Application guide
RT WSHP

• • • Providing indoor climate comfort

RT WSHP-AGU-1109-E

RT WSHP

APPLICATION GUIDE

Ref : RT WSHP-AGU-1109-E

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

Our company's products comply with European standards.

The manufacturing of RT WSHP answers to ISO9001 control quality system.

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.
- Low speed air in the air treatment section for reduced pressure drop
- Extra high efficiency variable plug fan option for life cycle cost reduction (energy + maintenance)
- Modulating gas burner option for comfort improvement

EASY TO INSTALL AND SERVICE

- 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 45 to 170 kW to cover wide range of application
- Heat pump (H), or heat pump and gas fired (M)
- Variable drive pulley as a standard feature
- External static pressure up to 800 Pa
- Plug and play unit, all units have factory fitted options, fully tested and wired

SAFETY

- Compliant with EN 60204-1 standard
- Compliant with EMC EC/2004/108 directive
- Compliant with PED 97-23 directive
- All electrical components are protected by circuit breakers

The Water Rooftop range has been designed to perfectly match applications as Geothermal systems and ground source heat pumps.

Water Rooftop is available in heat pump or dual fuel (gas fired and heat pump), the Water Rooftop range operates with environmentally friendly R410A HFC, providing cooling capacities from 48 kW up to 190 kW in 4 different Box sizes.

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

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

LIFE CYCLE COST

STANDARD FEATURES

Scroll compressors / Refrigeration Circuits / R410A for maximum efficiency

Scroll compressors with R410A are used on the Water Rooftop for maximum efficiency and reliability, having overload protection.
Refrigerant circuits include compressors with crankcase heaters, heat plate exchanger 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, reversing valve on each models.
Specific circuiting for Water Cooled Rooftop is optimised on Lennox laboratory.
Small diameter tube optimizes use of R410A refrigerant.

Dual circuits and tandem

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 EER (Energy Efficiency Ratio) can go up to 4,1 at 50% part load for size BWH055 (PrEN 14825).

The second advantage of tandem is the improvement of operating limits with unloading. In extreme water inlet conditions, Water Rooftop will continue to supply warm or cold air in unloading compressors.
For example size 170 can go up to 46°C inlet water temperature.

Thanks to combination of compressors,
Size 45, 55, 65, 75 & 120 will have 2 steps of modulation.
size 85, 100 & 150 will have 3 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.

Water heat exchanger

- True mono or dual circuit plate heat exchanger
- Copper brazed Stainless steel plate heat exchanger.
- 13 mm thermal insulation foam.
- Located in a technical cabinet protecting the insulation against climatic conditions (UV light, rain).
- Anti-freeze protection (down to -20°C) Resistance heaters on the plate exchanger.

Kit for groove lock coupling

The chilled water connections on all units are Victaulic connections. Each unit is supplied with a Victaulic connector and seal for the chilled water connections as standard.

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 Water Rooftop 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 Water Rooftop, 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 EUROVENT certified heat plate exchanger and a bypass damper (BALTIC™) and of a rotative wheel exchanger (FLEXY™), the Energy recovery module is fully controlled by the Climatic™ 50. The exchanger is protected against freezing of the exhaust air.

This module is fitted as a standard with G4 filters (BALTIC™) and G3 (FLEXY™) 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 garanty a supply airflow control and will indicate the dirtyness of Energy 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

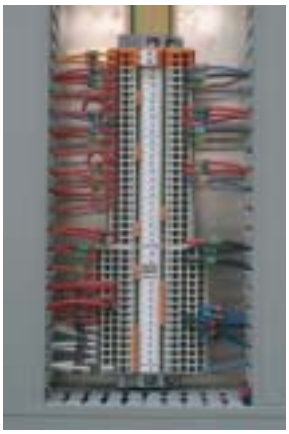
STANDARD FEATURES

Super light Water Rooftop
Combining the use of Aluminium on FLEXY™ and a very compact design, the large WSHP are the lightest rooftops on 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.

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.
The Water Rooftop should be powered by 400 V, 3phases, 50 Hz (no neutral needed).

Circuit breakers
To improve the safety of the Water Rooftop 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 Water Rooftop is 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 airflow on a particular project is different from what is specified on an order, LENNOX has enhanced the Water 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
External panels are easily removed providing clear access to all components.

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, EMC Directives, 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.
The Water Rooftop complies with EN60204 norms, PED 97-23 directive, EMC directive 2004/108/EC, is CE compliant.
This product 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)

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.

OPTIONAL

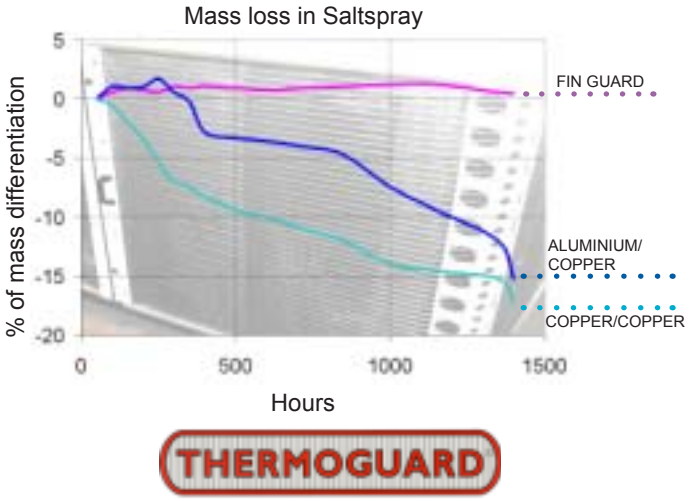
Anti-Corrosion Protection

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 Water Rooftop. 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 for indoor coil.

(*) see corrosion LENNOX policy.



INDOOR AIR QUALITY AND ENVIRONMENT FRIENDLY

STANDARD FEATURES

Quiet RT WHSP

LENNOX believes that an innovating and environment friendly rooftop should be quiet. The water Rooftop 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/m^3 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 Rockwool.

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

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 Water Rooftop. 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 CO_2 in the air between 0 and 2000 PPM. (This obviously varies depending upon space occupancy levels). The VOC sensor will then send a proportional signal (0-20 mA) to the CLIMATIC™ 50 controller which will then modulate the fresh air damper.

EASY TO INSTALL AND SERVICE

TO ADAPT TO DIFFERENT SITUATIONS, A SERIES OF OPTION ARE PROPOSED ON WATER ROOFTOP.

OPTIONAL

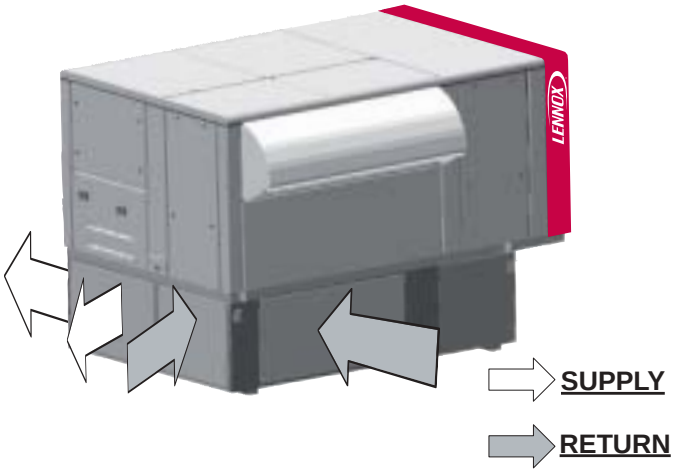
Low water temperature kit
This option allows the Water Rooftop to work in cooling mode with an inlet water temperature down to 10°C.
This system is possible by reducing the water flow thanks to an Electronic valve installed on water circuit controlled by CLIMATIC™ 50.

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 Water Rooftop 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.

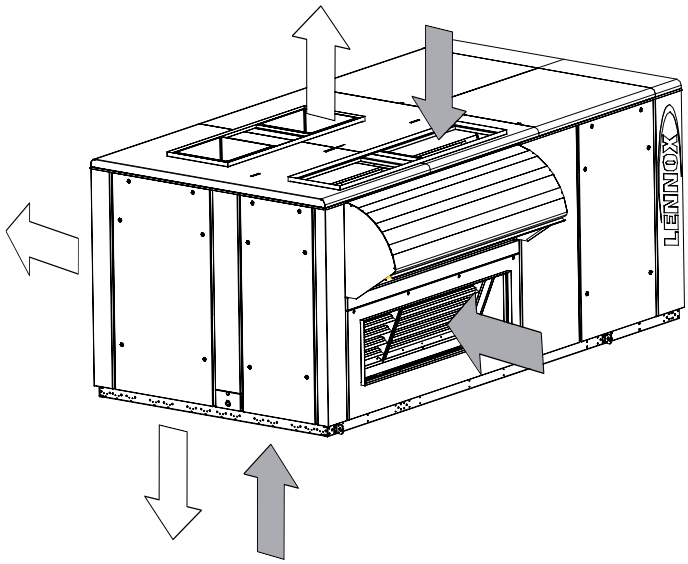


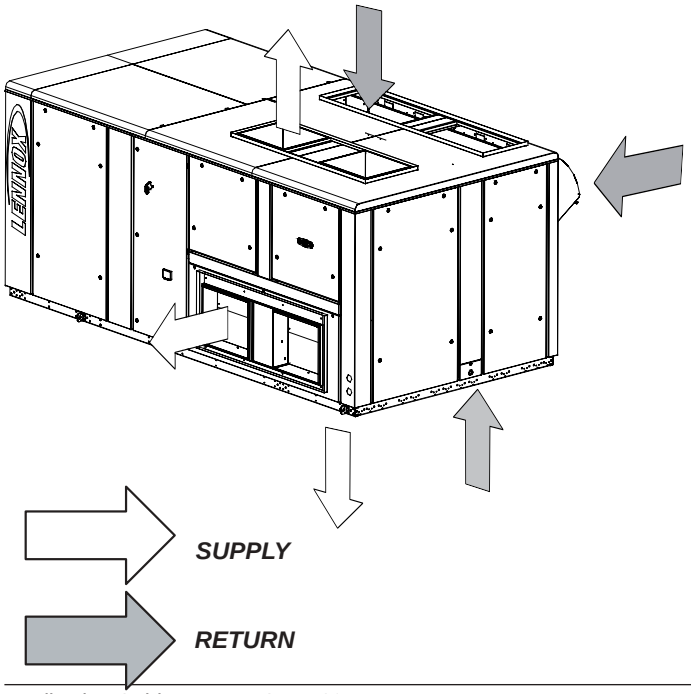
Air Sock Control
The use of air socks for space conditioning allows high air volumes to be distributed at low velocity and is becoming a common feature in many applications. To accommodate this trend, Air sock control is offered which allows the air socks to be progressively filled with air on start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

Drive Kit up to 800 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 800Pa 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.

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.





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 multidirectional 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
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.
Fans 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.

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

GAS BURNER

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 (33 & 60 kW burner) and 4 stages (120, 180 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 Water Rooftop 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% (available on 60,120, 180 kW burners).

	Size S (kW)	Size H (kW) / MOD
D-box	33	60
E-box	60	120
F-box	60	120
G-box	120	180

CONTROL

STANDARD FEATURES

CLIMATIC™ 50 Software (RT50)
The new generation of microprocessor based control, CLIMATIC™ 50 will equip the Water 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 14 MHz and a 2 Megabytes flash memory, CLIMATIC™ 50 has been designed to save energy and to extend the operational life of the Water Rooftop 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.
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, Water Rooftop can work on half of its capacity by using only half of the compressors. 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

Advanced control pack (control of humidity and enthalpy control on economizer)
Where a higher level of controllability is required to make the Water Rooftop 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. 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 Water 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 Water Rooftop 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

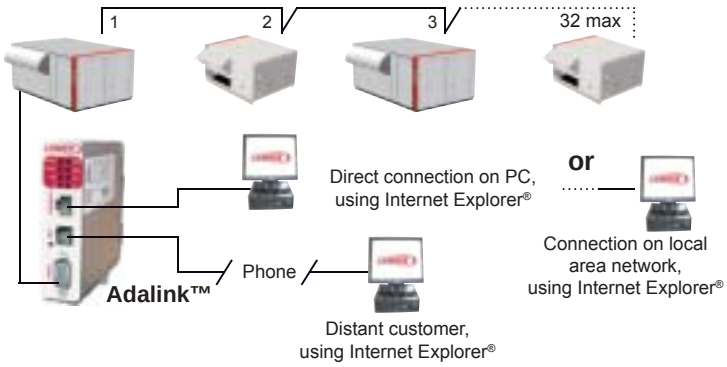
This board is a LonTalk® interface, which is needed for anyone who would like a BMS system to talk to the Water Rooftop with «Lon protocol» with FTT10. No other hardware than this board is required to have LonTalk® dialog. One board required per rooftop.

Bacnet® interface

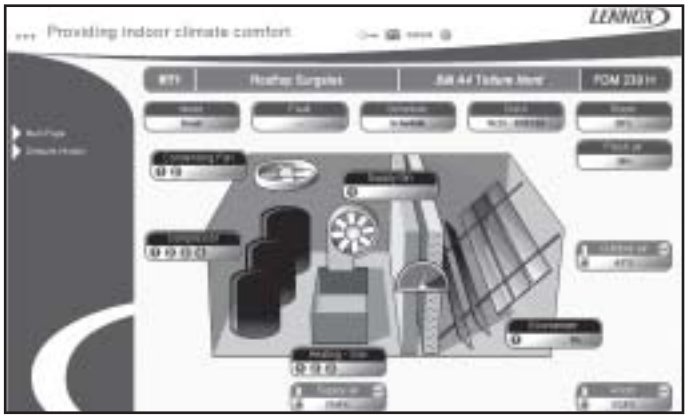
This board is a Bacnet® interface, which is needed for anyone who would like a BMS system to talk to the Water Rooftop with «Bacnet protocol» RS485.

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.



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.



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

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.

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.

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

SAFETY

DEPENDING ON LOCAL REGULATION AND CODES

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

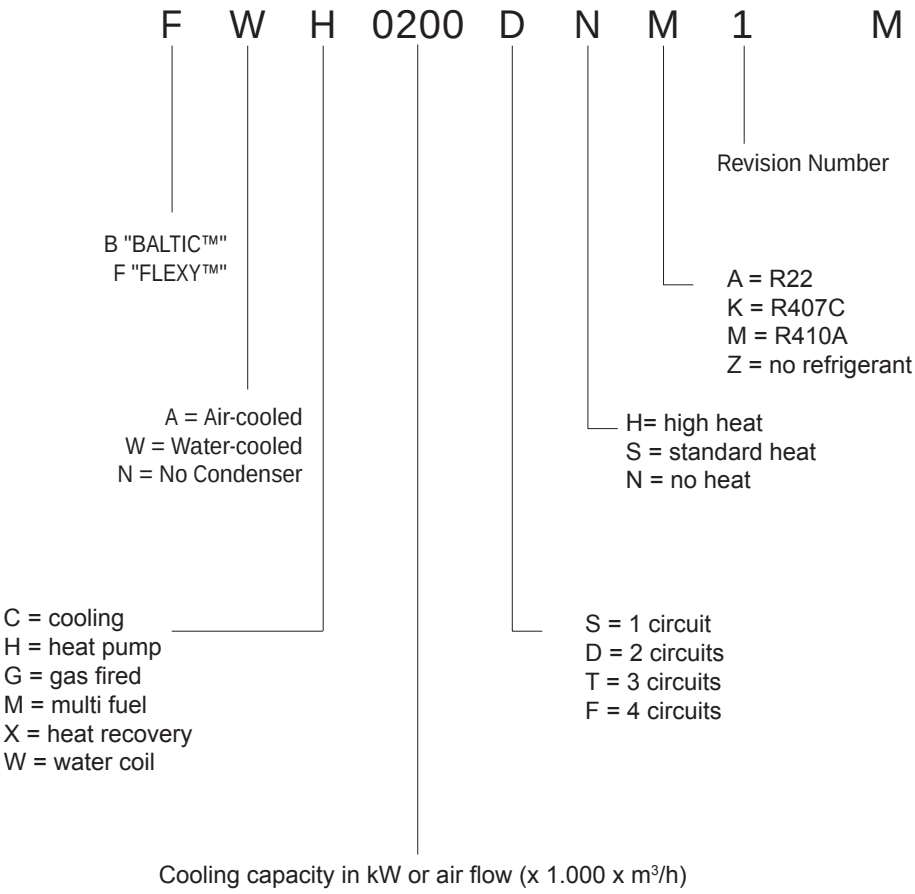
Disconnect Switch
Main disconnect switch is lockable to increase safety around the rooftop unit.
Switching off the unit with the disconnect switch will reset all. Disconnect switch will be sized accordingly to the option picked with the unit.
The main switch is used as an emergency cut off.
It is mandatory to guarantee a proper accessibility to this switch
Specific footbridges must be installed if the machine environment is requiring it.

Water flow switch
The electronic flow switch stops the unit if water flow is lower than the minimum requested.

Water filter
The water filter must be fitted in the water inlet of the unit, it protects the unit against particles (greater than 1 mm) getting inside the water circuit, and prevents the water interchanger gets dirty.

Heat plates exchanger anti freeze protection
The heat exchanger anti freeze heater prevents the water exchange from low temperatures.

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


F W H 0200 D N M 1 M
Revision Number
B "BALTIC™"
F "FLEXY™"
A = R22
K = R407C
M = R410A
Z = no refrigerant
A = Air-cooled
W = Water-cooled
N = No Condenser
H= high heat
S = standard heat
N = no heat
C = cooling
H = heat pump
G = gas fired
M = multi fuel
X = heat recovery
W = water coil
S = 1 circuit
D = 2 circuits
T = 3 circuits
F = 4 circuits
Cooling capacity in kW or air flow (x 1.000 x m3/h)

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.1

Performance	Size	45	55	65
Nominal Airflow	**m³/h**	**8100**	**9000**	**11500**
Cooling BWH-FWH (with water 30/35°C)				
Gross Air Cooling capacity (1)	KW	47,6	57,8	72,7
Rejected heat in the water	KW	56,4	68,4	85,3
Nominal water flow	m³/h	9,1	11,0	13,9
Power input	kW	11,2	13,8	16,3
EER gross (2)		5,0	5,0	5,2
EER net global (3)		4,1	4,1	4,4
Heating BWH-FWH (with water 20/15°C)				
Net heating capacity (1)	kW	53,4	65,0	85,6
Capacity taken from the water	kW	41,9	50,3	67,6
Power input	kW	12,1	15,3	18,8
COP gross		5,0	4,8	5,1
COP net global (3)		4,4	4,2	4,6
Part Load				
Part Load	%	50%	50%	55%
ESEER (10)		4,11	3,91	3,03
Heating - gas fired				
Heating capacity	kW	30,7 / 55,8	30,7 / 55,8	55,8 / 111,6
Input (std heat / high heat)	kW	33 / 60	33 / 60	60 / 120
Thermal efficiency	%	93	93	92
Gas flow (for G20 natural gas at 20 mbar gage and 15°C)	m³/h	3,2 / 5,7	3,2 / 5,7	5,7 / 11,5
Refrigeration circuit				
Nb of Circuits x Compressor type	Nb x type	2 scroll	2 scroll	1 scroll + 1 scroll
Expansion	Nb x type	2 TXV	2 TXV	4 TXV
Refrigerant charge per circuit	kg	1 x 12,5	1 x 12,5	2 x 11
Coils				
Indoor Coil: Face area / Nb of rows	m² / Nb	1,25 / 4	1,25 / 4	1,7 / 4
Heat plate Exchanger: nb of plates	Nb	76	76	54
Ventilation data				
Nominal Airflow	m³/h	8100	9000	11500
Minimum Airflow	m³/h	6500	7200	8600
Maximum Airflow	m³/h	10800	10800	16000
External static pressure / maximum (4)	Pa	100 / 800	100 / 800	100 / 800
Indoor fan (Centrifugal fan BWH/FWH)				
Number x Drive type	Type	1 x AT 15-15 S	1 x AT 15-15 S	1 x AT 15-11 G2L
Mechanical Power Input (1)	kW	1 x 1,5	1 x 2,2	1 x 2,2
Power input at nominal airflow		1,69	2,10	2,28
Motor rejected heat	kW	1,3	1,6	1,8
Rotation speed	rpm	683	725	697

Note :

(1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
Summer: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.2

Performance	Size	45	55	65
Nominal Airflow	**m³/h**	**8100**	**9000**	**11500**
Indoor fan (Centrifugal fan BWM/FWM)				
Number x Drive type	Type	1 x AT 15-15 S	1 x AT 15-15 S	1 x AT 15-11 G2L
Mechanical Power Input gas (1)	kW	1 x 2.2	1 x 3	1 x 2.2
Power input at nominal airflow		2,3	3,1	3,4
Rotation speed (S / H) (5)	rpm	851	913	801
Filter (furnished standard)				
Type	Eurovent	80-85% / G3	80-85% / G3	80-85% / G3
Nb of filter	Nb	4	4	4 + 2
Filter size	mm x mm	625 x 500 x 45	625 x 500 x 45	600 x 500 & 500 x 500
Dimensions				
Lenght	mm	1910	1910	2873
Height	mm	1221	1221	1225
Width with/without fresh air hood (6)	mm	2235	2235	2260
Weight standard unit BWH - FWH	kg	499	515	674
Weight gas unit Small/ High	kg	573 / 595	589 / 611	780 / 840
Acoustic @ 150 Pa				
Outside sound power	dB(A)	73	74	73
Indoor blower outlet sound power on BWH - FWH	dB(A)	84	86	84
Indoor blower outlet sound power on BWM - FWM	dB(A)	86	87	86
Construction				
Casing material (8)		Aluzinc	Aluzinc	Aluzinc
Painting	Type/RAL	polyester / 9002	polyester / 9002	polyester / 9002
Airflow side wall Insulation Class	Type	MO	MO	MO
Cooling mode operating limits				
Max. inlet water temp at indoor 27°C DB/ 19°C WB (9)	°C	46	46	46
Max. inlet water temp with unloading	°C	48	48	48
Min. inlet water temp. at indoor 20°C DB (7)	°C	25	25	25
Max. inlet water temp 100% fresh air at outdoor 35°C	°C	38	38	38
Heat pump mode operating limits				
Min. inlet glycoled water temp. at indoor 20°C DB (9)	°C	-15	-15	-15
Min outdoor temp with unloading	°C	-17	-17	-17
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: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.3

Performance	Size	75	85	100
Nominal Airflow	**m³/h**	**13500**	**15000**	**18500**
Cooling BWH-FWH (with water 30/35°C)				
Gross Air Cooling capacity (1)	KW	85,0	93,2	124
Rejected heat in the water	KW	100	110	146
Nominal water flow	m³/h	16,1	17,8	23,5
Power input	kW	20,1	21,8	29,3
EER gross (2)		5,2	5,0	5,1
EER net global (3)		4,1	4,0	4,1
Heating BWH-FWH (with water 20/15°C)				
Net heating capacity (1)	kW	102	111	140
Capacity taken from the water	kW	79,7	88,0	109,0
Power input	kW	23,2	24,4	32,5
COP gross		5,1	5,1	5,0
COP net global (3)		4,4	4,6	4,3
Part Load				
Part Load	%	50%	55%	60%
ESEER (10)		3,17	3,54	3,31
Heating - gas fired				
Heating capacity	kW	55,8 / 111,6	55,2 / 110,4	55,2 / 110,4
Input (std heat / high heat)	kW	60 / 120	60 / 120	60 / 120
Thermal efficiency	%	92	92	92
Gas flow (for G20 natural gas at 20 mbar gage and 15°C)	m³/h	5,7 / 11,5	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	4 TXV	4 TXV	4 TXV
Refrigerant charge per circuit	kg	2 x 11	2 x 10	2 x 10,5
Coils				
Indoor Coil: Face area / Nb of rows	m² / Nb	1,7 / 4	2,4 / 4	2,4 / 4
Heat plate Exchanger: nb of plates	Nb	66	66	94
Ventilation data				
Nominal Airflow	m³/h	13500	15000	18500
Minimum Airflow	m³/h	10000	12000	14000
Maximum Airflow	m³/h	16000	23000	23000
External static pressure / maximum (4)	Pa	100 / 800	150 / 600	150 / 600
Indoor fan (Centrifugal fan BWH/FWH)				
Number x Drive type	Type	1 x AT 15-11 G2L	1 x AT 15-15 G2L	1 x AT 15-15 G2L
Mechanical Power Input (1)	kW	1 x 2,2	1 x 3	1 x 5,5
Power input at nominal airflow		3,56	3,2	4,97
Motor rejected heat	kW	2,7	2,4	3,83
Rotation speed	rpm	804	744	811

Note :

(1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
Summer: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.4

Performance	Size	75	85	100
Nominal Airflow	**m³/h**	**13500**	**15000**	**18500**
Indoor fan (Centrifugal fan BWM/FWM)				
Number x Drive type	Type	1 x AT 15-11 G2L	2 x ADH 355 L	2 x ADH 355 L
Mechanical Power Input gas (1)	kW	1 x 4	2 x 2.2	2 x 3
Power input at nominal airflow		4,7	4,0	6,15
Rotation speed (S / H) (5)	rpm	908	859 / 895	949 / 980
Filter (furnished standard)				
Type	Eurovent	80-85% / G3	80-85% / G3	80-85% / G3
Nb of filter	Nb	4 + 2	8	8
Filter size	mm x mm	600 x 500 & 500 x 500	625 x 500 x 50	625 x 500 x 50
Dimensions				
Lenght	mm	2873	3348	3348
Height	mm	1225	1510	1510
Width with/without fresh air hood (6)	mm	2260	2290/2705	2290/2705
Weight standard unit BWH - FWH	kg	733	790	874
Weight gas unit Small/ High	kg	842 / 899	897 / 967	981 / 1051
Acoustic @ 150 Pa				
Outside sound power	dB(A)	76	76	78
Indoor blower outlet sound power on BWH - FWH	dB(A)	88	85	90
Indoor blower outlet sound power on BWM - FWM	dB(A)	91	84	87
Construction				
Casing material (8)		Aluzinc	Aluminum	Aluminum
Painting	Type/RAL	polyester / 9002	polyester / 9002	polyester / 9002
Airflow side wall Insulation Class	Type	MO	MO	MO
Cooling mode operating limits				
Max. inlet water temp at indoor 27°C DB/ 19°C WB (9)	°C	46	46	46
Max. inlet water temp with unloading	°C	48	48	48
Min. inlet water temp. at indoor 20°C DB (7)	°C	25	25	25
Max. inlet water temp 100% fresh air at outdoor 35°C	°C	38	38	38
Heat pump mode operating limits				
Min. inlet glycoled water temp. at indoor 20°C DB (9)	°C	-15	-15	-15
Min outdoor temp with unloading	°C	-17	-17	-17
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: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.5

Performance	Size	120	150	170
Nominal Airflow	**m³/h**	**20500**	**26000**	**30000**
Cooling BWH-FWH (with water 30/35°C)				
Gross Air Cooling capacity (1)	KW	138	165	194
Rejected heat in the water	KW	163	195	230
Nominal water flow	m³/h	26,3	31,3	37,0
Power input	kW	33,3	38,3	47,7
EER gross (2)		5,1	5,2	5,0
EER net global (3)		4,0	4,2	3,9
Heating BWH-FWH (with water 20/15°C)				
Net heating capacity (1)	kW	157	186	225
Capacity taken from the water	kW	120,8	147,2	174,9
Power input BWH - FWH	kW	37,7	40,5	52,4
COP gross		4,8	5,3	5,0
COP net global (3)		4,2	4,6	4,3
Part Load				
Part Load	%	50%	66%	50%
ESEER (10)		3,23	3,51	3,45
Heating - gas fired				
Heating capacity	kW	55,2 / 110,4	110,4 / 165,6	110,4 / 165,6
Input (std heat / high heat)	kW	60 / 120	120 / 180	120 / 180
Thermal efficiency	%	92	92	92
Gas flow (for G20 natural gas at 20mbar gage and 15°C)	m³/h	6,3 / 12,5	12,5 / 18,8	12,5 / 18,8
Refrigeration circuit				
Nb of Circuits x Compressor type	Nb x type	1 scroll + 1 scroll	1 scroll + 2 scroll	2 scroll + 2 scroll
Expansion	Nb x type	4 TXV	4 TXV	4 TXV
Refrigerant charge per circuit	kg	2 x 10,5	15,8 + 16	2 x 16
Coils				
Indoor Coil: Face area / Nb of rows	m² / Nb	2,4 / 4	3,8 / 4	3,8 / 4
Heat plate Exchanger: nb of plates	Nb	94	154	154
Ventilation data				
Nominal Airflow	m³/h	20500	26000	30000
Minimum Airflow	m³/h	15000	18000	21000
Maximum Airflow	m³/h	23000	35000	35000
External static pressure / maximum (4)	Pa	150 / 600	150 / 600	150 / 600
Indoor fan (Centrifugal fan BWH/FWH)				
Number x Drive type	Type	1 x AT 15-15 G2L	2 x AT 18-18 S	2 x AT 18-18 S
Mechanical Power Input (1)	kW	1 x 5,5	2 x 3	2 x 4
Power input at nominal airflow		5,99	6,40	8,99
Motor rejected heat	kW	4,61	4,93	6,92
Rotation speed	rpm	853	632	692

Note :

(1) All data are at Eurovent condition at 400V/3Ph/50Hz at nominal Airflow, Nominal ESP
Summer: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 1.6

Performance	Size	120	150	170
Nominal Airflow	**m³/h**	**20500**	**26000**	**30000**
Indoor fan (Centrifugal fan BWM/FWM)				
Number x Drive type	Type	2 x ADH 355 L	2 x ADH 450 L	2 x ADH 450 L
Mechanical Power Input gas (1)	kW	2 x 4	2 x 4	2 x 5.5
Power input at nominal airflow		7,87	7,81	10,56
Rotation speed (S / H) (5)	rpm	1022 / 1050	728 / 755	794 / 817
Filter (furnished standard)				
Type	Eurovent	80-85% / G3	80-85% / G3	80-85% / G3
Nb of filter	Nb	8	12	12
Filter size	mm x mm	625 x 500 x 50	625 x 500 x 50	625 x 500 x 50
Dimensions				
Lenght	mm	3348	4385	4385
Height	mm	1510	1830	1830
Width with/without fresh air hood (6)	mm	2290/2705	2290/2705	2290/2705
Weight standard unit BWH - FWH	kg	955	1237	1300
Weight gas unit Small/ High	kg	1062 / 1132	1478 / 1501	1541 / 1564
Acoustic @ 150 Pa				
Outside sound power	dB(A)	78	80	83
Indoor blower outlet sound power on BWH - FWH	dB(A)	89	91	94
Indoor blower outlet sound power on BWM - FWM	dB(A)	89	88	90
Construction				
Casing material (8)		Aluminum	Aluminum	Aluminum
Painting	Type/RAL	polyester / 9002	polyester / 9002	polyester / 9002
Airflow side wall Insulation Class	Type	MO	MO	MO
Cooling mode operating limits				
Max. inlet water temp at indoor 27°C DB/ 19°C WB (9)	°C	46	46	46
Max. inlet water temp with unloading	°C	48	48	48
Min. inlet water temp. at indoor 20°C DB (7)	°C	25	25	25
Max. inlet water temp 100% fresh air at outdoor 35°C	°C	38	38	38
Heat pump mode operating limits				
Min. inlet glycoled water temp. at indoor 20°C DB (9)	°C	-15	-15	-15
Min outdoor temp with unloading	°C	-17	-17	-17
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: Water temperatures 30 / 35°C
Entering coil temperature 27°C DB / 19°C WB
Winter: Water temperatures 20 / 15°C
Entering coil temperature 20°C DB

(2) EER Gross = Gross Cool Cap./ (Total power input - Pabs Supply fan)
COP Gross = (Net heating Cap. - Supply motor Heating Power) / (Total power input - Pabs Supply fan)

(3) EER Net = (Gross Cool. Cap - Supply motor Heating Power)/ Total power input
COP Net = Net heating Cap. / Total power input

(4) At nominal airflow

(5) S = Small, H = Hight

(6) At down return air and down supply air configuration

(7) Below this value, option "Flow Control Option" 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) According to PrEN 14825

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 2.1

		Size	45	55	65	75
Nominal Airflow		**m³/h**	**8100**	**9000**	**11500**	**13500**
Heating - Electric						
Type of modulation			Staged on S / Triac on M & H			
Heating capacity available	S	kW	27	27	27	27
	M	kW	45	45	45	45
	H	kW	54	54	54	54
Amps S / M / H		A	38 / 63 / 75	38 / 63 / 75	38 / 63 / 75	38 / 63 / 75
Gas modulating						
Modulation Range		%	40-100	40-100	20-100	20-100
Supply Fan option						
Type			Direct Drive			
Nb of fans			1	1	1	1
Fans reference			AT 15-15 S	AT 15-15 S	AT 15-11 G2L	AT 15-11 G2L
Electrical power at nominal conditions		kW	1,9	2,4	2,6	3,7
Max available pressure		Pa	800	800	800	800
Low water loop temperature option						
Type			2 way valve			
Signal			0 - 10 V			
Axial exhaust fan						
Nb of fans			2	2	3	3
Fan Diameter			450	450	450	450
Centrifugal exhaust fan						
Nb of fans			1	1	1	1
Type			Centrifugal			
Fan reference			AT10-10G2L		AT10-11G2L	
Energy recovery module						
Type of exchanger			Plate heat exchanger			
Protection against frosting on exhaust air			Air Differential Pressure Switch 20 to 300 Pa			
Lenght		mm	1487	1487	1835	1835
Height		mm	1201	1201	1201	1201
Width with/without fresh air hood		mm	1861 / 1373	1861 / 1373	1861 / 1373	1861 / 1373
Weight		kg	229	229	317	317
Heating capacity IDDB=23°C ODDB=0°C		kW	28	31	37	43
Outlet temperature before rooftop indoor coil		°C	10	10	10	10
Heating Efficiency (on fresh air)		%	42	4	42	41
Cooling capacity IDDB=24°C50% ODDB=35°C 40%		kW	13	14	17	19
Outlet temperature before rooftop indoor coil in cooling		°C	30	30	30	30
Cooling Efficiency (on fresh air)		%	46	45	45	45
Filter number Fresh air / Return air			2 / 2	2 / 2	3 / 3	3 / 3
Filter G4 and G4+F7						
Efficiency (gravimetric) / class EN779 / Eurovent G4		Type	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4	90%/G4/EU4
Nb of filter		Nb	4	4	4+2	4+2
Filter size		mm	500x625x50	500x625x50	500x600x50 500x600x50	500x600x50 500x600x50
Fire class		Type	M1	M1	M1	M1
Dynamic Defrost						
Axial fan number		Nb	2	2	2	2
Motor power (total)		kW	1,48	1,48	1,6	1,6
Soft start option						
Drive type		Type	1x AT15-15S	1x AT15-15S	1x AT15-11G2L	1x AT15-11G2L
Drive type (gas)		Type	1x AT15-15S	1x AT15-15S	1x AT15-11G2L	1x AT15-11G2L
Soft Starter		Available	Yes	Yes	Yes	Yes

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 2.2

		Size	85	100	120	150	170
Nominal Airflow		**m³/h**	**15000**	**18500**	**20500**	**26000**	**30000**
Heating - Electric							
Type of modulation			Staged on S / Triac on M & H				
Heating capacity available	S	kW	30	30	30	45	45
	M	kW	54	54	54	72	72
	H	kW	72	72	72	108	108
Amps S / M / H		A	42/75/100	42/75/100	42/75/100	63/100/150	63/100/150
Gas modulating							
Modulation Range		%	20-100	20-100	20-100	20-100	20-100
Supply fan option							
Type			EC Fan				
Nb of fans			2	2	2	2	2
Fan reference			K3G 630				
Electrical power at nominal conditions		kW	2,1	2,8	3,3	3,7	4,7
Max available pressure		Pa	500	450	350	450	400
Low water loop temperature option							
Type			2 way valves				
Signal			0 - 10 V				
Axial exhaust fan							
Nb of fans			3	3	3	3	3
Fan Diameter			450	450	450	560	560
Centrifugal exhaust fan							
Nb of fans			2	2	2	2	2
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
Light Power		W	2 x 25 W	2 x 25 W	4 x 25 W	4 x 25 W	4 x 25 W
Efficiency (1)		%	98	98	99	99	99
Energy recovery module							
Type of exchanger			Wheel exchanger				
Protection against frosting on exhaust air			Air Differential Pressure Switch 20 to 300 Pa				
Lenght		mm	2210	2210	2210	2400	2400
Height		mm	1915	1915	1915	2200	2200
Width with/without fresh air hood		mm	1715 / 1300	1715 / 1300	1715 / 1300	2060 / 1615	2060 / 1615
Weight		kg	478	478	478	600	600
HEATING capacity IDDB=23°C ODDB=0°C		kW	68	77	82	111	120
Outlet temperature before rooftop indoor coil		°C	14	13	12	13	12
Heating Efficiency (on fresh air)		%	59%	54%	52%	55%	52%
COOLING capacity IDDB=24°C50% ODDB=35°C 40%		kW	34	38	40	54	59
Outlet temperature before rooftop indoor coil in cooling		°C	31	30	30	30	30
Cooling Efficiency (on fresh air)		%	64%	59%	56%	59%	56%
Filter number Fresh air / Return air			3 / 3			4 / 4	
Filter G4 and G4+F7							
Efficiency (gravimetric) / class EN779 / Eurovent G4		Type	90% / G4 / EU4	90% / G4 / EU4	90% / G4 / EU4	90% / G4 / EU4	90% / G4 / EU4
Efficiency (opacimetric) / class EN779 / Eurovent F7		Type	85% / F7 / EU7	85% / F7 / EU7	85% / F7 / EU7	85% / F7 / EU7	85% / F7 / EU7
Nb of filter		Nb	8	8	8	12	12
Filter size		mm	625 x 500 x 50	625 x 500 x 50	625 x 500 x 50	625 x 500 x 50	625 x 500 x 50
Fire class		Type	M1	M1	M1	M1	M1
Dynamic Defrost							
Axial fan number		Nb	2	2	2	2	2
Motor power (total)		kW	1,8	1,8	2,0	4,6	4,6
Soft start option							
Drive type		Type	1 x AT 15-15 G2L	1 x AT 15-15 G2L	1 x AT 15-15 G2L	2 x AT 18-18 S	2 x AT 18-18 S
Drive type (GAZ)		Type	2 x ADH 355 L	2 x ADH 355 L	2 x ADH 355 L	2 x ADH 450 L	2 x ADH 450 L
Soft Starter		Available	Yes	Yes	Yes	Yes	Yes

(1) Bacteria elimination rate after 2 seconds of UV-C exposure

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, percentage of fresh air and external static pressure (to overcome system losses, example ductwork, diffusers.)
D. 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 3.18 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 6.18 with the required air flow and static pressure. (Do not forget to add the pressure drop for accessories in table 8.1)

Step 3 : Heating capacity

A. Heat pump (*)
The selection procedure is the same as that undertaken for 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 to 3.18.
Obtain the net capacity by adding the calorific power of the supply fan motor (selected above) to the gross capacity.

B. Other Heating
Select gas burner in table 4.1.

(*) : 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

Data from table 9.1 and 9.2

This step permits to calculate the maximum intensity (Ia) and the maximum electrical power (Pa) the unit can absorbed.

Pa = P(Unit + Delta indoor kit + Extraction fan** + Gas heater** + Energy Recovery**)
Ia = Ia(Unit + Delta indoor kit + Extraction fan** + Gas heater** + Energy Recovery**)

Id/Ia(base) = Tables table 9.1 and 9.2
Id=Ia(base) x Id/Ia(base) + Ia(Delta kit indoor + Extraction fan** + Electric or Gas heater** + Energy Recovery**)

(**) : if this option is required.

EXAMPLE

Step 1

A. 130kW
B. 35°C Water Outlet Temperature (DT=5°C, 24°C DB, 19°C WB entering air condition (room return air)
C. 20500 m³/h at 200Pa
D. Economiser and extraction fans options

Step 2

A. Table 1.5 shows that FWH120 will give 138,0 kW gross at nominal operating conditions.

B. Table 3.13 shows that a
FWH120 has a gross cooling capacity of 136,7 kW.

C. Table 8.1 shows that economiser will add 36 Pa to the external static specified, giving a total of 236 Pa.
*The table 6.5 shows that fan drive kit 'K6 (1*7,5 kW) is required for a FWH120 providing 20500 m³/h at 250 Pa.*
The net capacity is therefore
136,7 kW – 5,23 kW = 131,5 kW

Step 4

A. Table 9.1 shows that an FWH120 with extraction fans + Kit K6:

Pa= 51.9 + 2.2 + 0.9 =55 kW
Ia= 84.4 + 4.3 + 1.8 = 90.5 A

Id / Ia = 3,0
Id = 84,4 x 3,0 + 4,3 = 257,5 A

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

45 Size

Table 3.1

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
6500	16	21	44,6	31,4	7,2	42,9	30,5	8,1	41,0	29,6	9,1	39,0	28,6	10,3	36,8	27,5	11,5
		24	44,8	38,1	7,2	43,2	37,0	8,1	41,4	35,9	9,1	39,5	34,8	10,3	37,4	33,5	11,5
		27	45,6	41,9	7,3	44,1	40,9	8,2	42,5	39,8	9,2	40,7	38,6	10,3	38,7	37,3	11,6
		30	47,0	43,0	7,4	45,7	42,1	8,2	44,1	41,1	9,3	42,4	40,1	10,4	40,5	38,9	11,7
	19	24	49,1	30,0	7,4	47,2	29,3	8,3	45,2	28,6	9,3	43,1	27,8	10,4	40,7	26,9	11,7
		27	48,7	38,0	7,4	47,0	37,1	8,3	45,1	36,1	9,3	43,1	35,1	10,4	40,8	33,9	11,7
		30	49,0	42,7	7,4	47,4	41,7	8,3	45,6	40,7	9,3	43,7	39,6	10,5	41,6	38,4	11,7
		33	50,0	44,2	7,5	48,5	43,4	8,4	46,8	42,4	9,4	44,9	41,4	10,5	42,9	40,3	11,8
	22	27	53,7	27,7	7,6	51,7	27,3	8,5	49,6	26,8	9,5	47,3	26,3	10,6	44,8	25,7	11,8
		30	52,8	37,3	7,6	51,0	36,5	8,5	48,9	35,7	9,5	46,7	34,9	10,6	44,4	33,9	11,8
		33	52,6	43,0	7,6	50,9	42,2	8,5	48,9	41,3	9,5	46,8	40,3	10,6	44,6	39,1	11,9
		36	53,0	45,3	7,7	51,4	44,5	8,6	49,5	43,6	9,6	47,5	42,6	10,7	45,4	41,6	12,0
8100	16	21	46,8	34,5	7,3	45,0	33,4	8,1	43,0	32,3	9,2	40,9	31,1	10,3	38,7	29,9	11,5
		24	47,5	42,2	7,3	45,8	41,0	8,2	44,0	39,7	9,2	41,9	38,3	10,3	39,8	36,8	11,6
		27	48,8	47,0	7,3	47,2	45,8	8,2	45,5	44,5	9,2	43,6	43,1	10,3	41,5	41,6	11,6
		30	50,7	48,8	7,4	49,3	47,7	8,3	47,6	46,6	9,3	45,8	45,3	10,4	43,8	44,0	11,7
	19	24	51,4	33,5	7,4	49,5	32,6	8,3	47,4	31,7	9,3	45,2	30,8	10,4	42,8	29,7	11,7
		27	51,6	42,5	7,4	49,8	41,4	8,3	**47,6**	**40,3**	**9,3**	45,7	39,0	10,4	43,3	37,7	11,7
		30	52,4	48,2	7,5	50,7	47,1	8,4	48,8	45,9	9,4	46,8	44,5	10,5	44,5	43,1	11,7
		33	53,8	50,6	7,6	52,2	49,5	8,4	50,4	48,4	9,4	48,5	47,2	10,6	46,4	45,9	11,8
	22	27	56,2	31,7	7,6	54,2	31,0	8,5	51,9	30,4	9,5	49,5	29,7	10,6	47,0	28,9	11,8
		30	55,9	42,3	7,6	53,9	41,4	8,5	51,8	40,4	9,5	49,5	39,3	10,6	47,0	38,1	11,8
		33	56,2	49,1	7,7	54,3	48,1	8,5	52,3	46,9	9,5	50,1	45,7	10,6	47,7	44,4	11,9
		36	57,1	52,3	7,7	55,3	51,3	8,6	53,4	50,2	9,6	51,3	49,0	10,7	49,0	47,7	12,0
10800	16	21	48,2	36,8	7,4	46,3	35,5	8,3	44,2	34,1	9,3	41,9	32,7	10,4	39,5	31,2	11,7
		24	49,8	45,9	7,5	47,9	44,4	8,3	45,9	42,8	9,3	43,7	41,2	10,5	41,4	39,4	11,7
		27	51,9	52,2	7,5	50,2	50,7	8,4	48,3	49,1	9,4	46,2	47,4	10,5	43,9	45,6	11,8
		30	54,7	55,4	7,6	53,0	54,0	8,5	51,2	52,5	9,5	49,3	50,9	10,6	47,1	49,3	11,9
	19	24	53,2	36,7	7,6	51,1	35,5	8,5	48,9	34,3	9,5	46,4	33,1	10,6	43,9	31,8	11,8
		27	54,2	47,2	7,6	52,2	45,8	8,5	50,1	44,3	9,5	47,8	42,7	10,6	45,3	41,1	11,8
		30	55,8	54,5	7,7	54,0	53,0	8,5	51,9	51,4	9,5	49,7	49,7	10,7	47,3	47,9	11,9
		33	58,1	58,3	7,8	56,3	56,9	8,6	54,3	55,4	9,6	52,2	53,8	10,8	49,9	52,1	12,0
	22	27	58,3	35,8	7,8	56,1	34,8	8,6	53,7	33,8	9,6	51,1	32,8	10,7	48,4	31,7	12,0
		30	58,8	48,0	7,8	56,6	46,7	8,7	54,4	45,3	9,6	51,9	43,9	10,8	49,3	42,4	12,0
		33	59,9	56,4	7,8	57,9	55,0	8,7	55,7	53,5	9,7	53,3	51,9	10,8	50,8	50,2	12,1
		36	61,6	61,1	7,9	59,7	59,7	8,8	57,6	58,2	9,8	-	-	-	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.2

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
6500	8	58,1	9,3	54,3	8,8	50,7	8,4	47,2	8,0	43,8	7,7	40,4	7,3	37,1	6,9
	11	57,2	9,8	53,5	9,3	49,9	8,9	46,4	8,5	43,1	8,1	39,8	7,8	36,6	7,4
	14	56,2	10,4	52,6	9,9	49,1	9,5	45,7	9,1	42,4	8,7	39,2	8,3	36,1	7,9
	17	55,3	10,9	51,7	10,5	48,2	10,0	44,9	9,6	41,8	9,2	38,6	8,9	35,5	8,5
	20	54,3	11,6	50,8	11,1	47,4	10,7	44,2	10,2	41,1	9,8	38,1	9,5	35,0	9,1
	23	53,4	12,3	49,9	11,8	46,6	11,3	43,5	10,9	40,4	10,5	37,5	10,1	34,5	9,7
	26	52,4	13,0	49,1	12,5	45,8	12,0	42,7	11,6	39,8	11,2	36,9	10,8	34,0	10,4
8100	8	59,6	8,4	55,6	8,1	51,8	7,7	48,1	7,3	44,6	7,0	41,1	6,7	37,6	6,4
	11	58,6	8,9	54,7	8,5	51,0	8,2	47,4	7,8	43,9	7,5	40,5	7,2	37,1	6,8
	14	57,7	9,5	53,9	9,1	50,2	8,7	46,7	8,3	43,3	8,0	39,9	7,7	36,6	7,3
	17	56,7	10,0	53,0	9,6	49,4	9,2	45,9	8,9	42,6	8,5	39,4	8,2	36,1	7,9
	20	55,8	10,6	**52,1**	**10,2**	48,6	9,8	45,2	9,4	41,9	9,1	38,8	8,8	35,6	8,4
	23	54,8	11,3	51,2	10,9	47,8	10,5	44,5	10,1	41,3	9,7	38,2	9,4	35,1	9,0
	26	53,9	12,0	50,3	11,5	47,0	11,1	43,7	10,7	40,6	10,4	37,6	10,0	34,6	9,7
10800	8	61,2	7,7	57,0	7,3	53,0	7,0	49,1	6,8	45,3	6,5	41,5	6,3	-	-
	11	60,3	8,1	56,2	7,8	52,2	7,5	48,3	7,2	44,6	7,0	41,0	6,7	37,3	6,5
	14	59,3	8,6	55,3	8,2	51,4	7,9	47,6	7,7	44,0	7,4	40,4	7,2	36,8	6,9
	17	58,4	9,1	54,4	8,8	50,6	8,4	46,9	8,2	43,3	7,9	39,8	7,6	36,3	7,4
	20	57,4	9,7	53,5	9,3	49,8	9,0	46,1	8,7	42,6	8,4	39,2	8,2	35,8	7,9
	23	56,5	10,3	52,7	9,9	49,0	9,6	45,4	9,3	42,0	9,0	38,6	8,7	35,3	8,5
	26	55,5	10,9	51,8	10,5	48,2	10,2	44,7	9,9	41,3	9,6	38,1	9,3	34,8	9,1

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

55 Size

Table 3.3

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
7200	16	21	52,4	34,2	9,2	50,5	33,3	10,3	48,4	32,4	11,5	46,1	31,5	12,8	43,7	30,4	14,3
		24	52,6	42,1	9,2	50,7	41,0	10,3	48,7	39,8	11,5	46,5	38,5	12,8	44,2	37,1	14,3
		27	53,4	48,5	9,2	51,6	47,2	10,3	49,7	45,9	11,5	47,6	44,4	12,9	45,3	42,8	14,4
		30	54,8	53,4	9,2	53,1	52,1	10,3	51,2	50,6	11,6	49,2	49,1	12,9	47,0	47,4	14,4
	19	24	57,8	32,8	9,3	55,6	32,2	10,4	53,2	31,6	11,6	50,7	30,8	13,0	48,0	29,9	14,5
		27	57,7	42,0	9,3	55,5	41,0	10,4	53,2	40,0	11,6	50,8	38,8	13,0	48,2	37,6	14,5
		30	58,1	49,2	9,3	56,1	48,0	10,4	53,9	46,8	11,7	51,5	45,4	13,0	49,0	43,8	14,5
		33	59,2	54,8	9,4	57,3	53,5	10,5	55,1	52,1	11,7	52,8	50,5	13,1	50,4	48,9	14,6
	22	27	63,7	30,4	9,5	61,2	30,1	10,6	58,6	29,7	11,8	55,8	29,3	13,2	52,8	28,7	14,7
		30	63,2	41,0	9,5	60,8	40,3	10,6	58,3	39,4	11,8	55,6	38,5	13,2	52,7	37,5	14,7
		33	63,4	49,3	9,5	61,0	48,3	10,6	58,6	47,2	11,9	55,9	45,9	13,2	53,1	44,5	14,7
		36	64,1	55,6	9,6	61,9	54,5	10,7	59,5	53,1	11,9	56,9	51,7	13,3	54,2	50,1	14,8
9000	16	21	57,0	39,4	9,0	54,9	38,4	10,1	52,6	37,3	11,3	50,2	36,1	12,7	47,6	34,9	14,2
		24	57,6	48,2	9,0	55,5	46,9	10,1	53,3	45,5	11,3	51,0	44,0	12,7	48,5	42,4	14,2
		27	58,8	55,4	9,1	56,8	53,9	10,1	54,7	52,3	11,4	52,4	50,7	12,7	50,0	48,9	14,2
		30	60,6	61,0	9,1	58,7	59,4	10,2	56,6	57,8	11,4	54,4	56,0	12,8	52,1	54,1	14,3
	19	24	62,3	38,5	9,2	59,9	37,7	10,3	57,4	36,8	11,5	54,7	35,8	12,8	51,9	34,7	14,3
		27	62,6	48,5	9,2	60,3	47,3	10,3	**57,8**	**46,1**	**11,5**	55,2	44,7	12,9	52,4	43,2	14,4
		30	63,4	56,5	9,2	61,2	55,1	10,3	58,8	53,6	11,5	56,3	52,0	12,9	53,6	50,3	14,4
		33	64,9	62,8	9,3	62,8	61,2	10,4	60,5	59,6	11,6	58,0	57,9	13,0	55,4	56,0	14,5
	22	27	68,1	36,5	9,4	65,5	36,0	10,5	62,7	35,4	11,7	59,8	34,7	13,1	56,6	33,9	14,6
		30	68,1	47,9	9,4	65,5	47,0	10,5	62,8	46,0	11,7	59,9	44,8	13,1	56,9	43,5	14,6
		33	68,6	57,1	9,4	66,1	55,8	10,5	63,5	54,5	11,8	60,7	53,0	13,1	57,7	51,4	14,6
		36	69,8	64,1	9,5	67,4	62,7	10,6	64,8	61,2	11,8	62,1	59,5	13,2	59,2	57,7	14,7
10800	16	21	57,2	41,3	9,3	55,0	40,1	10,4	52,5	38,8	11,6	49,9	37,4	13,0	47,2	35,9	14,5
		24	58,2	50,3	9,3	56,0	48,8	10,4	53,6	47,2	11,7	51,1	45,5	13,0	48,5	43,7	14,5
		27	59,8	57,9	9,4	57,7	56,2	10,5	55,4	54,4	11,7	53,0	52,4	13,1	50,4	50,4	14,6
		30	62,0	63,8	9,5	60,0	62,1	10,6	57,8	60,2	11,8	55,4	58,2	13,2	52,9	56,0	14,7
	19	24	62,5	41,0	9,5	60,0	40,0	10,6	57,3	38,9	11,8	54,4	37,7	13,2	51,4	36,3	14,7
		27	63,2	51,3	9,5	60,7	49,8	10,6	58,1	48,3	11,8	55,3	46,7	13,2	52,4	45,0	14,7
		30	64,5	59,6	9,6	62,1	58,0	10,7	59,5	56,2	11,9	56,8	54,3	13,3	54,0	52,3	14,8
		33	66,3	66,2	9,6	64,0	64,5	10,7	61,6	62,6	12,0	58,9	60,5	13,4	56,1	58,4	14,9
	22	27	68,3	39,9	9,7	65,5	39,1	10,8	62,6	38,3	12,0	59,4	37,3	13,4	56,2	36,2	14,9
		30	68,7	51,5	9,8	65,9	50,3	10,8	63,0	48,9	12,1	60,0	47,5	13,4	56,8	45,9	14,9
		33	69,6	60,9	9,8	66,9	59,4	10,9	64,1	57,7	12,1	61,2	56,0	13,5	58,1	54,0	15,0
		36	71,1	68,3	9,9	68,6	66,6	11,0	65,8	64,8	12,2	62,9	62,8	13,6	59,9	60,7	15,1

HEATING CAPACITY AND ABSORBED POWER

Table 3.4

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
7200	8	69,8	12,1	65,7	11,5	61,6	11,0	57,5	10,5	53,4	10,1	49,3	9,7	45,3	9,2
	11	68,8	12,8	64,7	12,2	60,7	11,7	56,7	11,2	52,7	10,7	48,7	10,3	44,8	9,8
	14	67,7	13,5	63,8	12,9	59,8	12,4	55,9	11,9	52,0	11,4	48,1	10,9	44,2	10,5
	17	66,7	14,3	62,8	13,7	58,9	13,1	55,1	12,6	51,3	12,1	47,5	11,7	43,7	11,2
	20	65,5	15,1	61,7	14,5	58,0	13,9	54,2	13,4	50,5	12,9	46,8	12,4	43,1	11,9
	23	64,4	16,0	60,7	15,3	57,0	14,8	53,3	14,2	49,7	13,7	46,1	13,2	42,5	12,7
	26	63,2	16,9	59,6	16,2	56,0	15,6	52,4	15,1	48,9	14,6	45,4	14,1	41,9	13,6
9000	8	71,7	11,0	67,4	10,5	63,0	10,0	58,7	9,6	54,5	9,3	50,2	8,9	45,9	8,6
	11	70,7	11,6	66,4	11,1	62,2	10,6	58,0	10,2	53,8	9,8	49,6	9,5	45,5	9,1
	14	69,6	12,3	65,4	11,8	61,3	11,3	57,2	10,9	53,1	10,5	49,0	10,1	44,9	9,7
	17	68,5	13,0	64,5	12,5	60,4	12,0	56,4	11,5	52,4	11,1	48,4	10,8	44,4	10,4
	20	67,4	13,8	**63,4**	**13,1**	59,5	12,7	55,5	12,3	51,6	11,9	47,7	11,5	43,8	11,1
	23	66,3	14,6	62,4	14,0	58,5	13,5	54,6	13,1	50,8	12,6	47,0	12,2	43,2	11,8
	26	65,1	15,4	61,3	14,9	57,5	14,4	53,7	13,9	50,0	13,4	46,3	13,0	42,5	12,6
10800	8	73,1	10,3	68,5	9,9	64,0	9,5	59,5	9,2	55,0	8,9	50,6	8,6	46,1	8,3
	11	72,0	10,8	67,6	10,4	63,1	10,0	58,7	9,7	54,3	9,4	50,0	9,1	45,6	8,8
	14	71,0	11,5	66,6	11,0	62,3	10,6	57,9	10,3	53,7	10,0	49,4	9,7	45,1	9,4
	17	69,9	12,1	65,6	11,7	61,4	11,3	57,1	10,9	52,9	10,6	48,7	10,3	44,5	10,0
	20	68,8	12,8	64,6	12,4	60,4	12,0	56,3	11,6	52,2	11,2	48,1	10,9	44,0	10,6
	23	67,6	13,6	63,5	13,1	59,5	12,7	55,4	12,3	51,4	12,0	47,4	11,6	43,4	11,3
	26	66,5	14,4	62,4	13,9	58,5	13,5	54,5	13,1	50,6	12,7	46,6	12,4	42,7	12,0

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

65 Size

Table 3.5

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
8600	16	21	65,8	42,1	11,1	63,6	41,2	12,2	61,3	40,2	13,6	58,6	39,1	15,1	55,8	37,8	16,9
		24	65,7	52,0	11,1	63,6	50,8	12,2	61,4	49,5	13,6	58,8	48,0	15,1	56,0	46,4	16,9
		27	66,5	59,8	11,1	64,6	58,4	12,3	62,4	56,9	13,6	59,9	55,2	15,2	57,2	53,4	16,9
		30	68,3	65,7	11,2	66,4	64,2	12,3	64,3	62,6	13,7	62,0	60,9	15,2	59,4	58,9	17,0
	19	24	72,6	40,3	11,3	70,2	39,6	12,4	67,5	38,9	13,8	64,6	38,0	15,3	61,4	37,1	17,0
		27	72,0	51,7	11,3	69,7	50,7	12,4	67,2	49,5	13,8	64,4	48,2	15,3	61,3	46,8	17,0
		30	72,4	60,6	11,3	70,2	59,3	12,4	67,8	57,9	13,8	65,0	56,3	15,3	62,1	54,6	17,1
		33	73,8	67,2	11,4	71,6	65,8	12,5	69,3	64,3	13,8	66,6	62,5	15,4	63,8	60,6	17,1
	22	27	80,0	37,1	11,6	77,3	36,8	12,7	74,4	36,4	14,0	71,2	35,9	15,5	67,8	35,3	17,2
		30	79,1	50,4	11,6	76,5	49,6	12,7	73,6	48,7	14,0	70,5	47,7	15,5	67,2	46,6	17,2
		33	79,0	60,7	11,6	76,5	59,6	12,7	73,8	58,3	14,0	70,8	57,0	15,5	67,6	55,4	17,2
		36	79,9	68,2	11,6	77,5	66,9	12,7	74,9	65,5	14,0	72,0	63,9	15,5	68,8	62,1	17,2
11500	16	21	71,0	49,4	11,0	68,7	48,2	12,1	66,1	46,9	13,5	63,2	45,6	15,0	60,2	44,0	16,8
		24	71,6	60,3	11,0	69,3	58,8	12,2	66,8	57,2	13,5	64,1	55,4	15,0	61,1	53,5	16,8
		27	73,0	69,0	11,1	70,9	67,4	12,2	68,5	65,5	13,6	65,9	63,6	15,1	63,0	61,4	16,9
		30	75,5	75,7	11,2	73,4	73,9	12,3	71,1	72,1	13,6	68,6	70,0	15,2	65,8	67,8	16,9
	19	24	77,8	48,2	11,3	75,2	47,3	12,4	72,3	46,3	13,7	69,2	45,1	15,2	65,8	43,9	16,9
		27	77,9	60,6	11,3	75,4	59,3	12,4	**72,7**	**57,9**	**13,7**	69,6	56,3	15,2	66,3	54,5	16,9
		30	79,0	70,4	11,3	76,5	68,9	12,4	73,9	67,2	13,7	71,0	65,3	15,3	67,8	63,2	17,0
		33	80,9	77,8	11,4	78,6	76,1	12,5	76,0	74,3	13,8	73,2	72,3	15,3	70,1	70,1	17,1
	22	27	85,2	45,9	11,6	82,3	45,3	12,6	79,2	44,6	13,9	75,8	43,8	15,4	72,1	42,9	17,1
		30	84,9	60,1	11,6	82,1	59,0	12,7	79,1	57,8	13,9	75,8	56,5	15,4	72,2	55,0	17,1
		33	85,5	71,3	11,6	82,8	69,9	12,7	79,9	68,3	14,0	76,7	66,6	15,5	73,2	64,7	17,2
		36	87,1	79,6	11,7	84,5	78,0	12,8	81,6	76,3	14,0	78,5	74,4	15,5	75,2	72,3	17,2
16000	16	21	74,9	56,3	11,4	72,2	54,7	12,5	69,3	53,0	13,8	66,2	51,2	15,3	62,8	49,3	17,0
		24	76,5	68,1	11,5	73,9	66,2	12,6	71,1	64,2	13,9	68,0	62,0	15,4	64,8	59,7	17,1
		27	79,0	77,8	11,6	76,5	75,7	12,7	73,8	73,5	14,0	70,8	71,1	15,5	67,6	68,5	17,2
		30	82,4	85,3	11,7	80,0	83,2	12,8	77,4	80,9	14,1	74,5	78,4	15,6	71,4	75,8	17,4
	19	24	81,6	56,5	11,7	78,7	55,1	12,8	75,5	53,6	14,0	72,1	52,0	15,5	68,4	50,3	17,2
		27	82,8	69,7	11,7	79,9	67,9	12,8	76,9	66,0	14,1	73,5	64,0	15,6	70,0	61,7	17,3
		30	84,9	80,5	11,8	82,1	78,4	12,9	79,1	76,3	14,2	75,9	73,9	15,7	72,4	71,4	17,4
		33	87,9	88,7	11,9	85,2	86,6	13,0	82,3	84,3	14,3	79,2	81,8	15,8	75,8	79,2	17,5
	22	27	89,0	55,7	12,0	85,8	54,6	13,1	82,4	53,5	14,3	78,7	52,2	15,8	74,7	50,7	17,5
		30	89,8	70,7	12,1	86,6	69,1	13,1	83,3	67,4	14,4	79,7	65,5	15,9	75,8	63,5	17,5
		33	91,4	82,7	12,1	88,4	80,8	13,2	85,1	78,7	14,5	81,6	76,5	15,9	77,8	74,1	17,6
		36	94,0	91,9	12,3	91,1	89,8	13,3	87,9	87,6	14,6	84,5	85,2	16,0	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.6

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
8600	8	92,6	15,7	86,6	14,9	80,9	14,1	75,3	13,5	70,0	12,9	64,9	12,3	59,7	11,7
	11	90,9	16,4	85,1	15,6	79,5	14,9	74,1	14,2	69,0	13,6	64,0	13,0	59,0	12,5
	14	89,2	17,3	83,5	16,5	78,1	15,7	72,9	15,0	67,9	14,4	63,1	13,8	58,2	13,3
	17	87,4	18,2	81,9	17,3	76,7	16,6	71,6	15,9	66,8	15,3	62,2	14,7	57,5	14,1
	20	85,7	19,1	80,3	18,3	75,2	17,5	70,4	16,8	65,7	16,2	61,2	15,6	56,7	15,0
	23	83,9	20,1	78,7	19,3	73,8	18,5	69,1	17,8	64,6	17,2	60,3	16,6	55,9	16,0
	26	82,1	21,2	77,1	20,3	72,3	19,6	67,8	18,9	63,5	18,2	59,3	17,6	55,1	17,0
11500	8	96,4	13,8	90,0	13,1	83,8	12,5	77,9	11,9	72,2	11,4	66,7	10,9	61,1	10,5
	11	94,7	14,5	88,5	13,8	82,5	13,2	76,7	12,6	71,2	12,1	65,8	11,6	60,4	11,1
	14	93,0	15,3	86,9	14,6	81,1	13,9	75,5	13,3	70,1	12,8	64,9	12,3	59,7	11,8
	17	91,3	16,1	85,4	15,4	79,7	14,7	74,3	14,1	69,1	13,6	64,0	13,1	58,9	12,6
	20	89,5	17,0	**83,8**	**16,2**	78,3	15,6	73,0	15,0	68,0	14,5	63,1	14,0	58,2	13,5
	23	87,7	17,9	82,2	17,2	76,8	16,5	71,7	15,9	66,9	15,4	62,1	14,9	57,4	14,4
	26	85,9	18,9	80,5	18,2	75,4	17,5	70,5	16,9	65,8	16,4	61,2	15,8	56,6	15,3
16000	8	100,2	12,4	93,2	11,9	86,4	11,4	79,9	11,0	73,6	10,6	67,4	10,3	61,2	10,0
	11	98,6	13,0	91,7	12,5	85,1	12,0	78,7	11,6	72,6	11,2	66,5	10,9	60,5	10,5
	14	96,9	13,7	90,2	13,1	83,7	12,6	77,5	12,2	71,5	11,8	65,7	11,5	59,8	11,2
	17	95,1	14,4	88,6	13,8	82,3	13,3	76,3	12,9	70,5	12,5	64,8	12,2	59,1	11,8
	20	93,4	15,1	87,1	14,6	80,9	14,1	75,1	13,6	69,4	13,2	63,9	12,9	58,4	12,6
	23	91,7	16,0	85,5	15,4	79,5	14,9	73,8	14,4	68,3	14,1	63,0	13,7	57,6	13,4
	26	89,9	16,9	83,9	16,3	78,1	15,8	72,6	15,3	67,3	14,9	62,1	14,6	56,9	14,2

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

75 Size

Table 3.7

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
10800	16	21	76,2	49,3	13,3	74,0	48,2	14,6	71,4	47,0	16,1	68,4	45,7	17,9	65,2	44,3	20,1
		24	76,4	60,1	13,3	74,2	58,9	14,6	71,7	57,4	16,1	68,9	55,8	18,0	65,7	53,9	20,1
		27	77,3	69,0	13,4	75,3	67,6	14,6	72,9	66,0	16,1	70,1	64,2	18,0	67,1	62,1	20,1
		30	79,1	76,1	13,4	77,2	74,6	14,7	74,9	73,0	16,2	72,2	71,0	18,0	69,3	68,9	20,1
	19	24	84,0	47,4	13,6	81,5	46,6	14,8	78,6	45,7	16,3	75,3	44,7	18,1	71,8	43,5	20,2
		27	83,7	59,8	13,6	81,2	58,7	14,8	78,5	57,4	16,3	75,3	56,0	18,1	71,9	54,4	20,2
		30	84,2	69,8	13,6	81,9	68,5	14,8	79,2	67,0	16,3	76,1	65,3	18,1	72,8	63,4	20,2
		33	85,6	77,6	13,7	83,3	76,2	14,9	80,7	74,6	16,4	77,8	72,8	18,1	74,5	70,7	20,2
	22	27	92,6	44,0	14,0	89,7	43,6	15,1	86,5	43,1	16,6	83,0	42,5	18,3	79,2	41,7	20,3
		30	91,8	58,3	14,0	89,1	57,5	15,1	86,0	56,5	16,6	82,6	55,4	18,3	78,8	54,1	20,3
		33	91,9	69,6	14,0	89,2	68,5	15,1	86,2	67,3	16,6	82,9	65,8	18,3	79,3	64,2	20,3
		36	92,8	78,4	14,0	90,2	77,2	15,2	87,4	75,7	16,6	84,1	74,1	18,3	80,6	72,2	20,3
13500	16	21	82,7	57,2	13,2	80,1	55,9	14,4	77,3	54,4	15,9	74,1	52,8	17,7	70,5	51,1	19,8
		24	83,5	69,6	13,2	81,0	68,0	14,4	78,3	66,3	15,9	75,2	64,3	17,7	71,7	62,1	19,8
		27	85,1	80,1	13,3	82,8	78,3	14,5	80,1	76,3	16,0	77,1	74,2	17,8	73,8	71,7	19,9
		30	87,6	88,5	13,4	85,4	86,7	14,6	82,8	84,7	16,1	79,9	82,4	17,8	76,6	79,9	19,9
	19	24	90,4	56,1	13,5	87,6	55,1	14,7	84,4	53,9	16,1	81,0	52,6	17,9	77,1	51,1	19,9
		27	90,8	70,1	13,6	88,1	68,7	14,7	**85,0**	**67,1**	**16,2**	81,6	65,3	17,9	77,9	63,4	19,9
		30	92,0	81,7	13,6	89,4	80,0	14,8	86,4	78,2	16,2	83,1	76,1	17,9	79,5	73,8	20,0
		33	94,0	90,9	13,7	91,5	89,1	14,8	88,6	87,2	16,3	85,4	85,0	18,0	81,9	82,5	20,0
	22	27	99,0	53,8	13,9	95,9	53,1	15,0	92,4	52,2	16,4	88,6	51,3	18,1	84,5	50,2	20,1
		30	98,9	69,6	13,9	95,9	68,5	15,0	92,5	67,1	16,4	88,8	65,7	18,1	84,8	64,0	20,1
		33	99,6	82,5	14,0	96,7	81,1	15,1	93,5	79,4	16,5	89,9	77,6	18,2	85,9	75,5	20,1
		36	101,2	92,8	14,0	98,4	91,1	15,1	95,2	89,3	16,5	91,7	87,3	18,2	87,9	85,0	20,2
16000	16	21	84,7	60,5	13,7	81,9	59,0	14,8	78,9	57,3	16,3	75,5	55,5	18,1	71,8	53,5	20,1
		24	86,0	73,7	13,7	83,3	71,9	14,9	80,4	69,9	16,4	77,1	67,7	18,1	73,4	65,3	20,2
		27	88,1	85,0	13,8	85,5	83,0	15,0	82,7	80,8	16,4	79,5	78,3	18,2	75,9	75,7	20,2
		30	91,0	94,3	13,9	88,6	92,2	15,1	85,8	89,9	16,5	82,7	87,4	18,3	79,3	84,6	20,3
	19	24	92,4	60,2	14,0	89,4	58,9	15,1	86,0	57,5	16,6	82,4	56,0	18,3	78,3	54,2	20,3
		27	93,3	75,0	14,1	90,3	73,3	15,2	87,1	71,5	16,6	83,5	69,4	18,3	79,6	67,2	20,3
		30	94,9	87,3	14,1	92,1	85,4	15,3	89,0	83,3	16,7	85,5	81,0	18,4	81,6	78,4	20,4
		33	97,4	97,4	14,2	94,7	95,4	15,3	91,7	93,2	16,7	88,3	90,7	18,4	84,5	87,9	20,4
	22	27	100,9	58,8	14,4	97,6	57,8	15,5	94,0	56,7	16,9	90,0	55,5	18,5	85,7	54,2	20,5
		30	101,3	75,4	14,5	98,1	73,9	15,5	94,6	72,4	16,9	90,7	70,6	18,6	86,5	68,6	20,5
		33	102,6	89,1	14,5	99,5	87,4	15,6	96,0	85,5	16,9	92,2	83,3	18,6	88,1	80,9	20,5
		36	104,6	100,2	14,6	101,6	98,3	15,7	98,3	96,2	17,0	94,6	93,8	18,7	90,5	91,2	20,6

HEATING CAPACITY AND ABSORBED POWER

Table 3.8

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
10000	8	109	18,7	102	17,7	95,1	16,9	88,7	16,1	82,5	15,4	76,5	14,6	70,4	13,9
	11	107	19,6	100	18,6	93,5	17,8	87,3	17,0	81,3	16,2	75,5	15,5	69,6	14,8
	14	105	20,6	98,2	19,6	91,9	18,7	85,9	17,9	80,1	17,2	74,4	16,4	68,8	15,7
	17	103	21,6	96,4	20,7	90,3	19,8	84,4	18,9	78,8	18,2	73,4	17,4	67,9	16,7
	20	101	22,7	94,5	21,8	88,6	20,9	82,9	20,0	77,5	19,3	72,2	18,5	67,0	17,8
	23	99	23,9	92,6	23,0	86,8	22,1	81,4	21,2	76,2	20,4	71,1	19,7	66,0	18,9
	26	96	25,2	90,6	24,2	85,0	23,3	79,8	22,5	74,8	21,7	69,9	20,9	65,0	20,1
13500	8	114	16,4	106	15,6	98,9	14,9	91,9	14,3	85,1	13,7	78,5	13,2	71,9	12,6
	11	112	17,2	104	16,4	97,4	15,7	90,6	15,1	84,0	14,5	77,6	13,9	71,1	13,4
	14	110	18,1	103	17,3	95,8	16,6	89,2	15,9	82,8	15,3	76,6	14,7	70,3	14,2
	17	108	19,1	101	18,3	94,2	17,5	87,7	16,8	81,6	16,2	75,5	15,6	69,5	15,1
	20	106	20,1	**99,0**	**19,3**	92,5	18,5	86,2	17,8	80,3	17,2	74,4	16,6	68,6	16,0
	23	104	21,2	97,0	20,4	90,8	19,6	84,7	18,9	78,9	18,3	73,3	17,7	67,6	17,1
	26	101	22,4	95,1	21,5	89,0	20,8	83,2	20,0	77,6	19,4	72,1	18,8	66,6	18,2
16000	8	116	15,5	108	14,8	101	14,2	93,1	13,7	85,9	13,2	78,9	12,8	71,8	12,3
	11	114	16,2	106	15,5	99,0	14,9	91,8	14,4	84,8	13,9	77,9	13,4	71,1	13,0
	14	112	17,0	105	16,3	97,4	15,7	90,4	15,2	83,6	14,7	77,0	14,2	70,3	13,7
	17	110	17,9	103	17,2	95,8	16,6	89,0	16,0	82,4	15,5	75,9	15,0	69,5	14,6
	20	108	18,9	101	18,2	94,1	17,5	87,5	16,9	81,1	16,4	74,9	15,9	68,6	15,4
	23	106	19,9	99,1	19,2	92,4	18,5	86,0	17,9	79,8	17,4	73,7	16,9	67,7	16,4
	26	104	21,0	97,2	20,3	90,7	19,6	84,5	19,0	78,5	18,5	72,6	17,9	66,7	17,4

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

85 Size

Table 3.9

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
12000	16	21	86,5	55,4	15,2	83,9	54,3	16,6	80,8	53,1	18,3	77,4	51,7	20,4	73,6	50,1	22,8
		24	86,6	69,7	15,2	84,0	68,2	16,6	81,1	66,5	18,3	77,8	64,6	20,3	74,1	62,3	22,8
		27	87,9	80,6	15,2	85,5	78,8	16,6	82,6	76,8	18,3	79,4	74,5	20,4	75,8	71,9	22,8
		30	90,6	88,2	15,4	88,2	86,3	16,7	85,5	84,2	18,4	82,3	81,8	20,5	78,8	79,0	22,8
	19	24	95,2	52,4	15,6	92,3	51,7	16,9	88,9	50,8	18,5	85,2	49,8	20,6	81,1	48,5	22,9
		27	94,8	69,2	15,6	91,9	68,0	16,9	88,6	66,5	18,5	85,0	64,8	20,5	81,0	62,8	22,9
		30	95,6	81,9	15,6	92,8	80,3	16,9	89,6	78,4	18,6	86,1	76,3	20,6	82,2	73,8	22,9
		33	97,7	90,9	15,7	95,0	89,1	17,0	91,9	87,0	18,6	88,5	84,6	20,6	84,7	82,0	22,9
	22	27	104,8	47,2	16,0	101,5	46,9	17,3	97,9	46,5	18,9	93,9	46,0	20,8	89,4	45,3	23,1
		30	103,8	67,1	16,0	100,6	66,1	17,2	97,1	65,0	18,8	93,1	63,6	20,8	88,8	62,1	23,1
		33	104,1	82,1	16,0	101,0	80,6	17,3	97,5	79,0	18,9	93,7	77,1	20,8	89,4	74,9	23,1
		36	105,6	92,7	16,1	102,6	91,0	17,4	99,2	89,0	18,9	95,5	86,8	20,8	91,4	84,3	23,1
15000	16	21	90,7	62,8	15,0	87,9	61,5	16,3	84,7	60,0	18,0	81,1	58,3	20,1	77,2	56,4	22,5
		24	91,5	77,7	15,0	88,8	75,9	16,4	85,7	73,9	18,0	82,2	71,7	20,1	78,3	69,2	22,5
		27	93,6	89,0	15,1	91,0	87,0	16,4	88,0	84,7	18,1	84,6	82,2	20,1	80,8	79,3	22,5
		30	96,9	96,9	15,3	94,4	94,8	16,6	91,5	92,4	18,2	88,2	89,8	20,3	84,5	86,8	22,6
	19	24	99,4	60,7	15,4	96,3	59,7	16,7	92,8	58,5	18,3	88,9	57,2	20,3	84,6	55,6	22,6
		27	99,6	78,0	15,4	96,6	76,4	16,7	**93,2**	**74,6**	**18,3**	89,4	72,6	20,3	85,2	70,3	22,6
		30	101,2	91,2	15,5	98,2	89,2	16,8	94,9	87,1	18,4	91,2	84,6	20,3	87,1	81,9	22,6
		33	104,0	100,4	15,6	101,1	98,3	16,9	97,9	96,0	18,5	94,3	93,3	20,4	90,3	90,4	22,7
	22	27	108,9	56,6	15,8	105,5	56,0	17,1	101,7	55,2	18,6	97,5	54,4	20,6	92,9	53,3	22,8
		30	108,6	76,8	15,9	105,3	75,5	17,1	101,6	74,0	18,6	97,5	72,4	20,6	93,0	70,4	22,8
		33	109,6	92,1	15,9	106,4	90,4	17,1	102,7	88,5	18,7	98,7	86,2	20,6	94,3	83,7	22,8
		36	111,9	103,0	16,1	108,7	101,0	17,3	105,2	98,8	18,8	101,3	96,3	20,7	97,0	93,5	22,9
23000	16	21	97,8	76,7	15,7	94,5	74,7	17,0	90,9	72,5	18,6	86,9	70,0	20,6	82,5	67,3	22,9
		24	100,5	92,2	15,8	97,3	89,8	17,1	93,8	87,1	18,7	89,8	84,1	20,7	85,5	80,9	23,0
		27	104,5	104,2	16,0	101,4	101,5	17,3	97,9	98,6	18,9	94,1	95,3	20,8	89,9	91,8	23,1
		30	109,7	112,3	16,3	106,7	109,5	17,5	103,4	106,5	19,1	99,6	103,3	21,0	95,5	99,7	23,3
	19	24	106,4	77,2	16,2	102,8	75,4	17,4	98,8	73,4	18,9	94,5	71,2	20,8	89,8	68,7	23,1
		27	108,5	94,9	16,3	105,0	92,5	17,5	101,2	90,0	19,0	96,9	87,1	20,9	92,3	84,0	23,2
		30	111,9	108,5	16,5	108,6	105,9	17,7	104,8	103,0	19,2	100,6	99,8	21,1	96,1	96,3	23,3
		33	116,6	118,0	16,7	113,3	115,2	17,9	109,7	112,2	19,4	105,6	108,9	21,3	101,2	105,2	23,5
	22	27	115,8	76,0	16,7	111,9	74,5	17,8	107,6	72,9	19,3	103,0	71,0	21,2	98,0	69,0	23,4
		30	117,4	96,4	16,8	113,6	94,2	17,9	109,4	91,9	19,4	104,9	89,3	21,3	99,9	86,4	23,4
		33	120,3	112,1	17,0	116,6	109,5	18,1	112,5	106,8	19,6	108,0	103,7	21,4	-	-	-
		36	124,4	123,1	17,2	120,8	120,4	18,3	-	-	-	-	-	-	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.10

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
12000	8	121	19,5	113	18,6	106	17,7	98,6	16,9	91,6	16,2	84,7	15,5	77,9	14,8
	11	119	20,4	112	19,5	104	18,6	97,1	17,8	90,3	17,1	83,7	16,4	77,0	15,7
	14	117	21,4	110	20,5	103	19,6	95,6	18,8	89,0	18,1	82,6	17,4	76,1	16,7
	17	115	22,5	108	21,6	101	20,7	94,1	19,9	87,7	19,2	81,4	18,5	75,2	17,8
	20	113	23,7	106	22,8	99,1	21,9	92,6	21,1	86,4	20,4	80,3	19,6	74,2	18,9
	23	111	25,0	104	24,0	97,3	23,2	91,0	22,4	85,0	21,6	79,1	20,9	73,2	20,2
	26	108	26,3	102	25,4	95,5	24,5	89,4	23,7	83,6	22,9	77,9	22,2	72,2	21,5
15000	8	124	17,8	116	16,9	109	16,2	101	15,5	93,6	14,8	86,5	14,2	79,3	13,6
	11	122	18,6	115	17,8	107	17,0	99,5	16,3	92,4	15,7	85,4	15,1	78,4	14,4
	14	120	19,6	113	18,7	105	18,0	98,0	17,3	91,1	16,6	84,3	16,0	77,5	15,4
	17	118	20,6	111	19,8	104	19,0	96,5	18,3	89,8	17,6	83,2	17,0	76,6	16,4
	20	116	21,7	**109**	**20,9**	102	20,1	95,0	19,4	88,5	18,7	82,1	18,1	75,7	17,5
	23	114	23,0	107	22,1	100	21,3	93,4	20,6	87,1	19,9	80,9	19,3	74,7	18,6
	26	112	24,3	105	23,4	98,3	22,6	91,9	21,9	85,7	21,2	79,7	20,5	73,7	19,9
18000	8	130	15,7	121	15,1	112	14,6	104	14,1	95,7	13,6	87,7	13,2	79,7	12,8
	11	128	16,4	119	15,8	111	15,2	102	14,7	94,5	14,3	86,7	13,9	78,9	13,5
	14	126	17,2	117	16,6	109	16,0	101	15,5	93,3	15,1	85,7	14,6	78,1	14,2
	17	124	18,1	116	17,4	107	16,9	99,6	16,3	92,0	15,9	84,6	15,5	77,2	15,1
	20	122	19,0	114	18,4	106	17,8	98,1	17,3	90,8	16,8	83,5	16,4	76,3	16,0
	23	120	20,0	112	19,4	104	18,8	96,6	18,3	89,5	17,8	82,4	17,4	75,4	17,0
	26	118	21,2	110	20,5	102	19,9	95,1	19,4	88,1	18,9	81,3	18,5	74,5	18,1

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

100 Size

Table 3.11

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
14000	16	21	112,2	71,7	19,4	108,4	70,2	21,3	104,3	68,5	23,4	99,7	66,7	26,0	94,9	64,6	28,9
		24	112,9	89,2	19,5	109,3	87,1	21,3	105,2	84,8	23,5	100,8	82,3	26,0	96,1	79,5	29,0
		27	114,6	103,0	19,5	111,1	100,6	21,3	107,2	97,9	23,5	102,9	95,0	26,1	98,3	91,8	29,0
		30	117,4	113,4	19,6	114,0	110,8	21,4	110,2	107,9	23,6	106,1	104,8	26,2	101,6	101,3	29,1
	19	24	123,5	68,3	19,8	119,3	67,2	21,6	114,6	66,0	23,8	109,7	64,7	26,3	104,3	63,1	29,2
		27	123,7	88,4	19,8	119,6	86,6	21,6	115,1	84,7	23,8	110,2	82,5	26,3	104,9	80,1	29,2
		30	124,9	104,2	19,9	120,9	102,0	21,7	116,5	99,5	23,8	111,8	96,8	26,4	106,6	93,8	29,3
		33	127,1	116,0	19,9	123,2	113,5	21,7	119,0	110,8	23,9	114,4	107,8	26,4	109,4	104,4	29,3
	22	27	136,0	62,5	20,2	131,3	62,1	22,0	126,2	61,6	24,1	120,7	60,9	26,6	114,9	60,0	29,5
		30	135,6	85,8	20,2	131,0	84,5	22,0	126,0	83,1	24,1	120,7	81,4	26,6	115,0	79,5	29,5
		33	136,3	104,0	20,2	131,8	102,2	22,0	126,9	100,1	24,1	121,7	97,8	26,6	116,1	95,1	29,5
		36	137,9	117,7	20,3	133,6	115,4	22,1	128,9	113,0	24,2	123,8	110,2	26,7	118,3	107,1	29,6
18500	16	21	120,8	83,4	19,7	116,7	81,4	21,5	112,1	79,3	23,6	107,3	77,0	26,2	102,0	74,4	29,1
		24	122,5	102,6	19,7	118,4	100,0	21,5	114,0	97,3	23,7	109,3	94,3	26,2	104,1	91,0	29,1
		27	125,1	118,1	19,8	121,2	115,2	21,6	117,0	112,0	23,8	112,3	108,5	26,3	107,3	104,8	29,2
		30	128,8	129,9	19,9	125,1	126,8	21,7	120,9	123,4	23,9	116,4	119,7	26,4	111,5	115,8	29,4
	19	24	132,2	81,2	20,1	127,5	79,7	21,8	122,5	78,0	24,0	117,2	76,1	26,5	111,5	74,0	29,4
		27	133,3	103,0	20,1	128,8	100,8	21,9	**123,9**	**98,3**	**24,0**	118,7	95,6	26,5	113,1	92,7	29,4
		30	135,4	120,5	20,2	131,0	117,8	22,0	126,3	114,8	24,1	121,2	111,6	26,6	115,7	108,0	29,5
		33	138,5	133,8	20,3	134,3	130,8	22,1	129,7	127,5	24,2	124,7	124,0	26,7	119,4	120,1	29,6
	22	27	144,7	77,0	20,5	139,6	76,1	22,2	134,1	75,0	24,3	128,3	73,8	26,8	122,1	72,3	29,7
		30	145,2	101,9	20,5	140,2	100,2	22,3	134,9	98,2	24,4	129,2	96,0	26,9	123,1	93,4	29,7
		33	146,8	121,9	20,6	141,9	119,5	22,3	136,7	116,8	24,4	131,1	113,9	26,9	125,2	110,7	29,8
		36	149,4	137,0	20,7	144,7	134,2	22,4	139,6	131,2	24,5	134,1	127,8	27,0	128,3	124,2	29,9
23000	16	21	124,9	90,5	19,8	120,4	88,1	21,6	115,5	85,5	23,8	110,3	82,7	26,3	104,7	79,7	29,2
		24	127,5	110,9	19,9	123,1	107,8	21,7	118,4	104,6	23,9	113,2	101,1	26,4	107,7	97,3	29,3
		27	131,1	127,5	20,1	126,8	124,1	21,8	122,2	120,4	24,0	117,2	116,5	26,5	111,9	112,2	29,4
		30	135,7	140,5	20,2	131,6	136,8	22,0	127,1	132,9	24,1	122,2	128,7	26,7	117,0	124,3	29,5
	19	24	136,3	89,9	20,2	131,3	87,9	22,0	126,0	85,8	24,1	120,2	83,4	26,6	114,1	80,7	29,5
		27	138,3	112,8	20,3	133,5	110,1	22,1	128,2	107,1	24,2	122,6	103,9	26,7	116,7	100,3	29,6
		30	141,4	131,5	20,4	136,6	128,2	22,2	131,5	124,7	24,3	126,1	120,9	26,8	120,2	116,8	29,7
		33	145,5	145,9	20,6	140,9	142,4	22,3	135,9	138,5	24,5	130,6	134,4	26,9	124,9	129,9	29,8
	22	27	148,8	87,6	20,7	143,4	86,1	22,4	137,5	84,5	24,5	131,3	82,7	27,0	124,8	80,7	29,8
		30	150,3	113,6	20,8	145,0	111,2	22,5	139,3	108,7	24,6	133,2	105,8	27,0	126,8	102,7	29,9
		33	152,8	134,6	20,9	147,6	131,7	22,6	142,0	128,4	24,7	136,1	124,9	27,1	129,8	121,0	30,0
		36	156,3	150,9	21,0	151,3	147,5	22,7	145,8	143,9	24,8	140,0	139,9	27,3	133,8	135,6	30,1

HEATING CAPACITY AND ABSORBED POWER

Table 3.12

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
14000	8	150	26,2	141	24,9	132	23,7	123	22,5	114	21,5	105	20,5	97	19,5
	11	148	27,4	138	26,1	129	24,9	121	23,7	112	22,6	104	21,6	95	20,5
	14	145	28,8	136	27,4	127	26,2	118	25,0	110	23,9	102	22,8	94	21,7
	17	142	30,3	133	28,9	125	27,6	116	26,4	108	25,2	101	24,1	93	23,0
	20	139	31,8	131	30,4	122	29,1	114	27,8	107	26,7	99	25,6	92	24,4
	23	136	33,5	128	32,1	120	30,7	112	29,4	105	28,3	98	27,1	90	26,0
	26	133	35,3	125	33,8	118	32,5	110	31,2	103	29,9	96	28,8	89	27,6
18500	8	157	23,3	147	22,2	137	21,2	127	20,3	117	19,5	108	18,7	99	17,9
	11	154	24,4	144	23,3	134	22,3	125	21,3	116	20,5	107	19,6	98	18,8
	14	151	25,7	141	24,5	132	23,5	123	22,5	114	21,6	105	20,7	96	19,9
	17	148	27,0	139	25,8	130	24,7	121	23,7	112	22,8	104	21,9	95	21,0
	20	145	28,5	**136**	**27,2**	127	26,1	119	25,1	110	24,1	102	23,2	94	22,3
	23	142	30,0	134	28,8	125	27,6	116	26,6	108	25,6	100	24,6	92	23,7
	26	140	31,7	131	30,4	122	29,2	114	28,1	107	27,1	99	26,2	91	25,2
23000	8	161	21,7	150	20,8	140	20,0	129	19,3	119	18,7	109	18,1	99	17,5
	11	158	22,7	148	21,8	137	20,9	127	20,2	117	19,5	108	18,9	98	18,3
	14	155	23,8	145	22,8	135	22,0	125	21,2	115	20,5	106	19,9	97	19,2
	17	152	25,0	142	24,0	132	23,1	123	22,3	114	21,6	104	20,9	95	20,3
	20	150	26,3	140	25,3	130	24,4	121	23,6	112	22,8	103	22,1	94	21,4
	23	147	27,7	137	26,7	128	25,8	119	24,9	110	24,1	101	23,4	93	22,7
	26	144	29,3	134	28,2	125	27,3	116	26,4	108	25,6	99,5	24,8	91	24,0

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

120 Size

Table 3.13

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
15000	16	21	124,4	79,5	22,4	120,0	77,6	24,4	115,3	75,5	26,9	110,2	73,2	29,7	104,8	70,7	32,9
		24	125,5	97,7	22,4	121,2	95,3	24,5	116,6	92,6	26,9	111,6	89,7	29,8	106,3	86,5	33,0
		27	127,4	112,6	22,4	123,2	109,8	24,5	118,7	106,8	27,0	113,8	103,5	29,8	108,6	99,9	33,0
		30	130,1	124,3	22,5	126,0	121,3	24,6	121,6	118,1	27,1	116,8	114,6	29,9	111,7	110,8	33,1
	19	24	137,0	76,1	22,7	132,0	74,7	24,8	126,8	73,0	27,3	121,2	71,2	30,1	115,2	69,2	33,3
		27	137,5	96,8	22,8	132,7	94,7	24,8	127,5	92,4	27,3	122,0	89,8	30,1	116,2	87,0	33,3
		30	139,0	113,6	22,8	134,2	111,0	24,9	129,2	108,2	27,3	123,7	105,2	30,2	118,0	101,8	33,4
		33	141,2	126,7	22,9	136,6	123,9	24,9	131,6	120,8	27,4	126,3	117,4	30,3	120,7	113,8	33,5
	22	27	150,8	70,5	23,1	145,3	69,7	25,2	139,5	68,8	27,7	133,3	67,6	30,5	126,8	66,3	33,7
		30	150,9	94,2	23,1	145,5	92,6	25,2	139,8	90,8	27,7	133,7	88,8	30,5	127,3	86,5	33,8
		33	151,8	113,3	23,2	146,5	111,1	25,3	140,9	108,7	27,7	134,9	106,1	30,6	128,6	103,1	33,8
		36	153,6	128,1	23,2	148,4	125,6	25,3	142,9	122,9	27,8	137,0	119,8	30,7	130,8	116,4	33,9
20500	16	21	135,4	92,6	22,1	130,4	90,1	24,2	125,0	87,5	26,6	119,3	84,7	29,4	113,2	81,7	32,6
		24	137,4	113,6	22,2	132,5	110,6	24,2	127,2	107,3	26,7	121,6	103,8	29,5	115,7	100,0	32,7
		27	140,3	131,3	22,2	135,5	127,8	24,3	130,3	124,1	26,8	124,8	120,1	29,6	118,9	115,8	32,8
		30	144,0	145,5	22,3	139,3	141,8	24,4	134,2	137,8	26,9	128,8	133,6	29,7	123,0	129,0	32,9
	19	24	148,2	90,4	22,5	142,6	88,5	24,5	136,7	86,3	27,0	130,4	84,0	29,8	123,8	81,4	33,0
		27	149,7	114,0	22,5	144,2	111,3	24,6	**138,3**	**108,4**	**27,0**	132,2	105,3	29,9	125,7	101,8	33,1
		30	152,1	133,7	22,6	146,7	130,5	24,7	141,0	127,0	27,1	134,9	123,2	30,0	128,5	119,2	33,2
		33	155,3	149,5	22,7	150,0	145,9	24,8	144,4	142,1	27,2	138,4	138,0	30,1	132,1	133,5	33,3
	22	27	162,1	86,4	22,9	156,0	85,1	24,9	149,5	83,6	27,4	142,7	81,9	30,2	135,6	80,0	33,4
		30	163,2	113,0	22,9	157,2	110,9	25,0	150,8	108,5	27,4	144,1	105,8	30,3	137,0	102,8	33,5
		33	165,1	135,1	23,0	159,2	132,3	25,0	152,9	129,2	27,5	146,3	125,8	30,4	139,3	122,1	33,6
		36	167,8	152,7	23,0	162,0	149,5	25,1	155,8	146,0	27,6	149,3	142,1	30,5	142,5	137,9	33,7
23000	16	21	137,9	96,1	22,8	132,6	93,5	24,8	126,9	90,6	27,3	120,9	87,6	30,1	114,5	84,3	33,3
		24	140,3	118,2	22,9	135,1	114,8	24,9	129,5	111,3	27,4	123,6	107,5	30,2	117,4	103,4	33,4
		27	143,6	136,8	22,9	138,5	133,1	25,0	133,0	129,0	27,5	127,2	124,7	30,3	121,1	120,1	33,5
		30	147,8	152,1	23,1	142,7	148,1	25,1	137,4	143,8	27,6	131,7	139,2	30,4	125,6	134,2	33,6
	19	24	150,7	94,8	23,2	144,8	92,6	25,2	138,6	90,2	27,7	132,1	87,6	30,5	125,2	84,8	33,7
		27	152,7	119,4	23,2	146,9	116,4	25,3	140,8	113,2	27,7	134,3	109,7	30,5	127,5	106,0	33,8
		30	155,5	140,1	23,3	149,8	136,6	25,4	143,8	132,8	27,8	137,4	128,7	30,7	130,7	124,2	33,9
		33	159,2	156,9	23,4	153,6	153,0	25,5	147,7	148,9	27,9	141,4	144,4	30,8	134,8	139,5	34,0
	22	27	164,8	91,6	23,6	158,3	90,1	25,6	151,6	88,4	28,1	144,5	86,4	30,9	137,0	84,2	34,1
		30	166,2	119,3	23,6	159,9	116,8	25,7	153,3	114,1	28,1	146,3	111,1	31,0	138,9	107,8	34,2
		33	168,6	142,5	23,7	162,4	139,3	25,8	155,8	135,9	28,2	148,9	132,1	31,1	141,6	128,0	34,3
		36	171,8	161,2	23,8	165,7	157,6	25,9	159,2	153,7	28,3	152,4	149,5	31,2	145,2	144,9	34,4

HEATING CAPACITY AND ABSORBED POWER

Table 3.14

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
15000	8	168	30,9	157	29,2	147	27,7	137	26,3	127	25,0	118	23,8	108	22,6
	11	164	32,4	154	30,7	144	29,1	134	27,6	125	26,3	116	25,0	107	23,8
	14	161	34,0	151	32,2	141	30,6	132	29,1	123	27,7	114	26,4	105	25,1
	17	158	35,7	148	33,9	139	32,3	129	30,7	121	29,3	112	27,9	104	26,5
	20	155	37,6	145	35,8	136	34,1	127	32,4	119	31,0	110	29,6	102	28,1
	23	152	39,7	142	37,8	133	36,0	125	34,3	117	32,8	109	31,3	101	29,9
	26	149	41,8	140	39,9	131	38,0	123	36,3	115	34,8	107	33,2	99	31,7
20500	8	176	27,1	165	25,8	153	24,6	143	23,6	132	22,6	122	21,8	112	20,9
	11	173	28,4	161	27,0	151	25,8	140	24,7	130	23,7	120	22,8	110	21,9
	14	169	29,8	158	28,4	148	27,1	137	26,0	128	24,9	118	24,0	108	23,0
	17	166	31,3	155	29,9	145	28,5	135	27,3	125	26,3	116	25,3	107	24,3
	20	163	33,0	**152**	**31,4**	142	30,1	132	28,9	123	27,8	114	26,7	105	25,7
	23	159	34,8	149	33,3	139	31,8	130	30,5	121	29,4	112	28,3	103	27,2
	26	156	36,7	146	35,2	137	33,7	128	32,3	119	31,1	110	30,0	102	28,8
23000	8	179	26,0	167	24,9	156	23,9	145	23,0	134	22,3	123	21,6	112	20,9
	11	176	27,2	164	26,0	153	25,0	142	24,0	131	23,2	121	22,5	111	21,7
	14	172	28,5	161	27,3	150	26,2	139	25,2	129	24,4	119	23,6	109	22,8
	17	169	30,0	158	28,7	147	27,5	137	26,5	127	25,6	117	24,8	107	23,9
	20	166	31,5	155	30,2	144	29,0	134	27,9	124	27,0	115	26,1	105	25,2
	23	162	33,3	152	31,9	141	30,6	132	29,5	122	28,5	113	27,6	104	26,6
	26	159	35,1	149	33,7	139	32,4	129	31,2	120	30,2	111	29,2	102	28,2

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

150 Size

Table 3.15

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
18000	16	21	148,1	93,3	26,5	143,7	91,7	28,9	138,7	89,8	31,9	133,0	87,5	35,5	126,5	84,9	39,7
		24	148,1	117,1	26,5	143,9	114,8	28,9	139,0	112,0	31,9	133,5	108,8	35,5	127,3	105,2	39,6
		27	150,1	135,2	26,6	146,1	132,4	29,0	141,4	129,1	31,9	136,1	125,3	35,5	130,1	121,0	39,7
		30	154,2	147,8	26,8	150,4	144,8	29,1	145,9	141,2	32,1	140,7	137,2	35,6	134,9	132,6	39,8
	19	24	163,3	88,1	27,1	158,3	87,1	29,4	152,8	85,9	32,3	146,5	84,4	35,8	139,5	82,5	39,8
		27	162,3	115,9	27,1	157,6	114,0	29,4	152,2	111,7	32,2	146,1	109,1	35,7	139,3	105,9	39,8
		30	163,4	136,9	27,2	158,9	134,3	29,4	153,7	131,3	32,3	147,8	127,9	35,7	141,2	123,9	39,8
		33	166,6	151,5	27,4	162,3	148,6	29,6	157,2	145,2	32,4	151,5	141,3	35,8	145,1	136,9	39,8
	22	27	179,8	79,7	27,9	174,3	79,6	30,0	168,2	79,3	32,8	161,4	78,7	36,2	153,9	77,8	40,1
		30	178,0	112,4	27,9	172,7	111,1	30,0	166,7	109,5	32,7	160,1	107,5	36,1	152,8	105,1	40,0
		33	178,2	136,8	27,9	173,1	134,7	30,1	167,3	132,2	32,8	160,9	129,3	36,1	153,8	125,9	40,0
		36	180,4	153,9	28,1	175,5	151,3	30,2	170,0	148,3	32,9	163,7	144,8	36,2	156,8	140,8	40,1
26000	16	21	160,4	113,2	25,9	155,5	110,9	28,2	150,0	108,2	31,0	143,7	105,2	34,5	136,8	101,7	38,6
		24	162,3	139,3	26,0	157,6	136,2	28,2	152,2	132,7	31,1	146,2	128,7	34,6	139,4	124,2	38,7
		27	166,2	159,6	26,2	161,7	156,0	28,4	156,5	151,9	31,3	150,7	147,3	34,7	144,1	142,2	38,8
		30	172,2	174,0	26,4	167,9	170,1	28,6	162,9	165,8	31,5	157,2	161,0	34,9	150,9	155,6	39,0
	19	24	175,5	110,3	26,6	170,1	108,6	28,7	164,0	106,6	31,5	157,2	104,2	34,9	149,7	101,4	38,9
		27	176,5	140,3	26,7	171,3	137,6	28,8	**165,5**	**134,5**	**31,6**	158,8	131,0	34,9	151,5	126,9	38,9
		30	179,5	163,4	26,8	174,5	160,0	29,0	168,8	156,2	31,7	162,4	151,9	35,0	155,3	147,1	38,9
		33	184,6	179,7	27,1	179,8	176,0	29,2	174,2	171,8	31,9	168,0	167,1	35,2	161,1	161,9	39,1
	22	27	192,1	104,8	27,4	186,1	103,8	29,4	179,4	102,6	32,1	172,1	101,1	35,3	164,1	99,2	39,2
		30	192,1	139,4	27,5	186,3	137,2	29,5	179,9	134,7	32,1	172,7	131,8	35,3	164,9	128,4	39,2
		33	194,2	165,8	27,6	188,6	162,9	29,6	182,4	159,5	32,2	175,4	155,6	35,4	167,8	151,2	39,2
		36	198,4	184,7	27,9	193,0	181,2	29,8	186,9	177,3	32,4	180,2	172,9	35,6	172,7	168,0	39,4
35000	16	21	169,2	128,3	27,5	163,8	125,3	29,6	157,6	121,8	32,4	150,8	118,0	35,8	143,3	113,7	39,8
		24	173,3	156,3	27,7	168,0	152,4	29,8	162,0	148,1	32,6	155,4	143,3	35,9	148,1	137,9	39,9
		27	179,3	178,4	28,0	174,3	174,0	30,1	168,5	169,1	32,8	162,1	163,7	36,1	154,9	157,7	40,1
		30	187,5	194,1	28,3	182,6	189,5	30,4	177,0	184,3	33,1	170,8	178,7	36,5	163,8	172,5	40,4
	19	24	184,3	128,3	28,3	178,3	125,8	30,3	171,6	122,9	32,9	164,3	119,6	36,2	156,2	115,9	40,0
		27	187,4	160,0	28,5	181,6	156,4	30,5	175,1	152,4	33,1	167,9	148,0	36,3	160,1	143,0	40,1
		30	192,6	184,8	28,7	187,0	180,6	30,7	180,7	175,9	33,3	173,7	170,7	36,5	166,0	164,9	40,3
		33	199,9	202,6	29,1	194,4	198,0	31,0	188,3	193,0	33,6	181,5	187,4	36,8	174,0	181,3	40,6
	22	27	200,8	126,1	29,2	194,2	124,3	31,1	187,0	122,1	33,6	179,1	119,6	36,7	170,5	116,6	40,5
		30	203,0	162,1	29,4	196,7	159,1	31,2	189,6	155,6	33,7	181,9	151,7	36,8	173,4	147,3	40,5
		33	207,3	190,3	29,6	201,1	186,4	31,5	194,3	182,0	33,9	186,7	177,2	37,0	178,5	171,8	40,7
		36	213,6	210,5	29,9	207,6	206,2	31,8	201,0	201,4	34,2	193,6	196,0	37,3	-	-	-

HEATING CAPACITY AND ABSORBED POWER

Table 3.16

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
18000	8	197	33,8	185	32,1	172	30,6	161	29,1	149	27,8	138	26,5	127	25,2
	11	194	35,4	181	33,7	170	32,2	158	30,7	147	29,4	137	28,1	126	26,8
	14	190	37,1	178	35,5	167	33,9	156	32,4	145	31,1	135	29,8	125	28,5
	17	187	39,0	175	37,3	164	35,7	153	34,3	143	32,9	133	31,6	123	30,3
	20	183	41,0	172	39,3	161	37,7	151	36,2	141	34,9	131	33,6	122	32,3
	23	180	43,2	169	41,5	158	39,9	148	38,4	139	37,0	130	35,7	120	34,4
	26	176	45,4	165	43,7	155	42,1	146	40,6	136	39,2	128	37,9	119	36,6
26000	8	207	29,0	194	27,6	180	26,3	167	25,1	155	24,0	143	23,0	131	22,0
	11	204	30,3	191	28,9	178	27,6	165	26,5	153	25,4	141	24,4	130	23,3
	14	200	31,9	187	30,4	175	29,1	163	27,9	151	26,9	140	25,8	128	24,8
	17	197	33,5	184	32,1	172	30,8	160	29,6	149	28,5	138	27,5	127	26,4
	20	193	35,3	**181**	**33,8**	169	32,6	158	31,3	147	30,2	136	29,2	125	28,2
	23	190	37,2	178	35,8	166	34,5	155	33,2	145	32,1	134	31,1	124	30,0
	26	186	39,3	174	37,9	163	36,5	153	35,3	142	34,2	132	33,1	122	32,1
35000	8	214	26,6	199	25,5	185	24,5	171	23,6	157	22,8	144	22,1	131	21,4
	11	211	27,7	196	26,6	182	25,6	169	24,7	155	23,9	142	23,2	129	22,5
	14	208	29,0	193	27,9	180	26,9	166	26,0	153	25,2	141	24,5	128	23,7
	17	204	30,4	190	29,3	177	28,3	164	27,4	151	26,6	139	25,8	127	25,1
	20	201	31,9	187	30,8	174	29,8	161	28,9	149	28,1	137	27,3	125	26,6
	23	197	33,6	184	32,5	171	31,5	159	30,5	147	29,7	135	29,0	124	28,2
	26	193	35,4	180	34,3	168	33,3	156	32,3	145	31,5	133	30,8	122	30,0

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

COOLING CAPACITY AND ABSORBED POWER

170 Size

Table 3.17

Airflow (m^3/h)	Outdoor water temperature		25°C			30°C			35°C			40°C			45°C		
	IDWD	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
21000	16	21	174,1	110,5	32,0	169,1	108,4	35,1	163,3	106,1	38,8	156,8	103,4	43,3	149,4	100,3	48,5
		24	174,6	137,0	32,1	169,8	134,1	35,1	164,2	130,9	38,9	157,8	127,3	43,4	150,7	123,2	48,5
		27	177,0	157,9	32,2	172,3	154,6	35,3	166,9	150,9	39,0	160,7	146,6	43,4	153,7	141,9	48,6
		30	181,1	173,6	32,4	176,7	170,1	35,4	171,4	166,1	39,1	165,4	161,5	43,5	158,6	156,4	48,7
	19	24	191,6	105,0	32,7	186,0	103,6	35,7	179,5	101,9	39,3	172,2	99,9	43,7	164,2	97,6	48,7
		27	191,3	135,4	32,8	185,8	133,0	35,7	179,5	130,3	39,3	172,5	127,2	43,7	164,6	123,7	48,7
		30	192,7	159,3	32,9	187,4	156,3	35,8	181,4	152,9	39,4	174,5	149,0	43,7	166,8	144,6	48,7
		33	196,0	177,0	33,0	190,9	173,6	35,9	185,0	169,9	39,5	178,3	165,6	43,8	170,9	160,7	48,8
	22	27	210,8	96,0	33,6	204,5	95,4	36,4	197,4	94,7	39,9	189,5	93,7	44,1	180,8	92,5	49,1
		30	209,6	131,1	33,6	203,5	129,4	36,4	196,5	127,4	39,9	188,8	125,1	44,1	180,3	122,4	49,0
		33	210,2	158,6	33,6	204,3	156,1	36,4	197,5	153,2	39,9	190,0	149,9	44,1	181,7	146,2	49,0
		36	212,6	178,9	33,7	206,9	175,9	36,5	200,3	172,5	39,9	193,0	168,7	44,1	184,8	164,3	49,0
30000	16	21	188,8	130,9	31,2	183,1	128,1	34,1	176,5	124,9	37,8	169,2	121,4	42,1	161,1	117,5	47,2
		24	191,1	161,0	31,4	185,6	157,3	34,3	179,2	153,3	37,9	172,1	148,7	42,2	164,2	143,7	47,3
		27	195,2	185,5	31,6	189,9	181,3	34,5	183,7	176,6	38,1	176,8	171,4	42,4	169,0	165,6	47,4
		30	201,2	204,4	31,8	196,0	199,9	34,7	190,0	194,9	38,3	183,2	189,4	42,6	175,7	183,2	47,6
	19	24	206,3	128,1	32,0	199,9	125,8	34,8	192,7	123,3	38,3	184,7	120,5	42,5	175,9	117,3	47,5
		27	207,7	162,1	32,1	201,5	158,8	34,9	**194,4**	**155,2**	**38,4**	186,7	151,1	42,6	178,1	146,6	47,5
		30	211,0	189,5	32,3	204,9	185,5	35,1	198,1	181,1	38,6	190,5	176,3	42,7	182,1	170,8	47,7
		33	216,0	210,5	32,5	210,2	206,2	35,3	203,5	201,4	38,7	196,1	196,0	42,9	187,9	190,1	47,8
	22	27	225,5	122,2	32,9	218,4	120,8	35,6	210,5	119,2	39,0	201,8	117,3	43,1	192,4	115,0	47,9
		30	226,1	160,9	33,0	219,2	158,3	35,7	211,5	155,3	39,1	203,0	152,0	43,1	193,7	148,1	47,9
		33	228,4	191,9	33,2	221,7	188,4	35,8	214,2	184,5	39,2	205,9	180,1	43,2	196,9	175,2	48,0
		36	232,6	215,6	33,3	226,1	211,6	36,0	218,8	207,1	39,3	210,7	202,1	43,4	201,8	196,5	48,1
35000	16	21	194,8	139,2	32,8	188,6	135,9	35,7	181,7	132,4	39,2	173,9	128,4	43,5	165,4	124,1	48,5
		24	198,1	171,0	33,0	192,1	166,9	35,9	185,4	162,4	39,4	177,8	157,4	43,7	169,5	151,8	48,7
		27	203,2	197,2	33,3	197,4	192,5	36,1	190,8	187,4	39,6	183,5	181,7	43,9	175,3	175,4	48,8
		30	210,1	217,8	33,6	204,5	212,7	36,4	198,1	207,2	39,9	190,9	201,2	44,1	183,0	194,5	49,1
	19	24	212,2	137,9	33,7	205,4	135,2	36,4	197,8	132,3	39,8	189,4	129,0	44,0	180,2	125,3	48,9
		27	214,7	173,7	33,8	208,0	169,9	36,6	200,6	165,8	40,0	192,4	161,2	44,1	183,4	156,2	49,0
		30	218,9	202,9	34,1	212,5	198,4	36,8	205,2	193,5	40,2	197,2	188,0	44,3	188,4	182,0	49,1
		33	225,0	225,6	34,3	218,7	220,7	37,0	211,6	215,3	40,4	203,8	209,4	44,5	195,2	202,9	49,3
	22	27	231,4	134,0	34,6	223,9	132,1	37,3	215,6	130,0	40,6	206,5	127,6	44,6	196,6	124,7	49,4
		30	233,0	174,4	34,8	225,7	171,2	37,4	217,5	167,7	40,7	208,7	163,8	44,7	199,0	159,4	49,4
		33	236,3	207,2	35,0	229,2	203,1	37,6	221,3	198,7	40,8	212,6	193,7	44,8	203,1	188,1	49,5
		36	241,5	232,6	35,2	234,6	228,0	37,8	226,9	222,9	41,0	218,4	217,3	45,0	209,1	211,1	49,7

HEATING CAPACITY AND ABSORBED POWER

Table 3.18

Airflow (m^3/h)	OWT	18°C		15°C		12°C		9°C		6°C		3°C		0°C	
	IDDB	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA
21000	8	238	43,1	223	41,0	208	39,0	194	37,1	181	35,3	169	33,6	156	31,9
	11	234	45,2	219	43,1	205	41,0	192	39,1	179	37,3	167	35,6	154	33,9
	14	230	47,5	215	45,3	202	43,2	189	41,3	176	39,5	164	37,8	152	36,0
	17	225	49,9	212	47,7	198	45,6	186	43,7	174	41,8	162	40,1	151	38,3
	20	221	52,5	208	50,2	195	48,1	183	46,2	171	44,3	160	42,5	149	40,7
	23	217	55,2	204	52,9	191	50,8	179	48,8	168	47,0	157	45,2	147	43,3
	26	212	58,1	200	55,8	188	53,7	176	51,6	165	49,8	155	47,9	144	46,1
30000	8	249	36,7	233	35,0	217	33,5	202	32,0	188	30,7	174	29,4	160	28,1
	11	245	38,6	229	36,9	214	35,2	199	33,8	185	32,4	172	31,1	158	29,8
	14	241	40,6	226	38,8	211	37,2	196	35,7	183	34,3	170	33,0	156	31,7
	17	237	42,7	222	40,9	207	39,3	194	37,8	180	36,4	167	35,0	154	33,7
	20	233	45,0	218	43,2	204	41,6	191	40,0	178	38,6	165	37,2	153	35,9
	23	229	47,5	214	45,7	201	44,0	187	42,4	175	41,0	163	39,6	151	38,2
	26	224	50,1	210	48,3	197	46,6	184	45,0	172	43,5	160	42,1	149	40,7
35000	8	254	34,8	237	33,3	220	32,0	205	30,7	189	29,6	175	28,6	160	27,6
	11	250	36,5	233	35,0	217	33,6	202	32,4	187	31,2	173	30,2	158	29,1
	14	246	38,3	230	36,8	214	35,4	199	34,1	185	33,0	171	31,9	157	30,8
	17	242	40,3	226	38,8	211	37,4	196	36,1	182	34,9	168	33,8	155	32,7
	20	238	42,5	222	40,9	207	39,5	193	38,2	180	37,0	166	35,9	153	34,7
	23	233	44,8	218	43,2	204	41,7	190	40,4	177	39,2	164	38,1	151	36,9
	26	229	47,3	214	45,7	200	44,2	187	42,8	174	41,6	162	40,4	149	39,2

PT: *Gross total cooling/heating capacity in kW - Water ΔT = 5°C*
PS: *Sensible cooling capacity in kW*
PA: *Compressor absorbed power*

xxx: *Data according to Eurovent standard conditions*
OWT: *Outdoor Water Temperature*
IDDB: *Indoor Dry Bulb in°C*

Table 4.1

			Gas burner					Electrical heater			
Size	Airflow m³/h	Type	Power input kW	Heating Capacity kW	Pabs Elec kW	Nb Of Stages	Modulation option	Available capacity kW	Type of Modulation	Stages	Temp. rise °C
45	8100	S	33	30,7	0,2	2		27	2 stages	Stage 1:	3,4
										Stage 2:	10,4
	8100	M						45	2 stages	Stage 1:	7,0
										Stage 2:	17,4
	8100	H	60	55,8	0,2	2	40% - 100%	54	0-100%	50%-->	10,4
										100%-->	20,9
55	9000	S	33	30,7	0,2	2		27	2 stages	Stage 1:	3,1
										Stage 2:	9,4
	9000	M						45	2 stages	Stage 1:	6,3
										Stage 2:	15,7
	9000	H	60	55,8	0,2	2	40% - 100%	54	0-100%	50%-->	9,4
										100%-->	18,8
65	10800	S	60	55,8	0,2	2		27	3 stages	Stage 1	2,6
										Stage 2	5,2
										Stage3	7,8
	10800	M						45	3 stages	Stage 1	5,2
										Stage 2	7,8
										Stage3	13,1
	10800	H	120	111,6	0,2	4	20% - 100%	54	0-100%	50%-->	7,8
										100%-->	15,7
75	12600	S	60	55,8	0,2	2		27	3 stages	Stage 1	2,2
										Stage 2	4,5
										Stage3	6,7
	12600	M						45	3 stages	Stage 1	4,5
										Stage 2	6,7
										Stage3	11,2
	12600	H	120	111,6	0,2	4	20% - 100%	54	0-100%	50%-->	6,7
										100%-->	13,5
85	15000	S	60	55,2	0,16	2		30	2 stages	Stage 1:	2,9
										Stage 2:	5,7
	15000	M						54	0-100%	50%-->	5,2
										100%-->	10,3
	15000	H	120	110,4	0,25	2	40% - 100%	72	0-100%	50%-->	6,9
										100%-->	13,8
100	18500	S	60	55,2	0,16	2		30	2 stages	Stage 1:	2,3
										Stage 2:	4,6
	18500	M						54	0-100%	50%-->	4,2
										100%-->	8,4
	18500	H	120	110,4	0,25	2	40% - 100%	72	0-100%	50%-->	5,6
										100%-->	11,2
120	20500	S	60	55,2	0,16	2		30	2 stages	Stage 1:	2,1
										Stage 2:	4,2
	20500	M						54	0-100%	50%-->	3,8
										100%-->	7,6
	20500	H	120	110,4	0,25	2	40% - 100%	72	0-100%	50%-->	5,0
										100%-->	10,1
150	26000	S	120	110,4	0,25	2		45	2 stages	Stage 1:	2,5
										Stage 2:	5,0
	26000	M						72	0-100%	50%-->	4,0
										100%-->	7,9
	26000	H	180	165,6	0,25	2	40% - 100%	108	0-100%	50%-->	6,0
										100%-->	11,9
170	30000	S	120	110,4	0,25	2		45	2 stages	Stage 1:	2,2
										Stage 2:	4,3
	30000	M						72	0-100%	50%-->	3,4
										100%-->	6,9
	30000	H	180	165,6	0,25	2	40% - 100%	108	0-100%	50%-->	5,2
										100%-->	10,3
200	35000	S	180	165,6	0,25	2		72	2 stages	Stage 1:	2,9
										Stage 2:	5,9
	35000	M						108	0-100%	50%-->	4,4
										100%-->	8,8
	35000	H	240	220,8	0,25	2	40% - 100%	162	0-100%	50%-->	6,6
										100%-->	13,3
230	39000	S	180	165,6	0,25	2		72	2 stages	Stage 1:	2,6
										Stage 2:	5,3
	39000	M						108	0-100%	50%-->	4,0
										100%-->	7,9
	39000	H	240	220,8	0,25	2	40% - 100%	162	0-100%	50%-->	6,0
										100%-->	11,9

ENERGY RECOVERY MODULE IN COOLING MODE

045

Table 5.1

ODDB/ODWB		25 / 16		30 / 20		35 / 23		40 / 27		45 / 31	
Air flow	IDDB	CC	Out DB/ WB	CC	Out DB/ WB	CC	Out DB/WB	CC	Out DB/WB	CC	Out DB/WB
6500	18	6,7	22/13	11,4	25/14	16,0	27/15	20,5	30/16	24,9	32/17
	21	3,8	23/15	8,5	26/16	13,1	29/17	17,6	31/18	22,0	34/18
	24	1,0	25/17	5,7	27/18	10,3	30/19	14,8	33/19	19,1	35/20
	27			2,8	29/20	7,4	31/21	11,9	34/21	16,3	37/22
	30					4,6	33/23	9,1	35/23	13,5	38/24
	33					1,8	34/25	6,3	37/25	10,7	39/26
	36							3,6	38/27	8,0	41/28
8100	18	8,3	22/13	14,1	25/14	19,7	27/15	25,3	30/16	30,6	32/16
	21	4,7	23/15	10,5	26/16	16,2	29/17	21,7	31/18	27,1	34/18
	24	1,2	25/17	7,0	27/18	12,6	30/19	18,2	33/19	23,6	35/20
	27			3,5	29/20	9,1	31/21	14,7	34/21	20,1	37/22
	30					5,7	33/23	11,2	35/23	16,7	38/24
	33					2,3	34/25	7,8	37/25	13,2	40/26
	36							4,4	38/27	9,9	41/28
9700	18	9,8	22/13	16,6	25/14	23,3	27/15	29,9	30/16	36,2	32/16
	21	5,6	23/15	12,4	26/16	19,1	29/17	25,7	31/17	32,0	34/18
	24	1,4	25/17	8,2	27/18	14,9	30/19	21,5	33/19	27,9	35/20
	27			4,1	29/20	10,8	31/21	17,4	34/21	23,8	37/22
	30					6,7	33/23	13,3	36/23	19,7	38/24
	33					2,7	34/25	9,2	37/25	15,7	40/26
	36							5,3	38/27	11,7	41/28

055

Table 5.2

ODDB/ODWB		25 / 16		30 / 20		35 / 23		40 / 27		45 / 31	
Air flow	IDDB	CC	Out DB/ WB	CC	Out DB/ WB	CC	Out DB/WB	CC	Out DB/WB	CC	Out DB/WB
7200	18	7,4	22/13	12,6	25/14	17,7	27/15	22,6	30/16	27,4	32/16
	21	4,2	23/15	9,4	26/16	14,5	29/17	19,4	31/18	24,2	34/18
	24	1,0	25/17	6,2	27/18	11,3	30/19	16,3	33/19	21,1	35/20
	27			3,1	29/20	8,2	31/21	13,1	34/21	18,0	37/22
	30					5,1	33/23	10,1	35/23	14,9	38/24
	33					2,0	34/25	7,0	37/25	11,9	39/26
	36							4,0	38/27	8,8	41/28
9000	18	9,1	22/13	15,5	25/14	21,8	27/15	27,9	30/16	33,8	32/16
	21	5,2	23/15	11,6	26/16	17,8	29/17	23,9	31/18	29,9	34/18
	24	1,3	25/17	7,7	27/18	13,9	30/19	20,1	33/19	26,0	35/20
	27			3,8	29/20	10,1	31/21	16,2	34/21	22,2	37/22
	30					6,3	33/23	12,4	36/23	18,4	38/24
	33					2,5	34/25	8,6	37/25	14,6	40/26
	36							4,9	38/27	10,9	41/28
10800	18	10,8	22/13	18,3	25/14	25,7	27/15	33,0	30/16	40,0	33/16
	21	6,1	23/15	13,7	26/16	21,1	29/17	28,3	31/17	35,4	34/18
	24	1,5	25/17	9,1	27/18	16,5	30/19	23,7	33/19	30,8	35/20
	27			4,5	29/20	11,9	31/21	19,2	34/21	26,3	37/22
	30					7,4	33/23	14,7	36/23	21,8	38/24
	33					2,9	34/25	10,2	37/25	17,3	40/26
	36							5,8	38/27	12,9	41/28

CC : Cooling capacity of the Energy recovery module in kW
Out DB / WB : Outlet Dry and Wet temperature : After Heat recovery and before Rooftop Indoor Coil temperature in °C
100% fresh air mode
ODDB : Outdoor dry bulb in °C

ODWB: Outdoor Wet bulb in °C - Outdoor Wet bulb is taken such as RH=40%
IDWB : Indoor Wet Bulb in °C - Indoor Wet bulb is supposed equal to 16°C in all the tables
Airflow : Fresh Airflow in m^3/h

ENERGY RECOVERY MODULE IN COOLING MODE

065

Table 5.3

ODDB/ODWB		25 / 16		30 / 20		35 / 23		40 / 27		45 / 31	
Air flow	IDDB	CC	Out DB/ WB	CC	Out DB/ WB	CC	Out DB/WB	CC	Out DB/WB	CC	Out DB/WB
8600	18	8,9	22/13	15,1	25/14	21,1	27/15	27,0	30/16	32,8	32/17
	21	5,0	23/15	11,2	26/16	17,3	29/17	23,2	31/18	29,0	34/18
	24	1,3	25/17	7,5	27/18	13,5	30/19	19,5	33/19	25,2	35/20
	27			3,7	29/20	9,8	31/21	15,7	34/21	21,5	37/22
	30					6,1	33/23	12,0	35/23	17,8	38/24
	33					2,4	34/25	8,4	37/25	14,2	39/26
	36							4,8	38/27	10,6	41/28
11500	18	11,0	22/13	18,6	25/14	26,2	27/15	33,5	30/16	40,6	32/16
	21	6,2	23/15	13,9	26/16	21,4	29/17	28,8	31/18	35,9	34/18
	24	1,6	25/17	9,2	27/18	16,7	30/19	24,1	33/19	31,3	35/20
	27			4,6	29/20	12,1	31/21	19,5	34/21	26,7	37/22
	30					7,5	33/23	14,9	36/23	22,1	38/24
	33					3,0	34/25	10,4	37/25	17,6	40/26
	36							5,9	38/27	13,1	41/28
13000	18	13,0	22/13	22,1	25/14	31,0	27/15	39,7	30/16	48,2	33/16
	21	7,4	23/15	16,5	26/16	25,4	29/17	34,1	31/17	42,6	34/18
	24	1,8	25/17	10,9	27/18	19,9	30/19	28,6	33/19	37,1	35/20
	27			5,4	29/20	14,4	31/21	23,1	34/21	31,7	37/22
	30					8,9	33/23	17,7	36/23	26,2	38/24
	33					3,6	34/25	12,3	37/25	20,9	40/26
	36							7,0	38/27	15,6	41/28

075

Table 5.4

ODDB/ODWB		25 / 16		30 / 20		35 / 23		40 / 27		45 / 31	
Air flow	IDDB	CC	Out DB/ WB	CC	Out DB/ WB	CC	Out DB/WB	CC	Out DB/WB	CC	Out DB/WB
7200	18	10,2	22/13	17,4	25/14	24,3	27/15	31,2	30/16	37,8	32/16
	21	5,8	23/15	12,9	26/16	19,9	29/17	26,8	31/18	33,4	34/18
	24	1,4	25/17	8,6	27/18	15,6	30/19	22,4	33/19	29,1	35/20
	27			4,3	29/20	11,3	31/21	18,1	34/21	24,8	37/22
	30					7,0	33/23	13,9	35/23	20,6	38/24
	33					2,8	34/25	9,6	37/25	16,4	40/26
	36							5,5	38/27	12,2	41/28
9000	18	12,6	22/13	21,5	25/14	30,1	27/15	38,6	30/16	46,8	32/16
	21	7,2	23/15	16,0	26/16	24,7	29/17	33,2	31/17	41,4	34/18
	24	1,8	25/17	10,6	27/18	19,3	30/19	27,8	33/19	36,1	35/20
	27			5,3	29/20	14,0	31/21	22,5	34/21	30,8	37/22
	30					8,7	33/23	17,2	36/23	25,5	38/24
	33					3,5	34/25	12,0	37/25	20,3	40/26
	36							6,8	38/27	15,1	41/28
10800	18	15,7	22/13	26,7	25/14	37,5	28/15	48,0	30/16	58,3	33/16
	21	8,9	23/15	19,9	26/16	30,7	29/17	41,3	32/17	51,6	34/18
	24	2,2	25/17	13,2	27/18	24,0	30/19	34,6	33/19	44,9	36/20
	27			6,6	29/20	17,4	32/21	28,0	34/21	38,3	37/22
	30					10,8	33/23	21,4	36/23	31,7	38/24
	33					4,3	34/25	14,9	37/25	25,2	40/26
	36							8,5	38/27	18,8	41/28

CC : Cooling capacity of the Energy recovery module in kW
Out DB / WB : Outlet Dry and Wet temperature : After Heat recovery and before Rooftop Indoor Coil temperature in °C
100% fresh air mode
ODDB : Outdoor dry bulb in °C

ODWB: Outdoor Wet bulb in °C - Outdoor Wet bulb is taken such as RH=40%
IDWB : Indoor Wet Bulb in °C - Indoor Wet bulb is supposed equal to 16°C in all the tables
Airflow : Fresh Airflow in m^3/h

ENERGY RECOVERY MODULE IN COOLING MODE

85 - 100 - 120

Table 5.5

Fresh air ratio			Airflow	ODDB	25/16			30/20			35/24			40/27			43/30		
F085	F100	F120		IDDB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB	EFF	CC	OUT DB/WB
				18	90	6,1	19/14	91	10,5	19/16	90	14,9	20/19	91	19,3	20/20	92	21,9	20/20
				21	89	3,5	21/15	90	7,9	22/17	91	12,3	22/20	91	16,6	23/22	91	19,3	23/23
				24	89	0,9	24/16	90	5,3	25/18	91	9,6	25/21	92	14,0	25/24	91	16,6	26/25
20%	16%	15%	3000	27				89	2,6	27/19	90	7,0	28/22	91	11,4	28/25	92	14,0	28/27
				30							90	4,4	31/23	91	8,8	31/26	92	11,4	31/28
				33							90	1,8	33/23	91	6,1	34/26	91	8,8	34/28
				36										90	3,5	36/27	91	6,1	37/29
				18	80	11,2	19/14	81	19,1	20/17	82	27,1	21/20	82	35,1	22/22	83	39,9	22/22
				21	80	6,4	22/15	81	14,4	23/18	82	22,3	24/21	83	30,3	24/24	82	35,1	25/25
				24	80	1,6	24/16	81	9,6	25/19	82	17,5	26/21	83	25,5	27/25	84	30,3	27/27
40%	32%	29%	6000	27				80	4,8	28/19	82	12,8	28/22	83	20,7	29/25	83	25,5	30/27
				30							81	8,0	31/23	82	15,9	32/26	83	20,7	32/28
				33							81	3,2	33/24	82	11,2	34/26	83	15,9	35/28
				36										82	6,4	37/27	82	11,2	37/29
				18	73	15,3	20/14	74	26,2	21/17	75	37,1	22/20	74	48,0	24/23	75	54,5	24/24
				21	73	8,7	22/15	73	19,6	23/18	75	30,5	25/21	76	41,5	26/24	75	48,0	27/26
				24	72	2,2	24/16	73	13,1	26/19	74	24,0	27/22	75	34,9	28/25	76	41,5	29/27
60%	49%	44%	9000	27				73	6,5	28/19	74	17,5	29/22	75	28,4	30/26	76	34,9	31/28
				30							74	10,9	31/23	75	21,8	33/26	76	28,4	33/28
				33							74	4,4	34/24	75	15,3	35/27	76	21,8	35/29
				36										75	8,7	37/27	75	15,3	38/29
				18	66	18,6	20/15	67	32,0	22/17	68	45,3	23/21	69	58,6	25/24	69	66,6	26/25
				21	66	10,7	22/15	67	24,0	24/18	68	37,3	25/21	69	50,6	27/25	70	58,6	28/27
				24	66	2,7	24/16	67	16,0	26/19	68	29,3	28/22	69	42,6	29/25	70	50,6	30/27
80%	65%	59%	12000	27				67	8,0	28/19	68	21,3	30/22	69	34,6	31/26	70	42,6	32/28
				30							68	13,3	32/23	69	26,6	33/26	70	34,6	34/28
				33							68	5,3	34/24	69	18,6	35/27	69	26,6	36/29
				36										69	10,7	37/27	69	18,6	38/29
				18	61	21,4	21/15	62	36,7	23/18	63	52,1	24/21	64	67,4	26/24	65	76,6	27/27
				21	61	12,2	23/15	62	27,6	24/18	63	42,9	26/21	64	58,2	28/25	65	67,4	29/27
				24	61	3,1	24/16	62	18,4	26/19	63	33,7	28/22	64	49,0	30/25	65	58,2	31/28
100%	81%	73%	15000	27				62	9,2	28/19	63	24,5	30/23	64	39,8	32/26	64	49,0	33/28
				30							63	15,3	32/23	64	30,6	34/26	64	39,8	35/28
				33							63	6,1	34/24	64	21,4	36/27	64	30,6	37/29
				36										63	12,2	37/27	64	21,4	39/29
				18	56	24,2	21/15	57	41,5	23/18	58	58,8	25/21	59	76,1	27/25	59	86,5	28/27
				21	56	13,8	23/15	57	31,1	25/18	58	48,4	27/22	59	65,7	29/25	59	76,1	30/27
				24	56	3,5	24/16	57	20,8	27/19	58	38,1	29/22	59	55,4	31/26	59	65,7	32/28
	100%	90%	18500	27				57	10,4	28/20	58	27,7	30/23	59	45,0	32/26	59	55,4	34/28
				30							57	17,3	32/23	58	34,6	34/26	59	45,0	35/29
				33							57	6,9	34/24	58	24,2	36/27	59	34,6	37/29
				36										58	13,8	38/27	59	24,2	39/29
				18	53	25,7	21/15	54	44,0	24/18	55	62,4	26/21	56	80,7	28/25	56	91,7	29/27
				21	53	14,7	23/15	54	33,0	25/19	55	51,4	27/22	56	69,7	29/25	57	80,7	31/27
				24	53	3,7	24/16	54	22,0	27/19	55	40,4	29/22	56	58,7	31/26	57	69,7	32/28
		100%	20500	27				54	11,0	28/20	55	29,4	31/23	56	47,7	33/26	56	58,7	34/28
				30							55	18,3	32/23	56	36,7	34/27	56	47,7	36/29
				33							55	7,3	34/24	56	25,7	36/27	56	36,7	37/29
				36										56	14,7	38/27	56	25,7	39/29
				18	50	27,5	22/15	51	47,1	24/18	52	66,7	26/21	53	86,4	28/25	53	98,1	30/27
				21	50	15,7	23/15	51	35,3	25/19	52	55,0	28/22	53	74,6	30/25	53	86,4	31/28
				24	50	3,9	25/16	51	23,6	27/19	52	43,2	29/22	53	62,8	32/26	53	74,6	33/28
			23000	27				51	11,8	28/20	52	31,4	31/23	53	51,0	33/26	53	62,8	34/28
				30							52	19,6	32/23	53	39,3	35/27	53	51,0	36/29
				33							52	7,9	34/24	53	27,5	36/27	53	39,3	38/29
				36										53	15,7	38/27	53	27,5	39/29

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 m^3/h

ENERGY RECOVERY MODULE IN COOLING MODE

150 - 170

Table 5.6

Fresh air ratio		Airflow	ODDB	25/16			30/20			35/24			40/27			43/30		
F150	F170		IDDB	EFF	CC	OUT DB/WB	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	11,8	19/14	87	20,2	20/17	88	28,7	20/20	87	37,1	21/20	88	42,1	21/21
			21	85	6,7	22/15	86	15,2	22/18	87	23,6	23/20	87	32,0	23/23	88	37,1	24/23
			24	85	1,7	24/16	86	10,1	25/18	87	18,5	25/21	88	27,0	26/24	87	32,0	26/26
			27				86	5,1	27/19	87	13,5	28/22	88	21,9	29/25	89	27,0	29/27
			30							86	8,4	31/23	88	16,9	31/26	88	21,9	32/28
			33							86	3,4	33/23	87	11,8	34/26	88	16,9	34/28
			36										87	6,7	37/27	87	11,8	37/29
38%	33%	10000	18	78	18,1	20/14	79	31,0	21/17	80	43,9	21/20	79	56,8	23/22	80	64,6	23/23
			21	78	10,3	22/15	79	23,2	23/18	80	36,2	24/21	81	49,1	25/24	80	56,8	25/25
			24	77	2,6	24/16	78	15,5	25/19	79	28,4	26/22	80	41,3	27/25	81	49,1	28/27
			27				78	7,7	28/19	79	20,7	29/22	80	33,6	30/25	81	41,3	30/27
			30							79	12,9	31/23	80	25,8	32/26	81	33,6	33/28
			33							79	5,2	33/24	80	18,1	34/27	80	25,8	35/28
			36										79	10,3	37/27	80	18,1	37/29
54%	47%	14000	18	71	23,3	20/14	72	39,9	21/17	73	56,6	23/20	73	73,2	24/24	73	83,2	25/24
			21	71	13,3	22/15	72	30,0	24/18	73	46,6	25/21	74	63,2	26/24	73	73,2	27/26
			24	71	3,3	24/16	72	20,0	26/19	73	36,6	27/22	74	53,3	28/25	75	63,2	29/27
			27				72	10,0	28/19	73	26,6	29/22	74	43,3	30/26	74	53,3	31/28
			30							73	16,6	31/23	74	33,3	33/26	74	43,3	33/28
			33							72	6,7	34/24	73	23,3	35/27	74	33,3	36/29
			36										73	13,3	37/27	74	23,3	38/29
69%	60%	18000	18	65	27,7	20/15	66	47,4	22/17	67	67,2	24/21	68	86,9	25/24	68	98,8	26/26
			21	65	15,8	22/15	66	35,6	24/18	67	55,3	26/21	68	75,1	27/25	69	86,9	28/27
			24	65	4,0	24/16	66	23,7	26/19	67	43,5	28/22	68	63,2	29/25	69	75,1	30/27
			27				66	11,9	28/19	67	31,6	30/22	68	51,4	31/26	69	63,2	32/28
			30							67	19,8	32/23	68	39,5	33/26	69	51,4	34/28
			33							67	7,9	34/24	68	27,7	35/27	69	39,5	36/29
			36										68	15,8	37/27	68	27,7	38/29
81%	70%	21000	18	62	30,5	21/15	63	52,2	22/18	64	74,0	24/21	65	95,7	26/24	64	108,8	27/27
			21	62	17,4	23/15	63	39,2	24/18	64	60,9	26/21	65	82,7	28/25	65	95,7	29/27
			24	62	4,4	24/16	63	26,1	26/19	64	47,9	28/22	65	69,6	30/25	65	82,7	31/27
			27				63	13,1	28/19	64	34,8	30/23	65	56,6	32/26	65	69,6	33/28
			30							63	21,8	32/23	64	43,5	34/26	65	56,6	35/28
			33							63	8,7	34/24	64	30,5	36/27	65	43,5	37/29
			36										64	17,4	37/27	65	30,5	38/29
100%	87%	26000	18	56	34,5	21/15	57	59,1	23/18	58	83,8	25/21	59	108,4	27/25	60	123,2	28/27
			21	56	19,7	23/15	57	44,4	25/18	58	69,0	27/22	59	93,6	29/25	60	108,4	30/27
			24	56	4,9	24/16	57	29,6	27/19	58	54,2	29/22	59	78,9	31/26	60	93,6	32/28
			27				57	14,8	28/20	58	39,4	30/23	59	64,1	32/26	60	78,9	33/28
			30							58	24,6	32/23	59	49,3	34/26	60	64,1	35/29
			33							58	9,9	34/24	59	34,5	36/27	60	49,3	37/29
			36										59	19,7	38/27	60	34,5	39/29
	100%	30000	18	53	37,4	21/15	54	64,0	24/18	55	90,7	26/21	56	117,4	28/25	56	133,4	29/27
			21	53	21,3	23/15	54	48,0	25/19	55	74,7	27/22	56	101,4	29/25	56	117,4	31/28
			24	53	5,3	24/16	54	32,0	27/19	55	58,7	29/22	56	85,4	31/26	56	101,4	32/28
			27				54	16,0	28/20	55	42,7	31/23	56	69,4	33/26	56	85,4	34/28
			30							55	26,7	32/23	56	53,4	34/27	56	69,4	36/29
			33							55	10,7	34/24	56	37,4	36/27	56	53,4	37/29
			36										55	21,3	38/27	56	37,4	39/29
		35000	18	49	40,8	22/15	50	69,9	24/18	50	99,0	26/22	51	128,1	29/25	52	145,6	30/27
			21	49	23,3	23/16	50	52,4	26/19	51	81,5	28/22	51	110,6	30/26	52	128,1	32/28
			24	49	5,8	25/16	50	34,9	27/19	51	64,1	29/22	51	93,2	32/26	52	110,6	33/28
			27				50	17,5	29/20	51	46,6	31/23	52	75,7	33/26	52	93,2	35/28
			30							51	29,1	32/23	52	58,2	35/27	52	75,7	36/29
			33							51	11,6	34/24	51	40,8	36/27	52	58,2	38/29
			36										51	23,3	38/27	52	40,8	39/29

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 m^3/h

ENERGY RECOVERY MODULE IN HEATING MODE

045

Table 5.7

ODDB		20		10		0		-10		-15	
Air flow	IDDB	HC	OT	HC	OT	HC	OT	HC	OT	HC	OT
6500	8					8,2	4	18,7	-2	24,7	-5
	11			1,0	10	11,2	5	21,7	-1	27,9	-4
	14			4,0	12	14,1	6	25,4	1	31,7	-2
	17			6,9	13	17,1	7	28,8	2	35,7	-1
	20			9,8	14	20,0	9	32,9	4	39,9	1
	23	2,9	21	12,7	16	22,8	10	37,0	5	44,2	3
	26	5,7	23	15,5	17	26,9	12	41,4	7	48,7	5
8100	8					10,0	4	22,9	-2	30,3	-5
	11			1,2	10	13,7	5	26,6	-1	34,2	-4
	14			4,9	12	17,4	6	31,2	0	38,8	-2
	17			8,5	13	21,0	7	35,3	2	43,7	-1
	20			12,1	14	24,5	9	40,0	3	48,6	1
	23	3,5	21	15,6	16	28,1	10	45,2	5	54,0	3
	26	7,0	23	19,1	17	33,0	11	50,4	7	59,5	4
9700	8					11,8	3	27,1	-3	35,3	-5
	11			1,4	10	16,2	5	31,4	-1	40,3	-4
	14			5,8	12	20,5	6	36,8	0	45,6	-3
	17			10,0	13	24,8	7	41,4	2	51,2	-1
	20			14,2	14	29,0	8	47,1	3	57,2	1
	23	4,2	21	18,4	16	33,1	10	53,0	5	63,5	2
	26	8,3	23	22,5	17	38,4	11	59,3	7	69,9	4

055

Table 5.8

ODDB		20		10		0		-10		-15	
Air flow	IDDB	HC	OT	HC	OT	HC	OT	HC	OT	HC	OT
7200	8					9,0	4	20,6	-2	27,2	-5
	11			1,1	10	12,3	5	23,9	-1	30,7	-4
	14			4,4	12	15,6	6	28,0	1	34,8	-2
	17			7,6	13	18,8	7	31,7	2	39,3	-1
	20			10,8	14	22,0	9	36,1	4	43,8	1
	23	3,2	21	14,0	16	25,1	10	40,6	5	48,5	3
	26	6,3	23	17,1	17	29,6	12	45,3	7	53,5	5
9000	8					11,0	3	25,3	-2	33,3	-5
	11			1,3	10	15,1	5	29,3	-1	37,7	-4
	14			5,4	12	19,1	6	34,3	0	42,7	-3
	17			9,4	13	23,1	7	38,7	2	47,9	-1
	20			13,3	14	27,0	8	44,0	3	53,5	1
	23	3,9	21	17,2	16	30,9	10	49,7	5	59,4	3
	26	7,7	23	21,0	17	36,3	11	55,4	7	65,4	4
10800	8					13,0	3	29,8	-3	38,9	-6
	11			1,6	10	17,8	5	34,6	-1	44,5	-4
	14			6,4	12	22,6	6	40,0	0	50,1	-3
	17			11,1	13	27,3	7	45,6	1	56,4	-1
	20			15,7	14	32,0	8	51,9	3	63,0	0
	23	4,6	21	20,3	16	36,5	10	58,3	5	69,9	2
	26	9,2	23	24,9	17	42,4	11	65,2	6	77,0	4

HC : Heating capacity of the Energy recovery module in kW
OT: After Heat 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 m^3/h
100% fresh air mode

ENERGY RECOVERY MODULE IN HEATING MODE

065

Table 5.9

ODDB		20		10		0		-10		-15	
Air flow	IDDB	HC	OT	HC	OT	HC	OT	HC	OT	HC	OT
8600	8					10,8	4	24,6	-2	32,5	-5
	11			1,3	10	14,7	5	28,6	-1	36,8	-4
	14			5,2	12	18,6	6	33,5	1	41,7	-2
	17			9,1	13	22,5	7	37,9	2	47,0	-1
	20			12,9	14	26,3	9	43,2	4	52,5	1
	23	3,8	21	16,7	16	30,1	10	48,7	5	58,1	3
	26	7,5	23	20,5	17	35,4	12	54,4	7	64,0	5
11500	8					13,3	4	30,4	-2	40,1	-5
	11			1,6	10	18,2	5	35,3	-1	45,3	-4
	14			6,5	12	23,0	6	41,3	0	51,3	-2
	17			11,2	13	27,8	7	46,5	2	57,6	-1
	20			16,0	14	32,5	9	53,0	3	64,3	1
	23	4,7	21	20,7	16	37,2	10	59,8	5	71,4	3
	26	9,3	23	25,3	17	43,7	11	66,7	7	78,7	4
13000	8					15,7	3	36,0	-3	46,9	-6
	11			1,9	10	21,5	5	41,8	-1	53,6	-4
	14			7,7	12	27,3	6	48,3	0	60,4	-3
	17			13,3	13	32,9	7	55,0	1	68,0	-1
	20			18,9	14	38,5	8	62,6	3	76,0	1
	23	5,6	21	24,5	16	44,1	10	70,4	5	84,3	2
	26	11,0	23	30,0	17	51,1	11	78,7	6	92,9	4

075

Table 5.10

ODDB		20		10		0		-10		-15	
Air flow	IDDB	HC	OT	HC	OT	HC	OT	HC	OT	HC	OT
10000	8					12,4	4	28,3	-2	37,4	-5
	11			1,5	10	16,9	5	32,8	-1	42,2	-4
	14			6,0	12	21,4	6	38,5	0	47,8	-2
	17			10,5	13	25,9	7	43,5	2	53,9	-1
	20			14,9	14	30,3	9	49,4	3	60,0	1
	23	4,4	21	19,2	16	34,6	10	55,8	5	66,6	3
	26	8,7	23	23,5	17	40,7	11	62,2	7	73,4	4
13500	8					15,3	3	35,0	-3	45,6	-5
	11			1,9	10	20,9	5	40,6	-1	52,1	-4
	14			7,4	12	26,5	6	46,9	0	58,7	-3
	17			13,0	13	32,0	7	53,5	2	66,1	-1
	20			18,4	14	37,4	8	60,9	3	73,9	1
	23	5,4	21	23,8	16	42,8	10	68,4	5	82,0	2
	26	10,7	23	29,1	17	49,7	11	76,5	6	90,3	4
16000	8					19,0	3	43,4	-3	56,5	-6
	11			2,3	10	26,0	5	50,4	-2	64,6	-4
	14			9,2	12	32,9	6	58,2	0	72,7	-3
	17			16,1	13	39,7	7	66,3	1	81,9	-2
	20			22,9	14	46,5	8	75,0	3	91,3	0
	23	6,7	21	29,6	15	53,2	9	84,6	4	101,0	2
	26	13,3	23	36,2	17	61,6	11	94,5	6	111,6	3

HC : Heating capacity of the Energy recovery module in kW
OT: After Heat 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 m^3/h
100% fresh air mode

ENERGY RECOVERY MODULE IN HEATING MODE

85 - 100 - 120

Table 5.11

Fresh air ratio			Airflow	ODDB	20			10			0			-10			-15		
F085	F100	F120		IDDB	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT
				8							88	7,2	6,9	89	19,7	5,1	89	26,5	3,9
				11				88	0,9	10,9	89	9,9	9,4	89	23,7	7,5	90	30,8	6,3
				14				88	3,6	13,5	89	14,7	11,9	90	27,9	9,8	90	35,3	8,6
20%	16%	15%	3000	17				89	6,3	16,1	89	18,5	14,4	90	32,3	12,1	91	40,0	10,8
				20				89	9,0	18,6	90	22,4	16,8	91	36,8	14,4	91	44,9	13,0
				23	89	2,7	22,7	89	13,5	21,2	91	26,5	19,2	92	41,6	16,7	92	50,0	15,2
				26	89	5,4	25,3	90	17,2	23,7	91	30,8	21,5	92	46,6	18,8	92	55,3	17,4
				8							78	13,4	6,1	78	36,6	3,3	79	49,1	1,7
				11				78	1,7	10,8	79	18,4	8,3	79	43,9	5,4	79	57,0	3,8
				14				79	6,7	13,1	79	27,3	10,6	80	51,7	7,5	80	65,3	5,8
40%	32%	29%	6000	17				79	11,7	15,4	79	34,2	12,8	80	59,7	9,6	80	74,0	7,8
				20				80	16,8	17,7	80	41,5	15,0	81	68,2	11,7	81	83,0	9,8
				23	80	5,0	22,4	80	25,1	20,0	81	49,1	17,1	81	77,0	13,7	81	92,4	11,8
				26	80	10,1	24,7	80	31,9	22,2	81	57,0	19,2	82	86,1	15,7	82	102,2	13,8
				8							70	18,6	5,5	70	50,6	1,9	70	67,7	-0,1
				11				70	2,3	10,7	71	25,6	7,5	71	60,7	3,8	71	78,7	1,8
				14				71	9,3	12,8	71	32,6	9,5	71	71,3	5,7	71	90,1	3,6
60%	49%	44%	9000	17				72	16,3	14,9	71	47,3	11,5	72	82,4	7,6	72	102,0	5,5
				20				72	23,3	17,0	72	57,3	13,5	72	94,0	9,4	72	114,4	7,3
				23	72	7,0	22,2	73	30,3	19,0	73	67,7	15,4	73	106,1	11,3	73	127,3	9,1
				26	73	14,0	24,3	73	44,1	21,1	73	78,7	17,4	73	118,7	13,1	73	140,7	10,9
				8							64	22,9	4,9	63	61,7	0,8	63	82,5	-1,5
				11				64	2,9	10,6	64	31,5	6,8	64	74,0	2,5	64	95,8	0,2
				14				65	11,4	12,6	65	40,1	8,6	64	86,9	4,2	64	109,6	1,8
80%	65%	59%	12000	17				65	20,0	14,5	65	57,7	10,4	65	100,3	5,9	65	124,1	3,5
				20				66	28,6	16,3	65	69,8	12,2	65	114,4	7,7	65	139,1	5,2
				23	66	8,6	22,0	66	37,2	18,2	66	82,5	14,0	66	129,0	9,4	66	154,7	6,8
				26	66	17,2	23,9	67	53,8	20,0	66	95,8	15,8	66	144,2	11,0	65	170,9	8,7
				8							58	26,2	4,5	58	69,9	-0,2	58	93,4	-2,7
				11				59	3,3	10,6	59	36,0	6,2	58	83,7	1,4	58	108,3	-1,2
				14				59	13,1	12,3	59	45,8	7,9	59	98,3	3,0	59	123,9	0,4
100%	81%	73%	15000	17				60	22,9	14,1	60	55,6	9,5	59	113,4	4,6	59	140,1	1,9
				20				60	32,7	15,8	60	79,0	11,2	60	129,2	6,2	60	157,0	3,5
				23	61	9,8	21,8	61	42,5	17,5	60	93,4	12,8	60	145,7	7,7	60	174,5	5,0
				26	61	19,6	23,6	61	52,3	19,2	61	108,3	14,5	61	162,8	9,2	59	192,7	6,9
				8							53	28,7	4,1	53	64,7	-1,2	52	101,1	-3,9
				11				53	3,6	10,5	53	39,5	5,6	53	90,8	0,3	53	117,2	-2,5
				14				54	14,4	12,1	54	50,3	7,1	53	106,4	1,8	53	133,9	-1,1
	100%	90%	18500	17				54	25,1	13,7	54	61,1	8,7	54	122,7	3,2	54	151,3	0,3
				20				55	35,9	15,3	54	85,7	10,2	54	139,7	4,7	54	169,4	1,8
				23	55	10,8	21,7	55	46,7	16,9	55	101,1	11,7	55	157,3	6,1	54	188,2	3,3
				26	56	21,6	23,3	56	57,5	18,4	55	117,2	13,2	55	175,6	7,5	53	207,6	5,0
				8							50	29,6	3,9	50	66,6	-1,6	49	103,1	-4,5
				11				51	3,7	10,5	51	40,7	5,3	50	92,6	-0,2	50	119,5	-3,1
				14				51	14,8	12,0	51	51,8	6,8	51	108,5	1,2	50	136,4	-1,8
		100%	20500	17				52	25,9	13,5	52	62,9	8,2	51	125,1	2,6	51	154,1	-0,5
				20				52	37,0	15,0	52	87,5	9,6	51	142,3	4,0	51	172,4	0,9
				23	53	11,1	21,6	53	48,1	16,5	52	103,1	11,1	52	160,1	5,3	51	191,4	2,3
				26	53	22,2	23,1	53	59,2	18,0	52	119,5	12,6	52	178,7	6,6	50	211,0	4,0
				8							47	30,1	3,7	47	67,7	-2,1	46	103,3	-5,1
				11				48	3,8	10,5	48	41,4	5,0	47	79,0	-0,8	47	119,5	-3,9
				14				48	15,1	11,9	48	52,7	6,4	47	108,6	0,5	47	136,3	-2,6
			23000	17				49	26,3	13,3	49	64,0	7,7	48	125,0	1,8	48	153,8	-1,3
				20				49	37,6	14,7	49	75,3	9,1	48	142,1	3,1	48	171,9	0,0
				23	50	11,3	21,5	50	48,9	16,2	49	103,3	10,5	49	159,8	4,4	48	190,7	1,3
				26	50	22,6	23,0	50	60,2	17,6	49	119,5	11,9	49	178,1	5,7	47	210,0	2,9

EFF: Efficiency of the ENERGY RECOVERY in %
HC: Heating capacity of the ENERGY RECOVERY module in kW
OT: Outlet 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 m^3/h

ENERGY RECOVERY MODULE IN HEATING MODE

150 - 170

Table 5.12

Fresh air ratio		Airflow	ODDB	20			10			0			-10			-15		
F150	F170		IDDB	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT	EFF	HC	OT
			8							84	13,6	6,5	84	38,3	4,3	85	51,3	3,0
			11				84	1,7	10,8	85	18,8	9,0	85	46,0	6,6	86	59,7	5,2
			14				84	6,8	13,3	85	28,6	11,4	86	54,1	8,9	86	68,4	7,4
23%	20%	6000	17				85	11,9	15,8	85	35,8	13,7	86	62,6	11,1	87	77,6	9,6
			20				86	17,0	18,3	86	43,4	16,0	87	71,4	13,3	87	87,1	11,7
			23	85	5,1	22,5	85	26,2	20,7	87	51,3	18,3	87	80,7	15,4	88	97,0	13,8
			26	86	10,2	25,1	86	33,3	23,1	87	59,7	20,6	88	90,3	17,6	88	107,3	15,9
			8							76	21,4	5,9	76	59,6	2,8	76	80,0	1,1
			11				76	2,7	10,8	76	29,4	8,0	76	71,6	4,9	76	93,0	3,1
			14				76	10,7	13,0	76	37,4	10,2	77	84,2	6,9	77	106,6	5,1
38%	33%	10000	17				77	18,7	15,2	77	55,8	12,4	77	97,4	9,0	78	120,7	7,1
			20				77	26,7	17,5	77	67,6	14,5	78	111,2	10,9	78	135,5	9,0
			23	77	8,0	22,3	78	34,7	19,6	78	80,0	16,5	78	125,6	13,0	78	150,9	10,9
			26	78	16,0	24,6	78	52,0	21,9	79	93,0	18,6	79	140,6	14,9	79	166,8	12,8
			8							69	28,0	5,3	68	77,7	1,6	69	104,2	-0,5
			11				69	3,5	10,7	69	38,4	7,3	69	93,3	3,5	69	121,0	1,4
			14				69	14,0	12,7	70	48,9	9,3	70	109,7	5,3	70	138,6	3,2
54%	47%	14000	17				70	24,5	14,8	70	72,7	11,2	70	126,8	7,2	70	157,0	5,0
			20				71	35,0	16,8	70	88,0	13,2	71	144,7	9,0	71	176,2	6,8
			23	71	10,5	22,1	71	45,4	18,8	71	104,2	15,1	71	163,3	10,9	71	196,1	8,5
			26	71	21,0	24,2	71	55,9	20,8	71	121,0	17,0	72	182,7	12,6	72	216,7	10,3
			8							63	33,5	4,9	62	75,3	0,6	62	123,9	-1,7
			11				63	4,2	10,6	63	46,0	6,7	63	111,0	2,3	63	143,9	-0,1
			14				64	16,7	12,5	64	58,6	8,5	64	130,4	4,0	64	164,7	1,6
69%	60%	18000	17				64	29,3	14,4	64	71,1	10,3	64	150,7	5,7	64	186,5	3,3
			20				65	41,8	16,2	64	104,8	12,1	64	171,9	7,4	64	209,1	4,9
			23	65	12,6	21,9	65	54,4	18,1	65	123,9	13,8	65	193,9	9,1	65	232,7	6,5
			26	66	25,1	23,9	66	66,9	19,9	65	143,9	15,6	66	216,9	10,7	64	257,1	8,4
			8							59	36,9	4,6	58	83,0	-0,1	59	135,7	-2,6
			11				59	4,6	10,6	59	50,7	6,3	59	121,7	1,6	59	157,5	-1,0
			14				60	18,4	12,4	60	64,5	8,0	60	142,9	3,2	60	180,3	0,6
81%	70%	21000	17				60	32,3	14,1	61	78,4	9,6	60	165,0	4,8	60	204,1	2,1
			20				61	46,1	15,9	61	92,2	11,4	60	188,2	6,4	60	228,8	3,7
			23	61	13,8	21,8	62	59,9	17,6	61	135,7	13,0	61	212,2	8,0	61	254,5	5,3
			26	62	27,7	23,7	62	73,7	19,4	61	157,5	14,7	62	237,2	9,5	60	281,1	7,2
			8							54	41,2	4,2	53	92,6	-1,0	53	149,9	-3,7
			11				54	5,1	10,5	54	56,6	5,7	53	108,1	0,5	53	173,9	-2,3
			14				55	20,6	12,2	55	72,1	7,2	54	157,8	2,0	54	198,8	-0,9
100%	87%	26000	17				55	36,0	13,8	55	87,5	8,8	55	182,1	3,4	55	224,9	0,5
			20				56	51,5	15,4	55	102,9	10,3	55	207,4	4,9	55	251,9	2,0
			23	56	15,4	21,7	56	66,9	17,0	56	149,9	11,8	55	233,8	6,3	55	279,9	3,5
			26	57	30,9	23,3	57	82,3	18,5	56	173,9	13,4	56	261,1	7,7	54	309,0	5,2
			8							50	43,4	3,9	50	97,6	-1,7	49	124,7	-4,5
			11				50	5,4	10,5	50	59,6	5,3	50	113,8	-0,3	50	181,0	-3,2
			14				51	21,7	12,0	51	75,9	6,7	50	130,1	1,1	50	206,9	-1,9
	100%	30000	17				51	37,9	13,5	51	92,2	8,2	51	189,5	2,5	51	233,8	-0,6
			20				52	54,2	15,0	52	108,4	9,6	51	215,7	3,9	51	261,7	0,8
			23	52	16,3	21,6	52	70,5	16,5	52	124,7	11,1	52	243,0	5,2	51	290,6	2,2
			26	53	32,5	23,1	53	86,7	18,0	52	181,0	12,5	52	271,2	6,5	50	320,6	3,9
			8							46	44,6	3,6	46	100,3	-2,4	45	128,1	-5,4
			11				46	5,6	10,5	46	61,3	4,9	46	117,0	-1,1	46	144,8	-4,2
			14				47	22,3	11,9	47	78,0	6,2	46	133,7	0,2	46	208,5	-2,9
		35000	17				47	39,0	13,2	47	94,7	7,5	47	150,4	1,5	47	235,3	-1,7
			20				48	55,7	14,6	48	111,4	8,8	47	217,3	2,7	47	263,1	-0,5
			23	48	16,7	21,4	48	72,4	16,0	48	128,1	10,2	47	244,4	4,0	47	291,8	0,9
			26	49	33,4	22,9	49	89,1	17,4	48	144,8	11,5	48	272,5	5,2	46	321,6	2,4

EFF: Efficiency of the ENERGY RECOVERY in %
HC: Heating capacity of the ENERGY RECOVERY module in kW
OT: Outlet 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 m^3/h

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

45 STD Sizes

Table 6.1

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K1	1*1.1	0,78	K2	1*1.1	0,94	K2	1*1.1	1,11	K3	1*1.5	1,24	K4	1*2.2	1,38
7033	K2	1*1.1	0,93	K2	1*1.1	1,10	K3	1*1.5	1,23	K3	1*1.5	1,42	K4	1*2.2	1,56
7567	K2	1*1.1	1,11	K3	1*1.5	1,23	K3	1*1.5	1,42	K4	1*2.2	1,56	K4	1*2.2	1,75
8100	***K9***	***1*1.5***	***1,25***	K3	1*1.5	1,43	K10	1*2.2	1,57	K4	1*2.2	1,76	K5	1*2.2	1,96
8633	K10	1*2.2	1,42	K10	1*2.2	1,60	K4	1*2.2	1,79	K4	1*2.2	1,99	K8	1*3.0	2,18
9167	K10	1*2.2	1,65	K10	1*2.2	1,84	K4	1*2.2	2,04	K12	1*3.0	2,23	K8	1*3.0	2,45
9700	K10	1*2.2	1,91	K12	1*3.0	2,09	K12	1*3.0	2,30	K8	1*3.0	2,51	K8	1*3.0	2,73
10200	K12	1*3.0	2,23	K12	1*3.0	2,44	K8	1*3.0	2,65	K13	1*4.0	2,84	K13	1*4.0	3,07
10800	K12	1*3.0	2,60	K13	1*4.0	2,78	K13	1*4.0	3,00	K13	1*4.0	3,23	K11	1*4.0	3,46

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K5	1*2.2	1,56	K5	1*2.2	1,75	K6	1*2.2	1,94	K7	1*3.0	2,12	K14	1*3.0	2,31
7033	K5	1*2.2	1,75	K5	1*2.2	1,94	K7	1*3.0	2,12	K7	1*3.0	2,33	K14	1*3.0	2,53
7567	K5	1*2.2	1,95	K8	1*3.0	2,13	K7	1*3.0	2,34	K7	1*3.0	2,55	K14	1*3.0	2,77
8100	K8	1*3.0	2,15	K8	1*3.0	2,36	K7	1*3.0	2,58	K7	1*3.0	2,80	K17	1*4.0	2,99
8633	K8	1*3.0	2,40	K7	1*3.0	2,62	K11	1*4.0	2,80	K11	1*4.0	3,03	K17	1*4.0	3,26
9167	K8	1*3.0	2,67	K11	1*4.0	2,86	K11	1*4.0	3,09	K11	1*4.0	3,32	K17	1*4.0	3,56
9700	K11	1*4.0	2,92	K11	1*4.0	3,16	K11	1*4.0	3,39	K11	1*4.0	3,64	K20	1*5.5	3,77
10200	K11	1*4.0	3,30	K11	1*4.0	3,54	K20	1*5.5	3,68	K20	1*5.5	3,92	K20	1*5.5	4,17
10800	K20	1*5.5	3,60	K20	1*5.5	3,84	K20	1*5.5	4,09	K20	1*5.5	4,34	No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K14	1*3.0	2,51	K15	1*3.0	2,34	K15	1*3.0	2,49	K15	1*3.0	2,64	K16	1*4.0	2,76
7033	K14	1*3.0	2,74	K15	1*3.0	2,62	K15	1*3.0	2,77	K16	1*4.0	2,89	K16	1*4.0	3,05
7567	K17	1*4.0	2,95	K18	1*4.0	2,90	K16	1*4.0	3,05	K16	1*4.0	3,21	K16	1*4.0	3,37
8100	K17	1*4.0	3,21	K18	1*4.0	3,25	K16	1*4.0	3,41	K16	1*4.0	3,57	K19	1*5.5	3,62
8633	K17	1*4.0	3,50	K16	1*4.0	3,65	K19	1*5.5	3,69	K19	1*5.5	3,85	K19	1*5.5	4,02
9167	K20	1*5.5	3,69	K19	1*5.5	3,96	K19	1*5.5	4,13	K19	1*5.5	4,29	K19	1*5.5	4,46
9700	K19	1*5.5	4,27	K19	1*5.5	4,44	K19	1*5.5	4,60	K19	1*5.5	4,77	No kit		
10200	K19	1*5.5	4,81	No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

55 STD Sizes

Table 6.2

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K1	1*1.1	1,01	K2	1*1.5	1,14	K2	1*1.5	1,32	K3	1*2.2	1,46	K3	1*2.2	1,65
7800	K7	1*1.5	1,18	K2	1*1.5	1,35	K8	1*2.2	1,49	K3	1*2.2	1,68	K4	1*2.2	1,88
8400	K2	1*1.5	1,41	K8	1*2.2	1,55	K3	1*2.2	1,74	K3	1*2.2	1,94	K5	1*3.0	2,13
9000	***K8***	***1*2.2***	***1,63***	K8	1*2.2	1,82	K3	1*2.2	2,02	K10	1*3.0	2,21	K5	1*3.0	2,42
9600	K8	1*2.2	1,92	K10	1*3.0	2,10	K10	1*3.0	2,31	K5	1*3.0	2,52	K5	1*3.0	2,75
10200	K10	1*3.0	2,23	K10	1*3.0	2,44	K5	1*3.0	2,65	K11	1*4.0	2,84	K11	1*4.0	3,07
10800	K10	1*3.0	2,60	K11	1*4.0	2,78	K11	1*4.0	3,00	K11	1*4.0	3,23	K9	1*4.0	3,46

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K4	1*2.2	1,84	K4	1*2.2	2,04	K6	1*3.0	2,22	K6	1*3.0	2,43	K13	1*3.0	2,64
7800	K5	1*3.0	2,07	K5	1*3.0	2,27	K6	1*3.0	2,49	K6	1*3.0	2,70	K14	1*4.0	2,89
8400	K5	1*3.0	2,34	K6	1*3.0	2,55	K6	1*3.0	2,78	K9	1*4.0	2,96	K14	1*4.0	3,19
9000	K5	1*3.0	2,64	K9	1*4.0	2,83	K9	1*4.0	3,06	K9	1*4.0	3,29	K14	1*4.0	3,53
9600	K11	1*4.0	2,94	K9	1*4.0	3,17	K9	1*4.0	3,41	K9	1*4.0	3,65	K12	1*5.5	3,78
10200	K9	1*4.0	3,30	K9	1*4.0	3,54	K12	1*5.5	3,68	K12	1*5.5	3,92	K12	1*5.5	4,17
10800	K12	1*5.5	3,60	K12	1*5.5	3,84	K12	1*5.5	4,09	K12	1*5.5	4,34	No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K14	1*4.0	2,82	K15	1*4.0	2,70	K16	1*4.0	2,85	K16	1*4.0	3,01	K16	1*4.0	3,17
7800	K14	1*4.0	3,11	K15	1*4.0	3,08	K16	1*4.0	3,23	K16	1*4.0	3,39	K16	1*4.0	3,56
8400	K14	1*4.0	3,43	K15	1*4.0	3,51	K16	1*4.0	3,67	K17	1*5.5	3,71	K17	1*5.5	3,88
9000	K17	1*5.5	3,71	K17	1*5.5	3,87	K17	1*5.5	4,03	K17	1*5.5	4,19	K17	1*5.5	4,36
9600	K17	1*5.5	4,23	K17	1*5.5	4,39	K17	1*5.5	4,56	K17	1*5.5	4,73	K17	1*5.5	4,90
10200	K17	1*5.5	4,81	No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

65 STD Sizes

Table 6.3

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K1	1*1.1	0,93	K3	1*1.5	1,07	K3	1*1.5	1,26	K4	1*2.2	1,42	K5	1*2.2	1,64
9333	K1	1*1.1	1,12	K3	1*1.5	1,26	K3	1*1.5	1,46	K4	1*2.2	1,62	K5	1*2.2	1,84
10067	K3	1*1.5	1,28	K4	1*2.2	1,43	K4	1*2.2	1,64	K5	1*2.2	1,85	K5	1*2.2	2,08
10800	K9	1*2.2	1,47	K4	1*2.2	1,68	K4	1*2.2	1,89	K10	1*3.0	2,09	K10	1*3.0	2,32
11500	***K4***	***1*2.2***	***1,73***	K4	1*2.2	1,95	K10	1*3.0	2,15	K10	1*3.0	2,38	K6	1*3.0	2,62
12267	K4	1*2.2	2,03	K10	1*3.0	2,23	K10	1*3.0	2,46	K10	1*3.0	2,70	K7	1*4.0	2,91
13000	K11	1*3.0	2,33	K10	1*3.0	2,57	K13	1*4.0	2,77	K7	1*4.0	3,02	K7	1*4.0	3,27
13500	K10	1*3.0	2,73	K13	1*4.0	2,96	K7	1*4.0	3,24	K7	1*4.0	3,53	K19	1*5.5	3,71
14000	K13	1*4.0	2,96	K13	1*4.0	3,23	K7	1*4.0	3,52	K19	1*5.5	3,70	K12	1*5.5	4,00
14500	K13	1*4.0	3,25	K13	1*4.0	3,53	K19	1*5.5	3,71	K19	1*5.5	4,00	K12	1*5.5	4,31
15000	K13	1*4.0	3,55	K19	1*5.5	3,73	K19	1*5.5	4,02	K12	1*5.5	4,33	K12	1*5.5	4,64
15500	K19	1*5.5	3,76	K19	1*5.5	4,05	K19	1*5.5	4,35	K12	1*5.5	4,66	K12	1*5.5	4,64
16000	K19	1*5.5	4,10	K19	1*5.5	4,40	K19	1*5.5	4,71	K19	1*5.5	4,67	K20	1*7.5	4,91

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K5	1*2.2	1,86	K6	1*3.0	2,08	K7	1*4.0	2,29	K8	1*4.0	2,53	K15	1*4.0	2,78
9333	K5	1*2.2	2,08	K6	1*3.0	2,30	K6	1*3.0	2,55	K8	1*4.0	2,77	K15	1*4.0	3,03
10067	K6	1*3.0	2,30	K6	1*3.0	2,55	K6	1*3.0	2,80	K8	1*4.0	3,03	K15	1*4.0	3,30
10800	K6	1*3.0	2,57	K7	1*4.0	2,78	K8	1*4.0	3,04	K8	1*4.0	3,32	K15	1*4.0	3,59
11500	K7	1*4.0	2,83	K7	1*4.0	3,09	K8	1*4.0	3,36	K8	1*4.0	3,63	K18	1*5.5	3,80
12267	K7	1*4.0	3,16	K7	1*4.0	3,43	K12	1*5.5	3,59	K12	1*5.5	3,86	K18	1*5.5	4,15
13000	K7	1*4.0	3,53	K12	1*5.5	3,69	K12	1*5.5	3,96	K12	1*5.5	4,24	K18	1*5.5	4,53
13500	K12	1*5.5	4,01	K12	1*5.5	4,31	K18	1*5.5	4,62	K18	1*5.5	4,59	K18	1*5.5	4,89
14000	K12	1*5.5	4,30	K18	1*5.5	4,62	K18	1*5.5	4,59	K18	1*5.5	4,89	K16	1*7.5	5,12
14500	K12	1*5.5	4,62	K12	1*5.5	4,60	K18	1*5.5	4,90	K16	1*7.5	5,13	K17	1*7.5	5,44
15000	K12	1*5.5	4,61	K12	1*5.5	4,91	K16	1*7.5	5,15	K16	1*7.5	5,46	K17	1*7.5	5,77
15500	K16	1*7.5	4,87	K16	1*7.5	5,17	K16	1*7.5	5,49	K16	1*7.5	5,80	K17	1*7.5	6,13
16000	K16	1*7.5	5,21	K16	1*7.5	5,53	K16	1*7.5	5,84	K16	1*7.5	6,17	K17	1*7.5	6,50

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K15	1*4.0	3,03	K16	1*7.5	3,14	K17	1*7.5	3,39	K17	1*7.5	3,64	K17	1*7.5	3,89
9333	K15	1*4.0	3,29	K15	1*4.0	3,56	K17	1*7.5	3,67	K17	1*7.5	3,93	K17	1*7.5	4,20
10067	K15	1*4.0	3,58	K18	1*5.5	3,74	K17	1*7.5	3,96	K17	1*7.5	4,24	K17	1*7.5	4,52
10800	K18	1*5.5	3,76	K18	1*5.5	4,05	K17	1*7.5	4,27	K17	1*7.5	4,56	K17	1*7.5	4,52
11500	K18	1*5.5	4,09	K18	1*5.5	4,38	K17	1*7.5	4,61	K17	1*7.5	4,57	K17	1*7.5	4,85
12267	K18	1*5.5	4,44	K18	1*5.5	4,74	K18	1*5.5	4,70	K17	1*7.5	4,91	K17	1*7.5	5,21
13000	K18	1*5.5	4,83	K18	1*5.5	4,78	K17	1*7.5	5,00	K17	1*7.5	5,29	K17	1*7.5	5,59
13500	K17	1*7.5	5,12	K17	1*7.5	5,42	K17	1*7.5	5,72	K17	1*7.5	6,03	K17	1*7.5	6,35
14000	K17	1*7.5	5,43	K17	1*7.5	5,73	K17	1*7.5	6,05	K17	1*7.5	6,37	No kit		
14500	K17	1*7.5	5,75	K17	1*7.5	6,07	K17	1*7.5	6,39	No kit			No kit		
15000	K17	1*7.5	6,09	K17	1*7.5	6,42	No kit			No kit			No kit		
15500	K17	1*7.5	6,45	No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

75 STD Sizes

Table 6.4

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K1	1*1.5	1,35	K2	1*2.2	1,52	K2	1*2.2	1,76	K3	1*3.0	1,98	K4	1*3.0	2,22
10500	K2	1*2.2	1,46	K2	1*2.2	1,69	K2	1*2.2	1,93	K3	1*3.0	2,16	K4	1*3.0	2,42
11000	K2	1*2.2	1,64	K2	1*2.2	1,87	K3	1*3.0	2,10	K4	1*3.0	2,36	K4	1*3.0	2,62
11500	K2	1*2.2	1,83	K2	1*2.2	2,07	K3	1*3.0	2,31	K4	1*3.0	2,57	K5	1*4.0	2,80
12000	K2	1*2.2	2,03	K3	1*3.0	2,26	K3	1*3.0	2,52	K4	1*3.0	2,80	K5	1*4.0	3,03
12500	K3	1*3.0	2,23	K3	1*3.0	2,49	K3	1*3.0	2,76	K5	1*4.0	3,00	K5	1*4.0	3,28
13000	K3	1*3.0	2,47	K3	1*3.0	2,74	K9	1*4.0	2,97	K5	1*4.0	3,25	K5	1*4.0	3,54
13500	***K3***	***1*3.0***	***2,73***	K9	1*4.0	2,96	K5	1*4.0	3,24	K5	1*4.0	3,53	K10	1*5.5	3,71
14000	K9	1*4.0	2,96	K9	1*4.0	3,23	K5	1*4.0	3,52	K10	1*5.5	3,70	K8	1*5.5	4,00
14500	K9	1*4.0	3,25	K9	1*4.0	3,53	K10	1*5.5	3,71	K10	1*5.5	4,00	K8	1*5.5	4,31
15000	K9	1*4.0	3,55	K10	1*5.5	3,73	K10	1*5.5	4,02	K8	1*5.5	4,33	K8	1*5.5	4,64
15500	K10	1*5.5	3,76	K10	1*5.5	4,05	K10	1*5.5	4,35	K8	1*5.5	4,66	K8	1*5.5	4,64
16000	K10	1*5.5	4,10	K10	1*5.5	4,40	K10	1*5.5	4,71	K10	1*5.5	4,67	K12	1*7.5	4,91

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K4	1*3.0	2,48	K5	1*4.0	2,70	K6	1*4.0	2,96	K6	1*4.0	3,23	K13	1*4.0	3,50
10500	K4	1*3.0	2,68	K6	1*4.0	2,90	K6	1*4.0	3,17	K6	1*4.0	3,45	K7	1*5.5	3,61
11000	K5	1*4.0	2,85	K6	1*4.0	3,12	K6	1*4.0	3,40	K6	1*4.0	3,68	K7	1*5.5	3,85
11500	K6	1*4.0	3,07	K6	1*4.0	3,36	K6	1*4.0	3,64	K7	1*5.5	3,81	K7	1*5.5	4,10
12000	K6	1*4.0	3,31	K6	1*4.0	3,60	K7	1*5.5	3,78	K7	1*5.5	4,07	K7	1*5.5	4,37
12500	K6	1*4.0	3,57	K8	1*5.5	3,75	K7	1*5.5	4,04	K7	1*5.5	4,34	K7	1*5.5	4,65
13000	K8	1*5.5	3,73	K8	1*5.5	4,02	K7	1*5.5	4,32	K7	1*5.5	4,63	K7	1*5.5	4,60
13500	K8	1*5.5	4,01	K8	1*5.5	4,31	K7	1*5.5	4,62	K7	1*5.5	4,59	K7	1*5.5	4,89
14000	K8	1*5.5	4,30	K7	1*5.5	4,62	K7	1*5.5	4,59	K7	1*5.5	4,89	K11	1*7.5	5,12
14500	K8	1*5.5	4,62	K8	1*5.5	4,60	K7	1*5.5	4,90	K11	1*7.5	5,13	K14	1*7.5	5,44
15000	K8	1*5.5	4,61	K8	1*5.5	4,91	K11	1*7.5	5,15	K11	1*7.5	5,46	K14	1*7.5	5,77
15500	K11	1*7.5	4,87	K11	1*7.5	5,17	K11	1*7.5	5,49	K11	1*7.5	5,80	K14	1*7.5	6,13
16000	K11	1*7.5	5,21	K11	1*7.5	5,53	K11	1*7.5	5,84	K11	1*7.5	6,17	K14	1*7.5	6,50

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K7	1*5.5	3,66	K14	1*7.5	3,87	K14	1*7.5	4,14	K14	1*7.5	4,42	K14	1*7.5	4,70
10500	K7	1*5.5	3,89	K14	1*7.5	4,11	K14	1*7.5	4,39	K14	1*7.5	4,67	K14	1*7.5	4,61
11000	K7	1*5.5	4,14	K14	1*7.5	4,36	K14	1*7.5	4,65	K14	1*7.5	4,59	K14	1*7.5	4,87
11500	K14	1*7.5	4,33	K14	1*7.5	4,62	K14	1*7.5	4,58	K14	1*7.5	4,85	K14	1*7.5	5,14
12000	K14	1*7.5	4,60	K7	1*5.5	4,63	K14	1*7.5	4,84	K14	1*7.5	5,13	K14	1*7.5	5,42
12500	K7	1*5.5	4,61	K7	1*5.5	4,90	K14	1*7.5	5,12	K14	1*7.5	5,41	K14	1*7.5	5,71
13000	K7	1*5.5	4,89	K14	1*7.5	5,12	K14	1*7.5	5,41	K14	1*7.5	5,72	K14	1*7.5	6,02
13500	K14	1*7.5	5,12	K14	1*7.5	5,42	K14	1*7.5	5,72	K14	1*7.5	6,03	K14	1*7.5	6,35
14000	K14	1*7.5	5,43	K14	1*7.5	5,73	K14	1*7.5	6,05	K14	1*7.5	6,37	No kit		
14500	K14	1*7.5	5,75	K14	1*7.5	6,07	K14	1*7.5	6,39	No kit			No kit		
15000	K14	1*7.5	6,09	K14	1*7.5	6,42	No kit			No kit			No kit		
15500	K14	1*7.5	6,45	No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

85 - 100 - 120 STD Sizes

Table 6.5

Size			Available static pressure	150 Pa			200 Pa			250 Pa			300 Pa			350 Pa		
085	100	120	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
			12000	K1	1*2.2	1,54	K2	1*3.0	1,81	K3	1*3.0	2,11	K3	1*3.0	2,42	K4	1*4.0	2,72
			12500	K9	1*2.2	1,67	K2	1*3.0	1,94	K3	1*3.0	2,25	K3	1*3.0	2,57	K5	1*4.0	2,87
			13000	K2	1*3.0	1,79	K2	1*3.0	2,08	K3	1*3.0	2,39	K3	1*3.0	2,72	K5	1*4.0	3,02
			13500	K2	1*3.0	1,94	K2	1*3.0	2,24	K3	1*3.0	2,55	K4	1*4.0	2,85	K5	1*4.0	3,19
			14000	K2	1*3.0	2,09	K2	1*3.0	2,40	K3	1*3.0	2,72	K4	1*4.0	3,02	K5	1*4.0	3,37
			14500	K2	1*3.0	2,26	K2	1*3.0	2,57	K4	1*4.0	2,86	K4	1*4.0	3,20	K5	1*4.0	3,55
xx			***15000***	***K2***	***1*3.0***	***2,44***	K3	1*3.0	2,75	K4	1*4.0	3,04	K5	1*4.0	3,39	K10	1*5.5	3,63
			15500	K2	1*3.0	2,62	K4	1*4.0	2,90	K4	1*4.0	3,24	K5	1*4.0	3,59	K10	1*5.5	3,83
			16000	K13	1*4.0	2,78	K4	1*4.0	3,11	K4	1*4.0	3,44	K10	1*5.5	3,69	K10	1*5.5	4,05
			16500	K13	1*4.0	2,99	K4	1*4.0	3,32	K4	1*4.0	3,66	K10	1*5.5	3,90	K10	1*5.5	4,27
			17000	K13	1*4.0	3,21	K4	1*4.0	3,54	K14	1*5.5	3,78	K10	1*5.5	4,13	K10	1*5.5	4,50
			17500	K4	1*4.0	3,44	K14	1*5.5	3,67	K14	1*5.5	4,01	K10	1*5.5	4,37	K10	1*5.5	4,75
			18000	K4	1*4.0	3,69	K14	1*5.5	3,91	K10	1*5.5	4,26	K10	1*5.5	4,63	K10	1*5.5	4,67
	xx		***18500***	***K14***	***1*5.5***	***3,82***	K14	1*5.5	4,16	K10	1*5.5	4,52	K10	1*5.5	4,89	K10	1*5.5	4,92
			19000	K14	1*5.5	4,09	K14	1*5.5	4,43	K10	1*5.5	4,80	K10	1*5.5	4,82	K6	1*7.5	5,11
			19500	K14	1*5.5	4,36	K14	1*5.5	4,71	K14	1*5.5	4,73	K6	1*7.5	5,02	K6	1*7.5	5,38
			20000	K14	1*5.5	4,65	K14	1*5.5	4,66	K6	1*7.5	4,94	K6	1*7.5	5,30	K6	1*7.5	5,67
		xx	***20500***	***K14***	***1*5.5***	***4,61***	K16	1*7.5	4,88	K6	1*7.5	5,23	K6	1*7.5	5,59	K6	1*7.5	5,97
			21000	K14	1*5.5	4,90	K6	1*7.5	5,17	K6	1*7.5	5,53	K6	1*7.5	5,90	K6	1*7.5	6,28
			21500	K16	1*7.5	5,14	K6	1*7.5	5,48	K6	1*7.5	5,84	K6	1*7.5	6,22	K12	1*7.5	6,60
			22000	K16	1*7.5	5,45	K6	1*7.5	5,81	K6	1*7.5	6,17	K6	1*7.5	6,55	K8	2*5.5	7,30
			22500	K6	1*7.5	5,78	K6	1*7.5	6,14	K6	1*7.5	6,51	K8	2*5.5	7,19	K8	2*5.5	7,66
			23000	K6	1*7.5	6,13	K6	1*7.5	6,49	K18	2*4.0	7,31	K8	2*5.5	7,55	K8	2*5.5	8,02

Size			Available static pressure	400 Pa			450 Pa			500 Pa			550 Pa			600 Pa		
085	100	120	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
			12000	K5	1*4.0	3,05	K6	1*7.5	3,25	K8	2*5.5	3,69	K7	1*5.5	3,72	K7	1*5.5	4,06
			12500	K5	1*4.0	3,21	K6	1*7.5	3,40	K8	2*5.5	3,85	K7	1*5.5	3,89	K7	1*5.5	4,23
			13000	K5	1*4.0	3,37	K7	1*5.5	3,62	K7	1*5.5	3,71	K7	1*5.5	4,05	K7	1*5.5	4,40
			13500	K5	1*4.0	3,55	K7	1*5.5	3,80	K7	1*5.5	3,88	K7	1*5.5	4,23	K7	1*5.5	4,59
			14000	K10	1*5.5	3,62	K7	1*5.5	3,98	K7	1*5.5	4,06	K7	1*5.5	4,41	K7	1*5.5	4,78
			14500	K10	1*5.5	3,80	K7	1*5.5	4,17	K7	1*5.5	4,24	K7	1*5.5	4,60	K11	1*7.5	4,90
			15000	K7	1*5.5	4,00	K7	1*5.5	4,37	K7	1*5.5	4,44	K7	1*5.5	4,80	K11	1*7.5	5,11
			15500	K7	1*5.5	4,20	K7	1*5.5	4,59	K7	1*5.5	4,64	K12	1*7.5	4,94	K11	1*7.5	5,32
			16000	K7	1*5.5	4,42	K7	1*5.5	4,81	K7	1*5.5	4,85	K12	1*7.5	5,16	K11	1*7.5	5,54
			16500	K7	1*5.5	4,65	K7	1*5.5	4,70	K12	1*7.5	5,00	K12	1*7.5	5,38	K11	1*7.5	5,77
			17000	K7	1*5.5	4,89	K7	1*5.5	4,93	K12	1*7.5	5,23	K11	1*7.5	5,62	K11	1*7.5	6,01
			17500	K10	1*5.5	4,79	K12	1*7.5	5,09	K12	1*7.5	5,47	K11	1*7.5	5,86	K11	1*7.5	6,26
			18000	K6	1*7.5	4,96	K12	1*7.5	5,34	K12	1*7.5	5,72	K11	1*7.5	6,12	K11	1*7.5	6,53
			18500	K6	1*7.5	5,22	K12	1*7.5	5,60	K12	1*7.5	5,99	K11	1*7.5	6,39	K15	2*5.5	7,43
			19000	K6	1*7.5	5,48	K12	1*7.5	5,87	K12	1*7.5	6,26	K15	2*5.5	7,26	K15	2*5.5	7,73
			19500	K12	1*7.5	5,76	K12	1*7.5	6,15	K12	1*7.5	6,55	K15	2*5.5	7,56	K15	2*5.5	8,05
			20000	K12	1*7.5	6,05	K12	1*7.5	6,44	K15	2*5.5	7,40	K15	2*5.5	7,88	K15	2*5.5	8,37
			20500	K12	1*7.5	6,35	K8	2*5.5	7,24	K15	2*5.5	7,72	K15	2*5.5	8,21	K15	2*5.5	8,70
			21000	K8	2*5.5	7,09	K8	2*5.5	7,57	K15	2*5.5	8,05	K15	2*5.5	8,55	K15	2*5.5	9,05
			21500	K8	2*5.5	7,43	K8	2*5.5	7,91	K15	2*5.5	8,40	K15	2*5.5	8,90	K15	2*5.5	9,41
			22000	K8	2*5.5	7,78	K15	2*5.5	8,26	K15	2*5.5	8,76	K15	2*5.5	9,27	K15	2*5.5	9,79
			22500	K8	2*5.5	8,14	K15	2*5.5	8,63	K15	2*5.5	9,13	K15	2*5.5	9,65	K17	2*7.5	10,02
			23000	K8	2*5.5	8,51	K15	2*5.5	9,01	K15	2*5.5	9,52	K17	2*7.5	9,90	K17	2*7.5	10,42

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

150 - 170 STD Sizes

Table 6.6

Size		Available static pressure	150 Pa			200 Pa			250 Pa			300 Pa			350 Pa		
150	170	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
		18000	K1	2*1.5	2,27	K2	2*2.2	2,58	K2	2*2.2	2,97	K3	2*3.0	3,35	K3	2*3.0	3,76
		19000	K1	2*1.5	2,54	K2	2*2.2	2,85	K2	2*2.2	3,25	K3	2*3.0	3,64	K3	2*3.0	4,07
		20000	K2	2*2.2	2,74	K2	2*2.2	3,14	K2	2*2.2	3,56	K3	2*3.0	3,96	K4	2*3.0	4,40
		21000	K2	2*2.2	3,04	K2	2*2.2	3,46	K2	2*2.2	3,89	K3	2*3.0	4,30	K4	2*3.0	4,76
		22000	K2	2*2.2	3,37	K2	2*2.2	3,80	K3	2*3.0	4,21	K3	2*3.0	4,67	K4	2*3.0	5,14
		23000	K2	2*2.2	3,73	K3	2*3.0	4,14	K3	2*3.0	4,59	K4	2*3.0	5,06	K4	2*3.0	5,55
		24000	K2	2*2.2	4,11	K3	2*3.0	4,53	K3	2*3.0	5,00	K4	2*3.0	5,49	K7	2*4.0	5,90
		25000	K10	2*3.0	4,48	K3	2*3.0	4,96	K3	2*3.0	5,44	K7	2*4.0	5,86	K7	2*4.0	6,37
xx		***26000***	***K3***	***2*3.0***	***4,93***	K3	2*3.0	5,41	K11	2*4.0	5,83	K7	2*4.0	6,34	K7	2*4.0	6,86
		27000	K3	2*3.0	5,40	K11	2*4.0	5,82	K7	2*4.0	6,33	K7	2*4.0	6,85	K7	2*4.0	7,38
		28000	K11	2*4.0	5,82	K11	2*4.0	6,33	K7	2*4.0	6,85	K7	2*4.0	7,39	K9	2*5.5	7,70
		29000	K11	2*4.0	6,35	K11	2*4.0	6,88	K13	2*5.5	7,19	K13	2*5.5	7,72	K9	2*5.5	8,27
	xx	***30000***	***K11***	***2*4.0***	***6,92***	K13	2*5.5	7,23	K13	2*5.5	7,77	K13	2*5.5	8,32	K9	2*5.5	8,87
		31000	K13	2*5.5	7,29	K13	2*5.5	7,83	K13	2*5.5	8,38	K9	2*5.5	8,94	K9	2*5.5	9,51
		32000	K13	2*5.5	7,91	K13	2*5.5	8,47	K13	2*5.5	9,03	K9	2*5.5	9,61	K14	2*7.5	10,04
		33000	K13	2*5.5	8,57	K13	2*5.5	9,14	K13	2*5.5	9,72	K14	2*7.5	10,16	K14	2*7.5	10,75
		34000	K13	2*5.5	9,26	K13	2*5.5	9,85	K14	2*7.5	10,29	K14	2*7.5	10,88	K14	2*7.5	11,49
		35000	K16	2*7.5	9,85	K14	2*7.5	10,44	K14	2*7.5	11,04	K14	2*7.5	11,65	K14	2*7.5	12,27

Size		Available static pressure	400 Pa			450 Pa			500 Pa			550 Pa			600 Pa		
150	170	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
		18000	K4	2*3.0	4,19	K4	2*3.0	4,64	K5	2*4.0	5,03	K5	2*4.0	5,49	K6	2*4.0	5,96
		19000	K4	2*3.0	4,51	K4	2*3.0	4,97	K5	2*4.0	5,37	K6	2*4.0	5,84	K6	2*4.0	6,32
		20000	K4	2*3.0	4,86	K4	2*3.0	5,33	K5	2*4.0	5,73	K6	2*4.0	6,22	K6	2*4.0	6,71
		21000	K4	2*3.0	5,23	K5	2*4.0	5,63	K5	2*4.0	6,12	K6	2*4.0	6,62	K6	2*4.0	7,13
		22000	K7	2*4.0	5,55	K5	2*4.0	6,03	K5	2*4.0	6,53	K6	2*4.0	7,05	K8	2*5.5	7,34
		23000	K7	2*4.0	5,96	K5	2*4.0	6,46	K5	2*4.0	6,98	K8	2*5.5	7,27	K8	2*5.5	7,79
		24000	K5	2*4.0	6,41	K5	2*4.0	6,92	K9	2*5.5	7,22	K8	2*5.5	7,74	K8	2*5.5	8,27
		25000	K5	2*4.0	6,88	K9	2*5.5	7,19	K9	2*5.5	7,71	K8	2*5.5	8,24	K8	2*5.5	8,79
		26000	K5	2*4.0	7,39	K9	2*5.5	7,69	K9	2*5.5	8,22	K8	2*5.5	8,77	K8	2*5.5	9,33
		27000	K9	2*5.5	7,68	K9	2*5.5	8,22	K8	2*5.5	8,77	K8	2*5.5	9,33	K12	2*7.5	9,75
		28000	K9	2*5.5	8,24	K9	2*5.5	8,79	K8	2*5.5	9,35	K12	2*7.5	9,78	K12	2*7.5	10,35
		29000	K9	2*5.5	8,82	K9	2*5.5	9,39	K12	2*7.5	9,82	K12	2*7.5	10,39	K12	2*7.5	10,98
		30000	K9	2*5.5	9,44	K14	2*7.5	9,87	K12	2*7.5	10,45	K12	2*7.5	11,04	K12	2*7.5	11,64
		31000	K14	2*7.5	9,95	K14	2*7.5	10,53	K12	2*7.5	11,13	K12	2*7.5	11,73	K12	2*7.5	12,34
		32000	K14	2*7.5	10,63	K12	2*7.5	11,23	K12	2*7.5	11,83	K12	2*7.5	12,45	K12	2*7.5	13,07
		33000	K14	2*7.5	11,35	K12	2*7.5	11,96	K12	2*7.5	12,58	K12	2*7.5	13,21	K15	2*9.0	14,34
		34000	K14	2*7.5	12,10	K12	2*7.5	12,73	K15	2*9.0	13,37	K15	2*9.0	14,19	K15	2*9.0	15,04
		35000	K12	2*7.5	12,90	K15	2*9.0	13,29	K15	2*9.0	14,09	K15	2*9.0	14,92	K15	2*9.0	15,78

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

45 GAZ Sizes

Table 6.7

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K1	1*1.5	1,08	K2	1*2.2	1,22	K2	1*2.2	1,39	K3	1*2.2	1,57	K3	1*2.2	1,76
7033	K2	1*2.2	1,27	K2	1*2.2	1,45	K2	1*2.2	1,63	K3	1*2.2	1,83	K4	1*2.2	2,02
7567	K2	1*2.2	1,52	K2	1*2.2	1,71	K3	1*2.2	1,91	K8	1*3.0	2,09	K5	1*3.0	2,30
8100	***K2***	***1*2.2***	***1,80***	K3	1*2.2	2,01	K8	1*3.0	2,19	K8	1*3.0	2,41	K5	1*3.0	2,63
8633	K8	1*3.0	2,11	K8	1*3.0	2,32	K8	1*3.0	2,54	K5	1*3.0	2,76	K9	1*4.0	2,95
9167	K8	1*3.0	2,47	K8	1*3.0	2,69	K9	1*4.0	2,88	K9	1*4.0	3,11	K7	1*4.0	3,34
9700	K9	1*4.0	2,83	K9	1*4.0	3,06	K9	1*4.0	3,29	K7	1*4.0	3,54	K10	1*5.5	3,67
10200	K9	1*4.0	3,32	K9	1*4.0	3,57	K10	1*5.5	3,70	K10	1*5.5	3,94	K10	1*5.5	4,19
10800	K10	1*5.5	3,77	K10	1*5.5	4,01	K10	1*5.5	4,27	No kit			No kit		

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K4	1*2.2	1,95	K5	1*3.0	2,13	K6	1*3.0	2,32	K6	1*3.0	2,52	K12	1*3.0	2,35
7033	K5	1*3.0	2,21	K5	1*3.0	2,41	K6	1*3.0	2,62	K7	1*4.0	2,79	K12	1*3.0	2,68
7567	K5	1*3.0	2,51	K6	1*3.0	2,73	K7	1*4.0	2,90	K11	1*5.5	2,78	K13	1*4.0	3,02
8100	K9	1*4.0	2,81	K7	1*4.0	3,03	K7	1*4.0	3,26	K11	1*5.5	3,18	K13	1*4.0	3,44
8633	K7	1*4.0	3,18	K7	1*4.0	3,41	K11	1*5.5	3,48	K11	1*5.5	3,64	K11	1*5.5	3,80
9167	K7	1*4.0	3,59	K10	1*5.5	3,71	K11	1*5.5	3,98	K11	1*5.5	4,14	K11	1*5.5	4,31
9700	K10	1*5.5	3,91	K11	1*5.5	4,37	K11	1*5.5	4,53	K11	1*5.5	4,70	K11	1*5.5	4,87
10200	K11	1*5.5	4,82	No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
6500	K12	1*3.0	2,50	K12	1*3.0	2,65	K13	1*4.0	2,77	K14	1*4.0	2,92	K14	1*4.0	3,08
7033	K13	1*4.0	2,80	K13	1*4.0	2,95	K13	1*4.0	3,11	K14	1*4.0	3,27	K14	1*4.0	3,44
7567	K13	1*4.0	3,18	K13	1*4.0	3,34	K13	1*4.0	3,50	K14	1*4.0	3,67	K15	1*5.5	3,72
8100	K13	1*4.0	3,60	K11	1*5.5	3,65	K11	1*5.5	3,82	K15	1*5.5	3,99	K15	1*5.5	4,16
8633	K11	1*5.5	3,96	K11	1*5.5	4,12	K15	1*5.5	4,29	K15	1*5.5	4,46	K15	1*5.5	4,64
9167	K11	1*5.5	4,48	K15	1*5.5	4,65	K15	1*5.5	4,82	No kit			No kit		
9700	No kit			No kit			No kit			No kit			No kit		
10200	No kit			No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

55 GAZ Sizes

Table 6.8

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K1	1*2.2	1,37	K1	1*2.2	1,56	K2	1*2.2	1,75	K2	1*2.2	1,95	K3	1*3.0	2,13
7800	K1	1*2.2	1,68	K2	1*2.2	1,88	K5	1*3.0	2,06	K5	1*3.0	2,27	K3	1*3.0	2,48
8400	K2	1*2.2	2,03	K5	1*3.0	2,22	K5	1*3.0	2,43	K3	1*3.0	2,65	K6	1*4.0	2,84
9000	***K5***	***1*3.0***	***2,41***	K5	1*3.0	2,63	K6	1*4.0	2,82	K6	1*4.0	3,05	K4	1*4.0	3,28
9600	K6	1*4.0	2,82	K6	1*4.0	3,05	K6	1*4.0	3,29	K4	1*4.0	3,53	K7	1*5.5	3,66
10200	K6	1*4.0	3,32	K6	1*4.0	3,57	K7	1*5.5	3,70	K7	1*5.5	3,94	K7	1*5.5	4,19
10800	K7	1*5.5	3,77	K7	1*5.5	4,01	K7	1*5.5	4,27	No kit			No kit		

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K3	1*3.0	2,33	K3	1*3.0	2,54	K3	1*3.0	2,75	K4	1*4.0	2,93	K8	1*4.0	2,78
7800	K3	1*3.0	2,70	K4	1*4.0	2,88	K4	1*4.0	3,10	K8	1*4.0	3,07	K10	1*4.0	3,23
8400	K4	1*4.0	3,07	K4	1*4.0	3,30	K8	1*4.0	3,42	K8	1*4.0	3,58	K9	1*5.5	3,63
9000	K4	1*4.0	3,52	K9	1*5.5	3,70	K9	1*5.5	3,86	K9	1*5.5	4,02	K9	1*5.5	4,19
9600	K7	1*5.5	3,90	K9	1*5.5	4,31	K9	1*5.5	4,48	K9	1*5.5	4,65	K9	1*5.5	4,82
10200	K9	1*5.5	4,82	No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
7200	K10	1*4.0	2,94	K10	1*4.0	3,10	K10	1*4.0	3,26	K11	1*4.0	3,42	K11	1*4.0	3,59
7800	K10	1*4.0	3,39	K10	1*4.0	3,55	K9	1*5.5	3,61	K12	1*5.5	3,77	K12	1*5.5	3,94
8400	K9	1*5.5	3,79	K9	1*5.5	3,95	K12	1*5.5	4,12	K12	1*5.5	4,29	K12	1*5.5	4,46
9000	K9	1*5.5	4,35	K12	1*5.5	4,52	K12	1*5.5	4,70	K12	1*5.5	4,87	No kit		
9600	No kit			No kit			No kit			No kit			No kit		
10200	No kit			No kit			No kit			No kit			No kit		
10800	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

65 GAZ S Sizes

Table 6.9

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K1	1*2.2	1,18	K1	1*2.2	1,37	K2	1*2.2	1,59	K2	1*2.2	1,81	K3	1*3.0	2,02
9333	K1	1*2.2	1,43	K1	1*2.2	1,64	K2	1*2.2	1,86	K3	1*3.0	2,08	K3	1*3.0	2,32
10067	K1	1*2.2	1,73	K2	1*2.2	1,95	K3	1*3.0	2,16	K3	1*3.0	2,40	K3	1*3.0	2,65
10800	K2	1*2.2	2,06	K3	1*3.0	2,27	K3	1*3.0	2,52	K3	1*3.0	2,77	K4	1*4.0	2,99
11500	***K7***	***1*3.0***	***2,42***	K3	1*3.0	2,66	K6	1*4.0	2,88	K6	1*4.0	3,14	K4	1*4.0	3,41
12267	K6	1*4.0	2,81	K6	1*4.0	3,06	K6	1*4.0	3,32	K4	1*4.0	3,59	K9	1*5.5	3,75
13000	K6	1*4.0	3,28	K6	1*4.0	3,54	K9	1*5.5	3,70	K9	1*5.5	3,97	K9	1*5.5	4,25
13500	K6	1*4.0	3,68	K9	1*5.5	3,83	K9	1*5.5	4,11	K9	1*5.5	4,39	K8	1*5.5	4,68
14000	K9	1*5.5	3,94	K9	1*5.5	4,21	K9	1*5.5	4,49	K8	1*5.5	4,78	K9	1*5.5	4,73
14500	K9	1*5.5	4,34	K9	1*5.5	4,62	K9	1*5.5	4,91	K9	1*5.5	4,84	K11	1*7.5	5,05
15000	K9	1*5.5	4,76	K9	1*5.5	4,70	K13	1*7.5	4,90	K13	1*7.5	5,18	K11	1*7.5	5,47
15500	K9	1*5.5	4,85	K13	1*7.5	5,05	K13	1*7.5	5,33	K11	1*7.5	5,62	K11	1*7.5	5,91
16000	K13	1*7.5	5,22	K13	1*7.5	5,50	K11	1*7.5	5,79	K11	1*7.5	6,08	K11	1*7.5	6,38

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K3	1*3.0	2,26	K4	1*4.0	2,47	K4	1*4.0	2,72	K5	1*4.0	2,97	K5	1*4.0	3,21
9333	K6	1*4.0	2,54	K4	1*4.0	2,79	K5	1*4.0	3,05	K5	1*4.0	3,32	K5	1*4.0	3,57
10067	K4	1*4.0	2,88	K4	1*4.0	3,14	K5	1*4.0	3,42	K5	1*4.0	3,70	K10	1*7.5	3,79
10800	K4	1*4.0	3,26	K5	1*4.0	3,54	K8	1*5.5	3,70	K8	1*5.5	3,99	K10	1*7.5	4,21
11500	K4	1*4.0	3,69	K8	1*5.5	3,85	K8	1*5.5	4,14	K8	1*5.5	4,43	K10	1*7.5	4,67
12267	K8	1*5.5	4,03	K8	1*5.5	4,32	K8	1*5.5	4,62	K10	1*7.5	4,85	K10	1*7.5	4,80
13000	K8	1*5.5	4,54	K8	1*5.5	4,84	K8	1*5.5	4,79	K10	1*7.5	5,01	K10	1*7.5	5,31
13500	K8	1*5.5	4,63	K8	1*5.5	4,92	K10	1*7.5	5,13	K10	1*7.5	5,43	K10	1*7.5	5,73
14000	K11	1*7.5	4,94	K11	1*7.5	5,23	K10	1*7.5	5,52	K10	1*7.5	5,82	K10	1*7.5	6,13
14500	K11	1*7.5	5,34	K10	1*7.5	5,63	K10	1*7.5	5,93	K10	1*7.5	6,24	K10	1*7.5	6,55
15000	K11	1*7.5	5,76	K10	1*7.5	6,06	K10	1*7.5	6,37	No kit			No kit		
15500	K10	1*7.5	6,21	K10	1*7.5	6,52	No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K11	1*7.5	3,31	K10	1*7.5	3,56	K10	1*7.5	3,82	K10	1*7.5	4,08	K10	1*7.5	4,04
9333	K10	1*7.5	3,67	K10	1*7.5	3,93	K10	1*7.5	4,20	K10	1*7.5	4,16	K10	1*7.5	4,41
10067	K10	1*7.5	4,06	K10	1*7.5	4,34	K10	1*7.5	4,62	K10	1*7.5	4,56	K10	1*7.5	4,83
10800	K10	1*7.5	4,49	K10	1*7.5	4,78	K10	1*7.5	4,72	K10	1*7.5	4,99	K10	1*7.5	5,27
11500	K10	1*7.5	4,62	K10	1*7.5	4,90	K10	1*7.5	5,18	K10	1*7.5	5,47	K10	1*7.5	5,76
12267	K10	1*7.5	5,09	K10	1*7.5	5,39	K10	1*7.5	5,68	K10	1*7.5	5,98	K12	1*7.5	6,28
13000	K10	1*7.5	5,61	K10	1*7.5	5,92	K10	1*7.5	6,22	K12	1*7.5	6,53	No kit		
13500	K10	1*7.5	6,04	K10	1*7.5	6,36	No kit			No kit			No kit		
14000	K10	1*7.5	6,45	No kit			No kit			No kit			No kit		
14500	No kit			No kit			No kit			No kit			No kit		
15000	No kit			No kit			No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

65 GAZ H Sizes

Table 6.10

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K1	1*1.5	1,33	K2	1*2.2	1,50	K2	1*2.2	1,72	K3	1*3.0	1,93	K3	1*3.0	2,16
9333	K2	1*2.2	1,57	K2	1*2.2	1,79	K2	1*2.2	2,02	K3	1*3.0	2,24	K3	1*3.0	2,49
10067	K2	1*2.2	1,90	K3	1*3.0	2,11	K3	1*3.0	2,35	K3	1*3.0	2,60	K4	1*4.0	2,83
10800	K3	1*3.0	2,26	K3	1*3.0	2,50	K3	1*3.0	2,75	K4	1*4.0	2,97	K4	1*4.0	3,24
11500	***K3***	***1*3.0***	***2,68***	K7	1*4.0	2,89	K7	1*4.0	3,15	K4	1*4.0	3,42	K11	1*5.5	3,59
12267	K7	1*4.0	3,11	K7	1*4.0	3,37	K4	1*4.0	3,65	K11	1*5.5	3,81	K8	1*5.5	4,09
13000	K7	1*4.0	3,64	K11	1*5.5	3,79	K11	1*5.5	4,07	K8	1*5.5	4,35	K8	1*5.5	4,65
13500	K11	1*5.5	3,95	K11	1*5.5	4,23	K8	1*5.5	4,52	K8	1*5.5	4,81	K8	1*5.5	4,76
14000	K11	1*5.5	4,37	K11	1*5.5	4,65	K11	1*5.5	4,60	K8	1*5.5	4,88	K12	1*7.5	5,10
14500	K11	1*5.5	4,81	K11	1*5.5	4,75	K12	1*7.5	4,96	K12	1*7.5	5,24	K12	1*7.5	5,53
15000	K11	1*5.5	4,92	K12	1*7.5	5,12	K12	1*7.5	5,41	K12	1*7.5	5,70	K9	1*7.5	6,00
15500	K12	1*7.5	5,31	K12	1*7.5	5,59	K12	1*7.5	5,88	K9	1*7.5	6,18	K9	1*7.5	6,49
16000	K12	1*7.5	5,80	K12	1*7.5	6,09	K12	1*7.5	6,39	No kit			No kit		

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K4	1*4.0	2,37	K4	1*4.0	2,62	K5	1*4.0	2,87	K5	1*4.0	3,12	K5	1*4.0	3,39
9333	K4	1*4.0	2,71	K5	1*4.0	2,97	K5	1*4.0	3,24	K5	1*4.0	3,50	K9	1*7.5	3,61
10067	K4	1*4.0	3,09	K5	1*4.0	3,36	K5	1*4.0	3,64	K9	1*7.5	3,75	K9	1*7.5	4,03
10800	K5	1*4.0	3,52	K8	1*5.5	3,69	K8	1*5.5	3,97	K9	1*7.5	4,19	K9	1*7.5	4,50
11500	K8	1*5.5	3,87	K8	1*5.5	4,16	K8	1*5.5	4,45	K9	1*7.5	4,68	K9	1*7.5	4,66
12267	K8	1*5.5	4,38	K8	1*5.5	4,68	K8	1*5.5	4,64	K9	1*7.5	4,86	K9	1*7.5	5,18
13000	K8	1*5.5	4,60	K8	1*5.5	4,89	K9	1*7.5	5,11	K9	1*7.5	5,41	K9	1*7.5	5,75
13500	K12	1*7.5	4,97	K9	1*7.5	5,27	K9	1*7.5	5,56	K9	1*7.5	5,87	K9	1*7.5	6,18
14000	K9	1*7.5	5,39	K9	1*7.5	5,69	K9	1*7.5	5,99	K9	1*7.5	6,31	No kit		
14500	K9	1*7.5	5,83	K9	1*7.5	6,14	K9	1*7.5	6,45	No kit			No kit		
15000	K9	1*7.5	6,30	K9	1*7.5	6,62	No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
8600	K9	1*7.5	3,48	K9	1*7.5	3,74	K9	1*7.5	3,99	K9	1*7.5	3,97	K9	1*7.5	4,22
9333	K9	1*7.5	3,88	K9	1*7.5	4,14	K9	1*7.5	4,41	K9	1*7.5	4,37	K9	1*7.5	4,63
10067	K9	1*7.5	4,31	K9	1*7.5	4,59	K9	1*7.5	4,54	K9	1*7.5	4,81	K9	1*7.5	5,08
10800	K9	1*7.5	4,78	K9	1*7.5	4,73	K9	1*7.5	5,01	K9	1*7.5	5,29	K13	1*7.5	5,57
11500	K9	1*7.5	4,94	K9	1*7.5	5,23	K9	1*7.5	5,52	K9	1*7.5	5,81	K13	1*7.5	6,10
12267	K9	1*7.5	5,47	K9	1*7.5	5,77	K9	1*7.5	6,07	K13	1*7.5	6,38	No kit		
13000	K9	1*7.5	6,05	K9	1*7.5	6,36	No kit			No kit			No kit		
13500	K9	1*7.5	6,50	No kit			No kit			No kit			No kit		
14000	No kit			No kit			No kit			No kit			No kit		
14500	No kit			No kit			No kit			No kit			No kit		
15000	No kit			No kit			No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

75 GAZ S Sizes

Table 6.11

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K1	1*2.2	1,72	K2	1*2.2	1,94	K3	1*3.0	2,15	K3	1*3.0	2,40	K3	1*3.0	2,65
10500	K1	1*2.2	1,94	K3	1*3.0	2,15	K3	1*3.0	2,39	K3	1*3.0	2,64	K4	1*4.0	2,86
11000	K8	1*3.0	2,17	K3	1*3.0	2,40	K3	1*3.0	2,65	K9	1*4.0	2,87	K4	1*4.0	3,13
11500	K3	1*3.0	2,44	K3	1*3.0	2,68	K9	1*4.0	2,89	K9	1*4.0	3,15	K4	1*4.0	3,42
12000	K3	1*3.0	2,72	K9	1*4.0	2,93	K9	1*4.0	3,19	K4	1*4.0	3,46	K6	1*5.5	3,62
12500	K9	1*4.0	2,99	K9	1*4.0	3,25	K9	1*4.0	3,51	K6	1*5.5	3,68	K6	1*5.5	3,95
13000	K9	1*4.0	3,33	K9	1*4.0	3,59	K6	1*5.5	3,75	K6	1*5.5	4,02	K5	1*5.5	4,30
13500	***K9***	***1*4.0***	***3,68***	K6	1*5.5	3,83	K6	1*5.5	4,11	K6	1*5.5	4,39	K5	1*5.5	4,68
14000	K6	1*5.5	3,94	K6	1*5.5	4,21	K6	1*5.5	4,49	K5	1*5.5	4,78	K6	1*5.5	4,73
14500	K6	1*5.5	4,34	K6	1*5.5	4,62	K6	1*5.5	4,91	K6	1*5.5	4,84	K11	1*7.5	5,05
15000	K6	1*5.5	4,76	K6	1*5.5	4,70	K7	1*7.5	4,90	K7	1*7.5	5,18	K11	1*7.5	5,47
15500	K6	1*5.5	4,85	K7	1*7.5	5,05	K7	1*7.5	5,33	K11	1*7.5	5,62	K11	1*7.5	5,91
16000	K7	1*7.5	5,22	K7	1*7.5	5,50	K11	1*7.5	5,79	K11	1*7.5	6,08	K11	1*7.5	6,38

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K4	1*4.0	2,87	K4	1*4.0	3,14	K4	1*4.0	3,41	K5	1*5.5	3,58	K10	1*7.5	3,78
10500	K4	1*4.0	3,13	K4	1*4.0	3,40	K7	1*7.5	3,52	K5	1*5.5	3,85	K10	1*7.5	4,06
11000	K4	1*4.0	3,40	K4	1*4.0	3,69	K5	1*5.5	3,85	K5	1*5.5	4,14	K10	1*7.5	4,36
11500	K6	1*5.5	3,59	K5	1*5.5	3,87	K5	1*5.5	4,16	K5	1*5.5	4,45	K10	1*7.5	4,68
12000	K5	1*5.5	3,90	K5	1*5.5	4,19	K5	1*5.5	4,48	K10	1*7.5	4,72	K10	1*7.5	4,67
12500	K5	1*5.5	4,24	K5	1*5.5	4,53	K5	1*5.5	4,83	K5	1*5.5	4,78	K10	1*7.5	5,00
13000	K5	1*5.5	4,59	K5	1*5.5	4,90	K5	1*5.5	4,84	K10	1*7.5	5,06	K10	1*7.5	5,36
13500	K5	1*5.5	4,63	K5	1*5.5	4,92	K10	1*7.5	5,13	K10	1*7.5	5,43	K10	1*7.5	5,73
14000	K11	1*7.5	4,94	K11	1*7.5	5,23	K10	1*7.5	5,52	K10	1*7.5	5,82	K10	1*7.5	6,13
14500	K11	1*7.5	5,34	K10	1*7.5	5,63	K10	1*7.5	5,93	K10	1*7.5	6,24	K10	1*7.5	6,55
15000	K11	1*7.5	5,76	K10	1*7.5	6,06	K10	1*7.5	6,37	No kit			No kit		
15500	K10	1*7.5	6,21	K10	1*7.5	6,52	No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K10	1*7.5	4,05	K10	1*7.5	4,33	K10	1*7.5	4,60	K10	1*7.5	4,55	K10	1*7.5	4,81
10500	K10	1*7.5	4,34	K10	1*7.5	4,63	K10	1*7.5	4,57	K10	1*7.5	4,84	K10	1*7.5	5,11
11000	K10	1*7.5	4,65	K10	1*7.5	4,60	K10	1*7.5	4,87	K10	1*7.5	5,15	K10	1*7.5	5,43
11500	K10	1*7.5	4,63	K10	1*7.5	4,91	K10	1*7.5	5,19	K10	1*7.5	5,48	K13	1*7.5	5,77
12000	K10	1*7.5	4,95	K10	1*7.5	5,24	K10	1*7.5	5,53	K10	1*7.5	5,83	K13	1*7.5	6,13
12500	K10	1*7.5	5,30	K10	1*7.5	5,59	K10	1*7.5	5,89	K10	1*7.5	6,20	K13	1*7.5	6,50
13000	K10	1*7.5	5,66	K10	1*7.5	5,96	K10	1*7.5	6,27	K13	1*7.5	6,58	No kit		
13500	K10	1*7.5	6,04	K10	1*7.5	6,36	No kit			No kit			No kit		
14000	K10	1*7.5	6,45	No kit			No kit			No kit			No kit		
14500	No kit			No kit			No kit			No kit			No kit		
15000	No kit			No kit			No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

75 GAZ H Sizes

Table 6.12

Available static pressure	100 Pa			150 Pa			200 Pa			250 Pa			300 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K1	1*2.2	1,89	K2	1*3.0	2,10	K2	1*3.0	2,34	K2	1*3.0	2,60	K3	1*4.0	2,82
10500	K7	1*3.0	2,12	K2	1*3.0	2,36	K2	1*3.0	2,61	K8	1*4.0	2,83	K3	1*4.0	3,09
11000	K2	1*3.0	2,40	K2	1*3.0	2,64	K8	1*4.0	2,86	K3	1*4.0	3,12	K3	1*4.0	3,39
11500	K2	1*3.0	2,69	K8	1*4.0	2,90	K8	1*4.0	3,17	K3	1*4.0	3,44	K9	1*5.5	3,60
12000	K8	1*4.0	2,97	K8	1*4.0	3,23	K3	1*4.0	3,50	K9	1*5.5	3,66	K5	1*5.5	3,94
12500	K8	1*4.0	3,31	K3	1*4.0	3,58	K9	1*5.5	3,74	K9	1*5.5	4,02	K5	1*5.5	4,31
13000	K8	1*4.0	3,68	K9	1*5.5	3,84	K9	1*5.5	4,12	K5	1*5.5	4,40	K5	1*5.5	4,70
13500	***K9***	***1*5.5***	***3,95***	K9	1*5.5	4,23	K5	1*5.5	4,52	K5	1*5.5	4,81	K5	1*5.5	4,76
14000	K9	1*5.5	4,37	K9	1*5.5	4,65	K9	1*5.5	4,60	K5	1*5.5	4,88	K10	1*7.5	5,10
14500	K9	1*5.5	4,81	K9	1*5.5	4,75	K10	1*7.5	4,96	K10	1*7.5	5,24	K10	1*7.5	5,53
15000	K9	1*5.5	4,92	K10	1*7.5	5,12	K10	1*7.5	5,41	K10	1*7.5	5,70	K6	1*7.5	6,00
15500	K10	1*7.5	5,31	K10	1*7.5	5,59	K10	1*7.5	5,88	K6	1*7.5	6,18	K6	1*7.5	6,49
16000	K10	1*7.5	5,80	K10	1*7.5	6,09	K10	1*7.5	6,39	No kit			No kit		

Available static pressure	350 Pa			400 Pa			450 Pa			500 Pa			550 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K3	1*4.0	3,08	K4	1*4.0	3,35	K4	1*4.0	3,63	K6	1*7.5	3,74	K6	1*7.5	4,00
10500	K4	1*4.0	3,37	K4	1*4.0	3,65	K5	1*5.5	3,81	K6	1*7.5	4,04	K6	1*7.5	4,31
11000	K4	1*4.0	3,67	K5	1*5.5	3,84	K5	1*5.5	4,13	K6	1*7.5	4,36	K6	1*7.5	4,64
11500	K5	1*5.5	3,88	K5	1*5.5	4,17	K6	1*7.5	4,40	K6	1*7.5	4,70	K6	1*7.5	4,64
12000	K5	1*5.5	4,23	K5	1*5.5	4,53	K6	1*7.5	4,76	K6	1*7.5	4,71	K6	1*7.5	4,99
12500	K5	1*5.5	4,60	K5	1*5.5	4,91	K5	1*5.5	4,85	K6	1*7.5	5,07	K6	1*7.5	5,37
13000	K5	1*5.5	4,65	K6	1*7.5	4,87	K6	1*7.5	5,16	K6	1*7.5	5,46	K6	1*7.5	5,76
13500	K10	1*7.5	4,97	K6	1*7.5	5,27	K6	1*7.5	5,56	K6	1*7.5	5,87	K6	1*7.5	6,18
14000	K6	1*7.5	5,39	K6	1*7.5	5,69	K6	1*7.5	5,99	K6	1*7.5	6,31	No kit		
14500	K6	1*7.5	5,83	K6	1*7.5	6,14	K6	1*7.5	6,45	No kit			No kit		
15000	K6	1*7.5	6,30	K6	1*7.5	6,62	No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

Available static pressure	600 Pa			650 Pa			700 Pa			750 Pa			800 Pa		
Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
10000	K6	1*7.5	4,27	K6	1*7.5	4,55	K6	1*7.5	4,49	K6	1*7.5	4,76	K6	1*7.5	5,03
10500	K6	1*7.5	4,59	K6	1*7.5	4,54	K6	1*7.5	4,81	K6	1*7.5	5,08	K11	1*7.5	5,36
11000	K6	1*7.5	4,59	K6	1*7.5	4,86	K6	1*7.5	5,14	K6	1*7.5	5,42	K11	1*7.5	5,71
11500	K6	1*7.5	4,92	K6	1*7.5	5,21	K6	1*7.5	5,49	K11	1*7.5	5,79	K11	1*7.5	6,08
12000	K6	1*7.5	5,28	K6	1*7.5	5,58	K6	1*7.5	5,87	K11	1*7.5	6,17	K11	1*7.5	6,47
12500	K6	1*7.5	5,66	K6	1*7.5	5,97	K11	1*7.5	6,27	K11	1*7.5	6,58	No kit		
13000	K6	1*7.5	6,07	K6	1*7.5	6,38	No kit			No kit			No kit		
13500	K6	1*7.5	6,50	No kit			No kit			No kit			No kit		
14000	No kit			No kit			No kit			No kit			No kit		
14500	No kit			No kit			No kit			No kit			No kit		
15000	No kit			No kit			No kit			No kit			No kit		
15500	No kit			No kit			No kit			No kit			No kit		
16000	No kit			No kit			No kit			No kit			No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

85 - 100 - 120 GAS Sizes

Table 6.13

Size			Available static pressure	150 Pa			200 Pa			250 Pa			300 Pa			350 Pa		
085	100	120	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
			12000	K1	2*2.2	1,8	K2	2*2.2	2,1	K2	2*2.2	2,5	K3	2*3.0	2,80	K3	2*3.0	3,1
			12500	K2	2*2.2	2,0	K2	2*2.2	2,3	K2	2*2.2	2,7	K3	2*3.0	2,98	K4	2*3.0	3,3
			13000	K2	2*2.2	2,2	K2	2*2.2	2,5	K2	2*2.2	2,8	K3	2*3.0	3,17	K4	2*3.0	3,5
			13500	K2	2*2.2	2,3	K2	2*2.2	2,7	K2	2*2.2	3,0	K3	2*3.0	3,37	K4	2*3.0	3,7
			14000	K2	2*2.2	2,5	K2	2*2.2	2,9	K3	2*3.0	3,2	K3	2*3.0	3,58	K4	2*3.0	4,0
			14500	K2	2*2.2	2,7	K2	2*2.2	3,1	K3	2*3.0	3,4	K3	2*3.0	3,81	K4	2*3.0	4,2
xx			***15000***	***K2***	***2*2.2***	***2,9***	K2	2*2.2	3,3	K3	2*3.0	3,6	K4	2*3.0	4,04	K4	2*3.0	4,4
			15500	K2	2*2.2	3,2	K2	2*2.2	3,5	K3	2*3.0	3,9	K4	2*3.0	4,29	K4	2*3.0	4,7
			16000	K2	2*2.2	3,4	K3	2*3.0	3,7	K3	2*3.0	4,1	K4	2*3.0	4,55	K4	2*3.0	5,0
			16500	K2	2*2.2	3,6	K3	2*3.0	4,0	K3	2*3.0	4,4	K4	2*3.0	4,83	K4	2*3.0	5,3
			17000	K2	2*2.2	3,9	K3	2*3.0	4,3	K4	2*3.0	4,7	K4	2*3.0	5,12	K5	2*3.0	5,6
			17500	K3	2*3.0	4,2	K3	2*3.0	4,6	K4	2*3.0	5,0	K4	2*3.0	5,42	K7	2*4.0	5,8
			18000	K3	2*3.0	4,4	K3	2*3.0	4,9	K4	2*3.0	5,3	K9	2*4.0	5,66	K7	2*4.0	6,1
	xx		***18500***	***K3***	***2*3.0***	***4,8***	K3	2*3.0	5,2	K9	2*4.0	5,5	K9	2*4.0	5,99	K7	2*4.0	6,5
			19000	K3	2*3.0	5,1	K4	2*3.0	5,5	K9	2*4.0	5,9	K7	2*4.0	6,34	K7	2*4.0	6,8
			19500	K3	2*3.0	5,4	K9	2*4.0	5,8	K9	2*4.0	6,2	K7	2*4.0	6,70	K7	2*4.0	7,2
			20000	K9	2*4.0	5,7	K9	2*4.0	6,1	K9	2*4.0	6,6	K7	2*4.0	7,07	K8	2*5.5	7,3
		xx	***20500***	***K9***	***2*4.0***	***6,1***	K9	2*4.0	6,5	K7	2*4.0	7,0	K8	2*5.5	7,24	K8	2*5.5	7,7
			21000	K9	2*4.0	6,4	K9	2*4.0	6,9	K7	2*4.0	7,4	K8	2*5.5	7,64	K8	2*5.5	8,1
			21500	K9	2*4.0	6,8	K9	2*4.0	7,3	K8	2*5.5	7,6	K8	2*5.5	8,05	K8	2*5.5	8,5
			22000	K9	2*4.0	7,3	K13	2*5.5	7,5	K8	2*5.5	8,0	K8	2*5.5	8,49	K8	2*5.5	9,0
			22500	K13	2*5.5	7,5	K8	2*5.5	7,9	K8	2*5.5	8,4	K8	2*5.5	8,94	K8	2*5.5	9,4
			23000	K13	2*5.5	7,9	K8	2*5.5	8,4	K8	2*5.5	8,9	K8	2*5.5	9,41	K12	2*7.5	9,8

Size			Available static pressure	400 Pa			450 Pa			500 Pa			550 Pa			600 Pa		
085	100	120	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
			12000	K4	2*3.0	3,5	K5	2*3.0	3,9	K5	2*3.0	4,24	K5	2*3.0	4,6	K6	2*4.0	4,9
			12500	K4	2*3.0	3,7	K5	2*3.0	4,1	K5	2*3.0	4,45	K5	2*3.0	4,8	K6	2*4.0	5,2
			13000	K4	2*3.0	3,9	K5	2*3.0	4,3	K5	2*3.0	4,68	K5	2*3.0	5,1	K6	2*4.0	5,4
			13500	K4	2*3.0	4,1	K5	2*3.0	4,5	K5	2*3.0	4,92	K5	2*3.0	5,3	K6	2*4.0	5,7
			14000	K4	2*3.0	4,4	K5	2*3.0	4,8	K5	2*3.0	5,17	K5	2*3.0	5,6	K6	2*4.0	5,9
			14500	K4	2*3.0	4,6	K5	2*3.0	5,0	K5	2*3.0	5,43	K6	2*4.0	5,8	K6	2*4.0	6,2
			15000	K5	2*3.0	4,9	K5	2*3.0	5,3	K6	2*4.0	5,63	K6	2*4.0	6,1	K6	2*4.0	6,5
			15500	K5	2*3.0	5,1	K5	2*3.0	5,6	K6	2*4.0	5,91	K6	2*4.0	6,4	K6	2*4.0	6,8
			16000	K5	2*3.0	5,4	K7	2*4.0	5,8	K6	2*4.0	6,21	K6	2*4.0	6,7	K6	2*4.0	7,1
			16500	K7	2*4.0	5,6	K6	2*4.0	6,1	K6	2*4.0	6,51	K6	2*4.0	7,0	K8	2*5.5	7,2
			17000	K7	2*4.0	5,9	K6	2*4.0	6,4	K6	2*4.0	6,83	K6	2*4.0	7,3	K8	2*5.5	7,5
			17500	K7	2*4.0	6,2	K6	2*4.0	6,7	K6	2*4.0	7,17	K8	2*5.5	7,4	K8	2*5.5	7,9
			18000	K7	2*4.0	6,6	K6	2*4.0	7,0	K8	2*5.5	7,29	K8	2*5.5	7,8	K8	2*5.5	8,2
			18500	K6	2*4.0	6,9	K8	2*5.5	7,2	K8	2*5.5	7,64	K8	2*5.5	8,1	K10	2*5.5	8,6
			19000	K6	2*4.0	7,3	K8	2*5.5	7,5	K8	2*5.5	8,01	K8	2*5.5	8,5	K10	2*5.5	9,0
			19500	K8	2*5.5	7,4	K8	2*5.5	7,9	K8	2*5.5	8,40	K8	2*5.5	8,9	K10	2*5.5	9,4
			20000	K8	2*5.5	7,8	K8	2*5.5	8,3	K8	2*5.5	8,79	K8	2*5.5	9,3	K10	2*5.5	9,8
			20500	K8	2*5.5	8,2	K8	2*5.5	8,7	K8	2*5.5	9,21	K10	2*5.5	9,7	K11	2*7.5	10,1
			21000	K8	2*5.5	8,6	K8	2*5.5	9,1	K8	2*5.5	9,64	K11	2*7.5	10,0	K11	2*7.5	10,5
			21500	K8	2*5.5	9,1	K8	2*5.5	9,6	K12	2*7.5	9,94	K11	2*7.5	10,5	K11	2*7.5	11,0
			22000	K8	2*5.5	9,5	K12	2*7.5	9,9	K12	2*7.5	10,40	K11	2*7.5	10,9	K11	2*7.5	11,5
			22500	K12	2*7.5	9,8	K12	2*7.5	10,3	K11	2*7.5	10,88	K11	2*7.5	11,4	K11	2*7.5	12,0
			23000	K12	2*7.5	10,3	K12	2*7.5	10,8	K11	2*7.5	11,37	K11	2*7.5	11,9	K11	2*7.5	12,5

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

150 - 170 GAS Sizes

Table 6.14

Size		Available static pressure	150 Pa			200 Pa			250 Pa			300 Pa			350 Pa		
150	170	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
		18000	No kit			K1	2*3.0	3,3	K2	2*4.0	3,8	K2	2*4.0	4,44	K2	2*4.0	5,1
		19000	No kit			K1	2*3.0	3,6	K2	2*4.0	4,1	K2	2*4.0	4,77	K2	2*4.0	5,4
		20000	K1	2*3.0	3,4	K1	2*3.0	3,9	K2	2*4.0	4,5	K2	2*4.0	5,13	K3	2*5.5	5,6
		21000	K1	2*3.0	3,7	K1	2*3.0	4,3	K2	2*4.0	4,9	K2	2*4.0	5,52	K3	2*5.5	6,0
		22000	K1	2*3.0	4,1	K2	2*4.0	4,7	K2	2*4.0	5,3	K2	2*4.0	5,94	K3	2*5.5	6,4
		23000	K1	2*3.0	4,5	K2	2*4.0	5,1	K2	2*4.0	5,7	K2	2*4.0	6,40	K3	2*5.5	6,9
		24000	K1	2*3.0	5,0	K2	2*4.0	5,5	K2	2*4.0	6,2	K2	2*4.0	6,88	K3	2*5.5	7,4
		25000	K2	2*4.0	5,4	K2	2*4.0	6,0	K2	2*4.0	6,7	K3	2*5.5	7,18	K3	2*5.5	7,9
xx		***26000***	***K2***	***2*4.0***	***5,9***	K2	2*4.0	6,6	K2	2*4.0	7,2	K3	2*5.5	7,72	K3	2*5.5	8,4
		27000	K2	2*4.0	6,5	K2	2*4.0	7,1	K3	2*5.5	7,6	K3	2*5.5	8,30	K3	2*5.5	9,0
		28000	K2	2*4.0	7,1	K3	2*5.5	7,5	K3	2*5.5	8,2	K3	2*5.5	8,92	K3	2*5.5	9,7
		29000	K7	2*5.5	7,5	K3	2*5.5	8,1	K3	2*5.5	8,8	K3	2*5.5	9,58	K8	2*7.5	10,2
	xx	***30000***	***K3***	***2*5.5***	***8,1***	K3	2*5.5	8,8	K3	2*5.5	9,5	K8	2*7.5	10,13	K5	2*7.5	10,9
		31000	K3	2*5.5	8,8	K3	2*5.5	9,5	K8	2*7.5	10,1	K8	2*7.5	10,86	K5	2*7.5	11,6
		32000	K3	2*5.5	9,6	K8	2*7.5	10,1	K8	2*7.5	10,9	K8	2*7.5	11,63	K5	2*7.5	12,4
		33000	K8	2*7.5	10,2	K8	2*7.5	10,9	K8	2*7.5	11,7	K5	2*7.5	12,45	K9	2*9.0	13,2
		34000	K8	2*7.5	11,0	K8	2*7.5	11,8	K8	2*7.5	12,5	K9	2*9.0	13,25	K9	2*9.0	14,1
		35000	K8	2*7.5	11,9	K8	2*7.5	12,6	K9	2*9.0	13,4	K9	2*9.0	14,16	K9	2*9.0	15,0

Size		Available static pressure	400 Pa			450 Pa			500 Pa			550 Pa			600 Pa		
150	170	Airflow (m^3/h)	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI
		18000	K3	2*5.5	5,6	K3	2*5.5	6,2	K4	2*5.5	6,91	K4	2*5.5	7,6	K4	2*5.5	8,3
		19000	K3	2*5.5	5,9	K3	2*5.5	6,6	K4	2*5.5	7,30	K4	2*5.5	8,0	K4	2*5.5	8,8
		20000	K3	2*5.5	6,3	K3	2*5.5	7,0	K4	2*5.5	7,71	K4	2*5.5	8,5	K4	2*5.5	9,2
		21000	K3	2*5.5	6,7	K4	2*5.5	7,4	K4	2*5.5	8,15	K4	2*5.5	8,9	K5	2*7.5	9,5
		22000	K3	2*5.5	7,1	K4	2*5.5	7,9	K4	2*5.5	8,61	K4	2*5.5	9,4	K5	2*7.5	10,0
		23000	K3	2*5.5	7,6	K4	2*5.5	8,3	K4	2*5.5	9,11	K5	2*7.5	9,8	K5	2*7.5	10,5
		24000	K3	2*5.5	8,1	K4	2*5.5	8,9	K4	2*5.5	9,64	K5	2*7.5	10,3	K6	2*9.0	11,0
		25000	K3	2*5.5	8,6	K4	2*5.5	9,4	K5	2*7.5	10,05	K5	2*7.5	10,9	K6	2*9.0	11,6
		26000	K4	2*5.5	9,2	K5	2*7.5	9,8	K5	2*7.5	10,63	K5	2*7.5	11,5	K6	2*9.0	12,2
		27000	K4	2*5.5	9,8	K5	2*7.5	10,4	K5	2*7.5	11,26	K5	2*7.5	12,1	K6	2*9.0	12,9
		28000	K5	2*7.5	10,3	K5	2*7.5	11,1	K5	2*7.5	11,92	K5	2*7.5	12,8	K6	2*9.0	13,6
		29000	K5	2*7.5	11,0	K5	2*7.5	11,8	K5	2*7.5	12,62	K6	2*9.0	13,4	K6	2*9.0	14,3
		30000	K5	2*7.5	11,7	K5	2*7.5	12,5	K6	2*9.0	13,29	K6	2*9.0	14,2	K6	2*9.0	15,0
		31000	K5	2*7.5	12,4	K9	2*9.0	13,2	K6	2*9.0	14,07	K6	2*9.0	14,9	K10	2*11.0	15,1
		32000	K9	2*9.0	13,2	K9	2*9.0	14,0	K6	2*9.0	14,89	K6	2*9.0	15,8	K10	2*11.0	15,9
		33000	K9	2*9.0	14,0	K6	2*9.0	14,9	K6	2*9.0	15,76	K10	2*11.0	15,9	K10	2*11.0	16,8
		34000	K9	2*9.0	14,9	K6	2*9.0	15,8	K10	2*11.0	15,90	K10	2*11.0	16,8	K10	2*11.0	17,7
		35000	K10	2*11.0	15,1	K10	2*11.0	16,0	K10	2*11.0	16,82	K10	2*11.0	17,7	No kit		

P: Fan motor power in kW
HMPI: Heat Motor Power Input

xx: Nominal airflow

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

85 - 100 - 120 STD Sizes

Table 6.15

Size			Available static pressure	150		200		250		300		350		400		450		500		550		600	
085	100	120	Airflow (m^3/h)	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P
			12000	LP	1,6	LP	2,1	LP	2,6	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	HP	6,0
			13000	LP	1,8	LP	2,3	LP	2,8	LP	3,2	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	HP	6,2
			14000	LP	1,9	LP	2,4	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,3	HP	5,8	HP	6,3
			15000	LP	2,1	LP	2,6	LP	3,1	LP	3,6	LP	4,0	LP	4,5	LP	5,0	LP	5,5	HP	6,0	HP	6,5
			16000	LP	2,2	LP	2,7	LP	3,2	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	HP	6,2	HP	6,7
			17000	LP	2,4	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,4	HP	6,8
			18000	LP	2,6	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	HP	6,1	HP	6,6	HP	7,1
			19000	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	HP	5,8	HP	6,3	HP	6,8	HP	7,3
			20000	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	HP	6,1	HP	6,6	HP	7,1	HP	7,5
			21000	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,4	HP	6,8	HP	7,3	HP	7,8
			22000	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	HP	6,2	HP	6,6	HP	7,1	HP	7,6	HP	8,1
			23000	LP	4,0	LP	4,5	LP	5,0	LP	5,5	HP	6,0	HP	6,5	HP	6,9	HP	7,4	HP	7,9	No kit	

150 - 170 STD Sizes

Table 6.16

Size		Available static pressure	150		200		250		300		350		400		450		500		550		600	
150	170	Airflow (m^3/h)	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P
		18000	LP	2,4	LP	3,2	LP	3,9	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,6	LP	8,3	HP	9,1
		19000	LP	2,6	LP	3,3	LP	4,1	LP	4,8	LP	5,5	LP	6,3	LP	7,0	LP	7,7	LP	8,5	HP	9,2
		20000	LP	2,7	LP	3,4	LP	4,2	LP	4,9	LP	5,7	LP	6,4	LP	7,1	LP	7,9	LP	8,6	HP	9,3
		21000	LP	2,8	LP	3,6	LP	4,3	LP	5,1	LP	5,8	LP	6,6	LP	7,3	LP	8,0	HP	8,7	HP	9,5
		22000	LP	3,0	LP	3,8	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,4	LP	8,2	HP	8,9	HP	9,6
		23000	LP	3,2	LP	3,9	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,6	LP	8,3	HP	9,1	HP	9,8
		24000	LP	3,3	LP	4,1	LP	4,8	LP	5,6	LP	6,3	LP	7,1	LP	7,8	LP	8,5	HP	9,3	HP	10,0
		25000	LP	3,5	LP	4,3	LP	5,0	LP	5,8	LP	6,5	LP	7,3	LP	8,0	HP	8,7	HP	9,4	HP	10,2
		26000	LP	3,7	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	HP	8,9	HP	9,6	HP	10,4
		27000	LP	4,0	LP	4,7	LP	5,5	LP	6,2	LP	6,9	LP	7,7	LP	8,4	HP	9,1	HP	9,9	HP	10,6
		28000	LP	4,2	LP	4,9	LP	5,7	LP	6,4	LP	7,2	LP	7,9	LP	8,6	HP	9,4	HP	10,1	HP	10,8
		29000	LP	4,4	LP	5,2	LP	5,9	LP	6,7	LP	7,4	LP	8,2	HP	8,9	HP	9,6	HP	10,3	HP	11,1
		30000	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,7	LP	8,4	HP	9,1	HP	9,9	HP	10,6	HP	11,3
		31000	LP	5,0	LP	5,7	LP	6,5	LP	7,2	LP	7,9	LP	8,7	HP	9,4	HP	10,1	HP	10,9	HP	11,6
		32000	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	HP	8,9	HP	9,7	HP	10,4	HP	11,1	HP	11,8
		33000	LP	5,5	LP	6,3	LP	7,0	LP	7,8	LP	8,5	HP	9,2	HP	10,0	HP	10,7	HP	11,4	HP	12,1
		34000	LP	5,8	LP	6,6	LP	7,3	LP	8,1	HP	8,8	HP	9,5	HP	10,3	HP	11,0	HP	11,7	No kit	
		35000	LP	6,1	LP	6,9	LP	7,6	LP	8,4	HP	9,1	HP	9,8	HP	10,6	HP	11,3	HP	12,0	No kit	

Kit: Kit reference (LP = Low Pressure ; HP = High Pressure)
P: Power input (kW)

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

85 - 100 - 120 GAS Sizes

Table 6.17

Size			Available static pressure	150		200		250		300		350		400		450		500		550		600	
085	100	120	Airflow (m^3/h)	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P
			12000	LP	2,7	LP	3,2	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	HP	6,1	HP	6,5	HP	7,0
			13000	LP	2,8	LP	3,3	LP	3,8	LP	4,3	LP	4,7	LP	5,2	LP	5,7	HP	6,2	HP	6,7	HP	7,1
			14000	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,3	HP	6,8	HP	7,3
			15000	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,5	HP	6,0	HP	6,5	HP	7,0	HP	7,4
			16000	LP	3,3	LP	3,8	LP	4,3	LP	4,7	LP	5,2	LP	5,7	HP	6,2	HP	6,7	HP	7,2	HP	7,6
			17000	LP	3,5	LP	4,0	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,4	HP	6,9	HP	7,3	HP	7,8
			18000	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,6	HP	6,1	HP	6,6	HP	7,1	HP	7,6	HP	8,0
			19000	LP	3,9	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,4	HP	6,8	HP	7,3	HP	7,8	No kit	
			20000	LP	4,2	LP	4,6	LP	5,1	LP	5,6	HP	6,1	HP	6,6	HP	7,1	HP	7,6	HP	8,0	No kit	
			21000	LP	4,4	LP	4,9	LP	5,4	HP	5,9	HP	6,4	HP	6,9	HP	7,4	HP	7,8	No kit		No kit	
			22000	LP	4,7	LP	5,2	LP	5,7	HP	6,2	HP	6,7	HP	7,2	HP	7,6	HP	8,1	No kit		No kit	
			23000	LP	5,0	LP	5,5	HP	6,0	HP	6,5	HP	7,0	HP	7,5	HP	7,9	No kit		No kit		No kit	

150 - 170 GAS Sizes

Table 6.18

Size		Available static pressure	150		200		250		300		350		400		450		500		550		600	
150	170	Airflow (m^3/h)	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P	Kit	P
		18000	LP	4,1	LP	4,8	LP	5,6	LP	6,3	LP	7,0	LP	7,8	LP	8,5	HP	9,2	HP	9,9	HP	10,6
		19000	LP	4,2	LP	5,0	LP	5,7	LP	6,4	LP	7,2	LP	7,9	LP	8,6	HP	9,3	HP	10,0	HP	10,8
		20000	LP	4,3	LP	5,1	LP	5,8	LP	6,6	LP	7,3	LP	8,0	HP	8,7	HP	9,5	HP	10,2	HP	10,9
		21000	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,4	LP	8,2	HP	8,9	HP	9,6	HP	10,3	HP	11,0
		22000	LP	4,6	LP	5,4	LP	6,1	LP	6,9	LP	7,6	LP	8,3	HP	9,0	HP	9,8	HP	10,5	HP	11,2
		23000	LP	4,8	LP	5,6	LP	6,3	LP	7,0	LP	7,8	LP	8,5	HP	9,2	HP	9,9	HP	10,6	HP	11,4
		24000	LP	5,0	LP	5,7	LP	6,5	LP	7,2	LP	7,9	LP	8,7	HP	9,4	HP	10,1	HP	10,8	HP	11,5
		25000	LP	5,2	LP	5,9	LP	6,7	LP	7,4	LP	8,1	HP	8,9	HP	9,6	HP	10,3	HP	11,0	HP	11,7
		26000	LP	5,4	LP	6,1	LP	6,9	LP	7,6	LP	8,3	HP	9,1	HP	9,8	HP	10,5	HP	11,2	HP	11,9
		27000	LP	5,6	LP	6,4	LP	7,1	LP	7,8	LP	8,6	HP	9,3	HP	10,0	HP	10,7	HP	11,4	HP	12,2
		28000	LP	5,8	LP	6,6	LP	7,3	LP	8,1	HP	8,8	HP	9,5	HP	10,2	HP	11,0	HP	11,7	No kit	
		29000	LP	6,1	LP	6,8	LP	7,6	LP	8,3	HP	9,0	HP	9,8	HP	10,5	HP	11,2	HP	11,9	No kit	
		30000	LP	6,3	LP	7,1	LP	7,8	LP	8,6	HP	9,3	HP	10,0	HP	10,7	HP	11,5	HP	12,2	No kit	
		31000	LP	6,6	LP	7,3	LP	8,1	HP	8,8	HP	9,5	HP	10,3	HP	11,0	HP	11,7	No kit		No kit	
		32000	LP	6,9	LP	7,6	LP	8,4	HP	9,1	HP	9,8	HP	10,6	HP	11,3	HP	12,0	No kit		No kit	
		33000	LP	7,2	LP	7,9	LP	8,6	HP	9,4	HP	10,1	HP	10,8	HP	11,6	HP	12,3	No kit		No kit	
		34000	LP	7,5	LP	8,2	HP	8,9	HP	9,7	HP	10,4	HP	11,1	HP	11,9	No kit		No kit		No kit	
		35000	LP	7,8	LP	8,5	HP	9,3	HP	10,0	HP	10,7	HP	11,5	HP	12,2	No kit		No kit		No kit	

Kit: Kit reference (LP = Low Pressure ; HP = High Pressure)
P: Power input (kW)

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

OUTDOOR NOISE LEVEL

Table 7.1

External Static Presure: 150 Pa

FWH/FWM BWH/BWM	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
45	43	54	61	67	66	67	65	61	73	42
55	45	54	62	67	68	69	66	63	74	43
65	46	53	60	66	66	67	64	61	73	42
75	49	58	63	68	70	71	68	63	76	45
85	44	56	67	70	68	69	66	62	76	45
100	47	59	67	71	71	73	70	65	78	47
120	46	58	68	71	70	72	69	65	78	47
150	48	58	71	75	72	74	71	66	80	49
170	50	60	71	76	75	77	75	69	83	52

(1) Total outdoor POWER levels
(2) Global Outdoor Sound PRESSURE Levels 10 m

INDOOR NOISE LEVEL

Table 7.2

External Static Presure: 150 Pa

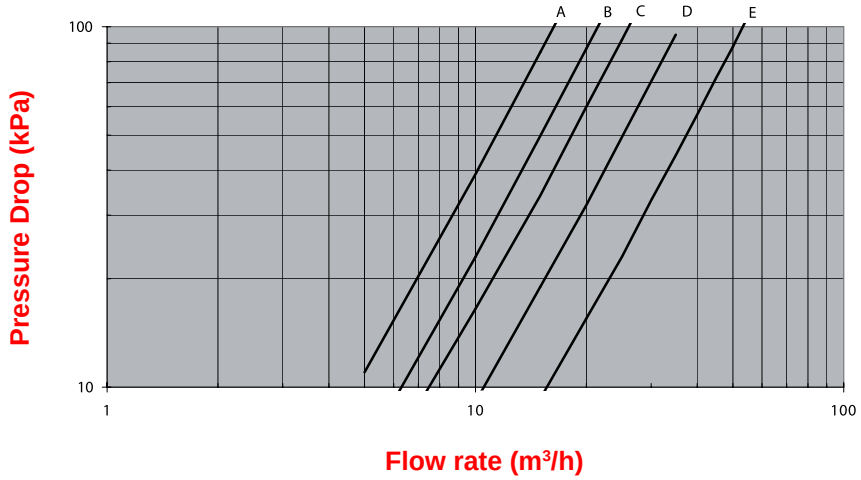
FWH/BWH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
45	48	61	71	76	78	80	77	70	80	84
55	49	63	72	78	80	81	79	72	81	86
65	50	60	69	76	78	79	76	69	79	84
75	54	65	72	79	82	83	80	74	83	88
85	49	64	72	77	80	81	78	71	81	85
100	52	67	75	82	84	85	83	76	85	90
120	51	66	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

Table 7.3

External Static Presure: 150 Pa

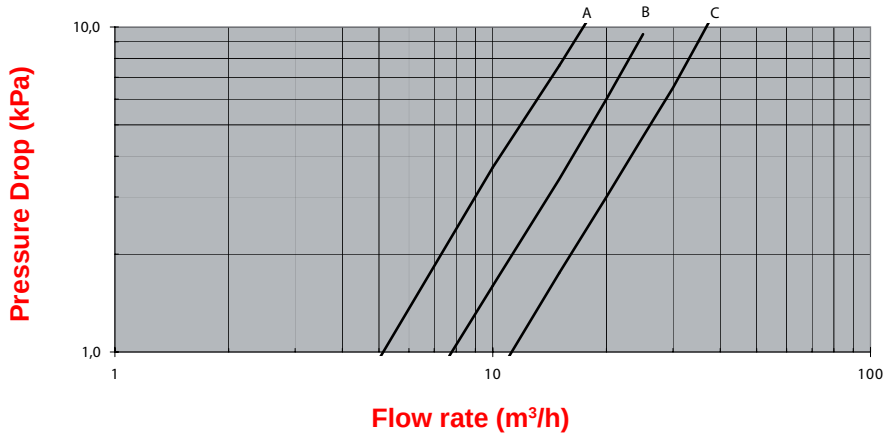
FWM/BWM	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
45	47	65	72	79	79	81	79	71	81	86
55	48	66	73	81	80	82	80	73	83	87
65	55	67	73	78	80	82	79	72	82	86
75	54	74	79	83	85	85	84	78	87	91
85	55	71	72	77	78	78	75	69	81	84
100	56	73	74	79	82	82	79	73	84	87
120	58	75	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

PLATE HEAT EXCHANGER



BWH/BWM FWH/FWM	Curve
45	A
55	A
65	B
75	C
85	C
100	D
120	D
150	E
170	E

WATER FILTER



BWH/BWM FWH/FWM	Curve
45	A
55	A
65	B
75	B
85	B
100	B
120	B
150	C
170	C

BWM - FWM = Heat pump rooftop with gas fired heating

BWH - FWH = Heat pump rooftop

Table 8.1

Sizes	Airflow	Economiser	G4 Filters	F7 Filters	UV light	Electric Heater M	Electric Heater H
45	6500	23	3	52		85	89
	8100	36	10	86		145	150
	9700	51	18	127		201	207
55	7200	28	6	66		98	102
	9000	44	14	108		165	170
	10800	63	25	160		230	236
65	8600	16	3	50		67	72
	11500	29	12	96		119	125
	13000	37	18	125		159	167
75	10000	22	7	70		79	85
	13500	35	16	117		135	142
	14000	56	31	194		195	204
85	12000	12	1	75	18	5	6
	15000	19	7	105	30	7	7
	23000	45	28	199	63	9	11
100	14000	17	5	94	26	7	8
	18500	29	15	143	44	10	11
	23000	45	28	199	63	14	16
120	15000	19	7	105	30	8	9
	20500	36	21	167	52	12	13
	23000	45	28	199	63	15	17
150	18000	6	1	75	15	5	7
	26000	12	12	130	33	10	13
	35000	22	29	204	54	18	23
170	21000	8	5	94	21	9	10
	30000	16	19	161	42	13	15
	35000	22	29	204	54	19	21

Sizes	Airflow	Heating Gaz fired H	Adjustable roofcurb	Multidirectional Roofcurb	Heat Recovery Fresh Air modul	Heat Recovery Exhaust air module
45	6500		20	29	113	80
	8100		32	45	170	124
	9700		46	64	239	177
55	7200		25	35	136	98
	9000		39	55	207	153
	10800		56	80	293	220
65	8600	29	19	12	129	91
	11500	46	33	18	223	162
	13000	67	43	26	282	207
75	10000	40	25	16	171	123
	13500	63	40	25	266	195
	14000	102	65	40	326	240
85	12000	14	17	22	149	93
	15000	23	27	33	220	139
	23000	53	63	73	223	143
100	14000	20	23	30	194	123
	18500	34	41	51	318	206
	23000	53	63	78	223	143
120	15000	23	27	35	220	139
	20500	42	50	62	185	118
	23000	53	63	78	223	143
150	18000	16	30	35	258	193
	26000	33	62	72	277	179
	35000	59	112	131	296	194
170	21000	21	40	49	190	121
	30000	44	82	95	359	234
	35000	59	112	131	296	194

Table 9.1

BWH / FWH		45		55		65		75		085		100		120		150		170	
		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)	Pa (kW)	FLA (A)	Pa (kW)	FLA (A)
UNIT																			
Basic Cooling Unit R410A		19,1	33,7	23,8	39,6	28,0	49,3	36,2	64,6	35,3	63,4	43,7	73,6	51,9	84,4	58,6	105,5	72,7	129,7
Compressors		16,8	30,0	23,5	42,0	26,1	46,6	28,8	51,2	31,4	56,2	37,0	62,0	45,2	72,8	51,0	91,8	62,8	112,4
Direct start up amps Id/Ia mono		3,4		3,6		3,7		3,2		3,0		3,5		3,0		2,0		2,0	
Standard indoor kit		1,9	3,4	2,7	4,8	2,7	4,8	6,4	10,9	3,6	6,5	6,4	10,9	6,4	10,9	7,3	13,0	9,6	16,6
High efficiency indoor kit		-	-	-	-	-	-	-	-	5,7	9,0	5,7	9,0	5,7	9,0	8,6	13,5	8,6	13,5
ELECTRICAL																			
Electric heater S		27	38	27	38	27	38	27	38	30	42	30	42	30	42	45	63	45	63
Electric heater M		45	63	45	63	45	63	45	63	54	75	54	75	54	75	72	100	72	100
Electric heater H		54	75	54	75	54	75	54	75	72	100	72	100	72	100	108	150	108	150
KITS																			
Standard Drive Kits	K1	-0,45	-0,9	-1,25	-2,3	-1,25	-2,3	-1,7	-3,1	-1,0	-1,7	-3,7	-6,1	-3,7	-6,1	-3,5	-6,2	-5,8	-9,8
	K2	-0,45	-0,9	-0,8	-1,4	-1,25	-2,3	-0,9	-1,7	0,0	0,0	-2,8	-4,4	-2,8	-4,4	-1,9	-3,4	-4,2	-7,0
	K3	0	0	0	0,0	-0,8	-1,4	0	0	0,0	0,0	-2,8	-4,4	-2,8	-4,4	0,0	0,0	-2,3	-3,6
	K4	0,8	1,4	0	0,0	0	0,0	0	0	1,2	1,8	-1,6	-2,6	-1,6	-2,6	0,0	0,0	-2,3	-3,6
	K5	0,8	1,4	0,9	1,7	0	0,0	1,2	1,8	1,2	1,8	-1,6	-2,6	-1,6	-2,6	2,3	3,6	0,0	0,0
	K6	0,8	1,4	0,9	1,7	0,9	1,7	1,2	1,8	5,0	8,7	2,2	4,3	2,2	4,3	2,3	3,6	0,0	0,0
	K7	1,7	3,1	-0,8	-1,4	2,1	3,5	2,8	4,4	2,8	4,4	0,0	0,0	0,0	0,0	2,3	3,6	0,0	0,0
	K8	1,7	3,1	0	0,0	2,1	3,5	2,8	4,4	9,2	15,3	6,4	10,9	6,4	10,9	5,5	8,8	3,2	5,2
	K9	0	0	2,1	3,5	0	0,0	1,2	1,8	-1,0	-1,7	-3,7	-6,1	-3,7	-6,1	5,5	8,8	3,2	5,2
	K10	0,8	1,4	0,9	1,7	0,9	1,7	2,8	4,4	2,8	4,4	0,0	0,0	0,0	0,0	0,0	0,0	-2,3	-3,6
	K11	2,9	4,9	2,1	3,5	0,9	1,7	5	8,7	5,0	8,7	2,2	4,3	2,2	4,3	2,3	3,6	0,0	0,0
	K12	1,7	3,1	3,7	6,1	2,1	3,5	5	8,7	5,0	8,7	2,2	4,3	2,2	4,3	9,9	17,4	7,6	13,8
	K13	2,9	4,9	0,9	1,7	2,1	3,5	1,2	1,8	1,2	1,8	-1,6	-2,6	-1,6	-2,6	5,5	8,8	3,2	5,2
	K14	1,7	3,1	2,1	3,5	0,9	1,7	5	8,7	2,8	4,4	0,0	0,0	0,0	0,0	9,9	17,4	7,6	13,8
	K15	1,7	3,1	2,1	3,5	2,1	3,5	-	-	9,2	15,3	6,4	10,9	6,4	10,9	13,3	23,2	11,0	19,6
	K16	2,9	4,9	2,1	3,5	5,9	10,4	-	-	5,0	8,7	2,2	4,3	2,2	4,3	9,9	17,4	7,6	13,8
	K17	2,9	4,9	3,7	6,1	5,9	10,4	-	-	13,6	23,9	10,8	19,5	10,8	19,5	-	-	-	-
	K18	2,9	4,9	-	-	3,7	6,1	-	-	6,0	10,1	3,2	5,7	3,2	5,7	-	-	-	-
	K19	4,5	7,5	-	-	3,7	6,1	-	-	-	-	-	-	-	-	-	-	-	-
	K20	4,5	7,5	-	-	5,9	10,4	-	-	-	-	-	-	-	-	-	-	-	-
EXTRACTION																			
Extraction fan		0,3	1,6	0,3	1,6	0,5	2,4	0,5	2,4	0,9	1,8	0,9	1,8	0,9	1,8	1,4	2,7	1,4	2,7
Extraction Roofcurb		1,5	3,4	2,2	4,8	1,5	3,4	2,2	4,8	4,4	10	4,4	10	4,4	10	4,4	10	4,4	10
ENERGY RECOVERY																			
Energy Recovery Module		0	0	0	0	0	0	0	0	0,2	1,0	0,2	1,0	0,2	1,0	0,2	1,0	0,2	1,0

P = Max. absorbed power in kW
FLA = Full load amps - A= Ia
Id/Ia = Startup amps/full load amps - A

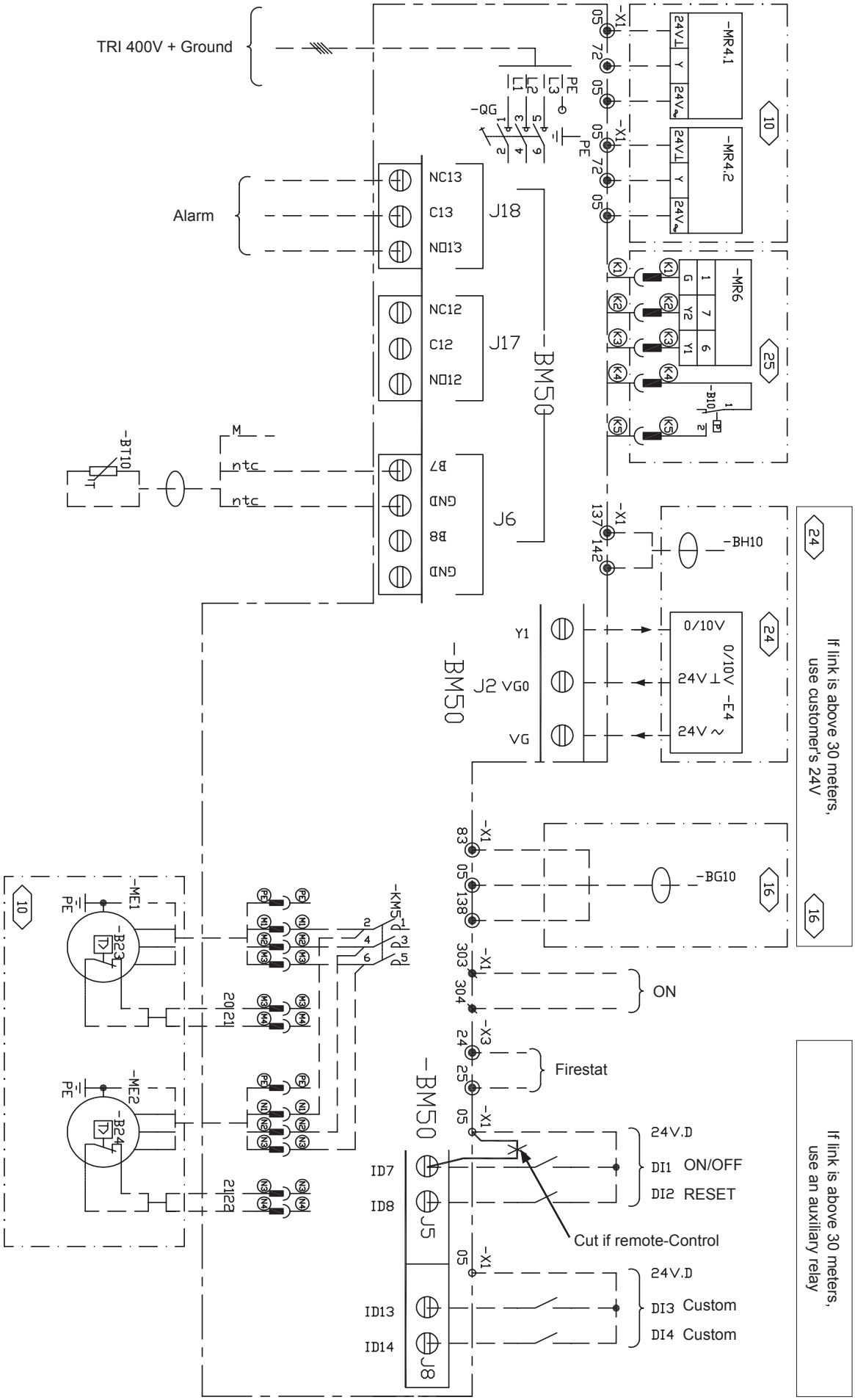
Table 9.2

BWM / FWM		45		55		65		75		085		100		120		150		170	
		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)	Pa (kW)	FLA (A)	Pa (kW)	FLA (A)
UNIT																			
Basic Cooling Unit R410A		19,9	35,1	24,7	41,3	28,8	49,4	39,4	70,9	37,1	66,5	44,6	75,7	55,1	90,1	60,9	109,1	75,9	134,9
Compressors		16,8	30,0	23,5	42,0	26,1	46,6	28,8	51,2	31,4	56,2	37,0	62,0	45,2	72,8	51,0	91,8	62,8	112,4
Direct start up amps Id/Ia mono		3,4		3,6		3,7		3,2		3,5		3,6		3,3		2,5		2,3	
Standard indoor kit		2,7	4,8	3,65	6,5	3,65	6,5	6,4	10,9	5,4	9,6	7,3	13,0	9,6	16,6	9,6	16,6	12,8	21,8
High efficiency indoor kit		-	-	-	-	-	-	-	-	5,7	9,0	5,7	9,0	5,7	9,0	8,6	13,5	8,6	13,5
KITS																			
Drive Kits Gas S	K1	-0,8	-1,4	-0,9	-1,7	-0,9	-1,7	-2,1	-3,5	0	0,0	-1,9	-3,4	-4,2	-7,0	-2,3	-3,6	-5,5	-8,8
	K2	0	0,0	-0,9	-1,7	-0,9	-1,7	-2,1	-3,5	0	0,0	-1,9	-3,4	-4,2	-7,0	0,0	0,0	-3,2	-5,2
	K3	0	0,0	0	0	0	0	-1,2	-1,8	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0
	K4	0	0,0	1,2	1,8	1,2	1,8	0	0	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0
	K5	0,9	1,7	0	0	1,2	1,8	1,6	2,6	1,9	3,4	0,0	0,0	-2,3	-3,6	7,6	13,8	4,4	8,6
	K6	0,9	1,7	1,2	1,8	1,2	1,8	1,6	2,6	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4
	K7	2,1	3,5	2,8	4,4	0	0	3,8	6,9	4,2	7,0	2,3	3,6	0,0	0,0	3,2	5,2	0,0	0,0
	K8	0,9	1,7	1,2	1,8	2,8	4,4	-1,2	-1,8	7,4	12,2	5,5	8,8	3,2	5,2	7,6	13,8	4,4	8,6
	K9	2,1	3,5	2,8	4,4	2,8	4,4	0	0	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4
	K10	3,7	6,1	1,2	1,8	5	8,7	3,8	6,9	7,4	12,2	5,5	8,8	3,2	5,2	15,4	25,6	12,2	20,4
	K11	3,7	6,1	1,2	1,8	5	8,7	3,8	6,9	11,8	20,8	9,9	17,4	7,6	13,8	-	-	-	-
	K12	0,9	1,7	2,8	4,4	5	8,7	1,6	2,6	12	21	10	17	8	14	-	-	-	-
	K13	2,1	3,5	-	-	5	8,7	3,8	6,9	7	12	6	9	3	5	-	-	-	-
	K14	2,1	3,5	-	-	2,8	4,4	-	-	-	-	-	-	-	-	-	-	-	-
	K15	3,7	6,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drive Kits Gas H	K1	-0,8	-1,4	-0,9	-1,7	-1,7	-3,1	-3,7	-6,1	0	0,0	-1,9	-3,4	-4,2	-7,0	-2,3	-3,6	-5,5	-8,8
	K2	0	0,0	-0,9	-1,7	-0,9	-1,7	-2,8	-4,4	0	0,0	-1,9	-3,4	-4,2	-7,0	0,0	0,0	-3,2	-5,2
	K3	0	0,0	0	0	0	0	-1,6	-2,6	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0
	K4	0	0,0	1,2	1,8	1,2	1,8	-1,6	-2,6	1,9	3,4	0,0	0,0	-2,3	-3,6	3,2	5,2	0,0	0,0
	K5	0,9	1,7	0	0	1,2	1,8	0	0	1,9	3,4	0,0	0,0	-2,3	-3,6	7,6	13,8	4,4	8,6
	K6	0,9	1,7	1,2	1,8	-0,9	-1,7	2,2	4,3	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4
	K7	2,1	3,5	2,8	4,4	1,2	1,8	-2,8	-4,4	4,2	7,0	2,3	3,6	0,0	0,0	3,2	5,2	0,0	0,0
	K8	0,9	1,7	1,2	1,8	2,8	4,4	-1,6	-2,6	7,4	12,2	5,5	8,8	3,2	5,2	7,6	13,8	4,4	8,6
	K9	2,1	3,5	2,8	4,4	5	8,7	0	0	4,2	7,0	2,3	3,6	0,0	0,0	11,0	19,6	7,8	14,4
	K10	3,7	6,1	1,2	1,8	0	0	2,2	4,3	7,4	12,2	5,5	8,8	3,2	5,2	15,4	25,6	12,2	20,4
	K11	3,7	6,1	1,2	1,8	2,8	4,4	2,2	4,3	11,8	20,8	9,9	17,4	7,6	13,8	-	-	-	-
	K12	0,9	1,7	2,8	4,4	5	8,7	-	-	12	21	10	17	8	14	-	-	-	-
	K13	2,1	3,5	-	-	5	8,7	-	-	7	12	6	9	3	5	-	-	-	-
	K14	2,1	3,5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	K15	3,7	6,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EXTRACTION																			
Extraction fan		0,3	1,6	0,3	1,6	0,5	2,4	0,5	2,4	0,9	1,8	0,9	1,8	0,9	1,8	1,4	2,7	1,4	2,7
Extraction Roofcurb		1,5	3,4	2,2	4,8	1,5	3,4	2,2	4,8	4,4	10	4,4	10	4,4	10	4,4	10	4,4	10
ENERGY RECOVERY																			
Energy Recovery Module		0	0	0	0	0	0	0	0	0,2	1,0	0,2	1,0	0,2	1,0	0,2	1,0	0,2	1,0
GAS																			
Gas S Size		0,2	0,4	0,2	0,4	0,2	0,4	0,2	0,4	0,16	0,7	0,16	0,7	0,16	0,7	0,3	1,0	0,3	1,0
Gas H Size		0,2	0,4	0,2	0,4	0,2	0,7	0,2	0,7	0,3	1,0	0,3	1,0	0,3	1,0	0,3	1,0	0,3	1,0
Gas H 100% modulation		0,2	0,4	0,2	0,4	0,2	0,7	0,2	0,7	0,3	1,0	0,3	1,0	0,3	1,0	0,3	1,0	0,3	1,0

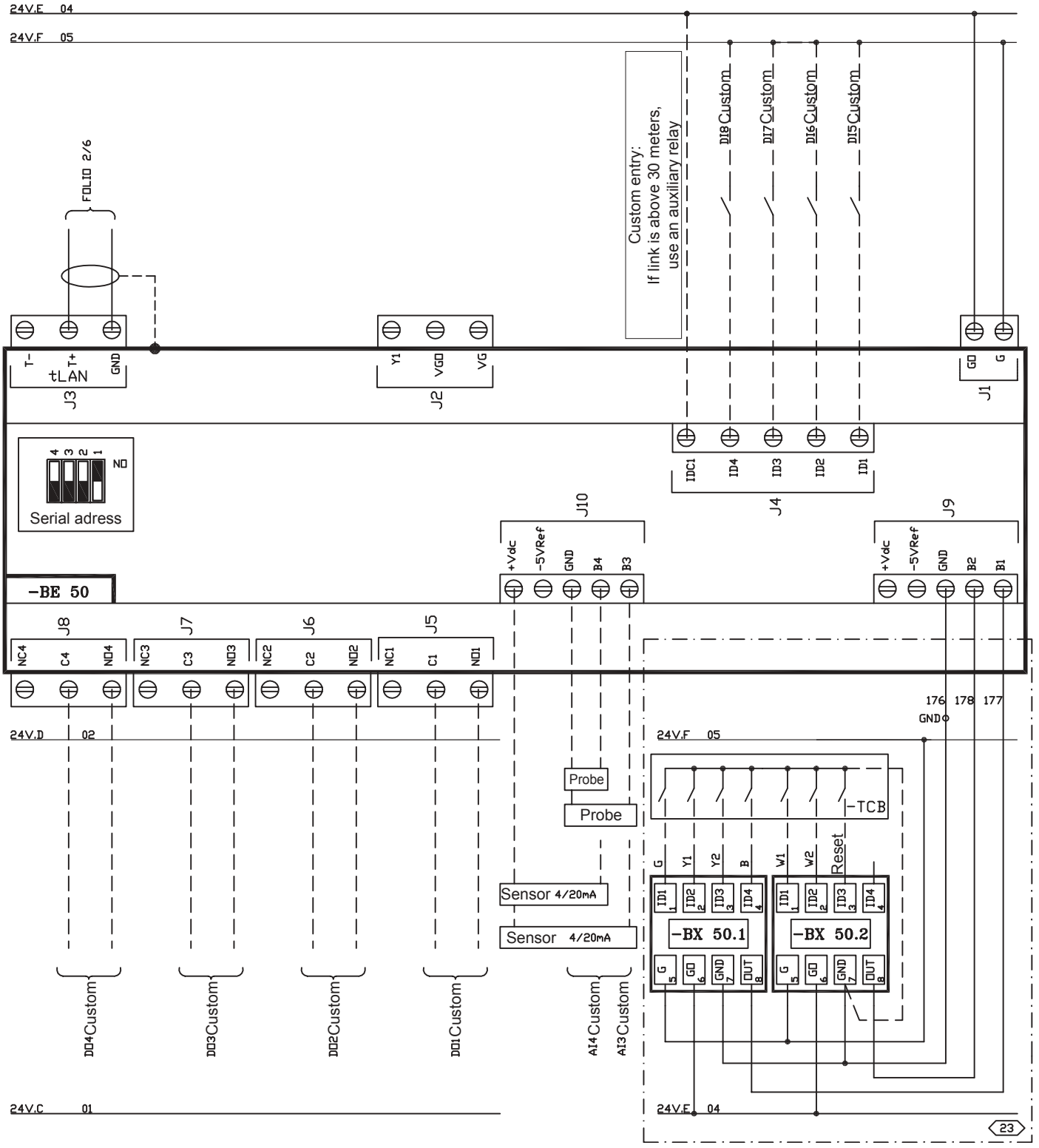
P = Max. absorbed power in kW
FLA = Full load amps - A= Ia

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

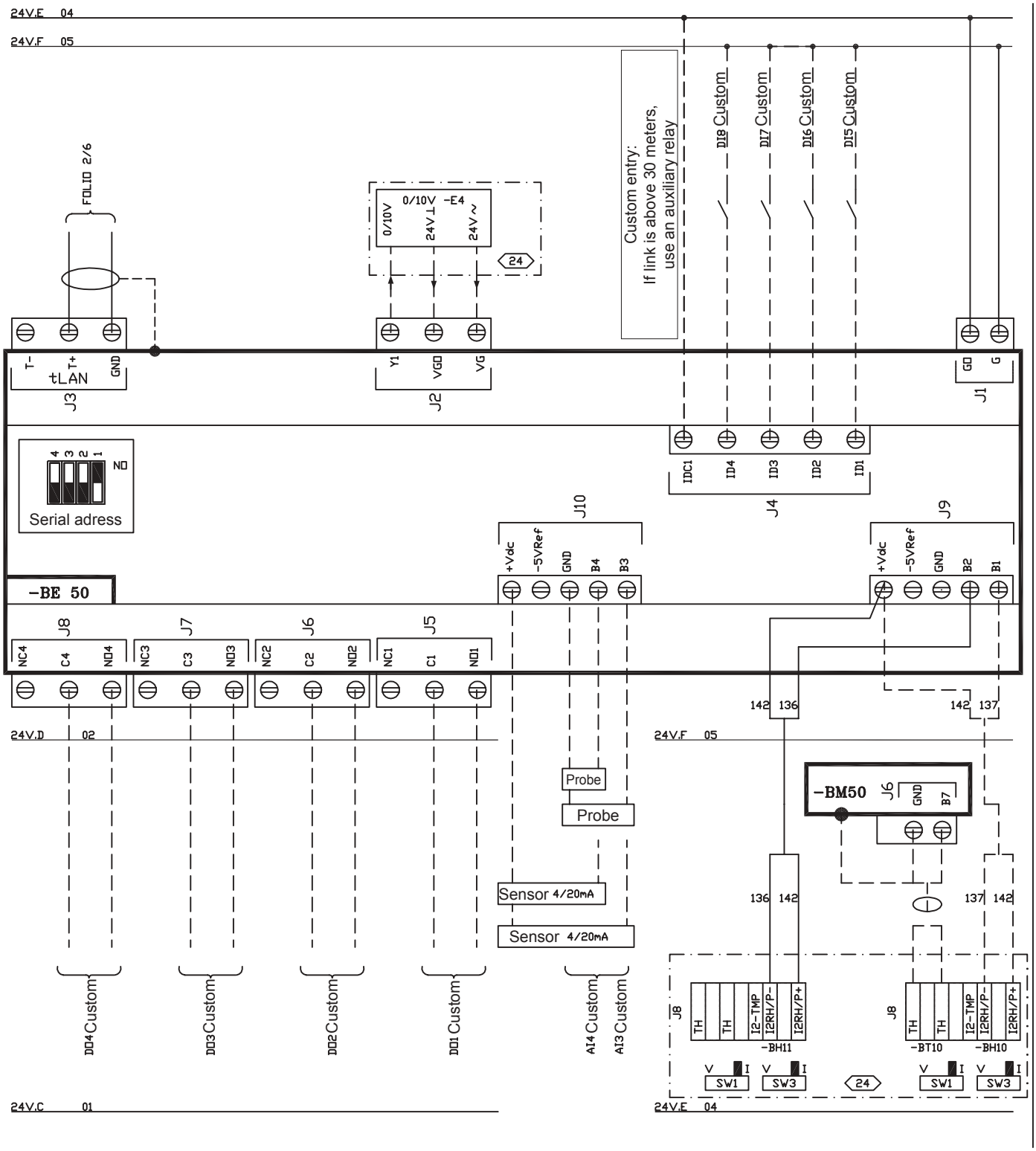
GENERAL CUSTOMER CONNECTION DIAGRAM



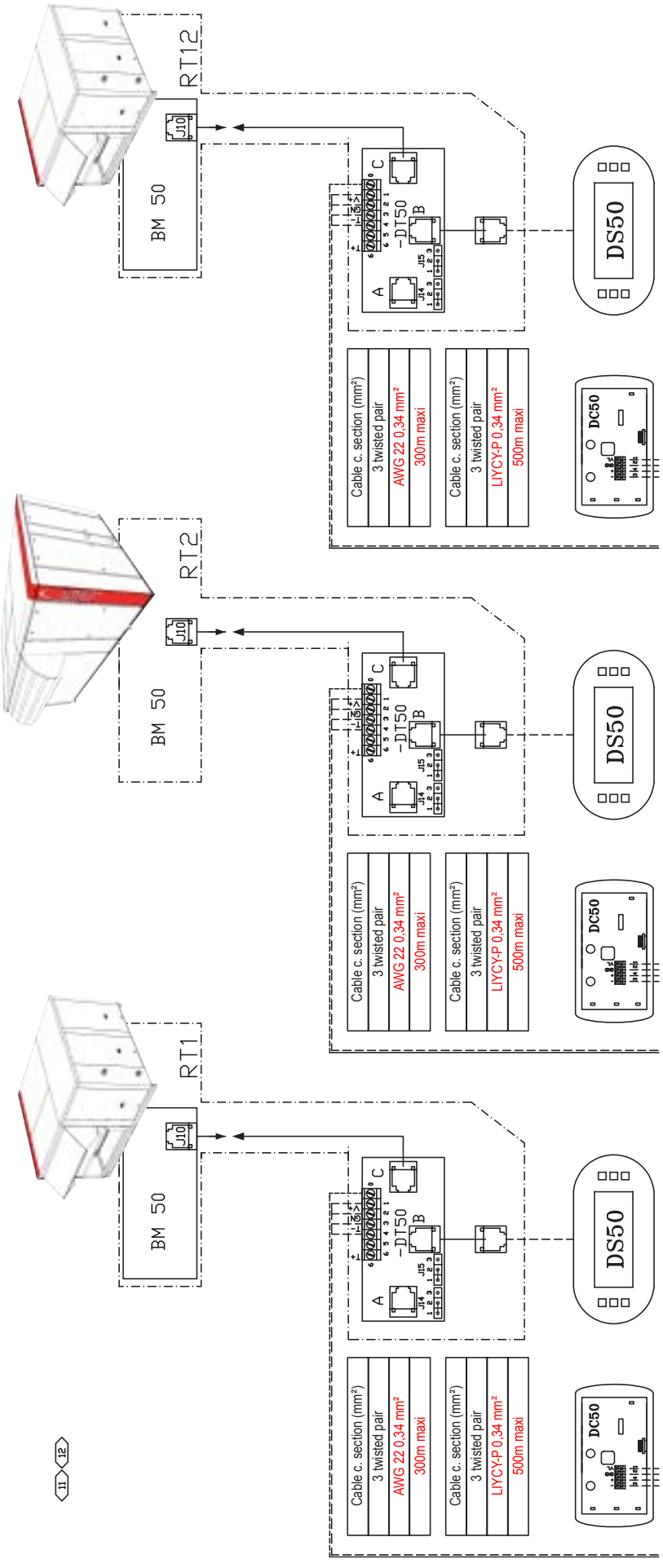
CUSTOMER CONNECTION WITH TCB



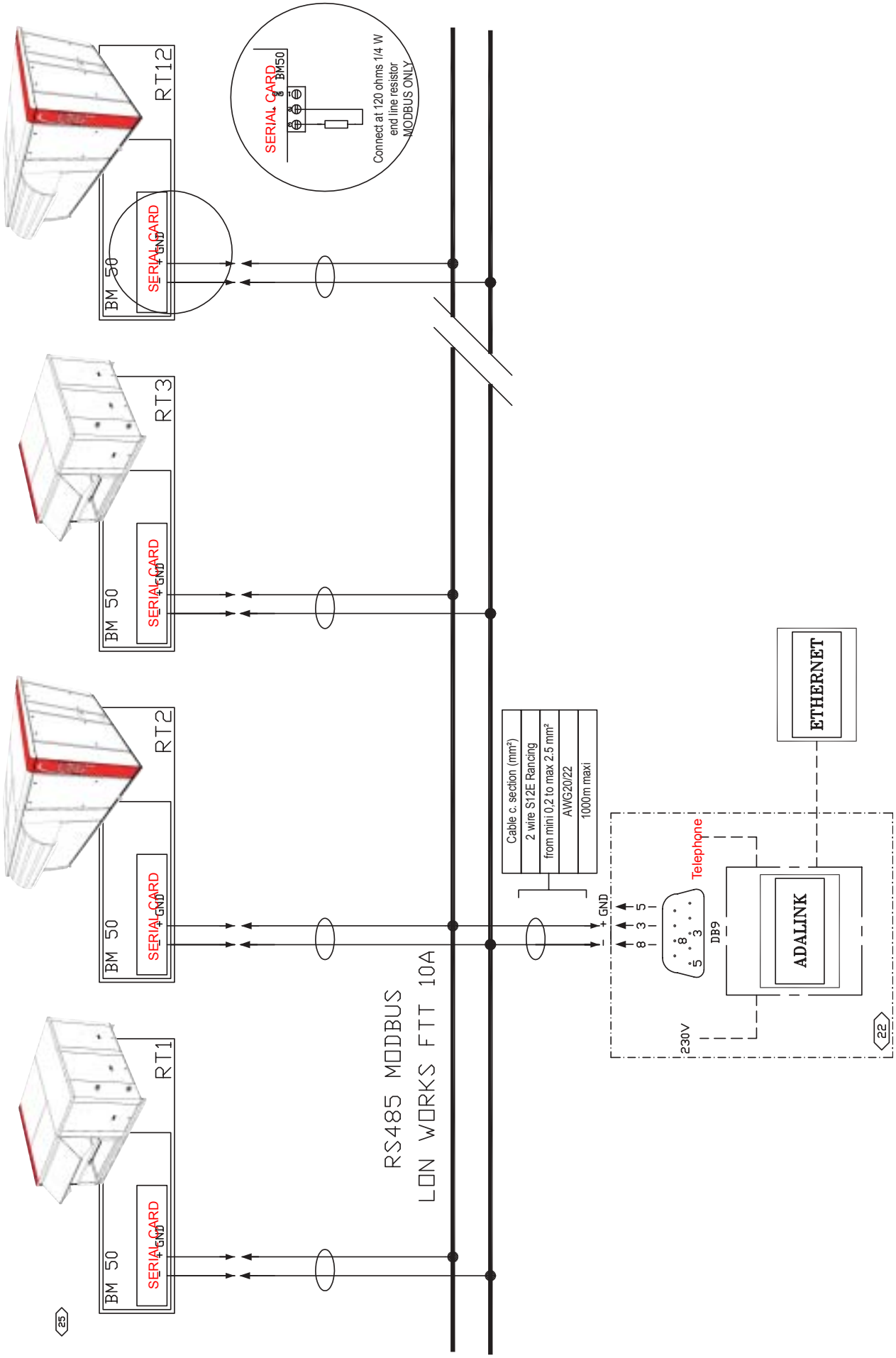
CUSTOMER CONNECTION WITH ADVANCED CONTROL PACK



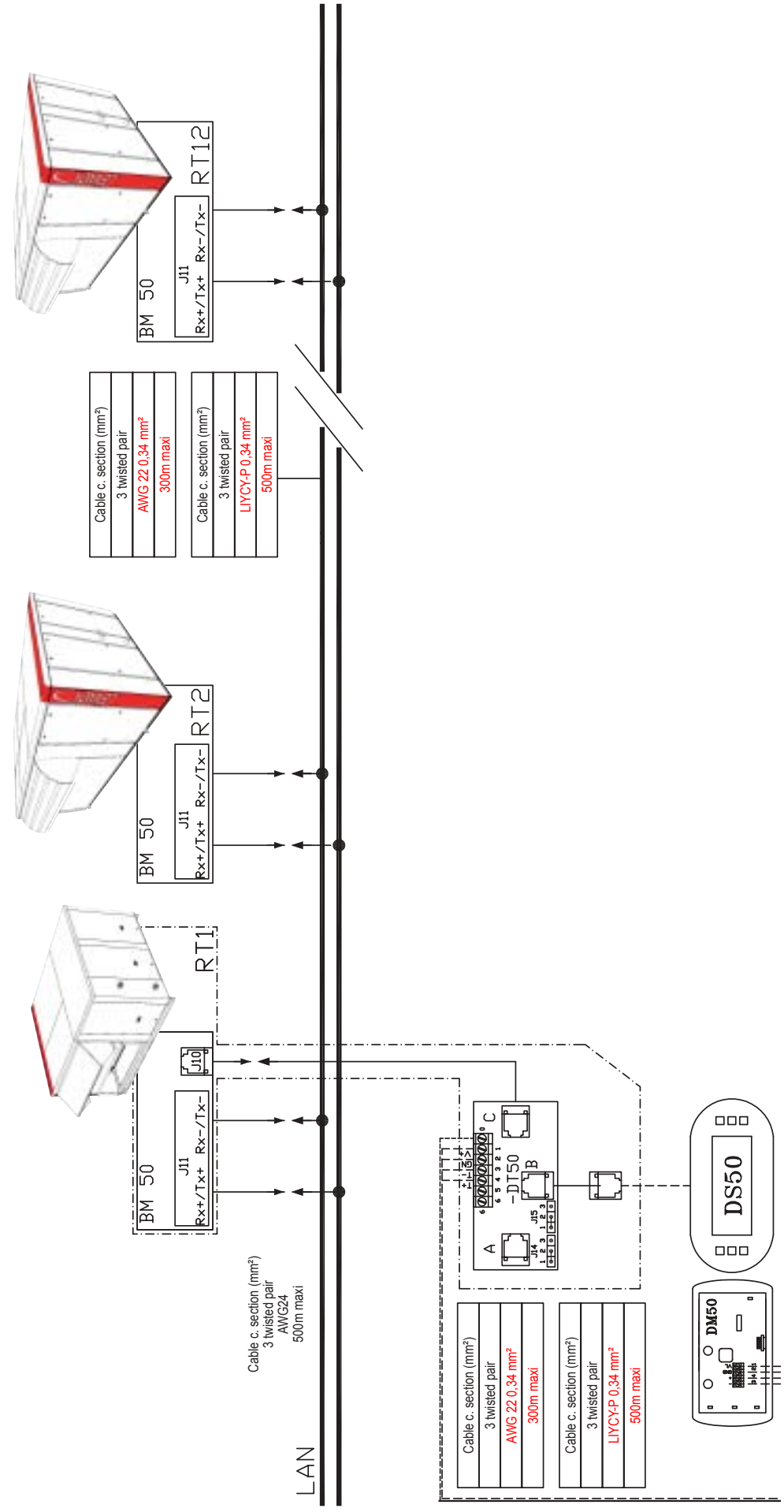
DS 50 : Service display / DC 50 : Comfort display



ADALINK


RT12
RT3
RT2
RT1
BM 50
SERIAL CARD
+ GND
SERIAL CARD
BM50
Connect at 120 ohms 1/4 W
end line resistor
MODBUS ONLY
RS485 MODBUS
LON WORKS FTT 10A
Cable c. section (mm²)
2 wire S12E Rancing
from mini 0,2 to max 2.5 mm²
AWG20/22
1000m maxi
+ GND
Telephone
DB9
ADALINK
ETHERNET
230V
25
22

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

} Those contacts add up

- All fresh air
- Activation A zone
- Activation B zone
- Activation C zone
- Activation Unoccupied zone
- Activation BMS zone
- Free, for BMS

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

} Those contacts add up

- 50 % Fresh air
- All Fresh Air
- Activation A zone
- Activation B zone
- Activation C zone
- Activation Unoccupied zone
- Activation BMS zone
- Free, for BMS

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')

This list might slighlty change depending of software version, please contact your Lennox sales office to get the most up to date version

Bits **R = Read / W = Write / L = Logical**					
@ (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

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

Words **R = Read / W = Write / L = Logical**					
@ (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 point.	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

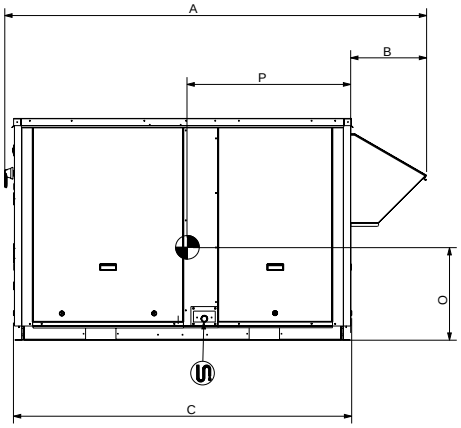
29H	41	R	10 = 1.0 g/kg	[Absolute Humidity] Outdoor	2123
2AH	42	R	1 = 1 pa	[Flow] Differential pressure on the air, in pascal	2131
2BH	43	R	1 = 1 ppm	[CO_2] Level in ppm	2132
2CH	44	R	1 = 1%	[% of opening] Register of fresh air	2413
2DH	45	R	1 = 1%	[% of opening] Valve gas	2618
2EH	46	R	1 = 1%	[% of opening] Electrical heaters (Triac)	2627
2FH	47	R	1 = 1%	[% of opening] Hot water coil	2633
30H	48	R	1 = 1%	[% of opening] Humidifier	2714
31H	49	R	10 = 1.0°C	[Dry contact] Temperature, Free 1, BE50-J9-B1	2161
32H	50	R	10 = 1.0°C	[Dry contact] Temperature, Free 2, BE50-J9-B2	2162
33H	51	R	10 = 1.0°C	[Dry contact] Temperature, Free 3, BE50-J10-B3	2163
34H	52	R	10 = 1.0°C	[Dry contact] Temperature, Free 4, BE50-J10-B4	2164
35H	53	R	10 = 1.0%	[Dry contact] Humidity, Free 1, BE50-J9-B1	2165
36H	54	R	10 = 1.0%	[Dry contact] Humidity, Free 2, BE50-J9-B2	2166
37H	55	R	10 = 1.0%	[Dry contact] Humidity, Free 3, BE50-J10-B3	2167
38H	56	R	10 = 1.0%	[Dry contact] Humidity, Free 4, BE50-J10-B4	2168
39H	57	R	1 = 1 h	[Running Time, Count] Fan, Blower	2318
3AH	58	R	1 = 1 h	[Running Time, Count] Compressor, 1	2519
3BH	59	R	1 = 1 h	[Running Time, Count] Compressor, 2	2529
3CH	60	R	1 = 1 h	[Running Time, Count] Compressor, 3	2539
3DH	61	R	1 = 1 h	[Running Time, Count] Compressor, 4	2549
3EH	62	R	bit	[Alarm] 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	...
3FH	63	R	bit	[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 =	…
40H	64	R		not used	

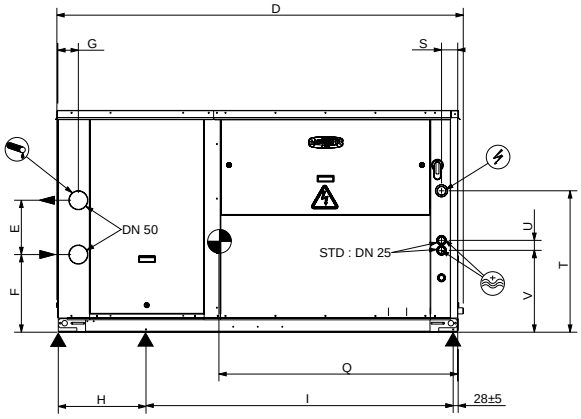
ECHELON - Settings and Readings

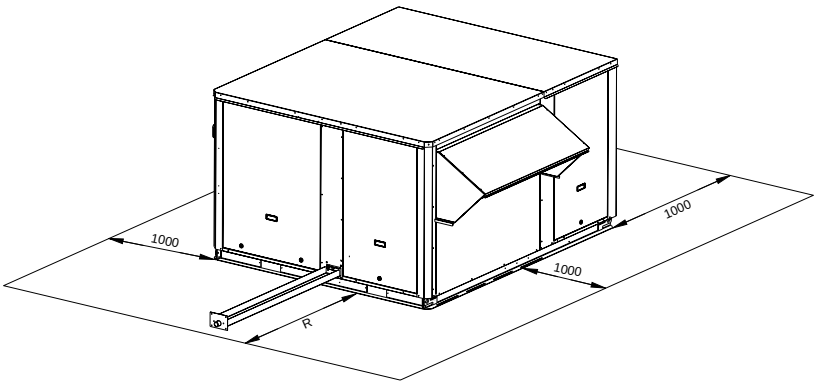
			DS50
R/W	L	[On / Off] Unit	3111
R/W	L	[Reset] Discharges the safety measures of the unit	3112
R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	3933
R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	…
R	L	[Alarm] General	1000
R	L	[On/Off] Fan, 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

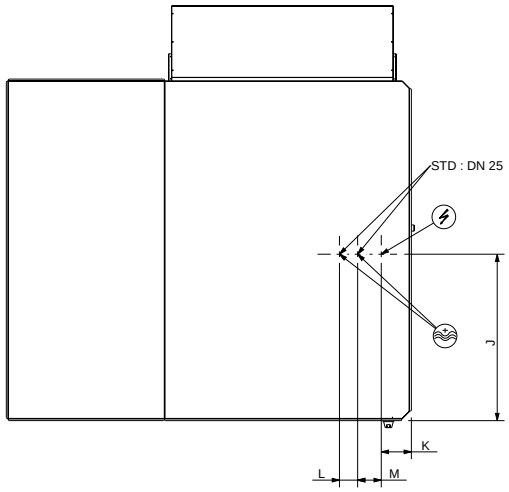
			DS50
R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	3932
R/W	10 = 1,0°c	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (BMS)
R/W	10 = 1,0°c	[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	

BWH/BWM 045/055 065/075



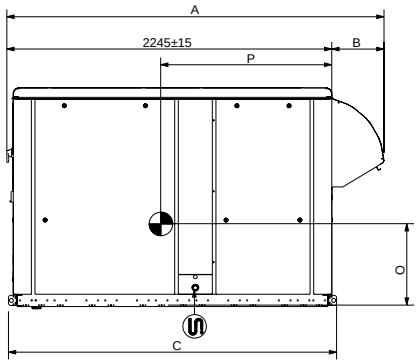


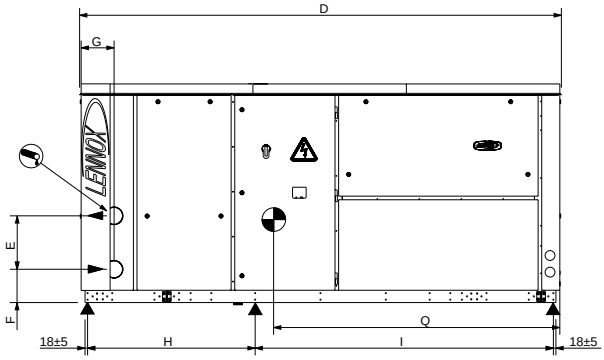


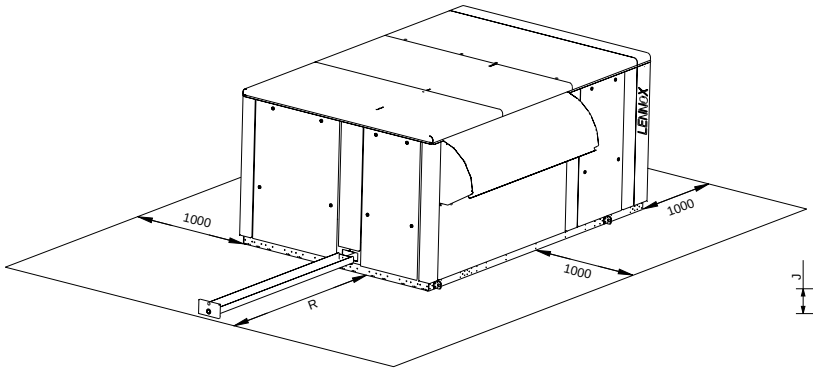


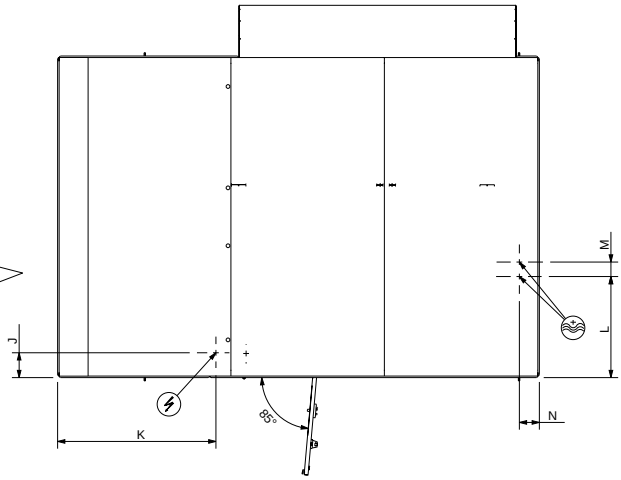
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	Q	R	S	T	U	V
045 055	2321	418	1861	2236	299	427	113	483	1690	916	166	100	296	504	927	1341	1390	89	778	55	450
065 075	2671	414	2195	2880	369	250	180	648	2140	1265	165	100	130	512	1124	1486	1950	89	783	55	455

FWH/FWM 85/100/120 150/170



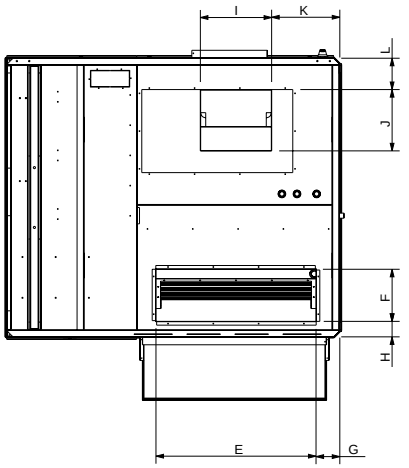


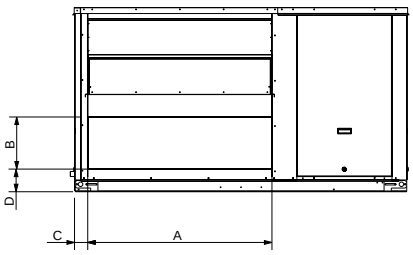


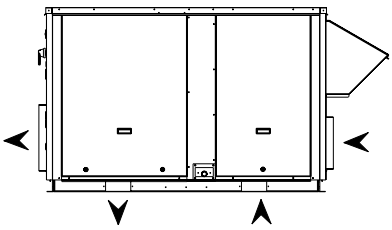


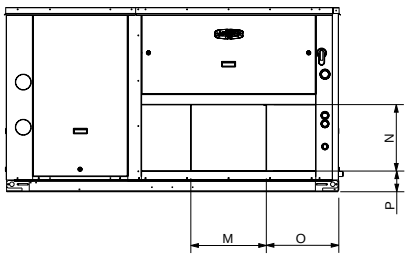
FWH FWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
85 100 120	2605	360	2266	3328	369	230	228	1158	2060	172	1094	698	100	138	562	1182	1977	2150
150 170	2701	458	2266	4371	369	233	223	1713	2548	175	1622	718	0	172	674	1216	2382	2700

BWH 045/055 065/075



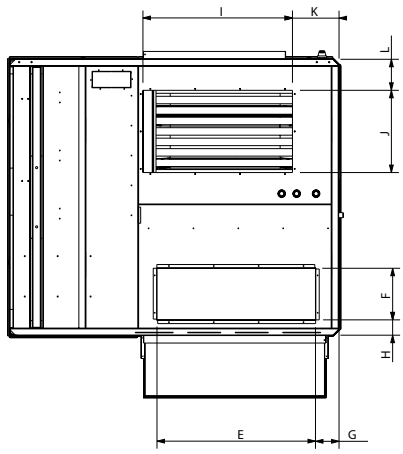


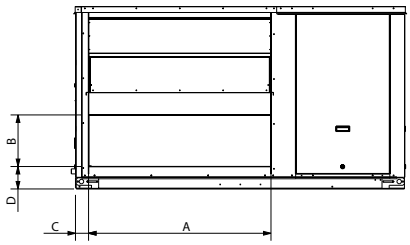


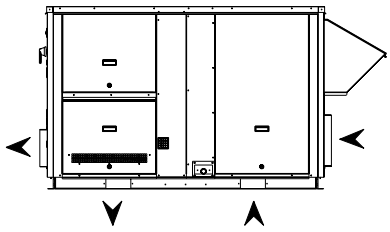


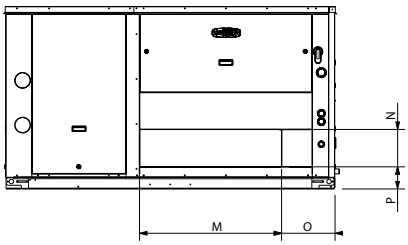
	Horizontal return				Downflow return				Downflow supply				Horizontal supply			
BWH	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
045 055	1220	345	88	150	1060	345	158	103	472	406	452	208	500	440	480	137
065 075	1670	345	83	155	1510	349	153	103	1042	410	475	519	1054	424	421	145

BWM 045/055 065/075



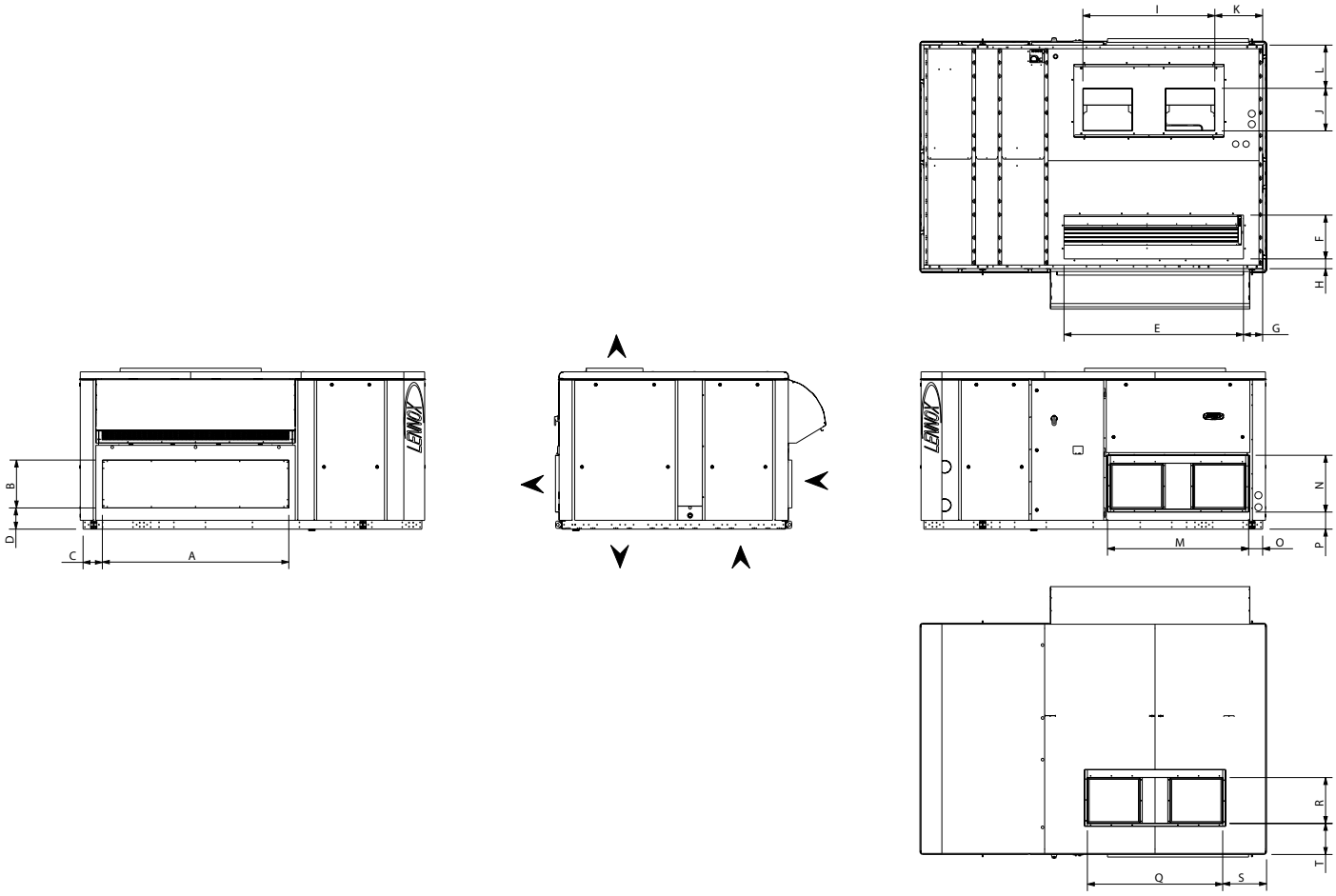






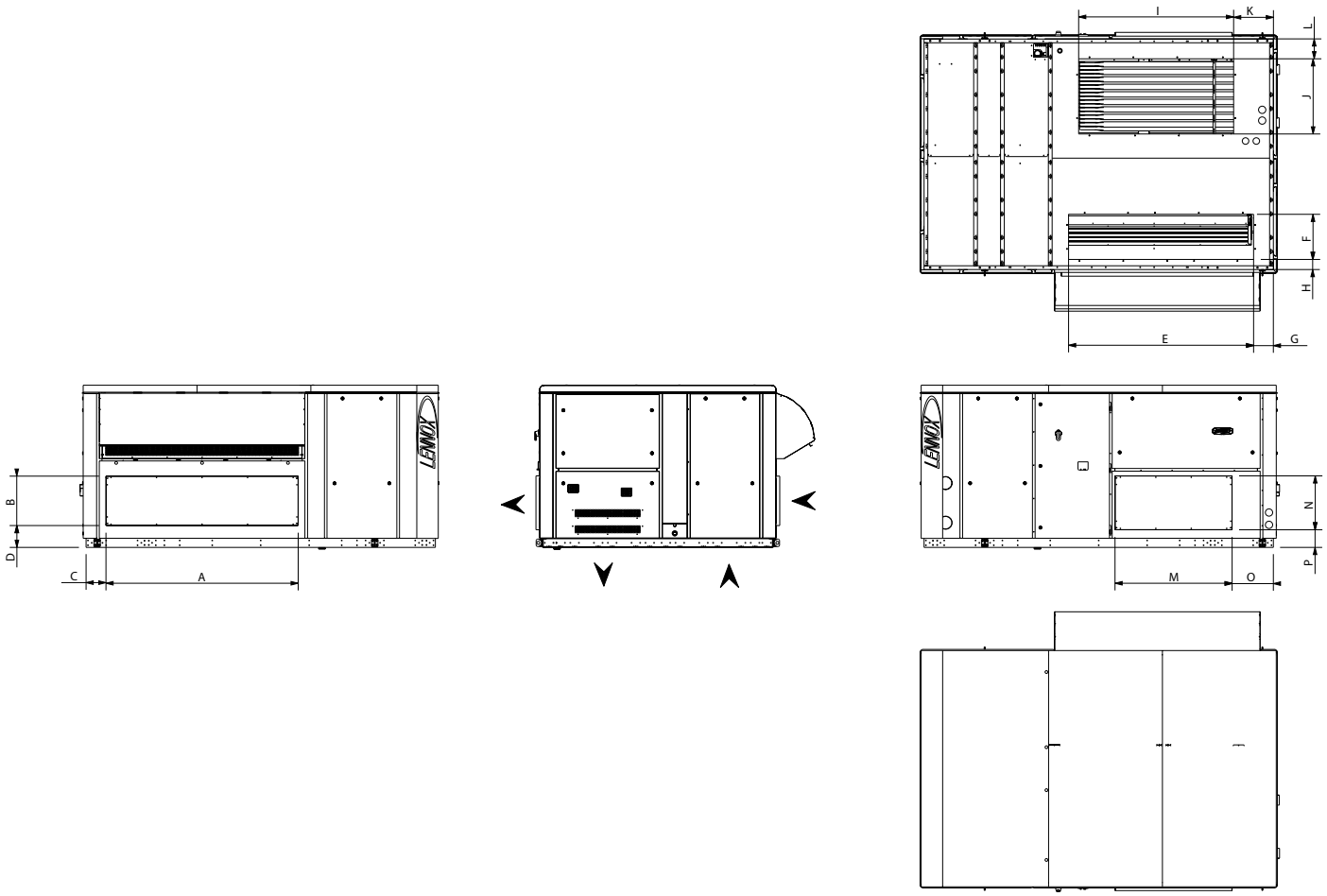
	Horizontal return				Downflow return				Downflow supply				Horizontal supply			
BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
045 055	1220	345	88	150	1060	345	158	103	1000	550	312	208	950	250	358	148
065 075	1670	345	83	155	1510	345	153	103	1400	721	307	208	1485	330	259	154

FWH 85/100/120 150/170



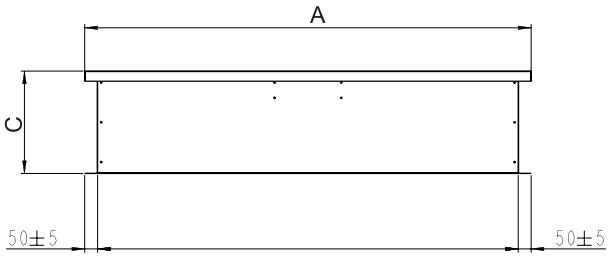
	Horizontal return				Downflow return				Downflow supply				Horizontal supply				Upflow supply			
FWH	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
85 100 120	1790	460	185	204	1723	420	184	94	1267	409	459	415	1355	545	135	164	1299	442	421	299
150 170	1800	500	378	320	1967	420	311	94	1450	482	530	373	1475	517	371	187	1623	517	408	471

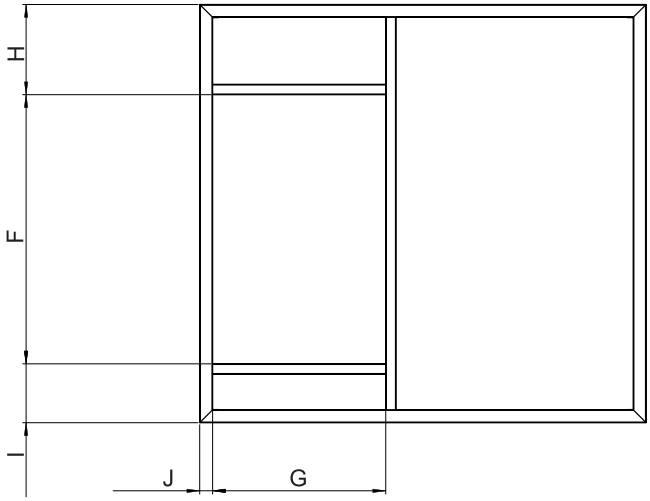
FWM 85/100/120 150/170

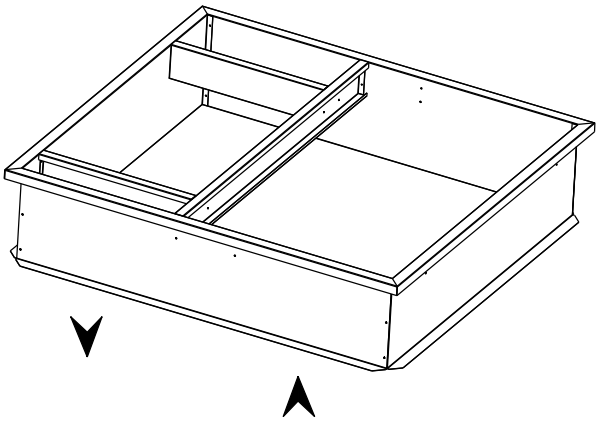


	Horizontal return				Downflow return				Downflow supply				Horizontal supply			
FWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
85 100 120	1790	460	185	204	1723	420	184	94	1443	700	370	184	1091	502	384	164
150 170	1800	500	378	320	1967	420	311	94	1540	700	478	184	1440	535	517	147

BWH/BWM 045/055 065/075

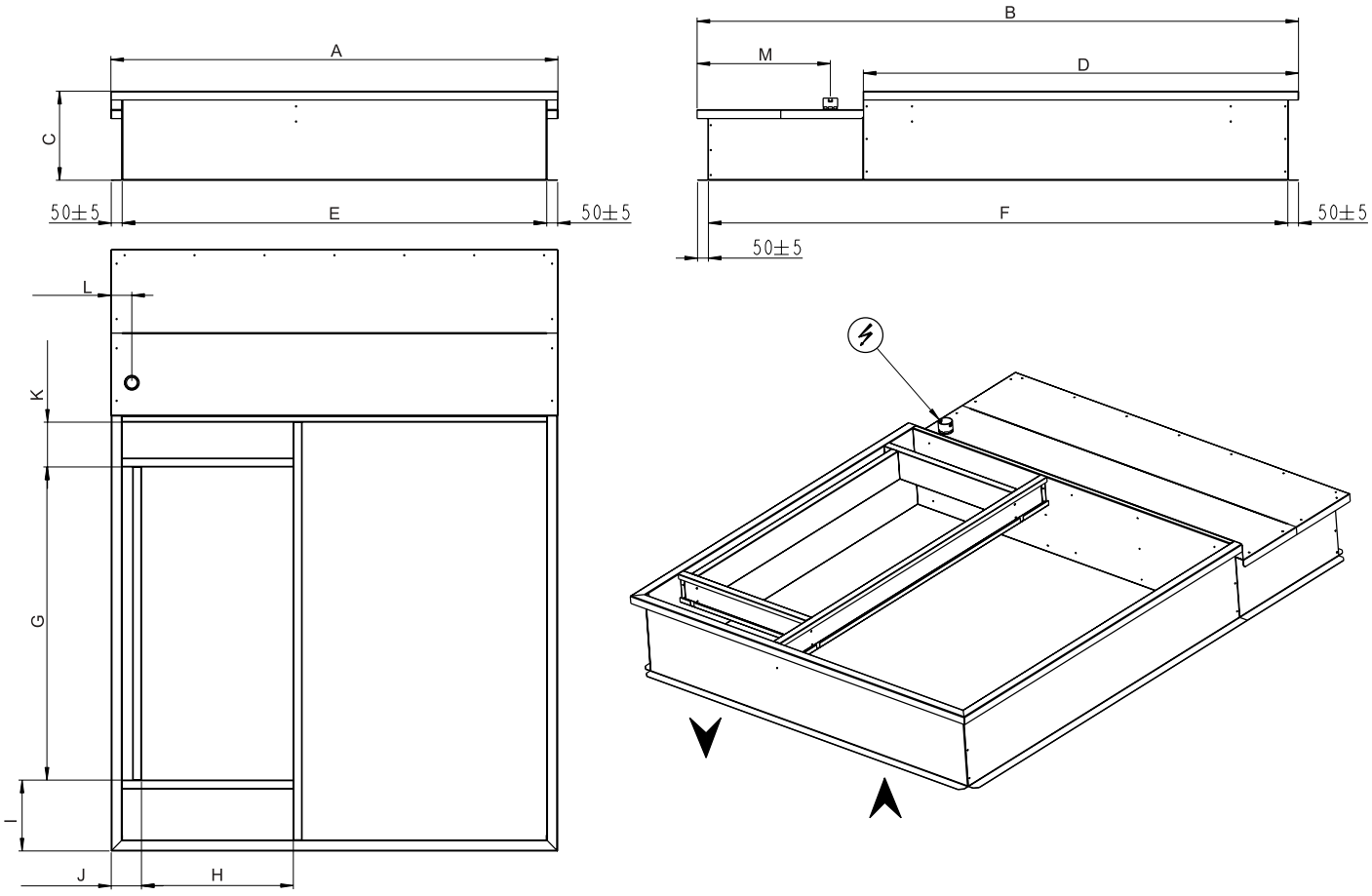






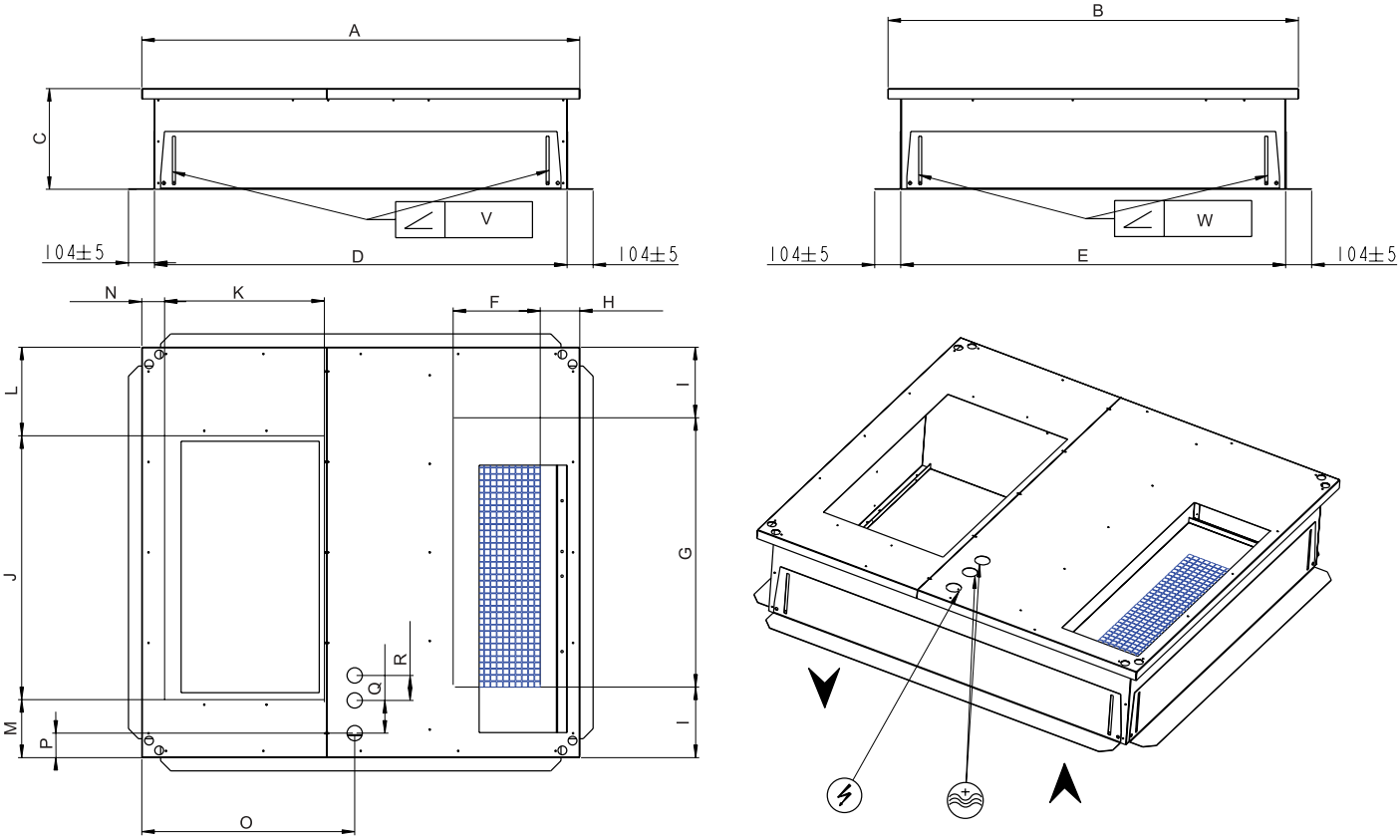
	Dimensions			Roof opening		Supply				
BWH-BWM	A	B	C	D	E	F	G	H	I	J
045-055	1740	1630	400	1640	1530	1050	675	352	229	50
065-075	2090	2080	400	1990	1980	1400	720	425	255	156

FWH/FWM 85/100/120 150/170



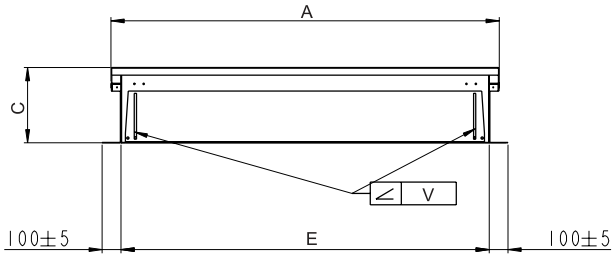
	Dimensions				Roof opening		Supply					Electrical connection	
FWH-FWM	A	B	C	D	E	F	G	H	I	J	K	L	M
085-100-120	2059	2771	410	2005	1956	2669	1443	700	326	139	207	96	614
150-170	2059	3466	410	2493	1956	3365	1540	700	433	139	491	95	800

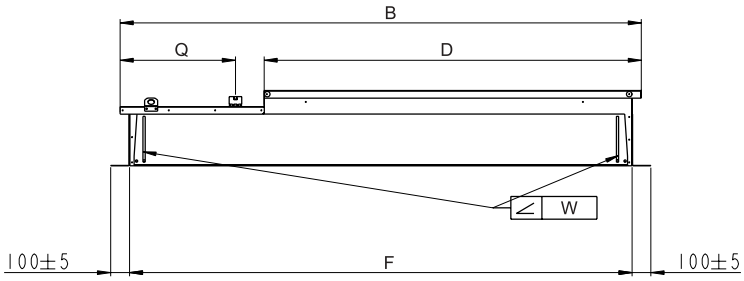
BWH/BWM 045/055 065/075

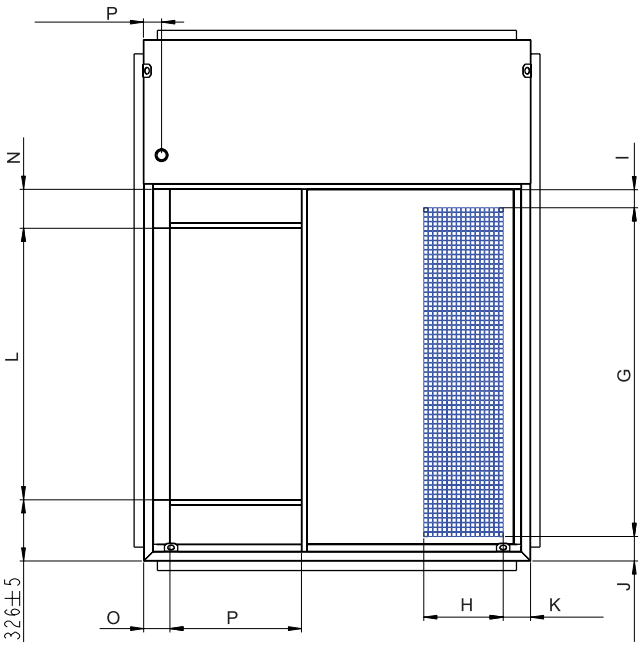


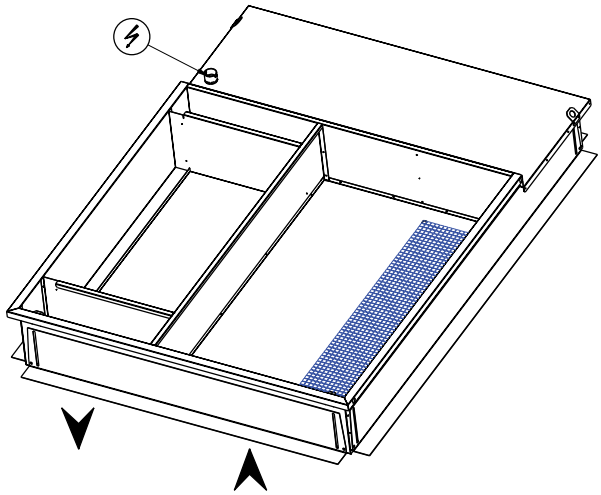
	Dimensions			Roof opening		Return				Supply					Electrical & water connections				Maximum slopes	
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	V	W
045 055	1743	1633	401	1642	1532	347	1072	157	281	1050	636	353	231	91	848	97	130	100	13%	12%
065 075	2092	2082	401	1992	1982	347	1497	199	293	1400	720	427	255	156	1197	97	130	100	10%	10%

FWH/FWM 85/100/120 150/170



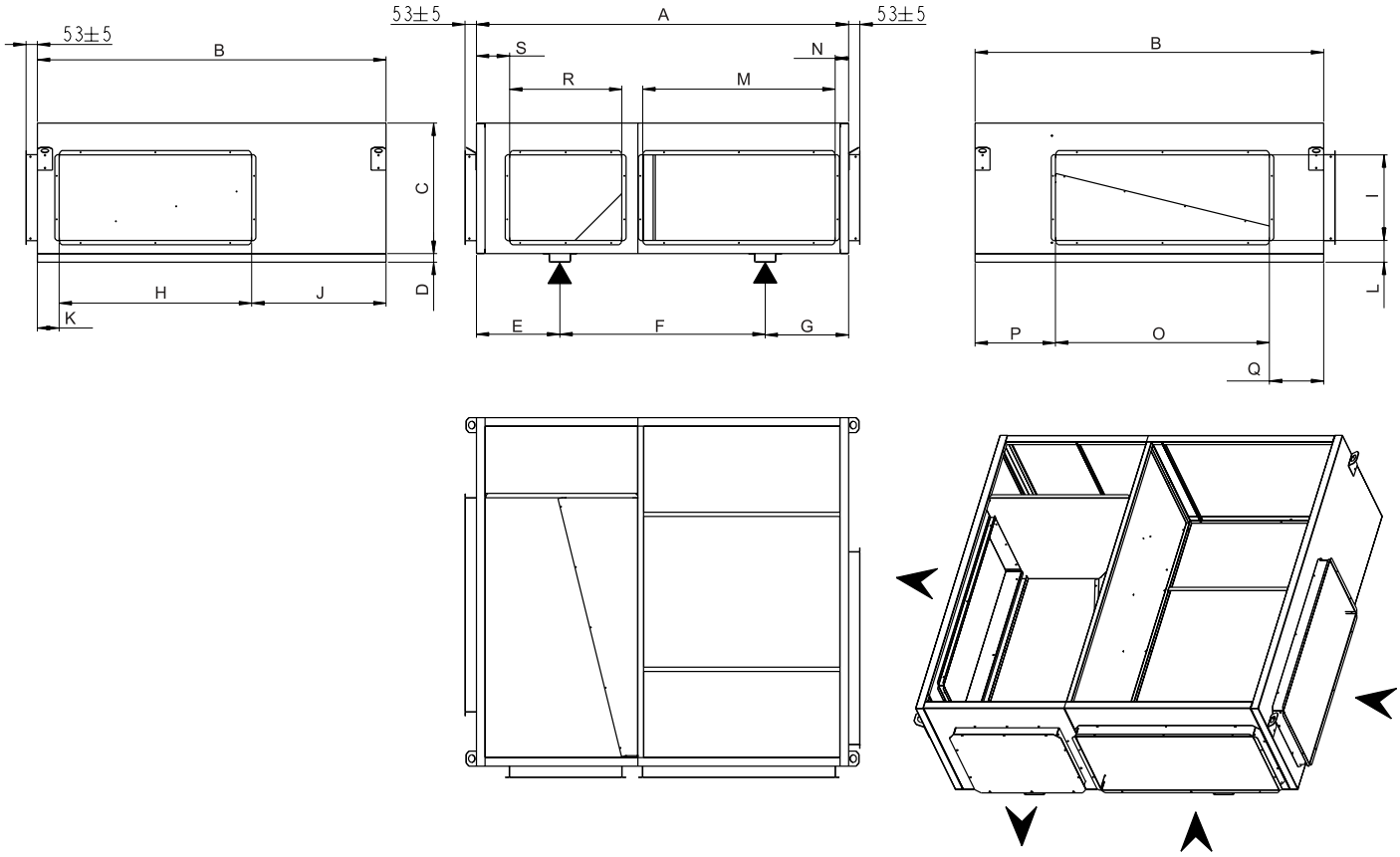






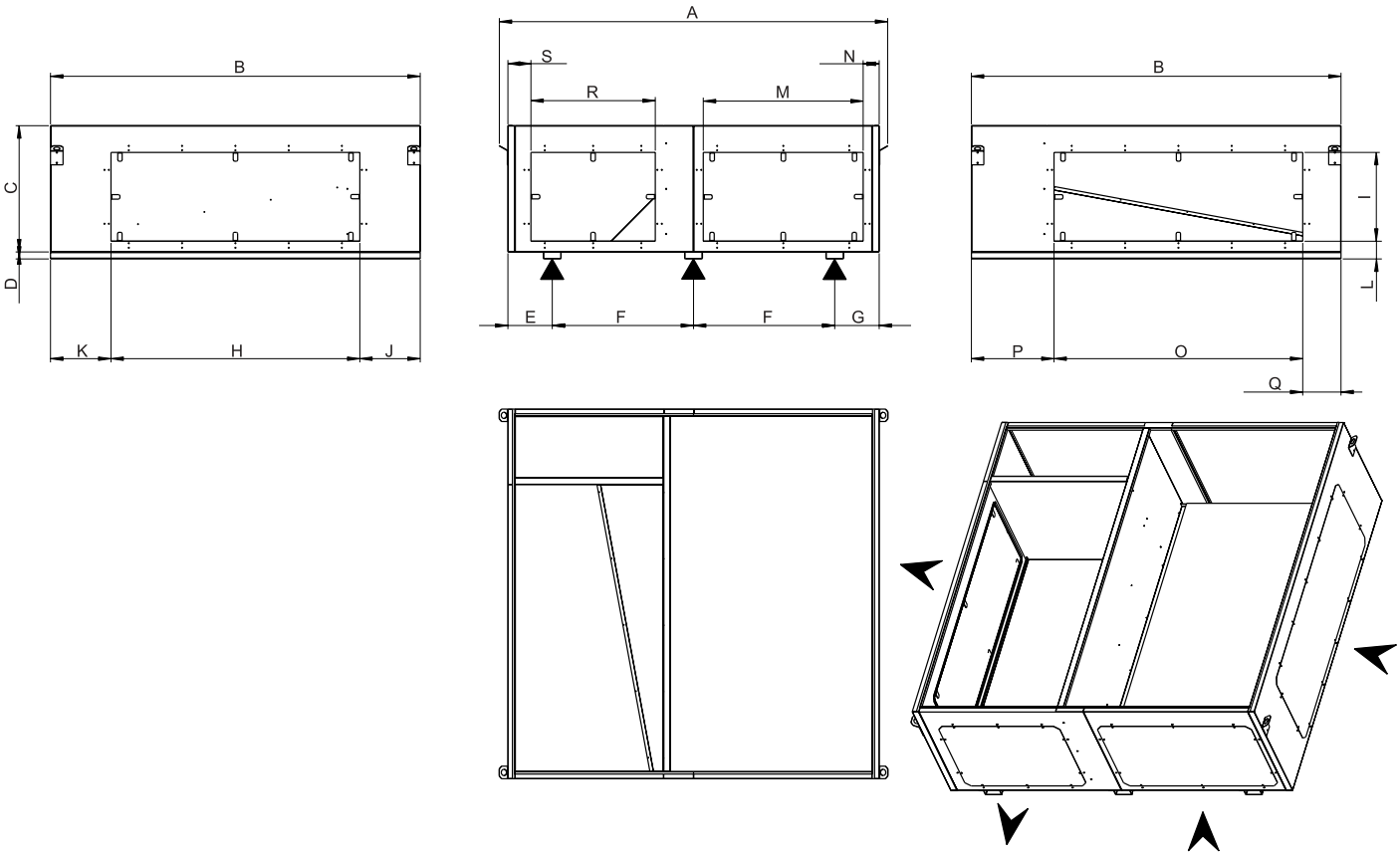
	Dimensions				Roof opening		Return					Supply				Electrical connections		Maximum slopes	
FWH FWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	V	W
085 100 120	2064	2771	400	2006	1958	2672	1747	422	96	131	146	1443	700	208	140	96	614	14%	10%
150 170	2064	3467	400	2494	1958	3368	1997	422	230	235	146	1540	700	520	140	95	800	14%	8%

BWH/BWM 045/055



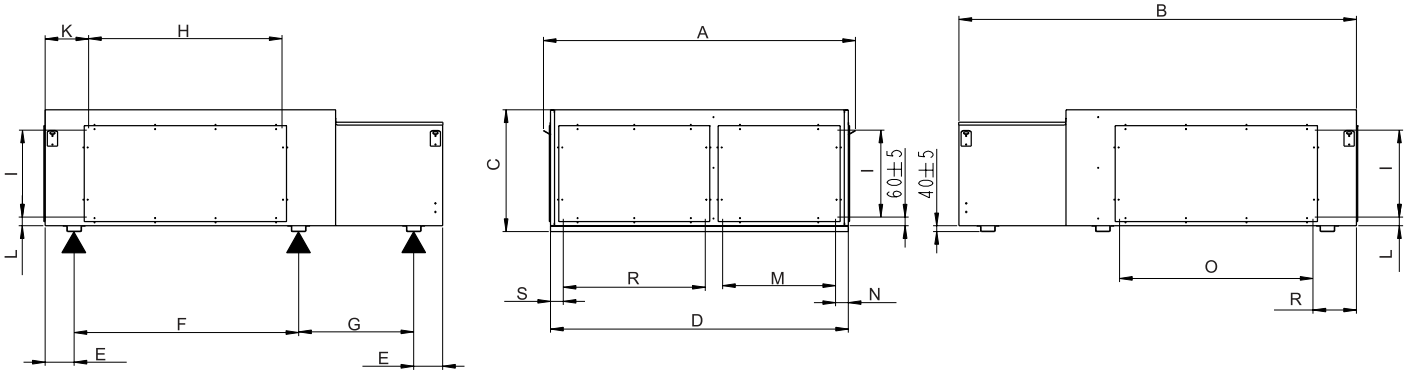
	Dimensions				Supporting feet			Horizontal return					Side return		Horizontal supply			Side supply	
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
045 055	1740	1630	610	40	390	960	390	900	400	629	102	102	900	63	1000	376	254	525	155

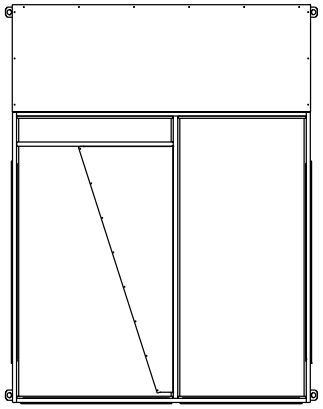
BWH/BWM 065/075

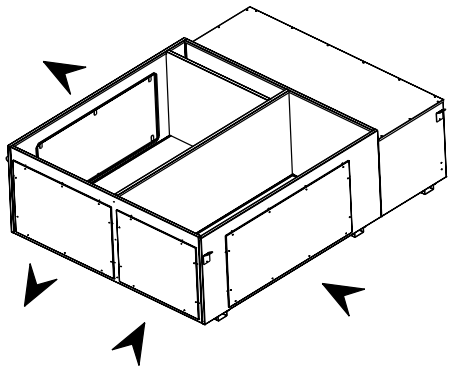


	Dimensions				Supporting feet			Horizontal return					Side return		Horizontal supply			Side supply	
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
065 075	2185	2080	710	40	250	795	250	1400	500	340	340	100	900	90	1400	465	215	700	130

FWH/FWM 85/100/120 150/170

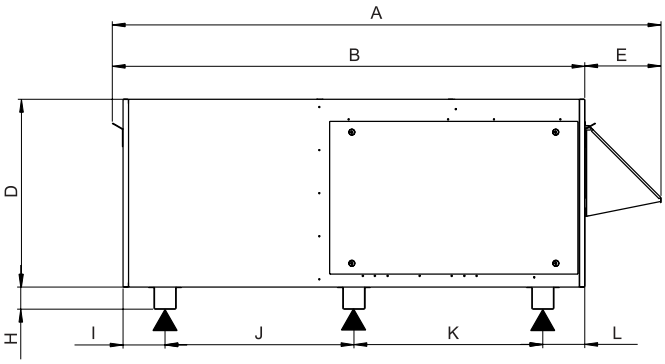


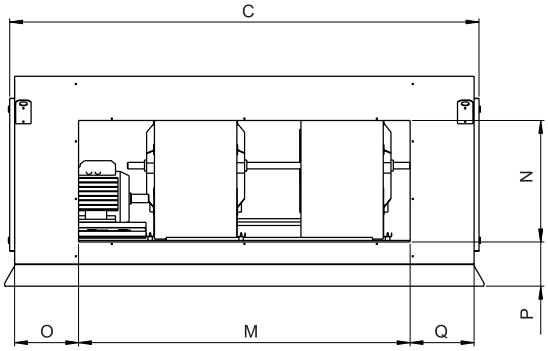


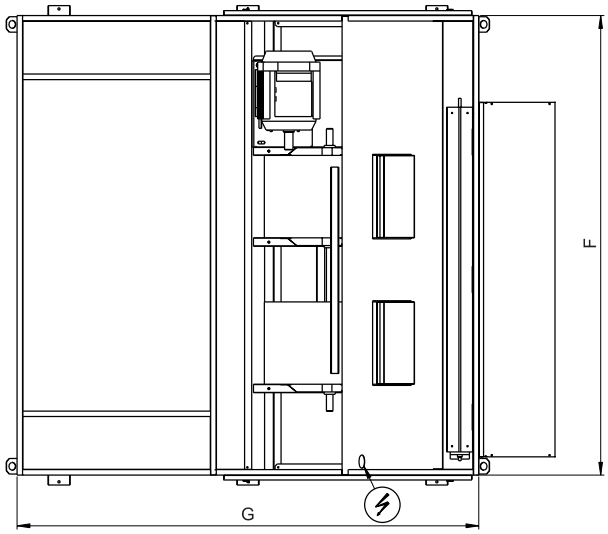


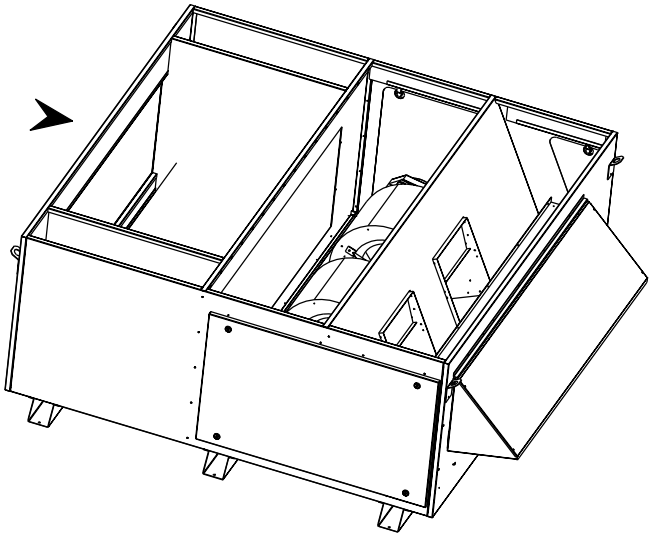
	Dimensions				Supporting feet			Horizontal return					Side return		Horizontal supply		Side supply	
FWH FWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Q	R	S
085 100 120	2154	2744	840	2056	200	1550	794	1335	600	600	300	60	780	88	1335	300	980	88
150 170	2154	3440	1140	2056	200	1799	1241	1540	600	900	229	60	780	88	1540	229	980	88

BWH/BWM	045/055 065/075



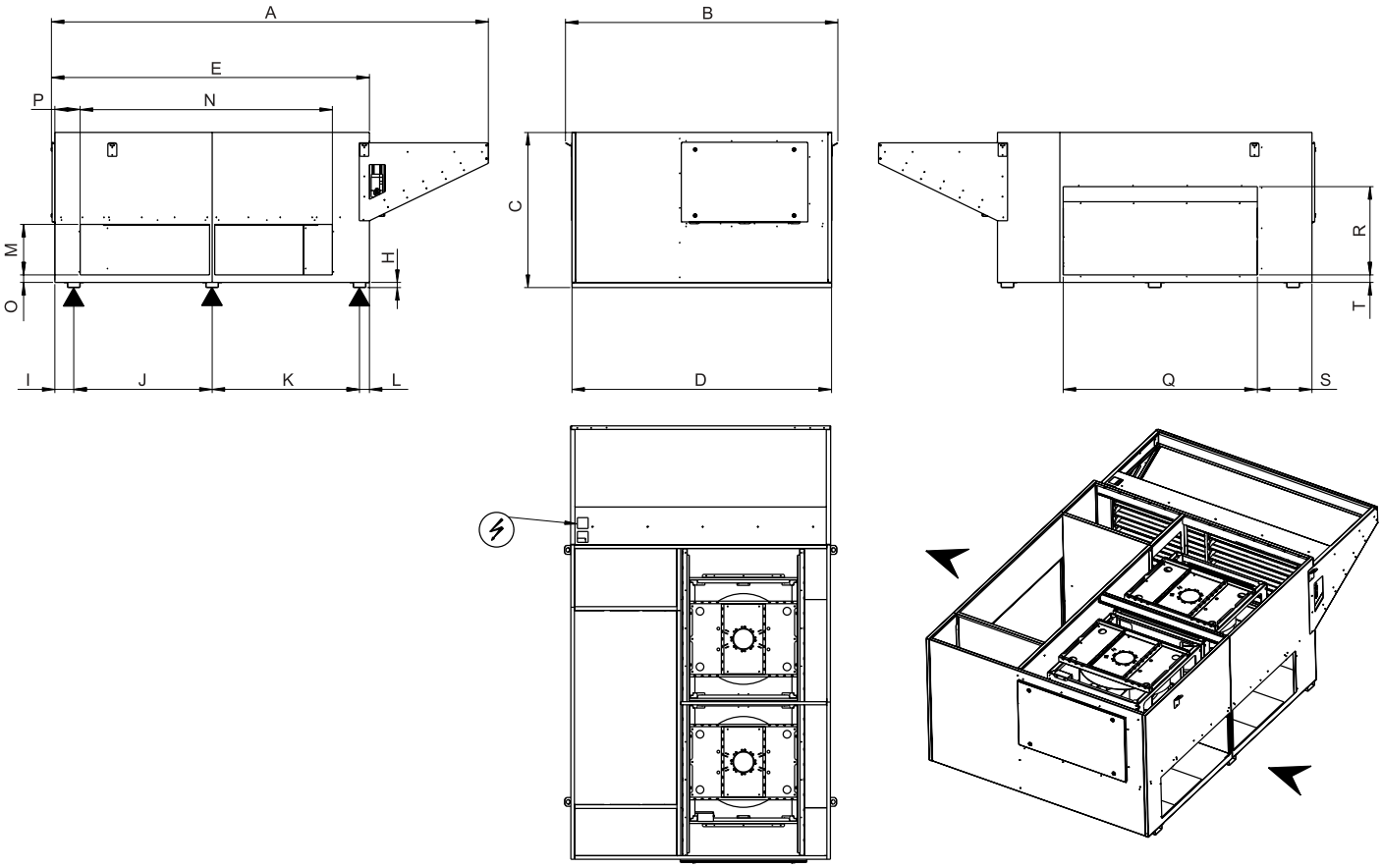






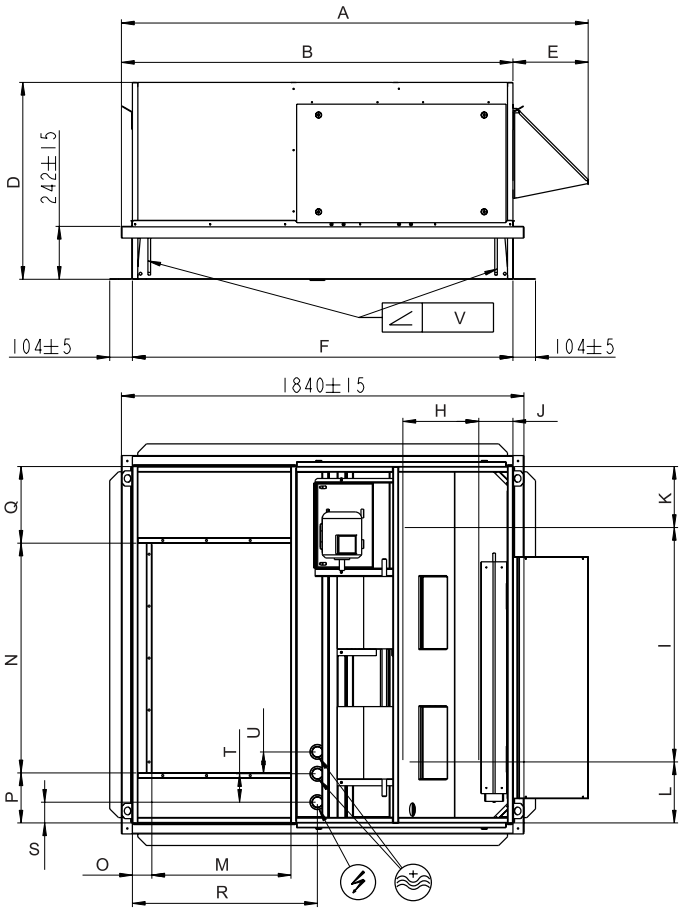
	Dimensions							Supporting feet					Return				
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
045 055	2133	1789	1674	700	344	630	1740	40	350	1040	0	350	1000	400	315	140	315
065 075	2483	2139	2124	850	344	2080	2090	100	190	855	855	190	1500	550	290	200	290

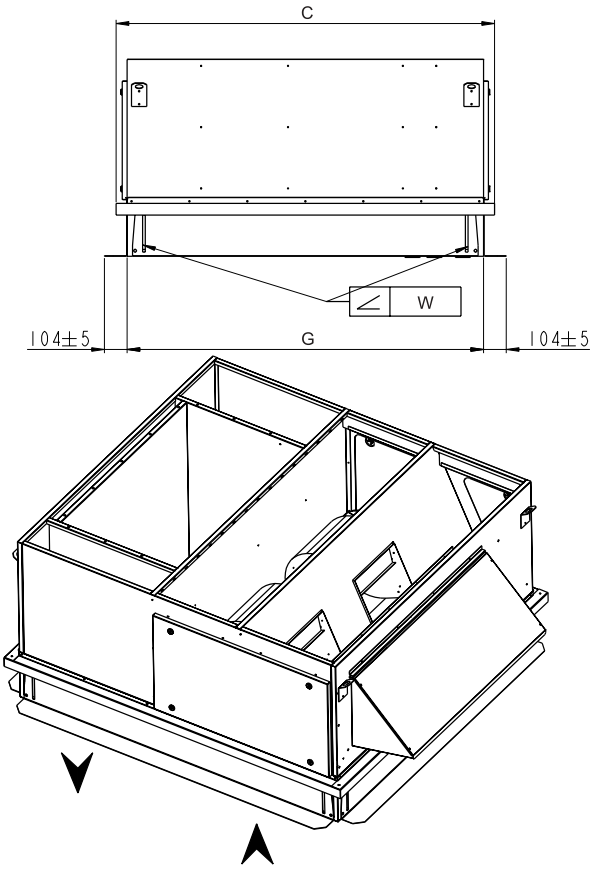
FWH/FWM 85/100/120 150/170



	Dimensions					Supporting feet					Return				Supply			
FWH FWM	A	B	C	D	E	H	I	J	K	L	M	N	O	P	Q	R	S	T
085 100 120	2761	2158	1228	2056	2026	40	150	853	867	136	400	1605	60	200	1440	700	327	60
150 170	3463	2159	1229	2058	2520	40	150	1097	1169	78	400	2000	60	200	1540	700	433	60

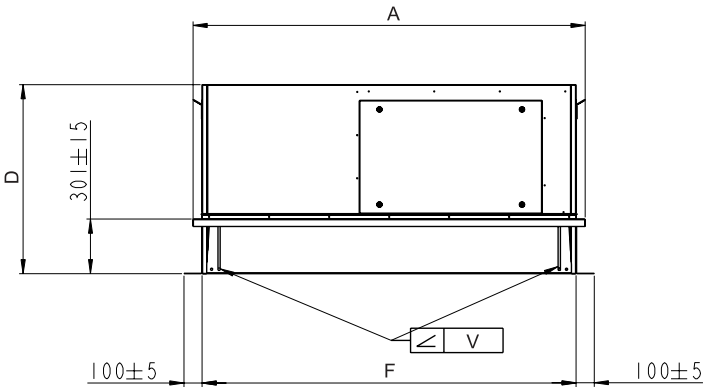
BWH/BWM 045/055 065/075

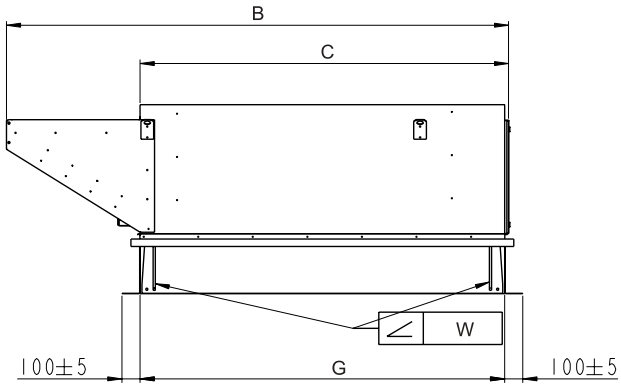


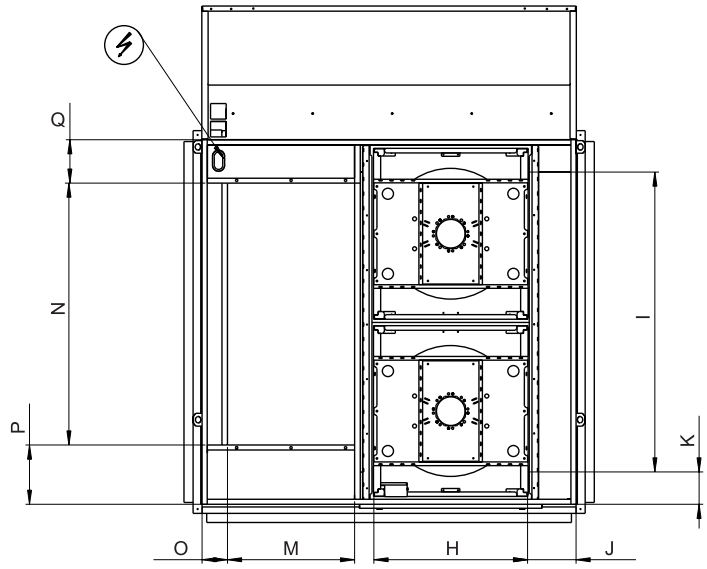


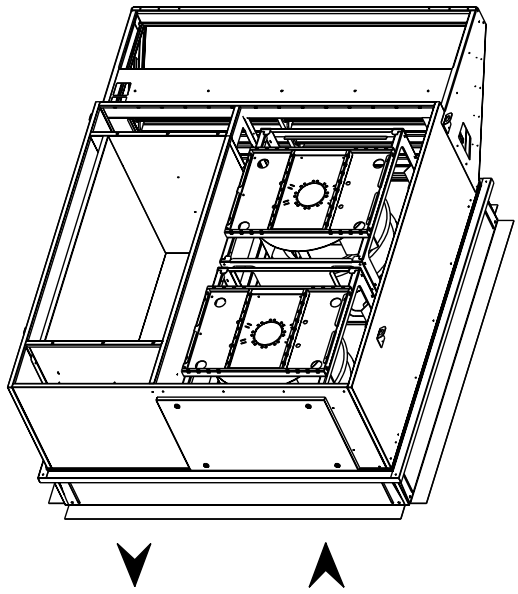
	Dimensions					Roof opening		Return					Supply					Electrical & water connections				Maximum slopes	
BWH BWM	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
045-055	2134	1790	1730	900	344	1740	1630	347	1072	156	279	279	636	1050	89	229	351	846	95	130	100	12%	9%
065-075	2484	2140	2180	1050	344	2090	2080	347	1497	198	292	292	720	1400	156	255	425	1196	96	130	100	9,6%	9,8%

FWH/FWM 85/100/120 150/170



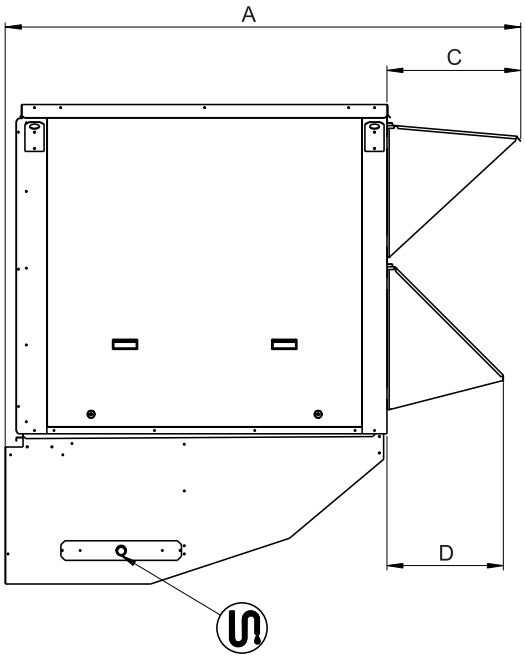


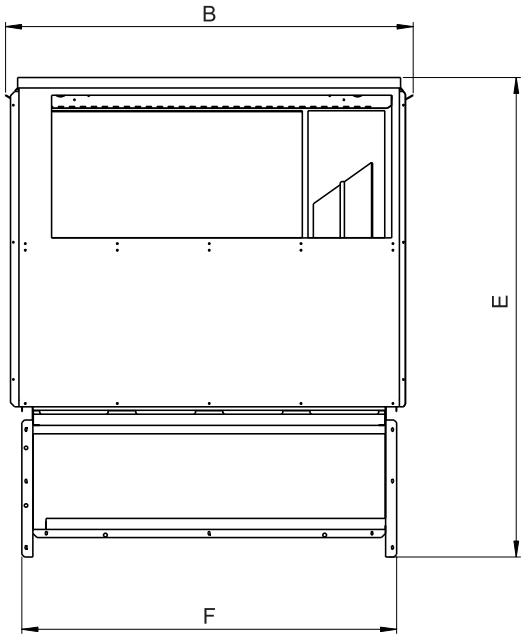


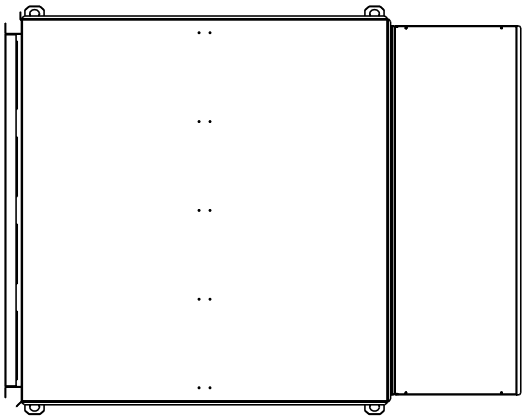


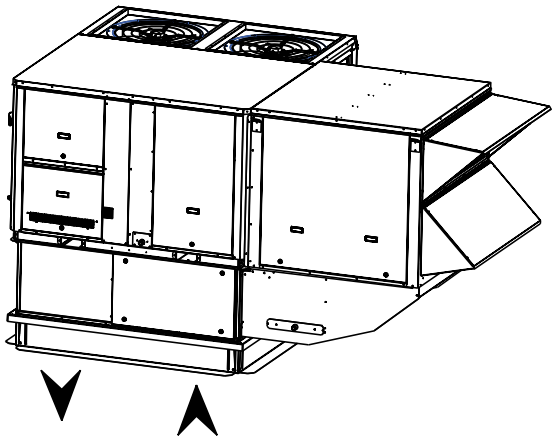
	Dimensions				Roof opening		Return				Supply					Maximum slopes	
FWH FWM	A	B	C	D	F	G	H	I	J	K	M	N	O	P	Q	V	W
085 100 120	2156	2762	2027	1040	2056	2005	845	1649	267	178	700	1440	139	326	239	14%	14%
150 170	2156	3457	2515	1040	2055	2493	770	1651	304	409	700	1540	139	433	520	8%	14%

BWH/BWM	045/055 065/075



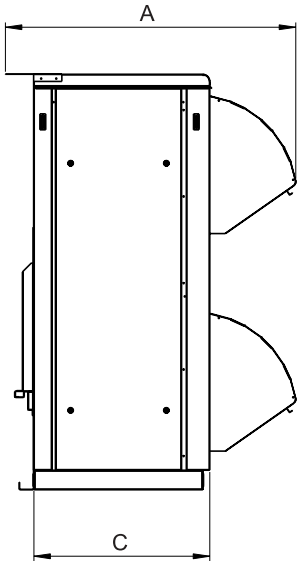


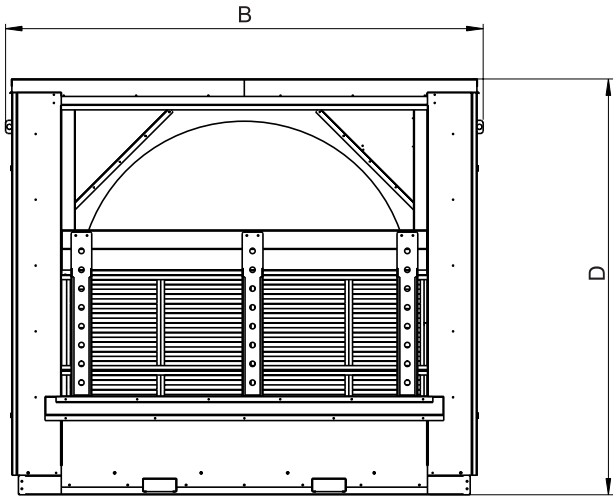


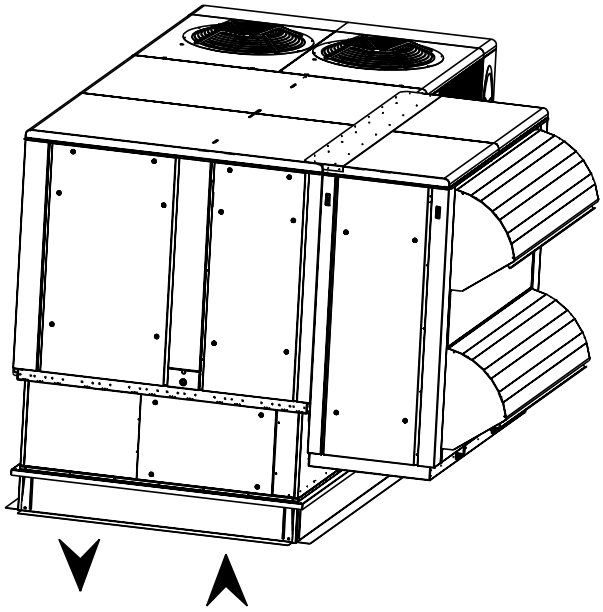


BWH-BWM	A	B	C	D	E	F
045-055	1880	1487	488	425	1749	1367
065-075	1840	1835	488	425	1749	1367

FWH/FWM 85/100/120 150/170



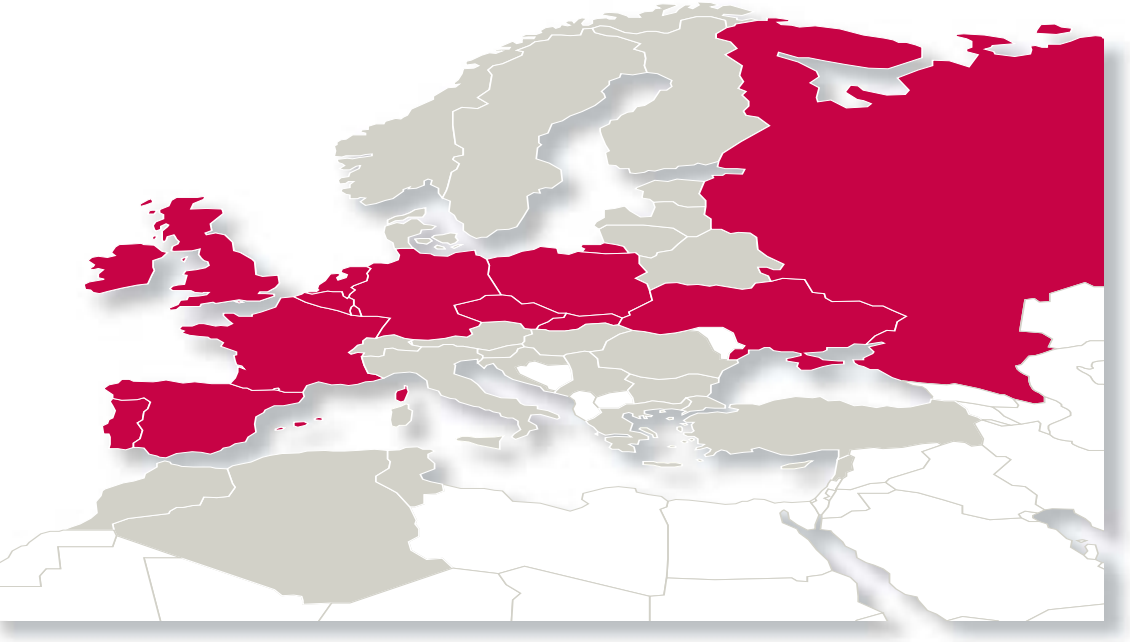




FWH-FWM	A	B	C	D
085-100-120	1447	2279	938	1908
150-170	1544	2539	936	2211

Table 10.1

BASE	***45***	***55***	***65***	***75***	***85***	***100***	***120***	***150***	***170***
Base Unit BWH - FWH	494	510	673	733	797	883	969	1250	1313
Base Unit BWM - FWM (S)	568	584	779	842	904	990	1076	1491	1554
Base Unit BWM - FWM (H)	590	606	840	900	974	1060	1146	1514	1577
AIR FLOW CONFIGURATION									
Downflown return, horizontal supply	-1	-1	7	7	23	23	23	30	30
Horizontal return, horizontal supply	1	1	3	3	20	20	20	27	27
Horizontal return, downflow supply	2	2	-4	-4	5	5	5	7	7
Horizontal return, upflow supply	-	-	-	-	63	63	63	83	83
Upflow return, upflow supply	-	-	-	-	57	57	57	76	76
FRESH AIR OPTIONS									
Economiser sensible + hood [5]	33	33	41	41	57	57	57	75	75
EXHAUST AIR OPTIONS									
Gravity exhaust damper for downflow return	14	14	19	19	14	14	14	19	19
Power exhaust fan axial	34	34	48	48	41	41	41	63	63
Extraction roofcurb vertical	240	240	365	365	499	499	499	572	572
Extraction roofcurb horizontal	185	185	301	301	474	474	474	557	557
Energy recovery module	229	229	317	317	478	478	478	600	600
FILTRATION OPTION									
G 4 metalic frame, whashable filters	4	4	17	17	6	6	6	11	11
F7 Filters / G4 Prefilters	18	18	40	40	36	36	36	44	44
G4 Refilable filters	-	-	-	-	6	6	6	11	11
UV light	-	-	-	-	4	4	4	8	8
DRIVE KITS STANDARD UNITS									
K1	-1	-5	-5	-7	-2	-24	-24	-16	-30
K2	-1	-5	-5	-3	0	-22	-22	-7	-22
K3	0	0	-5	0	0	-23	-23	0	-14
K4	5	0	0	0	8	-14	-14	-1	-15
K5	5	3	0	4	7	-15	-15	13	-1
K6	5	3	3	4	38	15	15	12	-3
K7	7	-5	6	18	21	-1	-1	6	-9
K8	7	0	6	18	60	38	38	40	26
K9	0	6	0	4	-3	-25	-25	42	27
K10	5	3	3	18	22	-1	-1	-2	-16
K11	11	6	3	34	37	15	15	14	0
K12	7	21	6	34	37	15	15	72	58
K13	11	3	6	4	8	-14	-14	42	28
K14	7	6	3	34	22	0	0	74	59
K15	7	6	6	-	60	38	38	111	97
K16	11	6	37	-	38	16	16	74	60
K17	11	21	37	-	92	70	70	-	-
K18	11	-	21	-	32	9	9	-	-
K19	25	-	21	-	-	-	-	-	-
K20	25	-	37	-	-	-	-	-	-
DRIVE KITS GAS S & H UNITS									
K1	-5	-3	-3	14	0	-5	-19	-7	-42
K2	0	-6	-3	14	0	-5	-20	0	-35
K3	0	-18	0	17	5	0	-15	35	0
K4	-3	0	4	20	13	8	-7	39	4
K5	0	-18	4	35	13	8	-7	71	36
K6	-4	0	4	35	19	14	0	85	50
K7	4	14	0	51	20	15	0	36	1
K8	-4	-14	18	17	48	43	28	67	32
K9	-14	39	18	20	20	15	0	85	50
K10	0	24	34	51	52	46	32	99	64
K11	18	24	34	51	84	78	64	-	-
K12	-4	39	34	35	80	75	60	-	-
K13	0	-	34	51	49	43	29	-	-
K14	-14	-	18	-	-	-	-	-	-
K15	39	-	-	-	-	-	-	-	-
ELECTRIC HEATER OPTION									
Electric heater S	47	47	71	71	47	47	47	57	57
Electric heater M	49	49	74	74	64	64	64	78	78
Electric heater H	62	62	77	77	78	78	78	103	103
ELECTRIC AND SAFETY OPTIONS									
Air sock control	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
OTHER OPTIONS									
Non Adjsutable non assembled roofcurb	33	33	45	45	94	94	94	108	108
Adjsutable assembled roofcurb	104	104	152	152	197	197	197	229	229
Multi direction horizontalflow curb	100	100	147	147	237	237	237	332	332



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