




humiFog Touch

pumping station



INSTALLATION MANUAL

→ **LEGGI E CONSERVA
QUESTE ISTRUZIONI** ←
**READ AND SAVE
THESE INSTRUCTIONS**

  **NO POWER
& SIGNAL
CABLES
TOGETHER**
READ CAREFULLY IN THE TEXT!

humiFog Touch

+0300112EN - ENG

Up to date version available on

www.carel.com

GENERAL WARNINGS



FAILURE TO CAREFULLY HEED THE WARNINGS SHOWN IN THIS MANUAL COULD LEAD TO FIRE OR EXPLOSION AND CONSEQUENT DAMAGE TO PROPERTY, INJURY OR DEATH.

CAREL Industries humidifiers are advanced products, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com. Each CAREL product, in relation to its advanced level of technology, requires setup/configuration/programming to be able to operate in the best possible way for the specific application. Failure to complete such operations, which are required/indicated in the user manual, may cause the final product to malfunction; CAREL accepts no liability in such cases. The customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment. CAREL may, based on prior agreements, act as a consultant for the installation/commissioning/use of the unit, however in no case does it accept liability for the correct operation of the humidifier and the final installation if the warnings or suggestions provided in this manual or in other product technical documents are not heeded. In particular, as well as observing the above warnings and suggestions, the following warnings must be observed for correct use of the product:

ELECTRIC SHOCK HAZARD: the humidifier contains live electrical components. Disconnect the mains power supply before accessing inside parts or during maintenance and installation.

WATER LEAK HAZARD: the humidifier automatically and constantly fills/drains certain quantities of water. Malfunctions in the connections or in the humidifier may cause leaks.

CAUTION

The installation of the product must include an earth connection, using the special yellow-green terminal available in the humidifier.

Caution:

- Disconnect the appliance from the mains power supply before accessing any internal parts.
- Environmental and power supply conditions must conform to the values specified on the product rating labels.
- The product is designed exclusively to humidify rooms either directly or through distribution systems (ducts).
- Only qualified personnel who are aware of the necessary precautions and able to perform the required operations correctly may install, operate or carry out technical service on the product.
- Only water with the characteristics indicated in this manual must be used to produce the spray.
- All operations on the product must be carried out according to the instructions provided in this manual and on the labels applied to the product. Any uses or modifications that are not authorised by the manufacturer are considered improper. CAREL declines all liability for any such unauthorised use.
- Do not attempt to open the appliance in any way other than described in the manual.
- Observe the standards in force in the place where the humidifier is installed.
- The appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Do not install and use the product near objects that may be damaged when in contact with water (or condensate). CAREL declines all liability for direct or indirect damage following water leaks from the humidifier.

- Do not use corrosive chemicals, solvents or aggressive detergents to clean the inside and outside parts of the humidifier, unless specifically indicated in the user manual.
- Do not drop, hit or shake the humidifier, as the inside parts and the linings may be irreparably damaged,

CAREL adopts a policy of continual development. Consequently, CAREL reserves the right to make changes and improvements to any product described in this document without prior warning. The technical specifications shown in the manual may be changed without prior warning. The liability of CAREL in relation to its products is specified in the CAREL general contract conditions, published on the website www.carel.com and/or by specific agreements with customers; specifically, to the extent where allowed by applicable legislation, in no case will CAREL, its employees or subsidiaries/affiliates be liable for any lost earnings or sales, losses of data and information, costs of replacement goods or services, damage to things or people, downtime or any direct, indirect, incidental, actual, punitive, exemplary, special or consequential damage of any kind whatsoever, whether contractual, extra-contractual or due to negligence, or any other liabilities deriving from the installation or use of the product, even if CAREL or its subsidiaries/affiliates are warned of the possibility of such damage.

DISPOSAL

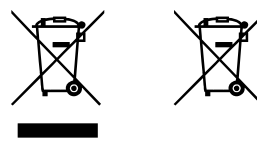


Fig. 1

Fig. 2

PLEASE READ AND KEEP.

WITH REFERENCE TO EUROPEAN UNION DIRECTIVE 2012/19/EU ISSUED ON 4 JULY 2012 AND RELATED NATIONAL LEGISLATION, PLEASE NOTE THAT:

- Waste Electrical and Electronic Equipment (WEEE) cannot be disposed of as municipal waste but must be collected separately so as to allow subsequent recycling, treatment or disposal, as required by law;
- users are required to take Electrical and Electronic Equipment (EEE) at end-of-life, complete with all essential components, to the WEEE collection centres identified by local authorities. The directive also provides for the possibility to return the equipment to the distributor or retailer at end-of-life if purchasing equivalent new equipment, on a one-to-one basis, or one-to-zero for equipment less than 25 cm on their longest side;
- the equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
- the symbol (crossed-out wheeled bin, see Figure 1), if shown on the product or on the packaging, indicates that the equipment must be disposed of separately at end-of-life;
- if at end-of-life the EEE contains a battery (Figure 2), this must be removed following the instructions provided in the user manual before disposing of the equipment. Used batteries must be taken to appropriate waste collection centres as required by local regulations;
- in the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

Warranty on materials: 2 years (from production date, excluding consumables).

Approval: the quality and safety of CAREL products are guaranteed by the ISO 9001 certified design and production system, as well as the



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1. PURPOSE OF THE MANUAL

This manual contains instructions for the installation, use and maintenance of the models of humiFog unit manufactured by:

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2. HOW TO READ THE MANUAL

The manual is divided into chapters and paragraphs. Each paragraph is a sub-level of the corresponding chapter. References to headings or paragraphs are indicated by the abbreviation "Chap." or "Par." followed by the number.

Example: "Chap. 2" or "Par. 2.1".

The figures in this manual are numbered consecutively according to the corresponding chapter, for example Figure 1.c is the third figure in chapter one. References to the figures are indicated by the abbreviation "Fig." followed by the number. Example: "Fig. 1.c".

The components shown in the figures are marked with numbers. A reference to component 1 in figure 2, chapter 3 will be indicated as follows: "See 1 - Fig. 3.b" or simply "(1 - Fig. 3.b)".



IMPORTANT

The figures shown in this manual are purely indicative. The actual components may vary from those illustrated. If in doubt, contact an authorised service centre.

In addition to the instructions for installation, use and maintenance, this manual contains safety information that requires special attention. This information is denoted by the symbols described below:



DANGER

Failure to comply with this warning will lead to an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



IMPORTANT

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, could cause minor damage to the unit.



Notice: provides supplementary information to the above safety instructions.

3. GENERAL SAFETY INFORMATION AND INSTRUCTIONS

3.1 Intended use

humiFog is a high pressure adiabatic humidification system for humidity control and evaporative cooling. It can be used both to condition the air in an AHU (air handling unit), and for direct humidification or cooling in rooms.



IMPORTANT: the product must only be used for its intended purpose, as envisaged by CAREL. CAREL declines all liability, both contractual and extra-contractual, for any damage to people, animals or things due to installation, control or maintenance errors or improper use.

3.2 General safety instructions

When using products that require electricity and a source of high-pressure water, a number of fundamental safety rules need to be observed, including:

- The appliance must not be used by children or people with reduced physical, sensory or mental capabilities, or people lacking the necessary experience or knowledge or who are not familiar with the operating instructions.
- People without specific qualifications and skills must not use the pumping station.
- People must not come into contact with the appliance if barefoot or any of the parts of their body are wet.
- No technical or cleaning operations are allowed until the appliance has been isolated from the power supply by moving the main system switch to "off" and the main switch on the appliance to "OFF".
- The safety and control devices must never be adjusted without the manufacturer's authorisation.
- The pictograms and labels affixed to the pumping station must not be removed. These must remain legible and the corresponding instructions must be observed at all times. If they are no longer legible, they must be replaced with equivalent pictograms or safety labels.
- The water connections must never be loosened during operation. Improperly secured pipes or hoses may detach without warning, resulting in injury.
- Do not block or obstruct the water drain.
- Do not pull, disconnect or twist the electrical cables coming out of the appliance, even when this is disconnected from the mains power supply.
- Never expose the appliance to the elements. It is designed for indoor use only.
- Do not dispose of the packaging material in the environment and keep it out of the reach of children, as it is a potential hazard. It must be disposed of in accordance with current legislation.
- Do not activate the pumping station without it being adequately supplied with water.
- The customer is responsible for ensuring that the humidification system complies with local guidelines on occupational health and safety and prevention of bacterial proliferation.
- In the event of water leaks, disconnect the pumping station from the power supply, shut off the water supply and promptly notify CAREL's Technical Service or other professionally qualified personnel.
- Periodically check that the water circuit operating pressure is above 1 bar and below than the maximum limit specified for the appliance. Otherwise, contact CAREL's Technical Service or other professionally qualified personnel.
- If the pumping station is not used for an extended period, the following operations need to be carried out:
 - Turn the main switch on the appliance to "OFF"
 - Turn the main system switch to "off"
 - Close the system water taps
 - Empty the system if there is the risk of freezing.
- This instruction manual is an integral part of the appliance and consequently must be kept with care and must ALWAYS accompany the pumping station even if it is transferred to another owner or installed in another system. If damaged or lost, another copy can be ordered from CAREL's local Technical Service.
- Read this instruction manual read carefully to ensure proper and safe installation, operation and maintenance of the appliance. The owner must be adequately informed and trained on how to use the appliance. Users must be familiar with all the information needed for safe operation of the system.
- Before connecting the pumping station to the water and power supply, it can be exposed to temperatures between -10°C and 40°C. Once commissioned, it can be exposed to temperatures between 5°C and 40°C.
- Periodically check that the water drains are not blocked.

3.3 Personal protective equipment



DANGER: strictly follow the instructions provided in the manual.

Personal protective equipment (PPE) means any equipment intended to be worn and kept by workers in order to protect themselves against one or more risks likely to threaten their health or safety during work, as well as any device or accessory intended for this purpose.

All PPE described in this manual are intended to protect personnel from health and safety risks.

Below is a list of personal protective equipment to be used and the procedures to be adopted to protect workers from the residual risks that exist during the various phases of the humidifier's life cycle.



GLOVES TO PROTECT AGAINST PHYSICAL ELEMENTS:

these must protect the person's hands against cuts, abrasion and heat.

NON-SLIP SAFETY FOOTWEAR: these must prevent falls on slippery surfaces and protect the person's feet from impact, crushing and puncture wounds.

SAFETY HARD HAT: this must protect the person's head against bumps or material accidentally falling from above.

SAFETY GLASSES: these must protect the person's eyes from all risks due to contact with hazardous substances or materials.

PROTECTIVE MASK: this protects the wearer's respiratory tract against all risks associated with the inhalation of dangerous substances.

PROTECTIVE CLOTHING: this guarantees the body adequate protection against thermal and chemical agents.

EARMUFFS: these must attenuate noises that would otherwise be harmful to the person's hearing.

INSTRUCTION MANUAL: this must be referred to whenever necessary, in order to avoid adopting unsafe procedures.

4. INTRODUCTION

4.1 Components

- Pumping station, comprising the system pump and the electrical panel;
- zone electrical panel;
- distribution system and droplet separator for humidification in air handling units;
- blower unit for in-room humidification.

The range includes the pumping station in the humiFog multizone and humiFog multizone Touch versions, which differ in terms of the components supplied, the accessories available and the different system configuration modes.

The system can comprise:

- single zone: 1 pumping station with 1 atomisation system;
- multizone: 1 pumping station that supplies up to 12 independent atomisation systems.



Notice:

- to connect the pumping station to the blowers, use the water circuit assemblies and electrical panels supplied separately by Carel (see the list of accessories);
- to facilitate commissioning, plates already equipped with electrical connectors are available for simply and quickly connecting the electrical panels to the solenoid valves on the distribution manifolds.

The following diagrams provide an overview of the systems that can be implemented.

4.2 Air handling unit (AHU)

Internal rack valves

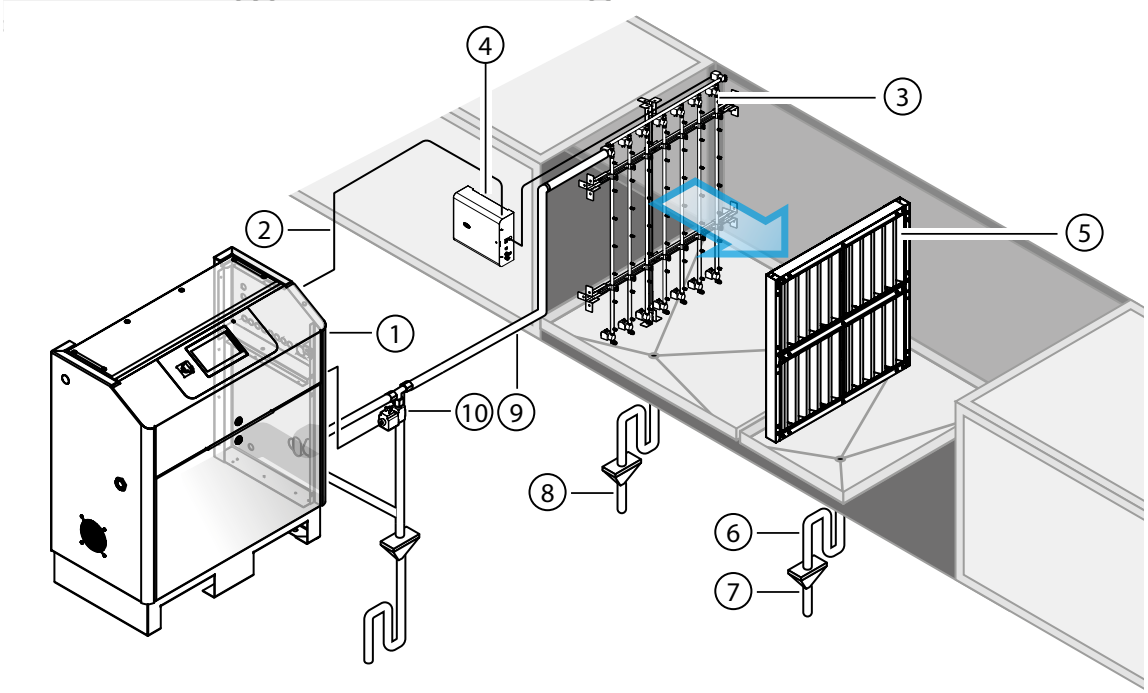


Fig. 4.a

| Ref. | Description |
|------|--|
| 1 | Pumping station |
| 2 | Electrical cables |
| 3 | Distribution manifolds |
| 4 | Zone-electrical panel |
| 5 | Droplet separator |
| 6 | Drain trap |
| 7 | Open funnel drain (after droplet separator) |
| 8 | Open funnel drain (before droplet separator) |
| 9 | High pressure water line |
| 10 | Line drain valve |

Tab. 4.a

Multizone

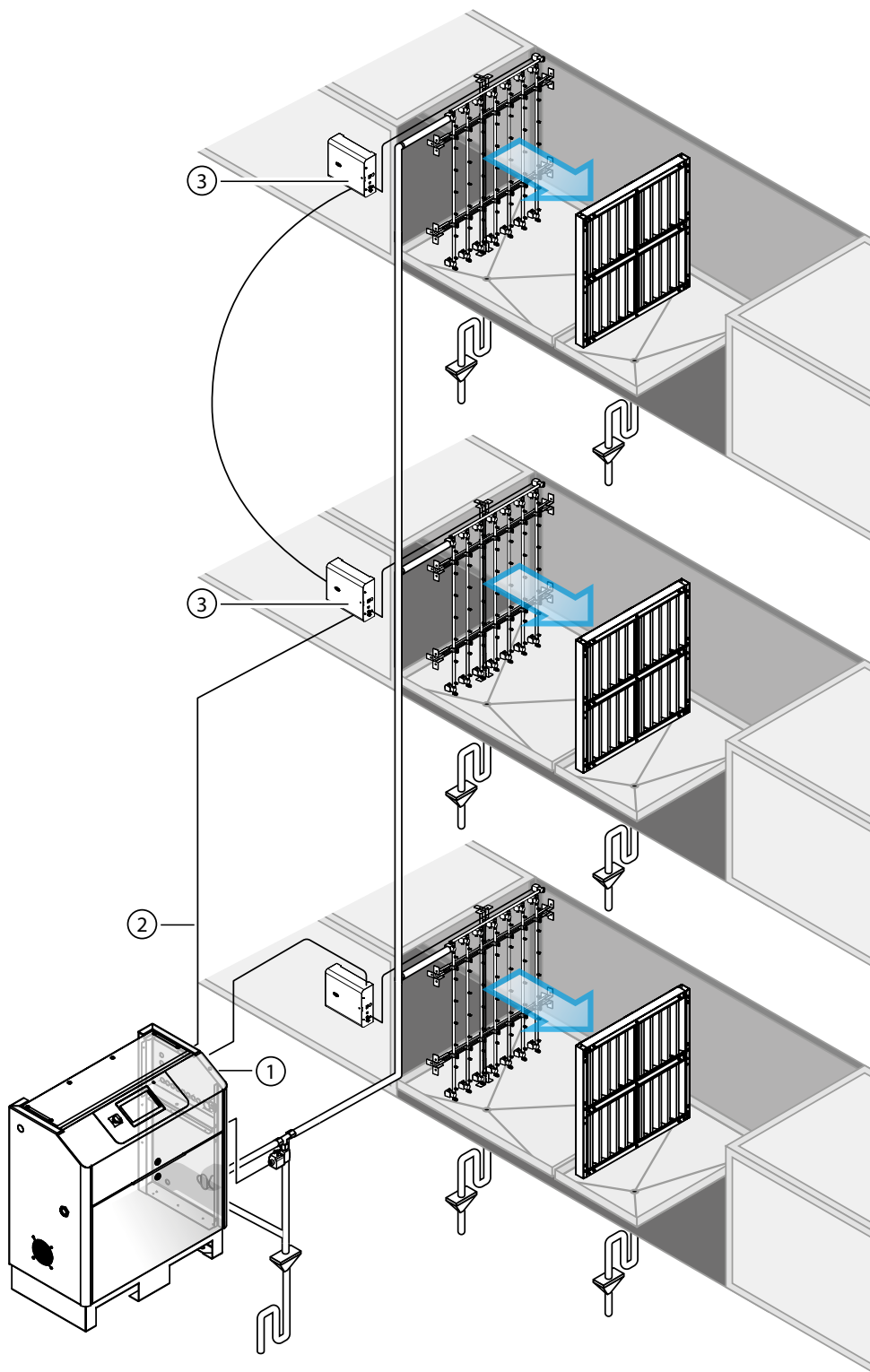


Fig. 4.b

| Ref. | Description |
|------|-----------------------|
| 1 | Pumping station |
| 2 | Ethernet cable |
| 3 | Zone electrical panel |

Tab. 4.b



Notice: for the Ethernet connection from the pumping station to the zone electrical panels, see "Installation notes".

4.2.1 Room

Single zone

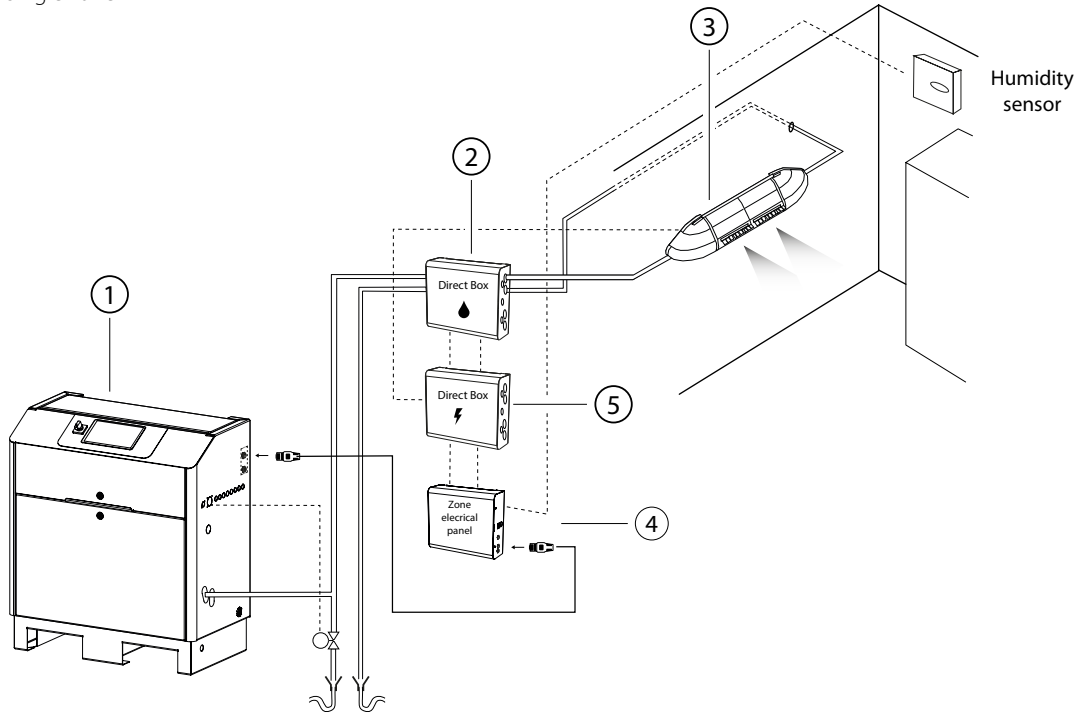


Fig. 4.c

Multizone

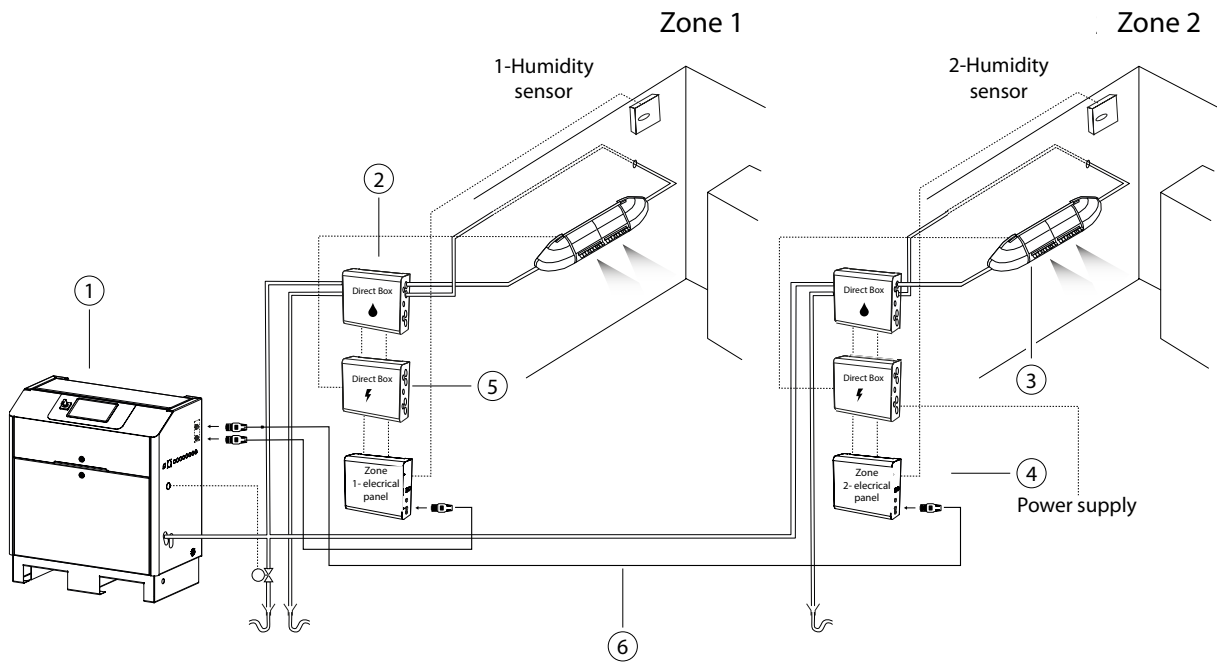


Fig. 4.d

| Ref. | Description |
|------|-----------------------|
| 1 | Pumping station |
| 2 | Directbox hydraulic |
| 3 | Blower unit |
| 4 | Zone electrical panel |
| 5 | Directbox electric |
| 6 | Ethernet cable |

Tab. 4.c

4.3 Pumping station

4.3.1 Part numbers

humiFog multizone Touch models

| U | A | * | * | * | * | * | 5 | 0 | * | |
|----------------|----------------|----------------------------------|--|----------------------|----------|-----------|----------------------------------|---|---|--|
| Range | Flow-rate kg/h | Model | Power supply and approval | Revision no. | Custom. | Pump type | | | | |
| UA: humiFog | 150: 150 kg/h | 1: humiFog multizone Touch | D: 230 Vac 50/60 Hz, 1~, CE L: 400 Vac 50/60 Hz, 3~, CE | 5: Fifth revision | 0: Carel | | | | | |
| | 300: 300 kg/h | | | | | | 0: Brass | | | |
| | 500: 500 kg/h | | | | | | 1: Stainless steel | | | |
| | 800: 800 kg/h | | | | | | 2: Silicone-free stainless steel | | | |
| | 1K2: 1200 kg/h | | | | | | | | | |

Tab. 4.d



Notice: in accordance with the requirements of EN60204-1; EN61000-6-2-; EN61000-6-4 in the most recent editions.

4.3.2 Dimensions - mm

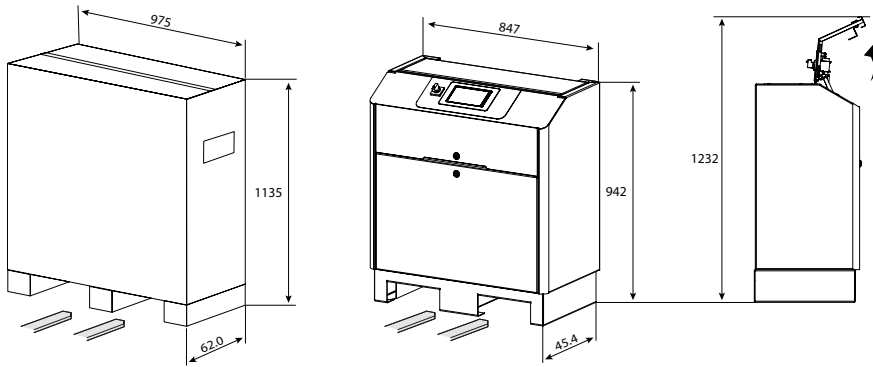


Fig. 4.e

4.3.3 Weight - kg

| humiFog multizone Touch models | Weight with/without packaging [kg] |
|----------------------------------|------------------------------------|
| UA150**500/UA150**501/UA150**502 | 104/ 94 |
| UA300**500/UA300**501/UA300**502 | 105/ 95 |
| UA500**500/UA500**501/UA500**502 | 115/ 105 |
| UA800**500/UA800**501/UA800**502 | 127/ 117 |
| UA1K2**500/UA1K2**501/UA1K2**502 | 126/ 116 |

Tab. 4.e

4.4 Opening the packaging

- check that the packaging is intact upon delivery and notify the carrier immediately, in writing, of any damage that may be due to improper or negligent transport;
- move the pallet with the pumping station to the installation site before removing it from the packaging, lifting the box using suitable lifting/handling equipment;
- place it near the position where it will be installed;
- remove the packaging.



IMPORTANT: make sure the load does not swing when lifting it.

4.4.1 Material supplied

After opening the packaging and removing the front panel, check that the following are present:

- 1 cable gland (A) for the power supply cable;
- 1 cable gland (B) for the electric cable coming out of the pumping station;
- 1 key (C) for opening the panels,
- installation manual

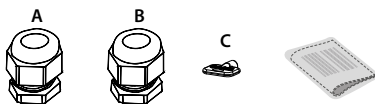


Fig. 4.f

4.5 Positioning

Install the pumping station on the floor, indoors, so as to ensure:

- accessibility of the display and that this can be clearly read;
- opening of the front panel;
- easy access to the internal parts;
- connection of the water supply and drain lines;
- power and control electrical connections.

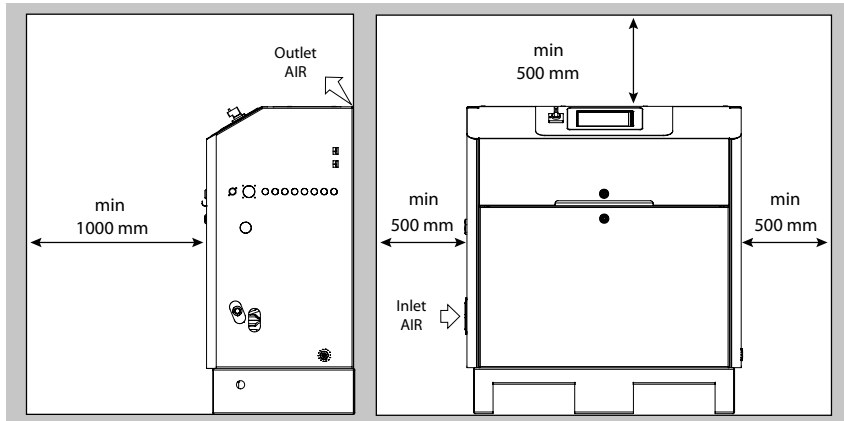


Fig. 4.g



Notice:

- check with a spirit level that the unit is placed on a horizontal surface;
- if the unit is positioned up against a wall, do not place any objects on it that block the cooling air.

4.6 Opening

Open the panels using the key supplied (figure) to access the electrical panel (A) and the water circuit section (B).

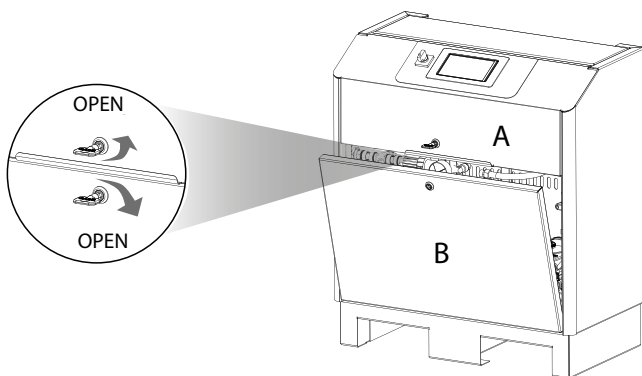


Fig. 4.h

4.7 Identification

The pumping station can be identified by the rating plate located inside the electrical panel.

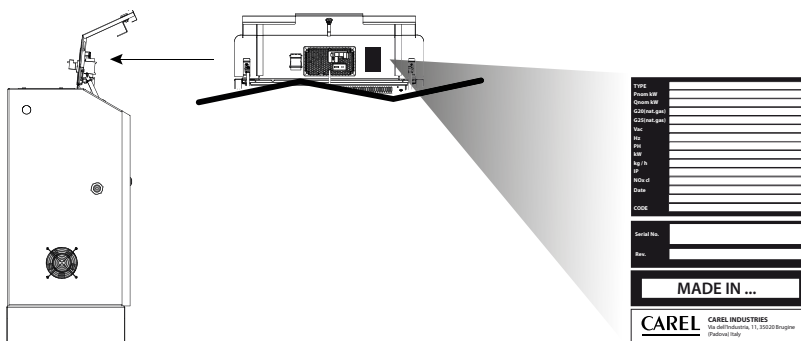


Fig. 4.i



IMPORTANT: tampering, removal or absence of the rating plate or anything else that does not allow certain identification of the product will make any installation or maintenance operations difficult and will void the manufacturer's warranty.

4.8 Structure

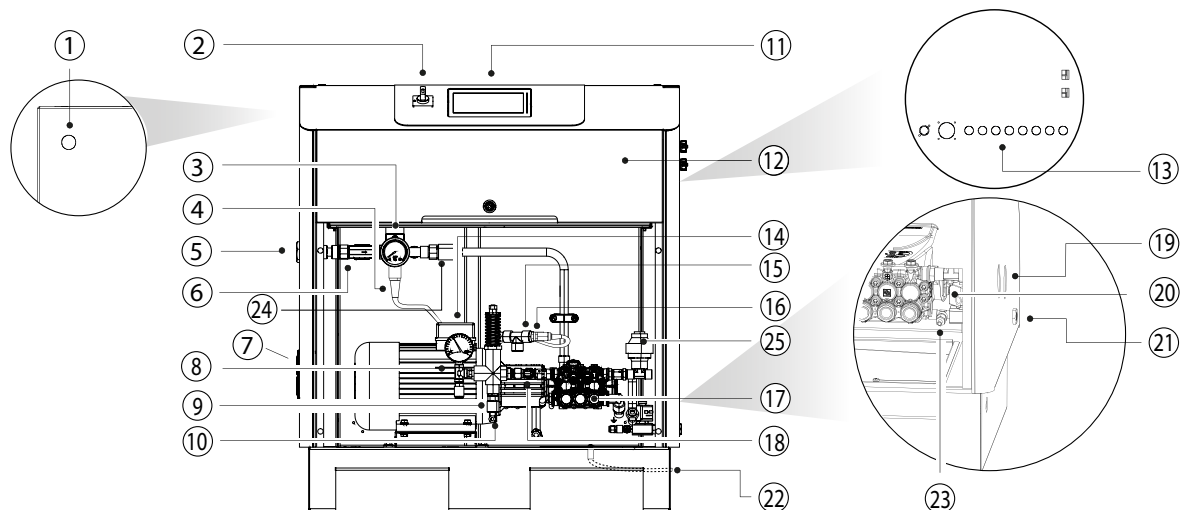


Fig. 4.j

| Ref. | Description |
|------|-------------------------------------|
| 1 | Opening for the power cable |
| 2 | On/Off switch |
| 3 | Inlet pressure gauge |
| 4 | Low pressure probe |
| 5 | Water inlet |
| 6 | Supply solenoid valve |
| 7 | Cooling fan |
| 8 | High pressure switch |
| 9 | Temperature probe |
| 10 | Thermostat |
| 11 | User terminal |
| 12 | Electrical panel |
| 13 | Openings for cable glands |
| 14 | High pressure outlet pressure gauge |
| 15 | High pressure control valve |
| 16 | High pressure probe |
| 17 | Piston pump |
| 18 | Elastic joint (internal) |
| 19 | Water outlet |
| 20 | Cabinet drain solenoid valve |
| 21 | Cabinet drain |
| 22 | Oil collection tank drain |
| 23 | Pressure relief valve |
| 24 | Conductivity meter |
| 25 | Damper |

Tab. 4.f

4.9 Accessories

Zone electrical panel

Electrical panel to be connected to the pumping station for managing multizone in-room or duct systems.



Fig. 4.k

| Ref. | Description |
|------------|------------------------|
| UA000SD500 | 230 V electrical panel |

Tab. 4.g

4.9.1 In-room humidification

directBOX hydraulic

Water circuit assembly for interfacing the pumping station with the blowers for in-room humidification. It contains the solenoid valves for pressurising 1/2 water lines (zone/step). See technical leaflet +050001828.



Fig. 4.l

| Ref. | Description |
|------------|--|
| UAKDLASV10 | directBOX hydraulic for managing 1 zone/step |
| UAKDLASV20 | directBOX hydraulic for managing 2 zones/steps |

Tab. 4.h

directBOX electric

Electrical panel for interfacing the pumping station with the blowers for in-room humidification. It receives the control signal for the fill and drain valve (1 or 2 zones/steps) and relays this to the directBOX hydraulic to actuate the valves. At the same time it controls the blower fans, which are only activated when there is a humidification request. See technical leaflet +050001828.



Fig. 4.m

| Ref. | Description |
|------------|---|
| UAKDLAEL10 | directBOX electric for managing 1 zone/step |
| UAKDLAEL20 | directBOX electric for managing 2 zones/steps |

Tab. 4.i

Blower unit

The blowers are positioned directly in the room to be humidified and cooled. They differ in terms of flow rate and direction of spray. They are connected to the pumping station via the directBOX hydraulic and directBOX electric accessories. See technical leaflet +050001852.



Fig. 4.n

| Ref. | Description |
|------------|--|
| DLA0****00 | Blower with 2 nozzles, 1.45 l/h, 230 V 50 Hz, front delivery |

Tab. 4.j



Notice:

- X: 2/4/8 = 2/4/8 nozzles
- P: D/U = 230V - 50 Hz/120V - 60 Hz power supply
- T: F/B = delivery from front/front and rear
- Y: 0/1/2 = 1.45/2.80/4.00 l/h.

Manifolds with nozzles

The distribution system is designed according to the specific application and comprising manifolds, solenoid valves, nozzles, pipes and fittings.

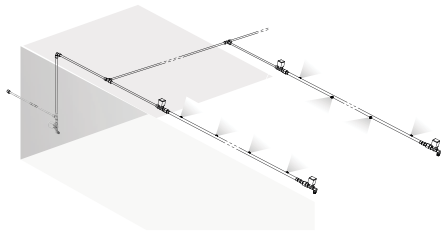


Fig. 4.o

4.9.2 Ducted humidification

Racks

The distribution system is designed according to the specific application and comprising manifolds with nozzles and fixing frame in the duct, available in the fully- or partially-assembled versions.

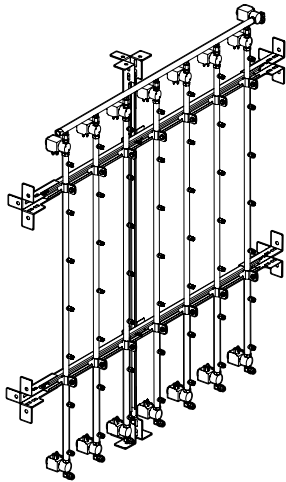


Fig. 4.p

The racks are available with:

- horizontal or vertical collectors;
- solenoid valves fitted on the rack or outside of the air handling unit.

Droplet separator

Frame with stainless steel or fiberglass modules.



Notice: the modules are sized according to the specific application.



Fig. 4.q

5. INSTALLATION NOTES

5.1 Network connection

See the technical data table for the specifications of the connection cables.

5.1.1 Zone panel connection

The connection is made using an Ethernet cable from the pumping station to the zone panels, as shown in the figure.

IMPORTANT: the maximum allowed length of an Ethernet connection between two devices is 100 m (for longer distances, use switch P/N KITSE08000).

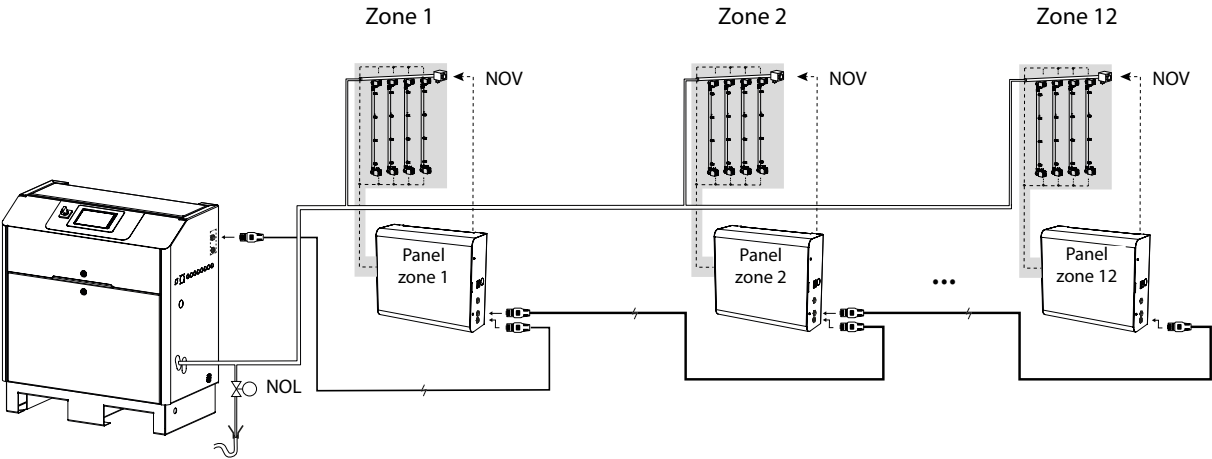


Fig. 5.a

| Ref. | Description |
|------|--------------------------------|
| NOL | Normally open line drain valve |
| NOV | Normally open vent valve |

Tab. 5.a

5.1.2 Supervisor connection

The connection to the supervisor network can be made in two ways:

- between the Ethernet port on the pumping station and the supervisor network
- via RS485 serial link between the BMS2 port on the pumping station controller and the supervisor network. In the latter case, the communication settings need to be changed when commissioning the system.

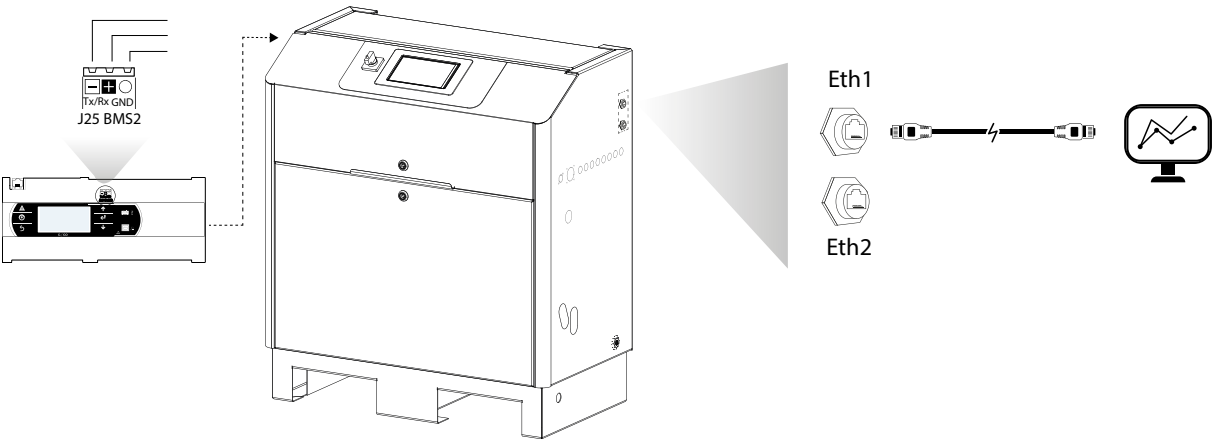


Fig. 5.b

5.2 Distribution system

5.2.1 Drain valve management (NOL)

The pumping station manages and controls the line drain valve (NOL, normally open). The zone panel can also manage a connected line drain valve.



Notice: the line drain valve must be fitted at the lowest point in the water circuit and wired to the nearest electrical panel (pumping station or zone panel), so that when opened, the entire system is emptied.

Case 1: Pumping station located below the distribution manifolds

Connect the drain valve near to pumping station that will control its opening.

Case 2: Pumping station located above the distribution manifolds, placed at different heights.

The drain valve must be connected near to the lowest distribution manifold.



Notice: the control signal for the zone 12 drain valve is output J12 NO3 on the zone electrical panel controller. See the corresponding manual.

Case 3: Distribution manifolds located both above and below the pumping station

Connect multiple drain valves at the lowest points in the water circuit.

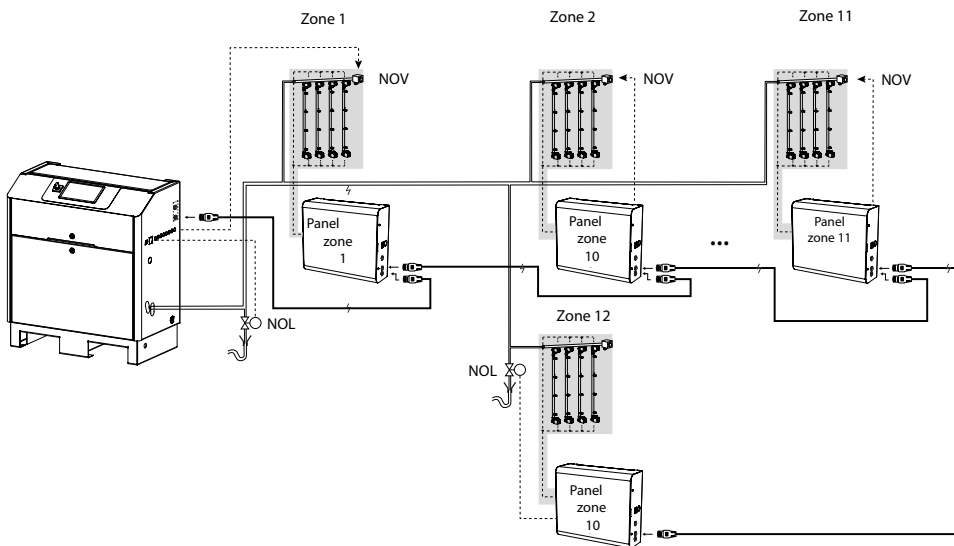


Fig. 5.c

5.3 Functional diagrams - room



IMPORTANT: the blower fill and drain valves are contained in the directbox hydraulic panel. The maximum allowable length for the water line leaving and re-entering the directbox or that, if no directbox is installed, connects the fill valve to the drain valve, is 30 m.



Notice: when making the water connections, always observe the following warnings:

- limit as much as possible the length of the fill/drain line on each distribution circuit;
- ensure a minimum slope of the piping to assist emptying during the drain cycle.

Case 1: 1 zone with 1 steps

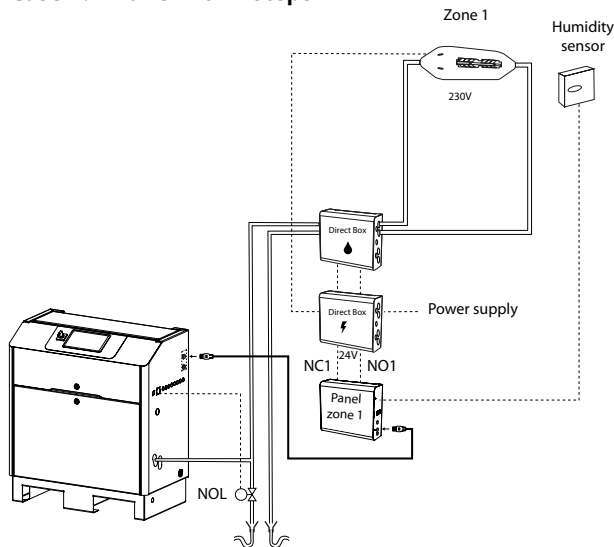


Fig. 5.d

Case 2: 1 zone with 2 steps

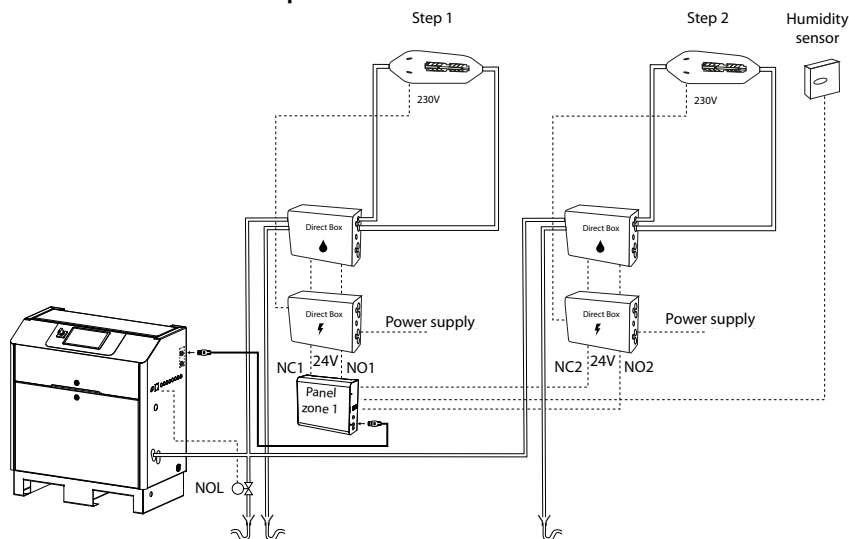


Fig. 5.e

Case 3: 2 zones with 1 step

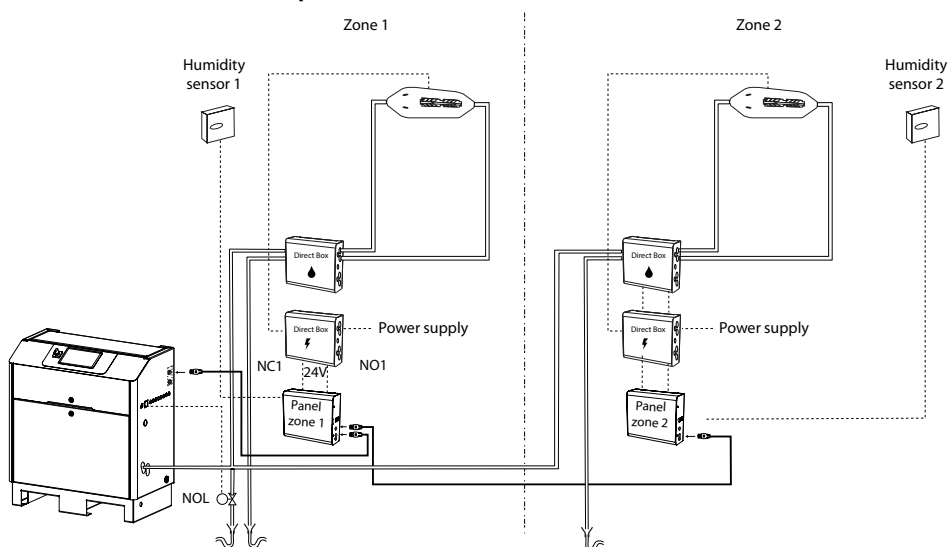


Fig. 5.f

5.4 Backup and rotation

5.4.1 Backup and rotation connection

The backup and rotation system configuration uses two pumping stations, one primary and the other backup, as well as a zone panel for each zone.

1. Connect the primary pumping station to the backup pumping station via an RJ45 Ethernet cable between the Ethernet port on the two units.
2. Connect one of the two pumping stations to the zone electrical panel as described in the paragraph on *Zone panel connections*.
3. Connect the solenoid valves in the zone distribution system to the corresponding zone electrical panel.

When connecting the NOL valves, there are two distinct possibilities:

- connect the two NOL valves in series, each of which to a different pumping station (as per the following diagram) if the lowest point is near the pumping stations or the NOL valve needs to be connected near to the pumping stations,
- connect a single NOL valve to the nearest zone electrical panel if there is no need to install the NOL valve near the pumping stations.



Notice: always install a non-return valve on the outlet line. A non-return valve is required on the outlet line of each individual pumping station, before the two pump water lines join.

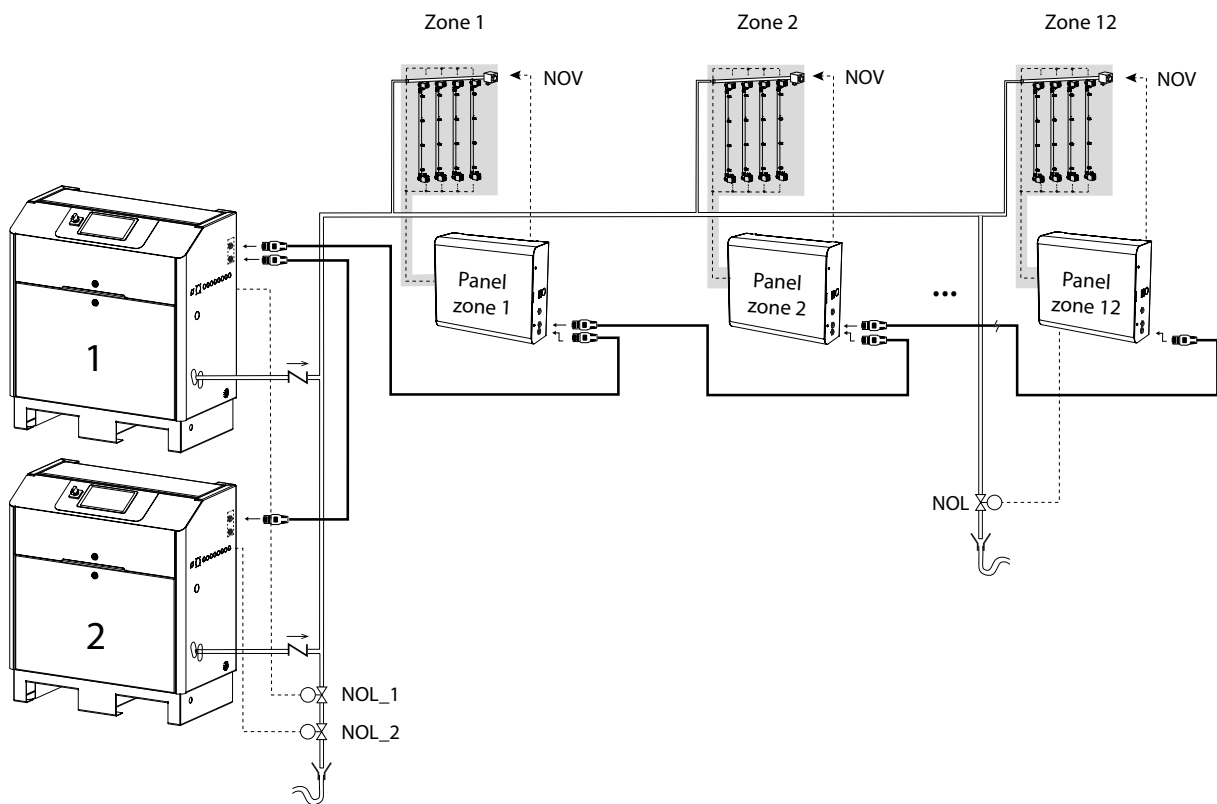


Fig. 5.g

6. INSTALLATION

6.1 Water connections

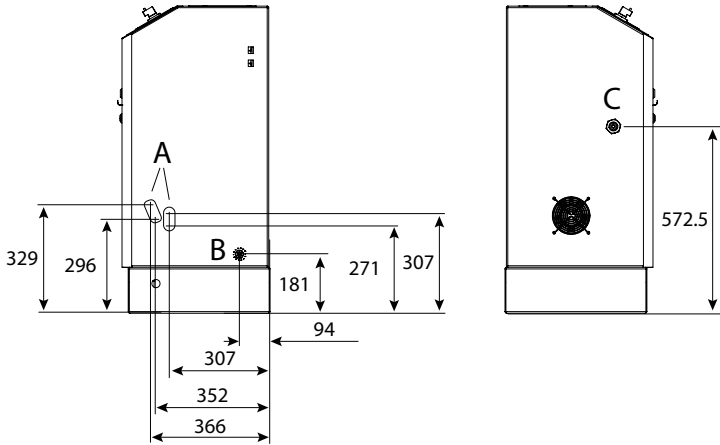


Fig. 6.a

| Model | Water inlet (C) | Water outlet (A) | Drain (B) |
|-------|-----------------|------------------|-----------|
| 150 | 3/4"G - F | M16 x 1.5 - M | 1/4"G - F |
| 300 | 3/4"G - F | M16 x 1.5 - M | 1/4"G - F |
| 500 | 3/4"G - F | M16 x 1.5 - M | 1/4"G - F |
| 800 | 3/4"G - F | M22 x 1.5 - M | 1/4"G - F |
| 1200 | 3/4"G - F | M22 x 1.5 - M | 1/4"G - F |

Tab. 6.a

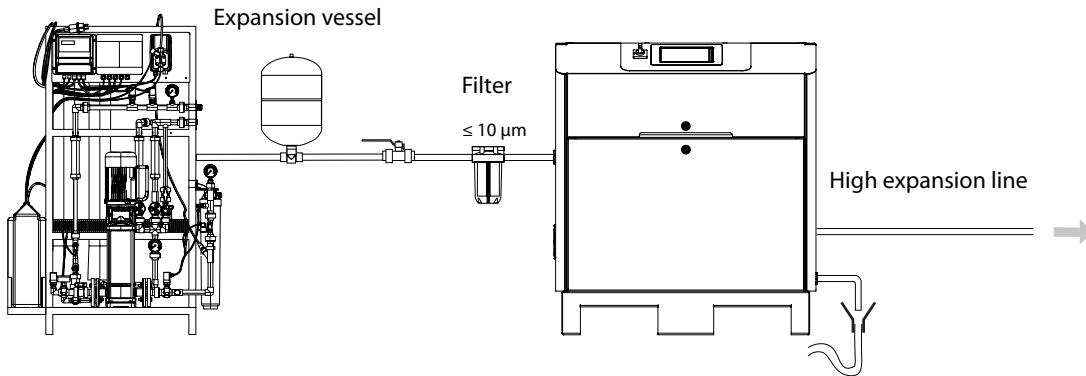


Fig. 6.b

| Ref. | Description |
|--------------------|------------------------|
| WTS | Water Treatment System |
| Filter | Filter |
| Expansion vessel | Expansion vessel |
| High pressure line | High pressure line |

Tab. 6.b

1. Install a 10 μm mechanical filter on the feedwater line to trap any solid impurities;
2. Install a shut-off valve upstream of the pumping station to shut off the supply line and carry out maintenance;
3. Install an expansion vessel upstream of the pumping station to dampen the variations in pressure that may occur on the water supply line;
4. Connect the power line to the pumping station;



Notice: the internal diameter of the feedwater pipe must be no less than:

| | |
|-------|----------------|
| 10 mm | UA150-300 |
| 15 mm | UA 500-800-1K2 |

5. Connect the water drain. Use piping suitable for demineralised water. The drain pipe must be below the pumping station drain to ensure the natural downflow of water;
6. Prepare a funnel to interrupt continuity of the drain pipe and a drain trap to prevent odours for returning;



Notice: the funnel and the drain trap must be installed at a height that guarantees the natural downflow of water.

7. Connect the high pressure line to the pumping station.

6.2 Feedwater

humiFog must only be supplied with demineralised water.

The use of demineralised water guarantees:

- minimum maintenance;
- no clogging of the nozzles;
- no dust (the droplets that evaporate do not release mineral salts into the AHU/room);
- greater hygiene.

The feedwater must be treated so as to ensure the limit values listed in the table. Under normal circumstances, this means that the water must derive from a reverse osmosis system.

| Feedwater specifications | unit of measure | limits | |
|--|-----------------|--------|------|
| | | min. | max. |
| (pH) (**) | | 6.5 | 8.5 |
| Specific conductivity at 20°C (**) (σR, 20°C) for steel pump | μS/cm | 0 | 50 |
| Specific conductivity at 20°C (**) (σR, 20°C) for brass pump | μS/cm | 30 | 50 |
| Total hardness (**) (TH) | ppm CaCO3 | 0 | 25 |
| Temporary hardness | ppm CaCO3 | 0 | 15 |
| Total quantity of dissolved solids (cR) | ppm | (*) | (*) |
| Dry residue at 180°C (R180°C) | ppm | (*) | (*) |
| Iron + Manganese | ppm Fe+Mn | 0 | 0 |
| Chlorides | ppm Cl | 0 | 10 |
| Silicon dioxide | ppm SiO2 | 0 | 1 |
| Residual chlorine | ppm Cl- | 0 | 0 |
| Calcium sulphate | ppm CaSO4 | 0 | 5 |

Tab. 6.c

(1) values dependent on the specific conductivity; in general:

CR ≅ 0.65 * σR, 20°C; R180 ≅ 0.93 * σR, 20°C

(**) most important values to be taken into consideration for each type of installation.



IMPORTANT:

- if the specific conductivity is less than 30 μS/cm, the stainless steel pump is recommended;
- for conductivities higher than 1000 μS/cm, the water must be pre-treated prior to reverse osmosis.

6.3 Electrical connections

Before making the connections, make sure that the unit is disconnected from the power supply: turn the main system switch and pumping station switch to OFF.

Install the cable glands on the left and right side of the electrical panel for the electrical cables to pass through.

6.3.1 Electrical panel

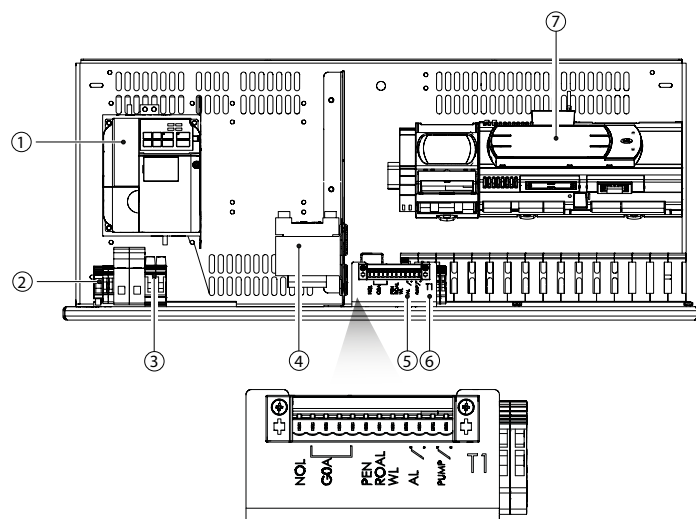


Fig. 6.c

| Ref. | Description |
|------|--|
| 1 | Inverter |
| 2 | Power terminal |
| 3 | Fuses F1 to F8 (F8 for three-phase model only) |
| 4 | Transformer A (see wiring diagram) |
| 5 | Connector T1 |
| 6 | Fuse F10 |
| 7 | Electronic controller |

Tab. 6.d

6.3.2 Power supply



Notice: recommended cable size: 2.5 mm² (AWG 13).

Check that the unit's power supply voltage corresponds to the rated data.
The connection must be made in compliance with national and local regulations in force.



IMPORTANT

- cables must comply with local regulations;
- install a switch upstream of the pumping station to isolate it from the power supply line;
- provide a TT earth system, with earth fault current protection => 30 mA.

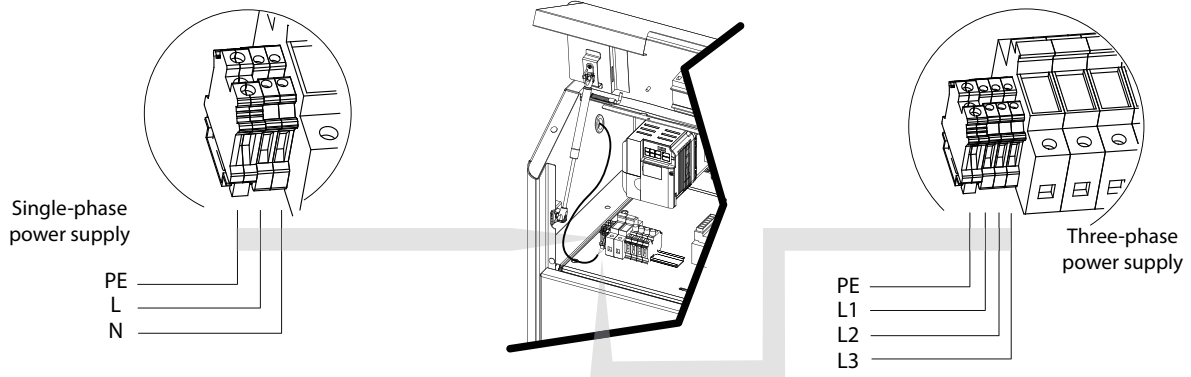


Fig. 6.d

6.4 Control connections

The type of control is selected on the user interface. See the humidification system **commissioning manual**.



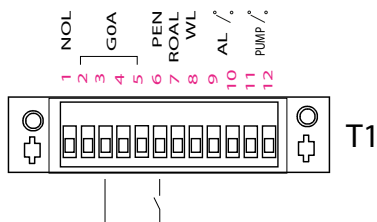
Notice: for all control connections:

- recommended cable size: 0.3 - 0.5 mm² (AWG 22/20) up to 30 m
- recommended cable size: 0.8 - 1.3 mm² (AWG 18/16) > 30 m

6.4.3 Enable pumping station production (PEN): Pump Enable



Notice: the pumping station is supplied with the PEN-G0A contacts jumpered. To enable the pumping station remotely, remove the jumper and connect a voltage-free contact.



| Connector | Terminals |
|-----------|-----------|
| T1 | PEN-G0A |

Tab. 6.e

Fig. 6.e

6.5 Solenoid valve connections

| Cable type | Max length |
|------------------------------|------------|
| 0.8 mm ² (AWG 18) | 30 m |

Tab. 6.f

6.5.1 Line drain solenoid valve connection

The line drain valve (NOL) empties the water line that connects the pumping station to the distribution system in each zone.



IMPORTANT: this should be installed near the pumping station and in any case at the lowest point in the system, to facilitate emptying by gravity.

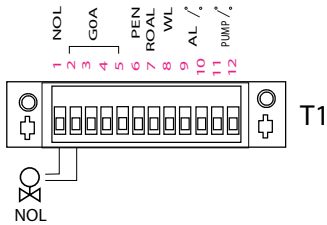


Fig. 6.f

| Connector | Terminals |
|-----------|-----------|
| T1 | NOL - GOA |

Tab. 6.g



Notice: recommended cable size: for lengths < 30 m: 0.8 mm² (AWG 18).

6.6 Inputs and outputs

6.6.1 Water treatment system (WTS) alarm input

Alarm input from the reverse osmosis water treatment system (WTS).



Notice: the pumping station is supplied with the ROAL - GND terminals jumpered.

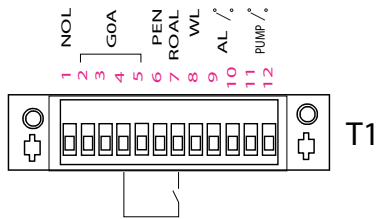


Fig. 6.g

| Connector | Terminals | Device |
|-----------|------------|---|
| T1 | ROAL - GOA | Alarm signal from water treatment system (contact open/closed = alarm present/absent) |

Tab. 6.h

6.6.2 Water leakage alarm input

Water leakage alarm input, detected by the flood sensor.

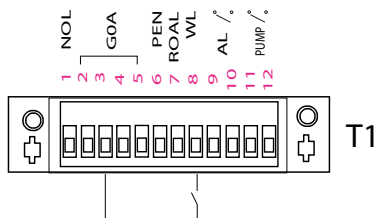


Fig. 6.h

| Connector | Terminals | Device |
|-----------|-----------|---|
| T1 | WL - GOA | Flood sensor (contact open/closed = alarm present/absent) |

Tab. 6.i

6.6.3 Alarm output

The alarm output is activated when one or more alarms are detected. The contact/output can be relayed to a supervisory system.

| | | |
|---------------------------------|--|-------------------|
| Relay electrical specifications | Power 500 VA; Voltage 250 V; Current 2 A resistive/inductive | |
| Relay status and operation | Contact open | alarms present |
| | Contact closed | no alarms present |

Tab. 6.j

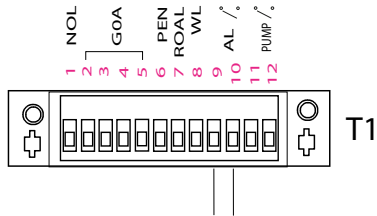


Fig. 6.i

| Connector | Terminals |
|-----------|-----------|
| T1 | AL |

Tab. 6.k

6.6.4 Pump status output

Programmable digital output for the following functions:

- pump status (default)
- unit working life
- maintenance warning
- no water alarm
- low inlet pressure (LP) warning
- low inlet pressure (LP) alarm
- frozen water alarm

With the exception of the unit working life function, the relay logic can also be selected between NO (default) and NC.

| | | | |
|---------------------------------|--|----------------|------------------|
| Relay electrical specifications | Power 500 VA; Voltage 250 V; Current 2 A resistive/inductive | | |
| Relay status and operation | Pump status | Contact open | Pump stopped |
| | | Contact closed | Pump running |
| | Unit working life | Contact open | Unit off |
| | | Contact closed | Unit on |
| | Maintenance warning | Contact open | No warnings |
| | | Contact closed | Warnings present |
| | No water alarm | Contact open | No warnings |
| | | Contact closed | Warnings present |
| | Low inlet pressure (LP) warning | Contact open | No warnings |
| | | Contact closed | Warnings present |
| | Low inlet pressure (LP) alarm | Contact open | No alarm |
| | | Contact closed | Alarms present |
| | Frozen water alarm | Contact open | No alarm |
| | | Contact closed | Alarms present |

Tab. 6.l

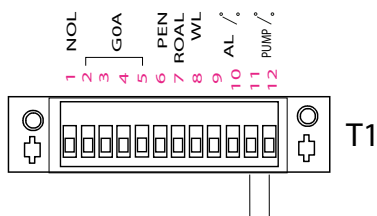


Fig. 6.j

| Connector | Terminals |
|-----------|-----------|
| T1 | PUMP |

Tab. 6.m

7. MAINTENANCE

7.1 Routine maintenance



IMPORTANT: before carrying out any maintenance operations, disconnect the power supply by moving the main system switch and the main switch on the appliance to "off".



IMPORTANT: maintenance on the product must be performed by an authorised company that, once the work has been completed, issues the owner a declaration of conformity that the work has been carried out in compliance with the national and local standards in force and the instructions provided by CAREL in the manual supplied with the appliance.



IMPORTANT: maintenance must be carried out on the pumping station at least once a year.



IMPORTANT: routine maintenance on the pumping station and the humidification system should be performed at the recommended intervals specified in this paragraph. These maintenance operations must only be carried out by qualified personnel.

Routine maintenance is recommended every 3 months, and mainly involves a visual inspection to check that the main components are working correctly. Below is a list of suggested operations:

- **Check the conditions of the inlet water filter.**

The filter cartridge should be replaced once a year. To change the cartridge, switch the unit off and shut-off the feedwater supply line. Empty the filter through the small valve at the bottom. Unscrew the housing from the top ring nut using the tool supplied. Remove the filter cartridge from inside the housing and insert a new one (P/N ACKF100000SP). Screw the housing back on, making sure that the O-ring is still in good condition, to ensure tightness. Close the valve at the bottom of the filter housing and turn the water supply back on.

- **Check the pump oil level.**

Use the dipstick on the yellow pump cap to visually check the oil level. The oil level is correct when measured in the curved portion of the dipstick. If the level is lower than the minimum level shown in the figure, top up with oil to restore the correct level (oil part number UAKOIL0000SP). Generally, the oil level should remain constant and there should be no need to top it up periodically.

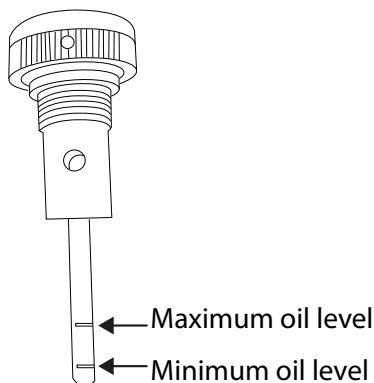


Fig. 7.k

- **Check** that there are no water leaks both inside the cabinet and on the distribution line and on the fittings.

7.2 One-off service and repairs

One-off service and repairs are performed in the event of malfunctions or breakages of certain components.

The components that are susceptible to breakage are listed below:

- solenoid valves
- pressure reducer
- pressure switches
- pump motor
- pump
- electronic controller
- fuses
- nozzles
- nozzle manifold
- blower fan

To replace these components, to contact authorised specialist personnel.

To identify the spare part code, see chapter 10 Annexes.

7.3 Pump maintenance

The pump is the most complex mechanical device inside the pumping station, as well as the heart of the high pressure system. It therefore requires specific regular maintenance, comprising the activities described below.

| Check/replace | Pump | |
|----------------------------------|---------|------------------|
| | monthly | every 1000 h (*) |
| check oil level | X | |
| check/change oil | | X |
| check/replace gaskets and valves | | X |

Tab. 7.a

7.3.1 Oil change



IMPORTANT: change the oil in the pump (P/N UAKOIL0000SP) after the first 50 operating hours. Failure to change the oil after the first 50 hours can cause damage to the pump and shorten its working life. In fact, the oil supplied with the pump tends to accumulate debris due to transport and initial operation, and cannot guarantee a longer working life.



IMPORTANT: if no leaks or malfunctions are found during the "1000 h" check, replacement may be postponed.

(*) In normal operating conditions, except for the first oil change after 50 hours, the oil needs to be changed every 3000 operating hours. Every 1000 hours, a notification is generated by the electronic controller, while the 3000 operating hours are signalled by the electronic controller via the "3000 hour maintenance" alarm on the display. To change the oil, see the specific maintenance and spare parts manual.

7.3.2 Replace gaskets and valves

The gaskets and valves must be replaced every 3000 hours, as signalled by the "3000 hour maintenance" alarm on the display. However, under particularly stressful conditions, replacement may be required before the specified interval. It is recommended to check pump operating status every 1000 hours (as notified by the controller). If the pump generates high noise, or is unable to reach the required working pressure (70 bars), or if water leaks are detected between the pump body and the pump head, it may be necessary to replace the gaskets and valves after a shorter period of time. Valves and gaskets are consumable parts, and their wear is not a result of product malfunctions. To replace the gaskets and valves, see the specific maintenance and spare parts manual.

7.3.3 50 hour oil change warning

The first "oil change required" warning for maintenance is signalled after 50 hours of operation: this indicates that an oil change is required. The warning typically appears a few days after starting the system. Therefore, when first operating the appliance, make sure a bottle of oil is available for the first oil change, and that the procedure for changing the oil is clearly understood. The warning can be easily reset by pressing the "alarm" button on the user interface. For practical reasons, the warning can also be reset after 40 hours of operation (but not any earlier).

After changing the oil, the unit's hour counter needs to be reset.

7.3.4 Maintenance warning, reset hour counter

After 1000 hours of operation, humiFog generates a "1000 hour maintenance" notification. This alerts the user to check that the system is working properly. If the pump is able to reach the rated operating pressure (70 bars), no action is required.

The notification can be easily reset by pressing the "alarm" button on the user interface. The same occurs after 2000 hours of operation. After 3000 hours of operation, on the other hand, humiFog generates a "3000 hour maintenance" alarm. In this case, work needs to be performed on the unit, changing the oil and replacing the pump gaskets and valves (as described in the previous paragraphs). Then reset the alarm and reset the unit hour counter.

If for some reason the gaskets and valves need to be replaced before 3000 hours of operation, the hour counter also needs to be reset. Whenever the gaskets and valves are replaced, it is also recommended to change the oil before resetting the hour counter.

8. TECHNICAL DATA

8.1 Technical specifications

| | UA1501D50* | UA3001D50* | UA5001D50* | UA8001L50* | UA1K21L50* |
|---|---|------------|--------------|--------------|------------|
| ENVIRONMENTAL CONDITIONS | | | | | |
| Operating temperature (°C) | 5 to 40°C | | | | |
| Operating humidity (rH) | 0 to 90% non-condensing | | | | |
| Storage temperature (°C) | -10 to 50°C | | | | |
| Storage humidity (rH) | 0 to 90% non-condensing | | | | |
| Ingress protection | IP20 | | | | |
| WATER CIRCUIT DATA | | | | | |
| Maximum flow-rate (kg/h) | 150 kg/h | 300 kg/h | 500 kg/h | 800 kg/h | 1200 kg/h |
| Water conductivity (µS/cm) | <50 µS/cm | | | | |
| Feedwater pressure (bars) | 2 to 5 bars | | | | |
| Water temperature (°C) | 5 to 20°C | | | | |
| Feedwater supply connector | G3/4" F | | | | |
| Outlet | M16x1.5 male | | M22x1.5 male | | |
| Main drain | G1/4" F | | | | |
| Oil collection tank drain | Ø12 mm | | | | |
| PHYSICAL SPECIFICATIONS | | | | | |
| Weight (kg) | 94 | 95 | 105 | 117 | 116 |
| Dimensions w x d x h | 850 x 480 x 945 | | | | |
| Height (mm) | 945 | | | | |
| Height with panel open (mm) | 1250 | | | | |
| Width (mm) | 850 | | | | |
| Depth (mm) | 480 | | | | |
| Clearance at top (mm) | 500 | | | | |
| Clearance at sides (mm) | 500 | | | | |
| Clearance at front (mm) | 1000 | | | | |
| ELECTRICAL SPECIFICATIONS | | | | | |
| Power supply voltage (Vac) | 230 V (±10%) | | | 400 V (±10%) | |
| Phases | 1 | | | 3 | |
| Frequency (Hz) | 50/60 Hz (±1%) | | | | |
| Power (kW) | 0.65 kW | 1.25 kW | 1.65 kW | 3.35 kW | 4.35 kW |
| Current (A) | 4.8 A | 7.4 A | 10 A | 3.9 A | 4.9 A |
| Cable size at terminal (mm ²) | 2.5 mm ² | | | | |
| SCCR (kA) | 5 kA | | | | |
| CONTROLLER SPECIFICATIONS | | | | | |
| Type | c.pCO | | | | |
| Probe inputs | 0 to 1 Vdc, 0 to 10 Vdc, 2 to 10 Vdc, 0 to 20 mA, 4 to 20 mA, NTC | | | | |
| Serial communication | three-wire RS485 / Fieldbus / BMS | | | | |
| Communication protocol | Modbus / BACNET | | | | |
| USB port | 1 type A USB port | | | | |
| Ethernet port | 2 Ethernet ports | | | | |

Tab. 8.a

8.2 Terminal tightening torque

| Ref. | Tightening torque (Nm) |
|--------------------|------------------------|
| Single terminal | 5.3 min to 7 max |
| Double terminal | 5.3 min to 7 max |
| Terminal with fuse | 13 min to 16 max |
| Earth terminal | 13 min to 16 max |

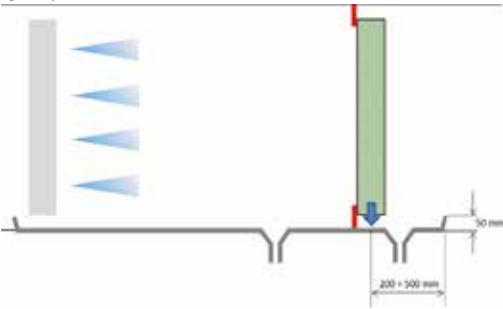
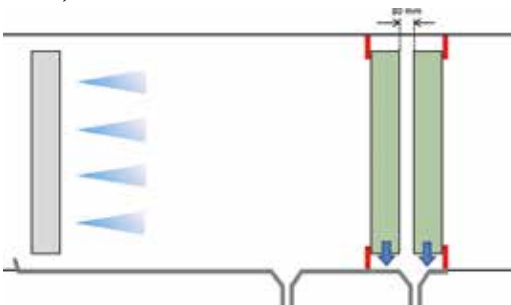
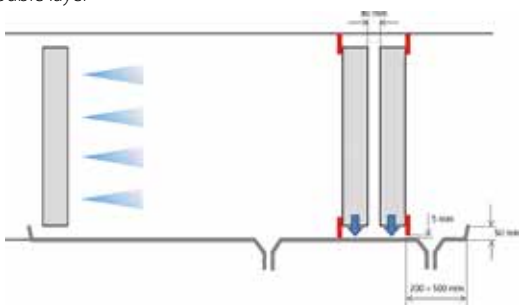
Tab. 8.b

8.3 Fuse chart

| Fuse | Pumping station | | | | |
|------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | UA1501D5** | UA3001D5** | UA5001D5* | UA8001L5** | UA1K21L5** |
| F1 | 1A T 5x20 250 V | 1A T 5x20 250 V | 1A T 5x20 250 V | 1A T 10.3x38 500 V | 1A T 10.3x38 500 V |
| F2 | 1A T 5x20 250 V | 1A T 5x20 250 V | 1A T 5x20 250 V | 1A T 10.3x38 500 V | 1A T 10.3x38 500 V |
| F5 | 4A T 5x20 250 V | 4A T 5x20 250 V | 4A T 5x20 250 V | 4A T 5x20 250 V | 4A T 5x20 250 V |
| F6 | 12A T 10.3x38 500 V | 20A F 10.3x38 500 V | 25A F 10.3x38 500 V | 25A F 10.3x38 500 V | 25A F 10.3x38 500 V |
| F7 | 12A T 10.3x38 500 V | 20A F 10.3x38 500 V | 25A F 10.3x38 500 V | 25A F 10.3x38 500 V | 25A F 10.3x38 500 V |
| F8 | - | - | - | 25A F 10.3x38 500 V | 25A F 10.3x38 500 V |
| F10 | 6.3A T 5x20 250 V | 6.3A T 5x20 250 V | 6.3A T 5x20 250 V | 6.3A T 5x20 250 V | 6.3A T 5x20 250 V |

Tab. 8.c

9. CHECKLIST

| Final installation checklist | | | |
|----------------------------------|--|------------|-----------|
| 1. Installation site | | Yes | No |
| 1.a | Temperature range 1 – 40 °C (34 – 104 °F). | | |
| 1.b | Protected against rain and humidity. | | |
| 1.c | Protected against direct sunlight. | | |
| 2. Water line | | Yes | No |
| 2.a | All water connections fitted correctly. | | |
| 2.b | Materials compatible for use with water treated by reverse osmosis (stainless steel/plastic). | | |
| 2.c | Piping on pumping station feedwater line suitable for an operating pressure range of 2 to 5 bars. | | |
| 2.d | Piping of water outlet line from pumping station to the atomisation system suitable for pressures of up to 100 bars. | | |
| 2.e | Length of the outlet line from the pumping station to the atomisation system within the limits specified by the manufacturer (par. 5.2). | | |
| 2.f | NOL drain solenoid valves installed at the lowest points of the circuit to facilitate drainage of water (Fig. 5.c). | | |
| 2.g | Drain pipe and drain tank installed in accordance with the manufacturer's instructions (par. 4.2). | | |
| 3. Electrical connections | | Yes | No |
| 3.a | Solenoid valves wired in accordance with the manufacturer's instructions (par. 6.2). | | |
| 3.b | Connection cables suitably sized for the maximum distance between the pumping station or the zone controller and the rack (par. 6.3). | | |
| 3.c | Enabling and control signals wired in accordance with the manufacturer's instructions (par. 6.4). | | |
| 3d | Ethernet connection in accordance with the manufacturer's instructions. | | |
| 4. Droplet separator | | Yes | No |
| 4.a | Double droplet separator at a distance of 80 mm (3.15"). | | |
| 4.b | Size of the drain tank underneath the separator from 200 to 500 mm (7.87" to 19.70"). | | |
| 4.c | Separator installed in accordance with the manufacturer's instructions provided in the quick guide +05000661E, depending on the type: - single layer  - double layer  - double layer  | | |

10. ANNEXES

Annex A: Wiring diagrams

Single-phase power supply: UA150* - UA300* - UA500*

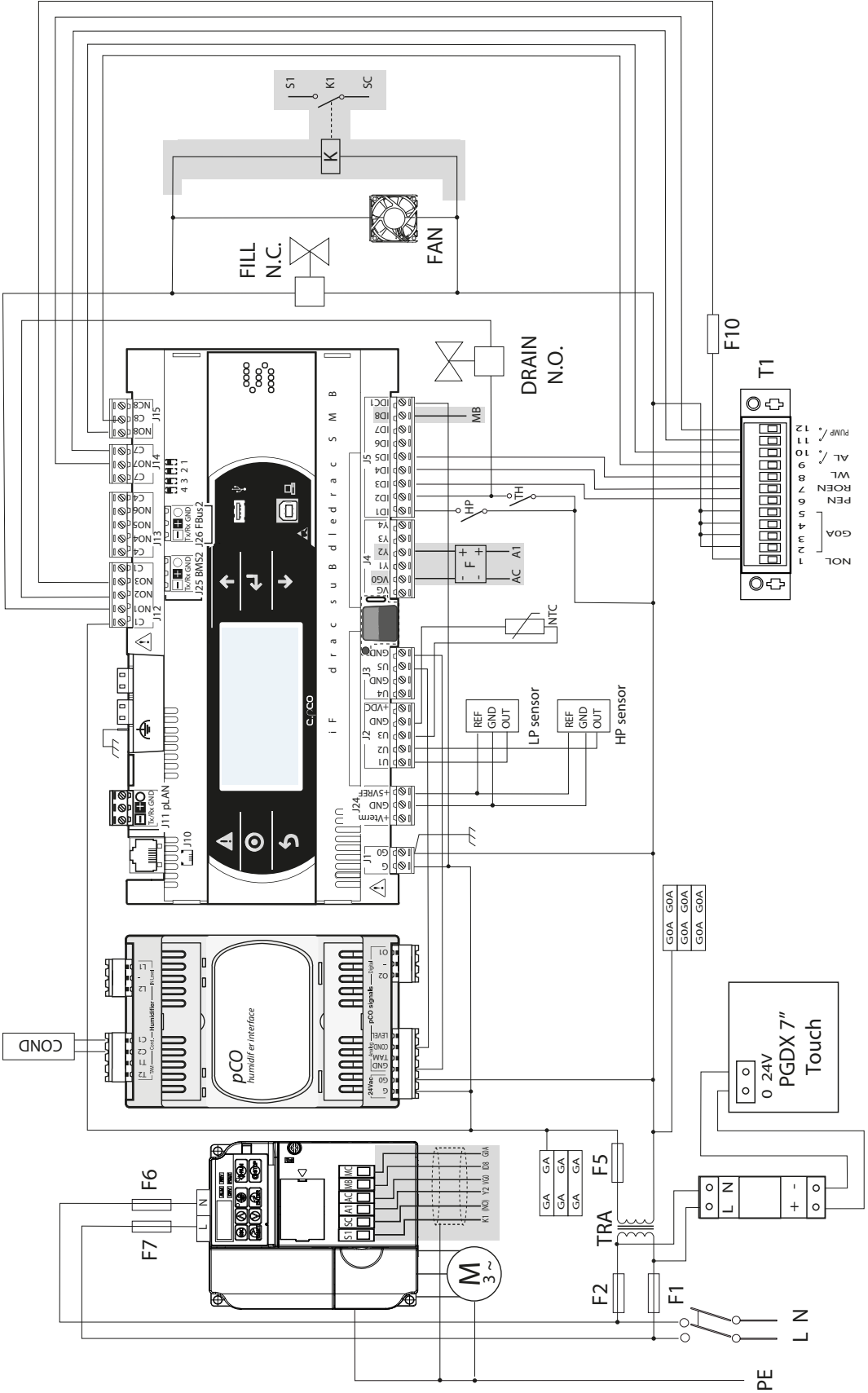


Fig. 10.a

Three-phase power supply: UA800* - UA1K2*

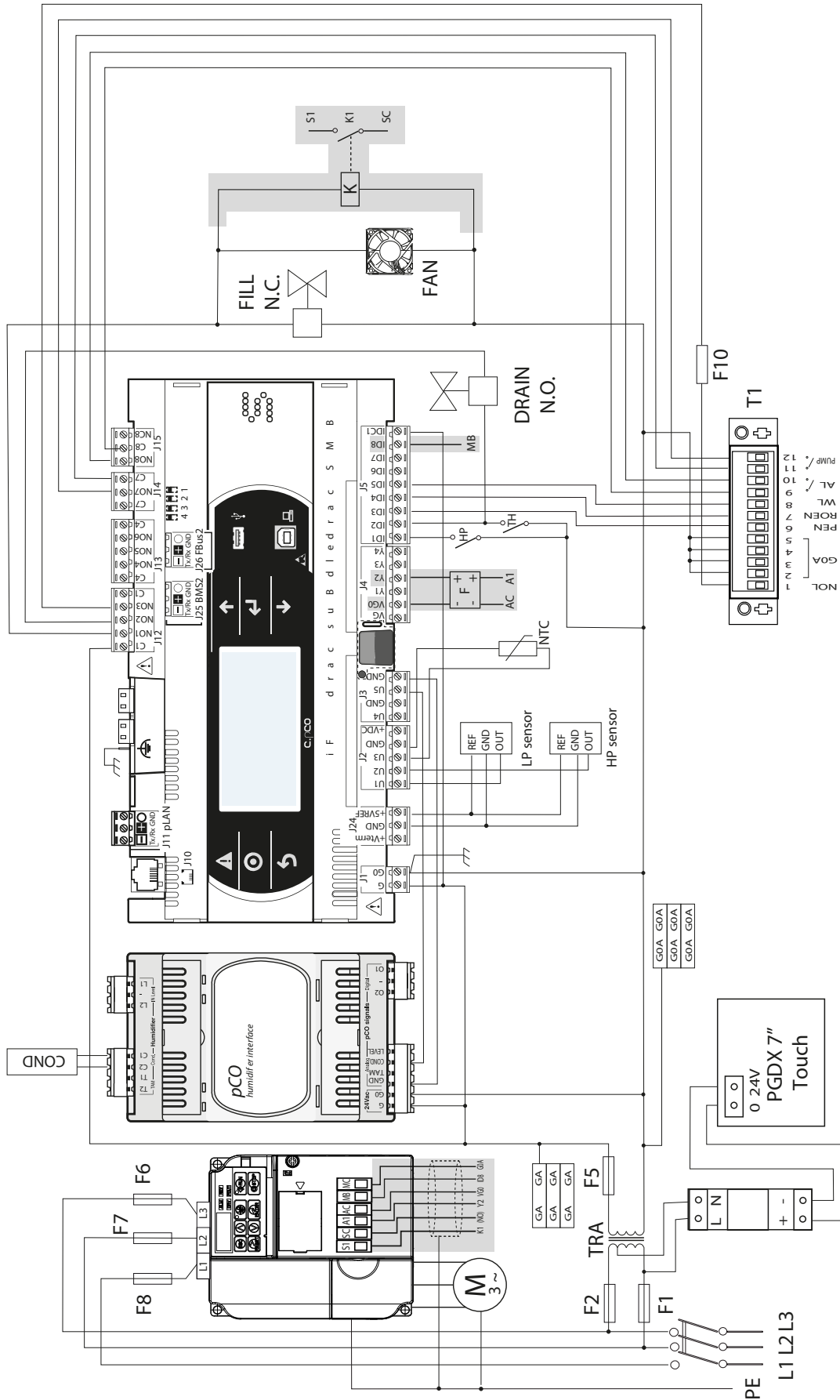


Fig. 10.b

Annex B: Accessories and spare parts kits

1 Mechanical/electrical parts

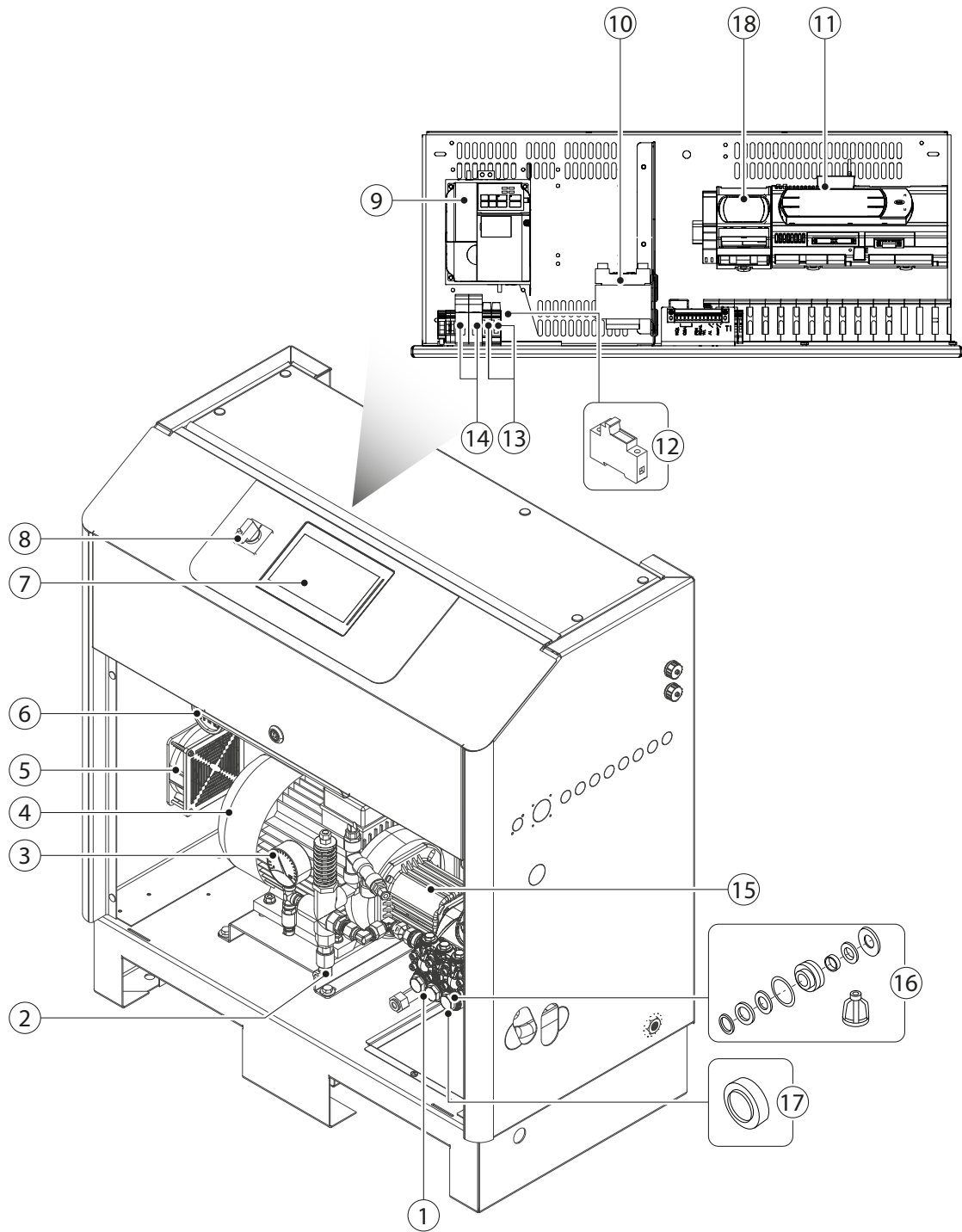


Fig. 10.c

| Part number | Description | Ref. figure | Qty per humidifier |
|--------------|---|-------------|--------------------|
| UAKP150T00SP | Brass pump for UA150 | 1 | |
| UAKP300T00SP | Brass pump for UA300 | 1 | |
| UAKP500T00SP | Brass pump for UA500 | 1 | |
| UAKP800T00SP | Brass pump for UA800 | 1 | |
| UAKP1K2T00SP | Brass pump for UA1K2 | 1 | |
| UAKP150T01SP | Stainless steel pump for UA150 | 1 | |
| UAKP300T01SP | Stainless steel pump for UA300 | 1 | |
| UAKP500T01SP | Stainless steel pump for UA500 | 1 | |
| UAKP800T01SP | Stainless steel pump for UA800 | 1 | |
| UAKP1K2T01SP | Stainless steel pump for UA1K2 | 1 | |
| UAKCV0HP00 | Pressure control bypass valve, brass | 2 | |
| UAKCV0HP01 | Pressure control bypass valve, stainless steel | 2 | |
| UAKMWHP001 | Pressure gauge, 0 to 100 bars | 3 | |
| UAKM075T50SP | Electric motor for UA150*D, 50-60 Hz CE | 4 | |
| UAKM150T50SP | Electric motor for UA300*D, 50-60 Hz CE | 4 | |
| UAKM220T50SP | Electric motor for UA500*D, 50-60 Hz CE | 4 | |
| UAKM300T50SP | Electric motor for UA800*L, 50-60 Hz CE | 4 | |
| UAKM400T50SP | Electric motor for UA1K2*L, 50-60 Hz CE | 4 | |
| URKFANL200 | Unit cooling fan | 5 | |
| ECKMA10000 | Pressure gauge, 0 to 10 bars | 6 | |
| UAKPGDX700SP | Touch display for UA*5 pumping station | 7 | |
| UAKINT0000 | Main switch | 8 | |
| UAKVFD0155SP | Variable frequency driver UA150**5 | 9 | |
| UAKVFD0305SP | Variable frequency driver UA300**5 | 9 | |
| UAKVFD0505SP | Variable frequency driver UA500**5 | 9 | |
| UAKVFD0805SP | Variable frequency driver UA800**5 | 9 | |
| UAKVFD1K25SP | Variable frequency driver UA1K2**5 | 9 | |
| URKTR10000 | 100 VA 230/400V 24V transformer | 10 | |
| UAKCPCOT00SP | Touchscreen electronic controller for UA*5* pumping station | 11 | |
| URKFH10000 | 2-pole fuse holder | 12 | |
| URKFH20000 | 3-pole fuse holder | 12 | |
| UAKFTR0AC0SP | Transformer fuse kit for UA150-300-500 CE | 13 | |
| UAKFTR0DE0SP | Transformer fuse kit for UA800-1K2 CE | 13 | |
| UAKFVFDA00SP | Inverter fuse kit for UA150 CE | 14 | |
| UAKFVDBE0SP | Inverter fuse kit for UA300-500-800-1K2 CE | 14 | |
| UAK0BMC150SP | Pump-motor coupling and flange for UA150 | 15 | |
| UAK0BMC300SP | Pump-motor coupling and flange for UA300 | 15 | |
| UAK0BMC500SP | Pump-motor coupling and flange for UA500 | 15 | |
| UAK0BMC800SP | Pump-motor coupling and flange for UA800 | 15 | |
| UAK0BMC1K2SP | Pump-motor coupling and flange for UA1K2 | 15 | |
| UAKVGO1502SP | Gasket and valve kit for UA150-300-500 with brass pump | 16 | |
| UAKVGO1802SP | Gasket and valve kit for UA800 with brass pump | 16 | |
| UAKVGO2202SP | Gasket and valve kit for UA1K2 with brass pump | 16 | |
| UAKVGX1502SP | Gasket and valve kit for UA150-300-800 with stainless steel pump | 16 | |
| UAKVGX1802SP | Gasket and valve kit for UA800 with stainless steel pump | 16 | |
| UAKVGX2202SP | Gasket and valve kit for UA1K2 with stainless steel pump | 16 | |
| UAKAR00001SP | Oil seal kit for UA150-300-500-800-1K2*5*0 brass, UA1K2*5*1 stainless steel | 17 | |
| UAKAR00002SP | Oil seal kit for UA150-300-500-800 stainless steel | 17 | |
| PCOUMI2000 | Electronic expansion alongside the touchscreen controller | 18 | |
| UAKVG000EX | Extractor rod for UA****5 gaskets and valves | | |
| UAKVG015EX | Seal and valve extractor for UA150-300-500 | | |
| UAKVG022EX | Seal and valve extractor for UA800 | | |
| UAKVG018EX | Seal and valve extractor for UA1K2 | | |
| UAKVGX15IN | Gasket and valve inserter for UA150-300-500 with stainless steel pump | | |
| UAKVGX18IN | Gasket and valve inserter for UA800 with stainless steel pump | | |
| UAKVGO15IN | Gasket and valve inserter for UA150-300-500 with brass pump | | |
| UAKVGO18IN | Gasket and valve inserter for UA800 with brass pump | | |
| UAKVG022IN | Gasket and valve inserter for UA1K2 with stainless steel and brass pump | | |
| UAKART0001 | UA150-300-500-800 brass oil seal extractor and inserter | | |
| UAKART0002 | UA1K2 stainless steel and brass oil seal extractor and inserter | | |
| UAKART0003 | UA150-300-500-800 stainless steel oil seal extractor and inserter | | |

Tab. 10.a

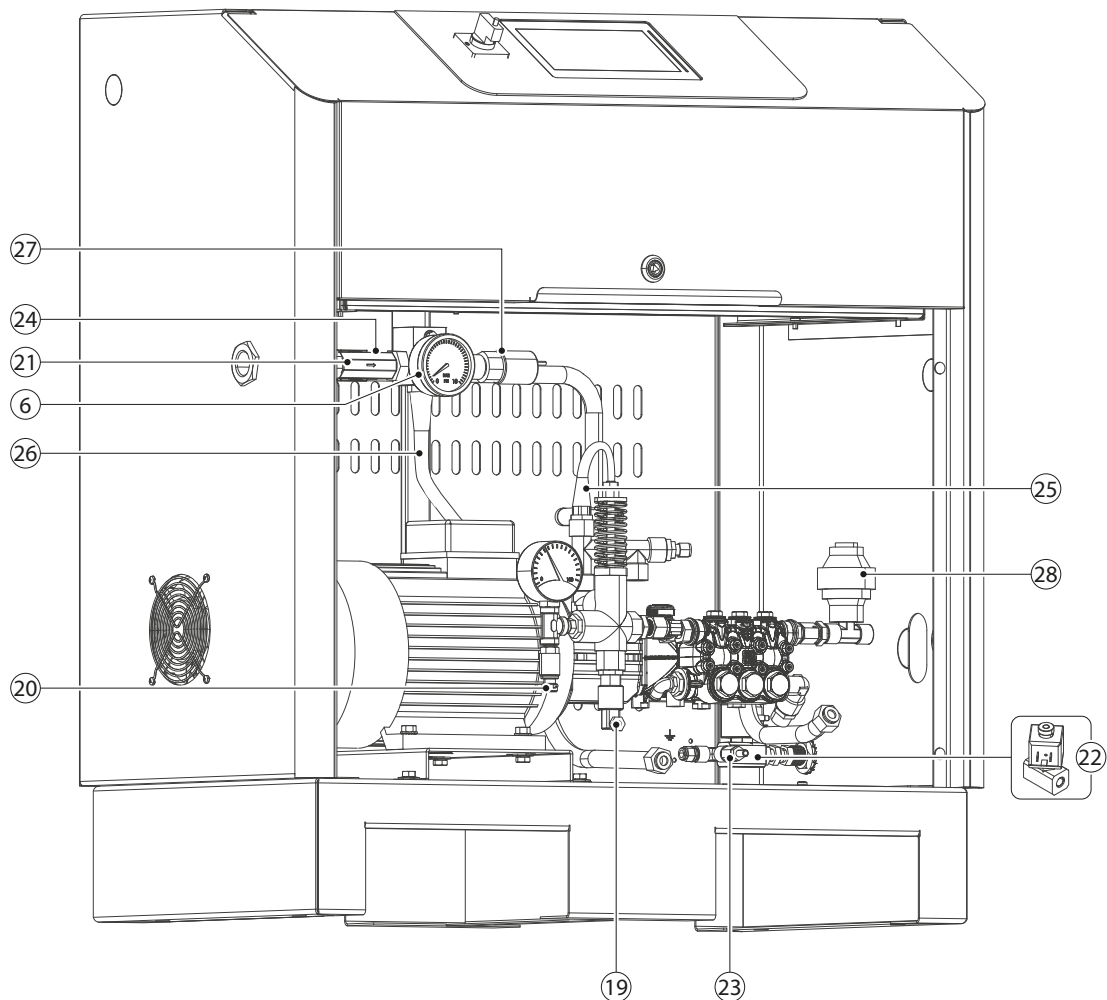
2 Water circuit parts


Fig. 10.d

| Part number | Description | Ref. figure | Quantity per humidifier |
|--------------|--|-------------|-------------------------|
| UAKTS00000SP | High temperature thermostat | 19 | |
| UAKPSP000 | High pressure switch (HP) | 20 | |
| ECKFSV0000 | Water fill solenoid valve for UA*4, UA*D, EC*, UA1505*, UA3005*, UA5005* | 21 | |
| MCKFSVAC00 | Water fill solenoid valve for UA8005*, UA1K25*, brass | 21 | |
| UGKEVOUT00SP | Water fill solenoid valve for UA8005*, UA1K25*, stainless steel | 21 | |
| UAKCV0DR00 | Cabinet drain solenoid valve, brass | 22 | |
| UAKCV0DR01 | Cabinet drain solenoid valve, stainless steel | 22 | |
| UAKSAFVAL0 | Safety valve | 23 | |
| UAKRACL01SP | PVC low pressure fittings kit | 24 | |
| UAKTRAS05V | 0-5 V high pressure probe | 25 | |
| SPKT0013P0 | Low pressure probe | 26 | |
| SPKT0011S0 | Low pressure probe | 26 | |
| HSCONDUT00 | Conductivity meter | 27 | |
| UAKSMZ0000SP | Pulsation damper | 28 | |
| UAKOIL0000SP | Oil for humiFog pump | - | |

Tab. 10.b

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