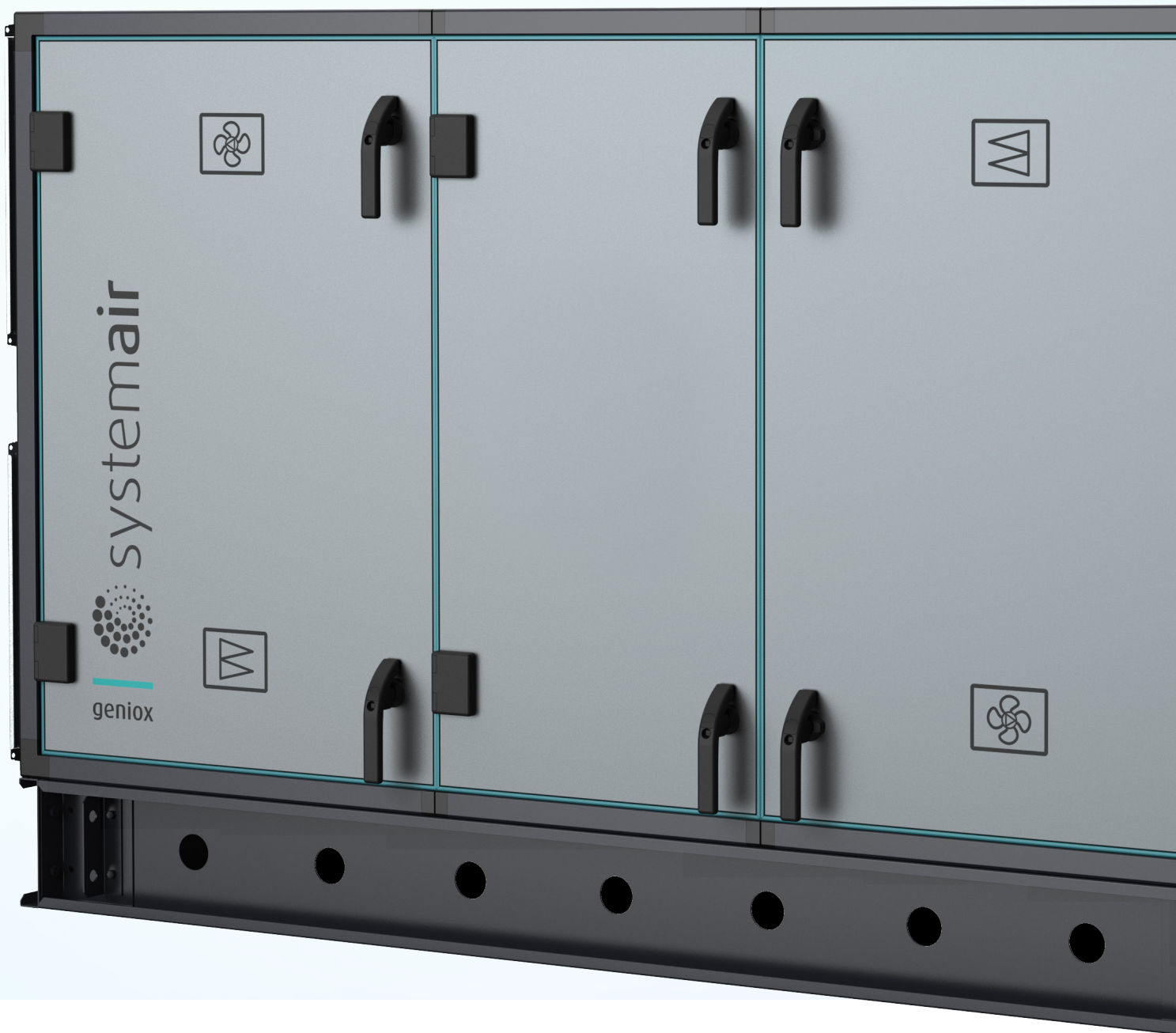
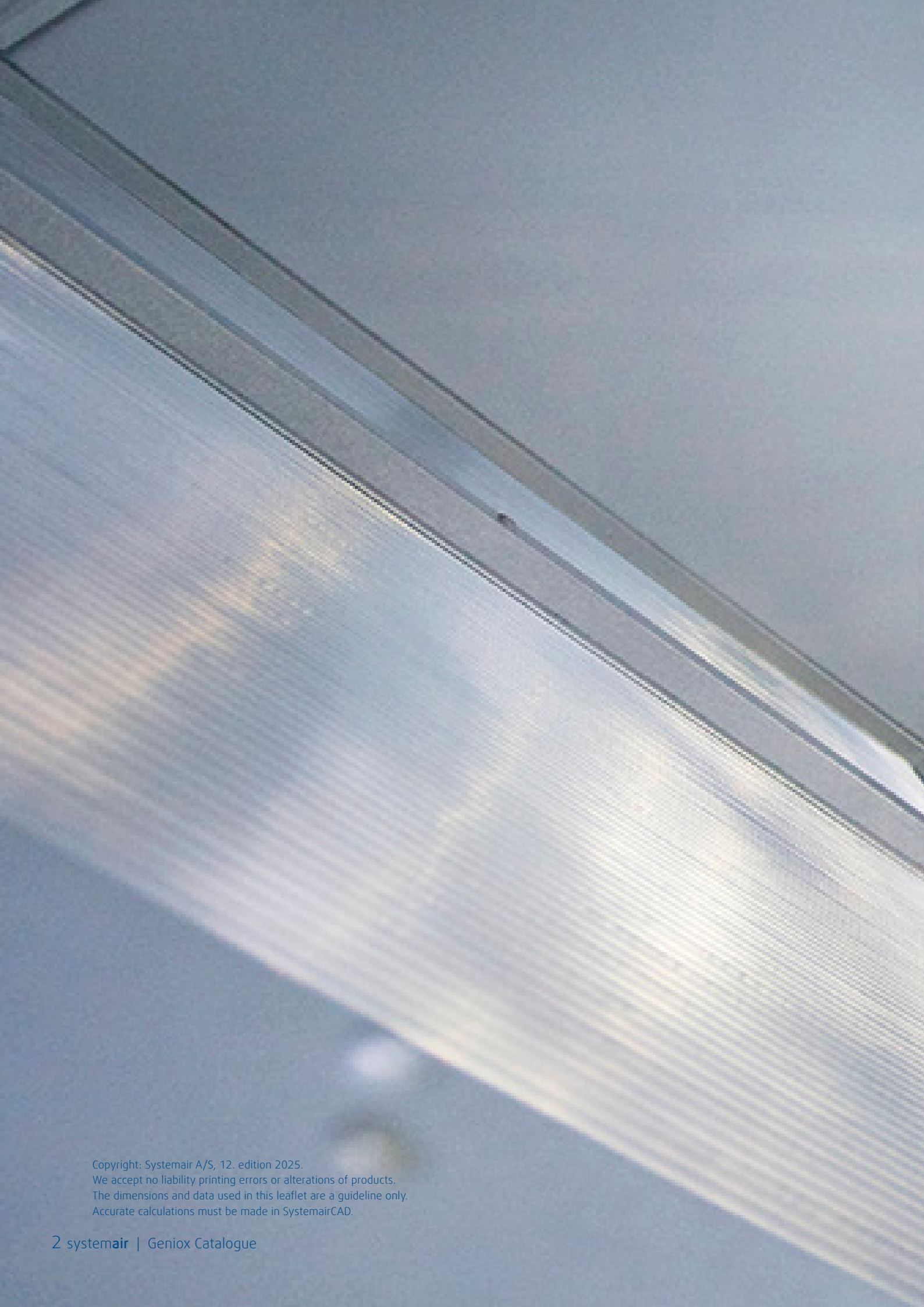


## Geniox Catalogue

Comprehensive overview: key features and functions



A close-up photograph of a corrugated metal surface, likely part of a building's exterior or a large container. A dark, diagonal structural beam or joint runs across the upper portion of the frame. The lighting creates strong highlights and shadows on the ridges of the corrugations.

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We accept no liability printing errors or alterations of products.  
The dimensions and data used in this leaflet are a guideline only.  
Accurate calculations must be made in SystemairCAD.

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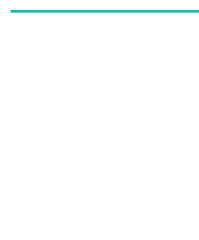
## Geniox

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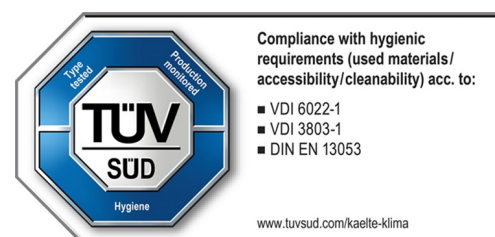
# Geniox is hygiene-friendly

Systemair believes that all air handling units (AHUs) should be **#HygienicByDesign**. We are of the firm opinion that hygienic measures should be a standard offering in all general ventilation units.

## #HygienicByDesign in a nutshell

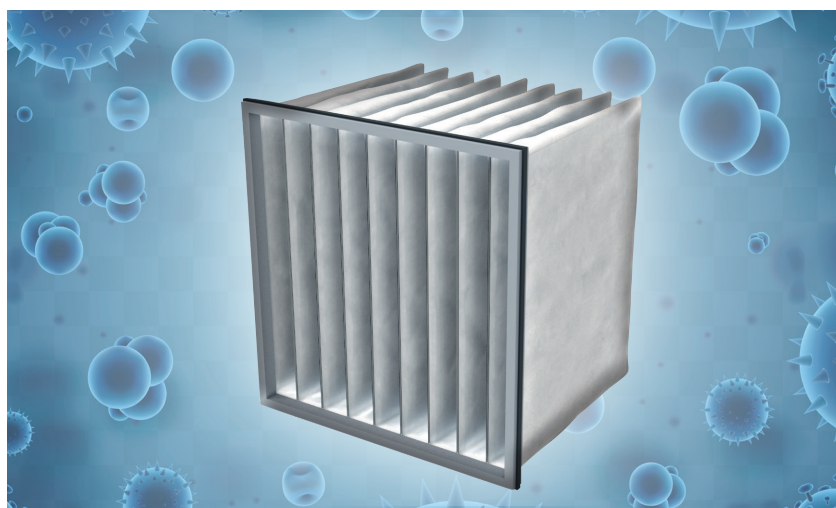
Our #HygienicByDesign approach provides hygienic operating conditions, peace of mind and unmatched flexibility when it comes to meeting specific hygienic demands in projects. In short:

- All Geniox air handling units are hygiene friendly, designed and built for easy cleanability and with hygienic materials that ensure hygienic conditions in the AHU over time. All plastic materials are complying with ISO846.
- The entire Geniox range can be configured into a Eurovent HAHU and VDI 6022-1 certified unit in a straight-forward, automated manner using the SystemairCAD selection software.
- Geniox AHUs also offer up to 2 stars in the Eurovent Hygienic AHU rating, which is comparable with VDI 6022-1 and similar national requirements.



## Optional Deltri+ virucidal air filters

Virucidal air filters with efficiency ePM1 90%, capable of neutralising or destroying viruses – including SARS-CoV-2, as tested by the Luxembourg Institute of Science and Technology (LIST) and an independent laboratory. Proven efficiency with Eurovent Certified Performance A+ energy class rating.



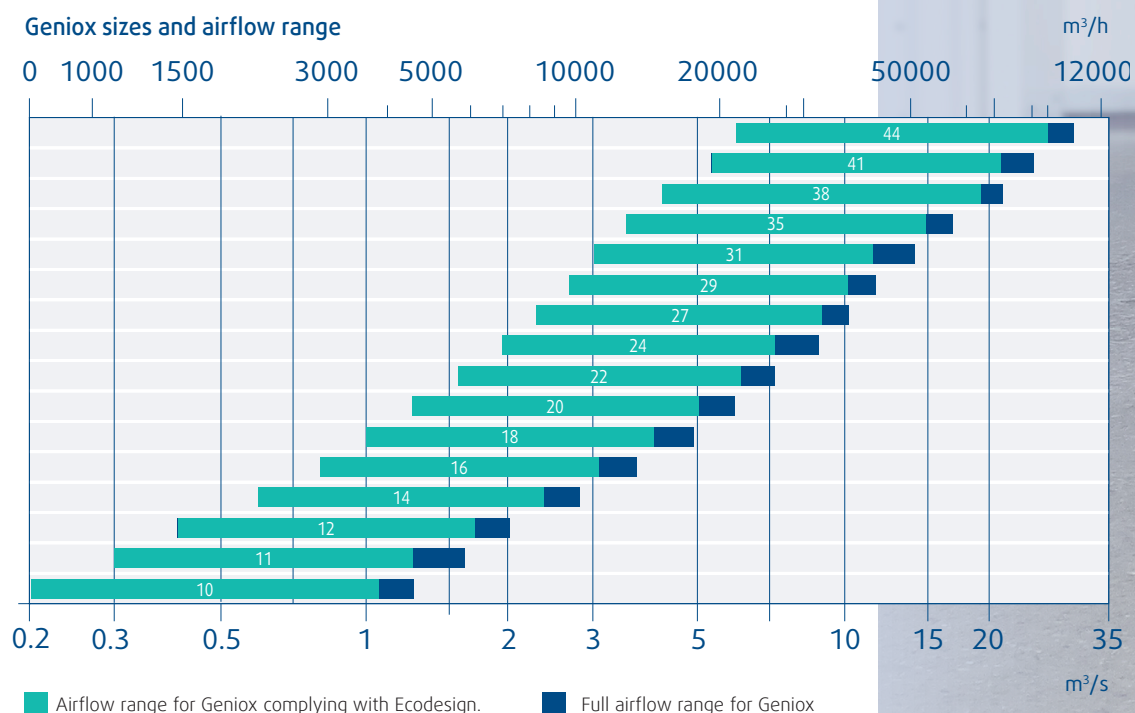
# Geniox Features

Geniox is designed as a modular air handling unit. Each function is placed into an air handling unit casing consisting of one or more modules. The modular functions can be configured for many different applications to make up the heart of any ventilation system.

**Geniox is a modular air handling unit available in 16 sizes with airflows 750-110,000 m<sup>3</sup>/h (0.2-30.6 m<sup>3</sup>/s)**

With rotary heat exchanger, run-around coil heat exchangers, crossflow heat exchanger, or counterflow heat exchanger.

- With water heating coil, electric heating coil, and/or cooling coil/DX coils.
- Can be supplied with integrated heat pump.
- Can be supplied with humidifier/adiabatic cooling.
- With Systemair Access control system, without control system, or Controller Ready.
- For indoor or outdoor installation.
- Eurovent certified.







# Geniox Casing

Mechanical performances are the results of official model box test (EN 1886).

## Thermal insulation

Class T2. Sound and thermal insulating mineral wool, which is completely encapsulated between two steel sheets.

Thickness: 60 mm. Density: 60 kg/m<sup>3</sup>.

## Deflection

Class D1 (M)\*.

## Air leakage

Class L1 (M)\*.

## Thermal bridging factor

Class TB2.

## Air handling unit casing

The casing protects the inside functions and is very effective for thermal and sound insulation.

## Operating pressure

Difference between external and internal pressure: 0 - 2000 Pa.

## General temperatures

General temperatures for air in the air handling unit:

Standard design: -40/+40 °C.

Special design: -40/+60 °C.

## Free area in front and above unit

When positioning the unit, we recommend that an area in front of the inspection side with the same width as the unit is kept free for service and inspection and also for replacement of fans, heat exchanger, and coils, if needed. At least an area in front of the unit which is equal to the maximum door width used in your unit.

For safe access to the cabinet with electrical components, if placed on top of the unit, the free area from the upper edge of the cabinet to the ceiling must be at least 700 mm.

## Filter by-pass leakage

Class F9 according to EN 1886.

## Service and maintenance

All doors provide easy access for cleaning and service.

## Transportation

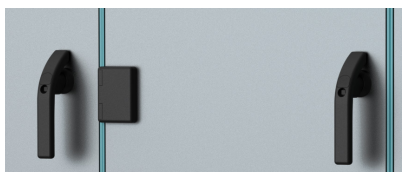
Casing design and standard packaging allows for easy transportation.

**\*(M)** According official model box test (EN 1886).



## Panels

The panels of Geniox are built using a sandwich construction with double sheets and 60 mm mineral wool for sound and heat insulation. The mineral wool is completely encapsulated, since the panels are closed on all sides. The panels with ZM310 surface are not only highly corrosion-resistant, class C5 according to EN ISO 12944-2:2000, but present an attractive, uniform appearance that can last for many years. The panels are also available as pre-painted steel sheets in black RAL 9005 or light grey RAL 7035, corrosion class C4. The frame profiles are either in ZM310 (C5) or pre-painted in RAL 7024 (C4).



## Handles and hinges

Practical handles and hinges make it possible to disassemble all doors and provide a space saving solution that is easy to service. All doors will have one handle with a lock. Doors with 2 handles: Lock placed in top handle. Doors with 3 handles: Lock placed in middle handle. Doors with 4 handles: Lock placed in one of the middle handles. Stacked air handling unit: The lock will be placed in the bottom handle of the top doors.



## Frame profiles and corners

Geniox is constructed using a robust framing profile. The frame profiles are internally galvanised with a painted outside or with a full ZM310 surface. The result is a strong and robust construction, able to resist twisting and lateral movement, making the unit extremely strong. The corners are made of reinforced nylon (PA6) which ensures strength and minimal thermal bridging.



## Inspection doors

Geniox has large inspection doors, making service access easy. The doors are mounted using solid hinges with easily removable pins. This means that the doors can be easily removed, if there is no room for normal opening of the doors. The doors are sealed using rubber profiles and have heavy-duty handles with minimum 1 lock on each door. They can only be locked and unlocked using a key.





### Outdoor unit

Geniox is available as roof unit, designed for outdoor installation. In this version the unit is assembled on a base frame.

The roof unit can be delivered with three different types of roofs:

**Steel profile roof**, Aluzinc protected corrugated steel sheets and profiles for fastening and finishing the roof.

**Polyvinyl chloride roof and bitumen membrane roof**, very easy to handle and has a good weather protection.

**Pre-painted unit.** Outdoor units can be painted in black RAL 9005 or light grey RAL 7035 with contrasting RAL 7024 posts. The unit can also be in ZM310 (panels and posts) for increased corrosion protection.



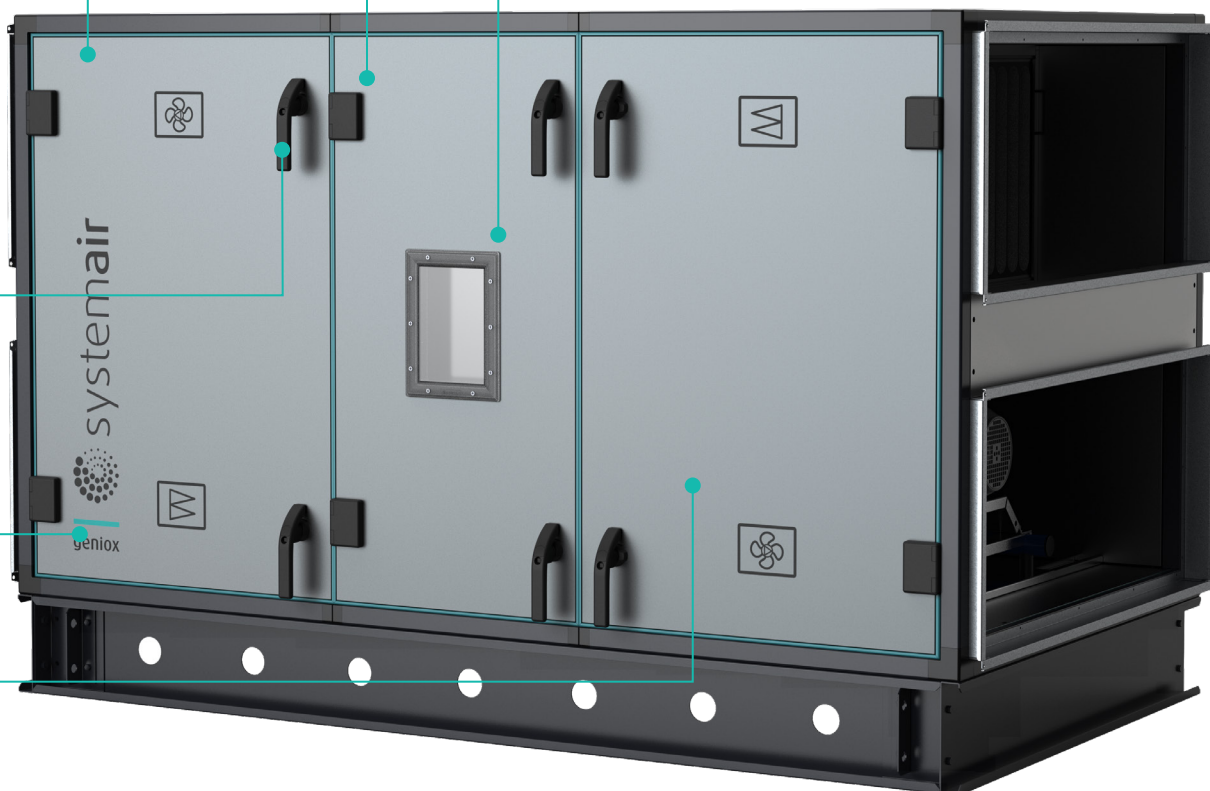
### Assembly brackets

A Geniox air handling unit consisting of several sections can be quickly and efficiently assembled by using the assembly brackets on the outside.



### Inspection windows

The windows have been designed exclusively for Systemair and provide a large area for easy inspection.



# Geniox quick selection

## Geniox

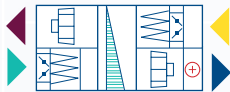
Rotary heat exchanger		Unit size															
		10	11	12	14	16	18	20	22	24	27	29	31	35	38	41	44
	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482	2782	2982	3182	3482	3482	4082	4082
	Height**	1082	1182	1282	1482	1682	1882	2082	2282	2482	2764	2964	3164	4000	4600	4600	5200
	Length	2282	2282	2282	2282	2282	2282	2382	2546	2746	2946	3146	3146	4646	4646	4646	4646

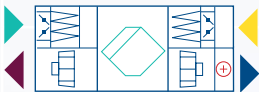
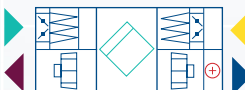
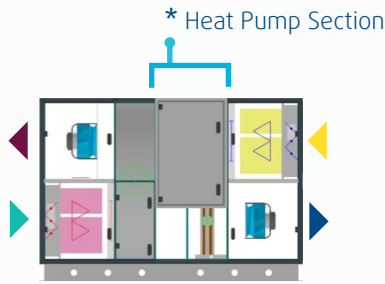
Plate heat exchanger Counterflow heat exchanger		Unit size								
		10	11	12	14	16	18	20	22	24
	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482
	Height**	1082	1182	1282	1482	1682	1882	2082	2282	2482
	Length	3182	3382	3382	3482	3782	3782	4182	4482	4482

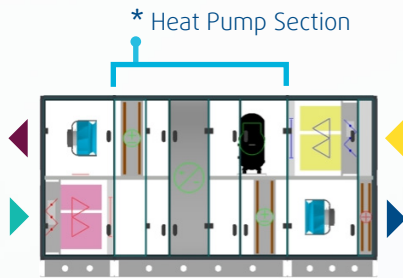
Plate heat exchanger Crossflow heat exchanger		Unit size												
		10	11	12	14	16	18	20	22	24	27	29	31	35
	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482	2782	2982	3182	3482
	Height**	1082	1182	1282	1482	1682	1882	2082	2282	2482	2764	2964	3164	3782
	Length	2982	3082	3182	3382	3582	3782	3782	4446	4746	4946	5446	5446	6846



## Geniox Heat Pump



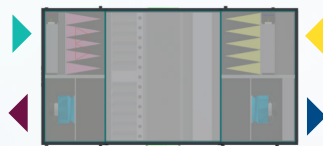
Geniox HP DF (Defrost Free)								
Size	10	11	12	14	16	18	20	22
Width	1082	1182	1282	1482	1682	1882	2082	2282
Width*	1382	1482	1632	1832	2232	2232	2432	2632
Height**	1200	1300	1400	1600	1800	2000	2300	2500
Length***	2882	2882	2882	2882	3182	3182	3582	3582
Length*	800	800	800	800	900	900	900	900



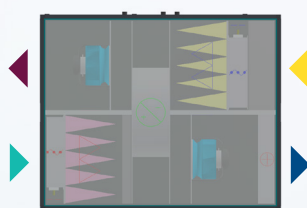
Geniox HP									
Size	10	11	12	14	16	18	20	22	24
Width	1082	1182	1282	1482	1682	1882	2082	2282	2482
Height**	1082	1182	1282	1482	1682	1882	2082	2282	2482
Length***	3282	3282	3282	3282	3482	3482	4082	4346	4546
Length*	1400	1400	1400	1400	1600	1600	2200	2300	2300

More information about the integrated reversible heat pump, can be found in the [Systemair Geniox HP brochure](#).

## Geniox Side-by-Side



Counterflow heat exchanger											
Side	06.06	08.06	08.08	10.08	10.10	12.10	12.12	14.12	14.14	16.14	16.16
Width	N/A	N/A	1682	2082	2082	2482	2482	2882	2882	3282	3282
Height*	N/A	N/A	882	882	1082	1082	1282	1282	1482	1482	1682
Length	N/A	N/A	3282	3282	3782	3782	3682	3682	3782	3782	4082



Rotary heat exchanger											
Side	06.06	08.06	08.08	10.08	10.10	12.10	12.12	14.12	14.14	16.14	16.16
Width	N/A	N/A	1682	2082	2082	2482	2482	2882	2882	3282	3282
Height*	N/A	N/A	882	882	1082	1082	1282	1282	1482	1482	1682
Length	N/A	N/A	2282	2282	2582	2582	2382	2382	2382	2382	2382

More information about the Geniox Side-by-Side units, can be found in the [Systemair side-by-side brochure](#).

### Design an air handling unit

Geniox contains countless combination options. To ease the process of designing a unit the most popular combinations are illustrated here.

#### Key to symbols

Outdoor air	▶	Extract air	▶
Supply air	▶	Exhaust air	▶

The dimensions on page 10 and 11 are for guidance only.  
The exact values and combinations are calculated in SystemairCAD.

\* Heat Pump Section

\*\* Including base frame 118 or 218 mm

\*\*\* Use the SystemairCAD configurator to define a suitable design through many options to get the final dimensions

# Systemair Access Control system

Simplifies connection, configuration and control

Installed in our air handling units (AHUs), Systemair Access is a user-friendly control solution which makes it easier than ever for you to get the best performance from your AHUs. Explore and utilise the full functionality using the NaviPad control panel, supplied as an option with Geniox AHUs, or via our Access Connect app on your smartphone or tablet.

**By operating your AHUs efficiently you also gain control over your energy consumption and operating costs.**

## User-friendly interface (UI)

Simple menu structure and navigation with icons. The colour theme adds visibility and contrast.

## Configuration wizard

Fast, simple configuration of common AHU accessories and functions.

## Energy insight function

Easily monitor Specific Fan Power (SFP value), energy usage for water heaters, and recovered energy.

## AHU dashboard gives overview of AHUs

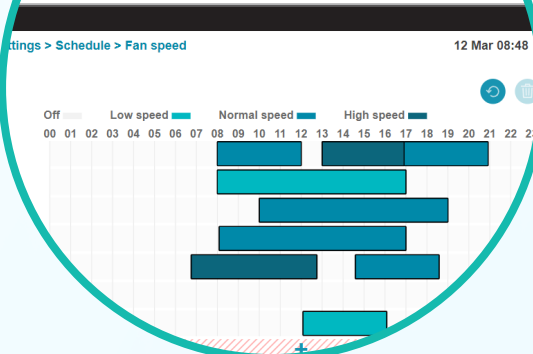
Gives the operator control of all connected AHUs.

## Alarm handling

Based on BACnet native standard.  
Allows **three** alarm actions on each AI signal.

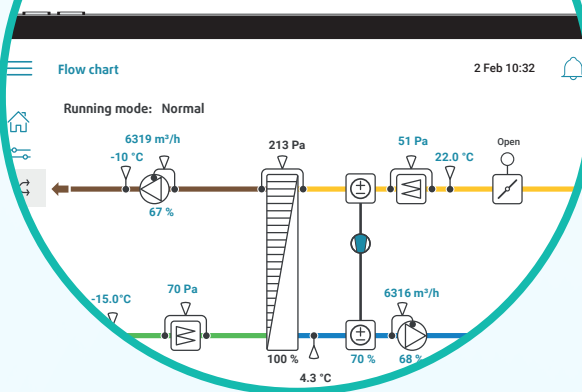
### Time schedules

Intuitive graphical user interface with flexible scheduling.



### Useful live data

Monitor and adjust AHU performance. Operating data and flow charts available in real time.





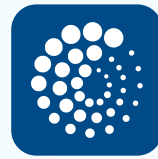
## Wireless communication makes Access even more convenient

Install the **Access Connect app** on your device and you don't need to access the AHUs physically to interact with them. Connect directly to the control unit in the AHU, or via the building's network.

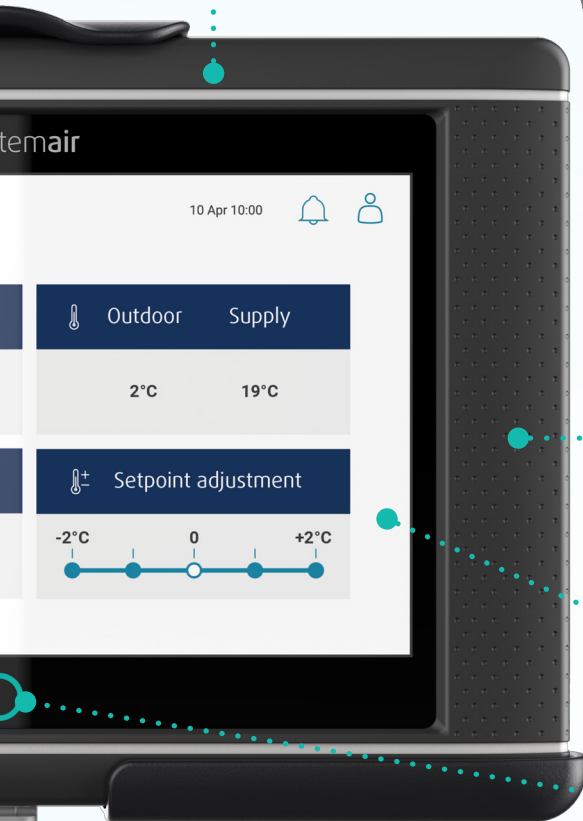
Choose the device you prefer



Download our  
**Access Connect app**



ACCESS CONNECT  
by Systemair



### Robust design

Access NaviPad is developed specifically for industrial use - simple to use, yet robust and durable.

### IPS display

IPS based 7" touch display with high contrast, wide viewing angles and clear visibility.

### Press Home button to view AHU dashboard

LED-light indicates status of all AHUs. Enables user to control several units.

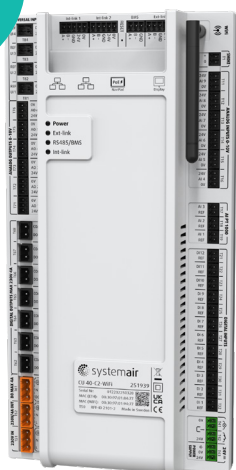
### Connection cable

The NaviPad is supplied with a 3 m connection cable.

## Access benefits

- Great user experience with intuitive menu navigation and configuration wizard
- Installation and commissioning truly plug and play
- Integrated support for BMS/SCADA using Modbus and BACnet communication
- Prepared for easy connection to Systemair Connect Cloud solution
- Wireless Communication

### SYSTEMAIR Access



#### Designed by Systemair

Designed specifically for easy, quick and compact installation in Systemair air handling units.

#### BACnet fully integrated

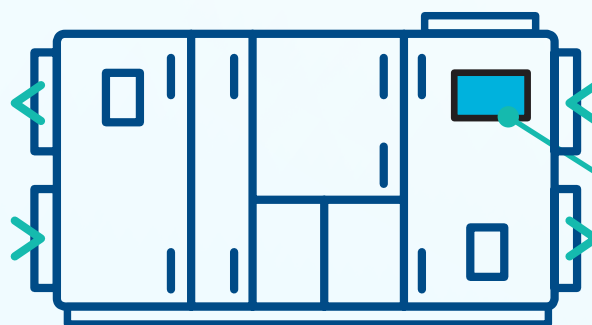
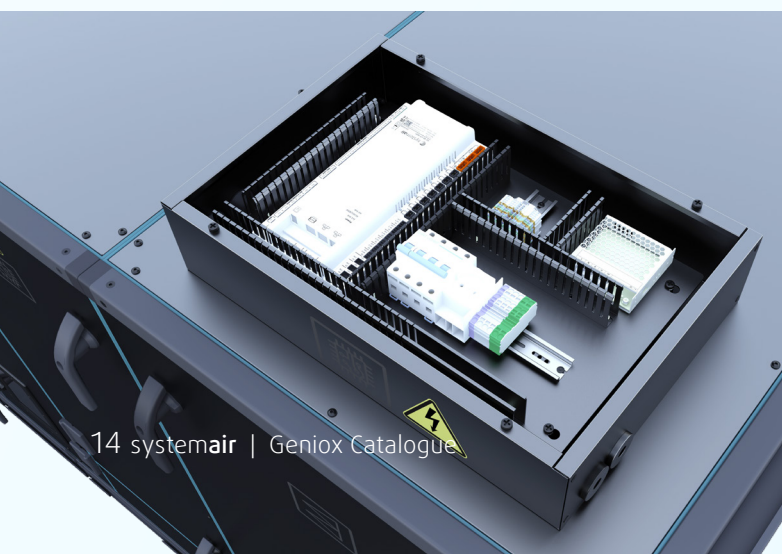
BACnet native integrated in the application provides rich functionality and a user friendly graphical user interface.

#### Connectors for external components

All connectors for external components on the control unit are clearly marked and grouped together to reduce installation and startup time.

#### Systemair Connect

Gather all your air handling units in an easy-to-use **cloud** service for complete overview and accessibility.



# Access Application Tool

Easy upgrade, configuration and commissioning record in “one click”

The PC based Access Application Tool offers easy upgrade to latest Access software and backup and restore of configuration files.

A commissioning record is automatically generated with “one click” and the trend log function provides detailed historical data.



## **Dedicated BMS connection**

Provides simplified connection setup to BMS/SCADA using Modbus and BACnet communication.

## **Bus-based field devices**

There are internal and external communication links for Modbus-based field devices. Wiring to all connected devices is simplified. All needed data and diagnostics are available in real time.







Take control.  
Configure your Geniox unit  
exactly the way you want it.

Configure Geniox with

## SystemairCAD

It's easy to configure Geniox using **SystemairCAD**, a design tool that ensures that each air handling unit is customised according to the actual conditions of each building.

When you configure your air handling unit, **SystemairCAD** performs a series of calculations for you. When you are finished, you can save the entire technical documentation as a pdf file on your computer.

The documentation contains e.g. technical data, drawings, calculation results, fan curves, graphics and a complete descriptive text that you can use in your specification document.

The drawing, which is drawn to scale, can be exported to other CAD or BIM programs as a DXF or DMR file. The project files can be opened directly in AutoCAD or Revit using the Systemair MagiCAD plug-in program.

You can also perform LCC calculations, print 3D.dxf files or print "live" air handling units in MagiCad or Revit.

**SystemairCAD can be downloaded from the Systemair website.**

### Design it yourself

You can design your Geniox air handling unit yourself using SystemairCAD. The programme calculates and generates the necessary documentation.

### Double check

SystemairCAD notifies you of any irregularities in your design and our specialised staff checks that everything is in order before producing your unique air handling unit.

### Directly to the factory

Your drawings are ready to go directly to the manufacturing stage in one of Systemair's plants, reducing administrative and delivery times.

### Documentation for installation and handover

Systemair supplies all documentation for control, i.e., flow chart, function descriptions, list of delivered components, external connections, and communication via BMS.

# Directives and certifications

## Eurovent certification

Geniox air handling units are Eurovent certified. This ensures the conformity between the calculated performance in SystemairCAD design program, and the measured performance at independent test laboratories.

## Eurovent energy classification

Geniox air handling units are energy classified according to Eurovent's guidelines for air handling units.

The energy class expresses the unit's total energy consumption.

The energy class is calculated by the design program SystemairCAD based on the actual data of the designed unit.

## Ecodesign Directive

The EU's Ecodesign Regulation (EU) 1253/2014 on ventilation prescribes minimum requirements regarding heat recovery efficiency, fan efficiency, SFP internal values, and the operation of air handling units. The selection software SystemairCAD is updated with an automatic Ecodesign calculation that will inform you if the requirements are fulfilled.

## Machinery Directive

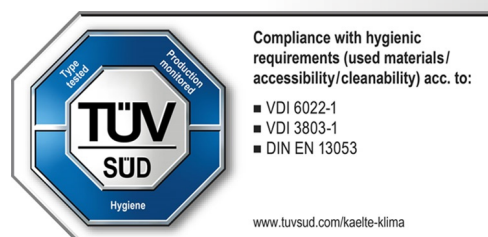
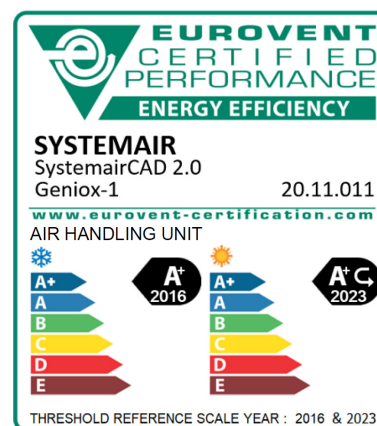
Geniox air handling units are manufactured according to the safety demands of the EU Machinery Directive 2006/42/EC. This is confirmed through the issuance of corresponding Declaration of Conformity and CE label.

## Eurovent Certified Performance for Hygienic Air Handling Units (ECP HAHU)

All application areas are covered through 2 star rating. Includes requirements from the VDI 6022-1, DIN 1946-4 and other national standards, such as HTM 03-01.

## Eurovent Summerlabel

Energy Efficiency Classes for Summer Application (EECS) label for air handling units (AHUs). Includes cooling and accommodates warmer weather conditions. The summer label is available to our entire range of Eurovent-certified AHUs.





# Standards

The Geniox design is based on the demands in the following CEN and ISO standards:

**EN 307:1999**

Heat exchangers. Definition and test procedures.

**EN308:2022**

Heat exchangers. Test procedures.

**EN 378-1&2:2016**

Refrigerating systems and heat pumps safety and environmental requirements.

**EN 378-1&2:2016**

Refrigerating systems and heat pumps safety and environmental requirements.

**EN ISO 16890-1: 2016**

Air filters for general ventilation.

**EN 1216:1999**

Heat exchangers.

**EN 1751:2014**

Aerodynamic testing of dampers and valves.

**EN 1886:2008**

Air handling units.  
Mechanical performance.

**EN 13053:2019**

Ratings and performance for units and components.

**EN 60204-1:2018**

Machine safety.  
Electrical equipment of machines.

**EN ISO 3741:2010**

Determination of sound power level in reverberation rooms.

**EN ISO 5136:2009**

Determination of sound power level in a duct.

**EN ISO 12100:2011**

Safety of machinery.

**EN ISO 12944-2:2017**

Corrosion protection.  
Classification of environments.

**DS 428:2019 + (1+2: 2021)**

Danish Standard for fire technical precautions, indoor air handling units comply with class A2-s1,d0.

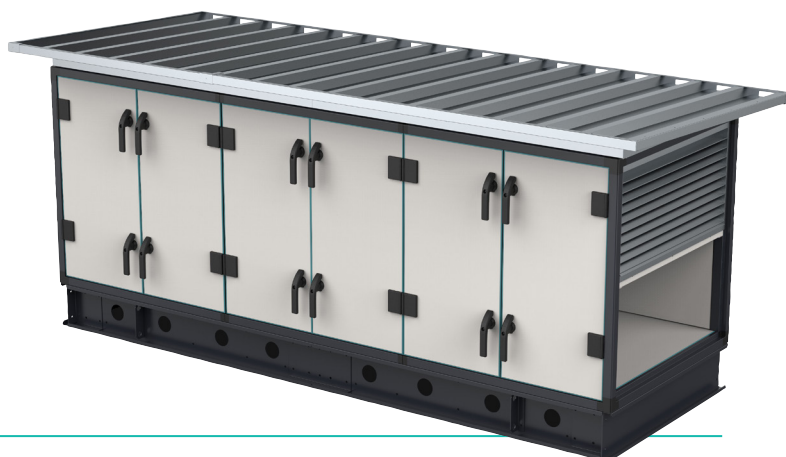


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ulla, eget sodales nisi dapibus feugiat. Nam per et turpis eu massa. Pellentesque nec odio a felis auctor tempus. Pellentesque scelerisque, lacus et insuam diam sit amet tellus. et amet tristique neque.

# Outdoor unit

The Geniox air handling unit is available as a roof unit for outdoor installation.



## Function

For the outdoor installation the unit is assembled on a base frame and features a roof construction which together with the double sealing of the panels provides protection against the effects of the weather.

The roof unit can be delivered with four different types of roof:

### Bitumen membrane roof

Manufactured of polyester, reinforced bitumen material fitted to the unit by a heating process. The bitumen roof is a very close and robust roofing completely finished from factory.

### Rubber sheeting roof

Manufactured of rubber fitted to the unit by a glueing process. The rubber roof is a very tight and robust roof completely finished from factory. The colour of the rubber roof is light grey.

### Louvers

Air intake and exhaust are available with louvers for effective protection against rain and snow. We recommend placing the exhaust air on the back of the unit by adding an outdoor air section. Exhaust can also be placed above air intake in the end of the unit.

### Steel profile roof

Manufactured of Aluzinc protected, steel sheets, and profiles for fastening and finishing the roof. This type of roof is supplied for local assembly on the air handling unit. The steel profile roof is a robust roof.

# Pre-painted unit

The Geniox air handling unit is available with black or light grey pre-painted steel sheets.



## Function

The black variant of Geniox is especially suitable for outdoor units when a good blending in with a dark facade and dark roof is required. The light grey variant is well-suited for both indoor and outdoor installation with a fine and even look.

## Variants

The sheets are made of pre-painted galvanized steel sheets in black (RAL 9005, gloss 30) or light grey (RAL 7035, gloss 30). When ordering air intake and outlet with louvers these are also painted in black (RAL 9005, gloss 30) or light grey (RAL 7035, gloss 30).

When choosing rubber sheeting roof or bitumen membrane roof, the roof lining will also be in black or light grey.

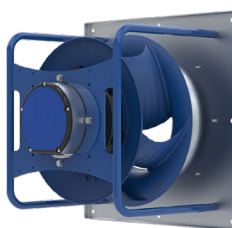
The frame profiles and corners will be delivered in RAL 7024 as standard for both solutions. The baseframe can be delivered in RAL 7024 for both solutions.

For all variants of the Geniox unit apply that they all come with green panel gaskets. Duct connections will be painted.

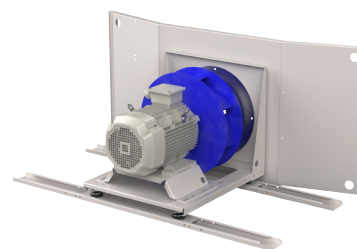


# Plug fan

The plug fan is built into an acoustically insulated air handling unit.



EC plug fan



AC plug fan

## Construction

Single inlet plug fan with open outlet into the air handling unit. The impeller is fitted with air foiled blades to obtain the highest possible efficiency. The fan is a single inlet, free-blowing fan where the unit casing acts as fan housing. Static efficiency up to 75%. To optimise the plug fan efficiency in the operating point, the fans can be selected in several variations:

- S:** Small impeller (low airflow)
- M:** Medium impeller (medium airflow)
- L:** Large impeller (high airflow)

## Variants

The plug fan comes in two variants:

### EC

Compact plug fan with an effective composite impeller, where all details are optimised in order to achieve a high efficiency. The impeller is fitted directly to an EC external rotor motor with integrated variable speed control. The EC motor is in efficiency class IE5. An EC motor is characterized by a high efficiency and excellent control features. Several fans can be positioned in parallel operation at larger units. The fans are mounted on the end wall of the fan section.

### AC

Plug fan with an effective impeller fitted to the motor shaft. Depending on size, the impeller is made of composite material or painted steel. The AC motors are stepless controllable via frequency converter. Two fans can be positioned in parallel operation at larger units. The fans are mounted on vibration steel springs on the bottom of the fan section.

**AC: Induction – asynchronous motor. Efficiency class IE3 according to EN 60034-30:2009. One frequency converter controls parallel operation of twin fans.**

### Positioning in the air handling unit

A plug fan supplies air at the fan section outlet with a low and even air speed. Therefore, it is an advantage to position air handling components on the outlet side of the fan.

## Service-friendly

The plug fan has a large inspection door providing easy access for service. The plug fan AC in sizes 10-14 has the fan and motor assembled on guide rails, which allow easy extraction from the unit.

## Sound data

The design program SystemairCAD calculates the fan sound power level  $L_w$  (ref. 1 pW). The calculations are based on measurements carried out according to the following standards:

- EN ISO 5136:2009, Determination of sound power level in a duct.
- EN ISO 3741:2010, Determination of sound power level in reverberation rooms.

SystemairCAD also calculates the sound power levels for all duct connections to the unit.

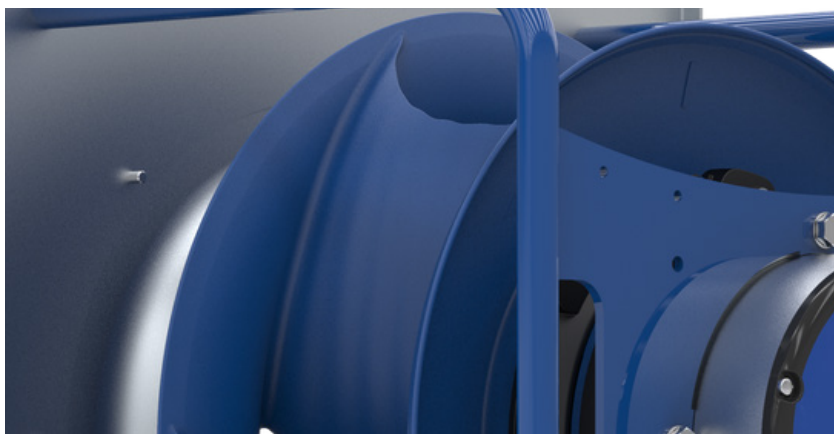
### Kitchen fan option\*

Our fan motor in the extract air is protected from grease and moisture from the kitchen air by placing the motor in its own casing. An outdoor air intake to the motor ensures that it is cooled. This air is then led through the fan wall to the fan's negative pressure side. It is extracted from here along with the exhaust air. This solution creates the best possible conditions for our motor by avoiding grease build-up and at the same time ensuring that the motor is cooled.

The frequency converter should also be placed outside the extract air from the kitchen.

Choose a kitchen fan together with a metal filter.

*\* Not compatible with all units.*



### Balancing

The fan is balanced both statically and dynamically.

### Operating temperatures

General temperatures for air in the air handling unit:

**Standard design: -40/+40 °C**

**Special design: -40/+60 °C.**

### Airflow calculation

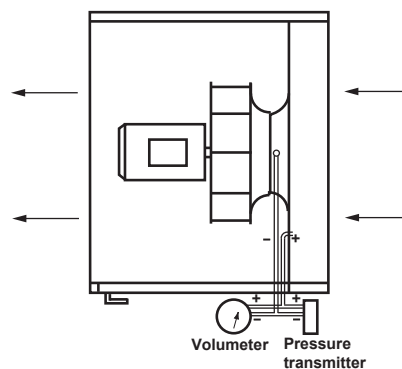
The inlet cone is equipped with a pressure nozzle. This can be used to determine the current airflow using the K-factor and the formula:

$$V = \sqrt{\Delta P_m \times K}$$

V = Airflow in m³/h

ΔP<sub>m</sub> = Measured pressure in Pa (according to sketch)

K = K-factor for the current fan (according to table).



### Plug fan EC

Impeller ø mm	Material	K-factor	Fan type EC
250	Composite	67	10-S, 11-S
280	Composite	85	10-M
310	Composite	106	10-L, 11-M, 12-S
350	Composite	140	11-L, 12-M, 14-S
400	Composite	180	12-L, 14-M, 16-S
450	Composite	220	14-L, 16-M, 18-S
500	Composite	280	16-L, 20-S
560	Composite	355	18-M, 20-M, 22-S
2x450	Composite	440	18-L, 20-L, 22-M, 24-S
2x500	Composite	500	27-S
2x560	Composite	710	22-L, 24-M, 27-M, 29-S
3x500	Composite	840	24-L, 27-L, 29-M, 31-S, 38-S
3x560	Composite	1065	29-L, 31-M, 35-M, 41-S
4X500	Composite	1120	31-L, 38-M, 44-S
3x450	Composite	660	35-S
4X560	Composite	1420	35-L, 41-M
5X560	Composite	1775	35-XL, 38-L, 41-L, 44-M
6X560	Composite	2130	38-XL, 44-L
7X560	Composite	2485	41-XL
8X560	Composite	2840	44-XL

### Plug fan AC

Impeller ø mm	Material	K-factor	Fan type AC
220	Steel	47	10-S,
250	Composite	60	10-M, 11-S
280	Composite	75	10-L, 11-M
310	Composite	95	11-L, 12-S
350	Composite	121	12-M, 14-S
400	Composite	154	12-L, 14-M, 16-S
450	Composite	197	14-L, 16-M, 18-S
500	Composite	252	16-L, 18-M, 20-S
560	Composite	308	18-L, 20-M, 22-S
2x450	Composite	394	20-L
630	Composite	381	22-M, 24-S
2x500	Composite	504	22-L, 24-M, 27-S
2x560	Composite	616	24-L, 27-M, 29-S
2x630	Composite	762	27-L, 29-M, 31-S
2x710	steel	980	29-L, 31-M, 35-L, 44-S
2x800	steel	1240	31-L, 35-XL, 38-L, 44-M
1x710	steel	490	35-S
1x800	steel	620	35-M, 38-S
1x900	steel	789	38-M, 41-S
1x1000	steel	999	41-M
2x900	steel	1578	38-XL, 41-M, 44-L
2x1000	steel	1998	41-XL, 44-XL

# Rotary heat exchanger

Regenerative heat exchanger with high efficiency.



## Versions

The rotary heat exchanger is available in 4 versions:

- A** Highest heat recovery solution\*
- B** Good heat recovery balanced with medium pressure drop
- C** Medium heat recovery with low pressure drop
- D** Lowest pressure drop solution

## Variants

The rotary heat exchanger is available in 3 variants: Condensation, sorption hybrid, and sorption heat exchanger.

### ST - Condensation heat exchanger:

**Winter** This variant is mainly used for recovery of heat from the extract air. However, there may also be recovered moisture from the extract air through condensation at low outdoor temperatures. Moisture transfer is excellent at temperatures colder than  $-12^{\circ}\text{C}$ .

**Summer** Recovery of cooling energy from the extract air. Available in version: A, B, C, and D.

### SH - Sorption hybrid exchanger:

**Winter** At milder temperature down to  $-12^{\circ}\text{C}$  this variant has a hygroscopic surface so that recovery of heat and moisture is possible before condensation. In this way, high extract air enthalpy content can contribute to the heating and humidification of the supply air.

**Summer** Recovery of cooling energy from the extract air and light dehumidification of outdoor air before cooling. Available in version: A, B, and D.

### HM - Sorption heat exchanger:

**Winter** At milder temperature down to  $-12^{\circ}\text{C}$  this variant has a recovery of heat and moisture from the extract air. In this way, high extract air enthalpy content can deliver a large contribution to the heating and humidification of the supply air.

**Summer** Recovery of cooling energy from the extract air and dehumidification of outdoor air before cooling. Large power savings for cooling can be achieved hereby as less energy is required for condensation loss on the cooling coil. Available in version: A, B, C, and D.

\* Note that high heat recovery performance is coherent with high cooling energy recovery.

## Rotor

The rotor is made with a hub with bearings and two layers of aluminium. The first layer is smooth and the second is corrugated. The two layers are rolled up to the required outer diameter, and then fixed in a very stable construction. The height of the corrugation determines the pressure drop as well as the mass of the rotor and thus also the efficiency. Foil width is 200 mm.

For unit size 35 and up, the rotor will be delivered in two.

## Sealing

In order to safeguard against leakage between the airflows, the heat exchanger is fitted with highly effective brush type seals.

## Service-friendly

The heat exchanger is equipped with a large inspection door. The exchangers in sizes Geniox 10 to 16 can be pulled out for inspection.

Division of large heat exchangers

On account of transport the exchangers from size 22 can be supplied divided in the height.

The lower half of the exchanger and the hub of the rotor are assembled into the lower half of the AHU casing. All other parts of the heat exchanger are supplied for local assembly.

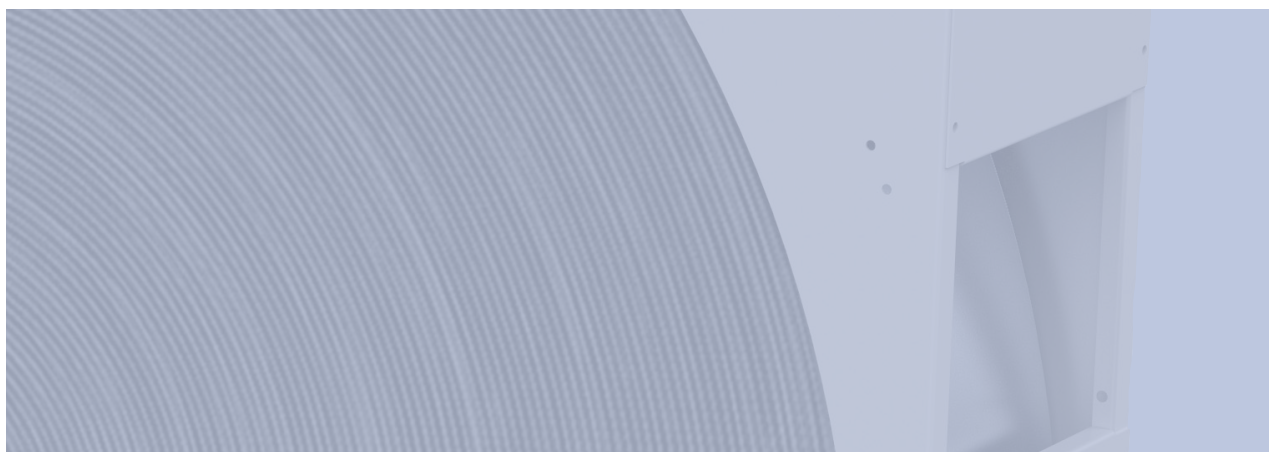
## Purging sector

The exchanger is with a purging sector that flushes the rotor matrix with outside air before it rotates into the supply air duct. In this way only outside air is present in the matrix, and the carry over of exhaust air to supply air is minimised.

## Drive system

An electronic control unit and a slow rotating motor drive the exchanger. This provides an accurate and stepless regulation of the rotor speed. In this way the exchanger efficiency is controlled. The drive system can also be set up for constant speed. In this way the exchanger provides full heat recovery when it is in operation.





### Mains connection

1 x 230 V, 50/60 Hz.

### Operation indication

The control unit has a LED that indicates the actual operating situation.

### Control signal

The control unit can be regulated by an external 0-10 VDC control signal. For condensation and sorption hybrid heat exchanger 0-10 V corresponds to 0-12 rpm, and for sorption heat exchanger to 0-20 rpm.

### Alarm connections

Built-in relay for connection to an alarm system. By an undesirable operating situation an alarm is triggered.

### Protection

Built-in protection against unstable voltage supplies from the mains. Built-in overcurrent protection, which protects the motor against overloading.

### Rotary alarm switch

Built-in system for monitoring the rotor operation position. Gives a signal by way of an alarm connection, if the rotor operation is interrupted unintentionally.

### Purging

Outside of the normal operating period the rotor is turned slowly 12 sec. every 15 min. in order to purge the rotor with clean air.

### Cooling recovery

The heat exchanger can be activated for the recovery of cooling energy via the external control signal.

### EATR control

The EATR (Extract Air Transfer Ratio) ensures optimal pressure ratio between extract air and supply air. The function secures a lower negative pressure in the extract air compared to supplied air. The EATR control function reduces leakage from the extract air to the fresh supply air when using of rotary heat exchangers.

## Data for rotor drive system, condensation and sorption hybrid exchangers

Unit size	Motor			Control unit			
	Type	Torque, Nm	Power, W	Type	Voltage, V	Current, A	Max. fuse
10-18	90 TYD-M	2,8	85	RHC 200	1 x 230	0,4	10 A
20-31	120 TYD-M	5,5	145	RHC 200	1 x 230	0,6	10 A
35-44	EMX-D Motor	26	750 W	Emotron EMX-D	1x230	Max. 3.5 A	10 A

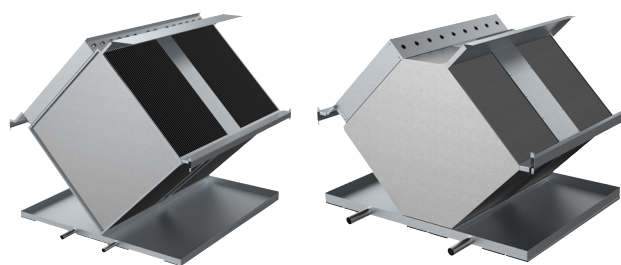
## Data for rotor drive system, sorption heat exchanger

Unit size	Motor			Control unit			
	Type	Torque, Nm	Power, W	Type	Voltage, V	Current, A	Max. fuse
10-14	90 TYD-M	2,8	85	RHC 200	1 x 230	0,4	10 A
16-22	120 TYD-M	5,5	145	RHC 200	1 x 230	0,6	10 A
24-31	120 TYD-L	7,5	370	RHC 200	1 x 230	1,6	10 A
35-44	EMX-D Motor	26	750 W	Emotron EMX-D	1x230	Max. 3.5 A	10 A

Mains electrical connection must not be cut-off outside the normal operating period, as this will terminate the purging function.

# Plate heat exchanger

Recuperative plate heat exchanger with high efficiency.



Crossflow heat exchanger

Counterflow heat exchanger

## Application

The plate heat exchanger is used where there are special requirements for separation of the two airflows. The heat exchangers are made of seawater resistant aluminium for use in environments where no corrosive elements are present in the air to corrode aluminium.

## Variants

The plate heat exchanger is available in two variants: Crossflow and Counterflow. It has separated airflows, and thus the transfer of odours to the supply air is avoided.

### Crossflow Heat Exchanger (x)

The crossflow heat exchanger has an efficiency of up to 80 % and is supplied in aluminum and in corrosion protected version. The heat exchangers are fitted with by-pass for capacity control and for frost protection and have a built-in drip tray with slope.

- Available in type A, B, C and D, with A being the most heat recovery efficient.
- Unit size 10-35.

### Counterflow Heat Exchanger (c)

The counterflow exchanger has an efficiency of up to 90 % and is supplied only in aluminium. The heat exchangers are fitted with by-pass for capacity control and for frost protection, and have a built-in drip tray with slope.

- Available in a normal and high efficiency type.
- Unit sizes 10-24.

## By-pass

The heat exchanger is supplied with a built-in by-pass that can regulate the heat recovery from 0-100%. The by-pass function is comprised of a damper for the heat exchanger and a damper for the by-pass airway.

The by-pass function is located in the middle of the plate heat exchanger. Consequently, the heat exchanger is divided.

## Service-friendly

The heat exchanger is equipped with large inspection doors that provide access for inspection and service. As the heat exchanger has no rotating part, it requires very little service.

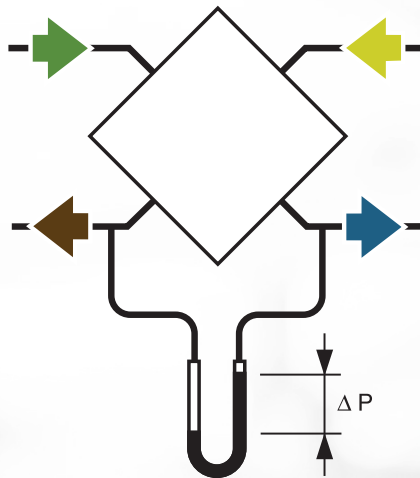
## De-icing and sectional defrosting

If the outdoor air is very cold, usually below -5 °C, there is a risk of frost and ice accumulation in the exhaust air side of the exchanger. By regulating bypass dampers the exchanger can automatically defrost and prevent ice accumulation.

## Drip tray with slope

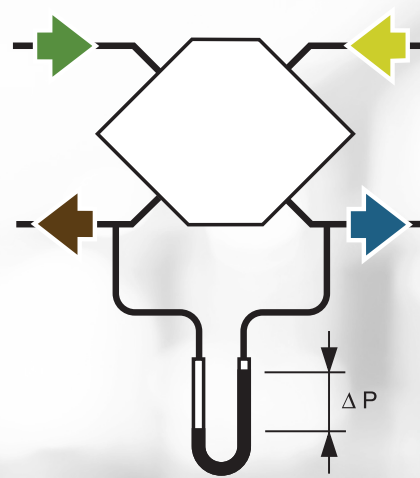
A drip tray made of stainless steel or Zink Magnelis (ZM310). is fitted beneath the heat exchanger for collection of the water that can condense. The drip tray drain outlet must be fitted with two water traps that are designed for the actual pressure difference. Refer to the assembly instructions. Both heat exchangers are fitted with a drip tray with slope in both extract and supply air sections (40 mm outlet).

Crossflow heat exchanger (x)



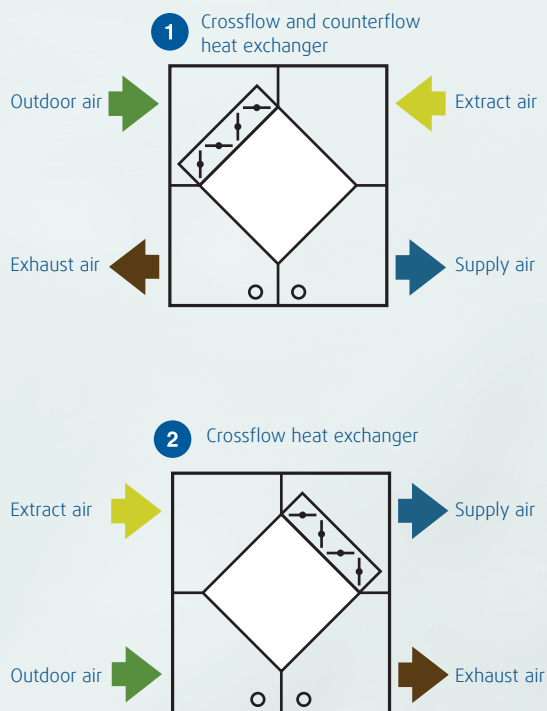
Max.  $\Delta P = 1000 \text{ Pa}$

Counterflow heat exchanger (c)

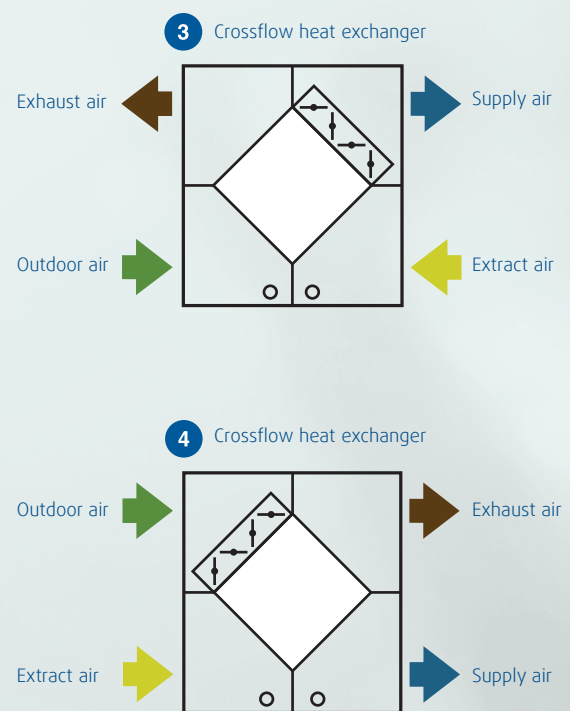


Max.  $\Delta P = 500 \text{ Pa}$

**Air direction variants**  
Extract air, diagonal downstream



**Air direction variants**  
Extract air, diagonal upstream \*



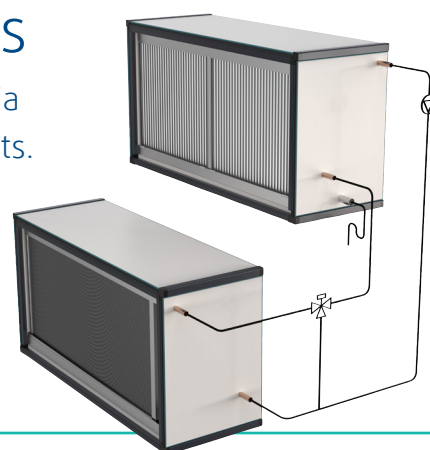
\* Air directions with upstream extract air (3 and 4) should only be used when the moisture content of the extract air, before the heat exchanger, is less than the following values:

Supply air before heat exchanger °C	0	-10	-20	-30
Extract air before heat exchanger max. g water/kg air	10	8	6	4
Otherwise, there is a risk of water accumulating in the heat exchanger.				



# Run-around coil heat exchangers

Heat exchanger system using two water coils to transfer via pipe system the cold/heat between extract and supply units.



The run-around coil heat exchangers are used where it is a requirement that the two airflows must be kept completely separated, or where they are at a distance from each other. The coils must be connected with a piped circuit in which a water/glycol mixture is circulated. Efficiency  $\geq 70\%$ .

## Variants

Standard – Coil completely built into the unit.

## Construction

The heat exchanger coils consist of copper tubes with aluminium fins.

## Copper tubes

3/8"

1/2"

5/8" (Generally preferred in run-around coil systems for the whole range).

## Fin material

3/8", 1/2", 5/8" 0.11 mm and 0.20 mm Aluminum

Standard design that offer good performance compared to cost.

3/8", 1/2", 5/8" 0.11 mm and 5/8" 0.25 mm Polyester coated aluminum

Synthetic coating the gives improved corrosion resistance. Used for mildly corrosive air.

1/2" and 5/8" 0.20 mm Copper

Great conductor of heat and more corrosive resistant than aluminum. Copper tubes with copper fins has not galvanic action in the tube-fin bonds. Used for high capacities or corrosive air.

1/2" and 5/8" 0.15 mm and 5/8" 0.20 mm AlMg 2.5 aluminum

Seawater resistant aluminum. Used for corrosive air

## Drip tray with slope

In the extract air section a tray for collection of condensed as standard. Available under supply air as optional.

## Droplet eliminator

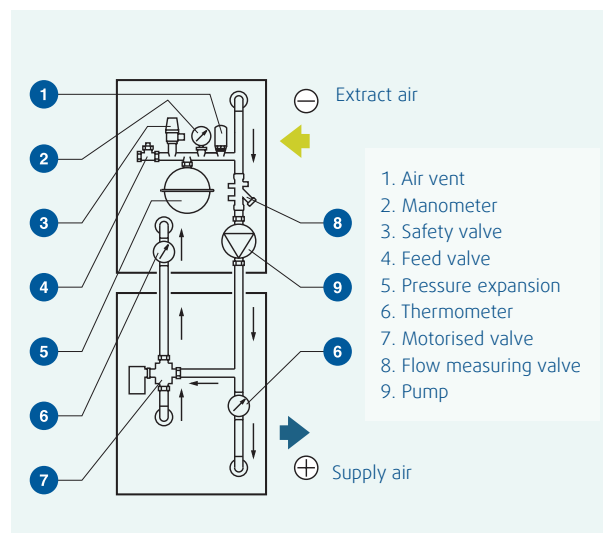
The run-around coil heat exchangers are available with a droplet eliminator in the extract air section.

## Regulation

A motorised valve built into the pipe circuit regulates the heat exchanger capacity.

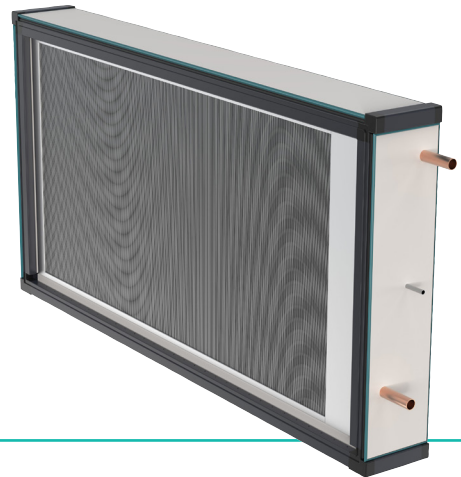
## Piped circuit example

water is standard. In the supply air section it is an option. The tray is available in stainless steel and in Magnelis MgZn. The drip tray drain outlet must be fitted with a water trap that is designed for the actual pressure difference (40 mm outlet). Refer to the assembly instructions.



# Heating coil

Air heater



## Heating media

**W** – Hot water.

Max. temperature 100 °C,  
max. working pressure 10 Bar. Available for  
temperatures up to 130 °C.

**C** – Condensation of refrigerant.

Max. working pressure depending on the type of  
refrigerant.

**E** – Electrical heating.

## Variants

Standard – Heating coil completely built into the unit.

## Construction

Water coils and condensation coils are made of copper  
tubing and aluminum fins. Coils for electrical heating  
consist of stainless steel tube heating elements.

## Copper tubes

**P25** – 3/8"

**P3012** – 1/2"

**P40** – 5/8"

## Fin material

**3/8", 1/2", 5/8" 0.11 mm and 0.20 mm Aluminum**

Standard design that offer good performance compared  
to cost.

**3/8", 1/2", 5/8" 0.11 mm and 5/8" 0.25 mm Polyester  
coated aluminum**

Synthetic coating the gives improved corrosion  
resistance. Used for mildly corrosive air.

**1/2" and 5/8" 0.20 mm Copper**

Great conductor of heat and more corrosive resistant  
than aluminum. Copper tubes with copper fins has not  
galvanic action in the tube-fin bonds. Used for high  
capacities or corrosive air.

**1/2", 5/8" 0.15 mm and 5/8"**

**0.20 mm AlMg 2.5 aluminum**

Seawater resistant aluminum. Used for corrosive air

## Frost protection

Heating coils for hot water are available with a  
connection piece for the fitting of a temperature  
sensor in the water circuit.

## Electrical heating

The inspection door, which can be opened only by  
using a key, provides access to a terminal box for the  
electrical connections. The coil has a built-in safety  
thermostat with an automatic reset function and an  
overheating thermostat with manual resetting.

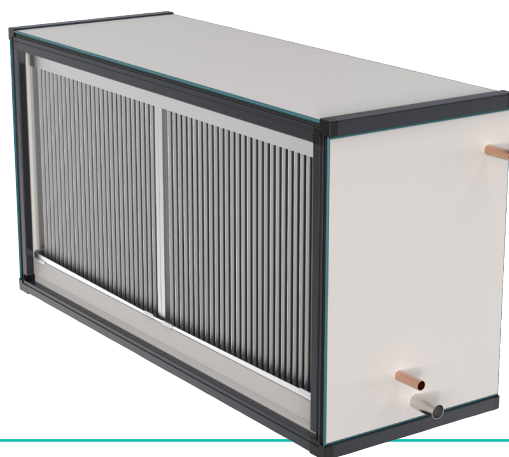
Flow type

Normal air velocity > 1.5 m/s

Low air velocity > 0.7 m/s

# Cooling coil

Air cooler



The cooling coil is used for cooling the supply air. It can be effected by cold water or direct evaporative refrigerant. A cooling coil for evaporation has the liquid distributor placed in the unit.

## Cooling media

**W** – Cold water.

Max. working pressure 10 Bar.

**D** – Evaporation.

Max. working pressure depending on the type of refrigerant.

## Variants

Standard – Cooling coil completely built into the unit.

## Construction

The water coils are made of copper tubing and aluminum fins.

## Copper tubes

3/8"

1/2"

5/8"

## Fin material

**3/8", 1/2", 5/8" 0.11 mm and 0.20 mm Aluminum**

Standard design that offer good performance compared to cost.

**3/8", 1/2", 5/8" 0.11 mm Polyester coated aluminum**

Synthetic coating the gives improved corrosion resistance. Used for mildly corrosive air.

**1/2" and 5/8" 0.20 mm Copper**

Great conductor of heat and more corrosive resistant than aluminum. Copper tubes with copper fins has not galvanic action in the tube-fin bonds. Used for high capacities or corrosive air.

**1/2", 5/8" and 5/8" 0,15 mm AlMg 2.5 aluminum**

Seawater resistant aluminum.

Used for corrosive air.

## Pipe connections

The connection pipes for the cooling coil are placed outside of the air handling unit. The cooling coil for evaporation has the liquid distributor placed inside the unit section. The expansion valve can be fitted to the connection piece outside of the unit.

## Drip tray with slope in 3 directions

The cooling coil section is fitted with a stainless steel or ZinkMagnesium ZM310 drip tray with slope for collection of condensed water. The drip tray drain outlet must be fitted with a water trap that is designed for the actual pressure difference (ø 40 mm outlet). Refer to the assembly instructions.

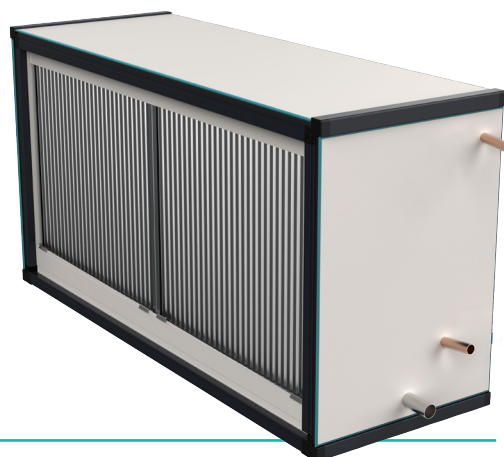
## Droplet eliminator

The cooling coil is available with a droplet eliminator that prevents condensed water droplets from being carried into the airflow.



# Change-over coil

Heating of air with hot water/glycol.  
Cooling of air with cold water/glycol.



The change-over coil is basically a cooling coil for cold water, which can also be used for heating by changing the water temperature from cold to warm as required.

## Heating/cooling media

**W** – Hot/cold water.

Max. working pressure 10 Bar.

## Variants

Standard – Heating/cooling coil completely built into the unit.

## Construction

Water coils are made of copper tubing and aluminum fins.

## Copper tubes

3/8"

1/2"

5/8"

## Fin material

**3/8", 1/2", 5/8" 0.11 mm and 0.20 mm Aluminum**

Standard design that offer good performance compared to cost.

**3/8", 1/2", 5/8" 0.11 mm and 5/8" 0.25 mm Polyester coated aluminum**

Synthetic coating the gives improved corrosion resistance. Used for mildly corrosive air.

**1/2" and 5/8" 0.20 mm Copper**

Great conductor of heat and more corrosive resistant than aluminum. Copper tubes with copper fins has not galvanic action in the tube-fin bonds. Used for high capacities or corrosive air.

**1/2", 5/8" 0.15 mm and 5/8" 0.20 mm AlMg 2.5 aluminum**

Seawater resistant aluminum. Used for corrosive air.

## Pipe connections

The connection pipes for the cooling coil are placed outside of the air handling unit.

## Drip tray with slope

The cooling coil section is fitted with a stainless steel or ZinkMagnesium ZM310 drip tray with slope for collection of condensed water. The drip tray drain outlet must be fitted with a water trap that is designed for the actual pressure difference (ø40 mm outlet). Refer to the assembly instructions.

## Droplet eliminator

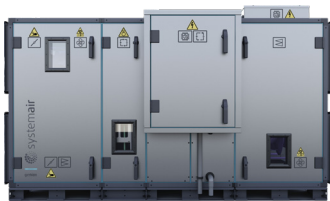
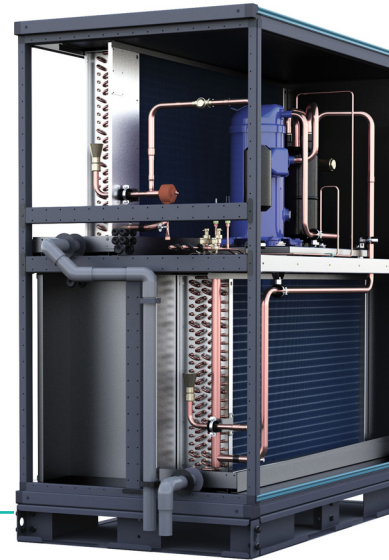
The change-over coil is available with a droplet eliminator that prevents condensed water droplets from being carried into the airflow.

## Frost protection

The heating/cooling coil is available with a connection piece for the fitting of a temperature sensor in the water circuit.

# Integrated reversible heat pump

The integrated heat pump system is built into a unit section. A reversible heat pump and a rotary heat exchanger that enables both heating and cooling.



## Geniox HP DF (Defrost Free) For high heat recovery

- **8 sizes**
- **Airflow 0.2-5.5 m³/s, 720-20,000 m³/h**
- **Reversible heat pump** with comfort cooling
  - Integrated, configured and filled with refrigerant from factory
  - No outdoor installations or pipework needed
  - No defrosting cycle required
  - Optimised design gives highest possible values of EER/COP
- **Compact solution**
  - Up to 25% space saving compared to other integrated HP system
  - All sections can pass 900 mm door opening
  - Heat pump in one module section
- **Cooling mode**
  - Maximised use of free-cooling potential, minimised energy use for compressor
- **Heating mode**
  - High heat recovery efficiency, no need for a re-heating system
  - Heating mode down to -20°C without preheater
- **Heat pump option** available for Geniox, Geniox GO and Geniox Core
- **Systemair Access** integrated control system

## Geniox HP For cooling recovery

- **9 Sizes**
- **Airflow 0.2-8.3 m³/s, 720-30,000 m³/h**
- **Reversible heat pump** with comfort cooling
  - Integrated, configured and filled with refrigerant from factory
  - No outdoor installations or pipework needed
- **Cooling mode**
  - Cooling recovery to give comfort cooling even at peak days of heat
  - Maximised use of free-cooling potential, minimised energy use for compressor
- **Heating mode**
  - Heating mode down to -12°C without preheater
  - Re-heater needed
- **Heat pump option** available for Geniox, Geniox GO and Geniox Core
- **Systemair Access** integrated control system

# Air flow capacity chart for both heat pump options

Based on outside and inside temperatures

Geniox HP DF (Defrost Free)										
Size	Air Flow (m³/s)			Air Flow (m³/h)			Max Cooling capacity (kW) (a)	Refrigerant quantity (kg)	Tonnes CO <sub>2e</sub>	External fuse HP only (A)
	Min Flow	SFP 1,5 (kW/m³/s)	Max Flow	Min Flow	SFP 1,5 (kW/m³/s)	Max Flow				
10	0.2	0.7	1.1	720	2400	3800	16.1	4.0	8.4	10
11	0.3	0.8	1.3	1080	3050	4700	20.3	4.7	9.8	13
12	0.4	1.1	1.6	1440	4000	5600	26.0	5.6	11.7	16
14	0.6	1.5	2.2	2160	5500	7800	34.7	6.4	13.4	20
16	0.8	2.1	2.9	2880	7700	10450	50.3	7.9	16.5	32
18	1.0	2.8	3.7	3600	10100	13350	66.1	9.5	19.8	40
20	1.3	3.4	4.6	4680	12200	16650	90.3	12.0	25.1	50
22	1.6	4.1	5.6	5760	14800	20300	97.8	15.0	31.3	50

Geniox HP											
Size	Air Flow (m³/s)			Air Flow (m³/h)			Max Cooling capacity (kW) (b)	Max Cooling capacity (kW) (c)	Refrigerant quantity (kg)	Tonnes CO <sub>2e</sub>	External fuse HP only (A)
	Min Flow	SFP 1,5 (kW/m³/s)	Max Flow	Min Flow	SFP 1,5 (kW/m³/s)	Max Flow					
10	0.2	0.6	1.3	720	2200	4600	27.3	14.5	3.4	7.1	10
11	0.3	0.8	1.5	1080	2750	5500	33.5	15.3	4.7	9.8	16
12	0.4	1.0	1.8	1440	3650	6600	44.9	25.6	5.3	11.1	25
14	0.6	1.4	2.7	2160	5200	9800	57.1	31.8	8.3	17.3	25
16	0.8	2.0	3.1	2880	7300	11000	72.8	38.8	9.7	20.3	32
18	1.0	2.6	4.4	3600	9500	16000	93.8	49.6	11.8	24.6	40
20	1.3	3.1	5.6	4680	11200	20000	123.7	67.4	20.5	42.8	50
22	1.6	3.9	6.7	5760	14000	24000	149.9	82.6	22.5	47.0	63
24	1.9	4.8	8.3	6840	17200	30000	168.8	88.0	25.0	52.2	63

(a) Outdoor 26°C, 50%RH, extract 22° 60%RH

(b) Outdoor 28°C, 50%RH, extract 22° 55%RH with cooling recovery

(c) Outdoor 28°C, 50%RH, extract 22° 55%RH without cooling recovery

The SFP is based on Outdoor air  
-10C/90%RH, Return air +22C/30%RH,  
Supply +20C, Extern duct pressure @ 200Pa.

Filter Supply F7 - ePM1 60%,  
Filter Extract M5 - ePM10 60%



# Air humidifier

Humidifier for adiabatic cooling and humidification



The humidifier is VDI 6022 certified.

## Function

The function is based on the natural process that water evaporates when air passes a wet surface. By uptake of water vapor in the air, the temperature decreases due to heat for the evaporation from the air. This is an adiabatic cooling, which means the enthalpy content of the air is unchanged during the process. This ensures humidification occurs without releasing drops, unless this is affected by entrainment. Avoid entrainment by passing the humidification elements with a suitable low speed or by mounting droplet eliminators, which can handle this.

## Application

The humidifier can be placed in the supply air after a heating coil which can preheat the air before humidification.

**Max. air velocity is 5.0 m/s.**

There may be need for an after heating coil in order to achieve the desired supply air temperature. With high outdoor temperature and low humidity, placement of the humidifier in the supply air can be used as adiabatic cooling with great advantage. Indirect adiabatic cooling can be achieved by placing it in the extract air before a plate heat exchanger. It is recommended to use a corrosion-protected heat exchanger.

## Construction

The humidifier is designed to fit the internal dimensions of Geniox. The unit comprises humidification elements, tray and frame made of stainless steel, circulation pump, balancing valves for irrigation, overflow, valve for adjusting bleed off, float valve for controlling the water supply to the tray and valve for emptying the tray. Droplet eliminator is included if necessary and sensor for protection of pump at low water level. The drain is led out of the section, and can be selected on the inspection side or the backside. The drain must be connected to a water trap with sufficient locking height.

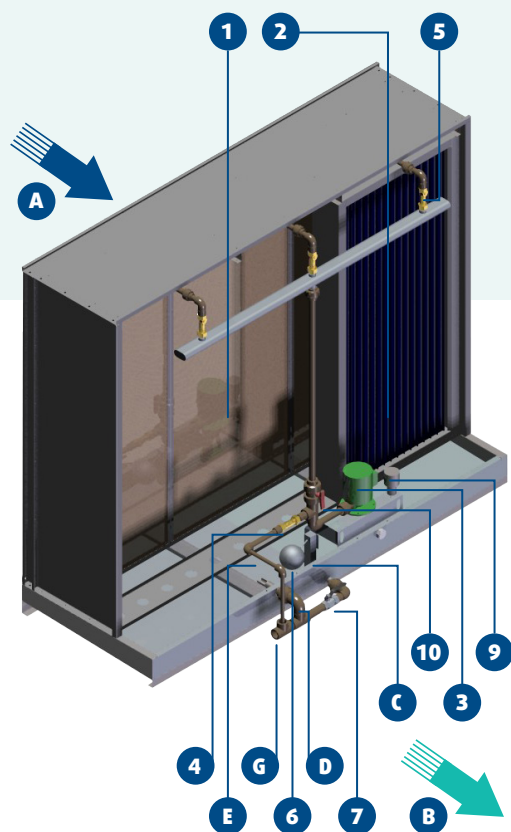
## Humidification elements

HU-CELL humidification elements are stainless steel frames which contain corrugated fiberglass plates arranged in cross-channel configuration. The configuration ensures that the air is in contact with a large surface area for evaporation, and simultaneously provides a low pressure drop.

The glass fiber material is impregnated with a stabilizing and absorbent additive which makes it possible to absorb water without loss of stability. The inorganic material is not a feed of source for bacteria and mould. The material contains silver ions, which increases the resistance to the growth of microorganisms and helps to release deposits from the water on the material. Silver ions are encapsulated in a chemical mixture, which ensures particles do not dissolve to either water or air.

Elements are supplied in the following thicknesses **75 mm, 100 mm, 125 mm, 150 mm**, which makes it possible to optimize the pressure drop depending on the desired humidification/cooling requirement.

*Control system is not supplied.*



### The humidifier can be step-controlled as illustrated

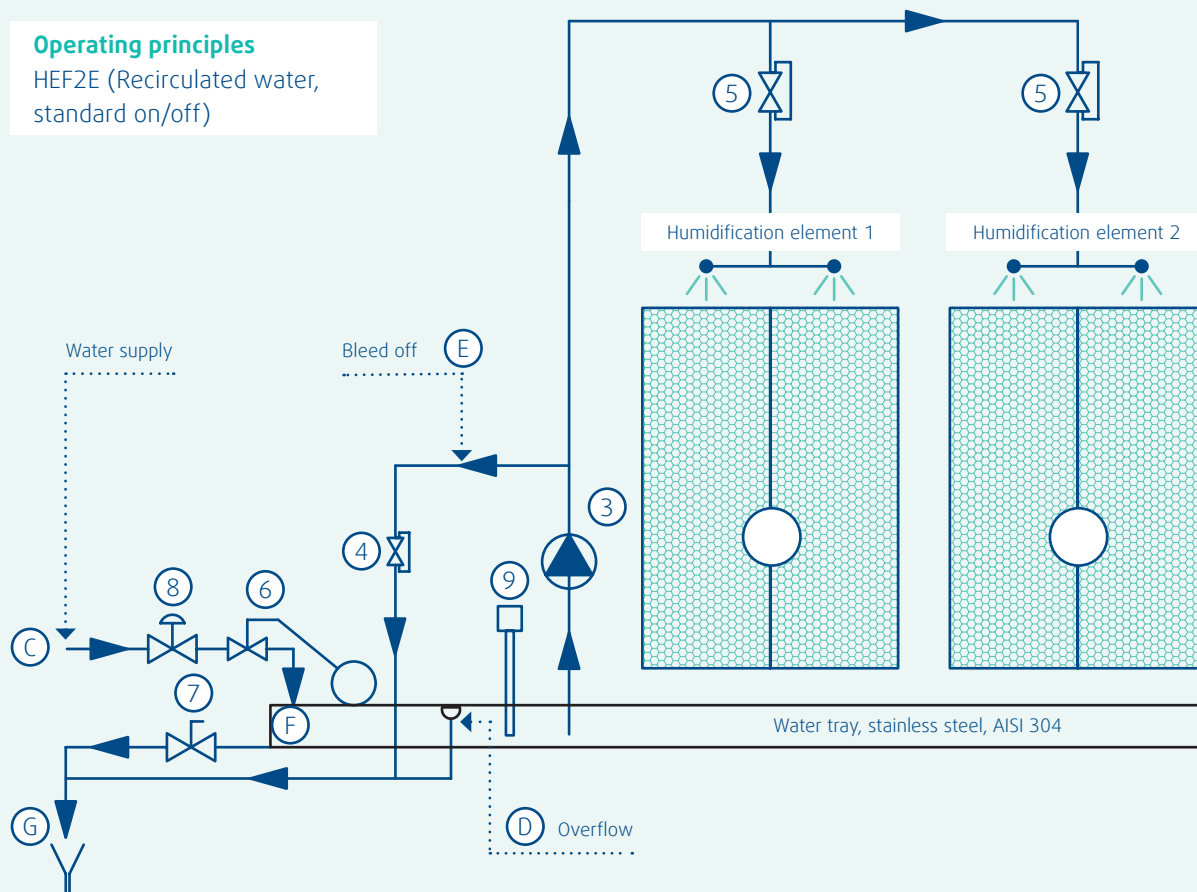
- |                          |                                 |  |
|--------------------------|---------------------------------|--|
| A. Process air           | 1. Humidification element       | 7. Draining valve                      |
| B. Humidified air        | 2. Droplet eliminator           | 8. Filling solenoid valve (optional)   |
| C. Water supply          | (optional)                      | 3. Water recirculations pump           |
| D. Overflow              | 3. Water recirculations pump    | 4. Bleed off regulation valve          |
| E. Constant bleed off    | 4. Bleed off regulation valve   | 5. Irrigation regulation valves        |
| F. Drainage              | 5. Irrigation regulation valves | 6. Float valve                         |
| G. Water outlet to drain | 6. Float valve                  | 7. Draining valve                      |
|                          |                                 | 8. Filling solenoid valve (optional)   |
|                          |                                 | 9. Max/min water level detector        |
|                          |                                 | 10. Cut-off valve (depending on model) |

Unit size	Number of stage valves/solenoid coil 24 V as standard and 230 V as an option
10	2
11	2
12	2
14	2
16	3
18	3
20	3
22	4
24	4
27	5
29	5
31	5

There are always 1 valve/solenoid coil supply water and 1 motor drain valves/solenoid coil 24 V as standard and 230 V as an option for both.

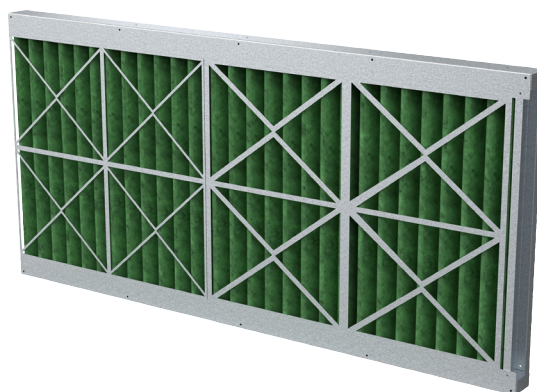
### Operating principles

HEF2E (Recirculated water, standard on/off)



# Panel filter

Prefilter. Designed on pleated filter principle.



## Filter classification

The panel filter is a basic filter class Coarse 65% (G4) according to EN ISO 16890 with a short building length. ePM10 60% (M5), ePM10 70% (M6).

## Filter material

Synthetic polyester fibres.

## Filter surface area

Large surface area due to the pleated filter form.

## Filter frame

Framework in cardboard (G4) or plastic (M5) encasing the filter with U-profiles of aluzinc.

## Accessories

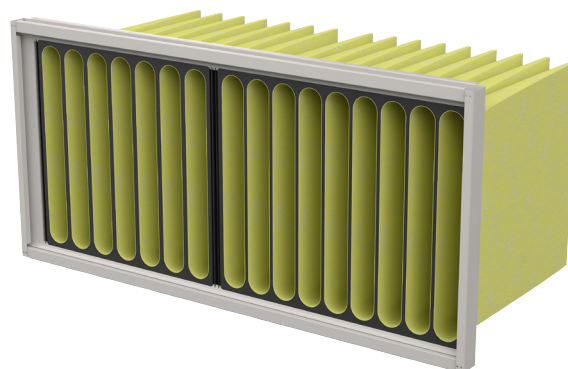
- U-tube manometer
- Magnehelic manometer
- Pressure outlet tab
- Spare filter
- Filter guard (on/off).

Unit size	Number and size
10	1x[792x392x48]
11	2x[490x392x48]
12	1x[490x490x48] + 1x[592x490x48]
14	2x[490x592x48] + 1x[287x592x48]
16	3x[490x592x48]
18	2x[490x392x48] + 4x[592x392x48]
20	3x[592x592x48] + 3x[592x287x48]
22	6x[592x490x48] + 2x[287x490x48]
24	3x[592x592x48] + 4x[490x592x48] + 1x[490x490x48]
27	2x[592x592x48] + 8x[490x592x48]
29	6x[592x592x48] + 4x[490x592x48]
31	5x[592x592x48] + 5x[592x490x48] + 5x[592x287x48]
35	2x[287x592x48] + 5x[592x287x48] + 10x[592x592x48] + 1x[287x287x48]
38	3x[287x592x48] + 15x[592x592x48]
41	3x[287x592x48] + 18x[592x592x48]
44	3x[287x592x48] + 6x[592x287x48] + 18x[592x592x48] + 1x[287x287x48]

# Bag filter

Prefilter, medium or fine filter.

The design provides a large filter area, a long lifetime and an overall good economy.



## Filter classification

The filter can be supplied in the filter classes Coarse 65% (G4), ePM10 60% (M5), ePM2.5 50% (M6), ePM1 60% (F7), ePM1 70% (F8), ePM1 85% (F9), or CITY-FLO ePM1 60% (F7 City-Flo) according to EN ISO 16890.

CITY-FLO ePM1 60% is a filter with particle and molecular filtration, specially designed for use in urban areas and areas with heavy traffic.

## Filter material

**Coarse 65% (G4):** Synthetic material. ePM10 60% (M5), ePM2.5 50% (M6), ePM1 60% (F7), ePM1 70% (F8), ePM1 85% (F9): Glass fibre material.

CITY-FLO ePM1 60% (F7 City-Flo): Glass fibre and coal with a wide spectrum.

ePM1 60% (F7), ePM1 70% (F8), ePM1 85% (F9) are available in two lengths; 520 and 640 mm.

## Filter frame

The filter cells are supplied with 25 mm standard plastic frame. Therefore, used filters can be disposed of in their entirety by combustion.

## Sealing

Rubber sealing strips are fixed to the filter cells. Air tightness according to EN 1886:2008.

## Fitting the filter cells

The cells are sealed with the enclosed sealing strips from Camfil. They are mounted on the filter profile (filter profile by ABS and TPE) with ease in a sliding movement.

## Positioning of an ePM1 85% (F9) filter

The class ePM1 85% (F9) filter should always be positioned in the positive pressure side of the supply air unit (EN 1886:2008).

## Accessories

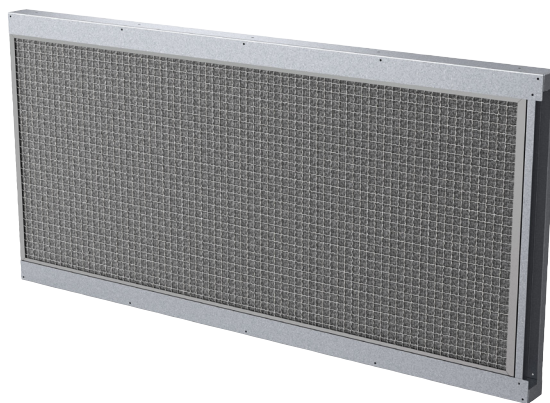
- U-tube manometer
- Inclined tube manometer
- Magnehelic manometer
- Pressure outlet tab
- Stainless steel bottom plate
- Spare filter set
- Inspection window
- LED-light with external switch.

Unit size	Number and size of frames	Number of pockets in each filter cell					
		Coarse 65% L = 370 mm	ePM 10 60% L = 520 mm	ePM 2.5 50% L = 520 mm	ePM1 60%, 70% and 85% L = 520 mm	ePM1 60%, 70% and 85% L = 640 mm	CITY-FLO ePM1 60% L = 520 mm
10	1x[792x392]	12	12	12	12	12	12
11	2x[490x392]	8	8	8	8	8	8
12	1x[490x490] + 1x[592x490]	8+6	8+8	8+8	8+8	8+8	8+8
14	2x[490x592] + 1x[287x592]	5+8	5+5	8+5	8+5	8+5	8+5
16	3x[490x592]	5	5	8	8	8	8
18	2x[490x392] + 4x[592x392]	8+10	8+10	8+10	8+10	8+10	8+10
20	3x[592x592] + 3x[592x287]	6+6	6+6	10+10	10+10	10+10	10+10
22	6x[592x490] + 2x[287x490]	6+5	6+5	10+5	10+5	10+5	10+5
24	3x[592x592] + 1x[490x592] + 3x[592x490] + 1x[490x490]	6+5+6+8	6+5+6+8	10+8+10+8	10+8+10+8	10+8+10+8	10+8+10+8
27	2x[592x592] + 8x[490x592]	6+5	6+5	10+8	10+8	10+8	10+8
29	6x[592x592] + 4x[490x592]	6+5	6+5	10+8	10+8	10+8	10+8
31	5x[592x592] + 5x[592x490] + 5x[592x287]	6+6+6	6+6+6	10+10+10	10+10+10	10+10+10	10+10+10
35	2x[287x592] + 5x[592x287] + 10x[592x592] + 1x[287x287]	3+6+6+3	5+6+6+5	5+10+10+5	5+10+10+5	5+10+10+5	5+10+10+5
38	3x[287x592] + 15x[592x592]	3+6	5+6	5+10	5+10	5+10	5+10
41	3x[287x592] + 18x[592x592]	3+6	5+6	5+10	5+10	5+10	5+10
44	3x[287x592] + 6x[592x287] + 18x[592x592] + 1x[287x287]	3+6+6+3	5+6+6+5	5+10+10+5	5+10+10+5	5+10+10+5	5+10+10+5



# Metal filter

Prefilter.



## Application

The metal filter is used as a prefilter in the extract air, where there may be grease particles in the air. However, there should always be a grease filter in the cooker hood. The metal filter is also efficient as a prefilter where there is dust, sand, flour, paint or oil in the outdoor air.

## Filter class

G2 according to EN ISO 16890.

## Filter material

The filter cells are made from electro-galvanised aluminium thread that is weaved together.

## Filter area

Very large surface, without additional air resistance.

## Filter frame

Stainless steel.

## Cleaning

Washable.

## Accessories

- U-tube manometer
- Magnehelic manometer
- Stainless steel base
- Filter guard (on/off)
- Spare filter
- LED light with external switch.

Unit size	Number and size
10	1x[792x392x40]
11	2x[490x392x40]
12	1x[490x490x40] + 1x[592x490x40]
14	2x[490x592x40] + 1x[287x592x40]
16	3x[490x592x40]
18	2x[490x392x40] + 4x[592x392x40]
20	3x[592x592x40] + 3x[592x287x40]
22	6x[592x490x40] + 2x[287x490x40]
24	3x[592x592x40] + 4x[490x592x40] + 1x[490x490x40]
27	2x[592x592x40] + 8x[490x592x40]
29	6x[592x592x40] + 4x[490x592x40]
31	5x[592x592x40] + 5x[592x490x40] + 5x[592x287x40]
35	2x[287x592x40] + 5x[592x287x40] + 10x[592x592x40] + 1x[287x287x40]
38	3x[287x592x40] + 15x[592x592x40]
41	3x[287x592x40] + 18x[592x592x40]
44	3x[287x592x40] + 6x[592x287x40] + 18x[592x592x40] + 1x[287x287x40]

# Carbon filter

Supply air, recirculation, or exhaust filter.



## Application

A compact cylindrical molecular filter designed to remove gaseous contaminants in low airflow applications such as air cleaners and specialized equipment. The carbon filter is effective against airborne molecules, such as odors, Volatile Organic Components (VOCs), toxic gasses, and corroding elements.

The Carbon filter can be used to filter supply, recirculation, and exhaust air.

## Variants

The CamCarb CG filters are plastic cylindrical molecular filters, consisting of two concentric ABS-cylinders with double molded TPE gasket. The filter can be filled with various types of media for removal of acids, VOCs, etc.

## Types

**CamCarb CG 2600 VOC L 452 mm / D 148 mm**

**CamCarb CG 3500 VOC L 595 mm / D 148 mm**

## Limit values

Temperature: -20 °C to +60 °C

Optimum temperature: max 40 °C

Humidity: RH max. 70 %

Contact time should range between 0,1 to 0,2 sec.

The recommended contact time depends on the contamination in the air. (Shown on SysCAD printout).

## Placement

To ensure that the filter does not clog up, you should always place an ePM1 60% filter in front of the carbon filter. The carbon filter is typically placed as a prefilter in the supply air.

## Accessories

- Inspection window
- Spare filters

Unit size	Type	Number of cylinders
10	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	15
11	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	18
12	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	23
14	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	33
16	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	42
18	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	56
20	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	72
22	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	84
24	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	105
27	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	128
29	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	144
31	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	180
35	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	204
38	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	252
41	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	288
44	CamCarb CG 2600 VOC / CamCarb CG 3500 VOC	342

# Damper

The dampers can be used as shut-off dampers for intake, extract, exhaust, and outdoor air. The dampers can also be used for mixing and recirculation.



The damper is VDI 6022 certified.

## Air tightness classification

The dampers comply with tightness class 4 C according to EN 1751:2014.

- Class 4 (leakage through a closed damper).
- Class C (casing leakage).

According to EN 1751:2014.

## Damper blades

Aerodynamically formed aluminium profiles.

## Bearings

Synthetic bearings with large bearing surfaces.

## Sealing

Rubber sealing strips between the damper blades.  
Special sealing between frame and damper blades

## Shafts

 12 mm steel

## Blade pivoting system

Composite gears combined with steel rods.

## Blade position indicator

Arrow for indication of the blade position.

## Damper motor

The dampers are activated by a motor for each damper.

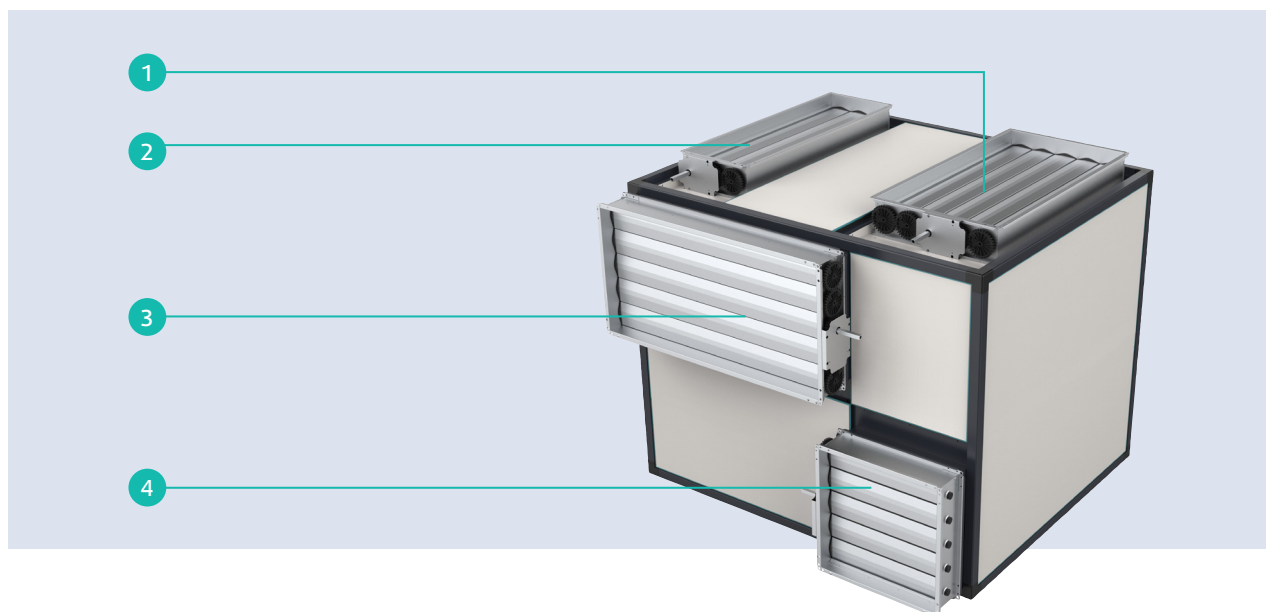
## Motor bracket

Bracket for fixing of a damper motor for each damper.

## Damper types

There are four types of dampers for each unit size. The dampers can be placed in end, top, or back of the unit and between airflows, allowing high flexibility.

Damper type	Internal in unit
1	"Full face, top, and end of unit. Geniox 10-24 one damper motor, Geniox 27-35 two damper motors Geniox 38-44 four damper motors"
2	"Full face, top, and end of unit. Geniox 10-24 one damper motor, Geniox 27-44 two damper motors"



**Dampers external on unit – Duct connection sizes, 20 mm flange connection**

Damper type		10	11	12	14	16	18	20	22	24	27	29	31
1	W	750	850	950	1150	1350	1550	1750	1950	2150	-	-	-
	H	400	400	500	600	700	800	900	1000	1100	-	-	-
2	W	750	850	950	1150	1350	1550	1750	1950	2150	-	-	-
	H	200	200	300	300	400	400	500	500	600	-	-	-
3	W	800	900	1000	1200	1400	1600	1800	-	-	-	-	-
	H	400	400	500	600	700	800	900	-	-	-	-	-
4	W	400	400	500	600	700	800	900	1000	1100	1200	1300	1400
	H	400	400	500	600	700	800	900	1000	1100	1200	1300	1400

**Dampers internal in unit – Duct connection sizes**

Damper type		10	11	12	14	16	18	20	22	24	27	29	31	35	38	41	44
1	W	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	2900	3100	3400	3400	4000	4000
	H	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1900	1900	2000
2	W	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	2900	3100	3400	3400	4000	4000
	H	300	300	400	400	500	500	600	600	700	700	800	800	900	1000	1000	1100

**Required torque (Nm) for each damper motor with varying pressure drops**

Pressure drop	10	11	12	14	16	18	20	22	24	27	29	31
0 Pa	4	5	6	7	8	9	11	12	14	15	17	18
500 Pa	7	8	10	11	13	14	16	17	19	21	23	24
1000 Pa	9	11	13	15	17	19	20	22	24	26	28	29



# Sound attenuator

The sound attenuator is used to reduce the sound power level from the air handling unit to the duct system.



## Construction

The sound attenuator is an absorption attenuator with baffles made of mineral wool. The baffles are surface treated in order to prevent the absorption material fibres from being carried away. Is also available for installation on duct.

## Variants

Baffles with standard lining. Each baffle is enclosed in an Zink Magnelis (ZM310) frame.

1. Baffles with standard lining for dry cleaning. The air handling unit casing has large inspection doors for easy cleaning.
2. Baffles with a synthetic lining, ideal for wet cleaning. Each baffle is enclosed in a stainless steel frame. The air handling unit casing has large inspection doors for easy cleaning.

Attenuation dB	Mid-frequency Hz							
	63	125	250	500	1000	2000	4000	8000
Geniox, length 600	3	7	11	18	29	32	29	20
Geniox, length 900	5	11	17	25	36	39	36	28
Geniox, length 1200	7	15	23	32	43	46	42	36
Geniox, length 1500	9	18	28	39	50	53	48	41
Geniox, length 1800	10	21	34	46	55	58	54	47

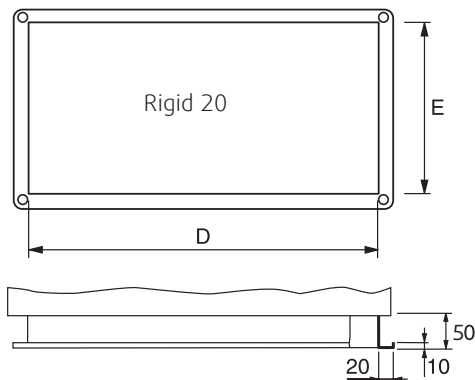
# Duct connection part

The connection part is used when connecting duct work to the Geniox air handling unit, either as rigid connection or as rigid and flexible connection.

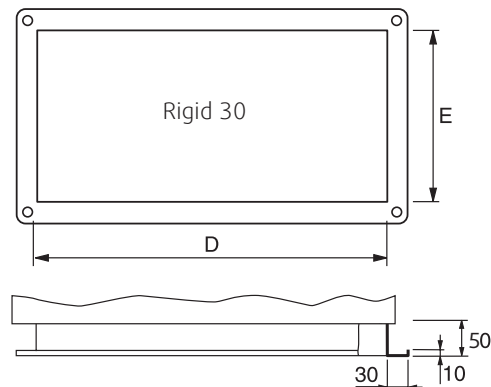


## Dimensions

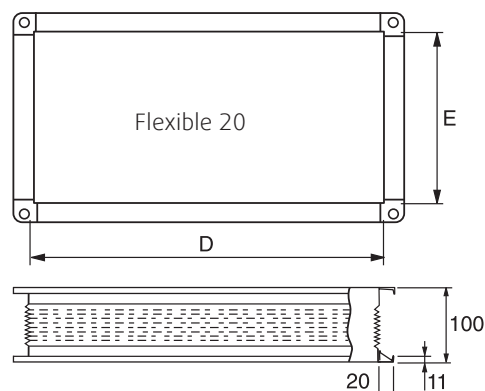
Unit size			10	11	12	14	16	18	20	22	24	27	29	31	35	38	41	44
Variants	End of unit	D	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	2900	3100	3400	3400	4000	4000
		E	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1900	1900	2200
	Top half face	D	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	2900	3100	3400	3400	4000	4000
		E	300	300	400	400	500	500	600	600	700	700	800	800	900	1000	1000	1100
	Top full face	D	1000	1100	1200	1400	1600	1800	2000	2200	2400	2700	2900	3100	3400	3400	4000	4000
		E	500	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1900	1900	2000
	Back of unit	D	600	600	700	900	900	1100	1100	1300	1300	1500	1700	1900	1800	1800	2100	2100
		E	500	550	600	700	800	900	1000	1100	1200	1300	1400	1500	1700	2000	2000	2300



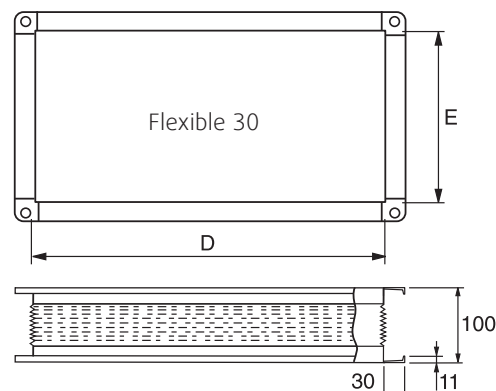
Rigid connection part for connecting to 20 mm LS profile for C-rail, and for 20 mm EP/LSM profile with holes in the corners.



Rigid connection part for connecting to 30 mm EP/LSM profile with holes in the corners.



Flexible connection part for connecting to 20 mm EP/LSM profile with holes in the corners. For mounting in continuation of rigid connection part.



Flexible connection part for connecting to 30 mm EP/LSM profile with holes in the corners. For mounting in continuation of rigid connection part.

## Inspection section

The inspection section is used where the option of service, inspection, or measuring is required, before or after an air handling function.



### Construction

The inspection section consists of an empty unit casing with an inspection door.

### Accessories

Inspection window fitted into the inspection door.

- LED lamp with external switch.
- Pressure outlet tab.

## Empty section

Used in units where space is required to fit a component, e.g. a temperature sensor, or to have the option of applying an extra air handling function at a later date.



### Construction

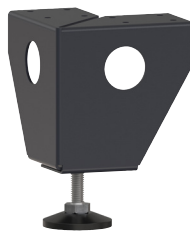
The empty section consists of an empty unit casing, where the side panels are assembled with screws.

### Accessories

- LED lamp with external switch.

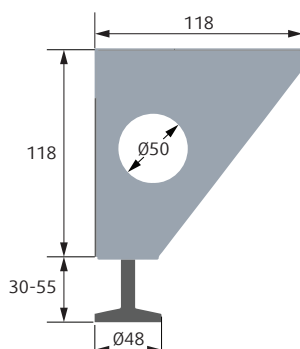
## Supporting legs

Units in sizes Geniox 10-18 for indoor installation can be supplied with supporting legs.



### Construction

Supporting legs are made of Magnelis ZM310. Pre-painting in RAL 7024 of the supporting legs is an option. They are 118 mm high, and have feet which are adjustable from 30-55 mm.



## Assembly brackets

The assembly bracket is designed to ensure an airtight connection between the casing sections.



### Assembly brackets

For air handling units divided in sections, the assembly brackets are mounted externally. Screws and nuts are delivered separately. For air handling units mounted on a base frame and assembled in the factory, the assembly brackets are mounted inside the unit. The brackets ensure that the sections are aligned at the end of the assembly.

### Construction

The brackets are made of zinc and pre-painted in dark grey.

# Outdoor air section

The outdoor air section is used for air intake and outlet in roof units.

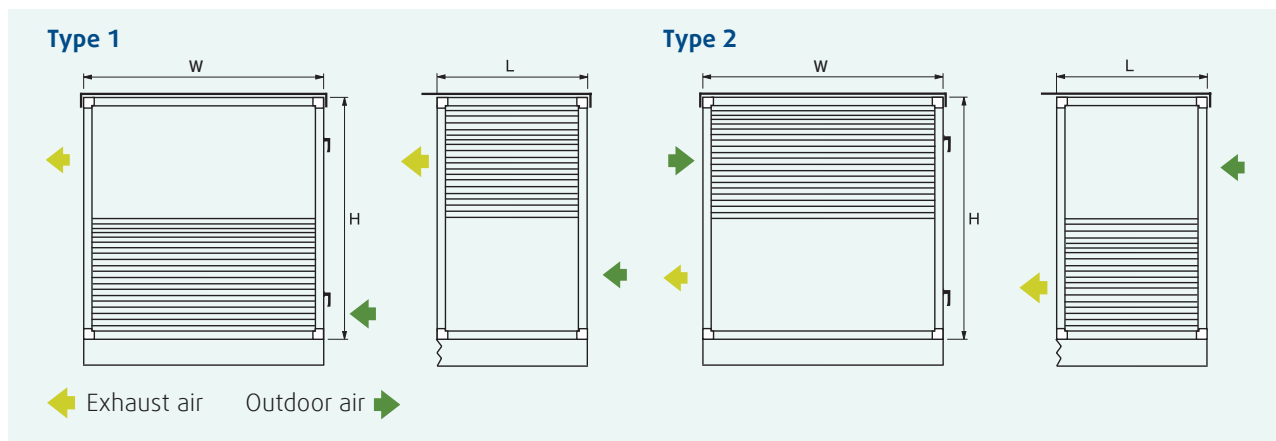


## Function

The outdoor air section has air intake through the end of the unit, and outlet of exhaust air through the back wall of the unit.

## Construction

The outdoor air section consists of an air handling unit casing with inspection door. The openings for air intake and outlet have louvers for effective protection against rain and snow. The outdoor air section can be delivered pre-painted.



## Dimensions

Unit size	10	11	12	14	16	18	20	22	24	27	29	31
Width (W)	1082	1182	1282	1482	1682	1882	2082	2282	2482	2782	2982	3182
Height (H)	1082	1182	1282	1482	1682	1882	2082	2282	2482	2764	2964	3164
Length (L)	600	600	800	900	1000	1100	1200	1300	1400	1500	1700	1900



# Standard base frame and base frame with high legs



Standard base frame  
in a pre-painted version



Base frame with high legs

## Standard base frame

Units for indoor installation can be supplied with base frame in height 118 mm with  $\varnothing$  50 mm holes or 218 mm with  $\varnothing$  80 mm holes. The base frame has feet which are adjustable from 30-55 mm.

Minimum length of base frame is 400 mm. Maximum length of the base frame is 6000 mm for units Geniox 10-24 and 4600 mm for units Geniox 27-31. Longer units are supplied divided on two or more base frames. The base frame is self-supporting, but as a minimum it must be supported in each corner and on the longitudinal profiles for each 1500 mm.

## Construction

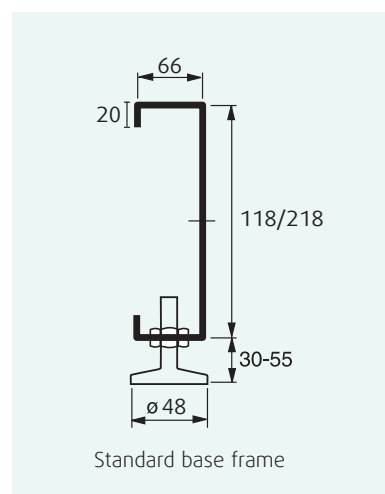
The base frame consists of strong, galvanized steel profiles, 118 mm or 218 mm height assembled with bolts. The unit can be delivered installed on the base frame from factory, or the base frame can be delivered separately.

Pre-painting in RAL 7024 of the base frame is an option.

## Base frame with high legs

It is possible to choose additional high legs for base frames. These legs will always be 250 mm high and they will be delivered with feet which can be adjusted 120 mm. This facilitates easy access for cleaning under the unit. The length and width of the unit determines the number of legs needed. Pre-painting is an option for the base frame as well as for the high legs.

High legs is installed at the factory up to Geniox 20. For bigger sizes legs will delivered separately.



## Geniox air handling units for outdoor installation

Geniox air handling units for outdoor installation are supplied with 218 mm base frame with  $\varnothing$  80 mm holes.

For Geniox 10 to 18 the base frame can be supplied with 118 mm base frame with  $\varnothing$  50 mm holes, as an option.

As extra protection against corrosion, base frames for outdoor installation can be supplied pre-painted. The unit will always be installed on the base frame when delivered.

# Base frame with forklift holes



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## Geniox air handling units for indoor installation

In order to save time on the building site it is an option to choose a unit delivered on a base frame with forklift holes. This is an option for Geniox sizes 10-31 (not applicable for units with heat pumps).

## Construction

The height of the base frame is always 118 mm. Minimum length of section is 700 mm in order to ensure enough space for the forklift holes. The unit will always be installed on the base frame when delivered, and the base frame will be adjusted to the lengths of the unit sections, max. 2882 mm. The base frame is made of 3 mm galvanized steel sheets. The base frame can be delivered pre-painted, RAL 7024.

