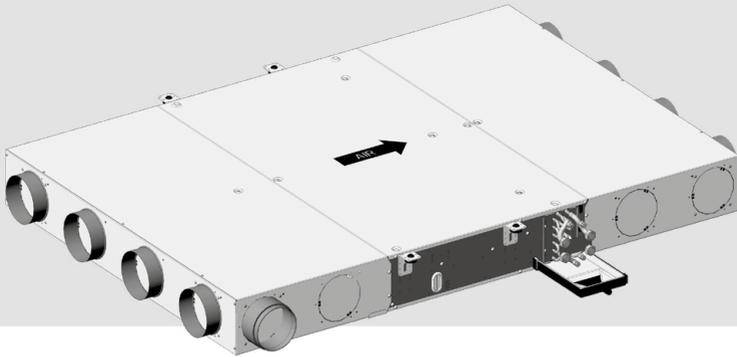




United Technologies

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS



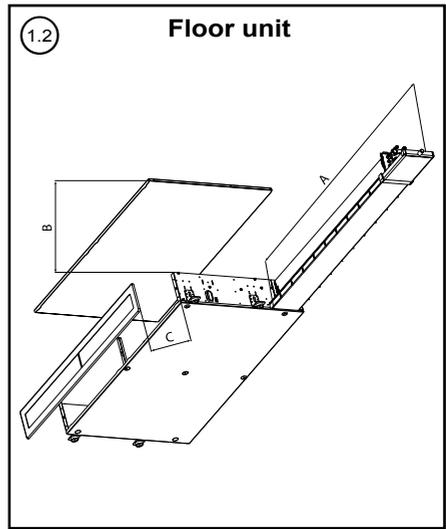
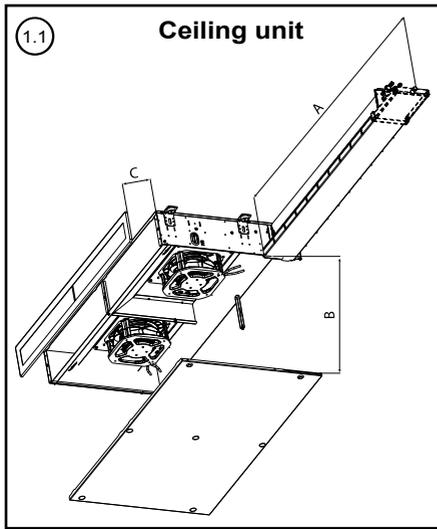
Hydronic Extra Slim Ducted Fan Coil Units

42EP

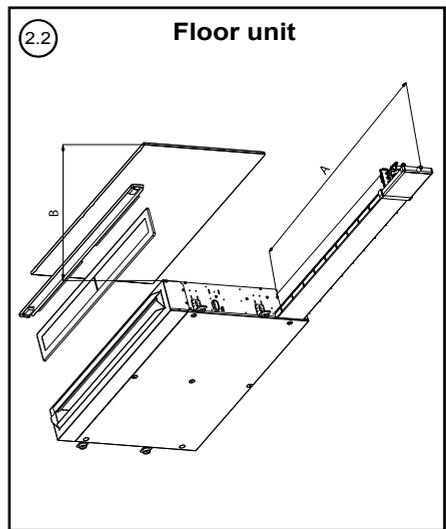
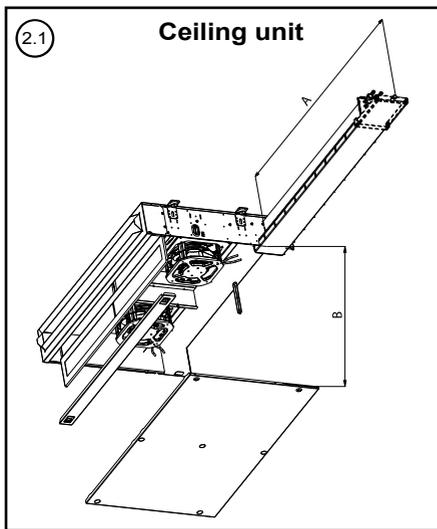
CONTENTS

1 - PRECAUTIONS	11
1.1 - Operating limits	11
1.2 - Clearances required	11
1.3 - Receiving a shipment - installation methods	11
1.4 - Supply voltage.....	12
2 - SAFETY CONSIDERATIONS	13
2.1 - General.....	13
2.2 - Protection against electrocution	13
2.3 - General installation conditions	13
2.4 - Caution for the control of the unit	14
2.5 - Conformity.....	14
3 - INSTALLATION OF THE UNIT	15
3.1 - Preliminary checks	15
3.2 - Installing the unit in the false ceiling / False floor	15
3.3 - Installation procedure	15
4 - COMPONENTS AND MAINTENANCE	16
4.1 - Fan motor assembly removal	16
4.2 - Heaters removal.....	16
4.3 - Drain pan removal.....	16
4.4 - Water Coil removal procedure.....	16
4.5 - Spigots Duct connection.....	17
4.6 - Rectangular flanges duct connection	17
4.7 - Optional filter and filter access	17
4.8 - Fresh air controller	17
4.9 - Optional water flow control valves.....	17
4.10 - Flexible pipe option	18
4.11 - Optional water sensor.....	19
4.12 - Optional condensate pump	19

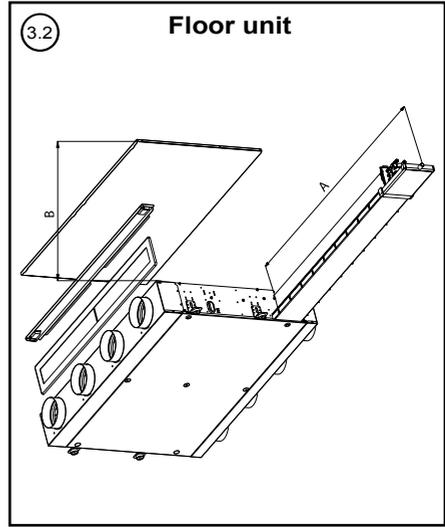
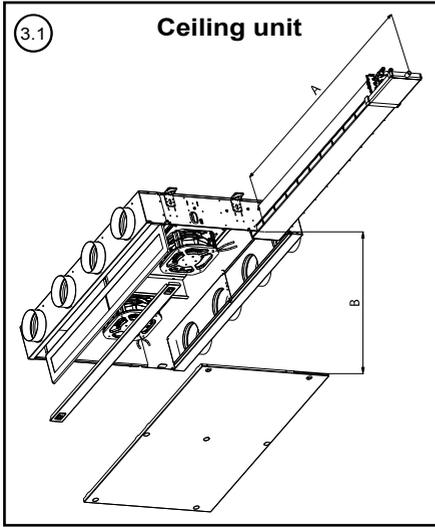
The illustrations in this document are for illustrative purposes only and not part of any offer for sale or contract. The manufacturer reserves the right to change the design at any time without notice.



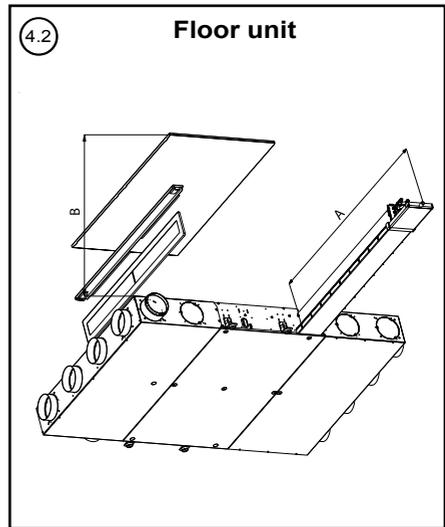
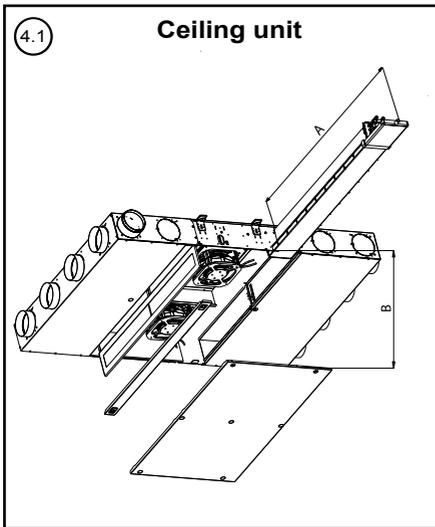
UNIT SIZE	A	B	C
42EP-SIZE 0	914	170	50
42EP-SIZE 1	1114	170	50
42EP-SIZE 2	1314	170	50



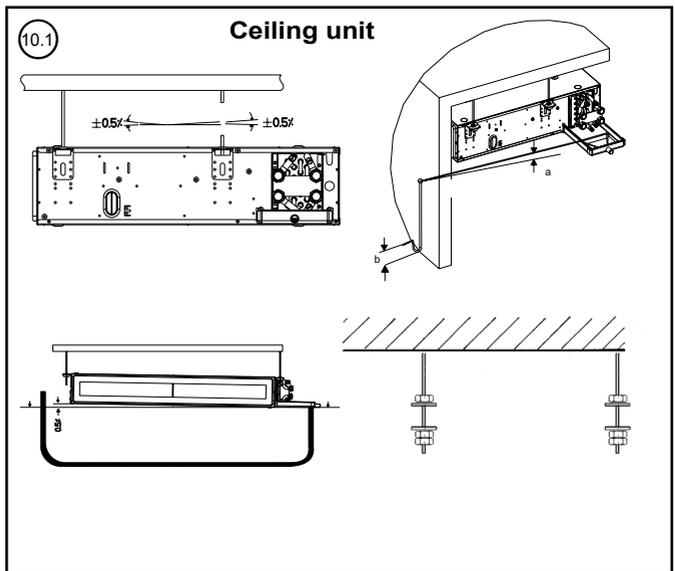
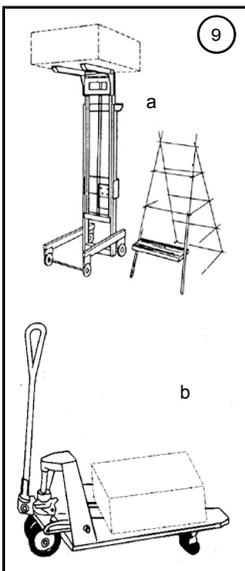
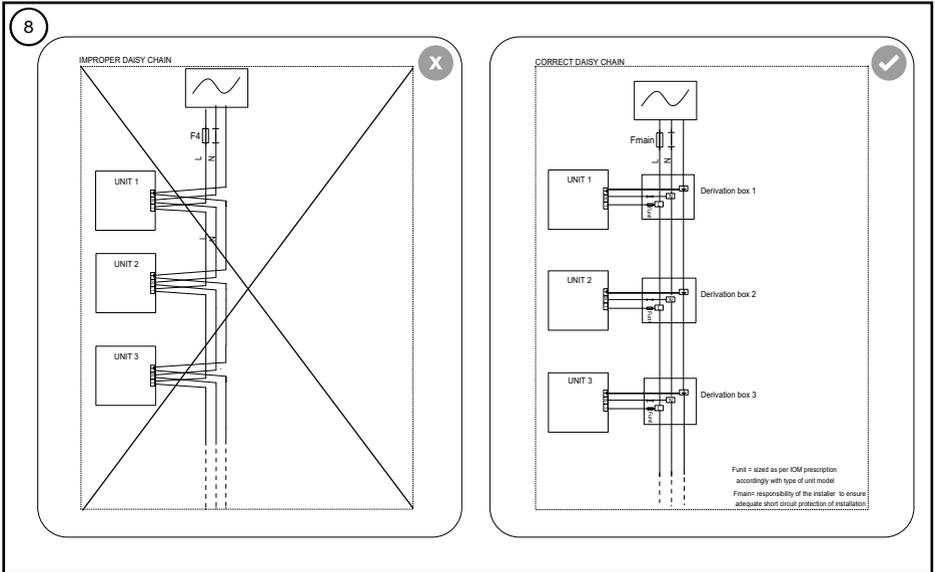
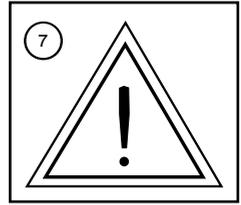
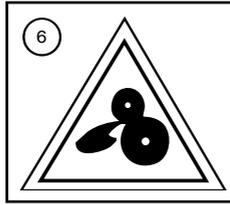
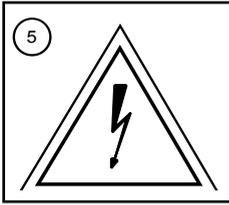
UNIT SIZE	A	B
42EP-SIZE 0	914	190
42EP-SIZE 1	1114	190
42EP-SIZE 2	1314	190



UNIT SIZE	A	B
42EP-SIZE 0	914	190
42EP-SIZE 1	1114	190
42EP-SIZE 2	1314	190

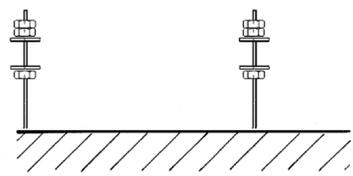
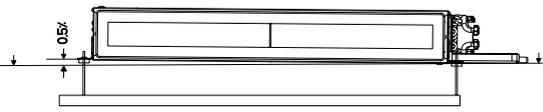
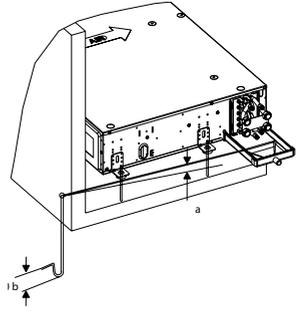
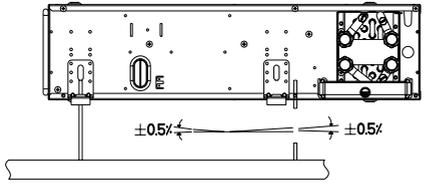


UNIT SIZE	A	B
42EP-SIZE 0	914	190
42EP-SIZE 1	1114	190
42EP-SIZE 2	1314	190

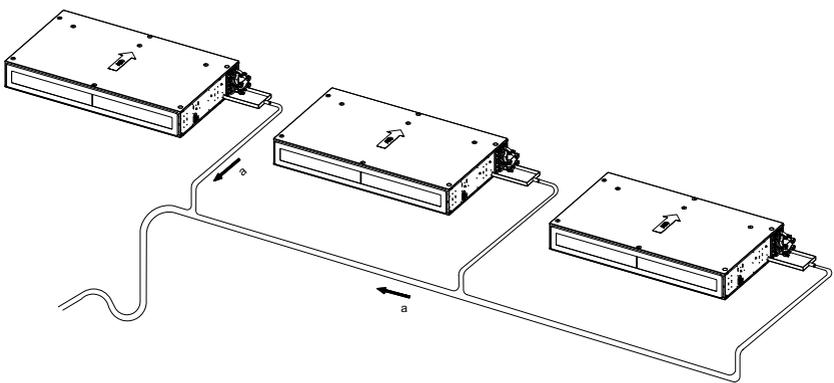


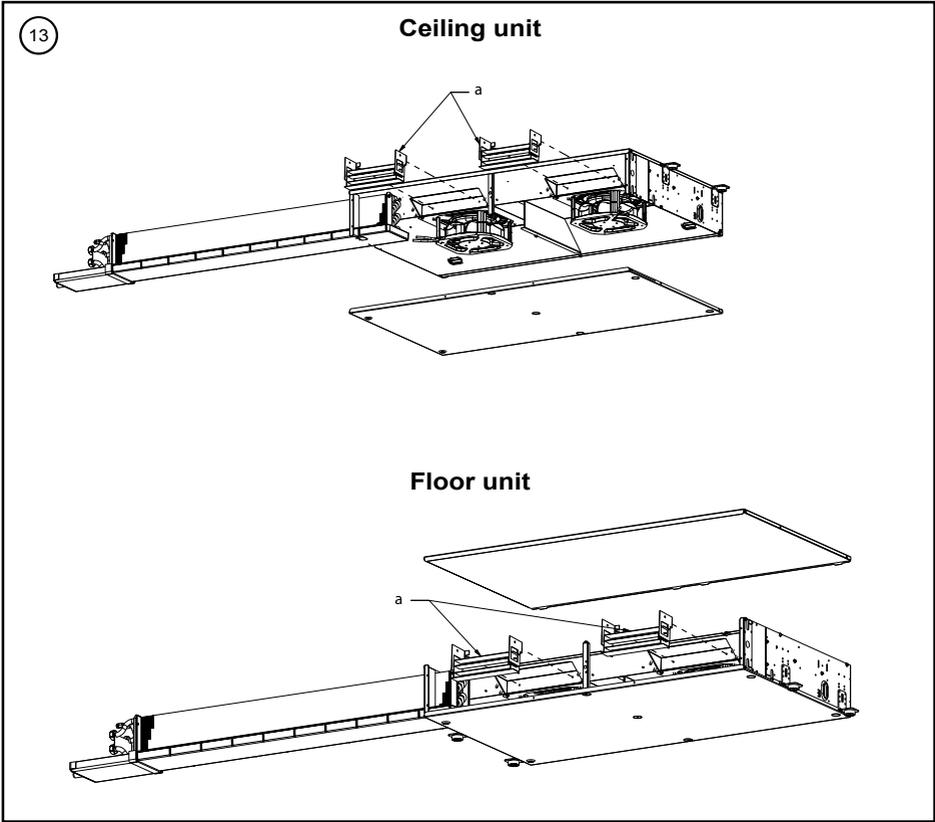
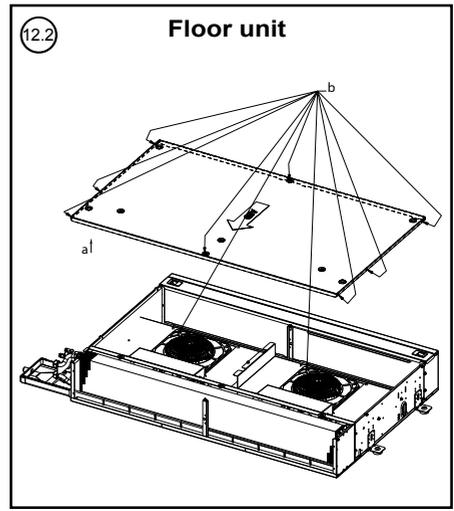
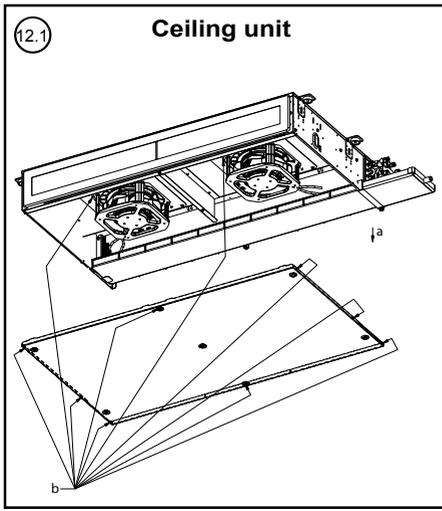
10.2

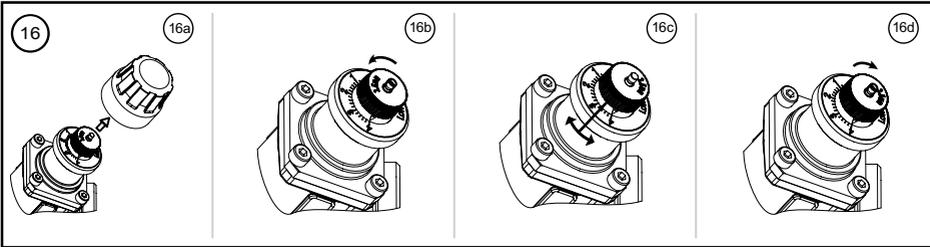
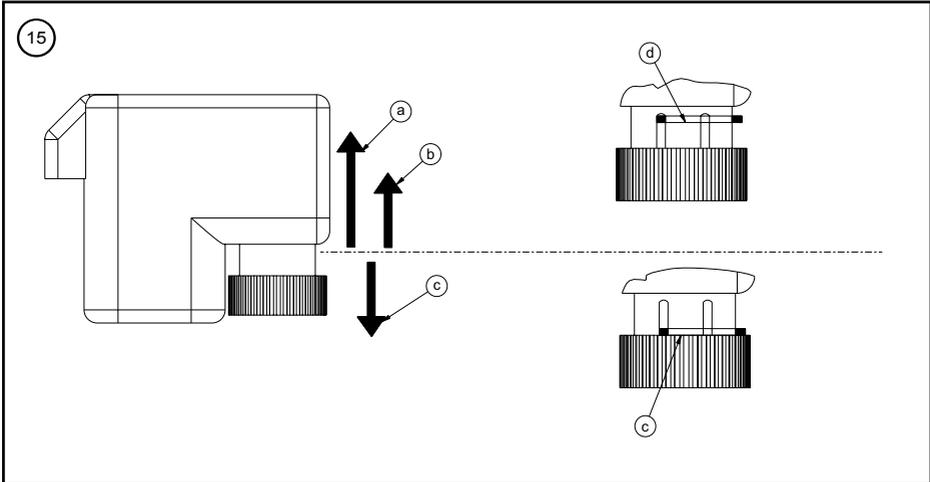
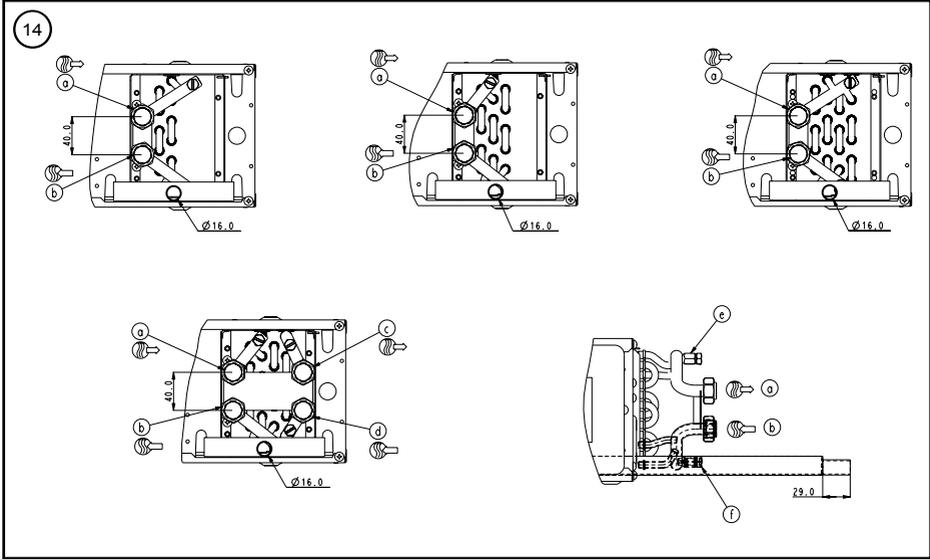
Floor unit



11







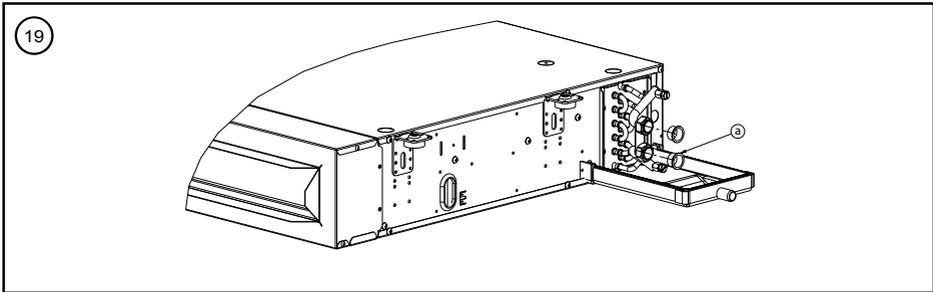
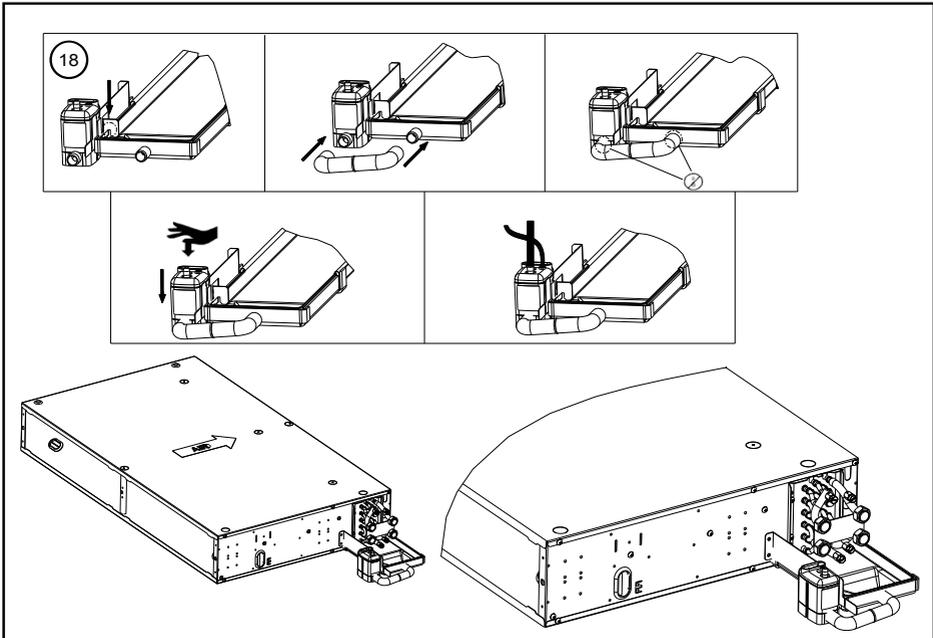
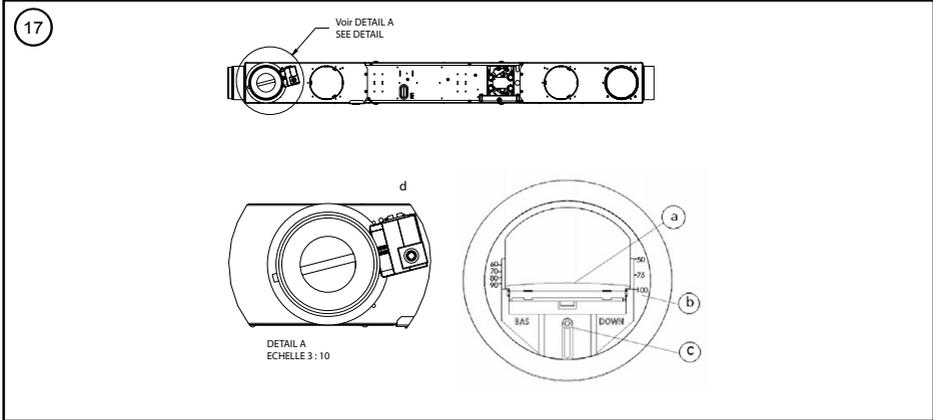


Figure titles and legends:

- 1 Base unit clearance - Clearances needs [mm]
- 2 Units with rectangular flanges - Clearances needs [mm]
- 3 Units with compact plenum - Clearances needs [mm]
- 4 Units with large plenums - Clearances needs [mm]
- 5 Electrical danger pictogram
- 6 Caution hand hazard pictogram
- 7 General danger pictogram
- 8 Daisy chain recommendations
- 9 Lifting unit for installation in a false ceiling
- 10 Levelling the unit
 - a 20 mm/m fall in horizontal pipe run
 - b 50 mm siphon
- 11 Several units connected to one condensate collector
 - a 20 mm/m fall
- 12 Fan assembly removal
 - 12.1 Ceiling unit
 - 12.2 Floor unit
 - a Removing fan access panel
 - b Position of torx screws
- 13 Electric heater removal
 - 13.1 Ceiling unit
 - 13.2 Floor unit
 - a Location of screw
- 14 Coil inlet/outlet positions, all sizes
 - a Cooling water outlet (4 and 2-pipe coil)
 - b Cooling water inlet (4 and 2-pipe coil)
 - c Heating water outlet (4-pipe coil)
 - d Heating water inlet (4-pipe coil)
 - e Air vent
 - f water purge
- 15 Meaning of wires - Proportional valve actuator (not applicable for valves with balancing functions)
 - a Black wire (230 V valve actuator), actuator rod rising
 - b Green wire (24 V valve actuator), actuator rod rising
 - c Brown wire, Actuator rod lowering
 - d Actuator rod in high position
 - e Actuator rod in low position
- 16 Water flow adjustment of optional 2-way valve with balancing function
 - a Control knob removal
 - b Knurled nut untightening
 - c Water flow adjustment (white knob)
 - d knurled nut tightening in initial position
- 17 Optional airflow controller
 - a Air Damper
 - b Fresh airflow setting (in m3/h)
 - c Airflow adjustment screw
 - d Motorized air dumper
- 18 Condensate pump assembly
- 19 Coil protective caps removal
 - a Protective caps (factory fitted)

1 - PRECAUTIONS

Only specially trained and qualified technicians and installers who have been fully trained on the product concerned are authorized to install, to commission and service this equipment. In particular it is obligatory to disconnect all power supplies to the unit and its accessories before carrying out any work.

1.1 - Operating limits

1.1.1 - Cooling mode

Cooling mode - Operating Limits	
Water circuit	Min. inlet Temperature >5°C ethylene / propylene glycol rate < 40% Water side pressure < 15,5 bar (1550 kPa)
Ambient temperature and humidity	T < 27°C / 65% relative humidity or humidity weight < 14,7 g/kg dry air
Supply air temperature	T > 12°C with maximum ambient humidity conditions (14,7 g/kg dry air)

1.1.2 - Heating mode

Heating mode - Operating Limits	
Water circuit	Max. inlet Temperature < 80°C ethylene / propylene glycol rate < 40% Water side pressure < 15,5 bar (1550 kPa)
Ambient temperature and humidity	T < 40°C
Supply air temperature	T < 60°C with supply plenum and spigots application

1.1.3 - Operating environment

The 42EP has been designed for indoor application in 'urban' conditions having a non-corrosive, dust-free and non-marine environment.

- The concentrations of the following chemicals must not be exceeded in any event:
 - SO₂ < 0.02 ppm
 - H₂S < 0.02 ppm
 - NO, NO₂ < 1 ppm
 - NH₃ < 6 ppm
 - N₂O < 0.25 ppm

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.

1.1.4 - Recommended coil water quality

At installation handover, and then periodically every year, it is advised to analyse the water for bacteria (detection of Ferro-bacteria, H₂S-producing and sulphate-reducing bacteria) and chemicals (in order to avoid problems due to corrosion and scaling).

The water circuit must include all the necessary elements for the treatment of the water: filters, additives, intermediate exchangers, purges, drains, isolating valves, etc., according to the analysis results.

- The results must be in accordance with the values shown below:
 - Total hardness in mmol/l: 1 < mmol/l < 1.5
 - Chloride [CL⁻]: <10 mg/litre
 - Sulphate [SO₄²⁻]: <30 mg/litre
 - Nitrate [NO₃]: =0 mg/litre
 - Dissolved iron [Fe]: Fe <0.5 mg/litre
 - Dissolved oxygen [O₂]: 4 < [O₂] < 9 mg/litre
 - Carbon dioxide [CO₂]: CO₂ <30 mg/litre
 - Resistivity [R]: 20 < R < 50 Ohm·m
 - pH: 6.9 < pH < 8

1.2 - Clearances required

Base unit:	Fig. 1
With rectangular flange:	Fig. 2
With compact plenum:	Fig. 3
With large plenum:	Fig. 4

NOTE : All information's about dimensions and weights are available in the PSD documentation on Carrier Web portal

1.3 - Receiving a shipment - installation methods

When receiving a shipment, check the condition of the goods and report any damage in transit to the shipping company. 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.

1 - PRECAUTIONS

1.4 - Supply voltage

Check that the supply voltage and frequency correspond to the values of the unit to be installed.

	Operating Limits - Electrical input
EC brushless Motor	Nominal: 230V Min : 207V Max : 253 V 60 or 50 Hz -1ph

NOTE: All performances data certified by Eurovent are based on 50Hz application. Carrier doesn't ensure the same performances when the unit operates at 60Hz; the RPM and power input of the fan-motor are usually higher.

WARNING: Failure to take proper account of the above advice and unauthorised modification of the electrical connections will render the Carrier warranty on the product null and void.

2 - SAFETY CONSIDERATIONS

WARNING: Switch off the main electrical power supply to the unit and accessories (if installed) before doing any work on the unit.

2.1 - General

Installing, commissioning and servicing of the various component (unit, control system, hot and cold water system, air distribution system) can be dangerous unless certain aspects of the installation, such as the presence of mains electricity and hot or cold water in the air conditioning equipment, are taken into account. Only specially trained and qualified technicians and installers who have been fully trained on the product concerned are authorised to install, commission and service this equipment.

During service work, it is essential to apply all recommendations and instructions given in service leaflets, on labels or in the instructions delivered with the equipment, and to comply with any other relevant instructions.

- Definition of the pictograms used:
 - Electrical danger Fig. 5
 - Caution hand hazard Fig. 6
 - General danger Fig. 7

Comply with all safety rules and regulations currently in force. Wear eye protectors and work with hand gloves and any individual protection equipment following local legislation. Take care when moving or positioning of the equipment.

2.2 - Protection against electrocution

Only electricians qualified to the level recommended by the IEC (International Electro technical Commission) in its standard IEC 364, corresponding to Europe HD 384, France NFC 15 100 and UK IEE Wiring Regulations, may have access to electrical components. In particular it is obligatory to disconnect all power supplies to the unit and its accessories before carrying out any work. Disconnect the main power supply with an isolating device (not supplied by Carrier).

IMPORTANT: The components, which make up the different control loops described in this manual include electronic items. As such, they may generate or be harmed by electromagnetic interference unless they are installed and used in accordance with these instructions. The components making up these control systems conform to the requirements of electromagnetic compatibility in residential, commercial and light industrial areas. They also comply with the low-voltage directive.

If the product is supplied without a Carrier control device, verification of EMC conformity is the responsibility of the installer.

2.3 - General installation conditions

IMPORTANT: The Carrier numeric controller, power module, or in general units fitted with controls loops must have an isolating device upstream (for example a double-pole circuit breaker). If necessary, an easily operated emergency stop device (such as a punch-button switch) must cut off the power to all equipment. These safety devices shall be sized and installed in accordance with IEC Recommendation 364, corresponding to Europe HD 384, France NFC 15 100 and UK IEE Wiring Regulations. These devices are not supplied by Carrier.

- In general terms, the following rules must be applied:

Upstream over current protection				
Standard units without electrical heater and controllers Fuse rating recommendation				
Unit size	Fuse type	Fuse rating [A]		
0	gG	4		
1				
2				
Standard units with electrical heaters and no controllers Fuse rating recommendation				
Unit size	Electrical Heater size [W]	Fuse type	Fuse rating [A]	
0	500	gG	4	
	800			
1	500			6
	800			
2	1000		8	
	500			
	800			
	1000			
	1600			

- Electrical connections must be made according to the wiring diagram provided with the unit and the installation and operation manual of the controller.
- Units must be provided with over-current protection upstream (not supplied by Carrier).
- Daisy chain is forbidden (supply others units from the terminal block of one of them, cf Fig. 8).
- The power disconnection device must be clearly labelled to identify which items of equipment are connected to it.
- 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.
- The power supply cable must be doubly insulated and fixed using a cable clamp. A hole is provided for this purpose in the plastic Carrier controller housing. The cable must be clamped on the outer insulation.
- The control loop components must be installed in

2 - SAFETY CONSIDERATIONS

an environment, which conforms to their index of protection (IP).

- The maximum level of pollution is normally pollutant (level 2) and installation category II.
- The low-voltage wiring (communication bus) must be kept physically separate from the power wiring.
- In order to avoid interference with the communication links
 - Keep low-voltage wiring away from power cables and avoid using the same cable run (a maximum of 300 mm in common with the 230 V a.c., 30 A cable).
 - Do not pass low-voltage wires through loops in the power cables.
 - Do not connect heavy inductive loads to the same electrical supply (circuit breaker) used by the controllers, power modules or speed controllers.
 - Use the screened cable type recommended by Carrier and make sure all cables are connected to the controllers and power modules.

2.4 - Caution for the control of the unit

IMPORTANT: It is not permitted to connect several units to the same control device (electronic NTC controller, WTC controller, or any other third party controller). Carrier electronic Thermostat type A&B for AC motors require additional accessory board to allow master/slave function. Carrier electronic Thermostat type C&D for EC motors can be connected up to 10 units, refer to thermostat installation manual instructions.

2.5 - Conformity

- This equipment is in compliance with the essential requirements of the following European directives:
 - Machinery directive 2006/42/EC
 - Electromagnetic directive 2014/30/EU
 - Restriction of Hazardous substances directive: 2011/65/EC
 - Eco Design directive 2009/125/EC and 327/2011/EU.

3 - INSTALLATION OF THE UNIT

3.1 - Preliminary checks

For all procedures, switch off the unit power supply at the isolator provided for the purpose during installation (isolator not supplied by Carrier).

CAUTION: After disconnecting power supply, keep the unit idle for 15-20min to cool heating circuit temperature

- Disconnect the power supply and connection cables.
- Close the isolating valves on the manifolds.
- Disconnect the flexible water pipes by unscrewing the gas connectors.

WARNING: Since the flexible water pipes do not have drain valves, a receiver must be provided to allow the cooling coil to be drained.

- Disconnect the supply air ducts.
- Disconnect the flexible condensate drain pipe. Drain the siphon into a suitable vessel.
- Support the unit lightly and release it by unscrewing the four nuts on the threaded hangers. Lower or lift the unit carefully according to unit type (floor or ceiling).

3.2 - Installing the unit in the false ceiling / False floor

The positioning of the unit must not create an obstacle that may lead to an unequal distribution and/or return flow of the air. The ceiling/floor must be sufficiently even to allow a simple installation without danger from the unit. The supporting structure must be able to carry the unit weight and prevent deformation, breaks or vibrations during operation.

INSTALLATION PRECAUTIONS: During the installation process, remove all debris and construction material from the ducts to prevent any damage to the unit.

3.3 - Installation procedure

NOTE: The fan-coil units are delivered upside down when stacked on a pallet.

- Place the unit close to where it will be installed. For installation in a false floor/ceiling use a hydraulic lift and a folding ladder to make the task easier (Fig. 9).
- Check that the clearances around the unit are sufficient to allow easy maintenance. Please refer to the diagram that shows the service clearances.
- Mark the position of the threaded hangers on the floor/ceiling (if several units need to be installed, it may be advisable to produce a drilling template). The method of fixing the threaded hangers (not supplied by Carrier) depends on the ceiling/floor type (maximum diameter of the threaded hangers is 10 mm). Once the threaded hangers are fixed to the ceiling, tighten the first nuts.

WARNING: When moving the units, do not use water pipes, condensate drain pan, valves or flexible pipes to lift them.

'Without filter' unit must be connected to an air ductwork. It is not allowed to operate the unit without any filter and with a free inlet at the same time.

Lift/place the unit and align it on the threaded hangers, insert the second nuts and tighten them slightly

NOTE: At this point do not tighten the nuts fully and do not clamp the unit up to the ceiling or on the floor (leave a space between the ceiling/floor and the unit). The nuts will be adjusted finally, when the unit has been connected to the pipework and ducts and levelled.

Level the unit according images section (Fig.10).

Adjust the hanger nuts so that the unit is inclined 0.5% towards the condensate drain pan. In the other direction (air flow direction) the unit must be perfectly level (Fig.10).

Condensate drain pipe (Fig. 11): Use a flexible pipe with an inside diameter of 16 mm and provide a constant fall of 20 mm/m over the whole horizontal pipe run. Install a 50 mm (minimum) siphon to prevent gases and odors from flowing back into the ceiling/floor void.

WARNING: After drain pipe connection, control clamping of the drain pipe and be sure there is no water leakage.

If several units are connected to a common collector, a device must be installed (Fig. 13). Before operating the unit, ensure that the water flows into the internal condensate drain pan by pouring some water into it. If problems are detected, check the drain pipe slope and look for possible obstructions. In all cases the connection duct(s) at the unit outlet must be insulated to prevent any condensation on the walls.

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.

Once installation is complete - i.e. when the unit is attached to the ceiling/floor, air ducts are complete, water manifolds are in position with stop valves ready on the connection stubs, and electrical installation is prepared; then connect the water pipe (1/2" gas screw connector).

WARNING: Be sure that the coil protective caps are removed before connecting the water pipes (see Fig.19).

NOTE: Each fan-coil units shall be connected with water flexible pipes in order to avoid any damage due to vibrations.

Ensure that a gasket (not supplied by Carrier) is installed between the screw connector and the stop valve.

When all units are installed, open the stop valves on the manifolds, bleed and then pressurize the circuits. To bleed the coils, slightly loosen the purge screws. The installation can then be started

NOTE: Do not switch on the power until all connections are made and earthed.

4 - COMPONENTS AND MAINTENANCE

4.1 - Fan motor assembly removal

- Remove the filter access door in case of units with inlet plenums.
- Remove the filter.
- Remove the bottom panel (ceiling unit) / top panel (floor unit).
- Disconnect the fan power supply and control (0-10V) cables.
- Remove 4 fixing screws and recover the fan assembly.

Refer to Fig. 12 for more details

NOTE: Be careful not to touch the fan blades during the removal process to avoid unbalancing the fans

4.2 - Heaters removal

CAUTION: Do not touch the live metal heater elements when the electric heater is connected to the power supply.

- For units with the electric heater option, disconnect the power supply cable to the heater. Withdraw the cable through the cable gland.
- Remove fixing screws of the electric heaters to retrieve it.

Refer to Fig. 13 for more details

WARNING: In case of customer supplied controller, it is the responsibility of the installer to set up an additional protection relay corresponding to the electrical heater capacity.

WARNING: With the optional electric heater a minimum air flow must be maintained else it may damage the unit (see tables below).

Heaters power supply (W)				
Unit size	500	800	1000	1600
0	2Volts	3Volts	NA	NA
1	2Volts	3Volts	3Volts	NA
2	2Volts	3Volts	3Volts	3Volts

4.3 - Drain pan removal

CAUTION: After disconnecting power supply, keep the unit idle for 15-20min to reduce heating circuit temperature.

Ceiling units

- Disconnect the flexible condensate drain pipe held in place by a collar (the collar is not supplied by Carrier).
- Remove the bottom panel.
- Retrieve the drain pan by sliding it from the support.
- During the drain pan removal and maintenance, lay the end of the coil on the metal support plate to prevent any damage to the casing.
- Control clamping of the drain pipe and be sure there is no water leakage.

Floor units

- Disconnect the flexible condensate drain pipe held in place by a collar (the collar is not supplied by Carrier).
- Remove the top panel.
- Remove the coil
- Retrieve the drain pan by sliding it from the support.
- During the drain pan removal and maintenance, lay the end of the coil on the metal support plate to prevent any damage to the casing.
- Control clamping of the drain pipe and be sure there is no water leakage.

4.4 - Water Coil removal procedure

CAUTION: After disconnecting power supply, keep the unit idle for 15-20min to reduce heating circuit temperature.

Ceiling units

- Close the isolating valves on the manifolds.
- Empty the coil by purging (see Fig. 14)
- Remove the flexible water pipes.
- Remove the valve actuators taking care to identify the cooling and heating valves.
- Disconnect the flexible condensate drain pipe held in place by a collar (the collar is not supplied by Carrier).
- Remove the two-way or four-way water flow control valve bodies. Depending on the unit configuration the four-way valve coupling may be fitted with a heating/ cooling changeover switch. If so, do not remove it.
- Remove the bottom panel.
- Retrieve the drain pan by sliding it from the support.
- Remove the coil
- After replacement, ensure that all gaskets are changed (new gaskets fitted) and that the inlet and outlet connections to the coil are made correctly using an appropriate sealing compound applied to the valve body. Bleed all air from the coil during refilling.

Floor units

- Close the isolating valves on the manifolds.
- Empty the coil by purging (see Fig. 14)
- Remove the flexible water pipes.
- Remove the valve actuators taking care to identify the cooling and heating valves.
- Disconnect the flexible condensate drain pipe held in place by a collar (the collar is not supplied by Carrier).
- Remove the two-way or four-way water flow control valve bodies. Depending on the unit configuration the four-way valve coupling may be fitted with a heating/ cooling changeover switch. If so, do not remove it.
- Remove the top panel.
- Remove the coil
- After replacement, ensure that all gaskets are

4 - COMPONENTS AND MAINTENANCE

changed (new gaskets fitted) and that the inlet and outlet connections to the coil are made correctly using an appropriate sealing compound applied to the valve body. Bleed all air from the coil during refilling.

WARNING: Take care when tightening the valve body to the coils (15 Nm is sufficient) to ensure they are not damaged.

CAUTION: Coil inlet/outlet and cooling/heating side positions

Water inlets/outlets, all sizes: Fig. 14.

WARNING: Carefully observe the direction indicated by the arrow on the valves, based on the valve type.

4.5 - Spigots Duct connection

These are manufactured from aluminium sheet metal. They are encased inside the unit. The ducts should be fixed to these spigots using circular collars or adhesive. Screws and rivets should not be used.

WARNING: 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.

Do not lift or support the unit using the spigots, place loads on the spigots during installation or operation.

4.6 - Rectangular flanges duct connection

When connecting rectangular flanges to the inlet and the outlet make sure that the duct is pushed closely the unit.

4.7 - Optional filter and filter access

4.7.1 - Description

The Carrier unit is fitted with G3 filter as standard. The G3 filter is compliant to M1 fire rating (according to NFP 92-507 standard).

4.7.2 - Air filter replacement

Air filters should be changed regularly. Filter life depends on the rate at which the filter becomes clogged, which depends upon the cleanliness of the working environment.

If clogged filters are not changed they can increase the air pressure drop, trapped dust particles may be given off and entrained in the air supply, and the general performance of the unit may be degraded (as the air flow reduces).

- Remove the filter access door in case of units with inlet plenums and take out the filter.
- Remove the filter directly in case of no plenum

NOTE: When installing a unit in a ceiling/floor void, check that no T-bars will obstruct filter access and removal.

4.8 - Fresh air controller

4.8.1 - Fresh air controller with (adjustable) constant air volume

The unit can be fitted with three ranges of constant and adjustable fresh air flow. 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 is 125 mm. The fresh air controller can be modified on site by unscrewing and repositioning the damper of the controller. See fig 17.

IMPORTANT: 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.

NOTE: To operate correctly the constant fresh air flow controller requires a differential pressure in the range of 60 Pa to 210 Pa.

4.8.2 - Fresh air controller with variable air volume

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

This is connected to the numeric Carrier controller and can regulate the fresh air intake in using a fixed rate set by the installer that can be reconfigured as required.

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

4.8.3 - Fresh air filtration

If the unit is provided without any filter or in the return plenum, it is the responsibility of the installer to check if the fresh air is filtered beforehand.

4.9 - Optional water flow control valves

These valves are either two-way or four-way type (three-way with integral bypass). The body of the valve is designed to withstand a 15.5 bar (1550 kPa) bar operating pressure.

With this option, the couple (valve + actuator) is usually normally closed (NC). Thus, the water flow is null in case of power cut. To fill the installation, to equalize the water circuits and to purge the units, the actuators must be connected to the power supply and the valves must be opened via the controller (thermostats or BMS).

For the replacement of these components refer to the chapter 4.9.4.

4 - COMPONENTS AND MAINTENANCE

4.9.1 - Optional balancing valves

Two-way valve with water flow balancing function is embedded with a differential pressure controller (with or without pressure test points to control the water flow settings). The setting of the valve is shown in Fig. 16.

The manual control knob (16a) is ready fitted to protect valve stem and pre-set mechanism and facilitates manual control of valve during commissioning.

Setting procedure:

- Remove control knob from the valve (16a)
- Loosen knurled nut (16b).
- Adjust the desired dial setting with the white knob (16c) - see table below.
- Retighten knurled nut by hand (16d).

WARNING: The valves have to be open when flushing or pressure testing the system. Strong pressure impacts can damage closed valves.

Differential pressure across the valve's control path is not allowed to exceed 400 kPa.

4.9.2 - 230 V - Actuators

Two types of valve actuators are provided: electro thermal actuator (on/off control) or modulating actuator (3-point).

The actuator supply is 230 V a.c.

4.9.3 - 24 V - Actuators

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

Both modulating actuators can be operated manually with a hexagonal key. The 0-10V command voltage range of the modulating actuator can also be adjusted.

The actuator supply is 24 V a.c.

NOTE: 24V actuators are not compatible with Carrier controllers (Thermostats A/B/C/D, WTC & NTC).

4.9.4 - Actuator replacement procedure

The actuators on both the chilled water and the hot water valves may be replaced in case of failure.

WARNING: Do not connect on the same neutral wire the valve actuator 24 Vac and the controller.

- Disconnect the power supply to the unit before carrying out any work on a unit.
- Disconnect the actuator power supply cable.
 - 230 V type actuator used with the Carrier numeric controller: Disconnect the actuator power supply cable fitted with a quick connector.
 - 230 V actuator used with an electronic thermostat: Remove the plastic protection cover held in place with two screws. Disconnect the actuator power supply cable connected to the quick connector. This can be done by pressing down the spring tongue using a screwdriver and pulling out the wire from the appropriate terminal.

- Uncouple the faulty actuator. Refitting is by the reversal of the procedure described above.

WARNING: Ensure that the actuator is firmly screwed to the valve body (maximum torque 15 N·m).

4.9.5 - Valve body replacement procedure

- Disconnect the power supply before carrying out any work on a unit.
- Close the isolating valves on the manifolds.
- Remove flexible water pipes.
- Remove the valve actuators taking care to identify the cooling and heating valves.
- Disconnect the flexible condensate drain pipe which is held in place by a collar (the collar is not supplied by Carrier). Remove the two-way or four-way water flow control valve bodies. Depending how the unit is configured, the four-way valve coupling may be fitted with a heating/cooling changeover switch, if so do not remove it.
- Fit the new valve body to the coil (fit new gaskets).
- Reconnect the flexible condensate drain pipe which is held in place by a collar (the collar is not supplied by Carrier).
- Refit the valve actuators taking care to ensure that they are correctly fixed to the valve body.
- Reconnect the flexible water pipes by tightening the union nuts. Retighten all the water connections and ensure that all gaskets have been changed and correctly fitted (maximum torque 15 N·m).
- Open the isolating valves on the manifolds and purge all air from the system.
- Check that there are no leaks and reconnect the power to the unit.

WARNING: When replacing a valve always ensure that the direction of flow 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.

4.10 - Flexible pipe option

- Minimum bending radius:
 - Non-insulated pipes 72 mm
 - Insulated pipes 106 mm.

Connections 1/2" diameter (female)

4 - COMPONENTS AND MAINTENANCE

4.11 - Optional water sensor

- A water temperature sensor can be provided. It has to be installed on the water circuit as described below:
 - For 2-pipe coil: the sensor shall be installed on a cooling water pipe (for change-over function). The sensor is installed on a part where the water flow is continuous.
 - For 4-pipe coil: the sensor shall be installed on a heating water pipe (for cold-draft function that prevents the operation of the unit when the heating network is off).

NOTE: In case of unit with an electrical box (for Carrier Thermostats), a “switch” is provided as an option instead of the water sensor.

4.12 - Optional condensate pump

Check the sealing of the hydraulic connection of the condensate pump and condensate recovery.

- The meaning of the electrical wires is described below:
 - Brown - Blue wires: Electrical supply 230V 50/60Hz
 - Black - Grey wires: Alarm contact Normally Closed (NC) 250V/8A maxi.



Order No.: EN7573046-00, 12.2019. Supersedes order No.: New.

Manufacturer reserves the right to change any product specifications without notice.

Printed in the European Union.