



# Arctigo ISD

Industrial air coolers single discharge

## Instruction manual

Product description	_____
Product labels	_____
Unpacking and lifting	_____
Installation	_____
Maintenance	_____
Spare parts	_____

ORIGINAL INSTRUCTIONS

31466441EN-10



## Index

<b>1</b>	<b>Important information .....</b>	<b>3</b>
1.1	Disclaimer.....	3
1.2	Intended use .....	3
1.3	Where to find product information .....	3
<b>2</b>	<b>Product description .....</b>	<b>4</b>
2.1	General information and application.....	4
2.2	Standard configuration .....	4
2.3	Options.....	4
2.4	Code description .....	5
<b>3</b>	<b>Product labels.....</b>	<b>6</b>
<b>4</b>	<b>Unpacking and lifting.....</b>	<b>10</b>
4.1	Standard unit.....	10
4.2	Unit with mounting feet (optional).....	12
4.3	Lifting from above.....	13
<b>5</b>	<b>Installation .....</b>	<b>13</b>
5.1	Assembly.....	13
5.2	Mounting dimensions .....	14
5.3	Mounting bracket.....	18
5.4	Technical spaces .....	18
5.5	Drain line .....	19
5.6	Electrical connections.....	19
5.7	Fan motor connection example, 3 ph AC fans .....	20
5.8	Fan motor connection example, 3 ph EC fans .....	20
5.9	Electric defrost.....	21
5.10	Hot gas defrost .....	22
5.11	Hot glycol connection .....	25
5.12	Suction hoods mounting (optional).....	26
<b>6</b>	<b>Maintenance.....</b>	<b>27</b>
6.1	Fan replacement .....	27
6.2	Drain tray .....	27
6.3	Side covers.....	29
6.4	Coil defrost heater elements replacement (optional).....	29
6.5	Drain tray heater elements replacement (optional) .....	29
6.6	Shut up sock mounting (optional).....	30
<b>7</b>	<b>Spare parts.....</b>	<b>31</b>

# 1 Important information



## 1.1 Disclaimer

This Instruction Manual applies to all Arctigo ISD industrial air cooler products and is supplied in combination with the Air Cooler Product Manual. 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 failure to comply with or incomplete compliance with 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 (EU market) - The Supply of Machinery (Safety) Regulations 2008 (UK market) and are intended for incorporation in cooling systems. Declarations of Incorporation are available on [alfa.luvegroup.com](http://alfa.luvegroup.com).

The product is built according to the following standards and directives:

EU market	UK market
2014/68/EU Pressure Equipment Directive (PED)	Pressure Equipment (Safety) Regulations 2016 (PER)
EN 60204-1 Safety of Machinery - Electrical equipment of machines	The Electrical Equipment (Safety) Regulations 2016
2014/30/EU Electromagnetic Compatibility Directive	Electromagnetic Compatibility Regulations 2016
2014/35/EU Low Voltage Directive	The Electrical Equipment (Safety) Regulations 2016
Any applicable local or national legislation	

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 Machine Directive 2006/42/EC (EU market) or the Supply of Machinery (Safety) Regulations 2008 (UK market). The heat exchanger shall be installed in conformance with the recognized national standards of electrical and refrigeration installation practice. It is not permitted to use the heat exchanger for any purpose other than the one it was designed for by Alfa LU-VE..

## 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](http://alfa.luvegroup.com). This includes:

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



Arctigo ISD

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](http://alfa.luvegroup.com).

## 2 Product description

### 2.1 General information and application

Arctigo ISD is a wide and flexible range of single discharge industrial air coolers for both cooling and freezing applications in medium to large cold rooms. This industrial air cooler line has been designed using the Helpman® heritage, to keep fresh and frozen goods refrigerated from +10 to -40 °C, with either high or low humidity content.

The Arctigo range offers a wide variety of cooler configurations and a long list of options, always allowing to select the best model to suit all applications in industrial refrigeration installations.

Arctigo air cooler models are available for dedicated applications such as agricultural storage, air-sock application or shock cooling.

- Refrigerants: HFC, ammonia, brine, CO<sub>2</sub>
- Capacity range (SC2): 3 up to 240 kW
- Air volume: 3,000 up to 130,000 m<sup>3</sup>/h

Refrigerant application	Design pressure
HFC	33 bar
Ammonia	30 bar
CO <sub>2</sub>	33-40-60-80 bar
Brine	10 bar

### 2.2 Standard configuration

- Finned coil:
  - 10 coil block modules
  - 3, 4, 6, 8 or 10 tube rows deep
  - Tubing ø 5/8" ripple Cu or smooth Cu tubing for brine or smooth stainless steel; ø 3/8" Cu for CO<sub>2</sub>
  - Tube pitch 50 mm square
  - Corrugated Alu-fins
  - Fin spacings 4, 5, 6, 7, 8, 10 and 12 mm
- 1 to 6 Fans, ø 400 mm up to ø 910 mm, drawing trough the coil. Power supply 400/50-60/3 or 230/50-6-1 (ø 400 and 450 mm), two noise levels (Δ/Y connections).  
AC/EC fan motors with dynamically and statically balanced external rotors, manufactured in accordance with VDE 530/12.84 IP54 class F. Integrated thermo contacts (Clickson) provide reliable protection against thermal overload.
- Corrosion resistant materials: coil frame and casing pre-galvanized sheet steel, epoxy coated RAL 9003. All fixing materials stainless steel.
- Hinged side panels and drain tray, drain(s) 1½" BSP external
- Fitted with schröder valve on the suction connection for testing purposes.
- Refrigerant connections right or left (L=default).
- Sufficient room for fitting the expansion valve inside.
- Suitable for dry expansion or pumped system.
- Stickers indicate fan direction and refrigerant in/out.



### 2.3 Options

- Connection box (CB)
- Connection box with single switch for all fans (CB1)
- Shut up sock (S)
- Sock Ring (SR)
- Electric defrost systems:
  - Electric defrost in drain tray + hot gas in coil (E1)
  - Electric defrost heavy (E2)





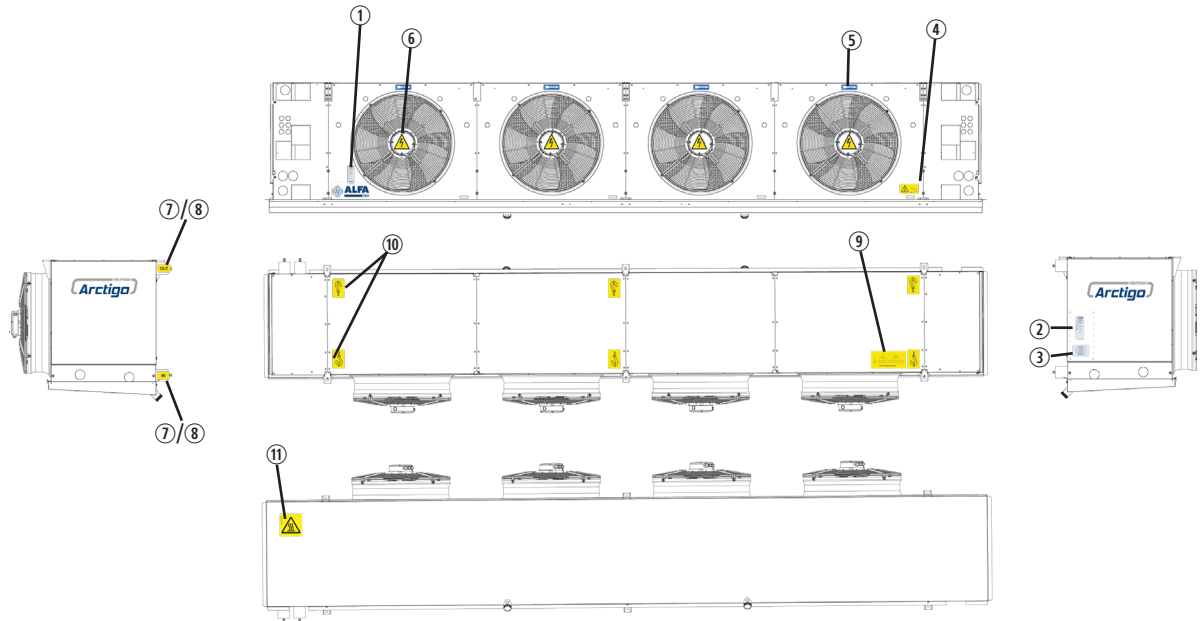
- Electric defrost light (E4)
- Hotgas defrost systems:
  - Hotgas defrost (HG)
  - Hotgas defrost, connected (HGC)
- Hot glycol circuit defrost (HW) - copper tubes
- Stainless steel casing and coil frame (SSC). Standard materials for underplate (aluminium) and fan grid (black painted steel).
- Alternative fin materials (SWR / EP)
- Dual fin spacing (DF) - on request
- On/off switch (SW)
- Motorized defrost damper - application temperature down to -30 °C
- Threaded connections (T) - for brine models
- Top connections (AVA) - for brine models
- Flanges for copper tubes models or stainless steel tubes models (F) - for brine models
- Fan casing 90° (FC1)
- Fan casing 45° (FC2)
- Suction hood 90° (H1)
- Suction hood 45° (H2)
- Insulated suction hood 90° (IH1)
- Insulated suction hood 45° (IH2)
- Hinged fan ring (HF)
- Insulated drain tray (I2)
- Mounting feet (MF)
- Fan ring heater (FRH)
- Streamer (ST) - not available for 400 and 910 mm fan units


## 2.4 Code description

IS	D	71	1	-	20	*	S	A	C	E	A	33	AL	7	-	AB	5	4	-	AB	D	-	L	FRH
1	2	3	4		5	6	7	8	9	10	11	12	13	14		15	16	17		18	19		20	21

- 1 Arctigo industrial air cooler single discharge
- 2 Air direction (D=draw-through)
- 3 Fan diameter (40=400, 45=450, 50=500, 63=630, 71=710, 80=800, 91=910 mm)
- 4 Number of fans (1 to 6)
- 5 Tubes per row
- 6 Geometry (blank=default, -2=ø 3/8" tube for CO<sub>2</sub> application)
- 7 Coil module (blank=standard coil module, S=short coil module)
- 8 Tube rows code (A=3, B=4, C=6, D=8, E=10)
- 9 Tube material (C=copper, S=stainless steel)
- 10 Application (E=direct expansion, PB=pumped bottom feed, PT=pumped top feed, blank for brine units)
- 11 Refrigerant system (H=HFC, A=ammonia, W=brine, X=CO<sub>2</sub>)
- 12 Maximum working pressure
- 13 Fin material (AL=aluminium, EP=precoated aluminium, SWR=sea water resistant aluminium)
- 14 Fin spacing (4=4.0, 5=5.0, 6=6.0, 7=7.0, 8=8.0, 0=10, 2=12 mm)
- 15 Number of circuits (2 digits)
- 16 Capillary diameter (1 digit: for brine and pump there is X, for DX there is 4, 5 or 6)
- 17 Orifice diameter (mm)
- 18 Fan motor code (2 digits)
- 19 Fan digit (D or Y for AC 3ph, S for AC 1ph, E for EC)
- 20 Refrigerant connection side (L=left, R=right - fan side view)
- 21 Options

### 3 Product labels





**LU-VE GROUP**

Manufactured by  
AIR HEX ALONTE S.R.L.  
via delle Albere 5, 36045, Alonte(VI)

---

**HEAT EXCHANGER**

Model  
ISD632-166CEX80SR44M8YL

Code: ARCTIGO

Manuf. Date: 09-2021

Cust. Code:

Net Weight ±5%:  
387,198 Kg

PED CAT ART 4.3

Model

Product code

Weight

PED category

---

Max DN: 15

PS min/max: -1/60.0 bar

Ts: -60/125 °C

Fluid Group: 2

PT: 90 bar

Test Date: 09-2021

Fluid

Pt

Test date

---


**ELECTRICAL DATA**

Fan motors qty: 2

Power Supply: 400V/T/50

No. Motors

**EXAMPLE**

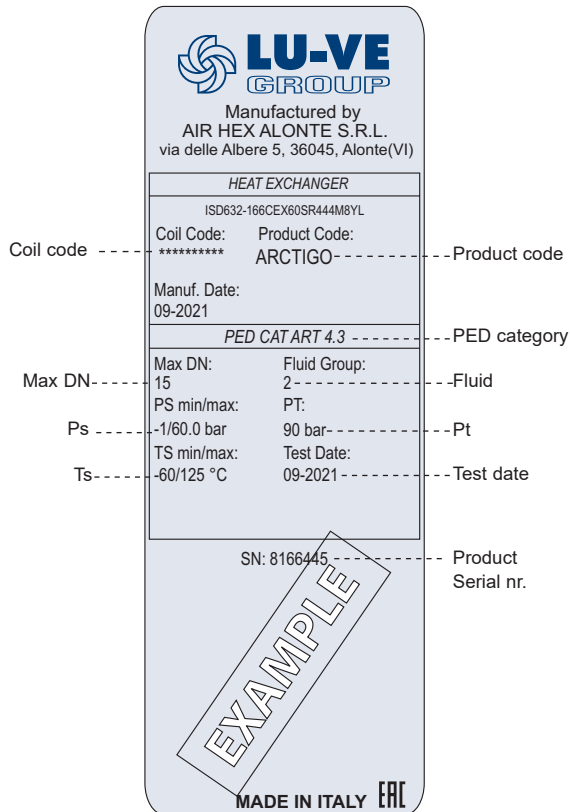


8166445

**MADE IN ITALY ERC**

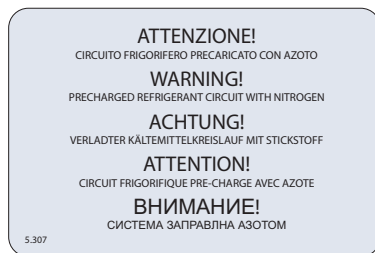
#### 1. Product label

Model	Refer to paragraph "2.4 Code description"
Product code	Communicate this when ordering spare parts as they identify the unit
Unit Net Weight	Check before any lifting operation to ensure that proper lifting tools are used
PED Category	According to PED
Max DN	Maximum diameter of the distributor tube
Fluid	Refrigerant
Ps	Design pressure
Pt	Test pressure
Coil Ts	Range of operating temperatures for the coil
Test date	Date on which the coil has been pressure tested in the factory
No Motors	Number of fans



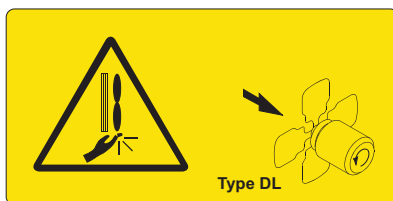
## 2. Product label - coil

Product code	Communicate these when ordering spare parts as they identify the unit
Product serial nr.	
PED Category	According to PED
Max DN	Maximum diameter of the distributor tube
Fluid	Refrigerant
Ps	Design pressure
Pt	Test pressure
Coil Ts	Range of operating temperatures for the coil
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. Warning sign for fans and fan type

Airflow direction:  
D= draw-through

Rotation direction:  
L= left

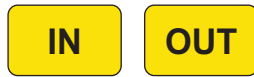


## 5. Fan rotation

Sticker indicates fan rotation direction.

## 6. Electrical warning

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

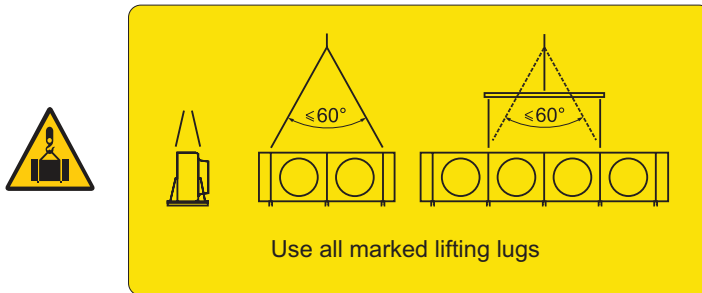


### 7/8. In/Out

Refrigerant connections inlet and outlet.  
Positioning according to the application.

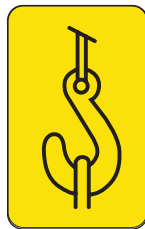
### 9. Lifting from above

Preferably use hoisting beams when lifting from above.



### 10. Lifting lug

Use all marked lifting lugs when lifting from above.



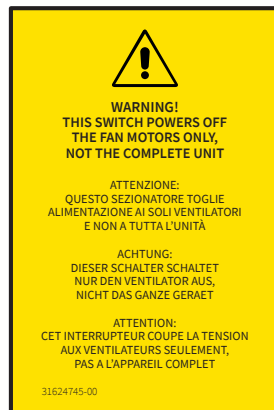
### 11. Hot surface

Danger of burns. Wear adequate protection.



### Fan motors switch off

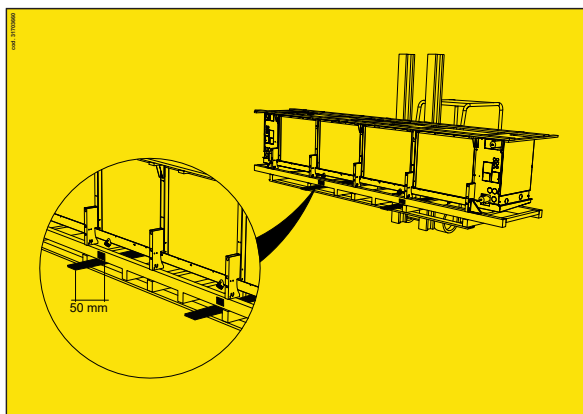
In case CB1 option is present, the sticker is applied on the connection box and indicates that this switch powers off the fan motors only, not the complete unit.



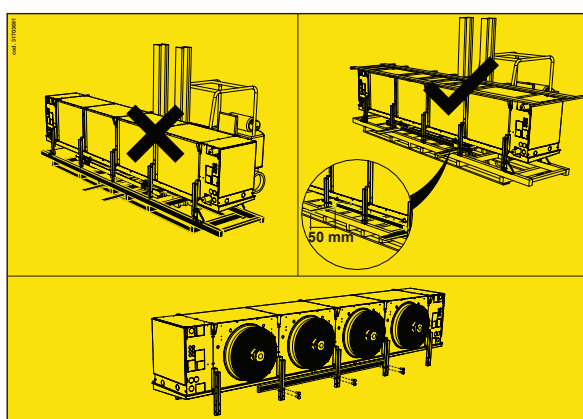
### Forklift

Sticker is applied on the pallet or on horizontal beam (MF option). Insert forks where indicated.





**Unit handling - standard unit**  
Sticker is applied on the packing.

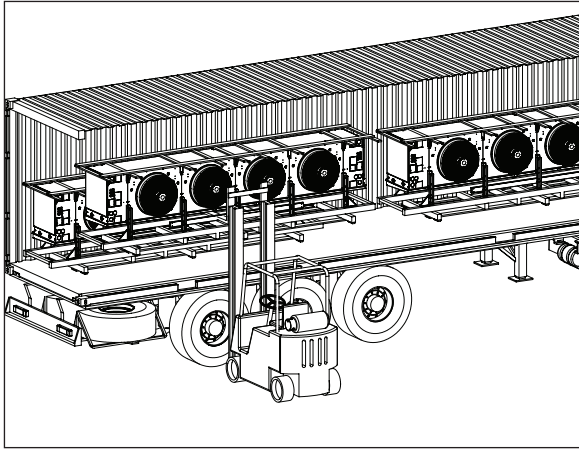


**Unit handling - MF option**  
Sticker is applied on the packing.

## 4 Unpacking and lifting

Always follow guidelines and instructions as given in the air cooler product manual 30366461ML.

Arctigo air coolers are delivered in mounting position, mounted on wooden beams. Handling and positioning can take place with use of a forklift.

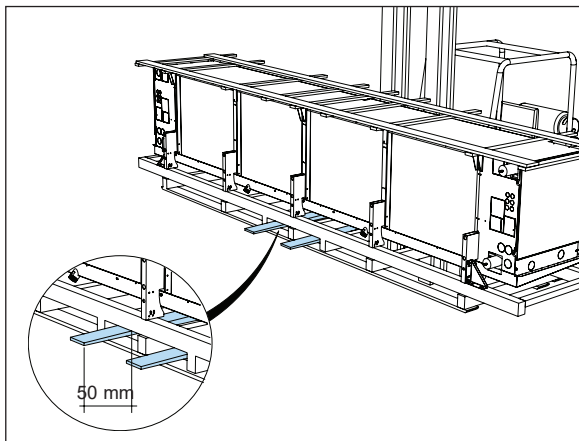


When more coolers are delivered in a single shipment, packed air coolers may be stacked during transportation (max. 2 units). Packed air coolers are to be unloaded one by one. Units must be unloaded and handled only from the long side, one at a time.

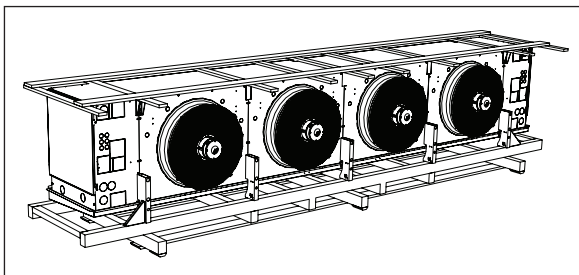
When possible, casing options are supplied mounted on the unit. In such cases this warning might be present on one side the unit packaging. In order to ensure safe lifting, the unit must be loaded on the heavier side i.e. the one where this warning sign is not present.



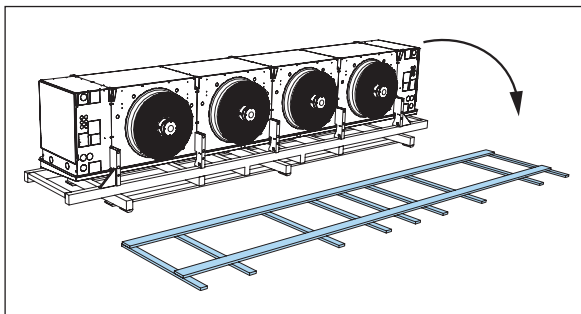
### 4.1 Standard unit



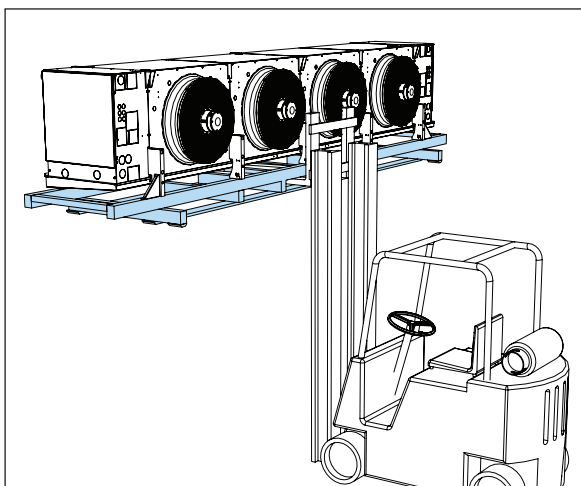
Insert the forks under the lower pallet. In order to avoid damage to the drain tray or falling of the unit, ensure that the lifting forks cover all beams from the lower support pallet.



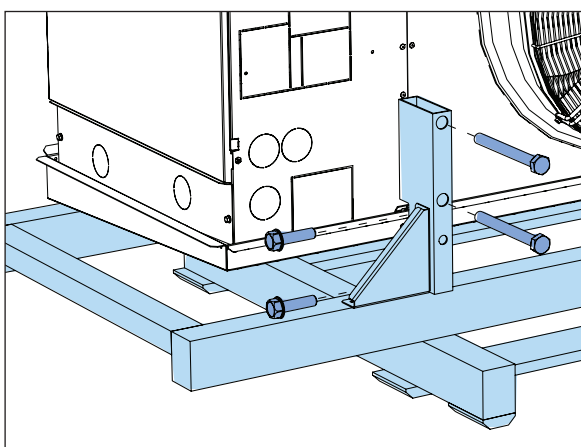
Place the unit on the ground and loosen the fixing materials from the top pallet.



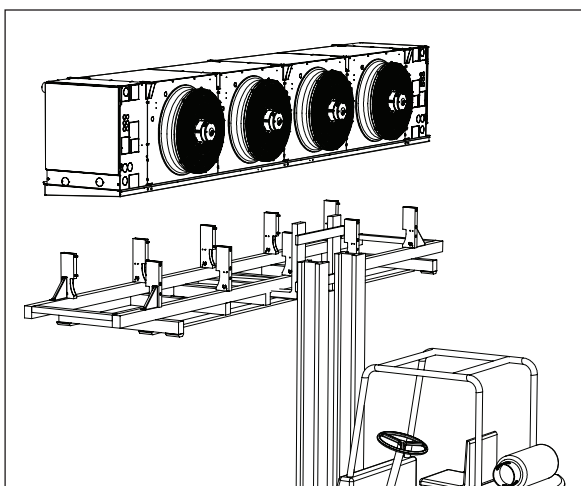
Remove the top pallet.



Insert the forks under the lower pallet.  
Lift the unit into mounting position and secure following instructions given in chapter "[5 Installation](#)".



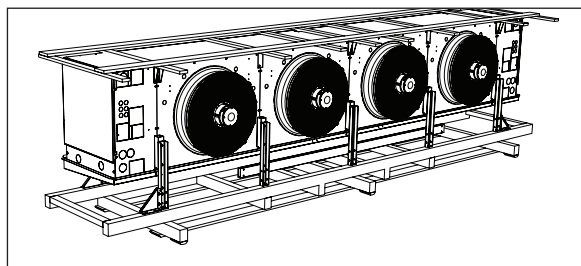
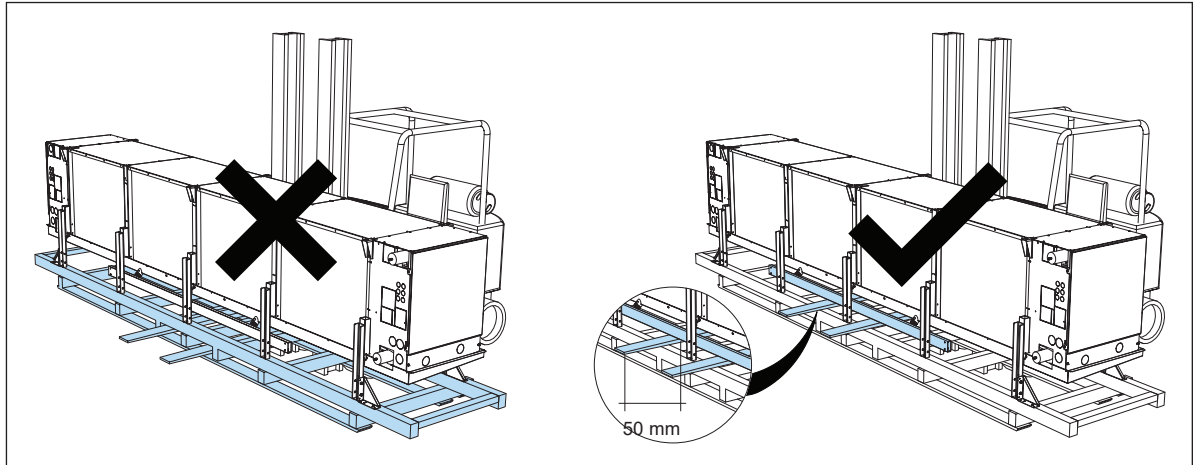
Once the unit is secured in the installation position, loosen the fixing materials from the lower support pallet.



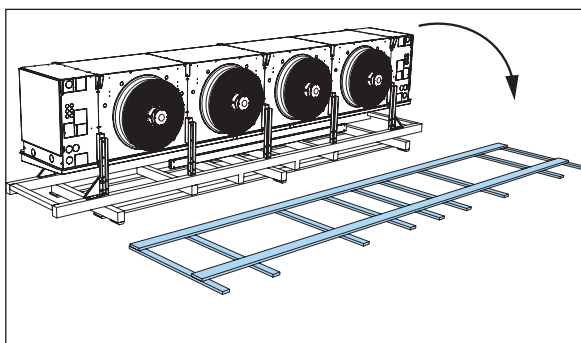
Remove pallet.

#### 4.2 Unit with mounting feet (optional)

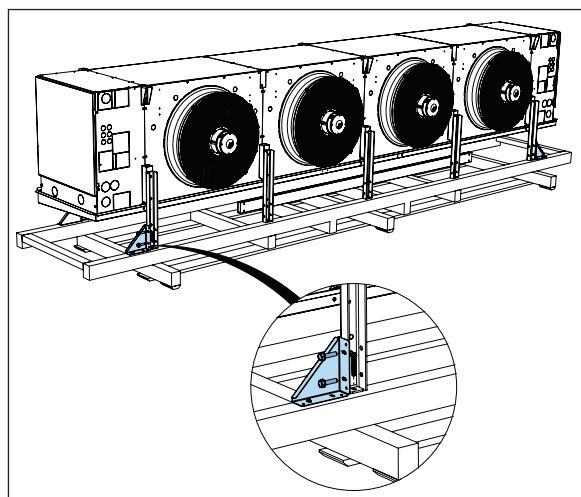
In order to avoid damage to the drain tray while handling, packing of units with mounting feet includes horizontal beams under the unit. Insert the forks under the horizontal beams. Ensure that the lifting forks cover the horizontal beams.



Place the unit on the ground and loosen the fixing materials from the top pallet.

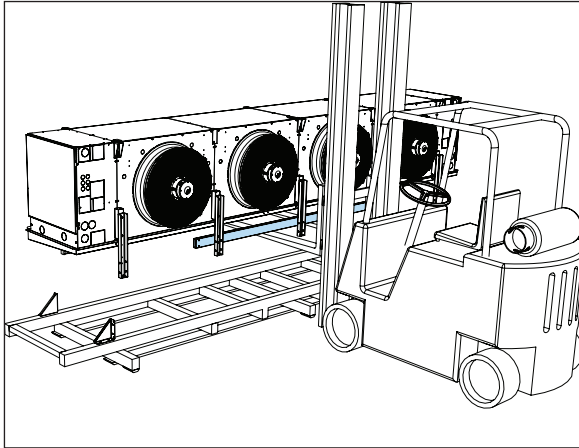


Remove the top pallet.

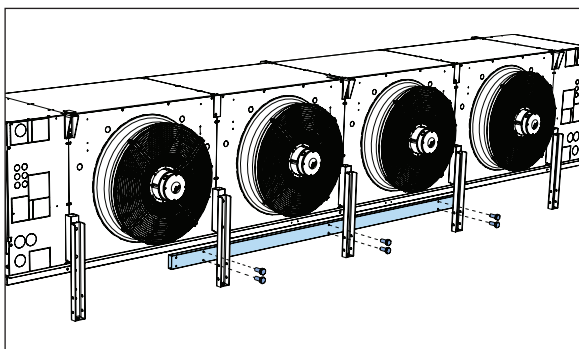


Unscrew the fixing materials from the lower support pallet and support triangles.



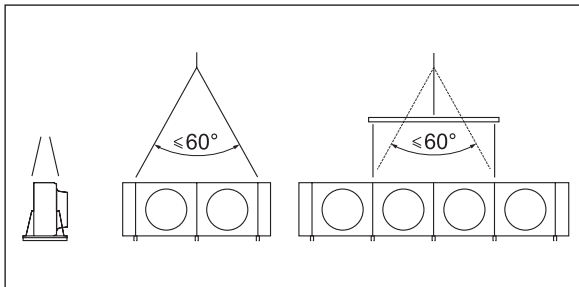


Handle and position the unit by inserting the forks under the horizontal beams.



Once the unit is positioned, unscrew and remove the horizontal beams to allow easier maintenance and grant drain tray accessibility.

#### 4.3 Lifting from above



When unit lifting from above is required, follow the lifting instructions in the air cooler product manual 30366461ML.

Before lifting the units, please check the structural integrity of the lifting devices and their proper fixing to the structure.

## 5 Installation



Always follow guidelines and instructions as given in the air cooler product manual 30366461ML.

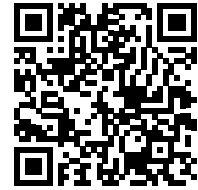


### 5.1 Assembly

Air cooler units may be delivered as separate components that need to be assembled on site. This could occur when casing options like suction hoods are selected, causing the unit to exceed the maximum width for transportation by truck (240 cm). Depending on handling conditions on site, assembly should take place either before or after mounting the unit to the final installation position. When supplied in components, assembly instructions are included with the air cooler unit.

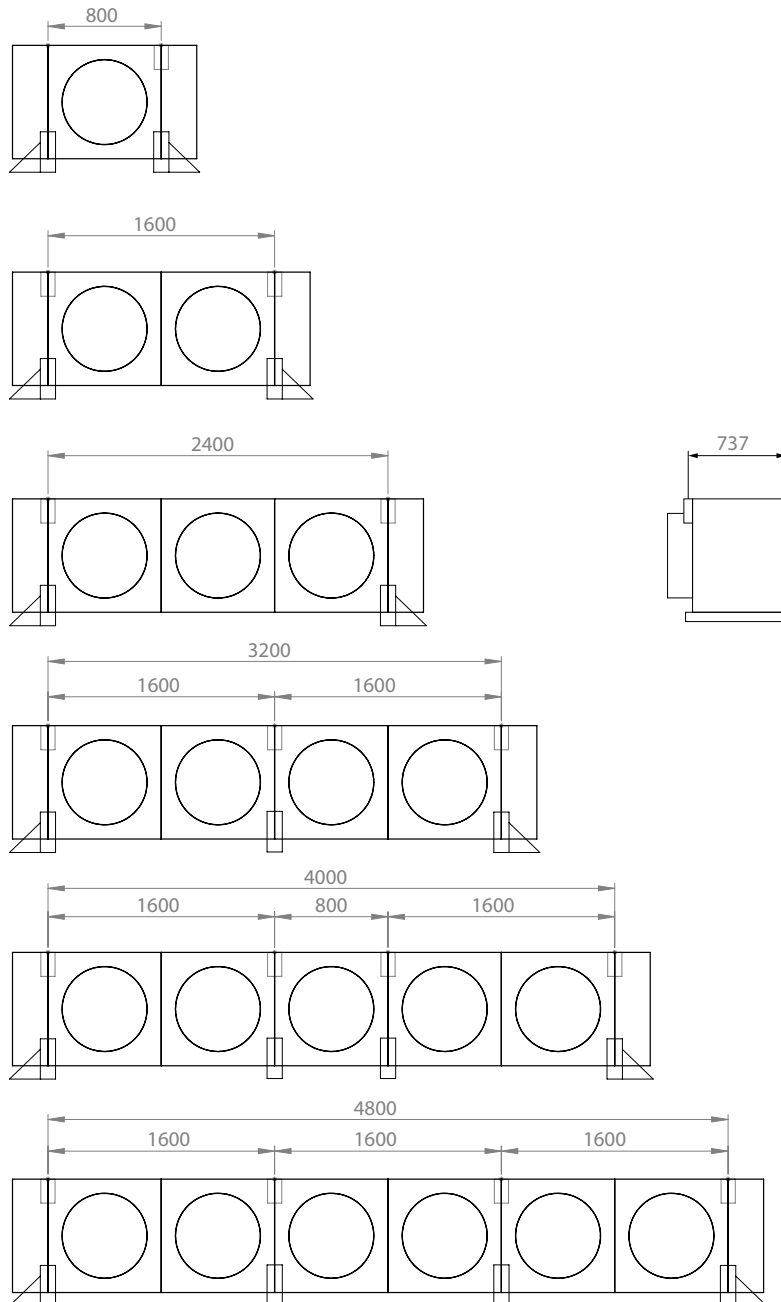
## 5.2 Mounting dimensions

Detailed drawings showing all required mounting and refrigerant connection dimensions are available for download on [alfa.luvegroup.com](http://alfa.luvegroup.com).

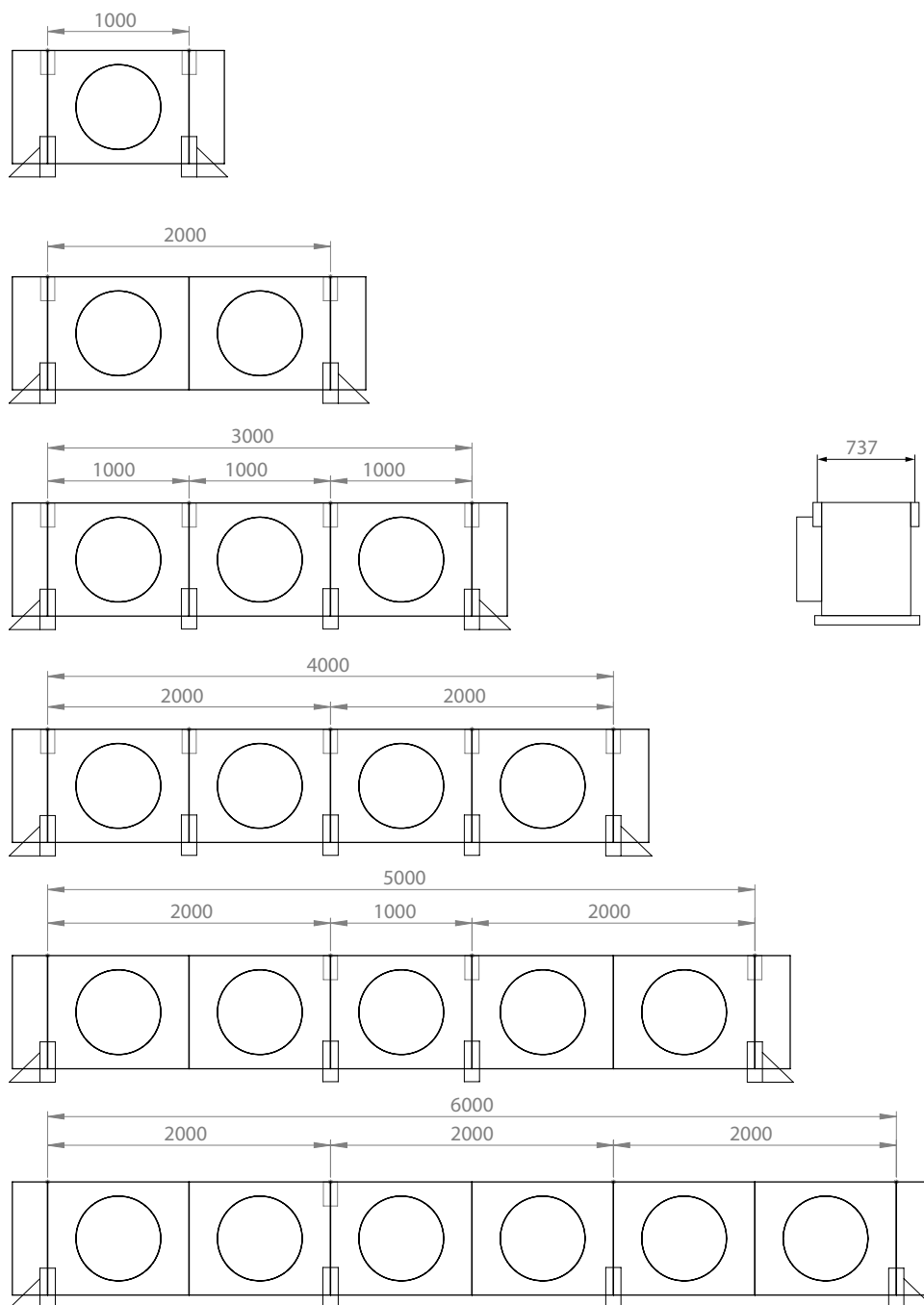


Dimensional drawings  
Arctigo ISD

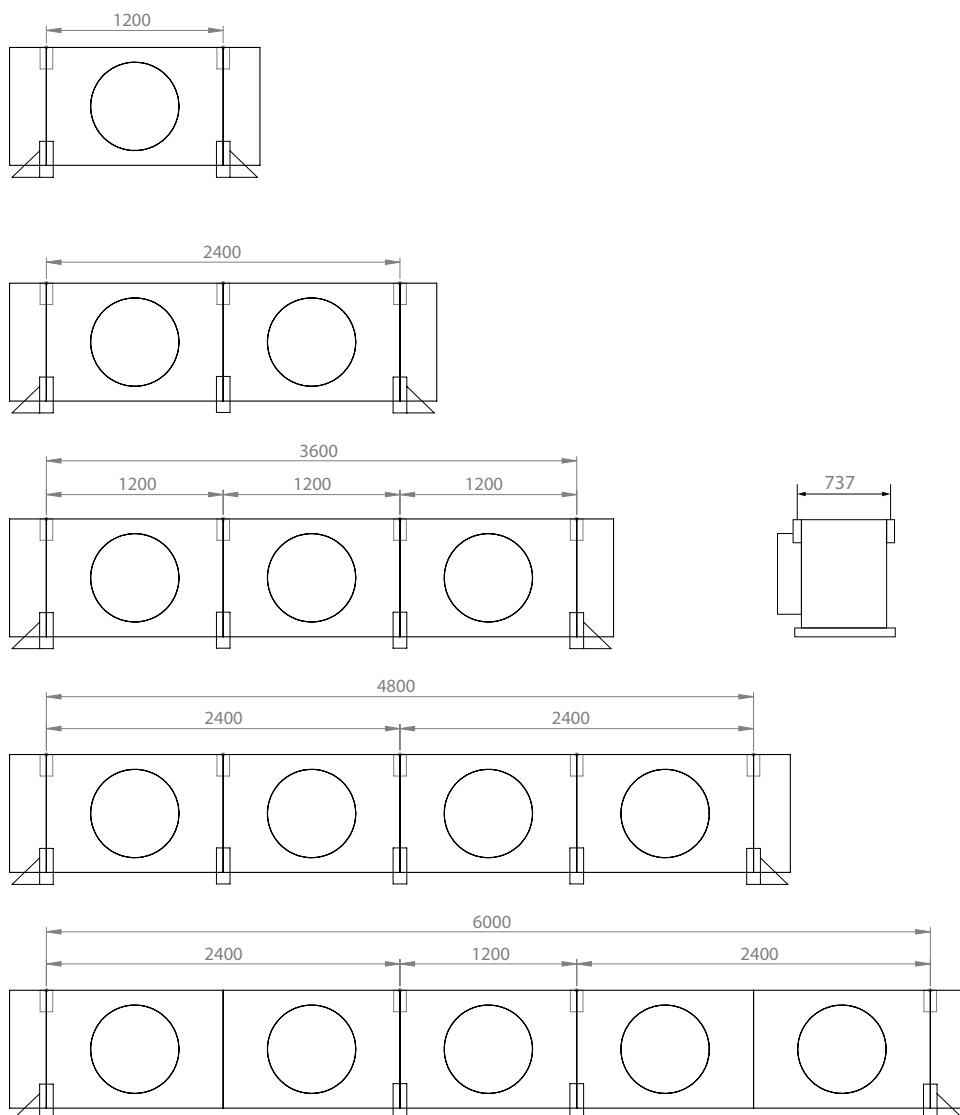
### ISD 40-45S



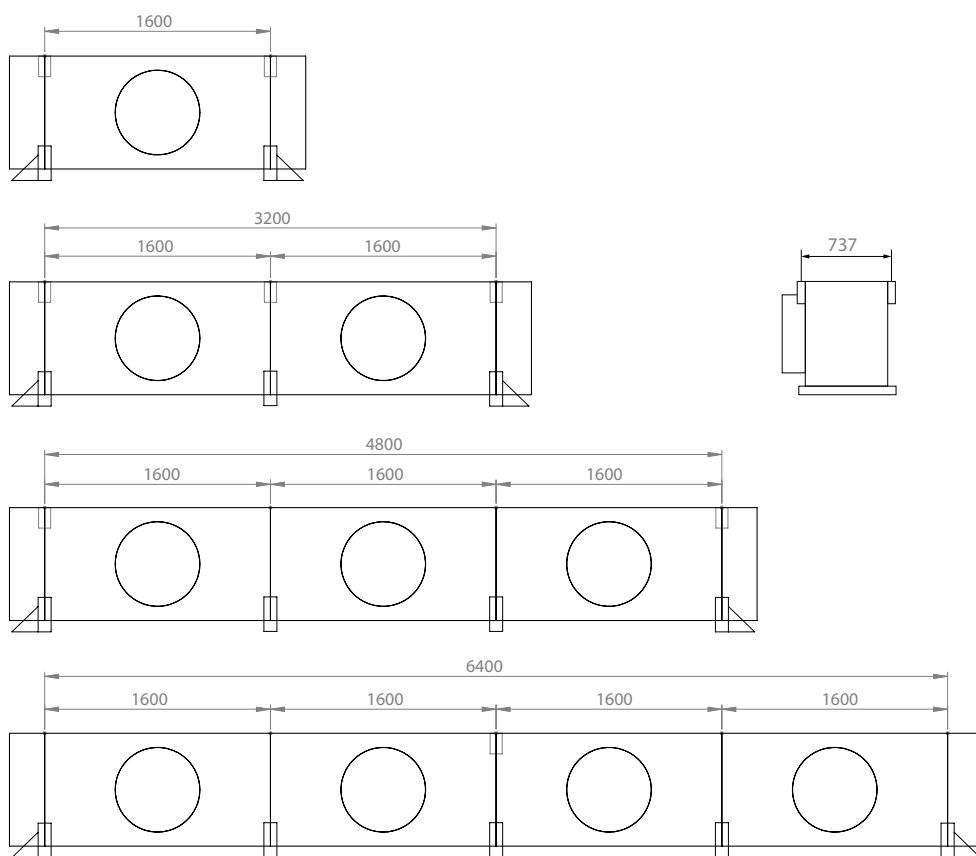
## ISD 45-50-63S



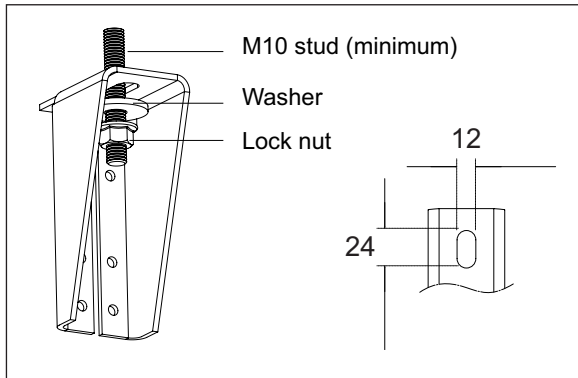
## ISD 63-71



## ISD 80-91-91S



### 5.3 Mounting bracket

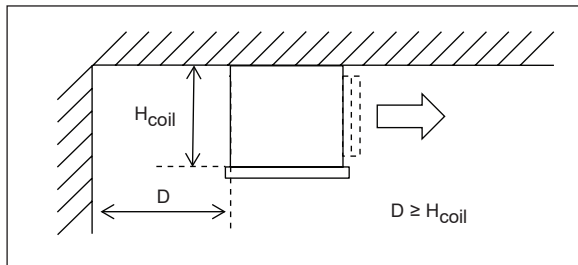


Use extra wide washer (ISO 7093) when mounting the unit to the ceiling.  
Avoid any lateral torque on the mounting brackets.

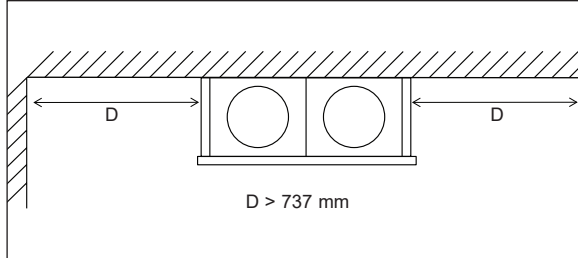


### 5.4 Technical spaces

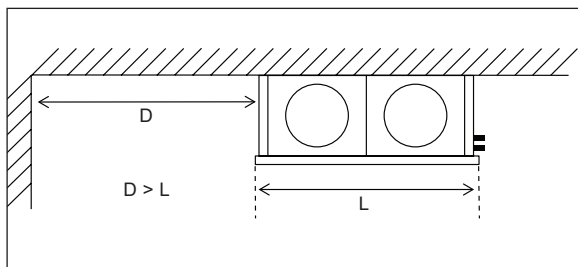
The following guidelines are to be respected when positioning air cooler units.



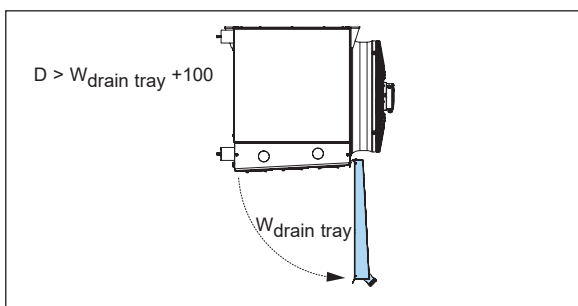
Minimum wall distance on suction side.



Minimum space for side panels opening.



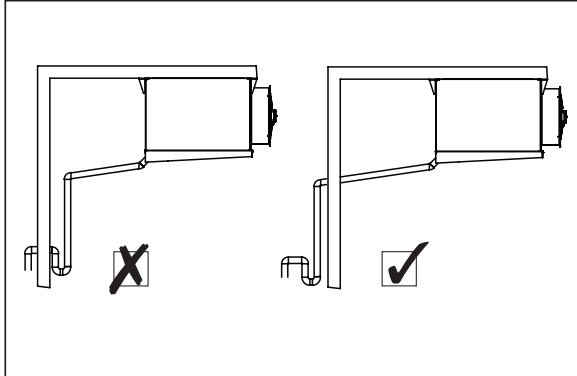
Minimum space for defrost heater replacement (optional). Side for defrost elements extraction is opposite to the connections.



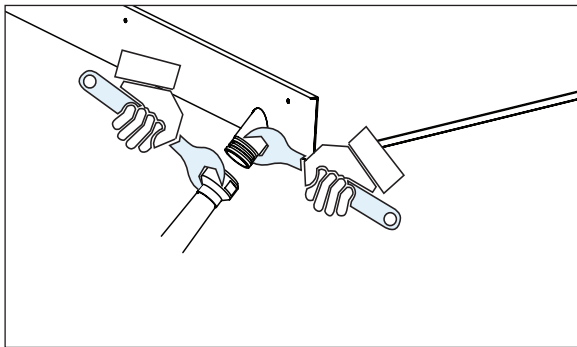
Adequate spacing for drain tray opening shall be left below the cooler.

## 5.5 Drain line

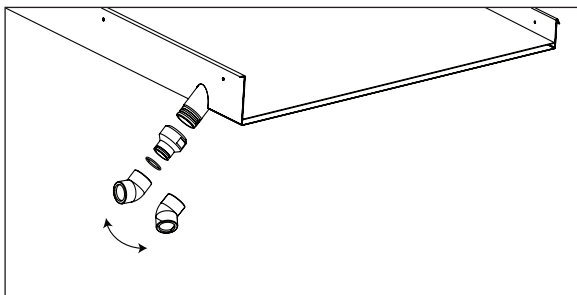
The drain line diameter must be at least the size of the drain tray drain diameter and should be laid with an adequate slope. For room temperatures below 0° C drain line insulation and an internal or external heating element are required to prevent freezing.



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



Tighten drain connection by using two wrenches. Keep wrenches firmly to not strain on connection welding.



Optional drain kit for PVC click-on connection including adapter, O-ring and 40 mm 45° PVC connection, freely adjustable into either horizontal or vertical position.



## 5.6 Electrical connections

The heat exchanger shall be installed in conformance with the recognized national standards of electrical and refrigeration installation practice.



Electrical connection diagrams for motors and electrical defrost connection are shown on the following pages as examples. For additional details, please refer to the connection diagrams available for download on [alfa.luvegroup.com](http://alfa.luvegroup.com).



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

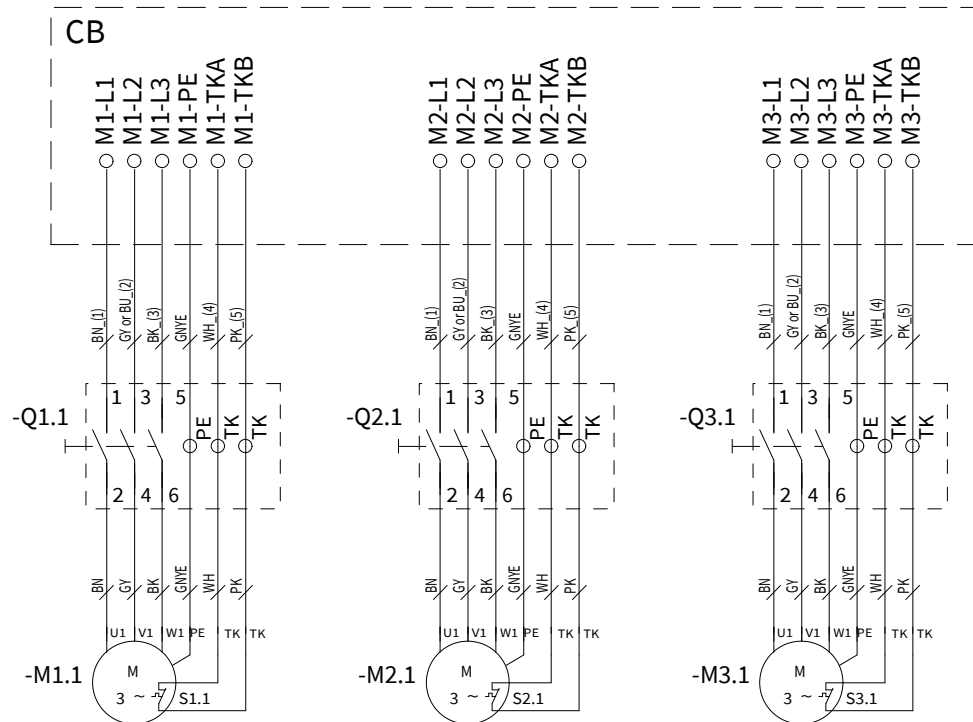
- Heat exchanger model indication
- Fan motor type
- Electrical options



Electrical connections  
Arctigo ISD

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

## 5.7 Fan motor connection example, 3 ph AC fans



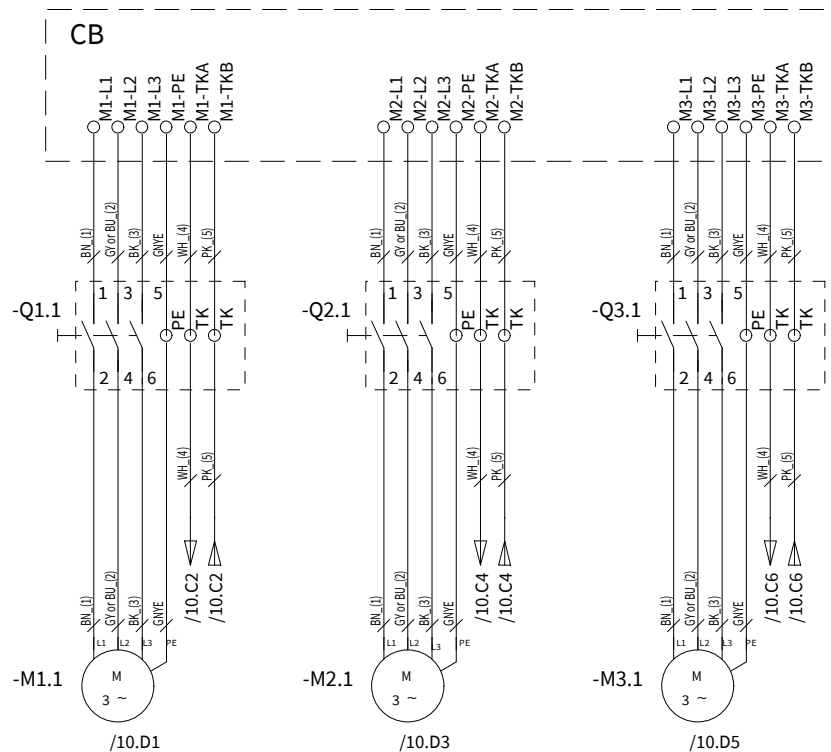
The built-in thermal overload protection (TK) must be integrated in the control circuit when a connection in the terminal box is present. If CB1 option is installed, thermocontacts are already connected to CB1. For smaller fans, if thermo-contacts are not connected to CB1 they are already internally wired on the fans.

During operation with frost of the fins, the power consumption can increase by up to 20-30% more than the nameplate value.



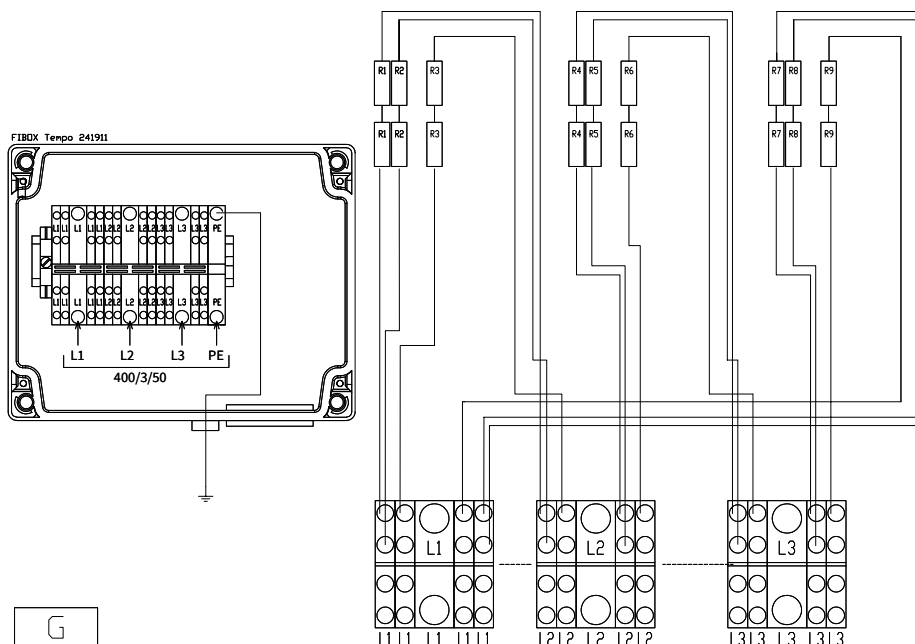
## 5.8 Fan motor connection example, 3 ph EC fans

Power connection



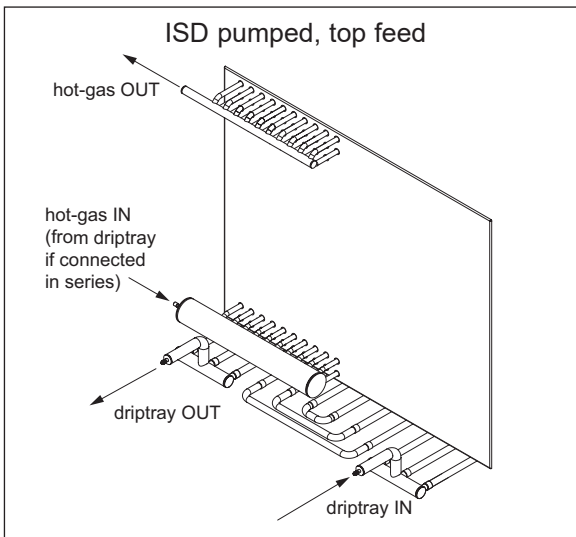
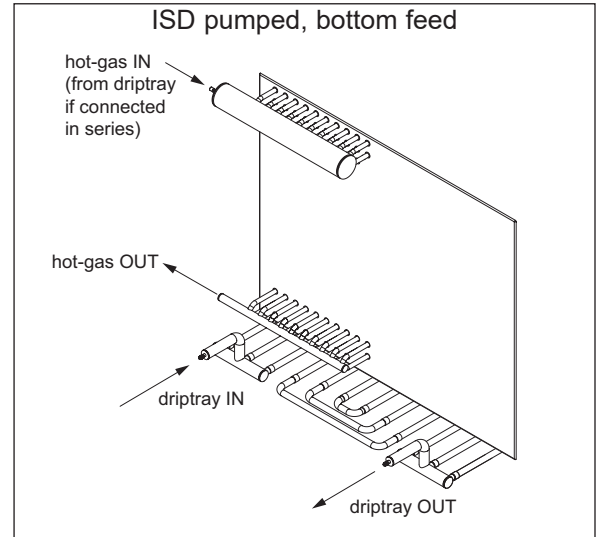
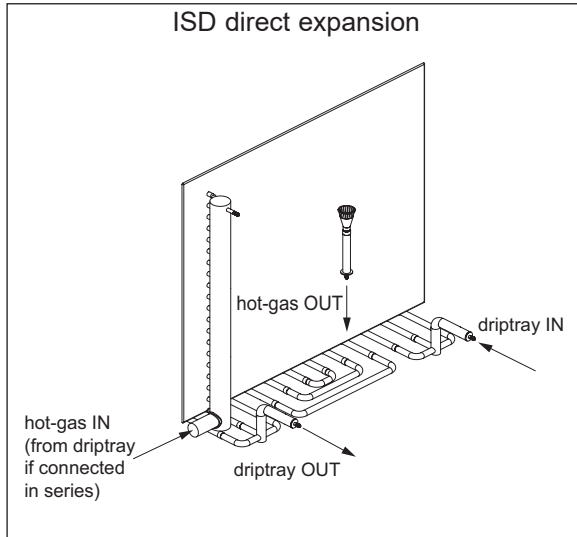


Model	Total heater no	DefrostSystem	Single Heater Power	CB POWER	NO POWER SUPPLIES	Total power consumption (Driptray + Coil) (W)	LINE 1 POWER SUPPLY	LINE 2 POWER SUPPLY	Row nr.	
						(W)	(W)	(A)	(W)	(A)
IS D401-10	6	Electrical Light E4	510	G	1x400/3/50	3060	3060	4,4	--	--
IS D401-10	6	Electrical Light E4	510	G	1x400/3/50	3060	3060	4,4	--	--
IS D401-10	6	Electrical Light E4	510	G	1x400/3/50	3060	3060	4,4	--	--
IS D401-10	6	Electrical Light E4	510	G	1x400/3/50	3060	3060	4,4	--	--
IS D401-10	9	Electrical Light E4	510	G	1x400/3/50	4590	4590	6,6	--	--
IS D402-10	6	Electrical Light E4	1020	G	1x400/3/50	6120	6120	8,8	--	--
IS D402-10	6	Electrical Light E4	1020	G	1x400/3/50	6120	6120	8,8	--	--
IS D402-10	6	Electrical Light E4	1020	G	1x400/3/50	6120	6120	8,8	--	--

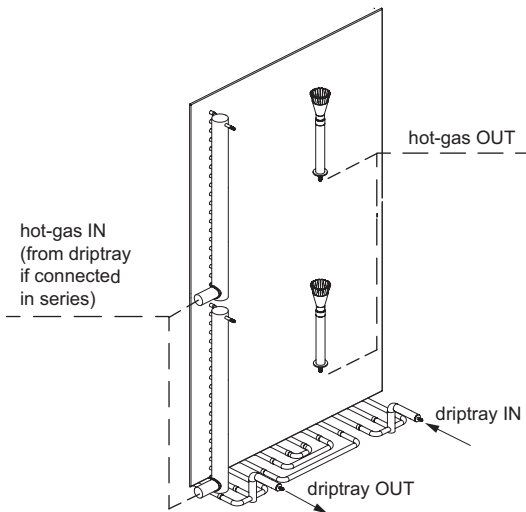


### 5.10 Hot gas defrost

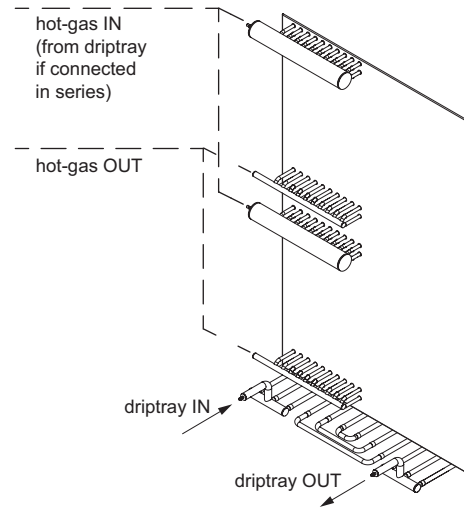
An oil separator (not included in the scope of supply) shall be installed in the piping before the hot gas defrost inlet to avoid oil circulation and accumulation throughout the hot gas circuit.



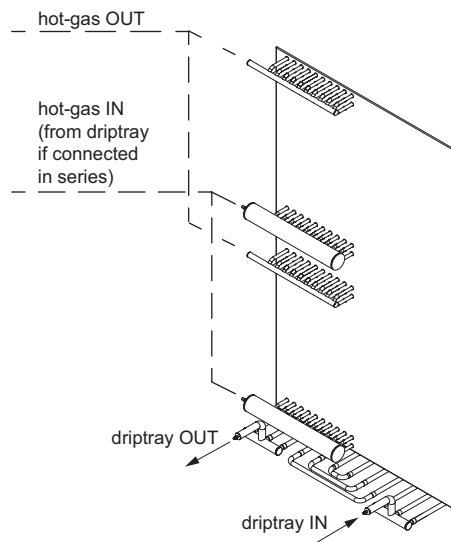
ISD direct expansion, 4 connections



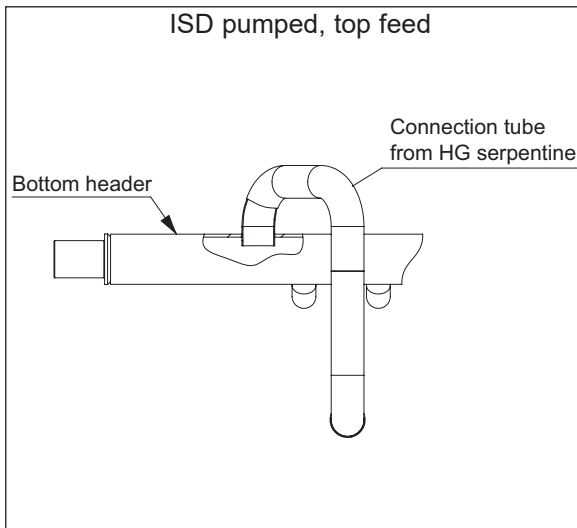
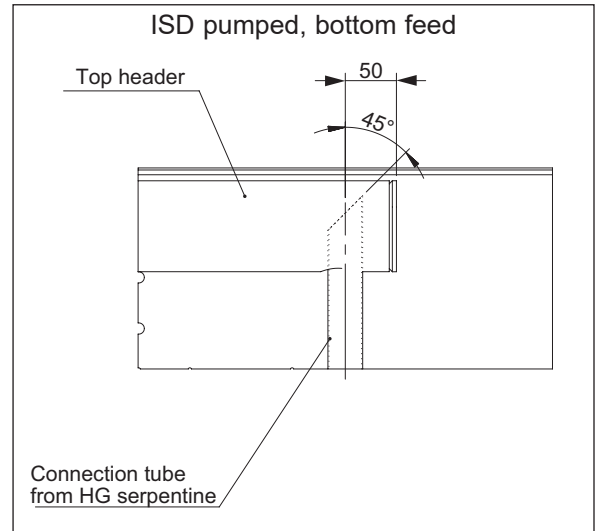
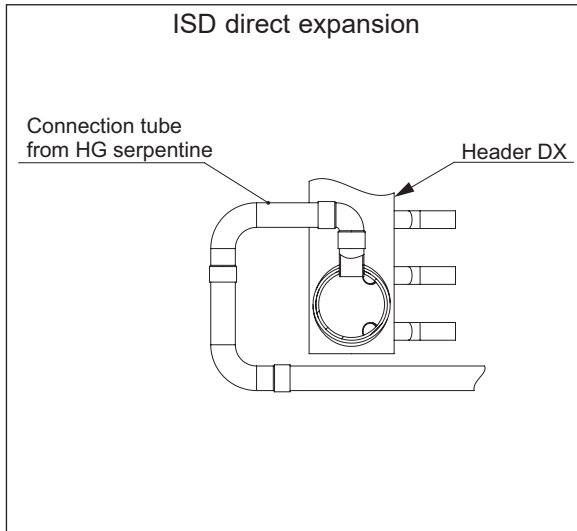
ISD pumped, bottom feed, 4 connections



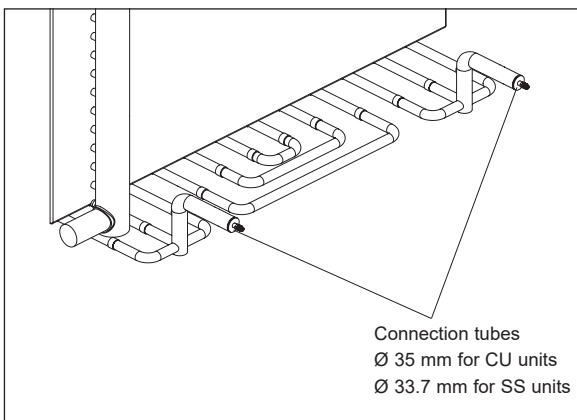
ISD pumped, top feed, 4 connections



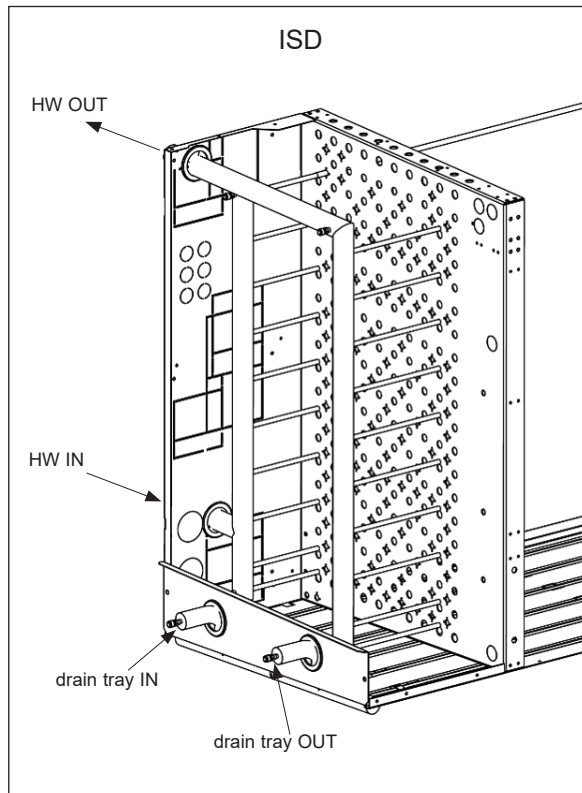
If drain tray and coil defrost are connected in series we recommend that hot gas passes first through the drain tray. Connection as below are recommended to avoid liquid recirculation.



Standardized connection diameters are  $\varnothing$  35 mm for copper tubes or  $\varnothing$  33.7 mm for stainless steel tubes.

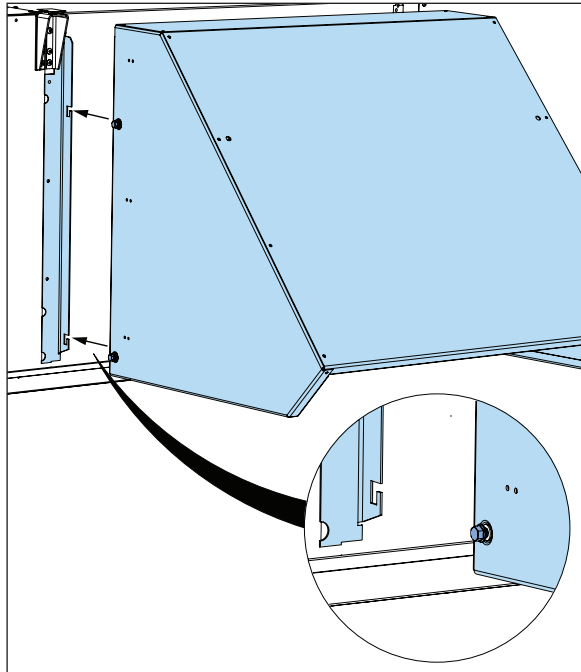


## 5.11 Hot glycol connection

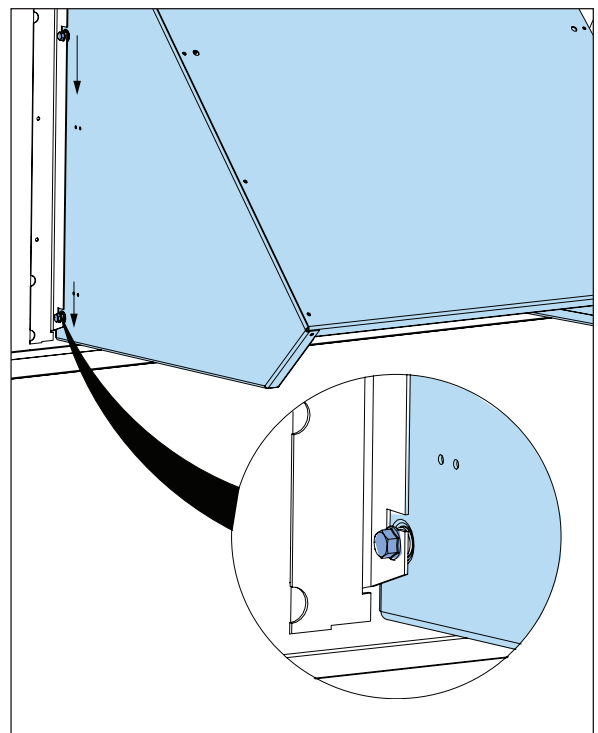
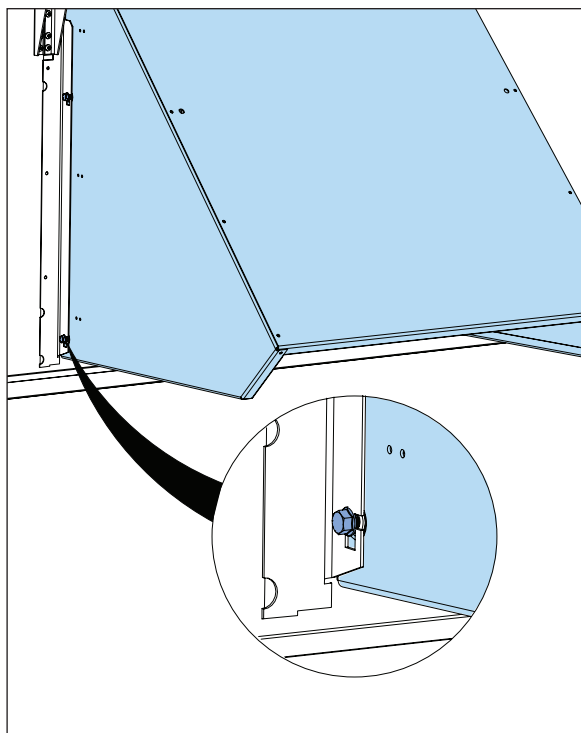


### 5.12 Suction hoods mounting (optional)

Suction hoods shall be assembled before mounting the unit to the ceiling.  
Place the suction hoods on air inlet side (coil side).



- Place 2 screws per side.
- Slot the screws into the sockets.
- Tighten the screws.



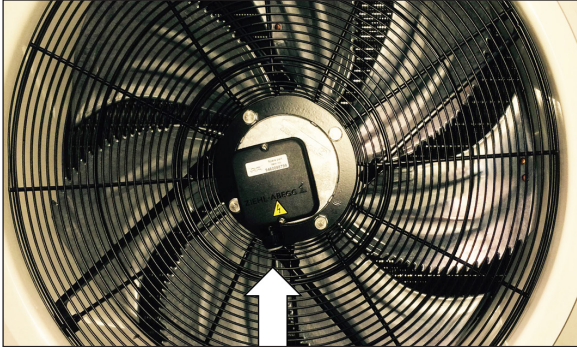
## 6 Maintenance



Ensure complete electrical isolation before performing any maintenance activity and always follow guidelines and instructions as given in the air cooler product manual 30366461ML.



### 6.1 Fan replacement



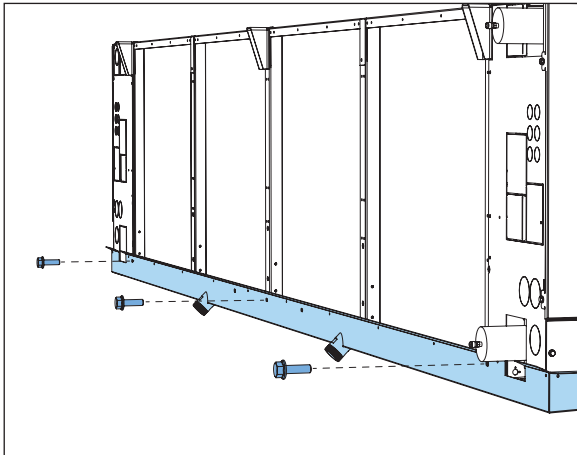
Cable glands must be positioned downwards.

Use an anti-corrosion coating like Geomet or comparable when remounting using new fixing bolts.



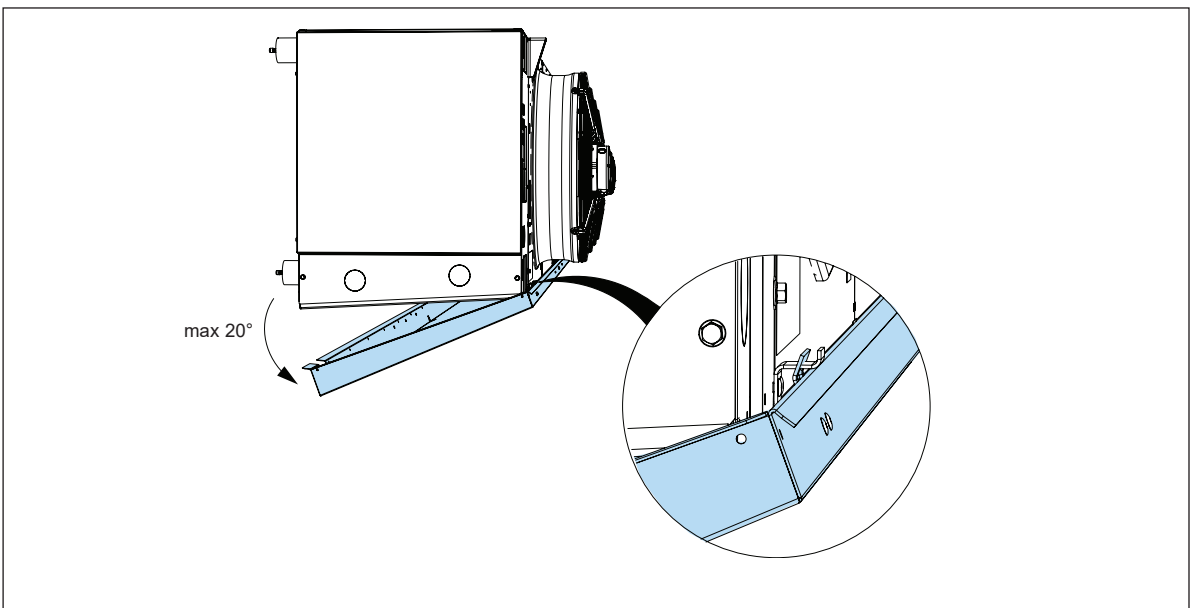
### 6.2 Drain tray

Always disconnect drain line before opening the drain tray.

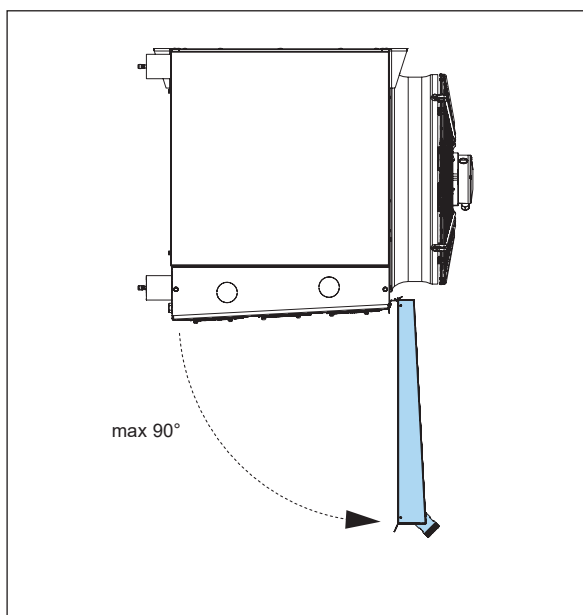
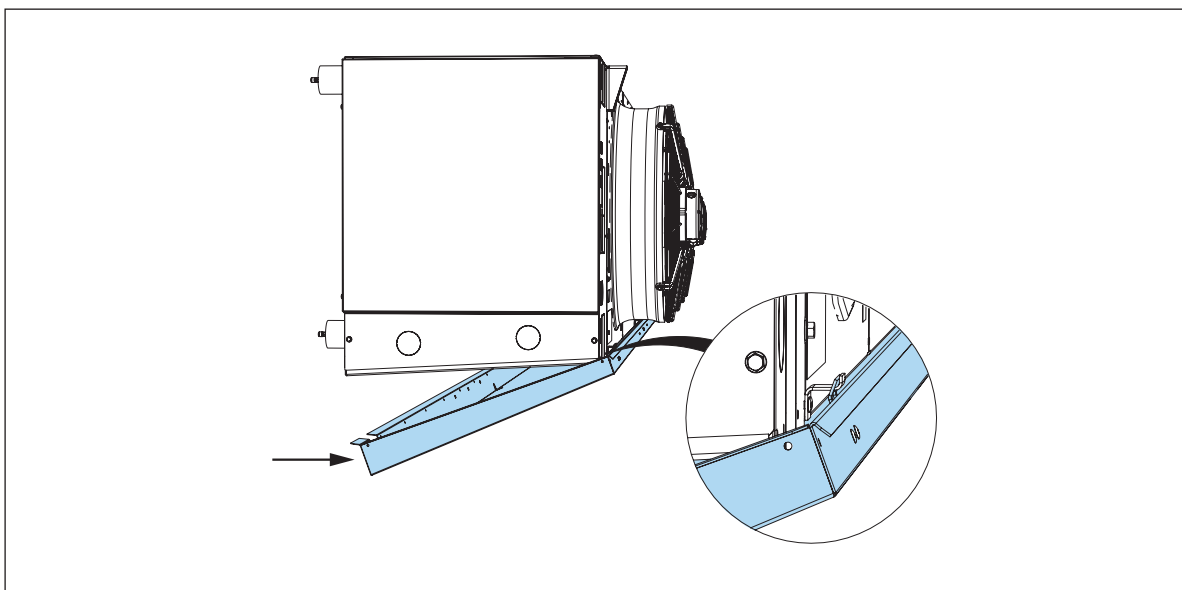


To open drain tray, first loosen and remove fixing bolts.

Slightly lower the drain tray.



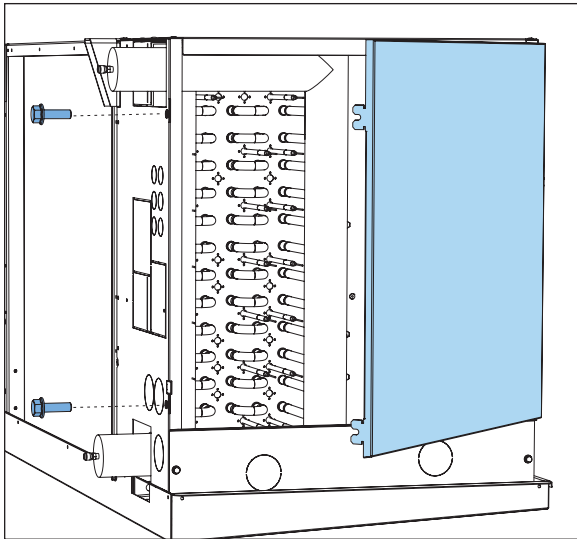
Push the drain tray till the end of hinges.



Completely lower the drain tray.  
Respect the maximum opening angle to avoid  
damage to the drain tray hinges.



### 6.3 Side covers



Hinged side covers can be opened for inspection, cleaning and maintenance purposes. This can only be done by qualified personnel. To open side covers, loosen fixing bolts.

### 6.4 Coil defrost heater elements replacement (optional)



Before handling heater elements always:

- disconnect power supply
- ensure heaters are at ambient temperature.

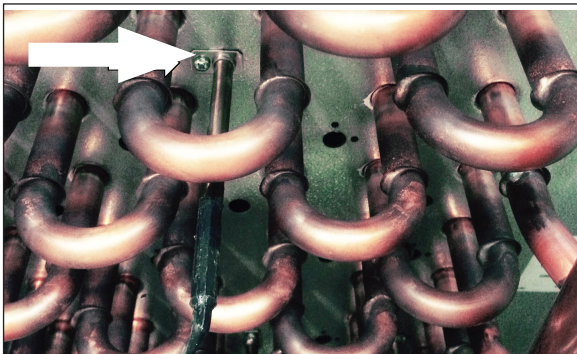


To remove heater elements, remove the fixing screw and the plate, if any. Extract element from coil. Mount new element in reverse order and restore electrical connections.



screw - opposite to connections side

plate - connections side



### 6.5 Drain tray heater elements replacement (optional)



Before handling heater elements always:

- disconnect power supply
- ensure heaters are at ambient temperature



To remove heater elements, open the drain tray and remove the fixings. Extract elements. Mount new element in reverse order and restore electrical connections.

## 6.6 Shut up sock mounting (optional)

When shut up sock option is selected, shut up ring is supplied assembled.



Position the shut up sock such that the belt is mechanically blocked by the rounding on the sock ring.

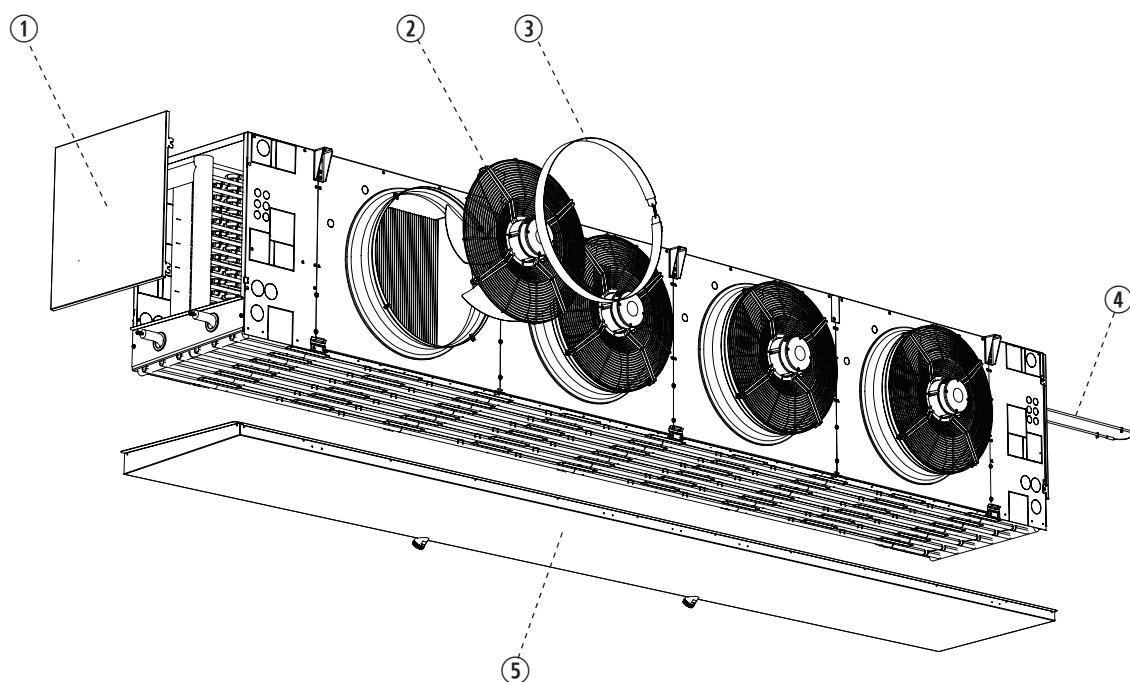


Slacken the shut upsock belt. Let the sock overlap the sock ring. Fasten the belt.



Fasten again the belt, tighter. Test tightness to verify correct mounting.

## 7 Spare parts



### Spare parts

- |   |  |
|---|--|
| ① | Side panel   |
| ② | Fan motor  |
| ③ | Fan ring heater (FRH)                              |
| ④ | Defrost heater - identical for coil and drain tray |
| ⑤ | Drain tray   |

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



[alfa.luvegroup.com](http://alfa.luvegroup.com)