AlfaBlue Junior DG

Instruction manual

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

ORIGINAL INSTRUCTIONS

30366476EN-03

Index

1 Important information

1.1 Disclaimer

This Instruction Manual applies to all AlfaBlue Junior DG dry coolers and is supplied in combination with the Air Cooled Liquid Coolers Product Manual AHE00050. 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

Liquid coolers are partly completed machinery according to Machine Directive 2006/42/EC and intended for incorporation in cooling systems. Declarations of Incorporation are available on alfa.luvegroup.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 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
- Electrical wiring diagrams
- Certificates

AlfaBlue Junior DG

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

AlfaBlue Junior DG is a competitive dry cooler line that offers excellent performance, allowing easy installation on site and an outstanding integration with other components. High efficient fan motors combine excellent sound characteristics and low energy consumption. AlfaBlue Junior dry coolers are often used for cooling down condenser water in air-conditioning and refrigeration installations. In the processing industry, dry coolers are suitable for closed circuit cooling of various process liquids.

- Suitable for all liquids that do not corrode copper.
- Capacity range: 45 up to 233 kW (water, EN1048).

2.2 Standard configuration

Finned coil:
Innovative coil design manufactured from 8 mm Cu tubes and aluminium turbo fins. Standard fin spacing 2.1 mm. Liquid connections externally threaded. Each heat exchanger is leak tested with dry air. Higher design/test pressures on request.

Model	Design pressure	Test pressure
AlfaBlue Junior DG	10 bar	15 bar

Construction:
Patented coil frame design allowing thermal expansion and offering protection against vibration. Corrosion resistant casing material, powder coated RAL9002. Separated fan sections.

Fans:
High efficiency AC or EC fans and low power consumption. Available in two fan diameters (500 & 630 mm), different power supplies (230/50-60/1, 400/50/3, 480/60/3) and four noise levels. Protection class IP 54 according to DIN 40050.
AC motors are fitted with integrated thermo contacts to provide reliable protection against thermal overload (terminals in the box).

2.3 Options

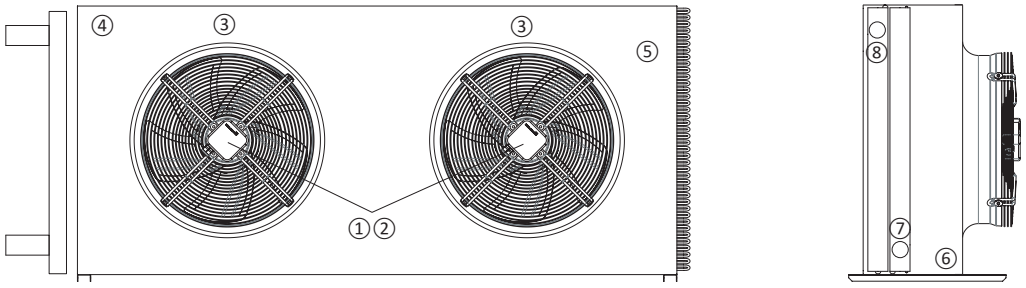
- Switch on/off (SW)
- Connection box for electrical power connection (CB)
- Fan speed control 230/1 and 400/3 (FT)
- Coil options:
  - Epoxy coated fins (EP)
  - Seawater resistant aluminium alloy fins (SWR)
  - Copper fins (CU)
  - F-coat treatment (FC)
  - Industrial fins (IF)
  - Fin spacing 2.5 mm (other fin spacings on request)
- Vibration dampers (VD)
- End covers (CV)
- Mounting feet kit for vertical airflow
- Aluminium flanges (FL)

2.4 Code description

DG	SE	50	2	.1	B	D	12	H/V	BO	*	-	AL	2.1	CU	*
1	2	3	4	5	6	7	8	9	10	11		12	13	14	15

1 AlfaBlue Junior dry cooler
2 Sound level/fan code (S=standard, L=low, Q=quiet, R=residential, E=EC fan motor)
3 Fan diameter (50=500, 63=630 mm)
4 Number of fans (1 to 6)
5 Version number
6 Tube rows code (A, B, C)
7 No. of phases (S=1 ph, D=3 ph D connection, Y=3 ph Y connection)
8 No. of circuits
9 Units are suitable for both horizontal and vertical airflow (mounting feet kit required for vertical airflow setup).
10 Packing (BO=box, CR=crate)
11 Options
12 Fin material (AL=aluminium, IF=industrial fins, SWR=AlMg2.5, CU=Copper, EP=epoxy coated aluminium, FC=F-coat)
13 Fin spacing (2.1, 2.5 mm)
14 Tube material (CU=copper)
15 Options

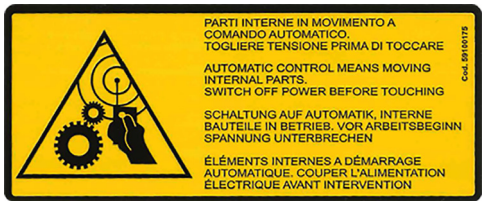
3 Product labels



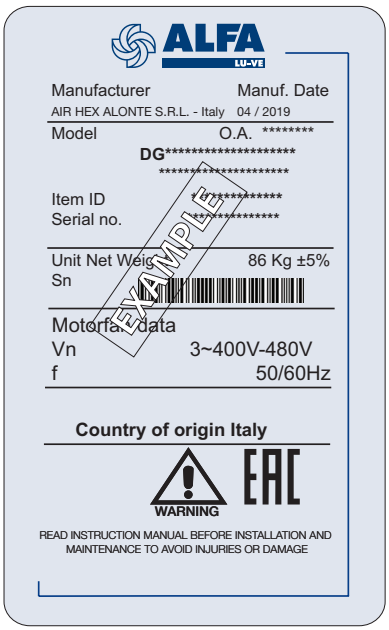
1. Electrical warning
Electrically powered component. Switch off power supply before any maintenance or installation activity.

2. Fan motor
Fan motor item number.

3. Fan direction
Sticker indicates fan rotation direction.

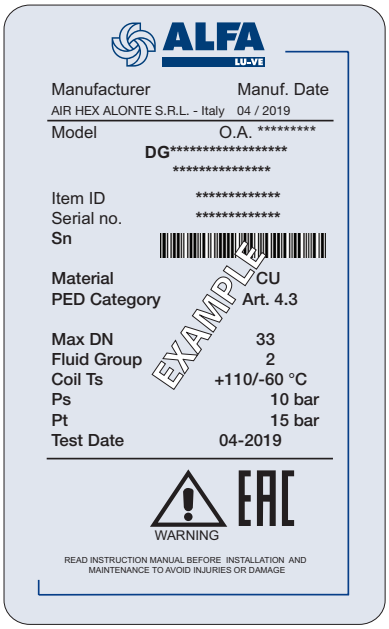


4. Moving parts
Warning: moving parts.
Switch off power supply before any maintenance or installation activities.



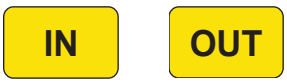
5. Product label

Model	Refer to paragraph "2.4 Code description"
Item ID Serial no.	Communicated 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



6. Product label - coil

Model	Refer to paragraph "2.4 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



7. & 8. In/Out

Liquid connections inlet and outlet.

Grounding

Whenever electrical components supplied by Alfa LU-VE have this sticker, is mandatory to ground them. The yellow/green grounding wire must be left longer than the others, to ensure that it is the last one to be detached from the terminals in the event of the cable being pulled off. Grounding is designed for the electrical equipment supplied with the unit and is not to be intended as protection from external sources.

4 Unpacking and lifting

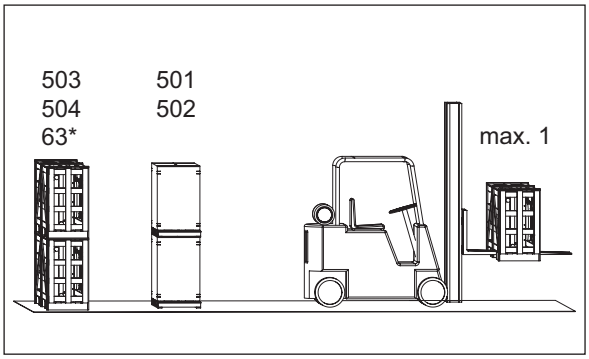
Always follow guidelines and instructions as given in the air cooled liquid coolers product manual AHE00050.

4.1 Packing

All units are packaged and shipped in horizontal airflow position. AlfaBlue Junior 501/502 units are mounted on a wooden pallet and covered with a sturdy cardboard box. All other models are mounted on a wooden pallet, wrapped with plastic foil and covered with an open crate.

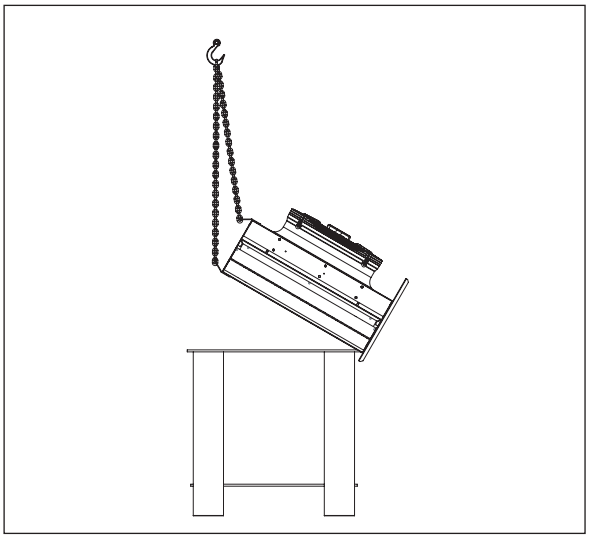
4.2 Shipping dimensions

model	Standard packing type	Standard packing					Including fan speed control switchboard				
		Length cm	Width cm	Height cm	Volume m^3	Weight kg	Length cm	Width cm	Height cm	Volume m^3	Weight kg
501	box	120	61	97	0,7	67	125	61	95	0,7	75
502	box	210	61	97	1,2	121	224	70	101	1,6	134
503	crate	311	70	100	2,2	208	311	70	100	2,2	226
504	crate	402	70	102	2,9	282	412	58	100	2,4	296
631	crate	177	91	135	2,2	122	177	87	127	2,0	130
632	crate	277	91	135	3,4	198	259	91	141	3,3	212
633	crate	377	91	135	4,6	296	377	91	135	4,6	310
634	crate	477	91	135	5,9	376	577	91	137	7,2	390
635	crate	577	91	135	7,1	477	559	91	141	7,2	491
636	crate	677	91	137	8,4	554	678	91	141	8,7	577

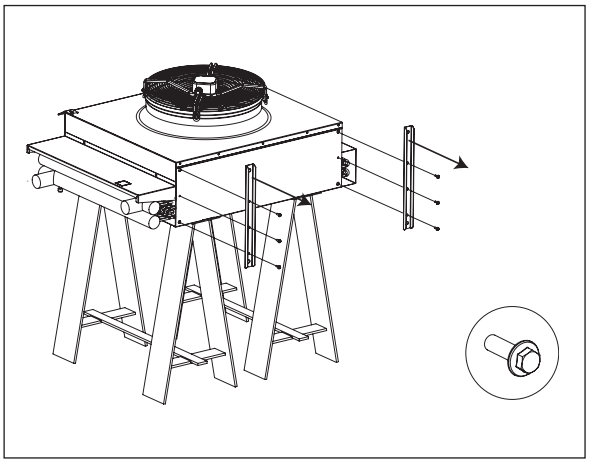


Handling can take place with use of a forklift.
Heat exchangers can be stacked during storage. (max. 2 units).

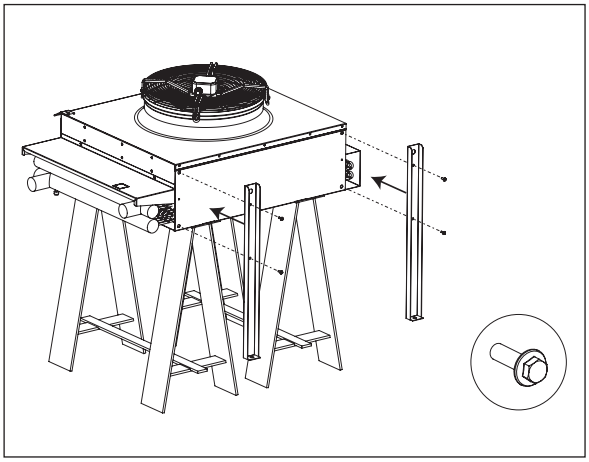
4.3 Feet mounting for vertical airflow



All units are packed and shipped in horizontal airflow position. For setup with vertical airflow, the mounting feet (kit) must be mounted prior to installation. For this purpose the unit must be lifted and tilted 90° onto supports. Use supports for each mounting foot position. The supports must span the full casing width to avoid damage to the finned coil.



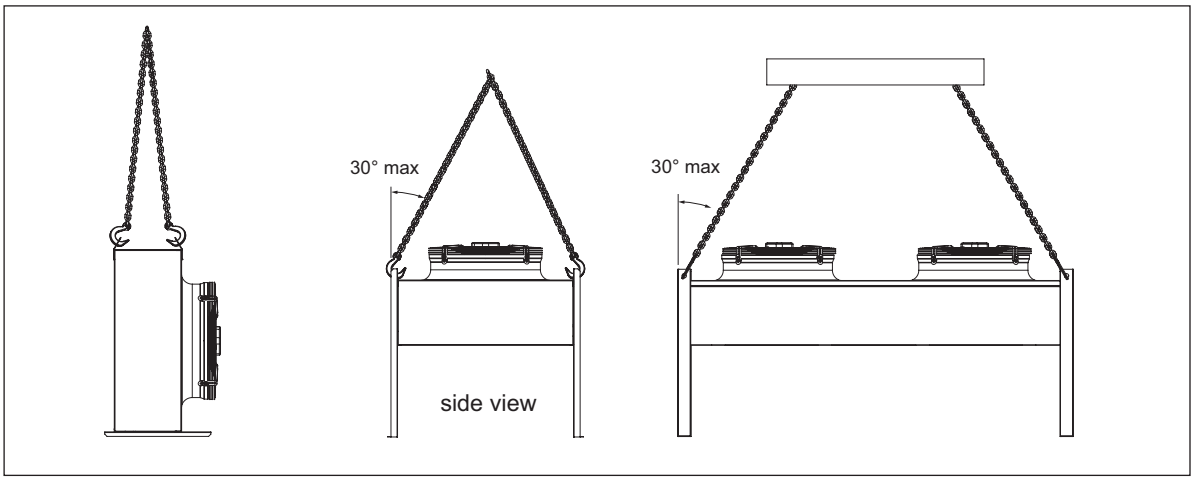
Loosen fixing bolts and remove all mounting profiles. For DG 630 models also remove the lifting lugs positioned on the opposite casing side.



Replace all mounting profiles with the supplied mounting feet. Mounting feet should be fitted on both sides of the casing at all vacant mounting feet and lifting lug positions.

With all mounting feet in place, the unit is ready for further positioning and installation.

4.4 Lifting from above



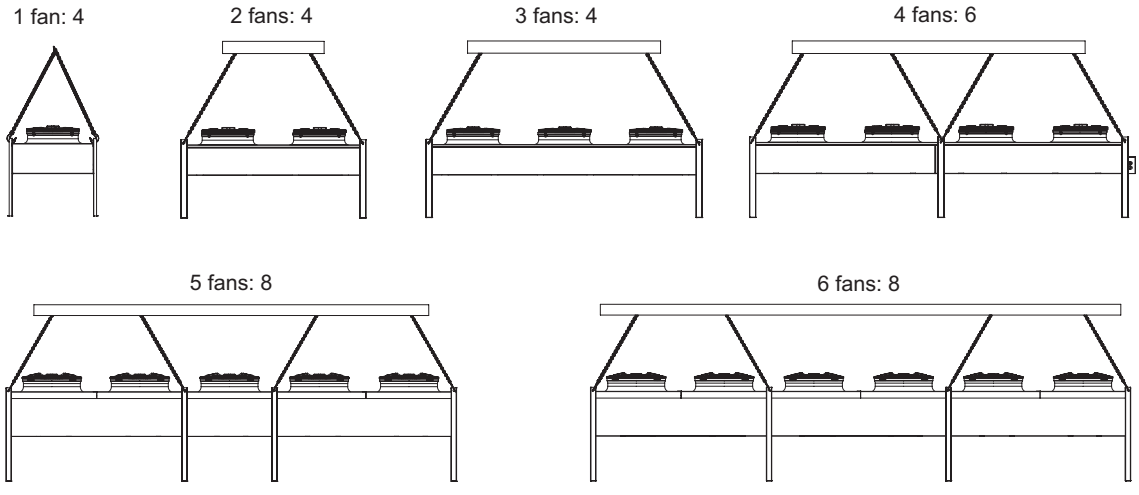
M8 eye bolts to be fitted on DG50 models (not provided)

AlfaBlue Junior heat exchangers can be lifted from above. For models with 2 or more fans the use of a hoisting beam is required. DG63 models are supplied with lifting lugs. For DG50 models eye bolts must be fitted on all lifting points.

Attach belts or hooks to the lifting point. Respect the allowable chain angles. The load on the lifting chains shall be equally distributed on all the lifting points.

For all heat exchanger models it is mandatory to use all indicated lifting positions during any lifting operation.

Total amount of lifting points *(identical for both horizontal and vertical airflow models)*



5 Installation

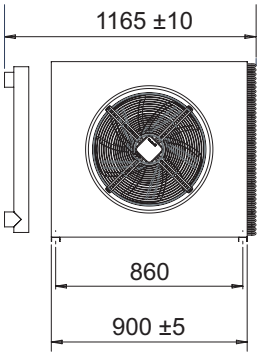
Always follow guidelines and instructions as given in the liquid coolers product manual AHE00050.

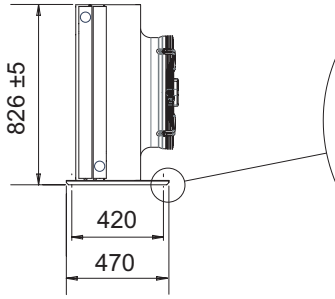
Dimensional drawings

5.1 Mounting dimensions

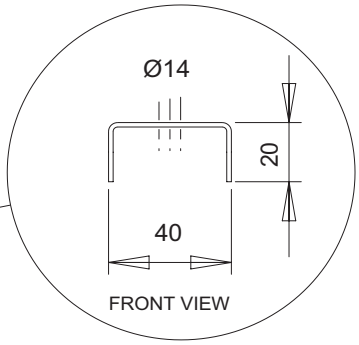
Drawings showing all required mounting and refrigerant connection dimensions are available for download on alfa.luvegroup.com.

Mounting dimensions model 50 - Horizontal airflow

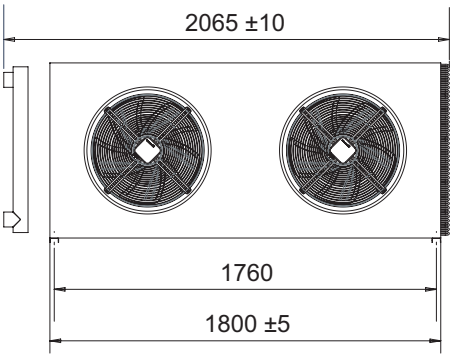


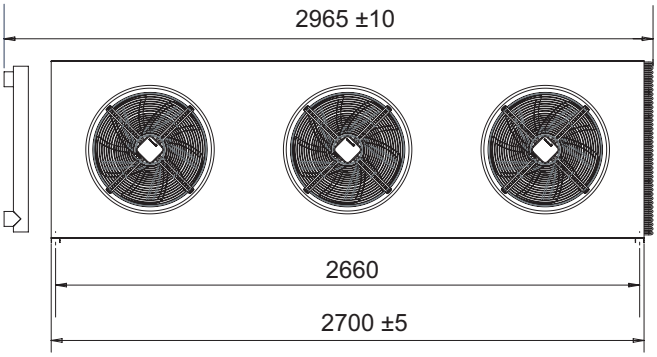


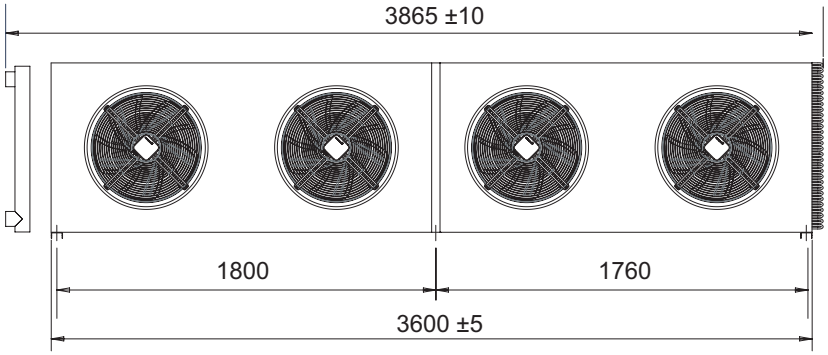
Side view (all models)



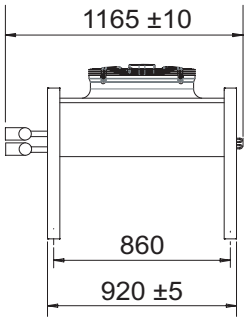
Mounting profile

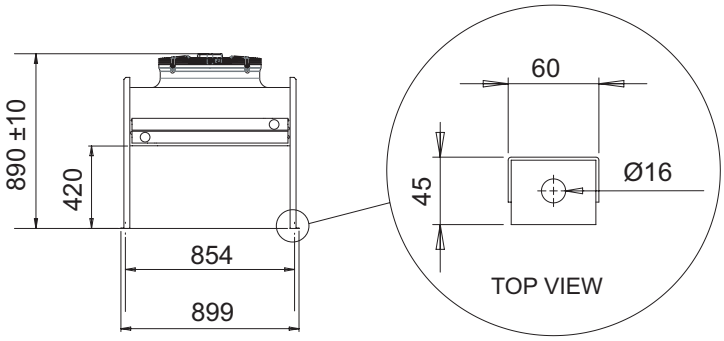






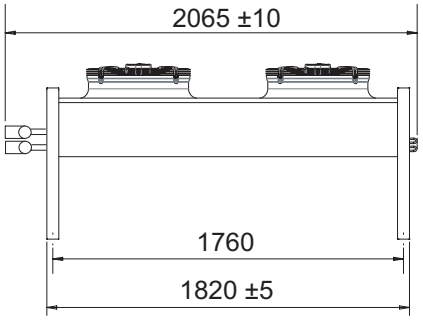
Mounting dimensions model 50 - Vertical airflow

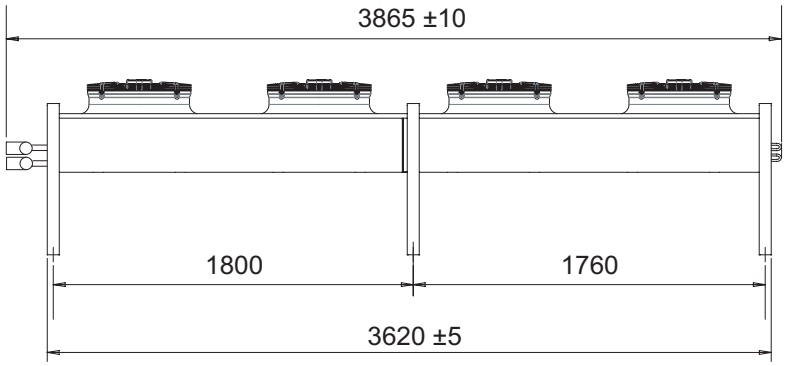




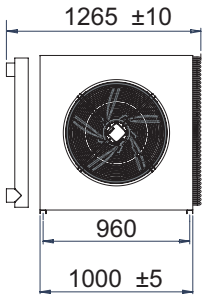
Side view (all models)

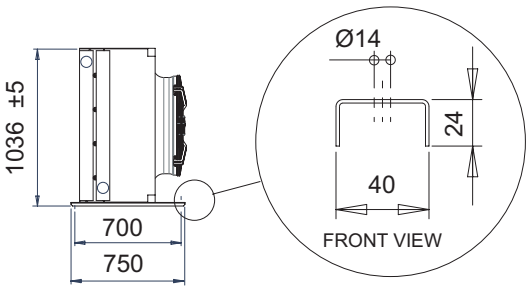
Mounting profile



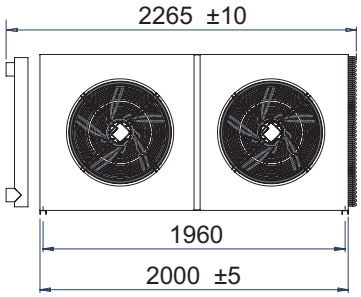


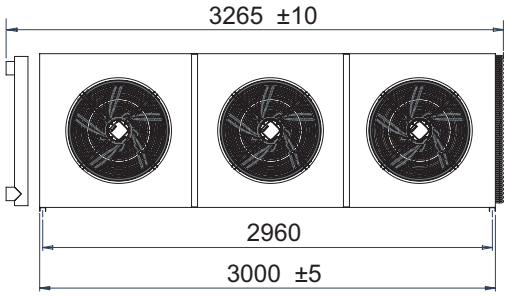
Mounting dimensions model 63 - Horizontal airflow

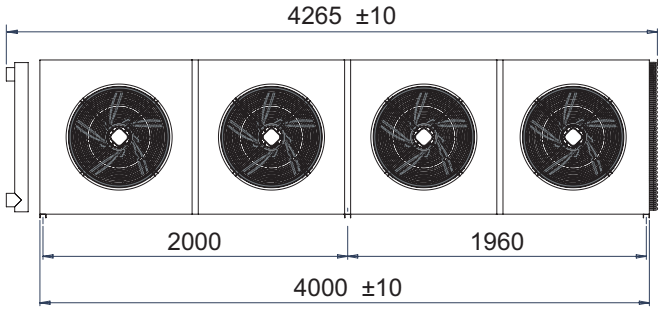


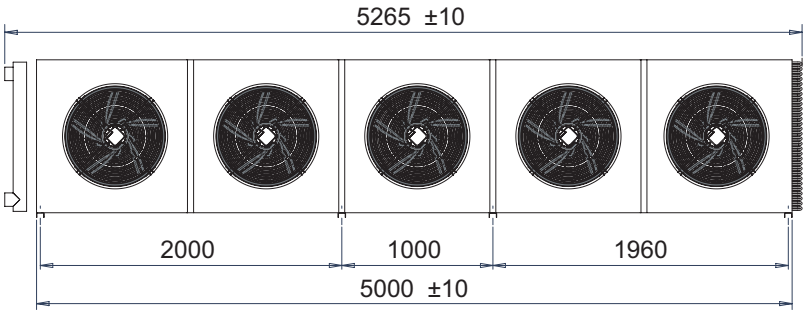


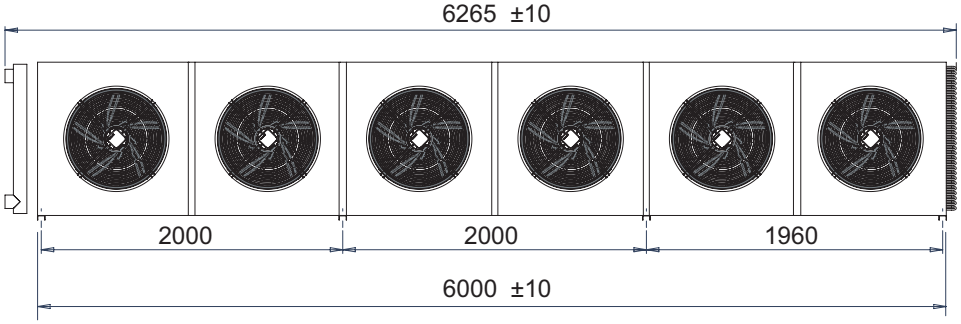
Side view (all models) Mounting profile



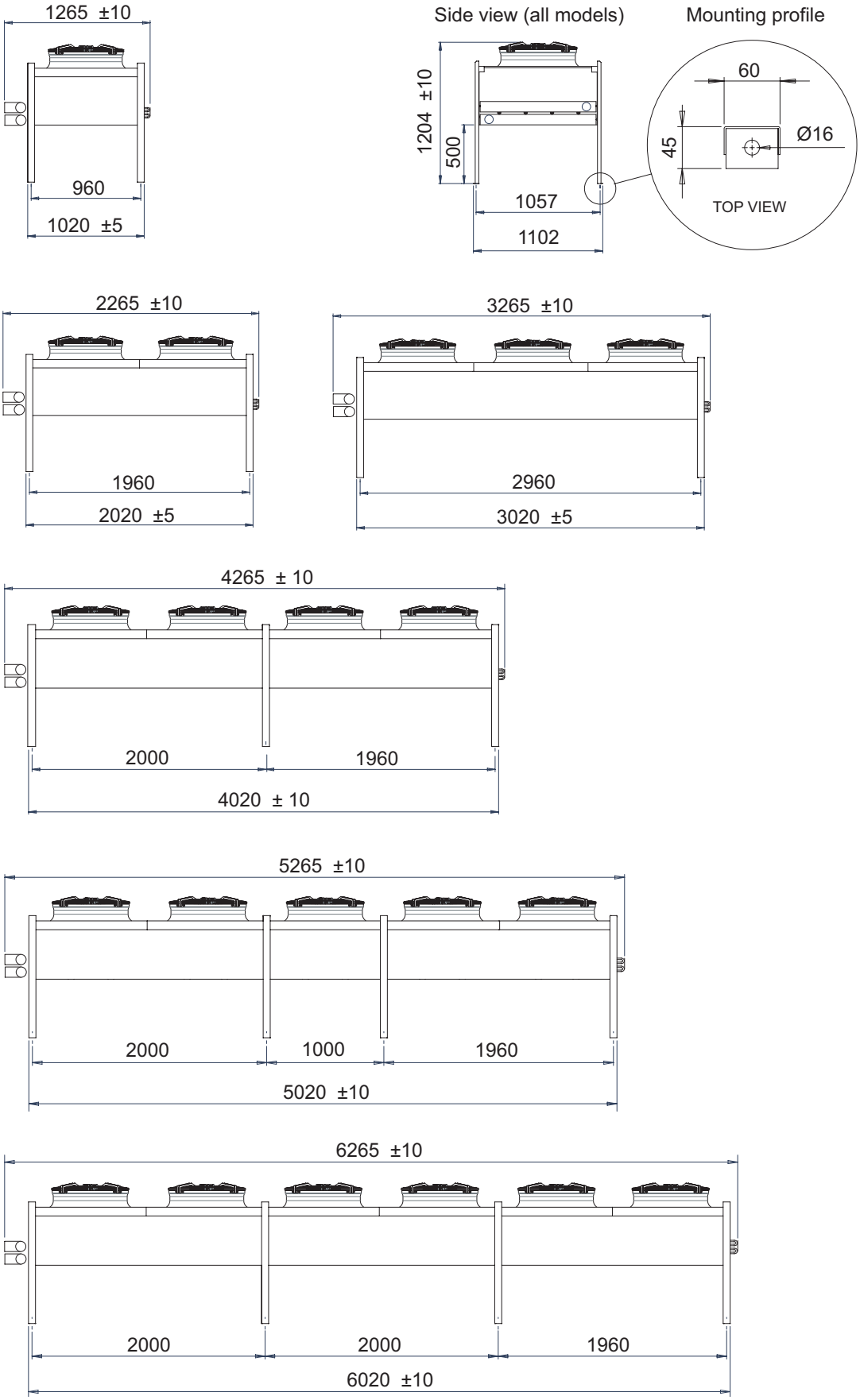






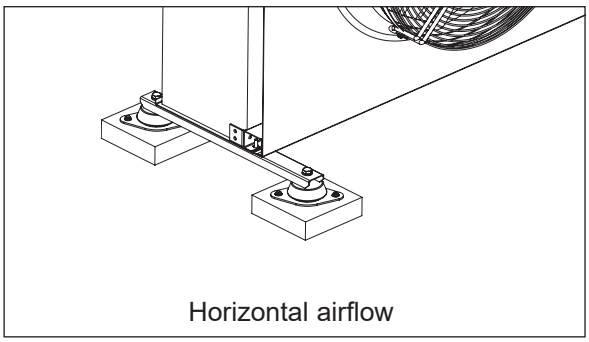


Mounting dimensions model 63 - Vertical airflow

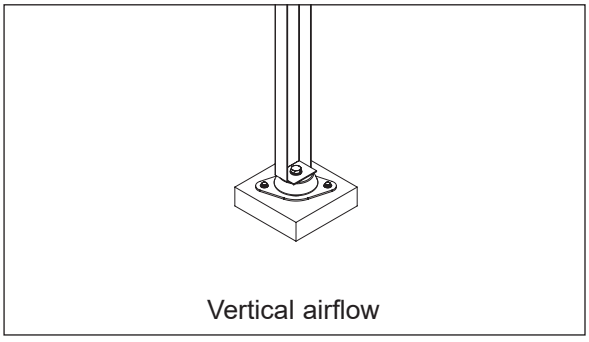


5.2 Concrete mounting base

To avoid oxidation of the equipment feet, it is recommended to mount the heat exchanger on concrete mounting bases.

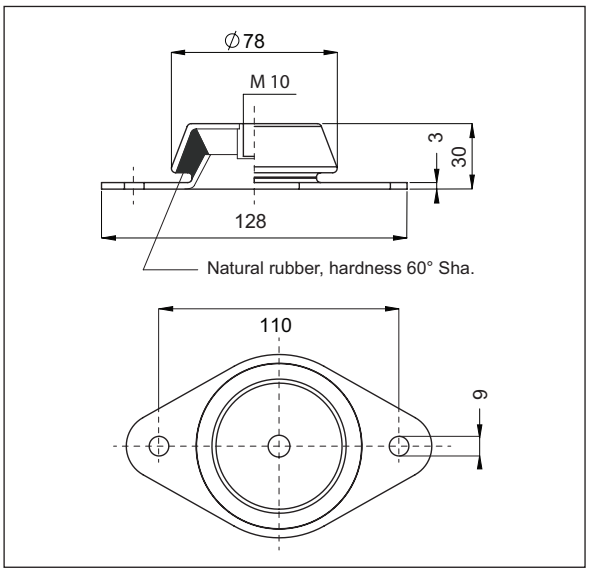


Horizontal airflow



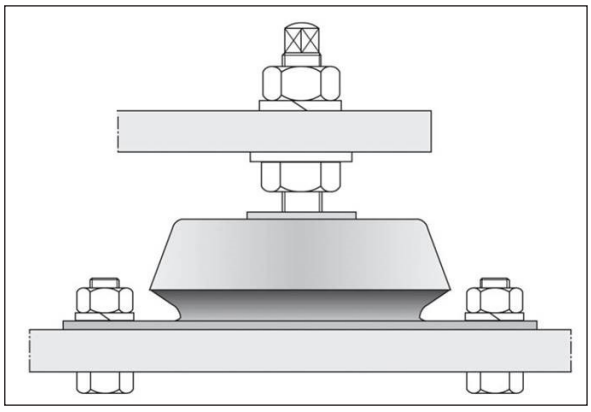
Vertical airflow

5.3 Vibration dampers



For active and passive isolation of vibrations and reducing noise transmission, Alfa LU-VE strongly recommends the installation of vibration dampers. Installation of vibration dampers must be carried out before positioning the unit. Vibration dampers are to be positioned between the unit feet and the mounting base with the supplied M10 screws.

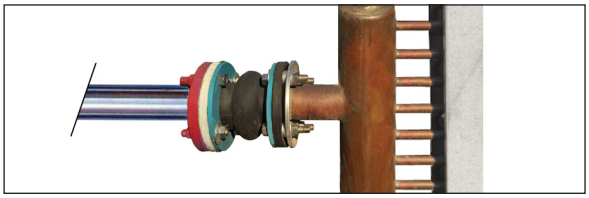
Model	Total nr. of vibration dampers
501, 502, 503 631, 632, 633	4
504, 634	6
635, 636	8



Picture shows an installation example using threaded bar, nut, grower washer, washer and locknut (not supplied).

This way vibration dampers can be used to make the cooler level adjusting the locknut. This is particularly useful with long units or irregular basement.

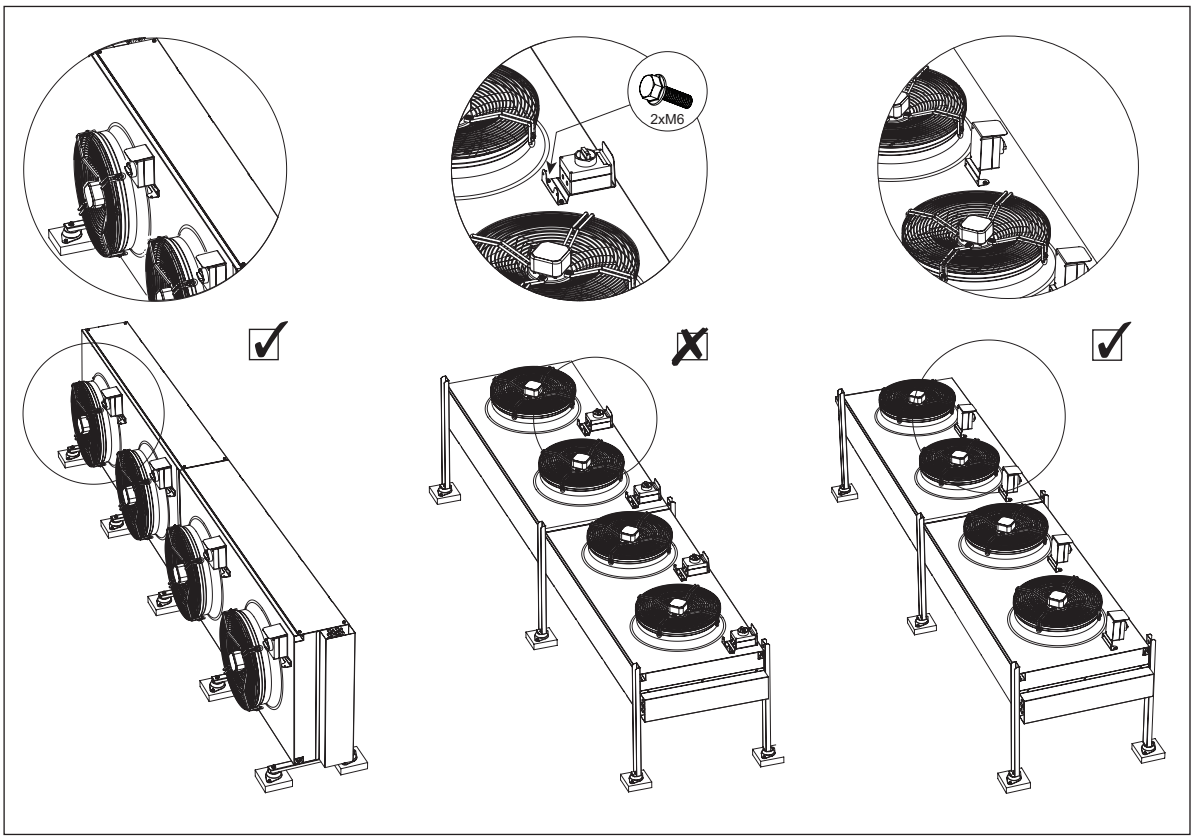
5.4 Expansion joints



Alfa LU-VE recommends the installation of expansion joints on both inlet and outlet connections. Expansion joints are elastic elements which, if properly installed, absorb the thermal expansions of the tubing. Expansion joints are also helpful in order to reduce vibrations in the piping.

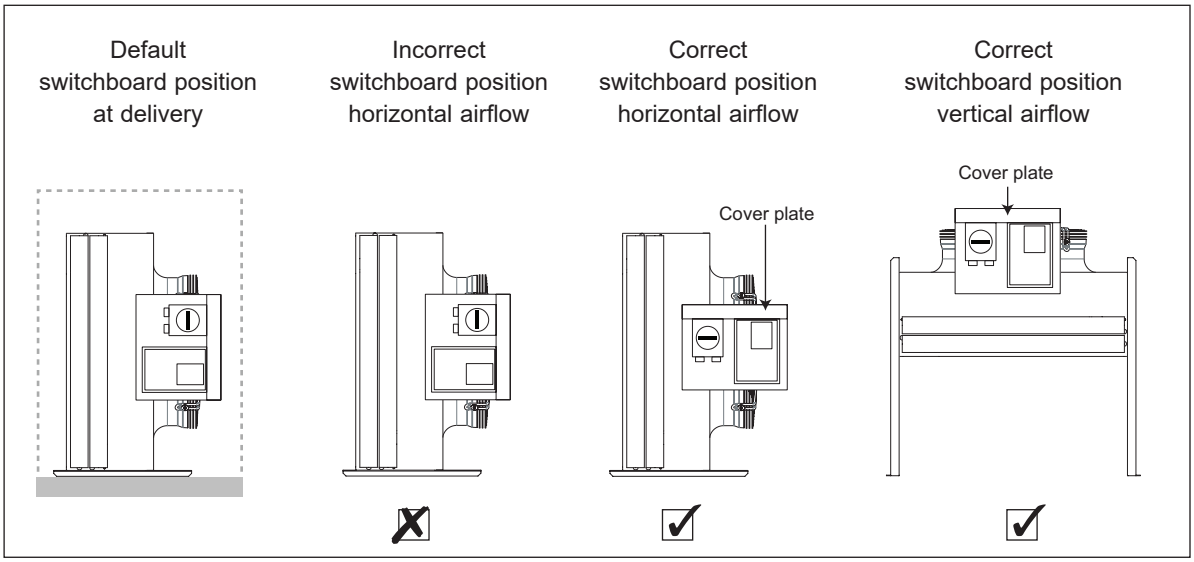
5.5 Switch on/off (option SW)

If switch on/off (SW) is selected, the default positioning is for horizontal airflow installation.
The cover design is such that it can be used both for horizontal and vertical airflow installation.
To adjust the switch positioning to the actual positioning on site: unscrew the cover fixing screws, turn it as shown and replace fixing screws.



5.6 Switchboard fan speed control (option FT)

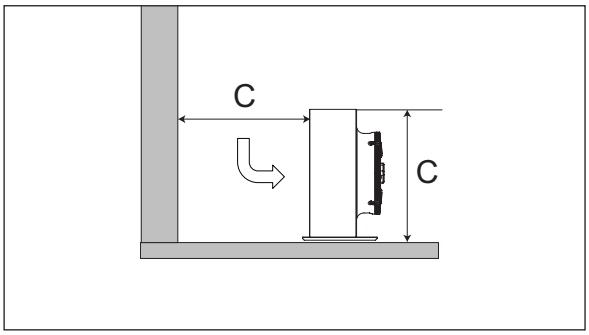
If fan speed control (FT) is selected, the default positioning of the switchboard is for vertical airflow installation. For application with horizontal airflow, unscrew switchboard and remount in position as indicated below. The cover plate should always be positioned horizontally to protect the electrical components.

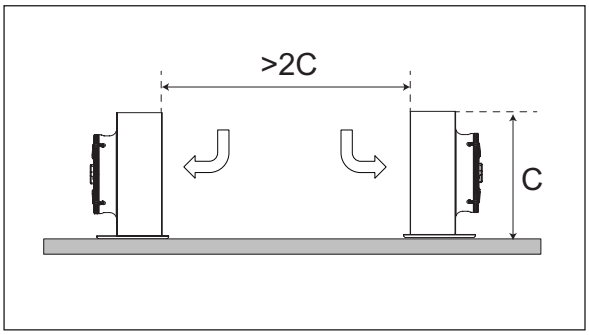


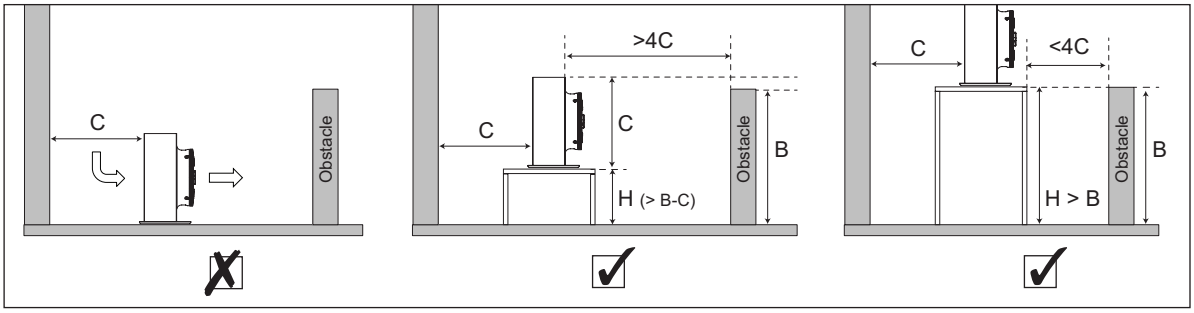
5.7 Installation layout guideline

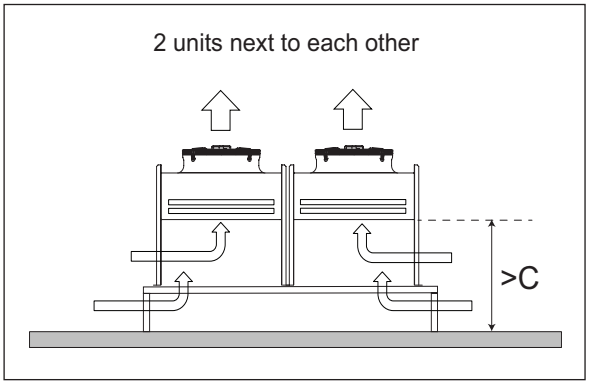
Ensure installation is such thet the following conditions are met:

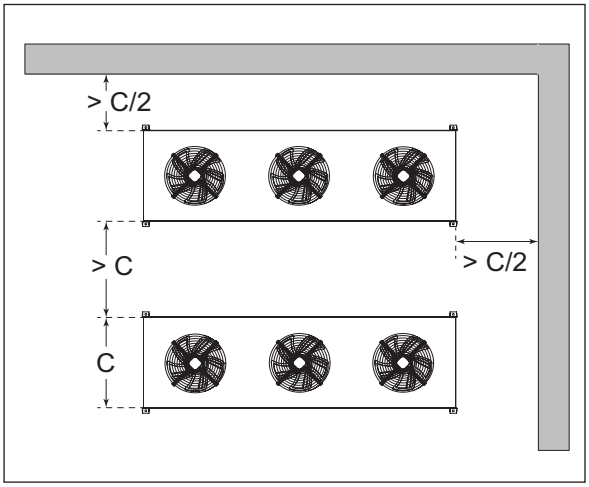
- Place the unit outdoor so that it can be monitored and controlled from all sides at all times.
- Ensure that sufficient space is available for maintenance.
- Verify the structures supporting capacity regarding the weight of the unit(s), including the liquid.
- As a rule of thumb the (unrestricted) air-inlet surface area should at least equal the coil surface of the unit(s).
- Recirculation of heated air is to be avoided at all times.

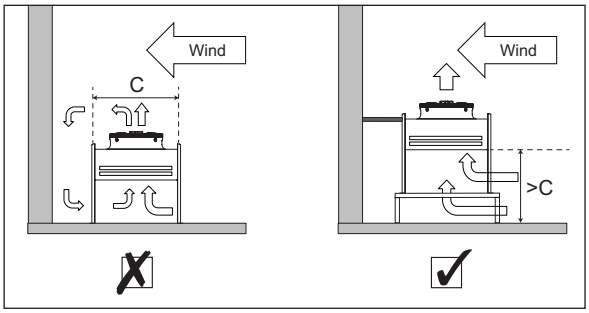












Contact Alfa LU-VE to determine optimal unit spacing for specific conditions on site. Special care should be taken in particular circumstances such as:

- When the installation site is exposed to strong winds.
- When walls or other obstructions with different configuration than the ones shown in the previous pictures are present on site.
- When severe environmental influences are likely to affect to the unit.

5.8 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 connection diagrams are available for download on alfa.luvegroup.com.
When in doubt always contact your local Alfa LU-VE representative for assistance.

Electrical connections

6 Operation

6.1 Start-up procedure

The following procedure is to be respected at every system start-up.

- Close the liquid-in valve and open the liquid-out valve.
- Open unit vent plug and then fill the unit while venting.
- When all air has been discharged from the liquid circuit, close unit vent plug.
- Start liquid pump.
- Open system inlet valve slowly until the appropriate liquid flow is reached.
- Verify there are no leaks in the liquid circuit and connections.
- Switch on fan power supply.
- Start the fans and verify fan direction.
- After some operating time, check the absence of air in the liquid circuit (vent if needed) and verify that current absorbtion does not exceed the value as given in the technical specifications.

6.2 Shutdown

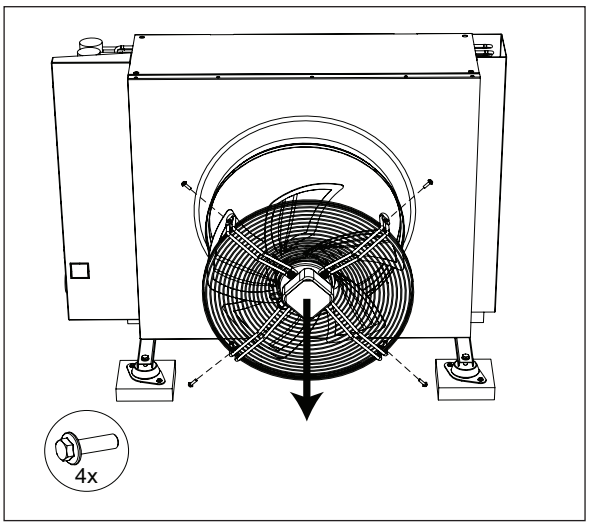
If the unit requires emptying for maintenance, system shutdown or dismounting, proceed as follows:

- Stop liquid supply and switch off electrical power supply.
- Make sure neither liquid nor power supply can be resumed accidentally or unexpectedly.
- Close liquid-in and liquid out valves.
- Install a proper hose at the drain valves. Open venting and draining valves. Attention: fluid may be hot.
- Make sure all drained liquid will be collected in a suitable vessel.
- Compressed air helps to drain in less time. Compressed air shall be oil free.

7 Maintenance

Ensure complete electrical isolation before performing any maintenance activity and always follow guidelines and instructions as given in the air cooled liquid coolers product manual AHE00050.

7.1 Fan replacement



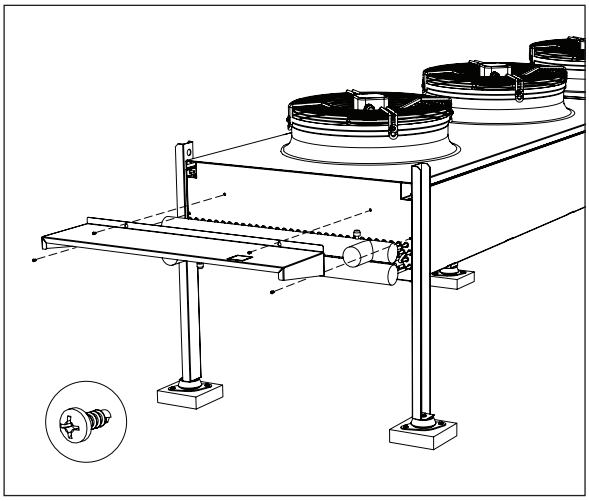
Always disconnect power supply before performing any maintenance activities on fans and fan motors. Disconnect fan cabling.

Unscrew fixing bolts and remove old fan.
Mount new fan in identical position.
Remount fasteners. Use an anti-corrosion compound when remounting the fixing bolts.

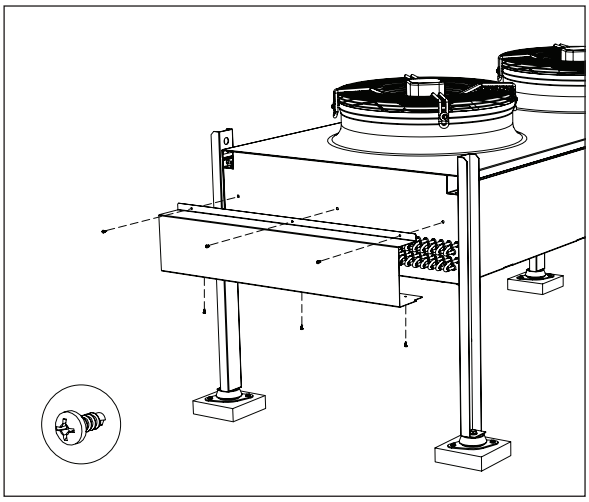
Restore electric connection.

Check the correct fan rotation.

7.2 End covers



End covers can be removed for inspection, cleaning and maintenance purposes. To remove end covers, loosen fixing bolts.



8 Spare parts

Spare parts for AlfaBlue Junior DG

①	End cover - bends side
②	End cover - connection side
③	Mounting profiles (horizontal airflow)
④	Mounting feet (vertical airflow)
⑤	Fan
⑥	Vibration damper
⑦	Switch on/off

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

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