Optigo FMD

Instruction manual

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

ORIGINAL INSTRUCTIONS

31114051EN 2010

Index

1 Important information

1.1 Disclaimer

This Instruction Manual applies to all Optigo FMD air cooler products and is supplied in combination with the Air Cooler Product Manual AHE00042. Both manuals must be carefully examined and instructions should be followed up at all times. Alfa LU-VE 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 alfa.luvegroup.com. The product is built according to the following standards:

- PED 2014/68/EU
- Safety of Machinery EN 60204-1
- Directive 2014/30/EC and subsequent modifications. Electromagnetic compatibility.
- Low Voltage - Reference Directive 2014/35/EC

However it is forbidden to operate our equipment before the machine incorporating the products or making part thereof has been declared to be in conformity with the EC Machine Directive.

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 LU-VE air heat exchanger products is available on-line on alfa.luvegroup.com. This includes:

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

alfa.luvegroup.com/fmd

Alfa LU-VE offers world-wide service and support. In case of any questions or uncertainty please contact your local Alfa LU-VE representative. Contact addresses are available at alfa.luvegroup.com.

2 Product description

2.1 General information and application

Optigo FMD are commercial dual discharge air coolers for general application in small to medium-sized cooling, freezing and working rooms. Low air velocity and noise level make them especially suitable for refrigerated working and processing rooms.

- Refrigerants: HFC* (FMDE), CO_2 (FMDX) and brine (FMDW)
- Air inlet temperature: -25 to +30 °C
- Fluid inlet temperature: -40 to +20 °C

Model	Refrigerant	Max working pressure
FMDE	HFC*	24 bar
FMDX	CO_2	60 bar**
FMDW	Brine	24 bar

* Fluid group 2 according to EN 378
** 85 bar in special execution

2.2 Standard configuration

- Innovative coil manufactured from internally grooved Cu tubes and aluminium fins.
- Optigo FMD coolers are available with 1 to 4 fans. All models are standard fitted with EC fan motors. Integrated thermo contacts.
- Durable aluminium alloy metallic casing, epoxy coated RAL 9003. Hinged driptray. Dismountable and openable casing for cleaning purposes.
- Vertical plastic drain connection.
- Fan motors wired to connection box.
- Fitted with schräder valve on the suction connection for testing purposes (only for FMDE and FMDX units).
- Delivered on a wooden pallet, either covered with a reinforced cardboard box or a wooden crate.

2.3 Options

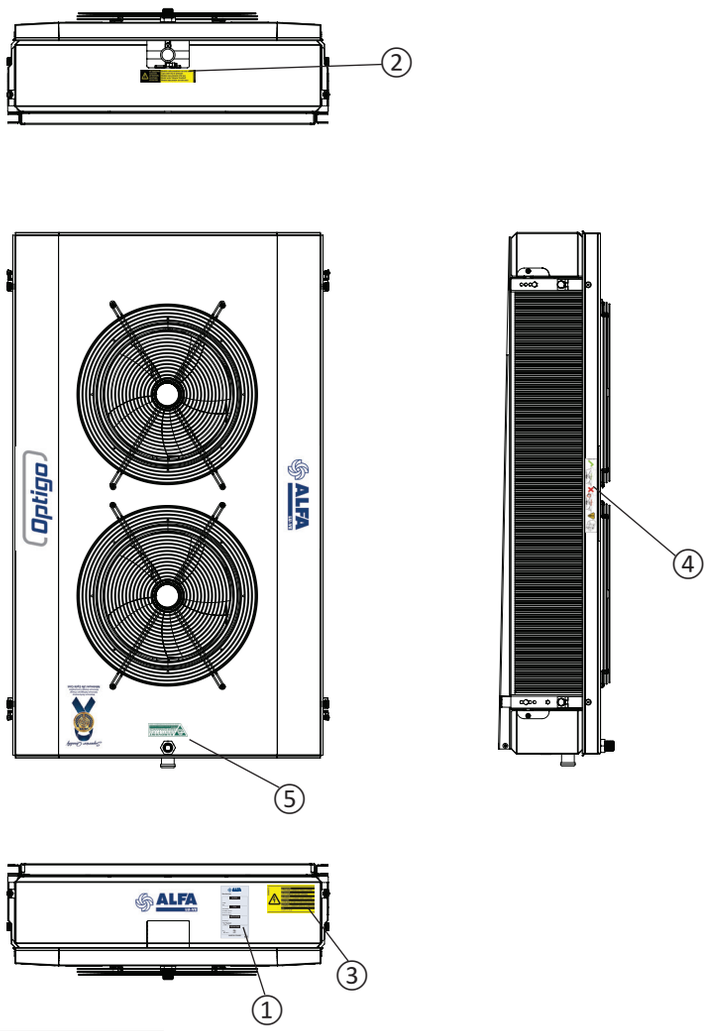
- Electric defrost (E)
  For cold rooms with room temperatures below 4 °C frost build-up is likely, the application of a defrosting system is recommended. The stainless steel defrost elements are connected to dedicated terminal box.
- Coil protection: pre-coated aluminium fins (AP)
- Horizontal metalic drain connection
- Stainless steel tubes (AISI 304)
- Re-heating coil (RH) - on request
- Water drain pump - on request

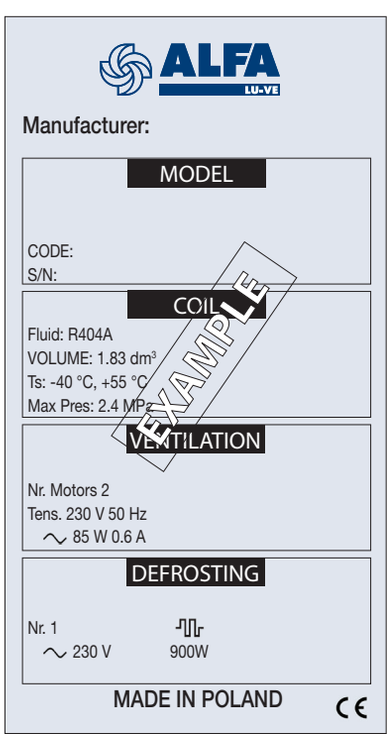
2.4 Code description

FMD	E	-	2	2	1	3	-	BP	-	N	-	AL	CU	*	-	*	*
1	2		3	4	5	6		7		8		9	10	11		12	13

1 Optigo FMD dual discharge commercial air cooler
2 Refrigerant system (E=HFC, X=CO_2, W=brine)
3 Casing type (1 to 4)
4 Number of fans (1 to 4)
5 Coil type (1, 2)
6 Fin spacing (3=3.0, 4=4.5, 7=7.0 mm)
7 Packing (BP=box + pallet, CR=crate)
8 Defrost system (N=air defrost, E=electric defrost)
9 Fin material (AL=aluminium, AP=pre-painted aluminium)
10 Tube material (CU=copper)
11 Circuits code - only for brine and CO_2 units
12 Applications - only for CO_2 units (blank=DX 60 bar design pressure, P=pumped 60 bar, 85=DX 85 bar design pressure)
13 Options

3 Product labels

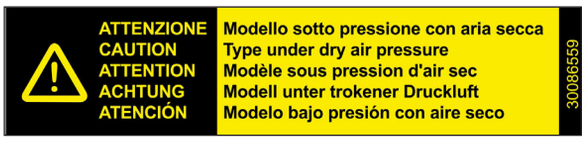




1. Product label

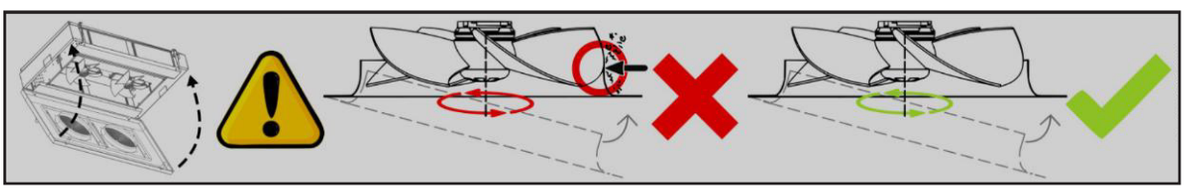
This label is positioned inside the casing.

Model	Refer to paragraph "2.4 Code description"
S/N	Communicate these when ordering spare parts as they identify the unit.
Fluid	Refrigerant
Volume	Coil Volume
Ts	Range of operating temperatures for the coil
Max Pres	Max working pressure
Nr Motors	Number of fans



2. Precharge warning
Only for FMDE and FMDX units.
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.

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



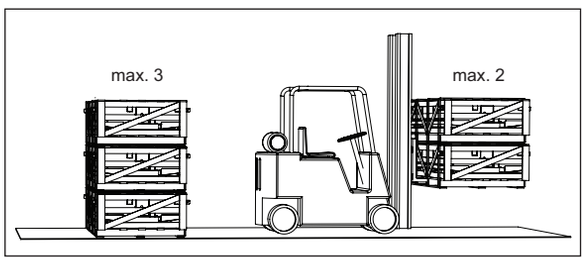
4. Close carefully
When opening/closing the driptray, pay attention in order to avoid interference between impellers and fan collars.

5. Eurovent
All FMDE models are **EUROVENT** certified.
Certified data:
• Capacities (ENV 327)
• Air quantities
• Motor power consumption
• External surfaces

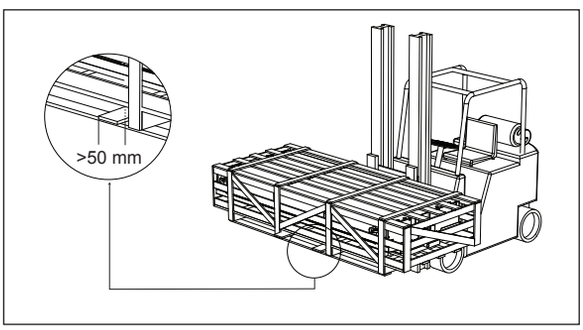
4 Unpacking and lifting

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

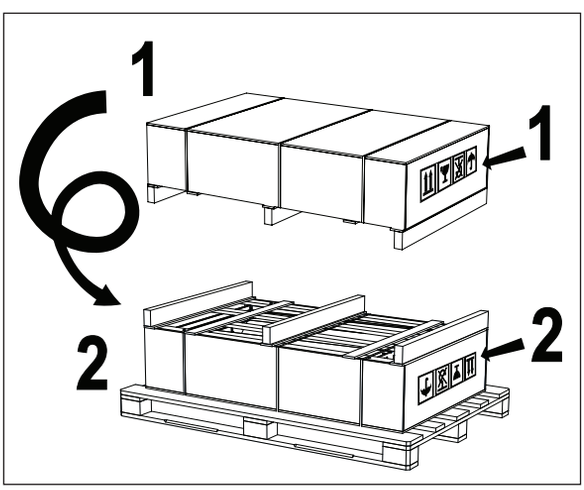
Optigo FMD air coolers are delivered on a wooden pallet, either covered with a reinforced cardboard box or a wooden crate. Handling and positioning can take place manually (smaller models) or with use of a forklift.



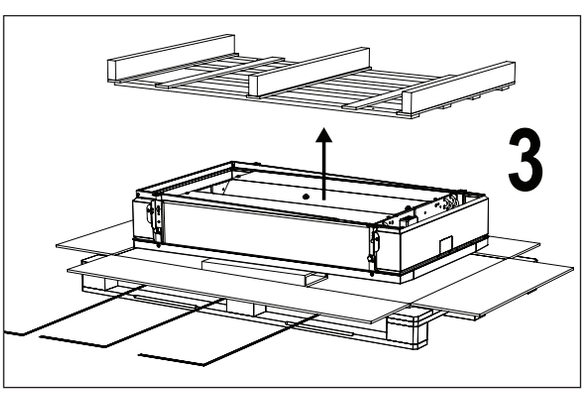
Packed air coolers may be stacked during transportation (max. 2) and storage (max. 3). Respect the maximum number of stacked air cooler units.



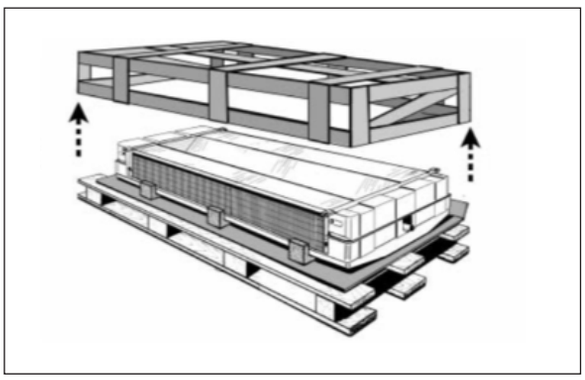
In order to avoid damage to the air cooler or falling of the unit, ensure that the lifting forks cover all beams from the lower support pallet.



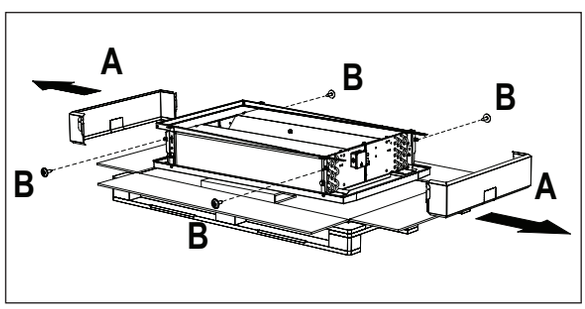
Casing type 1 and 2 models packed with **cardboard box** must be turned. Place the unit on the ground and manually turn the air cooler into mounting position on a second wooden pallet. Keep the packaging material in place to prevent the drip trays from damaging.



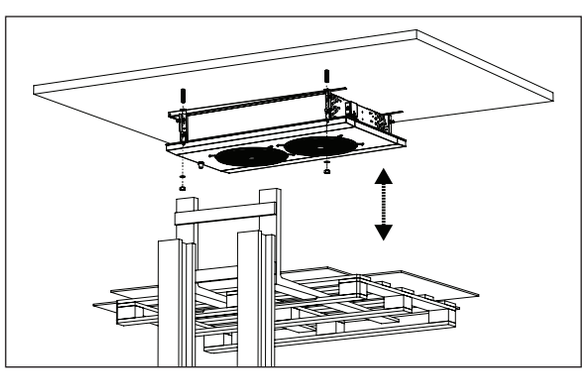
Remove the original support pallet (now on top) and flatten the cardboard sides. The cooler is now in mounting position.



Casing type 3 and 4 models packed with **crate** are supplied in mounting position. Prior to lifting and mounting, the top crate panel must be removed.



Remove side covers (A) by loosening screws (B).
Remove the transparent protection film from painted metallic parts, if present.



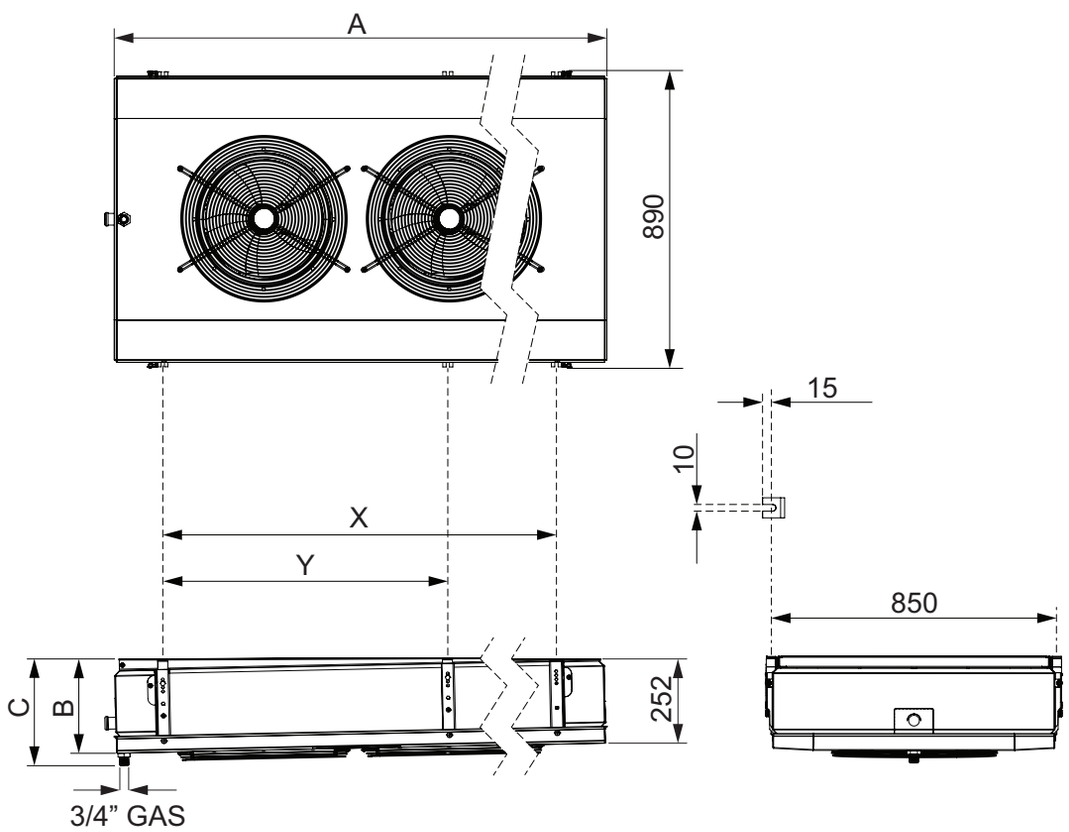
Lift the unit to mounting position and secure following instructions given in chapter "5 Installation". After having secured the cooler, the forks may be lowered and the remaining packaging materials can be removed.

5 Installation

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

5.1 Mounting dimensions

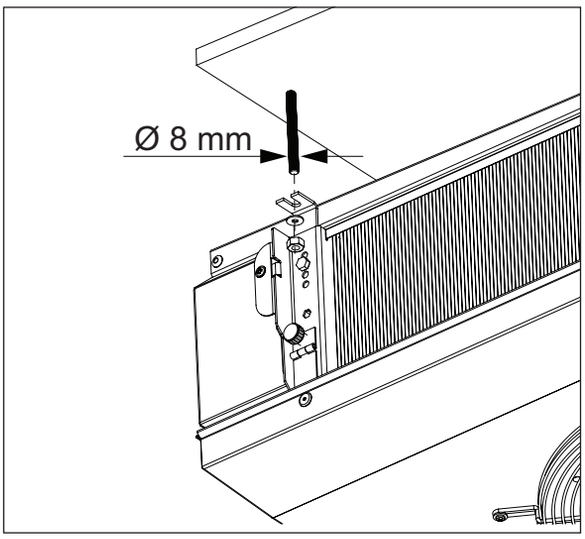
Casing type	Dimensions (mm)				
	A	B	C	X	Y
1	892	269	307	596	-
2	1447	281	319	1151	-
3	2002	293	331	1706	853
4	2557	293	331	2261	1130



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

Dimensional drawings

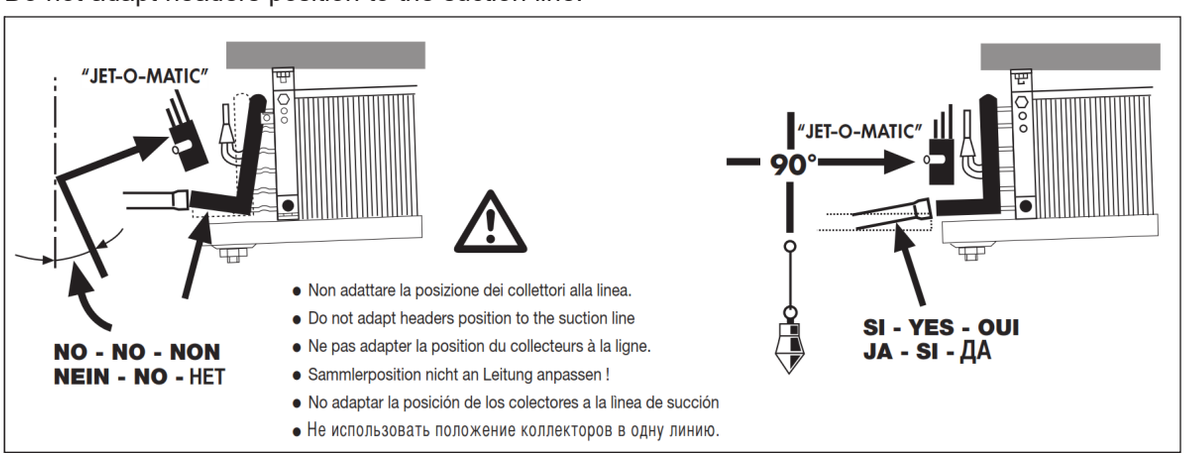
5.2 Mounting bracket

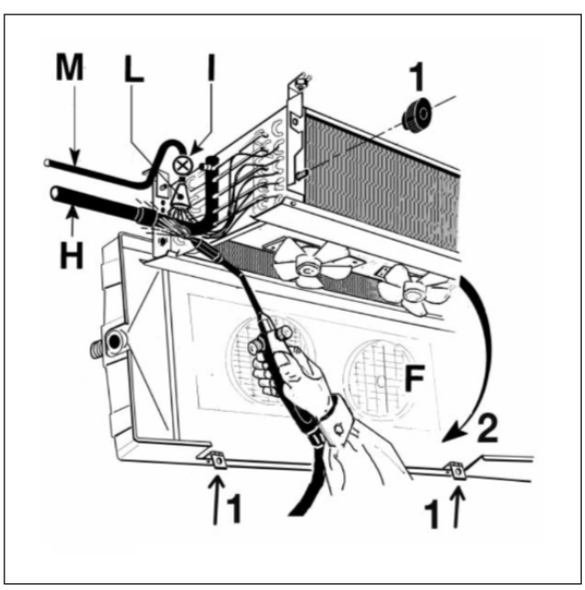


Use suitable studs when mounting the unit to the ceiling.
Fix the unit to cold room ceiling by securely tightening nuts and washers.

5.3 Refrigerant connections

Do not adapt headers position to the suction line.

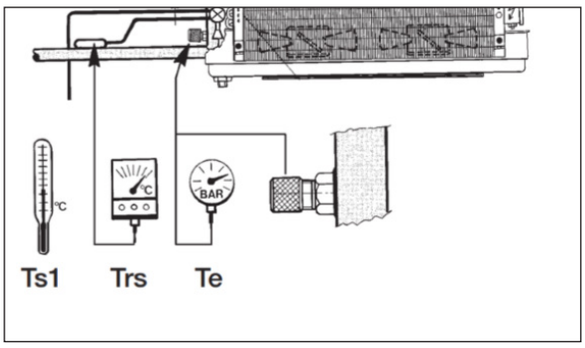




Ensure the supply circuit is closed (no pressure) before connecting the sunction lines.
Remove the fixing material (1) and open (2) the driptray (F). Connect the suction line (H), the thermostatic valve (I) to distributor (L) and the liquid line (M).

Ensure the flame nozzle is not aimed at the equipment, when welding. Insert a protection shield if required.

5.4 Pressure test

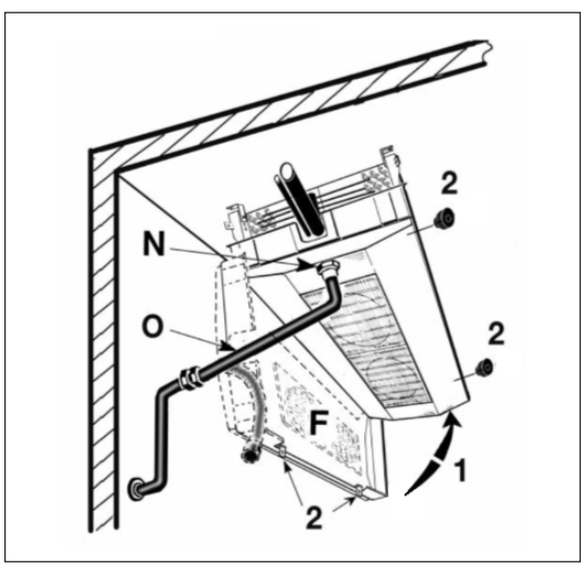


Ts1=cold room air inlet temperature.
Te=evaporating temperature. It is related to the refrigerant pressure on the unit cooler outlet.
Trs=refrigerant superheat temperature, on suction line near thermostatic valve bulb.
(Trs-Te)=superheat

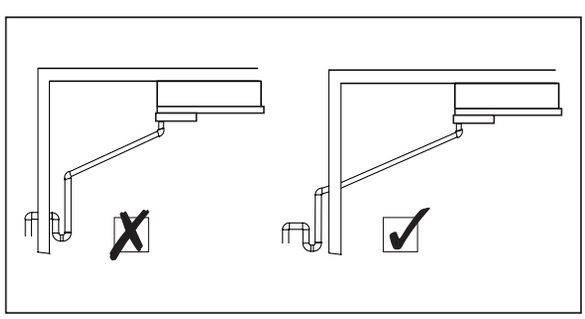
(Trs-Te) ≤ 0.7 x (Ts1-Te)

Keep the superheat as low as possible to obtain maximum unit cooler performance.
The thermostatic valve fitted must be correctly sized for the installation conditions and adjusted for correct system operation.

5.5 Drain line

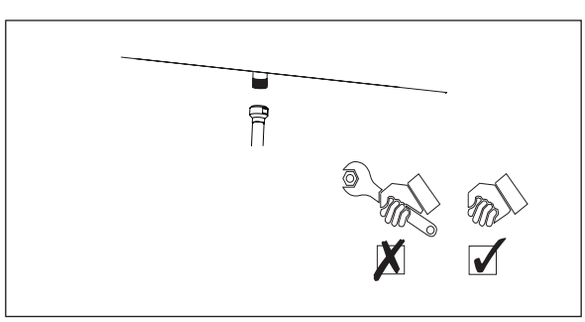


Close the driptray and connect the drain tubing (O) to the drain connection (N).



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 syphon must be installed on the drain line, outside the cold room.



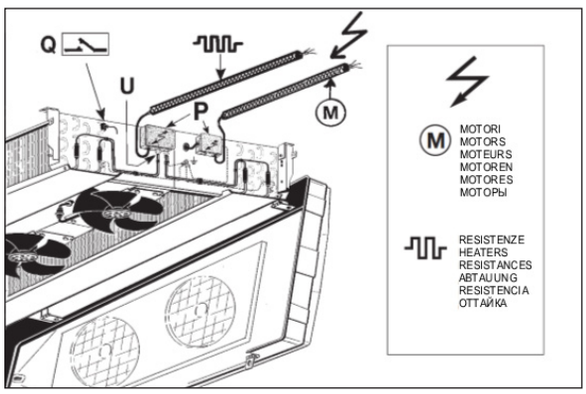
Tighten drain connection by hand only.

5.6 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

When in doubt always contact your local supplier or Alfa LU-VE representative for assistance.



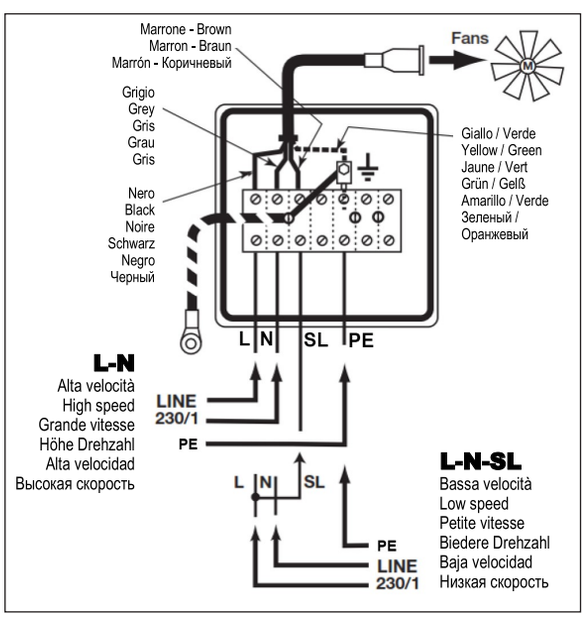
Remove the terminal block cover (P).
Insert the cables into the grommet (U) and block them with their respective gland. Connect terminals by following the wiring diagrams on the cover. When all connections are made refit the terminal block cover.

For systems using electrical/hot gas defrost, a defrost termination thermostat should be used, having a range of 10 °C to 20 °C with a sensor attached to the top return bends of the coil block or buried in the top of the coil block fins (Q).

Differential protections and circuit breakers are not included in the scope of supply.

5.7 Fan motors connections

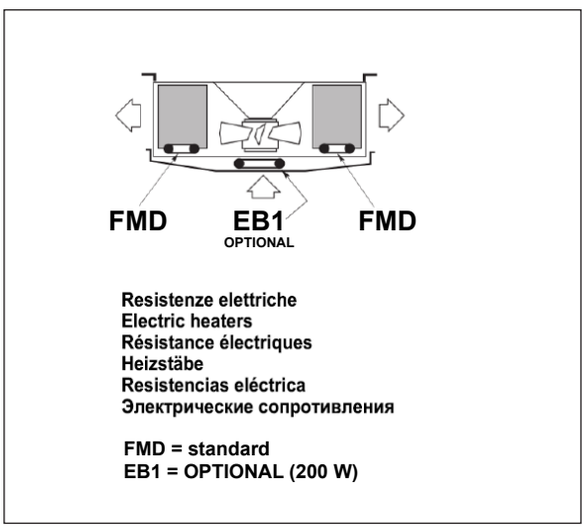
Ensure complete electrical isolation before performing any wiring.

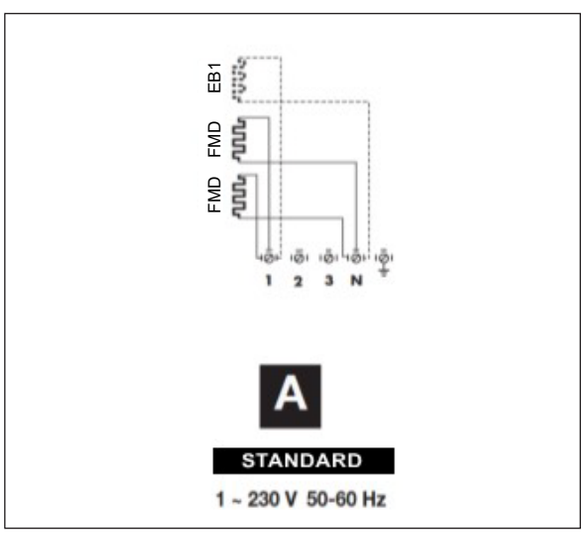


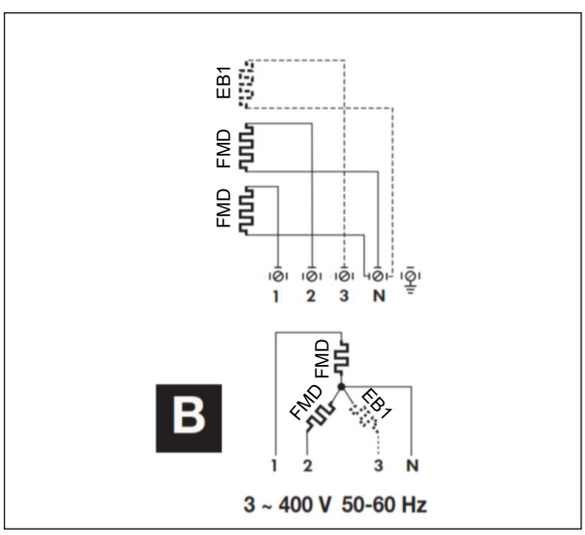
Standard connection box wiring

	Motor power consumption (x1)	
Speed	H = High Speed (1100 RPM)	L = Low Speed (900 RPM)
1~230 V - 50 Hz	85 W 0.7 A	42 W 0.4 A

5.8 Electric defrost connections





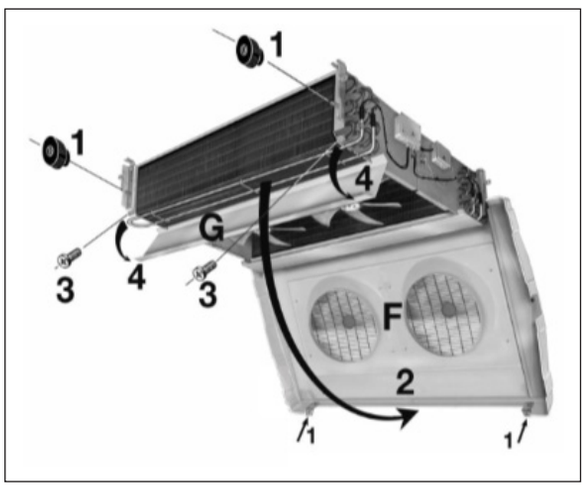


Casing type	Electric heaters		
	no.	W (x1)	W tot
1	2	900	1800
2	2	1600	3200
3	2	2350	4700
4	2	3100	6200

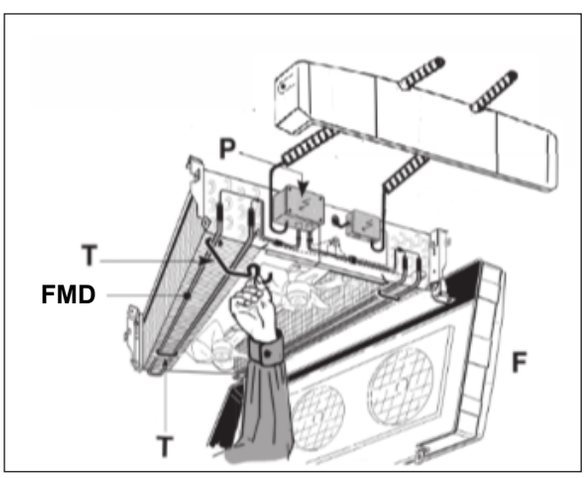
6 Maintenance

Ensure complete electrical isolation before performing any maintenance activity and always follow guidelines and instructions as given in the air cooler product manual AHE00042.
When opening/closing the driptray, pay attention in order to avoid interference between impellers and fan collars.

6.1 Driptray heater elements replacement

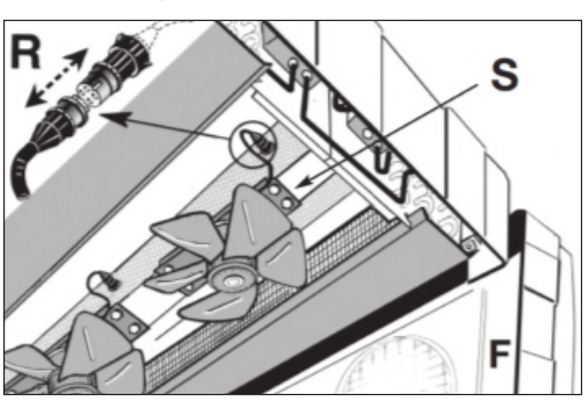


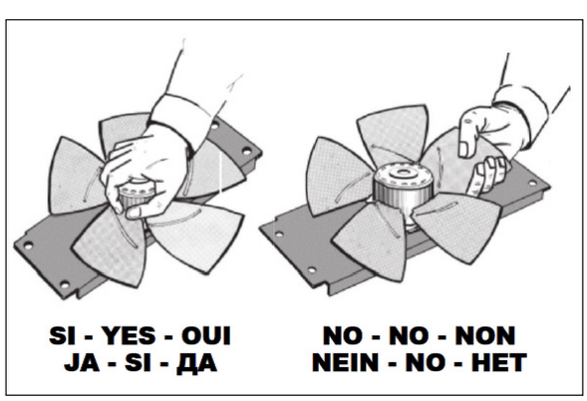
Always disconnect power supply before handling heater elements.
Disconnect drain line. Remove fixing bolts and open the driptray (F) and the bottom plate (G).



Open side covers. Remove fixing clips (T), disconnect heater elements from connection box (P) and extract elements (FMD).
Mount new elements in reverse order, close side covers and restore electrical connections.

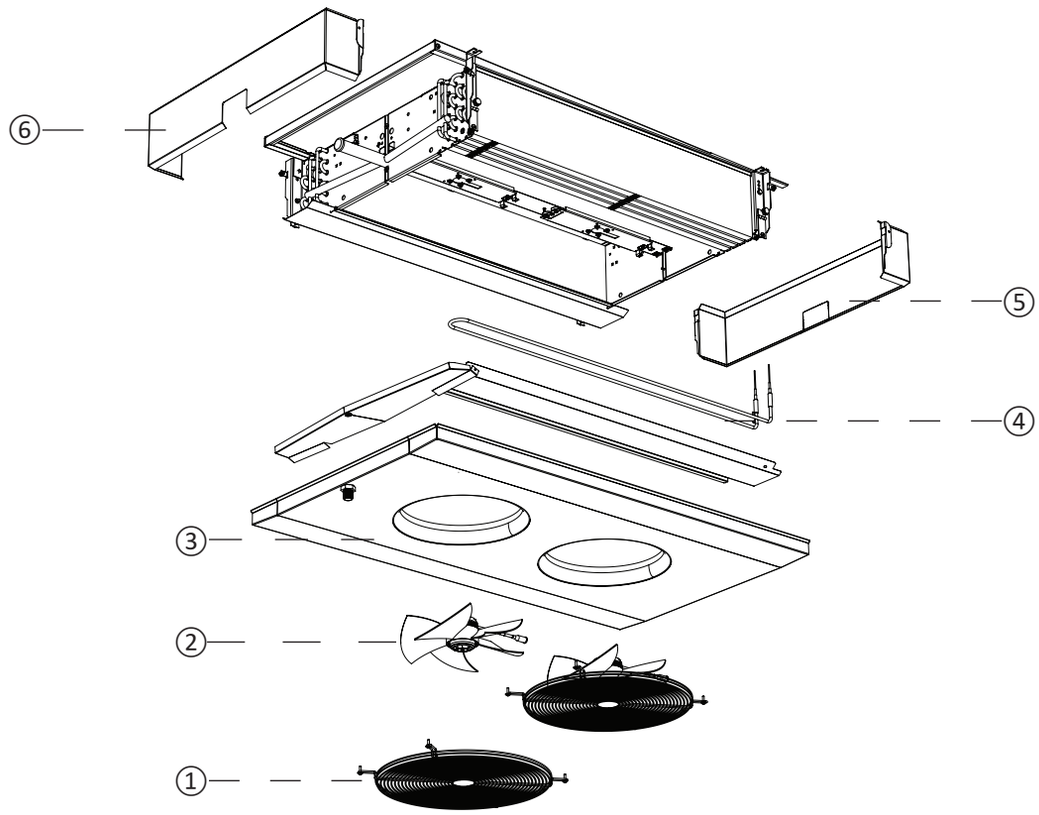
6.2 Fan replacement





Open the driptray. Disconnect the electric supply (R). Unscrew fixing bolts and remove old fan.
Mount new fan in identical position. Use an anti-corrosion compound when remounting the fixing bolts.

7 Spare parts



Spare parts Optigo FMD	
1	Fan guard
2	Fan motor
3	Drain tray kit
4	Electrical heater
5	Side cover - hairpins side
6	Side cover - connections side
7	Drain line electrical heater (optional, not shown)

Contact your local Alfa LU-VE representative for spare parts order and assistance.

alfa.luvegroup.com