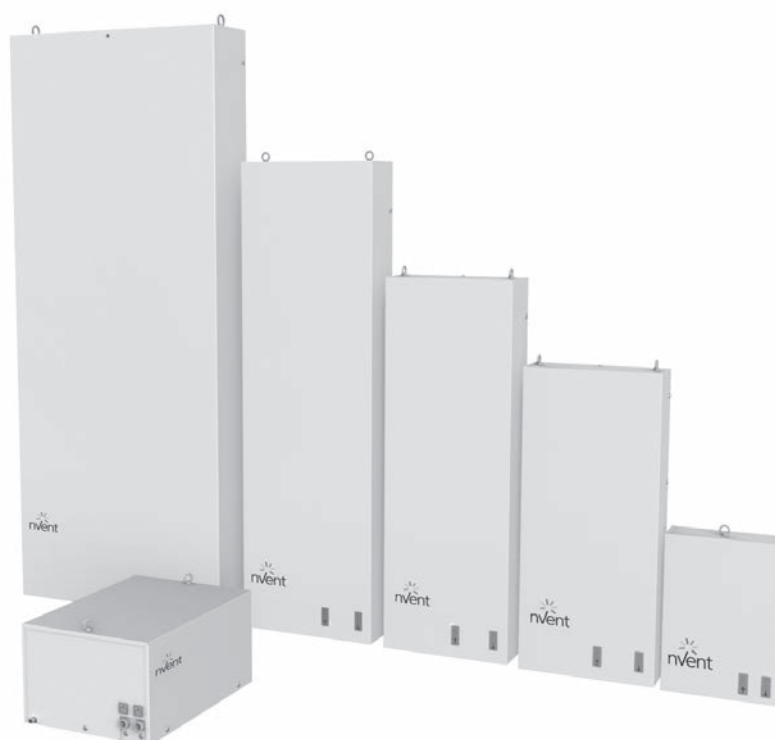


Air-water heat exchangers

Installation, operation and maintenance manual



**BLU
BIT**

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ATTENTION!

Read carefully and completely before installation. Keep the manual until unit decommissioning.

1. HEAT EXCHANGER APPLICATION

The **BLU** series air-water heat exchangers described in this manual are designed and built to cool the air inside electrical switchboards/enclosures in order to protect components sensitive to thermal shock. They also provide **IP55** ingress protection against contaminating and aggressive/corrosive substances.

1.1 Intended use

The **BLU** heat exchanger must be used:

- For cooling electrical switchboards
- Within the temperature and voltage-supply limits indicated on the data plate of the heat exchanger and also given in table **F.12** of this manual
- At a sufficient distance from any heat sources
- With water which meets the chemical and physical properties given in the table in chapter **7.1**
- On switchboards with **IP55** rating or higher. If these requirements are not respected, excessive condensation build-up may occur. As a consequence, cable entry points or any other openings in the enclosure should be well sealed.

To ensure correct operation, the specified scheduled maintenance operations (see section **11**) must be performed regularly. Incorrect or careless use may cause irreparable damage to the heat exchanger and may lead to hazardous situations.

1.2 Improper use

The **BLU** heat exchanger must not be used:

- Under conditions other than those described in section **1.1**
- With the doors of the electrical switchboard open, or installed on enclosures without a minimum **IP55** rating, due to excessive condensate formation
- With the temperature set below the dew point of the ambient air
- In potentially explosive or corrosive atmospheres
- In potentially inflammable atmospheres
- With the condensate line closed or blocked off, or in any case in which the condensate is not allowed to run off freely
- Without the front panel
- With the components in the switchboard installed in such a way as to obstruct the internal air flow

2. SUPPLY

Inside the packaging you will find:

- **1** Air-water heat exchanger
- **1** Installation, operation and maintenance manual
- **1** CE conformity certificate
- **1** Test certificate
- **1** A4 drilling template
- **1** Installation kit, containing (**F.02** and **F.03**):
 - Flanged nuts
 - Flat washers
 - Grub screws
- **1** Self-adhesive seal (**F.02** and **F.03**)
- **1** Runoff pipe (**BIT25**) (**F.05**)
- **1** Condensate runoff pipe elbow joint **BIT** (**F.05**)
- **2** Eyebolts for handling (**F.01**)

3. UPDATES

TEXA INDUSTRIES S.r.l. reserves the right to update its products and the corresponding manuals based on technical progress without prior notice. Please note that at the time of sale, this manual and the corresponding product may not be considered inadequate only because they are not subject to the above-mentioned progress.

4. TECHNICAL FEATURES

(figures **F.12** and **F.13**)

The unit's technical features and CE marking are given on the data plate attached to the heat exchanger.

5. TRANSPORT AND HANDLING

During transport and storage the heat exchanger must not be exposed to temperatures above 70°C or below -20°C. Upon receipt, check that the packaging has not been damaged during shipping.

To lift the heat exchanger in a safe manner the two supplied M6 eyebolts may be used; these should be fitted into the threaded inserts located on the top of the heat exchanger. (figure **F.01**).

6. INSTALLATION

Installation of the unit should only be performed by qualified and authorised personnel.

The heat exchanger must be installed with the enclosure air intake hole in the highest possible point.

Ensure the fixing elements and couplings will not interfere with the equipment inside the enclosure itself.

If the cooling unit is to be installed on a door, make sure the door can take the weight.

Install in a vertical position – maximum permitted deviation from the vertical is 2°.

Disconnect power before starting any work inside the switchboard.

The heat exchanger must be installed on the outside of the electrical enclosure. Drill the holes and make the necessary cuts in the enclosure (figure **F.03**) using the drilling template supplied with the unit. If required, fit the sealing strip on the heat exchanger on the side connected to the enclosure and follow the assembly diagram (figure **F.03**).

7. WATER CONNECTION

- Connect the water supply with a threaded union.
- Check whether it is possible to connect to an existing circuit or to a refrigerated water supply.
- Check that the circuit pressure is not greater than the permitted value.
- Check that there are no leaks from the pipes when charging the circuit with water.

7.1 Chemical parameters of the water in the circuit

For correct operation of the heat exchanger, and to prevent corrosion, the water used in the circuit must respect the limits given in the table below:

Hydrological data	
Parameters	Limits
pH	7 – 8.5
Carbonate hardness	3 – 8° dH
Dissolved carbon dioxide	8–15 mg/dm ³
Combined carbon dioxide	8–15 mg/dm ³
Aggressive carbon dioxide	0 mg/dm ³
Sulphides	< 10 mg/dm ³
Oxygen	< 50 mg/dm ³
Chloride ions	< 50 mg/dm ³
Sulphate ions	< 250 mg/dm ³
Nitrates and nitrites	< 7 mg/dm ³
COD (Chemical Oxygen Demand)	< 5 mg/dm ³
Ammonia	< 5 mg/dm ³
Iron	< 0.2 mg/dm ³
Manganese	< 0.2 mg/dm ³
Conductivity	< 2200 µS/cm
Dry residue	< 500 mg/dm ³
Potassium permanganate	< 25 mg/dm ³
Suspended substances	< 3 mg/dm ³

8. CONDENSATE RUNOFF PIPE

The condensate which, depending on the ambient temperature and humidity conditions, forms on the heat exchanger with finned tube which cools the enclosure air, is not a malfunction but a normal feature of the unit's operation. This condensate is taken outside through a pipe at the bottom of the heat exchanger.

A transparent Ø 12x2 plastic pipe must be connected to this outlet (figure F.06, F.07).

A 2.5 m plastic runoff pipe must be connected to **BIT** machines for this discharge (figure F.05).

To do this, the pipe must be cut to the correct length to span the distance between the metal pipe coming out of the machine and the edge of the enclosure roof. This section of pipe must then be coupled to the remaining length of pipe using the supplied elbow joint in order to bring the condensate to the base of the enclosure. This plastic pipe can be connected to another one with the same diameter to carry the condensate to another point, allowing it to be discharged in an area where there can be no slipping hazard for personnel. In this case, make sure the condensate flows without any hindrance. Avoid horizontal lengths of more than 0.5 metres, uphill sections and the accidental formation of traps (figure F.06). The end of the condensate runoff pipe must always be free and never underwater. The end of the condensate runoff pipe must therefore never be placed inside a condensate collection container (figure F.07). Using the heat exchanger with the doors of the enclosure open would generate an excessive amount of condensate; this is therefore not an authorised condition of use (figure F.08). To avoid this problem we suggest using a position switch on the door that will stop the heat exchanger if the door is opened.

9. ELECTRICAL CONNECTION

9.1 Safety

⚠ Warning! Caution! Electrical connections must only be performed by specialised and authorised personnel.

Check that there is no power to the switchboard and that the supply voltage corresponds to the characteristics given on the heat exchanger's data plate. In order to ensure protection of the power supply, use delayed action fuses/switch disconnectors or magneto-thermal cut-off switches (e.g. RCDs) of the values indicated (figure F.12). Connect the cables as indicated in the wiring diagram, taking care to correctly identify the individual wires.

9.2 Models with autotransformer (BLUA0GX0B-BLUA5GX0B)

These two-phase models can operate with two different supply voltages: 440 V 2~ 50-60 Hz and 400 V 2~ 50-60 Hz.

The heat exchanger is factory set for a 400 V 2~ 50-60 Hz power supply. If you wish to power the heat exchanger with a 440 V 2~ 50-60 Hz supply, the panel must be opened and the connection modified as follows: move the male faston **31** from the female faston **31A** to the female faston **31B** (Figure F.11).

(BLUB5KX0B)

These two-phase models can operate with two different supply voltages: 460 V 2~ 50-60 Hz and 400 V 2~ 50-60 Hz.

The heat exchanger is factory set for a 400 V 2~ 50-60 Hz power supply. If you wish to power the heat exchanger with a 460 V 2~ 50-60 Hz supply, the panel must be opened and the connection modified as follows: move the male faston **31** from the female faston **31A** to the female faston **31B** (Figure F.11).

10. ACCESSORIES

In order to optimise the heat exchange on the basis of the temperature required inside the enclosure, avoid using water unnecessarily and allow correct condensate management, thermostats and/or level indicators can be incorporated to control an ON/OFF solenoid valve which will allow or inhibit the water flow.

10.1 Mechanical thermostat + solenoid valve kit (optional)

The solenoid valve is a two-way normally closed model controlled by a mechanical thermostat which stops the water flow when the set temperature is reached (figure A F.04). The thermostat is factory set to 35°C; if you wish to regulate the temperature of the heat exchanger, shut off the power supply and remove the heat exchanger case, then adjust the thermostat regulation screw (figure F.04).

The thermostat can be set between 20°C and 46°C. For temperatures outside this range, contact our technical assistance department.

The thermostat has a hysteresis of 4°C, therefore valve opening will be enabled at a temperature of 4°C above the set-point.

After adjustment, refit the panel and restore the power supply.

10.2 Level indicator + solenoid valve

The level indicator operates when the level of liquid inside the condensate collection tank has reached its upper safety limit.

The solenoid valve is connected to the level switch which closes it in the event that the condensate or broken pipes make the level in the condensate collection tank increase beyond the maximum.

11. MAINTENANCE

⚠ Warning! Caution! Before embarking on any maintenance work, cut the power to the enclosure.

The only maintenance required is as follows:

Operation	Frequency
Check the fans: overheating or excessive vibration	Every 6 months

Any repairs that may need doing must only be performed by specialised and authorised personnel, using only original spare parts.

13. TROUBLESHOOTING

Malfunction	Conditions	Remedy
THE EXCHANGER IS NOT COOLING	1) None of the fans are working	Electricity is not reaching the exchanger: check there is voltage as well as closing of door and switches.
	2) The fans are working	Check the water temperature is adequately lower than the inside temperature.

12. TECHNICAL INFORMATION

12.1 Operating principle

The operating principle of air-water heat exchangers is based on the transfer of heat between an air flow and a water flow of different temperatures, via a surface with a high coefficient of thermal exchange (figure F.09).

The cooling water (supplied by the user) flows through the tubes of a heat exchanger battery.

The fan channels the air from the enclosure through the heat exchanger battery, where it gives up heat to the (colder) water.

The air, which is now cooled, is then reintroduced into the enclosure.

Correct use of air-water heat exchangers requires the essential condition that the temperature of the cooling water is always lower than that of the enclosure temperature.

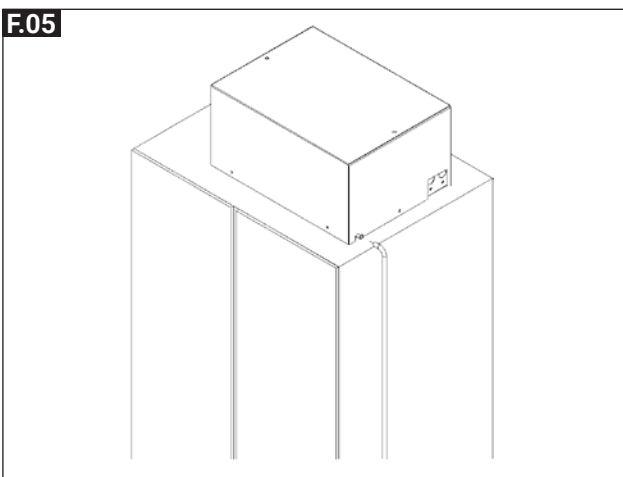
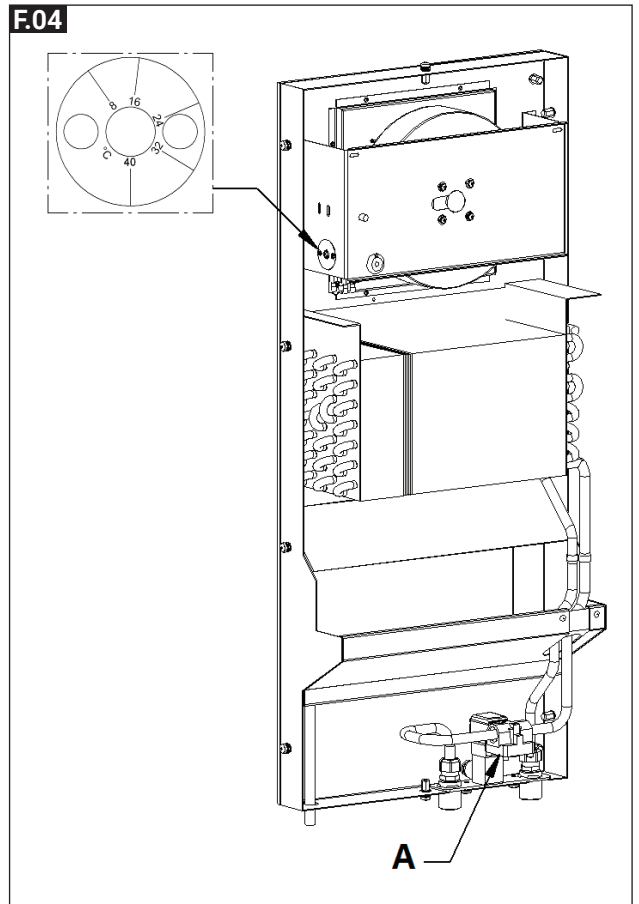
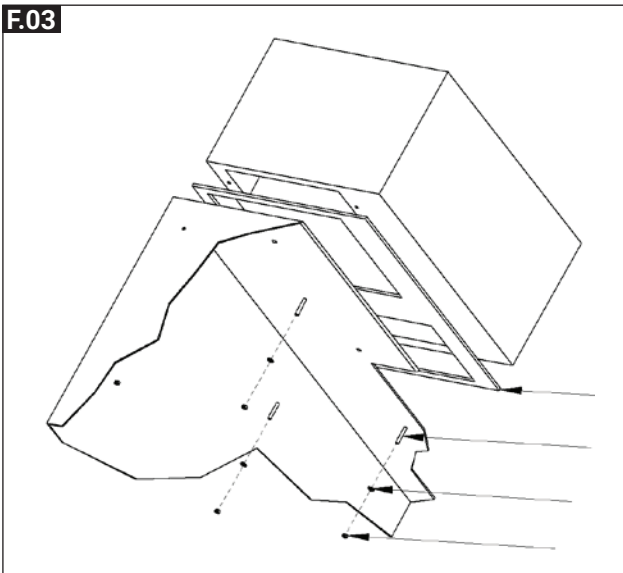
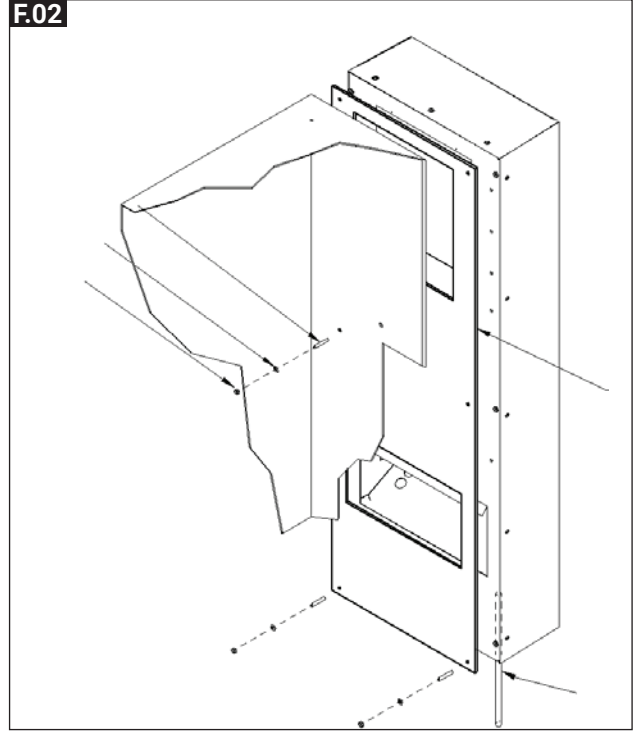
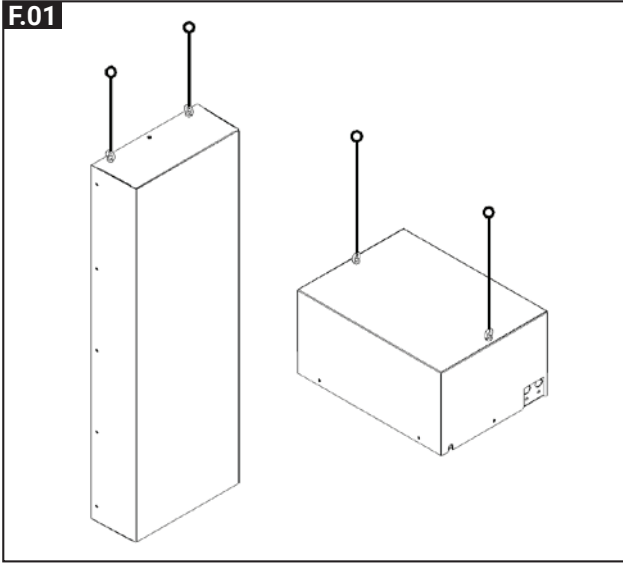
The greater the difference between the two temperatures, the greater the quantity of heat exchanged.

12.2 Safety devices

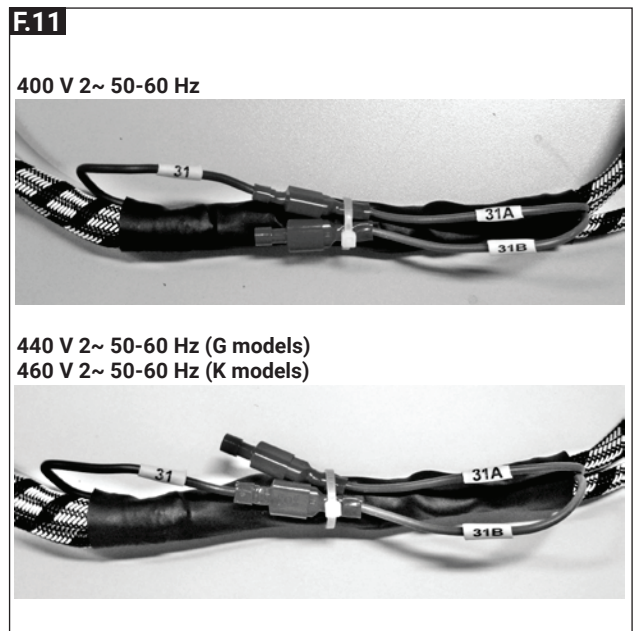
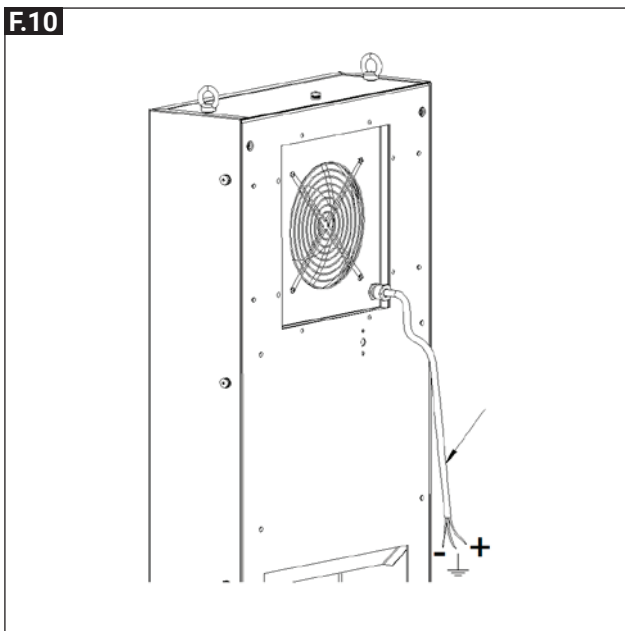
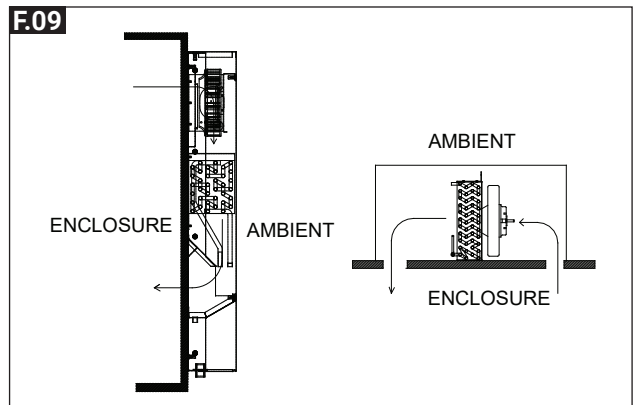
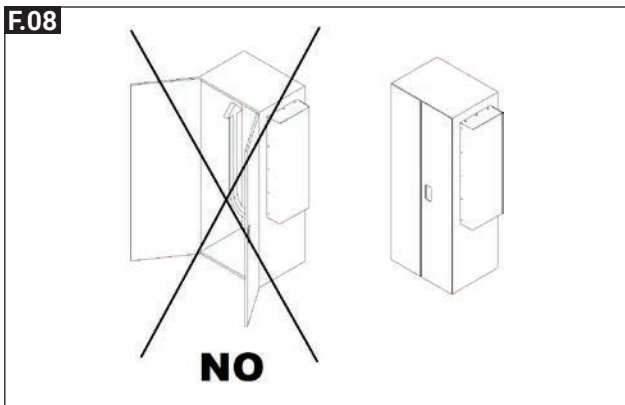
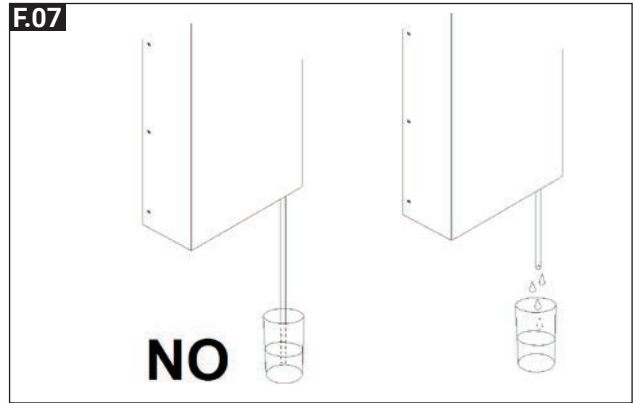
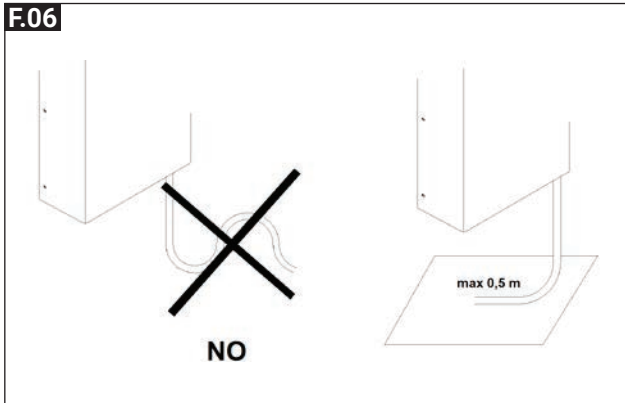
The fans have an internal thermal cut-out switch that stops them in the case of overheating.

Note: Keep the unit's documentation in a safe, dry place.

14. PICTOGRAMS



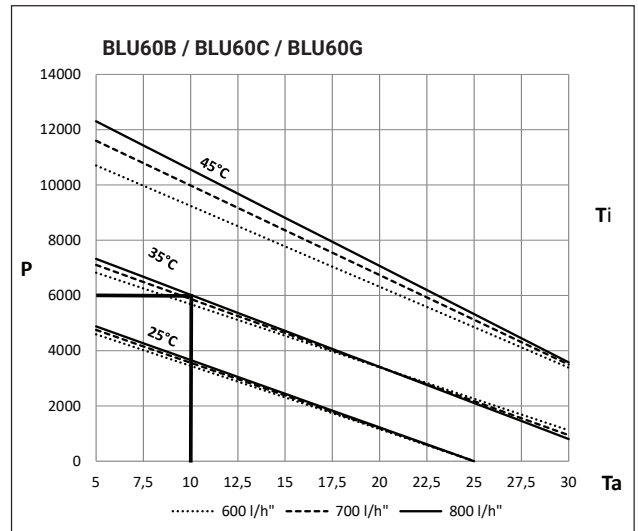
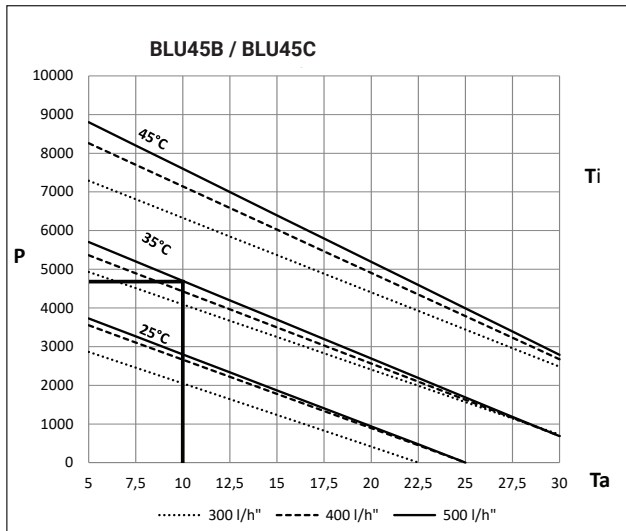
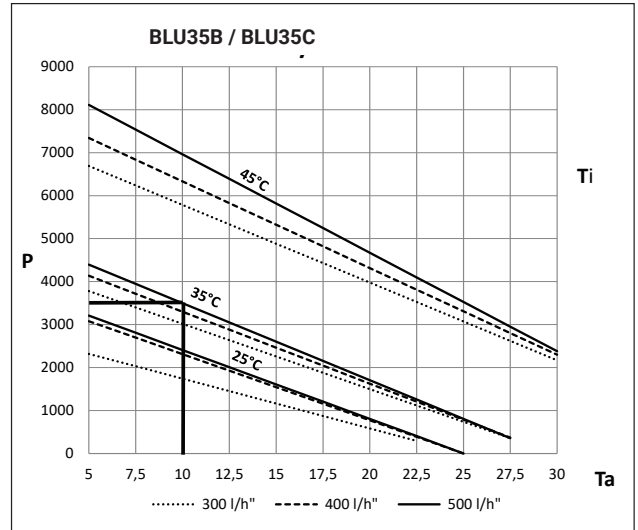
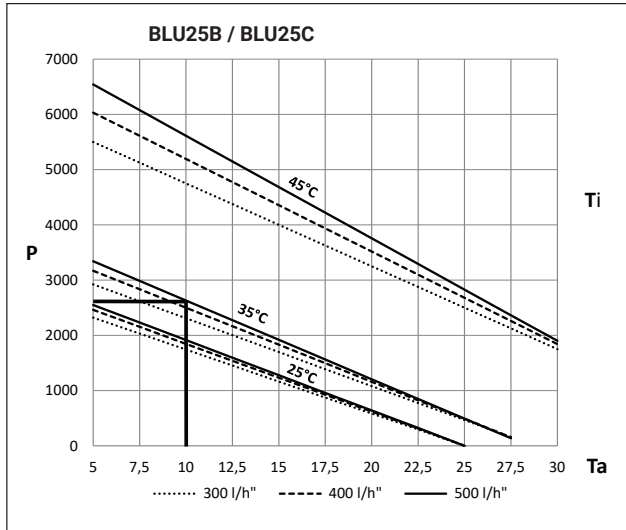
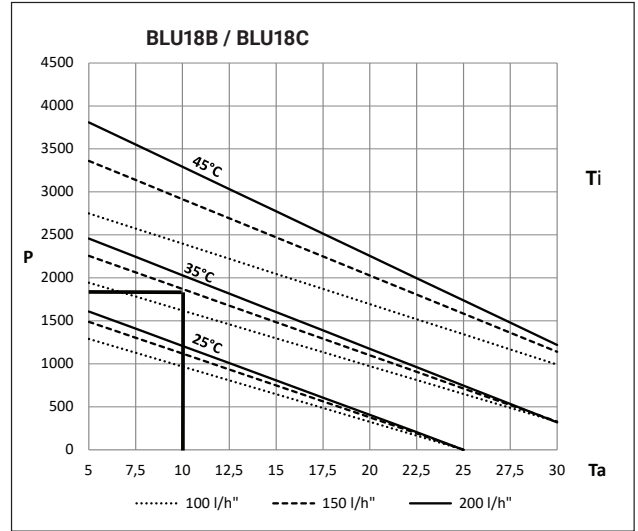
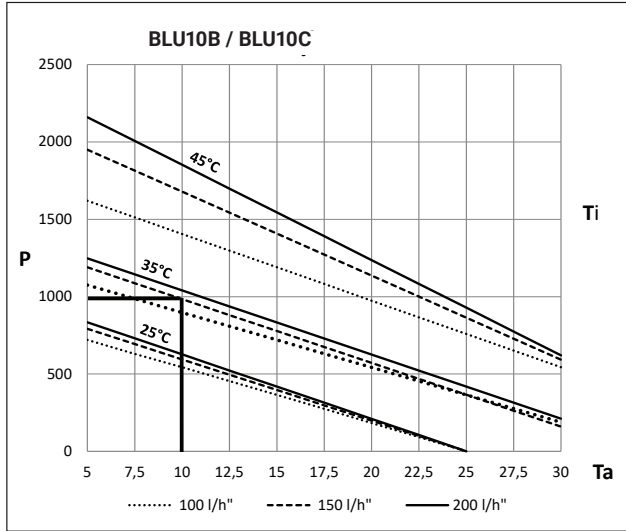
14. PICTOGRAMS



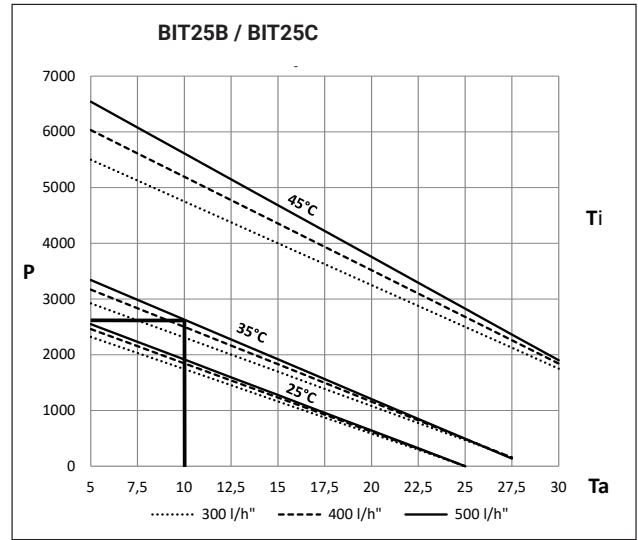
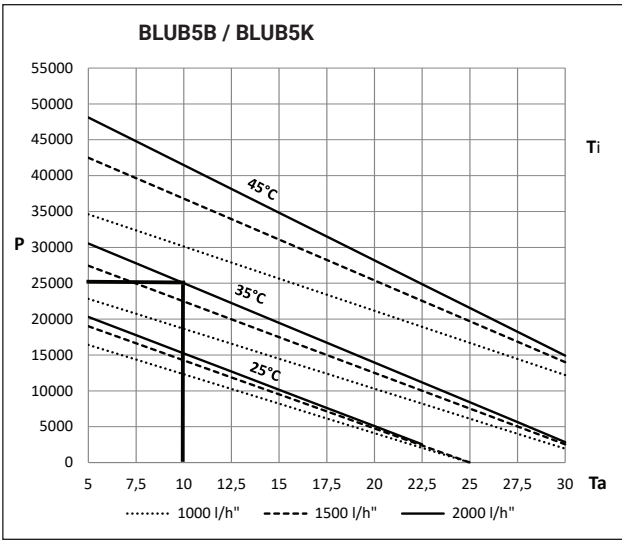
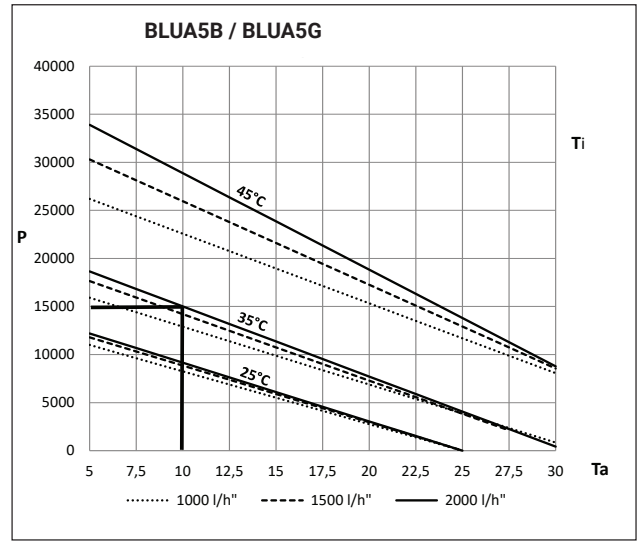
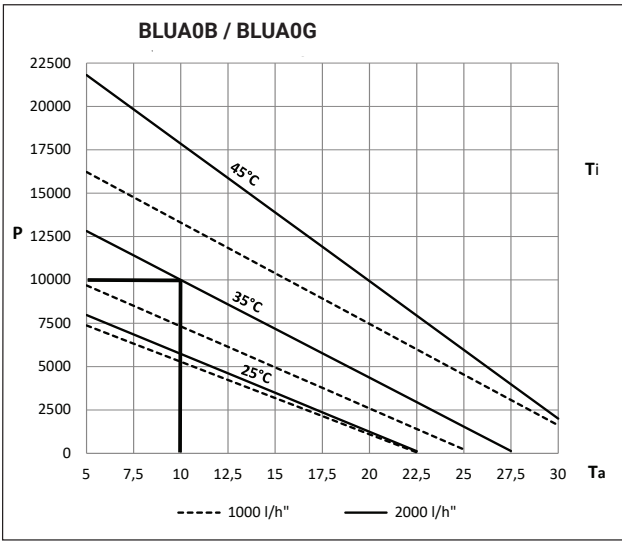
15. TECHNICAL DATA F.12

Useful cooling output	Reference water flow rate	Supply voltage	Dimensions (W x H x D)	Fitting type	Adsorbed			Pre-fuse T	Adsorbed power	Duty cycle	Refrigerant	Max pressure	Enclosure temperature range	Ambient temperature range	Protection internal circuit	Noise level	Weight	Color	Conformity
					mm	"	A												
W	l/h	V ~ Hz	mm	"	A	A	W	W	-	-	bar	°C	°C	IP	dB(A)	kg	-	-	
WT10A35																			
1000	150	230 1 ~ 50-60	311x453x115	3/8 G	0,17	2	29	100%	water	10	20 ÷ 60	1 + 70	IP55	55	12	RAL 7035 CE - UKCA			
1000	150	230 1 ~ 50-60	311x453x115	3/8 G	0,20	2	34	100%	water	10	20 ÷ 60	1 + 60	IP55	55	12	RAL 7035 CE - UKCA - UL			
1000	150	115 1 ~ 50-60	311x453x115	3/8 G	0,38	2	25	100%	water	10	20 ÷ 60	1 + 70	IP55	55	12	RAL 7035 CE - UKCA			
1750	150	230 1 ~ 50-60	398x901x137	1/2 G	0,36	2	75	100%	water	10	20 ÷ 60	1 + 70	IP55	58	18	RAL 7035 CE - UKCA			
1750	150	230 1 ~ 50-60	398x901x137	1/2 G	0,30	2	67	100%	water	10	20 ÷ 60	1 + 60	IP55	58	18	RAL 7035 CE - UKCA - UL			
1750	150	115 1 ~ 50-60	398x901x137	1/2 G	0,76	2	77	100%	water	10	20 ÷ 60	1 + 70	IP55	58	18	RAL 7035 CE - UKCA			
2500	500	230 1 ~ 50-60	398x901x137	1/2 G	0,33	2	80	100%	water	10	20 ÷ 60	1 + 70	IP55	58	19	RAL 7035 CE - UKCA			
2500	500	230 1 ~ 50-60	398x901x137	1/2 G	0,60	2	100	100%	water	10	20 ÷ 60	1 + 60	IP55	58	19	RAL 7035 CE - UKCA - UL			
2500	500	115 1 ~ 50-60	398x901x137	1/2 G	0,74	2	82	100%	water	10	20 ÷ 60	1 + 70	IP55	58	19	RAL 7035 CE - UKCA			
3500	500	230 1 ~ 50-60	398x1148x163	1/2 G	0,55	2	130	100%	water	10	20 ÷ 60	1 + 70	IP55	64	29	RAL 7035 CE - UKCA			
3500	500	230 1 ~ 50-60	398x1148x163	1/2 G	0,80	2	140	100%	water	10	20 ÷ 60	1 + 60	IP55	64	29	RAL 7035 CE - UKCA - UL			
3500	500	115 1 ~ 50-60	398x1148x163	1/2 G	1,12	2	135	100%	water	10	20 ÷ 60	1 + 70	IP55	64	29	RAL 7035 CE - UKCA			
4500	500	230 1 ~ 50-60	398x1148x163	1/2 G	0,71	2	160	100%	water	10	20 ÷ 60	1 + 70	IP55	69	30	RAL 7035 CE - UKCA			
4500	500	230 1 ~ 50-60	398x1148x163	1/2 G	1,20	4	220	100%	water	10	20 ÷ 60	1 + 60	IP55	69	30	RAL 7035 CE - UKCA - UL			
4500	500	115 1 ~ 50-60	398x1148x163	1/2 G	1,50	4	170	100%	water	10	20 ÷ 60	1 + 70	IP55	69	30	RAL 7035 CE - UKCA			
6000	800	230 1 ~ 50-60	450x1502x163	1/2 G	0,71	2	160	100%	water	10	20 ÷ 60	1 + 70	IP55	69	40	RAL 7035 CE - UKCA			
6000	800	230 1 ~ 50-60	450x1502x163	1/2 G	1,20	4	220	100%	water	10	20 ÷ 60	1 + 60	IP55	69	40	RAL 7035 CE - UKCA - UL			
6000	800	115 1 ~ 50-60	450x1502x163	1/2 G	1,50	4	170	100%	water	10	20 ÷ 60	1 + 70	IP55	69	40	RAL 7035 CE - UKCA			
6000	800	400/440 2 ~ 50-60	450x1502x163	1/2 G	0,40	1	170	100%	water	10	20 ÷ 60	1 + 70	IP55	69	42	RAL 7035 CE - UKCA			
10000	2000	230 1 ~ 50-60	797x1935x206	3/4 G	1,90	4	420	100%	water	10	20 ÷ 60	1 + 70	IP55	70	90	RAL 7035 CE - UKCA			
10000	2000	400/440 2 ~ 50-60	797x1935x206	3/4 G	1,10	2	440	100%	water	10	20 ÷ 60	1 + 70	IP55	70	90	RAL 7035 CE - UKCA			
15000	2000	230 1 ~ 50-60	797x1935x206	3/4 G	1,90	4	420	100%	water	10	20 ÷ 60	1 + 70	IP55	72	92	RAL 7035 CE - UKCA			
15000	2000	400/440 2 ~ 50-60	797x1935x206	3/4 G	1,10	2	440	100%	water	10	20 ÷ 60	1 + 70	IP55	70	92	RAL 7035 CE - UKCA			
25000	2000	230 1 ~ 50-60	797x1935x350	3/4 G	2,20	4	500	100%	water	10	20 ÷ 60	1 + 70	IP55	75	120	RAL 7035 CE - UKCA			
25000	2000	400/460 2 ~ 50-60	797x1935x350	3/4 G	1,30	2	530	100%	water	10	20 ÷ 60	1 + 70	IP55	75	120	RAL 7035 CE - UKCA			
2500	500	230 1 ~ 50-60	540x270x400	1/2 G	0,30	2	65	100%	water	10	20 ÷ 60	1 + 70	IP55	58	19	RAL 7035 CE - UKCA			
2500	500	115 1 ~ 50-60	540x270x400	1/2 G	0,62	2	67	100%	water	10	20 ÷ 60	1 + 70	IP55	58	19	RAL 7035 CE - UKCA			

16. PERFORMANCES F.13

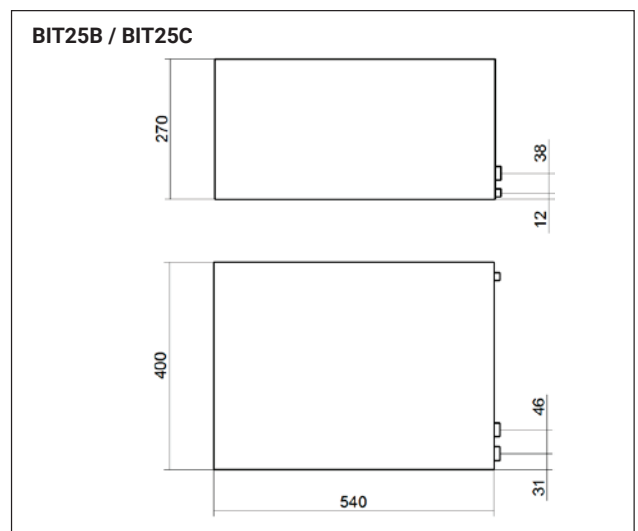
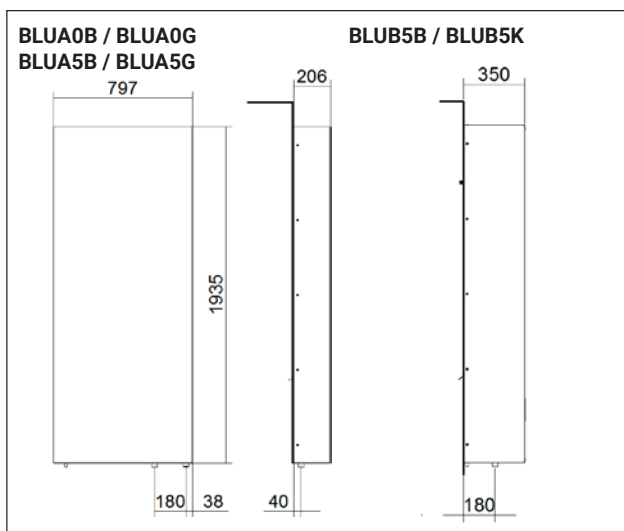
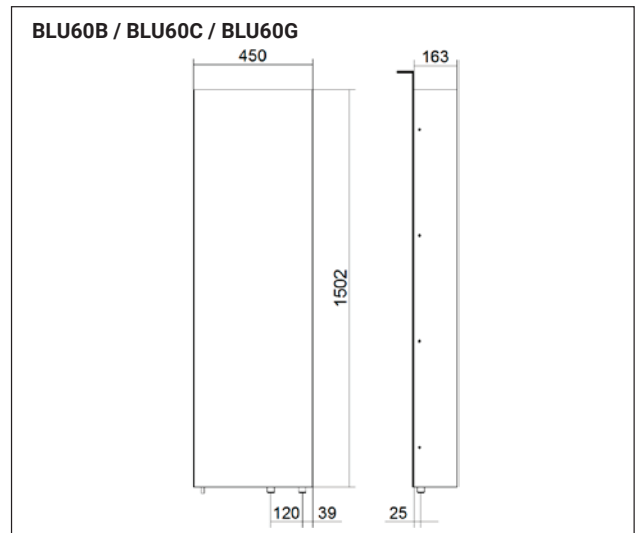
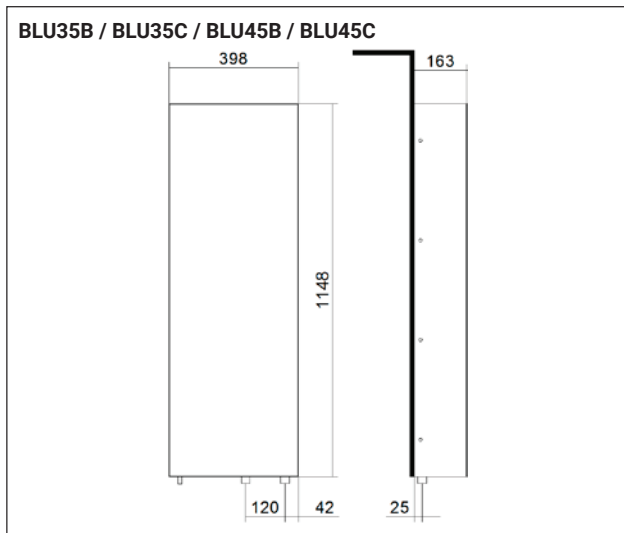
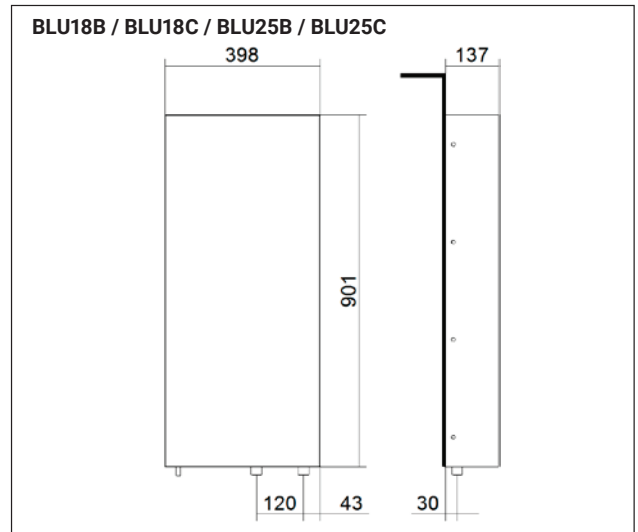
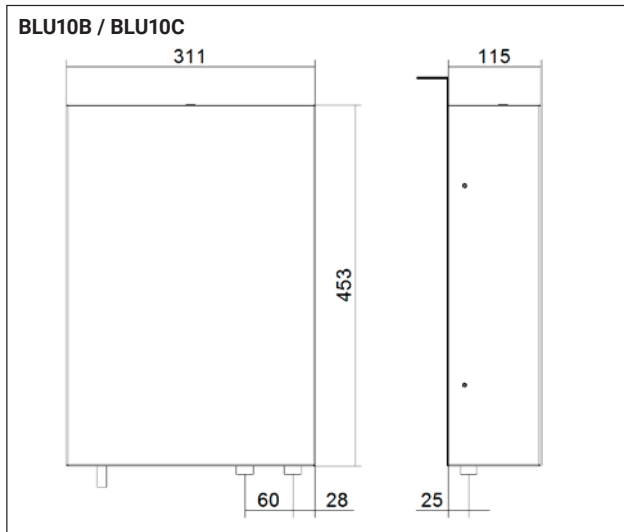


16. PERFORMANCES F.13



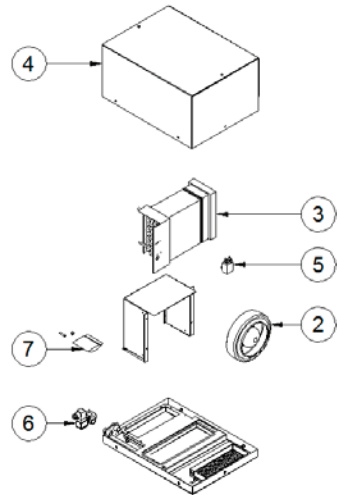
P (W)	Ta (°C)	Ti (°C)
Useful cooling output	Inlet water temperature	Enclosure internal temperature

17. DIMENSIONS F.14

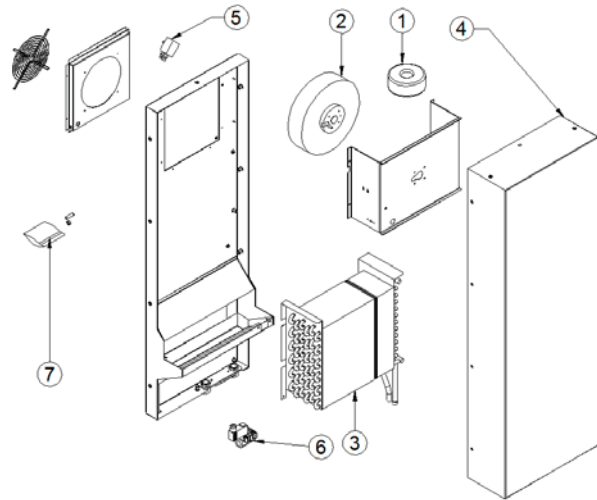


18. SPARE PARTS F.16

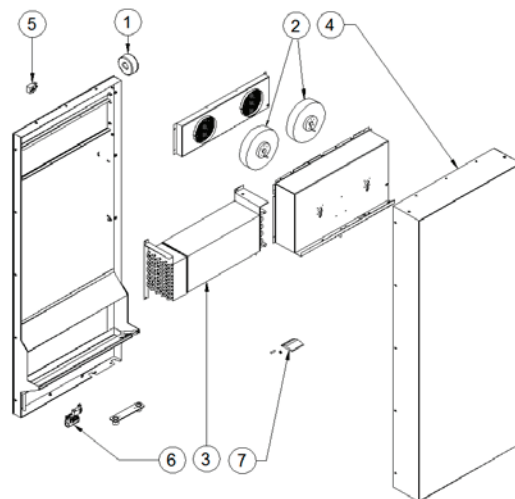
BIT25B / BIT25C



BLU10B / BLU10C
 BLU18B / BLU18C
 BLU25B / BLU25C
 BLU35B / BLU35C
 BLU45B / BLU45C
 BLU60B / BLU60C
 BLU60G



BLUA0B / BLUA0G
 BLUA5B / BLUA5G
 BLUB5B / BLUB5K



- | | | |
|--------------------|--------------------------|---------------------------|
| 1. Autotransformer | 4. Cover | 7. Assembly accessory kit |
| 2. Internal fan | 5. Mechanical thermostat | |
| 3. Exchanger coil | 6. Solenoid valves | |

When ordering the following informations are essential: Model, Serial number, Date of production, Requested parts' code

19. GUARANTEE

TEXA INDUSTRIES S.r.l. guarantees its product free from quality defects. It also guarantees for 12 months all the product's components starting from the date of shipment and when they are used in the following conditions:


1. When the temperatures of the panel or enclosure are no higher or lower than those indicated on the rating plate.
2. In circuits or systems that do not require cooling capacities higher than those indicated on the rating plate.
3. On premises where the temperatures are no higher or lower than those indicated on the rating plate.
4. On panels or enclosures with at least a minimum protection level of IP54.
5. When the instructions given in the "operating and maintenance" manual, provided with each single product, are fully complied with.

This guarantee does not cover any damage to the product due to:

- a. using a type and quantity of gas in the cooling circuit different to that indicated on the rating plate.
- b. using the product on unsuitable premises: where there is an acid or corrosive atmosphere.

For each component found to be faulty during the term of the guarantee, the manufacturer will, according to its unquestionable judgement, repair and/or substitute the faulty components free of charge either at its factory or in one of its authorised companies. Any additional expenses incurred for removing, handling and installation if required are not payable by the manufacturer. Any maintenance work needed and requested by the customer care/of his premises, even if it is during the term of the guarantee, will be billed according to the manufacturer rates. The products repaired or substituted in no way modify the time the guarantee starts or ends. The manufacturer can in no way be held liable except for repairing or substituting faulty products and if such products have to be redelivered it will be on a Carriage Forward basis. It is the customer's responsibility to see to the correct earthing, installation and power supply of the product in compliance with current standards. Reference must be made to the current laws in force regarding liability for damage caused by a faulty product, for which manufacturer is insured.

To benefit from the guarantee terms and relative product information it is essential to have the purchase document and the serial number of the product which you will find on the rating plate. The rating plate is printed on plastic and the writing will remain for a long time even on premises and in environments where conditions are particularly bad.

 Attention: the guarantee is automatically invalidated if the product is tampered with in any way.

20. ASSISTANCE SERVICE

Assistance Service For machine malfunctions, technical information or advice on installation, please contact Assistance Service at: **TEXA INDUSTRIES S.r.l.**


Strada Cà Bruciata, 5 46020 – Pegognaga (MN) – ITALIA

Tel.: 0376 – 554511 – e-mail: texa.service@nVent.com

Before contacting the Manufacturer Assistance Service, ensure you have:

- A. The full machine code number;
- B. The serial number of the machine;

All requests for assistance must be sent to Manufacturer in writing, by email or fax.

 Warning: The equipment can only be returned to Manufacturer on request and after agreement by the Manufacturer itself.

21. NOTES

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North America

Service@nVent.com
Tel +1 763 422 2211

Follow prompts for option 1,
then option 2 then option 3

All Other Locations

Texa.service@nVent.com
Tel +39 0376 554511



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