NA 10231 C

01 - 2023

CZ

Instructions manual

CIAT

CONTENTS

1 - INTRODUCTION

Indoor units with horizontal construction designed for installation indoors, connected to a network of ducts.

- **1 circuit:**

  Models: 90 / 100 / 120 / 160 / 180 / 182

- **2 circuits:**

  Models: 200 / 240 / 320 / 360 / 420 / 485 / 540 / 600

They are equipped with centrifugal fan (EC plug-fan also available in models 90 to 360), and expansion valve.

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory.

The units comply with European Directives:

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

Technicians who install, commission, operate and service the unit must possess the necessary training and certifications, understand the instructions given in this manual and be familiar with the specific technical characteristics of the installation site.

2 - SAFETY ADVISE

To avoid any risk of accident during installation, commissioning or maintenance, it is obligatory to take into consideration the following specifications for the units: refrigerated circuits under pressure, refrigerant presence, electrical voltage presence and implantation place.

Because of all of this, only qualified and experienced personnel can perform maintenance tasks or unit repairs.

It is required to follow the recommendations and instructions in this brochure, the labels, and the specific instructions.

Compliance with the norms and regulations in effect is mandatory. It is recommended to consult the competent authorities regarding the applicable regulations for users of units or components under pressure. The characteristics of these units or components are included on the plates of characteristics or in the regulatory documentation provided with the product.

Caution: Before intervening in the unit, verify that the main power to the unit is cut off. An electric shock can cause personal damage. The main disconnect switch is located in the unit's electric cabinet.

The compressor and line surfaces can reach temperatures above 100ºC causing burns to the body. In the same fashion, under certain conditions these surfaces can reach very cold temperatures that can cause freezing risks.

During any handling, maintenance or service operations, the technicians involved must be equipped with safety gloves, glasses, shoes, insulating clothing, etc

Refrigerant

Important: These units contain **R-410A**, a fluorinated greenhouse gas covered by the Kyoto protocol.

All interventions on the refrigerating circuit must be performed in accordance with applicable legislation. Within the European Union, it is necessary to observe regulation (EU) No.517/2014, known as F-Gas, over **Certain greenhouse effect fluoride gases.**

Components of the R-410A	R-32	R-125
Chemical formula	CH2F2	CHF2CF3
Weight ratio	50%	50%
Unitary global warming potential (GWP)	675	3.500
Global warming potential (GWP)	2.088	

Ensure that refrigerant is never released to the atmosphere when the equipment is installed, maintained or sent for disposal.

It is prohibited to deliberately release refrigerant into the atmosphere. The operator must ensure that any refrigerant recovered is recycled, regenerated or destroyed.

The operator is bound by the obligation to perform periodical sealing tests on the refrigerating circuit according to the regulation (EU) No.517/2014**.** Please, consult the frequency of tests in chapter of "Maintenance".

In case of a leak:

- Toxicity: According to EN 378-1, R-410A belongs to the A1/A1 group, i.e. with high safety both in the mix and also in the case of a leak.
- Although it is not toxic, in case of a leak to atmospheric pressure the liquid phase evaporates. The resulting vapours are still hazardous because they are heavier than air and can force the latter out of the machine rooms. If refrigerant is accidentally released, ventilate the room with fans.
- Although it is not flammable, keep them away from open flames (e.g. cigarettes) as temperatures of over 300°C cause their vapours to break down and form phosgene, hydrogen fluoride, hydrogen chloride and other toxic compounds. These compounds may produce severe physiological consequences if accidentally inhaled or swallowed.
- To detect leaks, an electronic leak detector, an ultraviolet lamp or soapy water must be used . Flame detectors do not help.
- Immediately repair any refrigerant leak, using a recovery unit specific for R-410A that avoids a possible mixture of refrigerants and/or oils.

3 - AVAILABLE ASSEMBLIES

CZ - 90 to 360: assemblies with mixing box (plan view)

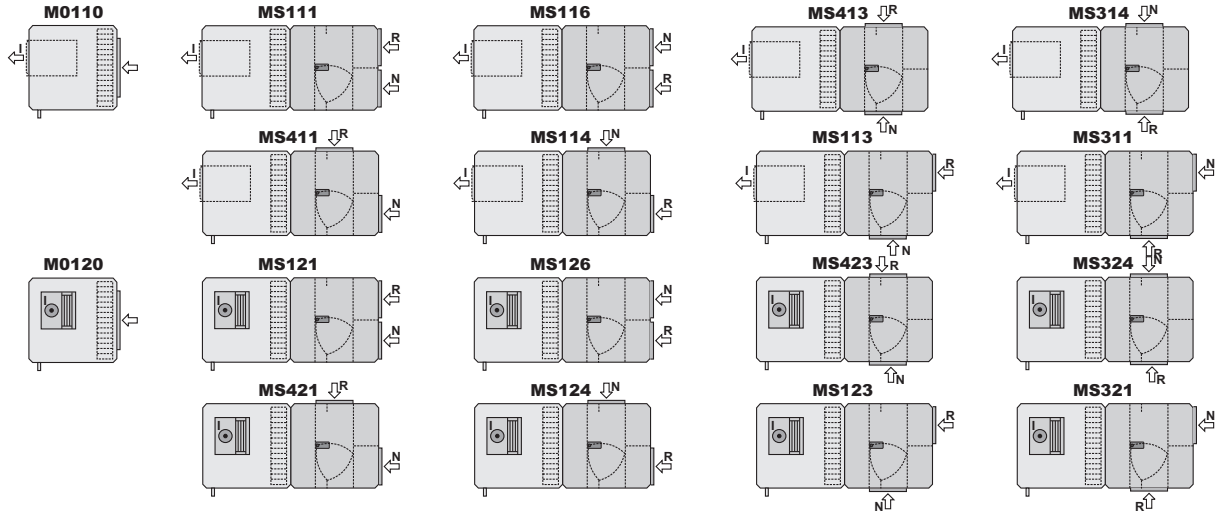
Air circulation
I = Outlet
R = Return
N = Fresh air intake
E = Air extraction

⊗ Air inlet
⊙ Air outlet

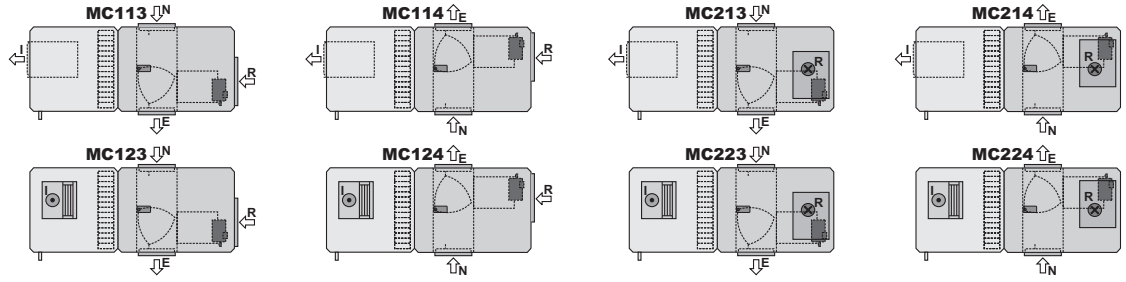
Designation **Mwxyz**

Assembly:	Return:	Supply:	Fresh air:
0 = Standard	1 = Rear	1 = Front	1,6 = Rear
S = Fresh air intake with damper	2 = Top	2 = Top	3 = Right-hand side (*)
C = Return fan	3 = Right-hand side (*)		4 = Left-hand side (*)
	4 = Left-hand side (*)		

(*) Seen in the direction of airflow



CZ - 90 to 180

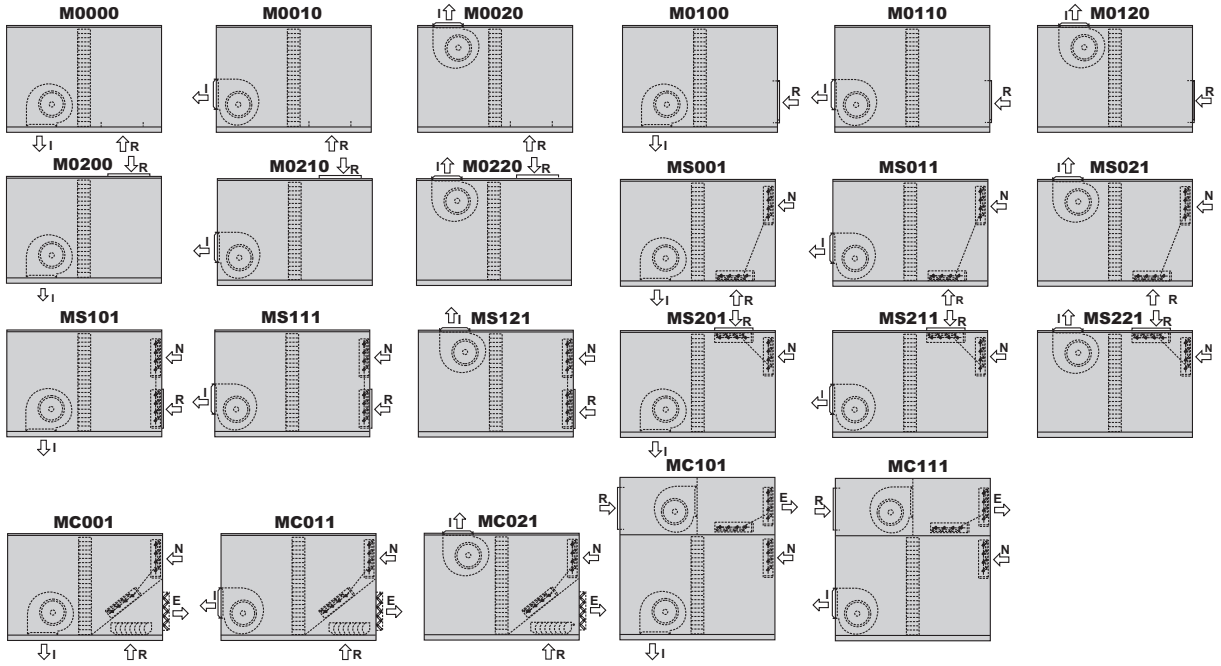


CZ - 420 to 600: assemblies with mixing box (raised view)

Air circulation
I = Supply
R = Return
N = Fresh air intake
E = Air extraction

Designation **Mwxyz**

Assembly:	Return:	Supply:	Fresh air:
0 = Standard	0 = Bottom	0 = Bottom	0 = No intake
S = Fresh air intake with damper	1 = Side	1 = Side	1 = Side
C0 = Lower return with plug-fan	2 = Top	2 = Top	
C1 = Return in top box with centrifugal fan			

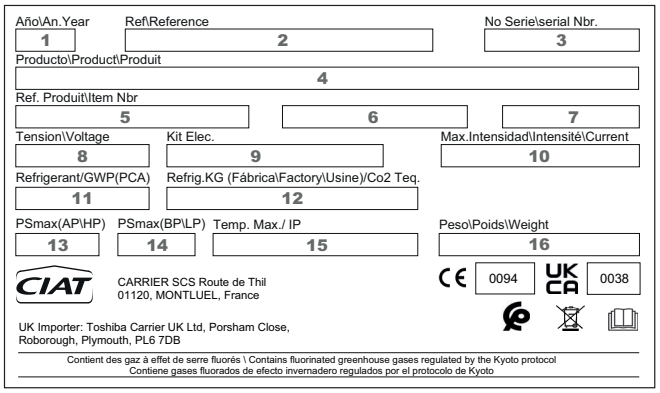


4 - UNIT IDENTIFICATION

Check the unit for any damage or missing components upon delivery.

Check that the details on the label, the packing and the name plate match the order. If equipment has been damaged, or there is a shortfall in delivery, notify accordingly.

All units bear, legibly and indelibly, a name plate located in a prime space, as appears in the attached image: Check that this plate matches the correct model.



Important: The serial number must be used in all correspondence regarding the unit.

Markings (name plate, punch marks, labels) must remain visible. They must not be altered, removed or modified.

Legend

1 Year of manufacture

2 Commercial product name

3 Serial number

4 Description of the product

5 Purchase order number

6 Sales order number

7 Work order number

8 Power supply

9 Power output of the auxiliary electrical heaters kit (optional) (kW)

10 Maximum absorbed current under full load (A) (including the electrical kit)

11 Type of refrigerant

12 Refrigerant content (kg) and Environment impact (CO_2 Teq.)

13 Maximum service pressure in the high pressure side (R-410A = 42 bar)

14 Maximum service pressure in the low pressure side (R-410A = 24 bar)

15 Maximum operating temperature (refer to “Opration limits”)
Maximum shipment and storage temperature: +50ºC
Electrical protection rating: IP54

16 Operation weight (kg) (empty weight + fluid + refrigerant)

5 - TRANSPORT AND HANDLING

5.1 Transport

The unit must be handled with care to avoid transport damage. Thus we recommend:

- Do not dispose of the transport supports or the packaging materials until the unit is in its final location.
- For transport in a container, one must be selected that has an easy load and unload to the installation location.

5.2 Discharging of the unit

The unit can be discharged using a forklift truck (all models) or a crane with a rocker arm and cloth slings (in models 420 to 600).

When using any of the two above methods, it is always mandatory to grasp the unit by the points intended for that purpose, as described in this chapter.

Any handling of the unit by other means or by gripping points different from those described here may be dangerous for both the unit and the personnel who are carrying out the discharging or transport work.

Always check the weight of the set and verify that the discharging method used is approved for handling that weight.

Note: please see the weight and the gravity centre coordinates of each model stated in the following section.

- **Discharge via forklift truck:**

  The unit is designed to be transported safely by using a forklift truck. The forks of the forklift truck must come in on the side of the unit, ensuring that the centre of gravity of the unit remains within the forks, because a misbalance in the transport may cause the unit to turn over and fall from the forklift truck.

  The recommended length for the forks will be bigger than the unit width, so that the entire weight-bearing structure can be supported on the forklift truck. This also prevents the possible introduction of the truck’s fork into functional parts of the unit that may cause damage to the unit.

  The standards and recommendations of the forklift truck must also be respected with regards to the maximum load, inclination of the fork carriage, elevation of the load for transport, and, in particular, the maximum speed.

- **Discharge via crane:**

  A rocker arm, as well as approved cloth slings, both suitable for the dimensions and weight of the unit, must be used in order to carry out the work safely and without causing damage to the units or to workers.

  These slings will be hooked to the two grips screwed on each crossbar in models 420 to 600.

  Make sure that the unit is protected from contact with the hooks to prevent damage to the housing.

The unit must be lifted and fixed with care, with maximum inclination of 15º, since it could harm its operation. Do not raise by points outside of those specified here.

5.3 Coordinates of the centre of gravity

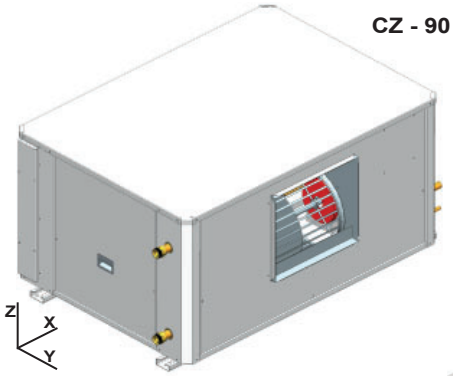
CZ	Centre of gravity (mm)			Weight (kg)
	X	Y	Z	
90	539	327	391	147
100	539	327	391	147
120	539	327	391	190
160	757	346	387	199
180	757	346	387	199
182	1.048	333	390	262
200	1.048	333	390	262
240	1.048	333	390	262
320	1.384	330	416	365
360	1.384	330	416	365
420	924	1.346	676	920
485	924	1.346	676	920
540	931	1.348	682	963
600	931	1.350	682	964

CZ	MS module	Centre of gravity (mm)			Weight (kg)
		X	Y	Z	
90 / 100 / 120	Montajes - 111, 116, 413, 314, 411, 114, 113, 311, 121, 126, 423, 324, 421, 124, 123, 321	558	459	330	98
160 / 180		723	465	327	118
182 / 200 / 240		1.030	436	327	152
320 / 360		1.360	471	360	200

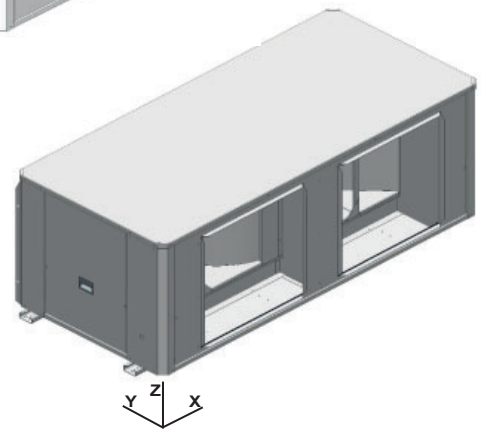
CZ	MC module	Centre of gravity (mm)			Weight (kg)
		X	Y	Z	
90 / 100 / 120	Asemblies - 113, 114, 123, 124	455	513	418	223
160 / 180		620	650	418	267
90 / 100 / 120	Asemblies - 213, 214, 223, 224	664	513	418	223
160 / 180		879	650	418	267

CZ	Asemblies	Centre of gravity (mm)			Weight (kg)
		X	Y	Z	
420	MS	1.104	1.346	699	1.000
	MC0	1.081	1.346	654	1.180
	MC1	1.156	1.346	933	1.626
485	MS	1.106	1.346	699	1.000
	MC0	1.085	1.346	654	1.180
	MC1	1.158	1.346	937	1.626
540	MS	1.106	1.346	699	1.000
	MC0	1.088	1.348	660	1.223
	MC1	1.158	1.348	938	1.669
600	MS	1.107	1.350	705	1.044
	MC0	1.088	1.350	660	1.224
	MC1	1.148	1.350	930	1.697

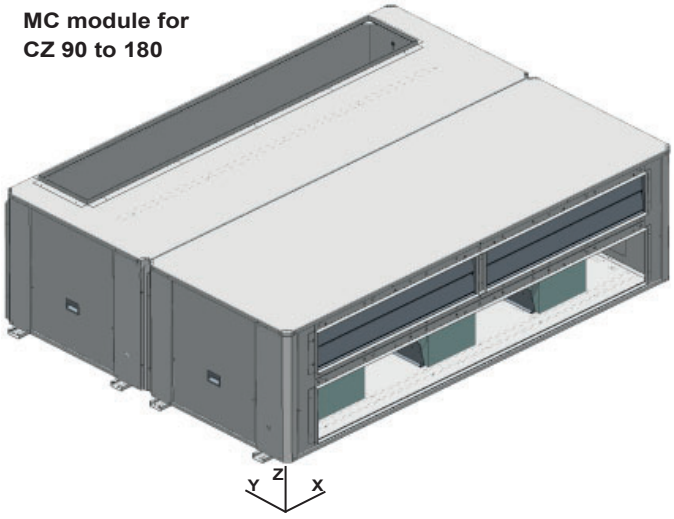
CZ - 90 to 360



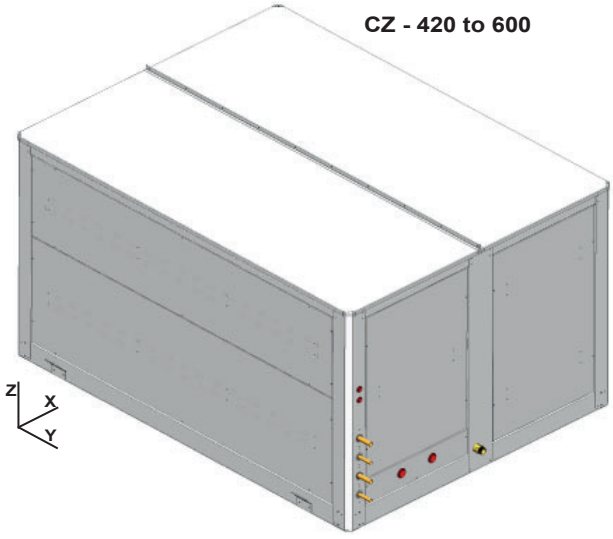
MS module for CZ 90 to 360



MC module for CZ 90 to 180



CZ - 420 to 600



6 - POSITIONING AND INSTALLATION

6.1 Choice of location

When choosing the location, whatever may be the selected fashion, the following precautions have to be taken into consideration:

- It is mandatory to comply with norm EN 378-3 on Safety and Environmental Requirements. Part 3: “In situ” installation and protection to people.
- The area where the unit will be located must be perfectly accessible for cleaning and maintenance operations (check minimum free space for maintenance). Leave enough space for air circulation around the unit.
- It is necessary to check that the surface of the floor or the structure supports the weight of the unit (please, consult the weight of the unit in the section “Centre of gravity coordenates”).
- It is necessary to ensure that the surface where the unit is going to be installed in completely flat. Any defect in the preparation of the unit support surface translates into stresses on the structure, which may result in its deformation.
- These units can be installed on the floor or on a brick frame or steel profile. Based on the fixing solution defined in the installation project, it will be necessary to plan the placement in the base of threaded rods in the expectation that the unit supports can be fixed later on. To do so, it is recommended that a template be made with the heights corresponding to the fixings.

  Foresee appropriate damping devices in these fixings to ensure that noise and vibration transmission is avoided (refer to the section “Anchorage for silent-blocks”).

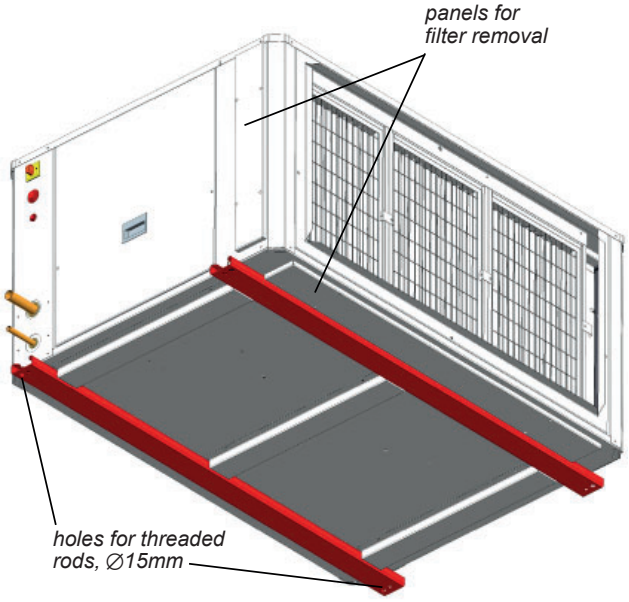
- In the event of assembling directly on silent-blocks to the ground, it is recommended that a template of the unit’s footprint with the anchoring points of the silent-blocks be made.
- With the help of the crane or the forklift truck, the unit will be raised to a sufficient height that the silent-blocks can be screwed into its base. The 4 silent-blocks of the corners must remain oblique and the interiors (if these exist) perpendicular to the unit.

All indoor units are designed for their indoor installation, connected to a duct network.

Necessary precautions must be taken to prevent the recirculation of air as well as obstructions.

- All models can be installed on the floor or on a brick frame or steel profile.
- Models 90 through 360 can be attached to the ceiling using the threaded rod:
  - Insert in the framework ceiling 4 threaded rods.
  - Insert the rods through the holes the unit has in its base.
  - Place the antivibration mounts, insert a washer and turn the nuts until the unit is well secured.
  - If there is enough space between the framework and the unit, a rubber or neoprene plate can be squeezed in.
  - Once these operations are finished, a false ceiling can be mounted to hide the unit, leaving a register cover to perform the maintenance and filter cleaning operations.

    The filter is mounted on a rail that can be removed from the side or from the base, to replace or clean it.



- Also, in case the installation has an air return which is not ducted, appropriately-sized grids must be foreseen in the space formed by the ceiling, the framework and the walls so that the unit aspires the return air from the air conditioned spaces.

6.2 Sound level

These units have been designed to operate with a low sound level. In any case, in the design of the installation, it must be taken into consideration:

- the outdoor environment for the acoustic radiation,
- the type of building for the noise transmitted in the air and the solid elements for the vibration transmission.

If necessary, a study must be commissioned to an acoustic technician.

Sound power level

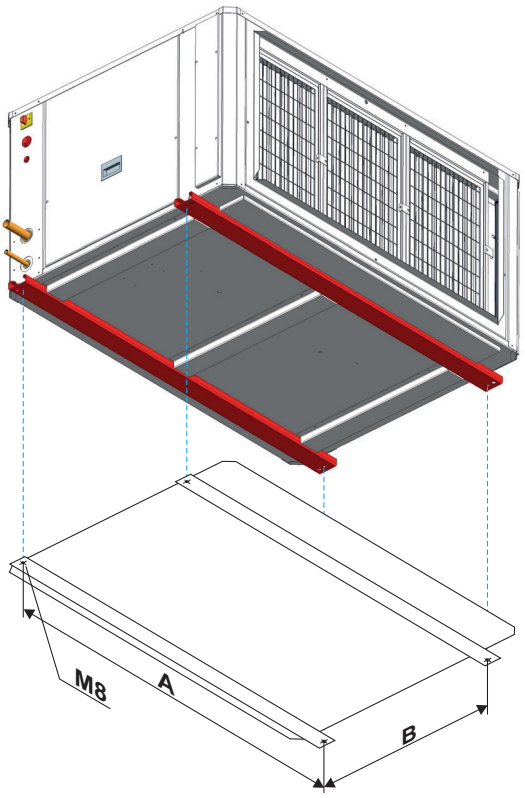
Sound power level in the indoor fan outlet to be taken into account for the silencer calculation:

CZ	90	100	120	160	180	182	200
Total dB(A)	79	82	80	80	80	82	85

CZ	240	320	360	420	485	540	600
Total dB(A)	82	83	85	86	87	89	92

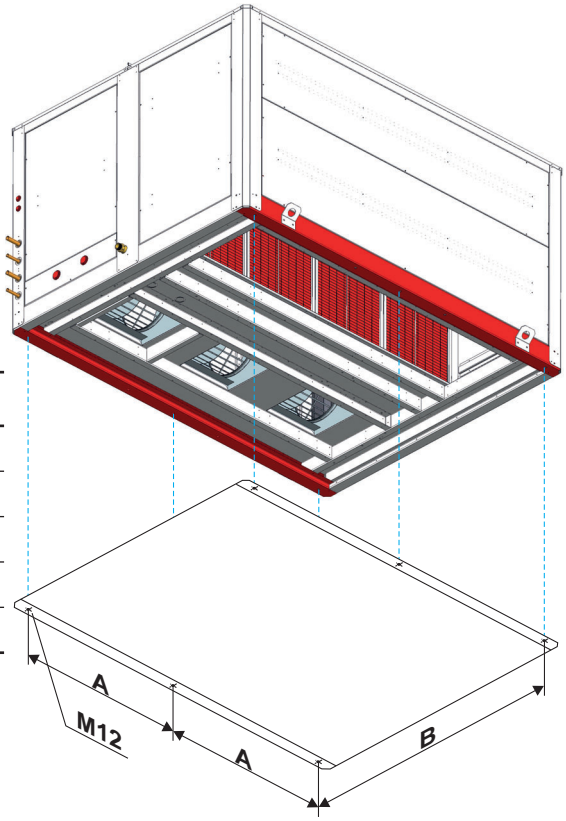
6.3 Anchorage for silent-blocks

CZ - 90 to 360



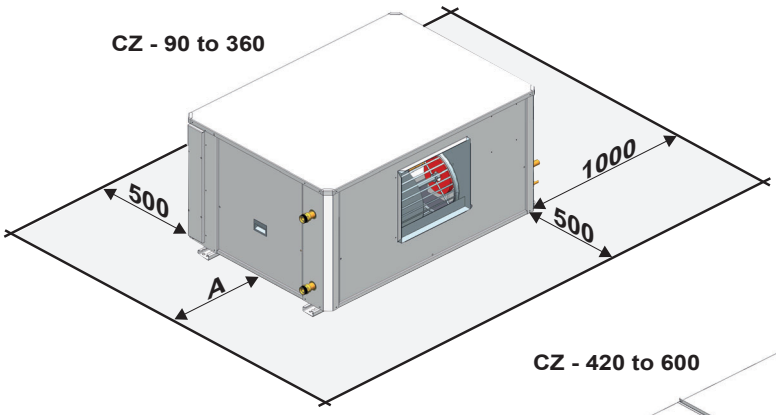
CZ	A (mm)	B (mm)
90 to 120	1.146	657
160 and 180	1.476	735
182 to 240	2.100	657
320 and 360	2.760	735
420 to 600	1.300	2.061

CZ - 420 to 600



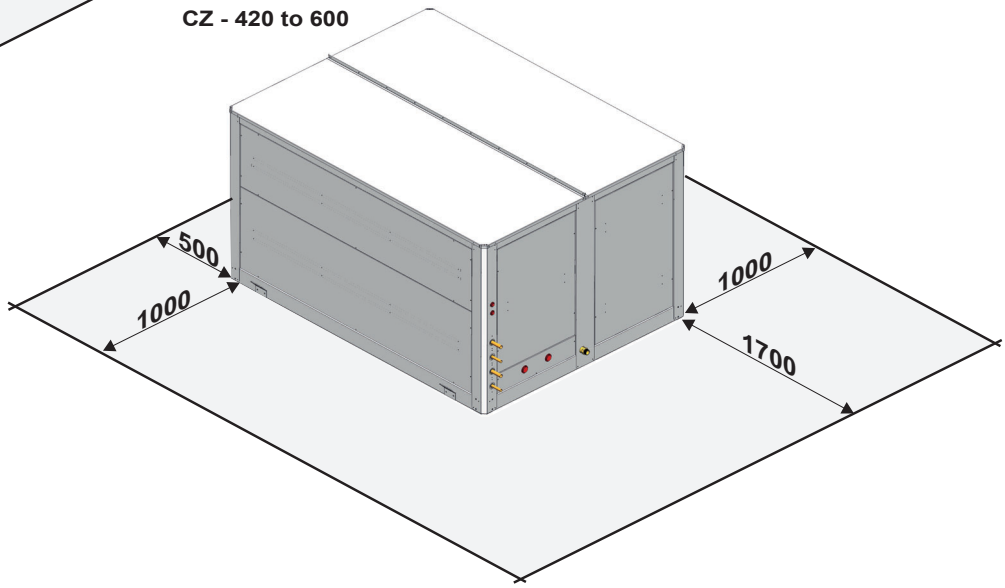
6.4 Recommended service clearance for unit start-up and maintenance operations (mm)

CZ - 90 to 360



CZ	A (mm)
90 to 180	250
182 to 360	1000

CZ - 420 to 600



7 - CHECKING BEFORE COMMISSIONING

Importante: Nunca se debe poner en marcha el equipo sin haber leído previamente la totalidad del manual.

7.1 Electrical connections

Installation norms

To perform the electric installation of the unit (cable glands, conductor section and their calculations, protections, etc.), refer to the technical characteristic table provided in the technical brochure of this series, the electrical scheme included with the unit and norms in effect that regulate the installation of air conditioning units and electrical receivers.

The electric power supply of the unit must be sized in accordance with the maximum power input by the unit taking into account all the options it features (if necessary, refer to the technical brochure).

Verify that electrical power corresponds to the one on the data plate and that the voltage remains constant.

Check that the electrical connections are correct and tight (an electrical diagram is included with each unit, along with its legend).

Note: All connections in the site are the responsibility of the installer. These connections are always made as per the current regulation.

To prevent electrical shocks, make all electrical connections before energizing the unit. Check that the automatic switch is closed. Omitting this can cause personal damage. Make the ground connection before any other electrical connection.

The installer must fix line protection elements according to the effective legislation.

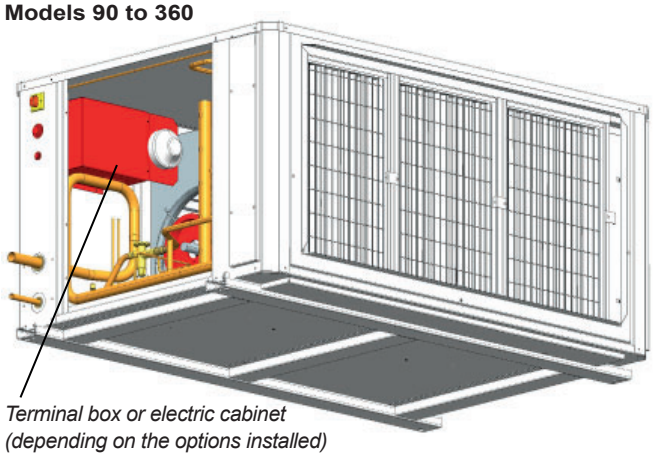
Connection with the outdoor unit

In the case of connection of a unit CZ with an outdoor unit SC, the instruction manual of the condensing unit should be consulted (N10230), since the electrical connection of both units is explained there.

Connecting optional devices

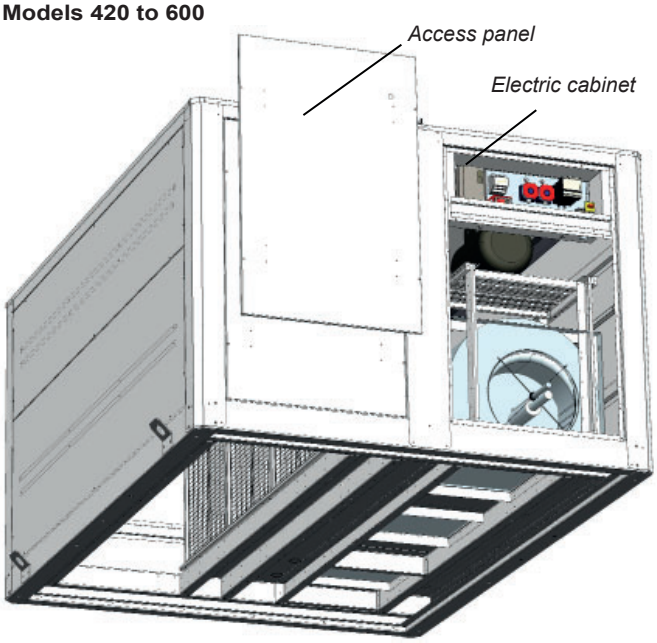
Indoor units CZ have an auxiliary terminal box or electric cabinet for the connection of optional elements such as the soft starter, dirty filter pressostat, etc.

Models 90 to 360



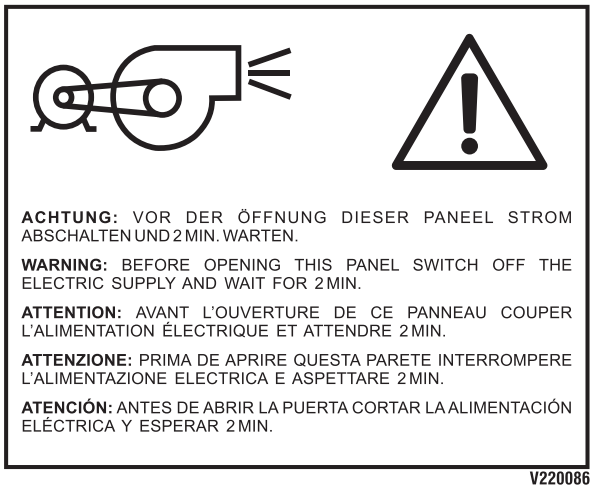
Terminal box or electric cabinet (depending on the options installed)

Models 420 to 600



7.2 Checks in the centrifugal fans

- Before commissioning, check the blade rotation direction and that the axis turns without strokes nor vibrations
- Once running, check the operation conditions: pressures, flows and consumptions.
- The overlapping of characteristic curves of the fan and the room is very important, so that the flows and pressures provided to the duct network are as required.

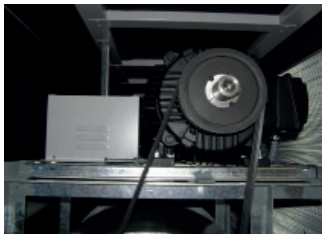


- **Soft starter detail (optional):**

  Soft starter of the supply and/or return centrifugal fans which prolongs the set time mainly aimed at installations with cloth ducts. Compulsory for motors with an output of 15 kW and above.

For motors up to 15kW it is installed in the factory in the auxiliary electric panel. For larger motors it is installed next to the ventilation group.

Motor output up to 15 kW ***Motor greater than 15 kW***



Pulley and belt calibration

Attention: Before performing these operations, it is necessary to verify that the unit is disconnected from mains.

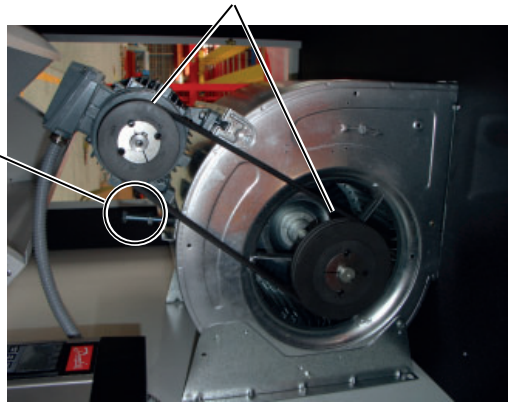
The centrifugal motorfans are coupled through pulleys and belts. In these fans, the following must be taken into consideration:

Pulley alignment:

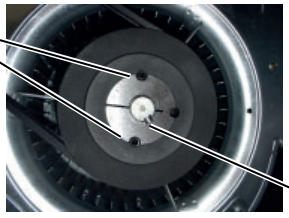
- The pulleys must be on the same plane, so it is important to check them with the help of a ruler or a laser aligner.
- In case they are not aligned, remove the pulley screws, and after removing the taper pin, the set of pulley and taper can be slided over the axis (this action can be performed both in the motor as well as in the fan).

Pulleys must stay on the same plane

Tensor screw



Pulley screws



Taper pin

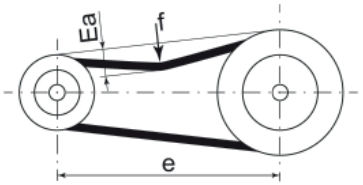
Belt tension:

After fixing the pulleys on the same plane, the belt tension is made by tightening the tensor screw.

Excessive tension on the belt can lead to premature wear on the assembly. Insufficient belt tension can cause slippage, overheating and premature wear of the belt.

It is essential to tension the belts using the “Deflection test” described below:

- The belt tension must be checked and corrected using a suitable measuring instrument (tensiometer or dynamometer).



- “Ea” calculation:
  - Ea = (e x E)/100 = deformation in mm for a pulley centre distance of 100 mm
  - e = pulley centre distance in mm
  - E = see table below for the value
  - f = force applied
- At the centre of the centre distance “e”, apply a force “f”, as determined in the table below, to each belt. Set the belt tension to obtain the calculated deflection “Ea”.

Belt type	f(N) ①	d (mm) ②	E (mm) ③
SPZ	25	56 ≤ 71	2.45
		< 71 ≤ 90	2.20
		< 90 ≤ 125	2.05
		125	1.90

① Load to be applied per belt f (N)

② Small pulley diameter (mm)

③ Belt deformation for a pulley centre distance of 100 mm - E (mm)

Important: During commissioning, the belt tension must be checked after 48 hours of operation.

The belt tension must be checked in all cases and before system start-up.

7.3 Checks in plug-fans (optional)

- Electronic plug-fans with variable speed and flow sensor that can be incorporated in supply (models 90 to 360) and return (models 420 to 600).
- The coupling of characteristic curves of the fan and the room is very important, so that the flows and pressures provided to the duct network are as required.
- The variable-speed plug-fans have a flow control pressostat. This pressostat comes from the factory adjusted to the indicated flow.
- It is possible to readjust the flow for different conditions, on site, by means of the on the pGD1 terminal (see the specific brochure of the CIATrtc contro).

7.4 Air ducts connections

The air supply and return ducts must be calculated in accordance with the rated flow and the unit's available pressure (refer to the technical brochure of this series).

The duct calculation and design must be made by qualified technical personnel.

It is advisable to take into consideration the following recommendations:

- Curves in the fan supply outlet(s) must be avoided. It is recommendable to have a straight section of duct measuring approximately 1 metre. If it is not possible, they must be as smooth as possible, using indoor deflectors when the duct is of large dimensions.
- When making the ducts, direction sharp changes must be avoided since they can generate occasional pressure drops, which affect the available pressure and the flow. The location of discharge and aspiration grilles must be studied carefully to avoid the air recirculation and the transmission and generation of noises to the interior.
- Flexible connections must be made between the ducts and the unit that avoid the noise and vibration transmission.
- No matter the type of ducts type to use, these must be insulated and not be composed of materials that propagate fire nor expel toxic gases in the event of a fire. The internal surfaces must be smooth and should not pollute the air that circulates within them. In any case, the effective legislation about this issue must be respected.

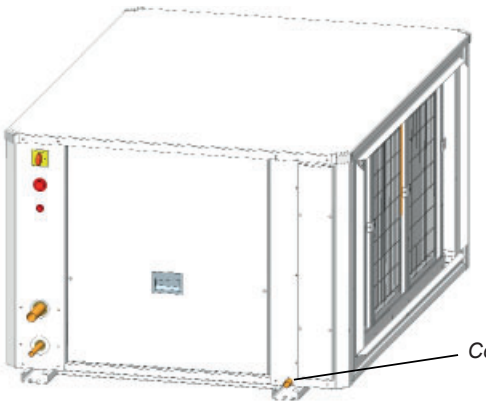
Caution: These units are designed to be connected to a duct network. In the event that the outlet fan of the indoor circuit is accessible from a particular point in the duct network, the installer must install a protection mesh in the discharge as per the current regulation.

7.5 Condensate drain connection

Models 90 to 360

These indoor units are equipped with a condensate drain pan, with a bronze, gas threaded 3/4" M drain junction.

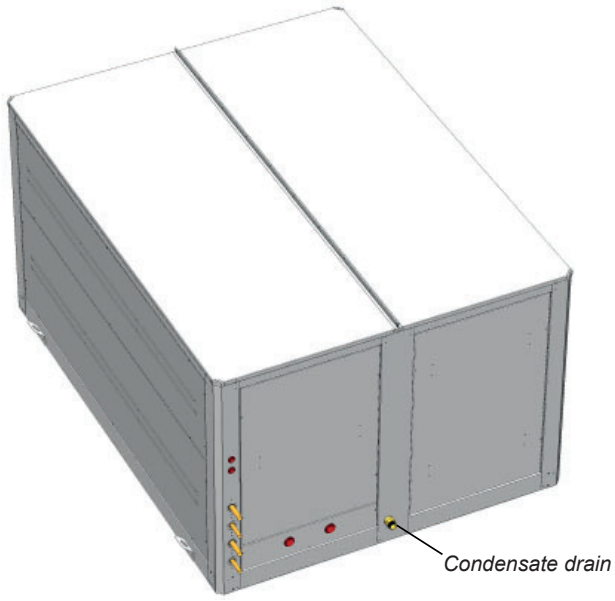
CONNECT SIPHON
METTRE SIPHON
PONER SIFON
V220014



Models 420 to 600

These indoor units are equipped with a condensate drain pan, with a bronze, gas threaded 1 1/4" M drain junction.

CONNECT SIPHON
METTRE SIPHON
PONER SIFON
V220014



Siphon installation norms

All water drain tubes must be provided with a siphon to avoid bad smell and water spills.

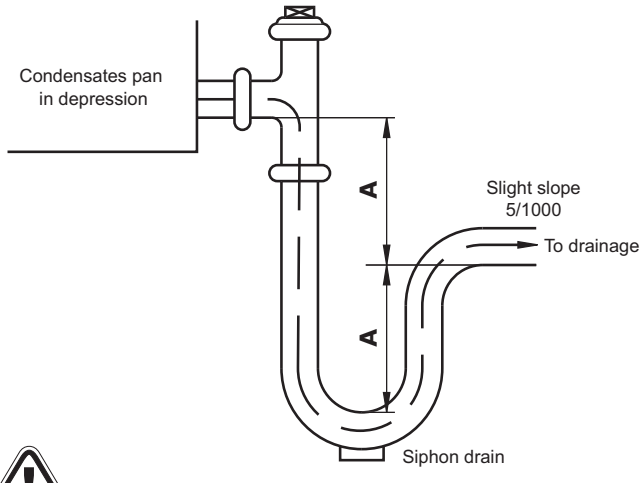
Pan in overpressure:

It's installed to avoid the access through the drain piping of bad smells.

Pan in underpressure:

Besides the above application, water must be suctioned from the pan because of the depression with respect to the motorfan assembly.

- Perform the siphon assembly as per the scheme of the attached starting diagram:
  - For the correct siphon design, the "A" height must be at least twice that of the underpressure (mm.w.c) where the condensate pan is placed.
  - Check that the condensate outlet is not clogged.
  - The drain piping must be slightly sloped to ease circulation towards the drain.
  - The original diameter of the piping must be respected. No reduction can be made.

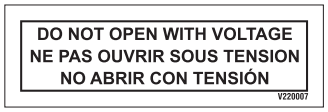


Check the watertightness of the connection.

8 - SAFETY ELEMENTS

Main door switch

By using a mechanical device, it impedes access to the electric panel when the unit is with voltage.



Control of air flow (optional)

- For those units with centrifugal supply fans (standard), a differential pressostat can be incorporated in order to measure the variation in air flow. This pressostat allows the detection of fan belt breakages, since the fan relay only detects operating faults that have arisen in the motor. This safety device is included in units with electrical heaters. This pressostat is installed in the factory in the auxiliary electric panel of the indoor unit.
- The supply plug-fans (optional) adapt their speed to the average flow measured by the differential pressure sensor and the value set as a setpoint in the electronic control.

Clogged filter detector (optional)

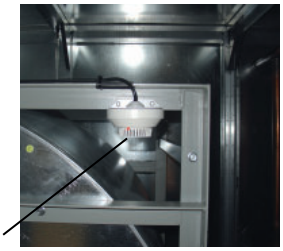
Differential pressostat for indication, through an automatic reset alarm, of a level of dirtiness of the filters greater than the established level.

Automatic reset.

Pressure reading is done thanks to two intakes within the air flow before and after the filter, such that a comparison is made between the pressure of the inlet air to the filter (positive) and the outlet air of the same to the other side of the evaporating coil (negative).

Smoke detector (optional)

In accordance with standard NF S 61-961, this smoke detection station uses a LED to indicate the installation status, and if the probe detects the presence of smoke in the installation, it stops the operation of the unit.



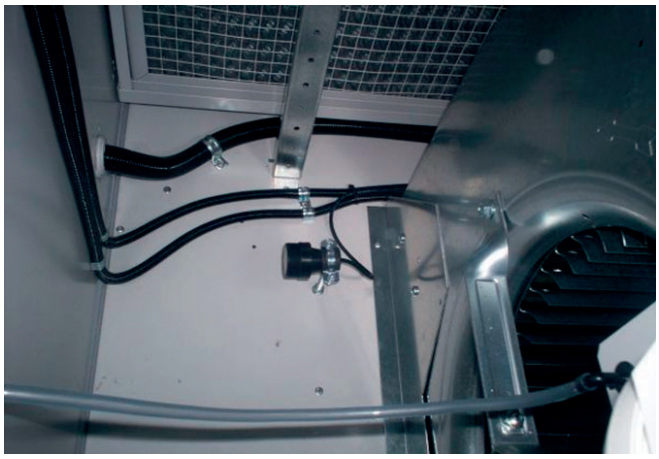
Smoke detecting probe

Refrigerant leak detector (optional)

The gas detector sensor is a device that signals leaks in refrigerant. When the loss of a certain concentration is detected, the sensor sends the alarm to the control, which stops the unit and locally activates a acoustic and visual signal.

This offers the advantage of acting immediately to gas leaks, guaranteeing the safety of persons who are in the proximity thereof. Its installation complies with European regulations F-GAS, EN378, and ASHRAE 15.

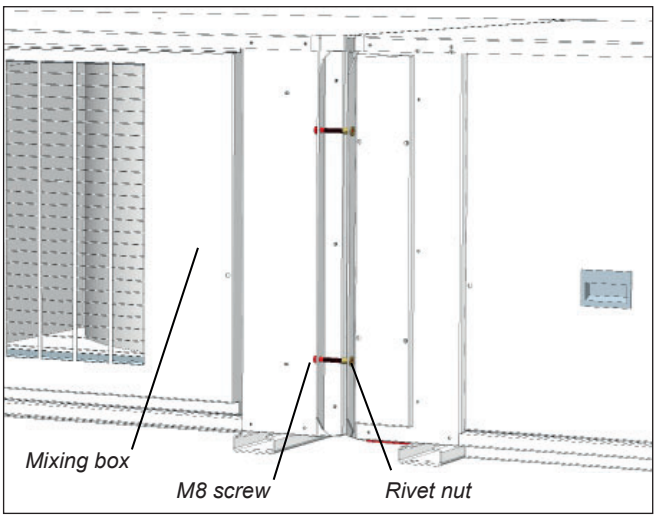
This sensor is installed next to the supply fan. In case of alarm, it is reset manually.



9 - OPTIONS

The installation of some of these options brings in pressure drops at air level therefore this must be considered when selecting fans. the pressure drop graphs in the options, can be seen in the technical brochure.

Note: all available assemblies indoor units with mixing boxes can be found in Chapter 3.



9.1 Mixing box

In models 90 to 360 of the CZ unit the mixing box is a separate module. The link between them is made with the M8 screws and rivet nuts provided from factory.

Note: the electrical connection of the mixing box (MS or MC) is performed from the electric cabiner to the condensing unit.

In the case of connection with a condensing unit SC, the instruction manual of this outdoor unit should be consulted (N10230), since the electrical connection of both units is explained there.

9.2 Electrical heaters

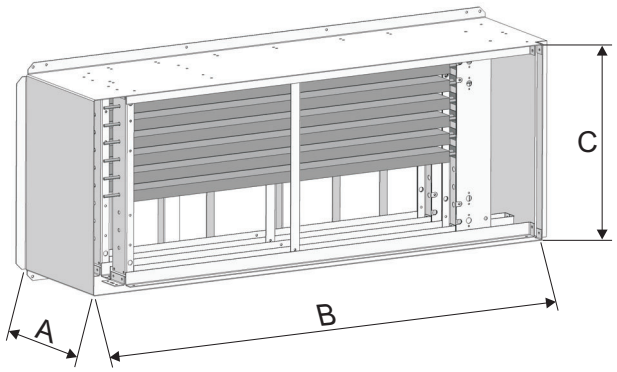
- The auxiliary electrical heaters are ready for operation in two power stages.
- The electrical heaters acquired with the unit will be incorporated to it modifying the electric panel in the factory, so that it is compatible with the electronic control.
- The electrical heaters requested for units already shipped will be sent in a kit, and the installer will need to assemble the elements required for the operation of the unit and for compliance with the legal regulations that are applied to the modified unit with regard to safety.

Models 90 to 360

In these models, the connection is made at the fan outlet:

- In models 90 to 120 each of the rows of electrical heaters has an output of 1 kW. As from model 160, the output of each row will be 2 or 3 kW according to the total output.
- In models with two supply fan outlets (two frames), as well as in the case of 1 supply outlet with 2 rails, the electrical heaters are distributed as symmetrically as possible between both frames.

Frame for assembly of the auxiliary heater in the supply fan outlet:



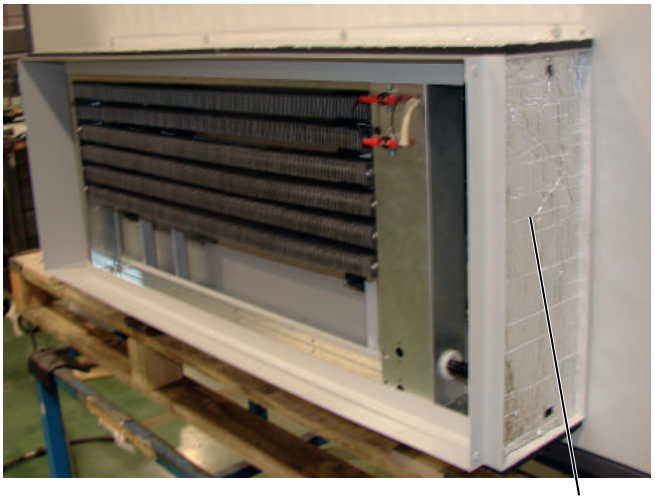
CZ	Total output (kW)	Dimensions (mm)		
		A	B	C
90 / 100 / 120 (1 supply outlet)	6 / 9 (1 row)	150	482	443
	12 (2 rows)	262	482	443
160 / 180 (1 supply outlet)	12 / 15 / 18 (1 row)	189	1.142	443
182 / 200 / 240 (2 supply outlet)	15 / 18 (1 row)	189	1.142	443
	24 / 30 / 36 (2 rows)	297	1.142	443
320 / 360 (2 supply outlet)	15 / 18 / 24 / 30 / 36 (1 row)	189	1.142	443

Note: in models with centrifugal return fan it is not possible to assemble electrical heaters with outputs of 30 and 36 kW.

Access for maintenance:

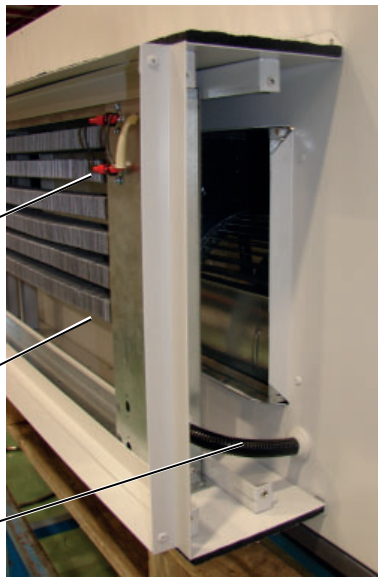
The frame has access designed from the right side for maintenance. In the case of 2 frames (2 supply outlets) are placed symmetrically so that the electrical heaters can be taken out without problems, that is, one will be accessed from the right and the other one from the left.

To access the electrical heaters , the 2 screws that fasten the frame side panel must be unscrewed as shown in the following image:

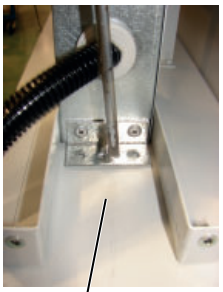


Access panel

In order to remove the electrical heaters the power supply cables must be disconnected from the terminal board and the hose taken out.



Then, unscrew the screw that fastens the electrical heaters' frame and take out by the rail, as shown in the following images.



Rail

9 - OPTIONS

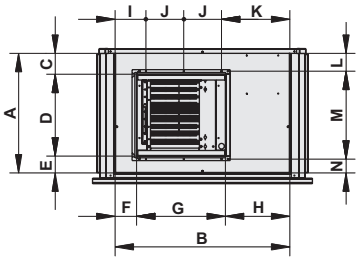
Kit assembly:

When the frame with the electrical heaters is provided in a kit, follow the steps below for connecting it:

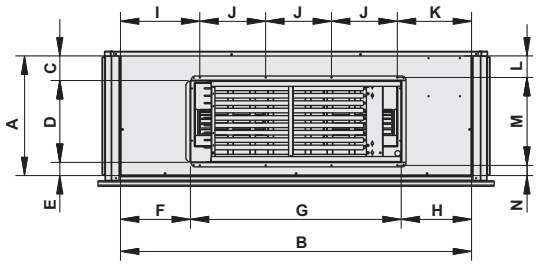
Step 1: lay down the frame on the panel to set the hole locations that will fix said frame to the panel. Another hole must also be drilled to connect the hose to the electric power supply.

If it is not possible to perform the previous step, the distance between holes, as well as the frame dimensions, are displayed in the following schemes:

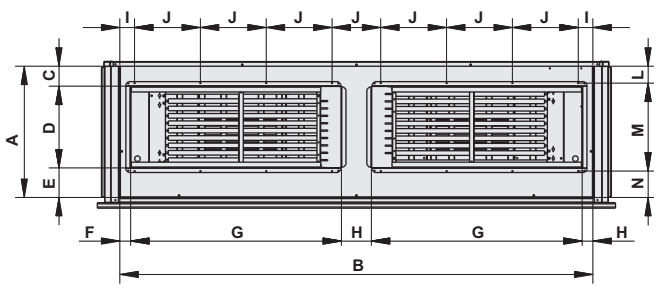
CZ - 90 / 100 / 120



CZ - 160 / 180 / 182 / 200 / 240



CZ - 320 / 360



Centrifugal fan (standard):

CZ	A	B	C	D	E	F	G	H	I	J	K	L	M	N
90 / 100	648	946	145	443	60	165	482	299	217	204	320	128	476	43
120	648	946	113	443	92	115	482	349	167	204	370	96	476	75
160 / 180	648	1276	46	443	158	81	1142	53	133	356	75	30	476	142
182 / 200	648	1900	161	443	44	379	1142	379	430	356	400	146	476	27
240	648	1900	133	443	72	379	1142	379	430	356	400	116	476	55
320 / 360	711	2560	108	443	160	58	1142	160	79	356	264	91	476	143

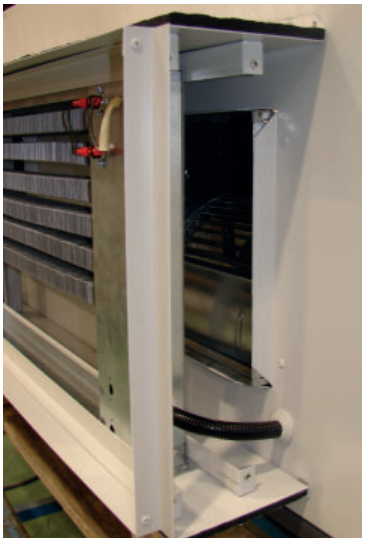
Plug-fan (optional):

CZ	A	B	C	D	E	F	G	H	I	J	K	L	M	N
90 / 100	648	954	95	443	112	236	480	236	259	204	287	80	473	95
120	648	954	95	443	112	236	480	236	259	204	287	80	473	95
160 / 180	648	1276	46	443	158	81	1142	53	133	356	75	30	476	142
182 / 200	648	1900	133	443	72	379	1142	379	430	356	400	116	476	55
240	648	1900	133	443	72	379	1142	379	430	356	400	116	476	55
320 / 360	711	2560	108	443	160	58	1142	160	79	356	264	91	476	143

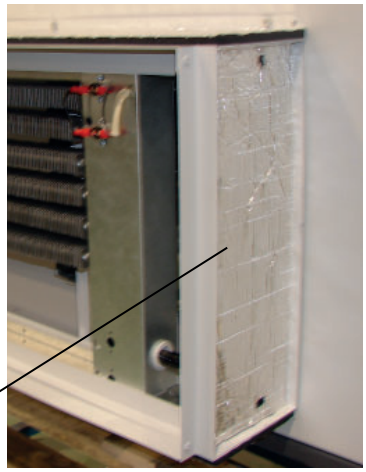
Step 2: fasten the frame to the panel with self-tapping screws.

Step 3: insert the hose through the drill made for the connection to the indoor electric panel of the unit.

Important: The connection of the necessary elements for the adequacy to the handling of the unit must be performed by the installer.



Step 4: close the access panel. The outlet is ready for ducting.



Models 420 to 600

Assembly and connection inside the unit.

Kit assembly:

When the frame with the electrical heaters is provided in a kit, follow the steps below for connecting it:

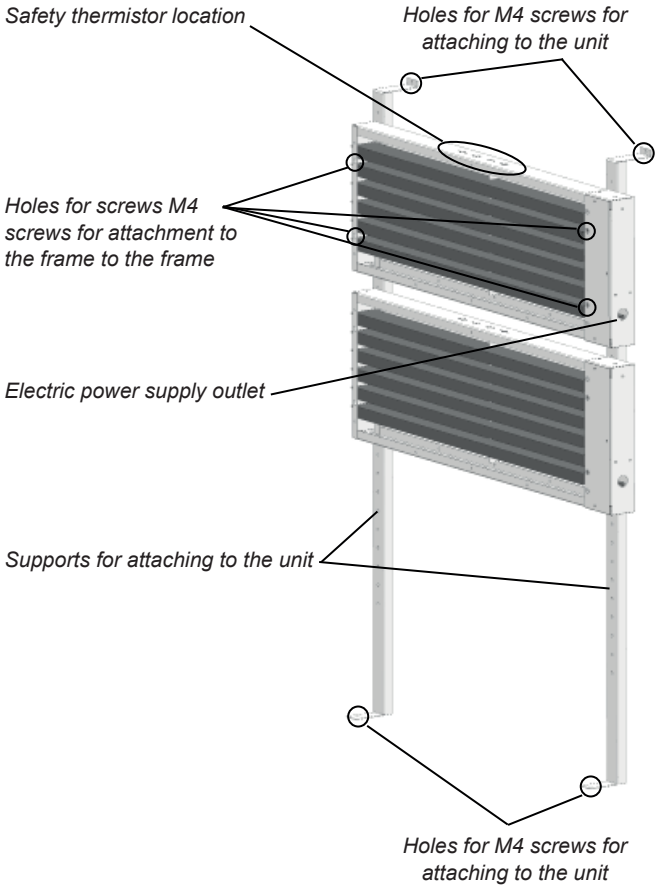
Step 1: the electrical heaters are sent divided into 2 or 4 frames, depending on the required power, as shown in the following table:

Total output (kW)	36	45	54	72
Stage power (kW)	18 + 18	18 + 27	27 + 27	36 + 36
CZ - 420 / 485	2 frames			--
CZ - 540 / 600	--	2 frames		4 frames

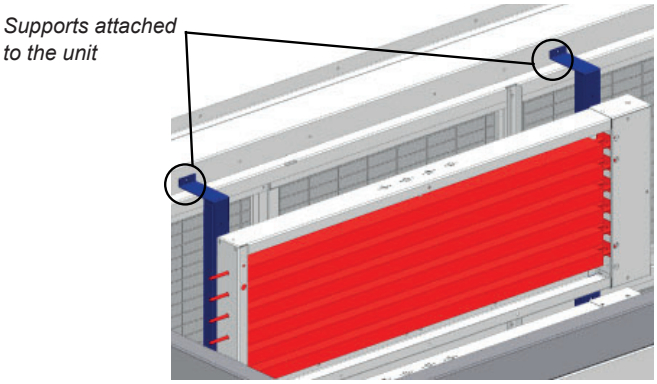
To attach these frames to the unit, four supports are provided. In the case of 2 frames, screw each one of them to 2 supports with the four M4 screws included in the kit.

The height of the frame on the support will depend on the position of the supply fan, since it should never be behind the fan volute.

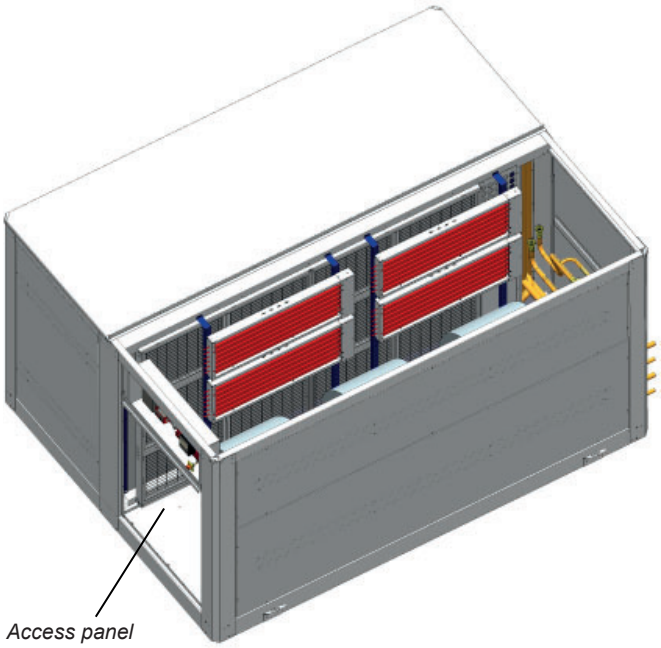
For example, in the following diagram, the frame location will be valid for lower and side supply.



Step 2: attach the supports with the frames linked inside the unit. To that extent, drills have been made in the unit to which the supports must be screwed.

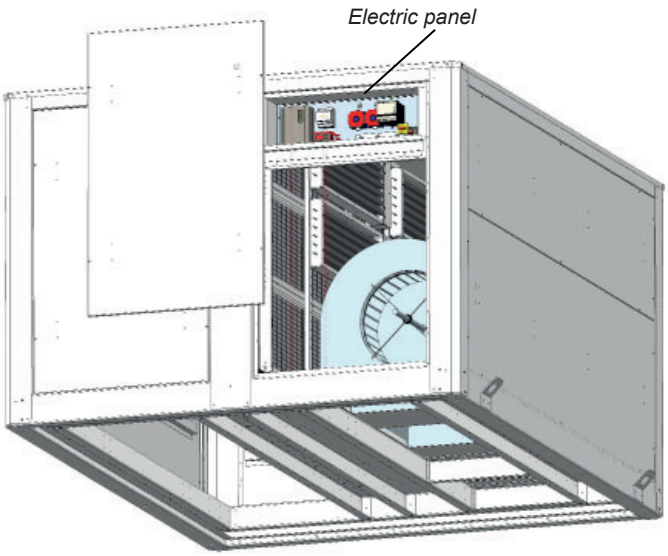


The supports attached to the unit can be seen in the following illustration.



Step 3: take the hoses with the electric power supplies to the indoor electric panel of the unit.

Important: The connection of the necessary elements for the adequacy to the handling of the unit must be performed by the installer.



9.3 Hot water coil

Hot water coil for mounting inside the unit, with a 3-way valve managed by the unit's electronic control.

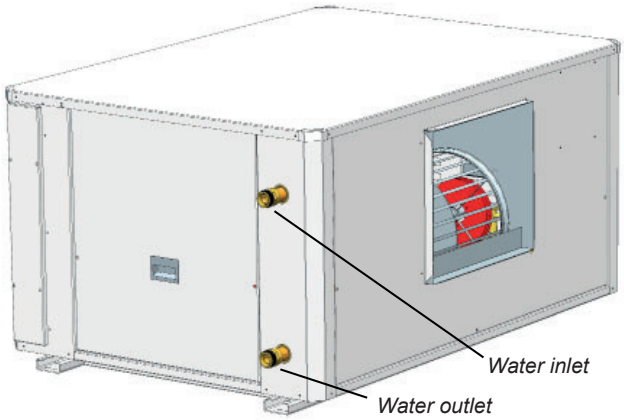
Two types of water coils are availables:

- Nominal coil for heating in cooling-only units.
- Auxiliary coil for heating in heat pump units. In this case the air inlet temperature matches the air outlet temperature of the indoor coil.

Note: With stop-drop in the indoor air coil it is not possible to assemble the hot water coil

Note: check position and dimensions of input/output of the coil in the technical brochure of this series.

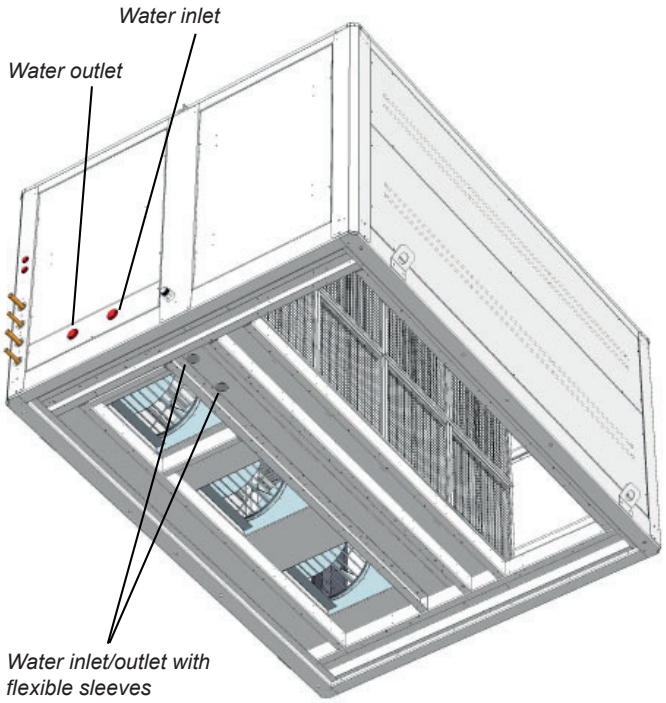
Models CZ 90 to 360



Models CZ 420 to 600

The inlet/outlet connections of the hot water coil are located inside the unit. The connection can be established via the unit base using flexible sleeves or via the side panel.

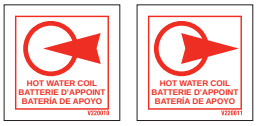
The sheet precut positions are indicated in the below drawing.



Recomendations:

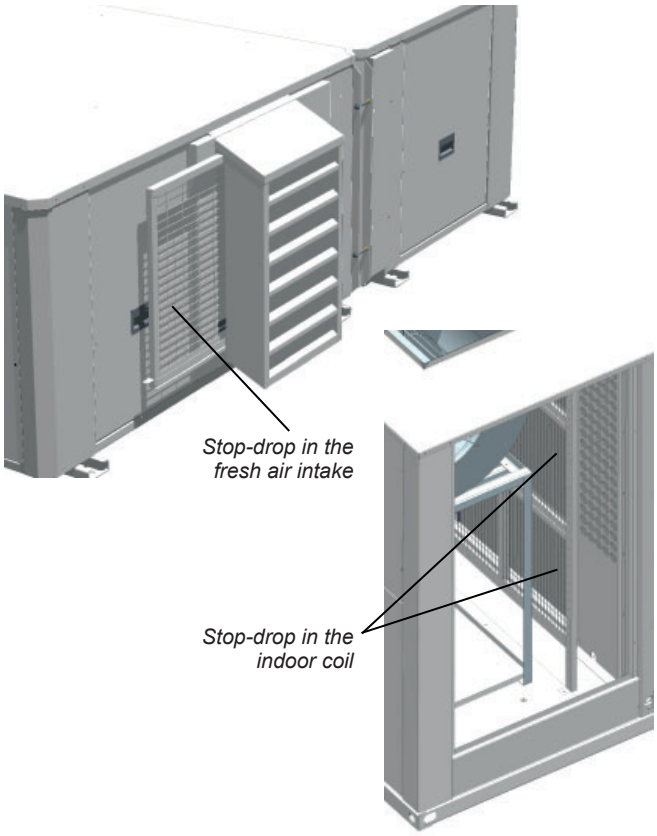
- Coil filling:
  - The coil filling must be made with the bleeder valve open until water runs through it, which is when it is time to close it.
  - Cut off the water supply and let the bubbles generated go up to the highest coil point, which is the same as the bleeder valve, and eliminate by opening the purger.
  - Pour more water into the circuit and repeat the previous steps.
  - Activate the water pump (to be foreseen by the installer) and repeat the previous steps until no air noises are heard in the piping, which is when the filling of the installation will have been finished successfully.
- In case of long unit stops, and forcibly if they happen in the winter season, the coil must be emptied.
- Possible water freezing must be avoided: glycolling water or by using anti-freeze thermostat that triggers the 3-way valve.

  Note: this thermostat is mandatory if the unit is installed outdoors, as well as in cases in which it uses free-cooling and works outside at negative temperatures.
- The direction of the water flow must be correct and so the following indications must be observed:



9.4 Stop-drop

Stop-drop in the indoor air coil and at the fresh air intake.



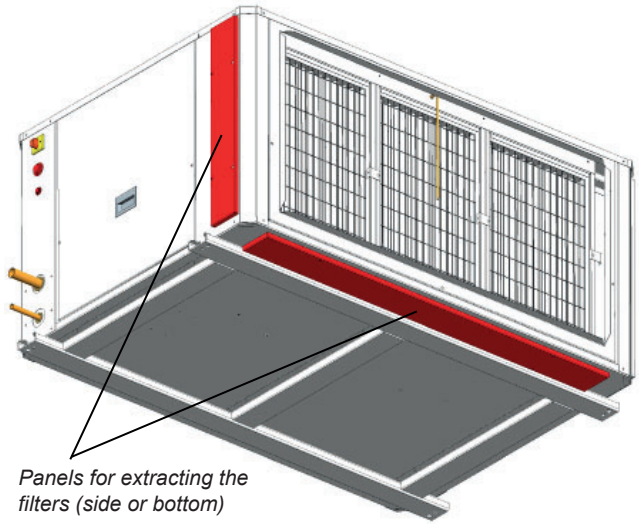
Note: with hot water coil (nominal or auxiliary) it is not possible to assemble the stop-drop.

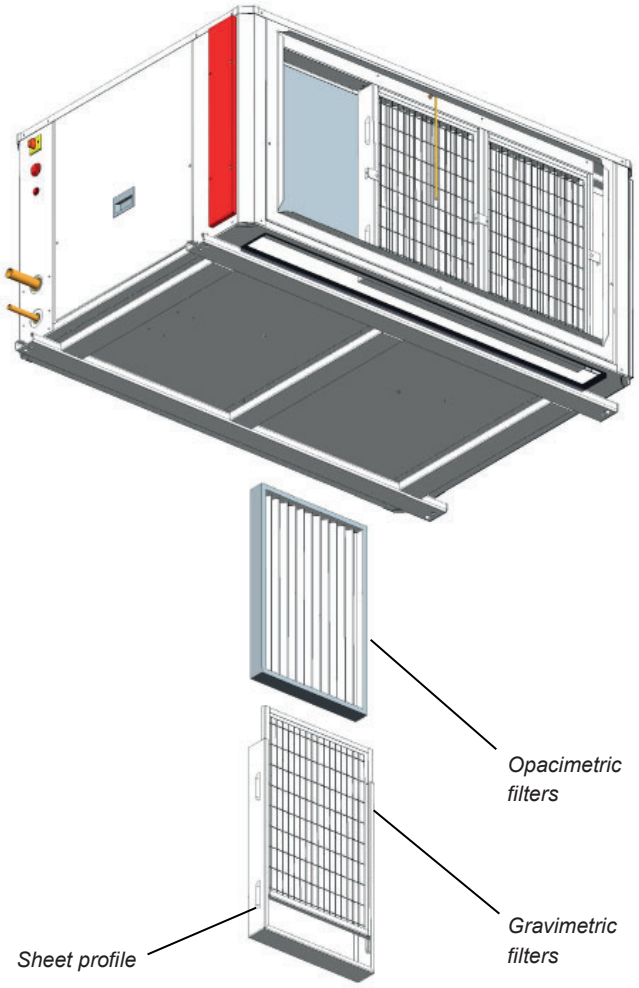
9.5 Filters

All model types can substitute the filtering mesh that the units include regularly with G4 rating, mounted on the same frames. Creased opacimetric filters classified F6 to F9 can also be added.

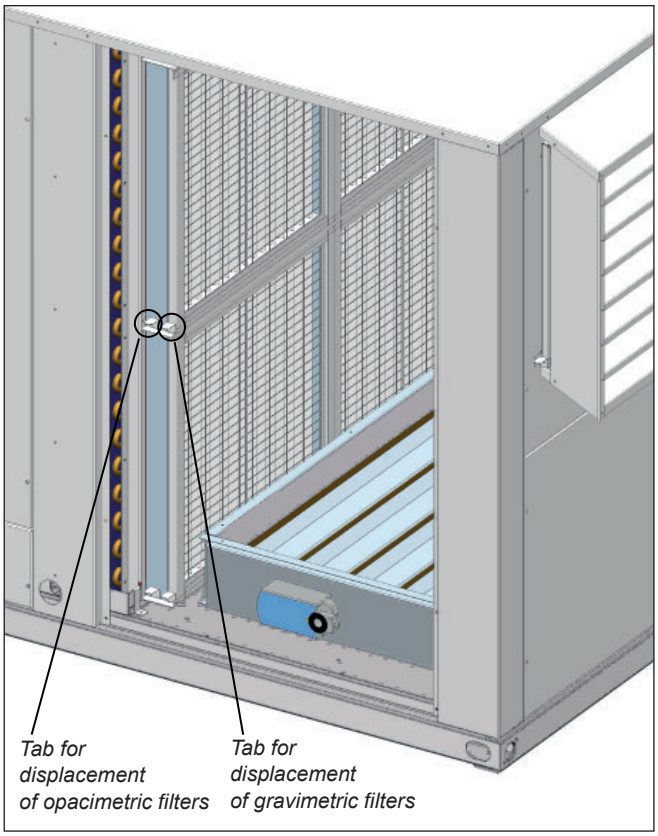
For taking out the filters, both the frames with the gravimetric filters as well as opacimetric frames (if the unit has includes them) are assembled over a sheet steel profile.

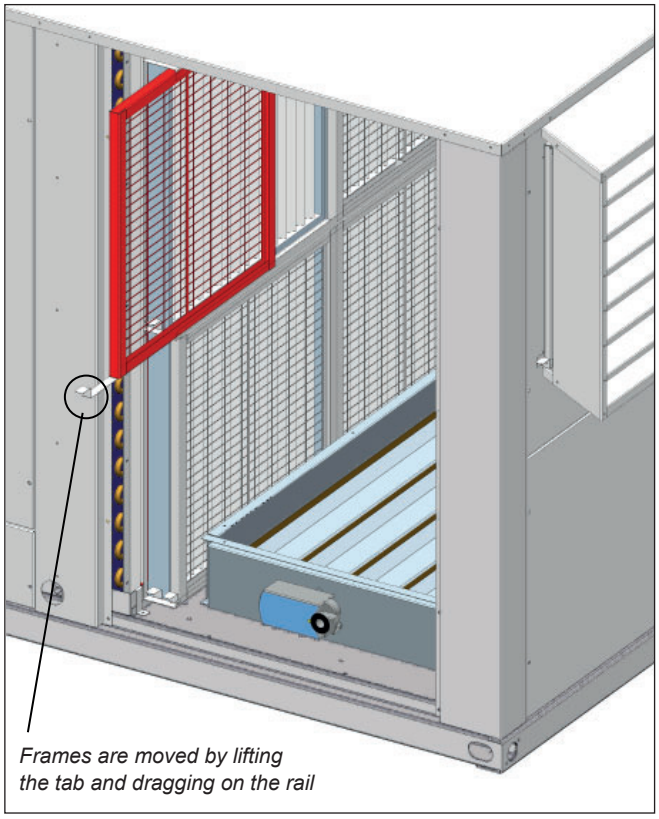
Models CZ 90 to 360





Modelos CZ 420 to 600





Note: assemblies with return fan can also have filtration at the air return (please, consult).

The available options are:

- Gravimetric filter G4.
- Opacimetric creased filters F6 + gravimetric G4.

The minimal maintenance operations and their periodicity will be made in accordance with national regulations.

All work on the unit's electrical or refrigerant systems must be carried out by a qualified authorised technician. See the standard EN 378-4.

Technicians who intervene with the unit must use the necessary safety equipment (gloves, goggles, insulating clothing, safety shoes, etc.). Furthermore, if working around sources of significant noise, we recommend the use of noise-dampening headgear.

Caution: Before intervening in the unit, cut off main power.

10.1 General recommendations

- Do not lean on the unit. A platform must be used to work on a level.
- Do not lean on the copper refrigerant tubes.
- Keep the unit clean.
- Keep the space surrounding the unit clean and cleared in order to avoid accidents and ensure the proper ventilation of the coil.
- Perform a visual (remains of water or oil below or around the unit) and auditory inspection of the entire installation.
- In general, a corrosion control must be performed on the metallic parts of the unit (frame, bodywork, exchangers, electric panel, etc.).
- Check that the insulation foam is not unstuck or torn.
- All the electric connection states must be checked as well, as well as the air tightness of the different circuits.

10.2 Access to the main components

Next, some recommendations are stated to perform the cleaning of the unit's components:

Condensate drain pan

- Check that the condensate pan is clean. There should be no stagnant water.
- Check that the drain is not clogged.
- Cleaning of the pan can be done with water and non-abrasive detergent.

Note: in the section "Condensate drain connection" are images with the position of the drain.

Centrifugal fan

- Verify that the turbine and the motor remain clean.
- Foresee having a spare belt set for the fans.
- The motors and the fans have bearings that have been lubricated and sealed and, thus, do not need further lubrication (except in the case of fans with a reinforced shaft).

Servomotor (opcional)

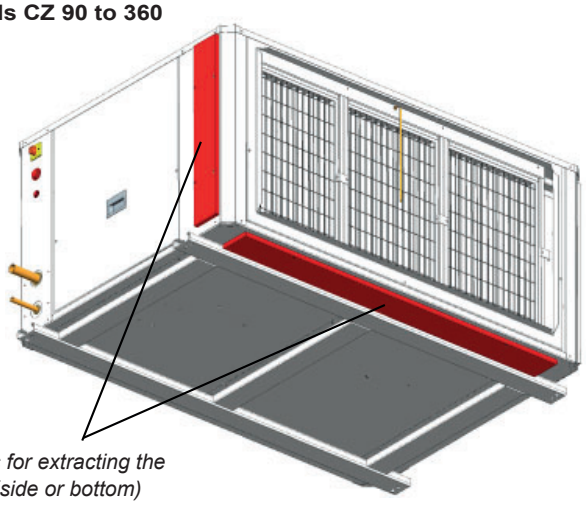
In indoor with motorized mixing boxes,it is advisable to check the condition of the servomotors.

Note: The available assemblies can be consulted in chapter 3 "Available assemblies".

Air filters

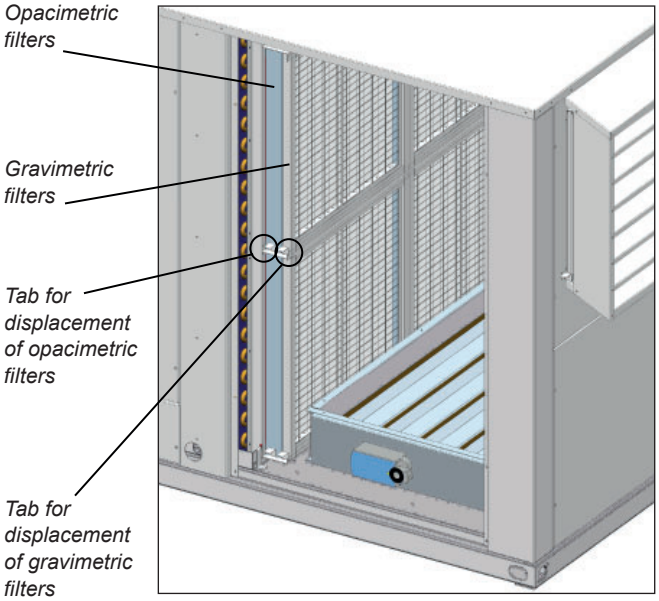
- Clean regularly. Depending on the installation conditions, the filter aspect must be examined to define the cleaning periodicity.
- Gravimetric filters. Cleaning the filtering mesh can be done with a household vacuum cleaner, or else by submerging it in water.
- Creased opacimetric filters It is necessary to replace them. Foresee replacement.

Models CZ 90 to 360



Panels for extracting the filters (side or bottom)

Models CZ 420 to 600



Refrigerant leak detector (optional)

The gas detector sensor is a device that signals leaks in refrigerant. This sensor is installed next to the supply fan. In case of alarm, it is reset manually.

Maintenance:

- Annual testing: it is necessary to carry out testing every year.
- Every 5/6 years: it is recommended that the gas detection element be replaced.

Note: Check the documentation attached to the leak detector for taring and calibration testing.

11 - FINAL SHUTDOWN

11.1 Shutting down

Separate the units from their energy sources, allow them to cool then drain them completely.

11.2 Recommendations for disassembly

Use the original lifting equipment.

Sort the components according to their material for recycling or disposal, in accordance with regulations in force.

Check whether any part of the unit can be recycled for another purpose

11.3 Fluids to be recovered for treatment

- Refrigerant
- Energy transfer fluid: depending on the installation, water, glycol/water mix.
- Compressor oil

11.4 Materials to be recovered for recycling

- Steel
- Copper
- Aluminium
- Plastics
- Polyurethane foam (insulation)

11.5 Waste electrical and electronic equipment (WEEE)

At the end of its life, this equipment must be disassembled and contaminated fluids removed by professionals and processed via approved channels for electrical and electronic equipment (WEEE).

Important: In order to recycle these units follow the stipulations of Directive 2012/19/EU on *Waste electrical and electronic equipment* (WEEE).

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Manufactured by CARRIER SCS - Rte de Thil, 01120 - MONTLUEL, France
Manufacturer reserves the right to change any product specifications without notice.

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