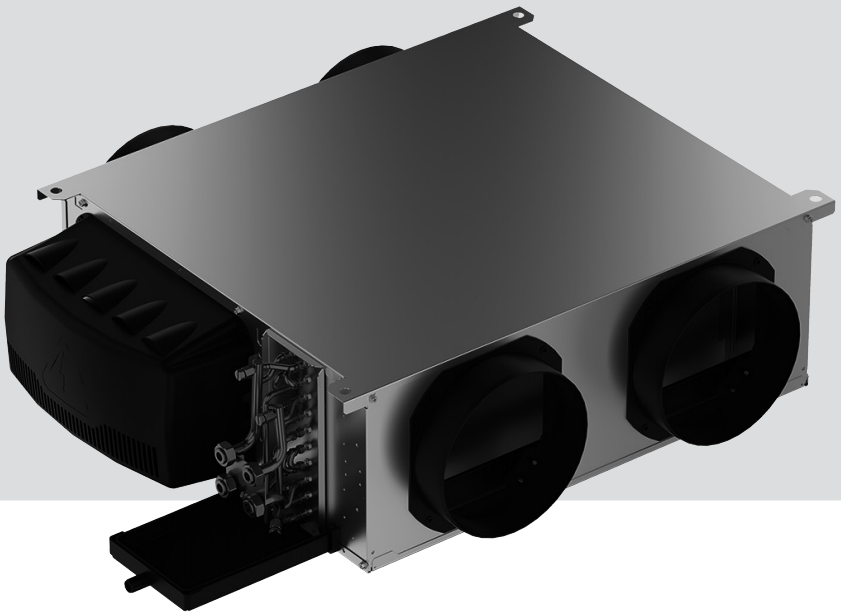
Carrier

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



DUCTABLE FAN COIL UNIT

42NX

Translation of the original document

CONTENTS

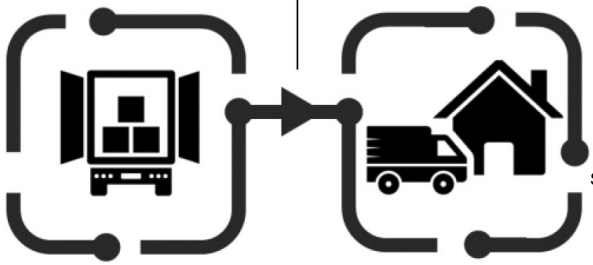
Fig.1

FR	Instructions pour la santé, la sécurité, et l'environnement
EN	Environment health & safety instructions
ES	Instrucciones de seguridad y salud ambiental
DE	Anweisungen zu Umwelt, Gesundheit und Sicherheit
IT	Istruzioni per la salute, la sicurezza e l'ambiente
NL	Instructies voor gezondheid, veiligheid en milieu
PT	Instruções de saúde, segurança e meio ambiente
RU	Инструкции по охране труда, здоровья и окружающей среды
PL	Instrukcje dotyczące zdrowia, bezpieczeństwa i środowiska
AR	تعليمات الصحة و السلامة و البيئة
GR	Οδηγίες για την υγεία, την ασφάλεια και το περιβάλλον

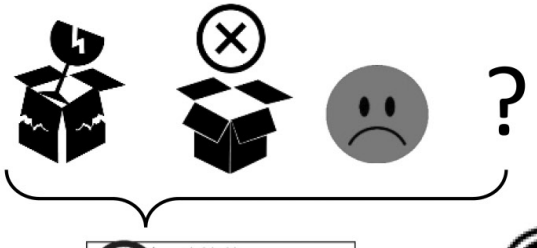
FR	Lire la notice avant l installation
EN	Read the instructions prior to installation
ES	Leer el instrucciones antes de la instalación
DE	Handbuch für Installation und Nutzung sorgfältig gelesen werden
IT	leggere le istruzioni prima dell'installazione
NL	Lees de installatie instructies voor installatie

PT	leia as instruções de instalação antes da instalação
RU	перед установкой прочтите инструкцию по установке
PL	przeczytaj instrukcję instalacji przed instalacją
AR	اقرأ تعليمات التثبيت قبل التثبيت
GR	Διαβάστε τις οδηγίες εγκατάστασης πριν από την εγκατάσταση

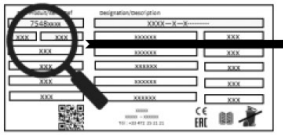
Handling



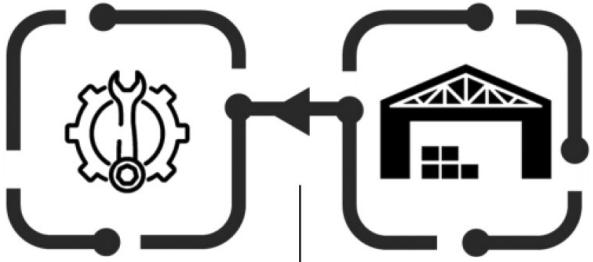
Delivery



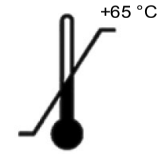
Serial number



Installation



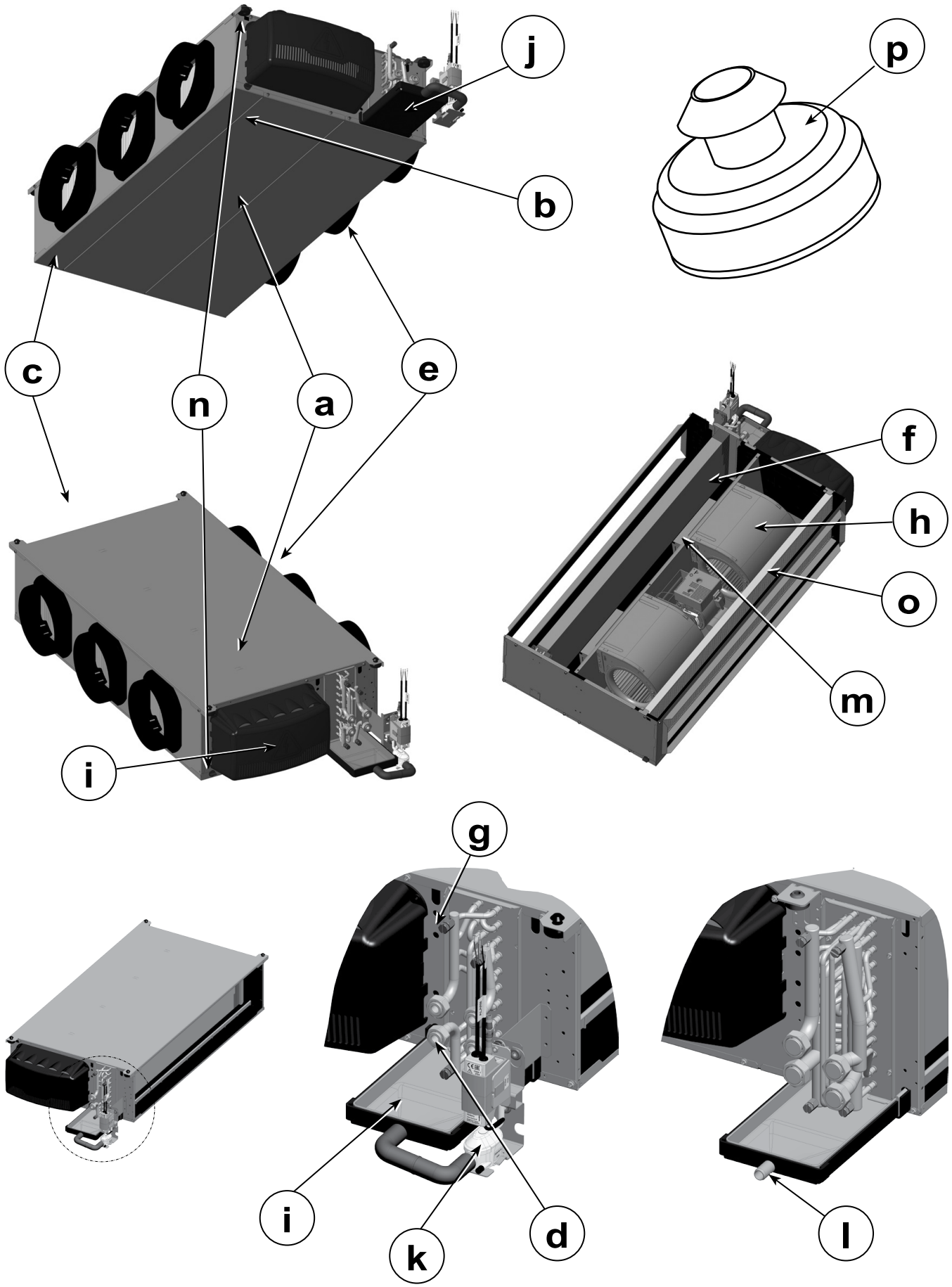
Storage



7596141-01

Fig.2

42NX 2, 3 and 4 – Suspended ceiling and Raised floor



42NX 5 – Suspended ceiling

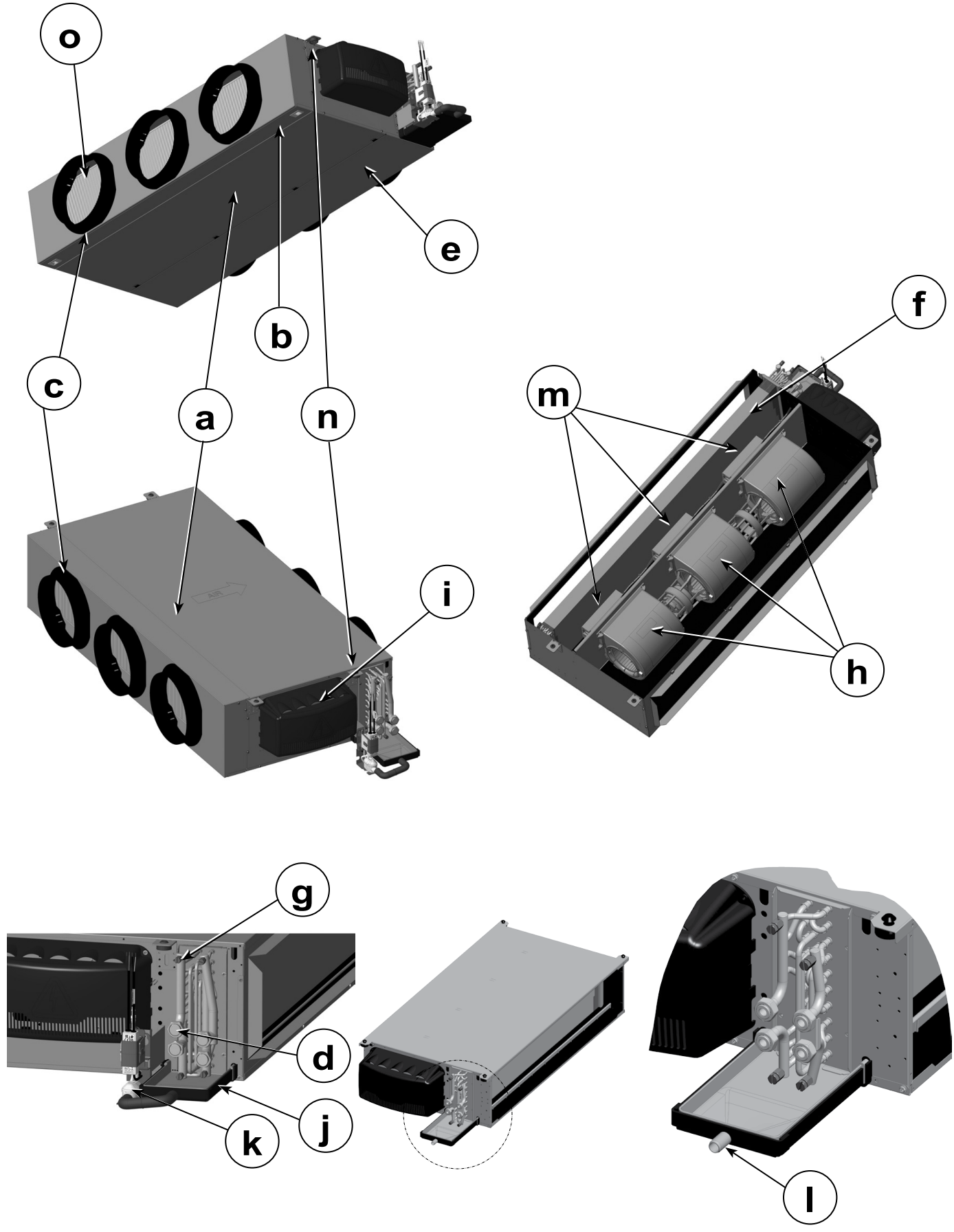


Fig.3

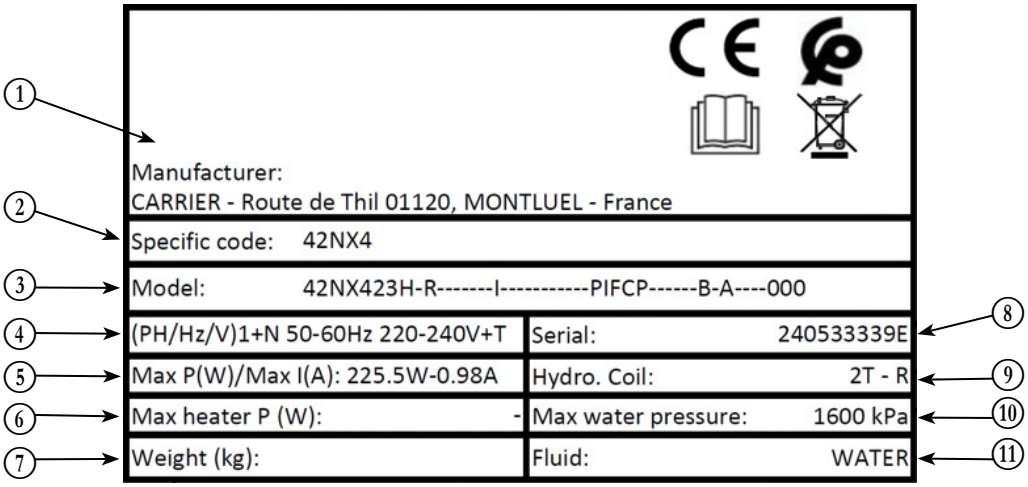
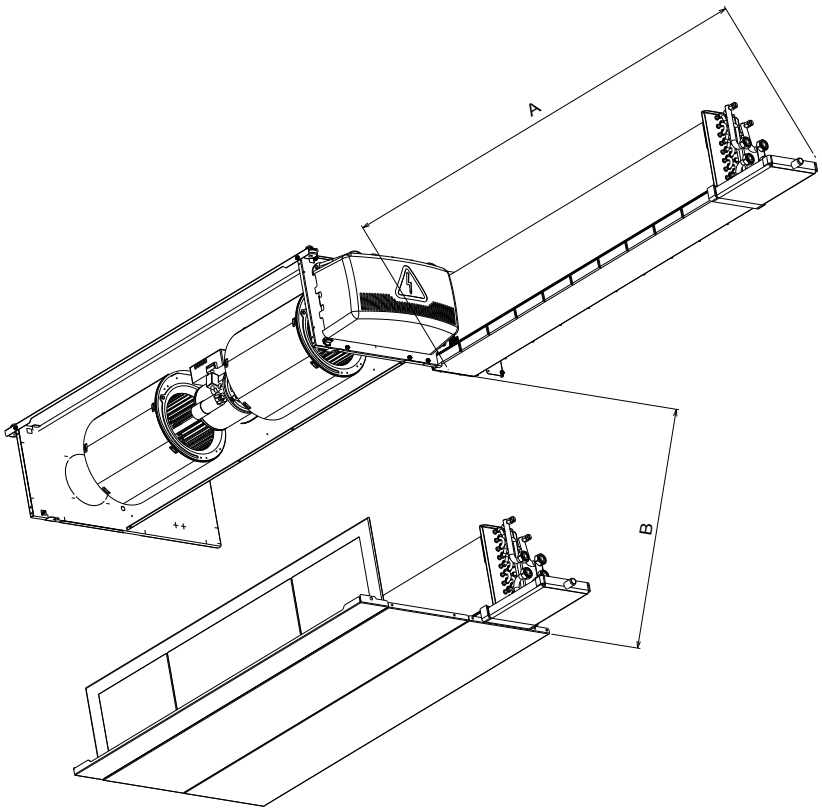


Fig.4

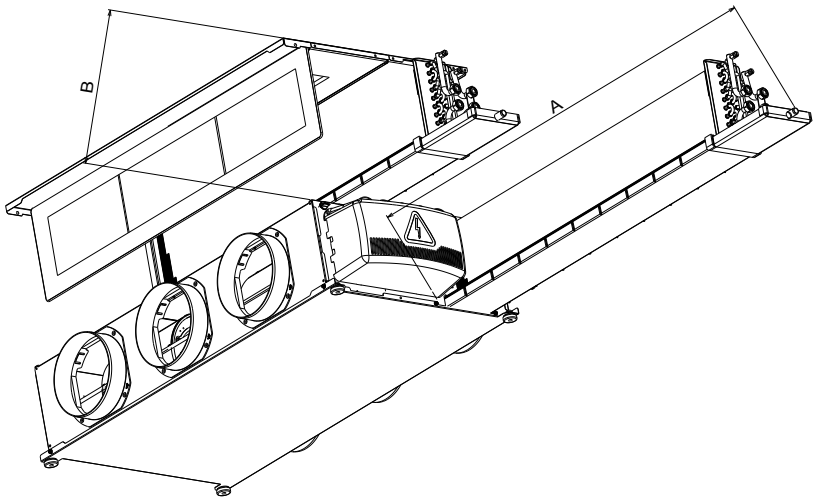
Suspended ceiling, size 2, 3, 4



	A	B
42NX 2	672	300
42NX 3	842	300
42NX 4	1242	300
42NX 5	1542	345

Fig.5

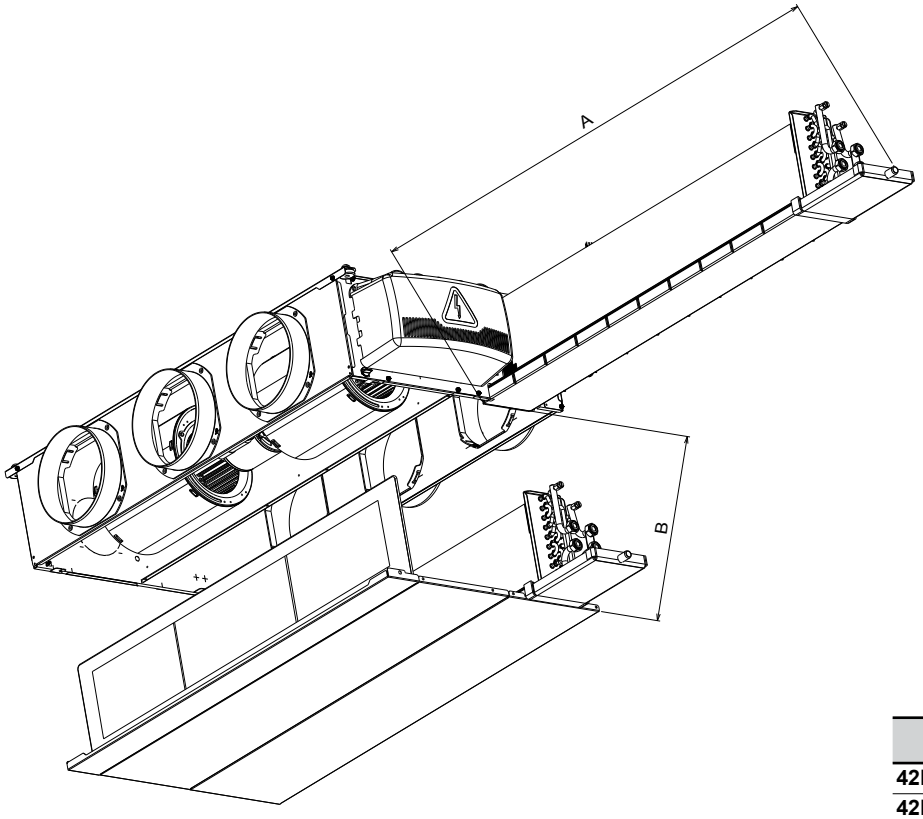
Raised floor, size 2, 3, 4



	A	B
42NX 2	672	300
42NX 3	842	300
42NX 4	1242	300

Fig.6

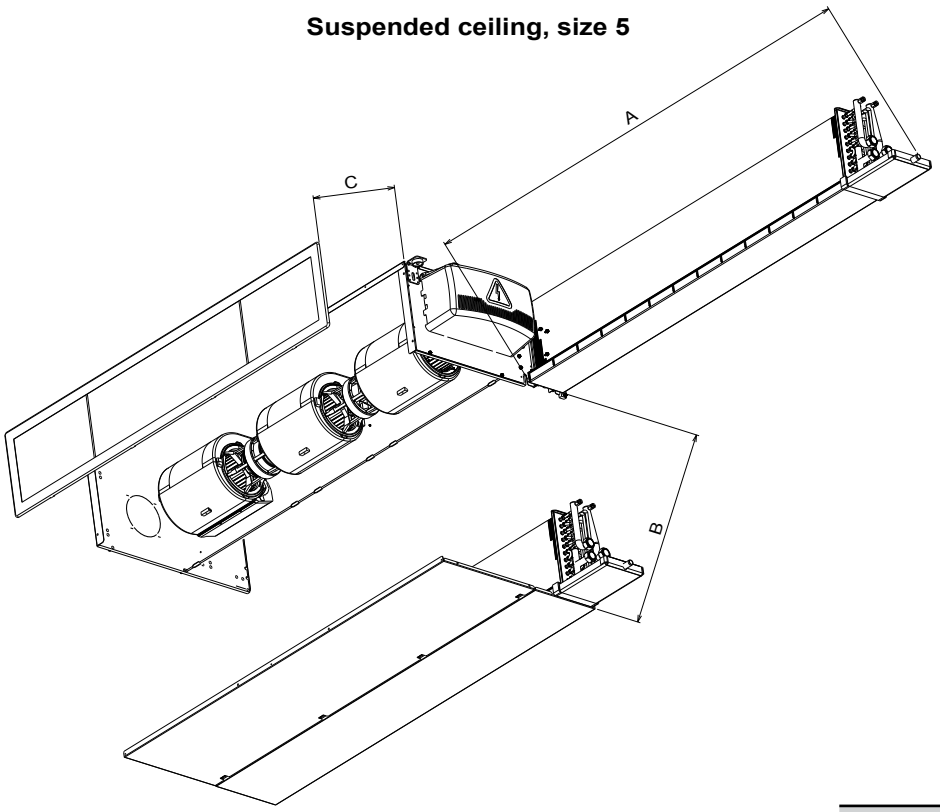
Suspended ceiling with plenum, 2, 3, 4



	A	B
42NX 2	672	300
42NX 3	842	300
42NX 4	1242	300

Fig.7

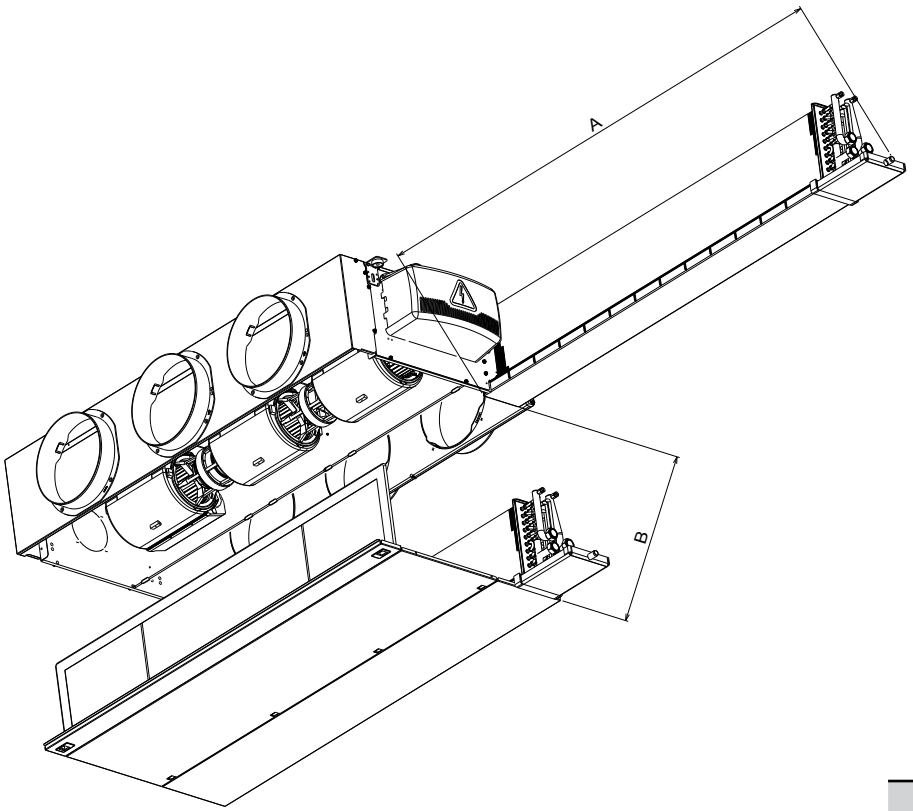
Suspended ceiling, size 5



	A	B	C
42NX 5	1542	345	50

Fig.8

Suspended ceiling with plenum, size 5



	A	B
42NX 5	1542	345

Fig.9

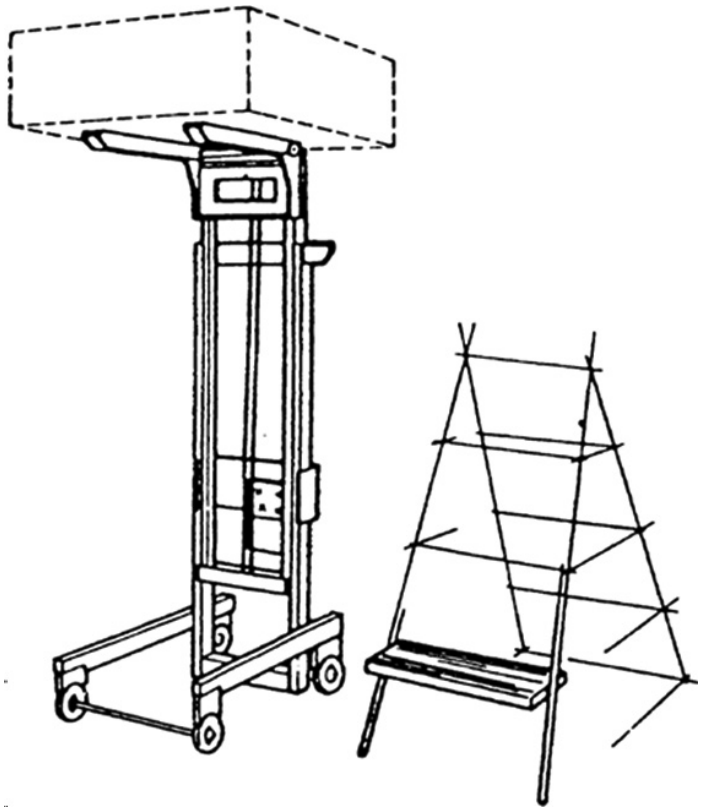


Fig.10

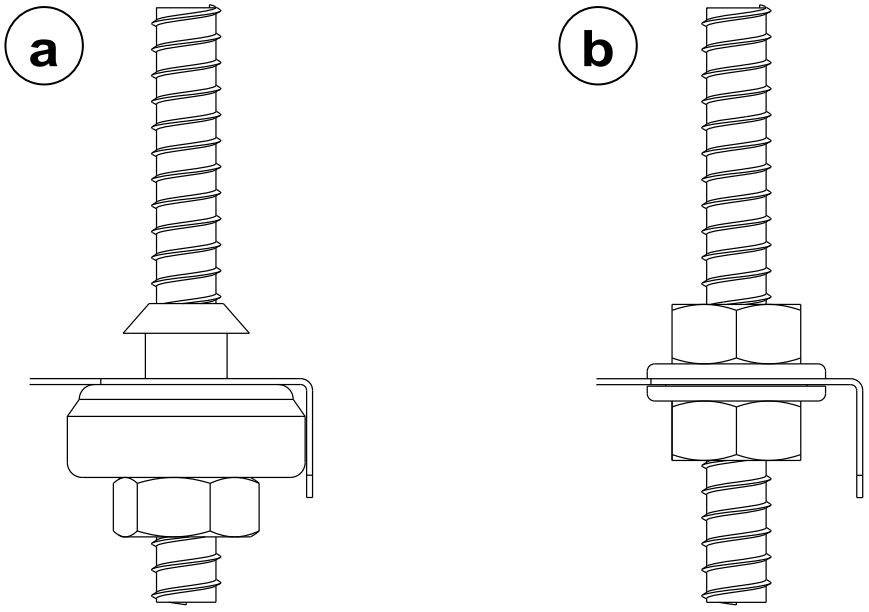


Fig.11

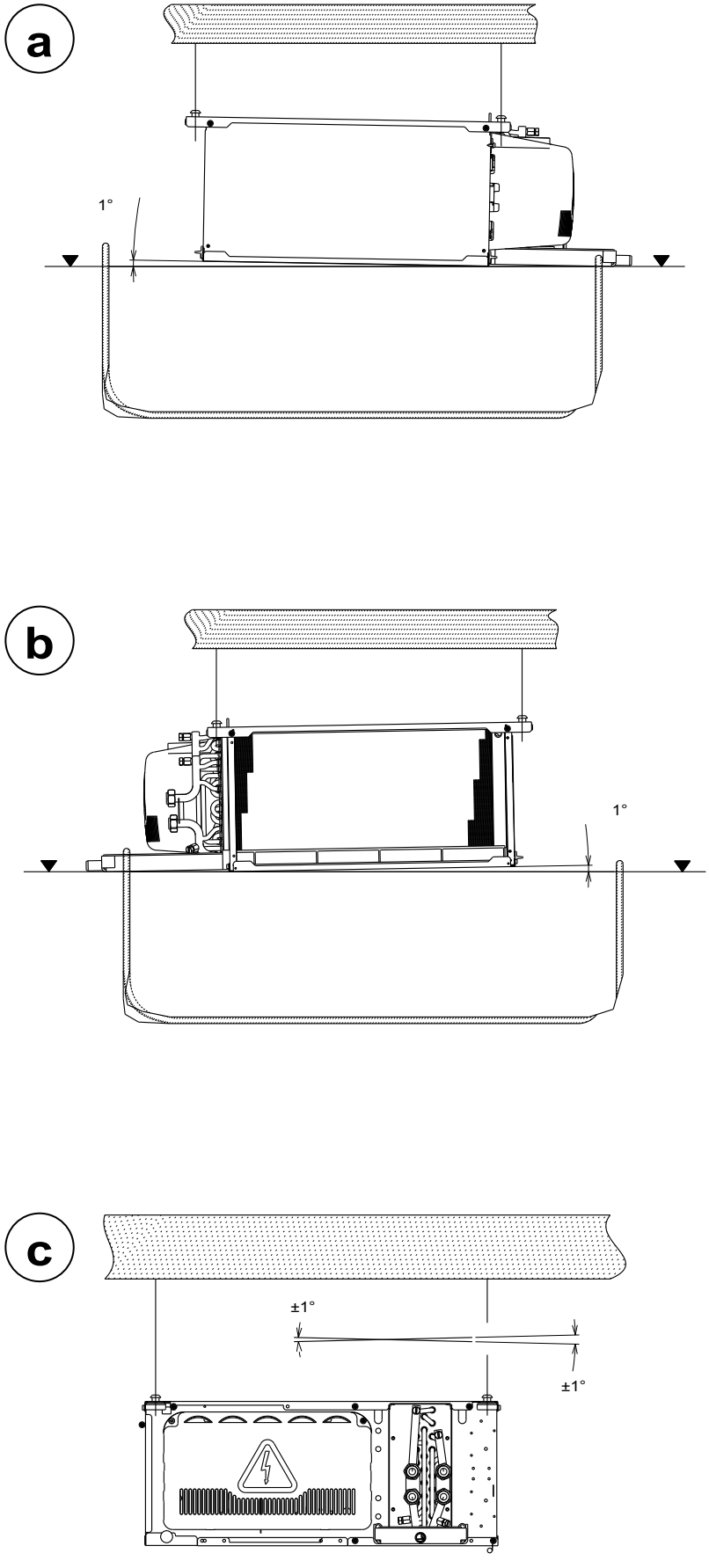


Fig.12

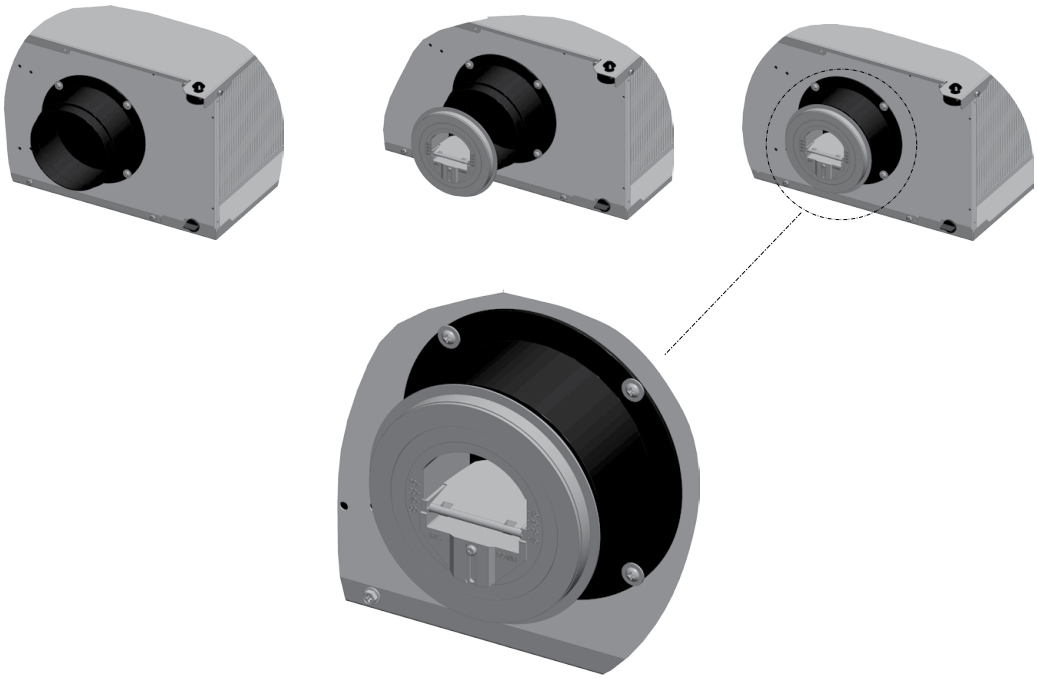
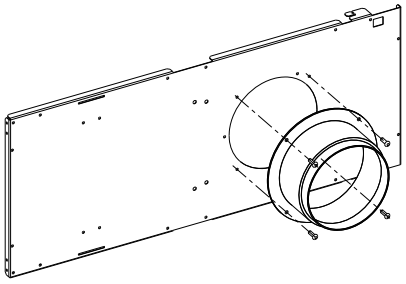
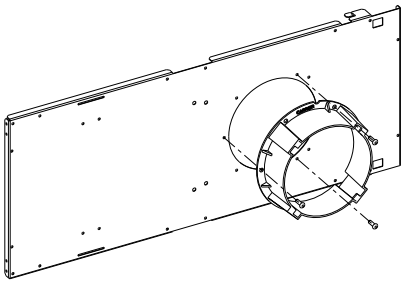


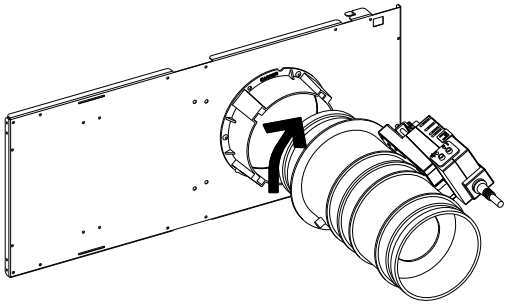
Fig.13



Remove the fresh air spigot using the 4 screws



Attach the adapter spigot supplied with the kit using the 3 screws



Adjust in the slots and turn the fresh air damper 12° on the adapter spigot to tighten it

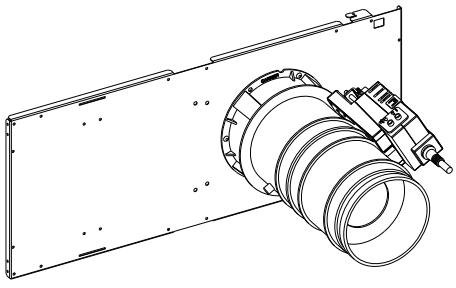
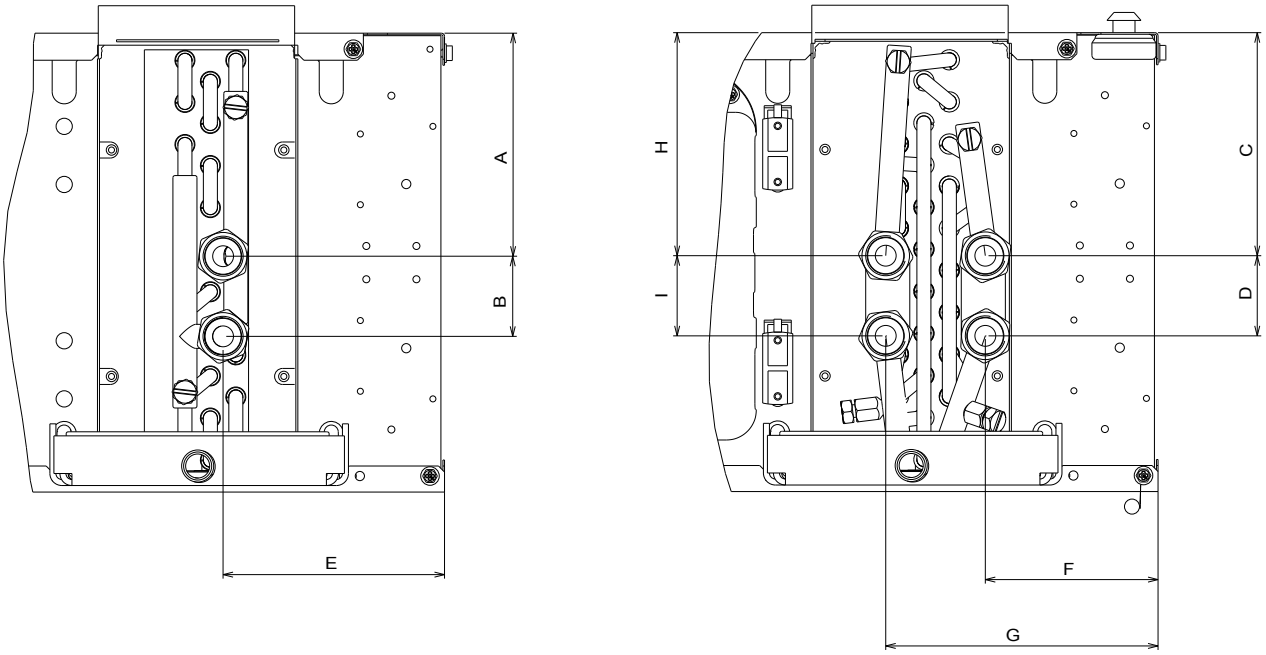
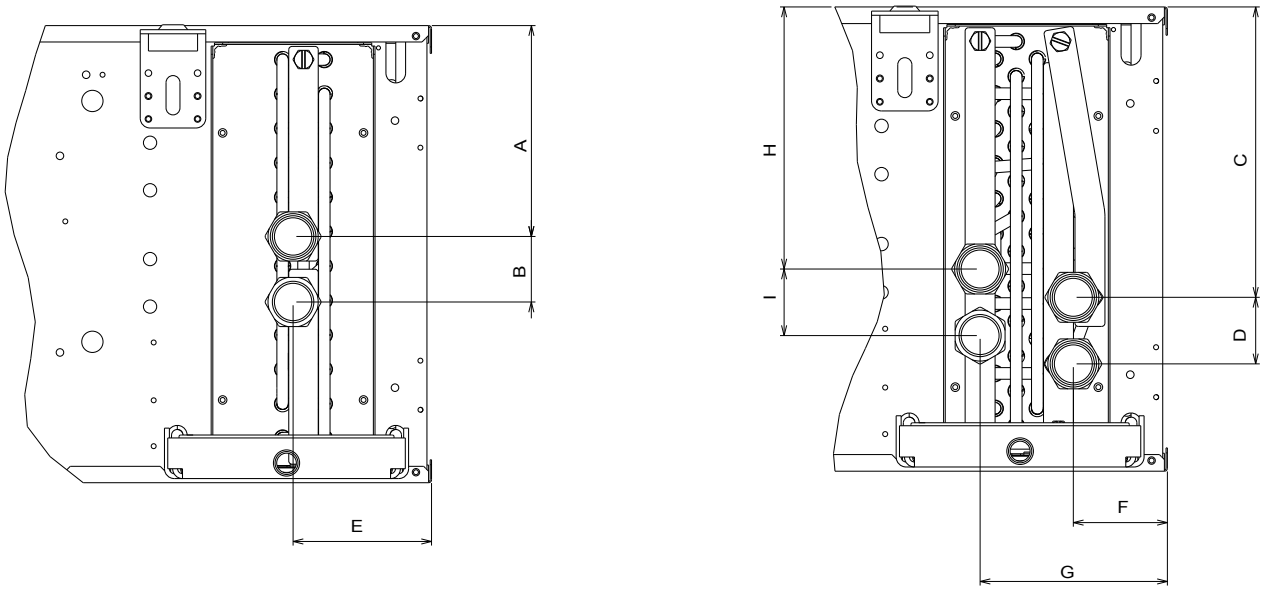


Fig.14

42NX 2,3,4

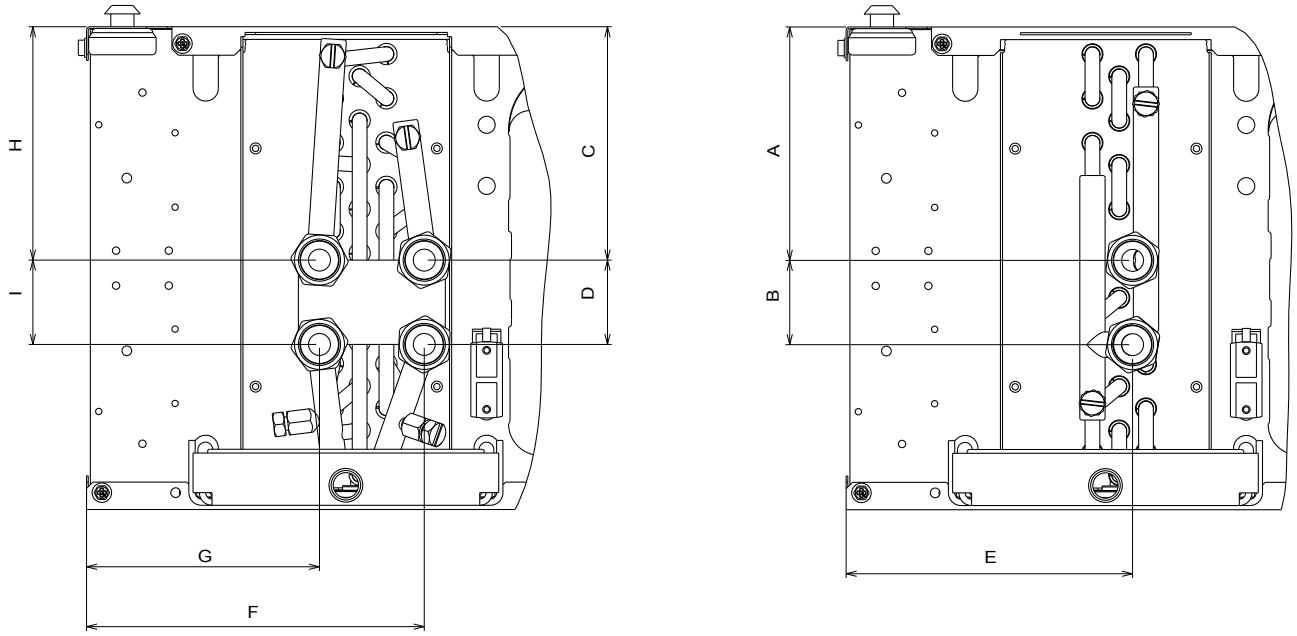


42NX 5

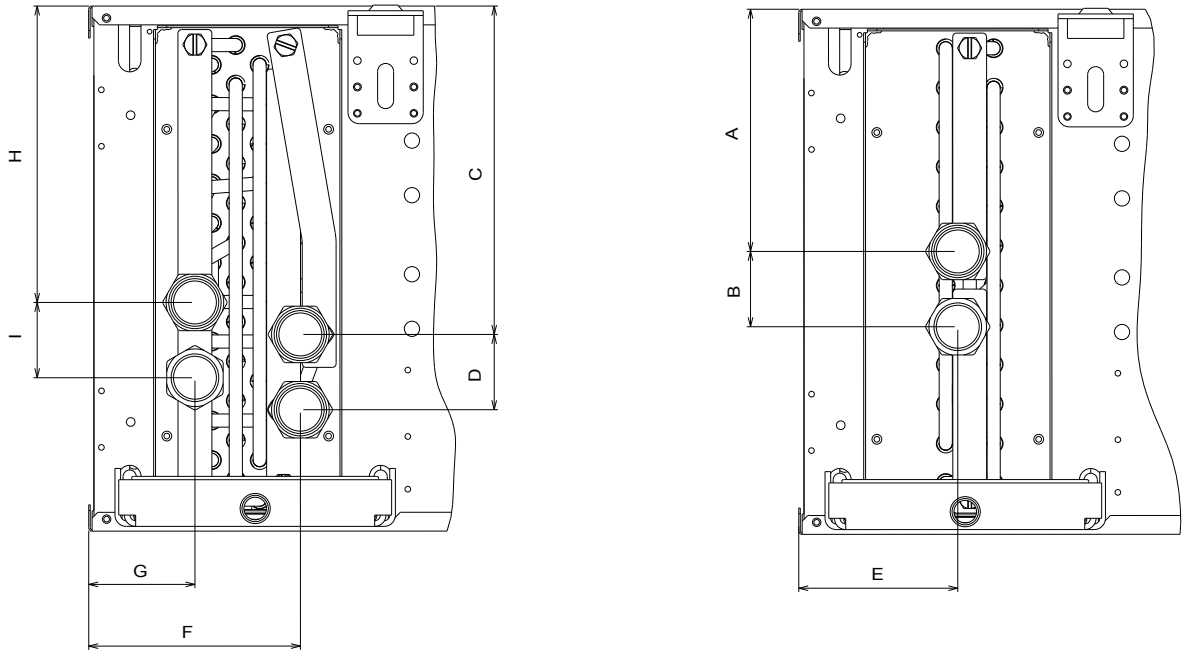


	Sizes	A	B	C	D	E	F	G	H	I
Right	**42NX 2**	111	40	111	40	111	86	136	111	40
	42NX 3	111	40	111	40	111	86	136	111	40
	42NX 4	111	40	111	40	111	86	136	111	40
	42NX 5	129	40	175	40	85	57	113	158	40

42NX 2,3,4



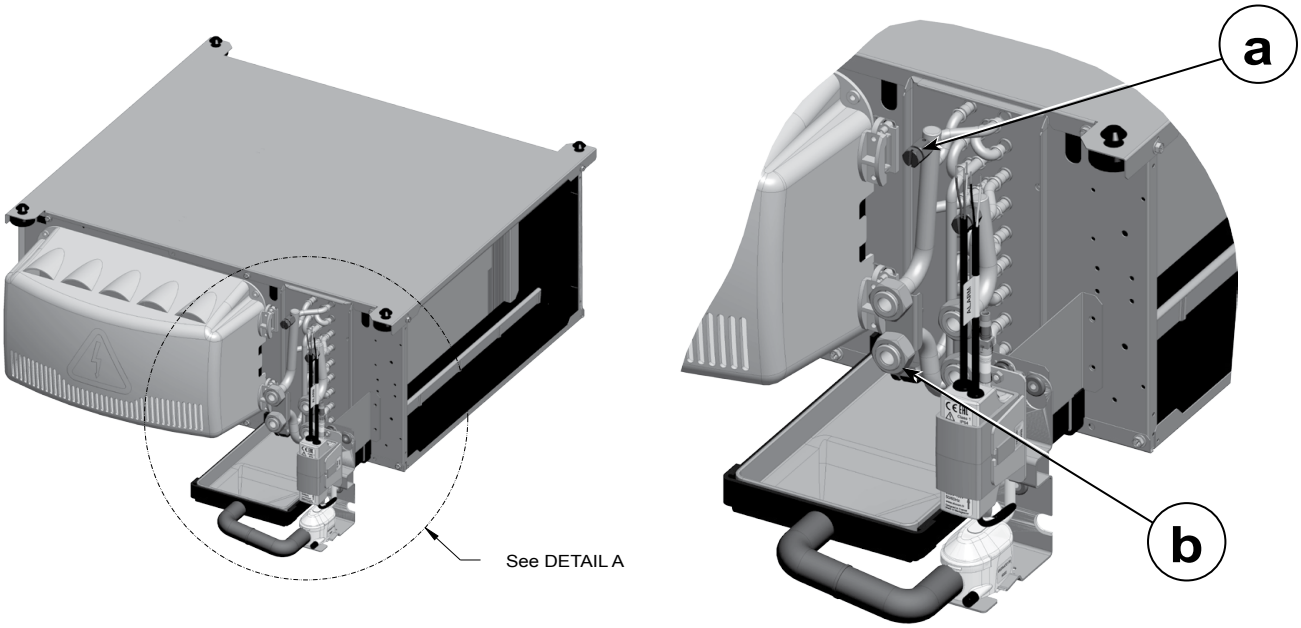
42NX 5



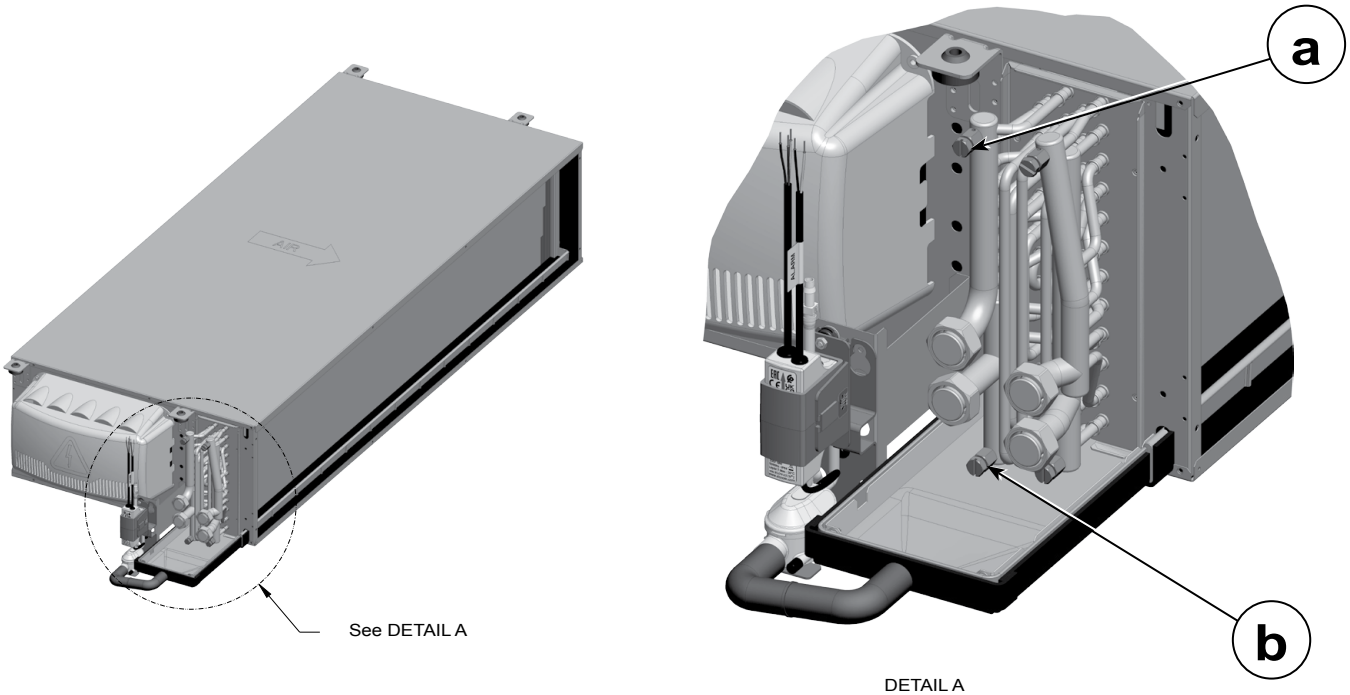
	Sizes	A	B	C	D	E	F	G	H	I
Left	**42NX 2**	111	40	111	40	136	160	111	111	40
	42NX 3	111	40	111	40	136	160	111	111	40
	42NX 4	111	40	111	40	136	160	111	111	40
	42NX 5	129	40	175	40	85	113	57	158	40

Fig.15

42NX 2,3,4



42NX 5



DETAIL A
SCALE 1:2

Fig.16

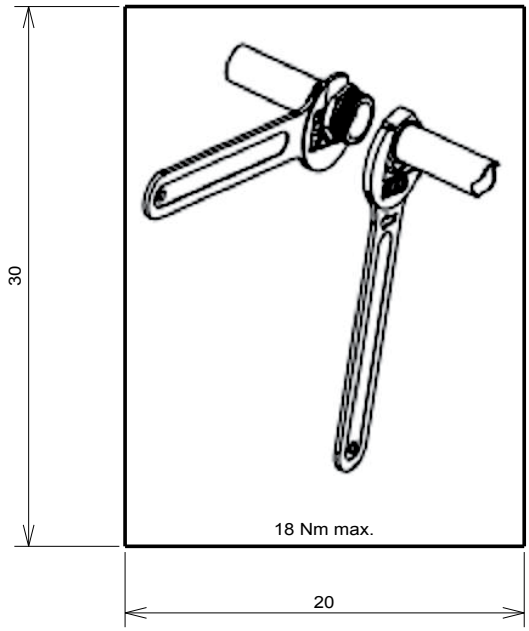


Fig.17

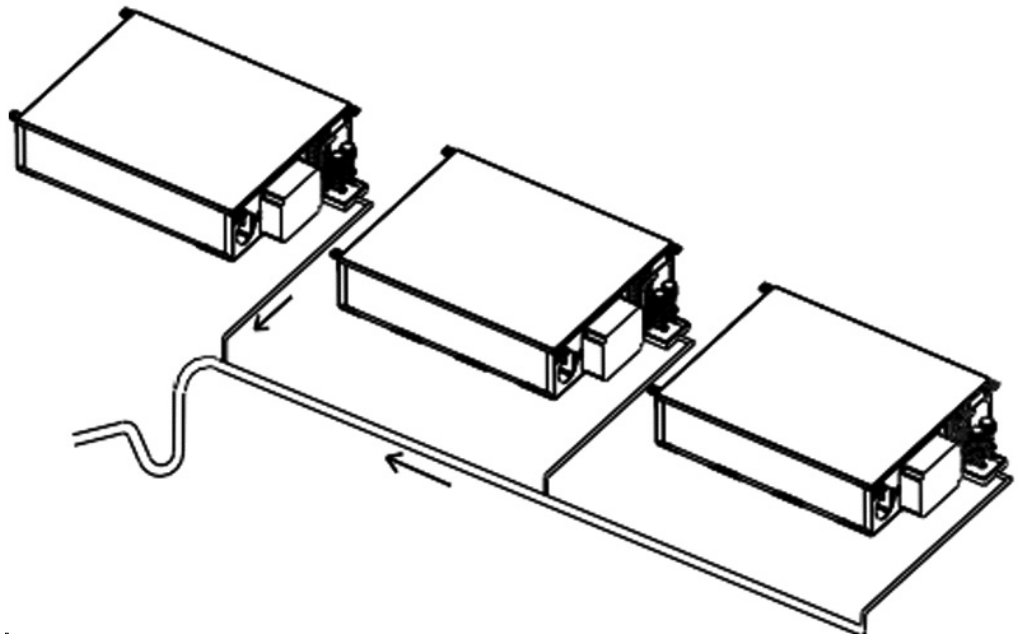
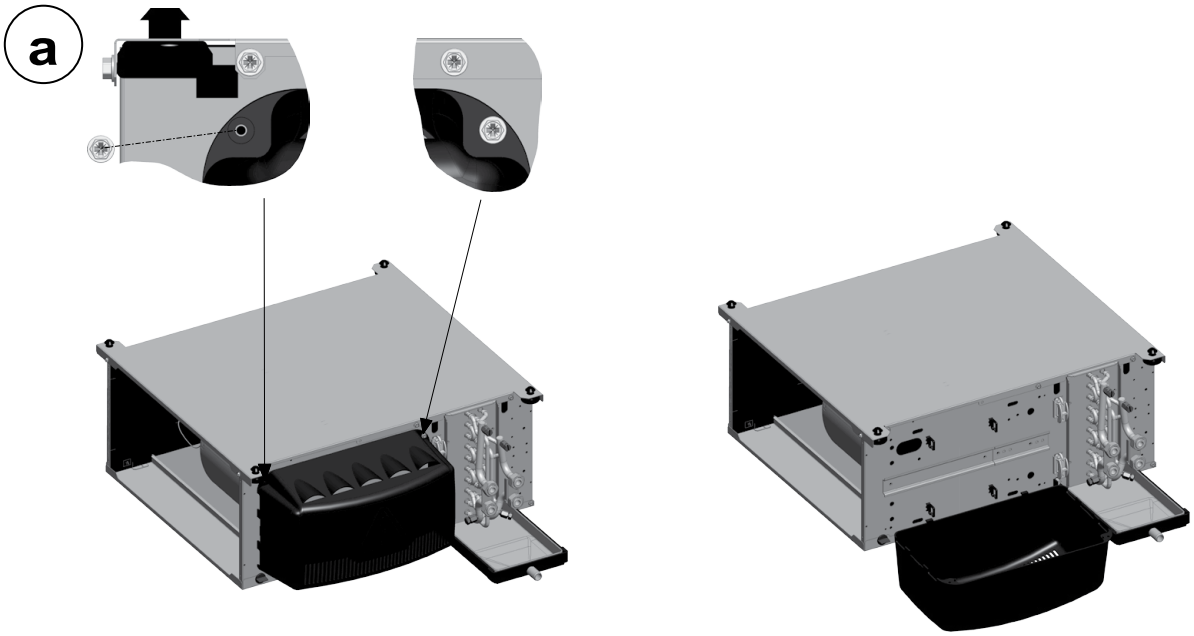
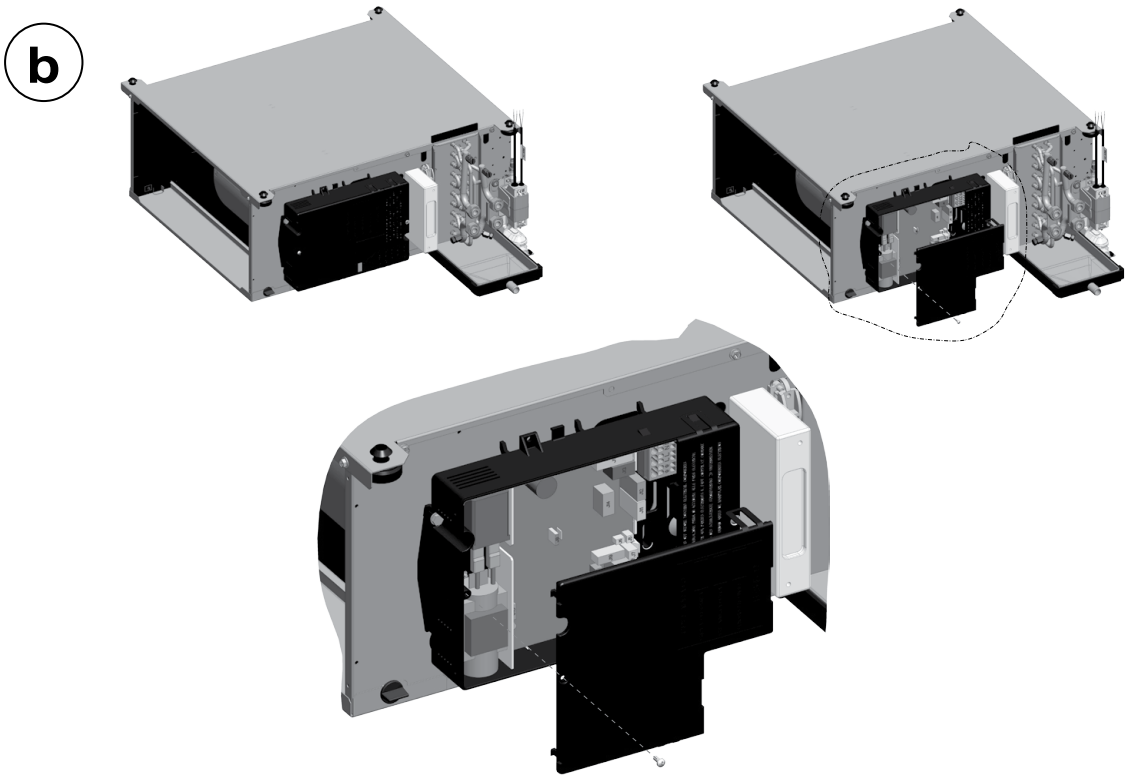


Fig.18

Electric box



NTC



WTC

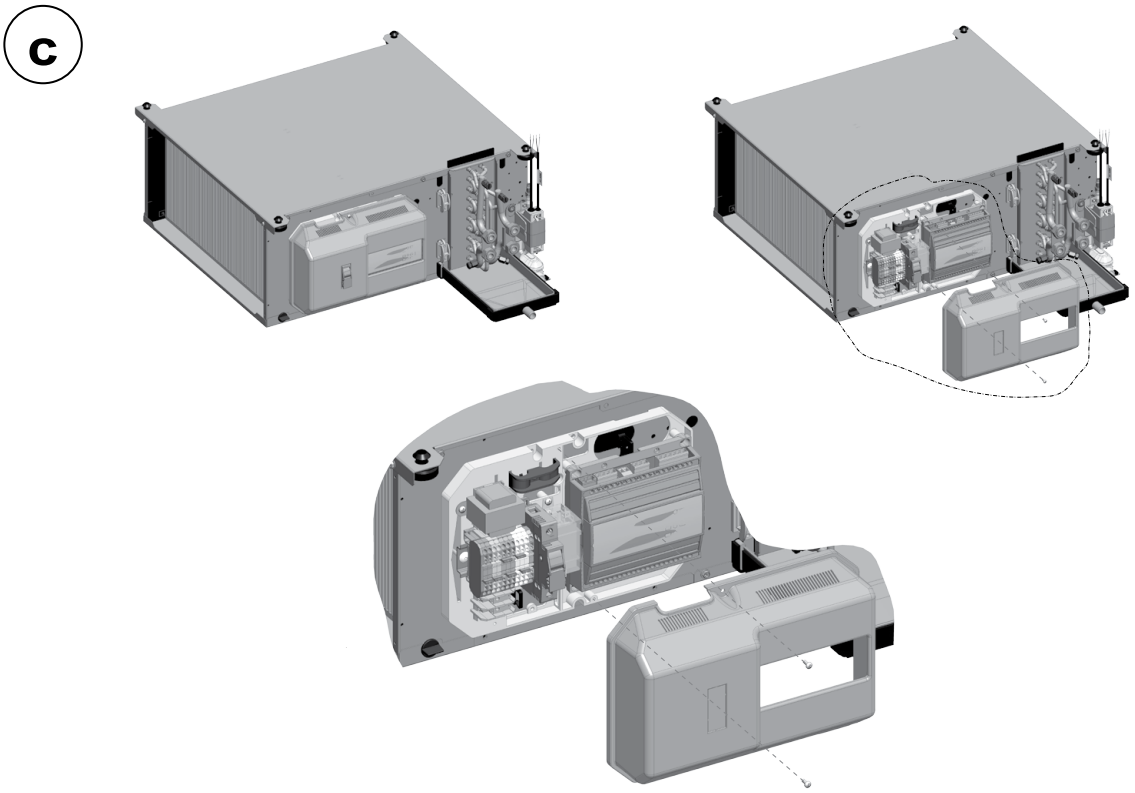


Fig.19

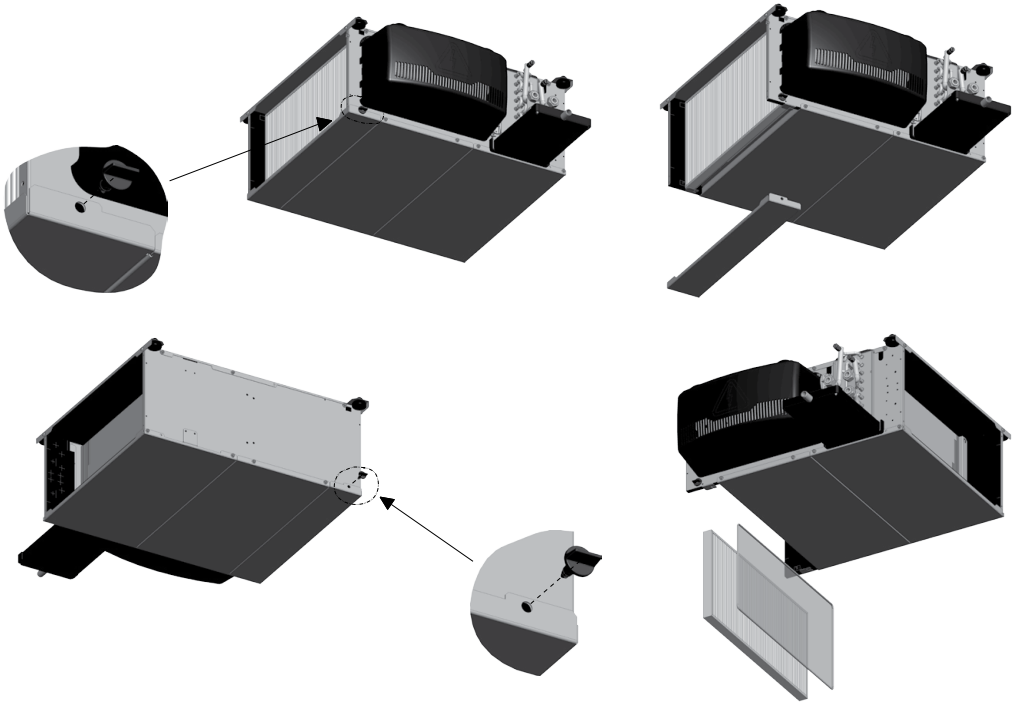


Fig.20

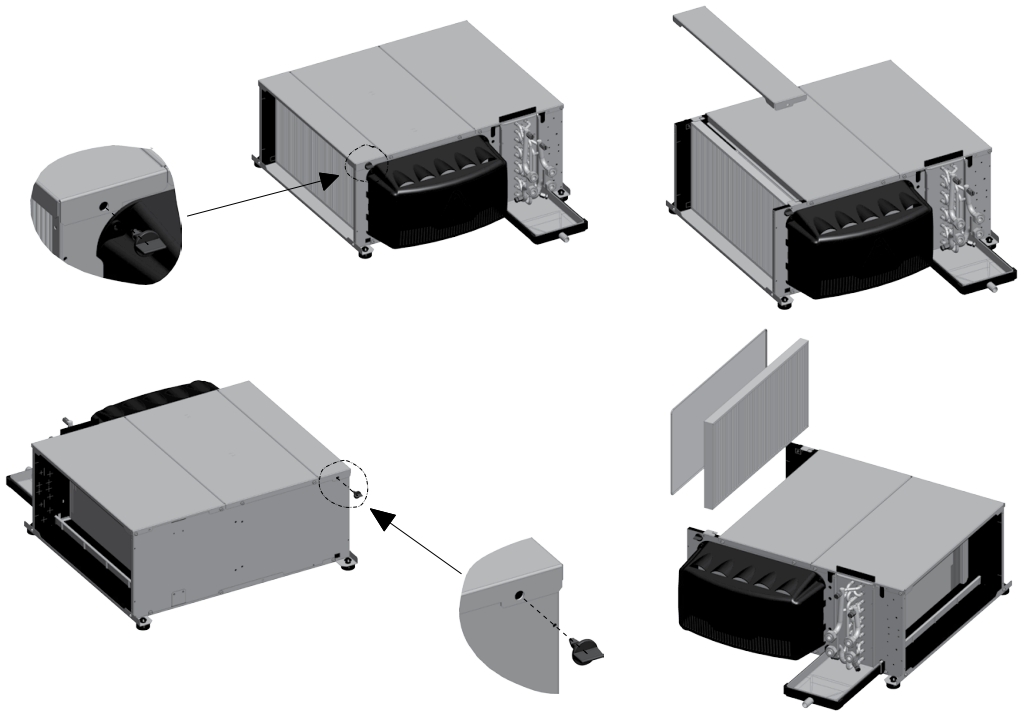


Fig.21

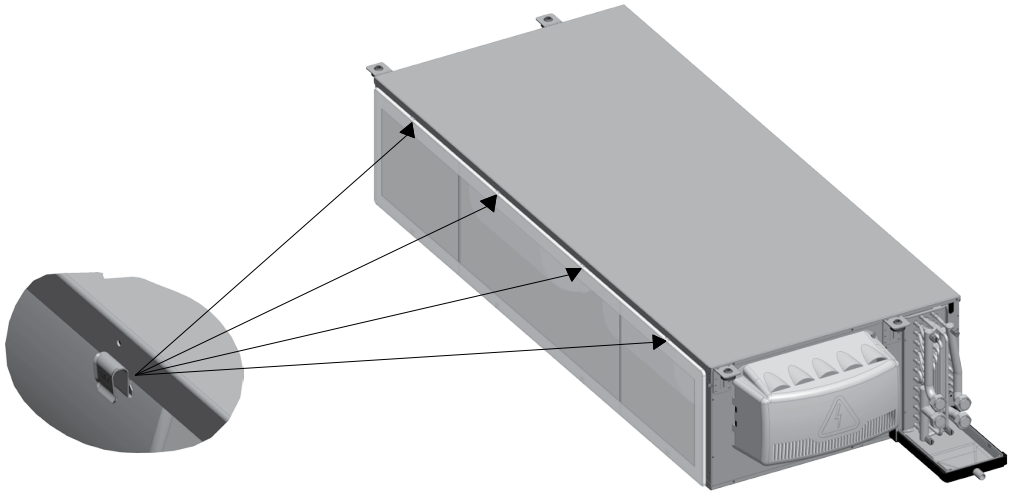
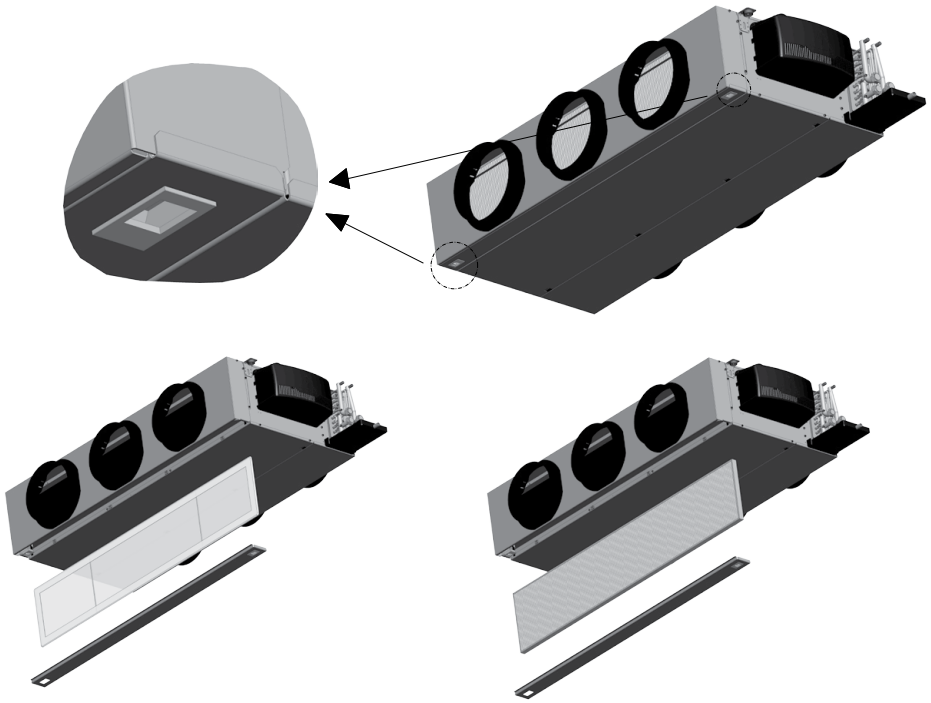


Fig. 22



1 - GENERAL

Thank you for purchasing a **CARRIER** unit. We trust that this unit will give you complete satisfaction.

The **42NX** range of fan coil units is designed to heat or cool residential and tertiary premises (e.g. offices, hotel rooms, shopping centres).

Comfort units are not designed to control the humidity of outside air. Fresh air handling must be provided by a self-contained system in accordance with accepted engineering practices (see our air handling unit ranges).

To guarantee correct operation of the unit, the connections (electrical, hydraulic, etc.) must comply with accepted engineering practices.

Your unit must be maintained and installed as recommended in this manual.

Each unit bears a name plate. The reference number shown on the name plate must be quoted in all correspondence.

In this document, you will find the components described in the following manner:

*optional : Factory-fitted

*accessory : Delivered separately.

2 - SAFETY

- **Only specially trained and qualified technicians and installers** who have been fully trained on the product are authorised to install, commission and service this equipment. **To prevent injury or damage to the unit or room, work must only be carried out by qualified personnel.**
- During any intervention, ensure compliance with all guidelines and instructions provided in this manual, on the labels, or in the instructions accompanying any of the material. Refer to figure 1.
- Comply with all safety rules and regulations currently in force.
- The electrical installation must comply with the national rules for electrical installation.
- This unit is designed to operate in an over-voltage category II and pollution degree 2 environment, in accordance with IEC standard 60664-1.
- Wear any individual protection recommended by the applicable local legislation (e.g. eye protectors, gloves) for handling, installation and commissioning work.
- This unit may be used by children aged eight and over, and by persons with limited physical, sensory or mental capabilities, or by persons with insufficient experience or knowledge, provided that they are being correctly supervised or provided they have received instructions on how to use the unit in complete safety, ensuring that they have a full understanding of any risks involved. Children must not play with the unit. User cleaning and maintenance must not be performed by children.

WARNING:

- ***Before accessing the unit's connection terminals, all the power circuits must be disconnected.***
- ***The unit does not have an "On-Off" control system to power off the unit. The customer is responsible for cutting the power supply.***
- ***Do not touch the live metal heater elements when the electric heater is connected to the power supply.***
- ***The units equipped with an electric heater must be fitted with a filter.***
- ***If the power supply cable is damaged, it must be replaced by the manufacturer, the manufacturer's after-sales service or persons with a similar qualification to avoid any risk of danger.***

3 - DESCRIPTION OF THE UNIT

3.1 - Components (figure 2)

a Fan Motor Assembly access panel
b Air filter hatch
c Spigots
d Manifold couplings
e Coil lower access panel
f Heat exchange coil
g Air bleed and drain valves
h Fan motor assembly
i Electrics box
j Condensate drain pan
k Condensate drain pump (*optional)
l Condensate drain
m Electric heater (*optional)
n Mounting hole
o Air filter
p Resilient mount (*accessory)

3.2 - Name plate (figure 3)

The name plate shows all the information needed to identify the unit and its configuration. This plate is placed on the technical panel which contains all the connections.

Before contacting us, please note the serial no. and the designation.

① Manufacturer's legal name and address
② Unit designation
③ Specific code
④ Electrical data
⑤ Maximum power and maximum current
⑥ Maximum capacity of the coil
⑦ Weight
⑧ Serial number
⑨ Coil type
⑩ Maximum permissible water pressure
⑪ Coil fluid

3.3 - Specific code

Feature name	Digit n° Codification	Value	Description	Compatibility
Range	1-4	42NX		
Frame Size	5	1	Chassis size 1	
		2	Chassis size 2	
		3	Chassis size 3	
		4	Chassis size 4	
		5	Chassis size 5	
Water coil type	6	2	2-pipe coil	
		4	4-tube coil	
Number of water coil rows	7	2	2-row coil	
		3	3-row coil	
		4	4-row coil	
Efficiency	8	M	Medium efficiency	
		H	High efficiency	
Water coil with coating	9	-	No coating	
		C	With coating	
Installation side for the air coil in the air flow direction	10	L	Coil on the left	
		R	Coil on the right	
Electrical heater	11	-	Without electric heater	
		A	500 W electric heater	
		B	1000 W electric heater	
Control system	18	I	Electric terminal block	To control the unit with a thermostat, select the electric terminal block
		G	Bare wires without plastic sheath	
		H	Bare wires with plastic sheath	
		K	NTC	
		M	WTC BACNET	
Valve body	26	-	Without valve	
		G	Two-way valve	
		H	Four-way valve	
		L	2-way balancing valve	
		T	2-way balancing valve and pressure points	

Feature name	Digit n° Codification	Value	Description	Compatibility
Valve actuator	27	-	Without actuator	The 24 V actuators are not available with the Carrier controllers and the electric terminal block
		A	230 V ON/OFF actuator	
		C	230 V floating actuator (3-point)	The 3-point floating actuators are not available with the electric terminal block
		B	24 V ON/OFF actuator	
		D	24 V floating actuator (3-point)	
		E	Modulating 0-10 V/24 V actuator	
Sensors	28	-	No sensor	
		A	Return air temperature sensor	
		B	Water temperature sensor	
		C	Water and return air temperature sensor	
		D	CO_2, water and return air temperature sensor	
		E	CO_2, water, supply air and return air temperature sensor	
		F	Supply air and return air temperature sensor	
		G	Supply air and water temperature sensor	
		H	Supply air temperature sensor	
		L	CO_2 and water temperature sensor	
		M	Water, supply air and return air temperature sensor	
		N	Supply air, water and CO_2 temperature sensor	
		P	CO_2, supply air and return air temperature sensor	
		Q	CO_2 sensor	
		R	CO_2 and return air temperature sensor	
		S	CO_2 and supply air temperature sensor	
Electrical Protection	29	-	No electrical protection	
		F	Fuse holder	
		C	Circuit breaker	
Condensate pump	30	-	Without pump	
		P	With pump	
Installation configuration	31-32-33	IFC	Rectangular connection to the return air and supply air for suspended ceiling	For installation in a suspended ceiling
		YFC	Rectangular connection to the return air or the supply air and round connection to the supply air or the return air for suspended ceiling	For installation in a suspended ceiling
		HFC	Round connection to the return air and supply air for suspended ceiling	For installation in a suspended ceiling
		UFC	Lateral round connection to the return air and supply air for suspended ceiling	For installation in a suspended ceiling
		IFF	Rectangular connection to the return air and supply air for raised floor	For installation in a raised floor
		YFF	Rectangular connection to the return air or the supply air and round connection to the supply air or the return air for raised floor	For installation in a raised floor
		HFF	Round connection to the return air and supply air for raised floor	For installation in a raised floor
		UFF	Lateral round connection to the return air and supply air for raised floor	For installation in a raised floor
		UC-	Lateral round connection to the return air and supply air for compact suspended ceiling	For installation in a suspended ceiling
Filter	34	-	Without filter	
		G	ISO Coarse 50 %	
		P	ePM10 50%	

Feature name	Digit n° Codification	Value	Description	Compatibility
Rectangular sleeve	35	-	Without rectangular flange	
		A	Outlet rectangular flange only	
		B	Inlet rectangular flange only	
		C	Rectangular return air and supply air sleeve	
Diameter and number of return air nozzles	36-37	--	No nozzles	
		A1	1 nozzle, diameter 160 mm	
		A2	2 nozzles, diameter 160 mm	
		A3	3 nozzles, diameter 160 mm	
		B1	1 nozzle, diameter 200 mm	
		B2	2 nozzles, diameter 200 mm	
		B3	3 nozzles, diameter 200 mm	
		B4	4 nozzles, diameter 200 mm	
		B5	5 nozzles, diameter 200 mm	
		C1	1 nozzle, diameter 250 mm	
		C2	2 nozzles, diameter 250 mm	
		C3	3 nozzles, diameter 250 mm	
		C4	4 nozzles, diameter 250 mm	
Diameter and number of supply air nozzles	38-39	--	No nozzles	
		A1	1 nozzle, diameter 160 mm	
		A2	2 nozzles, diameter 160 mm	
		A3	3 nozzles, diameter 160 mm	
		B1	1 nozzle, diameter 200 mm	
		B2	2 nozzles, diameter 200 mm	
		B3	3 nozzles, diameter 200 mm	
		B4	4 nozzles, diameter 200 mm	
		B5	5 nozzles, diameter 200 mm	
		C1	1 nozzle, diameter 250 mm	
		C2	2 nozzles, diameter 250 mm	
		C3	3 nozzles, diameter 250 mm	
		C4	4 nozzles, diameter 250 mm	

Feature name	Digit n° Codification	Value	Description	Compatibility
Fresh air	40	-	No controller	
		A	Sleeve, diameter 100 mm	
		B	15 to 50 m³/h controller for nozzle 100 mm in diameter	
		C	50 to 100 m³/h controller for nozzle 100 mm in diameter	
		D	Sleeve, diameter 125 mm	
		E	15 to 50 m³/h controller for nozzle 125 mm in diameter	
		F	50 to 100 m³/h controller for nozzle 125 mm in diameter	
		G	100 to 180 m³/h controller	
		H	Adapter for motorised air damper (to be ordered separately)	Motorized air damper compatible with NTC and WTC only (Position feedback is not available if WTC and CO_2 sensor are also selected)
Packaging	41	B	Bundle packaging	
		I	Individual packaging	
Labelling	42	-	No labelling	
		A	With individual labelling	
Anti-vibration mounts	44	-	No mount	
		A	With mount	
Condensate drain pan extension	45	-	No extension	
		E	With condensate drain pan extension	
Flexible connection	46	-	No flexible connection	
		F	With flexible connection	

3.4 - Models

The unit is available in 4 standard suspended ceiling models and 3 raised floor models:

I : Supply air sheet metal sleeve (*optional) and return air sheet metal sleeve (*optional)

Y : Return or supply plenum with spigots for round duct + supply air or return air sheet metal sleeve (*optional)

H : Return and supply plenum with spigots for round ducts

U / U Compact : Return and supply plenum with lateral spigot for round ducts.

The unit can be ducted at both the suction and the supply air.

3.5 - Clearances required

- Suspended ceiling size **2, 3, 4 - figure 4**
- Raised floor with plenum **2, 3, 4 - figure 5**
- Suspended ceiling with plenum **2, 3, 4 - figure 6**
- Suspended ceiling size **5 - figure 7**
- Suspended ceiling with plenum size **5 - figure 8**

3.6 - Dimensions and weight

- For dimensions, refer to the dimensional drawing.
- Weight (in kg)

		I	I + Return air or supply air sleeve	I + Return air sleeve and supply air sleeve	Y return air or supply air	Y + Supply air or return air sleeve	H	U compact	U std
42NX2	**With filter**	14,8	15,1	15,4	15,6	15,9	16,2		21,6
	Without filter	14,7	15	15,3	15,5	15,8	16,1	18,6	21,5
42NX3	**With filter**	18,1	18,5	18,9	19,1	19,5	19,9		29,8
	Without filter	17,9	18,3	18,7	18,9	19,3	19,7	22,9	29,6
42NX4	**With filter**	26,8	27,4	28	28,4	29	29,8		40
	Without filter	26,5	27,1	27,7	28,1	28,7	29,5	34,1	39,7
42NX5	**With filter**	35,3	36,5	39,8	37,7 / 40,3	41 / 41,5	42,1		54,9
	Without filter	34,8	36	37,2	37,2	38,3 / 38,2	39,4		54,4

NOTE: All information on dimensions and weights is available in the product selection documentation.

3.7 - Limits for the transport, storage and operating conditions

During normal use, this unit is intended to operate under the following conditions:

	Limits of use	
Supply voltage	230 V +- 10% . Check that the supply voltage and frequency correspond to the values for the unit to be installed.	
Frequency	60 or 50 Hz -1ph	
Index of Protection for the unit	IP 2X	
Impact protection rating	IK 02	
Maximum altitude	2000 m	
Minimum and maximum storage and transport temperatures	-20 °C ; +65 °C	
Minimum and maximum operating temperatures	0 °C + 40 °C	
Water coil mode	Cooling	Heating
Water circuit	Min. inlet Temperature > 5°C	Max. inlet Temperature < 80°C
	ethylene / propylene glycol rate < 40%	
	Water side pressure < 1600 kPa (16 bar)	
Ambient temperature and humidity	T < Intended environment for use of the unit 27 °C / 65 % RH (relative humidity) or humidity weight < 14.7 g/kg of dry air	40 °C
Supply air temperature	T > 12°C with maximum ambient humidity conditions (14.7 g/kg of dry air)	T < 60°C with supply plenum and spigots application

4 - TRANSPORT AND HANDLING

4.1 - Unpacking the unit and checking

- It is the responsibility of the recipient to inspect the contents of the packages upon receipt.
- Do not unpack the units until just before they are due to be installed, and make sure they are as close as possible to the installation site when unpacking them.
- Do not place heavy articles of any sort on them.

4.2 - Handling

- We recommend using a forklift to install the unit, see figure 9. Warning: When moving the units, do not use water pipes, condensate drain pan, spigots, sleeves, valves or flexible pipes to lift them.
- The unit must be handled using the mounting holes (figure 2-n).
- The unit must be handled with care and kept flat. Impacts may cause damage to the frame or the body of the unit and adversely affect its main functions and its appearance.
- If the units are stacked, we recommend two operators are employed for handling.

5.1 - General installation requirements

- Prior to installation, check the dimensions of the unit to ensure that there will be sufficient space to allow maintenance and servicing work to be performed. Refer to the sections " **3.4 Clearances required**" and "**3.5 Dimensions and weight**".
- The load-bearing structure must be able to bear the weight of the unit without any deformation, rupture or vibration during operation. Refer to the section "**Dimensions and weight" or to the name plate**

5.2 - Levelling the unit and securing

- The unit is placed inside the suspended ceiling or raised floor. Check the return for the unit is at a sufficient distance from the wall, if the return is not ducted. Refer to the section " **3.4 Clearances required**"
- Avoid all contact between the unit and other elements (excluding the air and hydraulic connections and fixings) to ensure there is no transmission of noise from vibrations.
- The unit must be secured to the ceiling or floor using 4 threaded rods either 6 mm or 8 mm in diameter (not supplied). They must be secured to the unit's 4 fixing systems (figure 2-n), using anti-vibration resilient mounts (*accessory except for size E, figure 2-p) to limit the transmission of vibrations within the building's structure during operation or a nut/washer assembly placed either side of the mounting bracket (figure 10-b).
- At this point, do not tighten the nuts fully and do not clamp the unit against the ceiling or floor (leave a space between the ceiling and the unit). The nuts will be adjusted finally, when the unit has been connected to the pipework and ducts and levelled.
- To finish securing, adjust the nuts on the mounting holes so that the unit is inclined 1° to 3° towards the condensate drain pan. At the other end (air flow direction) the unit must be perfectly level (figure 11-c).
- The unit must be levelled to prevent poor condensate draining. (see figure 11-a and figure 11-b).
- Before starting up the unit, check that the water flows properly into the condensate pan by pouring some water into it.

5.3 - Air connections

5.3.1 - General conditions for installation of air connections

- The "without filter" unit must be connected to air ductwork and must never operate with an open outlet. Any objects which enter the unit present a fire risk or a risk of fouling the unit.
- When installing the unit, check that there are no encumbrances which could obstruct access to and replacement of the filters.

5.3.2 - Recommended atmosphere for use

The unit has been designed for indoor applications, in a non-corrosive, dust-free environment.

Do not install a unit where flammable gases or products of an acidic or alkaline character may be present. The copper/aluminium coil or components inside the unit could suffer irreparable corrosion damage in their presence.

The concentrations of the following chemicals must not be exceeded in any event:

- SO_2 < 0.02 ppm
- H_2S < 0.02 ppm
- NO, NO_2 < 1 ppm
- NH_3 < 6 ppm
- N_2O < 0.25 ppm

WARNING: operation in a clean room or regulated room, and operation in an ATEX zone is formally PROHIBITED.

5.3.3 - Duct connection spigots

- The ducts should be fixed to these spigots using round collars or adhesive tape. Screws and rivets should not be used.
- In order to guarantee good air tightness, the duct should overlap the whole of the spigot.
- Make sure that the maximum supply air temperature does not exceed 60 °C.

WARNING: all spigots must be connected, whatever the model. None must be capped, either for the supply or return air.

NOTE: The pressure losses of these ducts must be compatible with the unit performance. The duct must be as smooth as possible. Avoid sharp bends. Check that there are no leaks or kinks, and that there is no dirt or installation debris inside the ducts. Debris within the ducts might damage the fan wheel and the damper in the air diffusers.

5.3.4 - Duct connection sleeves

When connecting sleeves to the inlet and the outlet points, make sure that the duct is in contact with the unit.

5.3.5 - Fresh air spigot

- If the fresh air return leads directly outside, the duct must not exceed 5 metres in length. The fresh air temperature must not be below -10 °C.
- A rain guard grille and a filter must be fitted (at installer's expense) to prevent water or other material entering the duct from outside.
- If an auxiliary fan is being used (supplied by the installer), the flow of fresh air must be limited to 10% of the unit's nominal flow rate to prevent noise, coil frosting or air filter bypass problems.

5.3.6 - Adjusting the fresh air spigots

The unit may be equipped with three constant and adjustable ranges of fresh air flow rates. The 3 ranges are 15 to 50 m³/h, 50 to 100 m³/h and 100 to 180 m³/h.

The diameter of the spigot housing the fresh air flow controller may be 100 mm or 125 mm.

The fresh air controller may be modified on site. To do this, unscrew and reposition its damper. See figure 12.

- Undo the locking screw (figure 12-a) on the control module by a ¼ turn using a "torx N°10" screwdriver.
- Move the marker for the module (located on the left or on the right) opposite the required flow rate.
- Tighten the locking screw for the control module once more.

NOTE: If the unit is fitted with a return air temperature sensor, the constant fresh air flow rate must not exceed 50% of the supply air flow delivered by the unit at minimum speed.

To obtain the desired flow rate, the pressure difference must be between 60 and 210 Pa.

Maintain the controller in the "BAS" (down) position.

5.3.7 - Variable air volume fresh air controller

If possible, we recommend moving the controller away from the unit's fresh air inlet to improve the acoustics. If this is not possible, refer to plan 7648387 or figure 13 during installation.

The unit can be equipped with a variable air fresh air flow controller from 0 to 55 l/s (0 to 200 m³/h).

This is connected to the control and allows the fresh air inlet to be regulated in two ways:

- Either using a fixed flow rate defined by the installer which can be reconfigured as needed.
- Or based on the CO_2 level; in this case it is connected to a CO_2 sensor via the control.

NOTE: With the variable fresh air flow controller, the pressure upstream of the fresh air duct must be 180 Pa. It is available as an option.

5.4 - Hydraulic connections

5.4.1 - General conditions for installation of hydraulic connections

- The installation of the hydraulic systems is crucial to the correct operation of the system. Drain valves should therefore be placed at the appropriate points and in sufficient number. In addition, strainers should be fitted, as well as vents at circuit high points, balancing tees and shut-off valves on each coil and, if necessary, pressure relief valves.
- Once the hydraulic connections are completed, it is preferable to thermally insulate the valves for energy reasons.
- Each fan coil unit shall be connected to the hydraulic network with flexible pipes in order to avoid any damage due to vibrations.

5.4.2 - Water quality recommended for water coils

It is recommended to conduct a bacteriological analysis (for detecting ferrobacteria, bacteria producing H_2S, and sulphate-reducing bacteria) and a chemical analysis (to prevent scaling and corrosion issues) of the water.

- Total hardness (French scale) 10 < TH < 15
- Chloride [Cl^-] < 10 mg/l
- Sulphate [SO_4^{2-}] < 30 mg/l
- Nitrate [NO_3^-] = 0 mg/l
- Dissolved iron < 0.5 mg/l
- Dissolved oxygen 4 < [O_2] < 9 mg/l
- Carbon dioxide [CO_2] < 30 mg/l
- Resistivity 2000 < Resistivity < 5000 Ωcm
- pH 6.9 < pH < 8

5.4.3 - The coil

WARNING: Make sure that the coil protective caps are removed before connecting the water pipes.

The coils are equipped (figure 14) with flat face swivel nuts with a female thread, diameter G ½″ or G ¾″ depending on the size of the unit, and a flat neoprene gasket (provided).

- The pipe system is positioned according to figure 14.
- The unit is equipped with an air bleed valve (figure 15-a) at the high point and partial draining at the low points (figure 15-b) that can be turned using an 11 mm flat wrench or a flat-blade screwdriver.
- For a unit pre-fitted with control valves, check the tightness of the couplings/valves before/after connecting to the network.
- A drain pan extension, which is naturally inclined, is provided as an *accessory or with certain valve configurations. It recovers any condensate and drains it via gravity or using a condensate drain pump (*optional).
- Water always flows into the bottom of the coil and exits at the top.
- For 4-tube coils, please respect the instructions given on the labels affixed to the coil.

WARNING: The coil can be partially drained, however precautions must be taken during winter if the installation is shut down. To drain completely, air must be blown through the coil.

Installation of the coil

We recommend a minimum tightening torque of 7 N.m (max. 18 N.m) to avoid any damage to the couplings and the exchanger.

During connection, always use a holding wrench on the component being connected to ensure the manifold is not twisted (figure 16).

- **Filtration**

An efficient filtration system (recommended mesh size of 0.5 mm) should be fitted on the supply water and return water lines.

- **Flushing**

The system must be flushed completely and filled with treated water to prevent the build-up of scale or sludge in the circuit. When flushing the circuit, the thermostatic valve or 3-point valve provided with the unit is in an open position before being supplied for the first time to prevent any accumulation of sludge and contaminants in the coil.

- **Water filling**

For the quality of the water, refer to the section "**Water quality recommended for water coils**"

Purge the coils during system start-up.

Before switching on for the first time, the thermostatic valves (First Open function) or the 3-point valves remain open and allow filling and draining of the coils during commissioning.

5.4.4 - Valves and actuator motors (*optional)

230 V - Actuators

Two types of actuators are available: electrothermal actuator (on/off control) or modulating actuator (3-point).

The actuator supply is 230 V AC.

24 V actuators

Three types of actuators are available: one electrothermal actuator (on/off control) or two modulating actuators (3-point or 0-10 V).

The 0-10 V control voltage range of the modulating actuator can also be adjusted.

The supply is 24 V AC.

Valves

The valve opening conditions are as follows:

With electrothermal actuator:

- Before powering up for the first time, the valve will be open for draining/flushing of the circuit (First Open function).
- After powering up for the first time, the valve will switch to “normally closed” operation as standard.

  The valve must then be opened either via the control device or by removing the valve actuators.

With 3-point actuator:

- Valve open before power up

  Opening and closing of the valve will be actuated by the control

Without actuator:

- Valve open

WARNING:

- ***We cannot be held liable for damage to valves caused by faulty design of the hydraulic supply network or incorrect system start-up.***
- ***The valves have to be open when flushing or pressure testing the system. High pressures risk damaging the closed valves. The differential pressure across the valve’s control path must not exceed 400 kPa.***
- ***When fitting a new valve, ensure that the direction of flow of fluid through the valve is as shown by the arrow on the valve body. If the direction of flow is wrong, the valve body will deteriorate rapidly and the flow control will be distorted.***
- ***Inset a gasket (not provided) between the threaded coupling and the shut-off valve.***
- ***The 24 V AC actuator and the controller must not be connected on the same neutral potential.***

5.4.5 - Flexible connection (*accessory)

The flexible connections available as an *accessory are delivered separately to the unit. They must be fitted and connected on site.

Depending on the valve configurations (directly on the coil, 2-way; 4-way or 2-way self-balancing), different types of flexible connection will be delivered according to the diameter of the connection.

The minimum curve radius is 106 mm.

5.4.6 - Condensate pan discharge connection (without condensate drain pump)

Figure 2-j: use a flexible connection with an interior diameter of 16 mm (not supplied). Several units can be connected to one manifold (figure 17). Ensure there is a sufficient incline of 20 mm/m along the entire length of the horizontal pipe, with no low points along this length.

Install a 50 mm (minimum) siphon to prevent gases and odours from flowing back into the ceiling void.

Warning: After connecting the drain pipe, check its clamping and make sure there is no water leakage.

5.4.7 - Condensate drain pump (*optional)

As an option, the condensate drain pump can be supplied connected but not mounted on the unit. An assembly plan will be supplied with the pump.

Its technical specifications are as follows:

For sizes 42NX 2, 3 and 4:

Maximum flow rate of 8.5 l/h for a pumping height of 2 metres and a horizontal pipe length of 5 metres.

Maximum flow rate of 7 l/h for a pumping height of 4 metres and a horizontal pipe length of 5 metres.

The operation points are provided in the table below. Connect a clear drain pipe (not supplied) with an internal diameter of 6 mm between the pump outlet and the wastewater pipe. This pipe should not be pinched or touch the unit or any other external component.

Table of actual flow rates for the pump connected to a PVC pipe with an internal diameter of 6 mm.

Sizes 42NX 2, 3 and 4: Water flow rate in litres per hour (-15% / +20%)				
Pump performance: Water flow rate in litres per hour (-15% / +20%)				
Discharge height	Horizontal length of the discharge pipe			
	5 metres	10 metres	20 metres	30 metres
1 metre	10,4	9,1	8,3	7,3
2 metres	8,5	7,8	7	6,4
3 metres	7,9	7,1	6,3	5,8
4 metres	7	6	5,3	4,9

For sizes 42NX 5:

Maximum flow rate of 14 l/h for a head height of 2 metres and a maximum pipe length of 5 metres.

Maximum flow rate of 11.5 l/h for a head height of 4 metres and a maximum pipe length of 5 metres.

The operation points are provided in the table below. Connect a clear drain pipe (not supplied) with an internal diameter of 6 mm between the pump outlet and the wastewater pipe. This pipe should not be pinched or touch the unit or any other external component.

Table of actual flow rates for the pump connected to a PVC pipe with an internal diameter of 6 mm.

Sizes 42NX 5: Water flow rate in litres per hour (-15% / +20%)				
Discharge height	Horizontal length of the discharge pipe			
	5 metres	10 metres	20 metres	30 metres
1 metre	17	17	16	14
2 metres	14	14	13,5	11,2
3 metres	13	13	12	9,5
4 metres	11,5	10,5	10	8,3

WARNING: Ensure the water flow rate discharged in the thermal selection is suitable for your application.

Under operating conditions outside the recommended temperature and relative humidity ranges in section "**3.6 Limits for the Transport, Storage and Operating Conditions**", the discharge pipe must be insulated to prevent condensation formation, which could damage the installation and pump. We recommend using a flexible transparent PVC type pipe with internal diameter 6 mm/ external diameter 9 mm. It is essential to ensure that the pump connections are sealed. A clamp is recommended for this purpose.

Note: This pump must always be used with a valve control device, to ensure control of the high safety device when the valve is closed (closure of the condensate drains).

5.4.8 - Water sensor (*optional)

A water temperature sensor can be provided. It must be installed on the water circuit as described below:

- For a 2-tube coil: the sensor must be installed on a cooling water pipe (for changeover function). The sensor is installed on a part where the water flow is continuous.
- For a 4-tube coil: the sensor must be installed on a hot water pipe (for cold draught function that prevents the operation of the unit when the hot water network is off).

5.5 - Electrical connections

5.5.1 - General conditions for electrical installation

The unit must be installed in accordance with the requirements below:

a) It is obligatory to disconnect all power supplies to the unit and its accessories before carrying out any work.

b) The electrical connections must be made in accordance with the wiring diagram for the unit and the instructions for the controller.

c) Only personnel qualified to perform electrical work may make electrical connections.

d) The wiring of the components which make up the different control systems and the communication buses must be carried out in accordance with the latest rules and regulations by professional installers.

e) The unit's power supply must have an omnipolar disconnection device for complete disconnection under overvoltage category III conditions.

f) All the units must have a current surge protection device in accordance with the installation rules. Refer to the Table below for the choice of fuse/circuit breaker rating and to the name plate to determine the rated amperage.

G The installation must be equipped with a device to protect against earth faults. It is recommended that the unit is supplied by a residual current device (RCD) which has a rated residual operating current of less than 30 mA.

h) The power disconnection device must be clearly labelled to identify which items of equipment are connected to it.

i) The main power cable must have H07V-K type double insulation with a minimum copper cross section of 3G1.5 mm^2 and include the colour green/yellow which must be used as earth conductors.

j) The power supply cable must be routed via the grommet provided and secured in the dedicated strain relief.

Its maximum diameter must be 12 mm. It must be clamped at low speed with a torque not exceeding 0.8 Nm.

k) If a CARRIER digital controller is used, the power supply cable must be secured using the tie provided. A routing is provided for it in the plastic box.

l) It is recommended that the communication bus cabling is physically separated from the power supply cabling to avoid any interference with the connecting cables.

m) Before connecting the unit to the network, ensure that the voltage matches that indicated on the name plate.

n) The unit's compliance with the above standards does not guarantee the compliance of the installation as a whole (several other factors not relating to the unit may be involved). As a result, the installer must observe the applicable recommendations in order to guarantee compliance.

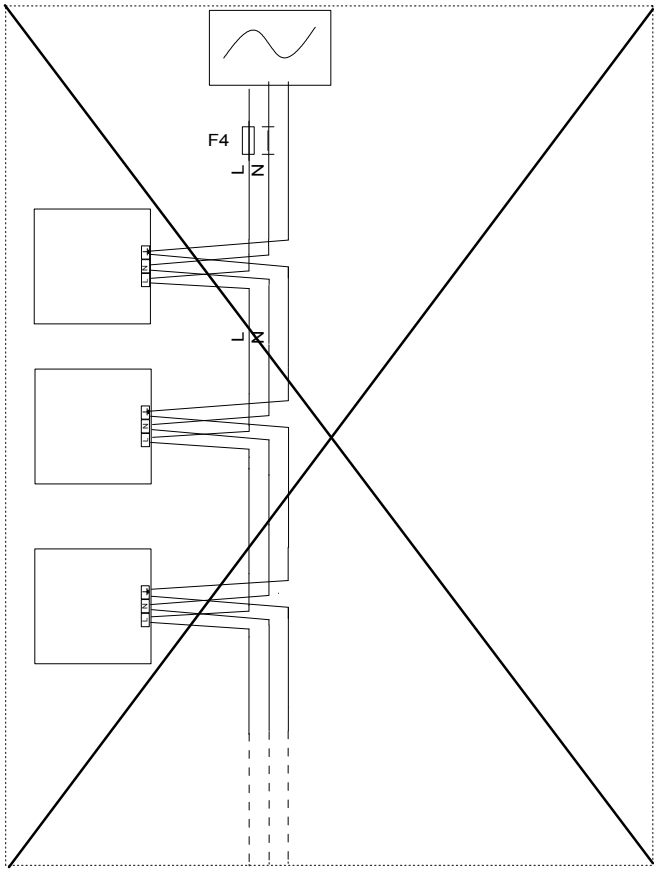
	Overcurrent protection upstream without controls. Protection by type GG fuses or a circuit breaker.		
	Without electric heater	With Elec. Heater	
		500W	1000W
42NX 2	2A	4A	6A
42NX 3	2A	4A	6A
42NX 4	2A	NA	6A
42NX 5	4A	NA	NA

	Overcurrent protection upstream with controls. Protection by type GG fuses or a circuit breaker.		
	Without electric heater	With Elec. Heater	
		500W	1000W
42NX 2	6A	6A	6A
42NX 3	6A	6A	6A
42NX 4	6A	NA	6A
42NX 5	6A	NA	NA

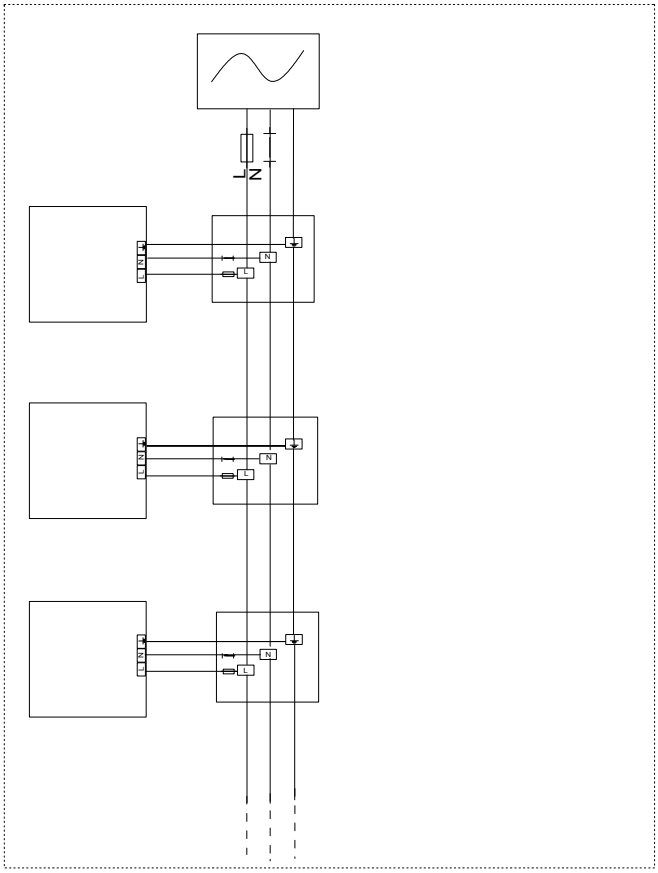
5.5.2 - Wiring diagram for connecting several units

WARNING: Never connect several terminal units in parallel on the same thermostat to prevent any risk of deterioration.

Incorrect wiring for several units



Correct wiring for several units



5.5.3 - Access to the electric terminal block

Use a Phillips screwdriver (size PZ27) or a 7 mm Allen key to undo the 2 screws securing the electric box cover (figure 18-a).

For the terminal block, always use a standard screwdriver with a pitch of 3.5 mm with 1000 V VDE fine insulation integrated into the flat tip to disconnect the cables.

5.5.4 - Access to the NTC control terminal block

Use a Phillips screwdriver (size PZ27) to unscrew the 2 screws securing the electric box cover (figure 18-b).

For the terminal block, always use a standard screwdriver with a pitch of 3.5 mm with 1000 V VDE fine insulation integrated into the flat tip to disconnect the cables.

5.5.5 - Access to the WTC control terminal block

Use a Phillips screwdriver (size PZ27) to unscrew the 2 screws securing the electric box cover (figure 18-c).

For the terminal block, always use a standard screwdriver with a pitch of 3.5 mm with 1000 V VDE fine insulation integrated into the flat tip to disconnect the cables.

5.5.6 - Fan motor

The motor is actuated by a 0-10 V DC control signal. The minimum voltage for actuation is 2 volts (without electric heaters operating). Refer to the section "**5.5.7 Motor actuation with the electric heaters**" below for the minimum voltage of the unit with the electric heaters.

5.5.7 - Motor actuation with the electric heaters.

Connecting the unit to an air flow circuit alters its performance. The user must ensure that the minimum air flow rates indicated below are respected:

	Minimum air flow rates			
	I, Y and H plenum versions		Compact U plenum version	
	500 W	1000 W	500 W	1000 W
42NX 1	Temporarily unavailable			
42NX 2	175 m³/h(1)	490 m³/h(1)	140 m³/h(1)	240 m³/h(1)
42NX 3	135 m³/h(1)	170 m³/h(1)	160 m³/h(1)	148 m³/h(1)
42NX 4	NA	480 m³/h(1)	NA	550 m³/h(1)

(1) Normal usage scenario, without pressure drop in the network.
If the network pressure drop increases, the control voltage will have to increase in relation to the reference flow rates.

- The operation of the electrical heater must be fan-controlled.
- Power to the electrical heaters should be cut whenever the fan motor assembly is stopped intentionally or unintentionally.
- Any control systems installed must post-ventilate the unit for at least 2 minutes after the complete shutdown of the system.
- Units equipped with electrical heaters are equipped with protection to prevent accidental overheating. If the thermal fuse is destroyed, the electrical heater must be replaced.

WARNING:

- ***If actuated using a thermostat or controller, you must refer to its technical documentation. You have sole responsibility for checking its capacity to accept the output of the electrical heater. If the selected controller (thermostat or controller) and/or relay is missing or inadequate, there is a risk of electrical overload and a risk of a thermal event. Under no circumstances can the manufacturer be held liable for direct or indirect damage caused by or in connection with the absence or inadequacy of the relay and/or thermostat.***

6 - SERVICING AND MAINTENANCE

The unit must be serviced periodically between the heating and cooling seasons. In particular, components prone to clogging (filter, condensate drain pan, coil, etc.) must be checked.

During maintenance, it is essential to apply all of the recommendations and instructions given in the maintenance brochures, on the labels or in the instructions provided with the equipment, and to follow any other relevant instructions.

6.1 - Air filter

The filter is crucial to the correct operation of the unit. Without it, the heat exchange coil would become clogged, the performance would drop, and the unit's sound level and electrical consumption would increase.

The unit can be equipped with:

- An **ISO Coarse 50%** filter (*optional). We recommend replacing it annually.
- An **ISO ePM10 50%** filter (*optional). This offers superior filtration quality and a maintenance interval of up to 2 years under normal conditions of use. For more frequent maintenance, dust can be removed from the **ISO ePM10 50%** filter by running a vacuum attachment in the opposite direction to the flow of air.

The above recommendations are for information only. We recommend regular inspections of the filter's appearance in order to define the frequency of this operation, which varies depending on the premises and the operating conditions.

The **ISO Coarse 50% and ISO ePM10 50%** filters both comply with the M1 fire rating in accordance with NFP 92-512 or B - s1, d in accordance with EN 13501-1.

WARNING: The unit may be supplied without a filter at the customer's request. The latter must ensure that a minimum of* ISO coarse 50% *filtration is provided upstream.

The filter should never be cleaned using water or detergent products, which could cause the spread of bacteria.

6.1.1 - Access to the filter

Suspended ceiling / Raised floor 42NX 2, 3 and 4 (figure 19 and 20)

- Mark the two quick locks on the filter access hatch (a).
- Turn a 1/4 turn to release the filter hatch (b).
- Guide the filter downwards (suspended ceiling) or upwards (raised floor) (c).
- Release the filter from its housing.
- Carry out the operations in reverse order for reassembly when fitting the new filter.

"I" models without plenum or return air sleeves 42NX 5 (figure 21)

- Mark the clips for the **ISO Coarse 50%** filter (a)
- Release the filter from the clips
- Carry out the operations in reverse order for reassembly when fitting the new filter.

Models with plenum or return air sleeves 42NX 5 (figure 22)

- Mark the two filter access bolts (a)
- Press the two filter access bolts (a)
- Guide the filter access hatch downwards and release the filter from its housing (b)
- Carry out the operations in reverse order for reassembly when fitting the new filter.

6.2 - Heat exchange coil

A clean coil is crucial to the efficiency of the unit. If necessary, clean the coil with a vacuum cleaner, taking care not to damage the fins.

6.3 - Condensate drain pan

The main condensate drain pan and the pan extension must be kept clean. The pans and drainage fittings may be completely cleaned using non-abrasive, water-based detergents. Also check periodically that the drain pipe is not blocked, bent or kinked, and has the required gradient (refer to the section "**Condensate pan discharge connection**")

7 - TESTING & WARRANTY

All our units are tested and approved before leaving the factory.

They are guaranteed against all manufacturing defects. The manufacturer shall not be held liable for any type of corrosion. The unit warranty does not cover damage resulting from incorrect electrical connection, inadequate electrical or thermal protection or failure to use a filter.

8 - END OF LIFE

Safety considerations relating to final shut-down

Shut off the energy sources to the units before disassembly.

Respect the local environmental laws and regulations.

Presence of 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).

- Check whether any part of the unit can be recycled for another purpose.
- Sort the components according to their material for recycling or disposal, in accordance with regulations in force.

Materials to be recovered for recycling - Steel - Copper - Brass - Aluminium - Plastics - Insulation.

The proportions of materials for each unit are listed in the Product Environmental Profile (PEP) available at the following website: à https://register.pep-ecopassport.org/pep/or on request from our departments.

Any contaminated fluids must be disposed of by specialist professionals.

9 - REGULATIONS

CE

EU Declaration of Conformity

This unit complies with the provisions of the following European directives:

- 2014/35/EU (LVD)
- 2014/30/EU (EMC)
- 2011/65/EU (RoHS)
- 2009/125/EC (Ecodesign) and regulation 327/2011/EU

And complies with the following standards:

- EN 60335-2-40 and EN 60335-1 (safety of electrical appliances).
- EN 61000-6-3 (Emission), EN 61000-6-1 (Immunity) (Electromagnetic Compatibility).

The unit's compliance with the above standards does not guarantee the compliance of the installation as a whole (several other factors not relating to the unit may be involved). As a result, the installer must observe the applicable recommendations in order to guarantee compliance.

The quality management system of the assembly site for this product has been certified as compliant with the requirements of ISO 9001 (latest version) after an audit conducted by an authorised independent third party.
The environmental management system of the assembly site for this product has been certified as compliant with the requirements of ISO 14001 (latest version) after an audit by an independent third party.
The occupational health and safety management system of the assembly site for this product has been certified as compliant with the requirements of ISO 45001 (latest version) after an audit by an independent authorised third party.
Please contact your sales representative for more information.

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The manufacturer reserves the right to change the product specifications without notice.
Carrier, Rte de Thil - 01120 Montluel, France.
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