,6	53	66,2	3,0	53	90,8	0,3	53	117,2	-2,5
				14	54	56,9	7,1	53	80,7	4,5	53	106,4	1,8	53	133,9	-1,1
				17	54	70,9	8,7	54	95,9	6,0	54	122,7	3,2	54	151,3	0,3
				20	54	85,7	10,2	54	111,7	7,5	54	139,7	4,7	54	169,4	1,8
				23	55	101,1	11,7	55	128,3	9,0	55	157,3	6,1	54	188,2	3,3
				26	55	117,2	13,2	55	145,5	10,4	55	175,6	7,5	53	207,6	5,0
		100%	20500	8	50	31,5	3,9	50	53,5	1,2	50	77,4	-1,6	49	103,1	-4,5
				11	51	44,5	5,3	51	67,6	2,6	50	92,6	-0,2	50	119,5	-3,1
				14	51	58,1	6,8	51	82,4	4,0	51	108,5	1,2	50	136,4	-1,8
				17	52	72,5	8,2	51	97,9	5,5	51	125,1	2,6	51	154,1	-0,5
				20	52	87,5	9,6	52	114,0	6,9	51	142,3	4,0	51	172,4	0,9
				23	52	103,1	11,1	52	130,7	8,3	52	160,1	5,3	51	191,4	2,3
				26	52	119,5	12,6	52	148,1	9,7	52	178,7	6,6	50	211,0	4,0
			23000	8	47	31,7	3,7	47	53,8	0,8	47	77,6	-2,1	46	103,3	-5,1
				11	48	44,7	5,0	47	67,9	2,1	47	92,8	-0,8	47	119,5	-3,9
				14	48	58,4	6,4	48	82,6	3,5	47	108,6	0,5	47	136,3	-2,6
				17	49	72,7	7,7	48	98,0	4,8	48	125,0	1,8	48	153,8	-1,3
				20	49	87,7	9,1	49	114,0	6,2	48	142,1	3,1	48	171,9	0,0
				23	49	103,3	10,5	49	130,6	7,5	49	159,8	4,4	48	190,7	1,3
				26	49	119,5	11,9	49	147,9	8,8	49	178,1	5,7	47	210,0	2,9

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

0150 - 0170

Fresh air ratio		Airflow	ODDB	20			15			10			5				
F150	F170			IDDB	EFF	HC	OT:	EFF	HC	OT:	EFF	HC	OT:	EFF	HC	OT:	
23%	20%	6000	8										84	5,4	7,5		
			11							84	1,7	10,8	84	11,2	10,0		
			14								84	6,9	13,3	85	17,4	12,4	
			17						84	3,4	16,7	85	12,0	15,8	85	24,0	14,8
			20						85	8,5	19,2	86	17,1	18,3	85	30,9	17,2
			23	85	5,1	22,5	86	13,6	21,7	85	26,2	20,7	86	38,3	19,6		
			26	86	10,1	25,1	86	18,6	24,1	86	33,3	23,1	87	46,0	21,9		
38%	33%	10000	8										75	8,5	7,2		
			11							76	2,8	10,8	76	17,5	9,5		
			14								76	11,4	13,0	76	27,2	11,7	
			17					76	5,6	16,5	77	20,7	15,2	77	37,4	13,8	
			20					77	14,4	18,8	77	30,5	17,5	77	48,2	16,1	
			23	77	8,5	22,3	78	23,9	21,0	78	40,9	19,6	78	59,6	18,2		
			26	78	17,5	24,6	78	33,9	23,3	78	52,0	21,9	78	71,6	20,3		
54%	47%	14000	8										68	11,1	7,0		
			11							69	3,6	10,7	69	22,9	9,1		
			14								69	14,9	12,7	70	35,4	11,1	
			17					70	7,3	16,4	70	27,0	14,8	70	48,8	13,0	
			20					70	18,9	18,5	71	39,8	16,8	71	62,9	15,0	
			23	71	11,1	22,1	71	31,2	20,5	71	53,4	18,8	71	77,7	17,0		
			26	71	22,9	24,2	71	44,3	22,6	71	67,7	20,8	71	93,3	18,9		
69%	60%	18000	8										63	13,2	6,9		
			11							63	4,3	10,6	63	27,3	8,7		
			14								64	17,8	12,5	64	42,3	10,6	
			17					64	8,7	16,3	64	32,2	14,4	64	58,1	12,4	
			20					65	22,5	18,2	65	47,5	16,2	65	74,9	14,2	
			23	65	13,2	21,9	65	37,2	20,1	65	63,6	18,1	65	92,5	16,0		
			26	66	27,3	23,9	66	52,7	22,0	66	80,7	19,9	66	111,0	17,8		
81%	70%	21000	8										59	14,5	6,8		
			11							59	4,7	10,6	59	30,0	8,5		
			14								60	19,6	12,4	60	46,4	10,2	
			17					60	9,6	16,2	60	35,4	14,1	61	63,8	11,9	
			20					61	24,7	18,0	61	52,1	15,9	61	82,1	13,7	
			23	61	14,5	21,8	61	40,8	19,8	62	69,8	17,6	61	101,4	15,4		
			26	62	30,0	23,7	62	57,9	21,6	62	88,5	19,4	62	121,7	17,1		
100%	87%	26000	8										54	16,1	6,6		
			11							54	5,3	10,5	54	33,3	8,2		
			14								55	21,8	12,2	55	51,5	9,8	
			17					55	10,7	16,1	55	39,3	13,8	55	70,7	11,3	
			20					56	27,5	17,7	56	57,8	15,4	56	90,9	12,9	
			23	56	16,1	21,7	56	45,3	19,4	56	77,3	17,0	56	112,2	14,4		
			26	57	33,3	23,3	57	64,2	21,0	57	97,9	18,5	56	134,5	16,0		
100%	100%	30000	8										50	16,9	6,5		
			11							50	5,5	10,5	50	34,9	8,0		
			14								51	22,8	12,0	51	53,9	9,4	
			17					51	11,2	16,0	51	41,1	13,5	51	73,9	10,9	
			20					52	28,8	17,6	52	60,5	15,0	52	95,0	12,3	
			23	52	16,9	21,6	52	47,5	19,1	52	80,8	16,5	52	117,1	13,8		
			26	53	34,9	23,1	53	67,2	20,6	53	102,3	18,0	52	140,2	15,3		
100%	100%	35000	8										46	17,3	6,4		
			11							46	5,7	10,5	46	35,6	7,7		
			14								47	23,3	11,9	47	54,9	9,1	
			17					47	11,4	15,9	47	41,9	13,2	47	75,1	10,4	
			20					48	29,4	17,4	48	61,5	14,6	48	96,4	11,8	
			23	48	17,3	21,4	48	48,3	18,8	48	82,1	16,0	48	118,6	13,1		
			26	49	35,6	22,9	49	68,3	20,2	49	103,7	17,4	49	141,8	14,4		

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

0150 - 0170

Fresh air ratio		Airflow	ODDB	0			-5			-10			-15		
F150	F170			IDDB	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC
23%	20%	6000	8	84	15,3	6,5	84	26,2	5,5	84	38,3	4,3	85	51,3	3,0
			11	85	21,7	9,0	85	33,3	7,9	85	46,0	6,6	86	59,7	5,2
			14	85	28,6	11,4	85	40,8	10,2	86	54,1	8,9	86	68,4	7,4
			17	85	35,8	13,7	86	48,6	12,5	86	62,6	11,1	87	77,6	9,6
			20	86	43,4	16,0	86	56,9	14,7	87	71,4	13,3	87	87,1	11,7
			23	87	51,3	18,3	87	65,5	17,0	87	80,7	15,4	88	97,0	13,8
			26	87	59,7	20,6	88	74,5	19,1	88	90,3	17,6	88	107,3	15,9
38%	33%	10000	8	76	23,9	5,9	75	40,9	4,4	76	59,6	2,8	76	80,0	1,1
			11	76	33,9	8,0	76	52,0	6,6	76	71,6	4,9	76	93,0	3,1
			14	76	44,5	10,2	76	63,6	8,7	77	84,2	6,9	77	106,6	5,1
			17	77	55,8	12,4	77	75,8	10,7	77	97,4	9,0	78	120,7	7,1
			20	77	67,6	14,5	78	88,6	12,8	78	111,2	10,9	78	135,5	9,0
			23	78	80,0	16,5	78	102,0	14,8	78	125,6	13,0	78	150,9	10,9
			26	79	93,0	18,6	79	115,9	16,8	79	140,6	14,9	79	166,8	12,8
54%	47%	14000	8	69	31,2	5,3	69	53,4	3,5	68	77,7	1,6	69	104,2	-0,5
			11	69	44,3	7,3	69	67,7	5,5	69	93,3	3,5	69	121,0	1,4
			14	70	58,1	9,3	69	82,8	7,4	70	109,7	5,3	70	138,6	3,2
			17	70	72,7	11,2	70	98,7	9,3	70	126,8	7,2	70	157,0	5,0
			20	70	88,0	13,2	71	115,3	11,1	71	144,7	9,0	71	176,2	6,8
			23	71	104,2	15,1	71	132,7	13,0	71	163,3	10,9	71	196,1	8,5
			26	71	121,0	17,0	71	150,8	14,9	72	182,7	12,6	72	216,7	10,3
69%	60%	18000	8	63	37,2	4,9	63	63,6	2,8	62	92,5	0,6	62	123,9	-1,7
			11	63	52,7	6,7	63	80,7	4,6	63	111,0	2,3	63	143,9	-0,1
			14	64	69,2	8,5	63	98,6	6,3	64	130,4	4,0	64	164,7	1,6
			17	64	86,5	10,3	64	117,4	8,1	64	150,7	5,7	64	186,5	3,3
			20	64	104,8	12,1	65	137,1	9,8	64	171,9	7,4	64	209,1	4,9
			23	65	123,9	13,8	65	157,7	11,5	65	193,9	9,1	65	232,7	6,5
			26	65	143,9	15,6	65	179,1	13,2	66	216,9	10,7	64	257,1	8,4
81%	70%	21000	8	59	40,8	4,6	59	69,8	2,3	58	101,4	-0,1	59	135,7	-2,6
			11	59	57,9	6,3	60	88,5	4,0	59	121,7	1,6	59	157,5	-1,0
			14	60	75,9	8,0	60	108,1	5,7	60	142,9	3,2	60	180,3	0,6
			17	61	94,9	9,6	60	128,6	7,3	60	165,0	4,8	60	204,1	2,1
			20	61	114,8	11,4	61	150,2	8,9	60	188,2	6,4	60	228,8	3,7
			23	61	135,7	13,0	61	172,6	10,6	61	212,2	8,0	61	254,5	5,3
			26	61	157,5	14,7	62	196,1	12,2	62	237,2	9,5	60	281,1	7,2
100%	87%	26000	8	54	45,3	4,2	53	77,3	1,6	53	112,2	-1,0	53	149,9	-3,7
			11	54	64,2	5,7	54	97,9	3,1	53	134,5	0,5	53	173,9	-2,3
			14	55	84,1	7,2	54	119,5	4,7	54	157,8	2,0	54	198,8	-0,9
			17	55	105,0	8,8	55	142,1	6,2	55	182,1	3,4	55	224,9	0,5
			20	55	126,9	10,3	55	165,7	7,6	55	207,4	4,9	55	251,9	2,0
			23	56	149,9	11,8	55	190,4	9,2	55	233,8	6,3	55	279,9	3,5
			26	56	173,9	13,4	56	216,1	10,6	56	261,1	7,7	54	309,0	5,2
	100%	30000	8	50	47,5	3,9	50	80,8	1,2	50	117,1	-1,7	49	156,2	-4,5
			11	50	67,2	5,3	50	102,3	2,6	50	140,2	-0,3	50	181,0	-3,2
			14	51	87,9	6,7	51	124,7	4,0	50	164,4	1,1	50	206,9	-1,9
			17	51	109,6	8,2	51	148,1	5,4	51	189,5	2,5	51	233,8	-0,6
			20	52	132,4	9,6	51	172,6	6,8	51	215,7	3,9	51	261,7	0,8
			23	52	156,2	11,1	52	198,1	8,2	52	243,0	5,2	51	290,6	2,2
			26	52	181,0	12,5	52	224,7	9,6	52	271,2	6,5	50	320,6	3,9
		35000	8	46	48,3	3,6	46	82,1	0,7	46	118,6	-2,4	45	157,8	-5,4
			11	46	68,3	4,9	46	103,7	1,9	46	141,8	-1,1	46	182,6	-4,2
			14	47	89,2	6,2	47	126,2	3,2	46	166,0	0,2	46	208,5	-2,9
			17	47	111,1	7,5	47	149,7	4,5	47	191,1	1,5	47	235,3	-1,7
			20	48	133,9	8,8	47	174,2	5,8	47	217,3	2,7	47	263,1	-0,5
			23	48	157,8	10,2	47	199,7	7,2	47	244,4	4,0	47	291,8	0,9
			26	48	182,6	11,5	48	226,2	8,4	48	272,5	5,2	46	321,6	2,4

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

0200 - 0230

Fresh air ratio		Airflow	ODDB	20			15			10			5			
F200	F230			IDDB	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT
23%	21%	8000	8										83	7,2	7,5	
			11							84	2,3	10,8	84	15,0	9,9	
			14							84	9,2	13,3	85	23,2	12,4	
			17					84	4,6	16,7	85	16,0	15,8	85	31,9	14,8
			20					85	11,3	19,2	85	22,7	18,2	85	41,2	17,2
			23	85	6,8	22,5	85	18,0	21,6	85	31,5	20,7	86	51,0	19,5	
			26	85	13,4	25,0	86	24,7	24,1	86	44,4	23,0	86	61,3	21,8	
34%	31%	12000	8										77	10,3	7,3	
			11							77	3,3	10,8	77	21,3	9,6	
			14							78	13,9	13,1	78	33,0	11,8	
			17					78	6,8	16,6	78	25,1	15,3	79	45,4	14,0
			20					78	17,5	18,9	79	37,0	17,6	78	58,5	16,3
			23	79	10,3	22,4	79	29,0	21,2	79	49,7	19,8	79	72,4	18,4	
			26	79	21,3	24,7	80	41,2	23,4	79	63,1	22,1	80	86,9	20,6	
51%	46%	18000	8										69	14,2	7,0	
			11							69	4,6	10,7	69	29,3	9,1	
			14							70	19,1	12,8	70	45,3	11,1	
			17					70	9,3	16,4	70	34,5	14,8	70	62,4	13,1
			20					71	24,1	18,5	71	50,9	16,8	70	80,4	15,1
			23	71	14,2	22,1	71	39,9	20,5	71	68,3	18,8	71	99,3	17,1	
			26	71	29,3	24,2	72	56,6	22,6	71	86,6	20,9	72	119,3	19,0	
69%	62%	24000	8										62	17,2	6,9	
			11							63	5,6	10,6	63	35,5	8,7	
			14							63	23,2	12,5	63	55,0	10,5	
			17					63	11,3	16,3	64	41,9	14,4	64	75,6	12,3
			20					64	29,3	18,2	64	61,7	16,2	64	97,3	14,1
			23	64	17,2	21,9	65	48,4	20,0	65	82,7	18,0	64	120,2	15,9	
			26	65	35,5	23,8	65	68,6	21,9	65	104,8	19,8	65	144,2	17,7	
86%	77%	30000	8										57	19,4	6,7	
			11							57	6,3	10,6	57	40,0	8,4	
			14							58	26,1	12,3	58	61,9	10,0	
			17					58	12,8	16,2	58	47,2	14,0	58	85,0	11,7
			20					59	33,0	17,9	59	69,4	15,7	59	109,3	13,3
			23	59	19,4	21,8	59	54,4	19,6	59	92,9	17,3	59	134,9	14,9	
			26	60	40,0	23,5	60	77,1	21,3	60	117,7	19,0	59	161,6	16,6	
100%	90%	35000	8										53	20,6	6,6	
			11							53	6,7	10,5	53	42,4	8,1	
			14							54	27,7	12,1	54	65,5	9,7	
			17					54	13,6	16,1	54	50,0	13,7	54	89,9	11,2
			20					55	35,0	17,7	55	73,5	15,3	55	115,5	12,8
			23	55	20,6	21,7	55	57,7	19,3	55	98,3	16,8	55	142,4	14,3	
			26	56	42,4	23,3	56	81,6	20,9	56	124,3	18,4	55	170,5	15,8	
	100%	39000	8										50	21,1	6,5	
			11							50	6,9	10,5	50	43,5	8,0	
			14							51	28,4	12,0	51	67,1	9,4	
			17					51	13,9	16,0	51	51,2	13,5	51	91,9	10,9
			20					52	35,9	17,6	52	75,2	15,0	52	118,0	12,3
			23	52	21,1	21,6	52	59,1	19,1	52	100,5	16,5	52	145,3	13,8	
			26	53	43,5	23,1	53	83,5	20,6	53	127,0	18,0	52	173,9	15,3	
		43000	8										47	21,3	6,4	
			11							48	7,0	10,5	48	43,7	7,8	
			14							48	28,6	11,9	48	67,4	9,2	
			17					49	14,1	16,0	49	51,5	13,3	49	92,3	10,6
			20					49	36,1	17,4	49	75,6	14,8	49	118,3	12,0
			23	50	21,3	21,5	50	59,4	18,9	50	100,8	16,2	50	145,6	13,4	
			26	50	43,7	23,0	50	83,8	20,3	50	127,3	17,6	50	174,0	14,7	

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

ENERGY RECOVERY MODULE IN HEATING MODE

0200 - 0230

Fresh air ratio		Airflow	ODDB	0			-5			-10			-15		
F200	F230		IDDB	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT
23%	21%	8000	8	84	20,4	6,5	84	35,0	5,5	84	51,0	4,3	85	68,4	2,9
			11	84	29,0	8,9	84	44,4	7,8	85	61,3	6,5	85	79,5	5,1
			14	84	38,1	11,3	85	54,4	10,1	85	72,1	8,8	86	91,2	7,3
			17	85	47,7	13,7	85	64,8	12,4	86	83,4	11,0	86	103,3	9,5
			20	86	57,8	16,0	86	75,8	14,7	86	95,2	13,2	87	116,0	11,6
			23	86	68,4	18,3	87	87,2	16,9	87	107,5	15,3	87	129,2	13,7
			26	87	79,5	20,5	87	99,2	19,0	87	120,3	17,5	88	142,9	15,8
34%	31%	12000	8	77	29,0	6,0	77	49,7	4,6	77	72,4	3,1	77	97,1	1,4
			11	78	41,2	8,2	77	63,1	6,8	78	86,9	5,2	78	112,8	3,5
			14	78	54,1	10,4	78	77,2	8,9	78	102,2	7,3	79	129,3	5,5
			17	78	67,7	12,6	79	92,0	11,0	79	118,2	9,3	79	146,5	7,5
			20	79	82,0	14,7	79	107,5	13,1	80	135,0	11,4	80	164,4	9,5
			23	80	97,1	16,9	80	123,7	15,2	80	152,4	13,4	80	183,0	11,5
			26	80	112,8	18,9	80	140,7	17,2	80	170,5	15,4	81	202,4	13,4
51%	46%	18000	8	69	39,9	5,4	69	68,3	3,5	69	99,3	1,7	69	133,1	-0,4
			11	69	56,6	7,3	69	86,6	5,5	69	119,3	3,5	69	154,6	1,4
			14	70	74,3	9,3	70	105,9	7,4	70	140,2	5,4	70	177,1	3,3
			17	70	92,9	11,3	70	126,1	9,3	70	162,0	7,2	71	200,6	5,1
			20	71	112,5	13,2	71	147,3	11,2	71	184,8	9,1	71	225,0	6,9
			23	71	133,1	15,1	71	169,5	13,1	71	208,6	10,9	71	250,4	8,6
			26	71	154,6	17,0	72	192,7	14,9	72	233,4	12,7	72	276,7	10,4
69%	62%	24000	8	62	48,4	4,8	62	82,7	2,7	62	120,2	0,5	62	160,8	-1,9
			11	63	68,6	6,6	62	104,8	4,5	62	144,2	2,2	62	186,7	-0,2
			14	63	89,9	8,4	63	128,0	6,2	63	169,3	3,9	63	213,7	1,4
			17	63	112,4	10,2	63	152,4	7,9	63	195,6	5,6	64	241,9	3,1
			20	64	136,0	12,0	64	177,9	9,6	64	223,0	7,3	64	271,2	4,7
			23	64	160,8	13,7	64	204,6	11,4	64	251,5	8,9	64	301,6	6,3
			26	65	186,7	15,5	65	232,4	13,1	65	281,2	10,5	64	333,2	8,2
86%	77%	30000	8	57	54,4	4,4	57	92,9	2,0	56	134,9	-0,5	56	180,2	-3,1
			11	57	77,1	6,0	57	117,7	3,6	57	161,6	1,1	57	209,0	-1,6
			14	58	101,0	7,7	57	143,6	5,2	57	189,7	2,6	57	239,1	-0,1
			17	58	126,2	9,3	58	170,9	6,8	58	218,9	4,2	58	270,5	1,4
			20	58	152,6	10,9	58	199,3	8,4	58	249,4	5,7	58	303,0	3,0
			23	59	180,2	12,5	58	229,0	10,0	59	281,2	7,2	58	336,8	4,5
			26	59	209,0	14,1	59	259,9	11,5	59	314,1	8,7	57	371,8	6,3
100%	90%	35000	8	53	57,7	4,1	53	98,3	1,5	53	142,4	-1,2	52	190,0	-3,9
			11	53	81,6	5,6	53	124,3	3,0	53	170,5	0,3	53	220,2	-2,5
			14	54	106,8	7,1	53	151,6	4,5	53	199,9	1,8	53	251,7	-1,1
			17	54	133,3	8,6	54	180,2	6,0	54	230,6	3,2	54	284,5	0,3
			20	54	161,0	10,2	54	210,0	7,4	54	262,5	4,6	54	318,5	1,7
			23	55	190,0	11,7	54	241,1	8,9	54	295,7	6,1	54	353,8	3,2
			26	55	220,2	13,2	55	273,4	10,4	55	330,1	7,5	53	390,3	4,9
	100%	39000	8	50	59,1	3,9	50	100,5	1,2	50	145,3	-1,7	49	193,7	-4,5
			11	50	83,5	5,3	50	127,0	2,6	50	173,9	-0,3	50	224,3	-3,2
			14	51	109,2	6,7	51	154,7	4,0	50	203,7	1,1	50	256,2	-1,9
			17	51	136,1	8,2	51	183,7	5,4	51	234,8	2,5	51	289,3	-0,6
			20	52	164,3	9,6	51	214,0	6,8	51	267,1	3,9	51	323,7	0,8
			23	52	193,7	11,1	52	245,4	8,2	52	300,7	5,2	51	359,3	2,2
			26	52	224,3	12,5	52	278,2	9,6	52	335,5	6,5	50	396,2	3,9
		43000	8	47	59,4	3,7	47	100,8	0,8	47	145,6	-2,1	47	193,6	-5,1
			11	48	83,8	5,0	48	127,3	2,2	47	174,0	-0,8	47	224,1	-3,8
			14	48	109,5	6,4	48	154,9	3,5	48	203,6	0,6	48	255,7	-2,6
			17	49	136,4	7,8	48	183,8	4,9	48	234,5	1,8	48	288,5	-1,3
			20	49	164,4	9,1	49	213,8	6,2	48	266,5	3,2	48	322,5	0,0
			23	49	193,6	10,5	49	245,0	7,5	49	299,7	4,5	48	357,7	1,4
			26	49	224,1	11,9	50	277,4	8,9	49	334,1	5,7	47	394,1	2,9

EFF : Efficiency of the ENERGY RECOVERY in %
 CC : Cooling capacity of the ENERGY RECOVERY module in kW
 OT : Outlet Dry and Wet temperature : After Energy recovery and Before Rooftop Indoor Coil temperature in °C

ODDB : Outdoor dry bulb in °C
 IDDB : Indoor dry bulb in °C
 AIRFLOW : Fresh Airflow in m3/h

FXK = Reversible double path rooftop R407C

Table 2.2

	SIZE	25	30	35	40
Heating - electric (1)					
Type of modulation		Triac	Triac	Triac	Triac
Available heating capacity	kW	9 / 18	9 / 18	18 / 36	18 / 36
Amps	A	13/ 26	13/ 26	13/ 26	13/ 26
100 % fresh air -10°C, heating capacity	kW	27	27	54	54
Heating hot water coil (1)					
Available heating capacity (2)	kW - S	22	25	45	51
Available heating capacity (2)	kW - H	39	45	75	85
High capacity filter					
Efficiency (opacimetric) / class EN779/Eurovent	type	85%/F7/EU7	85%/F7/EU7	85%/F7/EU7	85%/F7/EU7
Nr of filters	Nr	6	6	16	16
Filter size	mm	(x4)600x400x50 (x2) 600x500x50	(x4)600x400x50 (x2) 600x500x50	500x500x50	500x500x50

Table 2.3

	SIZE	55	70	85	100
Heating - electric (1)					
Type of modulation		Triac	Triac	Triac	Triac
Available heating capacity	kW	8 / 36	36 / 72	36 / 72	36 / 72
Amps	A	26 / 53	53 / 79	53 / 105	53 / 105
100 % fresh air -10°C, heating capacity	kW - S	54		108	108
Heating hot water coil (1)					
Available heating capacity (2)	kW - S	58	73	83	96
Available heating capacity (2)	kW - H	99	121	140	163
High capacity filter					
Efficiency (opacimetric) / class EN779/Eurovent	type	85%/F7/EU7	85%/F7/EU7	85%/F7/EU7	85%/F7/EU7
Nr of filters	Nr	16	16	16	16
Filter size	mm	500x500x50	660x500x50	660x500x50	660x500x50

Table 2.4

	SIZE	110	140	170
Heating - electric (1)				
Type of modulation		Triac	Triac	Triac
Available heating capacity	kW	36 / 72	36 / 72	36 / 72
Amps	A	53 / 105	53 / 105	53 / 105
100 % fresh air -10°C, heating capacity	kW	108	108	108
Heating hot water coil (1)				
Available heating capacity (2)	kW - S	2 x 59,6	2 x 68	2 x 72
Available heating capacity (2)	kW - H	2 x 102	2 x 118	2 x 127
High capacity filter				
Efficiency (opacimetric) / class EN779/Eurovent	type	85%/F7/EU7	85%/F7/EU7	85%/F7/EU7
Nr of filters	Nr	16	16	16
Filter size	mm	800x500x50	800x500x50	800x500x50

(1) not available with FG and FD version

(2) Condition entering water 90°C, leaving water 70°C, entering air 20°C, S = standard heat, H = high heat

Step 1 : Input

Calculate the total and sensible loads of the area to be conditioned at design conditions.

- A. Total cooling load in kW
- B. Summer design condition
- C. Air flow needed and external static pressure (to overcome system losses, eg ductwork, diffusers, etc)
- D. Type of refrigerant
- E. Accessories needed

Step 2 : Cooling capacity

A. Preselect the equipment using 'general data' in tables 1.1 to 1.6 to find units close to the required capacity.

B. Size the equipment using the 'cooling performance' in tables 3.1 to 3.25 to match the cooling loads at design conditions.

C. To establish the net capacity, the calorific power of the supply fan motor should be subtracted. Review the indoor fan performance in tables 6.1 to 6.26 with the required air flow and static pressure. (Do not forget to add the pressure drop for accessories in table 5.24)

- D. Fan selection for FXK
2 fans must be selected on an FX unit. You need the following information to perform the fan selections :
 - Pressure drop of the supply air duct work SA
 - Pressure drop of the return air duct work RA
 - Pressure drop of the exhaust air ductwork (if ducted) EA
 - Pressure drop of the fresh air ductwork (if ducted) FA

To select the supply air fan (indoor fan), review table 6.7 to 6.17, with the required air flow and the needed pressure according to the following formula :
 Pressure drop = SA + (FA* or RA*) + Pressure Drop (accessories)
 (*) FA or RA : use the biggest pressure drop of both

To select the exhaust air fan (outdoor fan), review table 6.18 to 6.28, with the required pressure based on the following formula :
 Pressure drop = EA + (FA* or RA*) + 10
 (*) FA or RA : use the biggest pressure drop of both
 Please use exhaust air nominal air flow if the supply air fan has been sized at nominal air flow , alternatively use supply air flow multiplied by 1,25.

Step 3 : Heating capacity

A. Heat pump(*)
 The selection procedure is the same as that undertaken for in cooling.
 Preselect equipment in "General data" in tables 1.1 to 1.6
 Obtain the gross heating capacity at design condition (winter conditions) from tables 3.1-3.25.
 Obtain the net capacity by adding the calorific power of the supply fan motor (selected above) to the gross capacity.

B. Other Heating
 Select hot water coil in tables 4.1 to 4.6, electric heater in tables 4.7, and gas burner type in table 4.7

(*) : This procedure doesn't take into account the impact of defrost in the heating performance. Depending on the outdoor moisture and temperature condition, the defrost operation might reduce the heat pump capacity.

Step 4 : Electrical data

A. Heat pump unit or ACP (Advanced Control PaC)
 $Pa = P(\text{Unit} + \Delta \text{kit indoor optional} + \text{Extraction fan} + \Delta \text{kit outdoor centrifuge} + \text{Electric heater} + \text{gas})$
 $la = la(\text{Unit} + \Delta \text{kit indoor optional} + \text{Extraction fan} + \Delta \text{kit outdoor centrifuge} + \text{Electric heater} + \text{gas})$
 $ld/la(\text{base}) = \text{Table 9.1}$
 $ld = la(\text{base}) \times ld/la(\text{base}) + la(\Delta \text{kit indoor optional} + \text{Extraction fan} + \Delta \text{kit outdoor centrifuge} + \text{Electric heater} + \text{gas})$

B. Cooling unit
 $P1, la1, (\text{summer operating}) = P, la(\text{Unit} + \Delta \text{kit indoor optional} + \text{Extraction fan} + \Delta \text{kit outdoor centrifuge})$
 $la2 (\text{winter operating}) = la(0,75 + \text{kit indoor std} + \Delta \text{kit indoor optional} + \text{Extraction fan} + \text{Electric heater} + \Delta \text{kit outdoor centrifuge})$
 $P2 (\text{winter operating}) = P(0,3 + \text{kit indoor std} + \Delta \text{kit indoor optional} + \text{Extraction fan} + \text{Electric heater} + \Delta \text{kit outdoor centrifuge})$
 $Pa = \max(P1; P2)$
 $la = \max(la1; la2)$

$ld/la(\text{base}) = \text{Table 9.1}$
 $ld = la(\text{base}) \times ld/la(\text{base}) + la(\Delta \text{kit indoor optional} + \text{Extraction fan} + \Delta \text{kit outdoor centrifuge} + \text{Electric heater} + \text{gas})$

(**) if option is required

EXAMPLE

Step 1

- A. 160kW
- B. 35°C outdoor temperature, 24°C DB, 19°C WB entering air condition (room return air)
- C. 30000 m3/h at 200Pa
- D. Economiser and 72 kW electric heater.

Step 2

A. Table 1.3 shows that FCM170 will give 170,0 kW gross at nominal operating conditions.

B. Table 3.15 shows that a FCM170 has a gross cooling capacity of 168,3 kW.

C. Table 4.7 shows that economiser and 72 kW electric heater will add 16 + 13 Pa to the external static specified, giving a total of 229 Pa. The table 6.3 shows that fan drive kit 'k13' (2*5.5 kW) is required for a FCM170 providing 30000 m3/h at 229 Pa.
 The net capacity is therefore 168,3 kW - 8 kW = 160,3 kW

Step 4

A. Table 6.3 shows that an FCM 170 (cooling unit) With 72 kW Electric heater + KIT '13'

$la1 = 138.5 + 5,2 = 143,7 A$
 $P1 = 77.7 + 3,2 = 80,9 kW$

$la2 = 0,75 + 16,6 + 5,2 + 100 = 122,55 A$

$P2 = 0,3 + 9,6 + 3,2 + 72 = 85,1 kW$

$P2 > P1$ so $P = P2 = 85,1 kW$
 $la2 > la1$ so $la = la2 = 122,55 A$

$ld / la = 2,0$
 $ld = 138,5 \times 2,0 + 5,2 + 100 = 382,2 A$

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

85 **Size**

Table 3.3

FCM	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 air flow 12 000 m ³ /h	16°C	21°C	80,6	52,8	18,6	77,8	51,3	20,7	74,5	49,7	22,9	70,8	48,1	25,5	67,4	46,7	27,7
		24°C	81,2	64,6	18,6	78,4	63,2	20,7	75,2	61,7	23,0	71,4	60,0	25,5	68,1	58,4	27,8
		27°C	82,1	76,1	18,7	79,3	74,9	20,8	76,0	73,4	23,1	72,3	71,6	25,6	69,0	69,0	27,8
		30°C	84,6	84,6	18,8	82,2	82,2	20,9	79,3	79,3	23,3	75,9	75,9	25,9	72,9	72,9	28,2
	19°C	24°C	87,8	52,2	19,1	84,6	50,6	21,2	81,0	49,0	23,4	76,9	47,4	25,9	73,3	46,0	28,2
		27°C	88,5	64,2	19,2	85,3	62,7	21,2	81,7	61,1	23,5	77,6	59,4	26,0	73,9	57,9	28,2
		30°C	89,4	75,7	19,2	86,2	74,4	21,3	82,6	72,9	23,5	78,4	71,1	26,0	74,8	69,5	28,3
		33°C	90,5	86,8	19,3	87,3	85,7	21,3	83,8	83,8	23,6	80,2	80,2	26,2	77,0	77,0	28,5
	22°C	27°C	95,4	51,6	19,7	91,8	49,8	21,7	87,8	48,1	23,9	83,4	46,6	26,5	79,4	45,3	28,7
		30°C	96,0	63,6	19,7	92,5	62,0	21,7	88,5	60,4	24,0	84,0	58,7	26,5	80,1	57,3	28,8
		33°C	97,0	75,0	19,8	93,4	73,6	21,8	89,4	72,1	24,1	84,9	70,5	26,6	81,0	69,0	28,9
		36°C	98,1	85,9	19,9	94,5	84,8	21,9	90,5	83,5	24,1	86,0	81,9	26,7	82,1	80,3	29,0
Nominal air flow 15 000 m ³ /h	16°C	21°C	84,3	58,2	18,9	81,3	56,7	20,9	77,8	55,1	23,2	73,8	53,4	25,7	70,3	52,0	27,9
		24°C	85,1	72,4	19,0	82,1	70,9	21,0	78,6	69,3	23,3	74,6	67,4	25,7	71,1	65,7	28,0
		27°C	86,0	86,0	19,0	83,4	83,4	21,1	80,4	80,4	23,4	76,9	76,9	25,9	73,7	73,7	28,2
		30°C	90,8	90,8	19,4	88,1	88,1	21,4	84,9	84,9	23,7	81,2	81,2	26,3	77,9	77,9	28,6
	19°C	24°C	91,7	57,6	19,4	88,3	55,9	21,4	84,4	54,3	23,7	80,0	52,7	26,2	76,2	51,3	28,4
		27°C	92,5	72,0	19,5	89,1	70,4	21,5	85,2	68,7	23,7	80,8	66,9	26,2	77,0	65,3	28,5
		30°C	93,5	86,0	19,6	90,1	84,5	21,6	86,2	82,9	23,8	81,9	80,9	26,3	78,0	78,0	28,5
		33°C	96,0	96,0	19,7	93,1	93,1	21,8	89,6	89,6	24,1	85,7	85,7	26,7	82,3	82,3	29,0
	22°C	27°C	99,3	56,8	20,0	95,5	55,1	22,0	91,3	53,5	24,2	86,6	51,8	26,7	82,5	50,5	29,0
		30°C	100,2	71,4	20,0	96,4	69,7	22,0	92,1	68,1	24,3	87,4	66,3	26,8	83,3	64,7	29,0
		33°C	101,2	85,4	20,1	97,4	83,9	22,1	93,2	82,3	24,4	88,4	80,4	26,9	84,3	78,7	29,1
		36°C	102,5	99,0	20,2	98,7	97,7	22,2	94,6	94,6	24,5	90,5	90,5	27,1	86,8	86,8	29,4
Maximum air flow 23 000 m ³ /h	16°C	21°C	90,6	70,5	19,3	86,9	68,9	21,3	82,7	67,2	23,5	78,1	65,3	26,0	74,0	63,5	28,2
		24°C	91,8	90,9	19,4	88,0	88,0	21,4	84,3	84,3	23,6	80,2	80,2	26,2	76,5	76,5	28,5
		27°C	96,5	96,5	19,8	93,1	93,1	21,8	89,3	89,3	24,0	85,0	85,0	26,6	81,2	81,2	28,9
		30°C	102,1	102,1	20,2	98,6	98,6	22,2	94,6	94,6	24,5	90,1	90,1	27,0	86,2	86,2	29,4
	19°C	24°C	98,2	69,8	19,9	94,1	68,2	21,9	89,6	66,5	24,1	84,6	64,7	26,5	80,3	63,0	28,8
		27°C	99,4	90,8	20,0	95,4	89,0	22,0	90,9	86,9	24,2	85,9	84,6	26,6	81,4	81,4	28,9
		30°C	102,3	102,3	20,2	98,7	98,7	22,2	94,7	94,7	24,5	90,1	90,1	27,0	86,1	86,1	29,3
		33°C	108,0	108,0	20,6	104,3	104,3	22,7	-	-	-	-	-	-	-	-	-
	22°C	27°C	106,1	68,9	20,5	101,7	67,3	22,4	96,8	65,7	24,7	91,5	63,9	27,2	86,8	62,4	29,4
		30°C	107,4	90,4	20,6	103,0	88,6	22,5	98,1	86,6	24,8	92,7	84,4	27,3	-	-	-
		33°C	108,4	108,4	20,7	104,6	104,6	22,7	-	-	-	-	-	-	-	-	-
		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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 3,17 kW
Supply fan Pa (FG/FD) : 4,0 kW
Outdoor fan Pa (all) : 1,8 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

100 **Size**

Table 3.4

FHM	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 air flow 14 000 m ³ /h	16°C	21°C	97,6	64,6	25,2	93,8	62,5	27,8	89,5	60,4	30,9	84,6	58,2	34,3	80,2	56,4	37,3
		24°C	98,6	79,4	25,2	94,8	77,5	27,9	90,5	75,4	31,0	85,5	73,1	34,4	81,1	71,0	37,4
		27°C	99,7	93,7	25,3	95,9	92,0	28,0	91,5	90,0	31,0	86,6	86,6	34,5	82,7	82,7	37,6
		30°C	102,8	102,8	25,6	99,6	99,6	28,3	95,8	95,8	31,5	91,3	91,3	35,0	87,3	87,3	38,2
	19°C	24°C	106,2	64,1	25,9	102,0	61,8	28,6	97,1	59,6	31,6	91,7	57,4	35,0	86,9	55,6	38,1
		27°C	107,3	78,9	26,0	103,1	76,9	28,7	98,2	74,7	31,7	92,7	72,5	35,1	87,9	70,5	38,2
		30°C	108,5	93,2	26,1	104,2	91,4	28,8	99,3	89,4	31,8	93,8	87,1	35,3	88,9	85,0	38,3
		33°C	109,8	106,9	26,2	105,5	105,4	28,9	101,3	101,3	32,0	96,5	96,5	35,6	92,2	92,2	38,8
	22°C	27°C	115,2	63,3	26,7	110,5	60,9	29,4	105,2	58,6	32,4	99,2	56,5	35,9	94,0	54,8	39,0
		30°C	116,5	78,1	26,8	111,7	76,0	29,5	106,3	73,8	32,5	100,3	71,6	36,0	95,1	69,7	39,2
		33°C	117,7	92,3	26,9	112,9	90,4	29,6	107,5	88,4	32,7	101,5	86,3	36,2	96,2	84,3	39,3
		36°C	119,1	105,7	27,1	114,2	104,2	29,8	108,8	102,5	32,8	102,7	100,4	36,3	97,4	97,4	39,5
Nominal air flow 18 500 m ³ /h	16°C	21°C	103,1	72,9	25,7	98,9	70,8	28,3	94,1	68,7	31,3	88,7	66,4	34,7	83,9	64,5	37,7
		24°C	104,3	91,4	25,8	100,1	89,4	28,4	95,2	87,1	31,4	89,8	84,6	34,8	85,0	82,2	37,8
		27°C	106,0	106,0	25,9	102,5	102,5	28,6	98,3	98,3	31,7	93,5	93,5	35,2	89,1	89,1	38,4
		30°C	112,1	112,1	26,4	108,3	108,3	29,2	103,8	103,8	32,3	98,8	98,8	35,8	94,2	94,2	39,0
	19°C	24°C	111,9	72,1	26,4	107,2	69,9	29,1	101,9	67,8	32,1	96,0	65,6	35,5	90,8	63,7	38,5
		27°C	113,2	90,9	26,6	108,5	88,8	29,2	103,1	86,6	32,2	97,2	84,1	35,6	92,0	81,8	38,7
		30°C	114,6	109,2	26,7	109,9	107,2	29,3	104,2	104,2	32,3	99,0	99,0	35,9	94,3	94,3	39,0
		33°C	118,6	118,6	27,0	114,5	114,5	29,8	109,7	109,7	32,9	104,2	104,2	36,5	99,4	99,4	39,7
	22°C	27°C	121,1	71,2	27,2	115,9	68,9	29,9	110,1	66,7	32,9	103,7	64,6	36,4	98,1	62,8	39,5
		30°C	122,5	90,1	27,4	117,3	87,9	30,0	111,4	85,7	33,1	105,0	83,4	36,5	99,4	81,3	39,7
		33°C	124,0	108,4	27,5	118,7	106,4	30,2	112,8	104,2	33,2	106,3	101,7	36,7	100,7	99,3	39,9
		36°C	125,4	125,4	27,6	120,9	120,9	30,4	115,8	115,8	33,6	110,0	110,0	37,2	104,9	104,9	40,5
Maximum air flow 23 000 m ³ /h	16°C	21°C	107,0	80,2	26,0	102,3	78,2	28,6	97,1	76,0	31,6	91,2	73,6	34,9	86,1	71,5	38,0
		24°C	108,5	102,5	26,1	103,8	100,3	28,8	98,4	97,8	31,7	92,8	92,8	35,1	88,2	88,2	38,3
		27°C	112,7	112,7	26,5	108,5	108,5	29,2	103,7	103,7	32,3	98,3	98,3	35,8	93,4	93,4	38,9
		30°C	119,2	119,2	27,1	114,8	114,8	29,8	109,8	109,8	32,9	104,1	104,1	36,4	99,0	99,0	39,7
	19°C	24°C	116,0	79,3	26,8	110,9	77,2	29,4	105,1	75,1	32,4	98,7	72,9	35,8	93,2	70,9	38,9
		27°C	117,6	102,0	26,9	112,4	99,9	29,6	106,5	97,5	32,6	100,1	94,7	36,0	94,6	92,2	39,1
		30°C	119,5	119,5	27,1	115,0	115,0	29,8	109,8	109,8	32,9	104,0	104,0	36,5	98,9	98,9	39,7
		33°C	126,0	126,0	27,7	121,3	121,3	30,4	115,9	115,9	33,6	109,8	109,8	37,2	104,5	104,5	40,5
	22°C	27°C	125,4	78,2	27,6	119,8	76,1	30,3	113,5	74,0	33,3	106,6	71,9	36,8	100,7	70,1	40,0
		30°C	127,1	101,2	27,8	121,3	99,1	30,4	115,0	96,8	33,5	108,1	94,2	37,0	102,1	91,8	40,2
		33°C	128,8	123,8	27,9	123,0	121,6	30,6	116,3	116,3	33,6	110,1	110,1	37,2	104,7	104,7	40,5
		36°C	133,2	133,2	28,3	128,1	128,1	31,1	122,3	122,3	34,3	115,9	115,9	37,9	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.5

FHM	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-12°C	
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
Minimum air flow 14 000 m ³ /h	8°C	138,1	26,6	123,6	25,1	110,1	23,7	102,5	22,9	97,7	22,4	86,3	21,1	76,0	20,0	66,7	19,0	63,3	18,7
	11°C	136,4	28,2	122,0	26,5	108,8	25,0	101,3	24,2	96,5	23,6	85,4	22,3	75,3	21,2	66,3	20,2	63,0	19,8
	14°C	134,6	29,8	120,5	28,1	107,4	26,5	100,1	25,6	95,4	25,0	84,5	23,6	74,6	22,4	65,8	21,3	62,6	21,0
	17°C	132,9	31,7	118,9	29,8	106,1	28,1	98,9	27,1	94,3	26,5	83,6	25,0	73,9	23,7	65,3	22,6	62,2	22,2
	20°C	131,1	33,7	117,4	31,7	104,8	29,8	97,7	28,7	93,2	28,0	82,7	26,5	73,2	25,1	64,9	23,9	61,8	23,5
	23°C	129,3	35,9	115,9	33,7	103,4	31,6	96,5	30,5	92,1	29,7	81,8	28,0	72,6	26,5	64,4	25,3	61,4	24,8
	26°C	127,6	38,3	114,3	35,9	102,1	33,6	95,3	32,4	91,0	31,6	80,9	29,7	71,9	28,0	63,9	26,7	61,0	26,2
Nominal air flow 18 500 m ³ /h	8°C	141,1	24,3	126,2	23,1	112,3	21,8	104,5	21,1	99,5	20,7	87,7	19,6	77,0	18,7	-	-	-	-
	11°C	139,3	25,6	124,6	24,3	110,9	23,0	103,3	22,3	98,3	21,8	86,8	20,7	76,3	19,7	66,9	18,9	63,4	18,6
	14°C	137,6	27,1	123,1	25,6	109,6	24,3	102,0	23,5	97,2	23,0	85,9	21,9	75,6	20,9	66,4	20,0	63,0	19,7
	17°C	135,8	28,6	121,5	27,1	108,3	25,7	100,8	24,9	96,1	24,3	85,0	23,1	74,9	22,1	65,9	21,2	62,6	21,0
	20°C	134,0	30,3	119,9	28,7	106,9	27,1	99,6	26,3	94,9	25,7	84,0	24,5	74,2	23,4	65,4	22,5	62,2	22,2
	23°C	132,3	32,1	118,4	30,4	105,6	28,8	98,4	27,8	93,8	27,3	83,1	25,9	73,5	24,8	64,9	23,8	61,8	23,6
	26°C	130,5	34,1	116,8	32,3	104,2	30,5	97,2	29,5	92,7	28,9	82,2	27,5	72,8	26,2	64,4	25,2	61,4	24,9
Maximum air flow 23 000 m ³ /h	8°C	143,5	22,8	128,1	21,7	113,9	20,6	105,8	20,0	100,7	19,6	88,5	18,7	-	-	-	-	-	-
	11°C	141,7	24,0	126,6	22,8	112,5	21,7	104,6	21,1	99,5	20,7	87,6	19,8	76,7	18,9	66,9	18,2	63,2	18,0
	14°C	139,9	25,3	125,0	24,1	111,2	22,9	103,4	22,3	98,4	21,9	86,6	20,9	76,0	20,1	66,4	19,4	62,8	19,2
	17°C	138,1	26,7	123,4	25,4	109,8	24,2	102,1	23,5	97,2	23,1	85,7	22,1	75,3	21,3	65,9	20,6	62,4	20,4
	20°C	136,4	28,2	121,9	26,9	108,4	25,6	100,9	24,9	96,1	24,5	84,8	23,4	74,5	22,6	65,4	22,0	62,0	21,8
	23°C	134,6	29,8	120,3	28,4	107,1	27,1	99,7	26,4	94,9	25,9	83,8	24,9	73,8	24,0	64,9	23,4	61,6	23,2
	26°C	132,8	31,7	118,7	30,1	105,7	28,8	98,4	28,0	93,8	27,5	82,9	26,4	73,1	25,5	64,4	24,9	61,2	24,7

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

Control Pa (FC/FH) : **0,3 kW**
 Control Pa (FG/FD) : **0,5 kW**

Supply fan Pa (FC/FH) : **4,97 kW**
 Supply fan Pa (FG/FD) : **6,15 kW**
 Outdoor fan Pa (all) : **1,8 kW**

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

100 Size

Table 3.5

FCM	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 air flow 14 000 m³/h	16°C	21°C	98,9	64,1	24,3	95,2	62,1	26,9	91,0	60,1	29,9	86,2	57,9	33,1	81,9	56,0	36,0
		24°C	99,8	78,3	24,3	96,1	76,7	27,0	91,9	74,8	29,9	87,0	72,6	33,2	82,7	70,6	36,1
		27°C	100,9	92,6	24,4	97,2	91,3	27,1	92,9	89,6	30,0	88,1	87,4	33,3	84,0	84,0	36,3
		30°C	103,2	103,2	24,6	100,2	100,2	27,3	96,6	96,6	30,4	92,3	92,3	33,8	88,4	88,4	36,8
	19°C	24°C	107,8	64,3	25,0	103,6	62,0	27,7	98,9	59,8	30,6	93,6	57,4	33,9	88,9	55,5	36,8
		27°C	108,7	78,0	25,1	104,5	76,0	27,7	99,7	74,0	30,7	94,4	71,7	34,0	89,7	69,6	36,9
		30°C	109,8	91,6	25,2	105,6	90,1	27,8	100,8	88,3	30,8	95,4	86,0	34,1	90,6	83,9	37,1
		33°C	111,1	105,3	25,3	106,9	104,2	27,9	102,1	102,1	30,9	97,4	97,4	34,3	93,2	93,2	37,4
	22°C	27°C	117,1	65,4	25,9	112,4	62,8	28,5	107,2	60,2	31,4	101,3	57,7	34,7	96,2	55,6	37,8
		30°C	118,0	78,2	25,9	113,3	76,0	28,6	108,0	73,8	31,5	102,1	71,4	34,8	97,0	69,2	37,9
		33°C	119,1	91,0	26,0	114,4	89,2	28,7	109,0	87,3	31,6	103,1	85,1	35,0	98,0	83,0	38,0
		36°C	120,4	103,6	26,1	115,7	102,4	28,8	110,3	100,9	31,7	104,3	98,8	35,1	99,1	96,8	38,2
Nominal air flow 18 500 m³/h	16°C	21°C	104,7	73,0	24,8	100,6	71,1	27,4	95,9	69,0	30,3	90,6	66,7	33,6	86,0	64,7	36,5
		24°C	105,9	90,9	24,9	101,7	89,1	27,5	97,0	87,0	30,4	91,7	84,6	33,7	87,1	82,3	36,6
		27°C	106,9	106,9	25,0	103,5	103,5	27,7	99,5	99,5	30,7	94,8	94,8	34,0	90,5	90,5	37,0
		30°C	112,7	112,7	25,5	109,1	109,1	28,2	104,9	104,9	31,2	99,9	99,9	34,6	95,5	95,5	37,7
	19°C	24°C	113,8	73,1	25,6	109,1	70,9	28,2	103,9	68,6	31,1	98,1	66,2	34,4	93,1	64,1	37,3
		27°C	114,9	90,4	25,7	110,3	88,5	28,3	105,0	86,3	31,2	99,2	83,7	34,5	94,1	81,4	37,5
		30°C	116,3	107,9	25,8	111,6	106,2	28,4	106,3	104,1	31,3	100,4	100,4	34,6	95,9	95,9	37,7
		33°C	119,2	119,2	26,1	115,3	115,3	28,8	110,7	110,7	31,8	105,4	105,4	35,2	100,7	100,7	38,4
	22°C	27°C	123,2	74,0	26,4	118,1	71,5	29,0	112,3	69,0	31,9	106,0	66,4	35,3	100,5	64,2	38,3
		30°C	124,4	90,6	26,5	119,2	88,4	29,1	113,4	86,1	32,1	107,1	83,5	35,4	101,6	81,1	38,5
		33°C	125,7	107,3	26,6	120,5	105,4	29,2	114,7	103,3	32,2	108,3	100,7	35,6	102,8	98,2	38,6
		36°C	127,3	124,0	26,8	121,5	121,5	29,4	116,6	116,6	32,4	111,0	111,0	35,9	106,0	106,0	39,1
Maximum air flow 23 000 m³/h	16°C	21°C	108,7	79,5	25,1	104,2	77,6	27,7	99,0	75,5	30,6	93,3	73,2	33,8	88,3	71,0	36,7
		24°C	110,1	100,8	25,3	105,5	99,0	27,8	100,4	96,8	30,7	94,6	94,1	34,0	89,8	89,8	36,9
		27°C	113,6	113,6	25,5	109,6	109,6	28,2	105,0	105,0	31,2	99,6	99,6	34,5	94,9	94,9	37,6
		30°C	120,1	120,1	26,1	115,9	115,9	28,8	111,0	111,0	31,8	105,4	105,4	35,2	100,5	100,5	38,4
	19°C	24°C	117,9	79,3	25,9	112,8	77,2	28,5	107,2	75,0	31,4	100,9	72,5	34,7	95,5	70,4	37,7
		27°C	119,3	100,3	26,1	114,2	98,3	28,6	108,5	96,0	31,5	102,2	93,3	34,8	96,8	90,7	37,9
		30°C	120,7	120,7	26,2	116,3	116,3	28,8	111,3	111,3	31,8	105,6	105,6	35,2	100,6	100,6	38,4
		33°C	126,9	126,9	26,7	122,3	122,3	29,4	117,1	117,1	32,4	111,2	111,2	35,9	106,0	106,0	39,1
	22°C	27°C	127,6	79,9	26,8	121,9	77,6	29,4	115,7	75,2	32,3	108,9	72,6	35,6	103,1	70,4	38,8
		30°C	129,0	100,3	26,9	123,3	98,2	29,5	117,1	95,8	32,4	110,3	93,0	35,8	104,4	90,5	38,9
		33°C	130,6	120,9	27,0	124,9	119,0	29,7	118,6	116,6	32,6	111,7	111,7	36,0	106,4	106,4	39,2
		36°C	133,8	133,8	27,3	128,9	128,9	30,0	123,3	123,3	33,1	-	-	-	-	-	-

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 4,97 kW
Supply fan Pa (FG/FD) : 6,15 kW
Outdoor fan Pa (all) : 1,8 kW

PERFORMANCES

FCM = Cooling only Rooftop
 FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
 FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

120

Size

Table 3.6

FHM	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 air flow 15 000 m³/h	16°C	21°C	110,3	72,1	28,9	105,9	69,5	32,0	100,9	66,9	35,5	95,2	64,4	39,4	90,0	62,2	43,0
		24°C	111,4	88,2	29,0	107,0	85,8	32,1	101,9	83,3	35,6	96,1	80,5	39,5	91,0	78,1	43,1
		27°C	112,7	103,6	29,1	108,2	101,4	32,2	103,1	99,0	35,7	97,2	96,1	39,6	92,4	92,4	43,4
		30°C	115,1	115,1	29,4	111,6	111,6	32,6	107,2	107,2	36,2	102,0	102,0	40,3	97,2	97,2	44,1
	19°C	24°C	120,2	71,6	29,9	115,2	68,7	33,0	109,5	66,0	36,5	103,1	63,4	40,4	97,5	61,3	44,1
		27°C	121,4	87,8	30,0	116,4	85,1	33,1	110,7	82,5	36,6	104,2	79,8	40,6	98,5	77,5	44,3
		30°C	122,8	103,1	30,2	117,7	100,8	33,2	111,9	98,3	36,7	105,4	95,6	40,7	99,6	93,0	44,4
		33°C	124,3	117,7	30,3	119,1	115,8	33,4	113,3	113,3	36,9	107,6	107,6	41,1	102,5	102,5	44,9
	22°C	27°C	130,4	70,8	30,9	124,8	67,7	34,0	118,4	65,0	37,5	111,4	62,4	41,6	105,2	60,3	45,3
		30°C	131,8	86,9	31,1	126,1	84,1	34,2	119,7	81,5	37,7	112,6	78,8	41,8	106,3	76,6	45,5
		33°C	133,3	102,1	31,2	127,5	99,7	34,3	121,0	97,3	37,9	113,9	94,6	42,0	107,6	92,2	45,7
		36°C	134,9	116,4	31,4	129,0	114,4	34,5	122,5	112,2	38,0	115,2	109,6	42,1	108,9	107,2	45,9
Nominal air flow 20 500 m³/h	16°C	21°C	117,6	82,3	29,7	112,6	79,7	32,7	106,9	77,2	36,1	100,4	74,6	40,1	94,8	72,3	43,7
		24°C	119,0	103,0	29,8	114,0	100,5	32,8	108,2	97,8	36,3	101,7	94,8	40,2	96,0	92,0	43,8
		27°C	120,7	120,7	30,0	116,5	116,5	33,1	111,4	111,4	36,7	105,5	105,5	40,8	100,1	100,1	44,5
		30°C	126,9	126,9	30,6	122,6	122,6	33,8	117,3	117,3	37,4	111,3	111,3	41,6	105,8	105,8	45,4
	19°C	24°C	127,7	81,3	30,7	122,1	78,7	33,7	115,7	76,1	37,2	108,6	73,5	41,2	102,5	71,4	44,9
		27°C	129,3	102,4	30,8	123,6	99,8	33,9	117,2	97,1	37,4	110,0	94,2	41,4	103,8	91,5	45,1
		30°C	131,0	122,7	31,0	125,2	120,3	34,1	118,7	117,5	37,6	111,6	111,6	41,6	105,9	105,9	45,4
		33°C	134,4	134,4	31,4	129,6	129,6	34,6	124,0	124,0	38,2	117,4	117,4	42,5	111,6	111,6	46,4
	22°C	27°C	138,2	80,1	31,7	131,9	77,4	34,8	124,9	74,8	38,3	117,1	72,4	42,4	110,4	70,3	46,2
		30°C	139,9	101,3	31,9	133,5	98,7	35,0	126,4	96,1	38,5	118,6	93,3	42,6	111,9	90,8	46,5
		33°C	141,7	121,7	32,1	135,2	119,3	35,2	128,1	116,6	38,7	120,2	113,6	42,9	113,4	110,7	46,7
		36°C	143,5	141,3	32,3	136,6	136,6	35,4	130,5	130,5	39,1	123,6	123,6	43,4	117,4	117,4	47,4
Maximum air flow 23 000 m³/h	16°C	21°C	120,0	86,4	29,9	114,7	83,9	32,9	108,7	81,4	36,3	102,0	78,7	40,3	96,1	76,3	43,9
		24°C	121,6	109,3	30,1	116,3	106,7	33,1	110,2	103,9	36,5	103,4	100,7	40,4	97,6	97,6	44,1
		27°C	124,7	124,7	30,4	120,1	120,1	33,5	114,6	114,6	37,0	108,3	108,3	41,1	102,6	102,6	44,9
		30°C	131,3	131,3	31,0	126,5	126,5	34,2	120,9	120,9	37,8	114,5	114,5	42,0	108,7	108,7	45,9
	19°C	24°C	130,3	85,3	30,9	124,4	82,8	34,0	117,7	80,3	37,4	110,3	77,7	41,4	103,9	75,5	45,1
		27°C	132,0	108,6	31,1	126,0	106,0	34,1	119,3	103,3	37,6	111,8	100,2	41,7	105,3	97,4	45,4
		30°C	133,8	131,3	31,3	127,4	127,4	34,3	121,4	121,4	37,9	114,7	114,7	42,0	108,6	108,6	45,9
		33°C	139,0	139,0	31,8	133,8	133,8	35,0	127,8	127,8	38,7	120,9	120,9	43,0	114,7	114,7	46,9
	22°C	27°C	140,9	84,0	32,0	134,3	81,4	35,1	126,9	79,0	38,6	118,9	76,5	42,7	111,9	74,4	46,6
		30°C	142,7	107,5	32,2	136,0	105,0	35,3	128,6	102,3	38,8	120,5	99,4	43,0	113,5	96,8	46,8
		33°C	144,6	130,3	32,4	137,9	127,8	35,5	130,4	125,0	39,0	122,3	121,8	43,2	114,6	114,6	47,0
		36°C	146,7	146,7	32,6	141,1	141,1	35,9	134,6	134,6	39,6	127,2	127,2	43,9	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.7

FHM	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-12°C		
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	
Minimum air flow 15 000 m³/h	Dry bulb	8°C	155,9	30,7	139,3	28,8	123,9	27,1	115,3	26,0	109,7	25,4	96,8	23,9	85,1	22,6	74,6	21,5	70,8	21,1
		11°C	153,8	32,4	137,4	30,4	122,3	28,5	113,8	27,5	108,4	26,8	95,7	25,2	84,2	23,8	74,0	22,7	70,3	22,3
		14°C	151,7	34,3	135,5	32,1	120,7	30,1	112,3	29,0	107,0	28,3	94,6	26,6	83,4	25,2	73,5	24,0	69,8	23,6
		17°C	149,6	36,4	133,7	34,0	119,1	31,9	110,9	30,7	105,7	29,9	93,5	28,1	82,6	26,6	72,9	25,4	69,4	25,0
		20°C	147,5	38,7	131,9	36,1	117,5	33,8	109,5	32,5	104,4	31,7	92,5	29,8	81,8	28,2	72,4	26,9	69,0	26,4
		23°C	145,5	41,3	130,1	38,5	116,0	35,9	108,1	34,5	103,1	33,6	91,5	31,6	81,1	29,8	71,9	28,4	68,6	28,0
		26°C	143,5	44,2	128,4	41,1	114,5	38,3	106,8	36,7	101,9	35,7	90,5	33,5	80,4	31,6	71,5	30,1	68,3	29,7
Nominal air flow 20 500 m³/h	Dry bulb	8°C	160,3	27,7	143,1	26,1	127,1	24,7	118,1	23,8	112,3	23,3	98,8	22,1	86,5	21,0	75,4	20,1	-	-
		11°C	158,1	29,1	141,2	27,5	125,4	25,9	116,6	25,1	110,9	24,5	97,6	23,2	85,6	22,1	74,8	21,2	70,8	20,9
		14°C	155,9	30,6	139,2	28,9	123,7	27,3	115,0	26,4	109,5	25,8	96,5	24,5	84,7	23,3	74,1	22,4	70,3	22,1
		17°C	153,8	32,3	137,3	30,5	122,1	28,8	113,6	27,8	108,1	27,2	95,4	25,8	83,8	24,7	73,5	23,8	69,8	23,5
		20°C	151,7	34,2	135,5	32,2	120,5	30,4	112,1	29,4	106,8	28,8	94,3	27,3	83,0	26,1	73,0	25,2	69,3	24,9
		23°C	149,6	36,2	133,6	34,1	118,9	32,2	110,7	31,1	105,4	30,5	93,2	28,9	82,2	27,7	72,4	26,7	68,8	26,5
		26°C	147,5	38,5	131,8	36,3	117,4	34,2	109,3	33,0	104,1	32,3	92,2	30,7	81,4	29,4	71,9	28,4	68,4	28,2
Maximum air flow 23 000 m³/h	Dry bulb	8°C	162,0	26,8	144,5	25,3	128,2	24,0	119,1	23,2	113,2	22,7	99,4	21,5	86,8	20,5	-	-	-	-
		11°C	159,8	28,1	142,5	26,6	126,5	25,1	117,5	24,4	111,7	23,8	98,2	22,7	85,9	21,6	74,8	20,8	70,7	20,6
		14°C	157,6	29,5	140,6	27,9	124,8	26,5	116,0	25,6	110,3	25,1	97,0	23,9	85,0	22,9	74,1	22,1	70,1	21,8
		17°C	155,4	31,1	138,7	29,4	123,2	27,9	114,4	27,0	108,9	26,5	95,9	25,2	84,1	24,2	73,5	23,4	69,6	23,2
		20°C	153,2	32,8	136,8	31,1	121,5	29,4	113,0	28,5	107,5	28,0	94,7	26,7	83,2	25,6	72,9	24,9	69,1	24,7
		23°C	151,1	34,8	134,9	32,9	119,9	31,2	111,5	30,2	106,2	29,6	93,6	28,3	82,4	27,2	72,3	26,5	68,6	26,3
		26°C	149,0	36,9	133,0	34,9	118,3	33,1	110,1	32,1	104,8	31,4	92,6	30,0	81,5	28,9	71,8	28,2	68,2	28,0

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

Control Pa (FC/FH) : 0,3 kW
 Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 5,99 kW
 Supply fan Pa (FG/FD) : 7,87 kW
 Outdoor fan Pa (all) : 2 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

120 Size

Table 3.8

FCM	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
			21°C	72,2	28,0	107,7	70,1	31,1	102,8	68,0	34,4	97,2	65,6	38,2	92,3	63,5	41,7
Minimum air flow 15 000 m³/h	16°C	24°C	88,1	28,1	108,8	86,1	31,1	103,8	83,8	34,5	98,1	81,2	38,3	93,0	78,7	41,8	
		27°C	104,2	28,2	109,9	102,2	31,2	104,8	99,8	34,6	99,0	96,8	38,4	94,3	94,3	42,0	
		30°C	116,4	116,4	28,4	113,0	113,0	31,6	108,7	108,7	35,1	103,7	103,7	39,0	99,1	99,1	42,7
		24°C	72,2	29,0	117,0	70,2	32,0	111,5	68,1	35,4	105,3	65,8	39,2	99,9	63,8	42,7	
	19°C	27°C	87,5	29,1	118,2	85,5	32,1	112,6	83,3	35,5	106,3	80,8	39,3	100,8	78,5	42,9	
		30°C	102,9	29,2	119,4	101,0	32,2	113,7	98,7	35,6	107,3	96,0	39,5	101,7	93,4	43,0	
		33°C	118,4	29,3	120,6	116,5	32,4	114,9	114,2	35,7	109,3	109,3	39,8	104,3	104,3	43,5	
	22°C	27°C	73,3	30,0	126,7	71,2	33,0	120,6	69,2	36,4	113,9	67,0	40,4	107,9	65,0	44,0	
		30°C	87,6	30,1	128,0	85,7	33,2	121,8	83,7	36,6	115,0	81,3	40,5	109,0	79,2	44,2	
		33°C	102,0	30,3	129,3	100,3	33,3	123,1	98,2	36,7	116,1	95,8	40,7	110,0	93,4	44,4	
		36°C	116,5	30,4	130,7	114,9	33,4	124,3	112,9	36,9	117,3	110,3	40,9	111,2	107,7	44,6	
	Nominal air flow 20 500 m³/h	16°C	21°C	82,4	28,8	114,3	80,2	31,7	108,8	77,9	35,1	102,6	75,3	38,8	97,1	73,0	42,3
24°C			103,8	28,9	115,7	101,5	31,9	110,1	98,8	35,2	103,8	95,6	39,0	98,3	92,6	42,5	
27°C			122,0	29,0	117,9	117,9	32,1	113,0	113,0	35,5	107,3	107,3	39,5	102,1	102,1	43,1	
30°C			128,3	29,6	124,0	124,0	32,7	119,0	119,0	36,2	113,1	113,1	40,2	107,8	107,8	44,0	
19°C		24°C	81,1	29,7	123,8	79,1	32,7	117,6	76,9	36,1	110,8	74,5	39,9	104,9	72,4	43,5	
		27°C	102,1	29,9	125,3	99,9	32,9	119,1	97,4	36,2	112,2	94,5	40,1	106,2	91,8	43,7	
		30°C	123,3	30,0	126,9	121,0	33,0	120,6	118,2	36,4	113,5	113,5	40,3	108,0	108,0	44,0	
		33°C	135,8	30,4	131,1	131,1	33,5	125,6	125,6	37,0	119,3	119,3	41,1	113,7	113,7	44,9	
22°C		27°C	80,7	30,7	133,7	78,8	33,8	127,0	76,8	37,2	119,5	74,7	41,2	113,1	72,7	44,9	
		30°C	101,0	30,9	135,3	99,0	33,9	128,5	96,8	37,4	121,0	94,2	41,4	114,5	91,7	45,1	
		33°C	121,4	31,1	137,0	119,4	34,1	130,1	116,9	37,6	122,5	113,9	41,6	116,0	111,0	45,3	
		36°C	142,1	31,3	138,2	138,2	34,3	132,3	132,3	37,9	125,5	125,5	42,0	119,6	119,6	45,9	
Maximum air flow 23 000 m³/h	16°C	21°C	86,9	29,0	116,6	84,7	31,9	110,7	82,3	35,3	104,2	79,6	39,1	98,5	77,0	42,6	
		24°C	110,8	29,1	118,1	108,3	32,1	112,2	105,4	35,4	105,6	102,0	39,2	99,8	98,7	42,7	
		27°C	126,1	29,4	121,6	121,6	32,4	116,3	116,3	35,9	110,2	110,2	39,8	104,7	104,7	43,5	
		30°C	132,8	30,0	128,1	128,1	33,1	122,7	122,7	36,7	116,4	116,4	40,7	110,8	110,8	44,5	
	19°C	24°C	85,0	30,0	126,1	83,0	32,9	119,6	80,8	36,3	112,5	78,4	40,2	106,4	76,1	43,8	
		27°C	108,6	30,1	127,8	106,3	33,1	121,2	103,7	36,5	114,0	100,6	40,4	107,8	97,6	44,0	
		30°C	132,6	30,3	128,9	128,9	33,3	123,2	123,2	36,7	116,7	116,7	40,8	110,9	110,9	44,5	
		33°C	140,5	30,8	135,4	135,4	34,0	129,5	129,5	37,5	122,8	122,8	41,6	116,9	116,9	45,5	
	22°C	27°C	84,0	31,0	136,1	82,2	34,0	129,0	80,2	37,5	121,3	78,0	41,5	114,7	76,0	45,2	
		30°C	107,0	31,2	137,9	105,0	34,2	130,8	102,6	37,7	123,0	99,8	41,7	116,2	97,2	45,5	
		33°C	130,3	31,4	139,7	128,1	34,4	132,5	125,4	37,9	124,6	122,0	41,9	117,2	117,2	45,6	
		36°C	148,3	31,6	142,8	142,8	34,8	136,5	136,5	38,4	129,4	129,4	42,6	-	-	-	

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 5,99 kW
Supply fan Pa (FG/FD) : 7,87 kW
Outdoor fan Pa (all) : 2 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

150 Size

Table 3.9

FHM	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 air flow 18 000 m³/h	16°C	21°C	135,2	88,0	32,8	130,3	85,1	36,4	124,5	82,3	40,4	117,9	79,3	44,9	112,0	76,8	48,9
		24°C	136,2	107,5	32,9	131,3	104,9	36,4	125,5	102,1	40,5	118,9	99,0	45,0	113,0	96,2	49,0
		27°C	137,5	126,3	32,9	132,6	124,0	36,5	126,8	121,4	40,6	120,2	118,2	45,1	114,2	114,2	49,1
		30°C	141,1	141,1	33,1	136,9	136,9	36,8	131,9	131,9	40,9	126,0	126,0	45,6	120,7	120,7	49,7
	19°C	24°C	147,6	87,2	33,7	142,0	84,2	37,3	135,5	81,2	41,2	128,2	78,3	45,7	121,8	75,8	49,7
		27°C	148,6	106,8	33,8	143,0	104,1	37,3	136,6	101,2	41,3	129,3	98,2	45,8	122,9	95,5	49,8
		30°C	149,9	125,7	33,9	144,3	123,3	37,4	137,9	120,6	41,4	130,6	117,5	45,9	124,2	114,7	49,9
		33°C	151,4	143,7	34,0	145,8	141,7	37,6	139,4	139,3	41,6	133,4	133,4	46,2	127,7	127,7	50,3
	22°C	27°C	160,5	86,2	34,7	154,2	82,9	38,2	147,1	79,9	42,2	139,2	77,0	46,6	132,3	74,6	50,6
		30°C	161,5	105,7	34,7	155,3	102,8	38,3	148,2	100,0	42,3	140,3	97,0	46,7	133,6	94,5	50,8
		33°C	162,9	124,3	34,8	156,6	121,9	38,4	149,5	119,3	42,4	141,6	116,4	46,9	134,6	113,7	50,9
		36°C	164,4	141,9	35,0	158,2	140,0	38,5	151,1	137,8	42,5	143,1	135,0	47,0	136,2	132,3	51,1
Nominal air flow 26 000 m³/h	16°C	21°C	145,4	103,1	33,6	139,7	100,4	37,1	133,2	97,6	41,1	125,9	94,6	45,5	119,4	91,9	49,4
		24°C	146,9	129,6	33,7	141,3	126,9	37,3	134,8	123,9	41,2	127,4	120,5	45,6	121,0	117,2	49,5
		27°C	149,9	149,9	33,9	145,1	145,1	37,5	139,4	139,4	41,5	132,8	132,8	46,1	126,9	126,9	50,1
		30°C	158,3	158,3	34,6	153,2	153,2	38,2	147,2	147,2	42,2	140,4	140,4	46,8	134,3	134,3	50,8
	19°C	24°C	158,0	102,0	34,5	151,7	99,2	38,0	144,5	96,4	41,9	136,6	93,4	46,4	129,6	90,9	50,3
		27°C	159,6	128,8	34,6	153,2	126,1	38,2	146,1	123,1	42,1	138,1	119,8	46,5	131,1	116,8	50,4
		30°C	161,4	155,0	34,8	155,1	152,4	38,3	147,7	147,7	42,2	140,7	140,7	46,7	134,5	134,5	50,8
		33°C	167,5	167,5	35,3	162,0	162,0	38,9	155,6	155,6	42,9	148,4	148,4	47,5	142,0	142,0	51,5
	22°C	27°C	171,2	100,4	35,5	164,2	97,5	39,0	156,4	94,8	42,9	147,8	92,0	47,4	140,3	89,6	51,4
		30°C	172,8	127,6	35,6	165,8	124,8	39,1	158,0	121,9	43,1	149,4	118,8	47,5	141,8	116,0	51,5
		33°C	174,6	153,8	35,8	167,6	151,3	39,3	159,8	148,4	43,2	151,2	145,1	47,7	143,7	141,9	51,7
		36°C	177,1	177,1	36,0	171,2	171,2	39,6	164,4	164,4	43,7	156,7	156,7	48,3	-	-	-
Maximum air flow 35 000 m³/h	16°C	21°C	152,6	117,7	34,1	146,2	115,1	37,5	138,9	112,4	41,4	130,7	109,2	45,8	123,6	106,2	49,7
		24°C	154,8	151,9	34,3	147,8	147,8	37,7	141,3	141,3	41,6	133,9	133,9	46,1	127,4	127,4	50,2
		27°C	162,4	162,4	34,8	156,5	156,5	38,4	149,8	149,8	42,4	142,1	142,1	46,9	135,4	135,4	50,9
		30°C	171,8	171,8	35,5	165,6	165,6	39,1	158,6	158,6	43,1	150,7	150,7	47,7	143,8	143,8	51,8
	19°C	24°C	165,5	116,2	35,1	158,4	113,7	38,5	150,5	111,0	42,4	141,7	108,1	46,8	134,1	105,4	50,8
		27°C	167,7	151,3	35,2	160,6	148,5	38,7	152,6	145,4	42,6	143,8	141,6	47,0	135,6	135,6	51,0
		30°C	172,3	172,3	35,6	166,0	166,0	39,1	158,8	158,8	43,1	150,8	150,8	47,7	143,7	143,7	51,8
		33°C	181,8	181,8	36,3	175,2	175,2	39,9	167,8	167,8	43,9	-	-	-	-	-	-
	22°C	27°C	179,0	114,3	36,1	171,3	111,8	39,6	162,7	109,3	43,5	153,2	106,7	48,0	145,1	104,2	52,0
		30°C	181,2	150,0	36,2	173,4	147,4	39,7	164,8	144,4	43,7	155,4	141,0	48,2	147,2	137,7	52,2
		33°C	182,6	182,6	36,4	175,8	175,8	40,0	168,2	168,2	44,0	-	-	-	-	-	-
		36°C	192,1	192,1	37,1	-	-	-	-	-	-	-	-	-	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.10

FHM	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-12°C		
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	
Minimum air flow 18 000 m³/h	Entering air temperature Dry bulb	8°C	188,8	36,0	169,1	34,0	150,8	32,1	140,6	31,1	134,0	30,4	118,6	28,7	104,6	27,2	92,0	25,8	87,3	25,4
		11°C	186,4	38,2	167,0	36,1	149,1	34,1	138,9	32,9	132,5	32,2	117,3	30,4	103,6	28,8	91,2	27,4	86,7	26,9
		14°C	184,1	40,5	164,9	38,3	147,2	36,1	137,3	34,9	130,9	34,1	116,0	32,3	102,5	30,6	90,5	29,1	86,0	28,6
		17°C	181,6	43,1	162,8	40,7	145,3	38,3	135,5	37,0	129,3	36,2	114,7	34,2	101,5	32,4	89,7	30,9	85,3	30,3
		20°C	179,2	45,9	160,6	43,2	143,4	40,7	133,8	39,3	127,6	38,4	113,3	36,2	100,3	34,3	88,8	32,7	84,6	32,1
		23°C	176,7	48,9	158,3	46,0	141,4	43,3	132,0	41,7	125,9	40,7	111,8	38,4	99,2	36,3	87,9	34,5	83,8	33,9
		26°C	174,1	52,2	156,1	49,0	139,4	46,0	130,1	44,2	124,2	43,1	110,4	40,6	98,0	38,3	87,0	36,3	83,0	35,6
		8°C	194,1	31,8	173,8	30,2	154,9	28,7	144,2	27,8	137,3	27,2	121,3	25,8	106,6	24,6	-	-	-	-
		11°C	191,8	33,6	171,7	31,9	153,1	30,3	142,6	29,3	135,9	28,7	120,0	27,3	105,6	26,1	92,6	24,9	87,8	24,6
		14°C	189,5	35,5	169,7	33,7	151,3	32,0	140,9	31,0	134,3	30,4	118,8	28,9	104,6	27,6	91,9	26,5	87,2	26,1
		17°C	187,1	37,5	167,6	35,6	149,4	33,8	139,3	32,8	132,7	32,2	117,5	30,6	103,6	29,3	91,1	28,1	86,5	27,8
		20°C	184,7	39,7	165,4	37,7	147,5	35,8	137,5	34,7	131,1	34,0	116,1	32,4	102,5	31,0	90,3	29,8	85,8	29,5
23°C	182,2	42,1	163,2	39,9	145,6	37,9	135,7	36,7	129,5	36,0	114,7	34,3	101,4	32,8	89,5	31,6	85,1	31,2		
26°C	179,7	44,6	160,9	42,3	143,6	40,1	133,9	38,9	127,7	38,1	113,3	36,3	100,2	34,7	88,6	33,4	84,3	33,0		
Nominal air flow 26 000 m³/h	Entering air temperature Dry bulb	8°C	198,4	29,1	177,3	27,8	157,6	26,5	146,5	25,8	139,4	25,3	-	-	-	-	-	-	-	-
		11°C	196,1	30,7	175,3	29,3	155,9	28,0	144,9	27,2	137,9	26,7	121,3	25,6	106,2	24,6	-	-	-	-
		14°C	193,8	32,3	173,3	30,9	154,1	29,6	143,3	28,8	136,4	28,3	120,1	27,1	105,2	26,1	91,7	25,3	86,7	25,1
		17°C	191,5	34,1	171,2	32,7	152,3	31,3	141,7	30,5	134,9	30,0	118,8	28,8	104,2	27,8	91,0	27,1	86,1	26,9
		20°C	189,1	36,1	169,1	34,5	150,5	33,1	140,0	32,3	133,3	31,8	117,5	30,6	103,2	29,7	90,2	28,9	85,5	28,8
		23°C	186,6	38,2	166,9	36,6	148,6	35,1	138,3	34,2	131,7	33,7	116,2	32,5	102,1	31,6	89,4	30,9	84,7	30,8
		26°C	184,2	40,4	164,7	38,8	146,6	37,2	136,5	36,3	130,0	35,8	114,8	34,6	101,0	33,7	88,6	33,1	84,0	32,9

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 6,40 kW
Supply fan Pa (FG/FD) : 7,81 kW
Outdoor fan Pa (all) : 4,6 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

150

Size

Table 3.11

FCM	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 air flow 18 000 m ³ /h	16°C	21°C	136,5	88,7	32,0	131,8	85,9	35,5	126,2	83,1	39,4	119,8	80,2	43,8	114,2	77,7	47,6
		24°C	137,6	108,0	32,0	132,9	105,4	35,6	127,3	102,7	39,5	121,0	99,6	43,9	115,3	96,9	47,7
		27°C	139,0	126,6	32,1	134,2	124,3	35,7	128,6	121,7	39,6	122,3	118,6	43,9	116,6	115,7	47,8
		30°C	142,2	142,2	32,2	138,3	138,3	35,9	133,5	133,5	39,9	127,8	127,8	44,4	122,7	122,7	48,4
	19°C	24°C	148,9	87,8	32,8	143,5	84,8	36,4	137,3	81,9	40,2	130,3	79,0	44,6	124,1	76,6	48,4
		27°C	150,0	107,2	32,9	144,6	104,5	36,4	138,4	101,8	40,3	131,4	98,8	44,7	125,2	96,2	48,5
		30°C	151,4	125,8	33,0	146,0	123,5	36,5	139,8	120,9	40,4	132,8	118,0	44,8	126,6	115,2	48,6
		33°C	152,9	143,6	33,1	147,6	141,7	36,6	141,4	139,4	40,5	135,2	135,2	45,0	129,8	129,8	49,0
	22°C	27°C	161,8	86,5	33,8	155,7	83,4	37,3	148,9	80,4	41,2	141,3	77,6	45,5	134,6	75,3	49,4
		30°C	162,9	106,0	33,9	156,9	103,2	37,4	150,1	100,5	41,3	142,4	97,6	45,6	135,8	95,1	49,5
		33°C	164,3	124,5	34,0	158,3	122,1	37,5	151,5	119,6	41,4	143,8	116,8	45,7	137,1	114,3	49,7
		36°C	165,9	142,0	34,1	159,9	140,1	37,6	153,1	138,0	41,5	145,4	135,3	45,9	138,8	132,8	49,8
Nominal air flow 26 000 m ³ /h	16°C	21°C	147,1	103,8	32,8	141,6	101,1	36,3	135,3	98,3	40,1	128,2	95,3	44,4	122,0	92,7	48,2
		24°C	148,6	129,9	32,9	143,1	127,2	36,4	136,8	124,3	40,2	129,7	120,9	44,5	123,5	117,7	48,3
		27°C	151,1	151,1	33,1	146,5	146,5	36,6	141,0	141,0	40,6	134,7	134,7	45,0	129,1	129,1	48,8
		30°C	159,5	159,5	33,7	154,6	154,6	37,3	148,9	148,9	41,2	142,3	142,3	45,6	136,4	136,4	49,5
	19°C	24°C	159,8	102,4	33,7	153,6	99,7	37,1	146,7	96,9	41,0	139,0	94,0	45,2	132,2	91,5	49,1
		27°C	161,3	129,1	33,8	155,2	126,4	37,3	148,2	123,5	41,1	140,5	120,2	45,4	133,8	117,3	49,2
		30°C	163,1	154,9	33,9	156,9	152,4	37,4	150,0	149,4	41,2	142,7	142,7	45,6	136,7	136,7	49,5
		33°C	168,8	168,8	34,4	163,5	163,5	37,9	157,4	157,4	41,9	150,3	150,3	46,3	144,1	144,1	50,3
	22°C	27°C	173,0	100,7	34,6	166,2	97,9	38,1	158,6	95,2	41,9	150,3	92,5	46,2	143,0	90,2	50,1
		30°C	174,5	127,7	34,8	167,8	125,0	38,2	160,2	122,2	42,1	151,8	119,2	46,4	144,6	116,5	50,3
		33°C	176,3	153,8	34,9	169,6	151,3	38,4	162,0	148,5	42,2	153,6	145,3	46,5	146,4	142,2	50,5
		36°C	178,5	178,5	35,1	172,7	172,7	38,6	166,1	166,1	42,6	158,7	158,7	47,1	-	-	-
Maximum air flow 35 000 m ³ /h	16°C	21°C	154,5	118,3	33,3	148,2	115,7	36,7	141,1	112,9	40,5	133,2	109,7	44,7	126,3	106,8	48,6
		24°C	156,5	152,0	33,4	150,2	149,2	36,9	143,4	143,4	40,7	136,3	136,3	45,0	130,0	130,0	49,0
		27°C	163,8	163,8	33,9	158,1	158,1	37,4	151,6	151,6	41,3	144,3	144,3	45,7	137,8	137,8	49,7
		30°C	173,2	173,2	34,6	167,3	167,3	38,2	160,5	160,5	42,1	152,8	152,8	46,5	146,1	146,1	50,5
	19°C	24°C	167,5	116,7	34,2	160,6	114,2	37,6	152,8	111,5	41,4	144,3	108,6	45,7	136,8	105,9	49,6
		27°C	169,5	151,4	34,4	162,6	148,7	37,8	154,8	145,5	41,6	146,3	141,8	45,9	138,9	138,3	49,8
		30°C	173,7	173,7	34,7	167,6	167,6	38,2	160,7	160,7	42,1	152,9	152,9	46,5	146,1	146,1	50,5
		33°C	183,2	183,2	35,4	176,9	176,9	39,0	169,7	169,7	42,9	-	-	-	-	-	-
	22°C	27°C	181,1	114,6	35,2	173,5	112,2	38,6	165,1	109,8	42,5	155,9	107,1	46,8	148,0	104,8	50,8
		30°C	183,1	150,2	35,4	175,5	147,6	38,8	167,1	144,6	42,7	158,0	141,3	47,0	150,0	138,1	51,0
		33°C	185,4	185,1	35,6	177,4	177,4	39,0	170,0	170,0	42,9	-	-	-	-	-	-
		36°C	193,6	193,6	36,2	-	-	-	-	-	-	-	-	-	-	-	-

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

Control Pa (FC/FH) : **0,3 kW**
 Control Pa (FG/FD) : **0,5 kW**

Supply fan Pa (FC/FH) : **6,40 kW**
 Supply fan Pa (FG/FD) : **7,81 kW**
 Outdoor fan Pa (all) : **4,6 kW**

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

170

Size

Table 3.12

FHM	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 air flow 21 000 m³/h	16°C	21°C	156,5	102,0	41,4	150,8	98,7	46,1	144,1	95,3	51,2	136,2	91,9	56,8	129,1	88,9	61,7
		24°C	157,8	124,9	41,5	152,1	121,8	46,2	145,3	118,5	51,3	137,4	114,9	56,9	130,2	111,5	61,8
		27°C	159,3	146,9	41,7	153,6	144,2	46,3	146,8	141,0	51,4	138,8	137,2	57,1	131,7	131,7	62,1
		30°C	163,2	163,2	42,0	158,5	158,5	46,7	152,6	152,6	52,0	145,4	145,4	57,8	138,9	138,9	62,9
	19°C	24°C	170,5	101,1	42,7	164,0	97,5	47,2	156,4	94,0	52,3	147,7	90,5	58,0	139,9	87,7	62,9
		27°C	171,9	124,0	42,8	165,4	120,8	47,4	157,7	117,4	52,5	149,0	113,8	58,1	141,1	110,6	63,1
		30°C	173,5	146,0	42,9	167,0	143,2	47,5	159,3	140,0	52,6	150,5	136,3	58,3	142,6	132,9	63,2
		33°C	175,4	167,0	43,1	168,8	164,7	47,7	161,4	161,4	52,8	153,7	153,7	58,7	146,7	146,7	63,9
	22°C	27°C	185,0	99,7	43,9	177,7	95,9	48,5	169,2	92,4	53,6	159,6	89,0	59,3	151,2	86,2	64,3
		30°C	186,4	122,6	44,1	179,1	119,2	48,6	170,6	115,8	53,7	161,0	112,3	59,5	152,5	109,3	64,5
		33°C	188,1	144,3	44,2	180,7	141,4	48,8	172,2	138,3	53,9	162,5	134,8	59,6	154,0	131,6	64,7
		36°C	190,1	164,8	44,4	182,6	162,5	49,0	174,1	159,8	54,1	164,4	156,5	59,8	155,8	153,1	64,9
Nominal air flow 30 000 m³/h	16°C	21°C	167,9	118,9	42,5	161,2	115,7	47,0	153,4	112,3	52,0	144,5	108,7	57,6	136,5	105,4	62,5
		24°C	169,7	149,6	42,6	163,0	146,4	47,2	155,2	142,8	52,2	146,2	138,5	57,8	138,2	134,5	62,7
		27°C	172,9	172,9	42,9	167,1	167,1	47,5	160,2	160,2	52,7	152,1	152,1	58,5	144,8	144,8	63,5
		30°C	182,3	182,3	43,7	176,2	176,2	48,4	169,0	169,0	53,6	160,6	160,6	59,4	153,0	153,0	64,5
	19°C	24°C	182,2	117,4	43,7	174,7	114,0	48,2	166,0	110,7	53,2	156,3	107,2	58,9	147,7	104,1	63,8
		27°C	184,1	148,6	43,9	176,5	145,3	48,4	167,9	141,7	53,4	158,0	137,6	59,1	149,4	133,9	64,0
		30°C	186,2	178,9	44,1	178,6	175,8	48,6	169,7	169,7	53,6	161,0	161,0	59,4	153,2	153,2	64,6
		33°C	192,7	192,7	44,7	186,1	186,1	49,3	178,4	178,4	54,5	169,4	169,4	60,4	161,4	161,4	65,6
	22°C	27°C	197,0	115,4	45,0	188,6	112,0	49,5	179,1	108,7	54,6	168,5	105,4	60,3	159,2	102,6	65,3
		30°C	198,9	146,9	45,2	190,5	143,6	49,7	181,0	140,1	54,8	170,3	136,3	60,5	161,0	132,8	65,6
		33°C	201,2	177,3	45,4	192,7	174,2	49,9	183,1	170,7	55,0	172,4	166,4	60,7	163,1	162,4	65,8
		36°C	203,5	203,5	45,6	196,4	196,4	50,3	188,0	188,0	55,6	178,5	178,5	61,5	170,0	170,0	66,8
Maximum air flow 35 000 m³/h	16°C	21°C	172,4	127,2	42,8	165,1	124,0	47,3	156,7	120,6	52,3	147,2	116,8	57,9	138,8	113,3	62,8
		24°C	174,5	162,2	43,0	167,2	158,9	47,5	158,7	155,0	52,5	149,5	149,5	58,1	141,9	141,9	63,1
		27°C	180,4	180,4	43,5	174,0	174,0	48,1	166,3	166,3	53,3	157,5	157,5	59,0	149,6	149,6	64,2
		30°C	190,4	190,4	44,4	183,7	183,7	49,0	175,8	175,8	54,2	166,6	166,6	60,1	158,5	158,5	65,3
	19°C	24°C	186,9	125,4	44,1	178,7	122,2	48,6	169,5	118,9	53,6	159,2	115,3	59,2	150,1	112,1	64,2
		27°C	189,0	161,2	44,3	180,9	157,8	48,8	171,6	154,0	53,8	161,2	149,7	59,4	152,1	145,5	64,4
		30°C	191,3	191,3	44,5	184,3	184,3	49,1	176,1	176,1	54,3	166,7	166,7	60,1	158,4	158,4	65,3
		33°C	201,2	201,2	45,4	193,9	193,9	50,0	185,4	185,4	55,2	175,7	175,7	61,2	167,1	167,1	66,5
	22°C	27°C	201,8	123,1	45,4	192,8	119,9	49,9	182,7	116,8	55,0	171,5	113,5	60,7	161,8	110,6	65,8
		30°C	204,0	159,4	45,6	195,0	156,1	50,1	184,9	152,5	55,2	173,7	148,4	60,9	163,9	144,6	66,1
		33°C	206,5	194,8	45,8	197,5	191,5	50,3	186,2	186,2	55,4	176,3	176,3	61,3	167,5	167,5	66,6
		36°C	212,2	212,2	46,4	204,4	204,4	51,1	195,3	195,3	56,3	185,1	185,1	62,3	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.13

FHM	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-12°C	
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
Minimum air flow 21 000 m³/h	8°C	219,9	43,9	197,3	41,5	176,2	39,2	164,4	37,9	156,8	37,0	139,1	34,9	123,0	33,0	108,5	31,3	103,1	30,7
	11°C	217,5	46,6	195,2	44,0	174,4	41,6	162,8	40,1	155,3	39,2	137,9	37,0	122,0	35,0	107,8	33,3	102,6	32,6
	14°C	215,1	49,5	193,0	46,8	172,5	44,1	161,1	42,6	153,7	41,6	136,6	39,3	121,0	37,1	107,1	35,3	102,0	34,6
	17°C	212,5	52,7	190,7	49,7	170,6	46,8	159,3	45,2	152,1	44,1	135,2	41,6	120,0	39,3	106,4	37,3	101,4	36,6
	20°C	209,9	56,2	188,4	52,9	168,6	49,8	157,4	48,0	150,4	46,8	133,8	44,1	118,8	41,6	105,5	39,4	100,6	38,6
	23°C	207,3	59,9	186,1	56,3	166,5	52,8	155,5	50,9	148,6	49,6	132,3	46,6	117,6	43,8	104,6	41,4	99,9	40,6
	26°C	204,5	64,0	183,6	59,9	164,3	56,1	153,6	53,9	146,7	52,5	130,7	49,2	116,3	46,1	103,6	43,4	99,0	42,5
Nominal air flow 30 000 m³/h	8°C	225,7	38,6	202,2	36,7	180,4	34,8	168,1	33,7	160,2	33,1	141,6	31,4	124,7	29,9	-	-	-	-
	11°C	223,3	40,8	200,2	38,8	178,6	36,8	166,5	35,7	158,7	35,0	140,4	33,3	123,8	31,8	108,8	30,4	103,3	29,9
	14°C	220,9	43,1	198,0	41,0	176,8	39,0	164,8	37,8	157,2	37,1	139,2	35,3	122,9	33,7	108,2	32,3	102,8	31,8
	17°C	218,4	45,7	195,8	43,5	174,9	41,3	163,1	40,1	155,6	39,3	137,9	37,5	121,9	35,8	107,4	34,4	102,1	33,9
	20°C	215,9	48,5	193,6	46,1	172,9	43,8	161,3	42,5	153,9	41,7	136,5	39,7	120,8	38,0	106,7	36,5	101,5	36,0
	23°C	213,3	51,5	191,3	48,9	170,9	46,5	159,5	45,1	152,2	44,2	135,1	42,1	119,6	40,2	105,8	38,6	100,7	38,1
	26°C	210,6	54,7	188,9	51,9	168,8	49,3	157,5	47,8	150,4	46,8	133,6	44,5	118,4	42,5	104,9	40,8	99,9	40,3
Maximum air flow 35 000 m³/h	8°C	228,1	36,6	204,2	34,9	181,9	33,3	169,3	32,3	161,3	31,7	142,3	30,2	-	-	-	-	-	-
	11°C	225,8	38,7	202,2	36,9	180,2	35,2	167,8	34,2	159,8	33,6	141,1	32,1	124,1	30,7	108,6	29,5	102,9	29,1
	14°C	223,4	40,9	200,1	39,0	178,4	37,3	166,2	36,3	158,3	35,6	139,9	34,1	123,1	32,7	108,0	31,5	102,4	31,1
	17°C	220,9	43,3	197,9	41,4	176,5	39,5	164,5	38,4	156,8	37,8	138,6	36,2	122,1	34,8	107,3	33,6	101,8	33,3
	20°C	218,4	45,9	195,7	43,8	174,6	41,9	162,7	40,8	155,1	40,1	137,3	38,5	121,1	37,0	106,5	35,9	101,2	35,5
	23°C	215,8	48,7	193,4	46,5	172,6	44,5	160,9	43,3	153,4	42,6	135,9	40,9	120,0	39,4	105,7	38,2	100,4	37,9
	26°C	213,2	51,7	191,0	49,4	170,5	47,2	159,0	46,0	151,6	45,2	134,4	43,4	118,8	41,9	104,8	40,7	99,7	40,3

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

Control Pa (FC/FH) : **0,3 kW**
 Control Pa (FG/FD) : **0,5 kW**

Supply fan Pa (FC/FH) : **8,99 kW**
 Supply fan Pa (FG/FD) : **10,56 kW**
 Outdoor fan Pa (all) : **4,6 kW**

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

170 Size

Table 3.15

FCM	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 air flow 21 000 m³/h	16°C	21°C	157,8	102,3	40,2	152,3	98,9	44,8	145,7	95,5	49,8	138,1	92,0	55,2	131,2	89,0
24°C			159,1	124,6	40,3	153,6	121,5	44,9	147,0	118,2	49,9	139,3	114,5	55,3	132,3	111,2	60,0
27°C			160,7	146,0	40,4	155,2	143,3	45,0	148,5	140,1	50,0	140,8	136,4	55,4	133,8	132,8	60,1
30°C			163,6	163,6	40,6	159,2	159,2	45,3	153,6	153,6	50,4	146,7	146,7	56,1	140,2	140,2	61,0
19°C		24°C	171,8	101,2	41,4	165,5	97,6	45,9	158,1	94,1	50,9	149,6	90,6	56,3	142,1	87,7	61,1
		27°C	173,1	123,7	41,5	166,8	120,4	46,1	159,4	117,0	51,0	150,8	113,4	56,5	143,2	110,2	61,3
		30°C	174,8	145,0	41,7	168,4	142,2	46,2	160,9	139,0	51,1	152,4	135,3	56,6	144,7	131,9	61,4
		33°C	176,8	165,4	41,8	170,4	163,0	46,3	162,8	160,2	51,3	155,5	155,5	57,0	148,4	148,4	61,9
22°C		27°C	186,4	99,8	42,7	179,3	95,9	47,2	171,1	92,3	52,1	161,8	88,9	57,6	153,5	86,1	62,5
		30°C	187,7	122,2	42,8	180,6	118,7	47,3	172,3	115,3	52,3	163,0	111,8	57,8	154,7	108,8	62,7
		33°C	189,4	143,3	42,9	182,2	140,4	47,5	173,9	137,3	52,4	164,5	133,8	58,0	156,2	130,6	62,9
		36°C	191,5	163,2	43,1	184,2	160,9	47,6	175,9	158,2	52,6	166,4	154,8	58,1	158,1	151,6	63,1
Nominal air flow 30 000 m³/h	16°C	21°C	169,5	118,4	41,3	163,1	115,2	45,7	155,5	111,9	50,6	146,9	108,4	56,0	139,2	105,2	60,7
		24°C	171,3	148,4	41,4	164,8	145,3	45,9	157,3	141,8	50,8	148,6	137,7	56,2	140,8	133,9	60,9
		27°C	174,3	174,3	41,7	168,9	168,9	46,3	162,1	162,1	51,3	154,1	154,1	56,8	146,8	146,8	61,7
		30°C	182,5	182,5	42,4	177,0	177,0	47,0	170,3	170,3	52,1	162,3	162,3	57,7	155,0	155,0	62,7
	19°C	24°C	183,9	116,7	42,5	176,6	113,4	46,9	168,3	110,2	51,8	158,8	106,8	57,3	150,4	103,8	62,1
		27°C	185,7	147,2	42,7	178,4	144,1	47,1	170,0	140,6	52,0	160,5	136,7	57,5	152,1	133,1	62,3
		30°C	187,9	176,9	42,8	180,5	173,9	47,3	172,0	170,3	52,2	163,9	163,9	57,8	156,0	156,0	62,7
		33°C	193,6	193,6	43,4	187,4	187,4	48,0	180,0	180,0	53,0	171,2	171,2	58,7	163,3	163,3	63,7
	22°C	27°C	198,8	114,6	43,8	190,7	111,2	48,2	181,5	108,1	53,2	171,2	104,8	58,7	162,2	102,1	63,6
		30°C	200,7	145,4	43,9	192,5	142,2	48,4	183,3	138,9	53,4	172,9	135,3	58,9	163,9	131,9	63,9
		33°C	202,9	175,2	44,1	194,7	172,2	48,6	185,4	168,9	53,6	175,0	164,9	59,1	165,9	161,0	64,1
		36°C	205,4	203,8	44,3	197,7	197,7	49,0	189,5	189,5	54,0	180,1	180,1	59,7	171,6	171,6	64,9
Maximum air flow 35 000 m³/h	16°C	21°C	174,1	126,3	41,6	167,1	123,2	46,0	159,0	120,0	50,9	149,9	116,4	56,3	141,7	113,1	61,0
		24°C	176,2	160,6	41,8	169,2	157,5	46,2	161,0	153,8	51,1	151,8	149,4	56,5	144,2	144,2	61,4
		27°C	181,2	181,2	42,2	175,1	175,1	46,8	167,8	167,8	51,8	159,2	159,2	57,3	151,3	151,3	62,3
		30°C	190,5	190,5	43,0	184,5	184,5	47,6	177,2	177,2	52,7	168,6	168,6	58,4	160,8	160,8	63,4
	19°C	24°C	188,7	124,3	42,9	180,8	121,3	47,3	171,9	118,2	52,2	161,9	114,8	57,6	153,1	111,7	62,5
		27°C	190,8	159,4	43,1	182,9	156,3	47,5	173,9	152,7	52,4	163,9	148,6	57,9	155,0	144,7	62,7
		30°C	193,2	193,2	43,3	186,4	186,4	47,8	178,3	178,3	52,8	169,0	169,0	58,4	160,6	160,6	63,5
		33°C	201,7	201,7	44,0	194,9	194,9	48,6	186,9	186,9	53,7	177,5	177,5	59,4	169,1	169,1	64,6
	22°C	27°C	203,8	121,9	44,2	195,1	118,9	48,6	185,4	115,9	53,6	174,5	112,8	59,1	165,1	110,1	64,1
		30°C	205,9	157,5	44,4	197,2	154,5	48,8	187,4	151,1	53,8	176,5	147,3	59,4	167,0	143,7	64,4
		33°C	208,4	192,1	44,6	199,6	189,1	49,1	189,8	185,5	54,0	178,7	178,7	59,6	169,7	169,7	64,7
		36°C	212,8	212,8	45,0	205,3	205,3	49,6	196,5	196,5	54,8	186,4	186,4	60,6	-	-	-

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 8,99 kW
Supply fan Pa (FG/FD) : 10,56 kW
Outdoor fan Pa (all) : 4,6 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

200 Size

Table 3.18

FCM	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 air flow 24 000 m³/h	16°C	21°C	180,9	117,6	40,9	174,7	113,9	45,4	167,4	110,2	50,4	159,1	106,4	55,9	151,6	103,2	60,8
		24°C	182,4	143,5	40,9	176,1	140,1	45,5	168,8	136,4	50,5	160,5	132,4	56,0	153,0	128,8	60,9
		27°C	184,2	168,3	41,0	177,9	165,3	45,6	170,6	161,8	50,6	162,2	157,7	56,1	154,7	153,8	61,0
		30°C	188,4	188,4	41,2	183,1	183,1	45,9	176,8	176,8	51,0	169,4	169,4	56,7	162,7	162,7	61,8
	19°C	24°C	197,3	116,4	42,0	190,2	112,5	46,5	182,0	108,7	51,4	172,9	104,9	56,9	164,8	101,8	61,8
		27°C	198,8	142,5	42,1	191,6	138,9	46,6	183,5	135,2	51,5	174,3	131,3	57,0	166,2	127,9	61,9
		30°C	200,6	167,3	42,2	193,4	164,2	46,7	185,2	160,7	51,7	176,0	156,7	57,2	167,9	153,1	62,1
		33°C	202,7	191,0	42,3	195,5	188,4	46,9	187,3	185,3	51,8	179,1	179,1	57,5	171,9	171,9	62,5
	22°C	27°C	214,3	114,7	43,2	206,4	110,6	47,7	197,4	106,7	52,6	187,3	103,0	58,1	178,6	100,1	63,1
		30°C	215,8	140,7	43,3	207,8	137,0	47,8	198,8	133,4	52,7	188,8	129,6	58,3	180,0	126,4	63,2
		33°C	217,6	165,3	43,4	209,6	162,2	47,9	200,6	158,8	52,9	190,5	155,1	58,4	181,7	151,7	63,4
		36°C	219,7	188,6	43,6	211,7	186,0	48,1	202,7	183,1	53,0	192,6	179,5	58,6	183,8	176,1	63,6
Nominal air flow 35 000 m³/h	16°C	21°C	194,9	137,7	41,9	187,7	134,2	46,4	179,4	130,6	51,3	170,0	126,7	56,7	161,8	123,3	61,5
		24°C	197,1	173,1	42,0	189,8	169,6	46,5	181,5	165,7	51,4	172,1	161,2	56,9	163,9	157,1	61,7
		27°C	200,8	200,8	42,3	194,5	194,5	46,8	187,2	187,2	51,9	178,8	178,8	57,4	171,3	171,3	62,4
		30°C	211,9	211,9	43,0	205,3	205,3	47,6	197,7	197,7	52,7	188,9	188,9	58,3	181,2	181,2	63,3
	19°C	24°C	211,8	135,9	43,1	203,7	132,3	47,5	194,5	128,8	52,4	184,3	125,0	57,8	175,4	121,8	62,7
		27°C	213,9	172,0	43,2	205,8	168,4	47,6	196,6	164,6	52,5	186,4	160,3	58,0	177,5	156,5	62,9
		30°C	216,3	207,0	43,4	208,2	203,6	47,8	198,4	198,4	52,7	189,4	189,4	58,3	181,4	181,4	63,2
		33°C	224,1	224,1	43,9	216,9	216,9	48,5	208,7	208,7	53,5	199,4	199,4	59,2	191,2	191,2	64,2
	22°C	27°C	229,3	133,5	44,3	220,3	129,9	48,7	210,3	126,4	53,6	199,3	122,9	59,1	189,7	120,0	64,0
		30°C	231,4	170,0	44,4	222,5	166,5	48,9	212,4	162,8	53,8	201,4	158,8	59,3	191,8	155,3	64,2
		33°C	233,9	205,3	44,6	224,9	202,0	49,1	214,8	198,2	54,0	203,8	193,9	59,5	194,1	189,8	64,5
		36°C	236,9	236,9	44,9	229,1	229,1	49,4	220,3	220,3	54,5	210,4	210,4	60,2	201,7	201,7	65,2
Maximum air flow 43 000 m³/h	16°C	21°C	201,7	150,6	42,3	193,7	147,2	46,7	184,7	143,6	51,6	174,6	139,6	57,0	165,8	135,9	61,9
		24°C	204,3	192,9	42,5	196,3	189,2	46,9	187,2	185,0	51,8	177,4	177,4	57,3	169,4	169,4	62,3
		27°C	212,3	212,3	43,0	205,1	205,1	47,5	196,8	196,8	52,5	187,4	187,4	58,1	179,2	179,2	63,1
		30°C	224,5	224,5	43,9	216,9	216,9	48,4	208,3	208,3	53,4	198,7	198,7	59,1	190,1	190,1	64,2
	19°C	24°C	218,9	148,5	43,5	210,0	145,2	47,9	200,1	141,7	52,8	189,2	138,0	58,3	179,7	134,7	63,2
		27°C	221,5	191,9	43,7	212,6	188,3	48,1	202,7	184,3	53,0	191,8	179,6	58,5	182,2	175,3	63,4
		30°C	225,3	225,3	44,0	217,4	217,4	48,5	208,6	208,6	53,5	198,6	198,6	59,1	189,9	189,9	64,2
		33°C	237,2	237,2	44,8	229,1	229,1	49,4	219,9	219,9	54,4	209,6	209,6	60,1	200,7	200,7	65,2
	22°C	27°C	236,7	145,7	44,8	227,1	142,5	49,2	216,3	139,3	54,1	204,5	135,9	59,6	194,4	132,9	64,7
		30°C	239,4	189,9	45,0	229,6	186,5	49,4	218,9	182,8	54,3	207,1	178,5	59,9	196,9	174,6	64,9
		33°C	242,3	233,2	45,2	232,5	229,6	49,6	220,9	220,9	54,5	210,4	210,4	60,2	201,2	201,2	65,3
		36°C	250,6	250,6	45,8	241,8	241,8	50,4	-	-	-	-	-	-	-	-	-

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 8,95 kW
Supply fan Pa (FG/FD) : 10,81 kW
Outdoor fan Pa (all) : 4,1 kW

PERFORMANCES



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

COOLING CAPACITY AND ABSORBED POWER

230 **Size**

Table 3.21

FCM	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 air flow 27 000 m³/h	16°C	21°C	216,4	140,4	55,9	208,5	135,3	61,9	199,4	130,2	68,6	189,0	125,0	76,1	179,9	120,8	82,9
		24°C	218,3	169,0	56,0	210,3	164,3	62,1	201,1	159,4	68,7	190,7	154,2	76,3	181,5	149,5	83,1
		27°C	220,3	196,5	56,2	212,3	192,4	62,2	203,0	187,7	68,9	192,5	182,4	76,5	183,2	177,5	83,3
		30°C	223,1	223,1	56,5	216,4	216,4	62,7	208,4	208,4	69,6	199,1	199,1	77,4	190,8	190,8	84,5
	19°C	24°C	236,0	137,3	57,8	226,9	132,1	63,8	216,6	127,1	70,5	205,1	122,2	78,0	195,0	118,1	84,9
		27°C	237,9	166,5	58,0	228,8	161,9	64,0	218,4	157,1	70,7	206,8	152,1	78,3	196,7	147,7	85,2
		30°C	240,1	194,5	58,2	230,9	190,4	64,2	220,5	185,9	70,9	208,8	180,9	78,5	198,6	176,4	85,5
		33°C	242,6	221,1	58,4	233,3	217,7	64,4	222,7	213,7	71,1	211,0	208,8	78,8	201,9	201,9	86,2
	22°C	27°C	256,4	134,4	59,8	246,1	129,2	65,8	234,7	124,4	72,5	222,0	119,7	80,3	211,0	115,9	87,3
		30°C	258,5	164,1	60,0	248,2	159,5	66,0	236,6	154,9	72,8	223,9	150,2	80,5	212,8	146,2	87,7
		33°C	260,8	192,2	60,2	250,4	188,3	66,3	238,8	184,2	73,0	226,0	179,6	80,8	214,8	175,4	88,0
		36°C	263,4	218,9	60,5	252,9	215,8	66,5	241,2	212,1	73,3	228,3	207,8	81,1	217,1	203,6	88,3
Nominal air flow 39 000 m³/h	16°C	21°C	234,3	164,6	57,7	224,8	159,4	63,6	214,0	154,2	70,1	202,0	148,6	77,6	191,6	143,9	84,4
		24°C	236,8	203,4	57,9	227,2	198,3	63,8	216,3	192,8	70,4	204,3	186,7	77,9	193,8	181,1	84,7
		27°C	238,8	238,8	58,1	230,5	230,5	64,2	220,9	220,9	71,0	210,1	210,1	78,7	200,6	200,6	85,8
		30°C	250,8	250,8	59,2	242,3	242,3	65,4	232,5	232,5	72,3	221,5	221,5	80,2	211,7	211,7	87,5
	19°C	24°C	254,4	160,4	59,6	243,7	155,4	65,5	231,7	150,5	72,1	218,6	145,4	79,7	207,2	141,0	86,7
		27°C	257,0	200,4	59,9	246,2	195,5	65,8	234,2	190,3	72,4	221,0	184,6	80,1	209,6	179,5	87,1
		30°C	259,8	239,1	60,2	249,0	234,5	66,1	236,9	229,2	72,8	223,6	223,0	80,4	212,3	212,3	87,6
		33°C	266,0	266,0	60,8	256,5	256,5	67,0	245,6	245,6	73,9	233,6	233,6	81,9	223,0	223,0	89,3
	22°C	27°C	275,3	156,4	61,7	263,4	151,7	67,6	250,4	147,1	74,3	236,1	142,5	82,1	223,8	138,6	89,4
		30°C	278,1	197,3	61,9	266,1	192,7	67,9	253,0	188,0	74,7	238,6	182,8	82,5	226,2	178,2	89,8
		33°C	281,1	236,8	62,2	269,0	232,5	68,2	255,8	227,7	75,0	241,3	222,2	82,9	228,9	217,0	90,2
		36°C	284,3	275,0	62,5	272,2	271,2	68,5	259,3	259,3	75,6	246,2	246,2	83,7	234,9	234,9	91,2
Maximum air flow 43 000 m³/h	16°C	21°C	238,6	170,6	58,0	228,5	165,5	63,9	217,2	160,2	70,4	204,7	154,6	77,9	193,9	149,7	84,8
		24°C	241,3	212,8	58,3	231,2	207,6	64,2	219,8	201,9	70,7	207,2	195,4	78,2	196,3	189,6	85,1
		27°C	245,5	245,5	58,7	236,6	236,6	64,7	226,5	226,5	71,5	215,1	215,1	79,3	205,0	205,0	86,5
		30°C	258,2	258,2	59,9	249,1	249,1	66,1	238,7	238,7	73,0	227,1	227,1	81,0	216,9	216,9	88,4
	19°C	24°C	258,9	166,1	60,0	247,6	161,2	65,9	235,1	156,3	72,5	221,5	151,2	80,2	209,7	146,8	87,2
		27°C	261,7	209,6	60,3	250,4	204,6	66,2	237,8	199,4	72,9	224,1	193,4	80,5	212,2	188,1	87,6
		30°C	264,8	252,0	60,6	253,4	247,2	66,5	240,1	240,1	73,2	227,7	227,7	81,1	216,8	216,8	88,4
		33°C	273,5	273,5	61,5	263,3	263,3	67,6	251,9	251,9	74,6	239,3	239,3	82,7	228,3	228,3	90,3
	22°C	27°C	280,0	161,7	62,1	267,6	157,1	68,0	253,9	152,7	74,8	239,1	148,1	82,6	226,4	144,2	89,9
		30°C	283,0	206,3	62,4	270,5	201,7	68,4	256,8	196,9	75,1	241,9	191,6	83,0	229,1	186,8	90,4
		33°C	286,2	249,6	62,7	273,6	245,2	68,7	259,8	240,2	75,5	244,8	234,3	83,4	232,0	228,8	90,8
		36°C	289,3	289,3	63,1	278,1	278,1	69,3	265,7	265,7	76,3	252,0	252,0	84,5	240,2	240,2	92,3

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

Control Pa (FC/FH) : 0,3 kW
Control Pa (FG/FD) : 0,5 kW

Supply fan Pa (FC/FH) : 11,34 kW
Supply fan Pa (FG/FD) : 14,01 kW
Outdoor fan Pa (all) : 4,1 kW

FXK= Heat recovery unit

R407C

FX UNIT

Table 3.22

SIZE	Outdoor air temperature		25°C	30°C	35°C	40°C	45°C
	% fresh air	Return air	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}
25	0	22°C DB	22,9	21,5	20,0	18,4	16,7
		27°C DB	26,4	24,7	23,0	21,1	19,1
	25	22°C DB	23,6	23,3	23,1	22,7	22,2
		27°C DB	25,9	25,4	24,8	24,2	23,5
	50	22°C DB	24,3	25,0	26,1	27,0	27,7
		27°C DB	25,4	26,1	26,7	27,4	27,9
	75	22°C DB	25,0	27,0	29,4	31,3	33,5
		27°C DB	25,0	26,8	28,7	30,8	32,1
	100	22°C DB	25,7	29,1	32,5	35,9	39,0
		27°C DB	24,5	27,6	30,7	33,8	36,6
30	0	22°C DB	28,4	26,7	24,9	22,9	20,9
		27°C DB	32,5	30,5	28,3	26,0	23,5
	25	22°C DB	29,2	28,8	28,6	28,2	27,5
		27°C DB	32,0	31,3	30,5	29,9	28,8
	50	22°C DB	30,0	30,9	32,3	33,3	34,1
		27°C DB	31,4	32,2	32,9	33,7	34,1
	75	22°C DB	30,8	33,3	36,2	38,5	41,0
		27°C DB	30,8	33,1	35,3	37,9	39,3
	100	22°C DB	31,7	35,8	40,0	44,1	47,9
		27°C DB	30,3	34,0	37,9	41,6	44,9
35	0	22°C DB	31,2	29,5	27,8	26,0	24,1
		27°C DB	36,1	34,1	31,9	29,6	27,2
	25	22°C DB	32,0	31,9	31,7	31,5	31,3
		27°C DB	35,4	35,0	34,5	34,0	33,3
	50	22°C DB	33,0	34,3	35,7	36,8	38,8
		27°C DB	34,8	36,1	37,1	38,2	39,1
	75	22°C DB	33,9	37,0	40,1	43,0	46,6
		27°C DB	34,1	37,0	39,8	42,8	45,2
	100	22°C DB	34,9	39,7	44,5	49,3	63,9
		27°C DB	33,5	38,1	42,6	46,9	59,4
40	0	22°C DB	36,7	34,8	32,8	30,6	28,3
		27°C DB	42,2	40,0	37,7	35,2	32,6
	25	22°C DB	37,7	37,5	37,8	37,5	37,2
		27°C DB	41,5	41,1	40,5	40,5	39,6
	50	22°C DB	38,8	40,2	42,6	44,2	45,8
		27°C DB	40,8	42,2	43,5	45,5	46,7
	75	22°C DB	39,8	43,3	47,8	51,4	55,4
		27°C DB	40,0	43,3	46,6	51,1	53,8
	100	22°C DB	40,9	46,4	52,4	58,5	64,5
		27°C DB	39,3	44,5	50,0	55,5	60,9
55	0	22°C DB	44,8	42,5	40,0	37,4	34,7
		27°C DB	51,7	48,9	45,9	42,7	39,4
	25	22°C DB	46,0	45,8	45,8	45,0	45,4
		27°C DB	50,8	50,2	49,5	49,7	48,3
	50	22°C DB	47,4	49,2	52,2	53,9	57,0
		27°C DB	49,9	51,7	53,4	56,2	57,5
	75	22°C DB	48,6	53,1	59,0	63,6	68,8
		27°C DB	48,9	53,1	57,5	63,2	66,7
	100	22°C DB	50,1	57,2	64,8	72,6	80,4
		27°C DB	48,0	54,7	61,8	69,0	76,1
70	0	22°C DB	63,9	60,3	56,5	52,3	47,8
		27°C DB	72,9	68,6	63,9	58,7	53,0
	25	22°C DB	65,5	64,8	64,6	63,7	61,7
		27°C DB	71,7	70,4	68,8	67,6	65,2
	50	22°C DB	67,3	69,4	72,6	75,0	76,9
		27°C DB	70,4	72,5	74,0	76,0	77,1
	75	22°C DB	69,1	74,7	81,2	86,5	92,8
		27°C DB	69,2	74,3	79,4	85,3	89,0
	100	22°C DB	71,0	80,0	89,4	98,8	107,9
		27°C DB	67,9	76,4	85,1	93,6	101,7

PT : Instantaneous gross capacity (defrost cycle is not taken into account) in kW

NB : All selections are done with 50% humidity in the air (return air and outdoor air)

Data according to Eurovent standard conditions

XXX

FXK= Heat recovery unit

R407C **FX** UNIT

Table 3.23

SIZE	Outdoor air temperature		25°C	30°C	35°C	40°C	45°C
	% fresh air	Return air	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}
85	0	22°C DB	78,0	73,9	69,4	64,5	59,3
		27°C DB	88,6	83,8	78,6	72,8	6,5
	25	22°C DB	79,9	79,2	79,2	78,3	76,8
		27°C DB	87,2	85,9	84,3	83,3	80,8
	50	22°C DB	82,1	84,6	88,7	91,9	94,5
		27°C DB	85,7	88,2	90,3	93,2	95,0
	75	22°C DB	84,0	90,7	98,9	105,3	113,1
		27°C DB	84,3	90,4	96,6	104,2	108,9
	100	22°C DB	86,3	96,9	108,2	119,6	130,7
		27°C DB	82,9	92,8	103,2	113,7	123,8
100	0	22°C DB	90,8	87,2	83,2	78,7	73,6
		27°C DB	103,4	99,2	94,5	89,3	83,6
	25	22°C DB	92,9	93,1	94,3	94,6	94,5
		27°C DB	101,8	101,5	100,9	101,4	100,8
	50	22°C DB	95,3	99,1	104,9	109,7	115,0
		27°C DB	100,2	104,1	107,7	112,8	117,3
	75	22°C DB	97,5	105,9	116,5	125,2	135,9
		27°C DB	98,6	106,5	114,9	125,4	133,1
	100	22°C DB	99,9	113,0	127,1	141,9	157,0
		27°C DB	97,0	109,3	122,4	136,3	150,3
110	0	22°C DB	103,5	97,2	90,6	83,7	76,5
		27°C DB	118,9	111,5	103,8	95,6	87,1
	25	22°C DB	106,3	105,0	104,6	103,2	101,5
		27°C DB	116,7	114,5	112,0	110,5	107,6
	50	22°C DB	109,5	112,8	118,2	122,5	126,5
		27°C DB	114,6	117,9	120,6	124,7	127,6
	75	22°C DB	112,4	121,8	133,1	142,2	153,1
		27°C DB	112,5	121,0	129,7	140,3	147,3
	100	22°C DB	115,7	130,9	147,0	163,4	179,5
		27°C DB	110,4	124,6	139,3	154,3	168,7
140	0	22°C DB	129,3	122,1	114,5	106,3	97,5
		27°C DB	148,6	140,0	130,8	121,0	110,5
	25	22°C DB	132,8	131,7	131,6	130,1	128,1
		27°C DB	145,9	143,6	140,7	138,9	135,5
	50	22°C DB	136,7	141,3	148,0	153,3	158,4
		27°C DB	143,3	147,7	151,2	155,9	159,7
	75	22°C DB	140,3	152,2	165,7	176,7	190,2
		27°C DB	140,8	151,5	162,0	174,6	183,0
	100	22°C DB	144,4	163,2	182,4	201,5	220,0
		27°C DB	138,2	155,7	173,3	190,6	207,1
190	0	22°C DB	152,7	144,5	135,7	126,2	115,9
		27°C DB	173,9	164,4	154,1	142,8	130,7
	25	22°C DB	156,5	155,1	155,0	153,4	150,9
		27°C DB	171,0	168,5	165,3	163,2	159,2
	50	22°C DB	160,8	165,8	173,5	179,6	185,6
		27°C DB	168,1	173,1	177,2	182,7	186,8
	75	22°C DB	164,7	178,0	193,6	206,4	221,7
		27°C DB	165,2	177,4	189,6	204,2	213,7
	100	22°C DB	169,2	190,2	212,6	235,3	257,3
		27°C DB	162,4	182,1	202,6	223,2	242,8

PT : Instantaneous gross capacity (defrost cycle is not taken into account) in kW

NB : All selections are done with 50% humidity in the air (return air and outdoor air)

Data according to Eurovent standard conditions

XXX

FXK= Heat recovery unit

R407C **FX** UNIT

Table 3.24

SIZE	Outdoor air temperature		20°C	12°C	4°C	- 4°C	- 12°C
	% fresh air	Return air	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}
25	0	18°C DB	31,1	25,3	20,4	16,2	12,3
		23°C DB	30,1	24,6	19,8	15,7	11,7
	25	18°C DB	30,7	26,3	22,4	19,1	15,9
		23°C DB	30,8	26,4	22,5	19,4	16,2
	50	18°C DB	30,3	27,4	24,6	22,3	19,9
		23°C DB	31,4	28,7	26,0	23,5	21,3
	75	18°C DB	29,9	28,5	27,0	25,7	24,4
		23°C DB	32,0	30,5	29,6	28,1	26,8
	100	18°C DB	29,5	29,6	29,8	29,3	29,2
		23°C DB	32,6	32,7	33,2	33,4	33,1
30	0	18°C DB	38,6	31,4	25,2	19,9	14,9
		23°C DB	37,5	30,5	24,5	19,2	14,2
	25	18°C DB	38,1	32,7	27,8	23,7	19,6
		23°C DB	38,3	32,8	27,9	24,3	19,7
	50	18°C DB	37,7	34,0	30,6	27,7	24,6
		23°C DB	39,0	35,7	32,3	29,2	25,8
	75	18°C DB	37,2	35,3	33,6	31,9	30,3
		23°C DB	39,8	37,9	36,8	34,9	33,1
	100	18°C DB	36,7	36,8	37,1	36,6	36,5
		23°C DB	40,6	40,6	41,3	41,5	41,3
35	0	18°C DB	40,1	32,7	26,6	21,1	15,7
		23°C DB	39,2	32,1	26,1	20,6	15,1
	25	18°C DB	39,6	33,9	29,3	24,3	20,2
		23°C DB	39,9	34,2	29,5	24,7	20,4
	50	18°C DB	39,1	35,2	31,9	28,3	24,8
		23°C DB	40,7	37,4	33,2	29,9	26,4
	75	18°C DB	38,6	36,5	34,8	32,5	31,0
		23°C DB	41,5	39,1	37,9	35,3	33,3
	100	18°C DB	38,2	37,8	38,2	37,3	37,0
		23°C DB	42,2	41,9	42,5	42,5	41,4
40	0	18°C DB	48,2	39,3	32,0	25,3	19,4
		23°C DB	47,3	38,7	31,4	24,7	19,0
	25	18°C DB	47,6	40,7	34,8	29,1	24,2
		23°C DB	48,2	41,2	35,2	29,7	24,3
	50	18°C DB	47,0	42,2	38,0	33,8	30,0
		23°C DB	49,0	44,9	40,0	35,3	31,0
	75	18°C DB	46,5	43,7	41,6	38,8	36,2
		23°C DB	50,0	46,9	45,4	42,3	39,8
	100	18°C DB	45,9	45,3	45,7	44,6	43,6
		23°C DB	50,9	50,2	51,1	50,2	49,2
55	0	18°C DB	56,3	46,3	38,1	30,6	23,5
		23°C DB	55,5	45,8	37,7	30,1	22,9
	25	18°C DB	55,7	47,8	41,1	34,9	29,3
		23°C DB	56,5	48,4	41,8	35,7	29,3
	50	18°C DB	55,1	49,3	44,3	39,6	35,0
		23°C DB	57,5	52,6	47,2	42,0	37,1
	75	18°C DB	54,4	50,9	48,0	45,4	42,2
		23°C DB	58,5	54,7	53,5	48,4	46,3
	100	18°C DB	53,8	52,6	52,6	50,4	50,7
		23°C DB	59,6	58,3	59,4	59,2	55,6
70	0	18°C DB	82,8	68,4	55,9	44,9	35,2
		23°C DB	80,9	66,8	54,5	43,6	33,9
	25	18°C DB	81,9	70,9	61,3	52,1	44,1
		23°C DB	82,3	71,3	61,7	53,2	44,6
	50	18°C DB	80,9	73,5	66,8	60,6	54,1
		23°C DB	83,7	77,4	70,5	63,9	56,9
	75	18°C DB	80,0	76,1	72,8	69,1	65,5
		23°C DB	85,2	81,1	79,5	75,4	71,4
	100	18°C DB	79,0	78,8	79,4	77,9	77,3
		23°C DB	86,7	86,4	87,6	87,8	87,2

PT : Instantaneous gross capacity (defrost cycle is not taken into account) in kW

NB : All selections are done with 50% humidity in the air (return air and outdoor air)

Data according to Eurovent standard conditions

XXX

FXK= Heat recovery unit

R407C

FX UNIT

Table 3.25

SIZE	Outdoor air temperature		20°C	12°C	4°C	- 4°C	- 12°C
	% fresh air	Return air	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}	PT _{R407C}
85	0	18°C DB	102,3	84,5	69,3	55,8	44,0
		23°C DB	100,1	82,9	68,1	54,7	42,9
	25	18°C DB	101,1	87,4	75,5	63,6	53,5
		23°C DB	101,9	88,1	76,4	65,1	53,7
	50	18°C DB	99,9	90,4	81,8	73,6	64,4
		23°C DB	103,6	95,5	86,1	77,5	67,3
	75	18°C DB	98,8	93,6	88,8	83,0	78,2
		23°C DB	105,4	99,9	96,7	91,1	85,0
	100	18°C DB	97,7	96,8	96,6	93,8	91,4
		23°C DB	107,3	106,4	106,9	105,7	103,8
100	0	18°C DB	104,9	87,0	73,2	61,6	51,9
		23°C DB	104,7	87,4	73,7	62,1	52,2
	25	18°C DB	103,8	89,4	77,4	67,1	58,0
		23°C DB	106,2	91,4	79,1	68,6	59,1
	50	18°C DB	102,8	91,8	82,3	73,5	65,4
		23°C DB	107,8	96,7	87,7	77,7	69,4
	75	18°C DB	101,9	94,4	88,0	82,4	76,6
		23°C DB	109,4	101,2	97,0	89,6	83,6
	100	18°C DB	100,9	97,2	94,3	91,0	89,5
		23°C DB	111,0	107,0	103,1	103,9	101,7
110	0	18°C DB	136,0	112,2	90,9	71,8	55,5
		23°C DB	132,0	109,0	88,2	69,4	53,20
	25	18°C DB	134,4	116,5	100,0	85,0	70,9
		23°C DB	134,5	116,7	100,4	87,0	72,8
	50	18°C DB	132,7	121,0	109,6	99,7	89,3
		23°C DB	137,0	126,7	114,9	105,0	95,4
	75	18°C DB	131,1	125,6	120,1	114,2	108,7
		23°C DB	139,5	133,7	129,1	123,6	118,6
	100	18°C DB	129,5	130,3	131,6	129,9	128,6
		23°C DB	142,0	142,9	145,4	143,4	143,8
140	0	18°C DB	172,9	142,7	116,1	92,6	72,4
		23°C DB	168,1	138,8	112,8	89,6	69,5
	25	18°C DB	170,8	148,1	127,5	108,4	92,2
		23°C DB	171,3	148,5	128,1	111,2	91,8
	50	18°C DB	168,8	153,7	139,1	126,8	113,8
		23°C DB	174,3	160,4	146,0	133,3	118,6
	75	18°C DB	166,7	159,4	152,0	144,4	138,6
		23°C DB	177,6	169,8	165,4	157,6	151,2
	100	18°C DB	164,7	165,2	166,5	164,3	163,5
		23°C DB	180,7	181,2	184,0	185,1	184,6
190	0	18°C DB	209,3	173,1	141,5	113,8	90,6
		23°C DB	204,2	169,2	138,3	111,1	87,9
	25	18°C DB	206,9	179,4	154,4	130,4	111,8
		23°C DB	207,9	180,4	155,8	134,7	114,2
	50	18°C DB	204,5	185,9	168,1	151,9	135,2
		23°C DB	211,5	194,9	176,3	160,0	144,4
	75	18°C DB	202,1	192,5	183,0	171,9	163,2
		23°C DB	215,2	205,2	199,0	188,6	178,5
	100	18°C DB	199,8	199,3	199,5	195,2	191,9
		23°C DB	219,0	218,6	220,4	219,9	218,1

PT : Instantaneous gross capacity (defrost cycle is not taken into account) in kW

NB : All selections are done with 50% humidity in the air (return air and outdoor air)

Data according to Eurovent standard conditions

XXX

FCM = Cooling only unit
 FHM = Heat pump rooftop

**Return air at
20°C**

Table 4.1

SIZE	Δ water temperature		90-70				80-60				70-50			
	Type (1)	Air flow m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h
85	S	12000	100	47	25	4	81	32	20	4	63	20	16	3
	H		153	39	38	7	125	27	31	6	98	16	24	4
	S	15000	112	59	22	5	91	40	18	4	70	24	14	3
	H		175	51	35	8	143	34	28	6	111	21	22	5
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
	H		222	81	29	10	182	55	24	8	140	33	18	6
100	S	14000	108	55	23	5	88	38	19	4	68	23	15	3
	H		168	47	36	7	137	32	29	6	107	20	23	5
	S	18500	124	73	20	5	101	49	16	4	78	30	13	3
	H		197	64	32	9	161	44	26	7	125	27	20	5
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
	H		222	81	29	10	182	55	24	8	140	33	18	6
120	S	15000	112	59	22	5	91	40	18	4	70	24	14	3
	H		175	51	35	8	143	34	28	6	111	21	22	5
	S	20500	130	80	29	6	106	54	15	5	82	33	12	4
	H		209	72	30	9	171	49	25	8	132	30	19	6
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
	H		222	81	29	10	182	55	24	8	140	33	18	6
150	S	18000	117	20	19	5	94	13	16	4	71	7	12	3
	H		202	29	33	9	166	20	27	7	129	12	21	6
	S	26000	140	28	16	6	112	18	13	5	84	10	10	4
	H		251	44	29	11	206	30	24	9	160	18	18	7
	S	35000	160	37	14	7	128	24	11	6	96	13	8	4
	H		296	61	25	13	242	41	21	11	188	25	16	8
170	S	21000	126	23	18	6	101	15	14	4	76	9	11	3
	H		222	35	31	10	182	24	26	8	142	15	20	6
	S	30000	149	32	15	7	120	21	12	5	90	12	9	4
	H		272	52	27	12	223	35	22	10	173	21	17	8
	S	35000	160	37	14	7	128	24	11	6	96	13	8	4
	H		296	61	25	13	242	41	21	11	188	25	16	8
200	S	24000	147	16	18	6	118	10	15	5	90	6	11	4
	H		239	46	30	11	196	31	24	9	153	20	19	7
	S	35000	177	23	15	8	143	15	12	6	108	9	9	5
	H		296	67	25	13	243	47	21	11	169	29	16	8
	S	43000	196	28	14	9	158	18	11	7	119	10	8	5
	H		330	86	23	15	271	58	19	12	210	36	15	9
230	S	27000	156	18	17	7	126	12	14	6	96	7	11	4
	H		256	52	28	11	210	36	23	9	164	22	18	7
	S	39000	199	35	24	8	151	16	12	7	114	10	9	5
	H		313	77	24	14	257	53	20	11	200	40	15	9
	S	43000	196	28	14	9	158	18	11	7	119	10	8	5
	H		330	86	23	15	271	58	19	12	210	36	15	9

(1) S = Standard heat, H = High heat

(2) Pressure drop = internal coil + 3 way valve

Water without glycol

Reminder : 10 kPa=1mCe

FCM = Cooling only unit
FHM = Heat pump rooftop

**Return air at
10°C**

Table 4.2

SIZE	Δ water temperature		90-70				80-60				70-50			
	Type (1)	Air flow m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h
85	S	12000	120	68	29	5	101	47	24	4	82	33	20	4
	H		183	56	44	8	155	53	37	7	127	27	30	6
	S	15000	134	84	26	6	113	61	22	5	92	41	18	4
	H		210	72	40	9	177	52	34	8	145	35	28	6
100	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
	S	14000	130	79	27	6	109	57	22	5	89	38	18	4
	H		201	67	41	9	170	48	35	7	139	33	29	6
120	S	18500	149	103	23	7	125	74	20	6	102	50	16	4
	H		236	92	37	10	200	66	31	9	163	45	25	7
	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
150	S	15000	134	84	26	6	113	61	22	5	92	41	18	4
	H		210	72	40	9	177	52	34	8	145	35	28	6
	S	20500	156	114	22	7	132	82	19	6	107	55	15	5
	H		250	102	35	11	211	74	30	9	172	50	24	8
170	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
	S	18000	141	28	23	6	118	20	19	5	169	41	17	7
	H		242	41	39	11	205	30	33	9	347	83	24	15
200	S	26000	169	41	19	7	141	28	16	6	112	18	12	5
	H		301	63	33	13	255	46	28	11	208	31	23	9
	S	35000	193	54	16	9	160	37	13	7	128	24	11	6
	H		355	87	29	16	300	63	25	13	245	42	20	11
230	S	21000	152	34	21	7	127	23	17	6	102	15	14	4
	H		266	49	36	12	225	36	31	10	184	24	25	8
	S	30000	180	47	17	8	150	33	14	7	114	21	12	5
	H		326	74	31	14	276	53	26	12	225	36	22	10
200	S	35000	193	54	16	9	160	37	13	7	128	24	11	6
	H		355	87	29	16	300	63	25	13	245	42	20	11
	S	24000	177	23	21	8	148	16	18	6	119	10	14	5
	H		286	65	34	13	243	47	29	11	199	32	24	9
230	S	35000	214	32	18	9	179	23	15	8	151	16	11	7
	H		354	99	29	16	300	71	25	13	245	49	20	11
	S	43000	236	40	16	10	197	28	13	9	158	18	11	7
	H		395	122	26	17	334	88	22	15	273	60	18	12
230	S	27000	188	25	20	8	157	18	17	7	126	12	14	6
	H		306	74	33	13	260	54	28	11	213	37	23	9
	S	39000	225	36	17	10	188	26	14	8	151	16	11	7
	H		375	110	28	17	318	80	23	14	260	54	19	11
230	S	43000	236	40	16	10	197	28	13	9	158	18	11	7
	H		395	122	26	17	334	88	22	15	273	60	18	12

(1) S = Standard heat, H = High heat

(2) Pressure drop = internal coil + 3 way valve

Water without glycol

Reminder : 10 kPa=1mCe

FCM = Cooling only unit
 FHM = Heat pump rooftop

Return air at 0°C

Table 4.3

SIZE	Δ water temperature		90-70				80-60				70-50			
	Type (1)	Air flow m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h	Heating capacity kW	Pressure drop kPa (2)	Δ Air temp.	Water flow rate m³/h
85	S	12000	140	92	32	6	121	70	28	5	102	50	24	4
	H		215	76	50	9	186	58	43	8	158	42	36	7
	S	15000	157	115	29	7	136	87	25	6	114	62	21	5
	H		246	99	45	11	213	75	39	9	180	54	33	8
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
	H		312	158	38	14	270	119	33	12	227	85	27	10
100	S	14000	152	107	30	7	131	81	26	6	110	58	22	5
	H		236	91	47	10	204	69	41	9	173	50	34	8
	S	18500	175	141	26	8	150	106	23	7	127	76	19	6
	H		277	125	42	12	240	95	36	11	202	68	30	9
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
	H		312	158	38	14	270	119	33	12	227	85	27	10
120	S	15000	157	115	29	7	136	87	25	6	114	62	21	5
	H		246	99	45	11	213	75	39	9	180	54	33	8
	S	20500	183	154	25	8	158	117	21	7	133	83	18	6
	H		294	140	40	13	254	106	34	11	214	76	29	9
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
	H		312	158	38	14	270	119	33	12	227	85	27	10
150	S	18000	166	40	26	7	142	29	22	6	118	20	18	5
	H		284	56	44	13	246	42	38	11	208	31	32	9
	S	26000	199	57	21	9	170	42	18	7	141	29	15	6
	H		353	86	38	16	306	65	33	13	258	47	28	11
	S	35000	227	74	18	10	194	54	15	9	161	37	13	7
	H		416	118	33	18	360	89	29	16	304	64	24	13
170	S	21000	180	47	24	8	154	34	20	7	128	24	17	6
	H		312	67	41	14	270	51	36	12	228	37	30	10
	S	30000	212	65	20	9	181	47	17	8	150	32	14	7
	H		383	100	35	17	331	76	31	15	279	55	26	12
	S	35000	227	74	18	10	194	54	15	9	161	37	13	7
	H		416	118	33	18	360	89	29	16	304	64	24	13
200	S	24000	208	31	24	9	178	23	21	8	149	16	17	7
	H		335	88	39	15	291	67	34	13	246	49	29	11
	S	35000	251	45	20	11	216	33	17	9	180	23	14	8
	H		414	134	33	18	359	101	28	16	304	74	24	13
	S	43000	277	54	18	12	238	40	15	10	198	28	13	9
	H		462	165	30	20	401	126	26	18	339	91	22	15
230	S	27000	221	35	23	10	189	26	20	8	158	18	16	7
	H		359	101	37	16	311	77	32	14	263	56	27	12
	S	39000	265	50	19	12	227	37	16	10	189	26	13	8
	H		439	150	31	19	381	114	27	17	322	82	23	14
	S	43000	277	54	18	12	238	40	15	10	198	28	13	9
	H		462	165	30	20	401	126	26	18	339	91	22	15

(1) S = Standard heat, H = High heat

(2) Pressure drop = internal coil + 3 way valve

Water without glycol

Reminder : 10 kPa=1mCe

Table 4.7

Size	Air flow m ³ /h	Gas Burner						Electric Heater			
		Type	Power input	Heating Capacity	Pabs Elec	Nb Of Stages	Modulation Option	Available Capacity	Type of Modulation	Stages	Temp. Rise
		-	kW	kW	kW			kW	-		°C
85	15000	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,9 5,7
		M	X					54	0-100%	50%--> 100%-->	5,2 10,3
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	6,9 13,8
100	18500	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,3 4,6
		M	X					54	0-100%	50%--> 100%-->	4,2 8,4
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	5,6 11,2
120	20500	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,1 4,2
		M	X					54	0-100%	50%--> 100%-->	3,8 7,6
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	5,0 10,1
150	26000	S	120	110,4	0,25	2		45	2 stages	Stage 1: Stage 2:	2,5 5,0
		M	X					72	0-100%	50%--> 100%-->	4,0 7,9
		H	180	165,6	0,25	2	20%-->100%	108	0-100%	50%--> 100%-->	6,0 11,9
170	30000	S	120	110,4	0,25	2		45	2 stages	Stage 1: Stage 2:	2,2 4,3
		M	X					72	0-100%	50%--> 100%-->	3,4 6,9
		H	180	165,6	0,25	2	20%-->100%	108	0-100%	50%--> 100%-->	5,2 10,3
200	35000	S	180	165,6	0,25	2		72	2 stages	Stage 1: Stage 2:	2,9 5,9
		M	X					108	0-100%	50%--> 100%-->	4,4 8,8
		H	240	220,8	0,25	2	20%-->100%	162	0-100%	50%--> 100%-->	6,6 13,3
230	39000	S	180	165,6	0,25	2		72	2 stages	Stage 1: Stage 2:	2,6 5,3
		M	X					108	0-100%	50%--> 100%-->	4,0 7,9
		H	240	220,8	0,25	2	20%-->100%	162	0-100%	50%--> 100%-->	6,0 11,9

FXK = Heat recovery unit

Table 4.8

SIZE	Available capacity kW	Number of stages	Temperature rise at nominal air flow	
			50%	100%
25	9	Full modulation	3,4°C	6,8°C
	18		6,8°C	13,5°C
30	9	Full modulation	3,4°C	6,8°C
	18		6,8°C	13,5°C
35	18	Full modulation	4,5°C	9,0°C
	36		9,0°C	18,0°C
40	18	Full modulation	3,8°C	7,5°C
	36		7,5°C	15,0°C
55	18	Full modulation	3,0°C	6,0°C
	36		6,0°C	12,0°C
70	36	Full modulation	5,0°C	10,0°C
	72		10,0°C	20,0°C
85	36	Full modulation	4,0°C	8,0°C
	72		8,0°C	16,0°C
100	36	Full modulation	3,1°C	6,3°C
	72		6,3°C	12,5°C
110	36	Full modulation	2,8°C	5,7°C
	72		5,7°C	11,4°C
140	36	Full modulation	2,3°C	4,5°C
	72		4,5°C	9,0°C
170	36	Full modulation	2,0°C	4,0°C
	72		4,0°C	8,0°C

PERFORMANCES - EVAPORATOR FAN



FCM = Cooling only Rooftop
FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop
FDM = Heat pump rooftop with gas fired heating

Table 6.1

Table with columns for Airflow (12000-23000), F100/F120, and power ratings (200-500 kW) for Kit and HMPI. Model: 85 - 120 STD.

Table 6.2

Table with columns for Airflow (12000-23000), F100/F120, and power ratings (200-500 kW) for Kit and HMPI. Model: 85 - 120 GAS S.

P : Fan motor power in kW

HMPI : Heat Motor Power Input

PERFORMANCES - EVAPORATOR FAN



FCM = Cooling only Rooftop

FGM = Cooling only with gas fired heating

FHM = Heat Pump Rooftop

FDM = Heat pump rooftop with gas fired heating

Table 6.5

Table 6.5: Performance data for 200 - 230 STD evaporator fan. Columns include Airflow (24000-43000), H200, H230, and various kit/HPMPI/P values for temperatures 150-600.

Table 6.6

Table 6.6: Performance data for 200 - 230 GAS S evaporator fan. Columns include Airflow (24000-43000), H200, H230, and various kit/HPMPI/P values for temperatures 150-600.

P : Fan motor power in kW

HPMPI : Heat Motor Power Input

FXK = Heating recovery unit

INDOOR FAN

External static pressure (Pa)

Table 6.7

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	RPM	RPM	Kit	P	RPM	RPM							
3200	K1	*0.8	701	K1	*0.8	750	K2	*0.8	841	K2	*0.8	884	K3	*0.8	924	K3	*0.8	964	K4	*0.8	1002	K4	*0.8	1038	K4	*0.8	1074	K5	*1.1	1108	K5	*1.1	1141	K5	*1.1	1174			
3500	K1	*0.8	730	K1	*0.8	776	K2	*0.8	864	K3	*0.8	905	K3	*0.8	945	K4	*0.8	983	K4	*0.8	1020	K5	*1.1	1055	K5	*1.1	1090	K5	*1.1	1124	K5	*1.1	1156	K5	*1.1	1188			
4000	K1	*0.8	781	K2	*0.8	824	K2	*0.8	866	K3	*0.8	906	K3	*0.8	945	K6	*1.1	982	K6	*1.1	1018	K5	*1.1	1054	K5	*1.1	1088	K5	*1.1	1121	K5	*1.1	1154	K7	*1.5	1185	K7	*1.5	1216
4200	K2	*0.8	803	K2	*0.8	845	K2	*0.8	885	K3	*0.8	924	K6	*1.1	962	K6	*1.1	998	K6	*1.1	1034	K5	*1.1	1068	K5	*1.1	1102	K5	*1.1	1135	K7	*1.5	1167	K7	*1.5	1198	K7	*1.5	1228
4500	K2	*0.8	837	K10	*1.1	877	K6	*1.1	915	K6	*1.1	952	K6	*1.1	989	K6	*1.1	1024	K5	*1.1	1058	K5	*1.1	1092	K9	*1.5	1125	K7	*1.5	1156	K7	*1.5	1188	K7	*1.5	1218	K7	*1.5	1248

FX 25

Table 6.8

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	RPM	RPM	Kit	P	RPM	RPM							
4000	K1	*0.8	751	K1	*0.8	795	K1	*0.8	837	K1	*0.8	878	K1	*0.8	918	K2	*1.1	956	K3	*1.1	993	K3	*1.1	1029	K4	*1.1	1064	K4	*1.1	1098	K4	*1.1	1131	K4	*1.1	1163	K5	*1.5	1195
4500	K1	*0.8	802	K1	*0.8	842	K2	*1.1	882	K2	*1.1	920	K2	*1.1	957	K3	*1.1	993	K3	*1.1	1028	K4	*1.1	1063	K4	*1.1	1096	K6	*1.5	1129	K6	*1.5	1160	K5	*1.5	1192	K5	*1.5	1222
5000	K7	*1.1	856	K7	*1.1	893	K2	*1.1	929	K2	*1.1	965	K2	*1.1	1000	K6	*1.5	1034	K6	*1.5	1067	K6	*1.5	1100	K6	*1.5	1132	K6	*1.5	1163	K5	*1.5	1193	K8	*1.5	1223	K8	*1.5	1253
5250	K7	*1.1	884	K2	*1.1	919	K2	*1.1	955	K6	*1.5	989	K6	*1.5	1023	K6	*1.5	1056	K6	*1.5	1088	K6	*1.5	1120	K6	*1.5	1151	K8	*1.5	1181	K8	*1.5	1211	K8	*1.5	1241	K8	*1.5	1269
5500	K2	*1.1	912	K9	*1.5	947	K6	*1.5	981	K6	*1.5	1014	K6	*1.5	1047	K6	*1.5	1079	K6	*1.5	1110	K10	*1.5	1141	K8	*1.5	1171	K8	*1.5	1201	K8	*1.5	1230	K8	*1.5	1259	K8	*1.5	1287

FX 30

Table 6.9

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	RPM	RPM	Kit	P	RPM	RPM							
4800	K1	*0.8	511	K1	*0.8	554	K2	*0.8	596	K2	*0.8	635	K2	*0.8	673	K3	*1.1	710	K4	*1.1	745	K4	*1.1	779	K4	*1.1	812	K4	*1.1	845	K5	*1.5	876	K5	*1.5	906	K5	*1.5	936
5400	K1	*0.8	533	K2	*0.8	573	K2	*0.8	611	K2	*0.8	649	K2	*0.8	685	K3	*1.1	719	K4	*1.1	753	K4	*1.1	786	K5	*1.5	818	K5	*1.5	849	K5	*1.5	879	K5	*1.5	909	K5	*1.5	937
6000	K1	*0.8	557	K2	*0.8	594	K3	*1.1	630	K3	*1.1	665	K3	*1.1	699	K4	*1.1	732	K7	*1.5	765	K7	*1.5	796	K5	*1.5	827	K5	*1.5	856	K5	*1.5	885	K6	*1.5	914	K6	*1.5	942
6300	K2	*0.8	570	K8	*1.1	606	K3	*1.1	641	K3	*1.1	675	K3	*1.1	708	K7	*1.5	740	K7	*1.5	771	K7	*1.5	802	K5	*1.5	832	K5	*1.5	861	K6	*1.5	890	K6	*1.5	918	K6	*1.5	945
6600	K8	*1.1	584	K3	*1.1	618	K3	*1.1	652	K3	*1.1	685	K3	*1.1	717	K7	*1.5	748	K7	*1.5	779	K5	*1.5	809	K5	*1.5	838	K6	*1.5	867	K6	*1.5	895	K6	*1.5	922	K6	*1.5	949

FX 35

Table 6.10

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	RPM	RPM	Kit	P	RPM	RPM							
5800	K1	*0.8	533	K2	*1.1	572	K2	*1.1	609	K3	*1.1	645	K3	*1.1	680	K3	*1.1	714	K3	*1.1	747	K4	*1.5	780	K5	*1.5	811	K5	*1.5	841	K5	*1.5	871	K5	*1.5	900	K6	*1.5	929
6400	K2	*1.1	557	K2	*1.1	593	K2	*1.1	628	K3	*1.1	662	K3	*1.1	695	K3	*1.1	727	K4	*1.5	759	K4	*1.5	790	K5	*1.5	820	K5	*1.5	849	K7	*1.5	878	K6	*1.5	906	K6	*1.5	933
7200	K2	*1.1	592	K2	*1.1	624	K3	*1.1	656	K8	*1.5	688	K8	*1.5	719	K4	*1.5	749	K4	*1.5	778	K9	*1.5	807	K7	*1.5	835	K7	*1.5	863	K7	*1.5	890	K6	*1.5	917	K6	*1.5	943
7600	K2	*1.1	610	K2	*1.1	641	K8	*1.5	672	K8	*1.5	702	K8	*1.5	732	K4	*1.5	761	K9	*1.5	790	K7	*1.5	817	K7	*1.5	845	K7	*1.5	872	K7	*1.5	898	K6	*1.5	924	K6	*1.5	950
8200	K8	*1.5	639	K8	*1.5	668	K8	*1.5	697	K4	*1.5	726	K4	*1.5	754	K9	*1.5	781	K9	*1.5	808	K7	*1.5	835	K7	*1.5	861	K7	*1.5	887	K7	*1.5	912	K10	*1.5	937	K10	*1.5	962

FX 40

FXK = Heating recovery unit

INDOOR FAN

Table 6.15

Air flow	External static pressure (Pa)																																						
	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM												
15500	K1	2*1.1	531	K2	2*1.5	562	K2	2*1.5	593	K2	2*1.5	622	K2	2*1.5	650	K2	2*1.5	677	K3	2*2.2	703	K4	2*2.2	729	K4	2*2.2	753	K4	2*2.2	777	K4	2*2.2	800	K4	2*2.2	823	K4	2*2.2	845
17500	K2	2*1.5	567	K2	2*1.5	596	K2	2*1.5	624	K3	2*2.2	678	K3	2*2.2	704	K4	2*2.2	729	K4	2*2.2	753	K4	2*2.2	777	K4	2*2.2	800	K6	2*3.0	822	K5	2*3.0	844	K5	2*3.0	862	K5	2*3.0	885
19000	K2	2*1.5	596	K2	2*1.5	623	K3	2*2.2	650	K3	2*2.2	676	K3	2*2.2	701	K4	2*2.2	726	K4	2*2.2	750	K6	2*3.0	774	K6	2*3.0	796	K6	2*3.0	819	K5	2*3.0	840	K5	2*3.0	862	K5	2*3.0	882
20500	K3	2*2.2	625	K3	2*2.2	652	K3	2*2.2	677	K3	2*2.2	702	K3	2*2.2	726	K6	2*3.0	750	K6	2*3.0	773	K6	2*3.0	795	K6	2*3.0	817	K5	2*3.0	839	K5	2*3.0	860	K7	2*4.0	881	K7	2*4.0	901
21500	K3	2*2.2	646	K3	2*2.2	671	K6	2*3.0	696	K6	2*3.0	719	K6	2*3.0	743	K6	2*3.0	766	K6	2*3.0	788	K6	2*3.0	810	K6	2*3.0	832	K7	2*4.0	853	K7	2*4.0	874	K7	2*4.0	894	K7	2*4.0	914

FX 110

Table 6.16

Air flow	External static pressure (Pa)																																						
	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM												
19500	K1	2*2.2	581	K1	2*2.2	608	K2	2*2.2	635	K2	2*2.2	662	K2	2*2.2	687	K2	2*2.2	712	K2	2*2.2	736	K3	2*3.0	760	K3	2*3.0	783	K3	2*3.0	806	K3	2*3.0	828	K3	2*3.0	849	K4	2*4.0	870
22000	K1	2*2.2	628	K2	2*2.2	653	K2	2*2.2	678	K5	2*3.0	702	K5	2*3.0	725	K3	2*3.0	749	K3	2*3.0	771	K3	2*3.0	794	K4	2*4.0	815	K4	2*4.0	837	K4	2*4.0	857	K4	2*4.0	878	K4	2*4.0	898
24000	K5	2*3.0	667	K5	2*3.0	690	K5	2*3.0	713	K5	2*3.0	736	K3	2*3.0	758	K3	2*3.0	780	K6	2*4.0	802	K6	2*4.0	823	K4	2*4.0	843	K4	2*4.0	864	K4	2*4.0	884	K4	2*4.0	904	K7	2*5.5	923
25000	K5	2*3.0	687	K5	2*3.0	710	K5	2*3.0	732	K3	2*3.0	754	K6	2*4.0	775	K6	2*4.0	797	K6	2*4.0	818	K4	2*4.0	838	K4	2*4.0	858	K4	2*4.0	878	K7	2*5.5	898	K7	2*5.5	917	K8	2*5.5	936
25500	K5	2*3.0	697	K5	2*3.0	719	K6	2*4.0	741	K6	2*4.0	763	K6	2*4.0	784	K6	2*4.0	805	K6	2*4.0	826	K6	2*4.0	846	K4	2*4.0	866	K7	2*5.5	886	K7	2*5.5	905	K7	2*5.5	924	K8	2*5.5	943

FX 140

Table 6.17

Air flow	External static pressure (Pa)																																						
	100		125		150		175		200		225		250		275		300		325		350		375		400														
	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM	Kit	P	RPM												
24000	K1	2*3.0	652	K1	2*3.0	676	K1	2*3.0	699	K1	2*3.0	722	K1	2*3.0	745	K1	2*3.0	767	K2	2*4.0	788	K2	2*4.0	810	K2	2*4.0	831	K3	2*4.0	851	K3	2*4.0	872	K3	2*4.0	891	K3	2*4.0	911
26000	K1	2*3.0	691	K1	2*3.0	713	K1	2*3.0	735	K2	2*4.0	757	K2	2*4.0	778	K2	2*4.0	799	K2	2*4.0	819	K3	2*4.0	839	K3	2*4.0	859	K4	2*5.5	879	K4	2*5.5	898	K4	2*5.5	917	K5	2*5.5	936
27000	K1	2*3.0	711	K2	2*4.0	732	K2	2*4.0	754	K2	2*4.0	774	K2	2*4.0	795	K2	2*4.0	815	K3	2*4.0	835	K4	2*5.5	855	K4	2*5.5	874	K4	2*5.5	894	K4	2*5.5	912	K5	2*5.5	931	K5	2*5.5	949
28000	K2	2*4.0	731	K2	2*4.0	752	K2	2*4.0	772	K2	2*4.0	792	K2	2*4.0	812	K6	2*5.5	832	K4	2*5.5	852	K4	2*5.5	871	K4	2*5.5	890	K4	2*5.5	909	K4	2*5.5	927	K5	2*5.5	945	K5	2*5.5	963
30000	K2	2*4.0	772	K6	2*5.5	791	K6	2*5.5	810	K6	2*5.5	830	K6	2*5.5	848	K4	2*5.5	867	K4	2*5.5	886	K4	2*5.5	904	K4	2*5.5	922	K5	2*5.5	940	K7	2*7.5	957	K7	2*7.5	975	K7	2*7.5	992

FX 170

FXK = Heating recovery unit

OUTDOOR FAN

External static pressure (Pa)

Table 6.18

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400																																	
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P																																
FX 25	5000	K1 1*1.1 791	K1 1*1.1 830	K1 1*1.1 868	K2 1*1.1 905	K2 1*1.1 941	K2 1*1.1 976	K2 1*1.1 1011	K3 1*1.5 1045	K4 1*1.5 1078	K4 1*1.5 1110	K4 1*1.5 1142	K4 1*1.5 1173	K4 1*1.5 1203	5125	K1 1*1.1 803	K1 1*1.1 841	K1 1*1.1 878	K2 1*1.1 915	K2 1*1.1 950	K3 1*1.5 1085	K4 1*1.5 1117	K4 1*1.5 1149	K4 1*1.5 1179	K5 1*2.2 1209	5250	K1 1*1.1 815	K1 1*1.1 852	K1 1*1.1 889	K2 1*1.1 925	K2 1*1.1 960	K3 1*1.5 1093	K4 1*1.5 1125	K4 1*1.5 1156	K5 1*2.2 1186	K5 1*2.2 1216	5375	K1 1*1.1 827	K1 1*1.1 864	K1 1*1.1 900	K2 1*1.1 935	K6 1*1.5 1069	K4 1*1.5 1101	K4 1*1.5 1132	K5 1*2.2 1163	K5 1*2.2 1193	K5 1*2.2 1222	5500	K1 1*1.1 840	K1 1*1.1 876	K1 1*1.1 911	K6 1*1.5 945	K6 1*1.5 1078	K4 1*1.5 1109	K5 1*2.2 1140	K5 1*2.2 1170	K5 1*2.2 1200	K5 1*2.2 1229

Table 6.19

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400																																																								
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P																																																							
FX 30	6250	K1 1*1.5 881	K1 1*1.5 914	K1 1*1.5 946	K1 1*1.5 977	K2 1*2.2 1009	K2 1*2.2 1040	K3 1*2.2 1070	K3 1*2.2 1100	K3 1*2.2 1130	K4 1*2.2 1159	K4 1*2.2 1187	K4 1*2.2 1216	K4 1*2.2 1244	6375	K1 1*1.5 894	K1 1*1.5 925	K1 1*1.5 957	K2 1*2.2 988	K2 1*2.2 1019	K3 1*2.2 1049	K3 1*2.2 1079	K3 1*2.2 1109	K3 1*2.2 1137	K4 1*2.2 1165	6500	K1 1*1.5 906	K1 1*1.5 937	K2 1*2.2 968	K2 1*2.2 999	K2 1*2.2 1029	K3 1*2.2 1059	K3 1*2.2 1089	K3 1*2.2 1118	K4 1*2.2 1147	K4 1*2.2 1175	K4 1*2.2 1203	K4 1*2.2 1231	K5 1*3.0 1258	6625	K1 1*1.5 919	K2 1*2.2 950	K2 1*2.2 980	K2 1*2.2 1010	K3 1*2.2 1039	K3 1*2.2 1069	K3 1*2.2 1099	K3 1*2.2 1127	K4 1*2.2 1156	K4 1*2.2 1184	K4 1*2.2 1212	K5 1*3.0 1239	K5 1*3.0 1266	6750	K2 1*2.2 932	K2 1*2.2 962	K2 1*2.2 992	K2 1*2.2 1021	K3 1*2.2 1051	K3 1*2.2 1080	K3 1*2.2 1109	K3 1*2.2 1137	K4 1*2.2 1165	K4 1*2.2 1193	K5 1*3.0 1220	K5 1*3.0 1247	K5 1*3.0 1274	6875	K2 1*2.2 944	K2 1*2.2 974	K2 1*2.2 1003	K2 1*2.2 1033	K2 1*2.2 1062	K3 1*2.2 1090	K3 1*2.2 1119	K3 1*2.2 1147	K4 1*2.2 1174	K5 1*3.0 1202	K5 1*3.0 1229	K5 1*3.0 1255	K5 1*3.0 1282

Table 6.20

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400																																																											
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P																																																										
FX 35	7500	K1 1*1.1 595	K2 1*1.5 627	K2 1*1.5 658	K2 1*1.5 689	K2 1*1.5 719	K3 1*1.5 749	K3 1*1.5 778	K4 1*2.2 806	K5 1*2.2 834	K5 1*2.2 861	K5 1*2.2 888	K6 1*2.2 914	K6 1*2.2 940	7650	K1 1*1.1 602	K2 1*1.5 633	K2 1*1.5 664	K2 1*1.5 694	K3 1*1.5 724	K3 1*1.5 753	K4 1*2.2 782	K4 1*2.2 810	K5 1*2.2 837	K5 1*2.2 864	K6 1*2.2 891	K6 1*2.2 917	K6 1*2.2 943	7800	K2 1*1.5 609	K2 1*1.5 640	K2 1*1.5 670	K2 1*1.5 700	K3 1*1.5 729	K3 1*1.5 758	K4 1*2.2 786	K4 1*2.2 814	K5 1*2.2 841	K5 1*2.2 868	K5 1*2.2 894	K6 1*2.2 920	K7 1*3.0 945	7950	K2 1*1.5 616	K2 1*1.5 646	K2 1*1.5 676	K2 1*1.5 706	K3 1*1.5 734	K4 1*2.2 763	K4 1*2.2 790	K5 1*2.2 818	K5 1*2.2 845	K5 1*2.2 871	K5 1*2.2 897	K6 1*2.2 923	K7 1*3.0 948	8100	K2 1*1.5 623	K2 1*1.5 653	K2 1*1.5 682	K2 1*1.5 711	K3 1*1.5 740	K4 1*2.2 768	K4 1*2.2 795	K5 1*2.2 822	K5 1*2.2 849	K5 1*2.2 875	K5 1*2.2 901	K7 1*3.0 926	K7 1*3.0 951	8250	K2 1*1.5 630	K2 1*1.5 659	K2 1*1.5 688	K2 1*1.5 717	K4 1*2.2 745	K4 1*2.2 773	K4 1*2.2 800	K5 1*2.2 826	K5 1*2.2 853	K5 1*2.2 879	K5 1*2.2 904	K7 1*3.0 929	K7 1*3.0 954

Table 6.21

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400																																																											
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P																																																										
FX 40	9000	K1 1*2.2 647	K1 1*2.2 675	K1 1*2.2 702	K2 1*2.2 729	K2 1*2.2 756	K2 1*2.2 782	K2 1*2.2 807	K3 1*2.2 833	K4 1*3.0 858	K4 1*3.0 883	K4 1*3.0 907	K5 1*3.0 931	K5 1*3.0 955	9180	K1 1*2.2 656	K1 1*2.2 683	K1 1*2.2 710	K2 1*2.2 736	K2 1*2.2 762	K2 1*2.2 788	K3 1*2.2 813	K3 1*2.2 838	K4 1*3.0 863	K4 1*3.0 888	K4 1*3.0 912	K5 1*3.0 935	K5 1*3.0 959	9360	K1 1*2.2 664	K1 1*2.2 691	K1 1*2.2 718	K2 1*2.2 744	K2 1*2.2 769	K2 1*2.2 795	K3 1*2.2 820	K4 1*3.0 844	K4 1*3.0 869	K4 1*3.0 893	K4 1*3.0 916	K5 1*3.0 940	K5 1*3.0 963	9540	K1 1*2.2 673	K1 1*2.2 699	K1 1*2.2 725	K2 1*2.2 751	K2 1*2.2 776	K2 1*2.2 801	K4 1*3.0 826	K4 1*3.0 850	K4 1*3.0 874	K4 1*3.0 898	K4 1*3.0 921	K5 1*3.0 945	K5 1*3.0 968	9720	K1 1*2.2 682	K1 1*2.2 708	K2 1*2.2 733	K2 1*2.2 758	K2 1*2.2 783	K4 1*3.0 808	K4 1*3.0 832	K4 1*3.0 856	K4 1*3.0 880	K4 1*3.0 903	K5 1*3.0 927	K5 1*3.0 949	K6 1*4.0 972	9900	K1 1*2.2 691	K1 1*2.2 716	K2 1*2.2 741	K2 1*2.2 766	K7 1*3.0 791	K4 1*3.0 815	K4 1*3.0 839	K4 1*3.0 862	K4 1*3.0 886	K4 1*3.0 909	K5 1*3.0 932	K6 1*4.0 954	K6 1*4.0 977



FXK = Heating recovery unit

OUTDOOR FAN

Table 6.22

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400												
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P					
FX 55	11250	K1	1*3.0	740	K1	1*3.0	763	K1	1*3.0	808	K1	1*3.0	852	K2	1*4.0	874	K2	1*4.0	895	K2	1*4.0	917	K3	1*4.0	938	K3	1*4.0	959	K3	1*4.0	980	K3	1*4.0	1000			
	11475	K1	1*3.0	751	K1	1*3.0	774	K1	1*3.0	818	K1	1*3.0	861	K2	1*4.0	883	K2	1*4.0	904	K2	1*4.0	925	K3	1*4.0	946	K3	1*4.0	967	K3	1*4.0	987	K3	1*4.0	1007			
	11700	K1	1*3.0	762	K1	1*3.0	784	K1	1*3.0	828	K2	1*4.0	871	K2	1*4.0	892	K2	1*4.0	913	K3	1*4.0	933	K3	1*4.0	954	K3	1*4.0	974	K4	1*5.5	995	K4	1*5.5	1015			
	11925	K1	1*3.0	774	K1	1*3.0	795	K5	1*4.0	817	K2	1*4.0	859	K2	1*4.0	880	K2	1*4.0	901	K2	1*4.0	921	K3	1*4.0	942	K3	1*4.0	962	K4	1*5.5	982	K4	1*5.5	1002			
	12150	K5	1*4.0	785	K5	1*4.0	806	K5	1*4.0	827	K2	1*4.0	848	K2	1*4.0	869	K2	1*4.0	890	K3	1*4.0	910	K3	1*4.0	930	K3	1*4.0	951	K4	1*5.5	970	K4	1*5.5	990	K4	1*5.5	1010
	12375	K5	1*4.0	796	K5	1*4.0	817	K2	1*4.0	838	K2	1*4.0	859	K2	1*4.0	879	K2	1*4.0	899	K2	1*4.0	920	K3	1*4.0	939	K4	1*5.5	959	K4	1*5.5	979	K4	1*5.5	998	K4	1*5.5	1018
	Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400											
FX 70	13500	K1	1*3.0	579	K1	1*3.0	601	K1	1*3.0	646	K2	1*3.0	690	K2	1*3.0	712	K3	1*4.0	733	K4	1*4.0	754	K4	1*4.0	775	K4	1*4.0	796	K4	1*4.0	816	K4	1*4.0	836			
	13770	K1	1*3.0	587	K1	1*3.0	609	K1	1*3.0	653	K2	1*3.0	696	K2	1*3.0	718	K3	1*4.0	739	K4	1*4.0	759	K4	1*4.0	780	K4	1*4.0	800	K4	1*4.0	820	K5	1*5.5	840			
	14040	K1	1*3.0	595	K1	1*3.0	617	K1	1*3.0	660	K2	1*3.0	702	K3	1*4.0	723	K4	1*4.0	744	K4	1*4.0	765	K4	1*4.0	785	K4	1*4.0	805	K4	1*4.0	825	K5	1*5.5	844			
	14310	K1	1*3.0	603	K1	1*3.0	624	K1	1*3.0	667	K2	1*3.0	709	K3	1*4.0	729	K3	1*4.0	750	K4	1*4.0	770	K4	1*4.0	790	K4	1*4.0	810	K6	1*5.5	829	K5	1*5.5	849			
	14580	K1	1*3.0	611	K1	1*3.0	632	K1	1*3.0	674	K2	1*3.0	715	K3	1*4.0	735	K4	1*4.0	756	K4	1*4.0	776	K4	1*4.0	795	K6	1*5.5	815	K6	1*5.5	834	K5	1*5.5	853			
	14850	K1	1*3.0	619	K1	1*3.0	640	K2	1*3.0	681	K3	1*4.0	722	K3	1*4.0	742	K4	1*4.0	761	K4	1*4.0	781	K6	1*5.5	801	K6	1*5.5	820	K6	1*5.5	839	K5	1*5.5	858			
	Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400											

Table 6.23

Table 6.24

Table 6.25

Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400									
	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P		
FX 85	16875	K1	1*4.0	664	K1	1*4.0	682	K2	1*5.5	719	K2	1*5.5	755	K3	1*5.5	773	K3	1*5.5	791	K3	1*5.5	809	K3	1*5.5	827	K3	1*5.5	845	K3	1*5.5	862	K4	1*7.5	879
	17275	K1	1*4.0	676	K1	1*4.0	694	K2	1*5.5	730	K2	1*5.5	766	K3	1*5.5	783	K3	1*5.5	801	K3	1*5.5	818	K3	1*5.5	836	K4	1*7.5	853	K4	1*7.5	870	K4	1*7.5	887
	17675	K2	1*5.5	689	K2	1*5.5	706	K2	1*5.5	741	K3	1*5.5	776	K3	1*5.5	793	K3	1*5.5	811	K3	1*5.5	828	K5	1*7.5	845	K4	1*7.5	862	K4	1*7.5	879	K4	1*7.5	895
	18075	K2	1*5.5	701	K2	1*5.5	718	K2	1*5.5	753	K3	1*5.5	787	K3	1*5.5	804	K5	1*7.5	821	K5	1*7.5	837	K4	1*7.5	854	K4	1*7.5	871	K4	1*7.5	887	K4	1*7.5	904
	18475	K2	1*5.5	714	K2	1*5.5	731	K3	1*5.5	764	K3	1*5.5	797	K3	1*5.5	814	K5	1*7.5	831	K4	1*7.5	847	K4	1*7.5	863	K4	1*7.5	880	K4	1*7.5	896	K4	1*7.5	912
	18875	K2	1*5.5	726	K2	1*5.5	743	K3	1*5.5	776	K3	1*5.5	808	K5	1*7.5	825	K5	1*7.5	841	K4	1*7.5	857	K4	1*7.5	873	K4	1*7.5	889	K4	1*7.5	905	K4	1*7.5	921
	Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400								
FX 100	21700	K1	2*4.0	871	K1	2*4.0	893	K2	2*4.0	937	K2	2*4.0	980	K2	2*4.0	1001	K2	2*4.0	1021	K2	2*4.0	1042	K3	2*5.5	1063	K3	2*5.5	1083	K3	2*5.5	1103	K3	2*5.5	1123
	22100	K1	2*4.0	884	K1	2*4.0	906	K1	2*4.0	949	K2	2*4.0	991	K2	2*4.0	1011	K2	2*4.0	1032	K3	2*5.5	1052	K3	2*5.5	1072	K3	2*5.5	1092	K3	2*5.5	1112	K3	2*5.5	1132
	22500	K1	2*4.0	897	K1	2*4.0	918	K2	2*4.0	960	K2	2*4.0	1002	K2	2*4.0	1022	K2	2*4.0	1042	K3	2*5.5	1063	K3	2*5.5	1082	K3	2*5.5	1102	K3	2*5.5	1122	K3	2*5.5	1141
	22900	K1	2*4.0	910	K2	2*4.0	931	K2	2*4.0	972	K2	2*4.0	1013	K4	2*5.5	1033	K3	2*5.5	1053	K3	2*5.5	1073	K3	2*5.5	1093	K3	2*5.5	1112	K3	2*5.5	1131	K5	2*5.5	1150
	23300	K1	2*4.0	923	K2	2*4.0	943	K2	2*4.0	984	K4	2*5.5	1004	K4	2*5.5	1024	K3	2*5.5	1044	K3	2*5.5	1064	K3	2*5.5	1084	K3	2*5.5	1103	K3	2*5.5	1122	K3	2*5.5	1141
	23700	K2	2*4.0	936	K2	2*4.0	956	K4	2*5.5	996	K4	2*5.5	1016	K4	2*5.5	1036	K3	2*5.5	1056	K3	2*5.5	1075	K3	2*5.5	1094	K3	2*5.5	1113	K3	2*5.5	1132	K5	2*5.5	1151
	Air flow	100		125		150		175		200		225		250		275		300		325		350		375		400								

PERFORMANCES - OUTDOOR FAN



FXK = Heating recovery unit

OUTDOOR FAN

Table 6.26

Air flow	External static pressure (Pa)												
	100	125	150	175	200	225	250	275	300	325	350	375	400
FX 110													
23750	Kit P RPM K1 2*2.2 633	Kit P RPM K1 2*2.2 657	Kit P RPM K2 2*3.0 681	Kit P RPM K2 2*3.0 704	Kit P RPM K2 2*3.0 727	Kit P RPM K3 2*3.0 749	Kit P RPM K3 2*3.0 772	Kit P RPM K4 2*4.0 793	Kit P RPM K4 2*4.0 815	Kit P RPM K5 2*4.0 835	Kit P RPM K5 2*4.0 856	Kit P RPM K5 2*4.0 876	Kit P RPM K5 2*5.5 1123
24225	Kit P RPM K1 2*2.2 642	Kit P RPM K2 2*3.0 665	Kit P RPM K2 2*3.0 689	Kit P RPM K2 2*3.0 712	Kit P RPM K2 2*3.0 734	Kit P RPM K3 2*3.0 756	Kit P RPM K3 2*3.0 778	Kit P RPM K4 2*4.0 800	Kit P RPM K4 2*4.0 821	Kit P RPM K5 2*4.0 841	Kit P RPM K5 2*4.0 862	Kit P RPM K5 2*4.0 882	Kit P RPM K5 2*5.5 1132
24700	Kit P RPM K2 2*3.0 650	Kit P RPM K2 2*3.0 674	Kit P RPM K2 2*3.0 697	Kit P RPM K2 2*3.0 719	Kit P RPM K3 2*3.0 742	Kit P RPM K3 2*3.0 764	Kit P RPM K4 2*4.0 785	Kit P RPM K4 2*4.0 806	Kit P RPM K4 2*4.0 827	Kit P RPM K5 2*4.0 848	Kit P RPM K5 2*4.0 868	Kit P RPM K5 2*4.0 887	Kit P RPM K6 2*5.5 1141
25175	Kit P RPM K2 2*3.0 659	Kit P RPM K2 2*3.0 682	Kit P RPM K2 2*3.0 705	Kit P RPM K2 2*3.0 727	Kit P RPM K3 2*3.0 749	Kit P RPM K4 2*4.0 771	Kit P RPM K4 2*4.0 792	Kit P RPM K4 2*4.0 813	Kit P RPM K5 2*4.0 834	Kit P RPM K5 2*4.0 854	Kit P RPM K5 2*4.0 874	Kit P RPM K6 2*5.5 893	Kit P RPM K6 2*5.5 1150
25650	Kit P RPM K2 2*3.0 668	Kit P RPM K2 2*3.0 691	Kit P RPM K2 2*3.0 713	Kit P RPM K2 2*3.0 735	Kit P RPM K4 2*4.0 757	Kit P RPM K4 2*4.0 778	Kit P RPM K4 2*4.0 799	Kit P RPM K4 2*4.0 820	Kit P RPM K5 2*4.0 840	Kit P RPM K5 2*4.0 860	Kit P RPM K5 2*4.0 880	Kit P RPM K6 2*5.5 899	Kit P RPM K6 2*5.5 1160
26125	Kit P RPM K2 2*3.0 677	Kit P RPM K2 2*3.0 700	Kit P RPM K2 2*3.0 722	Kit P RPM K4 2*4.0 743	Kit P RPM K4 2*4.0 764	Kit P RPM K4 2*4.0 786	Kit P RPM K4 2*4.0 806	Kit P RPM K4 2*4.0 827	Kit P RPM K5 2*4.0 847	Kit P RPM K5 2*4.0 867	Kit P RPM K6 2*5.5 886	Kit P RPM K6 2*5.5 905	Kit P RPM K6 2*5.5 1170

FX 110

Table 6.27

Air flow	External static pressure (Pa)												
	100	125	150	175	200	225	250	275	300	325	350	375	400
FX 140													
30000	Kit P RPM K1 2*4.0 724	Kit P RPM K1 2*4.0 744	Kit P RPM K1 2*4.0 764	Kit P RPM K1 2*4.0 783	Kit P RPM K2 2*5.5 803	Kit P RPM K2 2*5.5 822	Kit P RPM K3 2*5.5 841	Kit P RPM K3 2*5.5 860	Kit P RPM K3 2*5.5 878	Kit P RPM K3 2*5.5 896	Kit P RPM K3 2*5.5 915	Kit P RPM K3 2*5.5 933	Kit P RPM K4 2*7.5 950
30750	Kit P RPM K1 2*4.0 738	Kit P RPM K1 2*4.0 758	Kit P RPM K2 2*5.5 777	Kit P RPM K2 2*5.5 796	Kit P RPM K2 2*5.5 815	Kit P RPM K2 2*5.5 834	Kit P RPM K3 2*5.5 853	Kit P RPM K3 2*5.5 871	Kit P RPM K3 2*5.5 889	Kit P RPM K3 2*5.5 907	Kit P RPM K3 2*5.5 925	Kit P RPM K5 2*7.5 943	Kit P RPM K4 2*7.5 960
31500	Kit P RPM K1 2*4.0 753	Kit P RPM K2 2*5.5 772	Kit P RPM K2 2*5.5 791	Kit P RPM K2 2*5.5 809	Kit P RPM K2 2*5.5 828	Kit P RPM K3 2*5.5 846	Kit P RPM K3 2*5.5 864	Kit P RPM K3 2*5.5 882	Kit P RPM K3 2*5.5 900	Kit P RPM K5 2*7.5 918	Kit P RPM K5 2*7.5 935	Kit P RPM K4 2*7.5 953	Kit P RPM K4 2*7.5 970
32250	Kit P RPM K2 2*5.5 767	Kit P RPM K2 2*5.5 786	Kit P RPM K2 2*5.5 804	Kit P RPM K2 2*5.5 822	Kit P RPM K3 2*5.5 841	Kit P RPM K3 2*5.5 859	Kit P RPM K3 2*5.5 876	Kit P RPM K3 2*5.5 894	Kit P RPM K5 2*7.5 912	Kit P RPM K5 2*7.5 929	Kit P RPM K4 2*7.5 946	Kit P RPM K4 2*7.5 963	Kit P RPM K4 2*7.5 980
33000	Kit P RPM K2 2*5.5 781	Kit P RPM K2 2*5.5 800	Kit P RPM K2 2*5.5 818	Kit P RPM K3 2*5.5 836	Kit P RPM K3 2*5.5 853	Kit P RPM K3 2*5.5 871	Kit P RPM K5 2*7.5 889	Kit P RPM K5 2*7.5 906	Kit P RPM K5 2*7.5 923	Kit P RPM K5 2*7.5 940	Kit P RPM K4 2*7.5 957	Kit P RPM K4 2*7.5 974	Kit P RPM K4 2*7.5 991

FX 140

Table 6.28

Air flow	External static pressure (Pa)												
	100	125	150	175	200	225	250	275	300	325	350	375	400
FX 170													
33750	Kit P RPM K1 2*5.5 800	Kit P RPM K1 2*5.5 818	Kit P RPM K2 2*5.5 835	Kit P RPM K2 2*5.5 853	Kit P RPM K3 2*7.5 870	Kit P RPM K3 2*7.5 888	Kit P RPM K3 2*7.5 905	Kit P RPM K3 2*7.5 922	Kit P RPM K3 2*7.5 939	Kit P RPM K4 2*7.5 956	Kit P RPM K4 2*7.5 972	Kit P RPM K4 2*7.5 989	Kit P RPM K4 2*7.5 1005
34425	Kit P RPM K1 2*5.5 813	Kit P RPM K1 2*5.5 831	Kit P RPM K2 2*5.5 848	Kit P RPM K3 2*7.5 865	Kit P RPM K3 2*7.5 882	Kit P RPM K3 2*7.5 899	Kit P RPM K3 2*7.5 916	Kit P RPM K3 2*7.5 933	Kit P RPM K4 2*7.5 950	Kit P RPM K4 2*7.5 966	Kit P RPM K4 2*7.5 982	Kit P RPM K4 2*7.5 999	Kit P RPM K4 2*7.5 1015
35100	Kit P RPM K1 2*5.5 826	Kit P RPM K5 2*7.5 844	Kit P RPM K3 2*7.5 861	Kit P RPM K3 2*7.5 877	Kit P RPM K3 2*7.5 894	Kit P RPM K3 2*7.5 911	Kit P RPM K3 2*7.5 928	Kit P RPM K3 2*7.5 944	Kit P RPM K4 2*7.5 960	Kit P RPM K4 2*7.5 977	Kit P RPM K4 2*7.5 993	No Kit	No Kit
35775	Kit P RPM K5 2*7.5 840	Kit P RPM K3 2*7.5 856	Kit P RPM K3 2*7.5 873	Kit P RPM K3 2*7.5 890	Kit P RPM K3 2*7.5 906	Kit P RPM K3 2*7.5 923	Kit P RPM K3 2*7.5 939	Kit P RPM K4 2*7.5 955	Kit P RPM K4 2*7.5 971	Kit P RPM K4 2*7.5 987	No Kit	No Kit	No Kit
36450	Kit P RPM K3 2*7.5 853	Kit P RPM K3 2*7.5 870	Kit P RPM K3 2*7.5 886	Kit P RPM K3 2*7.5 902	Kit P RPM K3 2*7.5 919	Kit P RPM K3 2*7.5 935	Kit P RPM K4 2*7.5 951	Kit P RPM K4 2*7.5 967	No Kit	No Kit	No Kit	No Kit	No Kit
37125	Kit P RPM K3 2*7.5 866	Kit P RPM K3 2*7.5 883	Kit P RPM K3 2*7.5 899	Kit P RPM K3 2*7.5 915	Kit P RPM K3 2*7.5 931	Kit P RPM K4 2*7.5 947	Kit P RPM K4 2*7.5 963	No Kit	No Kit	No Kit	No Kit	No Kit	No Kit

FX 170

P Fan motor power in kW

RPM : Row per minute

OUTDOOR NOISE LEVEL - STANDARD

Table 7.1

ESP : 150 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	66	73	77	80	83	80	73	66	87	56
100	66	74	77	79	84	82	75	67	88	57
120	48	67	72	78	82	83	77	67	87	56
150	50	71	78	84	89	87	80	71	92	61
170	52	72	78	84	89	87	81	73	92	61
200	51	67	75	82	84	83	75	66	88	57
230	53	67	74	81	84	86	78	66	89	58

Table 7.2

ESP : 500 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	66	74	78	80	84	80	75	68	88	57
100	66	74	78	80	84	82	76	69	88	57
120	52	69	76	79	83	83	78	70	88	57
150	53	72	79	84	89	87	81	72	92	61
170	53	72	79	83	89	87	82	73	92	61
200	58	69	76	83	84	83	76	67	89	58
230	59	70	76	82	85	86	79	68	90	59

OUTDOOR NOISE LEVEL - LOW NOISE

Table 7.3

ESP : 150 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	47	69	72	76	78	74	68	63	82	51
100	49	69	70	75	76	76	73	67	82	51
120	48	64	71	76	77	75	73	67	82	51
150	50	68	74	78	77	79	76	68	84	53
170	52	68	74	79	79	81	78	71	86	55
200	51	67	75	80	82	76	73	66	85	54
230	53	68	75	79	82	77	74	66	85	54

Table 7.4

ESP : 500 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	51	71	75	78	79	75	72	67	84	51
100	45	69	70	76	76	76	72	66	82	53
120	45	65	72	77	77	76	75	68	83	52
150	53	69	75	78	78	79	77	69	85	54
170	53	70	75	79	80	81	79	72	86	55
200	58	70	76	81	82	76	74	68	86	55
230	59	70	76	81	82	77	75	68	87	56

(1) total outdoor POWER levels

(2) Global Outdoor Sound PRESSURE Levels 10 m

INDOOR NOISE LEVEL - STANDARD & LOW NOISE

Table 7.5

ESP : 150 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	49	64	72	77	80	81	78	71	81	85
100	52	67	75	82	84	85	83	76	85	90
120	51	66	74	81	82	84	82	75	84	89
150	55	67	77	84	85	86	84	75	86	91
170	57	69	79	87	88	89	87	79	89	94
200	60	72	76	80	80	80	75	68	82	86
230	62	74	77	82	82	82	78	71	85	88

Table 7.7

ESP : 500 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	50	69	74	81	80	81	80	73	82	87
100	49	68	75	83	82	83	82	76	84	89
120	50	69	76	84	84	85	84	77	86	90
150	58	73	81	85	86	87	86	77	88	92
170	59	74	82	87	89	89	88	80	90	95
200	68	79	81	86	84	82	80	73	87	91
230	69	80	83	87	85	84	81	75	88	92

INDOOR NOISE LEVEL - STANDARD & LOW NOISE

Table 7.7

ESP : 150 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	55	71	72	77	78	78	75	69	81	84
100	56	73	74	79	82	82	79	73	84	87
120	58	75	77	81	84	84	81	75	86	89
150	60	75	76	82	84	79	76	70	84	88
170	61	77	79	84	86	81	78	72	86	90
200	65	75	78	83	81	81	77	70	84	88
230	67	77	80	85	83	83	79	72	86	90

Table 7.8

ESP : 500 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	62	79	83	82	84	82	80	74	86	90
100	62	78	84	83	85	84	82	76	87	91
120	63	79	86	84	87	85	84	78	89	93
150	68	82	88	86	89	85	82	76	90	94
170	68	82	88	87	91	86	83	77	91	95
200	71	82	85	88	86	84	82	75	89	93
230	71	82	86	89	88	85	83	77	90	94

INDOOR NOISE LEVEL - HIGH EFFICIENCY & LOW NOISE

Table 7.9

ESP : 150 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	49	64	69	69	71	65	60	58	71	76
100	51	66	71	71	73	67	62	60	73	78
120	53	68	74	73	76	70	64	63	75	80
150	52	67	72	72	74	68	63	61	74	79
170	55	70	75	75	77	71	66	64	77	82
200	57	72	78	78	80	74	68	67	80	85
230	60	75	80	80	82	76	71	69	82	87

Table 7.10

ESP : 500 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	58	73	78	78	80	74	69	67	80	85
100	59	74	79	79	81	75	70	68	81	86
120	60	75	80	80	82	76	71	70	82	87
150	60	75	80	80	82	76	71	70	82	87
170	62	77	82	82	84	78	73	71	84	89
200	62	77	83	82	85	79	73	72	84	89
230	63	78	83	83	85	79	74	73	85	90

INDOOR NOISE LEVEL - HIGH EFFICIENCY & LOW NOISE

Table 7.11

ESP : 150 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	51	66	71	71	73	67	62	60	73	78
100	53	68	73	73	75	69	64	62	75	80
120	55	70	76	75	78	72	66	65	77	82
150	54	69	74	74	76	70	65	63	76	81
170	57	72	77	77	79	73	68	66	79	84
200	59	74	80	80	82	76	70	69	82	87
230	62	77	82	82	84	78	73	71	84	89

Table 7.12

ESP : 500 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	60	75	80	80	82	76	71	69	82	87
100	61	76	81	81	83	77	72	70	83	88
120	62	77	82	82	84	78	73	72	84	89
150	62	77	82	82	84	78	73	72	84	89
170	64	79	84	84	86	80	75	73	86	91
200	64	79	85	84	87	81	75	74	86	91
230	65	80	85	85	87	81	76	75	87	92

FXK = Heating recovery unit

INDOOR NOISE LEVEL

Table 7.9

ESP : 100 Pa

Spectrum per octave band

FX	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
25	54	66	74	78	80	80	72	65	85	54
30	57	69	78	81	82	81	76	68	87	56
35	51	63	73	76	78	77	70	63	83	52
40	54	65	74	78	80	78	72	65	84	53
55	58	70	78	82	84	85	77	69	89	58
70	58	70	81	82	85	85	76	69	90	59
85	63	74	84	87	89	88	81	74	94	63
100	65	76	84	89	90	89	84	76	95	64
110	61	72	81	85	87	88	79	72	92	61
140	65	76	87	89	91	90	83	76	96	65
170	68	79	89	92	93	92	86	79	98	67

PERFORMANCES - ACCESSORIES PRESSURE DROPS



FCM = Cooling only unit
FGM = Cooling only with gas fired heating

FHM = Heat pump rooftop
FDM = Heat pump rooftop with gas fired heating

Table 8

Size	Airflow	Economiser	G4 Filters	F7 Filters	UV LIGHT	Hot Water coil S	Hot Water coil H	Electric Heater S	Electric Heater M	Electric Heater H	Heating Gaz fired H	Adjustable roofcurb	Multidirectional Roofcurb	Heat Recovery Modul Fresh Air
85	12000	12	1	75	18	9	15	3	5	6	14	17	22	164
	15000	19	7	105	30	13	22	6	7	7	23	27	33	204
	23000	45	28	199	63	26	44	7	9	11	53	63	73	313
100	14000	17	5	94	26	11	19	6	7	8	20	23	30	191
	18500	29	15	143	44	18	31	8	10	11	34	41	51	252
	23000	45	28	199	63	26	44	11	14	16	53	63	78	313
120	15000	19	7	105	30	13	22	7	8	9	23	27	35	204
	20500	36	21	167	52	21	37	10	12	13	42	50	62	279
	23000	45	28	199	63	26	44	12	15	17	53	63	78	313
150	18000	6	1	75	15	6	10	4	5	7	16	30	35	170
	26000	12	12	130	33	12	19	9	10	13	33	62	72	245
	35000	22	29	204	54	19	33	15	18	23	59	112	131	329
170	21000	8	5	94	21	8	14	8	9	10	21	40	49	198
	30000	16	19	161	42	15	25	10	13	15	44	82	95	282
	35000	22	29	204	54	19	33	17	19	21	59	112	131	329
200	24000	12	3	88	18	7	11	16	15	14	21	53	67	173
	35000	26	18	154	39	13	22	22	21	20	44	112	133	252
	43000	39	31	211	54	19	31	24	26	29	66	169	195	310
230	27000	15	7	105	24	8	14	18	18	17	26	67	84	195
	39000	32	24	182	46	16	26	24	24	25	55	139	163	281
	43000	39	31	211	54	19	31	24	26	29	66	169	195	310

FXK = Heating recovery unit

Table 8.1

SIZE	Air flow m ³ /h		Hot water coil		Electric heater		Roofcurb Base frame (Pa)
			S (Pa)	H (Pa)	S (Pa)	H (Pa)	
25	Min.	3 200	6	12	3	5	5
	Nom.	4 000	9	17	6	9	5
	Max.	4 500	11	21	9	12	5
30	Min.	4 000	9	17	6	9	5
	Nom.	5 000	13	25	12	18	5
	Max.	5 500	15	30	12	18	6
35	Min.	4 800	2	4	3	3	5
	Nom.	6 000	3	6	3	3	5
	Max.	6 600	4	7	3	3	5
40	Min.	5 800	3	6	3	3	5
	Nom.	7 200	4	8	3	3	5
	Max.	8 100	5	10	3	3	5
55	Min.	7 200	4	8	3	3	5
	Nom.	9 000	6	12	3	3	5
	Max.	9 900	7	15	3	3	5
70	Min.	8 600	3	7	3	3	5
	Nom.	10 800	5	10	3	3	5
	Max.	12 200	6	13	3	3	5
85	Min.	10 800	5	10	3	3	5
	Nom.	13 500	8	15	3	6	6
	Max.	15 400	10	19	6	6	7
100	Min.	13 800	8	16	3	6	6
	Nom.	17 300	12	23	6	9	9
	Max.	18 200	13	26	6	9	10
110	Min.	15 200	5	9	3	3	5
	Nom.	19 000	7	14	3	6	5
	Max.	21 500	8	17	6	6	7
140	Min.	19 200	7	14	3	6	5
	Nom.	24 000	10	20	6	9	9
	Max.	25 500	11	23	9	9	10
170	Min.	24 000	10	20	6	9	9
	Nom.	27 000	13	25	9	9	11
	Max.	30 000	15	30	12	12	13

Tabella 9.1

	085		100		120		150		170		200		230		
	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	
UNIT															
basic FC / FH R410A	37,9	68,0	46,3	78,2	54,7	89,4	63,6	114,3	77,7	138,5	83,5	149,7	109,1	178,1	
Compressors	31,4	56,2	37,0	62,0	45,2	72,8	51,0	91,8	62,8	112,4	68,0	122,4	90,4	145,6	
Direct start up amps Id/la	3,0		3,5		3,0		2,0		2,0		2,0		2		
kit indoor standard	3,6	6,5	6,4	10,9	6,4	10,9	7,3	13,0	9,6	16,6	9,6	16,6	12,8	21,8	
kit indoor high efficiency	5,7	9,0	5,7	9,0	5,7	9,0	8,6	13,5	8,6	13,5	11,4	18,0	11,4	18,0	
Outdoor fan standard	2,6	4,6	2,6	4,6	2,8	5,0	5,0	8,8	5,0	8,8	5,6	10,0	5,6	10,0	
Outdoor fan Low noise	2,6	4,6	2,6	4,6	2,8	5,0	5,0	8,8	5,0	8,8	5,6	10,0	5,6	10,0	
ELECTRICAL															
Electric heater S	30	42	30	42	30	42	45	63	45	63	72	100	72	100	
Electric heater M	54	75	54	75	54	75	72	100	72	100	108	150	108	150	
Electric heater H	72	100	72	100	72	100	108	150	108	150	162	226	162	226	
Kits															
Differential kits	K1	-1,0	-1,7	-3,7	-6,1	-3,7	-6,1	-3,5	-6,2	-5,8	-9,8	-2,3	-3,6	-5,5	-8,8
INDOOR	K2	0,0	0,0	-2,8	-4,4	-2,8	-4,4	-1,9	-3,4	-4,2	-7,0	-2,3	-3,6	-5,5	-8,8
KIT STANDARD 0	K3	0,0	0,0	-2,8	-4,4	-2,8	-4,4	0,0	0,0	-2,3	-3,6	0,0	0,0	-3,2	-5,2
	K4	1,2	1,8	-1,6	-2,6	-1,6	-2,6	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0
	K5	1,2	1,8	-1,6	-2,6	-1,6	-2,6	2,3	3,6	0,0	0,0	3,2	5,2	0,0	0,0
	K6	5,0	8,7	2,2	4,3	2,2	4,3	2,3	3,6	0,0	0,0	7,6	13,8	4,4	8,6
	K7	2,8	4,4	0,0	0,0	0,0	0,0	2,3	30,6	0,0	0,0	3,2	5,2	0,0	0,0
	K8	9,2	15,3	6,4	10,9	6,4	10,9	5,5	8,8	3,2	5,2	0,0	0,0	-3,2	-5,2
	K9	-1,0	-1,7	-3,7	-6,1	-3,7	-6,1	5,5	8,8	3,2	5,2	7,6	13,8	4,4	8,6
	K10	2,8	4,4	0,0	0,0	0,0	0,0	0,0	0,0	-2,3	-3,6	11,0	19,6	7,8	14,4
	K11	5,0	8,7	2,2	4,3	2,2	4,3	2,3	3,6	0,0	0,0	15,4	25,6	12,2	20,4
	K12	5,0	8,7	2,2	4,3	2,2	4,3	9,9	17,4	7,6	13,8	7,6	13,8	4,4	8,6
	K13	1,2	1,8	-1,6	-2,6	-1,6	-2,6	5,5	8,8	3,2	5,2	15,4	25,6	12,2	20,4
	K14	2,8	4,4	0,0	0,0	0,0	0,0	9,9	17,4	7,6	13,8	-	-	-	-
	K15	9,2	15,3	6,4	10,9	6,4	10,9	13,3	23,2	11,0	19,6	-	-	-	-
	K16	5,0	8,7	2,2	4,3	2,2	4,3	9,9	17,4	7,6	13,8	-	-	-	-
	K17	13,6	23,9	10,8	19,5	10,8	19,5	-	-	-	-	-	-	-	-
	K18	6,0	10,1	3,2	5,7	3,2	5,7	-	-	-	-	-	-	-	-
EXTRACTION															
Extraction plug fan 600 à 100 Pa	4,4	10	4,4	10	4,4	10	4,4	10	4,4	10	6,6	15	6,6	15	
Axial Extraction	0,9	1,8	0,9	1,8	0,9	1,8	1,4	2,7	1,4	2,7	1,4	2,7	1,4	2,7	
UNIT															
Basic FG / FD R410A	39,7	71,1	47,2	80,3	57,9	95,1	65,9	117,9	80,9	143,7	86,7	154,9	113,5	186,7	
Compressors	31,4	56,2	37,0	62,0	45,2	72,8	51,0	91,8	62,8	112,4	68,0	122,4	90,4	145,6	
Direct start up amps Id/la	3,5		3,6		3,3		2,5		2,3		2,2		2		
kit indoor standard gas S & H	5,4	9,6	7,3	13,0	9,6	16,6	9,6	16,6	12,8	21,8	12,8	21,8	17,2	30,4	
kit indoor high Efficiency	5,7	9,0	5,7	9,0	5,7	9,0	8,6	13,5	8,6	13,5	11,4	18,0	11,4	18,0	
Outdoor fan standard	2,6	4,6	2,6	4,6	2,8	5,0	5,0	8,8	5,0	8,8	5,6	10,0	5,6	10,0	
Outdoor fan Low noise	2,6	4,6	2,6	4,6	2,8	5,0	5,0	8,8	5,0	8,8	5,6	10,0	5,6	10,0	
KIT															
Drive kits	K1	0	0,0	-1,9	-3,4	-4,2	-7,0	-2,3	-3,6	-5,5	-8,8	-5,5	-8,8	-9,9	-17,4
INDOOR	K2	0	0,0	-1,9	-3,4	-4,2	-7,0	0,0	0,0	-3,2	-5,2	-3,2	-5,2	-7,6	-13,8
	K3	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0	0,0	0,0	-4,4	-8,6
KIT GAZ S & H	K4	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0	0,0	0,0	-4,4	-8,6
	K5	1,9	3,4	0,0	0,0	-2,3	-3,6	7,6	13,8	4,4	8,6	4,4	8,6	0,0	0,0
	K6	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4	12,2	20,4	7,8	11,8
	K7	4,2	7,0	2,3	3,6	0,0	0,0	3,2	5,2	0,0	0,0	7,8	14,4	3,4	5,8
	K8	7,4	12,2	5,5	8,8	3,2	5,2	7,6	13,8	4,4	8,6	0,0	0,0	-4,4	-8,6
	K9	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4	4,4	8,6	0,0	0,0
	K10	7,4	12,2	5,5	8,8	3,2	5,2	15,4	25,6	12,2	20,4	7,8	14,4	3,4	5,8
	K11	11,8	20,8	9,9	17,4	7,6	13,8	-	-	-	-	12,2	20,4	7,8	11,8
	K12	12	21	10	17	8	14	-	-	-	-	-	-	-	-
	K13	7	12	6	9	3	5	-	-	-	-	-	-	-	-
EXTRACTION															
Extraction plug fan 600 à 100 Pa	4,4	10	4,4	10	4,4	10	4,4	10	4,4	10	6,6	15	6,6	15	
Axial Extraction fan	0,9	1,8	0,9	1,8	0,9	1,8	1,4	2,7	1,4	2,7	1,4	2,7	1,4	2,7	
GAS															
Gas (2 stages)															
Gas S kW	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	
Gas H Kw	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	
Gas H 100% modulation kW	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	
ENERGY RECOVERY															
	0,2	0,8	0,2	0,8	0,2	0,8	0,2	0,8	0,2	0,8	0,2	0,8	0,2	0,8	

P = Max. absorbed power in kW

FLA = Full load amps - A= la

Id/la = Startup amps/full load amps - A

Table 9.2

	SIZE	FX 25		FX 30		FX 35		FX 40		FX 55		FX 70	
		P	FLA	P	FLA	P	FLA	P	FLA	P	FLA	P	FLA
Basic unit cooling	R407C	13	23	16	29	16	29	22	38	26	44	31	50
Electric heater	S	9	13	9	13	18	26	18	26	18	26	36	53
	H	18	26	18	26	36	53	36	53	36	53	72	106
Drive kits	K 1	0	-1	-1	-1	-1	-1	-2	-3	-2	-4	-2	-3
	K 2	0	-1	-1	-1	-1	-1	-1	-2	-2	-3	-2	-3
	K 3	0	-1	-1	-1	-1	-1	-1	-2	-2	-3	-1	-2
	K 4	0	-1	-1	-1	-1	-1	-1	-1	-1	-2	-1	-2
	K 5	0	0	0	0	0	0	-1	-1	-1	-2	0	0
	K 6	0	0	0	0	1	1	0	0	-1	-2	-2	-4
	K 7	1	1	-1	-1	0	0	0	0	0	0	-1	-2
	K 8	0	0	1	1	-1	-1	-1	-1	0	0	0	0
	K 9	1	1	0	0			0	0	-1	-2	1	2
	K 10	0	0	1	1			1	2	1	2	-1	-2
	K 11											1	2
Outdoor Drive kits	K 1	0	0	0	0	-1	-1	0	0	0	0	0	0
	K 2	0	0	1	1	0	0	0	0	1	2	0	0
	K 3	1	1	1	1	0	0	0	0	1	2	1	2
	K 4	1	1	1	1	1	1	1	2	3	4	1	2
	K 5	1	2	2	3	1	1	1	2	1	2	3	4
	K 6	1	1			1	1	2	4			3	4
	K 7					2	3	1	2				
Id/Ia		3	3	3	3	3	3	3	3	3	3	3	3

Tabella 9.3

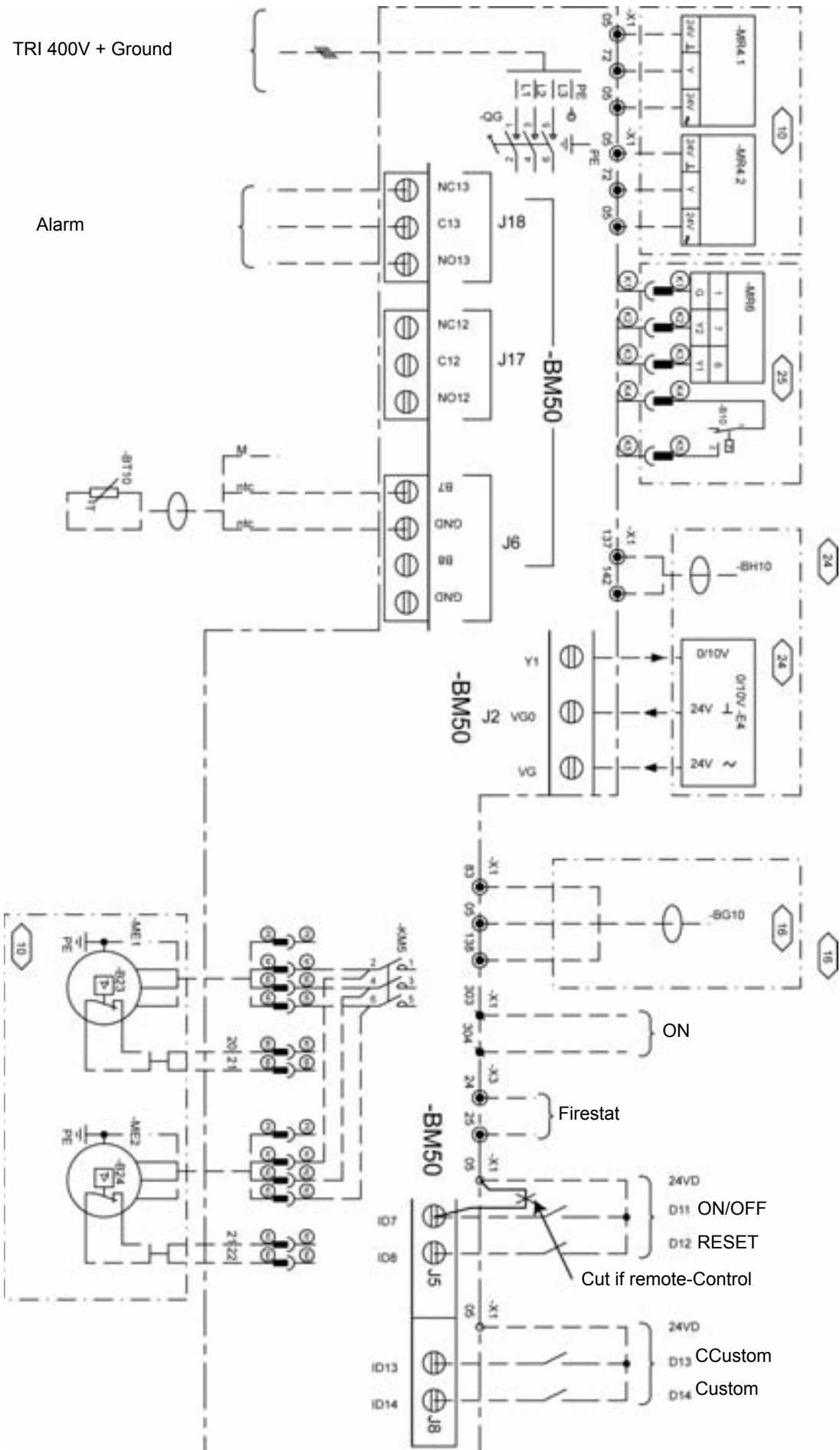
	SIZE	FX 85		FX 100		FX 110		FX 140		FX 170	
		P	FLA	P	FLA	P	FLA	P	FLA	P	FLA
Basic unit cooling	R407C	42	65	50	86	51	87	66	106	86	140
Electric heater	S	36	53	36	53	36	53	36	53	36	53
	H	72	106	72	106	72	106	72	106	72	106
Drive kits	K 1	-2	-4	-5	-9	-4	-8	-4	-7	-6	-9
	K 2	-2	-4	-4	-7	-4	-6	-4	-7	-3	-5
	K 3	-1	-2	-4	-7	-2	-3	-2	-4	-3	-5
	K 4	-1	-2	-2	-4	-2	-3	0	0	0	0
	K 5	-1	-2	-2	-4	0	0	-2	-4	0	0
	K 6	0	0	0	0	0	0	0	0	0	0
	K 7	0	0	-2	-4	2	4	3	5	4	9
	K 8	2	3					3	5		
	K 9	2	3								
	K 10										
	K 11										
Outdoor Drive kits	K 1	0	0	0	0	-2	-3	0	0	0	0
	K 2	2	3	0	0	0	0	3	5	0	0
	K 3	2	3	3	5	0	0	3	5	4	9
	K 4	4	7	3	5	2	4	8	14	4	9
	K 5	4	7	3	5	2	4	8	14	4	9
	K 6					6	9				
Id/Ia		3	3	3	3	3	3	3	3	3	3

P = Max. absorbed power in kW

FLA = Full load amps - A= Ia

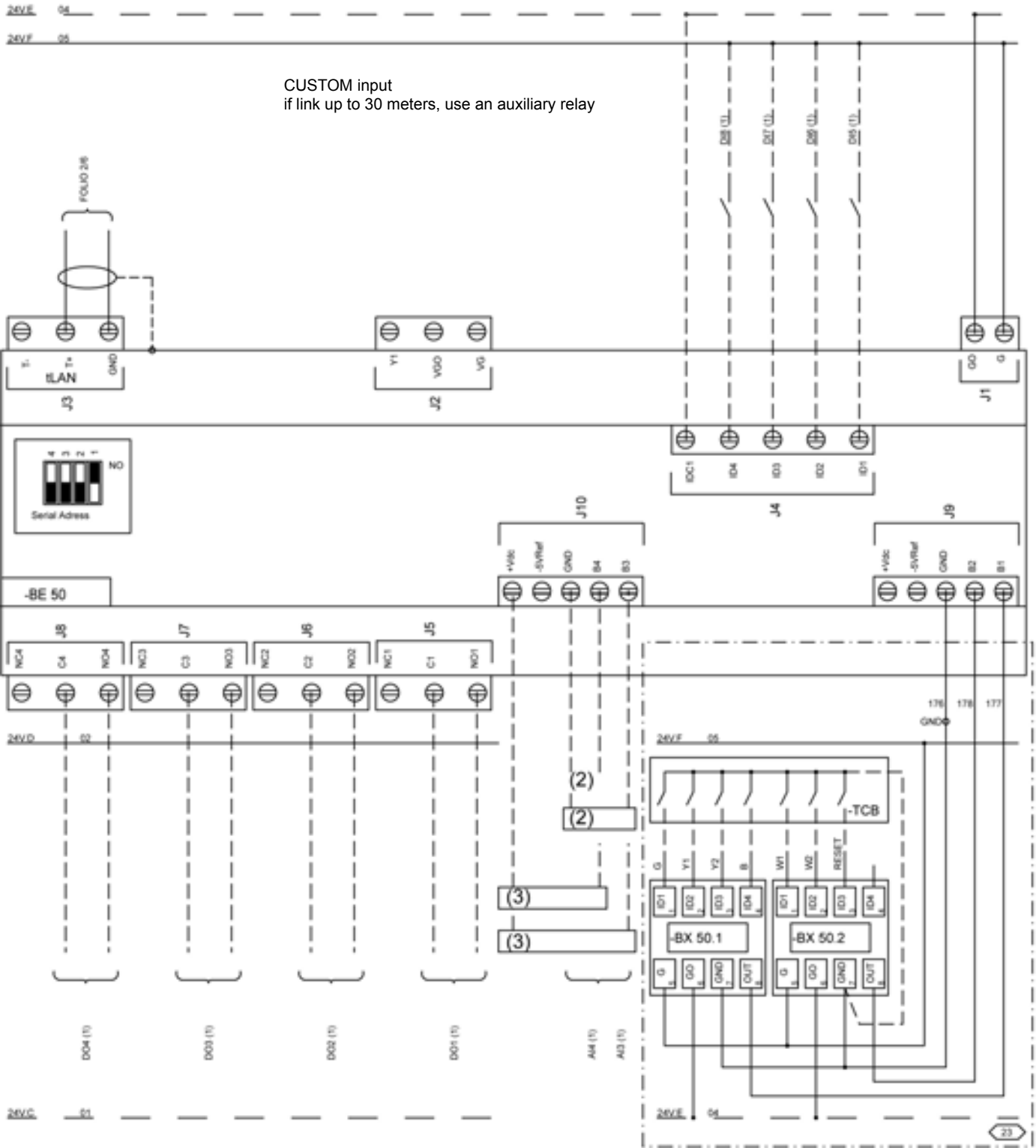
Id/Ia = Startup amps/full load amps - A

GENERAL CUSTOMER CONNECTION DIAGRAM



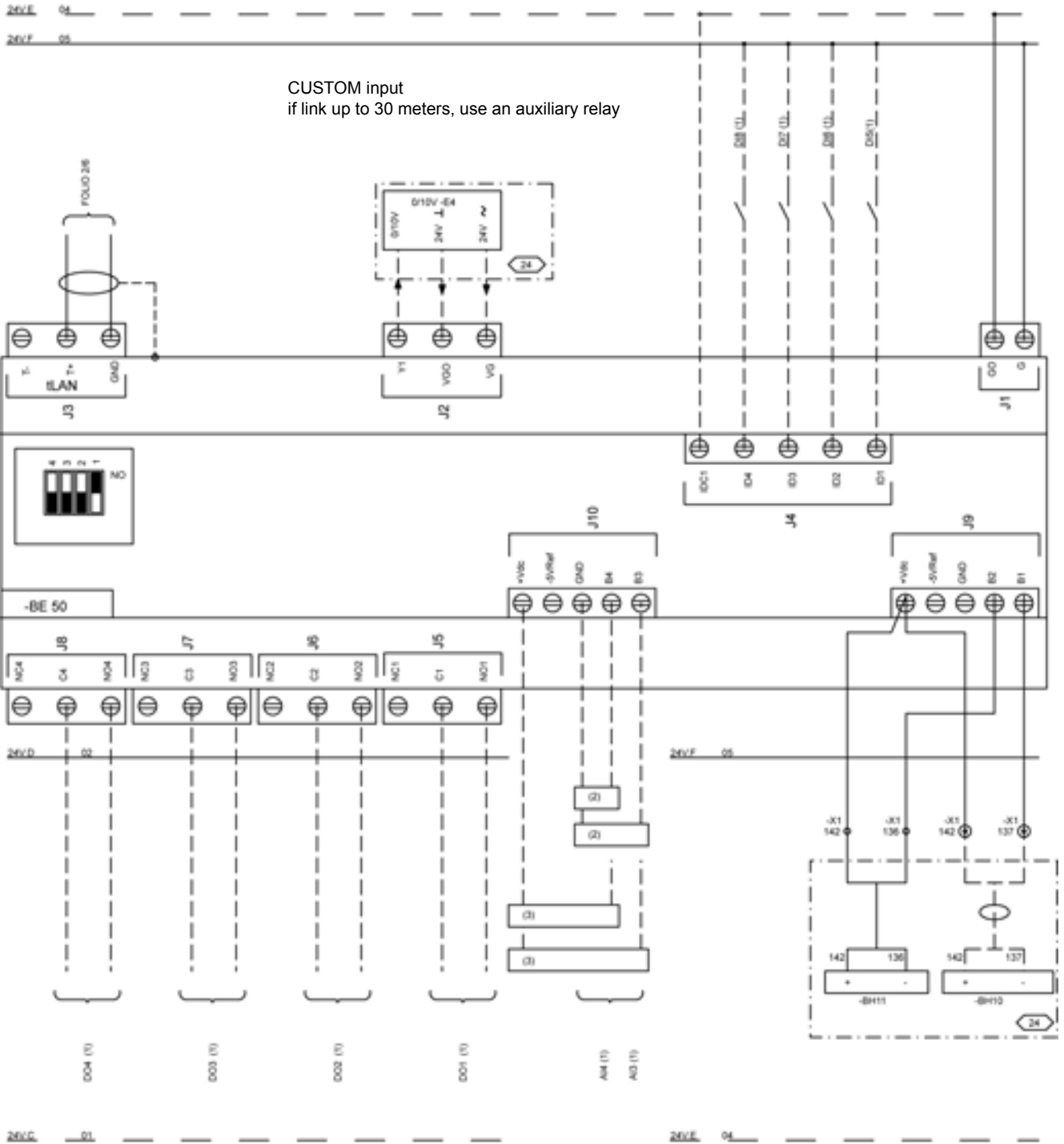
CUSTOMER CONNECTION WITH TCB

CUSTOM input
if link up to 30 meters, use an auxiliary relay



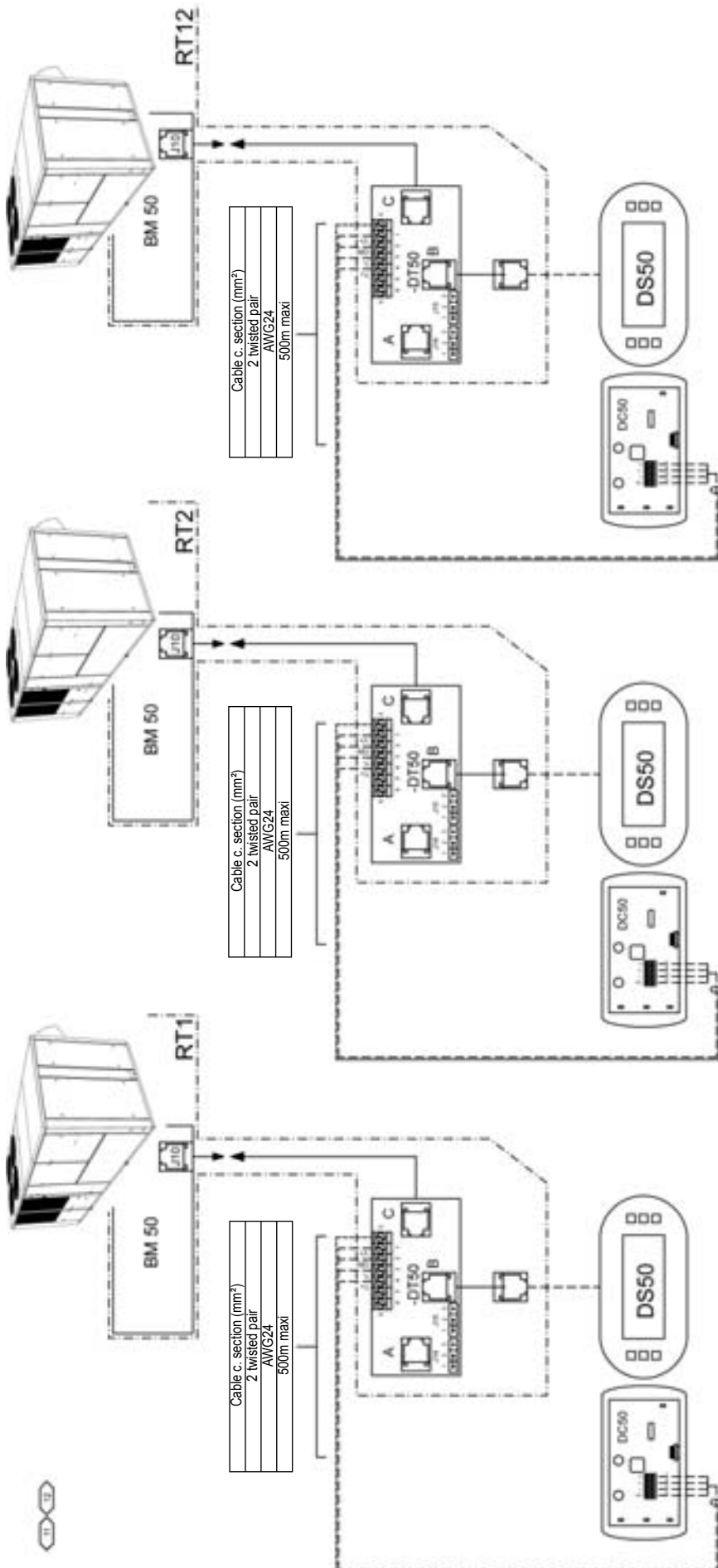
- (1) Custom
- (2) Probe
- (3) Sensor 4/20 mA

CUSTOMER CONNECTION WITH ADVANCED CONTROL PACK

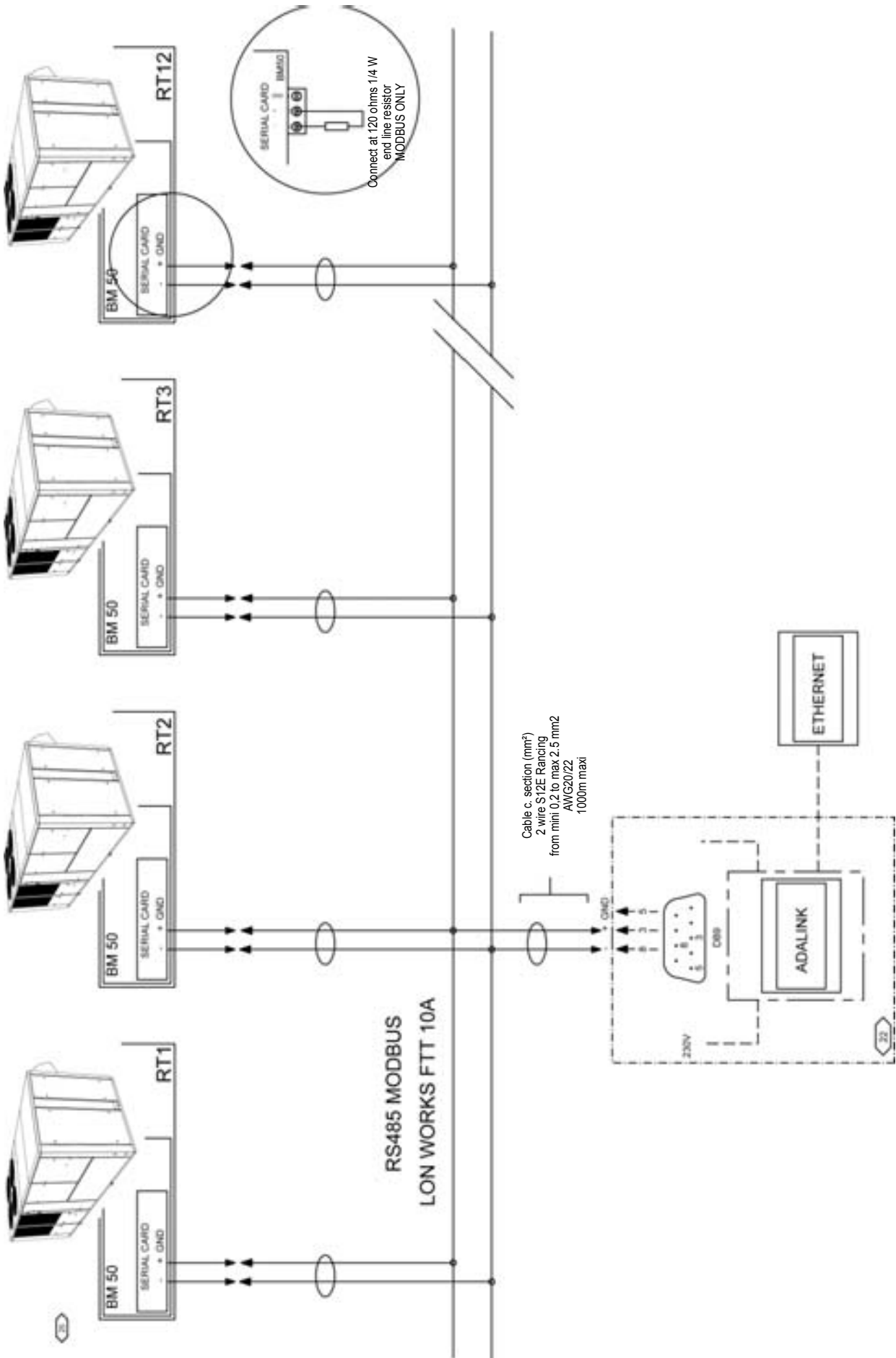


- (1) Custom
- (2) Probe
- (3) Sensor 4/20 mA

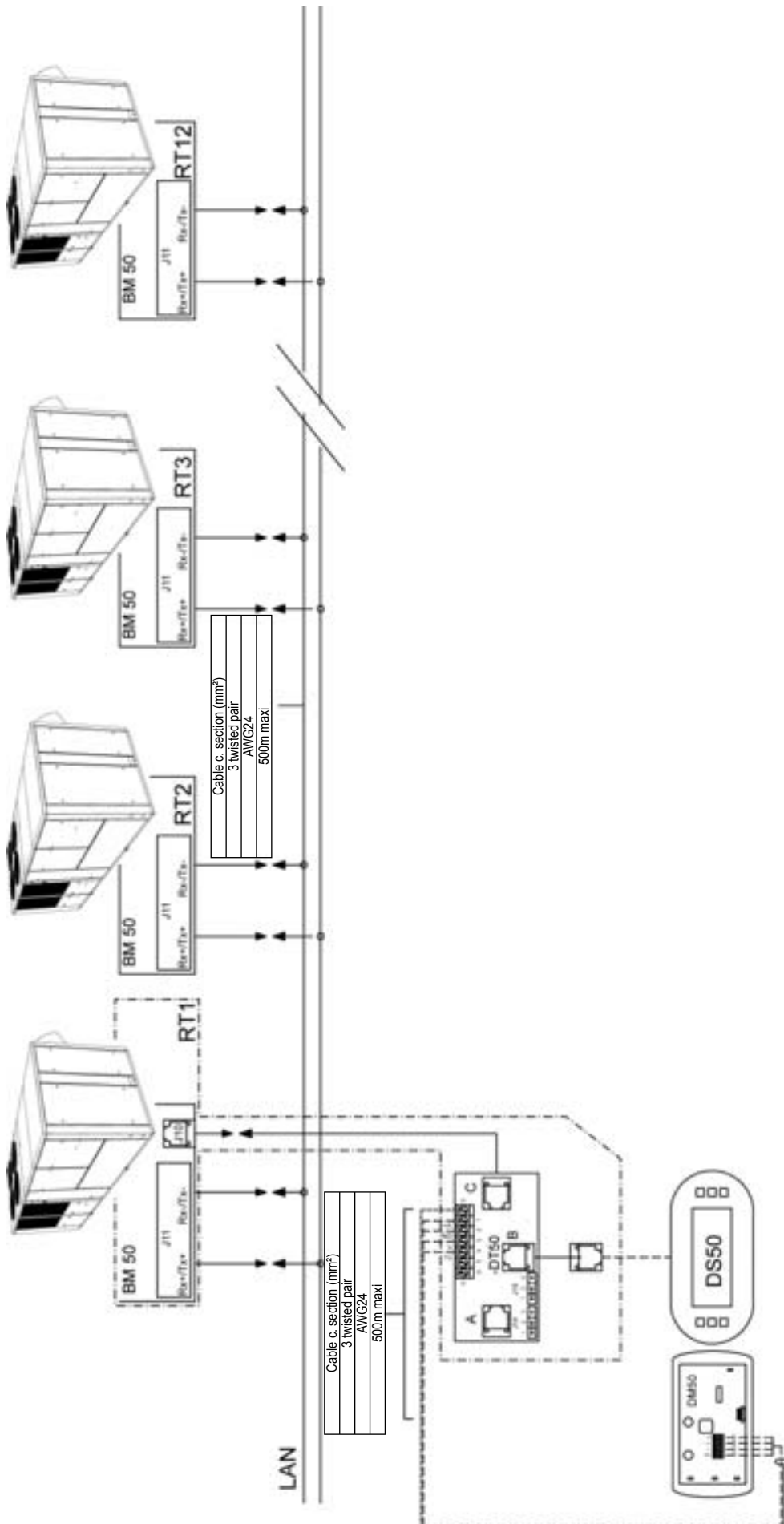
DS 50 : Service display / DC 50 : Comfort display



ADALINK



Master/Slave



STANDARD

Logical Output Board (1 output : 1 assigned)

DO 1 - Alarm, General

Logical Input Board (4 inputs : 2 assigned, 2 customized)

DI 1 - ON/OFF

DI 2 - Reset alarm

DI 3 & 4 - Customized

(choose, for each input (2) between those 12 possibilities)

- Disable, Compressors & Heaters
- Disable 100% Compressors
- Disable 50% Compressors
- Disable, Heaters
- Disable, Cooling
- Disable, Heating
- Fault contact, Humidifier
- All return air
- 20 % Fresh air
- 30 % Fresh air
- 40 % Fresh air
- 50 % Fresh air
- All fresh air
- Activation A zone
- Activation B zone
- Activation C zone
- Activation Unoccupied zone
- Activation BMS zone
- Free, for BMS

Those contacts
add up }

ADVANCED CONTROL PACK OR TCB

Logical Output Board (4 outputs : 0 assigned, 4 customized)

DO 3 to 6 - Customized (choose, for each input (4) between those 7 possibilities)

- Alarm, Filters
- Alarm, Blower
- Alarm, Compressors
- Activation Gas
- Alarm, Heaters
- Alarm, Hot Water Coil Freezing
- Smoke alarm
- Heating mode
- Activation A zone
- Activation B zone
- Activation C zone
- Activation Unoccupied zone
- Activation BMS zone
- Free, for BMS

Logical Input Board (4 outputs: 0 assigned, 4 customized)

DI 5 to 8 - Customized

(choose, for each input (4) between those 12 possibilities)

- Disable, Compressors & Heaters
- Disable, 100% Compressors
- Disable, 50% Compressors
- Disable, Heaters
- Disable, Cooling
- Disable, Heating
- Fault contact, Humidifier
- All return air
- 20 % Fresh air
- 30 % Fresh air
- 40 % Fresh air
- 50 % Fresh air
- All Fresh Air
- Activation A zone
- Activation B zone
- Activation C zone
- Activation Unoccupied zone
- Activation BMS zone
- Free, for BMS

Those contacts
add up }

Analogue Input Board (4 outputs : 0 assigned, 2 customized)

AI 1 & 2 - Customized

(choose, for each input (4) between those 4 possibilities)

- Override room temp set point -5 +5°C (4-20mA)
- Override min. fresh air set point 0-100% (4-20mA)
- Weather sensor, Temperature
- Weather sensor, Humidity
- Free temperature (NTC probe)
- Free relative humidity (4-20mA)

**Lennox Climatic 50 and BMS
Modbus, Trend or BACnet.****Specification of the Bus:**

Type:

➤ RS485

Speed: (Adjustable on Climatic 50 via display DS50; Setting 3933)

➤ 1200

➤ 2400

➤ 4800

➤ 9600

➤ 19200

Parity: Fixed

➤ no parity (N)

Length: Fixed

➤ 8 bits (8)

Stop bit: Fixed

➤ 2 bits (2)

Spécification du protocole:

Mode: Fixed

➤ R.T.U. for Modbus

Address of slave: (Adjustable on Climatic 50 via display DS50; Setting 3931)

➤ 1

➤ to 200

Supported functions, for Modbus:

➤ Reading Bits : 1 or 2

➤ Reading Words : 3 or 4

➤ Writing simple Bit : 5

➤ Writing simple Word : 6

Functionality 'Watchdog' on Climatic 50.

The automat Climatic 50 being passive on the bus it cannot detect any cut of communication with the BMS. From where in the event of cut of communication the Roof-Top would continue to function with the last adjustments emitted by the BMS. To avoid operation, penalizing the correct operation of the Roof-Top, the BMS must regularly write in the word 01h a value different from 0. The automat Climatic 50 decreases the value of the word 01h of 5 units every 5 seconds.

If the BMS writes the value 1000 in the word 01h, in the event of cut of communication at the end of 16 minutes 40 seconds the instructions emitted by the BMS are not taken more into account by the software of the automat Climatic 50. I.e. the following points are not took into account by the program of the automat Climatic 50 if the word 01h is equal to 0

Points concerned with the word 01h

Words :

➤ 02H / 03H / 04H / 05H / 06H / 07H / 08H

Bits :

➤ 03H / 04H / 06H / 07H / 08H / 09H / 0AH / 0BH / 0CH / 0DH / 0EH

This functionality does not prohibit the writing of the bit or of the word, those are always readable on our display DS50 (show in mode BMS via the key 'Prg')

MODBUS - BACNET

@ (hexa)	@ (deci)				DS50
01H	1	R/W	L	[On / Off] Unit	3111
02H	2	R/W	L	[Reset] Discharges the safety measures of the unit	3112
03H	3	R/W	L	[Enable] Stopping and running of the Fan Blower.[Off] the blower is stopped, [On] the blower is running.	3351 (BMS)
04H	4	R/W	L	[Enable] Stopping and running of the fan in the «Control Dead Zone». [Off] the blower is stopped, [On] the blower is running.	3352 (BMS)
05H	5	R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	3935
06H	6	R/W	L	[Room regulation] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	3324 (BMS)
07H	7	R/W	L	[F-Air Reheat] Activate reheating of the fresh air in the dead zone to maintain supply temperature.	3331 (BMS)
08H	8	R/W	L	[F-Air Reheat] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	3332 (BMS)
09H	9	R/W	L	[Enable] Run eco: [On] the Economiser is running, [Off] the Economiser if stopped.	3353 (BMS)
0AH	10	R/W	L	[Enable] Run CO2 Sensor: [On] Switch-on the CO2 control on a Zone, [Off] Stop the CO2 control on a zone.	3354 (BMS)
0BH	11	R/W	L	[Enable] [OFF] Force the unloading of compressors in cooling mode.	3355 (BMS)
0CH	12	R/W	L	[Enable] [OFF] Force the unloading of compressors in heating mode.	3356 (BMS)
0DH	13	R/W	L	[Enable] [OFF] Force the unloading of heating module (electric, gas or heat water coil)	3357 (BMS)
0EH	14	R/W	L	[Enable] [OFF] Force the unloading of humidity control.	3358 (BMS)
0FH	15	R/W	L	not used	
10H	16	R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	...
11H	17	R/W	L	[Dry contact] Digital Output, Free 1, BM50-J17-NO12	2141
12H	18	R/W	L	[Dry contact] Digital Output, Free 2, BE50-J5-NO1	2142
13H	19	R/W	L	[Dry contact] Digital Output, Free 3, BE50-J6-NO2	2143
14H	20	R/W	L	[Dry contact] Digital Output, Free 4, BE50-J7-NO3	2144
15H	21	R/W	L	[Dry contact] Digital Output, Free 5, BE50-J8-NO4	2145
16H	22	R/W	L	not used	
17H	23	R/W	L	not used	
18H	24	R/W	L	not used	
19H	25	R/W	L	not used	
1AH	26	R/W	L	not used	
1BH	27	R/W	L	not used	
1CH	28	R/W	L	not used	
1DH	29	R/W	L	not used	
1EH	30	R/W	L	not used	
1FH	31	R/W	L	not used	
20H	32	R/W	L	not used	
21H	33	R	L	[Alarm] General	1000
22H	34	R	L	[On/Off] Fan, Blower	2315
23H	35	R	L	[On/Off] Fan, Extraction	2321
24H	36	R	L	[On/Off] Compressor, 1	2516
25H	37	R	L	[On/Off] Compressor, Heat pump, 1	2517
26H	38	R	L	[On/Off] Compressor, 2	2526
27H	39	R	L	[On/Off] Compressor, Heat pump, 2	2527
28H	40	R	L	[On/Off] Compressor, 3	2536

MODBUS - BACNET

29H	41	R	L	[On/Off] Compressor, Heat pump, 3	2537
2AH	42	R	L	[On/Off] Compressor, 4	2546
2BH	43	R	L	[On/Off] Compressor, Heat pump, 4	2547
2CH	44	R	L	[On/Off] Gas, Burner, 1	2615
2DH	45	R	L	[On/Off] Gas, Burner, 2	2616
2EH	46	R	L	[On/Off] Gas, Burner, High power, 1	2617
2FH	47	R	L	[On/Off] Electrical heaters, 1	2625
30H	48	R	L	[On/Off] Electrical heaters, 2	2626
31H	49	R	L	[Dry contact] Digital Input, Free 1, BM50-J8-ID13	2151
32H	50	R	L	[Dry contact] Digital Input, Free 2, BM50-J8-ID14	2152
33H	51	R	L	[Dry contact] Digital Input, Free 3, BE50-J4-ID1	2153
34H	52	R	L	[Dry contact] Digital Input, Free 4, BE50-J4-ID2	2154
35H	53	R	L	[Dry contact] Digital Input, Free 5, BE50-J4-ID3	2155
36H	54	R	L	[Dry contact] Digital Input, Free 6, BE50-J4-ID4	2156
37H	55	R	L	not used	
38H	56	R	L	not used	
39H	57	R	L	not used	
3AH	58	R	L	not used	
3BH	59	R	L	not used	
3CH	60	R	L	not used	
3DH	61	R	L	not used	
3EH	62	R	L	not used	
3FH	63	R	L	not used	
40H	64	R	L	not used	

MODBUS - BACNET

@ (hexa)	@ (deci)				DS50
01H	1	R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	3934
02H	2	R/W	10 = 1.0°C	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (BMS)
03H	3	R/W	10 = 1.0°C	[Occupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (BMS)
04H	4	R/W	1 = 1%	[Room SP] Required room minimum fresh air rate in % Middle of the dead zone.	3312 (BMS)
05H	5	R/W	10 = 1.0°C	[Inoccupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (Uno)
06H	6	R/W	10 = 1.0°C	[Inoccupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (Uno)
07H	7	R/W	10 = 1.0%	[Humidity] Desired Maximum relative humidity in Room (in %). – Dehumidification set	3341 (BMS)
08H	8	R/W	10 = 1.0%	[Humidity] Desired Minimum relative humidity in Room (in %). – Humidification set point.	3342 (BMS)
09H	9	R/W		not used	
0AH	10	R/W		not used	
0BH	11	R/W		not used	
0CH	12	R/W	1 = 1h	[Clock] Hour	3121
0DH	13	R/W	1 = 1m	[Clock] Minute	3122
0EH	14	R/W	1 = 1	[Clock] Day of the month	3123
0FH	15	R/W	1 = 1	[Clock] Month	3124
10H	16	R/W	1 = 2001	[Clock] Year	3125
11H	17	R/W	10 = 1.0°C	[BMS] Room temperature coming from the BMS	2824
12H	18	R/W	10 = 1.0%	[BMS] Room humidity coming from the BMS	2828
13H	19	R/W	10 = 1.0°C	[BMS] Outdoor temperature coming from the BMS	2814
14H	20	R/W	10 = 1.0%	[BMS] Outdoor humidity coming from the BMS	2818
15H	21	R/W		not used	
16H	22	R/W		not used	
17H	23	R/W		not used	
18H	24	R/W		not used	
19H	25	R/W		not used	
1AH	26	R/W		not used	
1BH	27	R/W		not used	
1CH	28	R/W		not used	
1DH	29	R/W		not used	
1EH	30	R/W		not used	
1FH	31	R/W		not used	
20H	32	R/W		not used	
21H	33	R	1 = 1	[Alarm] Code Error	1000
22H	34	R	10 = 1.0°C	[Temperature] Room	2112
23H	35	R	10 = 1.0°C	[Temperature] Outdoor	2111
24H	36	R	10 = 1.0°C	[Temperature] Supply	2113
25H	37	R	10 = 1.0°C	[Temperature] Return	2114
26H	38	R	10 = 1.0%	[Relative Humidity] Room	2122
27H	39	R	10 = 1.0 g/Kg	[Absolute Humidity] Room	2124
28H	40	R	10 = 1.0%	[Relative Humidity] Outdoor	2121

MODBUS - BACNET

29H	41	R	10 = 1.0 g/Kg	[Absolute Humidity] Outdoor	2121
2AH	42	R	1 = 1 pa	[Flow] Differential pressure on the air, in pascal	2123
2BH	43	R	1 = 1 ppm	[CO ²] Level in ppm	2131
2CH	44	R	1 = 1%	[% of opening] Register of fresh air	2132
2DH	45	R	1 = 1%	[% of opening] Valve gas	2413
2EH	46	R	1 = 1%	[% of opening] Electrical heaters (Triac)	2618
2FH	47	R	1 = 1%	[% of opening] Hot water coil	2627
30H	48	R	1 = 1%	[% of opening] Humidifier	2633
31H	49	R	10 = 1.0 °C	[Dry contact] Temperature, Free 1, BE50-J9-B1	2714
32H	50	R	10 = 1.0 °C	[Dry contact] Temperature, Free 2, BE50-J9-B2	2161
33H	51	R	10 = 1.0 °C	[Dry contact] Temperature, Free 3, BE50-J10-B3	2162
34H	52	R	10 = 1.0 °C	[Dry contact] Temperature, Free 4, BE50-J10-B4	2163
35H	53	R	10 = 1.0%	[Dry contact] Humidity, Free 1, BE50-J9-B1	2164
36H	54	R	10 = 1.0%	[Dry contact] Humidity, Free 2, BE50-J9-B2	2165
37H	55	R	10 = 1.0%	[Dry contact] Humidity, Free 3, BE50-J10-B3	2166
38H	56	R	10 = 1.0%	[Dry contact] Humidity, Free 4, BE50-J10-B4	2167
39H	57	R	1 = 1 h	[Running Time, Count] Fan, Blower	2168
3AH	58	R	1 = 1 h	[Running Time, Count] Compressor, 1	2318
3BH	59	R	1 = 1 h	[Running Time, Count] Compressor, 2	2519
3CH	60	R	1 = 1 h	[Running Time, Count] Compressor, 3	2529
3DH	61	R	1 = 1 h	[Running Time, Count] Compressor, 4	2539
3EH	62	R	bit	[Alarm]	2549
3FH	63	R	bit	bit.0 = Air Flow bit.1 = Dirty Filters bit.2 = No Filters bit.3 = Electrical heaters bit.4 = High Temperature, Supply bit.5 = Low Temperature, Room bit.6 = Gas Burner 1 bit.7 = Gas Burner 2 bit.8 = Low Temperature, Supply bit.9 = High Temperature, Room bit.10 = Humidifier bit.11 = Low Humidity, Room bit.12 = High Humidity, Room bit.13 = Pump bit.14 = Real Time Clock bit.15 = BE50	...
40H	64	R		[Alarm] bit.0 = Probes & Sensors bit.1 = Fan, Blower bit.2 = Low Temperature, Condenser Water bit.3 = High Temperature, Condenser Water bit.4 = Flow Switch, Condenser Water bit.5 = Smoke Detector bit.6 = Fans, Condenser bit.7 = Compressor 1, H.P. & I.P. bit.8 = Compressor 1, L.P. bit.9 = Compressor 2, H.P. & I.P. bit.10 = Compressor 2, L.P. bit.11 = Compressor 3, H.P. & I.P. bit.12 = Compressor 3, L.P. bit.13 = Compressor 4, H.P. & I.P. bit.14 = Compressor 4, L.P. bit.15 =	...

not used

ECHELON Settings and Readings

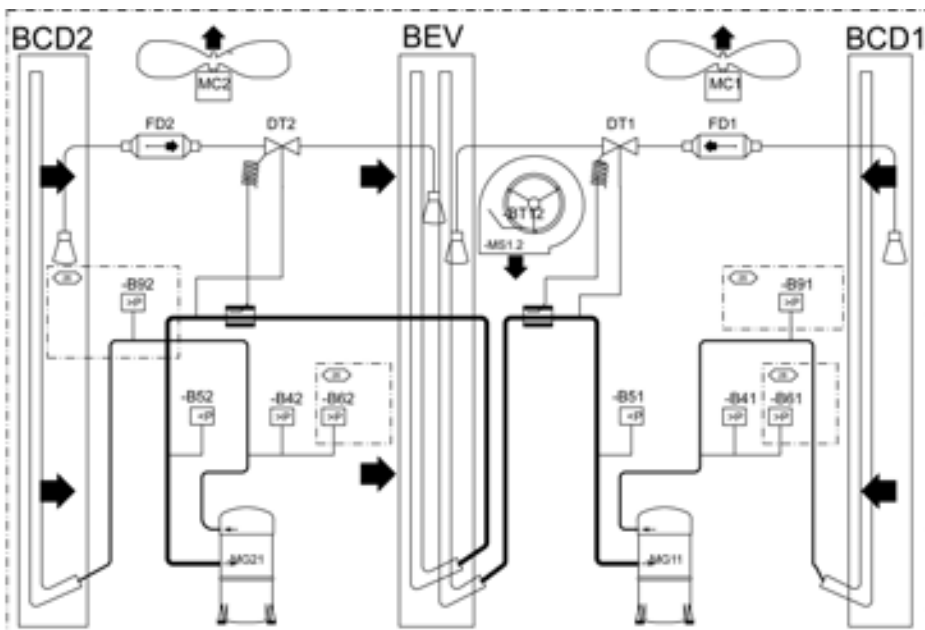
			DS50
R/W	L	[On / Off] Unit	3111
R/W	L	[Reset] Discharges the safety measures of the unit	3112
R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	3933
R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	...
R	L	[Alarm] General	1000
R	L	[On/Off] Fan, Blower	2315
R	L	[On/Off] Compressor, 1	2516
R	L	[On/Off] Compressor, Heat pump, 1	2517
R	L	[On/Off] Compressor, 2	2526
R	L	[On/Off] Compressor, Heat pump, 2	2527
R	L	[On/Off] Compressor, 3	2536
R	L	[On/Off] Compressor, Heat pump, 3	2537
R	L	[On/Off] Compressor, 4	2546
R	L	[On/Off] Compressor, Heat pump, 4	2547
R	L	[On/Off] Gas, Burner, 1	2615
R	L	[On/Off] Gas, Burner, 2	2616
R	L	[On/Off] Gas, Burner, High power, 1	2617
R	L	[On/Off] Electrical heaters, 1	2625
R	L	[On/Off] Electrical heaters, 2	2626

			DS50
R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	3932
R/W	10 = 1,0°C	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (BMS)
R/W	10 = 1,0°C	[Occupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (BMS)
R/W	1 = 1%	[Room SP] Required room minimum fresh air rate in %. Middle of the dead zone	3312 (BMS)
R/W	10 = 1,0°C	[Inoccupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (Uno)
R/W	10 = 1,0°C	[Inoccupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (Uno)
R/W	1 = 1%	[Humidity] Desired Maximum relative humidity in Room (in %). – Dehumidification set point	3341 (BMS)
R/W	1 = 1%	[Humidity] Desired Minimum relative humidity in Room (in %). – Humidification set point	3342 (BMS)
R/W	1 = 1h	[Clock] Hour	3121
R/W	1 = 1m	[Clock] Minute	3122
R/W	1 = 1	[Clock] Day of the month	3123
R/W	1 = 1	[Clock] Month	3124
R	1 = 1	[Alarm] Code Error	1000
R	10 = 1,0°C	[Temperature] Room	2112
R	10 = 1,0°C	[Temperature] Outdoor	2111
R	10 = 1,0°C	[Temperature] Supply	2113
R	10 = 1,0%	[Relative Humidity] Outdoor	2121
R	10 = 1,0 g/Kg	[Absolute Humidity] Outdoor	
R	10 = 1,0%	[Relative Humidity] Room	
R	10 = 1,0 g/Kg	[Absolute Humidity] Room	
R	1 = 1%	[% of opening] Register of fresh air	
R	1 = 1%	[% of opening] Valve gas	
R	1 = 1%	[% of opening] Electrical heaters (Triac)	
R	1 = 1%	[% of opening] Hot water coil	

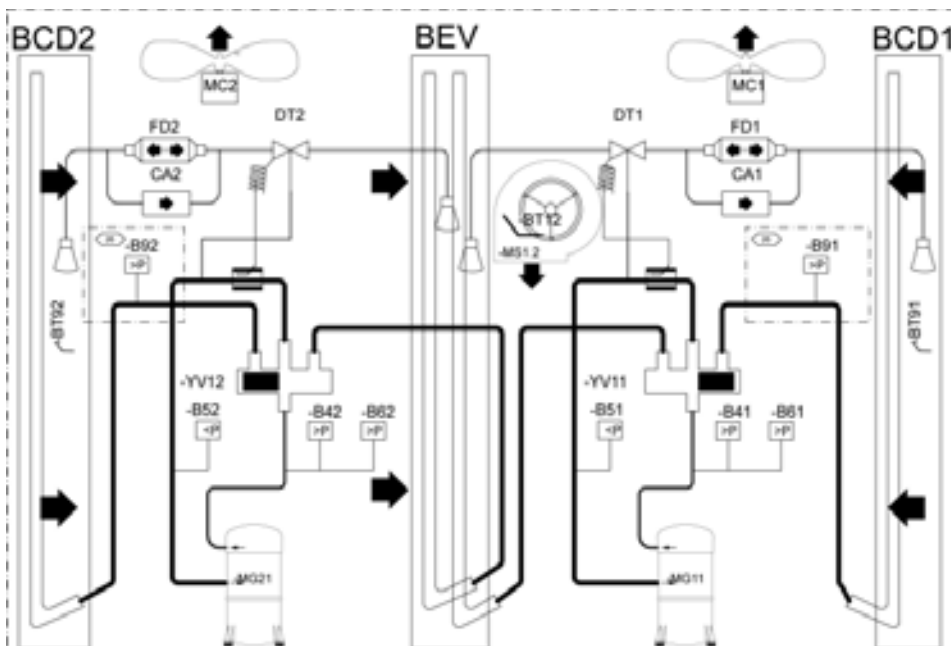
BCD1.2	Condenser coil
BEC	Hot water coil
BEV	Evaporator coil
CA1.2	Check valve
DT1.2	Thermostatic expansion valve
FD1.2	Filter drier
-B14-B15	Hot water battery antifreeze thermostat
-BT12	Blower temperature probe
-BT17	Return regulation temperature sensor
-B41-B42	Compressor -MG1-MG2 high pressure safety switch

-B51-B52	Compressor -MG1-MG2 low pressure safety switch
-B61-B62	Compressor -MG1-MG2 high pressure control switch
-MC1-MC2	Condenser -MC1-MC2 fan motor
-MC3-MC4	Condenser -MC3-MC4 fan motor
-MG11-MG12	Compressor -MG1-MG2
-MG21-MG22	Compressor -MG1-MG2
-MS1-2	Blower fan motor -MS1
VAM1.2	Manual check valve
VRM	Manual valve
-YV2	Hot water 3-way valve
-YV11-YV12	Compressor -MG1-MG2 cycle reversal valve

FC 085 - 100 -120



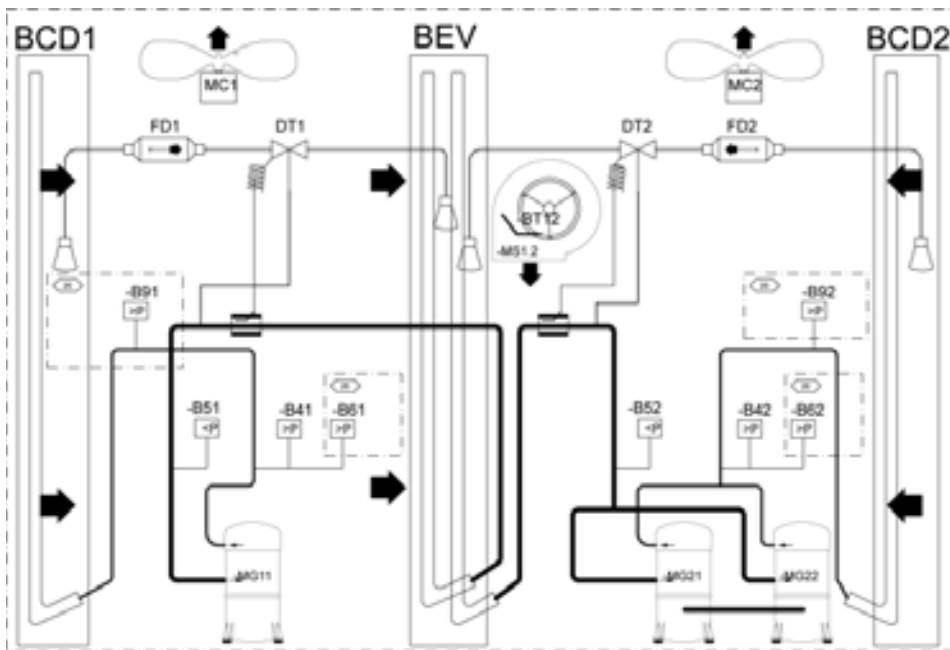
FH 085 - 100 -120



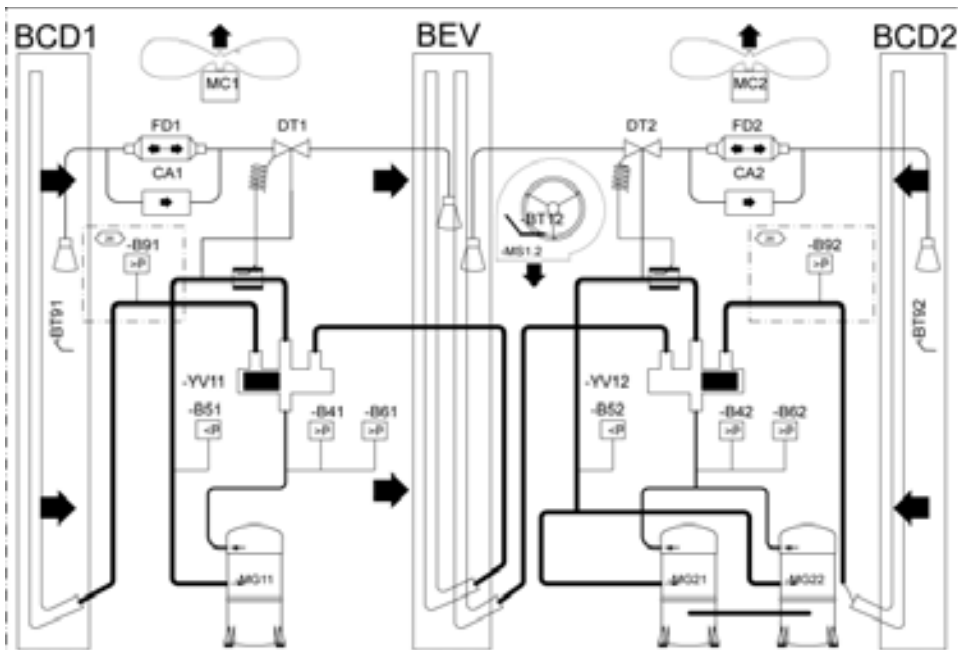
BCD1.2	Condenser coil
BEC	Hot water coil
BEV	Evaporator coil
CA1.2	Check valve
DT1.2	Thermostatic expansion valve
FD1.2	Filter drier
-B14-B15	Hot water battery antifreeze thermostat
-BT12	Blower temperature probe
-BT17	Return regulation temperature sensor
-B41-B42	Compressor -MG1-MG2 high pressure safety switch

-B51-B52	Compressor -MG1-MG2 low pressure safety switch
-B61-B62	Compressor -MG1-MG2 high pressure control switch
-MC1-MC2	Condenser -MC1-MC2 fan motor
-MC3-MC4	Condenser -MC3-MC4 fan motor
-MG11-MG12	Compressor -MG1-MG2
-MG21-MG22	Compressor -MG1-MG2
-MS1-2	Blower fan motor -MS1
VAM1.2	Manual check valve
VRM	Manual valve
-YV2	Hot water 3-way valve
-YV11-YV12	Compressor -MG1-MG2 cycle reversal valve

FC 150



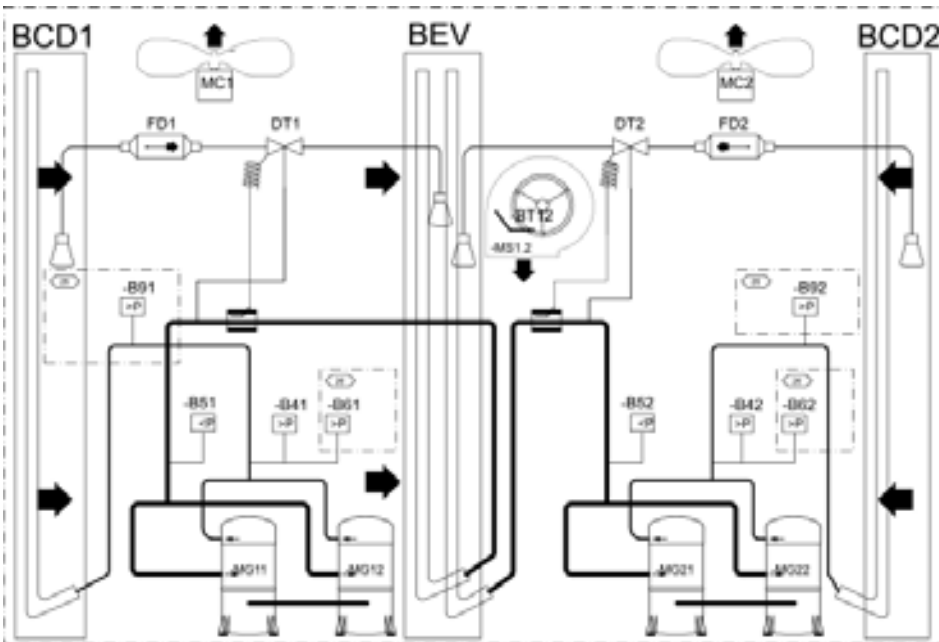
FH 150



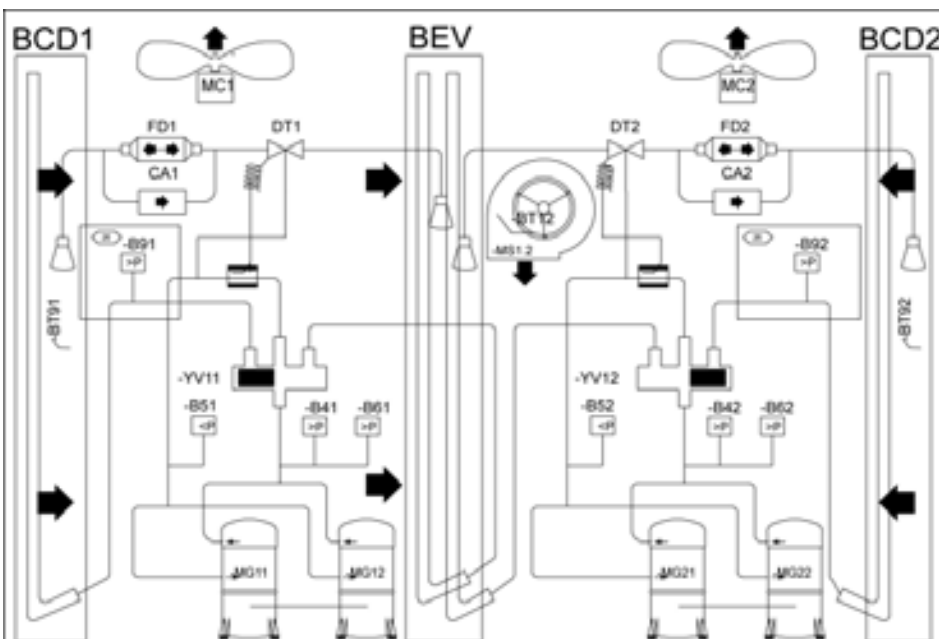
BCD1.2	Condenser coil
BEC	Hot water coil
BEV	Evaporator coil
CA1.2	Check valve
DT1.2	Thermostatic expansion valve
FD1.2	Filter drier
-B14-B15	Hot water battery antifreeze thermostat
-BT12	Blower temperature probe
-BT17	Return regulation temperature sensor
-B41-B42	Compressor -MG1-MG2 high pressure safety switch
-B51-B52	Compressor -MG1-MG2 low pressure safety switch

-B61-B62	Compressor -MG1-MG2 high pressure control switch
-MC1-MC2	Condenser -MC1-MC2 fan motor
-MC3-MC4	Condenser -MC3-MC4 fan motor
-MG11-MG12	Compressor -MG1-MG2
-MG21-MG22	Compressor -MG1-MG2
-MS1-2	Blower fan motor -MS1
VAM1.2	Manual check valve
VRM	Manual valve
-YV2	Hot water 3-way valve
-YV11-YV12	Compressor -MG1-MG2 cycle reversal valve

FC 170



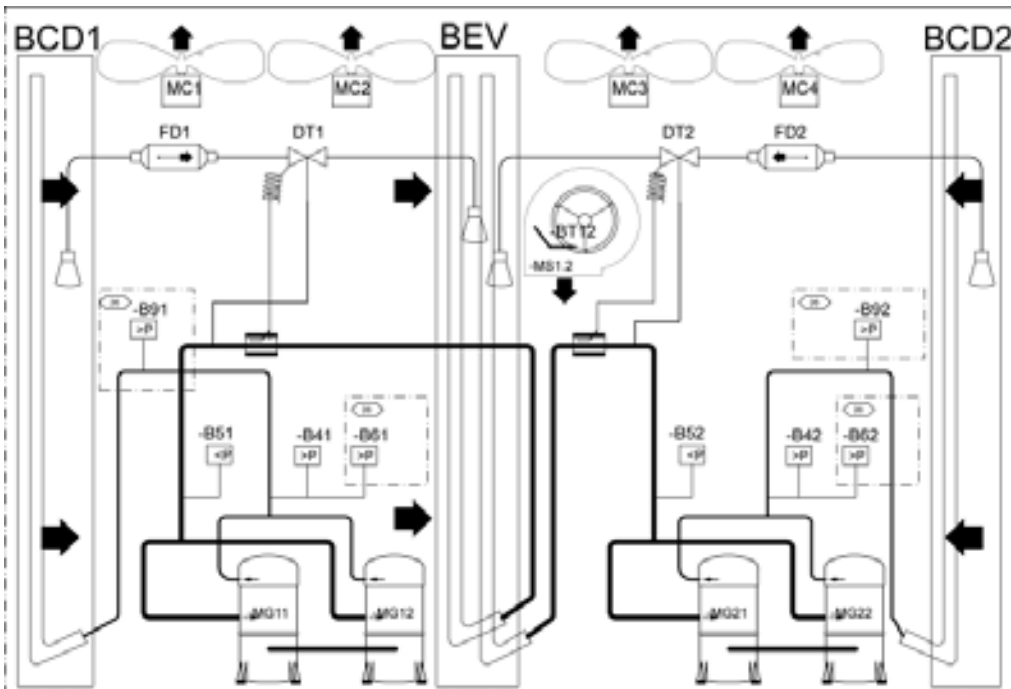
FH170



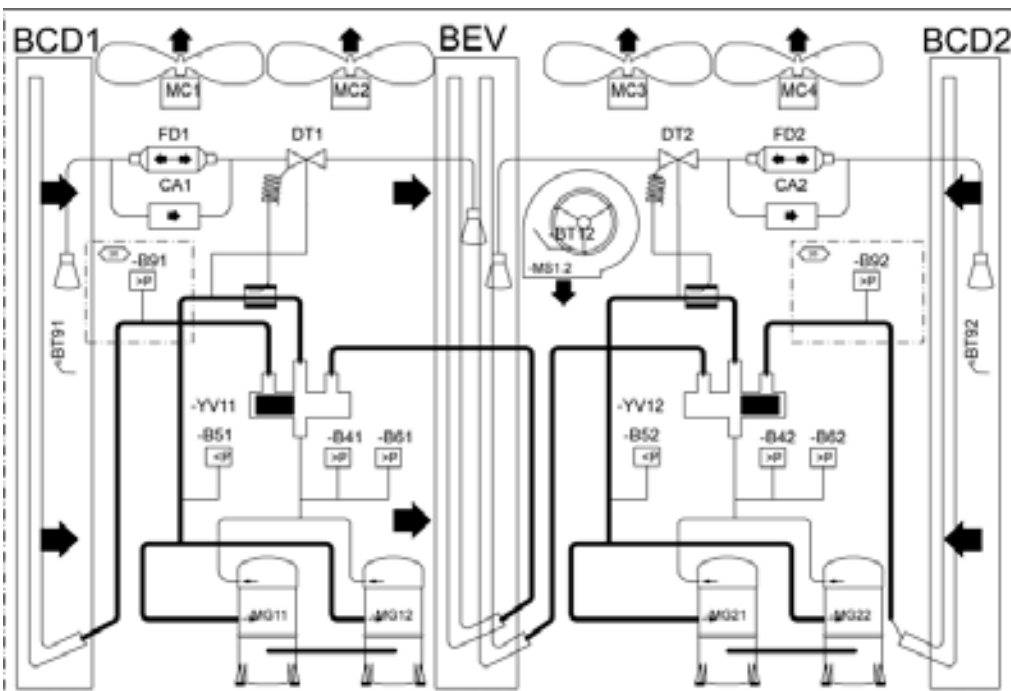
BCD1.2	Condenser coil
BEC	Hot water coil
BEV	Evaporator coil
CA1.2	Check valve
DT1.2	Thermostatic expansion valve
FD1.2	Filter drier
-B14-B15	Hot water battery antifreeze thermostat
-BT12	Blower temperature probe
-BT17	Return regulation temperature sensor
-B41-B42	Compressor -MG1-MG2 high pressure safety switch

-B51-B52	Compressor -MG1-MG2 low pressure safety switch
-B61-B62	Compressor -MG1-MG2 high pressure control switch
-MC1-MC2	Condenser -MC1-MC2 fan motor
-MC3-MC4	Condenser -MC3-MC4 fan motor
-MG11-MG12	Compressor -MG1-MG2
-MG21-MG22	Compressor -MG1-MG2
-MS1-2	Blower fan motor -MS1
VAM1.2	Manual check valve
VRM	Manual valve
-YV2	Hot water 3-way valve
-YV11-YV12	Compressor -MG1-MG2 cycle reversal valve

FC 200 - 230

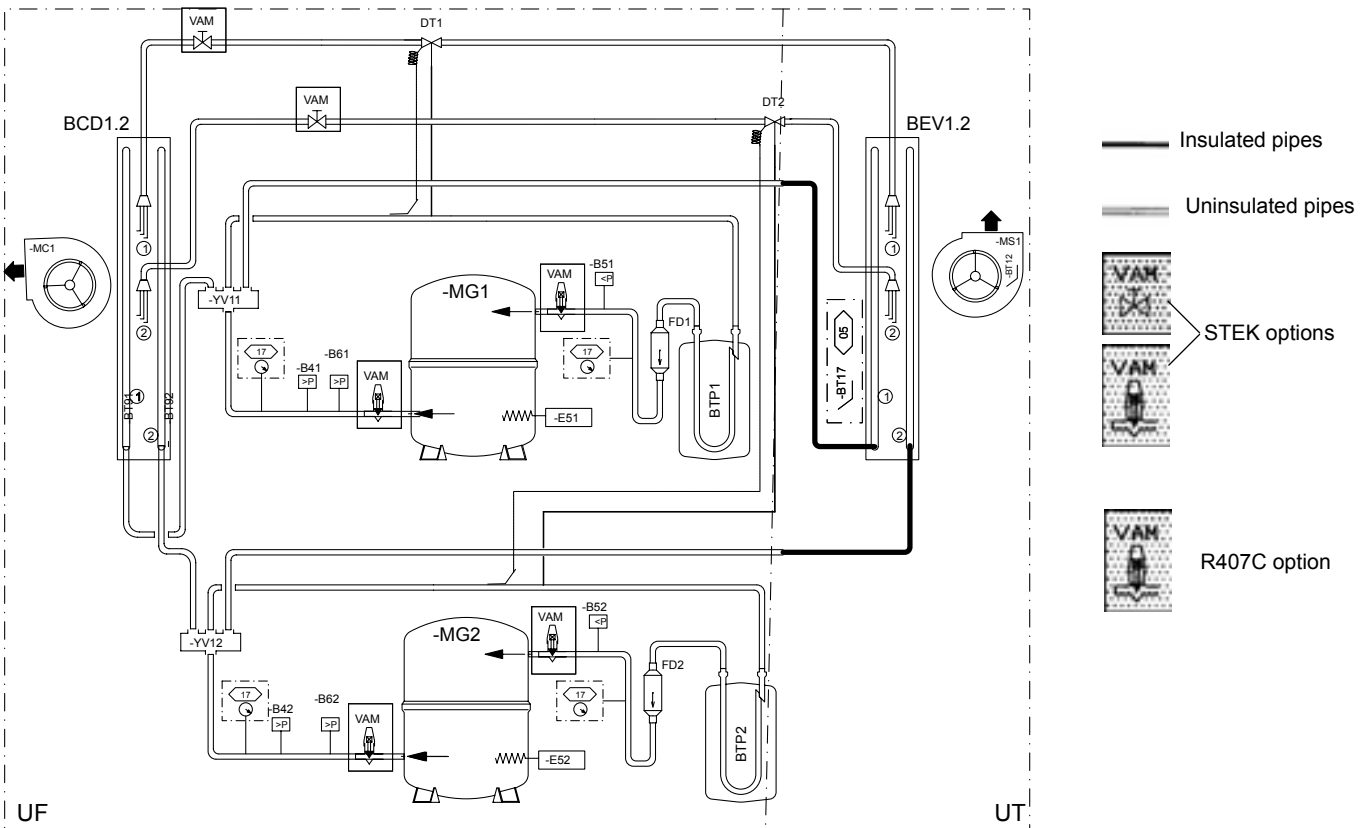


FH 200 - 230



UT	Air treatment unit	B51	Compressor -MG1 low pressure safety switch
UF	Cooling unit	DT	Thermostatic holder
BCD	Condenser coil	FD	Dehumidifier filter
BEV1	Evaporator coil	MC1	Condenser -MC1 fan motor
BT12	Blower temperature probe	MG1	Compressor -MG1 contactor
BTP1	Compressor -MG1 accumulator	MS1	Blower fan motor MS1
B41	Compressor -MG1 high pressure safety switch	VAM	Manual check valve
B42	Compressor -MG2 high pressure safety switch		

FX 025 - 030

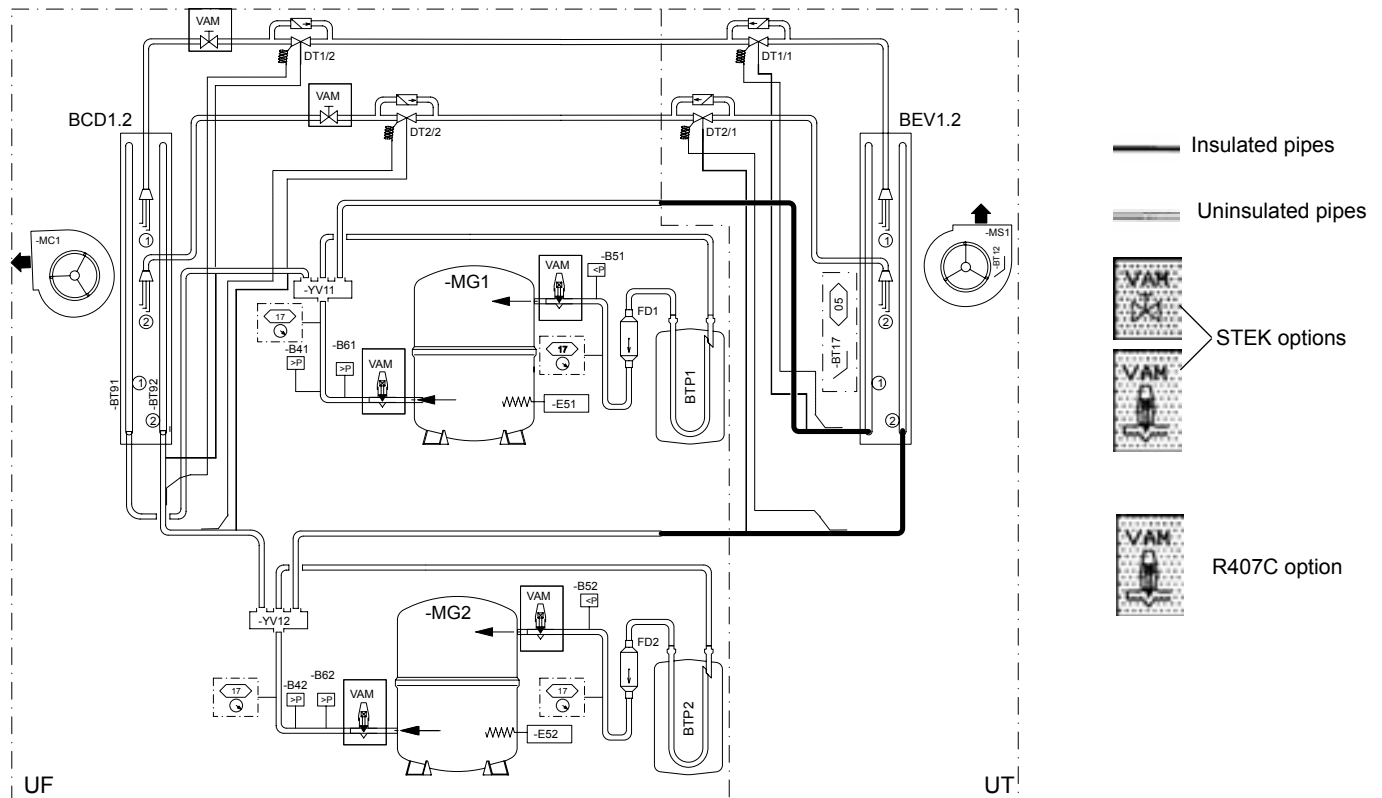


Pipe diameters

Discharge	3/4»
Suction	7/8»
Liquid line	5/8»

UT	Air treatment unit	B51	Compressor -MG1 low pressure safety switch
UF	Cooling unit	DT	Thermostatic holder
BCD	Condenser coil	FD	Dehumidifier filter
BEV1	Evaporator coil	MC1	Condenser -MC1 fan motor
BT12	Blower temperature probe	MG1	Compressor -MG1 contactor
BTP1	Compressor -MG1 accumulator	MS1	Blower fan motor MS1
B41	Compressor -MG1 high pressure safety switch	VAM	Manual check valve
B42	Compressor -MG2 high pressure safety switch		

FX 035 - 085

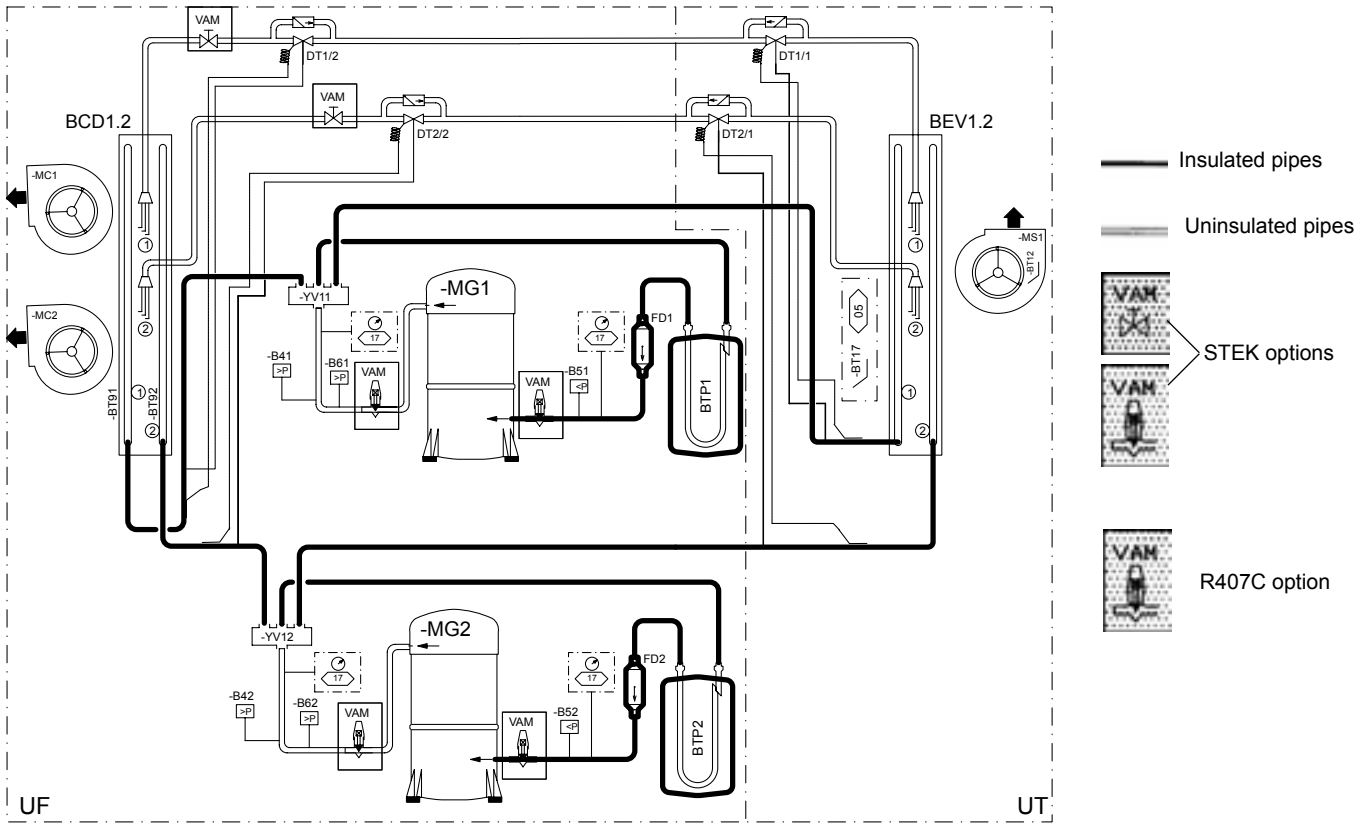


Pipe diameters

	FX 035-040	FX 055-085
Discharge	3/4»	7/8»
Suction	7/8»	1»1/8
Liquid line	5/8»	5/8»

UT	Air treatment unit	B51	Compressor -MG1 low pressure safety switch
UF	Cooling unit	DT	Thermostatic holder
BCD	Condenser coil	FD	Dehumidifier filter
BEV1	Evaporator coil	MC1	Condenser -MC1 fan motor
BT12	Blower temperature probe	MG1	Compressor -MG1 contactor
BTP1	Compressor -MG1 accumulator	MS1	Blower fan motor MS1
B41	Compressor -MG1 high pressure safety switch	VAM	Manual check valve
B42	Compressor -MG2 high pressure safety switch		

FX 100

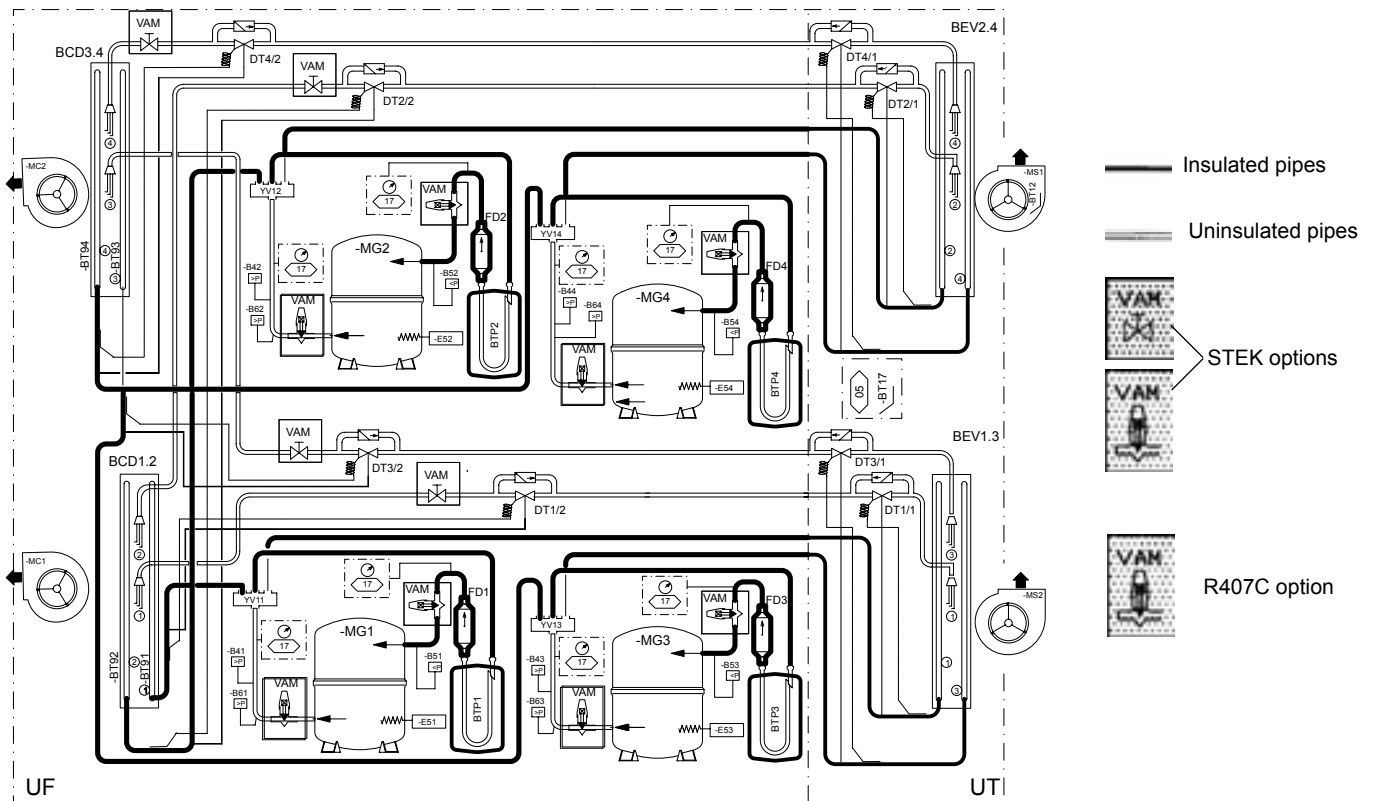


Pipe diameters

Discharge	7/8»
Suction	1»3/8
Liquid line	7/8»

UT	Air treatment unit	B51	Compressor -MG1 low pressure safety switch
UF	Cooling unit	DT	Thermostatic holder
BCD	Condenser coil	FD	Dehumidifier filter
BEV1	Evaporator coil	MC1	Condenser -MC1 fan motor
BT12	Blower temperature probe	MG1	Compressor -MG1 contactor
BTP1	Compressor -MG1 accumulator	MS1	Blower fan motor MS1
B41	Compressor -MG1 high pressure safety switch	VAM	Manual check valve
B42	Compressor -MG2 high pressure safety switch		

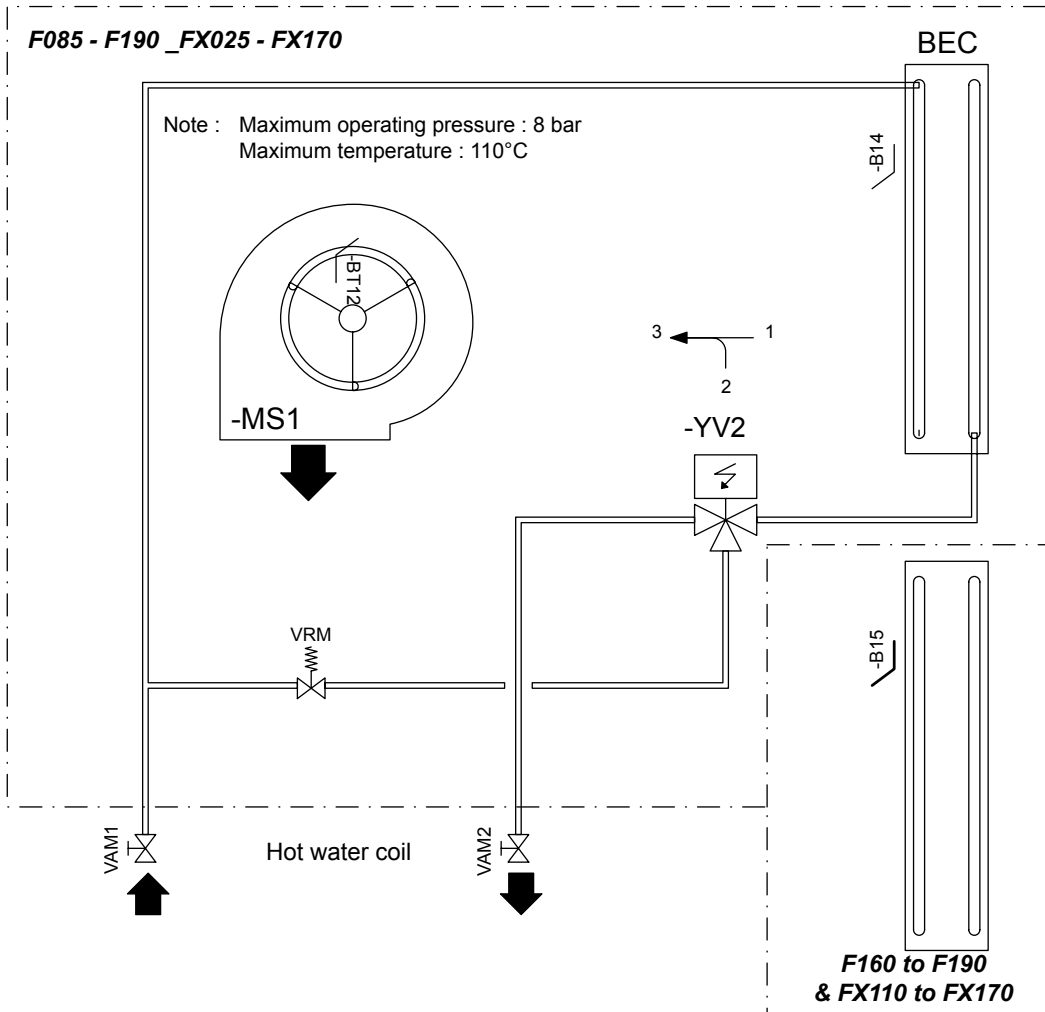
FX 110 - FX 140 - FX 170



Pipe diameters

Discharge	7/8»
Suction	1»1/8
Liquid line	5/8»

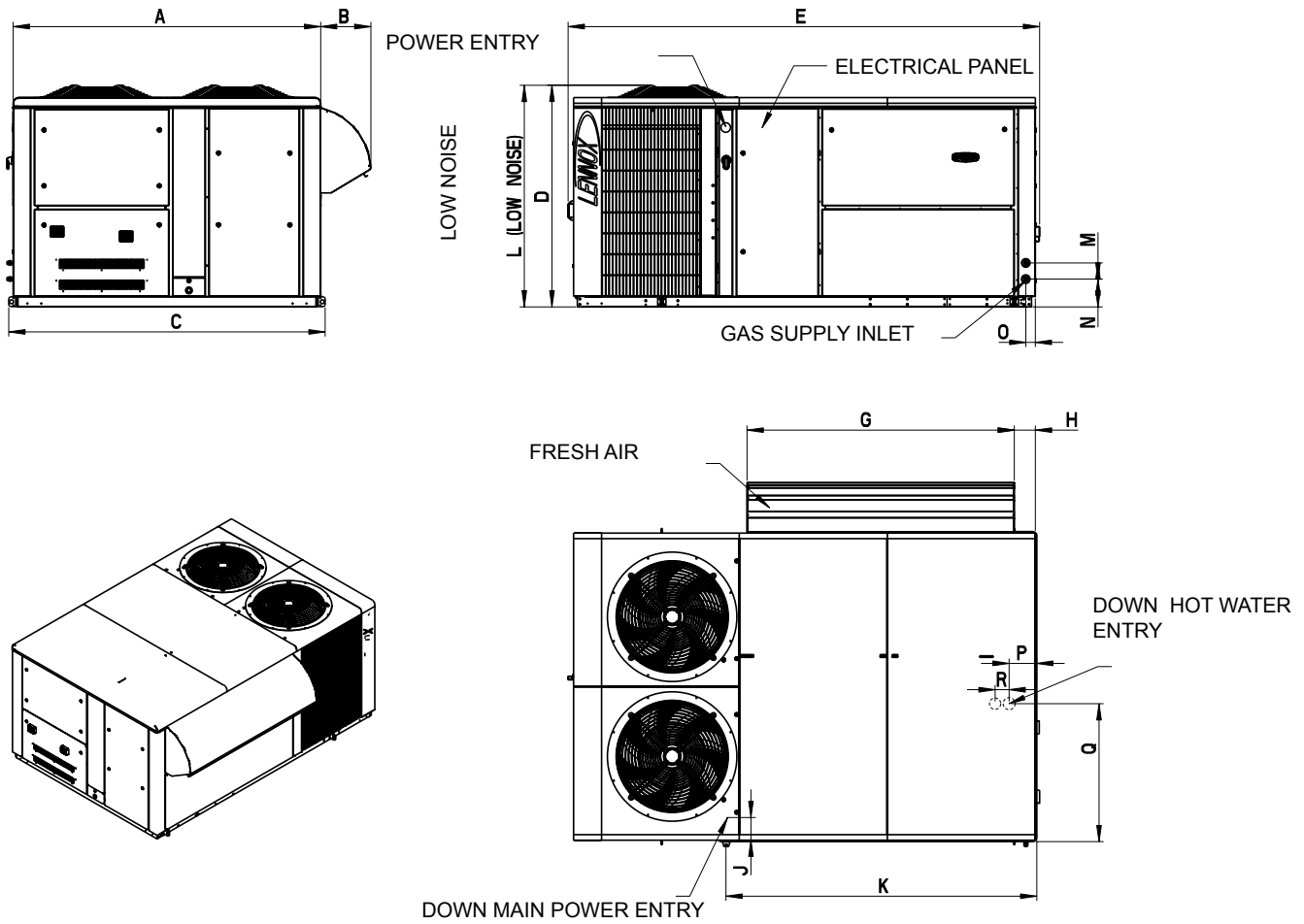
UT	Air treatment unit	B51	Compressor -MG1 low pressure safety switch
UF	Cooling unit	DT	Thermostatic holder
BCD	Condenser coil	FD	Dehumidifier filter
BEV1	Evaporator coil	MC1	Condenser -MC1 fan motor
BT12	Blower temperature probe	MG1	Compressor -MG1 contactor
BTP1	Compressor -MG1 accumulator	MS1	Blower fan motor MS1
B41	Compressor -MG1 high pressure safety switch	VAM	Manual check valve
B42	Compressor -MG2 high pressure safety switch		



Pipe diameters (DN)		
	1 row	2 rows
F085	25	32
F100	25	32
F120	25	32
F150	25	40
F170	25	40
F200	25	40
F230	25	40

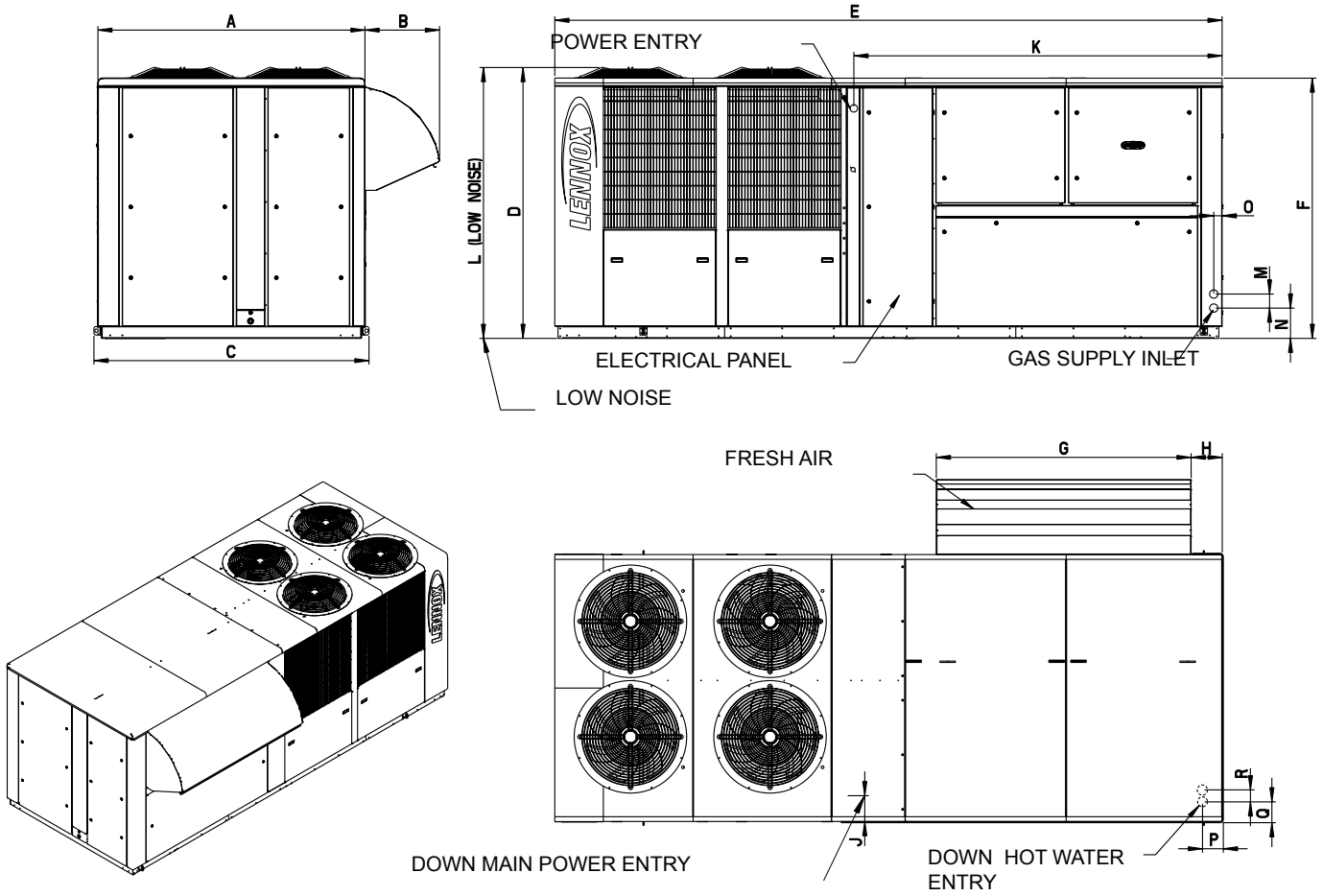
Pipe diameters (DN)		
	1 row	2 rows
FX025	20	20
FX030	20	20
FX035	20	20
FX040	20	20
FX055	20	25
FX070	20	25
FX085	20	25
FX100	25	25
FX110	25	32
FX140	25	32
FX170	25	32

FC/FH FG/FD	85/100/120 150/170
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DIMENSIONS																
	A	B	C	D	E	G	H	J	K	L	M	N	O	P	Q	R
85-100-120	2200	360	2285	1510	3350	1915	150	165	2222	1776	115	200	68	188	978	100
150-170	2200	450	2285	1834	4380	2100	255	165	2740	2095	115	200	68	187	978	100

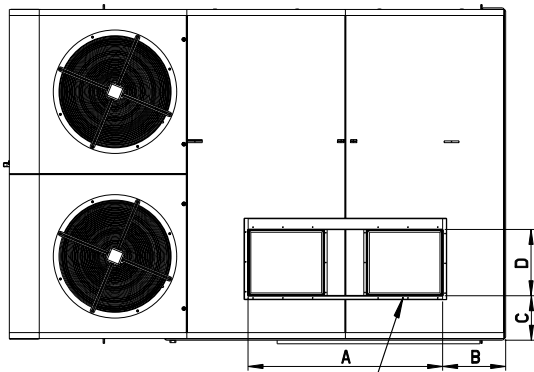
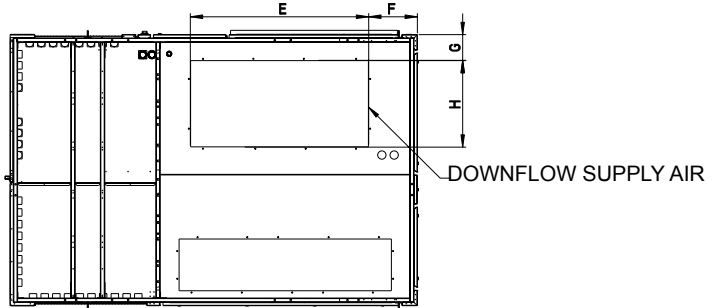
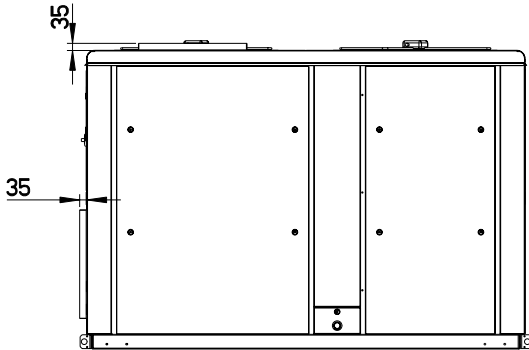
FC/FH FG/FD	200/230
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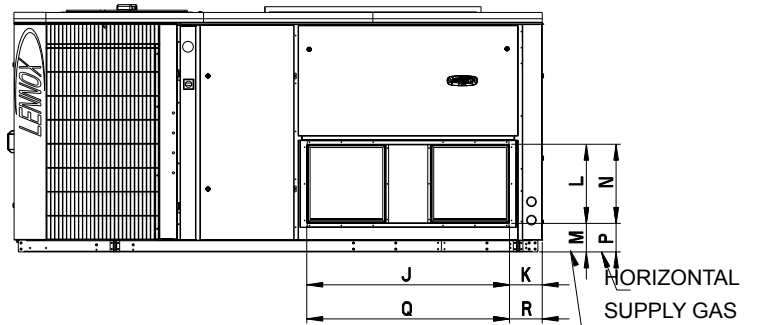
DIMENSIONS

	A	B	C	D	E	G	H	J	K	L	M	N	O	P	Q	R
200-230	2200	615	2285	2134	5533	2100	255	165	3033	2395	115	250	68	161	161	100

FC/FH FG/FD	85/100/120 150/170
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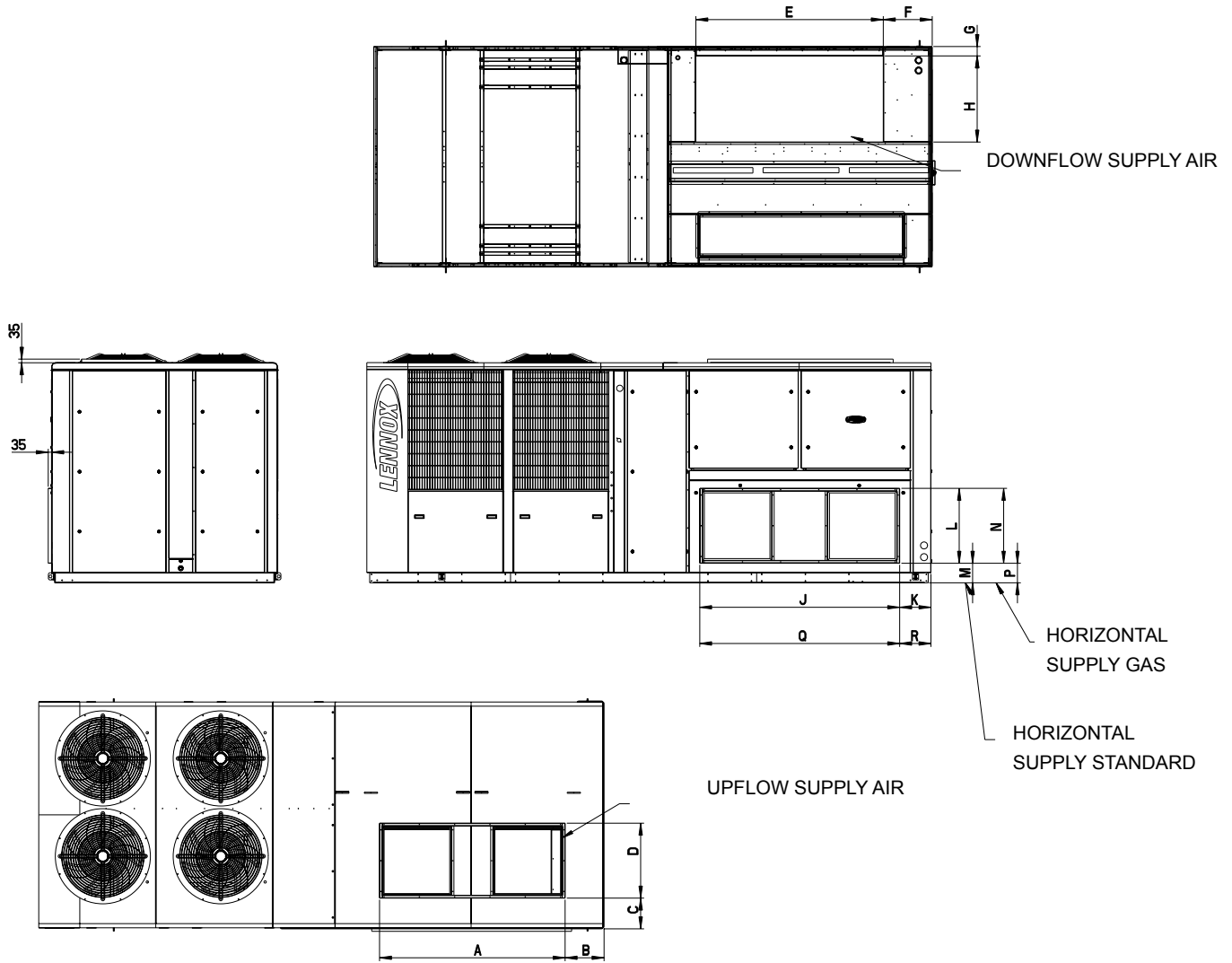
UPFLOW SUPPLY AIR



HORIZONTAL SUPPLY STANDARD

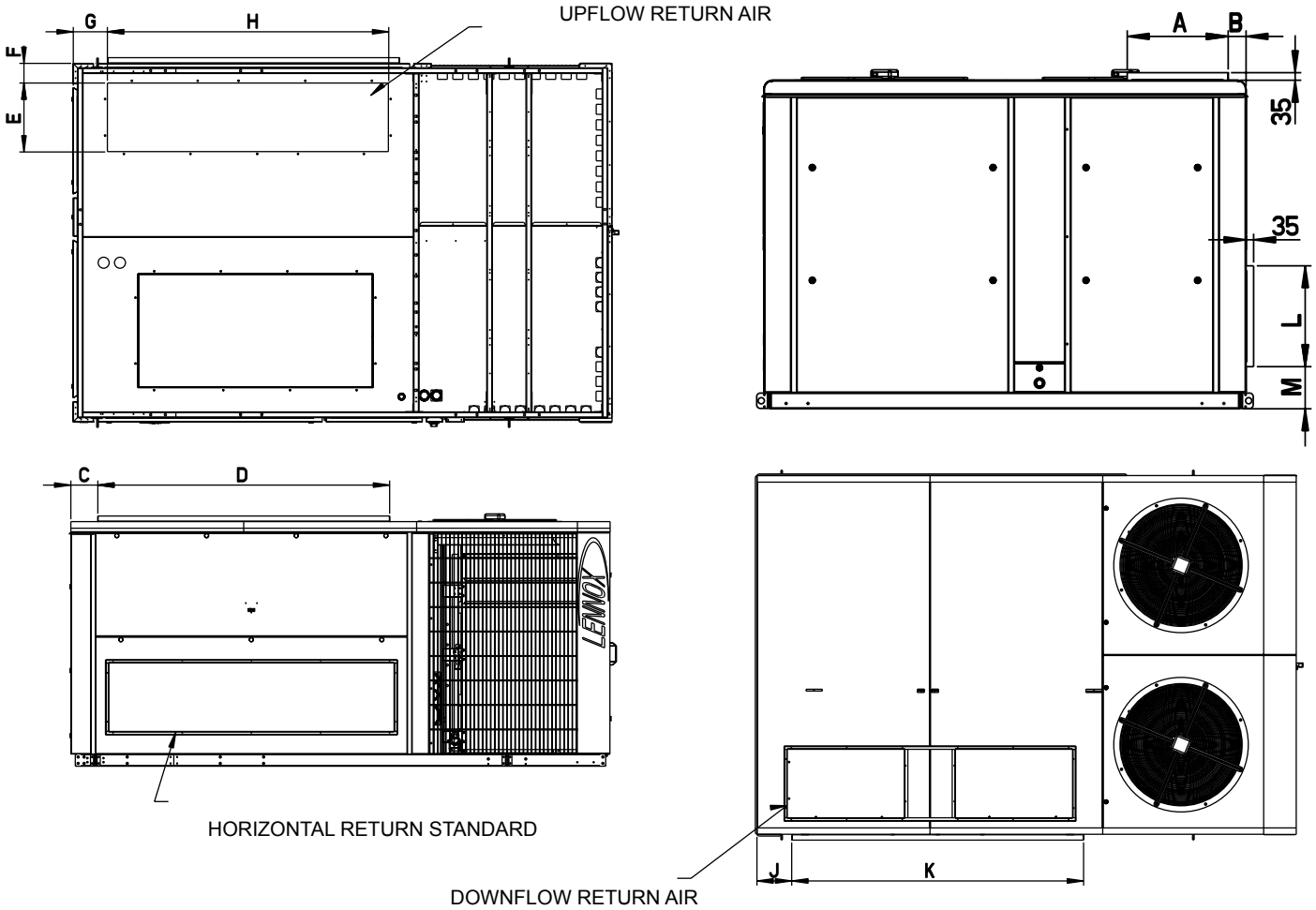
SUPPLY																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
85-100-120	1355	385	260	495	1430	410	210	700	1355	160	495	155	500	155	1090	410
150-170	1690	370	435	570	1540	505	210	700	1530	370	570	150	535	135	1440	545
Airflow configuration	Upflow supply			Downflow supply				Horizontal supply				Gas supply				

FC/FH FG/FD	200-230
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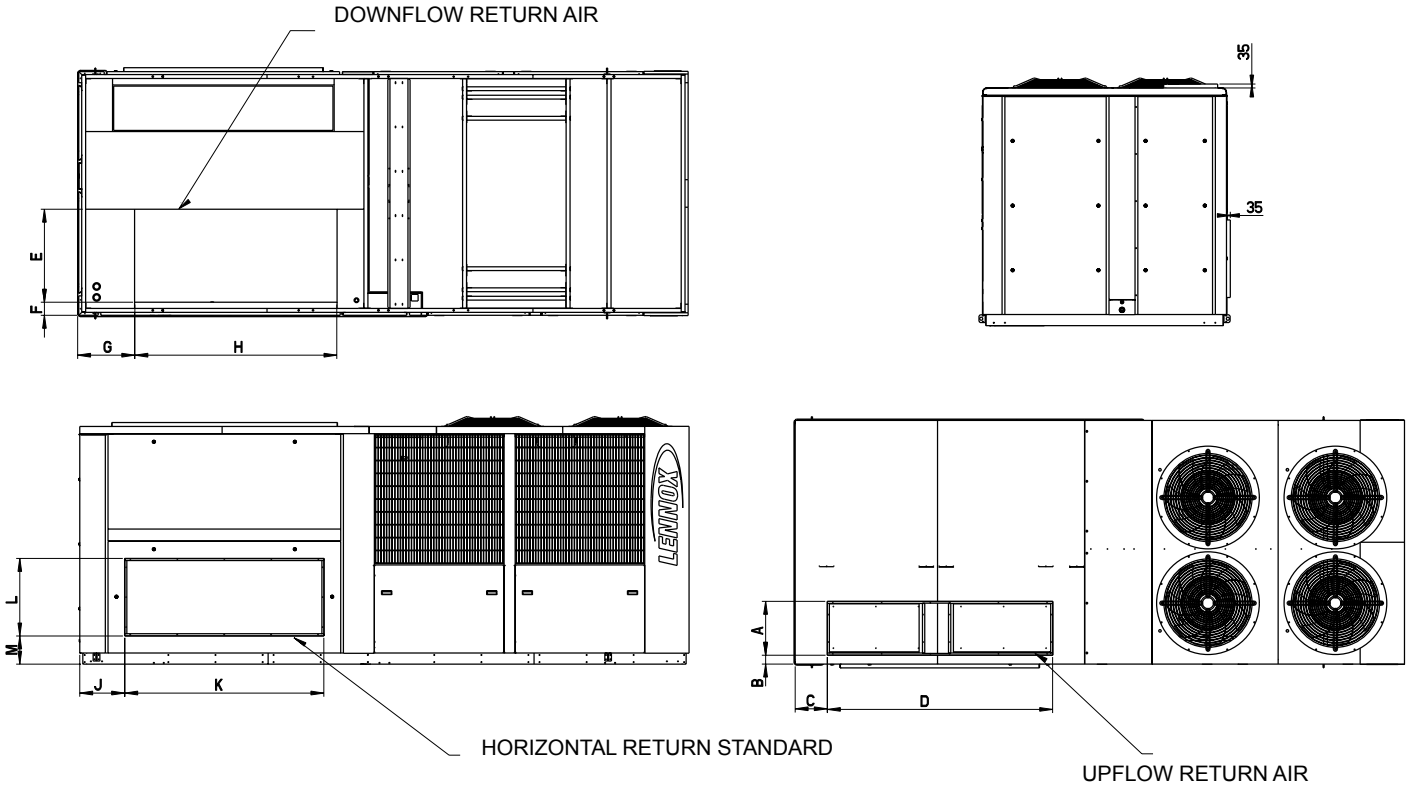
SUPPLY																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
200-230	2010	275	260	730	1827	505	120	840	2010	275	730	165	700	165	1700	500
Airflow configuration	Upflow supply			Downflow supply				Horizontal supply				Gas supply				

FC/FH FG/FD	85/100/120 150/170
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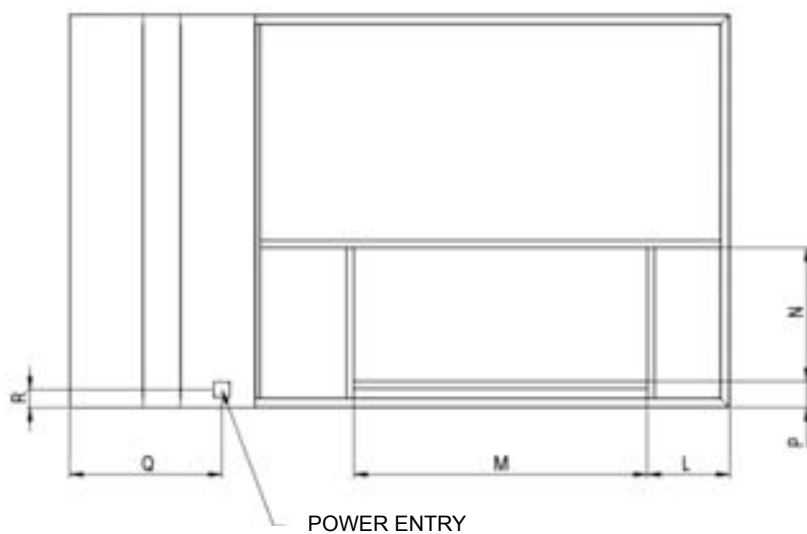
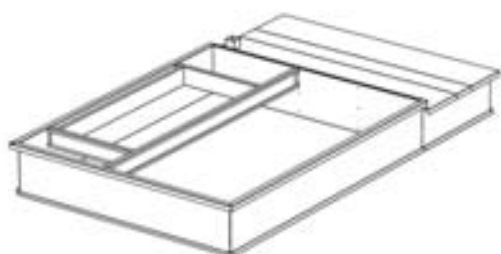
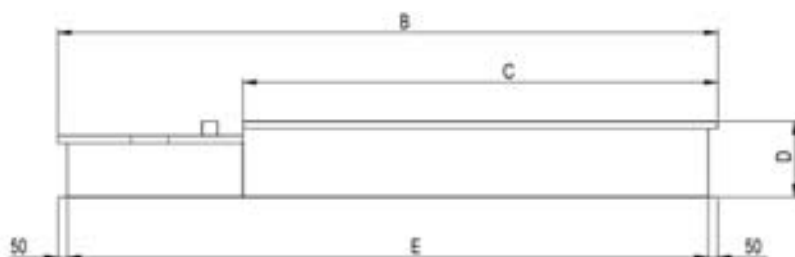
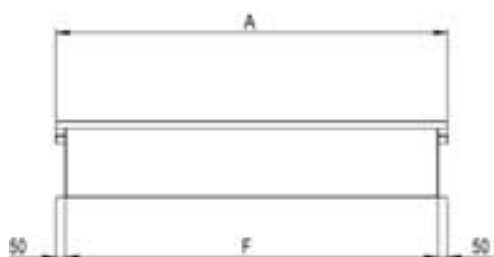
RETURN												
	A	B	C	D	E	F	G	H	J	K	L	M
85-100-120	460	81	165	1790	420	120	200	1750	210	1790	460	185
150-170	490	80	287	2040	420	120	305	2000	405	1800	500	310
Airflow configuration	Upflow return				Downflow return				Horizontal return			

FC/FH FG/FD	200-230
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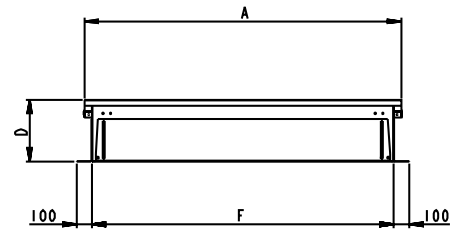
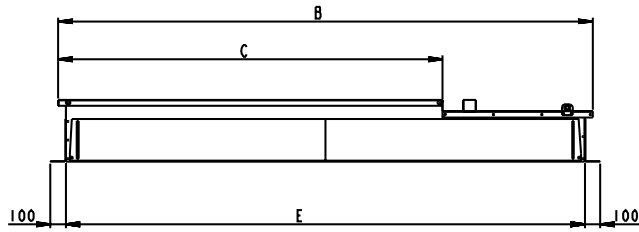
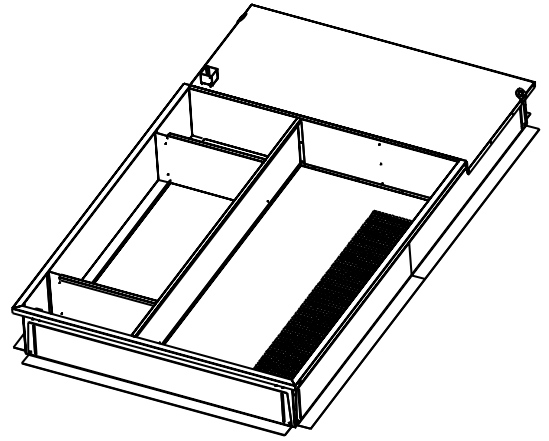
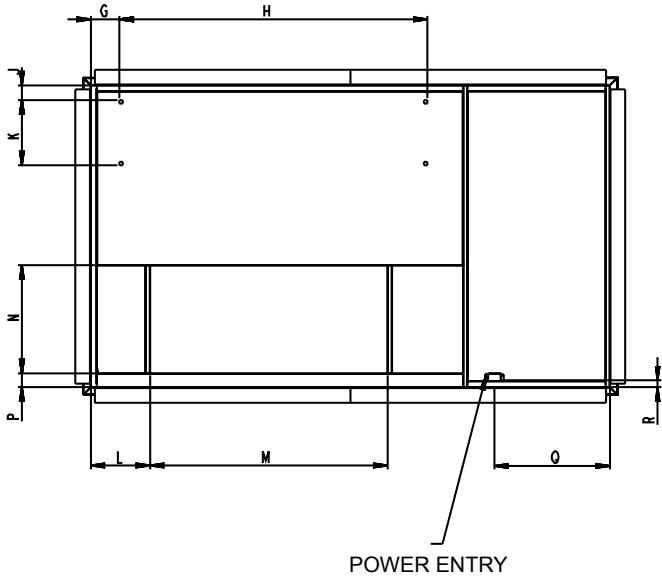
RETURN												
	A	B	C	D	E	F	G	H	J	K	L	M
200-230	490	80	287	2040	420	120	305	2000	405	1800	700	305
Airflow configuration	Upflow return			Downflow return				Horizontal return				

**FC/FH
FG/FD** **ALL SIZES**



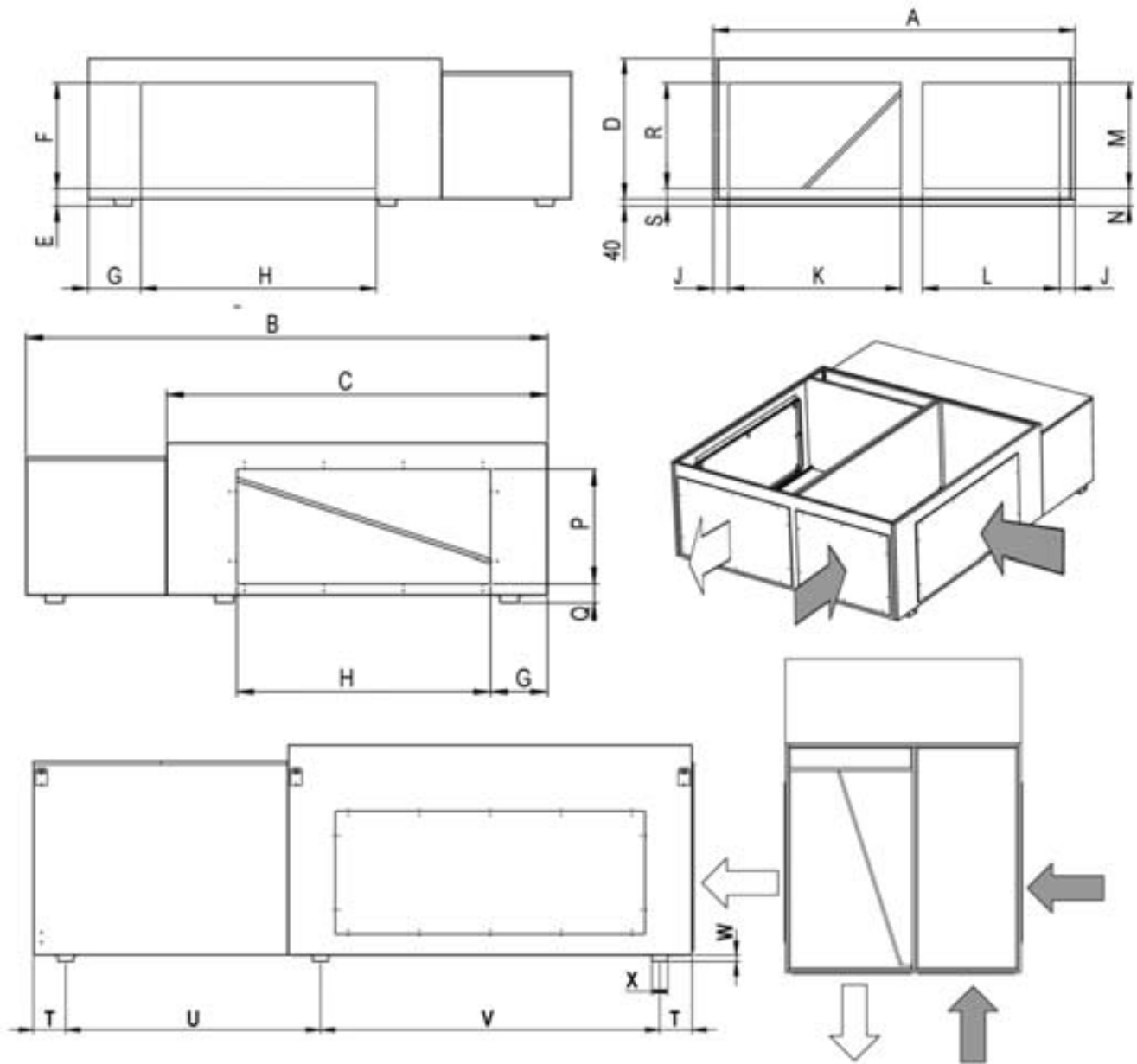
NON ADJUSTABLE ROOFTOP												
	A	B	C	D	E	F	L	M	N	P	Q	R
85-100-120	2056	2770	2005	400	2672	1959	336	1433	700	139	614	90
150-170	2056	3466	2493	400	3367	1959	433	1540	700	139	800	90
200-230	2056	4066	2493	425	3967	1959	432	1830	800	89	1095	105

**FC/FH
FG/FD** **ALL SIZES**



ADJUSTABLE ROOFCURB																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
85-100-120	2056	2770	2005	400	2672	1958	130	1747	145	420	336	1432	700	140	620	95
150-170	2056	3466	2493	400	3367	1958	234	1997	145	420	430	1540	700	140	800	95
200-230	2056	4100	2493	400	4003	1958	234	1997	145	420	430	1830	800	80	1133	95

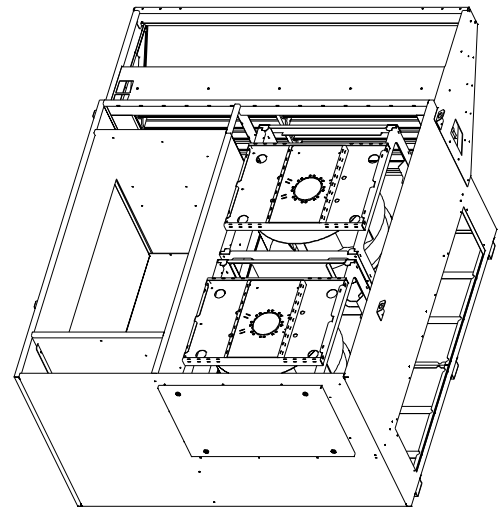
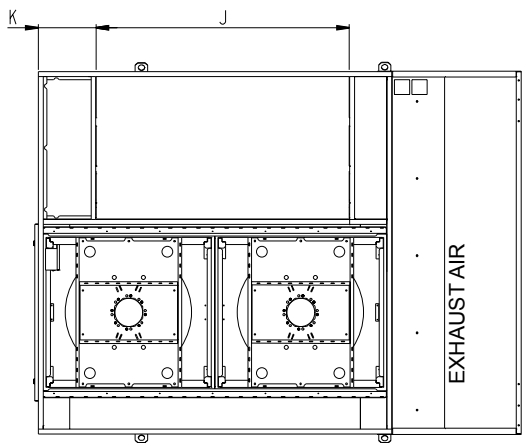
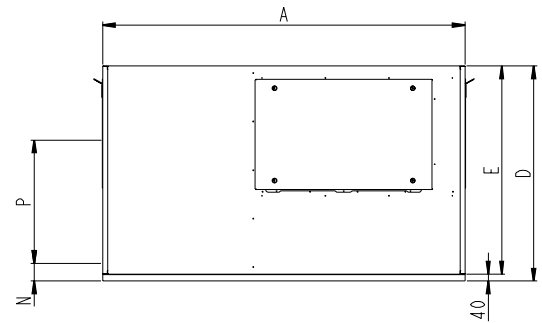
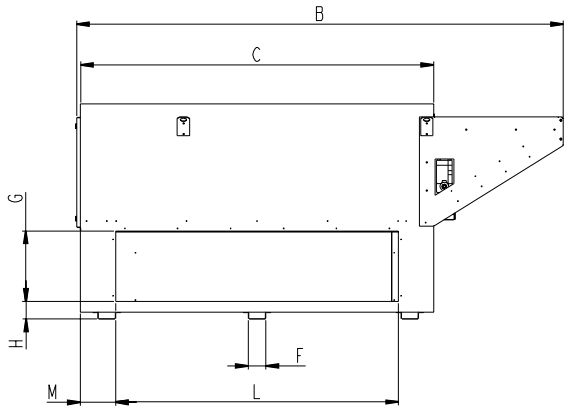
**FC/FH
FG/FD** **ALL SIZES**



MULTIDIRECTIONAL ROOFCURB											
	A	B	C	D	E	F	G	H	J	K	L
85-100-120	2056	2745	2005	800	100	600	300	1335	88	980	780
50-170	2056	3441	2493	1100	100	600	230	1540	88	980	780
200-230	2056	4070	2493	1300	200	700	322	1850	88	980	780

MULTIDIRECTIONAL ROOFCURB											
	M	N	P	Q	R	S	T	U	V	W	X
85-100-120	600	100	600	100	600	100	200	794	1550	40	100
50-170	900	100	600	100	900	100	200	1241	1798	40	100
200-230	1100	100	600	100	1100	100	200	1571	2093	40	100

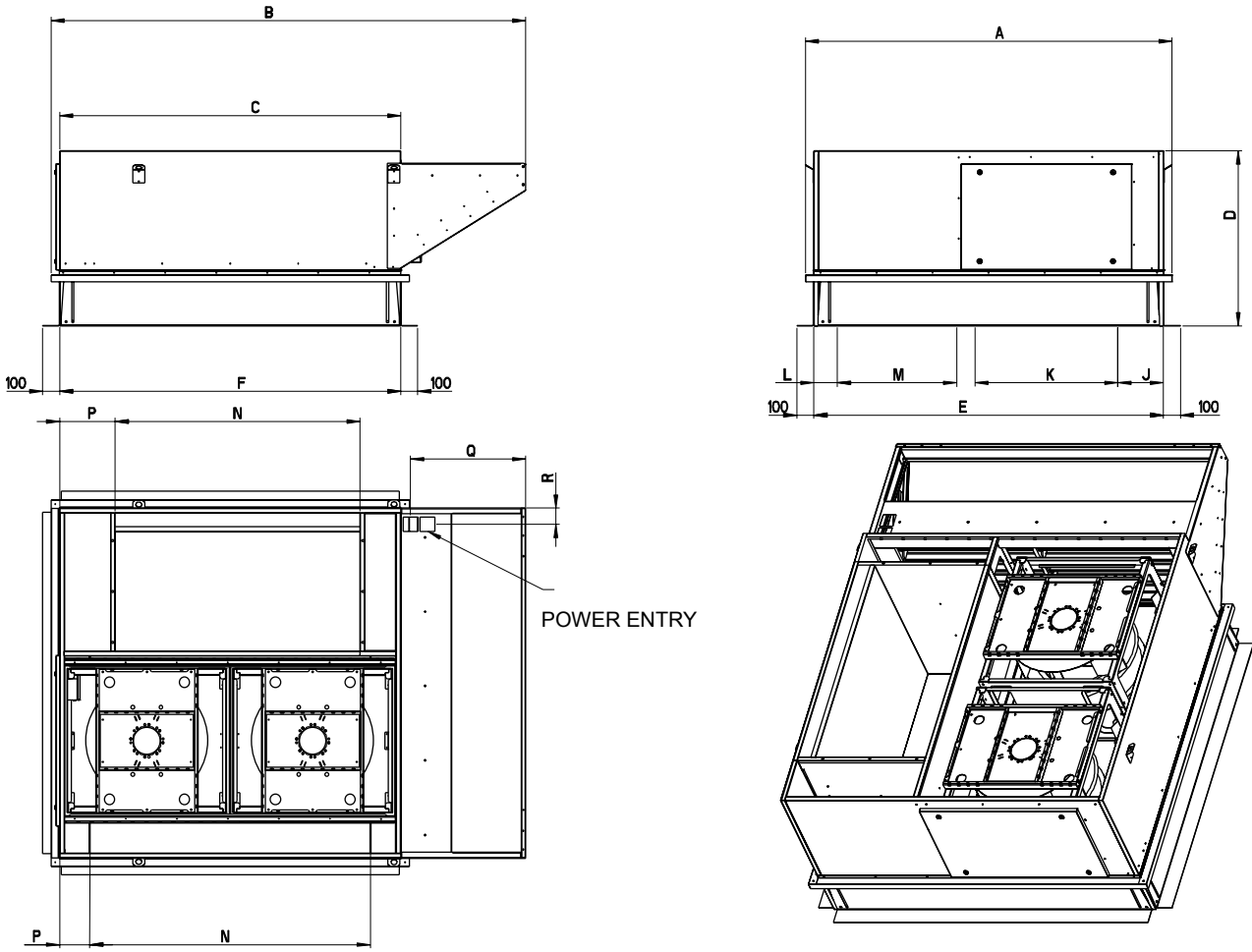
<p>FC/FH FG/FD</p>	<p>ALL SIZES</p>
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RETURN AIR

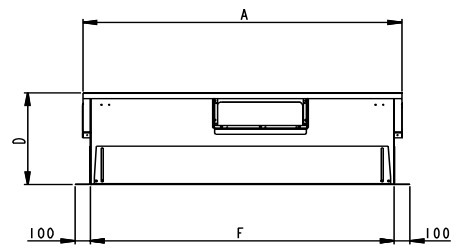
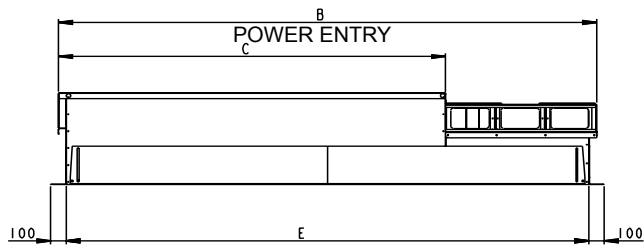
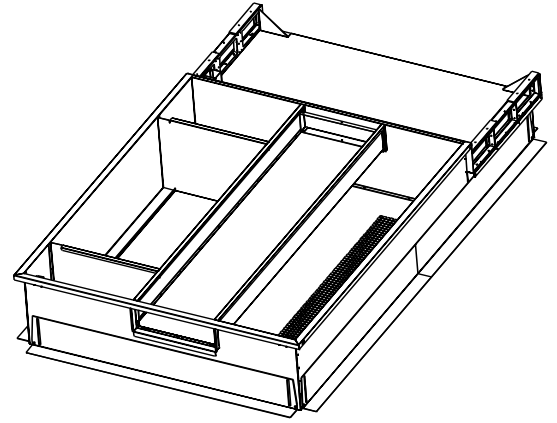
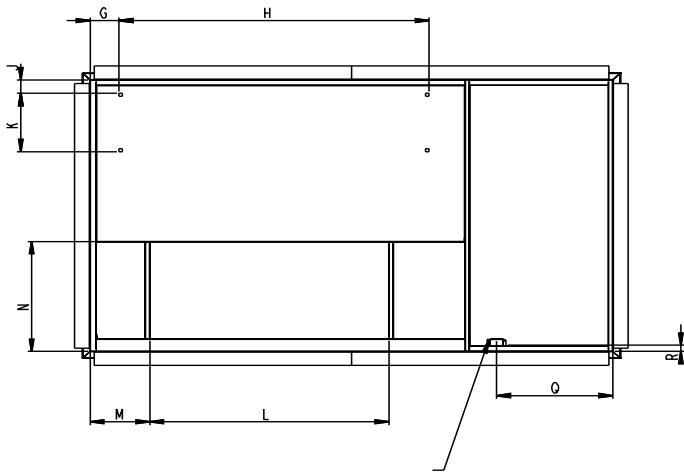
HORIZONTAL RETURN ROOFCURB														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
85-100-120	2056	2762	2004	1220	1180	100	400	60	1440	405	1605	200	100	700
150-170	2056	3458	2493	1220	1180	100	400	60	1542	405	2000	200	100	700
200-230	2056	4080	2493	1220	1180	185	400	60	1827	405	2293	200	100	700

**FC/FH
FG/FD** **ALL SIZES**

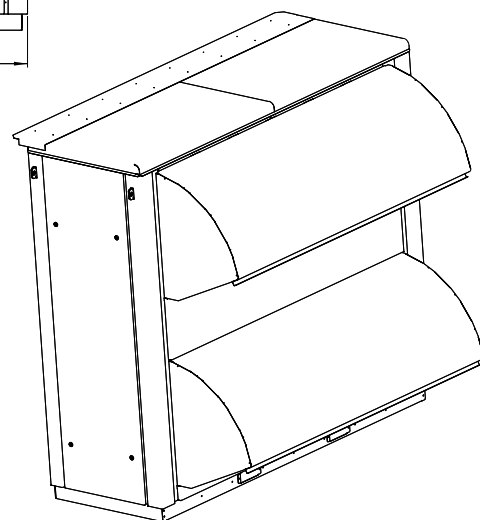
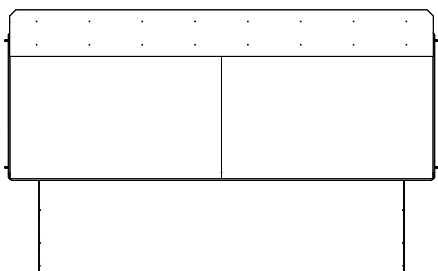
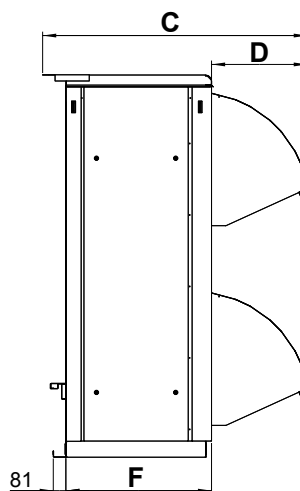
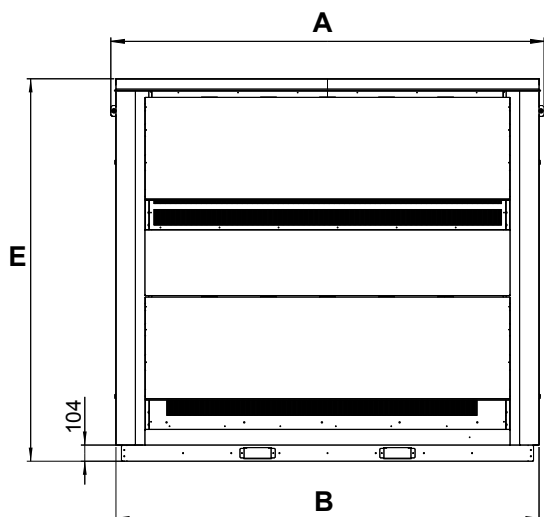


RETURN ROOFCURB																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
85-100-120	2156	2740	2005	1030	2056	2005	1650	180	310	840	140	700	1440	326	593	95
150-170	2156	3437	2494	1030	2056	2494	1650	410	310	840	140	700	1540	434	770	95
200-230	2156	3394	2494	1030	2056	3294	2550	100	310	840	80	800	1830	434	1113	95

**FC/FH
FG/FD** **ALL SIZES**



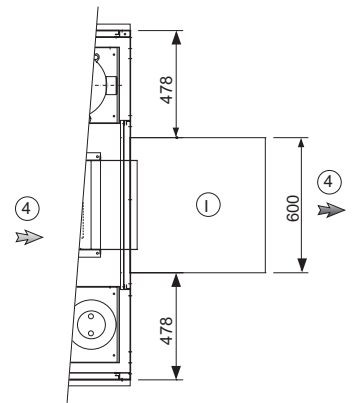
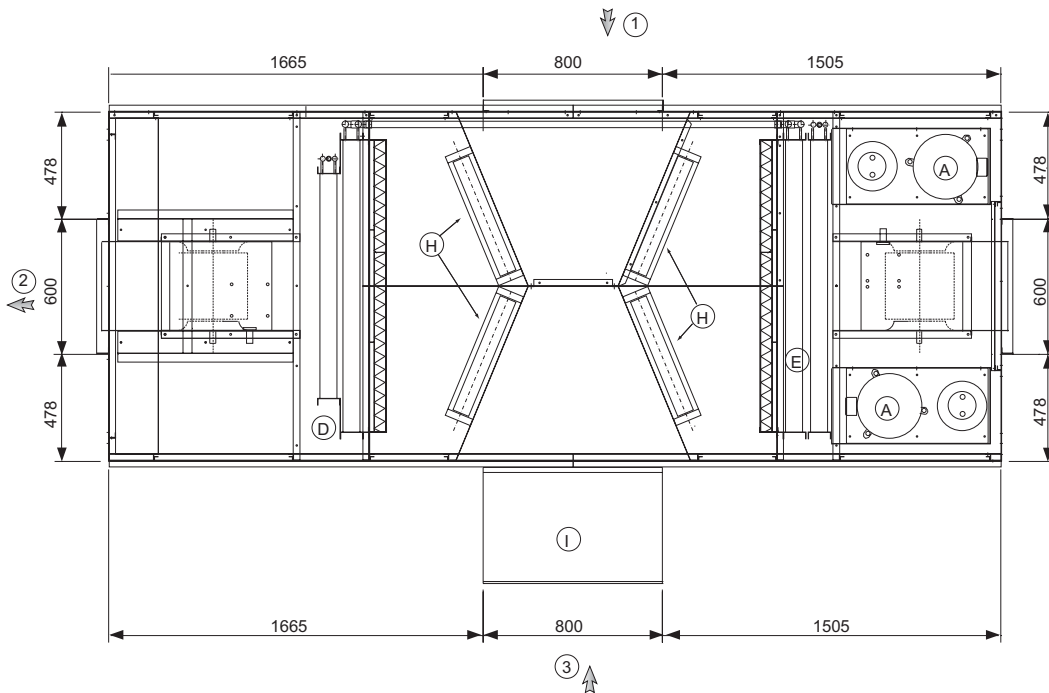
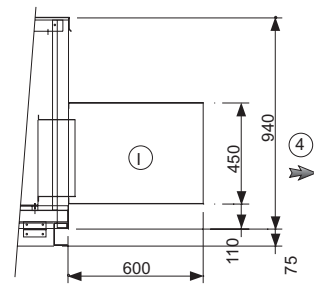
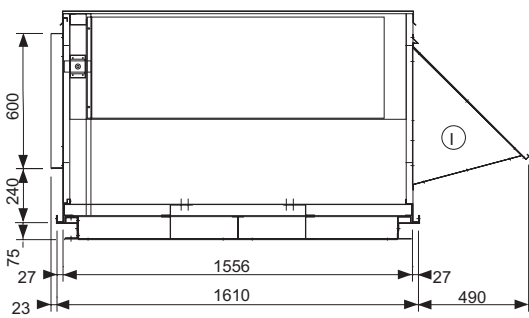
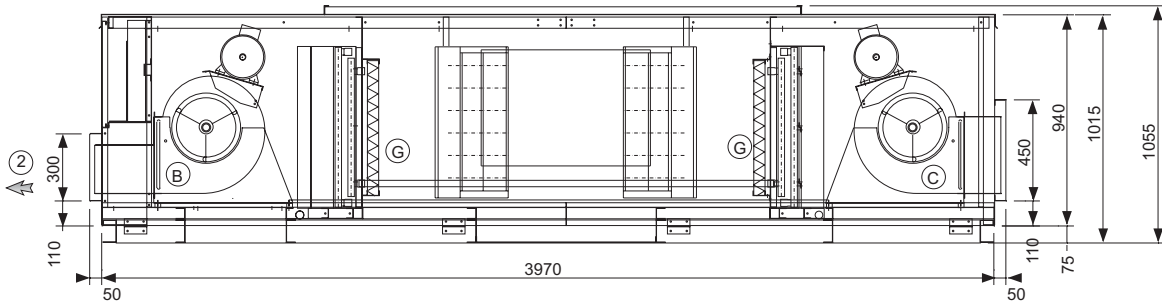
TRANSITION ROOFCURB																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
85-100-120	2056	2770	2005	660	2672	1958	130	1747	145	420	336	1432	700	140	620	95
150-170	2056	3466	2493	660	3367	1958	234	1747	145	420	430	1540	700	140	800	95
200-230	2056	4100	2493	660	4003	1958	234	1747	145	420	430	1830	800	80	1133	95



	Size	A	B	C	D	E	F
F-box	85-100-120	2279	2212	1447	360	1911	938
G-box	150-170	2539	2473	1544	457	2211	938
H-box	200-230	2789	2723	1703	616	2461	938

FXK = Heat recovery unit

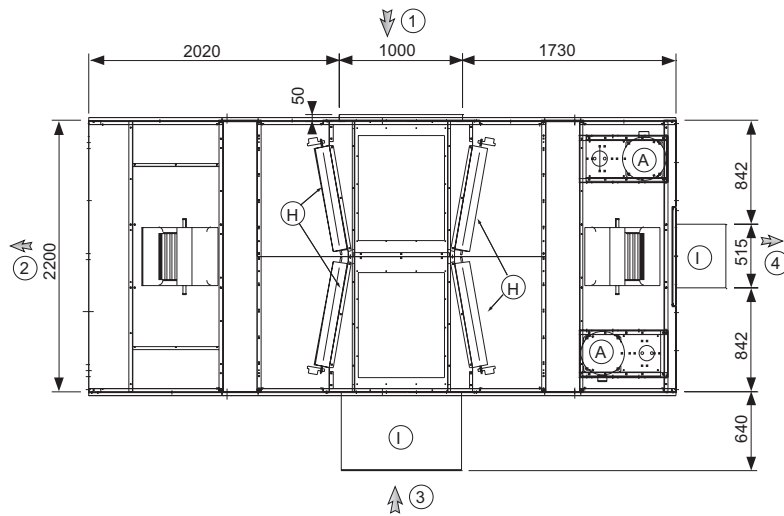
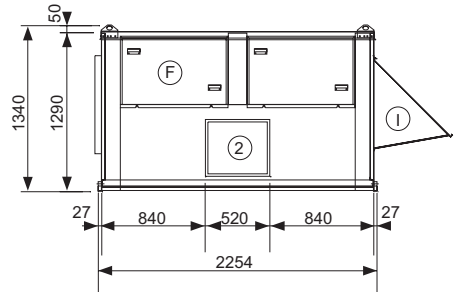
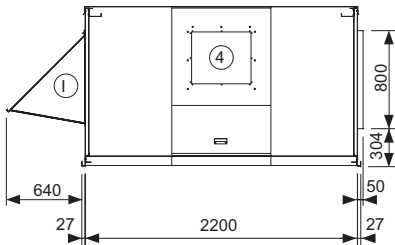
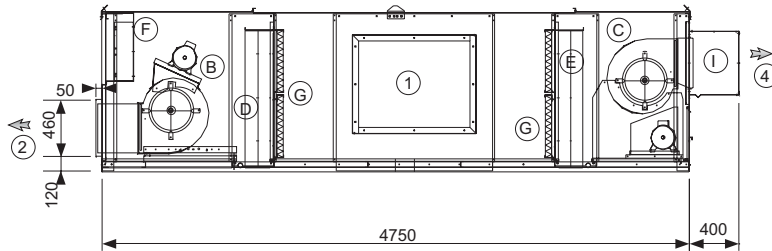
FXK
25/30



A	Compressor	1	Return air
B	Supply fan	2	Supply air
C	Exhaust fan	3	Fresh air
D	Evaporator coil	4	Exhaust air
E	Condenser coil	5	Flue outlet
F	Control box	6	Power entry
G	Filter	7	Gas entry
H	Damper	8	Condensate drain
I	Air hood		

FXK = Heat recovery unit

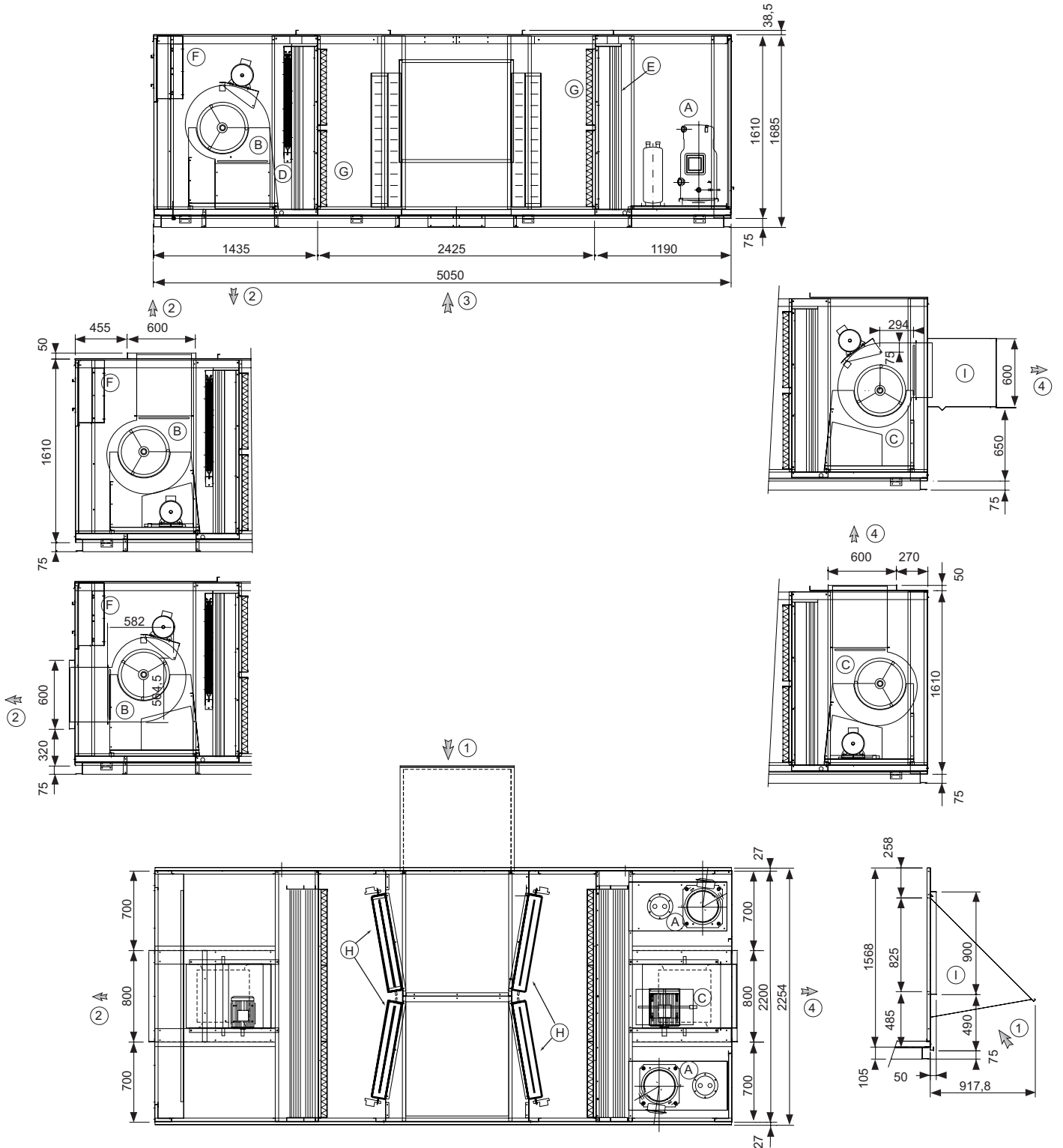
FXK
35/40/55



A	Compressor	1	Return air
B	Supply fan	2	Supply air
C	Exhaust fan	3	Fresh air
D	Evaporator coil	4	Exhaust air
E	Condenser coil	5	Flue outlet
F	Control box	6	Power entry
G	Filter	7	Gas entry
H	Damper	8	Condensate drain
I	Air hood		

FXK = Heat recovery unit

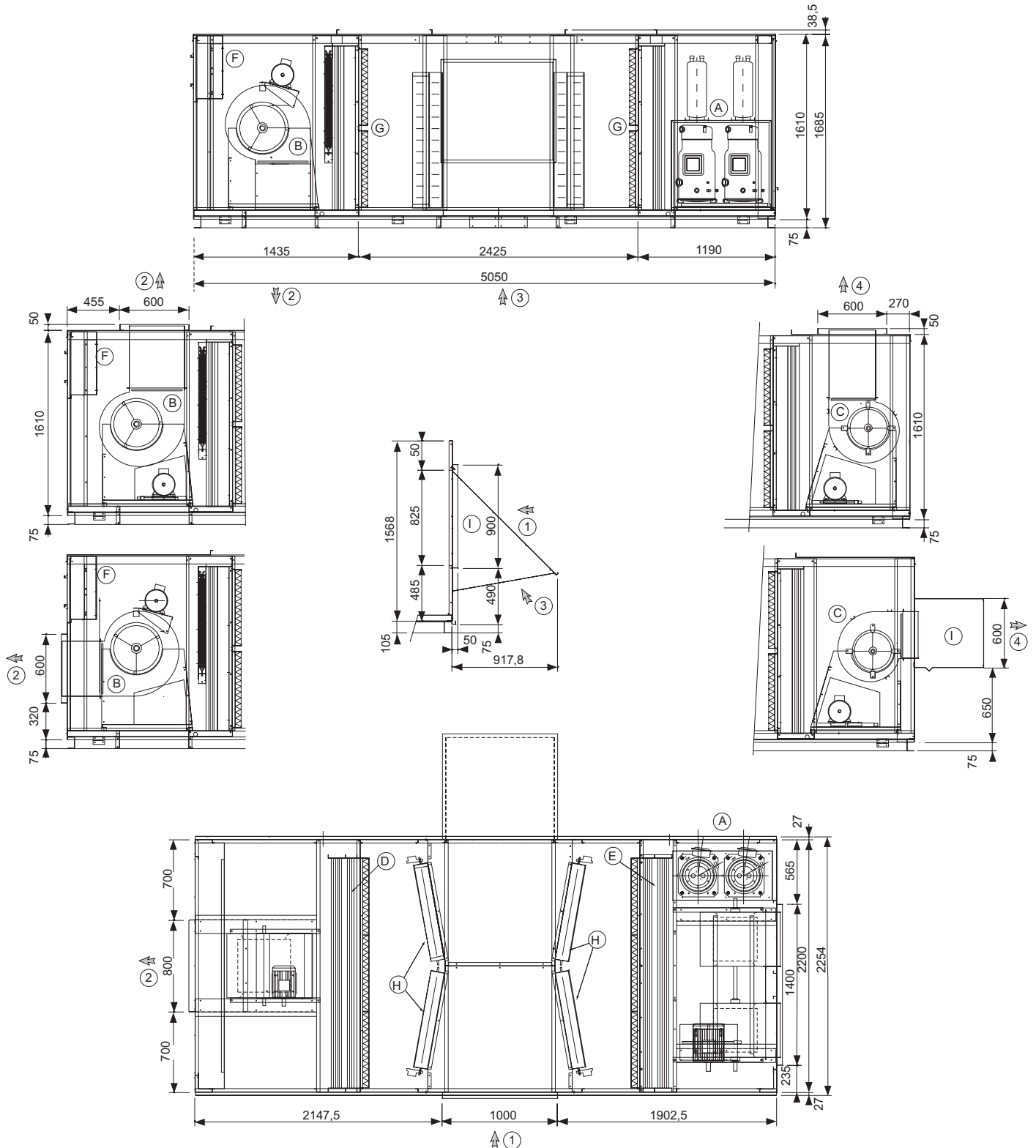
FXK
70/85



A	Compressor	1	Return air
B	Supply fan	2	Supply air
C	Exhaust fan	3	Fresh air
D	Evaporator coil	4	Exhaust air
E	Condenser coil	5	Flue outlet
F	Control box	6	Power entry
G	Filter	7	Gas entry
H	Damper	8	Condensate drain
I	Air hood		

FXK = Heat recovery unit

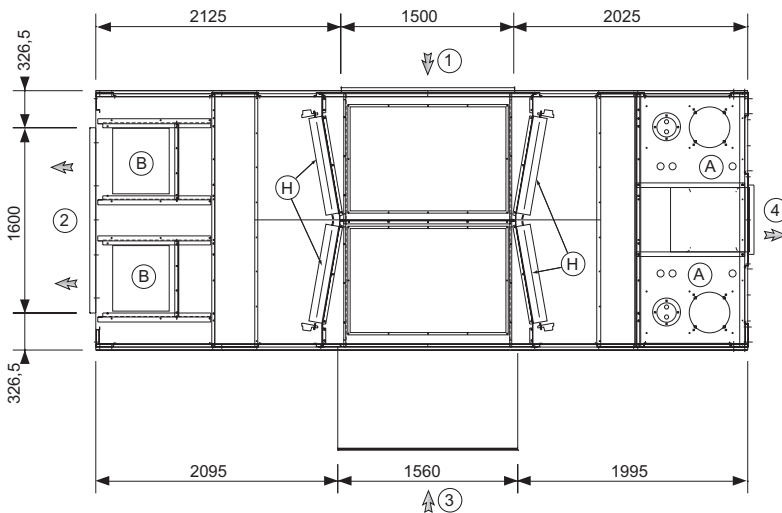
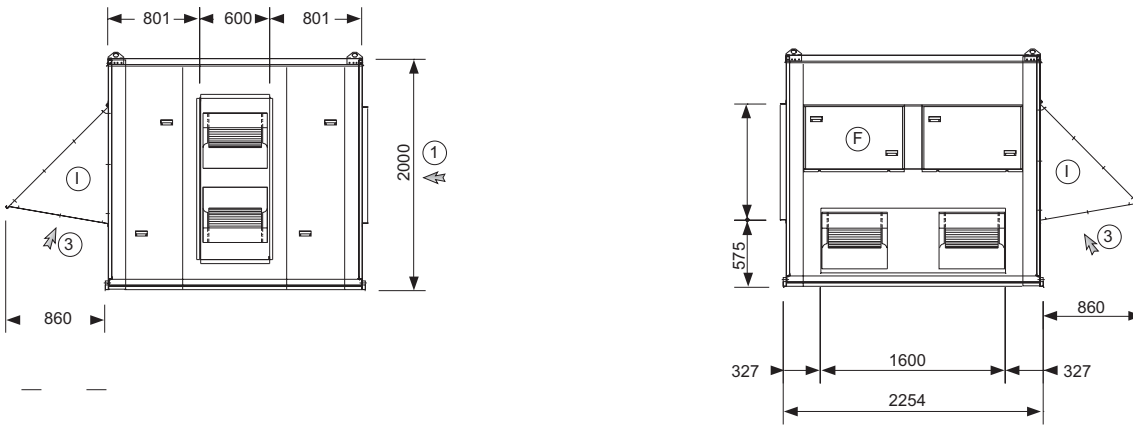
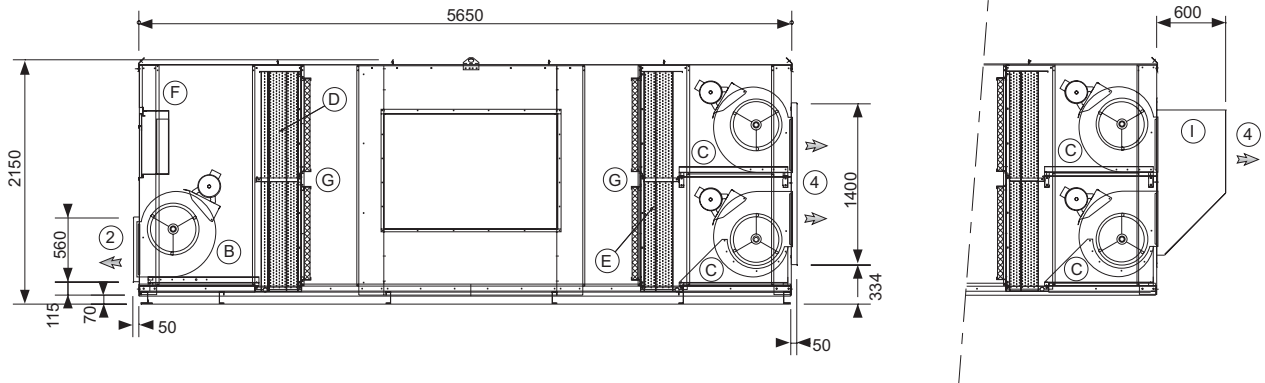
FXK 100



A	Compressor	1	Return air
B	Supply fan	2	Supply air
C	Exhaust fan	3	Fresh air
D	Evaporator coil	4	Exhaust air
E	Condenser coil	5	Flue outlet
F	Control box	6	Power entry
G	Filter	7	Gas entry
H	Damper	8	Condensate drain
I	Air hood		

FXK = Heat recovery unit

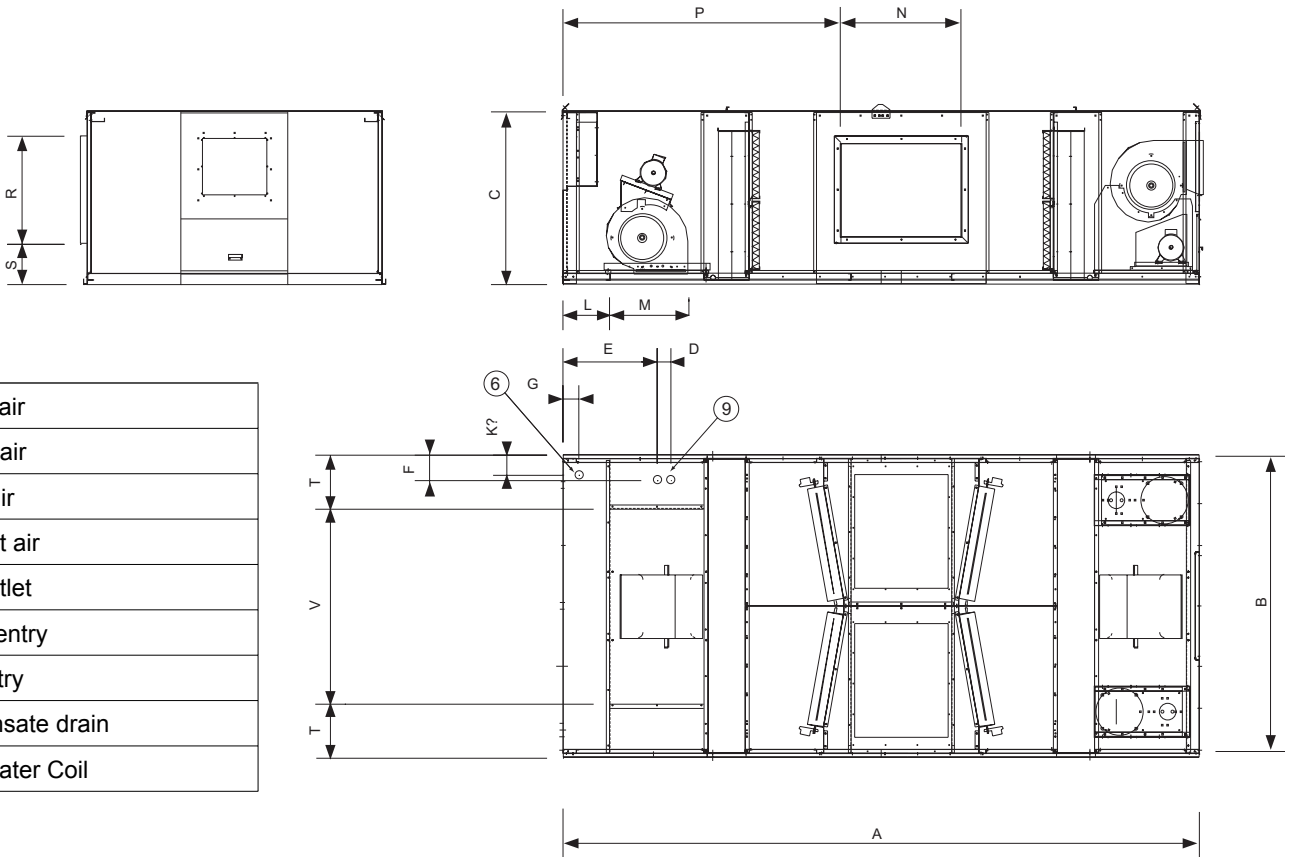
FXK 110/140/170



A	Compressor	1	Return air
B	Supply fan	2	Supply air
C	Exhaust fan	3	Fresh air
D	Evaporator coil	4	Exhaust air
E	Condenser coil	5	Flue outlet
F	Control box	6	Power entry
G	Filter	7	Gas entry
H	Damper	8	Condensate drain
I	Air hood		

FXK = Heat recovery unit

FXK 025 -> 170



1	Return air
2	Supply air
3	Fresh air
4	Exhaust air
5	Flue outlet
6	Power entry
7	Gas entry
8	Condensate drain
9	Heat Water Coil

SIZE	Weight kg	A mm	B mm	C mm	D mm	E mm	F mm	G mm	K mm
25	950	3970	1610	940	75	320	145	120	145
30	980	3970	1610	940	75	320	145	120	145
35	1400	4750	2254	1290	100	700	180	120	145
40	1450	4750	2254	1290	100	700	180	120	145
55	1600	4750	2254	1290	100	700	180	120	145
70	1800	5050	2254	1610	100	550	180	100	130
85	1900	5050	2254	1610	100	550	180	100	130
100	2000	5050	2254	1610	100	550	180	100	130
110	2300	5650	2254	2000	100	550	180	100	130
140	2400	5650	2254	2000	100	550	180	100	130
170	2600	5650	2254	2000	100	550	180	100	130

SIZE	Weight kg	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm
25	950	375	450	800	1665	600	240	505	600
30	980	375	450	800	1665	600	240	505	600
35	1400	350	700	1000	2020	800	300	402	1450
40	1450	350	700	1000	2020	800	300	402	1450
55	1600	350	700	1000	2020	800	300	402	1450
70	1800	460	600	1000	2147	900	490	727	800
85	1900	460	600	1000	2147	900	490	727	800
100	2000	460	600	1000	2147	900	490	727	800
110	2300	110	580	1500	2125	1000	575	327	1600
140	2400	110	580	1500	2125	1000	575	327	1600
170	2600	110	580	1500	2125	1000	575	327	1600

OPTION WEIGHT (STANDARD)



Table 10.1

BASE	85	100	120	150	170	200	230	
Base Unit FCM	934	1009	1085	1367	1430	1650	1950	
Base Unit FHM	949	1024	1100	1397	1460	1680	1980	
Base Unit FGM (S)	1041	1116	1192	1608	1671	1914	2214	
Base Unit FGM (H)	1111	1186	1262	1631	1694	1954	2254	
Base Unit FDM (S)	1056	1131	1207	1638	1701	1944	2244	
Base Unit FDM (H)	1126	1201	1277	1661	1724	1984	2284	
Air flow configuration								
Downflow return, horizontal supply	23	23	23	30	30	41	41	
Horizontal return, horizontal supply	20	20	20	27	27	37	37	
Horizontal return, downflow supply	5	5	5	7	7	9	9	
Horizontal return, upflow supply	63	63	63	83	83	113	113	
Upflow return, upflow supply	57	57	57	76	76	103	103	
Fresh air options								
Economiser sensible + hood	57	57	57	75	75	102	102	
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	
Return roofcurb vertical	499	499	499	547	547	729	729	
Return roofcurb horizontal	474	474	474	557	557	711	711	
Energy recovery module	478	478	478	600	600	725	725	
Filtration option								
G 4 metallic frame, washable filter	6	6	6	11	11	19	19	
G 4 metallic frame, washable filter	4	4	4	8	8	8	8	
F7 Filters / G4 Prefilters								
G4 Refilable filters	2	2	2	2	2	2	2	
UV light	4,1	4,1	4,1	7,8	7,8	7,8	7,8	
Refrigeration option								
Drive kits Standard Units	K1	-2	-24	-24	-16	-30	-7	-40
	K2	0	-22	-22	-7	-22	-11	-45
	K3	0	-23	-23	0	-14	0	-34
	K4	8	-14	-14	-1	-15	33	-1
	K5	7	-15	-15	13	-1	32	-1
	K6	38	15	15	12	-3	64	31
	K7	21	-1	-1	6	-9	34	0
	K8	60	38	38	40	26	1	-33
	K9	-3	-25	-25	42	27	65	32
	K10	22	-1	-1	-2	-16	79	45
	K11	37	15	15	14	0	98	64
	K12	37	15	15	72	58	66	32
	K13	8	-14	-14	42	28	97	64
	K14	22	0	0	74	59		
	K15	60	38	38	111	97		
	K16	38	16	16	74	60		
	K17	92	70	70				
	K18	32	9	9				
Drive kits Gas S & H Units	K1	0	-5	-19	-7	-42	-44	-76
	K2	0	-5	-20	0	-35	-33	-65
	K3	5	0	-15	35	0	0	-32
	K4	13	8	-7	39	4	-1	-33
	K5	13	8	-7	71	36	31	-1
	K6	19	14	0	85	50	65	33
	K7	20	15	0	36	1	50	18
	K8	48	43	28	67	32	1	-32
	K9	20	15	0	85	50	32	0
	K10	52	46	32	99	64	46	14
	K11	84	78	64			64	32
	K12	80	75	60				
	K13	49	43	29				
Heating options versus BCK or BGK								
Electric heater (Standard heat) 2 steps	47	47	47	57	57	78	78	
Electric heater (Medium heat) Modulating	64	64	64	78	78	103	103	
Electric heater (High heat) Modulating	78	78	78	103	103	143	143	
Hot water coil (Standard heat)	34	34	34	52	52	63	63	
Hot water coil (High heat)	62	62	62	96	96	116	116	
Electric and safety options								
Air sock control	1,5	1,5	1,5	1,5	1,5	1,5	1,5	
Other Options								
Non Adjustable non assembled roofcurb	94	94	94	108	108	128	128	
Adjustable assembled roofcurb	158	158	158	184	184	222	222	
Multi direction horizontalflow curb	237	237	237	332	332	395	395	
Transition roofcurb	215	215	215	249	249	291	291	
Refurbishment roofcurb	ND	ND	ND	ND	ND	ND	ND	

Table 10.2

BASE	85	100	120	150	170	200	230
Base Unit FCM	1378	1453	1530	1957	2020	2420	2720
Base Unit FCM	1398	1468	1545	1987	2050	2450	2750
Base Unit FGM (S)	1485	1560	1637	2198	2261	2684	2984
Base Unit FGM (H)	1555	1630	1707	2221	2284	2724	3024
Base Unit FDM (S)	1500	1575	1652	2228	2291	2714	3014
Base Unit FDM (H)	1570	1645	1722	2251	2314	2754	3054
<i>Air flow configuration</i>							
Downflown return, horizontal supply	20	20	20	27	27	36	36
Horizontal return, horizontal supply	28	28	28	37	37	50	50
Horizontal return, downflow supply	15	15	15	19	19	26	26
Horizontal return, upflow supply	118	118	118	156	156	210	210
Upflow return, upflow supply	126	126	126	167	167	223	223
<i>Fresh air options</i>							
Economiser sensible + hood	100	100	100	133	133	179	179
<i>Exhaust air options</i>							
Gravity exhaust damper for downflow return	33	33	33	48	48	53	53
Power exhaust fan axial + gravity exhaust damper downflow return	60	60	60	92	92	99	99



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