Reference: IOM_ClimaPac
Version: V2 - EN/11.2020
Original instructions

ClimaPac

Air Handling Unit

Installation, Operation and Maintenance Manual

Contents

1. Safety

1.1 Marking

1.1.1 Safety signs

DANGER	threatening danger, grievous bodily harm and death.
WARNING	dangerous situation, grievous bodily injury.
CAUTION	dangerous situation, light bodily injury.
NOTICE	important information and application notice.
ESD NOTE	risk of damaging electronical components.

1.1.2 Components signs

Following signs identify the different components of the unit.

They are used in this manual and on the proper unit in order every section can be quickly identified.

	Fan		Empty section		Plate heat exchanger
	Cooling coil		Damper		Run-around coil
	Heating coil		Filter		Rotary heat exchanger
	Cooling/ heating coil		Silencer		Custom section
	Humidifier		Controller		

1.2 Intended use

ClimaPac air handling unit must only be used for ventilation and air conditioning of building.

It includes:
- filtering normally polluted air.
- air cooling.
- air heating.
- air humidifying and/or dehumidifying.

Proper use also includes observance of the operation manual and instructions from the manufacturer of the individual components, as well as the inspection and maintenance intervals stipulated by STULZ Tecnivel.

Any use other than that described above is considered improper. If necessary, check if your units are suitable for your intended purpose and application. The manufacturer/supplier is not liable for any damages arising from improper use. The user alone bears the risk.

Misuse particularly includes:
- Conveying any other gases except air.
- Conveying steam or water.
- Coarse filtering and/or filtering any other media except air.
- Chopping up or reducing size of materials.
- Drying out clothing.
- The unit is not suitable for handling abrasive media.

Unless clearly specified by Stulz, the ClimaPac units shall not be used in following cases:
- in explosion-risk areas.
- in rooms with conductive dust.
- in rooms with strong electromagnetic fields.
- in rooms with aggressive atmosphere that may attack plastics or cause corrosion (especially in atmosphere where zinc is particularly susceptible to corrosion).

ClimaPac units must not be installed in a place accessible to general public.

In case of doubt, please contact Stulz

1.3 Safety Instructions

These operating instructions contain basic information which is to be complied with for installation, operation and maintenance. They must therefore be read and complied with by the fitter and the responsible trained staff/operators before assembly and commissioning. They must be permanently available at the place where the system is used.

⚠ DANGER

- Works have to be carried out by competent staff only.
- Safety devices may not be bypassed.

1.4 Duties of the operator

The operator must ensure that all maintenance, inspection and assembly work is carried out by authorized and qualified specialist staff who have made an in-depth study of the operating instructions.

Independent conversion and manufacture of replacement parts.

The system may only be converted or modified after consultation with STULZ. Original replacement parts and replacement parts/accessories authorized by STULZ are an aid to safety.

2. Transport/Storage

2.1 Delivery of units

The ClimaPac unit is delivered packed with heat shrinkable plastic film in separated modules as indicated in the unit drawing. Modules must be assembled together following the instructions of the part 5. Assembly and installation. In case the unit is delivered completely assembled (to be consulted with STULZ), the assembly is not required.

NOTICE

If you use a cutting tool (e.g. cutter) to remove the package, take care not to damage the unit (scratching).

NOTICE

When delivery is accepted, check the unit against the consignment papers for completeness and for external damage and record it on the consignment note in the presence of the freight forwarder.
- **You receive the consignment papers with the delivery of the A/C unit.**
- **The shipment is made ex works, in case of shipment damages, please assert your claim towards the carrier.**

2.2 Transport

DANGER

Mortal danger by crushing.
A defective lifting device can lead to the uncontroler fall of the A/C unit.
Do not stay under suspended loads!

WARNING

Service doors must always be closed during transport.

The ClimaPac unit can be moved by lifting devices with belts or ropes.

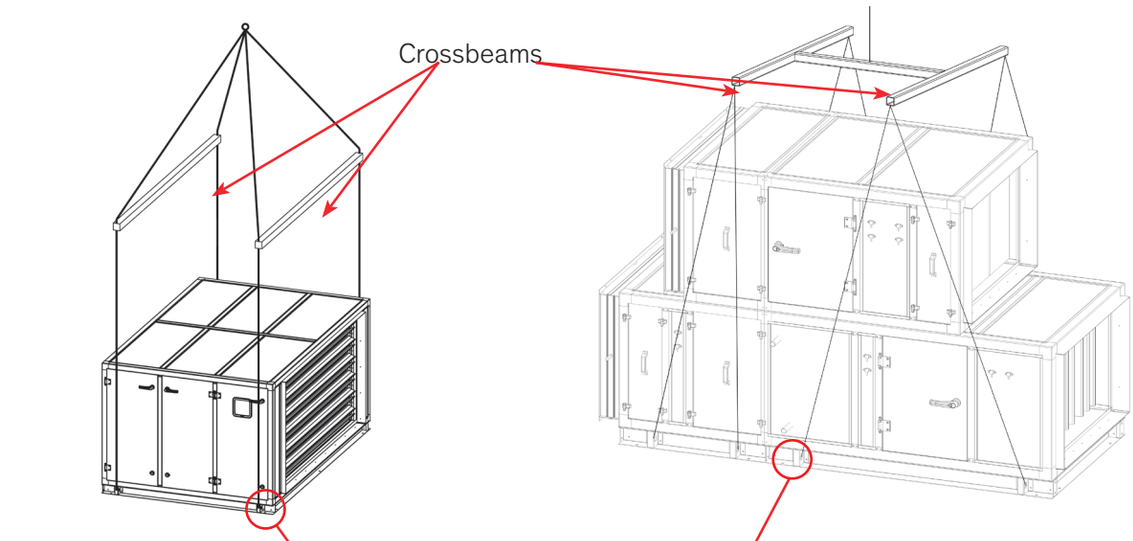
In order to ensure a safe craning of the units, instructions here below must be followed:
- Mount approriate shackles on the lifting lugs on the base frame.
- Use crossbeams with the appropriate width to prevent the sling to rub against the unit.
- With weatherproof units, make sure the protruding parts of the roof are not damaged by the lifting gear.
- Do not lift any other loads together with the module/unit which is to be transported.

NOTICE

All the local standards and regulations about crane transport must be observed.

NOTICE

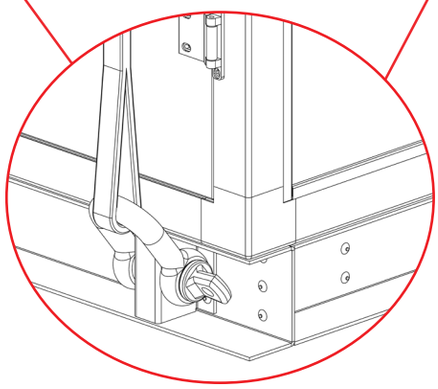
Accessories required to transport the unit (crossbeams, shackles, slings/ropes) are not supplied by STULZ.



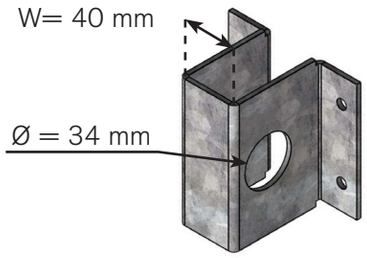
Transport of individual module

Transport of several modules fixed together

Detail of the attachment system



Eye bolt dimensions:



Lifting gear

NOTICE

For transportation of modules or complete unit, lifting gear must be attached to all eyebolts of the baseframe.

2.3 Storage

If you put the unit into intermediate storage before the installation, the following measures have to be carried out to protect the unit from damage and corrosion:

- Make sure that the water connections are provided with protective hoods.
- The stotage point must be dry and not exposed to direct sunlight. Recommended storage conditions are as following:
  - Temperature [°C]: -10 - +50
  - Humidity [% rel. h.]: 5 - 95, without condensation.
- Units equipped with a steam humidifier must be stored in a place protected from frost.
- The unit should be stored packaged to avoid the risk of corrosion especially of the heat exchanger fins.

3. Description

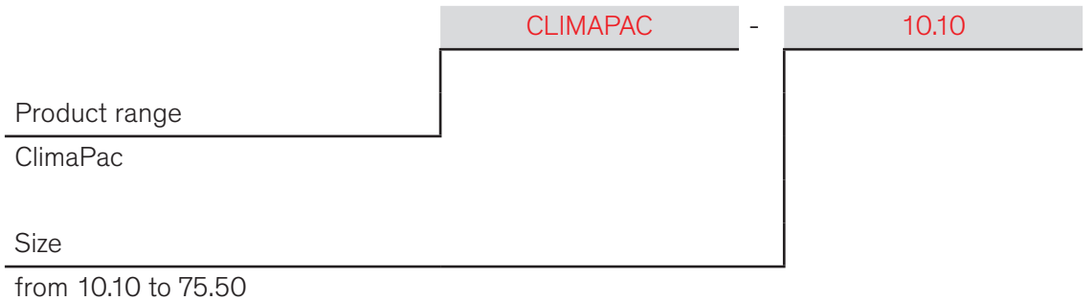
3.1 Type Code

The type code represents the unit variant of your air handling unit and can be found on the type plate.

Type plate (example)

The type plate to be found on the unit may have a different design or additional information.

Nomenclature



3.2 Air Handling Unit design

ClimaPac air handling units are configured with the TIP selection program and technical sheets provide technical details of the unit, such as:

- Unit dimensions,
- Description of each component,
- Power consumption,
- Sound levels at unit inlet/outlet,
- Energy efficiency class of the unit,

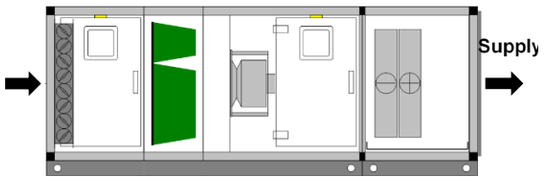
NOTICE

Particular technical documents (drawings, wiring diagram) of each unit is available on demand.

Available configurations

In line

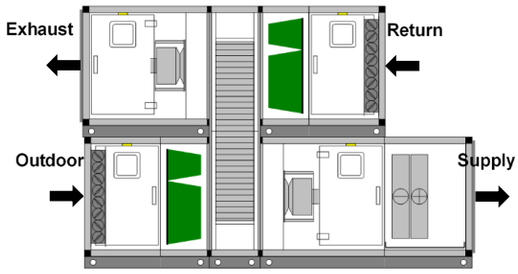
In this configuration, there is one single airflow passing through the AHU.
Inlet air can be 100% fresh air or a mix of outdoor air and recirculated air.



Front view

Double deck

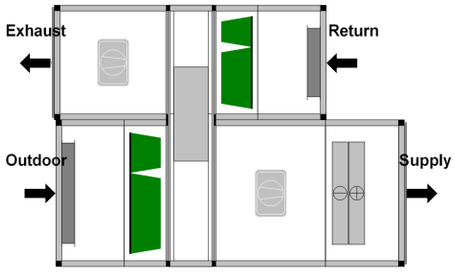
In this configuration, two separate airflows pass through the unit, one above the other.
The lower part supplies treated air to the room (100% fresh air or a mix of fresh air and recirculated air) and the upper part extracts air from the room.
A unit in double deck configuration can be equipped with heat recovery system.



Front view

Side by side

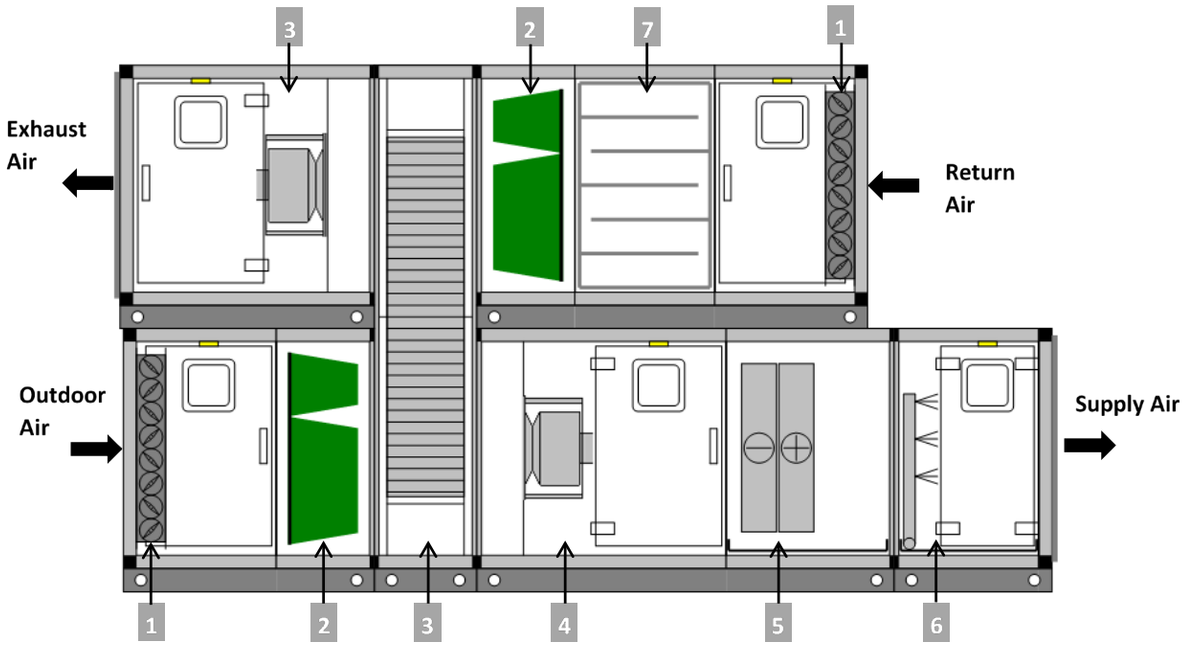
In this configuration, two separate airflows pass through the unit, one next to the other.
The lower part supplies treated air to the room (100% fresh air or a mix of fresh air and recirculated air) and the upper part extracts air from the room.
A unit in double deck configuration can be equipped with heat recovery system.



Top view

Available sections

Example: double deck ClimaPac with rotary heat exchanger.



1. Regulation damper Controls teh airflow passing through the AHU.			
2. Filters section In this section, air passing through the unit is filtered. Different types of filters are available (pre-filters, bag filters, compact filters) with different filtration levels. Slide in/out mounting for maintenance from the side of the unit is available (up to size 20.10)			
3. Heat recovery section In this section, energy is taken from the return air and transferred to the supply air. Heat recovery systems available are plate heat exchanger, rotary heat exchanger and run-around coils.			
4. Fan section In this section air is driven through the AHU by the fan. Fans are Plug-fan type with AC or EC motor.			
5. Coil section In this section the air is heated up or cooled down by a heating/cooling coil. Coils can be water type or direct expansion (DX).			
6. Humidifier section In this section air is humidified by a humidifier. Two types of humidifiers are available (evaporative pads and steam humidifiers)..			
7. Sound attenuation section In this section, sound level is reduced by a silencer. Silencers are available with length from 600 mm up to 1800 mm according to the needs.			
8. Sound attenuation section Each unit can be equipped with a controller and electrical cabinet, mounted inside or outside the AHU. Technical sheet of the control (sensors, control sequences) is supplied with the technical documentation of each unit.			

Controller's manual is provided in a separate document.

3.3 Operation limits

Outdoor air:

	Lower limit	Upper limit
Temperature	-15°C	70°C

Return air:

	Lower limit	Upper limit
Temperature	0°C	70°C

Water supply

	Lower limit	Upper limit	Max. Water pressure
Cooling/ heating coil	5°C	90°C	10 bar
Steam humidifier	-	40°C	10 bar
Evaporative pad	-	25°C	6 bar

Standar supply voltage*

Voltage	380 - 415V / 3ph / 50Hz; PE
Voltage tolerance	± 10%
Frequency Tolerance	± 1%

*Other supply voltages are available on demand.

Further information on the operation and storage conditions limits is available in the specific manual of each component (available on demand).

4. Assembly and Installation

4.1 Requirements for the Installation site

The ClimaPac units is designed to be installed on a level foundation (concrete base or steel beam).

⚠ DANGER

Uneven or insufficient foundation or a bad positioning of the unit on the foundation can lead the unit to overturn.
See foundations requirements for a correct installation.

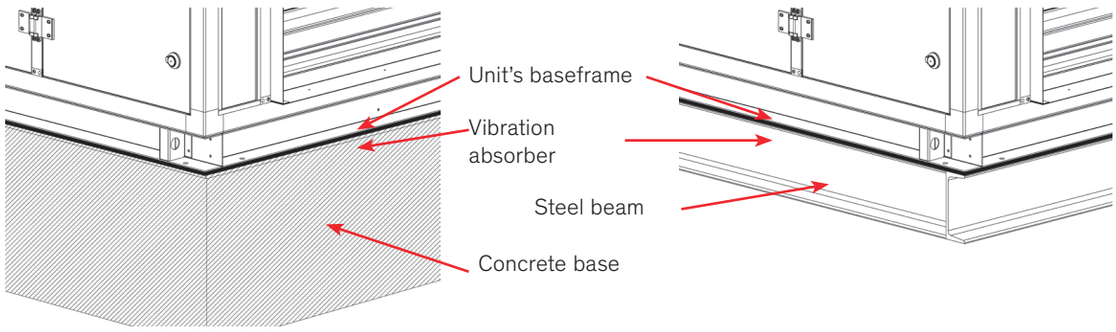
⚠ DANGER

Risk of explosion.
The unit may be not operated in an explosive atmosphere!

- The base on which the unit is to be installed must be level, flat and of adequate load-bearing capacity.
- The whole baseframe of the unit must rest on the base and make full surface contact with it.
- The minimum height of the base must correspond to the siphon height (for siphon calculation see *4.3.2 Connection of drains*).
- In case of using strip foundations, additional cross supports are required at the beginning and end of the unit, as well as at the joints between unit sections.
- The whole baseframe of the unit must rest on the base and make full surface contact with it.
- In case of using strip foundations, additional cross supports are required at the beginning and end of the unit, as well as at the joints between unit sections.
- Pad or point contact is not permissible.
- Children, unauthorized persons and animals may not have access to the installation site of the AHU
- Take into account the necessary clearances for the maintenance and the air flow (see *4.1.2 Space requirements for installation, maintenance and operation*).

4.1.1 Structure-borne sound insulation

In order to insulate the supporting structure from the vibrations produced by the unit, it is recommended to use suitable anti-vibration mounts, such as rubber strip.



Installation on concrete base.

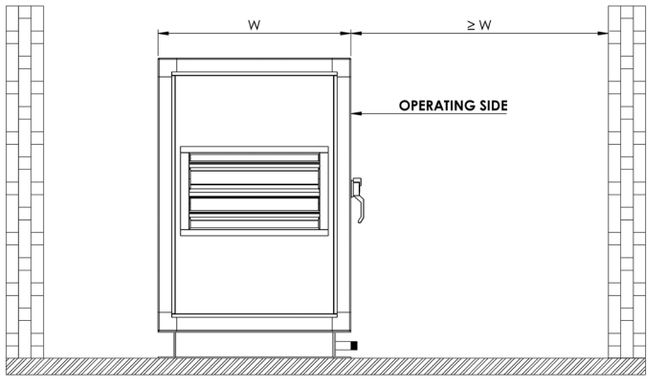
Installation on steel beam.

NOTICE

Vibration absorber must be installed according to the instructions of the manufacturer.

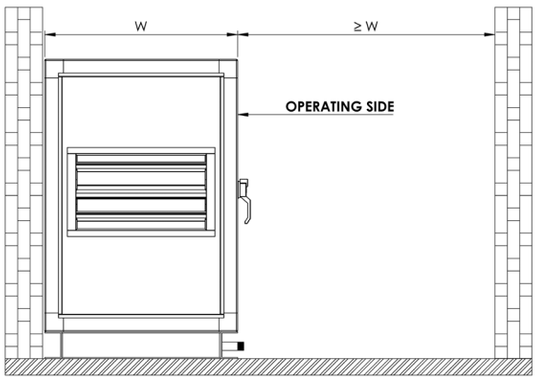
4.1.2 Space requirements for installation, maintenance and operation

The minimum space necessary for installation, operation and maintenance is one unit width on the operator side, as indicated on the sketch below:

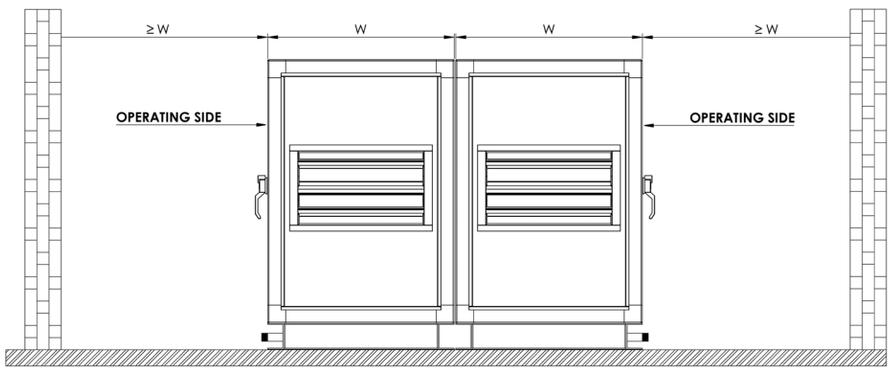


Space requirements.

If the unit is to be installed against a wall or back-to-back with another unit (see sketches below), modules must be assembled together before positionning the unit in its final location.

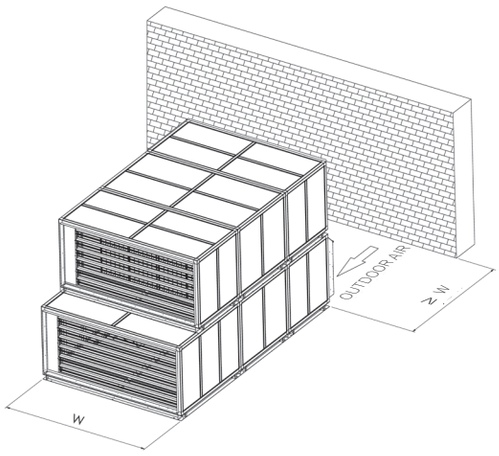


Installation against the wall.



Installation back-to-back.

If no ductwork is connected to the air intake/exhaust, a sufficient clearance must be left in the air intake area in order to ensure a good air circulation, as indicated on the sketches below.



Clearance in the air intake area.

NOTICE

Duct work must be installed by qualified staff.

NOTICE

Weatherproof units must not be used for structural functions or as part of the roof for the building.

4.2 Positioning and assembly of the unit

4.2.1 Positioning of the unit

Transport each module with a lifting gear according to the chapter *2.2 Transport* and place it in its final position according to the drawing.

Before assembled the modules together, check the following points:
- Every module is provided with rubber strip, in order to ensure a correct tightness between 2 modules (installed in factory).
- All fixing elements, drilled holes are perfectly placed in order all the modules can be fixed together.

WARNING

Risk of crushing limbs.
A defective lifting device can lead to the uncontrolled fall of the A/C unit.
Do not stay under suspended loads! Wear safety boots.

4.2.2 Supplied parts

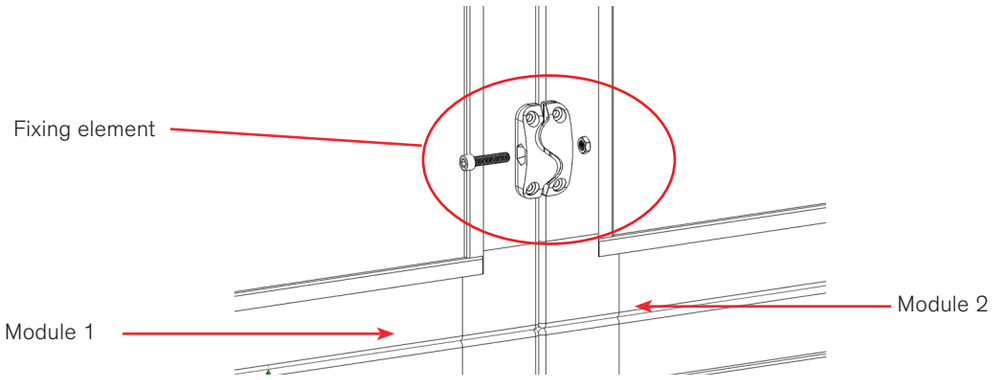
The following parts, necessary for assembly, are supplied with the unit:

- **Fixing elements assembly:** DIN 912 Hex Socket Cap Screws, M8 × 30mm + hex nuts, M8.
- **Base assembly:** Hex Screws, M8 × 20mm + Hex nuts, M8.
- **Upper/lower module assembly:** DIN 7976 Hex set screws, 6,6 × 19 mm.
- **Roof assembly (outdoor units):**
  - Rivets.

4.2.3 Assembly sequence:

Aluminium profiles assembly

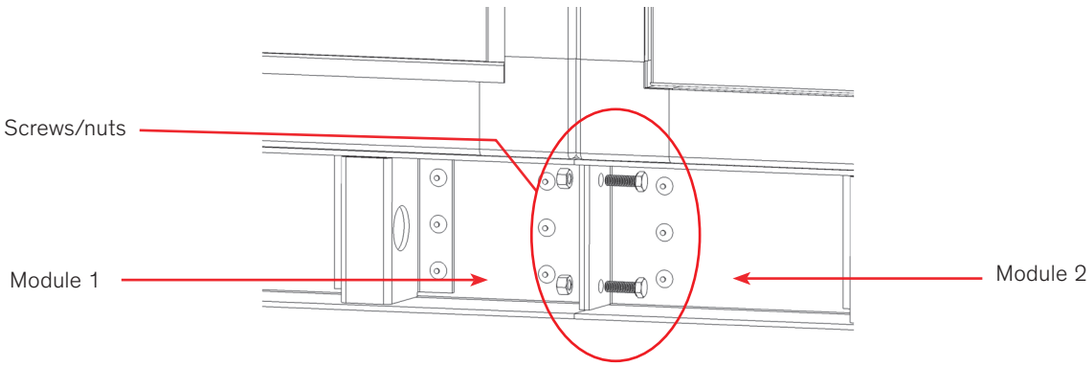
- Insert first the M8 nuts in the joining element and then insert the M8 × 30 mm Hex socket cap screw in the other part of the fixing element.
- Tighten the screw with the Allen key.



Assembly of modules.

Lower baseframe assembly

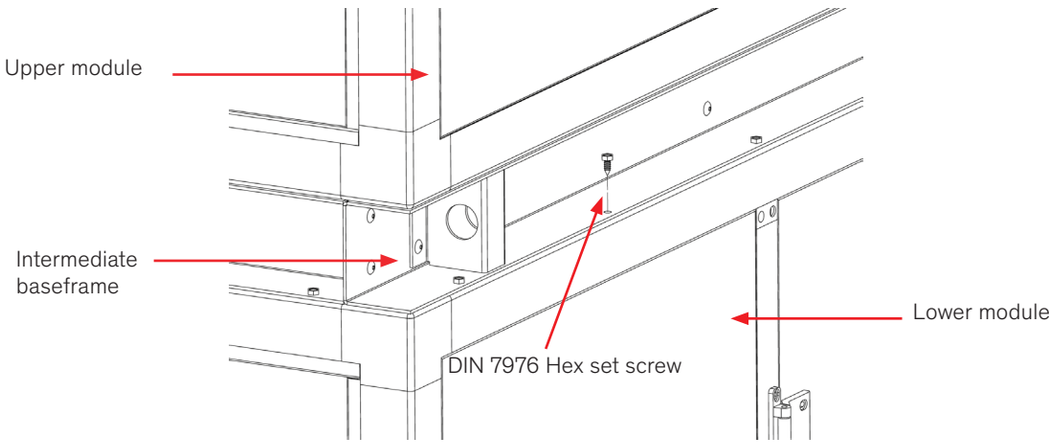
- Insert first the M8 × 20 mm Hex screws in the fixing element of the baseframe and secure it with the M8 nuts.



Assembly of baseframe.

Intermediate baseframe assembly

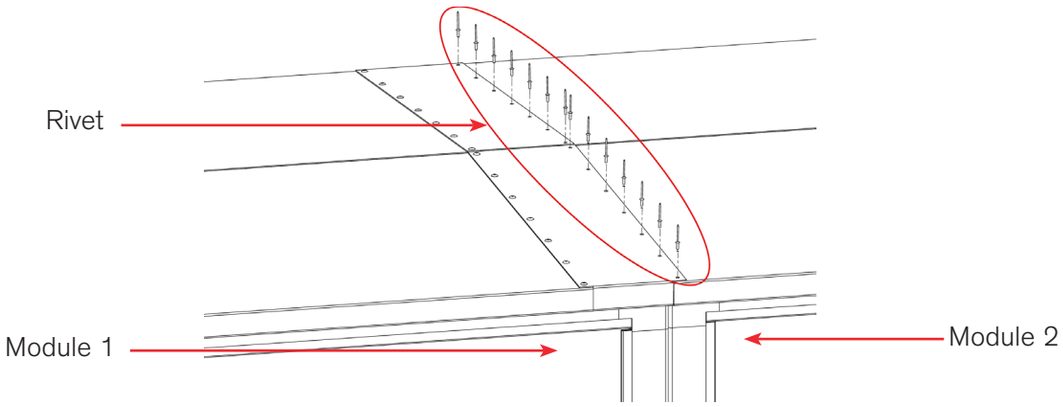
- The intermediate baseframe (if existing) of the double deck units must be fixed to the aluminium profiles of the lower modules with the DIN 7976 Hex set screws.



Assembly of intermediate baseframe.

Roof assembly (units for outdoor installation)

- Make sure all modules are correctly assembled and drilled holes in the roof of module 1 are perfectly facing drilled holes of module 2.
- Insert the rivets in the drilled holes and secure them with a rivet gun.



Assembly of roof on two adjacent modules.

NOTICE

Units with a width ≤ 1500 mm are equipped with a single-pitch roof and units with a width > 1500 mm are equipped with dual-pitch roof.

4.3 Installation

This chapter gives general guidelines for the connection of the different components of the unit. Detailed installation and maintenance instructions can be found in the specific manual of each component.

4.3.1 Electrical connection

DANGER

Before working with electrical wires, make sure they are de-energized.
Electric cables are only to be connected by authorized specialist.

Before connecting electrical wires, check the following points:
- The unit must be equipped with an earth connection.
- Power supply specifications (voltage, frequency) match the indication on type plate and/or indications on wiring diagrams supplied with the unit.
- Components and cables are in good conditions.

Electrical components such as air heaters, electric motors, actuators, etc. must be connected according to manufacturer's specifications, local standards and regulations.

General recommendations regarding electromagnetic interferences (earthing, cable length, shielded cables, etc.) must be observed.

Cables used for wiring work (cross section, length, layout) must be chosen according to electric specifications of the unit (available on the electrical data sheet on demand) and must be in accordance with local requirements.

Units with electrical cabinet:

Only the main switch, located in the electrical cabinet is to be connected to the power supply according to the wiring diagram of the unit.

The electric cable must be introduced into the electrical cabinet from below, passing it through the hole drilled on the lower part of the cabinet.

Modules must be electrically connected using the special connectors, as shown below

Connector for electrical connection of modules

Units without electrical cabinet:

Each electric component of the AHU must be connected to the power supply separately.

Electrical wiring must be performed according to the wiring diagram supplied with the unit and specific documentation of each component.

If a connection box is provided on the outside of the unit for wiring, cables must be connected inside it, passing them through the hole on the side of the box.

If no connection box is provided on the outside of the unit for wiring, cables must be connected directly to the connection box of the component, passing them through the cable gland on the unit's panel.

Each electrical component must be provided with appropriate safety device to protect it and the persons in contact with it against events such as: electrical contacts, overloads, short circuits, moving elements and burns.

The electrical installation must comply with directives and regulations in force in the country where it is made.

Although installation and safety devices are under the responsibility of the installation's owner, following recommendations must be taken into account:

Regarding the motors, we recommend to use adjustable protection devices against overcurrent (short circuits) and overvoltage (circuit breakers or magnetic starters), which must be set to the maximum current of the motor to avoid damages.

If the motor is equipped with thermal protection, they must be appropriately connected.

For other electric components, we recommend to use protection devices against overcurrent (short circuits) and overvoltage (magneto-thermal switches or fuse).

NOTICE

Further information about electrical wiring can be found in the installation and maintenance manual of the electrical components (available in separate documents).

4.3.2 Connection of drains

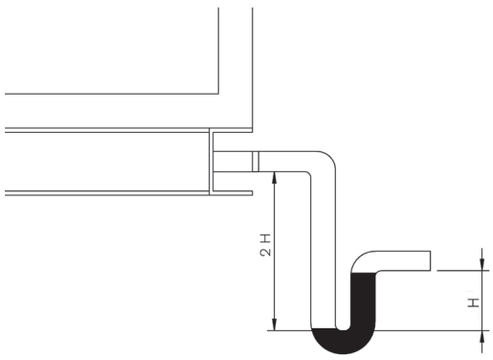
Components using water (evaporative pads humidifiers, water coils) are provided with a drain for emptying it (e.g. condensate pan).

To avoid any trouble due to the pressure (positive or negative) in the sections where there is a drain, every water outlet must be provided with a siphon of sufficient height to overcome the static pressure of the unit, as explained below:

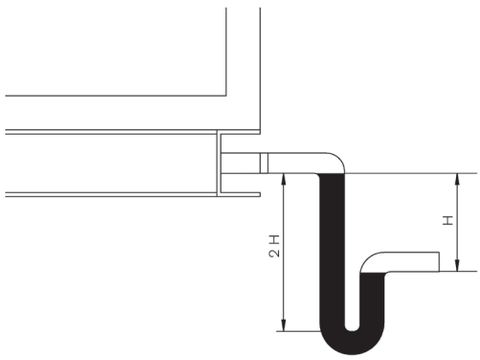
The minimum height of the siphon must be equal to 2H, calculating H according to the following formula:

$$H\ (mm) = \frac{P(Pa)}{10}$$

P: total pressure (positive or negative) of the unit fan:



Siphon for positive pressure.



Siphon for negative pressure.

NOTICE

In order the siphon works properly, do not connect several water outlets to the same siphon.

4.3.3 Air connections

NOTICE

Ductwork must have independent supporting devices.
ClimaPac unit cannot be used for supporting the Ductwork.

In order to avoid the transmission of noise to the structure, the connection between the ClimaPac and duct-work must be free of tensions, using flexible duct connectors.

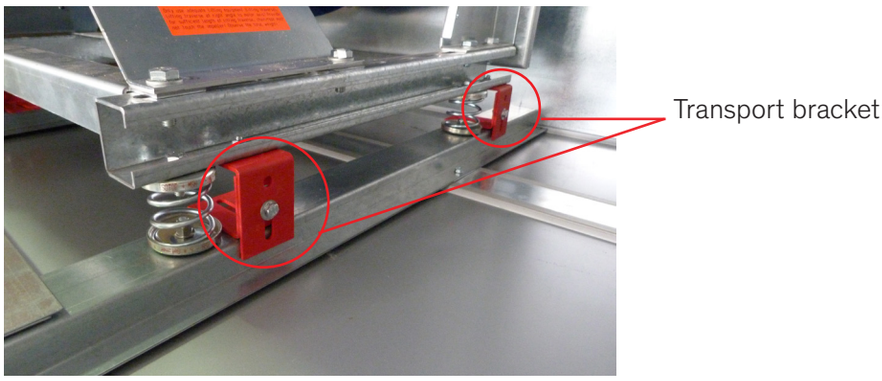
The length of the flexible duct connection once mounted must always be smaller than its maximum length.

Dimensions of the duct connection frames are indicated in the technical sheet of the unit.

4.3.4 Fans

Plug fans with AC motors are mounted on anti-vibration springs. To avoid the fan to move during transport and installation, 4 transport brackets are used to fix the fan structure to the steel support.

These brackets (in red in the following picture) must be removed before the first start-up of fans.



4.3.5 Cooling/heating Coils

Water coils

To close the water circuit you must connect the unit to a chilled water ring mains, which contains either a chiller or a dry cooler or cooling tower for the generation of cold water. Details of the water coils connection are given in the table below.

Inlet/Outlet		Draining	
Diameter	Connection	Diameter	Connection
Up to 2,0”	External thread	1 1/2”	External thread
Greater than 2,0”	Grooved for mounting Victaulic type flange*		

*Flange is not supplied by Stulz

Connecting the unit to the external system

NOTICE

Water remaining from the test run may escape when the protective caps are removed.

- Rinse thoroughly water lines of the external system to ensure water entering the water coil is clean and free of particles.
- Remove the protective caps of the pipes inlet and outlet.
- Fix the lines of the external system to the lines of the unit. Water inlet/outlet and connection type are indicated in the table above.
- Insulate the water pipes with the diffucion tight insulating material, to prevent the introduction of ambient air heat and the formation of condensate at the pipes.

NOTICE

Make sure the external system lines don't put mechanical stress on the ClimaPac connection pipes.

Condensate drain

The condensate water drains must be provided with a siphon (see siphon calculation in *4.3.2 Connection of drains* and connected to local waste water system.

NOTICE

If the coil is designed to work with water, the use of an anti-freezing agent might have an impact on the coil efficiency.

Direct expansion coil (DX)

DX coils are filled with dry nitrogen in factory. When removing the protective caps, the gas shall escape emitting a hissing noise.

If not, it might indicate there is a leakage in the circuit and measured shall be taken.

DX coil is to be connected to the refrigerant circuit by welding (on the outside of the coil section).

The diameters of the connections must be observed in the installation, in order to avoid possible pressure loss that would decrease the performance.

4.3.6 Humidifiers

Evaporative humidifier

Water supply and draining (located outside of the unit) are to be connected according to the following table:

Water supply		Water type	Draining	
Diameter	Connection		Diameter	Connection
½"	External thread	Tap water or threated water	25 mm	PVC female/glue

The Electrical connection must be made according to the instructions given in the chapter *4.3.1 Electrical connection* and in the component installation manual.

In particular, in models with recirculated water, the level detector must be connected.

The drain must be connected to a siphon following the instructions in paragraph *4.3.2 Connection of the drains.*

There are more details on the installation and connection of the humidifier in the particular installation and maintenance manual provided in a separate document.

Steam humidifier

Steam humidifiers are installed on the outside of the unit. All connections (electrical, hydraulic) are made on the humidifier itself.

All installation and maintenance instructions are available in the particular manual of the steam humidifier provided in a separate document.

4.3.7 Heat recovery systems

Rotary heat recovery system

Motor must be connected according to the instructions given in the chapter *4.3.1 Electrical connection.*

Wheel without controller of KR serie

Heat recovery wheel have a three phases motor 3 × 400/230 V with thermal protection at 140°C.

By default, the motor is star connected.

Wheel with controller of KR serie

If the heat recovery wheel is connected to a controller KR serie, the motor must be Delta connected (230V) and thermal protection contacts must be connected.

NOTICE

For detailed information on the installation of the rotary heat recovery systems and controllers of the KR series, the installation and maintenance manuals for these components are available in separate documents.

4.3.8 Water quality

In all the components using water (water batteries, humidifiers), and regardless of the type of treatment or added agents that are used, the water must be perfectly clean.

Tap water can be used in the water batteries, possibly adding an antifreeze agent.

In humidifiers, tap water or treated water can be used.

For more information on the type of treatment and the quality of the water used, refer to the instruction manuals of the different components.

5. Commissioning

⚠ WARNING

The unit must be installed and connected in accordance with the chapter on "installation" before initial commissioning.

We recommend to carefully read the installation and maintenance manuals of the different components assembled in the UTA (in particular the instructions regarding the settings and the start-up) before starting the unit.

5.1 Previous checks and settings

Before proceeding with the commissioning of the unit, the verifications and / or actions listed in the following table must be carried out.

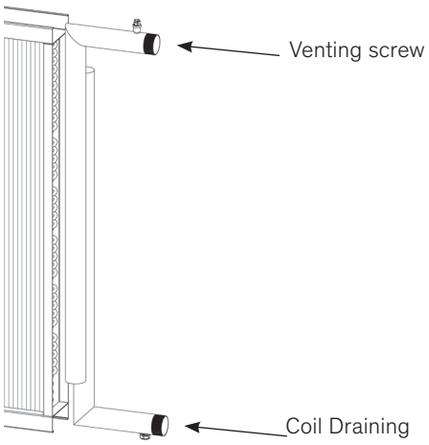
Important information is to be found in the manuals of the different components installed in the air handling unit.

Verifications/ previous actions		
Task type	**Description**	**Comments**
Fans		
Previous check	• Electrical connections (fan + frequency converter, if applicable) are correctly made with the appropriate supply voltage and the earthing is made, • Transport brackets are removed (Plug-fan AC), • They are clean, without visible damage and no foreign body prevents them to work properly.	
Evaporative humidifiers		
Previous check	• Electrical connections (pump + level switch, if applicable) are correctly made with the appropriate supply voltage and the earthing is made, • They are clean, without visible damage and no foreign body prevents them to work properly, • Water supply is properly connected and free of particles that may prevent the correct entry of water, • Draining is provided with a siphon and free of particles or contamination. • Supplied water has the required characteristics.	
Previous action	• Fill the water sump and adjust water level 3 cm under the overflow level, using the float valve regulator **(models with recirculated water).** • Adjust the irrigation flow regulation valves of the evaporative pads, • Adjust the regulation valve of continuous purge/deconcentrating **(models with recirculated water).** • Remove the inorganic material/dust on the panels. • Fill the siphon with water.	See instructions manual
Dampers		
Previous check	They are clean, without visible damage and no foreign body prevents them to work properly, The open/closed mechanism works smoothly.	

Verifications/ previous actions		
Task type	**Description**	**Comments**
Steam humidifiers		
Previous check	• Electrical connections are correctly made with the appropriate supply voltage and the earthing is made, • Ventilation grids are not covered, • Water supply has been rinsed before connecting it, • Water connection is correctly made, • Water draining is correctly installed. • Drained water flows free. • Water supply/draining are free of leaks.	See instructions manual
Heat recovery wheel		
Previous check	• Electrical connections (motor and controller, if applicable) are correctly made with the appropriate supply voltage and the earthing is made, • Rotor is clean, without visible damage and no foreign body prevents it to work properly. • Belt tension is correct,	
Plate heat exchanger		
Previous check	It's clean, without visible damage and no foreign body prevents the good circulation of air.	
Cooling/heating coils		
Previous check	• The system has been correctly rinsed in order to remove any solid particle or contamination. • Coils are clean, without visible damage and no foreign body prevents the good circulation of air, • Coils are properly connected to the water/refrigerant circuit, • Draining of condensate tray is provided with a siphon and free of particles or contamination.	
Previous action	• Rinse carefully the system to remove any solid particle or contamination, • Fill the coil with the indicated fluid (see technical sheets of the unit) with the right concentration, • Purge carefully the coil to ensure there is no air inside, as shown on the figure below the table (otherwise, the coil performances could be affected), • Fill the siphon with water.	See instructions manual
Filters		
Previous check	• They are clean, without visible damage and no foreign body prevents the good circulation of air, • They are correctly fixed to the frame.	
Integrated control		
Previous check	• Electrical connections are correctly made with the appropriate supply voltage and the earthing is made,	
Casing		
Previous check	• Panels and profiles are clean and without visible damage, • There are no loose objects inside the unit that could damage the components or the casing when the fans start. • Roof is properly installed (units for outdoor installation).	

Coils venting

Water coils are provided with venting screws, located on the outlet header.



Venting of coil

5.2 First start

DANGER

Before starting the fans, make sure all the doors are closed and the dampers are open.

Heat recovery wheel

Check the rotation direction is correct (see yellow arrow on the motor corner).

If the heat recovery wheel is equipped with a KR controller, consult the instructions manual for the start-up.

Fans

Check that the rotation direction is correct (see indication on the fan).

Check that the power consumption of the fans matches the indicated figure on the technical sheet of the AHU.

Make sure that the impeller makes no abnormal noise, that could indicate an incorrect balancing.

If the fan is provided with a frequency converter, consult the specific instructions manual before proceeding with the commissioning.

Controller

User's instructions of the controller can be found in the specific user manual in a separate document.

6. Maintenance

6.1 Safety instructions

All maintenance work has to be carried out under strict compliance with the country-specific accident prevention regulations. In particular we refer to the accident prevention regulations for electrical installations, refrigerating machines and equipment. Non-compliance with the safety instructions can endanger people and the environment.

Maintenance work is only to be carried out on the units by authorized and qualified specialist staff.

Procedure instructions

- Carry out work on the system only when it is shut down.
- Switch off the unit at the controller and the master switch.
- Display a “DO NOT SWITCH ON“ warning sign.
- Switch off power conducting cables to the unit and secure them against being switched on again.
- Check to ensure that they are in the de-energized state.

6.2 Periodic maintenance

Activity	Action, if requiered	Maintenance Interval
DAMPERS		
Check for contamination, damage and corrosion.	Clean / repair.	6 months
Check mechanical function.	Repair.	6 months
Check actuators.	Repair / replace.	6 months
AIR FILTERS		
Check pressure drop across the filter	Replace the filter when the maximal allowed pressure drop is exceeded and at least every 6 months.	1 month*
Check for damage, corrosion and odors.	Replace the filter(s) if needed.	3 months

*Indicative interval, depends on the level of outdoor air pollution.

AIR/AIR PLATE HEAT EXCHANGER		
Check for contamination, damage and corrosion.	Clean / repair.	6 months*
ROTARY HEAT EXCHANGER		
Check for contamination, damage and corrosion	Clean / repair	12 months*
Check tension of V-belt’s	Re-tension / shorten / replace	12 months*

*6 months for sorption wheel

COILS

Activity	Action, if requiered	Maintenance Interval
Check for contamination, damage and corrosion.	Clean / repair.	6 months
Check Drip tray (cooling and evaporator coils).	Clean.	6 months
Check water inlet/outlet (water coils).	Clean.	6 months
Check Siphon function and water level of siphon (Cooling and evaporator coils).	Clean / refill.	6 months
Check flow control valves (water coils).	Clean / repair / replace.	6 months

FANS		
Check Blades and housing for contamination, damage and corrosion.	Clean / replace.	6 months
Check impeller for wear/deposits/corrosion and damage.	Clean / replace.	6 months
Check bearings for noise.	Replace.	6 months
Vibration test.	Clean/rebalance impeller/replace.	Recommended every 6 months or in case of abnormal noise.

For more information, consult the specific fan manual, available on request

EVAPORATIVE HUMIDIFIER		
Check suction/impulsion circuit for contamination.	Clean	1 month
Check power consumption is lower than the rated power consumption (on type plate).	Repair / replace	1 month
Check mechanical function of float and control valves and solenoid valves (if applicable).	Repair / replace	12 months
Check evaporative pads for contamination, damage and deposits.	Clean / replace	3 months
Clean the individual irrigation system.	Clean	12 months

STEAM HUMIDIFIER (ELECTRODES TYPE)		
Check electrical and mechanical connections are in good.	Repair / tighten	6 months*
Remove the hardening agents from the steam cylinder, the drain hose and the sludge drain pump.	Clean	6 months*
Check length of electrodes.	Replace	6 months*
Check the manual electrode nuts and threaded terminals.	Tighten	6 months*

**Valid intervals for average water conductivity (see instruction manual) and operation of 8h / day. These intervals may vary depending on water quality and operating time.*

Activity	Action, if requiered	Maintenance Interval
STEAM HUMIDIFIER (RESISTANCE TYPE)		
Check electrical and mechanical connections are in good condition.	Repair / tighten	12 months*
Visual inspection of level control.	Clean	12 months*
Visually inspect the interior of the cylinder, the heating elements and temperature sensors.	Clean	12 months*

** Valid intervals for demineralized or condensed water. These intervals may vary depending on water quality and operating time.*
Note: a visual inspection of the electrical and mechanical connections, the level control and the inside of the cylinder should be carried out 4 weeks after commissioning.

UNIT HOUSING		
Check for contamination, damage and corrosion.	Clean and repair	12 months
Check for water formation (condensation, leaks).	Clean and determination of cause.	12 months
Check function of drains.	Clean.	12 months
Check flexible connections for leaks.		12 months
ELECTRICS		
Retighten electrical connections.		12 months

6.3 Air filters

Filters are equipped with a pressure switch. When the maximum allowed differential pressure across the filter is exceeded because of clogging, filters must be replaced.

Procedure for filters replacement

- Open the access door to the filters.
- Open the clamping device to release the filters.
- Remove the filters to be changed pulling them out of the frame individually.
- Clean filter seals, check and replace damaged seals as needed.
- Put new filters.
- Close clamping device.

NOTICE

When installing new bag filters, make sure filters pockets are in vertical position.

6.4 Plate heat exchanger

Plate heat exchangers have no moving parts, hence mechanical maintenance is unnecessary.

If there are dirt and dust deposits in the heat exchangers, these can be easily removed, using one of the following methods:

- with compressed air, in the case of dusty surfaces if there is a lot of dirt, but it is not firmly attached, at the same time taking care not to damage the plates and seals;
- hot water or by using a detergent spray (e.g., Decade, ND-150, Chem Zyme, Primasept, PolyDet, Oakite 86M or the like) to remove greasy deposits, if there is a lot of firmly attached dirt.

Strongly alkaline or other substances corrosive to the fins or the seal should obviously be avoided.

6.5 Coils (water, direct expansion)

⚠ DANGER

Use protection gloves to avoid injuries caused by sharp edges during maintenance and cleaning process.

Fins

Fins, usually made of aluminium being part of the exchanger, are particularly delicate and can be cleaned with one of the following methods:

- Compressed air (if there is dust not firmly adhered to the fins), directing the flow of compressed air against the flow of air through the battery and perpendicular to the fins to avoid deforming them.
- Hot water jet at low pressure (presence of grease or dirt firmly attached to the fins), ensuring that the direction of the jet is parallel to the flow of air passing through the coil when it is in operation, avoiding directing the jet with an angle that could deform the fins. We recommend to use neutral detergent, taking into account that they do not attack aluminum or copper. Liquid dishwashers are usually adequate.

i NOTICE

Risk of damaging the fins.
Do not use high pressure water to clean coils.

Condensate tray

Condensate trays are made of stainless steel and can be cleaned with warm water and neutral soap.

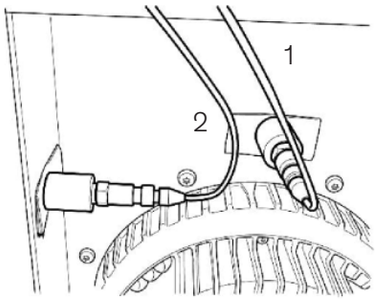
6.6 Fans

DANGER

To make sure all electronics components are de-energized, after disconnecting main power supply wait 5 minutes before opening the device.
The electronics housing of the fan motor can get hot.

The bearings of the fans are lifetime lubricated and do not need maintenance.

Vibration test procedure (recommended every 6 months).
- Place vibration sensors on the motor support plate as indicated on the drawing here below.



1: vibration sensor towards motor's axis of rotation.

2: vibration sensor perpendicular to motor's axis of rotation.

Positionning of the vibration sensors.

- Check vibration severity is lower than 3.5 mm/s.

Cleaning of fans:

Use a soft cloth and water with a neutral soap to clean the fan (housing, impeller).

NOTICE

Do not use high pressure water to clean the device.
Do not use alkaline or corrosive substance to clean the device.
Do not use any pointed or sharp-edged objects for cleaning.

6.7 Unit housing

The unit's casing (panels, profiles) can be cleaned with a microfiber cloth with lukewarm water (adding a neutral soap solution if necessary).

7. Dismantling and disposal

The air handling unit can only be dismantled by qualified specialists.

- Switch off the ClimaPac unit at the controller and the master switch.
- Switch off power conducting cables to the unit and secure them against being switched on again.
- Disconnect the ClimaPac unit from the de-energized network.

⚠ CAUTION

If glycol or similar additives had been used, this liquid also has to be collected and disposed in an appropriate manner and may under no circumstances be introduced in the local waste water system.

- Disconnect the unit from the external water circuit by closing the shut-off valves and drain the water circuit of the unit.
- Move the unit, as described in the chapter “transport”, with a lifting device of sufficient load-carrying capacity.
- Dispose of the air handling unit in accordance with the disposal and safety regulations applicable on site. We recommend a recycling company for this.

The unit basically contains the following raw materials:
- Aluminium (profiles, heat exchanger coils, plate heat exchanger).
- Stainless steel (condensing tray).
- Galvanized steel (frames, panels, roof).
- Zinc aluminium (panels).
- Copper (pipelines, wiring).

8. EC declaration of conformity

Declaración CE de conformidad
EG-Konformitätserklärung
EC declaration of conformity

Fabricante / Hersteller / Manufacturer Dirección / Adresse/ Address	**STULZ Tecnivel, S.L.** C/ Carabaña, s/n. - P.I. Ventorro del Cano 28925 - Alcorcón (Madrid) - Spain

Declara / Erklärt / Declare

Por la presente declara que las unidades listadas a continuación, en las versiones comercializadas por STULZ Tecnivel, S.L. cumplen con los requisitos recogidos por las directivas armonizadas CE y las normas de seguridad CE referenciadas a continuación.
En caso de realizarse modificación sobre producto, no coordinada con STULZ Tecnivel, S.L., la presente declaración pierde su validez.

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konstruktion und Bauart sowie in der von STULZ Tecnivel in Verkehr gebracten Ausführung den einschlägingen grundlegenden Sicherheits-und Gesundheitsanforderungen der betreffenden EG-Richtlinie entschpricht. Bei einer nicht mit STULZ Tecnivel, S.L. Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Hereby confirms that the units designated below, in the version commercialized by us, comply with the requirements of the harmonized EC directives and EC safety standards listed below.
In the event of any modification of the equipment not coordinated with STULZ Tecnivel, S.L. this declaration will no longer be valid.

Equipo / Maschine / Unit **Con denominación / Bezeichnung / Description**	**Air Handling Unit** **ClimaPac 10.10 to ClimaPac 75.50**
Directivas CE / EG-Richtlinien / EC-Directives	Directiva de máquinas / Maschinenrichtlinie / Machinery directive 2006/42/EC Directiva de baja tensión / Niederspannungsrichtlinie / Directive for low voltage 2014/35/EU Directiva de CEM / EMV- Richtlinie / EMC directive 2014/30/EU Directiva de ecodiseño / Ökodesign Richtlinie / Ecodesign directive 2009/125/EC
Armonizadas EN / Harmonisierte EN / Harmonized EN	EN ISO 12100:2012 EN 60204-1:2019. EN IEC 61000-6-2:2019 IEC61000-6-4:2018 UNE-EN 13053-2007+A1 UNE-EN 1886-2008

Madrid, 10.12.2020
Lugar, Fecha / Ort, datum / Place, date

José Luis Orobia
Representante legal/ Gesetzlicher rertreter/Legal representative

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