DAIKIN APPLIED (UK) LTD
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Installation, use and maintenance manual

Modular T Smart ATB

D-EIMAH01806-22_00EN

› Modular T Smart ABT

Translation of the original instructions

REV	**00**
DATE	**June 2022**
REPLACES	

Contents

1 Important warnings

The pictogram shows a situation of immediate danger or a dangerous situation that might cause injuries or death.

The pictogram shows that it is necessary to adopt suitable behaviour in order to avoid jeopardising staff safety and cause damages to the equipment.

The pictogram shows particularly important technical information that should be taken into consideration by the people installing or using the equipment.

Purpose of the manual

The purpose of this **manual** is to guide the installer and qualified operator in the installation, maintenance and proper and safe use of the equipment. For this reason, **it is mandatory for all personnel involved in installation, maintenance and supervision of the unit to read this manual.**
Contact the manufacturer if any points are unclear or difficult to understand.

This manual contains information regarding:
- technical specifications of the unit;
- instructions for transport, handling, installation and assembly;
- use;
- information for instructing personnel authorised for its use;
- maintenance.

All the information provided generally refers to any unit of the Modular T range. All units are shipped together with a **technical drawing**, indicating the specific weight and size of the unit received. It must be considered an integral part of this manual and therefore it must be kept with the utmost care in all its parts.

If the manual or drawing is lost, it is important to request a copy from the Manufacturer, specifying the unit's serial number that can be found on the label on the unit itself.

In the case of divergent information between this manual and the drawing, the drawing will prevail.

Intended use of the unit

This appliance has the function of treating the air intended to condition civil and industrial environments. Any other use is not in accordance with the intended use and therefore dangerous.

This range of units is designed to be used in NON-explosive environments.

This range of units is designed for installation inside buildings

If the unit is used in critical situations, by type of system or environmental context, the customer must identify and adopt the technical and operational measures to avoid damage of any kind.

Safety regulations

SKILLS REQUIRED FOR THE INSTALLATION OF THE UNIT

Installers must perform operations according to their professional qualifications: all activities not within one's expertise (i.e. electrical connections) must be carried out by specialised and qualified staff so as not to endanger one's safety and the safety of the other operators interacting with the unit.

Equipment transport and handling operator: authorised person with recognised expertise in using transport and lifting equipment.

Technical installer: expert technician, sent or authorized by the manufacturer or its representative, with adequate skills and training to install the unit.
Assistant: technician subject to care obligations while lifting and assembling the equipment. He must be suitably trained and informed about the operations to perform and the safety plans of the site/installation location.

In this manual, the technician competent to carry out each operation is specified.

SKILLS REQUIRED FOR THE USE AND MAINTENANCE OF THE UNIT

Generic operator: AUTHORISED to run the unit using commands placed on the keypad of the electrical control panel. Performs only unit control operations, power on/off.
Maintenance mechanic (qualified): AUTHORISED to carry out maintenance, adjustments, replacement and repair of mechanical parts. It must be a person competent in mechanical systems, therefore able to perform mechanical maintenance in a satisfactory and safe manner, must possess theoretical preparation and manual experience. NOT AUTHORISED to work on electrical systems.
Manufacturer's technician (qualified): AUTHORISED to perform complicated operations in every situation. Operates in accordance with the user.

Maintenance electrician (qualified): AUTHORISED to perform service of an electric nature, adjustments, maintenance and electrical repairs. AUTHORISED to operate in the presence of an active electrical connection inside the control panels and junction boxes. It must be a person competent in electronics and electrical engineering, therefore able to work on electrical systems satisfactorily and safely, must possess theoretical knowledge and proven experience. NOT AUTHORISED to work on mechanical systems.

Installers, users and maintenance technicians CANNOT work on the unit if they:

- are without experience and responsibility or minors;
- are in inadequate psycho-physical conditions;
- do not master the operating cycle of the unit;
- have not attended theoretical/practical training alongside an expert unit operator or user, or alongside a Manufacturer's technician.

In this manual, the technician competent to carry out each operation is specified.

Read this manual carefully before unit installation and maintenance and keep it for any further future consultation by the various operators. Do not remove, tear out or rewrite any part of this manual.

Failure to follow these instructions may cause damage and injuries, even fatal, voids the warranty and relieves the Manufacturer of any liability.

All installation, assembly, electrical connections to the mains and ordinary/extraordinary maintenance must be performed **only by technicians complying with the legal requirements**, after turning off the unit and using personal protective equipment (i.e. gloves, protective goggles, etc.), in compliance with the regulations in force in the country the equipment is to be used in and the laws on safety in the workplace.

Installation, use or maintenance other than those specified in the manual may cause damage, injury or death, invalidate the warranty and relieve the Manufacturer of all liability.

Use protective clothing and suitable equipment while handling or installing the equipment, in order to prevent accidents and safeguard your own and other people's safety. Individuals not assigned to installation or maintenance are NOT allowed to stand or pass through the work area while the unit is assembled.

Before carrying out any installation or maintenance, disconnect the equipment from the power supply and wait at least 120 seconds before carrying out any operation.

Before installing the equipment, check that the systems comply with the legal provisions in force in the country of use and meet the specifications on the serial number plate.

It is the responsibility of the user/installer to check the static and dynamic stability relative to the installation and to arrange environments so that **people who are not competent or authorised DO NOT have access to the unit or to its controls**.

It is the responsibility of the user/installer to make sure that **weather conditions** do not affect the safety of persons and property during installation, use and maintenance.

Make sure the air intake is not located near any exhausts, flue-gases or other contaminating elements.

Do not install the equipment in places exposed to strong winds, salt air or open flames.

After installation is complete, instruct the user on the correct use of the unit.

If the equipment does not work or functional or structural alterations are noted, disconnect it from the power supply and contact a service centre authorised by the Manufacturer or Retailer, without attempting to repair it on your own. For any replacements request the use of original spare parts. Unauthorised actions, tampering or modifications that do not follow the information provided in this manual can cause damage, injuries or fatal accidents and void the warranty.
The serial number plate on the unit provides important technical information, essential in case of unit maintenance or repairs. We recommend that you do not remove, damage or modify it.

In order to ensure correct and safe conditions of use, we recommend you have the unit maintained and checked at least annually by a service centre authorised by the Manufacturer or Dealer.

Residual risks

Despite having implemented and adopted all the safety measures indicated by applicable regulations, some residual risks remain. In particular, in some operations of replacement, adjustment and tooling maximum attention is always required in order to work in the best possible conditions.

LIST OF OPERATIONS WITH RESIDUAL RISKS

Risks for qualified personnel (electricians and mechanics):

- handling - during unloading and handling it is necessary to pay attention to all the steps listed in this manual regarding the points of reference;
- installation - during installation it is necessary to pay attention to all the steps listed in this manual regarding the points of reference the installer must ensure the static and dynamic stability of the unit's site of installation;
- maintenance - during maintenance it is necessary to pay attention to all the steps listed in this manual, and in particular to high temperatures that may be present in the heat transfer fluid lines to/from the unit;
- cleaning - the unit must be cleaned only when it is switched off, by turning off the switch installed by the electrician and the switch located on the unit itself. The key for interrupting the power supply must be kept by the operator until the end of the cleaning operations. Internal cleaning of the unit must be carried out using the protections required by current regulations. While the inside of the unit does not contain particular hazards, it is necessary to pay the utmost attention so that accidents do not occur during cleaning. The coils that have a potentially sharp finned pack must be cleaned using suitable protective goggles and gloves. During adjustment, maintenance and cleaning there are residual risks of variable entity. Being operations that must be performed with guards disabled, it is necessary to pay particular attention in order to avoid damage to persons and things.

Always pay close attention when performing the operations specified above. Remember that these operations must always be performed by authorised personnel.
All work must be completed in accordance with the legal provisions relating to work safety. Remember that the unit in question is an integral part of a larger system that includes other components, depending on the final characteristics of realisation and the mode of use. Therefore in the end it is the responsibility of the user and assembler to assess the residual risks and their respective preventive measures.

SAFETY DEVICES

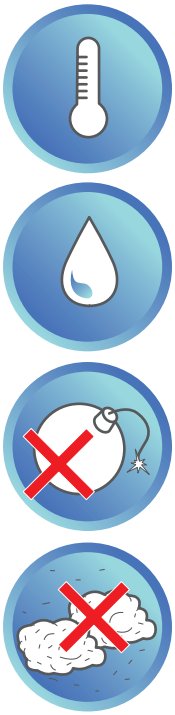
The unit is equipped with safety devices to prevent risks of damage to persons and for proper operation. Always pay attention to the symbols and safety devices on the unit. It should **only** operate with the safety devices engaged and with fixed or movable guards installed correctly and in the proper position.

If during installation, use or maintenance the safety devices have been temporarily removed or disabled, the unit can be operated **exclusively** by the qualified technician who made this change. It is **mandatory** to prevent other people's access to the unit. When finished, restore the devices to their proper status as soon as possible.

2 Unit characteristics

Modular T units are produced in a standard version which includes an aluminium counter-current heat exchanger, ePM1 50% (F7) class filter in supply and ePM10 75% (M5) class filter in return, 50 mm double skin panel with insulation in mineral wool.
The accessories can be purchased separately as an option and installed on site.

Environmental conditions



Modular T heat recovery units are designed to be positioned on the floor, indoors. The unit cannot operate in environments containing explosive material and with a high concentration of dust.

Outside air temperature	**without heating coil:** • from -5 °C to 46 °C **with heating coil:** • from -25 °C to 46 °C
Operating environment temperature	from -5 °C to 46 °C
Temperature of the environment with the unit off (e.g., storage, transport, etc.)	from -40 °C to 60 °C

Thanks to its modularity, each unit is able to adapt to different needs in terms of air flow and thermodynamic treatments.

Environmental contamination

Depending on the installation operating environment, specific regulations must be followed and all the necessary precautions must be taken to avoid environmental issues (a system that operates in a hospital or chemical environment can have problems different from those in other sectors, even from the point of view of disposal of consumable parts, filters, etc.).
It is mandatory for the buyer to inform and train workers regarding proper procedures.

Noise

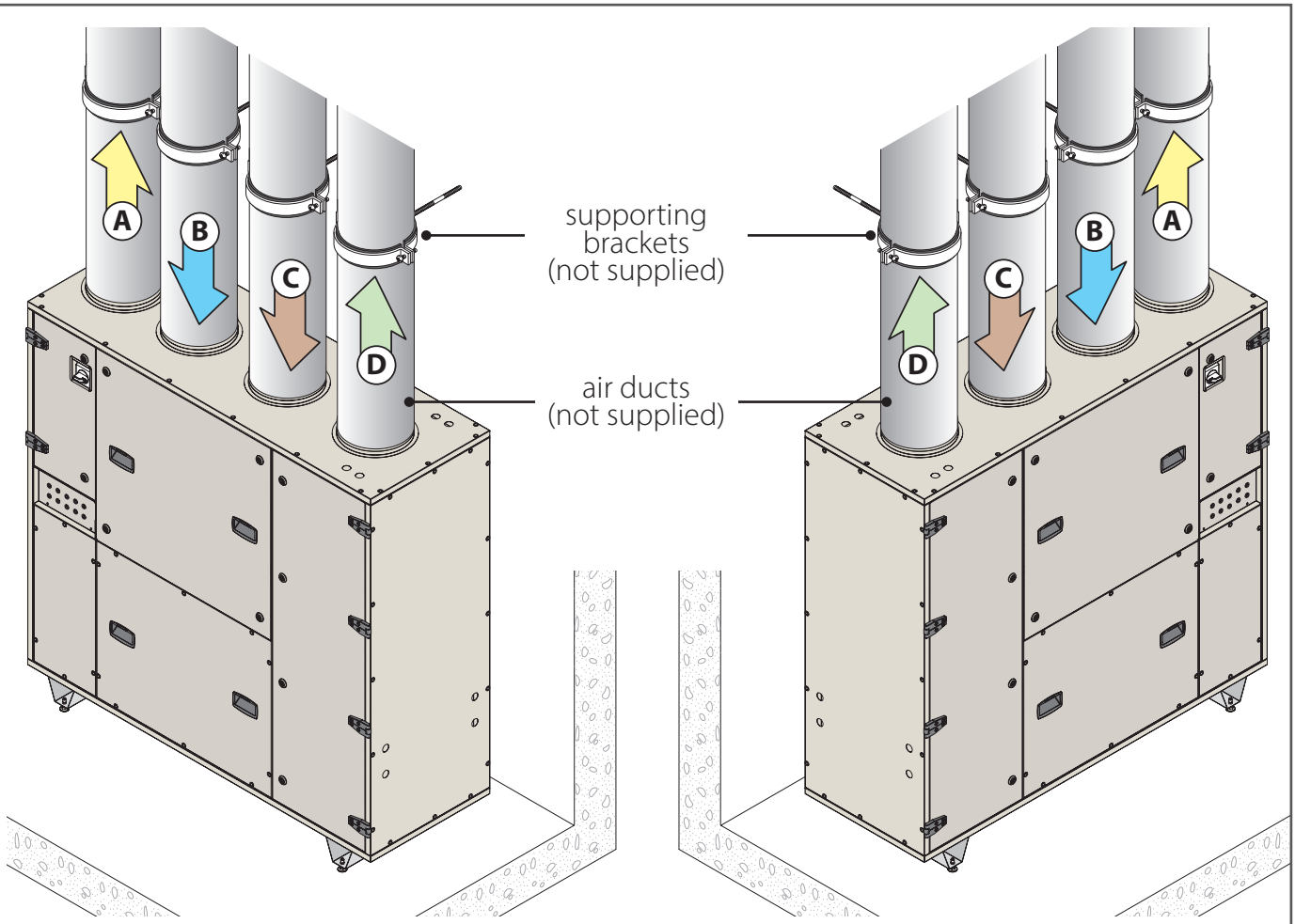
The units have been designed and manufactured in such a way as to produce sound emissions below the threshold of **80 dB(A)**. It should be noted that every environment has its own acoustic characteristics that can greatly affect the pressure values perceived during operation, therefore it is necessary to consider the noise level data provided as a point of reference, while it is up to the buyer to carry out the specific phonometric surveys on the installation site and in the real conditions the unit will be used.

Ceiling and air duct specifications

The **floor** where you plan to position the unit **must** be:

- perfectly flat and without roughness;
- vibration resistant;
- able to **support the weight of the equipment considering an appropriate safety margin** (see table of technical data on page 10).

1 The **air ducts** (not supplied) must be connected directly to the unit: when assembly is completed, they must not be stretched, in order to avoid damage and transmission of vibrations. To ensure the seal of the connections and the integrity of the unit, it is essential that the air ducts be supported by special brackets (not supplied) that do not weigh directly on the unit.



RH
CONFIGURATION UNITS
ATBR****

LH
CONFIGURATION UNITS
ATBL****

DUCT

- A Exhaust air
- B Outside air
- C Return air
- D Supply air

1 Unit ducts

Technical data

TECHNICAL DATA TABLE	SIZE					
	u.m.	03	04	05	06	07
Nominal air flow rate	m^3/h	800	1650	2300	2700	3900
Thermal efficiency	%	89	88	85	90	91
FLA	A	1.7	3.4	4.6	5.2	7.9
FLI	W	390	780	1060	1190	1820
Electrical connection	V	230 V, 1 ph	230 V, 1 ph	230 V, 1 ph	230 V, 1 ph	230 V, 1 ph

WEIGHT TABLE	UNIT/SECTION									
	u.m.	ATB 03	ATB 04	05		06			07		
				ATB 15	ATB 25	ATB 16	ATB 26	ATB 36	ATB 17	ATB 27	ATB 37
Gross weight with packaging	kg	210	260	140	280	150	270	110	190	330	130
Device weight	kg	200	250	130	270	140	260	100	180	320	120
Filter weight	kg	3	3	3	3	3	3	3	3	3	3
Fan weight	kg	11	11	12	12	14	14	-	21	21	-
Heat recuperator weight	kg	11	17	-	26	-	36	-	-	46	-

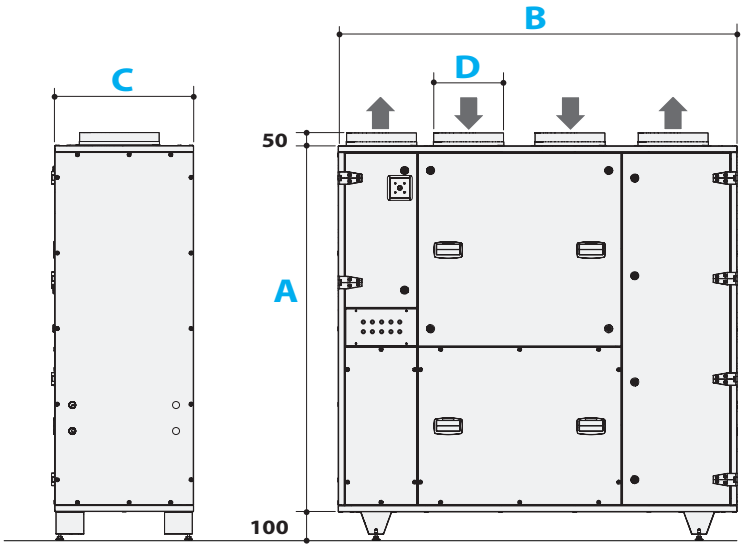
Overall dimensions

KEY ON PAGE 13

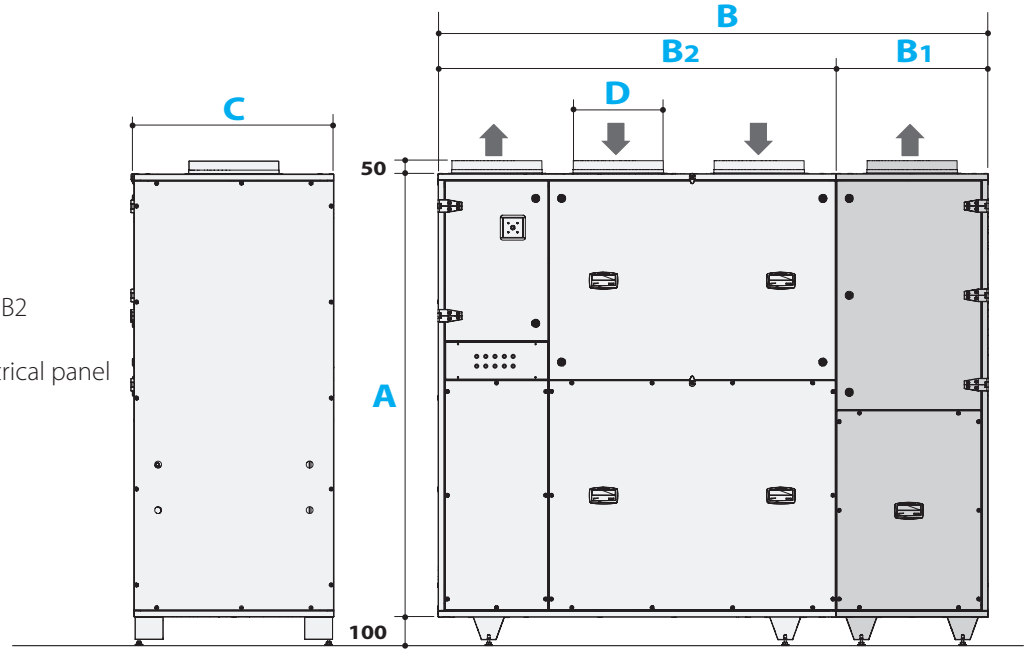
RH
CONFIGURATION UNITS

SIZE 3-4: unit with one section, B

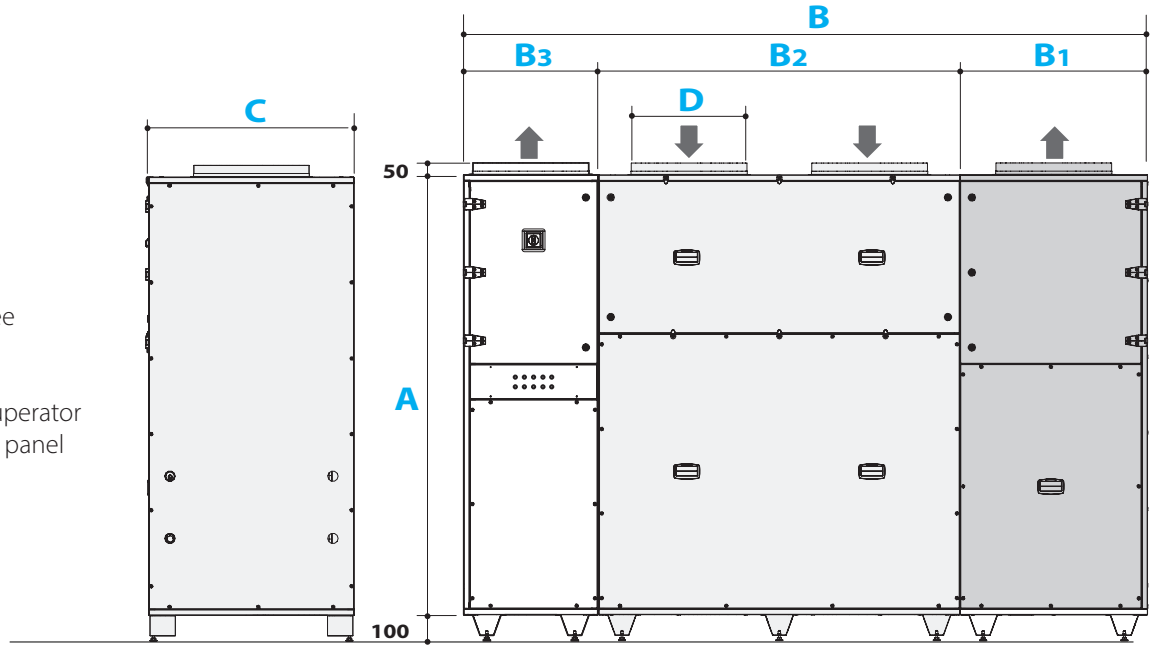
SECTION B: heat recuperator + electrical panel + supply



SIZE 5: unit with two sections, B1 and B2
SECTION B1: supply
SECTION B2: heat recuperator + electrical panel



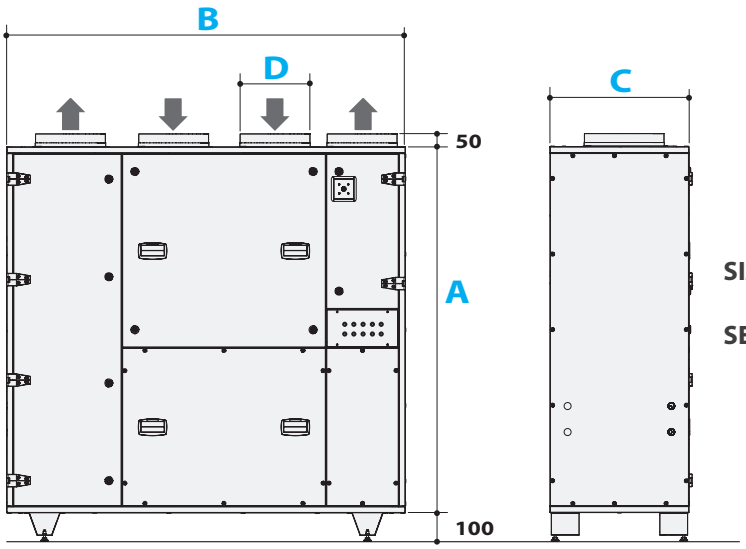
SIZE 6-7: unit with three sections, B1, B2, B3
SECTION B1: supply
SECTION B2: heat recuperator
SECTION B3: electrical panel



(mm)

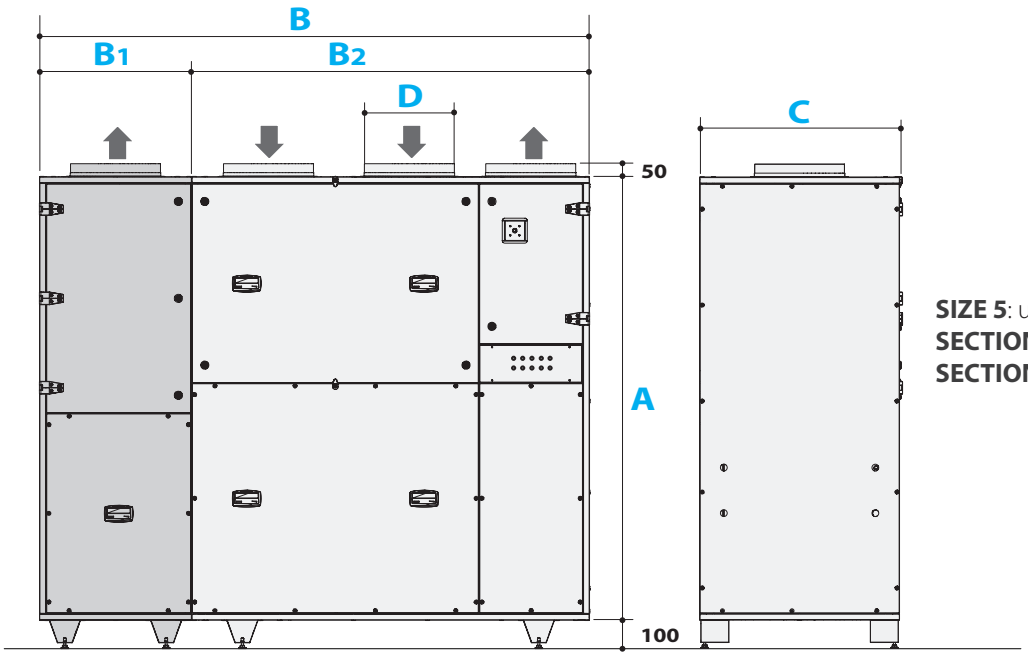
LH
CONFIGURATION UNITS

KEY ON PAGE 13

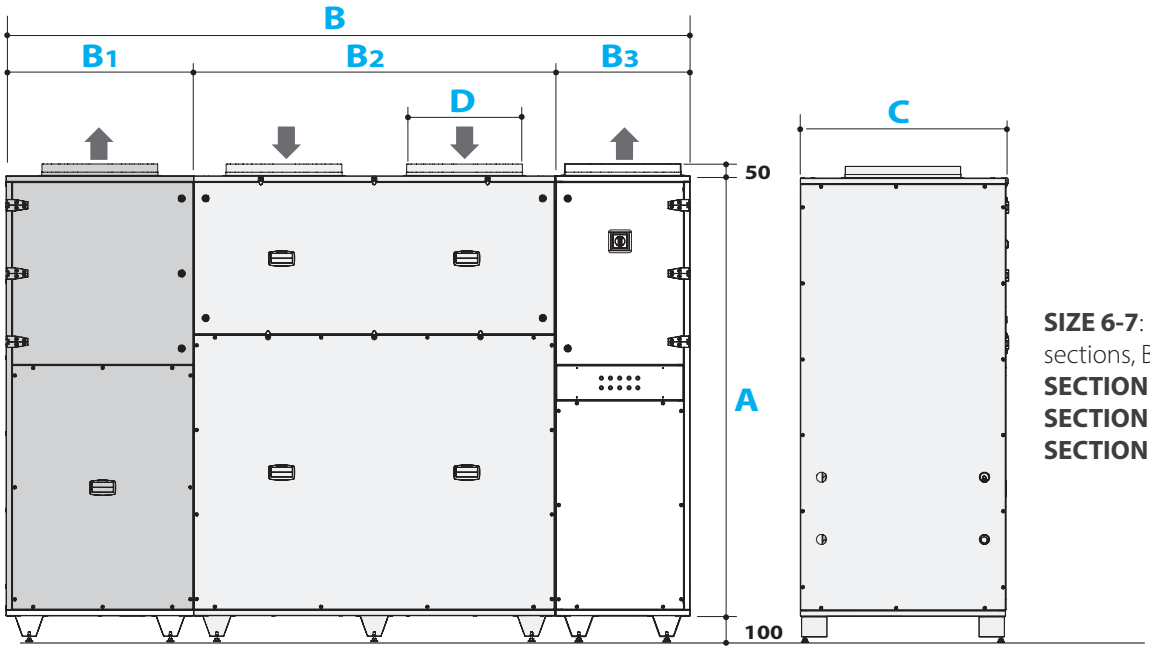


SIZE 3-4: unit with one section, B

SECTION B: heat recuperator + electrical panel + supply



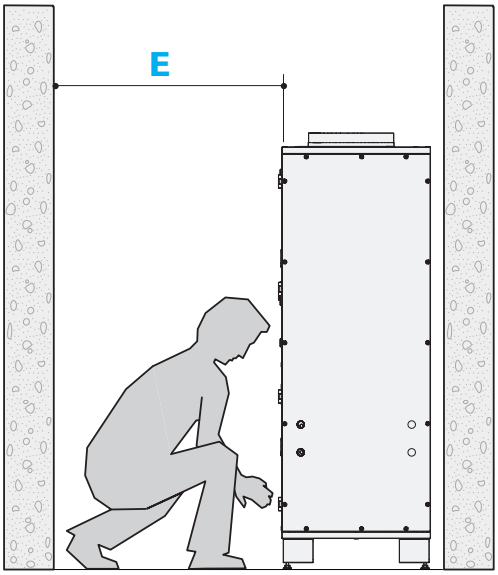
SIZE 5: unit with two sections, B1 and B2
SECTION B1: supply
SECTION B2: heat recuperator + electrical panel

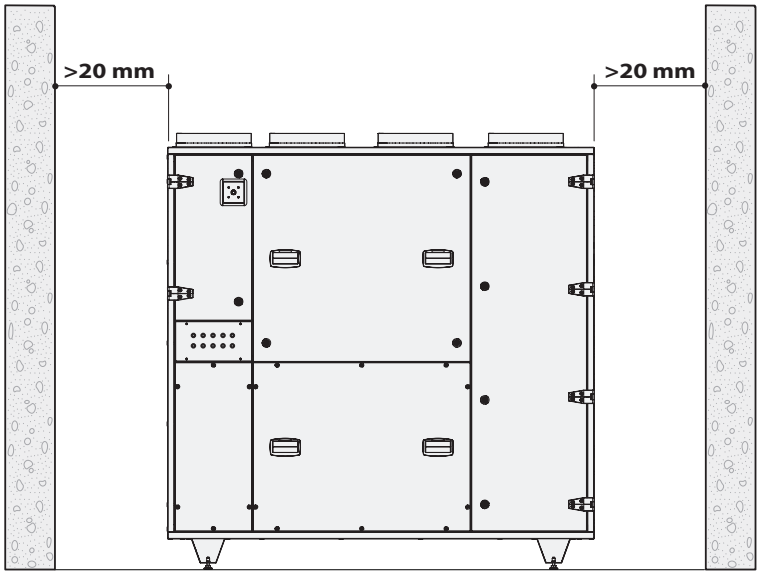


SIZE 6-7: unit with three sections, B1, B2, B3
SECTION B1: supply
SECTION B2: heat recuperator
SECTION B3: electrical panel

(mm)

Safety measurements

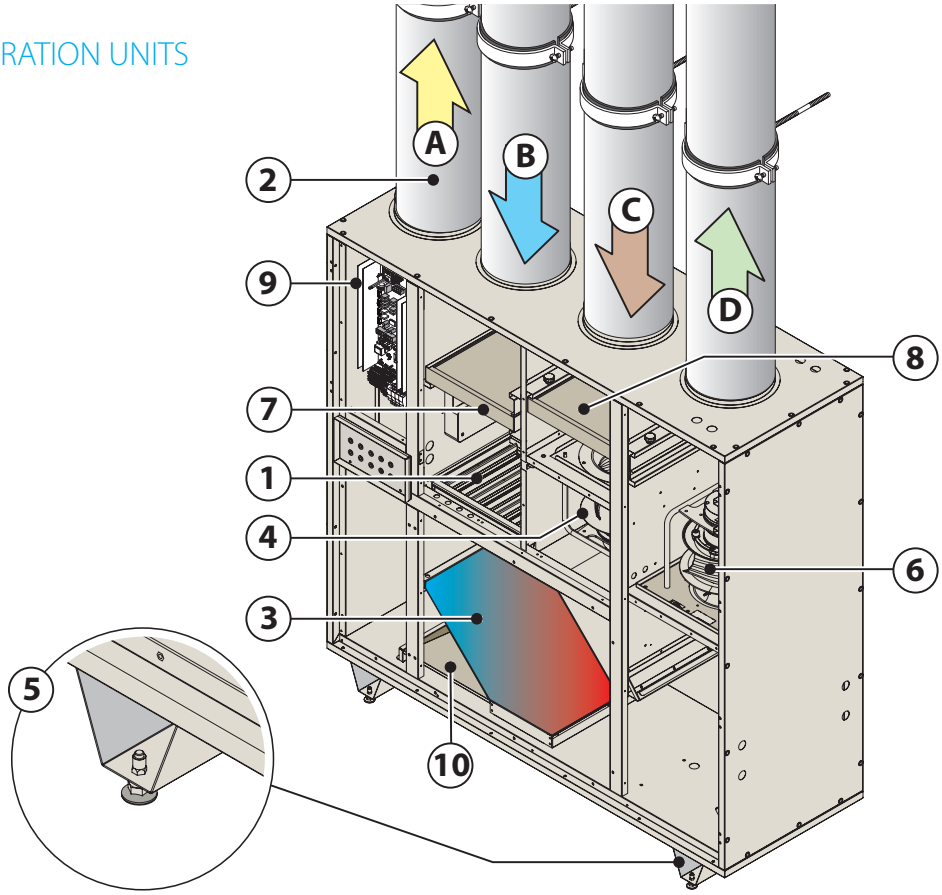




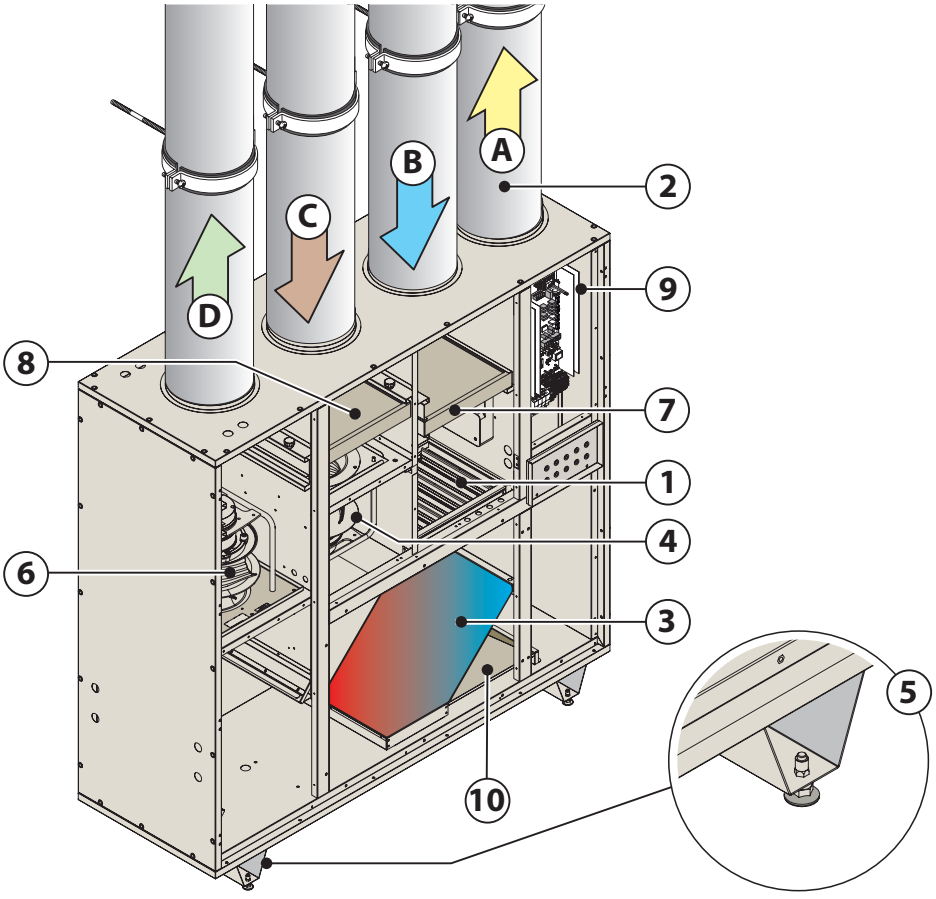
		SIZE					
		u.m.	3	4	5	6	7
Height	A	mm	1450	1450	1750	1700	1900
Length	B	mm	1580	1650	2170	2620	2950
	B1	mm	-	-	600	480	580
	B2	mm	-	-	1570	1430	1560
	B3	mm	-	-	-	710	810
Width	C	mm	550	790	790	790	890
Duct collar diameter	D	mm	250	315	355	400	500
Operating space in front of the unit	E	mm	850	1100	1100	1100	1200

Summary of unit operation

RH
CONFIGURATION UNITS



LH
CONFIGURATION UNITS



2 Air flows in the unit

2 KEY

1. By-pass damper
2. Duct
3. Counter flow/ heat exchanger
4. Return fan
5. V-shaped supports with adjustable feet
6. Supply fan
7. ePM1 50% (F7) supply filter
8. ePM10 75% (M5) supply filter
9. Electrical panel
10. Condensate drain pan

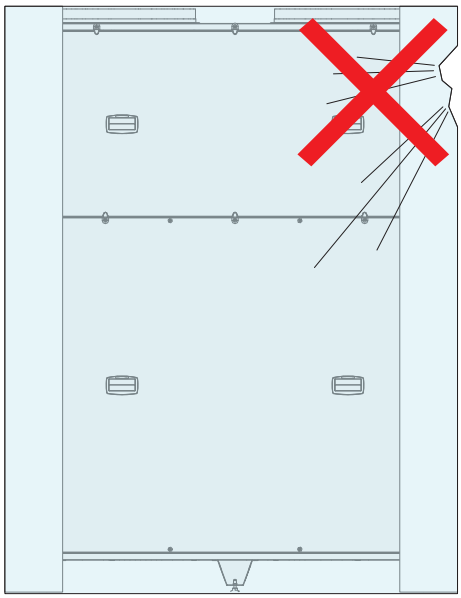
A. Exhaust air
B. Outside air
C. Return air
D. Supply air

POS.	COMPONENT NAME	CONSTRUCTION MATERIAL
7- 8	Filter	Galvanised steel frame, fibreglass filter unit
2	By-pass damper	Aluzinc
3	Heat exchanger	Aluminium
4- 6	Fan assembly	Steel frame, composite impeller
5	V-shaped supports with adjustable feet	Galvanized steel

3 Receipt of the packages

Handle the equipment following the Manufacturer's instructions on the packaging and in this manual.
Always use personal protective equipment.

The means and method of transport must be chosen by the transport operator according to the type, weight and size of the unit. If necessary, draw up a "safety plan" to guarantee the safety of the people directly involved.



Upon receipt of the unit check the integrity of the packaging and the amount of parcels sent:

A) <u>There is visible damage/one or more package is missing</u>:
do not install, but **promptly** notify the Manufacturer and the carrier that made the delivery.
Alternatively you can accept the shipment "subject to verification": this will make it possible to open the cartons and check if the internal components are indeed damaged. In the latter case, as noted previously, **promptly** notify the Manufacturer and the carrier that made the delivery.
Before opening the packages, it is recommended to take good quality pictures to document the damage.

B) <u>There is NO visible damage</u>: move the unit to the site of installation.

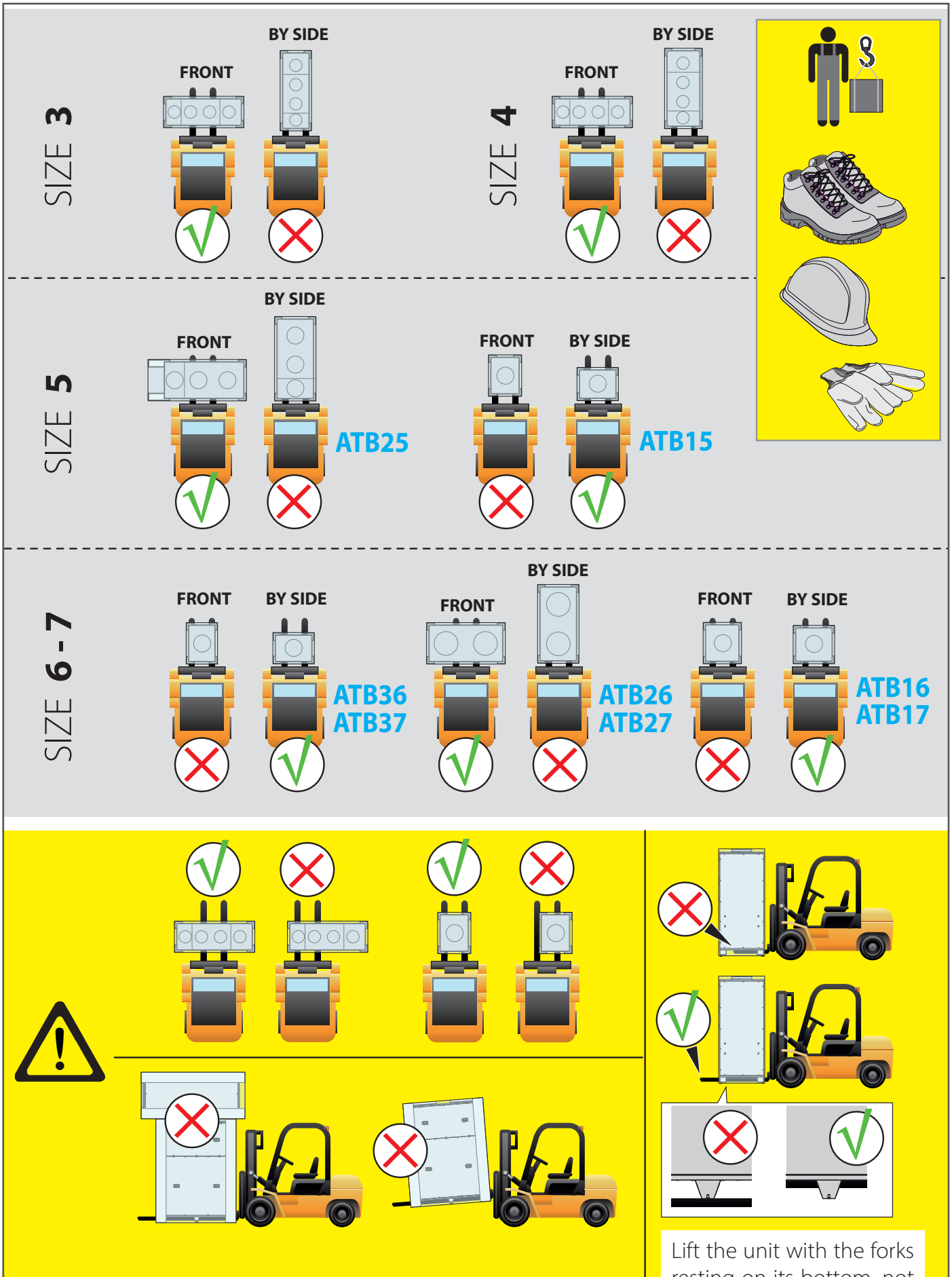
4 Transport

The packages must be transported with a transpallet or a forklift, suitable for the weight and size of the package. The choice of the most appropriate means and way remains the responsibility of the transport operator.

3 The figure shows the correct forking direction of the unit according to the size and the sections; always make sure to keep the centre of gravity of the load balanced.

The operating area must be perfectly free from objects or people not involved in the transport.

Transport the equipment carefully, in perfect psycho-physical shape, avoiding sudden manoeuvres and equipped with personal protective equipment (gloves, safety shoes, etc.).



Lift the unit with the forks resting on its bottom, not on the foot brackets

3 Correct transport of the packed unit

5 Unpacking and verification of integrity

We recommend the equipment be unpacked after moving it to its installation location and only when it is to be installed. This operation must be performed using personal protection equipment (i.e., gloves, safety shoes, etc.).

Do not leave the packing unattended: it is potentially harmful to children and animals (suffocation hazard).

Some packing materials must be kept for future use (wooden crates, pallets, etc.), while those that cannot be reused (i.e., polystyrene, strapping, etc.) must be disposed of in compliance with the regulations in force in the country of installation: this will protect the environment!

After unpacking

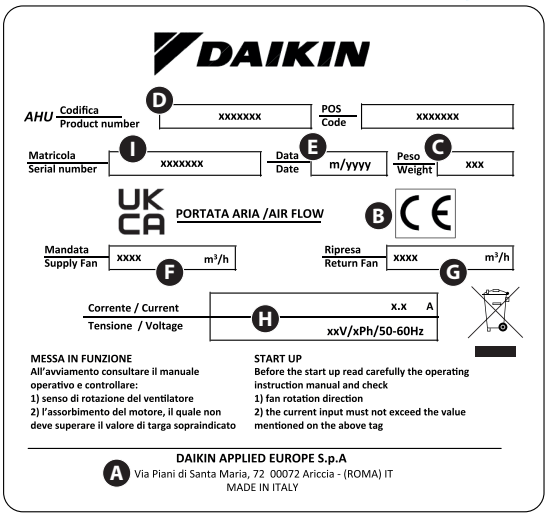
After unpacking, check the received contents:

- **Installation and operation manual (IOM)**
- **Wiring diagram**
- **Declaration of conformity**

Check therefore that you have received all the components and that they are undamaged
In case of damaged or missing parts.

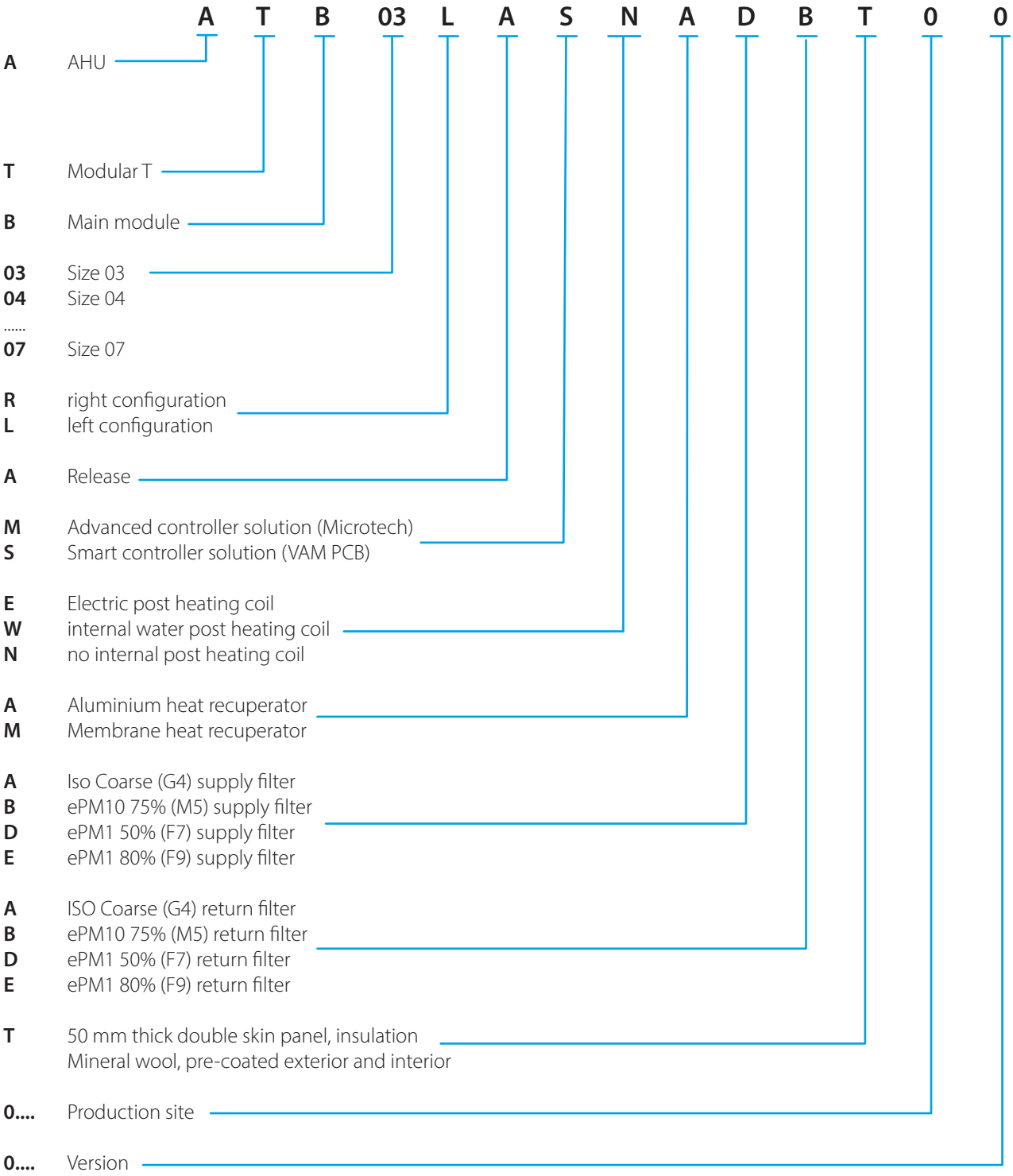
- **do not move, install or repair** damaged components and the unit in general.
- **take quality photos** to document the damage.
- **Find the serial number plate** on the unit and note the unit's serial number;
- **Immediately** notify the carrier that delivered the unit;
- **promptly** contact the Manufacturer (keep available the serial number of your unit).

Please note that complaints or claims of damage reported after 10 days of receipt of the unit cannot be accepted



A: Manufacturer's name and data
DAIKIN APPLIED EUROPE S.P.A.
Via Piani di Santa Maria, 72 - 00072 Ariccia (Roma) - Italy
Tel: (+39) 06 93 73 11 - Fax: (+39) 06 93 74 014
B: CE markings
C: Unit weight
D: Code and POS
E: Date of manufacture
F: Supply air flow
G: Return air flow
H: Electrical specifications (frequency, number of phases, absorption in plate conditions)
I: Unit serial number

Product nomenclature



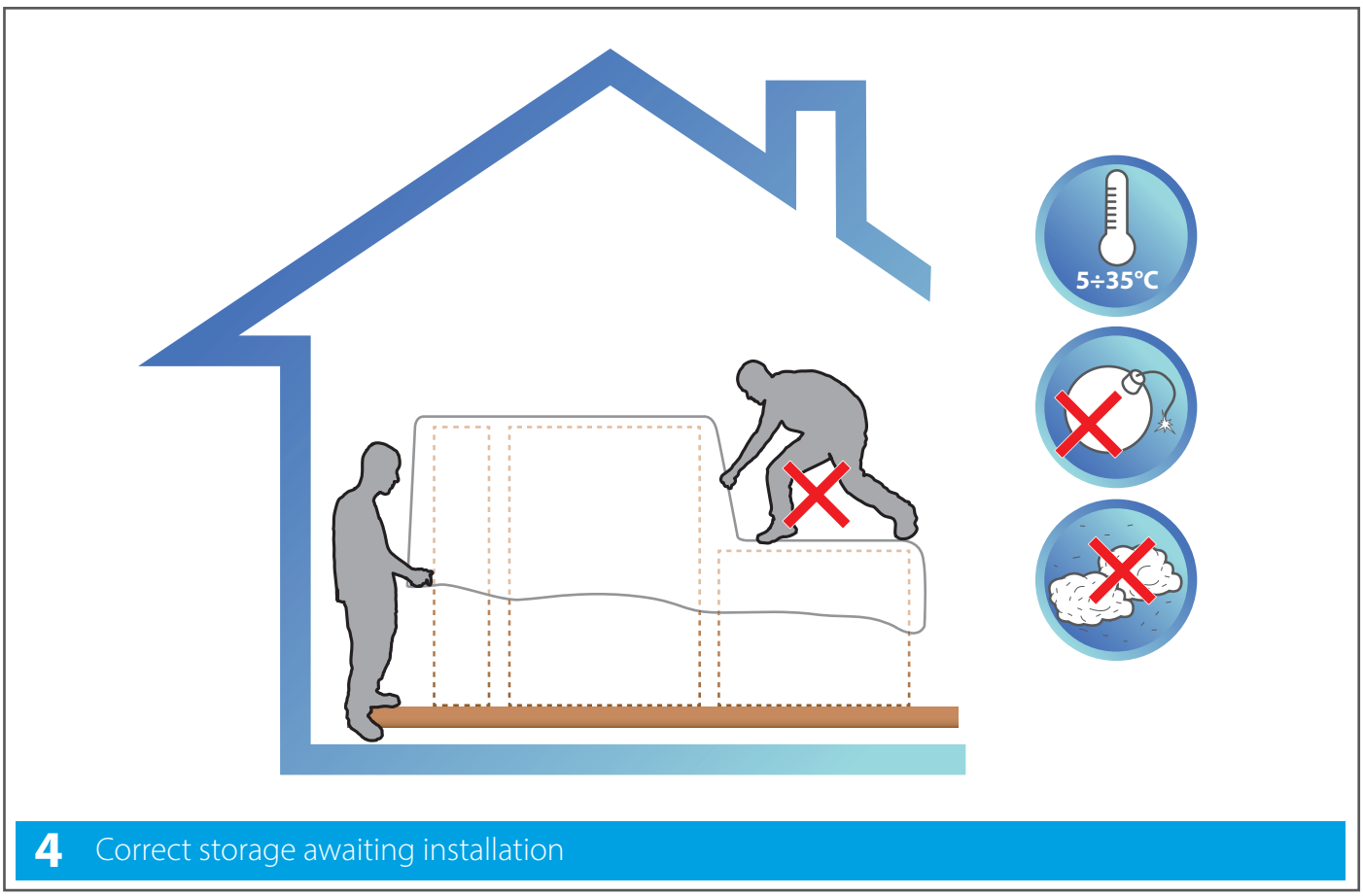
Storage waiting for installation

4 Waiting for the installation, the components of the unit and the relative documents must be stored in an area that:

- is dedicated exclusively to the storage of the units;
- is protected from the weather (preferably prepare a closed area), with adequate temperature and humidity.
- Is accessible only to operators tasked with the assembly.
- Can support the weight of the equipment (check the load rating) and has a stable floor.
- is free from other components, especially if they are potentially explosive/incendiary/toxic.

If you cannot proceed with the installation straight away:

- check periodically that the above-mentioned conditions about the storage area are guaranteed;
- cover the unit with a sheet;
- always provide an insulating base (e.g., wood blocks) between the floor and the unit itself.



4 Correct storage awaiting installation

Any movement carried out after unpacking must be done with the doors closed. Do not move the units by pulling on the doors, if present, the uprights or other protruding parts that are not an integral part of the structure.

Do not step on the units!

6 Installation

All installation, assembly, electrical connections to the mains and extraordinary maintenance must be performed **only by qualified personnel authorised by the Retailer or Manufacturer,** in compliance with the regulations in force in the country the equipment is to be used and the standards on the systems and safety in the workplace.

During installation, the area must be free from people and objects not used for the assembly.

Before starting, make sure you have all the necessary equipment.
Use only equipment that is in good condition and undamaged.

Installation procedure

Before installation, read the safety instructions on the first pages of this manual. Contact the Manufacturer if any points are unclear or not perfectly understandable. A check mark next to each step will help to confirm complete and proper installation.

- ☐ **PHASE 0: TRANSPORT OF THE UNITS TO THE PLACE OF INSTALLATION**
- ☐ **PHASE 1:** UNIT CHECK AND SETTINGS
- ☐ **PHASE 2:** FEET ASSEMBLY
- ☐ **PHASE 3:** FITTING THE GASKET (ONLY SIZES 05-06-07)
- ☐ **PHASE 4:** MECHANICAL UNION OF THE SECTIONS (SIZES 05-06-07)
- ☐ **PHASE 5:** ELECTRICAL WIRING BETWEEN SECTIONS (SIZES 05-06-07)
- ☐ **PHASE 6:** BRC CONTROLLER CONNECTION
- ☐ **PHASE 7:** ELECTRICAL CONNECTIONS
- ☐ **PHASE 8:** CONNECTION TO A DRAIN
- ☐ **PHASE 9:** AERAULIC CONNECTIONS
- ☐ **PHASE 10:** TESTING

After installation store this manual and the assembly sheet that accompanied the unit in a place that is dry and clean. This way it will be accessible to operators in the future who need to consult it.
Do not remove, tear out or write on any part of this manual besides the spaces set aside for notes:

.....

.....

PHASE 0: TRANSPORT OF THE UNITS TO THE PLACE OF INSTALLATION

Transport the units until they reach the place intended for installation.

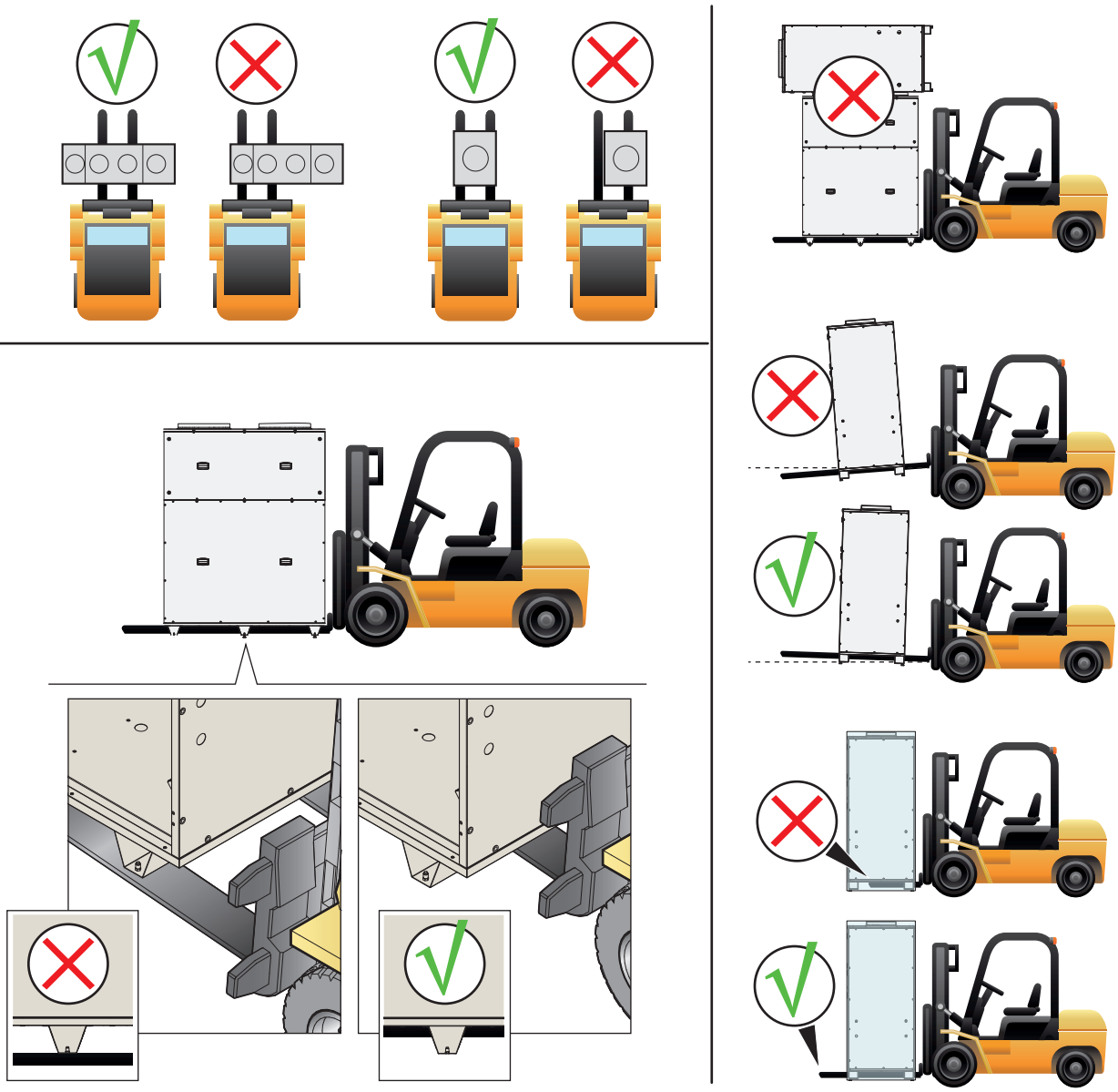
5 The units must be transported with a transpallet or a forklift, suitable for the weight and size of the package. The choice of the most appropriate means and way remains the responsibility of the transport operator.

The figure on page 22 shows the correct forking direction of the unit according to the size and sections; always make sure to keep the centre of gravity of the load balanced.

The operating area must be perfectly free from objects or people not involved in the transport.

Transport the equipment carefully, avoiding sudden manoeuvres and equipped with personal protective equipment (gloves, safety shoes, etc.).

See page 17 to know the correct forking direction of the unit.

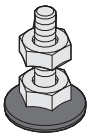
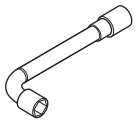
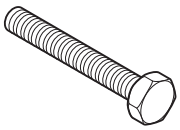
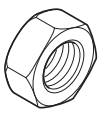
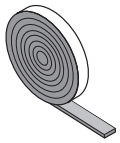


Lift the unit with the forks resting on its bottom, not on the foot brackets

5 Correct transport of the unit

PHASE 1: UNIT CHECK AND SETTINGS

Check that all components supplied are present

		SIZE				
		3	**4**	**5**	**6**	**7**
Installation and operation manual (IOM)		1	1	1	1	1
Wiring diagram		1	1	1	1	1
Declaration of conformity		1	1	1	1	1
Adjustable feet and hex nut		4	4	8	14	14
Door release key		1	1	1	1	1
Stainless steel washer		-	-	16	32	40
Split spring washer		-	-	8	16	20
M6x70 hex bolt		-	-	8	16	20
M6 hex nut		-	-	8	16	20
Gasket		-	-	1 roll	1 roll	1 roll

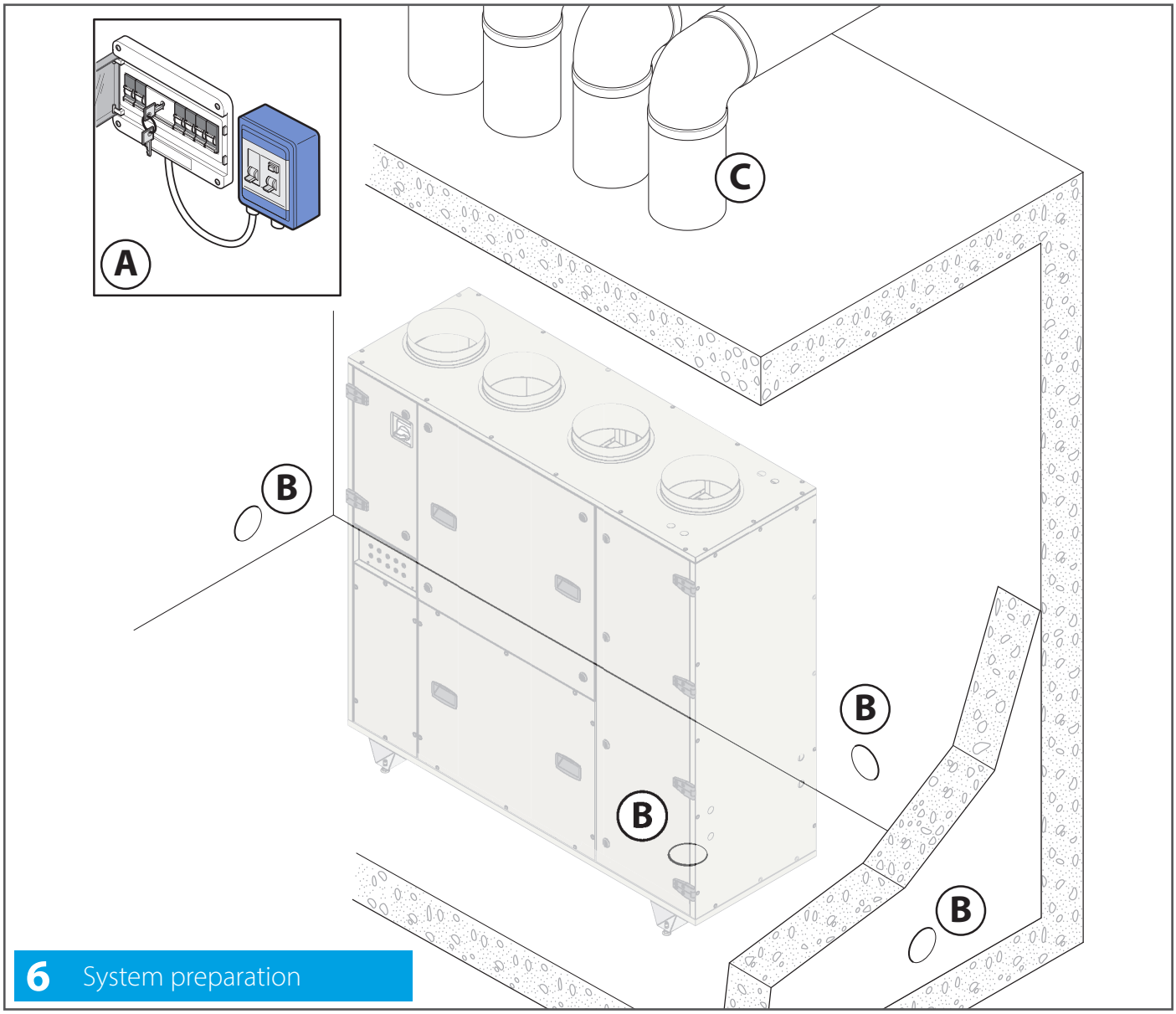
6 Check that the following have been planned at the installation site:

Ⓐ an **electrical system** compliant with current regulations and with specifications that meet the needs of the unit;

Ⓑ a **floor or wall drain, with siphon,** connected to the sewer system;

Ⓒ an **aeraulic system** (ducts for the air to be conveyed to the rooms.

Check that the **floor** of the place chosen for installation is:
- perfectly **flat and without any roughness**;
- vibration **resistant**;
- **able to support the weight of the equipment** considering an appropriate safety margin (see technical data table on page 10).



6 System preparation

PHASE 2: FEET ASSEMBLY

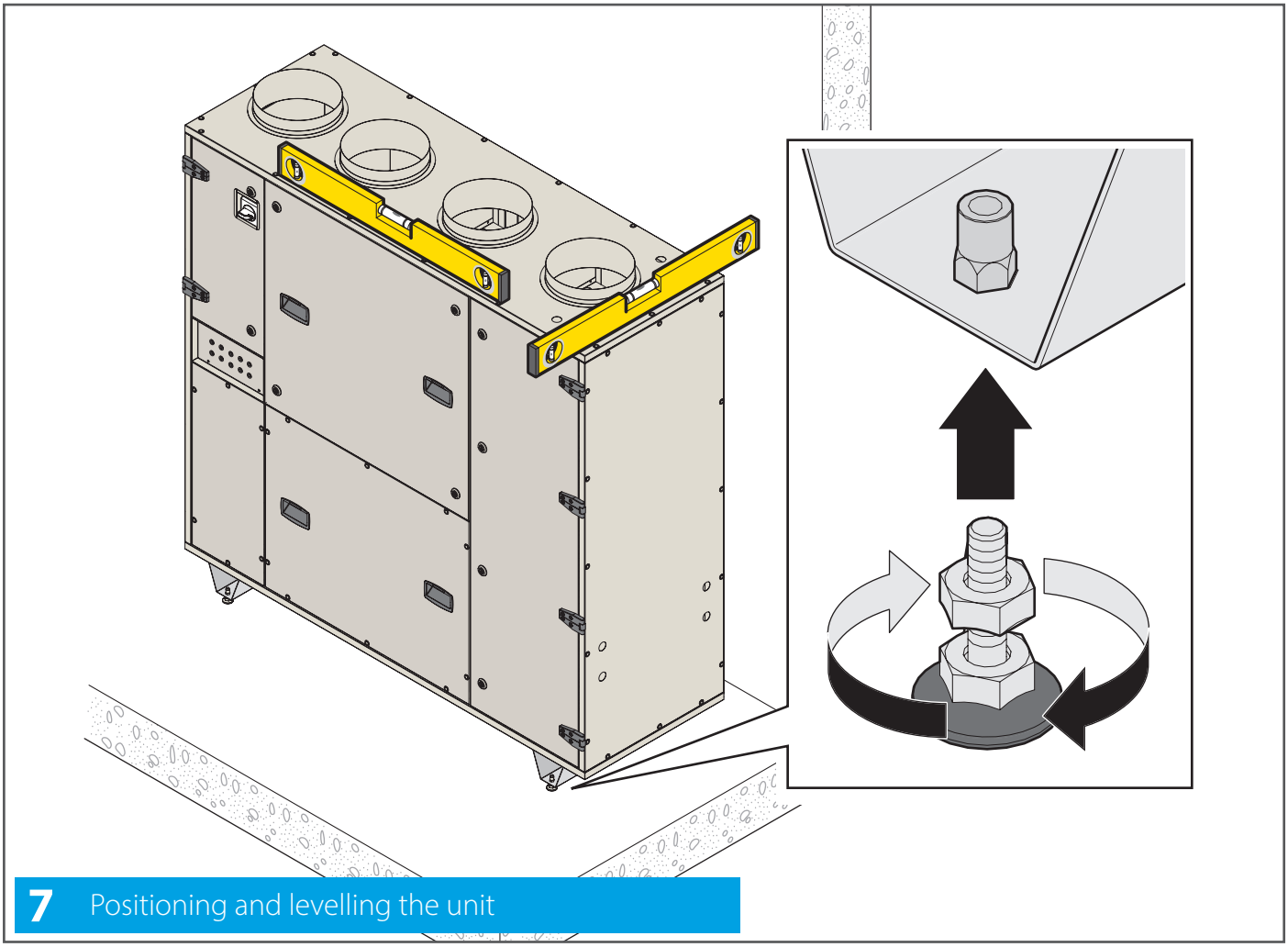
7 Before positioning the unit, assemble the provided feet; do not use other types of supports or try to modify the feet supplied.

To attach the feet **DO NOT tilt the unit or turn it over**.

With a transpallet or with a forklift, suitable for the weight and dimensions of the unit, lift it as little as necessary to carry out the assembly of the feet; during lifting, **NEVER position yourself under the unit itself**.

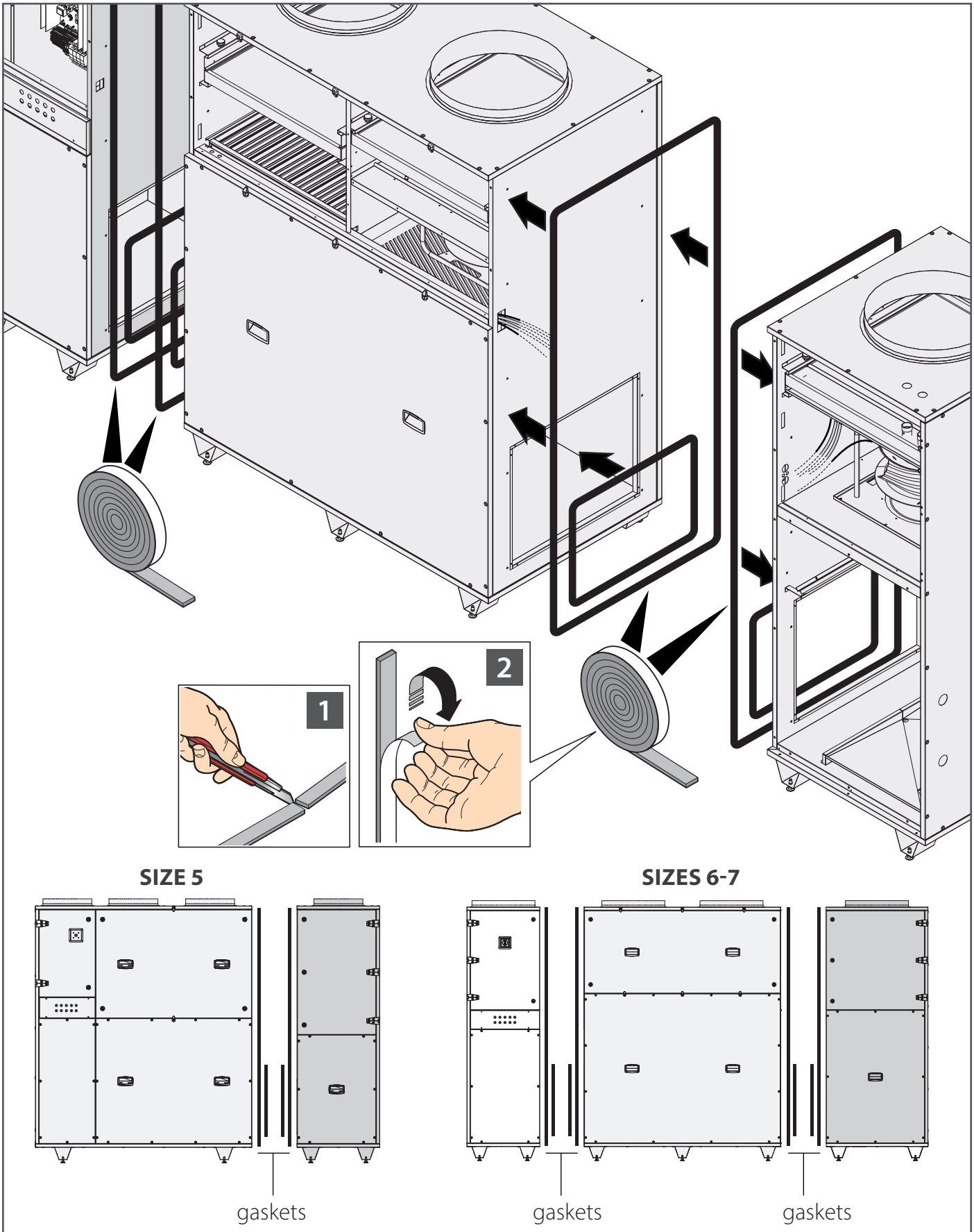
It remains the responsibility of the transport operator to choose the most appropriate means and way for lifting. The figure on page 22 shows the correct forking direction of the unit according to the size and sections; always make sure to keep the centre of gravity of the load balanced.

After fitting the feet, check that the unit is perfectly level; if this condition is not verified, rotate the feet until it is obtained (be careful not to unscrew the feet too much, risk of instability).



7 Positioning and levelling the unit

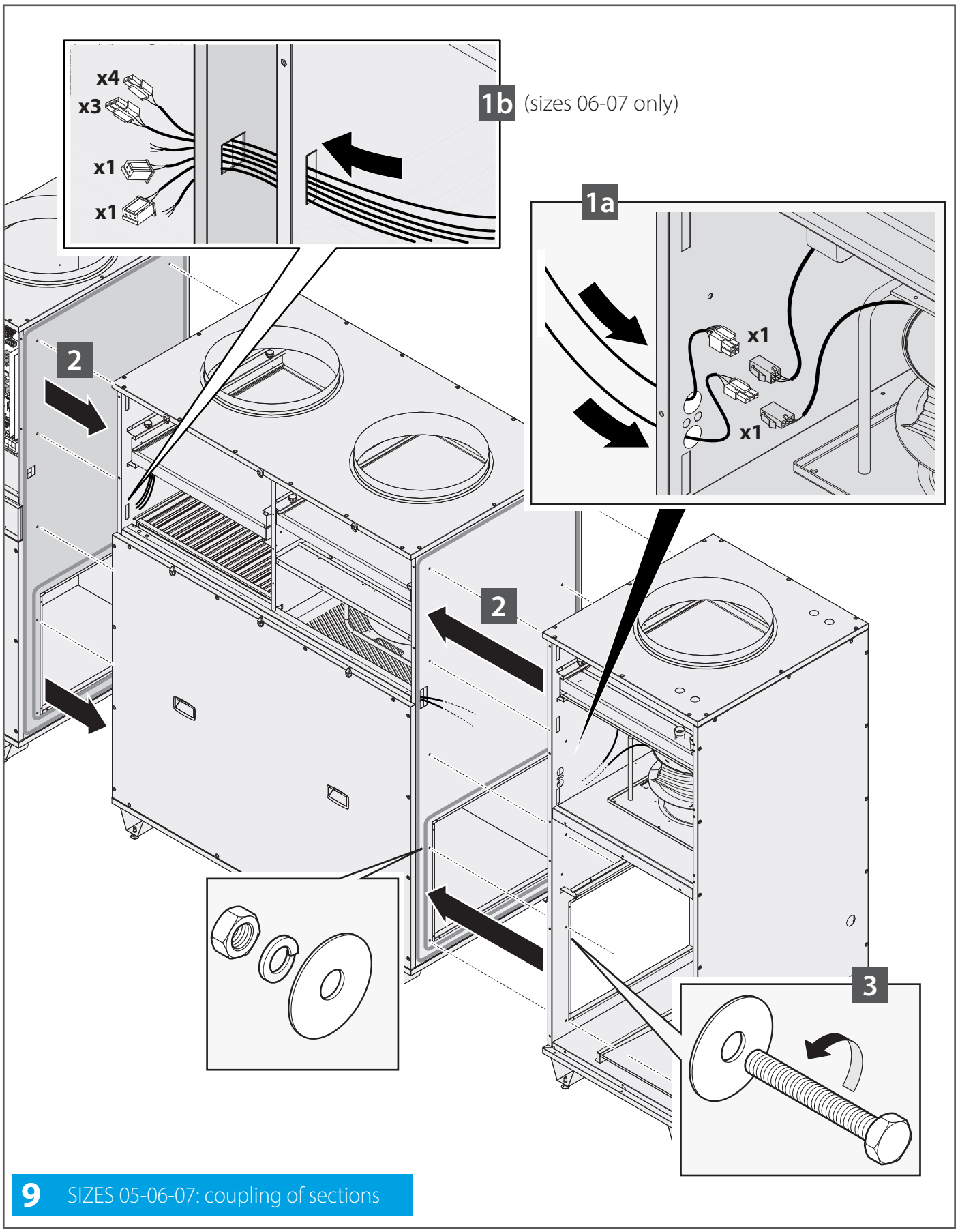
PHASE 3: FITTING THE GASKET (ONLY SIZES 05-06-07)



8 SIZES 05-06-07, gasket application

PHASE 4: MECHANICAL UNION OF THE SECTIONS (SIZES 05-06-07)

9 Pass all the cables through the holes provided and then join the various sections as shown in the figure. Size 5 has two sections, sizes 6 and 7 have three sections.



9 SIZES 05-06-07: coupling of sections

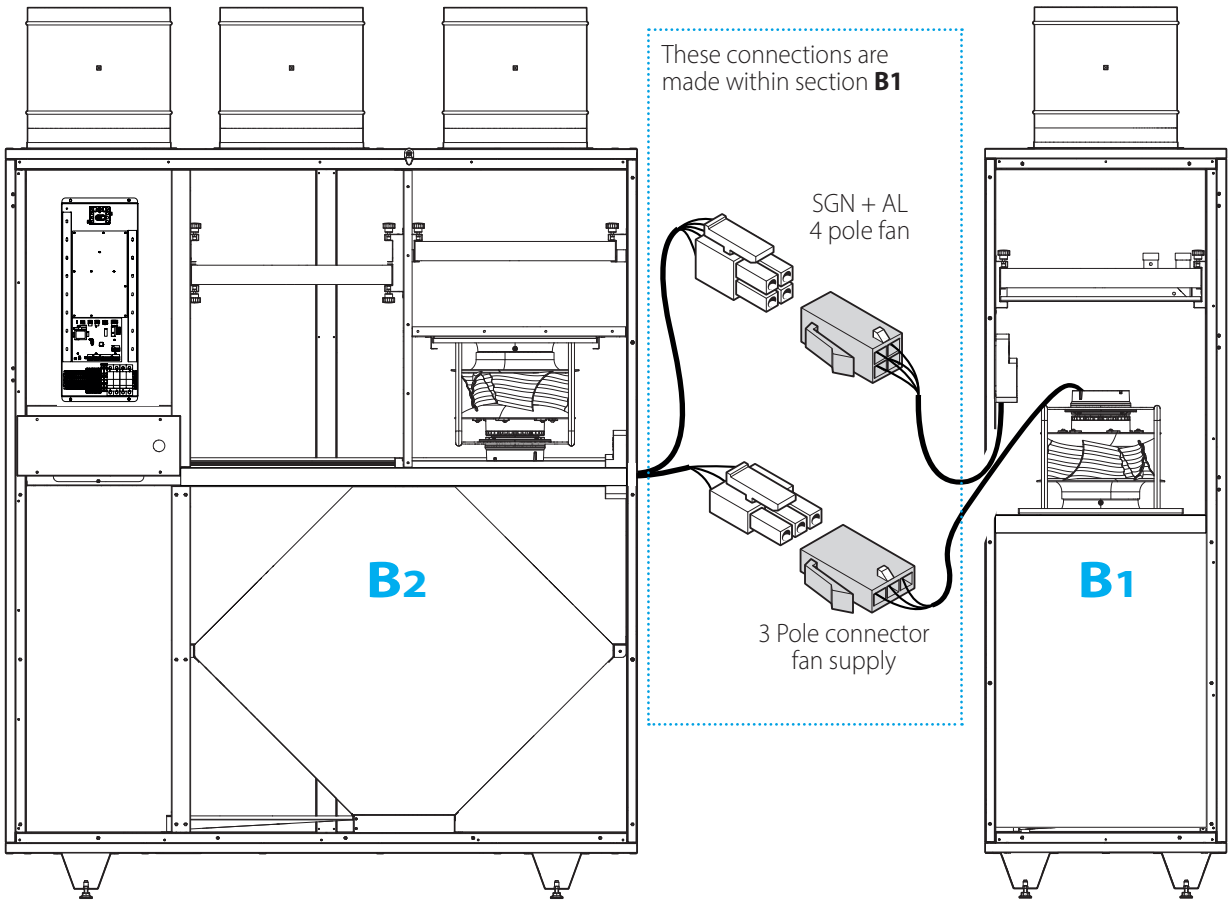
PHASE 5: ELECTRICAL WIRING BETWEEN SECTIONS (sizes 05-06-07)

Make the connections shown in the figure.

10 SIZE 5

- 1x - 4-pole SGN + AL fan connector;
- 1x - 3-pole connector fan supply.

10 SIZE 5: electrical connections between sections



11 12 SIZES 6-7

- 1x - 4-pole SGN + AL fan connector;
- 1x - 3-pole connector fan supply;
- 4x- 2-pole connector: Supply filter pressure switch, Return filter pressure switch, Fan alarm, Return alarm
- 3x- 3-pole connector: Supply fan signal, Return fan signal, Recirculation damper
- 12x- return temperature;
- 11x- outside temperature.

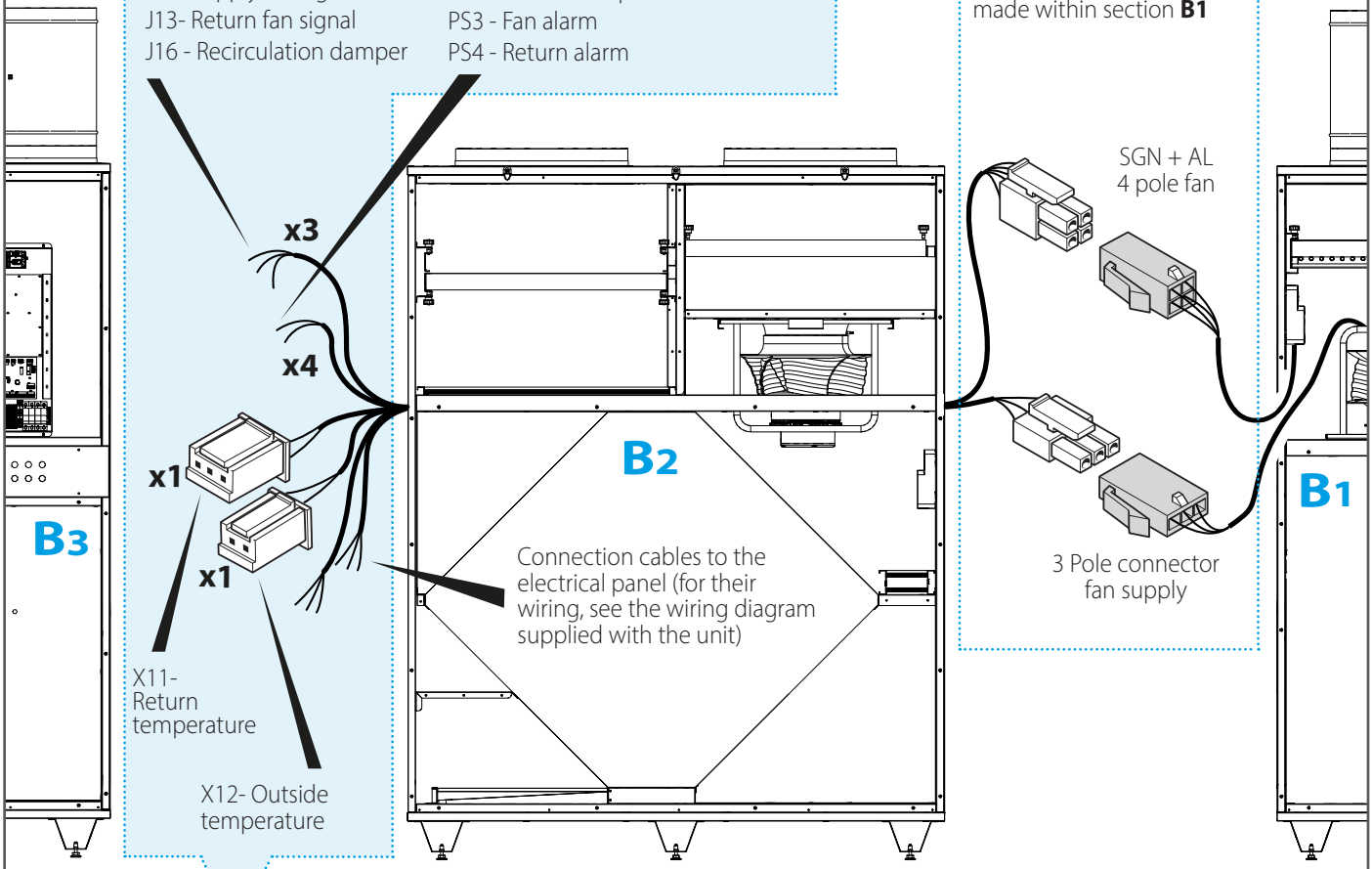
11 SIZE 6-7: electrical connections between sections

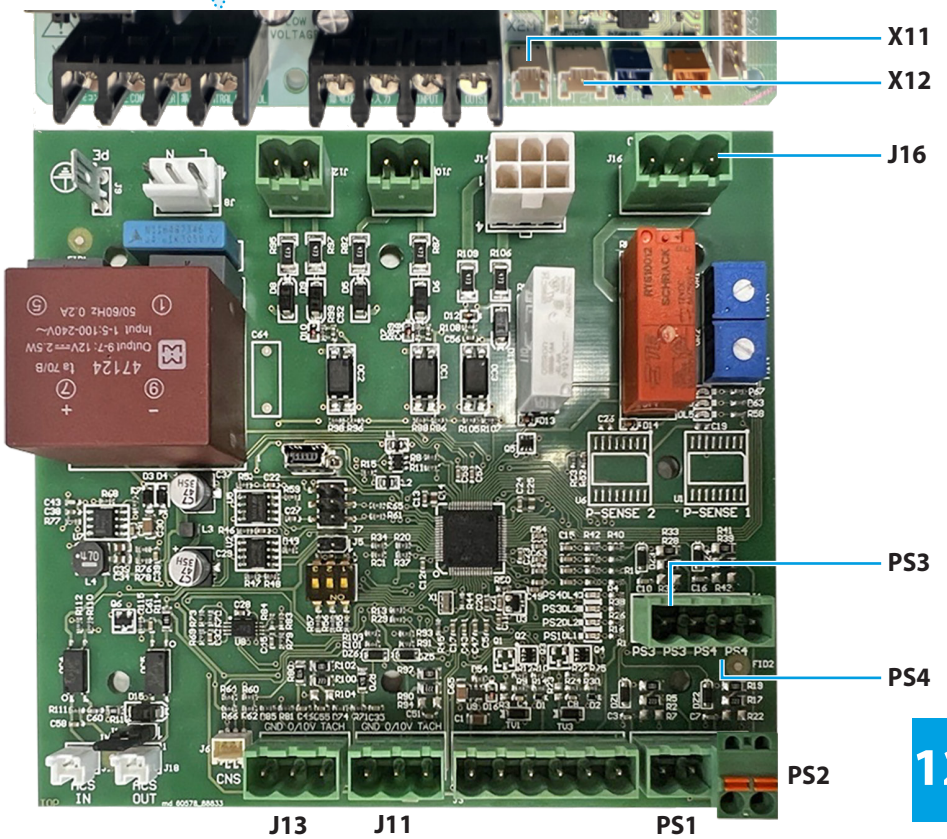
12 These 4 cables connect to the electrical panel board (section **B3**)

J11- Supply fan signal
J13- Return fan signal
J16 - Recirculation damper

PS1- Supply filter pressure switch
PS2- Return filter pressure switch
PS3 - Fan alarm
PS4 - Return alarm

These connections are made within section **B1**





J11 - Supply fan signal
J13 - Return fan signal
J16 - Recirculation damper

PS1 - Supply filter pressure switch
PS2 - Return filter pressure switch
PS3 - Fan alarm
PS4 - Return alarm

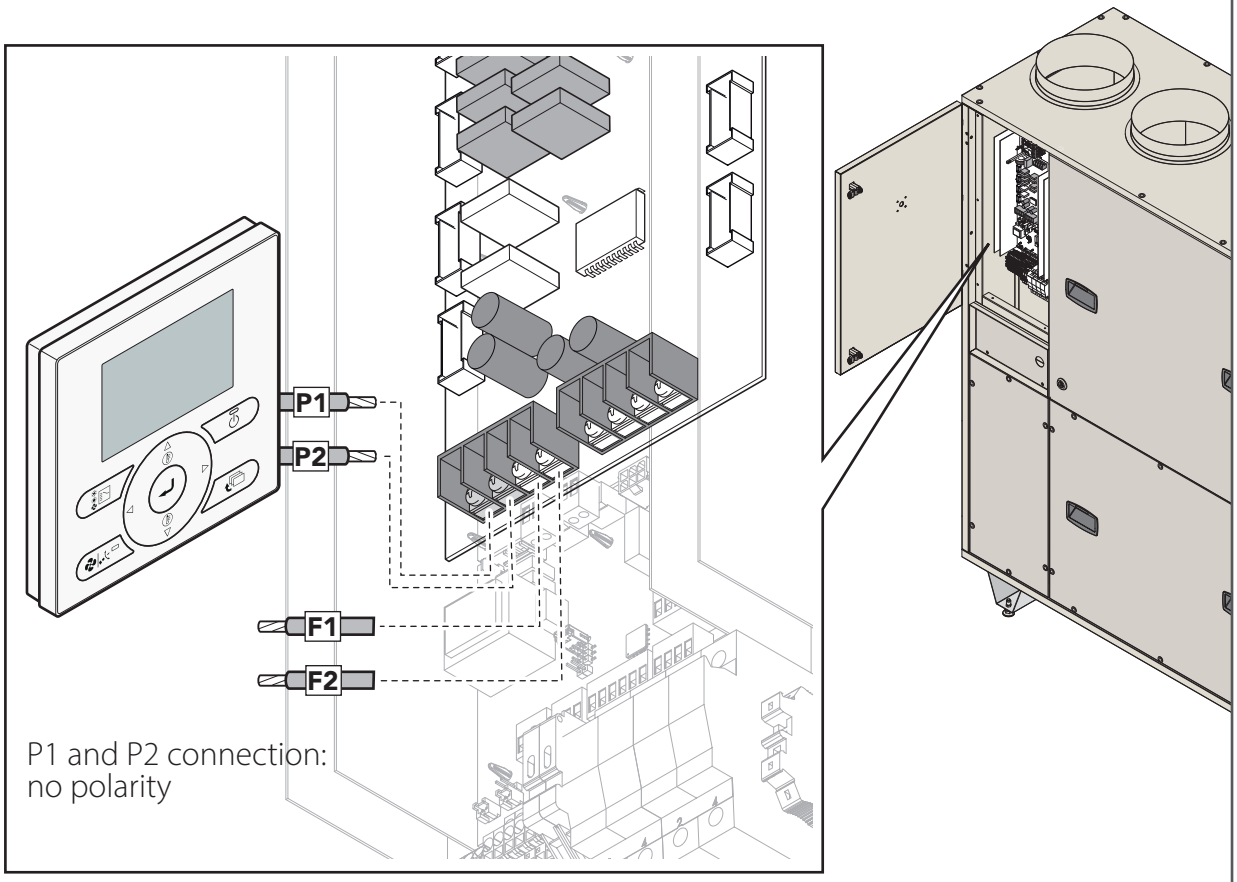
X11 - Recovery temperature
X12 - Outside temperature

12 SIZE 6-7: electrical connections between sections

PHASE 6: BRC CONTROLLER CONNECTION

13 The unit is supplied with a BRC controller which must be connected as shown in the figure.

13 BRC controller connection



PHASE 7: ELECTRICAL CONNECTIONS

14

For the **power supply** it is necessary to connect the unit to an electrical panel in compliance with current regulations.

Always refer to the wiring diagram that is specific to the unit that you bought (it was shipped with the unit). If it is not on the unit or has been lost, contact the salesperson of reference who will send a copy (specify the unit's serial number).

Before connecting the electrical panel, make sure that:

- the voltage and frequency of the network correspond to the parameters of the unit.
- the electrical system being connected has sufficient capacity to supply the nominal electric power of the unit to be installed and meets current regulations.

The electrical connection must be:

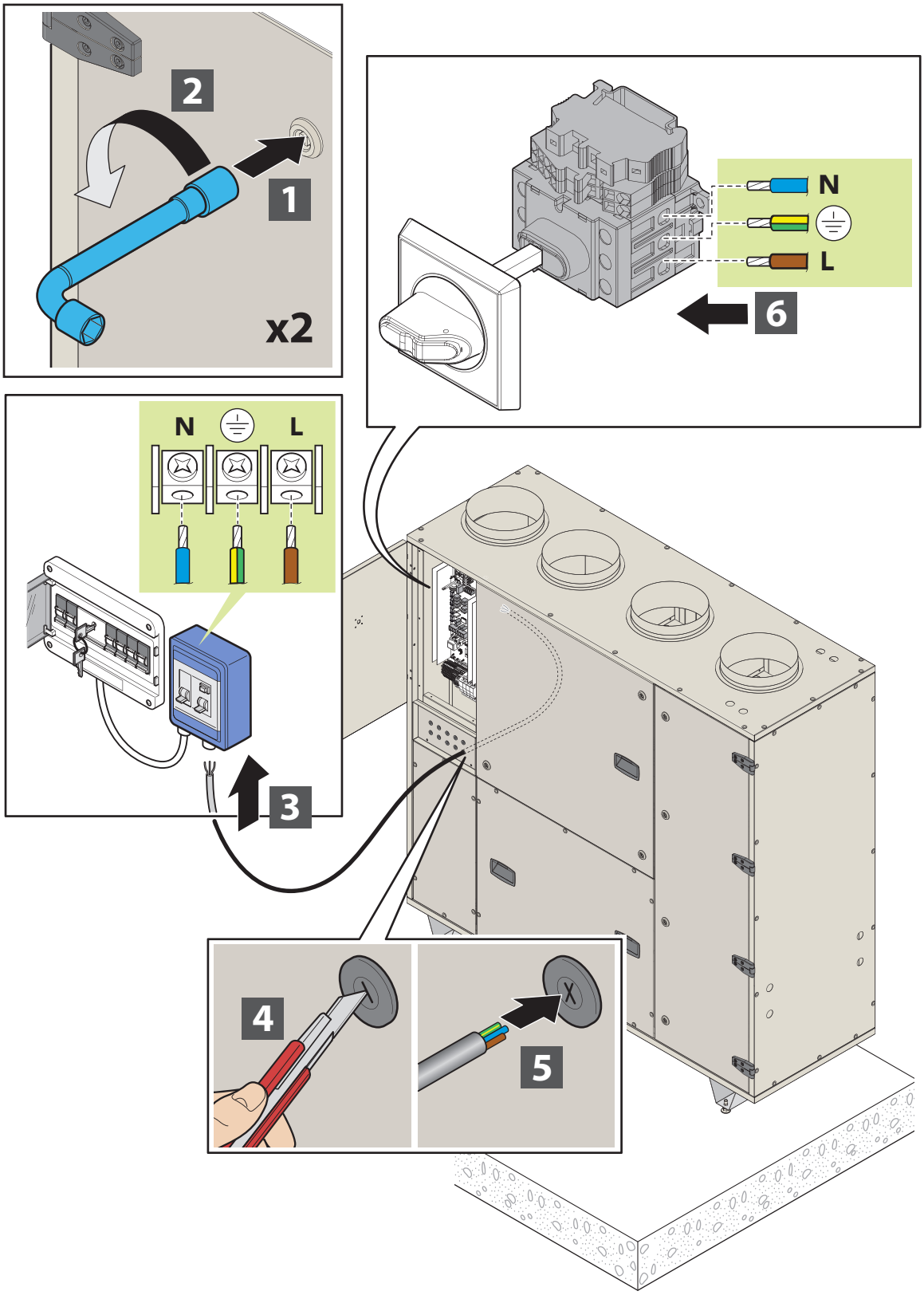
- made by qualified personnel after cutting off the facility's power supply;
- Performed in a fixed and permanent manner, without intermediate splices, in compliance with the regulations of the country of installation;
- adequate to the absorption of the unit (see technical specifications);
- provided with a functioning grounded plug. For multiple units it is necessary to connect each unit to the ground connection or combine them all with metal ties.
- preferably situated in a dedicated room, **locked** and protected from the weather. If there is also a key switch, the key must be removed when cutting the power supply and returned to its position only after finishing service operations.
- install a **16A circuit breaker system** or a system suited to the unit absorption.

During the electrical connection, make sure that **no person**, other than the one who is working on the system, has access to the electrical rooms or switches.

The actual supply voltage of the users **must not deviate more than 10%** from the normal voltage expected. Higher voltage differences cause damage to users and to the electrical system, malfunctioning of fans, noise level. It is therefore essential to check the alignment of the actual voltage values with the nominal values.

After connecting, make sure that:

- the ground connection is sufficient (using the appropriate instrument). An incorrect connection, ineffective and lacking the grounding circuit, is contrary to safety regulations and is a source of danger and can damage the components of the unit.
- the motor rotation direction is correct;
- the wiring and motor power draw are correct.

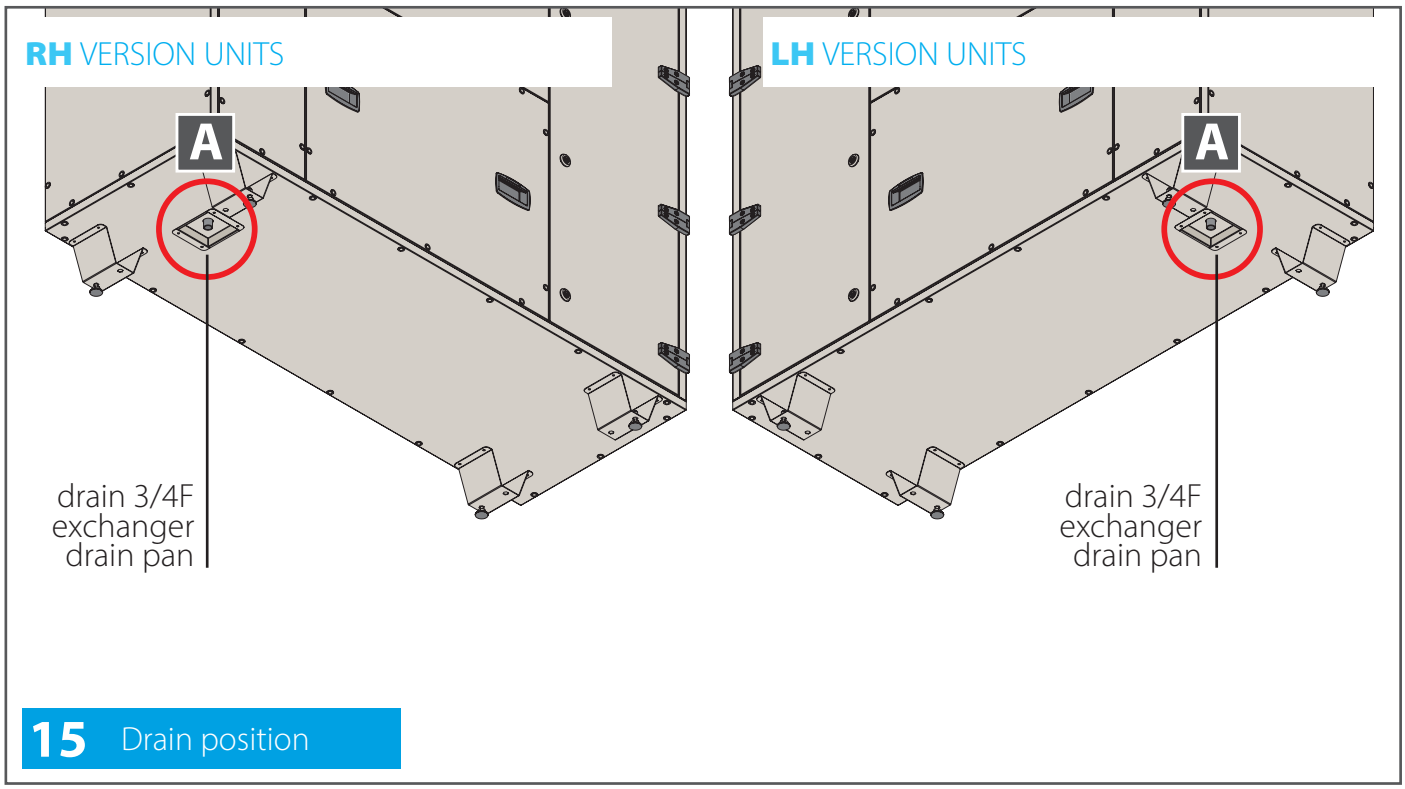


The Manufacturer is not responsible for connections made in a manner that does not comply with regulations, with the specifications of this manual, and in the event of tampering with any electrical component of the unit.

14 Electrical connection

PHASE 8: CONNECTION TO A DRAIN

15 The units are equipped with a 3/4 "F drain in the lower part; it is used to empty the condensate collected from the drain pan placed under the exchanger.



15 Drain position

In order to absorb any recovery of air or sewage and to make the correct flow of drain water visually controllable, **each drain must be equipped with a siphon** (not supplied). To avoid overflows from the drain pan, the siphon must be equipped with **a drain** that allows the removal of the impurities that settle on the bottom; moreover, in order not to jeopardize the operation of the drain system, siphons operating under pressure must NOT be connected with others operating under depression. The choice of the type of siphon and its correct installation is the responsibility of the installer.

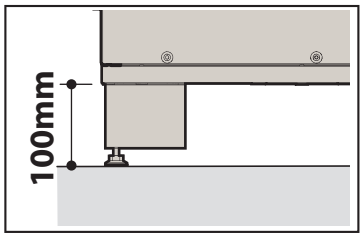
16 The sewer drain can be located:

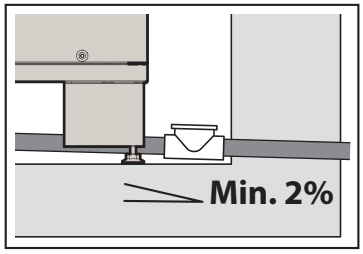
S1 **on the side walls**
distance of the unit from the walls:
- side: keep a space necessary to position a siphon (not supplied);
- rear: no spacing is required.

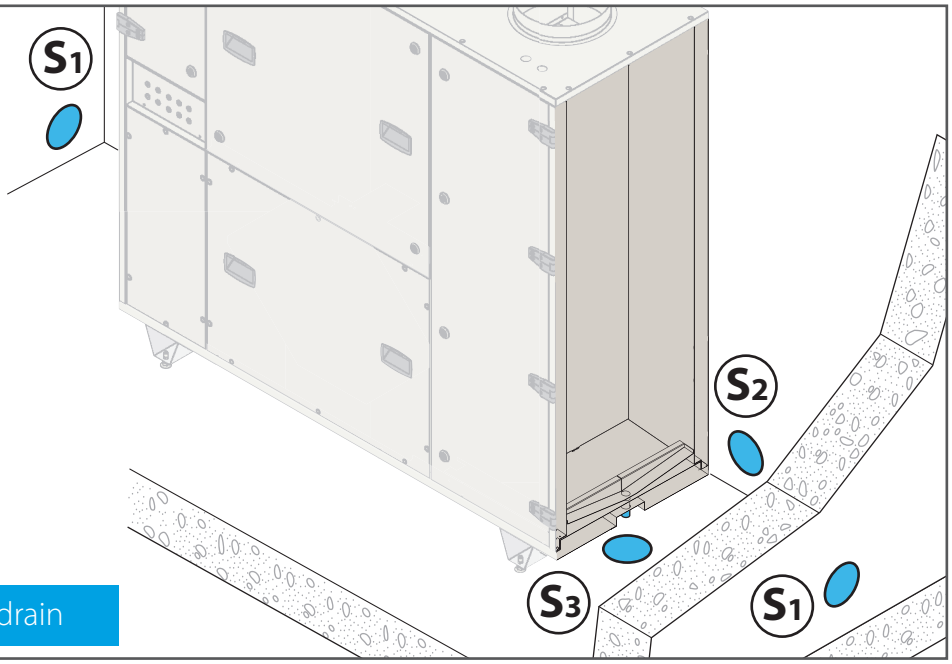
S2 **on the rear wall**
distance of the unit from the walls:
- side: keep a minimum space of 20 mm;
- rear: keep a space necessary to position a siphon (not supplied).

S3 **on the floor under the unit/on the floor outside the unit**
distance of the unit from the walls:
- side: keep a minimum space of 20 mm;
- rear: no spacing is required.

Take into account the height of the unit from the ground (100 mm) when choosing or positioning the siphon.



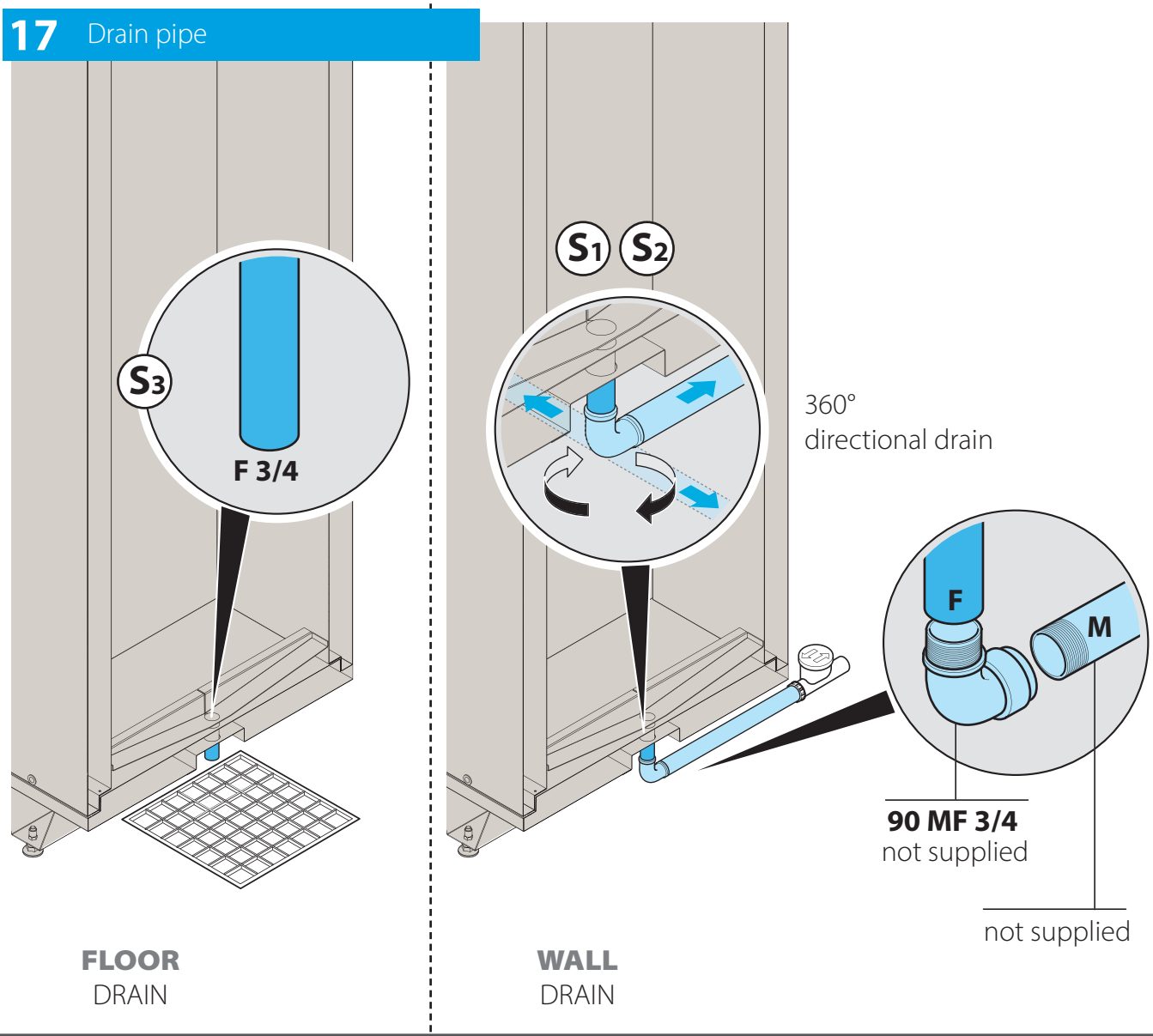




16 Possible positions of the drain

17 The drain pipe must have a larger diameter than the unit drain (3/4 "F) and a minimum inclination of 2% in order to guarantee its operation.
In case of wall drain, it is advisable to use a 90MF 3/4" fitting (not supplied) to avoid narrowing in the drain pipe.

17 Drain pipe



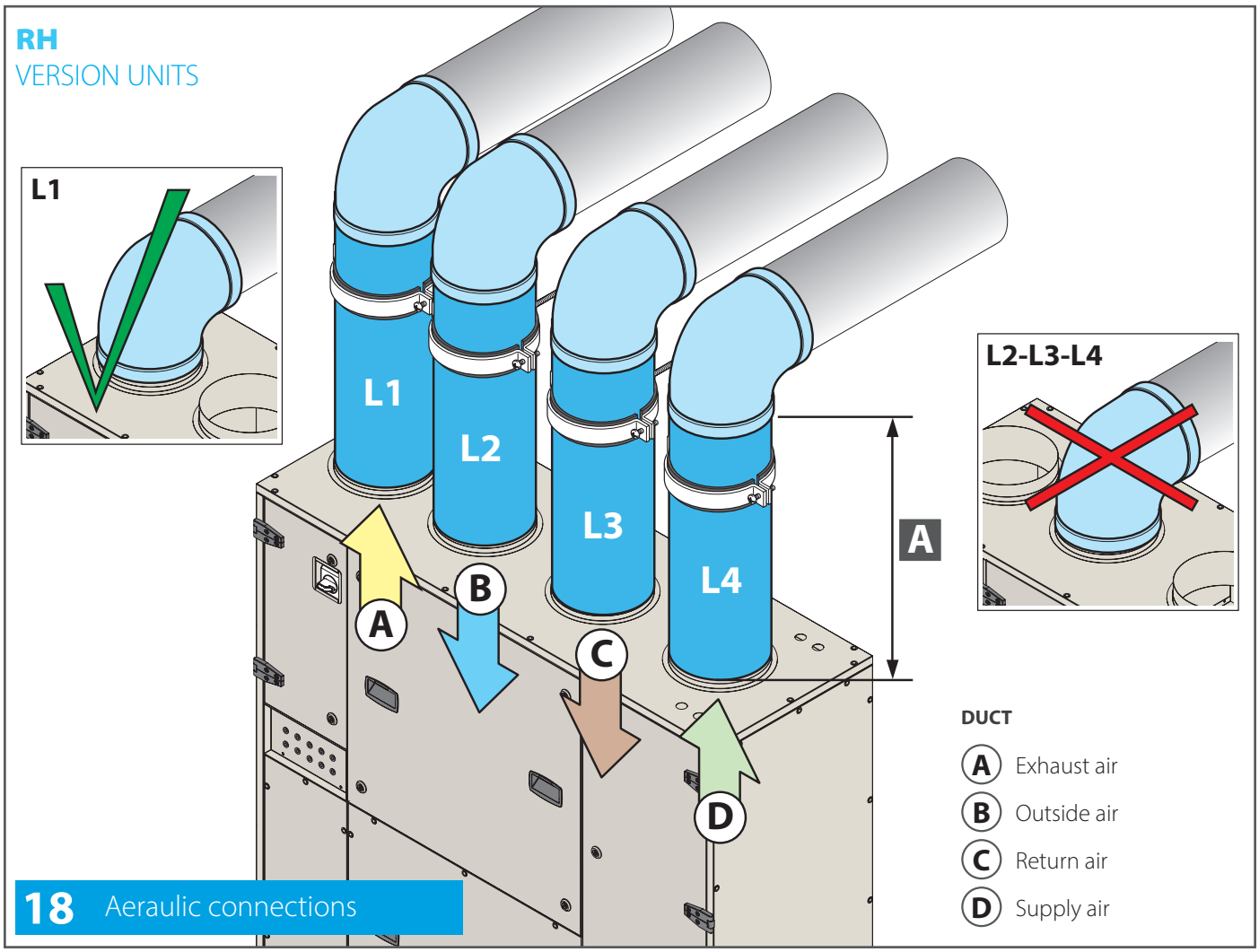
PHASE 9: AERAULIC CONNECTIONS

18 Air ducts are not supplied with the unit. The installer must buy and install them separately. For a correct installation

- Clean the joint surfaces between the duct and the unit/coil.
- Apply a gasket to the flange in order to prevent air infiltration.
- Carefully tighten the connecting screws.
- proceed with sealing the gasket in order to optimise its seal.

In order to ensure the seal of the connection and the integrity of the unit's structure, it is essential to make sure that the ducts do not weigh on it, being supported by their own brackets.

Upon request to the manufacturer, an attenuator is available, specific for Modular T to be mounted on the return or supply air duct.



18 Aeraulic connections

		STRAIGHT DUCTS A MINIMUM LENGTH					
		SIZE ▶	3	4	5	6	7
Straight duct	L1	mm	if necessary, a bend can be fitted directly on the collar				
	L2	mm	250	315	355	400	500
	L3	mm	250	315	355	400	500
	L4	mm	500	630	710	800	1000

PHASE 10: TESTING

To commission the unit it is necessary to (tick "√" the operations completed):

	check for accurate fluid inlet and outlet pipe connections to the coils (if applicable)
	Check that there is a suitable siphon for all the water being drained.
	check unit integrity;
	check that the installation of the sections is correct (only for size 5-6-7)
	check that the electrical connections have been made correctly
	Remove extraneous materials (e.g., assembly sheets, tools, clips, etc.) and dirt (footprints, dust, etc.) from inside the sections.

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment should be used when operating the unit, suitable for use in accordance with company criteria and rules.
During unit maintenance, other preventive measures are suggested in addition to the above: safety shoes, gloves, suitable clothing, always compatible with the use and according to company guidelines.

TRAINING

It is the responsibility of the unit buyer/user to provide adequate instruction and training to unit operators.

OPTIONAL

In agreed cases, additional training may be provided through the one-on-one instruction of operators by the Manufacturer's technical staff.

7 Commissioning

Configuration

The settings (format: XX(XX)-X-XX), for example 19(29)-1-02, used in this chapter, are made up of 3 parts, separated by "-":

- Mode number: for example, 19(29), where 19 is the mode number for group settings, and 29 is the mode number for individual settings
- Switch number: for example, 1
- Position number: for example, 02

Operating procedure

To adjust the settings of the ventilation unit for heat recovery, you can use the user interface of the Modular L Smart unit or the air conditioner.

Initial settings

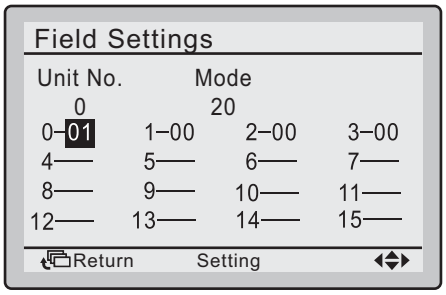
- Mode numbers 17, 18 and 19: Modular L Smart group control.
- Mode numbers 27, 28 and 29: individual control

Changing the settings with BRC1E53

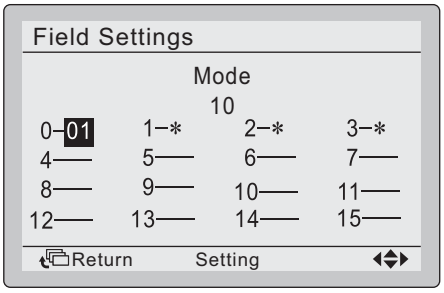
Make sure that the doors of the switch boxes on the Modular L Smart unit are closed.

1. Briefly press a button to turn on the screen lighting.
2. Press and hold the Cancel button (a) for at least 4 seconds to enter the service Settings menu.
3. Navigate to Field Settings with the Up/Down buttons and press the Menu/Enter button (b).
4. Press the Left/Right buttons to highlight the number in Mode.
5. Press the Up/Down buttons to select the required mode number.
   Result: Based on the number of mode selected, starting with 20, you will also have to select a number of units for individual control.
6. Use the Left/Right buttons to highlight the number in Unit No.
7. Use the Up/Down buttons to select the internal unit number. It is NOT necessary to select a unit number when configuring the entire group.
8. Use the Left/Right buttons to select a position number (0 to 15) for the switch number you want to change.

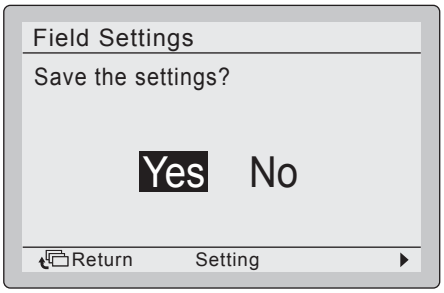
In case of individual settings:



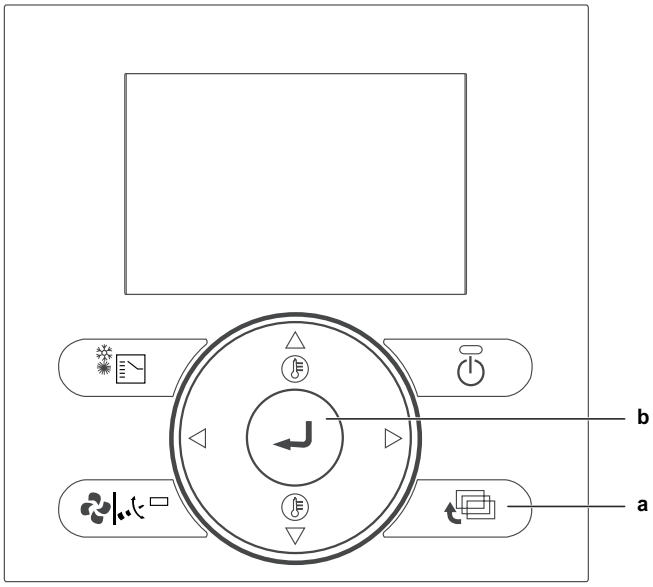
In case of group settings:



9. Use the Up/Down buttons to select the required position.
10. Press the Menu/Enter button (b) and confirm your selection with Yes.



11. After completing all changes, press the Cancel button (a) twice to return to normal mode.



Settings list

Mode setting	Switch No. setting	Setting description	Position No. setting													
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
19(29)	0	Filter contamination inspection setting	Filter contamination check with fan step 1-15	Filter contamination check with new fan step	Control by timer	Target detection filter with fan step 1-15	Automatic ESP selection + target detection filter with new fan step										
	1	Low mode setting	Off	Operation 1/15 (28 min. off/2 min.on)	Operation 1/10 (27 min.off/3 min.on)	Operation 1/6 (25 min. off/5 min. on)	Operation 1/4 (22.5 min.off/7.5 min.on)	Operation 1/3 (20 min.off/10 min.on)	Operation 1/2 (15 min.off/15 min.on)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
	2	Supply fan step setting*	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	3	Return fan step setting*	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	4	24-hour fan setting	Off	Operation 1/15 (28 min. off/2 min.on)	Operation 1/10 (27 min.off/3 min.on)	Operation 1/6 (25 min. off/5 min. on)	Operation 1/4 (22.5 min.off/7.5 min.on)	Operation 1/3 (20 min.off/10 min.on)	Operation 1/2 (15 min.off/15 min.on)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
	7	Change in reference concentration for ventilation air flow control (ppm)	0	+200	+400	+600	-200	-400	-600								
	8	Ventilation stop through automatic control of the ventilation air flow	Allowed	NOT allowed	Allowed	NOT allowed											
		Fan residual operation	Off	Off	Heater operation	Heater operation											
	9	Normal ventilation mode through the automatic control of the ventilation air flow					Control using CO_2 sensor										
1A	0	Fresh-up operation**	Off	On													

Mode setting	Switch No. setting	Setting description	Position No. setting					Position No. setting									
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	0	Filter scheduled cleaning setting	About 2500 hours	±1250 hours													
	1	Night free cooling timer (after stop)	Off	On after 2 hours	On after 4 hours	On after 6 hours	On after 8 hours										
	2	Pre-cooling/pre-heating	Off	On													
	3	Pre-cooling/pre-heating duration	30 minutes	45 minutes	60 minutes												
	4	Initial fan speed	High	Very high													
	5	Yes / No setting for duct connection with VRV system	Without duct	With duct	Without duct	With duct											
		Cold area setting (fan operation when heater thermostat is off)			Stop	Low	Stop	Low									
	6	Night free cooling (fan settings)	High	Very high													
	7	Target temperature for independent night free cooling	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	27°C	28°C	29°C	30°C		
	8	Setting of interdependent control device for centralized zones	No	Yes													
	9	Preheating time extension setting	0 minutes	30 minutes	60 minutes	90 minutes											

Mode setting	Switch No. setting	Setting description	Position No. setting					Position No. setting									
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
18(28)	0	JC/J2 external signal	Last command	Priority for external input	Priority on operation	Night free cooling / Forced shutdown disabling		24 hour On/Off ventilation									
	1	Setting for direct Power On	Off	On													
	2	Automatic restart setting	Off	On													
	3	Output signal for external humidifier (X24A)			Humidifier output (fan operation)	Humidifier output (fan operation)											
	4	Ventilation mode indication	On	Off													
	6	Automatic mode of ventilation air flow	Linear		Steady A	Steady B											
	7	Fresh-up mode	No supply indication	No supply indication	Return indication	Return indication											
	8	External input terminal function selection (between J1 and JC)	Fresh-up	Output error	Operation stop output error	Forced shutdown	Fan forced shutdown	Increased air flow									
	9	BRP4A50A output switching selection (between X3 and X4)	Heater output	Output error	Fan output (low/high/very high)	Fan output (high/very high)	Fan output (very high)	Fan output (low/high/very high)									
	11	Filter contamination check**	No action	Filter check reset	Force filter check												

Selection of the optimal ventilation speed

The fine adjustment of the fan speed can be done correctly by modifying the following parameters:

- Initial fan speed: High or Very High
- Supply fan speed step setting: Steps 1 to 15
- Return fan step setting: Steps 1 to 15

You can access the parameters in question by following the procedure "**Service Settings Configuring → on the field settings page**, as illustrated in the List of settings paragraph.

Both supply fans and return fans have an optimal speed value, described in terms of **RPM** (number of revolutions per minute), which can be found directly in the AED Unit Selection Software report, as shown below:

3) Fan supply

Model	GR281-61D.BD.CR_S
Type	EC
Material	Composite
Quantity	1x (single fan)
External static pressure	100 Pa
Internal static pressure	330 Pa
Total static pressure	430 Pa
Dynamic pressure	17 Pa
Project flow	2200 m^3/h
K factor	85
Operating rotation speed • Max	2621 RPM • 3110 RPM
Efficiency (Reg327/2011)	67.8%
Efficiency	65.7%
Absorbed electrical power	0.49 kW
Power class • PMREF (EN13053)	P1 • 0.82 kW
SFPv class • SFPv (EN13053)	SFP1 • 731 $W/(m^3/s)$

3) Fan return

Model	GR281-6ID.BD.CRS
Type	EC
Material	Composite
Quantity	1x (single fan)
External static pressure	100 Pa
Internal static pressure	306 Pa
Total static pressure	406 Pa
Dynamic pressure	17 Pa
Project flow	2200 m^3/h
K factor	85
Operating rotation speed • Max	2585 RPM • 3110 RPM
Efficiency (Reg327/2011)	67.4%
Efficiency	65.3%
Absorbed electrical power	0.47 kW
Power class • PMREF (EN13053)	P1 • 0.78 kW
SFPv class • SFPv (EN13053)	SFP1 • 698 $W/(m^3/s)$

Optimal RPM values for supply and return (exhaust) fans

Knowing the size of the unit, it is possible to proceed with the setting of the step relating to the corresponding supply/return fan on the BRC controller, in compliance with the following speed selection tables (we recommend you consider the rpm value for the "Heat return function").

In the absence of unit selection through the Daikin device software, check the performance for the individual unit size from page 36 onwards.

Speed selection tables

In order to select the correct step for the supply and return fan it is necessary to:
- Choose the table whose unit size number corresponds to the size indicated in the AED unit selection software report.
- Identify the steps of the supply/return fan, choosing from column H (high), the steps in which the RPM values are closest to those indicated in the AED unit selection software report for the aforementioned fan.
- Set the values of the selected steps on the controller by going to the **Service settings → Field settings** path and proceed with the following settings
  a. **19(29)-2- Step_selected_ supply_fan**, for the Step of the supply fan, from 01 to 15
  b. **19(29)-3- Step_selected_return_fan**, for the return fan Step, from 01 to 15
- If the RPM values for the supply and return fans are not present in column H but in column UH (very high), then:
- Set the initial fan speed to Very High by going to the **Service Settings → Field settings** path and changing the default value from **17(27)-4-01**(High) to**17(27)-4-02**(Very high)
- Set the selection steps as indicated in step 3.

Step		Modular T Smart Size 03											
		Supply fan						Return fan					
		Heat recovery operation			Bypass operation			Heat recovery operation			By-pass operation		
		UH (very high)	H (high)	L (low)	UH	H	L	UH	H	L	UH	H	L
Fan RPM setting SA (19(29)-2-…)	01	2164	1803	951	2264	1828	1028	2390	2036	1282	2145	1763	951
	02	2227	1868	1025	2324	1908	1093	2439	2095	1345	2202	1818	1008
	03	2290	1939	1099	2384	1982	1162	2492	2159	1409	2259	1877	1065
	04	2350	2005	1176	2443	2048	1225	2541	2217	1474	2316	1932	1122
	05	2409	2071	1253	2503	2122	1290	2593	2276	1541	2370	1992	1178
	06	2469	2127	1327	2566	2187	1359	2642	2323	1602	2425	2046	1236
	07	2529	2187	1404	2626	2261	1423	2695	2375	1666	2476	2105	1293
	08	2586	2245	1475	2685	2327	1489	2744	2422	1731	2531	2157	1352
Fan RPM setting EA (19(29)-3-…)	09	2654	2310	1555	2754	2401	1572	2806	2479	1800	2593	2219	1424
	10	2728	2367	1634	2825	2469	1657	2873	2529	1865	2657	2279	1499
	11	2796	2416	1709	2894	2521	1734	2932	2573	1925	2717	2330	1565
	12	2868	2472	1783	2965	2577	1817	2997	2626	1988	2781	2380	1640
	13	2931	2524	1848	3033	2629	1891	3054	2670	2048	2841	2427	1706
	14	2999	2583	1919	3104	2685	1957	3113	2721	2115	2908	2476	1775
	15	3059	2632	1985	3170	2737	2016	3170	2763	2172	2964	2524	1828

The table refers to the indicated values, subject to tolerances.
To adjust the desired air flow value based on on-site measurements, you can increase the RPM to increase the flow and decrease the RPM to reduce it. If necessary, slightly modify the fan speed in order to obtain the desired air flow.

Step		Modular T Smart Size 04											
		Supply fan						Return fan					
		Heat recovery operation			By-pass operation			Heat recovery operation			By-pass operation		
		UH	H	L	UH	H	L	UH	H	L	UH	H	L
Fan RPM setting SA (19(29)-2-…)	01	2547	2122	1119	2664	2151	1210	2390	2036	1282	2145	1763	951
	02	2621	2198	1206	2735	2245	1286	2439	2095	1345	2202	1818	1008
	03	2695	2282	1293	2805	2332	1367	2492	2159	1409	2259	1877	1065
	04	2765	2359	1384	2875	2410	1441	2541	2217	1474	2316	1932	1122
	05	2835	2437	1474	2945	2497	1517	2593	2276	1541	2370	1992	1178
	06	2905	2503	1561	3019	2573	1599	2642	2323	1602	2425	2046	1236
	07	2976	2573	1652	3089	2661	1675	2695	2375	1666	2476	2105	1293
	08	3043	2641	1735	3160	2738	1752	2744	2422	1731	2531	2157	1352
Fan RPM setting EA (19(29)-3-…)	09	3123	2718	1830	3241	2825	1849	2806	2479	1800	2593	2219	1424
	10	3210	2785	1923	3324	2905	1950	2873	2529	1865	2657	2279	1499
	11	3290	2842	2010	3405	2966	2041	2932	2573	1925	2717	2330	1565
	12	3375	2909	2098	3489	3032	2137	2997	2626	1988	2781	2380	1640
	13	3449	2969	2175	3569	3093	2225	3054	2670	2048	2841	2427	1706
	14	3529	3040	2259	3652	3160	2302	3113	2721	2115	2908	2476	1775
	15	3599	3097	2336	3730	3220	2372	3170	2763	2172	2964	2524	1828

Step		Modular T Smart Size 05											
		Supply fan						Return fan					
		Heat recovery operation			By-pass operation			Heat recovery operation			By-pass operation		
		UH	H	L	UH	H	L	UH	H	L	UH	H	L
Fan RPM setting SA (19(29)-2-…)	01	2123	1769	933	2221	1793	1009	2345	1997	1258	2104	1730	933
	02	2185	1833	1006	2280	1872	1072	2393	2056	1320	2160	1783	989
	03	2247	1902	1078	2339	1945	1140	2445	2118	1382	2216	1842	1045
	04	2305	1967	1154	2397	2009	1202	2493	2175	1446	2272	1895	1101
	05	2364	2032	1229	2456	2082	1265	2544	2233	1512	2325	1954	1156
	06	2422	2087	1302	2517	2146	1333	2592	2279	1572	2379	2007	1213
	07	2481	2146	1377	2576	2218	1396	2644	2330	1635	2429	2065	1268
	08	2537	2202	1447	2634	2283	1461	2692	2376	1698	2483	2116	1327
Fan RPM setting EA (19(29)-3-…)	09	2604	2266	1526	2702	2356	1542	2753	2432	1766	2544	2177	1397
	10	2677	2322	1603	2772	2422	1626	2818	2481	1830	2607	2236	1470
	11	2743	2370	1676	2839	2473	1701	2877	2524	1888	2666	2286	1536
	12	2814	2425	1749	2909	2528	1782	2940	2576	1951	2728	2335	1609
	13	2876	2476	1813	2976	2579	1855	2996	2619	2009	2787	2381	1674
	14	2942	2534	1883	3045	2634	1920	3054	2670	2075	2853	2429	1742
	15	3001	2582	1948	3110	2685	1978	3110	2711	2131	2908	2476	1793

Step		Modular T Smart Size 06											
		Supply fan						Return fan					
		Heat recovery operation			By-pass operation			Heat recovery operation			By-pass operation		
		UH	H	L	UH	H	L	UH	H	L	UH	H	L
Fan RPM setting SA (19(29)-2-…)	01	1721	1433	756	1800	1453	817	1900	1618	1019	1705	1402	756
	02	1771	1485	815	1847	1517	869	1939	1666	1069	1750	1445	801
	03	1820	1541	874	1895	1576	924	1981	1717	1120	1796	1492	847
	04	1868	1594	935	1942	1628	974	2020	1762	1172	1841	1536	892
	05	1915	1646	996	1990	1687	1025	2061	1809	1225	1884	1583	937
	06	1963	1691	1055	2040	1739	1080	2100	1847	1274	1928	1627	983
	07	2010	1739	1116	2087	1798	1132	2142	1888	1325	1969	1673	1028
	08	2056	1784	1172	2135	1850	1184	2181	1925	1376	2012	1715	1075
Fan RPM setting EA (19(29)-3-…)	09	2110	1836	1236	2189	1909	1249	2230	1971	1431	2061	1764	1132
	10	2169	1882	1299	2246	1963	1317	2284	2010	1483	2113	1811	1191
	11	2223	1920	1358	2301	2004	1379	2331	2045	1530	2160	1852	1244
	12	2280	1965	1417	2357	2049	1444	2383	2087	1581	2211	1892	1303
	13	2330	2006	1469	2411	2090	1503	2428	2122	1628	2258	1929	1357
	14	2384	2054	1526	2468	2135	1555	2475	2163	1681	2311	1969	1411
	15	2432	2092	1578	2520	2176	1603	2520	2197	1726	2356	2006	1453

Step		Modular T Smart Size 07											
		Supply fan						Return fan					
		Heat recovery operation			By-pass operation			Heat recovery operation			By-pass operation		
		UH	H	L	UH	H	L	UH	H	L	UH	H	L
Fan RPM setting SA (19(29)-2-…)	01	1700	1416	747	1779	1436	808	1877	1599	1007	1685	1385	747
	02	1749	1467	805	1825	1499	859	1916	1646	1057	1729	1428	791
	03	1799	1523	863	1872	1557	913	1957	1696	1107	1775	1475	837
	04	1846	1575	924	1919	1609	962	1996	1741	1158	1819	1517	881
	05	1893	1627	984	1966	1667	1013	2036	1787	1210	1862	1564	926
	06	1939	1671	1042	2015	1718	1067	2075	1825	1259	1905	1607	971
	07	1986	1718	1103	2062	1776	1118	2117	1866	1309	1945	1653	1015
	08	2032	1763	1158	2109	1828	1170	2155	1902	1360	1988	1694	1062
Fan RPM setting EA (19(29)-3-…)	09	2085	1814	1222	2163	1886	1234	2204	1948	1414	2036	1743	1119
	10	2143	1859	1284	2219	1939	1302	2256	1986	1465	2087	1790	1177
	11	2197	1897	1342	2273	1980	1362	2303	2021	1512	2134	1830	1230
	12	2253	1942	1400	2329	2024	1427	2354	2062	1562	2184	1869	1288
	13	2302	1982	1452	2382	2065	1485	2399	2097	1609	2231	1906	1340
	14	2356	2029	1508	2438	2109	1537	2446	2138	1661	2284	1945	1395
	15	2403	2067	1559	2490	2150	1584	2490	2171	1706	2328	1982	1436

The table refers to the indicated values, subject to tolerances.
To adjust the desired air flow value based on on-site measurements, you can increase the RPM to increase the flow and decrease the RPM to reduce it. If necessary, slightly modify the fan speed in order to obtain the desired air flow.

Factory configuration

Size03:			
Supply		**Return**	
Volumetric flow	ESP	Volumetric flow	ESP
800	100	800	100
RPM [1/min]		RPM [1/min]	
2310		2276	
17(27)-4-01			
19(29)-2-09		19(29)-3-05	

Size04:			
Supply		**Return**	
Volumetric flow	ESP	Volumetric flow	ESP
1650	100	1650	100
RPM [1/min]		RPM [1/min]	
2835		2873	
17(27)-4-02			
19(29)-2-05		19(29)-3-10	

Size05:			
Supply		**Return**	
Volumetric flow	ESP	Volumetric flow	ESP
2300	100	2300	100
RPM [1/min]		RPM [1/min]	
2743		2692	
17(27)-4-02			
19(29)-2-11		19(29)-3-08	

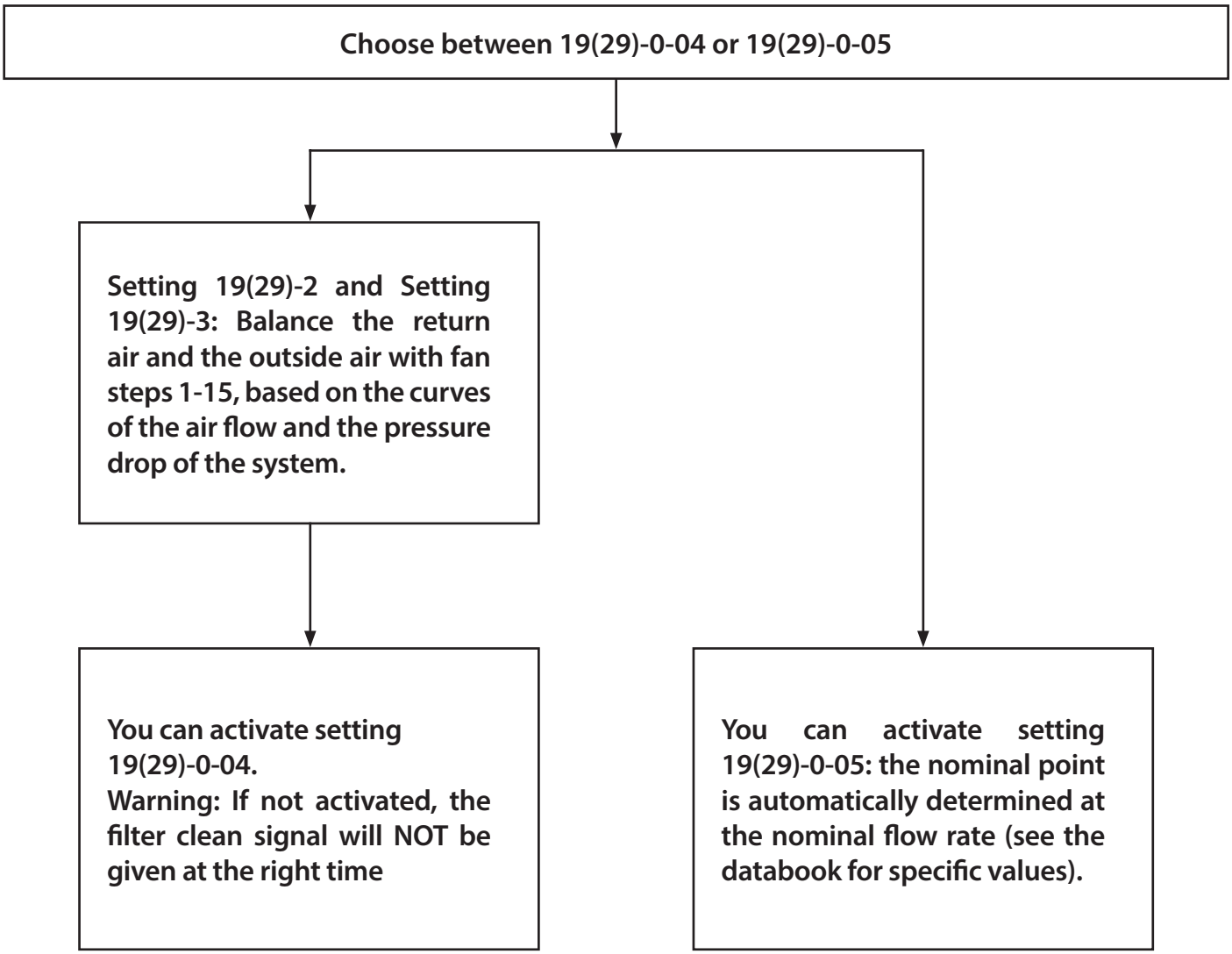
Size06:			
Supply		**Return**	
Volumetric flow	ESP	Volumetric flow	ESP
2700	100	2700	100
RPM [1/min]		RPM [1/min]	
2280		2284	
17(27)-4-02			
19(29)-2-12		19(29)-3-10	

Size07:			
Supply		**Return**	
Volumetric flow	ESP	Volumetric flow	ESP
3900	100	3900	100
RPM [1/min]		RPM [1/min]	
2143		2155	
17(27)-4-02			
19(29)-2-10		19(29)-3-08	

"Field setting without preliminary selection": adjust the fan speed based on the measurement of the air flow in the duct, as explained in the previous pages.

Settings for all configurations

Setting 17(27)-4: First choose the fan speed. Set the speed to high or very high.

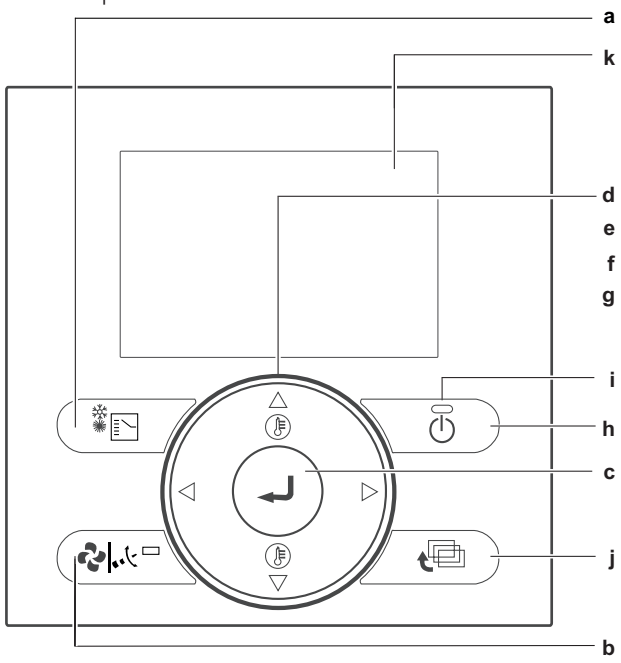


Information about settings 19(29)-0-04 and 19(29)-0-05

The configuration is interrupted if the user interface is turned off while activating settings 19(29)-0-04 or 19(29)-0-05. By turning the user interface back on, the function will be restarted
from the start Completing setting 19(29)-0-04 takes between 1 and 6 minutes. You can check if the setting has been completed successfully by verifying that the field setting has passed to 0-01. Completing setting 19(29)-0-05 takes between 3 and 35 minutes. You can check if the setting has been completed successfully by verifying that the field setting has passed to 0-02. These settings can ONLY be activated with clean filters. Make sure that the pressure drop in the duct of the upper and lower units is balanced. The function starts as soon as it is selected and with the user interface turned on. Setting 19(29)-0-04 CANNOT be configured if the outdoor temperature is ≤-10 °C, value outside the operating range. Setting 19(29)-0-05 CANNOT be configured if the outdoor temperature is ≤5 °C. In this case, error 65-03 is displayed and the unit stops running. Change the setting in 19(29)-0-04. The setting CANNOT be configured if there are any alarms or errors. If auxiliary fans are used, ONLY setting 19(29)-0-03 can be configured. Settings 19(29)-0-04 and 19(29)-0-05 can be configured for multiple units with 1 user interface.

Information on the user interface

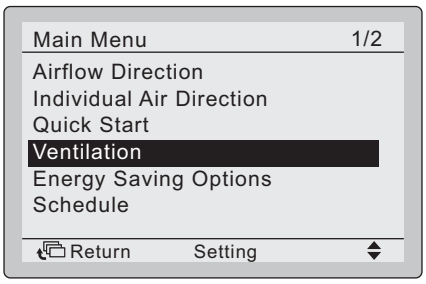
Read the manual provided with the user interface for more detailed instructions.



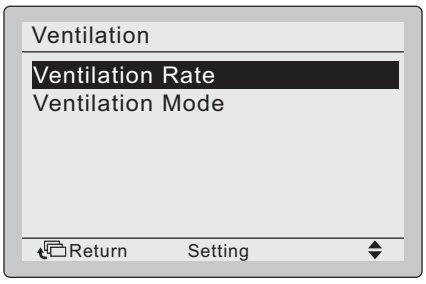
a Operation Mode Selector button
b Fan Speed/Airflow Direction button
c Menu/Enter button
d Up button
e Down button
f Right button
g Left button
h ON/OFF button
i Operation lamp
j Cancel button
k LCD (with backlight)

To change the ventilation flow

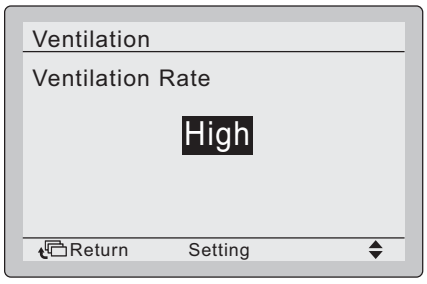
1. Press the Menu/Enter button to display the main menu.
2. Press the Up/Down buttons to select Ventilation and press the Menu/Enter button



3. Press the Up/Down buttons to select the Ventilation rate and press the Menu/Enter button to confirm



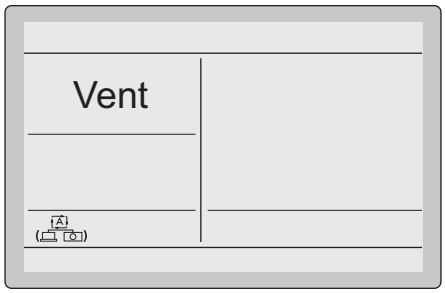
4. Press the Up/Down buttons to change the setting to Low or High and press the Menu/Enter button to confirm.



To select the ventilation mode

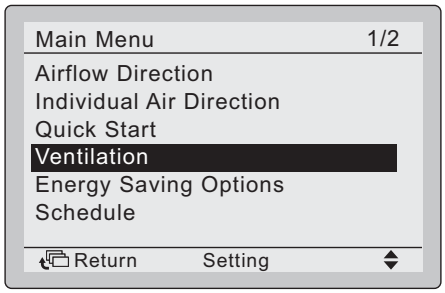
The ventilation mode is used when there is no need for cooling or heating, whereby only the ventilation units for heat recovery work.

1. Press the Operation mode selector button several times until ventilation is selected

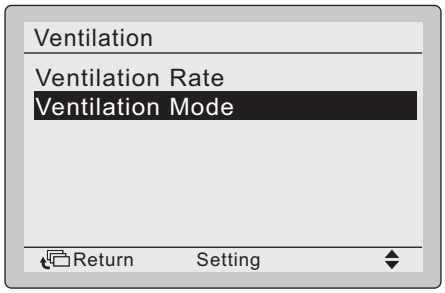


To change the ventilation mode

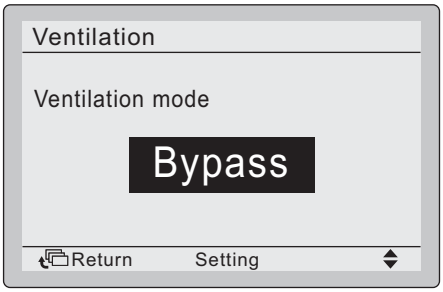
1. Press the Menu/Enter button to display the main menu.
2. Press the Up/Down buttons to select Ventilation and press the Menu/Enter button.



3. Press the Up/Down buttons to select the Ventilation mode and press the Menu/Enter button.



4. Press the Up/Down buttons to select the required ventilation mode. For more information on ventilation modes, see the reference guide for the installer and user.



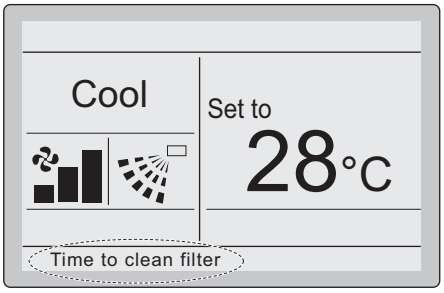
Ventilation modes

You can change the ventilation mode in the main menu

Mode	Description
Automatic mode	Using information from the air conditioner (cooling, heating, fan and set temperature) and the heat recovery ventilation unit (indoor and outdoor temperature), this mode automatically switches from Energy recovery to Bypass ventilation and vice versa.
Energy recovery ventilation mode	The outside air is conveyed into the room after passing through a heat exchanger, where the heat is exchanged with the return air.
Bypass mode	The outdoor air bypasses the heat exchanger. This means that the outside air is conveyed into the room without heat exchange with the return air.

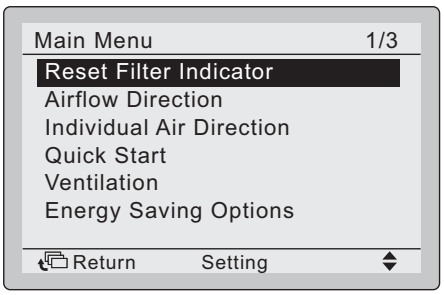
"Time to clean filter" indication

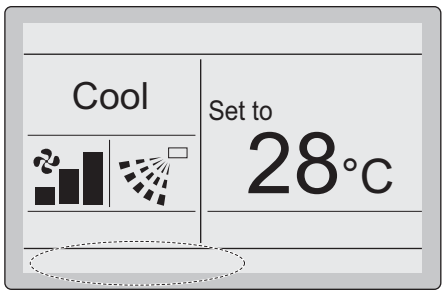
When the time comes to clean the filters, the following message or icon appears at the bottom of the basic screen: Time to clean filter.



Removal of the "Time to clean the filter" indication

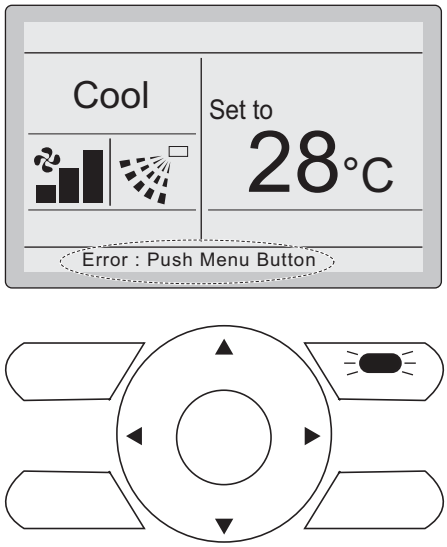
Press the Menu/Enter button
Press the Up/Down buttons to select Filter Indicator reset.
Press the Menu/Enter button





Information on error indications

If an error occurs, an error icon is displayed on the basic screen and the operation light blinks. If a warning occurs, ONLY the error icon flashes and NOT the operation light. Press the Menu/Enter button to view the error code or warning and contact information.



The error code flashes and both the contact address and model name are displayed as shown below. In this case, contact your Daikin dealer regarding the error code.

Malfunction code	Specific code	Description
A1		EEPROM fault
A6		Rotor locked
A6	22	Unstable fan speed: filter contamination control failure
A8		Power failure
AJ		Malfunction of the capacity setting
C0		Generic error
C1		Fan communication error
C6		Fan motor sensor or fan control driver malfunction
CH		CO2 sensor warning
US		Transmission error between the unit and the user interface
U8		Transmission error between the main and secondary user interface
UA		Incorrect user interface installation
UC		Repeated central address
UE		Transmission error between the unit and the centralized controller
60		External protection device activated
64	01	Indoor air thermistor malfunction (R1T)
64	02	Indoor air thermistor (R1T) out of the operating range
65	01	Malfunction of outdoor air thermistor (R2T)
65	02	Outdoor air thermistor (R2T) out of the operating range
65	03	Function 19(29)-0-04/-05 is not possible due to operation at a reduced outside temperature
6A		Malfunction related to the humidifier
6A		Malfunction related to the humidifier + thermistor

In the event of a malfunction with the code in the grey background, the unit continues to operate. However, be sure to have it inspected and repaired as soon as possible

Prevention of heat exchanger freezing

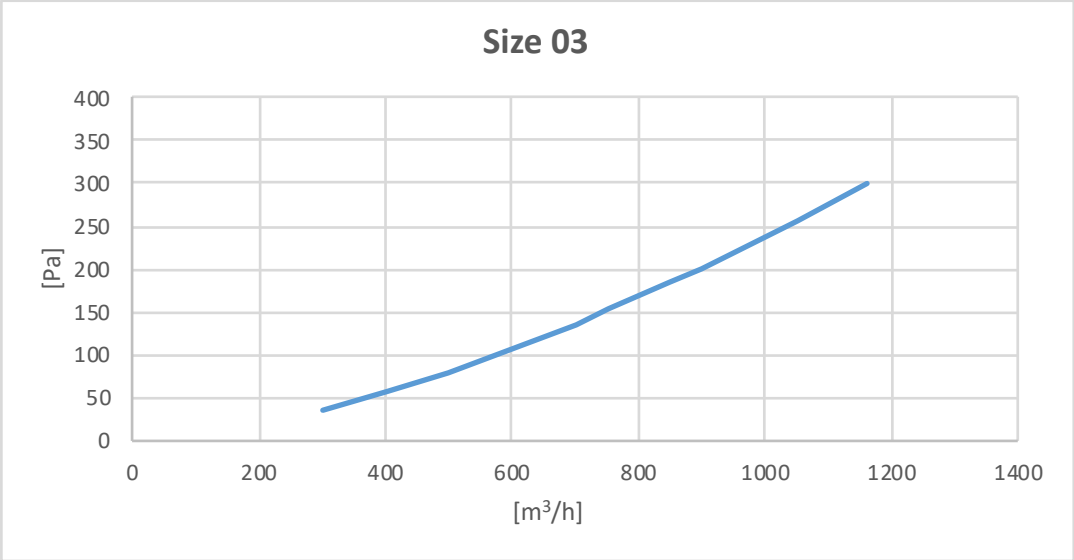
- In the presence of electrical preheating:
- the electric preheating coil will prevent the heat exchanger from freezing, by modulation, once the outside air temperature drops below the limit value, set at 0 °C; in the event of a malfunction of the heater or insufficient air flow for its start-up, a differential pressure switch will stop the unit until it has defrosted.
- In the absence of the electric preheating coil:
- a differential pressure switch will prevent the heat exchanger from freezing, stopping the unit when freezing begins

The differential pressure switch will be set in accordance with the nominal air flow. If the Modular L Smart unit works according to different criteria than that of the nominal air flow, it will be ESSENTIAL to adjust the settings according to the following table.

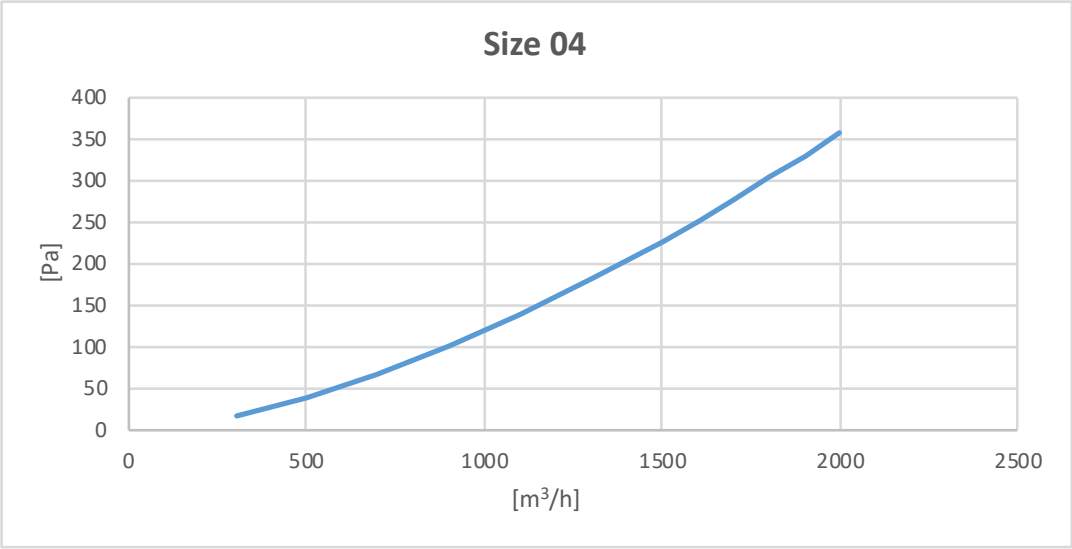
Factory settings of the differential pressure switch for freezing prevention					
Size	03	04	05	06	07
Pa	300	360	310	290	340

Factory settings for freeze protection - differential pressure switch:

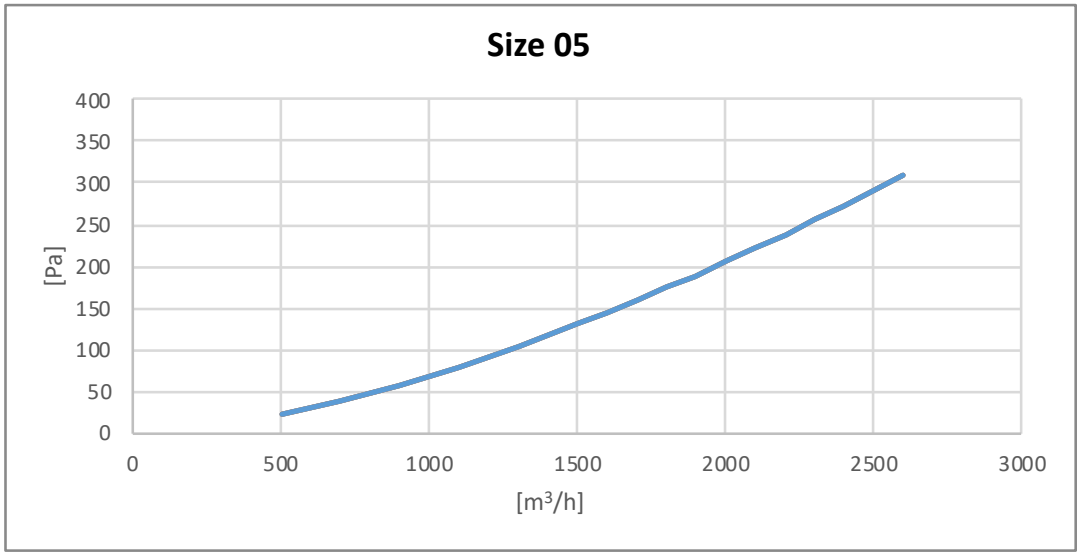
Size 3



Size 4



Size 5



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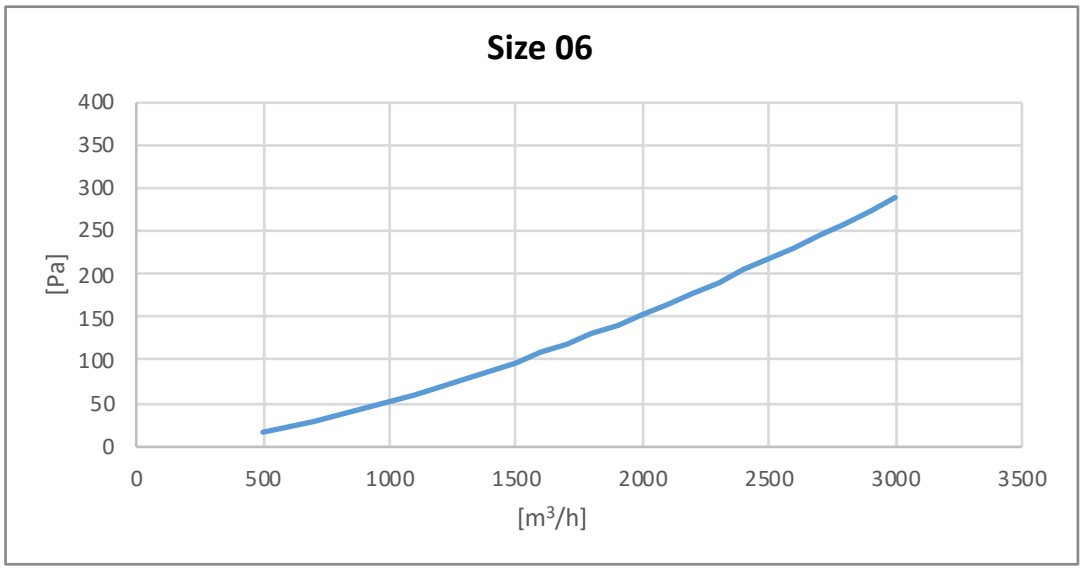

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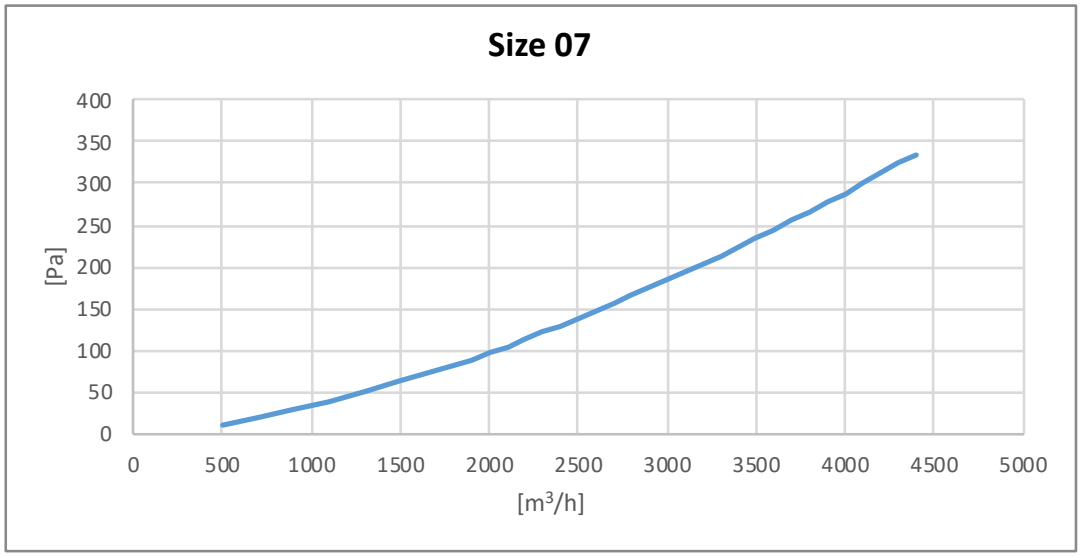
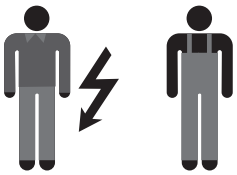


8 Maintenance



Safety precautions for maintenance

Ordinary and extraordinary maintenance must be carried out **solely by the operator assigned to perform maintenance** (mechanical and electrical maintenance staff) according to the regulations in force in the country of use and complying with the laws regarding systems and work safety. Remember that, by operator assigned to perform maintenance is meant the person who can work on the unit to perform ordinary and extraordinary maintenance, repairs and fine tuning. This person must be an expert operator, properly instructed and trained, given the risks involved in such operations.

Before performing any ordinary and extraordinary maintenance, the unit **must always be stopped (by disconnecting from the mains)** and **the EMERGENCY button engaged**. The switch must have a key that must be removed and held by the operator who will perform the operations until the end of the maintenance itself.

It is absolutely prohibited to remove any protections from moving parts and unit protection devices with the unit connected to the mains or operational. Adjustments made with safety devices disengaged must be performed **by a single person**, expert and authorised, and during this activity it is necessary to prevent access to the area of the unit by other people. Upon completing the adjustments with safety devices disengaged, the protections must be re-engaged as soon as possible.

During maintenance the operational space surrounding the unit must be free of obstacles, clean and well lit. It is prohibited for unqualified people to pass through or remain in this space.

Use personal protective clothing (safety shoes, safety glasses, gloves, etc.) compliant with regulations.

Before carrying out repairs or other work on the unit, **always declare out loud** your intentions to other operators who are located in the unit area and make sure that they have heard and understood the warning.

Ordinary maintenance

Proper maintenance of the systems maintains efficiency (reducing costs) and consistent performance over time, and increase the usable life of the equipment.

ACTIVITY	FREQUENCY				
	A	B	C	D	E
General cleaning of the unit.		√			
Check and eventual disassembly and washing of filters.				√	
Replacing the filters (when they have deteriorated).	**in case of alarm**				
Clean the finned surfaces of the coils (if provided) with a compressed air jet and soft brush.	√				
Clean the exchange surfaces of heat recuperators with a compressed air jet and soft brush.	√				
Empty and clean the condensate drain pans.		√			
Visual inspection for corrosion, limescale, release of fibrous substances, any damage, abnormal vibrations, etc. (if possible, it is advisable to extract the components for a more thorough inspection).			√		
Check condensate drain and cleaning of siphons.		√			
In the case of water coils check for the presence of Legionella.		√			
Cleaning of the heat exchanger		√			
Check tightness of screws and bolts in the fan section.	√				
Check the impeller and various devices, with removal of any buildup.	√				
Check the integrity of piping connected to pressure gauges and pressure switches.		√			
Check the ground connection.		√			
Power connection terminal tightness	√				

A: every year
B: every six months
C: every 3 months
D: every month

GENERAL INFORMATION ON CLEANING PROCEDURES

Read the safety instructions at the beginning of this manual and page. 54

Warning: turn off the unit before ordinary and extraordinary maintenance and wait at least 120 seconds before carrying out any maintenance

You should consult with your supplier of chemical products to choose the most suitable for cleaning the unit components.

For the cleaning method refer to the instructions of the detergent manufacturer and carefully read the safety data sheet (SDS).

As general guidelines, refer to the following rules:

- Always use personal protection (safety shoes, safety glasses, gloves, etc.).
- Use mild products (pH between 8 and 9) for washing and disinfecting, in normal concentrations. Detergents must not be toxic, corrosive, flammable or abrasive.
- Use a soft cloth or bristle brushes that do not damage the stainless steel surfaces.
- If you use water jets, the pressure should be less than 1.5 bar and the temperature must not exceed 60 °C.
- To clean components like motors, damper motors, bearings, Pitot tubes, filters and electronic sensors (if applicable), do not spray water directly on them.
- After cleaning make sure that you have not damaged the electrical parts and the gaskets.
- Cleaning operations should not involve the lubricated parts, like impeller shafts, because this could affect their good operation and create problems with durability.
- For the cleaning of finned components or dampers use an industrial vacuum cleaner and/or a compressor. Attention, the compressed air flow must run opposite to the direction of airflow through the unit.
- To clean plastic components such as tapping points, grommets, cable glands, connecting pipes and clicks, use a cloth soaked in alcohol. We recommend carrying out the operation during the general cleaning of the unit and when replacing the filters. If cleaning with the alcohol-soaked cloth is insufficient, replace the plastic components

CLEANING THE EXCHANGER

Remove the dust and fibres with a soft bristle brush or a vacuum cleaner.

Be careful when cleaning with compressed air because the exchanger package can be damaged.
CLEANING with pressure jets is allowed if the maximum water pressure is 1.5 bar and a flat nozzle is used (40° - WEG 40/04 type).
Oils, solvents, etc. can be removed with water or hot grease solvents, by washing or immersion.
Periodically clean the condensate drain tray and fill the drain siphon with water.

VENTS

Periodically check that there are no new sources of contamination near the air intake. Each component must be checked periodically for the presence of contamination, damage and corrosion. The gasket can be protected with glycerine-based lubricants or replaced with a new one, if worn.

FAN ASSEMBLY

The unit must be disconnected from the power supply when cleaning the fans.

Fans can be cleaned with compressed air or by brushing them with soap and water or with a neutral detergent.
Finish the cleaning by rotating the fan by hand to verify the absence of abnormal noises.

CLEANING FILTERS

The unit must NOT be running when the filters are removed to avoid drawing in outside air that might be contaminated.

Filters need to be cleaned often and carefully. Usually, the compact filters (G4) can be cleaned **two or three times** by vacuuming them with a vacuum cleaner, or by blowing them with compressed air before replacing them. For replacement, refer to the control system signalling.

CORRECT FILTER AND PRE-FILTER INSTALLATION (IN THE EVENT OF REPLACEMENT)

Remove the old filters (see previous chapter), extract the new filters from the packaging (in which they are supplied to avoid deterioration during transport and stay on site), insert them in the special containment section, paying attention to their correct positioning.

Remove the filters from their packaging only when ready to install them to avoid getting them dirty and contaminating them.

Make sure that the inside of the filter is not contaminated by external agents.
This operation should be carried out about one hour after the first start-up of the unit, the period during which the ducts are cleaned of dust and various debris. Proceeding in this way preserves the filtering sections that cannot be regenerated.

Extraordinary maintenance

Turn off the unit before routine maintenance and wait at least 120 seconds before performing maintenance.

One can not predict extraordinary maintenance as it is normally due to effects of wear or fatigue caused by the incorrect operation of the unit.

REPLACEMENT OF PARTS

The replacement of parts should be performed by expert personnel::

- Qualified maintenance mechanic
- Qualified maintenance electrician
- Manufacturer technician

The unit is designed to be able to perform all the servicing necessary to maintain good efficiency of the components. However, it sometimes happens that a component fails due to malfunction or wear, so for replacement refer to the executive drawing.

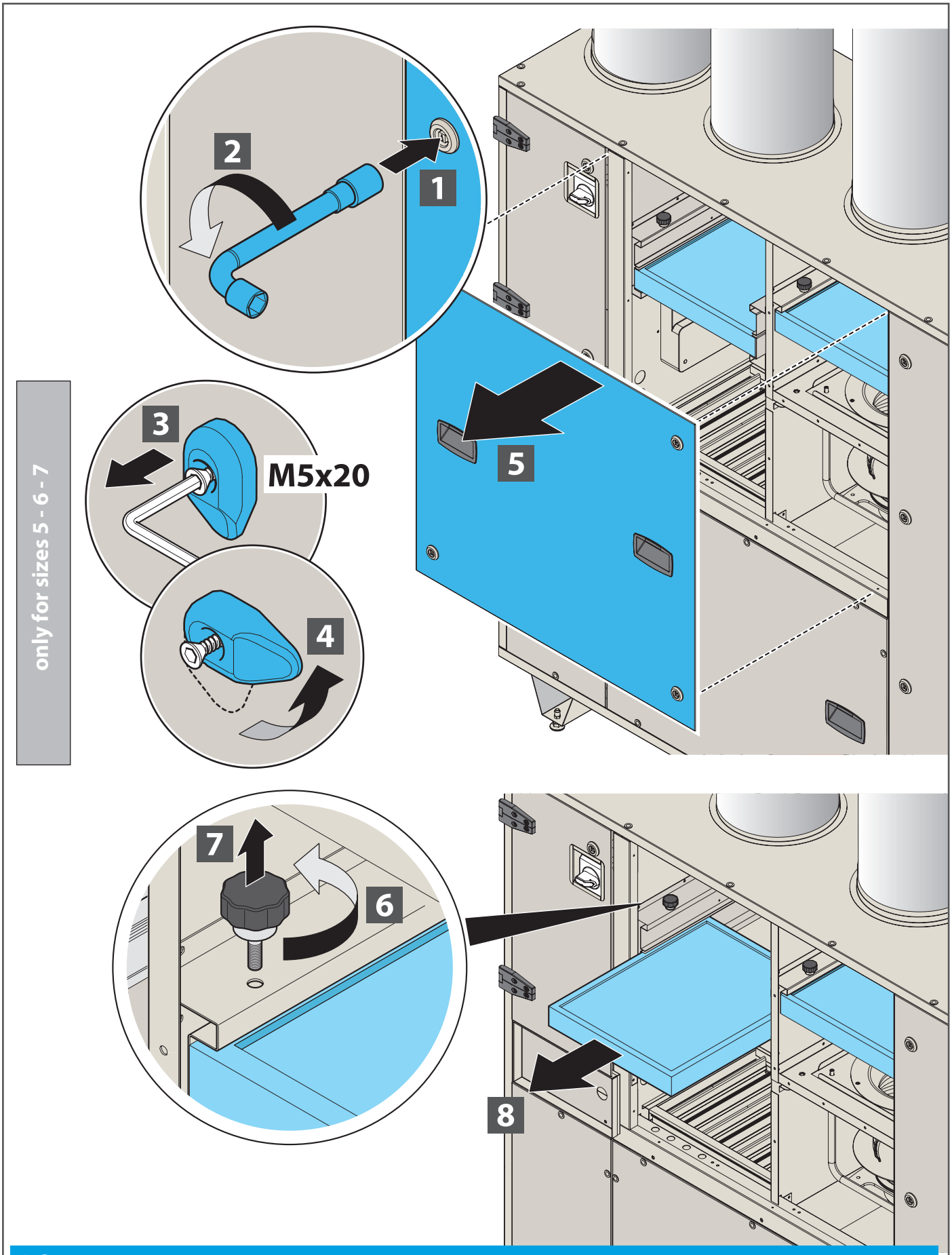
These are the components that may need replacement:

- **19** filters
- **20** exchanger
- fans
- by-pass damper

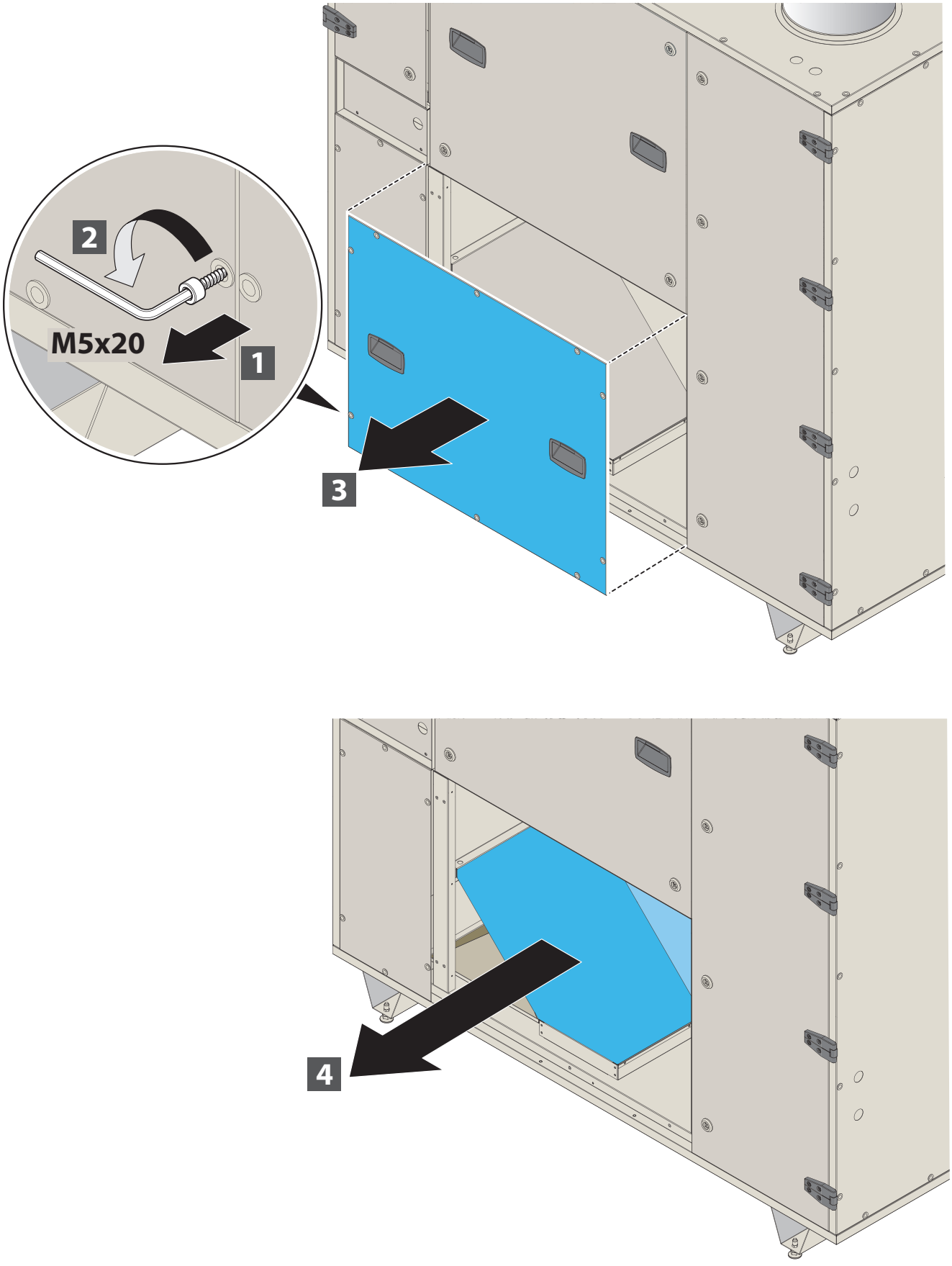
For some of these operations of a general nature we will not enter into detail as these are operations that fall within the abilities and professional expertise of the staff assigned to perform them.

CONSUMABLE COMPONENTS - SPARE PARTS

During the operation of the unit there are particular mechanical and electrical components that are most subject to wear. These parts must be monitored in order to carry out their replacement or repair before they cause problems to the correct operation of the unit with consequent downtime.



19 Filter disassembly



20 Exchanger removal

Disposal of used materials - waste

The unit is made with metal, plastic and electronic components.
All these components must be disposed of in compliance with local disposal laws and, where applicable, with those transposing Directive 2012/19/EU (WEEE).

Diagnostics

GENERAL DIAGNOSTICS

The unit's electrical system includes quality electromechanical components and is therefore extremely durable and reliable over time.
Should there be any malfunctions due to malfunctions of electrical components it will be necessary to act as follows:

- Check the fuses of the power supply for the control circuits and if necessary replace them with fuses having the same specifications.
- Check if the thermal protection switch for the motor has been triggered or if its fuses have blown.

If this has occurred, it may be caused by:
- Motor overload due to mechanical problems. They need to be solved.
- Incorrect supply voltage. Verify the protection trip threshold.
- Malfunction and/or short circuits in the motor. Identify and replace the failed component.

ELECTRICAL MAINTENANCE

Do not modify the unit for any reason and do not add other devices.
The manufacturer is not liable for resulting malfunctions and problems.
Further clarification is available by contacting the manufacturer's Customer Service.

Troubleshooting table

MALFUNCTION TYPE	COMPONENT	POSSIBLE CAUSE/SOLUTION
NOISE LEVEL	Fan impeller	Impeller deformed, unbalanced or loose
		Nozzle damaged
		Foreign bodies in the fan
	Transmission	Motor or fan not attached well
	Bearings	Bearing worn or deteriorated
	Motor	Incorrect supply voltage
		Worn bearings
		Contact between the rotor and stator
	Ducts	Excessive speed in the ducts
		Anti-vibration joint too taut
INSUFFICIENT AIR FLOW	Ducts	Load losses superior to the demand
		Dampers closed
		Obstructions in the ducts
	Filters	too dirty
	Heat exchange coils	too dirty
EXCESSIVE AIR FLOW	Ducts	Load losses inferior to the demand
		Ducts too large
		Terminals not installed
	Unit	Filters not inserted
		Access doors open
		Access doors open
INSUFFICIENT THERMAL EFFICIENCY	Coil	Incorrect connection of inlet/outlet piping
		Coil dirty
		Air bubbles in the pipes
		Excessive air flow
	Electric pump	Insufficient water flow
		insufficient pressure
		Wrong direction of rotation
	Fluid	Temperature different from the project
		Incorrect regulation bodies
WATER LEAK	Fan section	Leak from the coil due to corrosion
		Dragging of drops due to high air velocity
		Clogged "overflow" drain

Optional accessory assembly

D-EIMOC2009-20_MODULAR TOP ADDITIONAL FILTER
D-EIMOC2009-22_MODULAR TOP ELECTRIC PRE/POST HEATING

Repair log

DATE	SERVICE TYPE	TIME REQUIRED	SIGNATURE

DATE	SERVICE TYPE	TIME REQUIRED	SIGNATURE

For more information email **info@daikinapplied.uk** or visit **www.daikinapplied.uk**

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0345 565 2700

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