



Alfa Laval Optigo CC

Instruction manual



- Product description
- Product labels
- Unpacking & lifting
- Installation
- Maintenance
- Spare parts

ORIGINAL INSTRUCTIONS

AHE00047EN 1904



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1 Important information

1.1 Disclaimer



This Instruction Manual applies to all Alfa Laval Optigo CC air cooler products and is supplied in combination with the Alfa Laval Air Cooler Product Manual AHE00042. Both manuals must be carefully examined and instructions should be followed up at all times. Alfa Laval does not accept liability for any damage resulting from non-compliance to the instructions as given in the manuals and order-related documents.

1.2 Intended use

Air coolers are partly completed machinery according to Machine Directive 2006/42/EC and are intended for incorporation in cooling systems. Declarations of Incorporation are available on www.alfalaval.com. The units may not be put into operation until the conformity of the complete machine or cooling system has been declared according to the following standards and directives:

- Pressure Equipment Directive 2014/68/EU
- Machine Directive 2006/42/EC
- Low Voltage Directive 2014/35/EU
- Electrical Equipment of Machines IEC 60204-1
- Electro Magnetic Compatibility 2014/30/EU
- Any applicable local or national legislation

1.3 Where to find product information

Detailed technical data for individual product models are available in order related documents, on the product label and in product data sheets. Comprehensive technical information for all Alfa Laval air heat exchanger products is available on-line on www.alfalaval.com. This includes:

- Product manuals
- Instruction manuals
- Product leaflets & brochures
- Product data sheets (selection software)
- Dimensional drawings
- Electrical wiring diagrams
- Certificates



Optigo CC

Alfa Laval offers world-wide service and support in over 55 countries. In case of any questions or uncertainty please contact your local Alfa Laval representative. Contact addresses are available at www.alfalaval.com.

2 Product description

2.1 General information and application

Optigo CC are commercial single discharge unit coolers for general application in small to medium-sized cooling, freezing and working rooms. Coolers are available in draw-through (CC) and blow-through design (CCB). A wide range of models make them especially suitable for refrigerated working, processing and storage rooms. Dedicated ranges for HFO/HFC refrigerants (E), brine (W) and CO₂ (X). A selection of Optigo CC coolers is available from stock.

- Refrigerants: HFO/HFC DX (E), CO₂ DX (X) and brine (W).
- Room temperatures: +10 to -30 °C.
- Capacity range (SC2): 1 up to 55 kW.
- Air volumes: 770 up to 30000 m³/h.

Model	Refrigerant	Design pressure	Test pressure
CC(B) E	HFO/HFC	40 bar	57 bar
CC X	CO ₂	80 bar	114 bar
CC(B) W	Brine	10 bar	14.3 bar

2.2 Standard configuration

- Internally grooved Cu tubes and aluminium fins, smooth tubing for brine applications and dedicated thicker tubes for CO₂ application. Tube pitch is staggered. All HFO/HFC DX models fitted with a T-connection to improve the refrigerant distribution and for hotgas defrost in coil.
- Optigo CC coolers are available with 1 to 4 fans fitted with AC or EC fan motors in two fan speed executions (noise levels) H/L. Fan diameters 250, 300, 350, 400 or 500 mm drawing or blowing through the coil. Integrated thermo contacts (Clixon) standard for 3-phase AC motors. All single phase motors protected by an integrated internal overload switch. Electronically integrated overload protection for EC fan motors.
- All casing parts made of durable sheet metal, epoxy coated RAL 9002. Top plate corrosion resistant Magnelis®.
- All models fitted with hinged side panels and aluminium drip tray. Drip tray is adjustable for perfect leveling. Removable internal drip tray for inspection and cleaning.
- Hinged side panels and drip tray, drain(s) 1½" BSP external
- Fitted with schröder valve on the suction connection for testing purposes.
- Sufficient room for fitting the expansion valve inside.
- Stickers indicate fan direction and refrigerant in/out.
- Optigo CC251-403 models are delivered in wooden folding boxes, CC404-504 and CCB models in wooden crates. All packings suitable for safe stacking.





2.3 Options

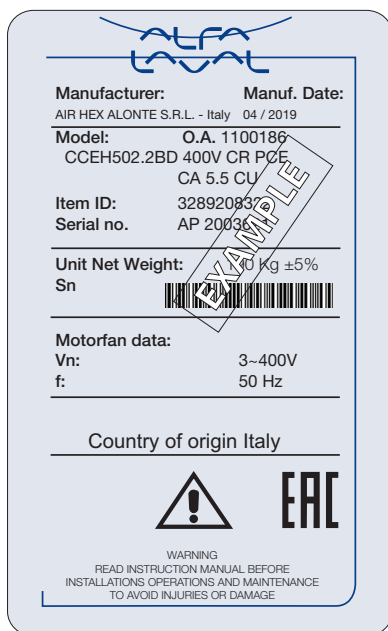
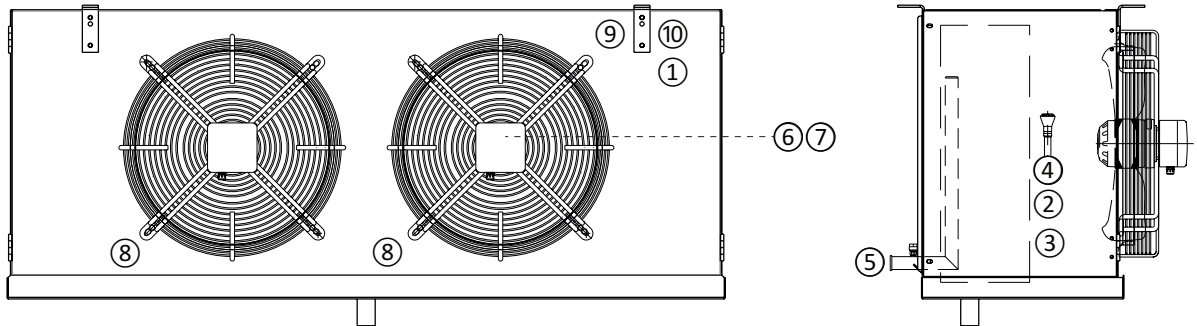
- Electric defrost
For cold rooms with room temperatures below 4 °C and where frost build-up is likely, the application of a defrosting system is advised. Electric defrost for Optigo CC consists of stainless steel heater elements. The defrost elements are connected to separate terminals in the terminal box. Available defrost systems are:
 - Electric defrost in coil (standard E1, heavy E2)
 - Electric defrost in driptray (HD)
 - Hotgas defrost in driptray (HG)
 - Electric defrost in driptray & hotgas in coil
- Driptray insulation 12 mm + cladding (IS)
- Shut-up sock (S)
- Airsock adapter ring (SR)
Available for CC400 and CC500 draw-through models only.
- Coil protection
 - Pre-coated aluminium fins (EP)
 - Cataphoresis treatment (CA)
- Stainless steel casing and frame (SSC)
- Fan ring heater (FRH)
- Re-heating coil (RH)
- Switch on/off (SW)
- Fan motors wired to connection box (CB)

2.4 Code description

CC	B	E	H	E	50	1	.2	A	S	230V	BO	SS	E	EP	-	7.0	CU	IS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18

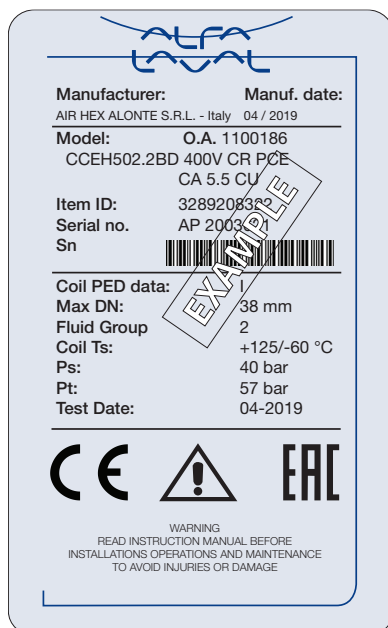
- 1 Commercial unit cooler
- 2 Air direction (default=draw through, B=blow through)
- 3 Refrigerant system (E= HFO/HFC DX, X=CO2 DX, W=brine)
- 4 Fan speed (H=high speed, L=low speed)
- 5 Fan motor type (blank=AC, E=EC)
- 6 Fan diameter (25=250, 30=300, 35=350, 40=400, 50=500 mm)
- 7 Number of fans (1 to 4)
- 8 CC version
- 9 Tube rows code (A, B, C)
- 10 No. of phases (S= 1, T=3)
- 11 Motor voltage
- 12 Packing (BO=box, CR=crate)
- 13 Casing material (PC=powder coated, SS= stainless steel)
- 14 Defrost system (A=air defrost, E=electric defrost, HG=hotgas, HG+E= hotgas + electric defrost in driptray)
- 15 Fin material (AL=aluminium, EP=epoxy coated aluminium, CA=cataphoresis)
- 16 Fin spacing (4, 5.5, 7, 10, 12 mm)
- 17 Tube material (CU=copper)
- 18 Options

3 Product labels



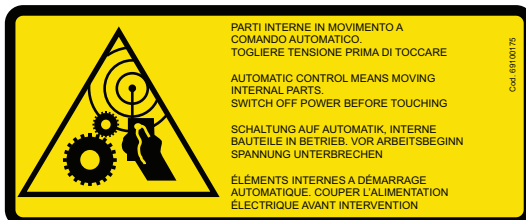
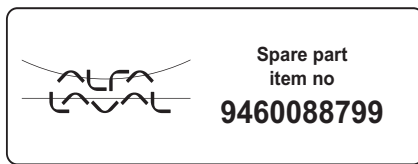
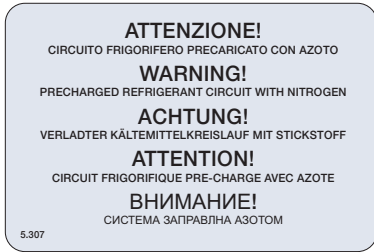
1. Product label

Model	Refer to paragraph "Code description"
Item ID Serial no.	Communicate these when ordering spare parts as they identify the unit.
O.A.	Order Acknowledgement number
Unit Net Weight	Check before any lifting operation to ensure that proper lifting tools are used



2. Product label - coil

Model	Refer to paragraph "Code description"
Item ID Serial no.	Communicate these when ordering spare parts as they identify the unit.
Max DN	Maximum diameter of the distributor tube
Fluid Group	According to PED
Coil Ts	Range of operating temperatures for the coil
Ps	Design pressure
Pt	Test pressure
Test date	Date on which the coil has been pressure tested in the factory



3. Nitrogen precharge warning

Units are delivered from the manufacturer with an overpressure. Check pressure on the Schrader valve. With unpressurised unit: Immediate report to manufacturer and note on bill of delivery.

4/5. In/Out

Refrigerant connection inlet and outlet.

6. Fan motor

Fan motor item number.

7. Electrical warning

Electrically powered component. Switch off power supply before any maintenance or installation activity.

8. Fan direction

Sticker indicates fan rotation direction

9. Moving parts

Warning: moving parts.

Switch off power supply before any maintenance or installation activities.

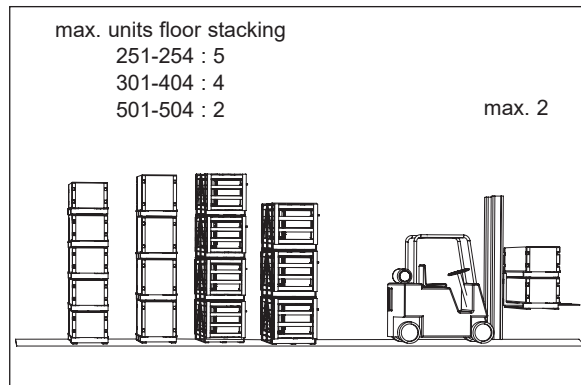
10. Eurovent

Sticker is applied when the product is included in the Eurovent Certify All program.

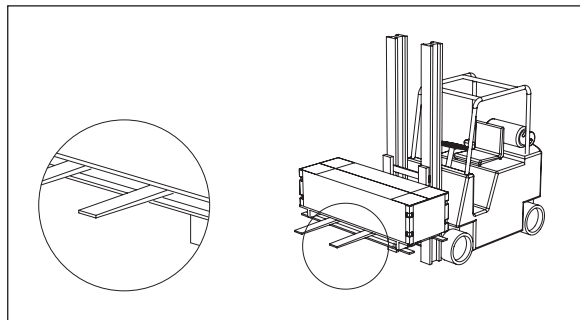
4 Unpacking and lifting



Always follow guidelines and instructions as given in the air cooler product manual AHE00042. Optigo CC air coolers are delivered on a wooden pallet, either covered with a wooden folding box or a wooden reinforced crate. Handling and positioning can take place manually (smaller models) or with use of a forklift. When more than one cooler units are delivered in a single shipment, packed air coolers may be stacked during transportation.

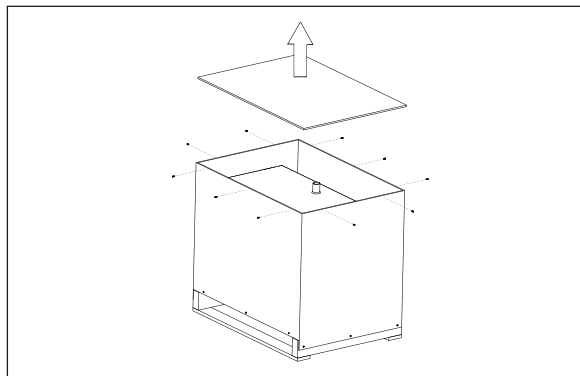


Respect the maximum number of stacked air cooler units.



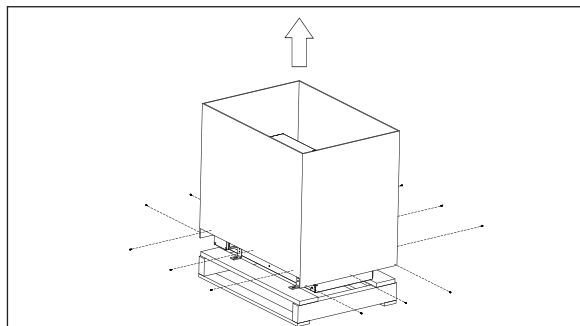
In order to avoid damage to the air cooler or falling of the unit, ensure that the lifting forks fully cover the support pallet.

4.1 Unpacking

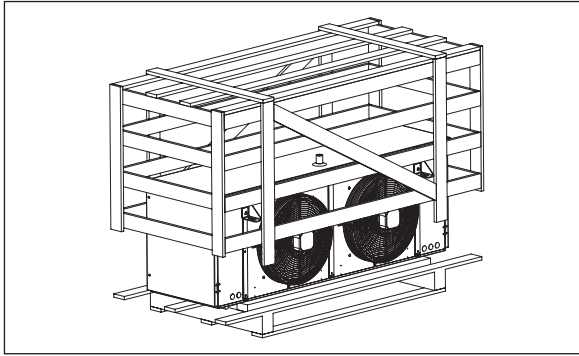


Folding box (CC251-403)

Place the unit on the ground. Unscrew the fixings from the top of the box and remove the cover.

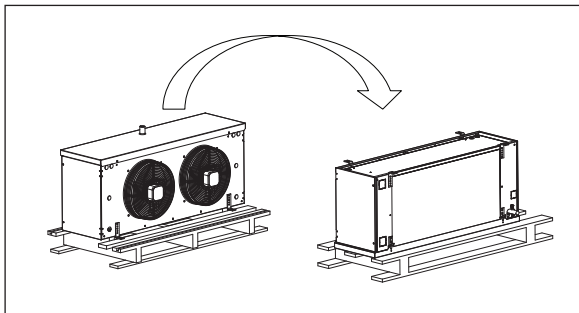


Unscrew the fixings from the bottom of the box and remove it. Remove the fixing screws from the lower support pallet.

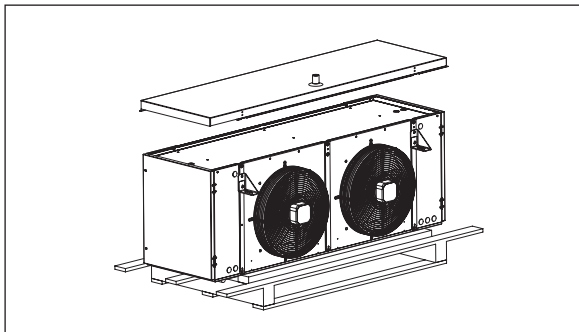


Wooden crate (CC404-504 & CCB301-504)
 Place the unit on the ground and loosen the fixing materials from the top crate.
 Remove top crate.
 Remove the fixing screws from the lower support pallet.

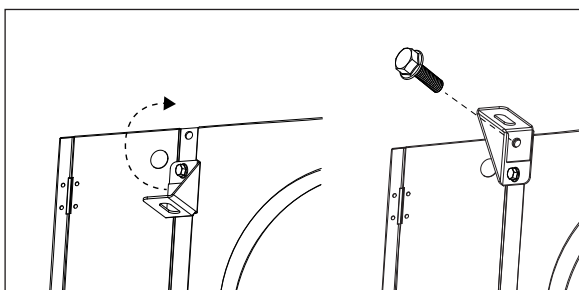
4.2 Lifting



CC250/350 & CCB300/350
 Unpacked models 250/300/350 must be turned before mounting.
 Manually turn the air cooler into mounting position on a second wooden pallet. Use adequate protective material to prevent the drip tray from damaging. The cooler is now ready to be lifted into mounting position.

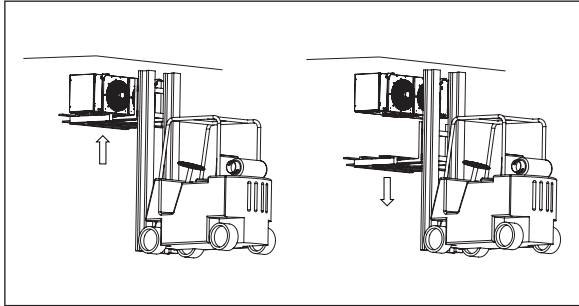


CC400/500 & CCB400/500
 Unpacked models 400/500 are in mounting position.
 Remove drip tray (supplied unmounted).

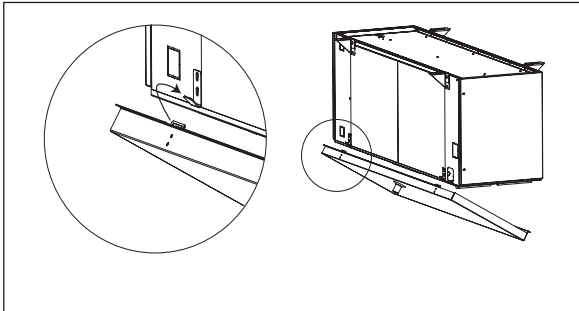


For CC400/500, turn mounting brackets into correct position and secure with supplied fixing materials.

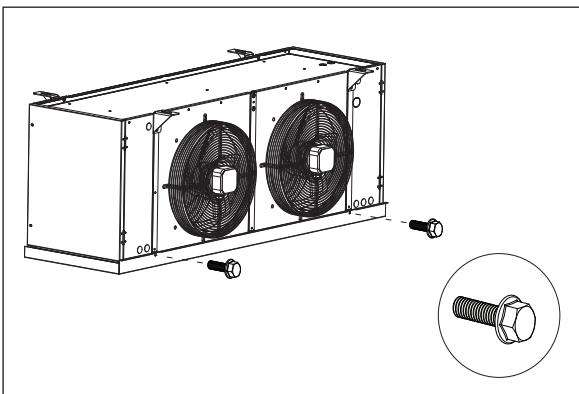
The cooler is now ready to be lifted into mounting position.



Lift the unit into mounting position and secure following instructions given in chapter "Installation".



After having fixed the cooler to the ceiling, place driptray on its hinges (CC400/500 only).



Use supplied fixing materials to fasten the drip-tray.

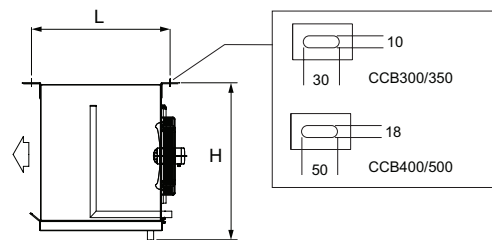
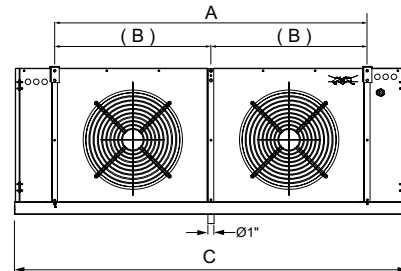
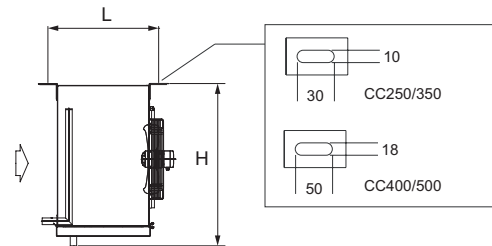
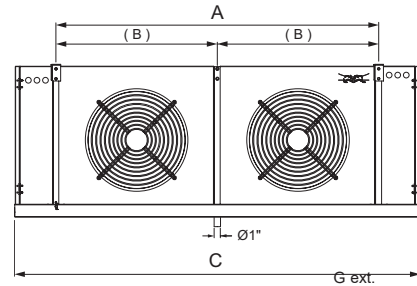
5 Installation



Always follow guidelines and instructions as given in the air cooler product manual AHE00042.

5.1 Mounting dimensions

cooler model	Dimensions ± 5 mm					Shipping volume m ³
	C	H	L	A	B	
Draw-through CC						
CC 251	811	423	418	508	-	0.3
CC 252	1319	423	418	1016	-	0.5
CC 253	1827	423	418	1524	-	0.7
CC 254	2335	423	418	2032	1015	0.9
CC 351	811	602	418	508	-	0.4
CC 352	1319	602	418	1016	-	0.7
CC 353	1827	602	418	1524	-	0.9
CC 354	2335	602	418	2032	1015	1.2
CC 401	1046	668	583	600	-	0.7
CC 402	1646	668	583	1200	-	1.1
CC 403	2246	668	583	1800	-	1.5
CC 404	2846	668	583	2400	1200	2.1
CC 501	1297	854	583	850	-	1.3
CC 502	2147	854	583	1700	-	2.1
CC 503	2997	854	583	2550	-	2.9
CC 504	3847	854	583	3400	1700	3.7
Blow-through CCB						
CCB 301	811	482	609	508	-	0.5
CCB 302	1319	482	609	1016	-	0.7
CCB 303	1827	482	609	1524	-	1.0
CCB 304	2335	482	609	2032	1016	1.2
CCB 351	1046	606	651	600	-	0.7
CCB 352	1646	606	651	1200	-	1.0
CCB 353	2246	606	651	1800	-	1.5
CCB 354	2846	606	651	2400	1200	1.9
CCB 401	1046	665	651	600	-	0.8
CCB 402	1646	665	651	1200	-	1.2
CCB 403	2246	665	651	1800	-	1.6
CCB 404	2846	665	651	2400	1200	2.0
CCB 501	1297	854	902	850	-	1.7
CCB 502	2147	854	902	1700	-	2.7
CCB 503	2997	854	902	2550	-	3.7
CCB 504	3847	854	902	3400	1700	4.7

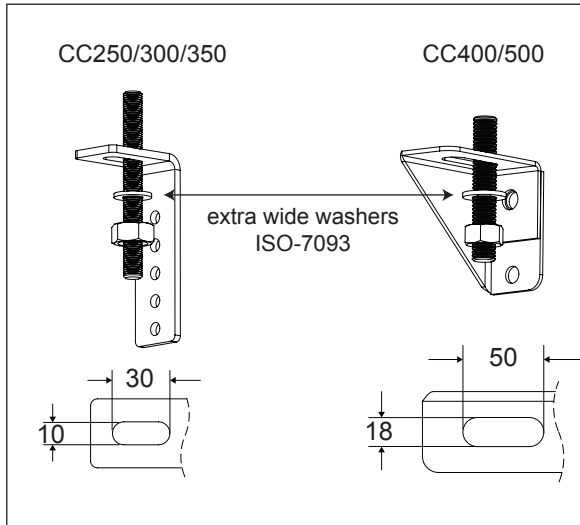


Detailed drawings showing all required mounting and refrigerant connection dimensions are available for download on www.alfalaval.com.



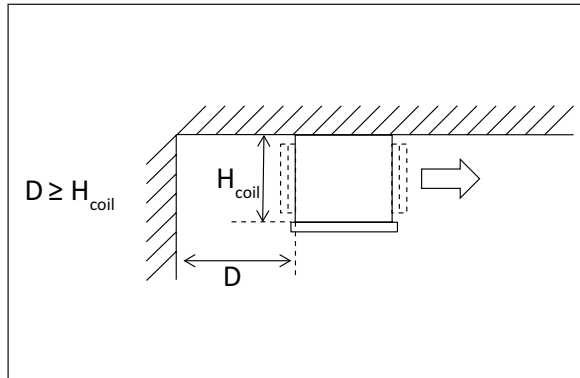
Dimensional drawings

5.2 Mounting bracket

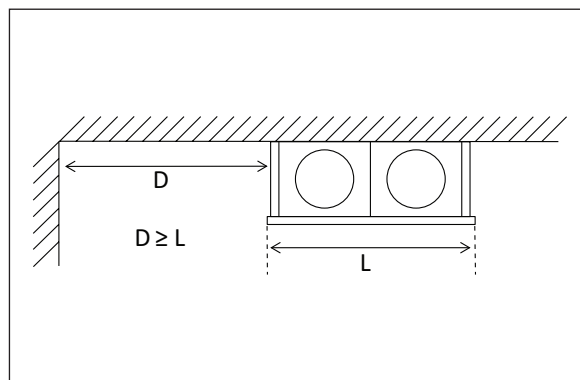


Use extra wide washers (ISO 7093) when mounting the unit to the ceiling.

5.3 Technical spaces

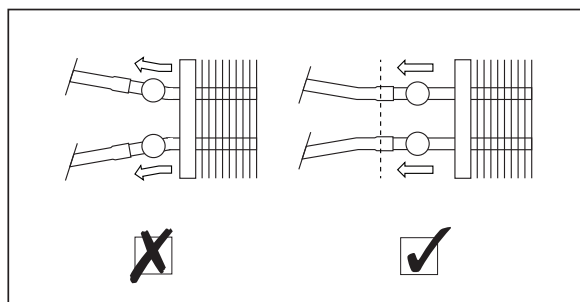


Respect the minimum wall distance on suction side.



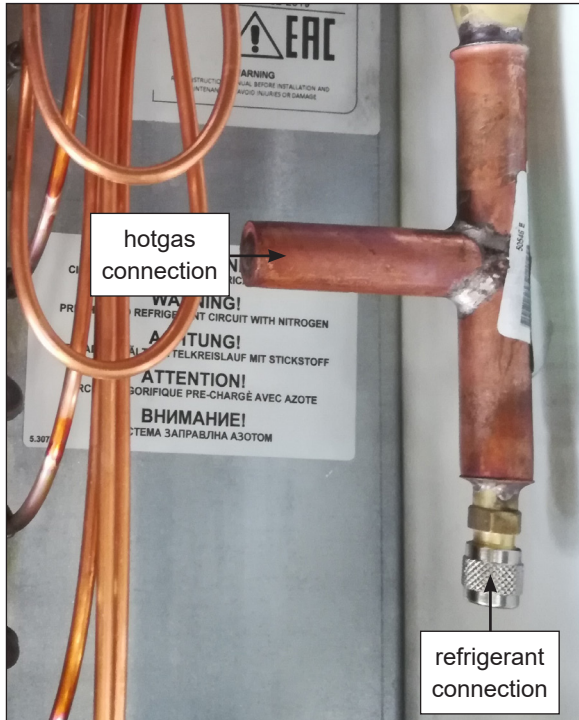
Respect the minimum space for defrost heater extraction and replacement.

5.4 Refrigerant connections



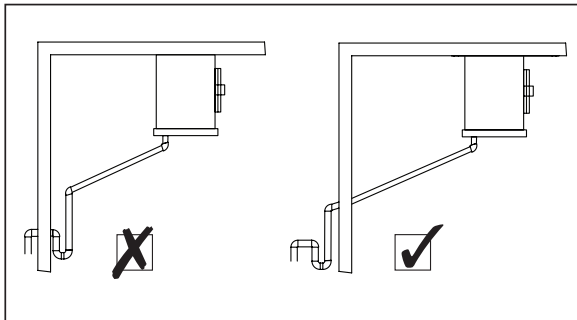
Never bend the air cooler refrigerant connection tubes.

5.5 Hotgas connection (optional)



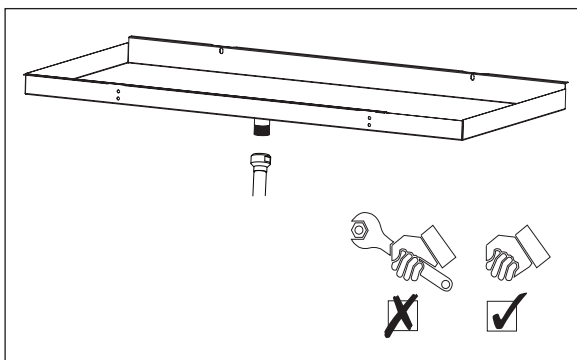
Picture shows the T-connection for refrigerant and hotgas defrost inlet.

5.6 Drain line



The drain line diameter must be at least the size of the driptray drain diameter and should be laid with an adequate slope. For room temperatures below 0° C drain line insulation and defrosting are required.

A siphon must be installed on the drain line, outside the cold room



Tighten drain connection by hand only.

5.7 Electrical connections



The following data determine which connection diagram is to be selected and respected for electrical installation:

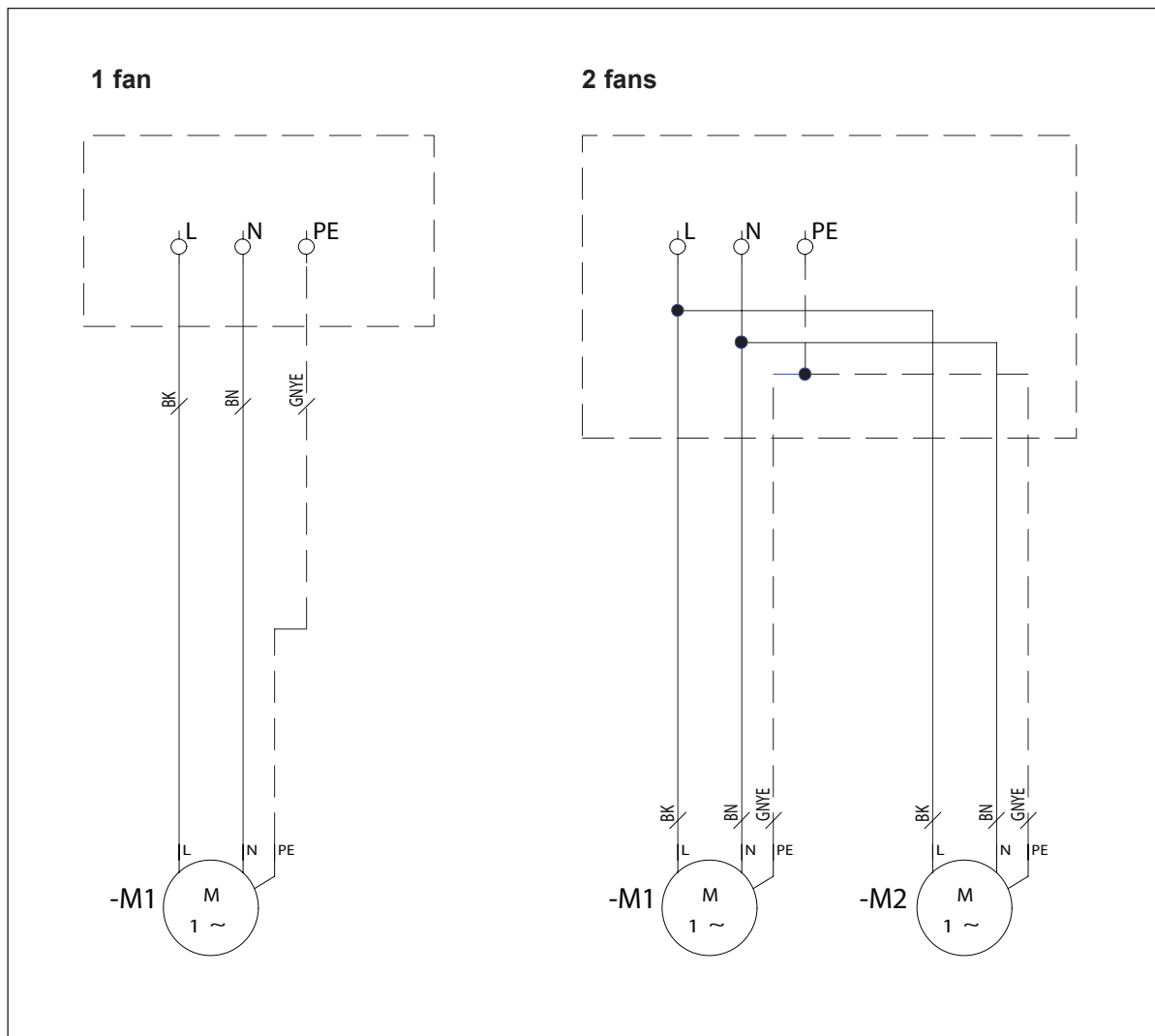
- Heat exchanger model indication
- Fan motor type
- Electrical options



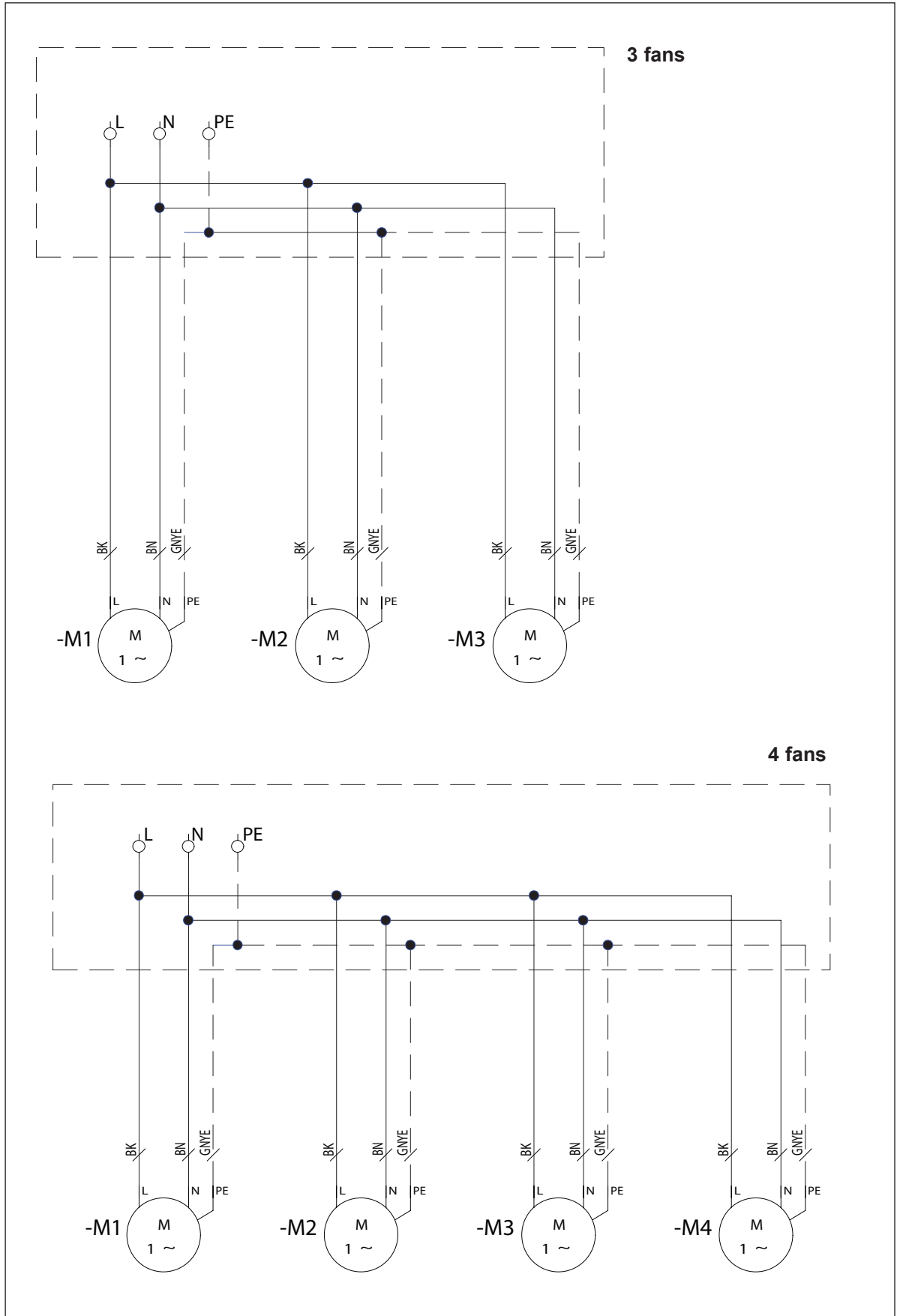
Electrical connections

Electrical connection diagrams are available for download on www.alfalaval.com. When in doubt always contact your local supplier or Alfa Laval representative for assistance. Please find below the electrical connection diagrams for standard configurations.

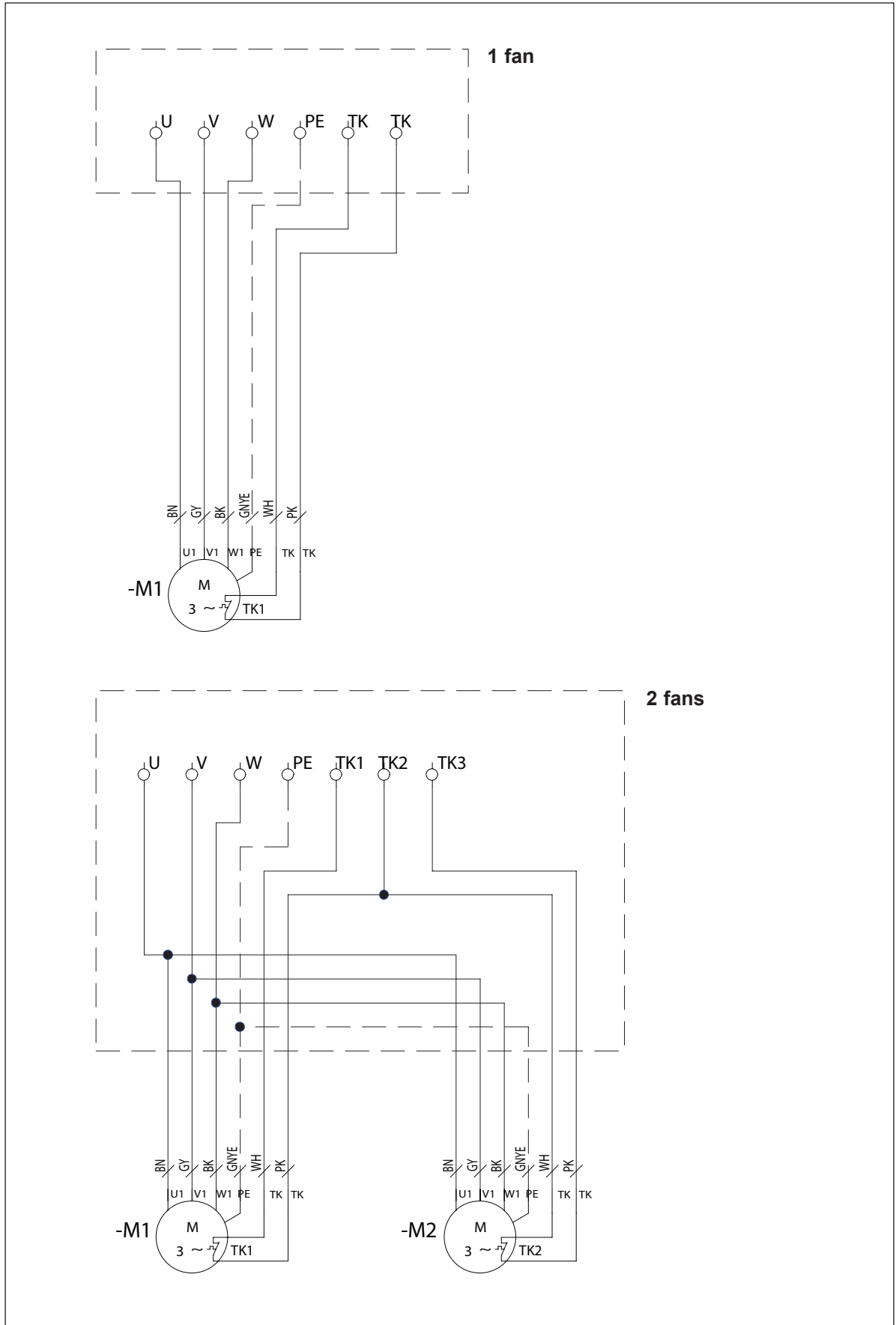
Electrical connections 1-phase AC fan motors

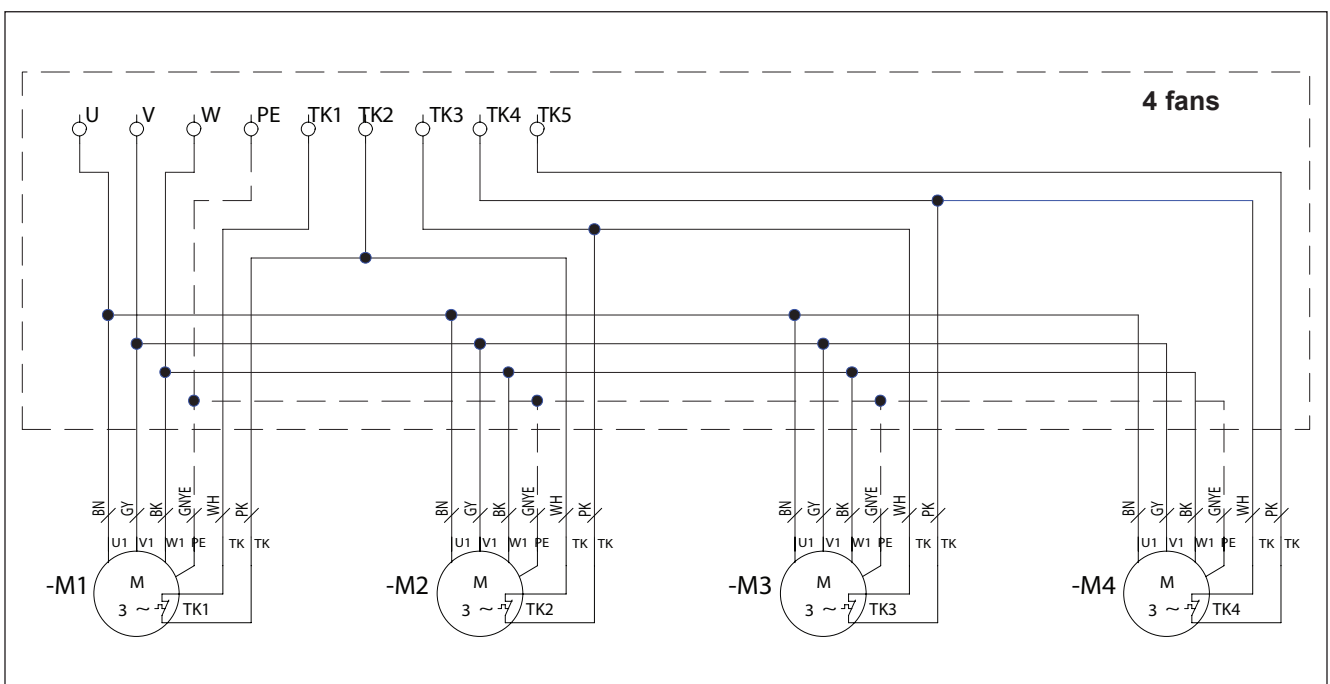
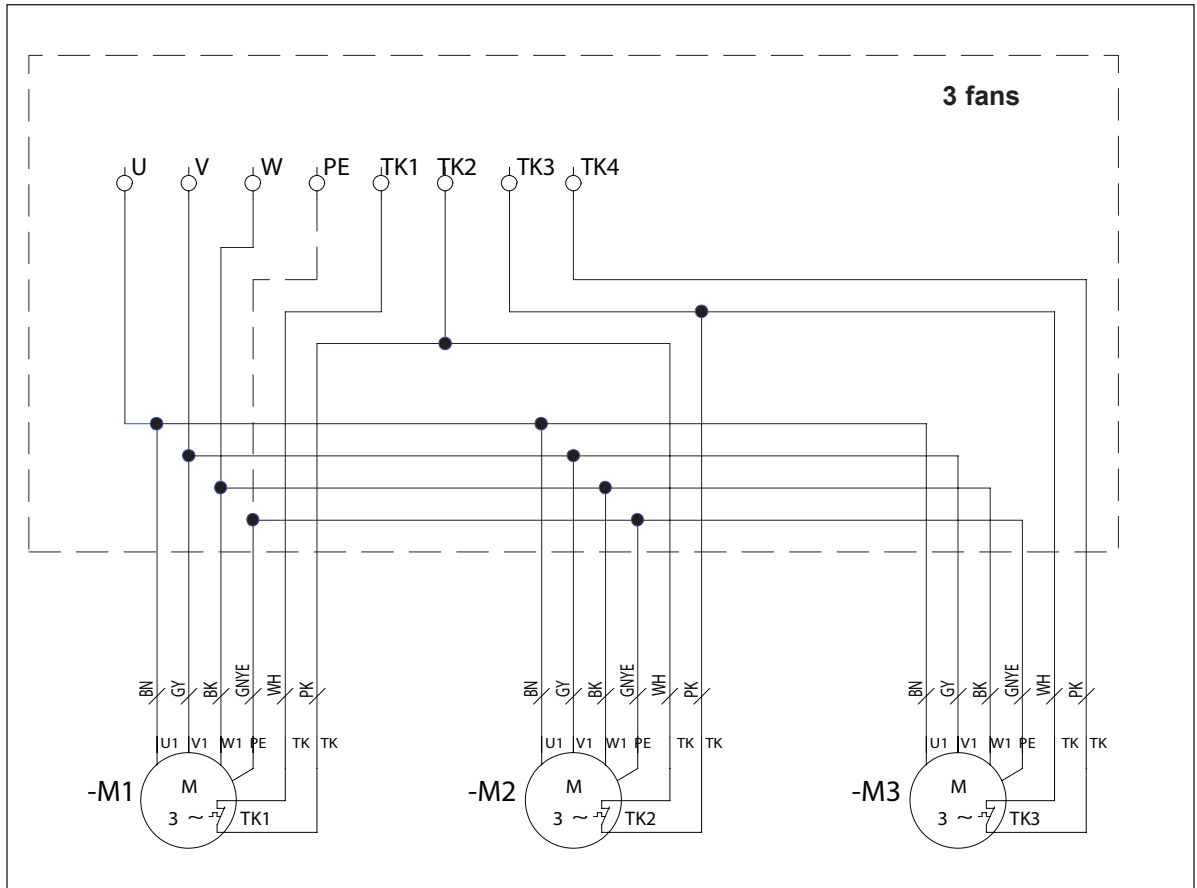


Electrical connections 1-phase AC fan motors

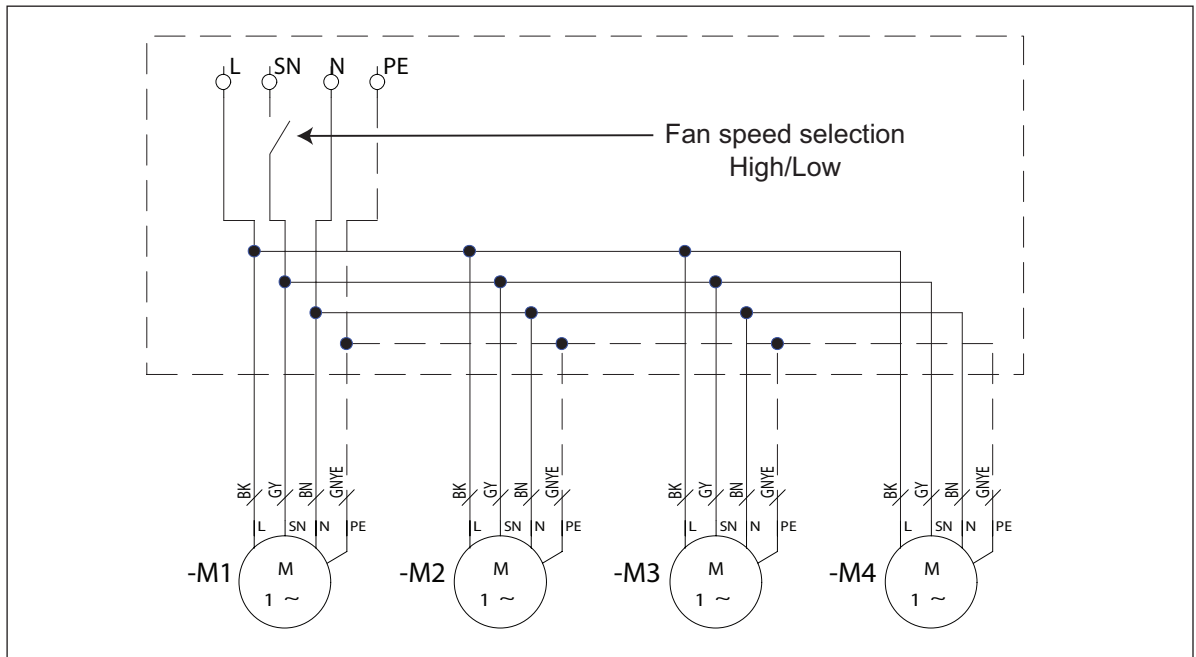


Electrical connections 3-phase AC fan motors

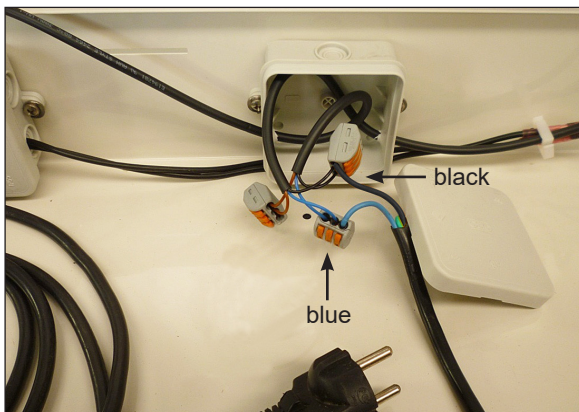




Electrical connection for 1-4 EC fan motors 1-phase (2-speed, CC250 only)

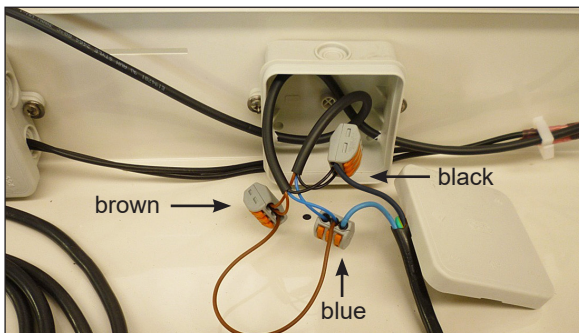


Open the connection box. You will find the electric wiring diagram inside.



High speed connection

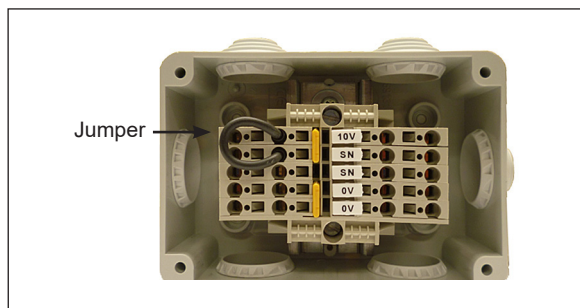
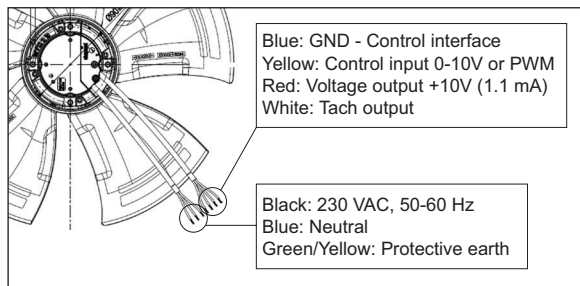
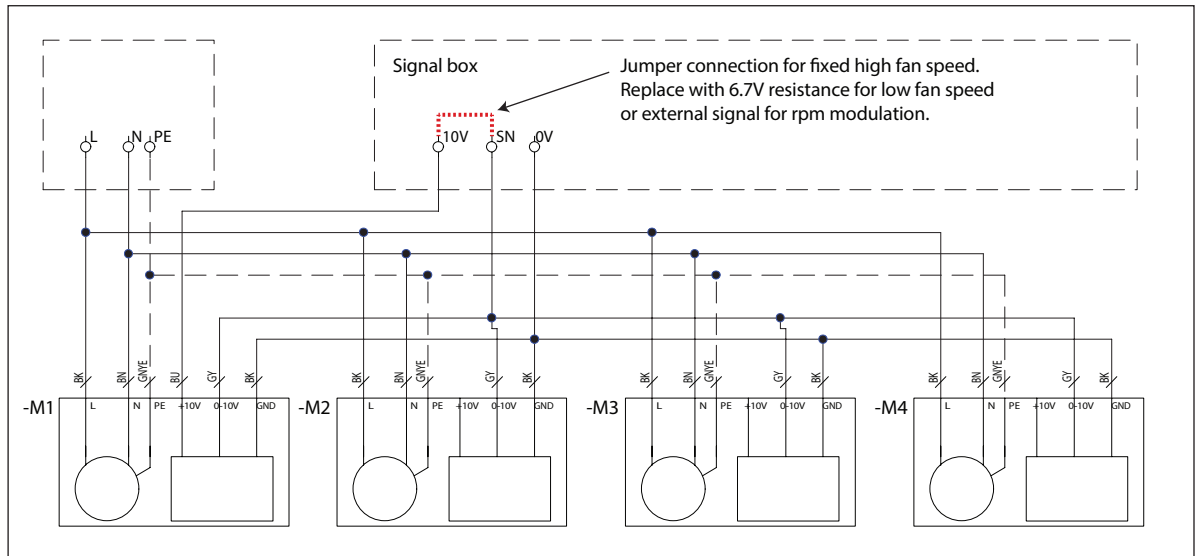
Connect blue wire (N) to neutral.
Connect black wire (L) to power supply.



Low speed connection

Connect blue wire to neutral (N) and black wire to power supply (L).
Open the orange clamps from the blue and brown wires.
Create a jumper connection between the brown (SN) and the blue (N) wires. This extra piece of cable is not supplied with the unit.

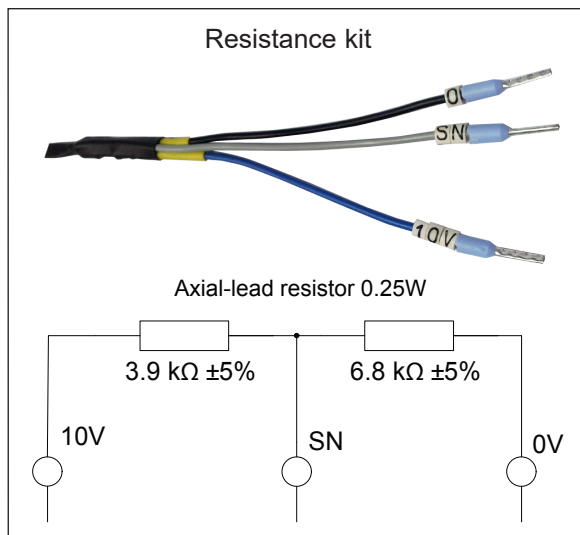
Electrical connection for 1-4 EC fan motors 1-phase with 0-10V speed regulation



High speed setting

The “High speed” setting provides the maximum fan speed according to datasheet. This is achieved when a jumper connects the +10 V output of the fan motor to the inlet signal (see electrical scheme).

If continuous rpm modulation is needed, the jumper should be removed and replaced by an external signal (between 0 and 10 V max). The jumper connection can be made in the connection box or inside each fan motor’s “black box”.



Low speed setting

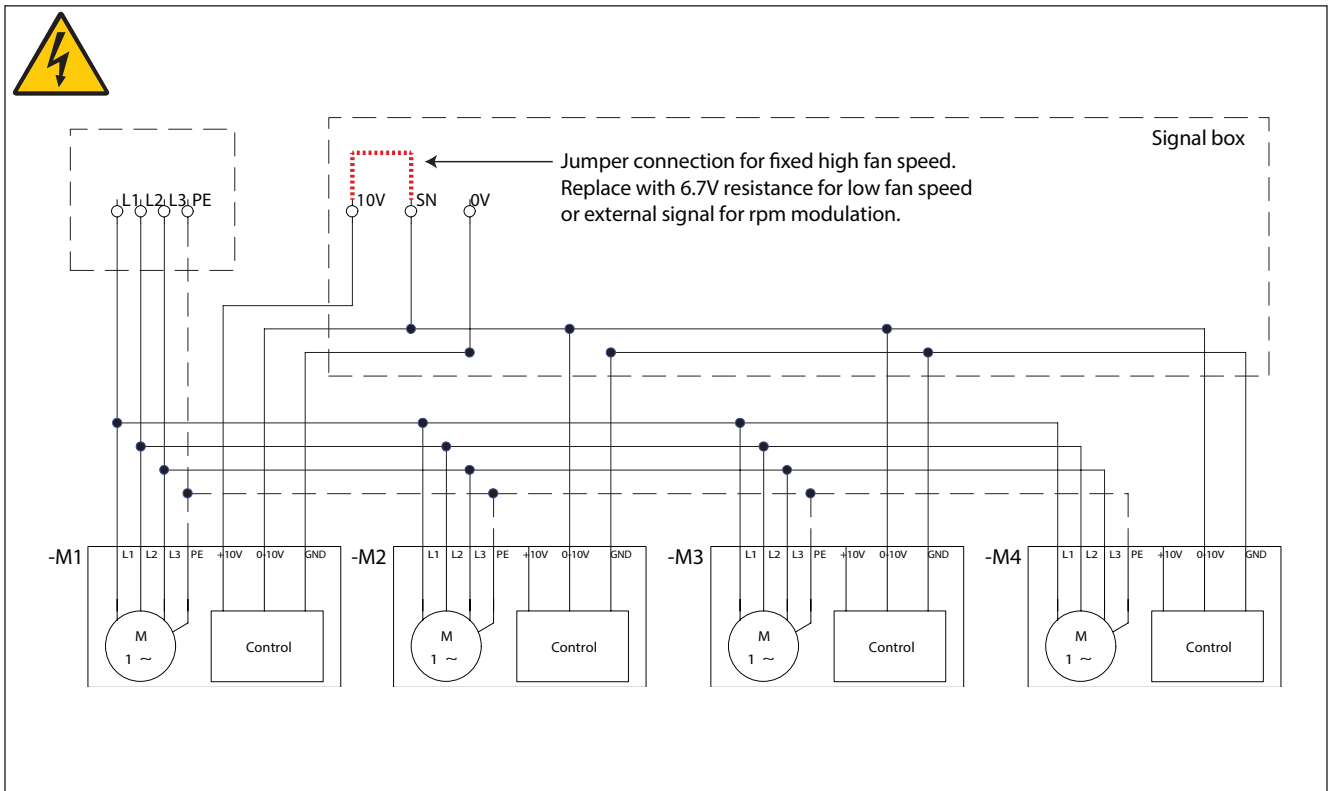
The “Low speed” setting provides the reduced fan speed according to datasheet. This is achieved with a resistance kit reducing the steering signal from 10 V to 6.7 V. The fan will operate at a fixed rpm value.

If continuous rpm modulation is needed, the resistance kit should be removed and replaced by an external signal (between 0 and 6.7 V max).

This resistance kit is located inside the connection box (if selected) or inside each fan motor’s “black box”.

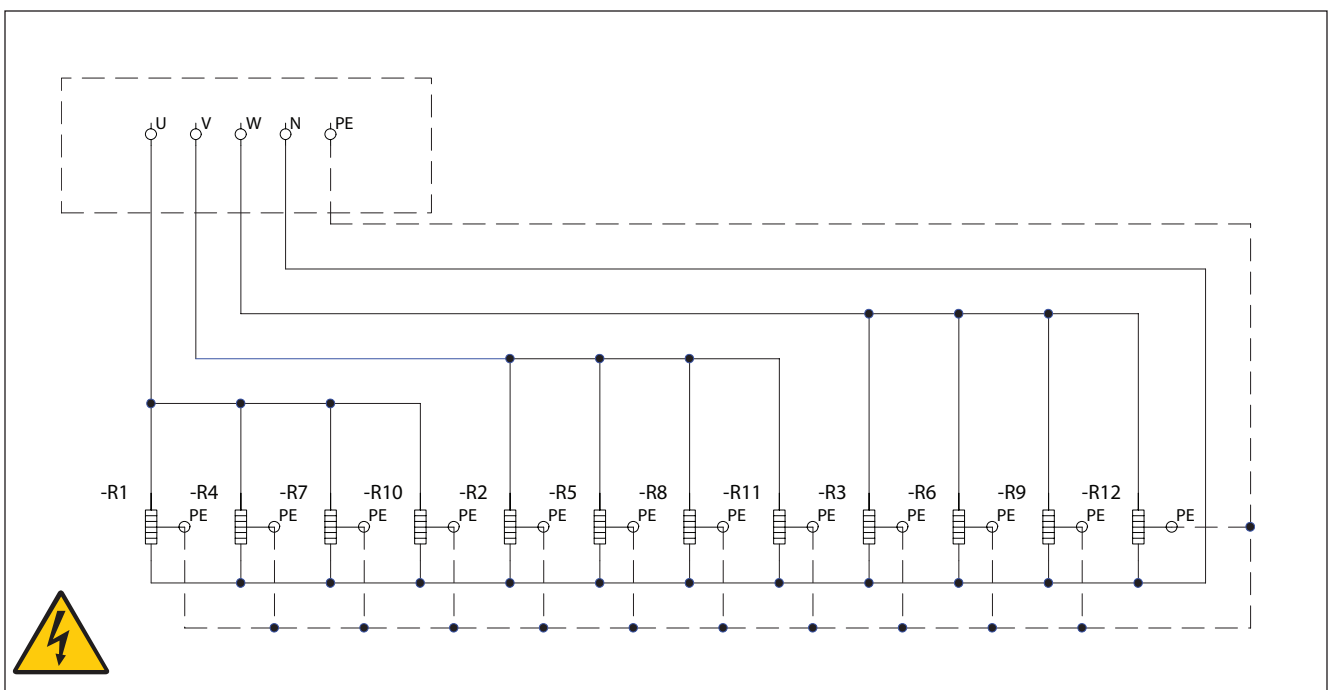


Electrical connection for 1-4 EC fan motor 3-phase with 0-10V speed regulation



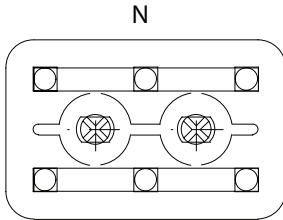
For High/Low fan speed setting and fan speed modulation follow the same procedure as given for the 1-phase fan motors on page 19.

Electrical connection for electric defrost CC400 & CC500

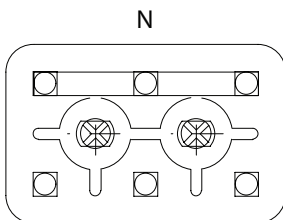
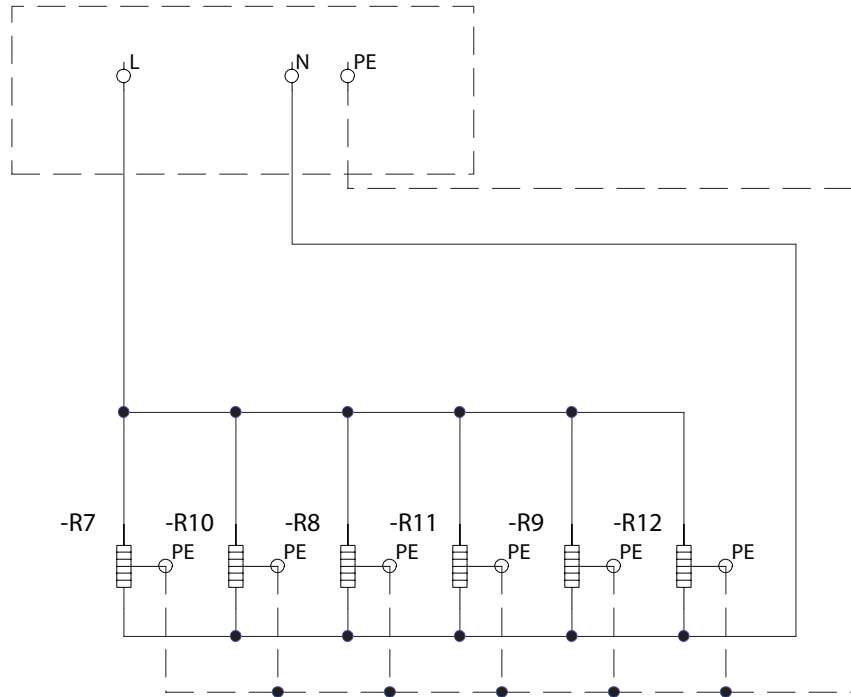




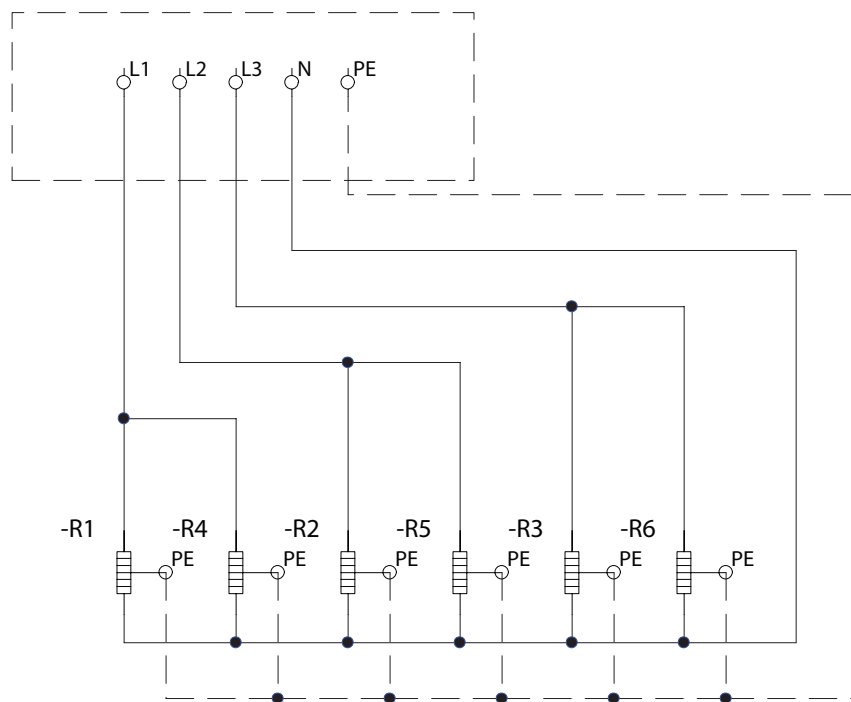
Electrical connection for electric defrost CC250 & CC350



Incoming supply
230V - 50Hz 1phase



Incoming supply
400V - 50Hz 3phase+N





5.8 Electric defrost capacities

Draw-through CC

Model	Tube rows	Coil defrost					Drip tray defrost			
		Optigo CC	heater elements no.		power per heater W	total power W	heater elements no.		total power W	
			no.	std	heavy	std	heavy	std	heavy	std
251.1A	4	2	-	420	840	-	1	-	420	-
251.1B	6	2	-	420	840	-	1	-	420	-
251.1C	8	4	-	420	1680	-	1	-	420	-
252.1A	4	2	-	760	1520	-	1	-	760	-
252.1B	6	2	-	760	1520	-	1	-	760	-
252.1C	8	4	-	760	3040	-	1	-	760	-
253.1A	4	2	-	1120	2240	-	1	-	1120	-
253.1B	6	2	-	1120	2240	-	1	-	1120	-
253.1C	8	4	-	1120	4480	-	1	-	1120	-
254.1A	4	2	-	1470	2940	-	1	-	1470	-
254.1B	6	2	-	1470	2940	-	1	-	1470	-
351.1A	4	4	-	420	1680	-	1	-	420	-
351.1B	6	4	-	420	1680	-	1	-	420	-
351.1C	8	5	-	420	2100	-	1	-	420	-
352.1A	4	4	-	760	3040	-	1	-	760	-
352.1B	6	4	-	760	3040	-	1	-	760	-
352.1C	8	5	-	760	3800	-	1	-	760	-
353.1A	4	4	-	1120	4480	-	1	-	1120	-
353.1B	6	4	-	1120	4480	-	1	-	1120	-
353.1C	8	5	-	1120	5600	-	1	-	1120	-
354.1A	4	4	-	1470	5880	-	1	-	1470	-
354.1B	6	4	-	1470	5880	-	1	-	1470	-
401A	4	5	7	460	2300	3220	1	2	460	920
401B	6	5	7	460	2300	3220	1	2	460	920
401C	8	8	10	460	3680	4600	1	2	460	920
402A	4	5	7	880	4400	6160	1	2	880	1760
402B	6	5	7	880	4400	6160	1	2	880	1760
402C	8	8	10	880	7040	8800	1	2	880	1760
403A	4	5	7	1290	6450	9030	1	2	1290	2580
403B	6	5	7	1290	6450	9030	1	2	1290	2580
403C	8	8	10	1290	10320	12900	1	2	1290	2580
404A	4	5	7	1700	8500	11900	1	2	1700	3400
404B	6	5	7	1700	8500	11900	1	2	1700	3400
404C	8	8	10	1700	13600	17000	1	2	1700	3400
501A	4	5	7	630	3150	4410	1	2	630	1260
501B	6	5	7	630	3150	4410	1	2	630	1260
501C	8	8	10	630	5040	6300	1	2	630	1260
502A	4	5	7	1220	6100	8540	1	2	1220	2440
502B	6	5	7	1220	6100	8540	1	2	1220	2440
502C	8	8	10	1220	9760	12200	1	2	1220	2440
503A	4	5	7	1810	9050	12670	1	2	1810	3620
503B	6	5	7	1810	9050	12670	1	2	1810	3620
503C	8	8	10	1810	14480	18100	1	2	1810	3620
504A	4	5	7	2400	12000	16800	1	2	2400	4800
504B	6	5	7	2400	12000	16800	1	2	2400	4800
504C	8	8	10	2400	19200	24000	1	2	2400	4800



Blow-through CCB

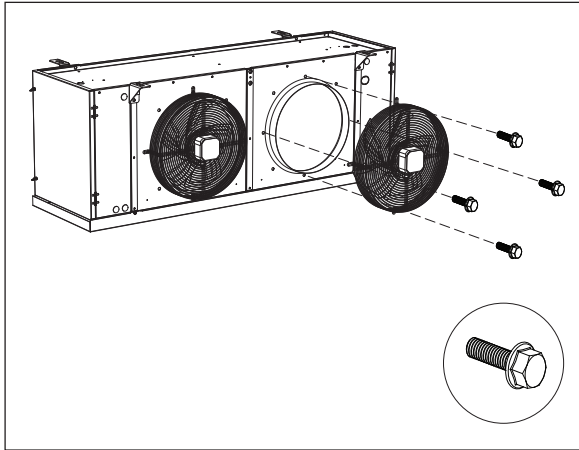
Model	Tube rows	Coil defrost					Drip tray defrost			
		heater elements no.		power per heater W	total power W		heater elements no.		total power W	
		std	heavy		std	heavy	std	heavy	std	heavy
301A	4	2	-	420	840	-	1	-	420	-
301B	6	2	-	420	840	-	1	-	420	-
301C	8	4	-	420	1680	-	1	-	420	-
302A	4	2	-	760	1520	-	1	-	760	-
302B	6	2	-	760	1520	-	1	-	760	-
302C	8	4	-	760	3040	-	1	-	760	-
303A	4	2	-	1120	2240	-	1	-	1120	-
303B	6	2	-	1120	2240	-	1	-	1120	-
303C	8	4	-	1120	4480	-	1	-	1120	-
304A	4	2	-	1470	2940	-	1	-	1470	-
304B	6	2	-	1470	2940	-	1	-	1470	-
351A	4	4	-	460	1840	-	1	-	460	-
351B	6	4	-	460	1840	-	1	-	460	-
351C	8	5	-	460	2300	-	1	-	460	-
352A	4	4	-	880	3520	-	1	-	880	-
352B	6	4	-	880	3520	-	1	-	880	-
352C	8	5	-	880	4400	-	1	-	880	-
353A	4	4	-	1290	5160	-	1	-	1290	-
353B	6	4	-	1290	5160	-	1	-	1290	-
353C	8	5	-	1290	6450	-	1	-	1290	-
354A	4	4	-	1700	6800	-	1	-	1700	-
354B	6	4	-	1700	6800	-	1	-	1700	-
354C	8	5	-	1700	8500	-	1	-	1700	-
401A	4	5	7	460	2300	3220	1	2	460	920
401B	6	5	7	460	2300	3220	1	2	460	920
401C	8	8	10	460	3680	4600	1	2	460	920
402A	4	5	7	880	4400	6160	1	2	880	1760
402B	6	5	7	880	4400	6160	1	2	880	1760
402C	8	8	10	880	7040	8800	1	2	880	1760
403A	4	5	7	1290	6450	9030	1	2	1290	2580
403B	6	5	7	1290	6450	9030	1	2	1290	2580
403C	8	8	10	1290	10320	12900	1	2	1290	2580
404A	4	5	7	1700	8500	11900	1	2	1700	3400
404B	6	5	7	1700	8500	11900	1	2	1700	3400
404C	8	8	10	1700	13600	17000	1	2	1700	3400
501A	4	5	7	630	3150	4410	1	2	630	1260
501B	6	5	7	630	3150	4410	1	2	630	1260
501C	8	8	10	630	5040	6300	1	2	630	1260
502A	4	5	7	1220	6100	8540	1	2	1220	1440
502B	6	5	7	1220	6100	8540	1	2	1220	1440
502C	8	8	10	1220	9760	12200	1	2	1220	1440
503A	4	5	7	1810	9050	12670	1	2	1810	3620
503B	6	5	7	1810	9050	12670	1	2	1810	3620
503C	8	8	10	1810	14480	18100	1	2	1810	3620
504A	4	5	7	2400	12000	16800	1	2	2400	4800
504B	6	5	7	2400	12000	16800	1	2	2400	4800
504C	8	8	10	2400	19200	24000	1	2	2400	4800



6 Maintenance

Ensure complete electrical isolation before performing any maintenance activity and always follow guidelines and instructions as given in the air cooler product manual AHE00042.

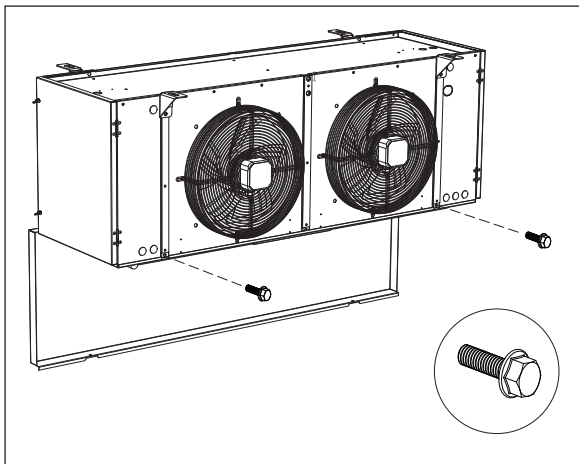
6.1 Fan replacement



Unscrew fixing bolts and remove old fan. Mount new fan in identical position. Cable glands must be positioned downwards. Use an anti-corrosion compound when remounting the fixing bolts.

Restore electric connection when the new fan has been mounted.

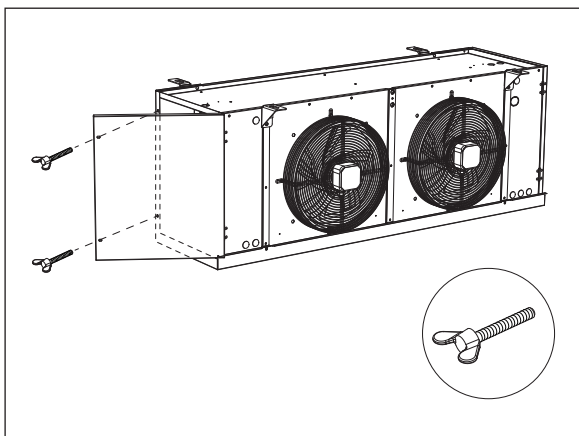
6.2 Drip tray



The drip tray can be opened for inspection, cleaning and maintenance purposes. Always disconnect drain line before opening the drip tray. To open tray, first loosen and remove fixing bolts and then lower drip tray.

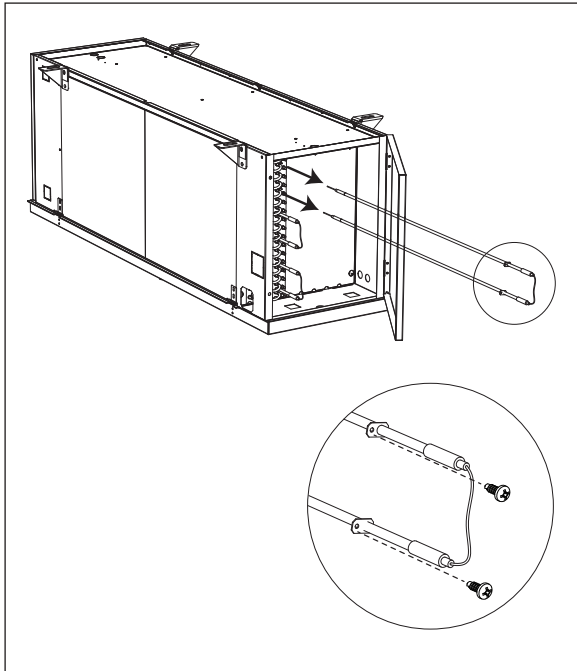
Respect the maximum opening angle (90°) to avoid damage to the drip tray hinges.

6.3 Side covers



Hinged side covers can be opened for inspection, cleaning and maintenance purposes. To open side covers, loosen fixing bolts.

6.4 Coil heater elements replacement

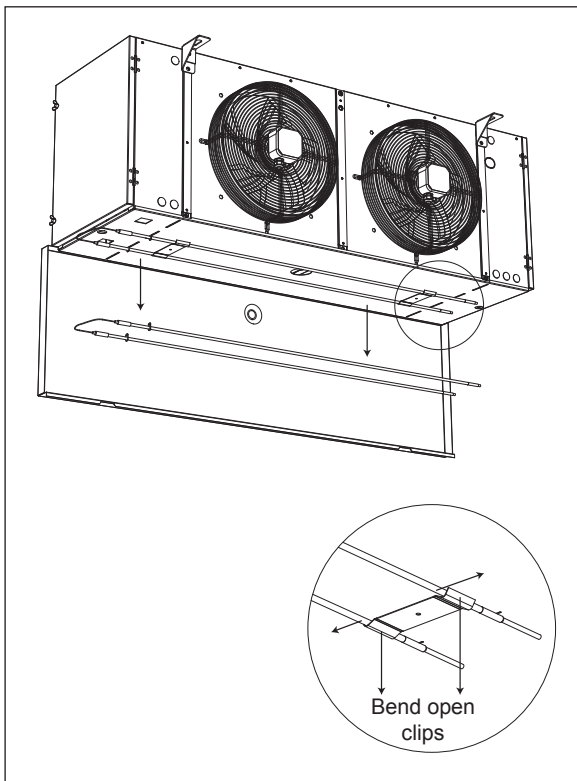


Always disconnect power supply before handling heater elements.

To remove coil heater elements, open side covers on both sides. Disconnect heater element from connection box. On the opposite cooler side, remove fixing screws and extract element from coil.

Mount new element in reverse order. Restore electrical connections and close side covers.

6.5 Drip tray heater elements replacement

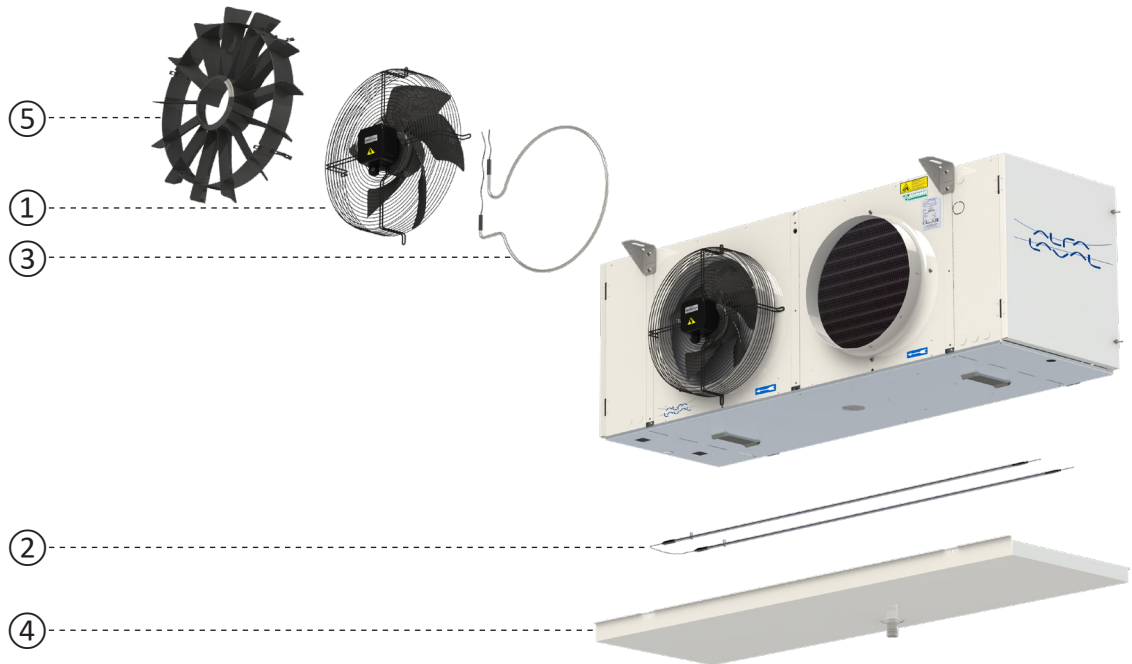


Always disconnect power supply before handling heater elements.

To remove drip tray heater elements, open side cover on connection box side and disconnect heater element. Open drip tray. Disconnect heater element and remove element from bottom plate while slightly bending open the fixing clips.

Mount new element in reverse order. Close drip tray and restore electrical connections. Close side cover.

7 Spare parts



Spare parts Optigo CC

- | | |
|---|---|
| 1 | Fan motors |
| 2 | Electrical defrost heaters (coil & drip tray heater identical) |
| 2 | Electrical defrost kits (heaters, conn. box & fixing materials) |
| 3 | Fan ring heaters |
| 3 | Fan ring heater kits (heaters, connection box & fixing materials) |
| 4 | Drip tray |
| 5 | Air streamer (draw-through models only) |

Spare parts can be selected and ordered in the online eBusiness tool Alfa Laval Anytime. If required please contact your local Alfa Laval Representative for assistance.



Alfa Laval Anytime



www.alfalaval.com