

NA 10.90 C

11 - 2014

EXPAIR

Instruction manual



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**Appropriate PPE (Personal Protective Equipment)
must be worn when servicing the units**

Warning

The unit must be installed and maintained by a qualified, experienced technician. Follow the operating precautions to the letter when carrying out work on the unit. Labels have been placed on the unit to remind you of the safety instructions. As a general rule, follow all applicable safety regulations and standards.

1 - RECEIPT

Each air conditioner has a name plate bearing an identification number. This number must be quoted in all correspondence. In accordance with Article 133-3 of the French Code of Commerce, the recipient is entirely responsible for checking the condition of the goods received.

In the event of missing items, the customer must provide the exact number of parcels delivered.

Any damaged or missing items must be specified on the delivery note in the presence of the driver before signing the delivery note.



These comments must be confirmed to the carrier by registered letter within three business days.

The comments "conditional" and "pending unwrapping" shall have no value.

The client must unwrap the goods in the presence of the driver.

Claims must be made at the time of delivery and be described in detail.

• Equipment storage

The cabinet must be stored in a dry, sealed area, away from moisture and frost. The temperature in this area must not exceed 50°C.

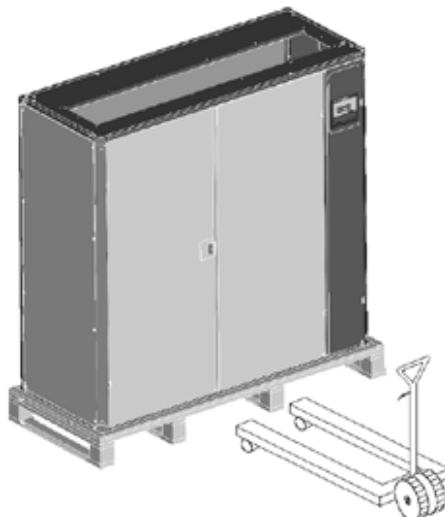
• Equipment warranty

See general terms and conditions of sale.

2 - HANDLING

The unit must be lifted using slings or a spreader beam or be carried by a pallet truck and all four corners of the unit must be supported by wooden blocks. In all cases, the cabinet must be raised by its base. This operation must be carried out by qualified personnel: refer to the information on the label affixed to the equipment.

Warning: The unit must be handled with care and kept vertical.



• **Weights and dimensions:**

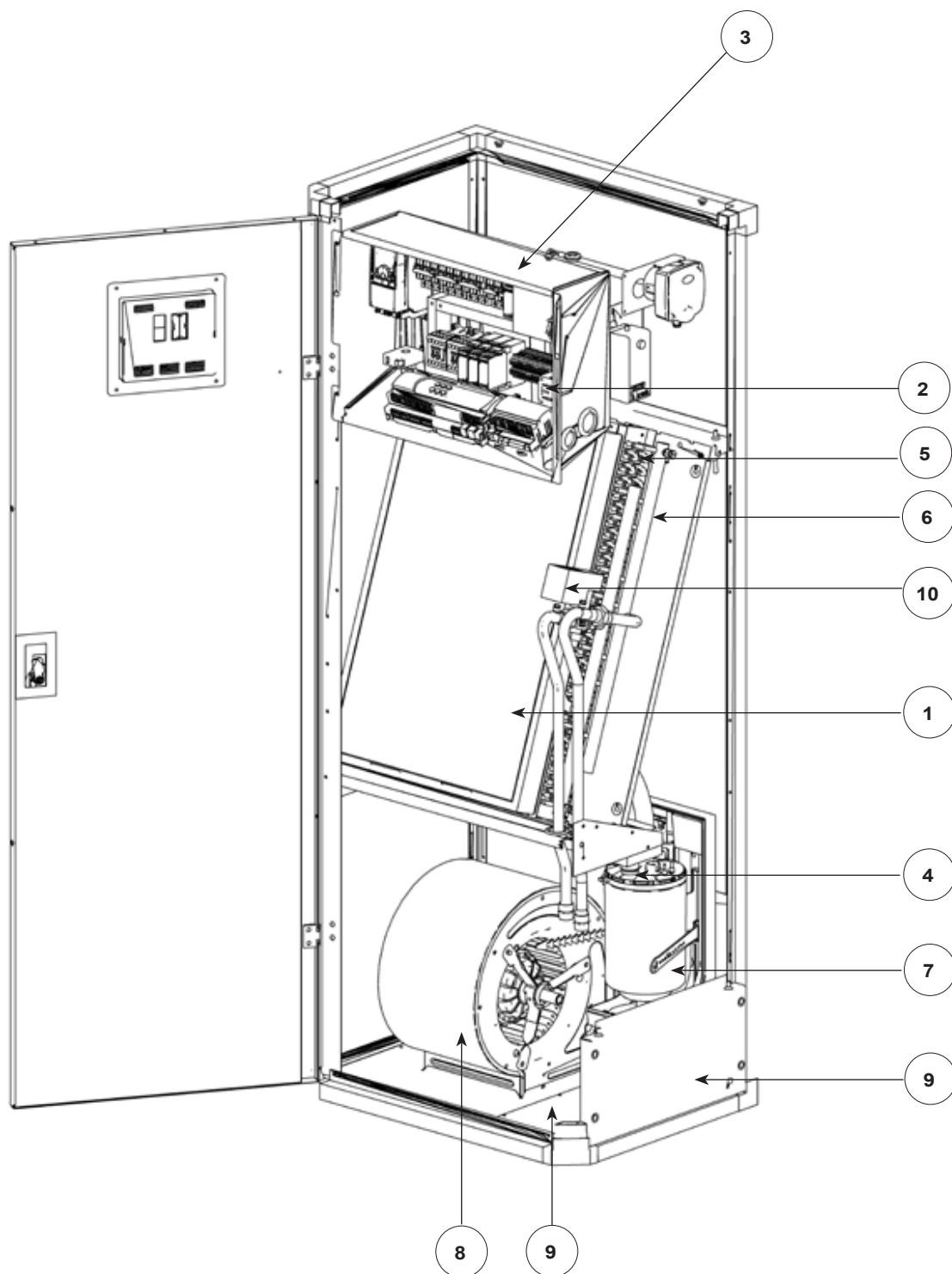
SIZE	CW Cabinet	
	Dimensions H x W x D.	Weight (kg)
5	1700x680x500	115
8		120
12		125
16	1900x850x780	280
27	1900x1150x780	310
39	1900x1490x780	375
59	1900x1990x780	480

SIZE	DXA Cabinet Indoor unit		SIZE	CL condensation unit Outdoor unit	
	Dimensions H x W x D	Weight (kg)		Dimensions H x W x D	Weight (kg)
5	1700x680x500	115	CL 28	658 x 1035 x 449	69
8		120	CL 28	658 x 1035 x 449	69
10		125	CL 35	658 x 1035 x 449	69
12	1900x850x780	280	CL 35	658 x 1035 x 449	69
15			CL 50	1258 x 1035 x 449	101
19	1900x1150x780	310	CL 65	1258 x 1035 x 449	112
24			CL75	1258 x 1035 x 449	118
31	1900x1490x780	375	2 x CL 50	1258 x 1035 x 449	202
36			2 x CL 65	1258 x 1035 x 449	224
38	1900x1990x780	480	2 x CL 65	1258 x 1035 x 449	224
48			2 x CL 75	1258 x 1035 x 449	236



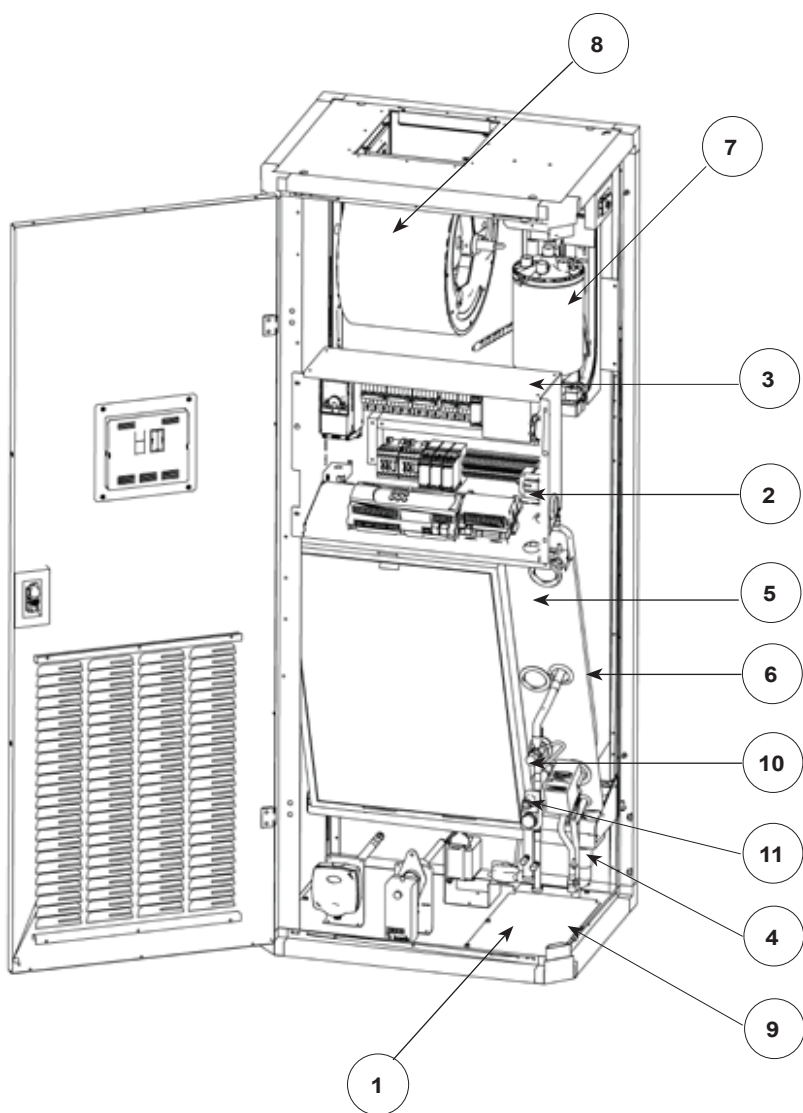
3 - LOCATION OF COMPONENTS

3.1 CW 5/8/12/16/27/39/59: Chilled water model



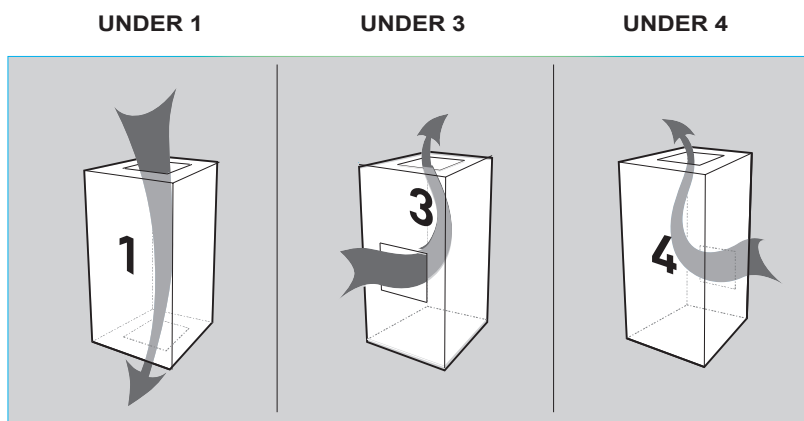
- 1- Filter
- 2- Disconnect switch
- 3- Control unit
- 4- Condensate draining
- 5- Cooling coil
- 6- Heating coil (optional)
- 7- Humidifier (option)
- 8- Fan motor assembly
- 9- Removable plate for hydraulic connections (bottom or right-hand side)
- 10- Control valve

3.2 DXA 5/8/10/12/15/19/24/31/36/38/48: direct expansion model



- 1- Filter
- 2- Disconnect switch
- 3- Control unit
- 4- Condensate draining
- 5- Evaporator coil
- 6- Heating coil (optional)
- 7- Humidifier (option)
- 8- Fan motor assembly
- 9- Removable plate for hydraulic connections (bottom or right-hand side)
- 10- Expansion valve
- 11- Solenoid valve

3.3 Assembly/air flow direction



4 - INSTALLATION Unit/Casing/Plenum

4.1 Mounting the unit

- The unit must be placed on a flat, smooth surface which is as level as possible (ratio of approx. one to one thousand).
- If the supply air is conveyed through a raised floor, the seal between the unit and the floor must be tight.
- Under normal conditions, the unit need not be floor mounted.
- Provide sufficient space around the unit for maintenance operations.
- The cabinet frame must rest fully on its contact surface.

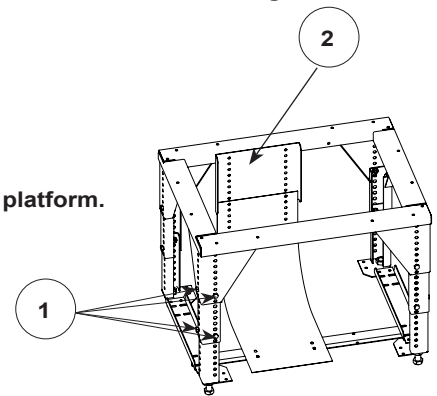
Units fitted with a support base:

- The floor must be as flat as possible,
 - A gasket must be installed to ensure the tightness between the unit and base platform.
 - Level the unit by adjusting the legs on the support base,
- An initial adjustment must be made using the 4 screws (no. 1)
→ Then adjust the height of the deflector (no. 2).

Default height setting:

H=225 for a raised floor height of 225 - 320mm

H=320 for a raised floor height of 320 - 525mm



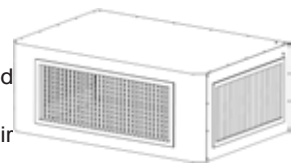
Units supplied with a plenum:

4.2 Supply/extraction plenum:

Proposed when air is to be distributed directly into a space. It is mounted on top of the cabinet and features double-deflection grilles to allow the direction of the air stream to be adjusted.

The plenum may also be used mounted at the bottom to carry air directly from a space back to the air handling system.

The plenum is secured from the inside at the 4 corners. To secure it, the diffusion grille on the front panel must therefore be removed.



5 - CONNECTIONS

5.1 Air connections

• Indoor unit

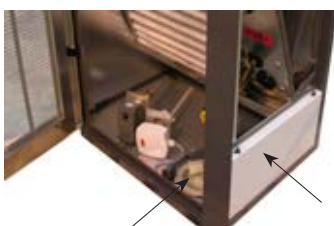
The air connection is made using rigid ducts in sheet steel or similar, fitted with a drilled connection flange. It is secured with self-tapping screws. A gasket should be fitted between the flange and the unit.

For units to be fitted as UNDER models (air discharge to the ground), a support base is available as an option to enable this. If the raised floor allows, a single hole is required, in the raised floor itself, with the same dimensions as the base. Tightness will be ensured by fitting a gasket between the unit and the support frame.

5.2 Hydraulic connections

The hydraulic pipes must be routed through the plate provided for this purpose.

UNDER
(removable bottom or right-hand side plate)



1. Remove the precut foam panel,
2. Drill the external panel,
3. Make the correct cut-outs in the plate
4. Put it back in place before routing the tubing, and seal to prevent any air bypass.

OVER
(Routing on the right-hand side)



• Condensate draining

- Fit a siphon: H = 100 mm
- If the humidifier option is selected, water will not drain into the unit's drain pan.
- To have a single drain for both, connect the humidifier drain downstream of the unit's drain pan.
- When connecting or tightening the couplings, always use 2 spanners to avoid twisting the piping.
- If the condensate pump option is selected without the humidifier option, the former will be fitted inside the unit (connection via Ø5 mm hose).

Warning: The operating pressure on the chilled or hot water network must not exceed 8 bar.

• **Diameters of water coil connections**

		CW 5	CW 8	CW 12	CW 16	CW 27	CW 39	CW59
Cooling coil	inlet	G1/2" M	G3/4" M	G3/4" M	G3/4" M	G1" M	G1" M	G1" 1/4 M
	Outlet	G1/2" M	G3/4" M	G3/4" M	G3/4" M	G1" M	G1" M	G1" 1/4 M
		CW 5 DXA 5	CW 8 DXA 8	CW 12 DXA 10	CW 16 DXA 12/15	CW 27 DXA 19/24	CW 39 DXA 31/36	CW 59 DXA 38/48
Heating coil	inlet	G1/2" M	G1/2" M	G1/2" M	G1/2" M	G3/4" M	G3/4" M	G3/4" M
	outlet	G1/2" M	G1/2" M	G1/2" M	G1/2" M	G3/4" M	G3/4" M	G3/4" M

Refer to the section on the "Humidifier" to connect the humidifier.

5.3 Refrigerant connection, DXA model

Installation precautions

The refrigerant connections between the unit and the condenser must be made by qualified personnel.

Only insulated copper refrigeration pipes must be used.

This network must be designed and constructed correctly in order to ensure the entire system operates correctly.

The pipes must be sufficiently flexible to withstand fluctuations in length, expansion and contraction. The liquid line must be angled in order to always carry the fluid to the unit.

It is particularly important to avoid

- Excessive refrigerant pressure drop,
- Oil accumulation,
- Liquid being driven into the compressor, either when running or off,

The pipe route must:

- Neither obstruct nor be obstructed by the existing installation,
- Be protected against accidental impacts,
- Be visible in its entirety, and not encased in plaster or concrete.
- The height differences and equivalent lengths between the indoor and outdoor unit must be meet the recommendations (see Table).
- The pipe sizing must ensure a minimum pressure drop, and the minimum and maximum speeds must be complied with for correct circulation of the gas to drive the oil.
- Fit oil traps every 4 metres on the vertical columns to ensure the oil is returned to the compressor.
- Check that no contamination has fallen into the tube.
- Carry out all brazing operations using a nitrogen purge.

• **Refrigerant connection diameters**

	Sizes	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
		CL28	CL 28	CL 35	CL 35	CL 50	CL 65	CL 75	2 x CL 50	2 x CL 65	2 x CL 65	2 x CL 75
Indoor unit	Liquid ø	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"
	Gas ø	5/8"	5/8"	3/4"	7/8"	7/8"	1" 1/8"	1" 1/8"	2 x 7/8"	2 x 7/8"	2 x 1" 1/8"	2 x 1" 1/8"
Outdoor unit	Liquid ø	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	2 x 3/8"	2 x 3/8"	2 x 3/8"	2 x 1/2"
	Gas ø	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	2 x 3/4"	2 x 7/8"	2 x 7/8"	2 x 7/8"

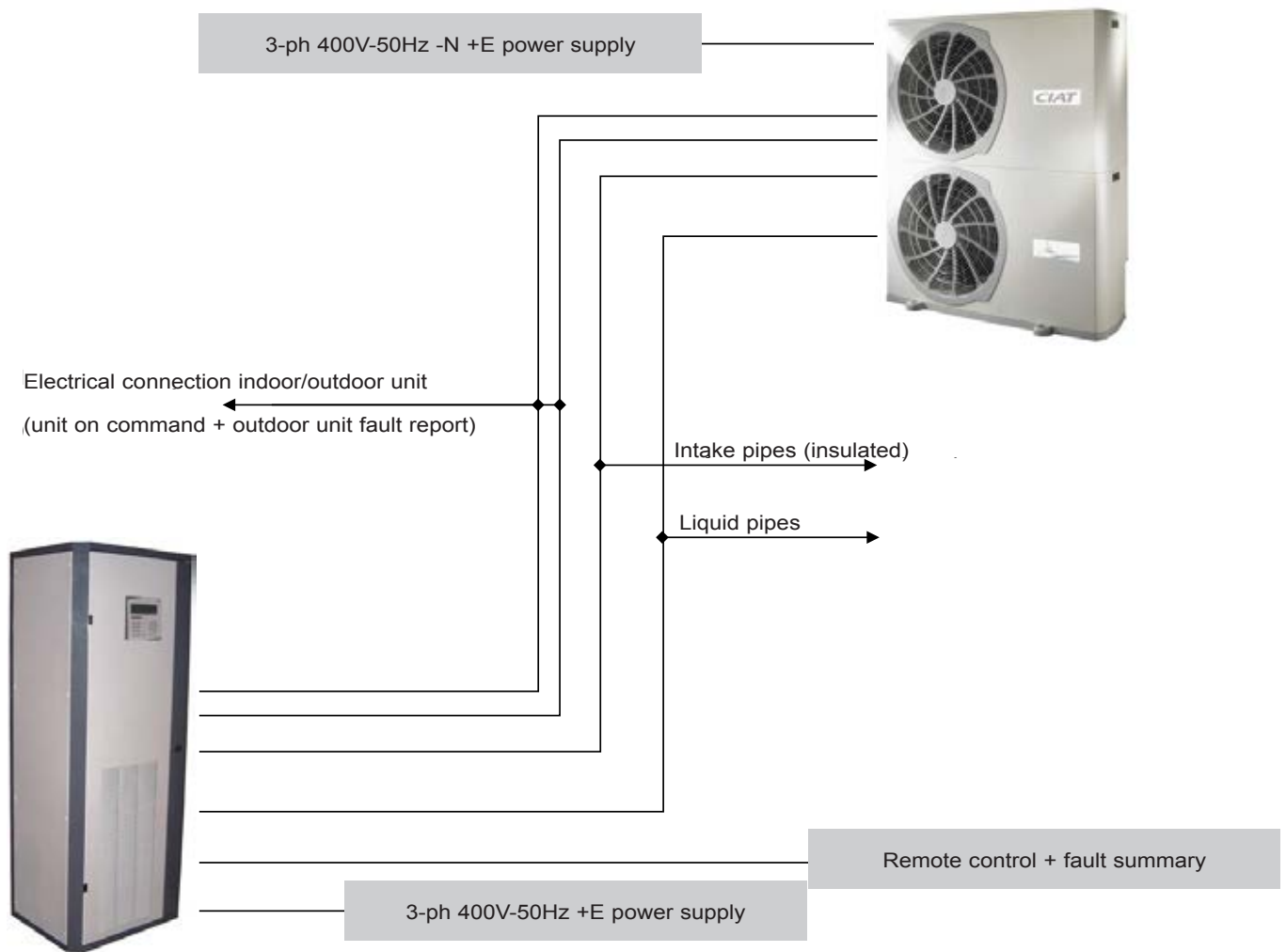
• **Refrigerant connections (outdoor unit)**

Refer to the instructions contained in the outdoor unit



Warning: The unit is delivered with a safety charge. Refer to the table of charges in the "system start-up" chapter

• INSTALLATION PRINCIPLE



Note:

EXPAIR DXA 31/36/38/48 models have 2 outdoor units.

- For all electrical connections, refer to the wiring diagram sent with the indoor and outdoor unit.
- Electrical connection not supplied by CIAT
- Refrigerant pipe not supplied by CIAT

• Tables of maximum lengths for refrigerant connections

The tables below show the permitted lengths for the pipers and the corresponding maximum height difference. The values in the tables show the reduction in cooling capacity as compared to the nominal capacity as a percentage. DXA 5 + CL28 / 3/8" liquid line, 5/8" gas line

Total length (m) Height difference (m)	6	20	30
0	0	-6	-9
5	0	-6	-9
10	-	-6	-

DXA 8 + CL28 / 3/8" liquid line, 5/8" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-3	-5	-7	-9
10	-	-3	-5	-7	-9
20	-	-3	-5	-7	-9
30	-	-	-5	-7	-9

DXA 10 + CL35 / 3/8" liquid line, 3/4" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-2	-4	-6	-8
10	-	-2	-4	-6	-8
20	-	-2	-4	-6	-8
30	-	-	-4	-6	-8

DXA 12 + CL35 / 3/8" liquid line, 3/4" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-2	-4	-6	-8
10	-	-2	-4	-6	-8
20	-	-2	-4	-6	-8
30	-	-	-4	-6	-8

DXA 15 + CL50 / 3/8" liquid line, 3/4" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-2	-4	-6	-8
10	-	-2	-4	-6	-8
20	-	-2	-4	-6	-8
30	-	-	-4	-6	-8

DXA 19 + CL65 / 3/8" liquid line, 7/8" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-4	-5	-6	-7
5	0	-4	-5	-6	-7
10	-	-4	-5	-6	-
20	-	-4	-5	-	-

DXA 24 + CL75 / 1/2" liquid line, 7/8" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-2	-3	-4	-5
10	-	-2	-3	-4	-5
20	-	-2	-3	-4	-5
30	-	-	-3	-4	-5

DXA 31 + 2 x CL50 / 2 x 3/8" liquid line, 2 x 3/4" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-5	-7	-8	-9
10	-	-5	-7	-8	-9
20	-	-5	-7	-8	-9
25	-	-	-7	-8	-

DXA 36 + 2 x CL65 / 2 x 3/8" liquid line, 2 x 7/8" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-4	-5	-6	-7
10	-	-4	-5	-6	-7
20	-	-4	-5	-	-

DXA 38 + 2 x CL65 / 2 x 3/8" liquid line, 2 x 7/8" gas line

Total length (m) Height difference (m)	6	20	30	40
0	0	-4	-5	-6
10	-	-4	-5	-6
20	-	-4	-5	-

DXA 48 + 2 x CL75 / 2 x 1/2" liquid line, 2 x 7/8" gas line

Total length (m) Height difference (m)	6	20	30	40	50
0	0	-5	-7	-8	-9
10	-	-5	-7	-8	-9
20	-	-5	-7	-8	-9
30	-	-	-7	-8	-



5.4 Electrical connections

- The power cable run must be protected by a grommet.
- The electrical connections and wiring must be set up as shown on the wiring diagram included with the unit, and in accordance with current codes and regulations.
- Make sure that power supply characteristics of the mains supply matches that on the unit's name plate.
- The unit must be earthed, and the power supply must always be sufficient to supply the necessary power.
- Indoor and outdoor units each have their own power supplies.
- The electrical cable must be selected based on the necessary length, power, design protection, operating mode and in accordance with current codes and regulations.

• INDOOR UNIT electrical characteristics

3-ph 400V power supply + Earth – 50Hz

		CW 5	CW 8	CW12	CW 16	CW 27	CW 39	CW 59
		DXA 5	DXA 8	DXA 10	DXA 12/15	DXA 19/24	DXA 31/36	DXA 38/48
fan motor assembly	Voltage (V)	400 V						
	Power (kW)	0.55		0.75		1.1	1.5	2.25
	Current (A)	2.6		3.3		5	6.6	9.9
Control circuit	Voltage (V)	24						
	Current (A)	1						
Electric heater (option)	Voltage (V)	400						
	Power (kW)	3	6	9	12	18	24	
	Current (A)	4.3	8.7	13	17.3	26	34.6	
Humidifier (option) max. value	Voltage (V)	400						
	Power (kW)	2.25		6				
	Current (A)	3.2		8.7				
Total current without option	Current (A)	3.6		4.3	6	7.6	10.9	
	Rating of main switch (A)	16						
Total current all options	Current (A)	11.1	11.1	15.5	26	32.1	42.3	54.2
	Rating of main switch (A)	16		40			63	

• OUTDOOR UNIT electrical characteristics

3-ph 400V power supply + Neutral + Earth – 50Hz

Refer to the instructions contained in the outdoor unit

To connect the Indoor/Outdoor unit, see the appendix at the end of the instructions.

6 - TECHNICAL CHARACTERISTICS

6.1 Filters

G4 filters:

Thickness: 48 mm.
 Efficiency: 90 % gravimetric
 Filter area: 2 x face area
 Fire rating: M1

F7 filters:

Thickness: 48 mm
 Efficiency: 85 % opacimetric
 Filter area: 17 x face area with a thickness of 48 mm
 38 x face area with a thickness of 48 mm
 Fire rating: M1

	CW 5	CW 8	CW 12	CW16	CW27	CW 39	CW 59
	DXA 5	DXA 8	DXA 10	DXA 12/15	DXA 31/36	DXA 31/36	DXA 38/48
Dimensions	508 x 465	604 x 465	700 x 465	945 x 565	945 x 400	945 x 565	945 x 500
Number	1	1	1	1	2	2	4

• Clean filter pressure drop

	CW 5 DXA 5	CW 8 DXA 8	CW 12 DXA 10	CW 16 DXA 12/15	CW 27 DXA 19/24	CW 39 DXA 31/36	CW 59 DXA 38/48
Nominal flow rate (m ³ /h)	1 300	2 000	2 500	4 000	6 000	8 000	12 000
ΔP (Pa) G4	33	49	55	53	58	53	58
ΔP (Pa) F7	35	53	59	57	63	57	63
ΔP (Pa) G4+F7	-	-	-	110	121	110	121

Filter fouling is measured by a pressure sensor located in the electrics box.
 It is set to 1.5 times the pressure drop value for the filter when clean (pressure ports upstream and downstream of the filter).

6.2 Cooling coil:

NB: Make sure that the chilled water supply pipes are insulated.
 Moderately tighten the coil supply connections to avoid damaging the manifolds.

• Coil characteristics:

	CW	CW 5	CW 8	CW 12	CW 16	CW 27	CW 39	CW 59
Coil specifications	Nominal water flow rate* (m ³ /h)	1.1	1.4	1.67	2.57	3.7	6.4	8.14
	Capacity (l)	2.2	2.74	3.87	9.2	13.1	18.1	25.1
Valve specifications	KV valve	1.6	2.5	4	4	10	10	16
	ΔPmax (Pa) 2-way valve	1200	400	400	600	600	600	500
	ΔPmax (Pa) 3-way valve	250	100	240	600	600	600	500

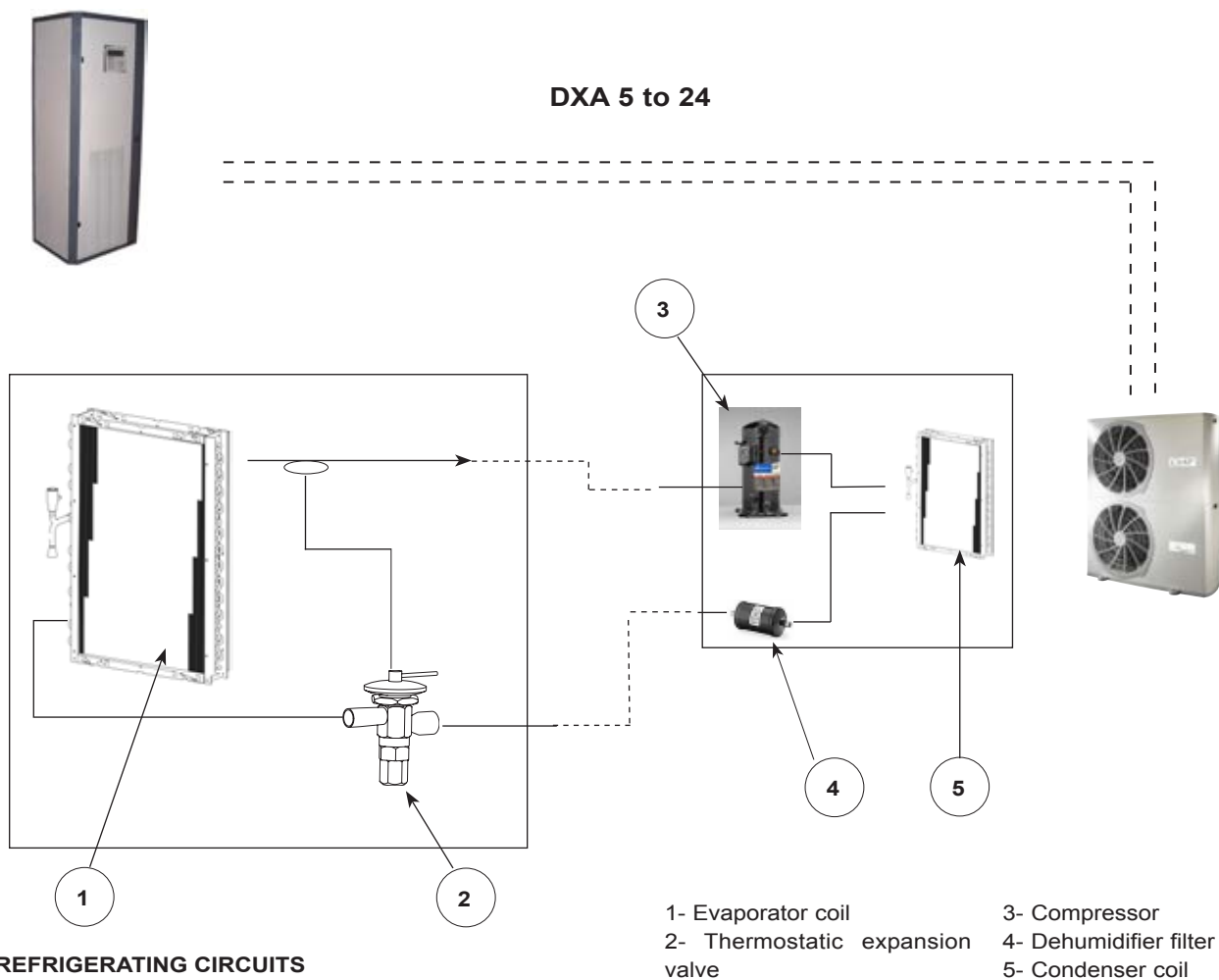
*Return air conditions 24°C RH 50%, water temperature 7/12 °C

NB: Refer to your temperature range selection sheet for the technical information (capacity, water flow, water flow rates, pressure drops, etc.).

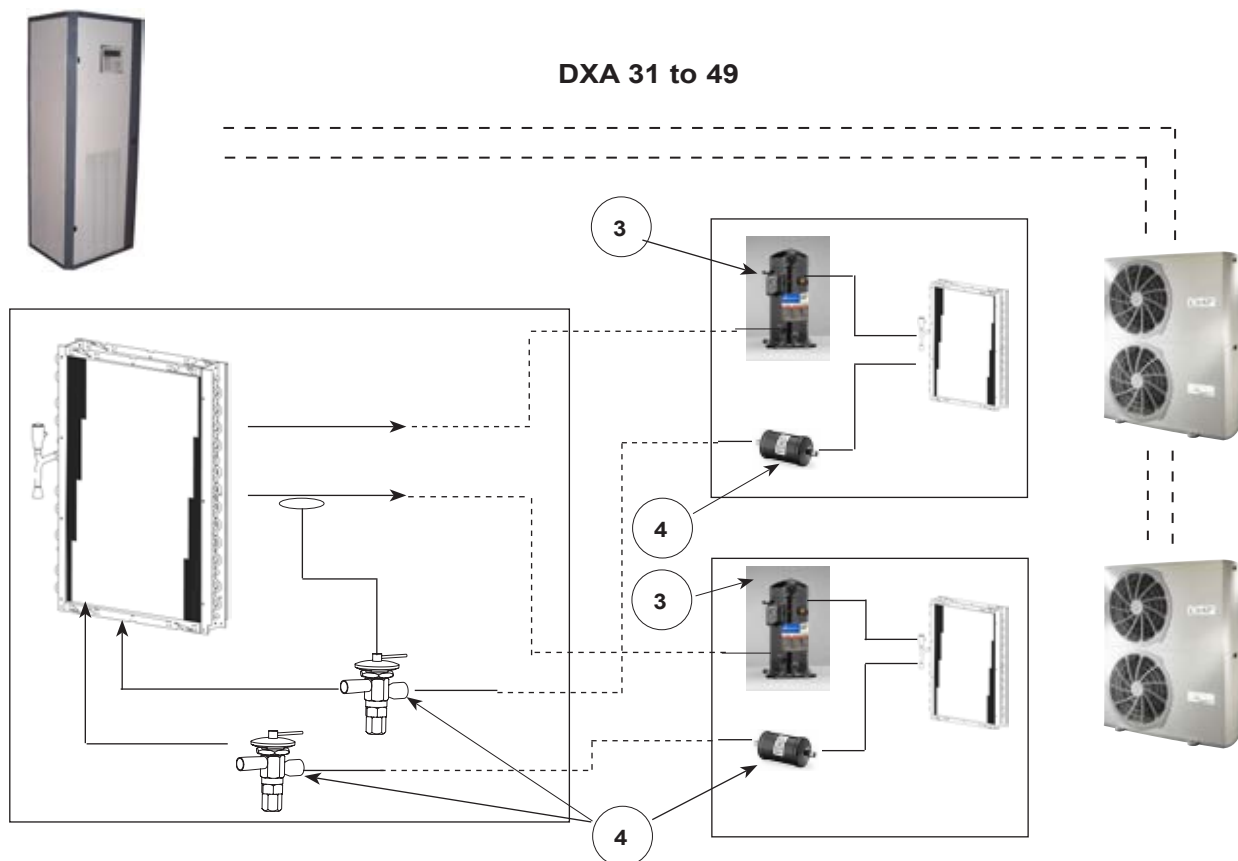
6.3 Refrigerating circuit:

DXA schematic diagram:

1 REFRIGERATING CIRCUIT



2 REFRIGERATING CIRCUITS



Refrigerant R410A charges

Table 1: Charge in kg per circuit, distance between CABINET and CL = 0m

EXPAIR Cabinet	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
Outdoor Unit	CL 28	CL 28	CL 35	CL 35	CL 50	CL 65	CL 75	2xCL 50	2xCL 65	2xCL 65	2xCL75
Charge in kg	1.69	1.69	1.952	1.952	3.134	3.68	3.894	3.334	3.38	4.38	4.594
Heater	OPTION	OPTION	OPTION	OPTION	STD	STD	STD	STD	STD	STD	STD
Crankcase*											

*maximum charge without crankcase heater: 4.5 kg

Table 2: Charge in kg per circuit to be added according to distance between CABINET/CL

Type of CL	Distance (m)												
	1	3	6	9	12	15	20	25	30	35	40	45	50
28	0.055	0.165	0.33	0.495	0.66	0.825	1.1	1.375	1.65	1.925	2.2	2.475	2.75
35	0.058	0.174	0.348	0.522	0.696	0.84	1.16	1.45	1.74	2.03	2.32	2.61	2.9
50	0.061	0.183	0.366	0.549	0.732	0.915	1.22	1.525	1.83	2.135	2.44	2.74	3.05
65	0.07	0.21	0.42	0.63	0.84	1.05	1.4	1.75	2.1	2.45	2.8	3.15	3.5
75	0.101	0.303	0.606	0.909	1.212	1.515	2.02	2.525	3.03	3.535	4.04	4.545	5.05

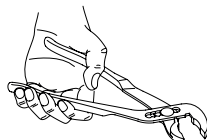
CL condensation units are delivered pre-charged. The charge of 410A contained must be deducted from the value above for your installation.

Pre-charge value: CL 28-35 = 1 kg

CL 50-65-75 = 2kg

On-site charge calculation per circuit = Table 1 charge + table 2 charge - CL pre-charge

6.4 Heating coil and valve (option)



Moderately tighten the "coil supply" connections to avoid damaging the manifolds.

• Coil and valve characteristics:

	Sizes	CW 5 DXA 5	CW 8 DXA 8	CW 12 DXA 10	CW 16 DXA 12/15	CW 27 DXA 19/24	CW 39 DXA 31/36	CW 59 DXA 38/48	
	Coil characteristics	Nominal water flow rate* (m³/h)	0.2	0.25	0.33	0.6	0.86	1.21	1.24
Capacity (l)		0.56	0.67	0.78	1.67	2.35	3	4	
Valve characteristics	KV valve	1.6				4			
	ΔPmax (Pa) 2-way valve	1200				400			
	ΔPmax (Pa) 3-way valve	250	250	250	250	240	240	240	

*Nominal flow rate, water TΔ: 20°C

NB: Refer to your temperature range selection sheet for the technical information (capacity, water flow, water flow rates, pressure drops, etc.).

6.5 Air flow rate setting (indoor unit)

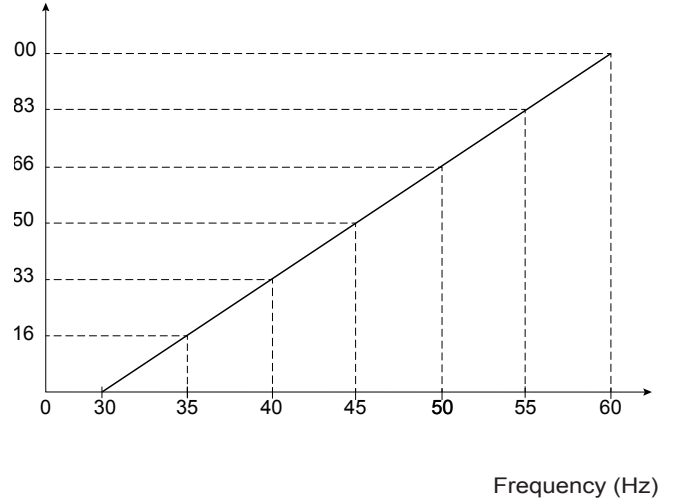
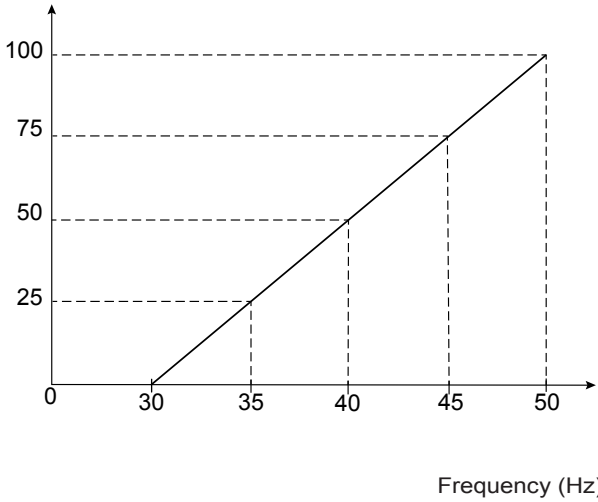
The air flow rate is set manually on the frequency inverter located in the electrics box for the indoor unit. The table below gives the air flow rate value in m³/h according to the operating pressure and the position of the frequency inverter.

	Operating pressure (Pa)	Inverter frequency (Hz)						
		30	35	40	45	50	55	60
CW 5 DXA 5	0	1 100	1 300	-	-	-	-	-
	50	850	1 100	1 300	-	-	-	-
	100	-	800	1 250	1 300	-	-	-
	150	-	-	1 150	1 300	-	-	-
	200	-	-	-	1 100	1 300	-	-
CW 8 DXA 8	0	1 350	1 600	1 850	2 000	-	-	-
	50	1 100	1 400	1 700	1 900	2 000	-	-
	100	-	1 150	1 450	1 700	2 000	-	-
	150	-	-	1 000	1 450	1 950	2 000	-
	200	-	-	-	1 200	1 750	1 950	2 000
CW 12 DXA 10	0	1 350	1 650	1 900	2 250	2 450	2 500	-
	50	900	1 450	1 750	2 100	2 300	2 450	2 500
	100	600	1 150	1 550	1 950	2 150	2 300	2 500
	150	-	650	1 250	1 750	2 000	2 100	2 400
	200	-	-	750	1 500	1 800	1 950	2 200
CW 16 DXA 12/15	0	2 600	3 100	3 550	4 000	4 000	-	-
	50	2 250	2 750	3 300	3 800	4 000	-	-
	100	1 800	2 400	3 000	3 550	4 000	-	-
	150	-	1 950	2 700	3 300	3 850	-	-
	200	-	-	2 250	3 000	3 600	-	-
CW 27 DXA 19/24	0	4 100	4 850	5 650	6 000	-	-	-
	50	3 500	4 400	5 250	6 000	-	-	-
	100	2 750	3 850	4 800	5 550	6 000	-	-
	150	-	3 200	4 350	5 200	6 000	-	-
	200	-	-	3 650	4 750	5 750	-	-
CW 39 DXA 31/36	0	4 950	5 850	6 750	7 650	8 000	-	-
	50	4 300	5 300	6 300	7 250	8 000	-	-
	100	3 400	4 650	5 700	6 800	7 800	-	-
	150	-	3 750	5 100	6 300	7 350	-	-
	200	-	-	4 300	5 650	6 900	-	-
CW 59 DXA 38/48	0	7 300	8 650	10 000	11 300	12 000	-	-
	50	6 250	7 800	9 300	10 750	12 000	-	-
	100	5 000	6 800	8 450	10 050	11 600	-	-
	150	-	5 550	7 550	9 300	10 900	-	-
	200	-	-	6 400	8 450	10 200	-	-

NB: Air flow rate values with G4 filter and without the hot water coil option.

Min. air flow rate (m³/h)

	DXA 5	DXA 8	DXA 10	DXA 12	DXA 15	DXA 19	DXA 24	DXA 31	DXA 36	DXA 38	DXA 48
Min. air flow rate value (m³/h)	600	900	950	2 000	2 000	4 000	4 000	6 000	6 000	8 000	8 000



DXA 5 / CW 5	DXA 8 / CW 8
DXA 12/15 / CW 16	DXA 19/24 / CW 27
DXA 31/36 / CW 39	DXA 38/48 / CW 59

DXA 10 / CW 12

● **VACON frequency inverter**

The vertical self-contained air-conditioning unit is delivered to you with the frequency inverter fully configured in the factory. The rotation frequency has been configured to your flow rate/pressure elements, as provided when the order was placed.

This value may be adjusted on site on the controller:

- Parameter P155 (µAir Connect2 controller)
- No control, inside the electrics box.



In the event of a fault, a code is displayed on the variable speed drive. Please contact us, quoting the fault code: Depending on the cabinet, the frequency inverter has a programming code:

Size	Code	Size	Code
CW 5	1	DXA 5	8
CW 8	2	DXA 8	9
CW 12	3	DXA 10	10
CW 16	4	DXA 12	11
CW 27	5	DXA 15	12
CW 39	6	DXA 19	13
CW 59	7	DXA 24	14
		DXA 31	15
		DXA 36	16
		DXA 38	17
		DXA 49	18

Inverter fault code	F = Fault
1	Overcurrent
2	Overvoltage
3	Earthing fault
8	System fault
9	Undervoltage
13	Under-temperature
14	Over-temperature
15	Motor stalled
16	Motor over-temperature
22	EEPROM fault
25	Watchdog fault
34	Internal bus fault
35	Application fault
50	Analogue input fault
51	External fault
53	External bus fault

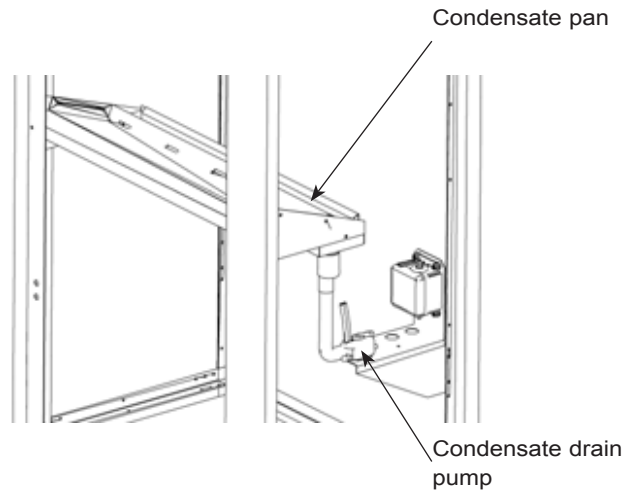
NB: all faults systematically stop the cabinet and "Motor fault" is displayed on the controller



6.7 Condensate drain pump (option)

Specifications:

- 230V-50 Hz-35W power supply
- Max. flow rate: 30 l/h
- Max. discharge height: 10 m



• Table of actual flow rates

the pressure drops defined in this table are calculated with a hose 6 mm in diameter	Discharge height (m)	Total pipe length			
		5 m (l/h)	10 m (l/h)	20 m (l/h)	30 m (l/h)
NPSH 0 m	1	29	27	25	23
	2	27.5	25.5	24	22
	3	25.5	24	22	20.5
	4	23.5	22	20	19
	5	21	19.5	18	16.5
	6		16.5	15	14
	7		14	12.5	11.5
	8		11.5	10	9
	9		9	7.5	6.5
	10		6	5	4

6.8 Humidifier (option)

The immersed-electrode humidifier is fitted with a microprocessor-based controller that adapts, within the allowable operating limits, to the physical and chemical properties of the water used.

Current passes through the water between the immersed electrodes, heating it to boiling point.

The water acts as an electrical resistance, ensuring continuity between the electrodes and a minimum of dissolved salts.

	CW 5/8/12 DXA 5/8/10	CW 16/27/39/59 DXA 12/15/19/24/31/36/38/48
Make/model	KUE T1 COW21	KUE T2 COW21
Control voltage	24 V	24 V
Power input in control circuit	Without 9 V A valve; with 35 V A valve	
Power voltage	3-PH/400 V	3-PH/400 V
Power circuit current (A)	3.2A	8.7A
Protection rating	10A	16A
Max. steam flow rate	3 kg/h	8 kg/h
Max. power (KW)	2.25	6
Factory steam flow rate setting	CW 5/DXA 5: 1.5 kg/h CW 8/DXA 8: 1.9 kg/h CW 12/DXA 10: 2.4 kg/h	CW 16/DXA 12/15: 3.9 kg/h CW 27/DXA 19/24: 5.7 kg/h CW 39/DXA 31/36: 7.7 kg/h CW 59/DXA 38/48: 8 kg/h
Factory power setting	CW 5/DXA 5: 1.13 kW CW 8/DXA 8: 1.45 kW CW 12/DXA 10: 1.8 kW	CW 16/DXA 12/15: 2.88 kW CW 27/DXA 19/24: 4.32 kW CW 39/DXA 31/36: 5.75 kW CW 59/DXA 38/48: 6 kW
Water supply pressure	1 to 10 bar	
Max. water supply flow rate	0.6 l/min	1.2 l/min
Conductivity of supply water	350 to 1250 µS/cm	
Hardness of supply water	100 to 400 TH	
Drain water flow rate	10 l/min	
Water supply ø	G 3/4 M	
Drain ø	32 M	
Weight	2 kg	3.3 kg

If a water softener or water treatment system is used, the water hardness must not be less than 40% of the initial hardness and never be less than 15°F.



6.9 Electric heater (option)

• Characteristics:

Choice of electric heater per model

- Galvanised sheet metal panels
- Shielded tubing with scrolled fins
- High-inertia heater
- Supply voltage: three phase 400 V 50Hz
- Control: 2 stage or TRIAC depending on the option selected.

		CW 5 DXA 5	CW 8 DXA 8	CW 12 DXA 10	CW 16 DXA 12/15	CW 27 DXA 19/24	CW 39 DXA 31/36	CW 59 DXA 38/48
Power (kW)		3.0		6.0	9.0	12.0	18.0	24.0
Power (kW)	- Stage 1	3.0			6.0	6.0	12.0	12.0
	- Stage 2	-	-	3.0	3.0	6.0	6.0	12.0
Number of heaters:	- Stage 1	3 x 1 kW				3 x 2 kW		3 x 4 kW
	- Stage 2	-	-	3 x 1 kW	3 x 2 kW		3 x 4 kW	3 x 4 kW
Total current (A)		4.3		8.7	13	17.3	26	34.6

6.10 Control

CIAT μ Air Connect 2 configurable controller. For setting and configuration, refer to the corresponding manual



CIAT μ AIR CONNECT 2

7 - SYSTEM START-UP



All operations on the refrigerating circuit must be carried out in accordance with the applicable environmental regulations.

After making the necessary electrical and hydraulic connections, carry out the system start-up and check the following steps:

- Check the tightness of the electrical connections,
- Check the hydraulic connections (direction of inlet/outlet connections),
- Make sure the inside of the cabinet is clean and free from any foreign bodies,
- Check the power supply voltage and heat protection calibration in accordance with the current ratings of the various elements,
- Check the siphon height,
- Vent the air from the coils via the air bleed valves,
- Check the tightness of the circuits; retighten the valve if necessary,
- To configure the setpoints, refer to the "µAIR CONNECT" manual
- The air flow rate can be adjusted manually using the inverter
- If a master/slave control system is used, make sure that the connection cable between the cabinets is in place.
- Depressurise the system until -0.1 M Pa (-760 mm Hg) is obtained,
- Fill with the required quantity of refrigerant (for charges see the "Refrigerating circuit" chapter),
- Simulate activation of the various electrical components, controlled components and alarms.
- Check the currents.

● **Standard components:**

- Temperature alarm,
- Air flow rate alarm,
- Condensation unit,
- Fan motor assembly

● **Optional components:**

- Temperature low limit alarm,
- Outer contact control,
- Electric heater,
- Humidifier
- Hot water valve
- Check the cleanliness of the humidifier supply water (option),
- After allowing the unit to run for a few hours, check the filter fouling condition, especially in the case of an F7 filter.

8 - MAINTENANCE

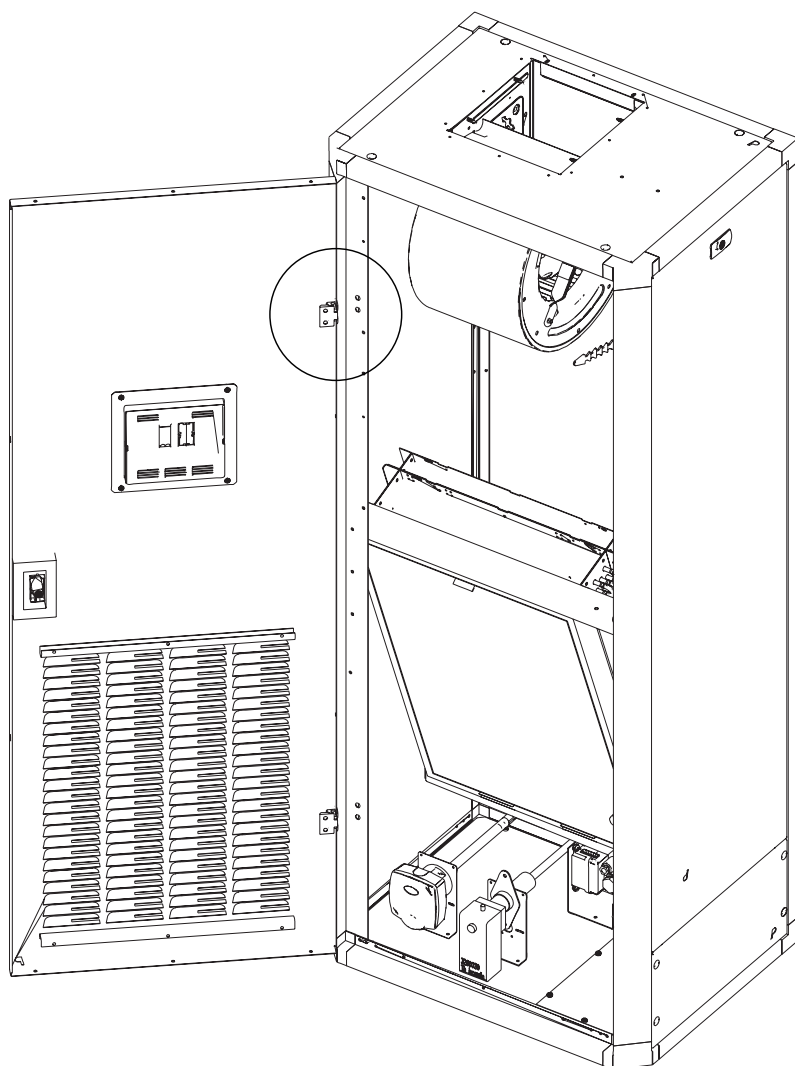
It is possible to remove the doors in order to facilitate access to the various components.

For dual doors:

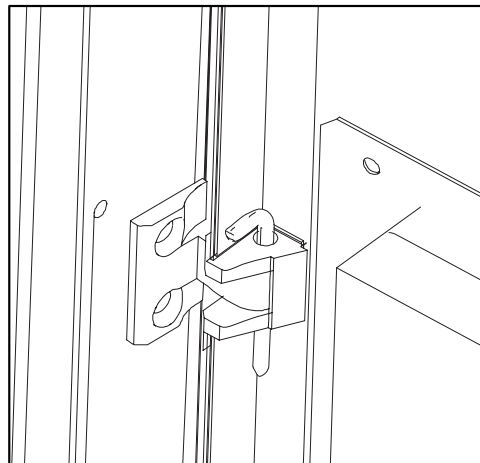
Open the left-hand door using the centre latch and lower the 2 right-hand door targets (for dual doors).

Pull out the pin and remove the hinge (Detail B).

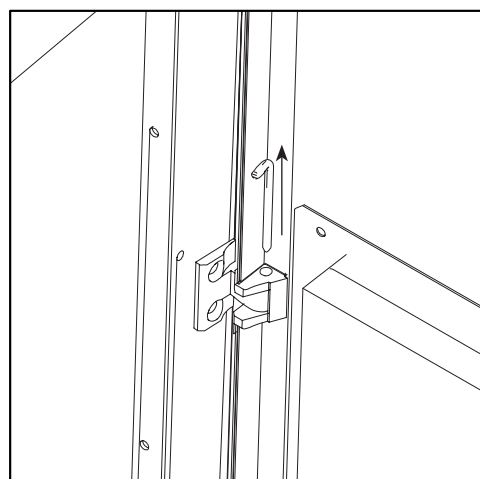
Lift off the door (Detail C).



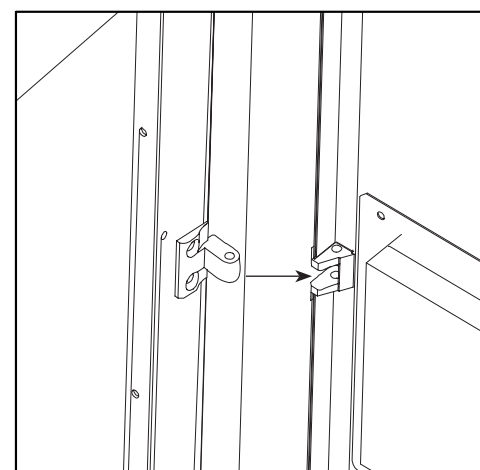
DETAIL A



DETAIL B



DETAIL C



8.1 Filters

Check the filters frequently during system start-up. The rate at which they will clog will depend on how well the air circuits were cleaned.

• Maintenance frequency

The filter life depends essentially on the amount of dust in the air and the efficiency of the filtration system. The filtration quality cannot be maintained if the filter medium has been damaged during maintenance. We recommend that the filters be replaced once every two years, even in the case of moderate use

• Filter element replacement method

When performing maintenance, it is important to avoid releasing and spreading the dust that has accumulated in the filter. Turn off the unit.

Access the filters by opening the panels on the front,

For sizes CW 5/8/12, DXA 5/8/10.

Fig. 1

Press the lug and pull it towards you (no.1) to unclip it and release the filter.

Note: The lug remains attached to the support bracket (no.2).

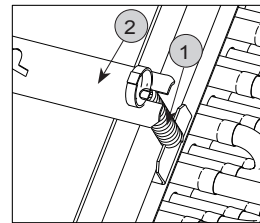


For other sizes

Fig. 2

Remove the spring (no.1) from the runner (no.2).

Remove the filters by moving the runner aside.



Replace the used filters with new filters using cells fitted with a gasket. Take care to note the direction of air flow indicated on the new filters.

Always make sure that the filter elements are properly positioned before compressing them or turning the unit back on.

8.2 Cooling coil

• Maintenance frequency

As the cooling coil is protected by a filter, its air circuits require very little maintenance.



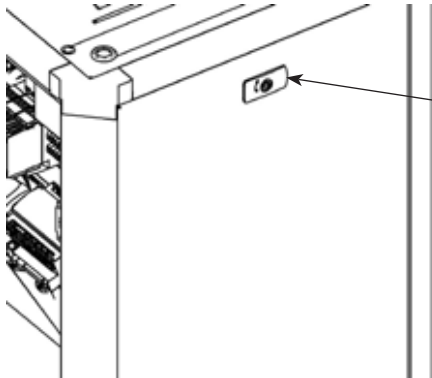
Always cut the power supply to the cabinet before any cleaning operations

8.3 Electric heater

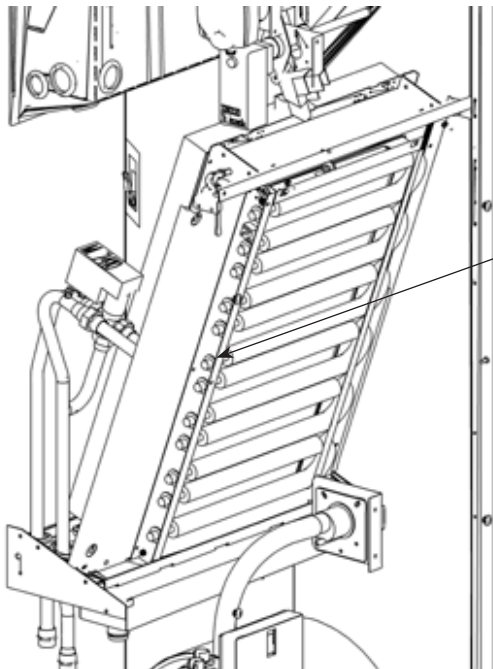
• **Maintenance frequency**

The electric heater requires very little maintenance. However, the following checks are necessary:
Visually inspect the heating elements, wires and connection cables after every 1500 hours of operation.
Check and retighten the connections once or twice a year.

• **Cleaning procedure**



To access the electric elements, remove the removable side panel by turning the latch a quarter turn



Accessing heating elements located behind the hydraulic coil.
Cleaning using an air nozzle.
To remove the heaters
- unscrew the bolt and remove the washer, and push the pin backwards to release it from its housing. Follow the assembly process in reverse order

● **Maintenance**

Clean the humidifier once a year and replace its tank.

● **Cleaning or replacing the steam cylinder**

This operation is necessary when the deposits that form on the active surface of the electrodes prevent the correct flow of current (alarms E08, E06).

To remove the tank:

- Drain the tank completely via the manual drain programme actuated by the control (See extract from the control manual N09.41 paragraph 6.2, parameter no.911)
- Cut the power supply to the unit via the switch or via the line fuses,
- Remove the cylinder steam pipe,
- Disconnect the main electrodes and remove the pins from the level electrodes,
- Remove the retention spring, the cylinder and lift up and out.

In general, the steam tank can be reused after being descaled (scale on the electrodes prevents the free flow of water and current).

If the electrodes are too badly affected the tank must be replaced: Only the tank body and seal need to be changed.

Check the gasket and replace it if need be. Put the tank back in place by following the above steps in reverse order.

● **Cleaning the unit and seasonal maintenance**

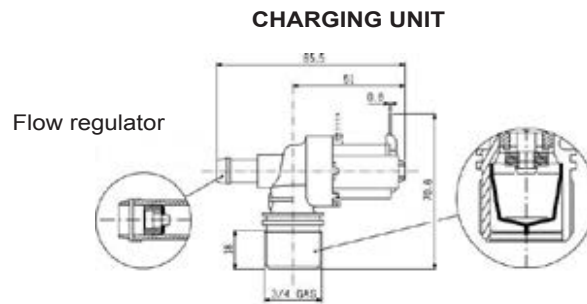
The unit must be checked and cleaned once a year or after it is shut off for an extended period. Remember to always first drain the water from the tank and to cut the power supply.

- **Procedure:**

Remove or wash the water supply valve. Check the inlet filter for clogging,

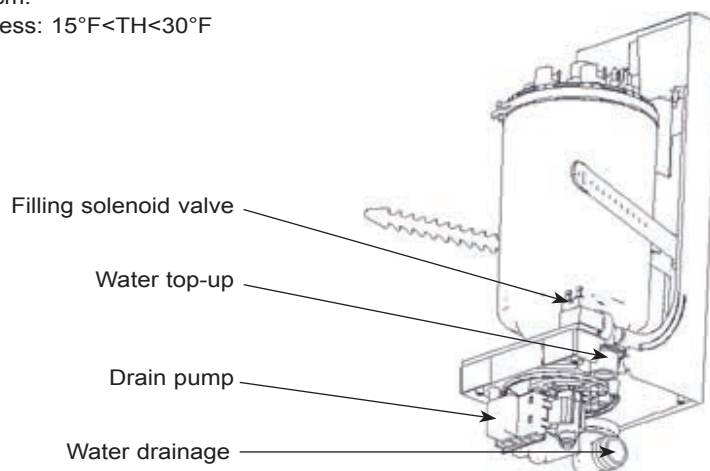
If the pump malfunctions or becomes worn, it must be replaced.

Inspect the water supply, steam supply and condensate drain pipes and replace them if necessary.



In case of a fault on the humidifier (no steam produced), check the water conductivity: it must be between 350 and 1250µS/cm.

In case of repeated scaling, check the water hardness: 15°F<TH<30°F

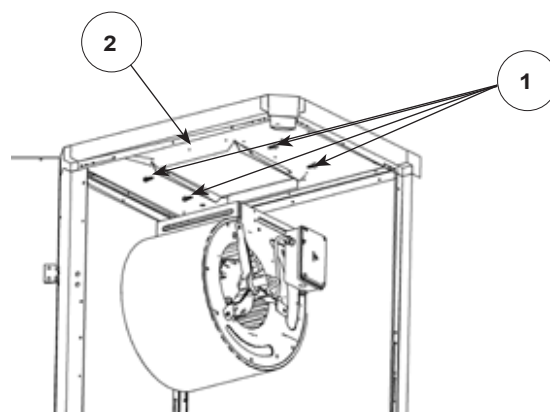
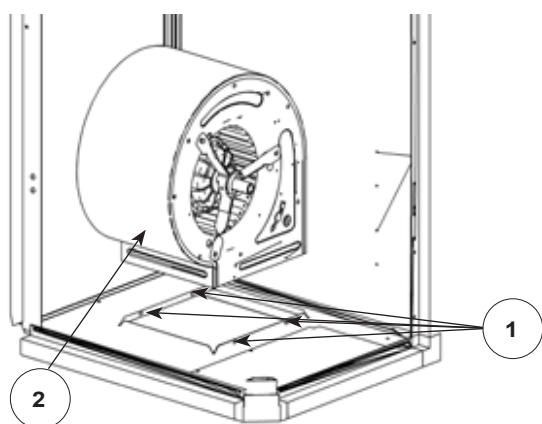


8.5 Fan

Check and retighten the connections once a year.

• **Fan removal method:**

- Remove the 4 screws holding the fan in place (no.1) to separate it from the air supply panel (no.2).



8.6 Electrics box

Retighten the connections once a year.

Visually inspect the components, wires and cables.

9 - SERVICE INTERVAL SUMMARY TABLE:

Regular maintenance will keep the unit running at optimum performance. The values given in the table below are provided for guidance only. They do not take into account individual factors that can lengthen or shorten the unit's service life.

DEVICE	AT SYSTEM START-UP	2-3 MONTHS	12 MONTHS
Filters		-Replace	-Replace
Cooling coil		-Clean	- Check and clean the condensate drains
Electric heater (option)	-Check the connections	-Clean	-Retighten the electrical connections -Check the components
Humidifier (option)*	-Check the connections	- Check the condition of the cylinder, replacing it if necessary	- Retighten the electrical connections - Check the components - Check the condensate drains -Make sure that steam is evenly distributed
Fans	-Check the connections		-Retighten the electrical connections
Electrics box	-Check the connections		-Retighten the electrical connections -Check the components
Hydraulic circuit		-Check correct operation	-Check the components
Water leak detection sensor and relay	-Check correct operation		-Check the insulation -Check correct operation
Filter pressure switch	- Check correct operation and setpoint adjustment	- Check correct operation and setpoint adjustment	- Check correct operation and setpoint adjustment
Thermostat and fire control relay	-Check correct operation	-Check correct operation	-Check correct operation
Valve	- Check circuit for correct operation and tightness		-Check correct operation
CL condensation unit	Refer to the corresponding instructions		

* If a water softener or water treatment system is used, the water hardness should not be less than 40% of the initial hardness and should never be less than 15°f.

10 - OPERATING READINGS

	Date/Time					
Compressor	Extraction pressure (bar)					
	Extraction temperature (°C)					
	Condensation pressure (bar)					
	Condensation temperature (°C)					
Heat exchange coil	Gas/liquid inlet temperature (°C)					
	Gas/liquid outlet temperature (°C)					
	Air inlet temperature (°C)					
	Air outlet temperature (°C)					
Plate heat exchanger	Water inlet temperature (°C)					
	Water outlet temperature (°C)					
	Gas/liquid inlet temperature (°C)					
	Gas/liquid outlet temperature (°C)					
Rated voltage (V)						
Voltage at terminals (V)						
Compressor absorbed current (A)						
Fan motor absorbed current (A)						
Mechanical check: pipes, screws, etc.						
Electrical connection tightness check						
Outdoor coil cleaning						
Check the control						
Differential pressure switch						
Sealing test						
Filter check						



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