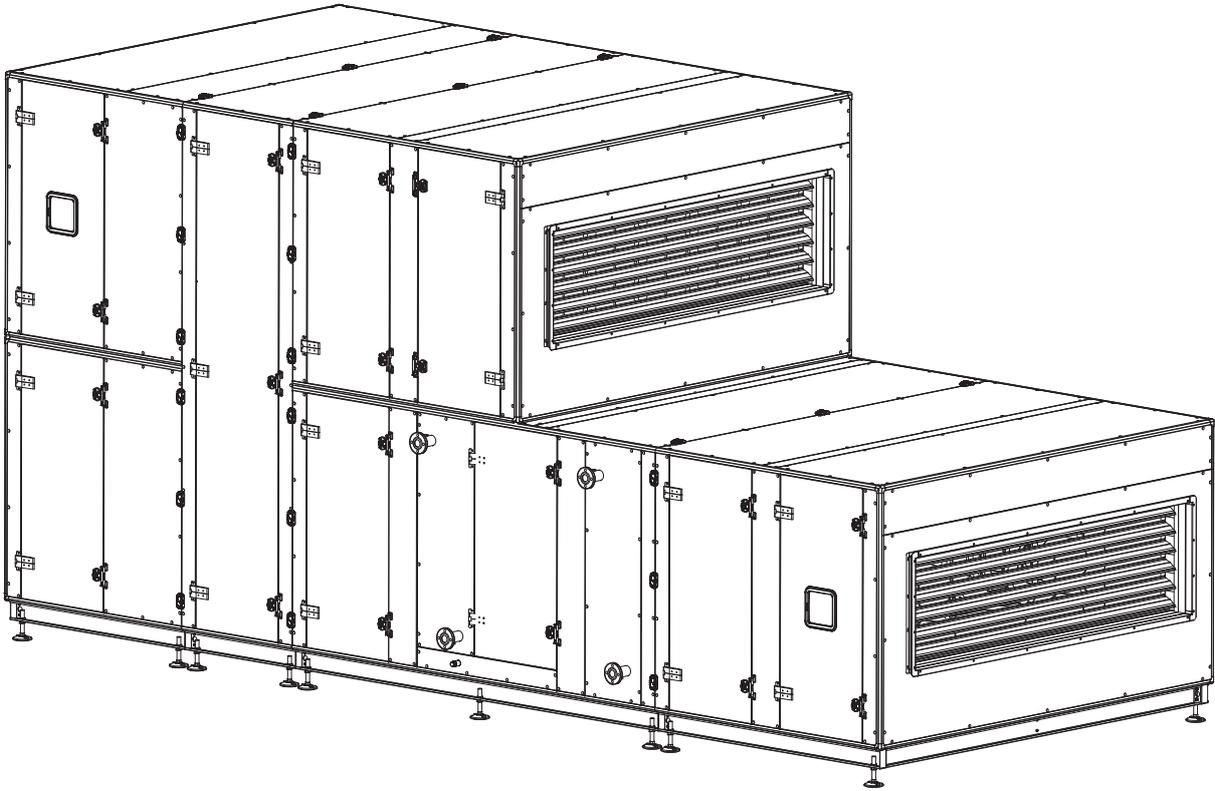


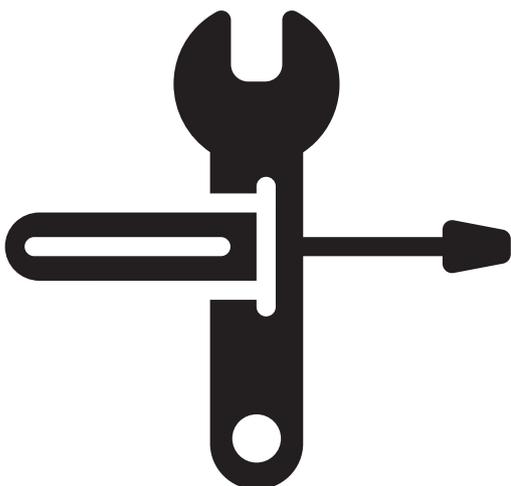
# EVO-POOL

AIR HANDLING UNITS



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# General Information

## Foreword

### General

EVO-POOL air handling units (AHUs) have been designed and manufactured in accordance with the CE machine directive. In order to guarantee safe operation and use of the unit, please carefully read and observe the instructions in this document and pay special attention to the warnings that apply to this unit. Any modifications in the design and/ or installation of the AHU that are carried out without discussion with AERA and without advance written agreement will result in the loss of the right to any warranty claims and any claim for injury to personnel as a result of these modifications. All work must be carried out by sufficiently trained personnel.

### Warnings and cautions

Warnings and Cautions appear at appropriate sections throughout this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The constructor assumes no liability for installations or servicing performed by unqualified personnel.

**WARNING!:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION!:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or for equipment or property-damage-only accidents.

### Safety Considerations

To avoid death, injury, equipment or property damage, the following recommendations should be observed during equipment operation:

1. The units are suitable for ambient air temperature between -20°C and +60°C and for air flow temperature between -20°C and +40°C. Different conditions need written confirmation from the manufacturer.
2. Care should be taken by the user to prevent frost in coils. For ambient temperatures below 0C make sure that water inside the cooling coil is removed during winter and a minimum of 25% Ethylene Glycol is added to heating water circuit.
3. Components - Some OEM products have specific manufacturer's service instruction documents. These are delivered with the Air Handling Unit. In this case, the indications in the OEM manual are valid and the service handbook in hand has only general or complementary character for the relating components.
4. Liquid and gas storage -Maximum working pressure for all coils is 15bar. In case of coil connections to higher working pressures, any warranty relating to coil tightness and personnel safety is excluded.
5. Tubing filled with mediums with very high or low working temperatures are to be insulated with suitable materials to avoid burn or scald injuries caused by contact.
6. As fire prevention, fire dampers are to be provided where ducts cross firebreaks. Local fire prevention code is to be observed carefully.
7. In case of external electrical heater usage, the operation of the heater and AHU must be interlocked and appropriate safety components are used in the electrical circuit.

To avoid death, injury, equipment or property damage, the following recommendations should be observed during maintenance and service visits:

1. The maximum allowable pressures for system leak testing on low and high pressure side are given in the chapter "Installation". Always provide a pressure regulator.
2. Disconnect the main power supply before any servicing on the unit.
3. The Air Handling Unit control system must guarantee that in case of breakdown or power interruption during maintenance or repair work, the unforeseen start-up of a shut off unit is impossible.
4. Service work on the refrigeration system and the electrical system should be carried out only by qualified and experienced personnel.
5. For inspection on the Air Handling Units and to avoid risks, the units surroundings are to be sufficiently lighted.
6. Heat exchangers filled with refrigerants must be serviced by specialized personnel. Waste disposal or recycling of dangerous refrigerants must done in accordance with all international, national, and local regulations.
7. Where units are installed in areas with high temperature and/or high humidity, the risks of external condensation on the casing must be considered.

# General Information

## Reception

On arrival, inspect the unit before signing the delivery note.

In case of visible damage: The consignee (or the site representative) must specify any damage on the delivery note, legibly sign and date the delivery note, and the truck driver must countersign it. The consignee (or the site representative) must notify AERA. And send a copy of the delivery note. The customer (or the site representative) should send a registered letter to the last carrier within 3 days of delivery.

## Warranty

Warranty is based on the general terms and conditions of the manufacturer. The warranty is void if the equipment is repaired or modified without the written approval of the manufacturer, if the operating limits are exceeded or if the control system or the electrical wiring is modified. Damage due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation. If the user does not conform to the rules of this manual, it may entail cancellation of warranty and liabilities by the manufacturer. Electrical motors are factory-tested and properly run when leaving the factory. Any wiring faults on motors will cause damage for which AERA cannot be held responsible.

- The control package ( either bought from AERA as an accessory or sourced from a third party) must include frost protection routines and components to prevent freezing damage of internal components (coils, heat recovery devices, humidifiers, ...)
- Electrical connections may become un-tightened during transport. All electrical connections should be checked and re-tighten prior to commissioning. All electrical connections shall be made according to the wiring diagrams provided on the components or in provided documents. Warranty is not valid if electrical components are not connected properly.
- When the unit use a medium (water/ refrigerant) with a temperature below than +2°C, The unit controls should be designed in order to protect the exchanger against freezing. AERA cannot be held responsible for damages coming from freezing / de-freezing operation.
- The warranty does not cover overheating due to wrong use or improper control of electric heaters.
- Dismantling or changing the units and/or components without AERA approval or assistance will invalidate the warranty.
- EVO-POOL units have been manufactured according to the selections and drawings provided with the order: AERA cannot be held responsible for eventual non compliance to original specifications or specific requirements outside the order.
- In order to avoid fan motor overloading, the units shall be started with filters and other components fitted correctly, the ductwork connected to the units and the access doors closed.
- Make sure the units work at design (Air flow/Pressure) conditions. The sound levels of the units can vary a lot depending of the fan speed, the filter conditions or the actual duct pressure drops. Also, the given sound levels can be highly affected by the installation method, the peripheral components, the ductwork and the acoustic characteristics of the building/room.
- The units must be controlled in order not to exceed the maximum or minimum differential pressure drops on plate heat exchangers indicated in the technical data sheets. The efficiency of the exchanger may drop significantly in higher / lower air volumes and/or uneven air flows.

## Maintenance Agreement

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

# Transport Installation

## Storage and preventive maintenance

In case of external storage, units must be protected from adverse weather conditions. With internal and external storage, the unit must also be protected against everyday damage. To avoid defects on the bearings, the fans and the motors must be manually turned every month. If the units are not running for more than 18 months, the grease in the bearings must be changed. When possible, all electrical equipment and fan belts should be removed and stored separately in dry atmosphere. In case of long term storage, belts shall be removed in order to avoid stress on the bearings.

## Off loading and handling

EVO-POOL units are supplied in section modules, or as a complete unit, in accordance with the relevant assembly drawings. Any necessary use of force during unloading or movement of the units must only be applied via the unit base frame or the shipping pallet.

The unit unloading and handling can be carried out easily with the use of a forklift or crane. For sections lighter than 1000 kg, the unit can be lifted from the transport lugsb delivered separately.

Figure 1 - Crane operation procedure

1. Do not stand on the units. If this is unavoidable ensure a more even weight distribution by the use of boards.
2. Use battens to prevent damage of the top and sides of the units.

The forks must only be applied under the unit base frame and not against it.

Note: The lift point should be as near as possible to the centre of gravity. The centre of gravity of each section is located at the centre of the unit length, with the exception of the fan sections for which the centre of gravity is located towards the motors (see Figures 2 and 3).

**CAUTION!** Never lift the units by the heat exchanger connections or by any other projections. Do not tilt the fan module to avoid possible impingement on the dampers.

Sections can be delivered provided of feet, pallets done by wooden blocks positioned on each corner, base frame, base frame base provide of fork holes.

In the case of section is provided of base frame without any fork holes or without feet, insert the fork of the lift below the section lifting it by a lever action. In this case, the bar must only bear against the base frame or profile (see Figure 2).

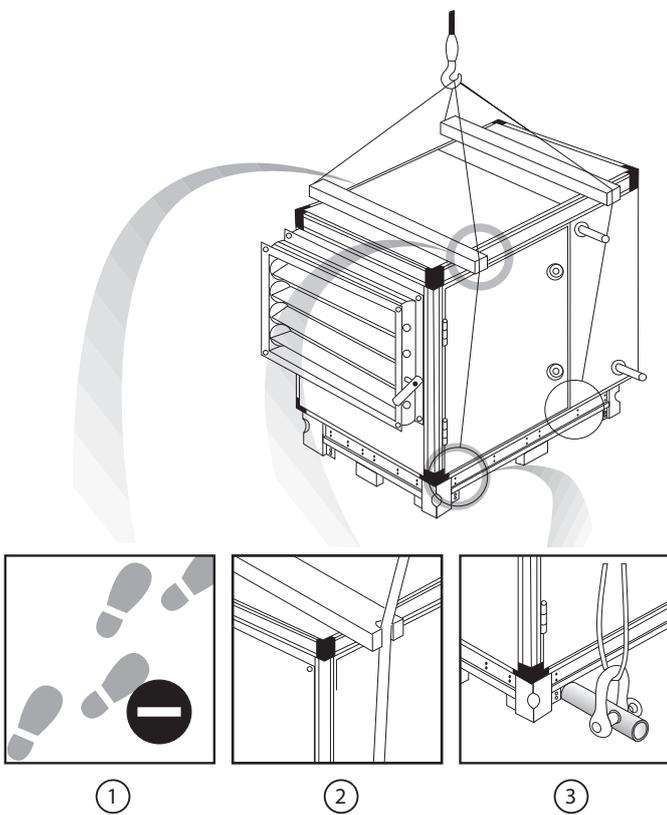


Figure 2

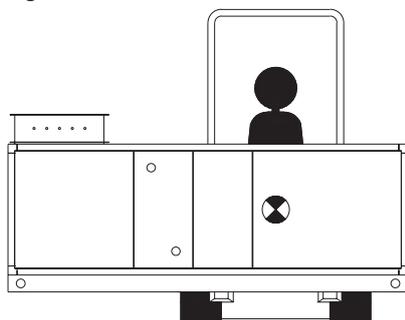
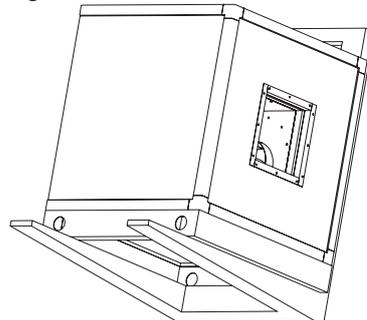


Figure 3



# Transport Installation

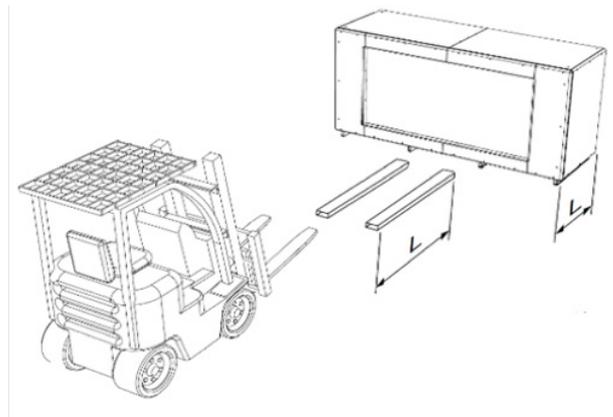
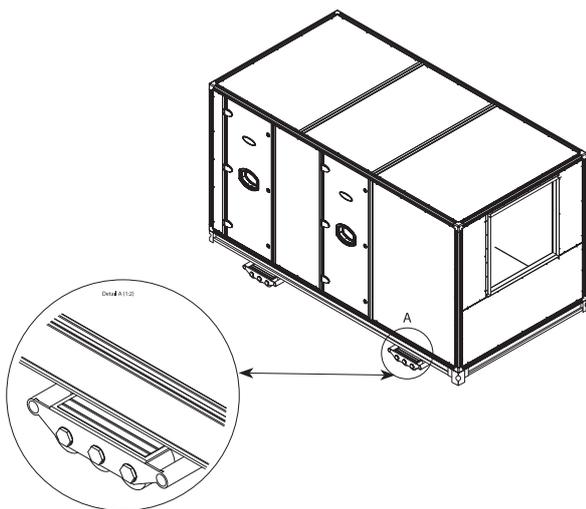
With larger units, the use of several forklift may be required.

When rigging the unit by crane, follow these guidelines:

1. If lifting holes are provided on the unit base frame, sling spreader bars (see Figure 1, part 3).
2. If lifting holes are not provided, see Figure 1 part 4
3. If, as option, lifting points (eye bolts) are provides, crane belts can be connected directly to them.
4. The minimum rated lifting capacity (vertical) of each sling and spreader bar should be no less than the shipping weight
5. The unit must be lifted with care, avoiding shock load by lifting the unit slowly and evenly.
6. All lifting points in one axis of the unit must be used when offloading and moving the unit.
7. Slings are to be provided by the rigger and attached to all lifting points.

**CAUTION!** Loading, unloading and removal of single sections have to be carried out by employing means able to support the unit weight indicated in the technical sheet. Ensure that the belts do not damage the top surface of the unit structure using proper devices.

Note: Units fitted with base frames may be moved on roller trolleys or tubular rollers (see Figure 4).



## CAUTION!

Supporting and lifting under the cross beams or coils is prohibited. No horizontal transport devices must be placed under this frame section such as pallet lifters or the forks of fork lift trucks.

## ATTENTION

Before transporting the device make sure that the forks of forklift truck are sufficient length that will come out from the opposite side of the device!

# Installation and Assembly

## Installation and Assembly



You will find information regarding the assembly and installation of the unit. This may only be carried out by specialists with the necessary knowledge of relevant accident prevention regulations and other standard regulations relevant to health and safety in the workplace, based on their training and experience.



The unit should be installed in such a way that it is accessible only to technical personnel with the appropriate authorisation and training. The unit may only be assembled in accordance with the application shown in the technical information supplied with the unit.

The units must not be stacked with other components that are not part of the unit.

This is only permissible if the necessary load-bearing capacity has been specially incorporated into the units delivered from AERA

When connecting the duct it must be ensured that no foreign materials can enter the unit. If necessary, a suitable wire mesh guard can be installed by the third party at the opening on the discharge/intake side of the unit.



### DAMAGE TO THE UNIT!

During installation of EVO-POOL units special care must be taken to ensure that no loads are applied to the floor panels. During assembly work suitable measures should be taken to ensure that any loads are spread across the bottom profiles (e.g. using grid walkways).

## Installation

### Installation location

The unit must be installed at a location that fulfils the following requirements:

- The substructure must be level and stable.
- The maximum deflection of the substructure may not exceed 4 mm per metre.
- In units where a condensate drain is installed, the height of the substructure must be at least the same as to the required siphon height (see siphon).
- Make sure that no damage to the installation location or the environment can be caused by loose components.
- In order to be able to remove fans, heat exchangers, droplet eliminators, etc. and also perform servicing and maintenance, a minimum clearance of one unit width must be maintained on the operating side.
- A minimum clearance of 600 mm between the rear of the unit and the wall must be maintained if the internal dividing joint connectors cannot be used due to the unit configuration.
- Evo-pool has easily adjustable feet. Make sure that the device is placed on a flat surface before any assembly work. Change the height of the feet to leveling the device. Height "H" can be maximum 90mm

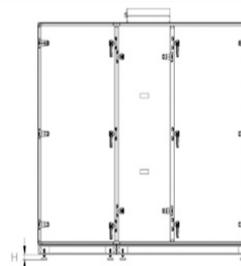
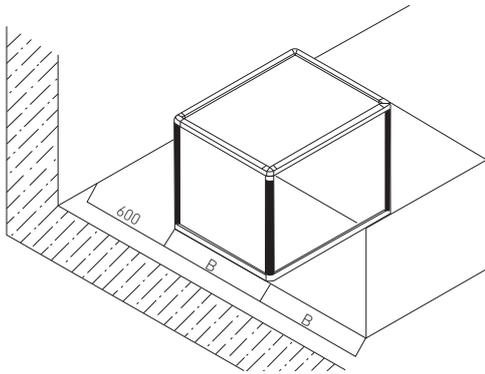


Figure 5: Adjustable Feet

# Installation and Assembly



## Minimum clearances

- In order to be able to remove fans, heat exchangers, droplet eliminators, etc. and also perform servicing and maintenance, a minimum clearance of one unit width must be maintained on the operating side.
- A minimum clearance of 2300 mm between the rear of the unit and the wall must be maintained if the internal dividing joint connectors cannot be used due to the unit configuration.

## Foundation construction for outdoor installation (weatherproof, roof frame)



### NOTE!

EVO-POOL units for outside installation are not a substitution for roof! In compliance with prEN 13053 and VDI 3803 it is not allowed to use surfaces of weatherproof units to support parts of a building or in a similar way substitute a roof.

- Instructions for „Foundation construction for indoor installation“ on page 23 should be applied.
- If the unit has fresh air intake and discharge air make sure that the ducts are long enough so that the discharge air is not by-passed to fresh air intake.
- Choose an installation location where the fresh air intake will not be facing the main wind direction.
- In areas where there is a heavy amount of snowfall, the unit must be installed in a location where its operation will not be affected by snow. A suitable height for the subconstruction must be selected.
- If the unit is to be mounted on a roof, then the load-bearing capability of the roof and its supporting structure must be checked. Consult a structural engineer if necessary.
- The roof edge below the unit, as well as ducts and other roof openings must be performed waterproof by others.
- The roof frame must be insulated to prevent condensation

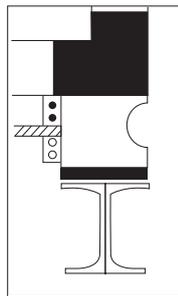


Figure 6: Foundation construction on steel beam by others

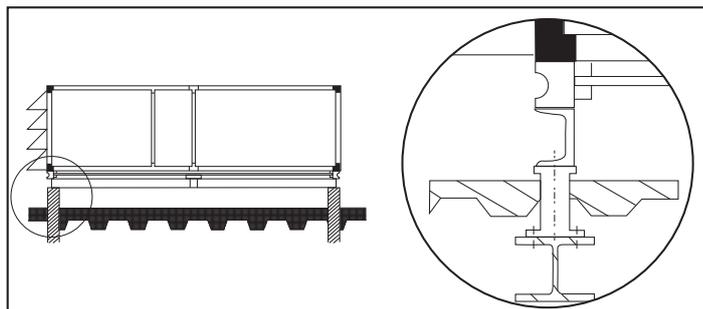


Figure 6-1: Foundation construction on steel supports by others

# Installation and Assembly



## NOTE

Particular care must be taken to ensure compliance with the precise dimensions of roof openings and to ensure that the foundation is level.

### Structure-borne sound attenuation

In order to reduce the transfer of vibrations from the unit to the supporting structure, anti-vibration mounts and structure-borne sound attenuating mats must be installed.

- We recommend that the foundation is isolated from the unit using rubber plates, for example, where the unit is installed on level ground and no special structure-borne sound isolation requirements exist.
- We recommend the use of commercially available spring elements for ceiling mounting.
- For very special acoustic requirements please consult an acoustics engineer to select the most suitable structure-borne sound attenuation method.

### Assembling the unit



## NOTE

For detailed information, please refer only to the documentation enclosed with the unit. Data sheet, installation instructions, small parts and accessories supplied loose can be found in the unit part specified in the parts list.



## DAMAGE TO THE UNIT!

Fittings/attachments etc. not provided by the manufacturer that could cause a leak must not be mounted on the walls or frame of the unit. The unit's operability must be maintained.

# Installation and Assembly

## Removing transportation lugs/device/locks

- All transportation lugs/devices/locks marked yellow on and in the unit must be removed prior to assembly.
- Remove the transportation locks on the external driven fan..
- The transportation lugs on the roof must be removed.
- Remove the screws on the end panels and secure the supplied M8 x 70 screw.
- Remove the lug, screw and bushing at the dividing joint, then secure the supplied M8 x 30 screw.

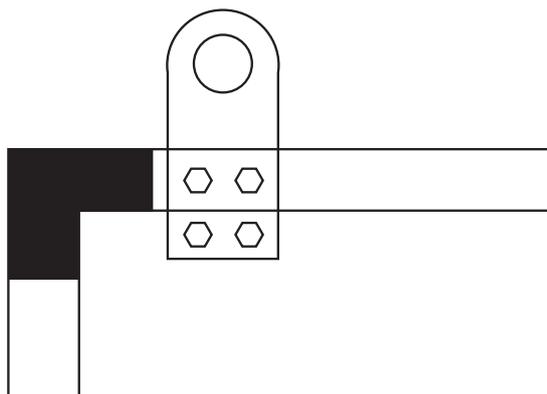


Figure 6-2: Transport lugs – roof, end wall and dividing joint



### NOTE!

Because of danger of collision with transport lugs - externally mounted dampers/louvres, flexible connections are partially supplied loose. These components are field-mounted and sealed by others.



### NOTE

Transportation lugs/device must not be used to suspend the units on a permanent basis. Transportation lugs/device may be used only once.

# Installation and Assembly

## Installation of individual modules

To assemble individual modules (dividing joint) proceed as follows:

- Do not forget to attach the sealing seal between the two modules while assembling the modules. Once you have connected the modules, make sure you stick the two modules with silicone.

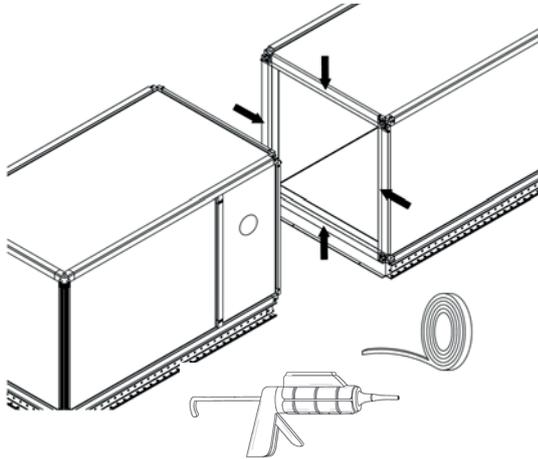


Figure 6-3: Installing individual modules



### DAMAGE TO THE UNIT!

Do not attach tensioning belts/hoisting devices to heat exchanger connections, condensate drains and door handles or use these to pull or push the equipment!

- Position the unit parts as close to one another as possible prior to assembly. Only use the unit base frame to pull the individual components together. Units that do not have a base frame must be pulled together with tensioning belts. These must be positioned around the profiles in the base or roof area.

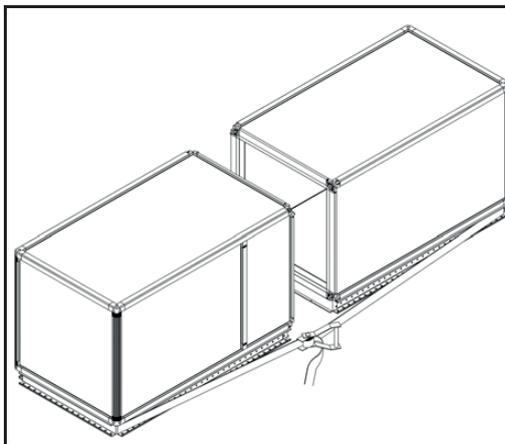


Figure 6-4: Unit with base frame

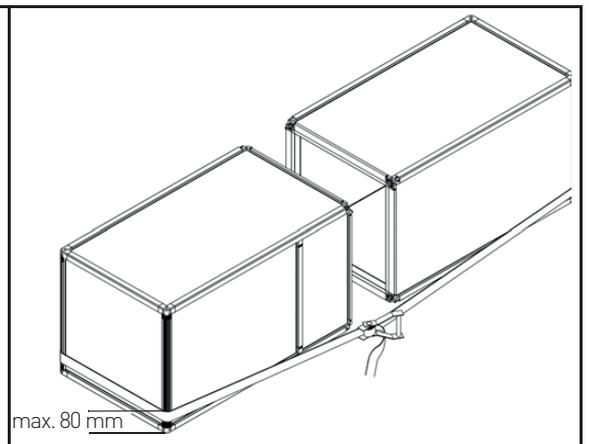


Figure 6-5: Unit without base frame

# Installation and Assembly

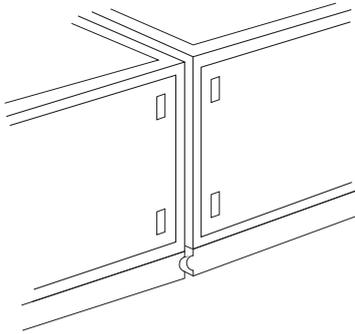


Fig. 6-6: Internal view

- If the rear of the unit is not accessible, screw the interior dividing joint connectors in the corner together.

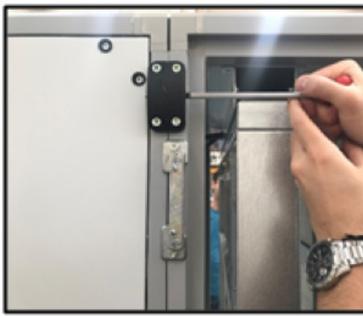


Figure 6-7: Connecting unit parts

- Before joining the sections for final assembly position, them as close to one another as possible. Use the unit base frame only to pull the sections together

Bring modules closer together and tighten the bolt

- Seal pipe and cable ducts to prevent air leakage and condensation using Polyurethane foam, or similar insulation material (not included in EVO-POOL delivery scope).

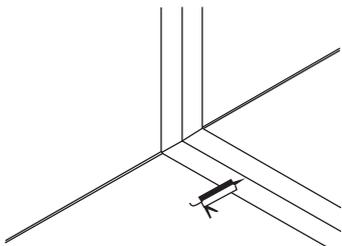


Figure 6-8: Dividing joints.

## Additional measure for double-deck/side by side units

- Connect both unit parts using the provided plates.
- Bring modules closer together and tighten the bolt

## Additional measure for hygiene units

- Clean and seal all internal dividing joint grooves in the floor area. The sealant is included in the scope of delivery for hygiene units.

# Installation of Components and Accessories

## Installation of Components and Accessories



In line with the connection of heat exchangers, humidifiers etc., the coil connection may only be carried out by specialists with the necessary knowledge of relevant accident prevention regulations and other standard regulations relevant to health and safety in the workplace, based on their training and experience.



### DAMAGE TO THE UNIT!

When mounting EVO-POOL units care must be taken to ensure that no loads are applied to the floor panels. During installation work suitable measures should be taken to ensure that any loads are spread across the bottom profiles (e.g. using grid walkways).



The door handles are packaged separately to avoid damage during the transport. Install the door handles after the unit is placed on floor and leveled.

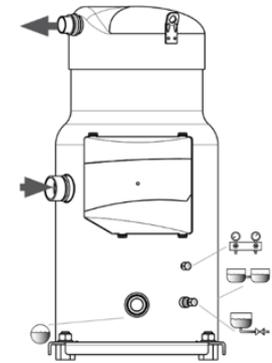
- Place the door handle and tighten the screw as shown below.

### Prerequisites

- Check the unit for external damage and check whether it has been properly assembled and anchored.
- Check whether anti-vibration and structure-borne sound attenuating mats have been provided. This means that either:
  - the foundation has been isolated from the unit using rubber plates (for example) where the unit is installed on level ground and no special structure-borne sound isolation requirements exist;
  - or, in the case of ceiling mounting, commercially available spring elements have been used;
  - or, where very special acoustic requirements exist, an acoustics engineer has been consulted when selecting the most suitable structure-borne sound attenuation method.
- Before you start with the coil connection, check the following:
  - Drain valves must be installed at all low points in the water system to ensure that the water circuit can be fully drained in order to carry out maintenance or repairs.
  - A water drain with shut-off valve must be installed in order to drain the unit's water system.
  - Air vents must be installed at all the high points of the water system at easily accessible locations.
- Ensure that the piping system is flushed through until it is clean by others and a cleaning record compiled.

# Installation of Components and Accessories

## Compressors



The system must be monitored after initial start-up for a minimum of 60 minutes to ensure proper operating characteristics such as:

- Proper metering device operation and desired super heat readings,
- Suction and discharge pressure are within acceptable levels,
- Correct oil level in compressor sump indicating proper oil return,
- Low foaming in sight glass and compressor sump temperature 18°F above saturation temperature to show that there is no refrigerant migration taking place
- Current draw of individual compressors within acceptable values (max. operating current)
- No abnormal vibrations and noise

### Installation of air control and air conveying components

In order to prevent the transmission of structure-borne sound, a tension-free connection between air ducts and the unit must be made using elastic connectors or structure-borne sound attenuators

If you are connecting air ducts to the units via flexible connectors, the installation length of the connectors must be less than their extended length.

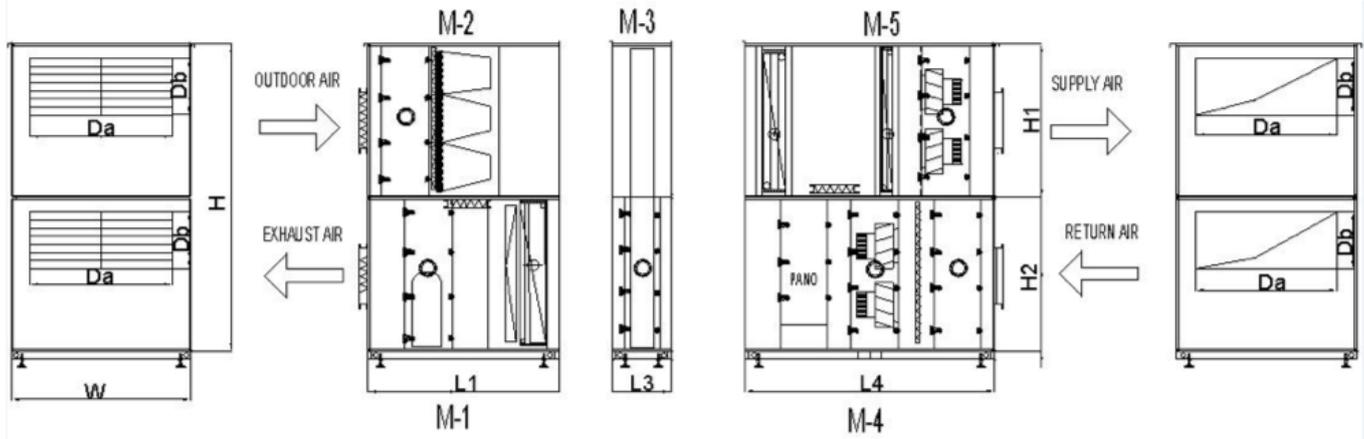
### Installation of air handling components with coil connection

Recommendations on water quality for heat exchangers that operate using low pressure hot water (LPHW) and chilled water:

A good water quality – e.g. salt and lime-free drinking water – increases the lifetime and efficiency of the heat exchanger.

- Check the limiting values shown in the table annually to prevent damage to the hydraulic system and its components. If necessary inhibitors must be added.

# Technical Specifications And Dimensions

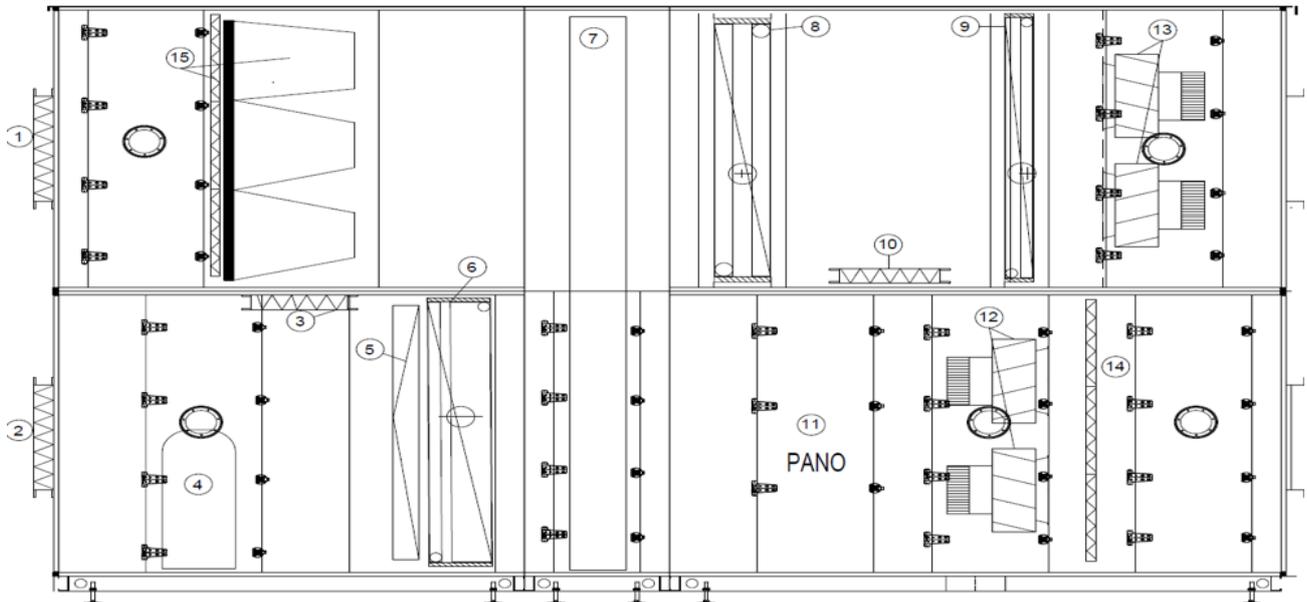


Technical Specifications		
Evo-Pool 300		
Air Flow Rate [m <sup>3</sup> /h]	30000	
External Static Pressure-Return [Pa]	300	
External Static Pressure-Supply [Pa]	400	
Fan-Motor Type	EC	
Compressor Electrical Power [kW]	25,19	
Compressor Technology	Scroll	
Compressor Number Of Piece	2	
Width [mm]	W	2235
	H	3860
Height [mm]	H1	1930
	H2	1930
	L1	2377
Length [mm]	L3	737
	L4	3112
	Connections	Da
Db		710
Refrigerant	R407C	

Aera Evo-pool units are used for energy efficient dehumidification in swimming pools and humid rooms. Thanks to their modular design, units can be configured individually to meet particular air handling requirements and specifications. Evo-pool devices are designed to operate fully automatically to ensure the highest energy efficiency and optimum thermal comfort without the need for operation mode selection. The aim is to meet the customer specifications concerning required air volume and conditions.

Aera Evo-pool 300 unit has 5 module which are M-1, M-2, M-3, M-4 and M-5. Outdoor air intake connection and exhaust air outlet connection provided with damper. Dampers dimensions are indicated in the table

# EVO-POOL Components



- 1.Outdoor Damper
- 2.Exhaust Damper
- 3.Mixing Damper
- 4.Compressors
- 5.Drop Eliminator
6. Evaparator
- 7.Heat Recovery (Heat pipe)
8. Condenser
- 9.Heating Coil
- 10.Bypass Damper
- 11.Control Panel
- 12.Exhaust Fans
- 13.Supply Fans
- 14.G4 Filter
- 15.G4 and F7 Filter

# Evo-Pool Operating Functions

Evo-pool devices are designed to operate fully automatically to ensure the highest energy efficiency and optimum thermal comfort without the need for operation mode selection. When the desired thermal conditions are entered in the control system, the automation system will run the appropriate operation mode.

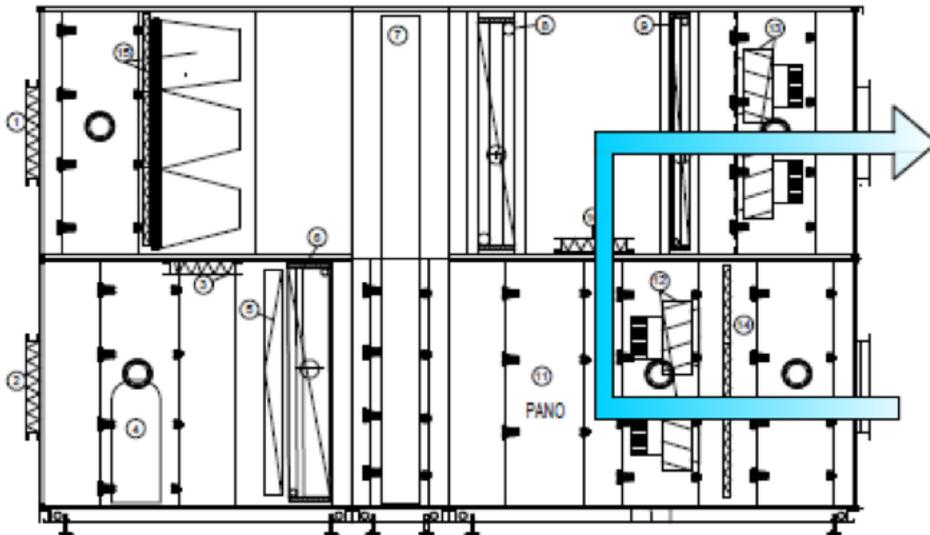
After setting desired temperature and humidity values;

## 1.If Extract Air Absolute Humidity is less then Absolute Humidity Setpoint;

There is no need for dehumidification, the compressors do not work. Unit will operate depend on fresh air need;

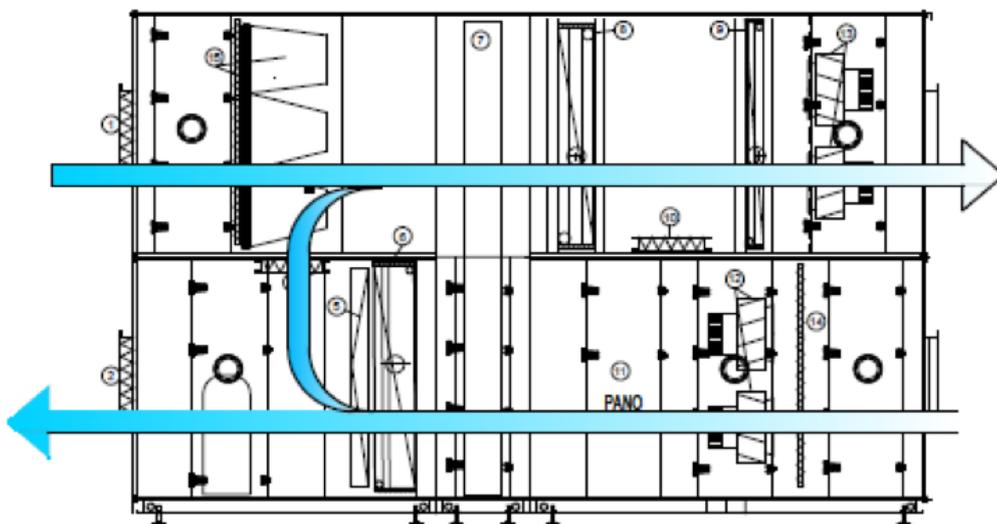
### a.Amount of CO2 is less than setting value(ppm);

The device operates in mixing mode for energy efficiency. In the meantime, for the set temperature value, the heater coil will be activated if required.



### b.Amount of CO2 is greater than setting value(ppm);

Outdoor damper is %30 open and mixing damper is %70 open, also bypass damper is closed,



# Evo-Pool Operating Functions

## 2. If Extract Air Absolute Humidity is greater then Absolute Humidity Setpoint;

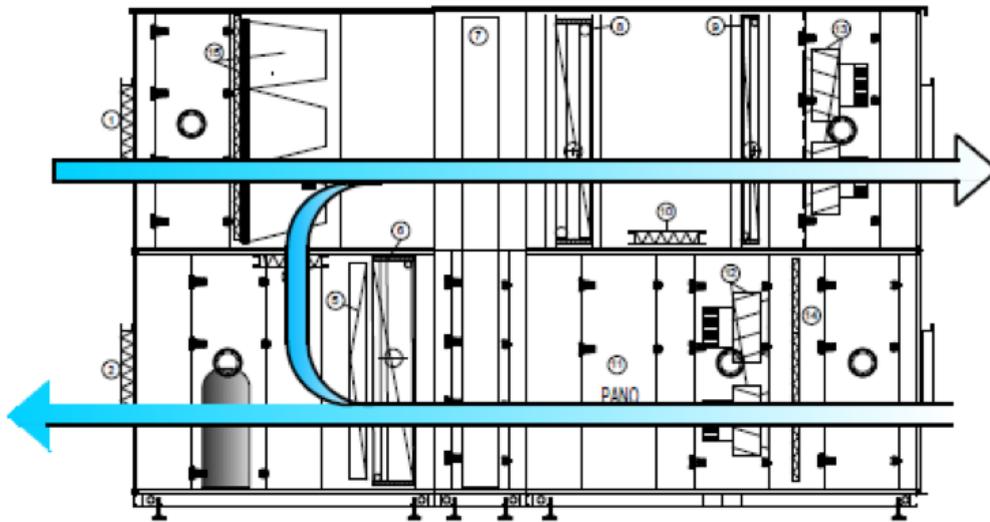
Dehumidification proces is needed. At this point the automation system will adjust the amount of moisture with the optimum energy level according to the conditions below;

### a.Outdoor Absolute Humidity is less then Extract Air Absolute Humidity;

Depending on the temperature setpoint,

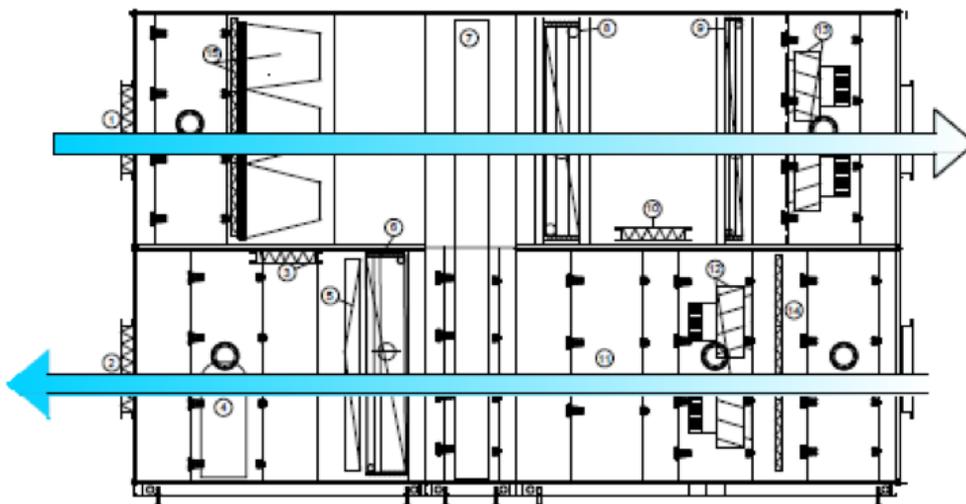
#### a.1.If outdoor temperature is below temperature setpoint;

Both compressors will be ON in sequence (1st compressors will be on after 30 seconds later 2nd will be on) and mixing damper is %70 open, outdoor damper is %30 open and also it will operate with bypass damper closed.



#### a.2. If outdoor temperature is greater than temperature setpoint;

Compressors are switched off, the device will operate with %100 fresh air and bypass damper is closed. In this operation mode, automation system will check dehumidification process, and no aduquate dehumidification is achieved (setting value(min)), the device will operate with a.1 condition.



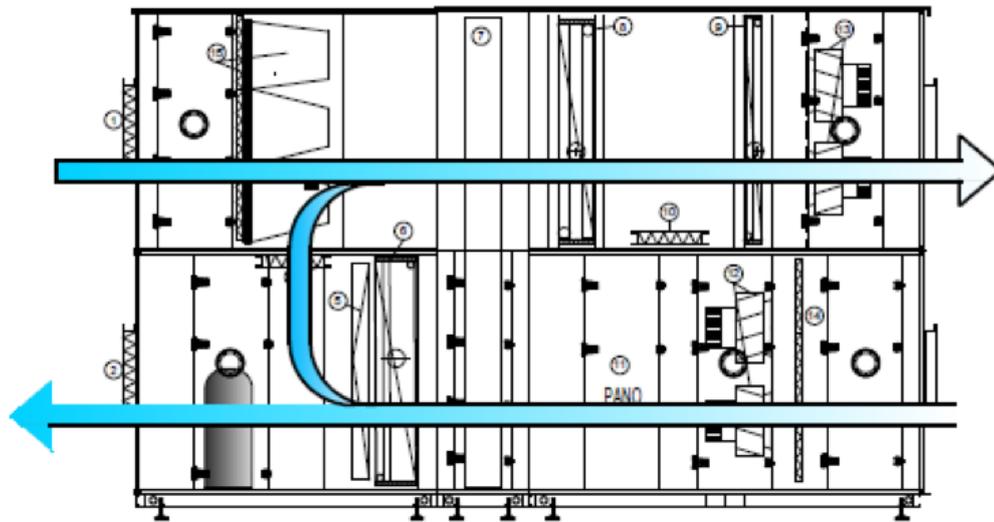
# Evo-Pool Operating Functions

**b. Outdoor Absolute Humidity is greater then Extract Air Absolute Humidity;**

Compressors are on and also,  
Depending on amount of CO<sub>2</sub> in building,

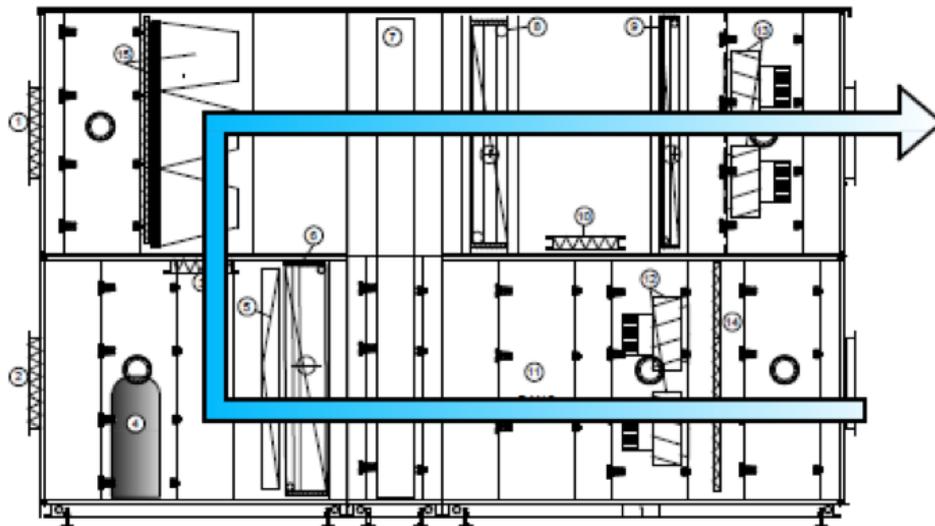
**b.1 Amount of CO<sub>2</sub> is greater than setting value(ppm);**

Outdoor damper is %30 open and mixing damper is %70 open, also bypass damper is closed,



**b.2. Amount of CO<sub>2</sub> is less than setting value(ppm);**

The device operate with mixing damper is %100 open, bypass and outdoor damper are closed.



# Evo-Pool Control System



Evo-pool units has Exocompact model controller and E3-DSP model display screens. This section will be about Exocompact and E3-DSP series.

## Communication

EXOcompact is capable of communicating via RS485 (EXOline, Modbus), TCP/IP (EXOline, BACnet/IP) and M-Bus.

### TCP/IP

The built-in TCP/IP port makes it easy to create systems spanning a very wide area. By using network infrastructure already in place for ordinary computers, installation costs can be greatly reduced.

Third generation EXOcompact offers TCP/IP communication 5-20 times faster compared to controllers of the second generation. EXOcompact with TCP/IP communication is available featuring 1 or 2 serial communication ports.

### Serial communication

EXOline and Modbus communication takes place via RS485. M-Bus functionality has been improved, and it is now possible to use EXOcompact with most types of meters.

### Displays

Third generation EXOcompact enables the use of both an internal and external display at the same time. The maximum permitted cable length for an external display is 100 m.

### Indications

The upper left corner of the controller contains a status indication. Alarm indications are shown in the display.

Designation	Colour	Description
P1 RxTx	Yellow/ Green	Port 1: Receiving/transmitting
P2 RxTx	Yellow/ Green	Port 2: Receiving/transmitting (not available on models with built-in M-Bus)
TCP/IP	Green/ Yellow	Fixed green: Link Flashing green: Traffic Flashing yellow: Identification
P/B	Green/ Red	Power supply/Low battery level

# Evo-Pool Control System

## E3-DSP External Display Unit

External display unit for operation of a third generation Corrigo E or EXOcompact, with or without built-in display and buttons. E3-DSP offers full external control of controllers mounted inside of a cabinet, etc.

### Technical data

Protection class:	IP30
Power supply:	Internal via communication cable from EXOcompact or Corrigo
Display:	Backlit, LCD, 4 rows with 20 characters
Character height:	4.75 mm
Dimensions (WxHxD):	115 x 95 x 25 mm
Working temperature:	5...40°C
Storage temperature:	-40...+50°C
Ambient humidity:	5...95 % RH

### Display

E3-DSP has a backlit display with 4 rows of 20 characters each. The display light is normally dimmed but is activated when a button is depressed. The display light will be dimmed again after a period of inactivity. E3-DSP can be connected to a controller with a built-in display, enabling both displays to be used simultaneously. The display menu system is handled using seven buttons:



### Installation

E3-DSP can be mounted on a wall or a device box (cc 60 mm). It can also be mounted on a cabinet front using the supplied magnetic tape.



# Evo-Pool Control System

When using this mounting, the cable should be led through the alternate outlet at the bottom of the wiring compartment (see the figure below). Prize the lid off and move the cable. Rotate the lid 180°, blocking the side outlet. Then mount the lid back on.



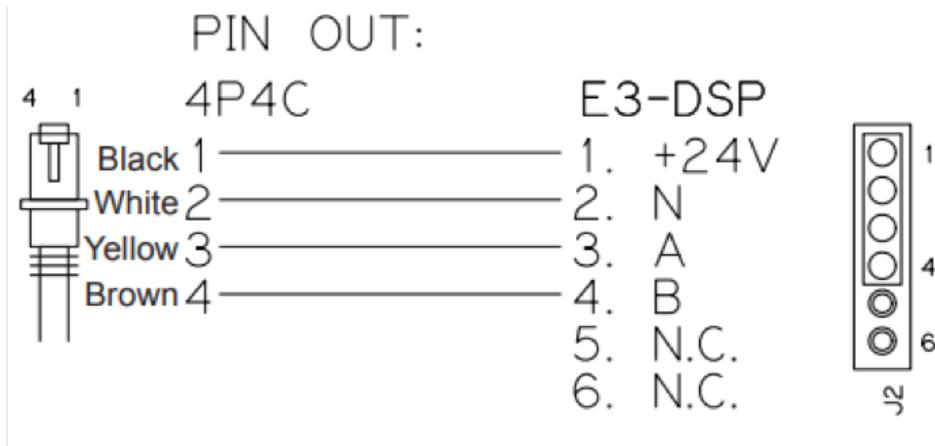
## E3-DSP buttons and icons

The display menu system is handled via seven buttons:

Designation	Function	Colour
	There are one or more unacknowledged alarm(s)	Flashing red
	There are one or more remaining, acknowledged alarm(s)	Fixed red
	You are in a dialogue box where it is possible to switch to change mode	Flashing yellow
	Change mode	Fixed yellow

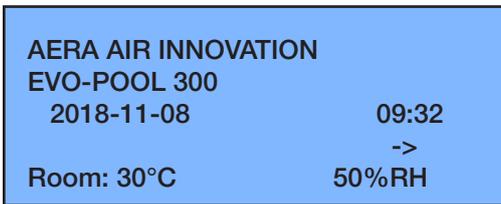
## Wiring

Wire the unit in accordance with the wiring diagram below



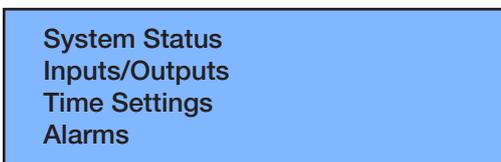
# Control Menus

Control system display meets with following screen

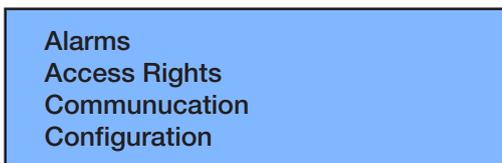


You can use  button to acces menus.

Main menus:



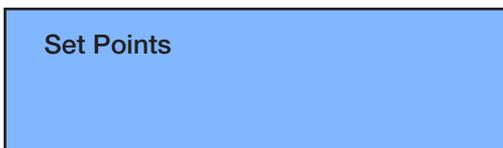
By using 



To enter sub menu, use  button

## System Status Menu

Under “**System Status**” menu;



## Set points

To set desired temperature, humidity and flow values, enter “**Set Points**” menu,  
Under “ Set Points” Menu

# Control Menus

Temp Set Points  
Ext Temp SP: 0 °C  
Season T.SP: 0 °C  
Sup Temp SP: 0 °C

Temperature set points can change under this submenu.

By using



Set Points  
Ext Hum. SP: 0 %  
CO2 Set: 600 PPM

Active sensors set points can change under this submenu.

By using



Flow Setpoints  
Sup SP: m3/h  
Ext SP: m3/h  
SupAct : m3/h  
ExtAct : m3/h

Air flow set points can change under this submenu

## HNA Mode

It shows operation mode which is activated

HNA Mode:

# Control Menus

## Inputs/Outputs Inputs Analog Inputs

Extract Temp: °C  
Supply Temp: °C  
Outdoor Temp: °C

Sensor actual values from temperatures sensors.

By using



Sup.Flow: m3/h  
Ext.Flow: m3/h  
Exh. Filter: Pa  
Sup. Filter: Pa

Sensor actual values from pressure transmitters.

By using



Active Sensors  
Return CO2: ppm  
Return Hum: %Rh  
Outdoor Hum: %Rh

Sensor actual values from active sensors.

By using



Heating V. FB:  
Mixing D. FB:  
Bypass D. FB:  
Outdoor D. FB:

Status information of dampers and heating coil valve actuator.

# Control Menus

## Digital Inputs

E-Stop	:Off
Remote On	:Off

Status information of E-Stop (Emergency Stop) and remote on switch

By using 

Cmp1 I. Term:	Off
Cmp2 I. Term:	Off
Cmp.1 Term:	Off
Cmp.2 Term:	Off

Status informations of Compressors internal termics and compressor protection circuit breaker alarm.

By using 

Cmp1 H.Pres. A:	Off
Cmp1 L.Pres. A:	Off
Cmp.2 H.Pres.A:	Off
Cmp.2 L.Pres.A:	Off

Status informations of Compressors low and high pressure alarms

## Outputs

### Analog Outputs

Heating Valve:	%
Outdoor Damp:	%
Mixing Damp:	%
Bypass Damp:	%

Analog output signals of heating valve and dampers

# Control Menus

## Digital Outputs

General Alarm:Off  
System: Off  
SAF:Off  
EAF:Off

Digital outputs signals of general alarm. Unit's status SAF(Supply air fan) and EAF ( Exhaust air fan) running status

By using



COMP 1: Off  
COMP 2: Off

Digital outputs signals of compressors running status.

## Time Settings

Time

## Alarms

Alarm History

Actual and alarm history list.

# Control Menus

## Access Rights

### Log On

Log on  
Enter password \*\*\*\*  
Cur.level: Operator

Default operator password : 3333  
Current level shows of authority level

To enter a password click  button and

Use  button to set first digit. And

Click  button to confirm first digit and for other

Digits use  button again

### Log Off

Log Off  
Yes  
Cur.level: Operator

### Change Password

Change password for  
Level : Operator  
New password: \*\*\*\*

Only admin level can access to change password

## Communication TCP/IP

Exoline address  
PLA:  
ELA:

By using



DHCP: Yes  
Set static IP →  
Running IP:  
111.222.333.444

# Control Menus

By using



**Running Subnetmask:**  
111.222.333.444  
**Running Gateway:**  
111.222.333.444

By using



**Running DNS:**  
111.222.333.444  
**MainComputer Status:**  
Not Connected

By using



**Active connection  
To Main Computer**  
Yes

By using



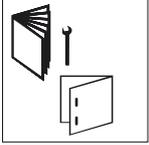
**TCP port routing  
To serial port:**  
1

## Configuration

To access configuration settings, must have admin authority

# Commissioning and Maintenance

## Commissioning and Maintenance



### NOTE

Data sheet and assembly instructions can be found on the inside of the equipment where this label appears. These documents must be removed prior to commissioning.

Several subassemblies and components must be commissioned separately. The relevant steps are listed in the following chapter.



### ELECTRICAL HAZARD!

The following applies for all maintenance and cleaning work: the doors of the unit may only be opened if the unit has been switched off and cannot be accidentally switched back on.



### DANGER DUE TO EXPLOSION RISK AREA!

Particular attention must be paid to safety information and (electrical) installation information for units operating in explosion risk areas. Noncompliance with these regulations may lead to explosions that could cause severe injury to persons and major damage to property!



### DANGER FROM ROTATING UNIT PARTS!

The fans do not come to a stand still immediately when the unit has been powered down. You should therefore wait for at least 5 minutes until the fans have come to a standstill before starting maintenance and repair work.



### DAMAGE TO THE UNIT!

When mounting EVO-POOL units care must be taken to ensure that no loads are applied to the floor panels. During installation and maintenance work, suitable measures should be taken to ensure that any load is spread across the bottom profiles (e.g. using grid walkways).



The maintenance intervals specified apply for air with normal levels of contamination. The maintenance intervals must be reduced accordingly for air with particularly high levels of contamination.



### NOTE

Cleaning should be carried out more regularly if the air contains oil as the sealing materials are only resistant to oil for a limited period. Only use alcohol-based disinfectants.

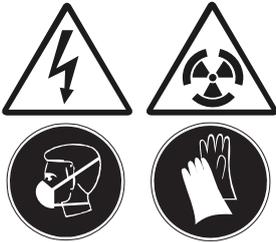


### PERSONAL PROTECTION

A mask and protective gloves must be worn when carrying out cleaning and specific maintenance tasks at the unit.

# Commissioning and Maintenance

## Basic cleaning and maintenance tasks



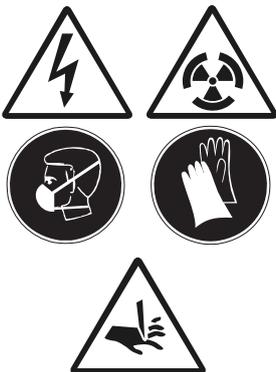
**ELECTRICAL HAZARD AND DANGER FROM ROTATING UNIT PARTS!  
OBSERVE PERSONAL PROTECTION MEASURES.**

In doing so, be sure to observe the safety information.

- Remove excess dirt by wiping it off using a dry cloth or, if necessary, an industrial vacuum cleaner.
- Remove dirt that accumulates due to the constructional installation of additional accessory parts.
- Other types of soiling: remove with a dry cloth, and wash off using a little water with added alkaline cleaning agent if necessary.
- Do not use abrasive cloths or tools that may scratch or scrape the protective surface during cleaning as this will cause irreparable damage.
- Treat galvanised parts with preservative spray.
- Apply lubricant spray to all moving parts, such as door levers and hinges – dampers excluded!
- Clean the seals on the inspection doors and check for leaks.

It is recommended that seals are treated with a moisture-repellent preservative.

- Check electrical connections.
- Check earthing.



## Basic information regarding the cleaning of fins

**ELECTRICAL HAZARD AND DANGER FROM ROTATING UNIT PARTS! OBSERVE  
PERSONAL PROTECTION MEASURES.**

In doing so, be sure to observe the safety information.

### DANGER FROM SHARP EDGES!

There is a danger that the thin fins will inflict cuts during cleaning.

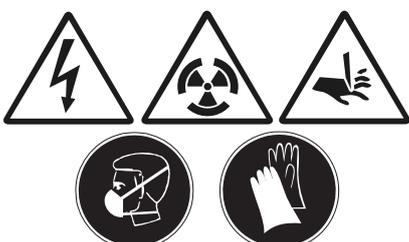
The fin package must be cleaned to ensure that the heat exchanger continues to operate at full capacity. This can be carried out using a brush (not wire brush) or an industrial vacuum cleaner. Do not use hard or sharp cleaning tools!

Copper or aluminium fins may be blown out against the direction of the airflow using compressed air, or sprayed with water at low pressure for cleaning.

Steel galvanised heat exchangers or heat exchangers with reinforced fins may also be cleaned using steam jet cleaning appliances.

### Maintenance interval checklist

The maintenance intervals as defined in European guidelines and standards (e.g. VDI 6022) must be observed.



**ELECTRICAL HAZARD, DANGER FROM ROTATING UNIT PARTS AND SHARP  
EDGES! OBSERVE PERSONAL PROTECTION MEASURES.**

Be sure to observe the safety information on

# Commissioning and Maintenance

Unit part	Interval (months)	Task	✓
Units for installation indoors	1 month	<ul style="list-style-type: none"> <li>• Clean and refill existing siphons.</li> </ul>	
	3 months	<ul style="list-style-type: none"> <li>• Check casing for damage/firm seating.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check/renew seals on all service openings</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check panels for damage and corrosion, renew corrosion protection and check function of door safety catch (on discharge side).</li> <li>• Hygiene inspection (we recommend the maintenance steps and intervals specified in VDI 6022!): Check built-in parts for contamination and clean as necessary; carry out wipe disinfection; check sealing materials for microorganisms and fungi, clean/replace as necessary.</li> </ul>	
Units for installation outdoors (roof units, weatherproof)	12 months	<ul style="list-style-type: none"> <li>• Carry out tasks listed at “Units for installation indoors”.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check tightness of unit roof.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check side walls and cover strips, reseal as necessary.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check base frame and base frame skirt.</li> <li>• Clean external weather grille for fresh air and extract air.</li> </ul>	
Belt driven fan unit	3 months	<ul style="list-style-type: none"> <li>• Check fan/motor mountings, also check for soiling, damage and corrosion.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check that anti vibration mounts are functioning correctly.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check that belt guards are functioning correctly, clean as necessary.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check impeller for imbalance.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check tension of V-belt and check for wear; re-tension or renew as necessary –</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check fan/motor for bearing noise, replace bearings as necessary.</li> <li>• Observe recommended lubrication interval for fan bearings without lifetime lubrication (see Table 8-3 on page 61).</li> </ul>	
Direct driven fan unit	3 months	<ul style="list-style-type: none"> <li>• Check motors for soiling, damage and corrosion, also check mountings.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check motors for bearing noise, replace bearings as necessary.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check impeller (particularly welded seams) for cracks; replace bearings if necessary.</li> </ul>	

# Commissioning and Maintenance

Unit part	Interval (months)	Task	✓
Basic requirements for all filters	3 months	• Check filter for soiling, damage and odours.	
		• Clean filter section.	
	6 months	• Check whether the maximum permissible pressure differential (see Guideline RLT 01, for example) or pressure differential specified by manufacturer has been exceeded; if so, replace the filter.	
	at least every 6-9 months	• Hygiene inspection (we recommend the maintenance steps and intervals specified in VDI 6022!): Even if the filter shows no visible signs of contamination, fungi and micro-organisms may grow through the filter during long-term use (in air with low dust content).	
Bag/panel/ fine-dust filters	continuous measurement replace every 3 months	• Replace the filter when the maximum pressure differential is reached.	
Activated carbon filter (cartridges)	6 months	• Replace the filter if the activated carbon is saturated.	
		• Check that filter mounting plates with activated carbon cartridges are firmly seated. In order not to reduce the service life of the costly activated carbon filter, make sure that the pre- and fine-filtering stages are intact.	
Grease filter	every 3-6 months	• Wash out filter cells in cleaning bath.	
Other filters	Refer to the relevant documentation provided for information on maintenance.		
Heater section (LPHW)	12 months	• Check for tightness and for possible contamination on the air side.	
		• If there is a risk of frost, also check the safety devices regularly, or take appropriate precautionary measures such as draining the equipment or adding antifreeze.	
		• Check that pipe connections and mountings are secure.	
		• Clean air side as necessary (blow through heat exchanger using compressed air or low pressure water).	
		• Bleed.	
Heater section (steam)	12 months	• Carry out tasks specified under "Heater section (LPHW)" .	
		• Check that the steam inlet and condensate outlet are functioning correctly.	
		• Check control functions as necessary.	
Electric heater section	12 months	• Dry clean on air side.	
Direct (gas) fired heater section	Refer to the relevant documentation provided for information on maintenance.		

# Commissioning and Maintenance

Unit part	Interval (months)	Task	✓
Cooler with/ without droplet eliminator	12 months	• Check for tightness and for possible contamination on the air side.	
		• If there is a risk of frost, also check the safety devices regularly, or take appropriate precautionary measures such as draining the equipment or adding antifreeze.	
		• Check that pipe connections and mountings are secure.	
		• Clean air side as necessary (blow through heat exchanger using compressed air or low pressure water).	
		• Bleed.	
		• Clean condensate tray/drain.	
		• Check siphon, top up as necessary.	
	• Clean droplet eliminator with descaling spray.		
	Before each winter season	• Drain cooler coil before the start of winter if necessary.	
Evaporator/ condenser	12 months	• Clean and check evaporator/condenser.	
		• Make sure that all refrigeration components in direct evaporators (refrigerating machine, direct evaporator, distribution manifold, refrigerant lines, etc.) are working efficiently.	
Heat pipe	12 months	• Clean the heat transfer fins.	
		• Clean condensate tray/drain.	
		• Check siphon, top up as necessary.	
		• Where a heat pipe with bypass is used, check the air control and shut-off dampers.	
Liquidcoupled heat exchangers	12 months	• Carry out tasks specified under "Cooler with/without droplet eliminator" (interval – 12 months).	
Plate heat exchanger	12 months	• Carry out cleaning depending on the type of contamination in the plate block.	
		• Check the function of the bypass damper as necessary.	
		Wet cleaning may only be carried out if a tray has been installed!	
		• Remove oil and fat deposits.	

# Commissioning and Maintenance

Unit part	Interval (months)	Task	✓
Rotary heat exchanger	3 months	<ul style="list-style-type: none"> <li>• Check tension of drive belt, re-tension as necessary.</li> </ul>	
	12 months	<ul style="list-style-type: none"> <li>• Clean heat exchanger fins – wet cleaning may only be carried out if a tray has been installed – never clean the heat exchanger fins with high pressure water or steam.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Clean chamber.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check efficiency of damper where an energy recovery system with bypass configuration is used.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check peripheral seal, adjust as required.</li> </ul>	
Dampers and shut-off dampers	6 months	<ul style="list-style-type: none"> <li>• Vacuum clean dampers (blow out), never apply grease!</li> </ul>	
		<ul style="list-style-type: none"> <li>• Detach the drive from the dampers and check dampers for ease of movement.</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check that the drive (damper actuator) reaches its end positions.</li> </ul>	
Sound attenuator	6 months	<ul style="list-style-type: none"> <li>• Check the sound attenuating chamber and sound insulating splitters for contamination, clean as necessary.</li> </ul>	
Compressor Oil level Checking		<ul style="list-style-type: none"> <li>• In installations with good oil return and line runs up to 66ft, no additional oil may be needed. 1 or 2% of the total system refrigerant charge (in weight) can be used to roughly define the required oil top-up quantity but in any case the oil charge has to be adjusted based on the oil level in the compressor sight glass.</li> </ul> <p>When the compressor is running under stabilized conditions the oil level be visible in the sight glass</p> <p>The presence of foam filling in the sight glass indicates large concentration of refrigerant in the oil and/or presence of liquid returning to the compressor.</p> <ul style="list-style-type: none"> <li>-The oil level can also be checked a few minutes after the compressor stops.</li> <li>-Always use original Danfoss oil from new cans. (P.O.E.320 SZ)</li> <li>-Top up the oil while the compressor is idle. Use the schrader connector or any other accessible connector on the compressor suction line and a suitable pump.</li> </ul>	

# Commissioning and Maintenance

## Filter Change

**DANGER** ⚠

**Make sure that the power connection is disconnected before doing any work on the device.**

Danger of electric shock; moving parts (fan) and hot surfaces.

The filters must be regularly checked for contamination, damage and odours every 3 months.

If the filters are damp or mouldy, they must be exchanged immediately.

Unlock the lock and turn the handles counter clock-wise direction for opening doors



There are 4 spring for each filter to place into filter casing. To remove filter you must take out springs.



And take filter carefully.



# Commissioning and Maintenance

## Service and maintenance of the fan

**DANGER**  **RISK OF INJURY!** Make sure that the power connection is disconnected, and fan is not moving before doing any work on the device.

Danger of electric shock; moving parts (fan) and hot surface

Be careful during service and maintenance as the fans are heavy.

The fan must be regularly checked for contamination, damage and corrosion every 6 months.

- Regular inspection with cleaning, is necessary to prevent imbalance due to ingress of dirt.
- Clean the fans housing.
- Watch out for vibration free motion.
- Maintenance interval in accordance with the degree of contamination of the impeller!
- Fan can be cleaned with a moist cloth. Do not use any aggressive, paint solvent cleaning agents when cleaning. Never use a high-pressure cleaner or water-spray for cleaning - particularly when the ventilator is running.

There are 4 bolt to fix fans to support sheet metal.



Remove bolts and and replace fans.



# Commissioning and Maintenance

## Condensate tray

### Cleaning

**DANGER** ⚠ **RISK OF INJURY!** Make sure that the power connection is disconnected, and fan is not moving before doing any work on the device

**WARNING** ⚠ Danger of electric shock; moving parts (fan) and hot surface.  
The condensate tray must be regularly checked for contamination and damage every 6 months.

Loosen the screws of the device service panel and remove.



Clean condensate tray with a cloth



### Cleaning of housing

**DANGER** ⚠ **RISK OF INJURY!** Make sure that the power connection is disconnected, and fan is not moving before doing any work on the device.

**WARNING** ⚠ Danger of electric shock; moving parts (fan) and hot surface  
-The unit housing must be regularly checked for contamination, damage and corrosion every 12 months.  
-Use a wet cloth to clean the housing.

# Commissioning and Maintenance

Units in general

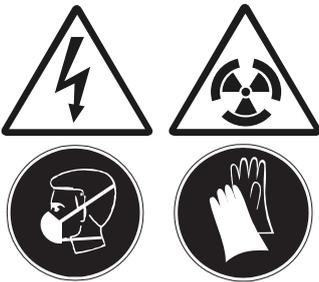
Commissioning of units for installation indoors

The following commissioning steps must be carried out:

- Carefully check the entire casing and parts such as
  - Doors and service openings
  - Handles and levers
  - Connections with foam rubber seals
  - Inspection windows
  - Panels

for damage and firm seating.

- Remove protective film, if present.
- Remove all transportation locks.
- Make sure that there are no loose items inside the unit.
- Check that the unit is airtight.
- Clean the unit as described under



Maintenance of units for installation indoors

**ELECTRICAL HAZARD AND DANGER FROM ROTATING UNIT PARTS! OBSERVE PERSONAL PROTECTION MEASURES.**

# Commissioning and Maintenance



## NOTE

If the air contains oil or aggressive substances, cleaning should be carried out more regularly as the sealing materials are only resistant to oil for a limited period.

The following maintenance steps must be carried out:

- Carefully check the entire casing and parts such as
  - Doors and service openings
  - Seals
  - Handles and levers
  - Connections with foam rubber seals
  - Inspection windows
  - Panelsfor damage and firm seating.

Doors and service openings

- Check seal, renew if necessary.
- Check that door safety catch (on discharge side) is functioning correctly.

Panels

- Check for damage and corrosion.
- Renew or apply corrosion protection (paint), impregnate, etc., as necessary.

Siphon

- Clean and refill existing siphons.

Hygiene inspection

- Check built-in parts for contamination, clean as necessary.
- Carry out wipe disinfection (disinfectant must not be aggressive towards the materials used, only use alcohol-based disinfectant).
- Check the sealing materials for micro-organisms and fungi. Clean or replace the sealing materials as required.

Commissioning of units for installation outdoors (roof units, weatherproof)

The following commissioning steps must be carried out:

- You should initially perform all steps described under „Commissioning of units for installation indoors“.
- Check the weatherproof seals (see „Foundation construction for outdoor installation (weatherproof, roof frame)“)

Observe current guidelines and standards! We recommend the maintenance steps and intervals specified in VDI 6022

# Commissioning and Maintenance

Maintenance of units for installation outdoors (roof units, weatherproof)

The following maintenance steps must be carried out:

- You should initially perform all steps described under „Maintenance of units for installation indoors“.
- Check tightness of unit roof.
- Check side walls and cover strips, reseal with single-component sealing compound as necessary.
- Clean external weather grille for fresh air and extract air once a year.

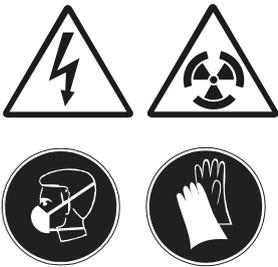
Hygiene inspection

- Check built-in parts for contamination, clean as necessary.
- Carry out wipe disinfection (disinfectant must not be aggressive towards the materials used, only use alcohol-based disinfectant).
- Check the sealing materials for micro-organisms and fungi. Clean or replace the sealing materials as required.

Fan unit and drives

**ELECTRICAL HAZARD AND DANGER FROM ROTATING UNIT PARTS! OBSERVE PERSONAL PROTECTION MEASURES.**

In doing so, be sure to observe the safety information.



**DAMAGE TO UNIT**



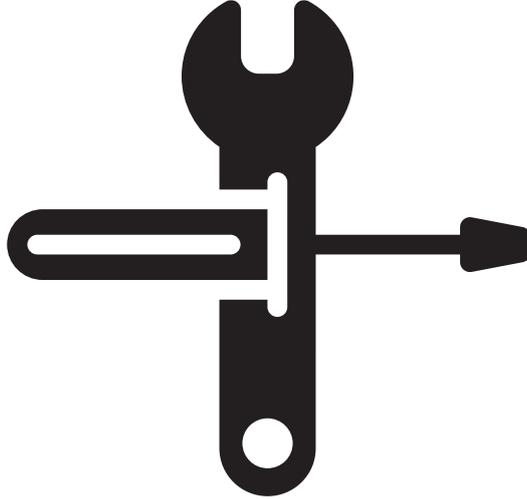
The following commissioning steps must be carried out:

- As a general rule the entire casing and all parts must be checked for damage and firm seating.
- Check the rotational direction of the fan at all speeds.
- Measure the power consumption of the motor. The rated current of the motor according to the plate must not be exceeded under any operating conditions.
- If using a motor with separated air supply, make sure that the air intake grille and air duct are clean. The full cross-section of the air duct must be unobstructed.

Observe current guidelines and standards! We recommend the maintenance steps and intervals specified in VDI 6022

# EVO-POOL

AIR HANDLING UNITS



**AERA AIR CONDITIONING & VENTILATION TECH.**

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