Installation and Operation Manual for PoolStar Units

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1. Preface

This manual serves as a standard operational, installation, and maintenance guide for the ventilation units of the PoolStar models with the corresponding certification model names listed in the declaration:

UA.TR.YT.D.062303-22

With the corresponding name PoolStar (3-63)

The company "VENT-SERVICE" LLC continuously works on improving equipment, expanding the range, and optimizing operations. Therefore, the company reserves the right to make changes and adjustments to the effective manual, guidelines, and technical passport for this product.

"VENT-SERVICE" LLC is not obligated to notify third parties or clients about such changes. The most up-to-date information about the equipment can be obtained by the client on the official website: https://aerostar.ua/ua/catalogue

2. Safety Instructions

2.1 Instruction and General Provisions

Connection, startup, adjustment, and operations related to the operational maintenance and repair should be carried out in the presence of a work permit by qualified personnel, in conditions compliant with the norms of the current legislation of the country.

Qualified personnel refer to individuals familiar with the necessary standards, rules, instructions, and documentation for the installation, connection, startup, and operation of ventilation equipment. Their qualifications should enable them to identify, prevent, and avoid potential malfunctions and hazards to life, health, and property.

During the preparation of the installation for operation and its operation, safety requirements outlined in "DSTU B A.3.2-12:2009 Occupational Safety Standard System. Ventilation Systems. General Requirements," "NPAOP 40.1-1.21-98 Rules for the Safe Operation of Consumer Electrical Installations," and "Rules for the Technical Operation of Consumer Electrical Installations" should be adhered to. The installation should be assembled in accordance with the requirements of DSTU B A.3.2-12:2009, project documentation, and this passport.

The installation should provide free access to service areas during operation.

Maintenance and repair of equipment should only be performed after disconnecting it from the power network and the complete stoppage of moving parts of the installation and associated equipment.

Grounding the installation is carried out in accordance with the "Rules for the Arrangement of Electrical Installations" (RAEI).

Maintenance and repair of equipment should only be carried out after disconnecting it from the power grid and ensuring the complete cessation of moving parts of the installation and associated equipment.

The grounding of the unit is performed in accordance with the "Rules for the Arrangement of Electrical Installations" (RAEI). The grounding resistance should to comply with the RAEI

requirements. The resistance value between the grounding bolt and every metallic part of the unit that may become energized should not exceed 0.1 Om.

During testing, adjustment, and operation, the suction and pressurizing openings should be protected to prevent injury to individuals from the air flow and rotating parts.

During tests, adjustments, and operations, suction and discharge openings should be protected to eliminate the risk of injury to people from air flow and rotating parts.

Power outage should occur only in emergency situations.

Equipment maintenance should be performed exclusively by qualified personnel with the relevant authorization for work, including authorization for work at heights.

The servicing personnel should be instructed and provided with the appropriate equipment.

Work on unit in a state of altered consciousness is prohibited.

All servicing personnel should be of a legal age.

Strictly prohibited is the access of children to playing with equipment.

2.2 STRICTLY PROHIBITED:

- Starting the equipment before connecting fuses;
- Starting the equipment with open inspection doors or panels;
- Opening inspection doors or panels before the fan comes to a complete stop;
- Performing equipment repair without prior disconnection of electrical devices from the power supply;
- Servicing heaters until their surfaces cool to a safe temperature;
- Using equipment outside the ranges specified in its technical documentation and for purposes other than intended;
- Operating malfunctioning equipment.

2.3 UNACCEPTABLE USAGE

It is prohibited to use the equipment:

- In an extremely dusty environment;
- By untrained personnel;
- When not adhering to current standards;
- With incorrect installation;
- In case of electrical power defects;
- In complete or partial non-compliance with instructions;
- Without proper maintenance;
- With modifications and other interventions not allowed by the manufacturer;

• In a workspace cluttered with tools and other objects;
• In the presence of abnormal vibrations in the working area.

2.4 DEFINITION OF HAZARDOUS ZONES

Only qualified and trained personnel should have access to the equipment.
• The external hazardous zone is defined as the space approximately 2 m around the unit and equipment.
• Access to the internal hazardous zone can be gained from the inside of the unit.

2.5 WORK WITH PRESSURIZED EQUIPMENT

All units specified in this manual comply with the requirements of Directive 2014/68/EU (Pressure Equipment).

2.6 WORK WITH THE UNIT:

• The unit should be disconnected from the power supply by switching off and locking the main switch.
• Servicing personnel should use appropriate personal protective equipment in accordance with commonly accepted safety rules (helmet, gloves, goggles, etc.).

2.7 WORK WITH THE REFRIGERATION CIRCUIT:

• Pressure checking, system venting, and charging under pressure should be carried out using appropriate equipment and tools.

• To prevent risks, before disconnecting or brazing parts, the pressure in the refrigeration circuit should be reduced to zero pressure.

• There is a risk of residual pressure due to oil degassing or heating of the heat exchanger after the circuit has been depressurized. Zero pressure should be maintained by opening the relief valve on the low-pressure side.

• Brazing should be performed by a qualified welder.

CAUTION! In case of fire, there may be a refrigeration circuit leak!

2.8SAFETY RULES

Do not activate the ventilation system without grounding.

Before turning on the unit, ensure that all doors are closed, and covers are in place and secured.

Before conducting an internal inspection of the unit, make sure it is disconnected from the power supply and has no rotating parts and components.

Before switching on the unit, its sections should be connected according to the installation instructions.

Before opening the doors, turn off the unit and the input switch, and wait (1-2 minutes) for the fans to stop.

Exercise caution when performing installation or repair work on the water heater - the temperature of the heat carrier can reach 130°C.

If the ventilation system is operated with an automation system not coordinated with the manufacturer, the functionality, reliability, and safety protection of the device are the responsibility of the company that installed the automation.

Protection zones for moving parts:

Protection zones for moving parts: Moving parts in the unit include fan blades, belt drive of the rotary recuperator (if any), and parts of the shut-off and bypass valves of the plate recuperator (if any). Inspection doors are closed and protected from direct contact with moving elements.

3 General Information

Ventilation and air conditioning units are manufactured in accordance with current Ukrainian and European technical norms and requirements.

PoolStar units should be installed and used strictly in accordance with this documentation.

The manufacturer is not responsible for damages resulting from improper use of the equipment; all risks are assumed by the equipment purchaser.

Installation and operational documentation should be accessible to the servicing personnel and service organizations. It is recommended to place it near the ventilation unit.

During operation, installation, electrical connection, commissioning, as well as repair and maintenance of the equipment, follow current safety rules, norms, and generally accepted technical requirements. Use personal protective equipment (gloves) due to the sharp edges and corners of the installation. All connected equipment should to comply with current safety standards.

Replacement and repair of individual components of the PoolStar unit that could affect safety and proper equipment operation are strictly prohibited.

Before installation and use, carefully read and strictly follow the instructions and recommendations provided in the following sections.

Installation and commissioning of the equipment can only be performed by personnel from a specialized firm with authorization from the manufacturer in accordance with current norms and rules.

A properly designed and installed ventilation system will not be effective without proper care.

After installation, the ventilation unit should be checked (tested), adjusted according to the project, and handed over to the servicing personnel in perfect working condition.

During testing, check whether the actual performance of the fans and the thermal power of the heaters correspond to the values specified in the project.

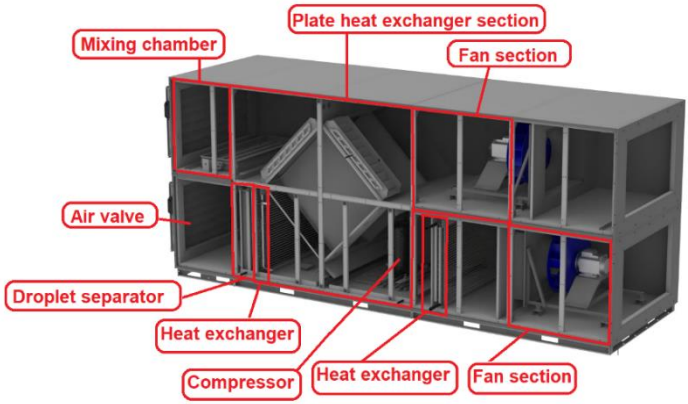
NOTE!

CHANGES MAY BE MADE TO THE CONSTRUCTION of the units that do not deteriorate their consumer properties and are not considered in this manual.

The supplier of the automation system provides the INSTRUCTION for the operation and installation of the automation system.

3.1 Application and Operating

Conditions PoolStar units are designed to create a comfortable climate. The sectional design of PoolStar allows for installation both indoors and outdoors. Outdoor installations are equipped with a protective roof. PoolStar units are designed to supply fresh air free from solid, fibrous, adhesive, aggressive, or air-hazardous impurities. The air should not contain substances that contribute to the corrosion or decomposition of zinc, steel, or aluminum. The standard operating temperature range is from -30°C to +40°C.



Picture 1
Schematic structure of the PoolStar units

3.2 Operation Principle and Modes of Operation

3.2.1 Winter (Primary Mode)

The primary mode for the winter season when there are people in the room. It involves removing moisture and supplying to the pool room with fresh, heated air.

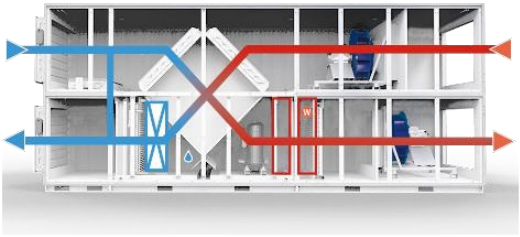
Default Settings: Fans operate at 100% Fresh air blending - 30% The heat pump is activated.

Picture 2 (a)

3.2.2 Winter min

Applied when the pool is not in use, the water surface is covered, or there is no water in the pool. Fresh air is supplied to the room for a minimal number of people (service personnel).

Default Settings: Fans operate at 80% Recirculation – 80% Fresh air blending – 20%

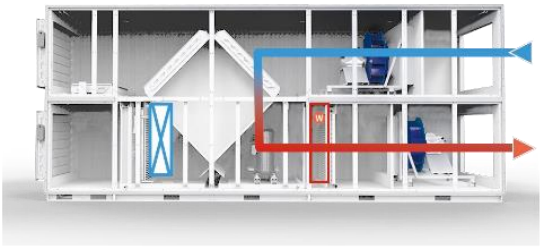


Picture 2 (b)

3.2.3 Fast heating

Designed for conditions when there are no people in the pool area, no moisture is being released, the water surface is covered, or there is no water.

Default Settings: Water heater operates in standby mode Fresh air blending - 0%

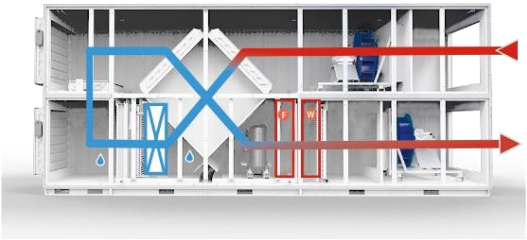


Picture 2 (c)

3.2.4 Active Dehumidification

Used when there are no people in the pool, but active moisture release is occurring. The unit operates in standby mode, maintaining a certain humidity level through the operation of the heat pump.

Default Settings: Recirculation - 100% Fresh air blending - 0% Heat pump is active



Picture 2 (d)

3.2.5 Summer

A mode in which the pool area is ventilated with fresh warm air. It maintains the specified humidity level by removing moist air and supplying warm dry air.

Default Settings: Fans operate at 100%, providing 100% fresh air. The heat pump is not active

Picture 2 (e)

3.2.5 Summer +

The mode is similar to the summer mode, except that the supply air is not heated at the heat exchanger, but passes through the bypass.

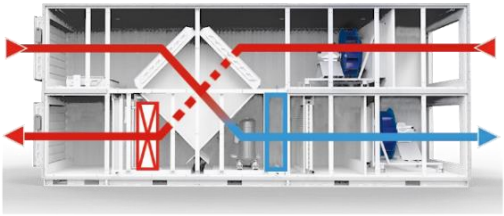
Default: Fans running at 100%, 100% fresh air.

Picture 2 (f)

3.2.7 Summer ++ (additional option)

The system operates as a total exchange ventilation system. This mode is relevant during the warm season when the outdoor air has high humidity. In this mode, incoming air passes through the heat exchanger, and the heat pump activates in reverse, extracting excess heat from the incoming air.

Default Settings: Fans operate at 100%, providing 100% fresh air.

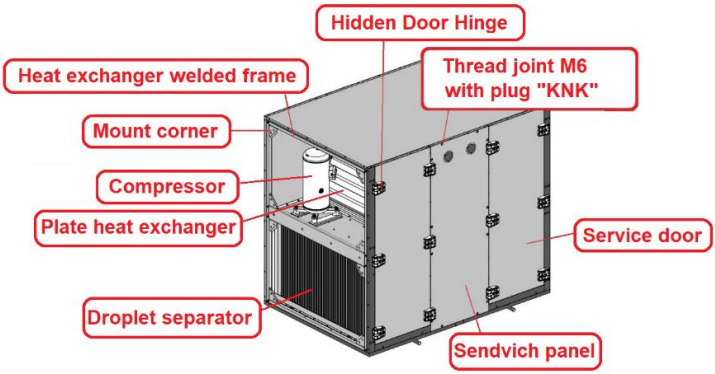


Picture 2 (g)

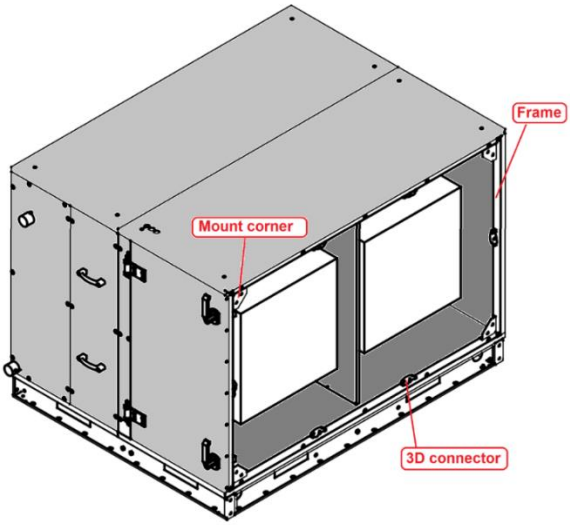
3.3 Unit Design

The modular, panel design is a distinctive feature of the PoolStar unit construction. PoolStar unit have a welded frame structure consisting of metal profiles, and the panels contain mineral wool and polyurethane filler. The strength of the construction is achieved through the labyrinth connection of panels and a specially welded frame. Panels designed for access to built-in equipment for service purposes such as maintenance or equipment control (filter replacement, fan cleaning) are equipped with doors with a "hinge-handle" and "U"-shaped handles. Sections where maintenance of internal units is infrequent (electric heaters, valve section, recuperator, etc.) are equipped with removable panels with handles (clamp screws). All other panels not intended for service access are fixed with M6x20mm DIN912 screws, covered from the top with a plug «KNK». The panels up to the 25th standard size is 50mm thick, and for sizes above the 25th, the panels have a thickness of 45mm. The panel housing with a thickness of 45mm is filled with mineral wool or polyurethane with a volume mass, density of 80 kg/cubic meter. Sandwich panels are used in units with modifications above the 25th standard size, and units with a smaller standard size use panels with mineral wool filler. Sandwich panels that do not serve as service access are installed to the frame, fixed with silicone gel sealant and closed with a threshold, and are not removable in the future. The junctions of service panels or doors with aluminum profiles are equipped with a "D-shaped seal" attached to the profile. The gaps throughout the structure are sealed with sealant.

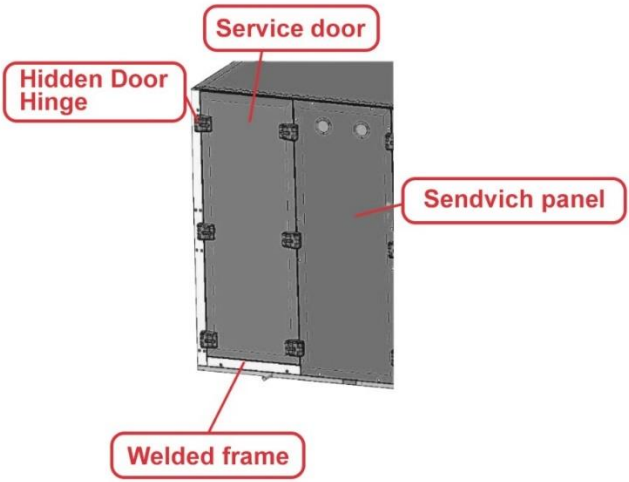
In in the fan and filter sections, the rear panels with mineral wool filler are fixed by a 5.5x19mm self-tapping screw. The gaps are sealed with sealant.



Picture 3 (a)
Positioning of elements in the PoolStar unit and directly the panels in the heat exchanger section



Picture 3 (b)
Frame of PoolStar unit



Picture 3 (c)
The service door of PoolStar unit

3.4 Orientation

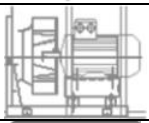
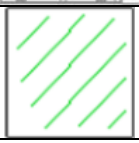
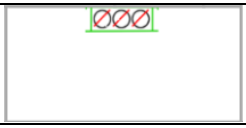
The design of the Poolstar allows you to combine the side of the connection to external energy sources and service accesses. The side is defined with respect to the direction of air flow, right or left.

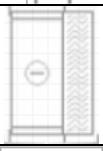
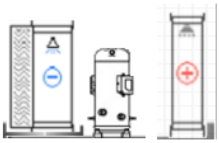
The Poolstar units and individual sections are also equipped with identification markings that show the equipment functions, connection, energy supply and discharge schemes (Picture 4, table 1)

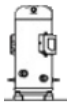
3.5 Information and Safety

PoolStar units and individual sections are equipped with identification labels that display equipment functions, connection schemes, and energy supply and discharge (Picture 4) (Table 1). Functional modules are designed with consideration for the necessary parameters: the size of installation and construction openings, which simplifies the process of assembling ventilation units on-site.

P.n. №	Name	Conventional symbols.	Stickers	Purpose
1.	Flexible insert			Connection of the unit to the ventilation system, vibration minimization

2.	Air valve			Airflow regulation to the unit
3.	Pocket-type filter			Air filtration for incoming air to the unit and ventilation duct.
4.	Cassette-type filter			Air filtration for incoming air to the unit and ventilation duct
5.	Fan			"Supplies air to the ventilation system
6.	Sound absorber			Disperses and reduces the amount of noise produced by the unit
7.	Empty section			Serves as an intermediate element between sections. It is used to equalize the airflow and increase the length of the supporting, first level of the unit
8.	Mixing chamber			Mixes airflow from the supply and exhaust.
9.	Direct cooler			Using refrigerant, extracts heat from the air and dehumidifies it.
10.	Water-based heater.			Transfers heat from circulating water to the air

11.	Electric heater			Heats the supply air by using electrical power
12.	Water cooler			Removes heat from the air using cooler water
13.	Plate heat exchanger			Use heat from the exhaust air and transfers it to the supply air without mixing the streams
14.	Droplet separator			Prevents or minimizes the formation of droplets in the ventilation system.
15.	Glycol-based heat exchanger			Transfers heat from the heat transfer fluid circulating in the circuit to the air
16.	Rotary heat exchanger.			Receives and use heat from the exhaust air, transferring it to the supply air
17.	Heat pump			The heat pump transfers heat from the surrounding environment and directs it into the ventilation system, dehumidifies, and maintains the air temperature within a specified range.

18.	Compressor			The heat transfer fluid is fed into the heat exchanger system
19.	Steam condensation			Saturates the air with steam
20.	Gas heater			Heats the air using a gas burner for this purpose.
21.	Automation			The box of automatization where located all control devices of the unit

Picture 4

Service panels of electrical heating sections, individual junction boxes, and service panels covering electrical equipment are equipped with a warning label marked "danger - electricity."

A caution about the danger of contact with rotating parts is located on the external side of the service doors of the unit with a precautionary marking "danger."

AC motor.

Mounted on a vibration-resistant frame, separated from the unit's housing. Ideally tuned to the aerodynamics of the ventilation network, with adjustable parameters when needed. Energy efficiency classes: IE1, IE2, IE3. Degree of protection: IP55.

"Equipped with a frequency converter that allows for a quick startup to the operational point."

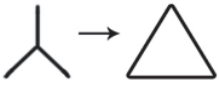
EC motor.

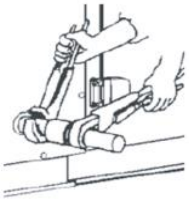
In EC fans, the speed is regulated based on the required load, resulting in energy savings compared to conventional cascade on/off control, and it also reduces noise characteristics. High working pressure: up to 2500 Pa. Wide range of nominal voltage: 1 ~ 200..277 V or 3 ~ 380..480 V 50/60 Hz. Long service life: over 40,000 hours = 4.5 years of continuous operation.

EC motor with efficiency ABOVE 90% saves at least 30% more electrical energy than AC motor.

Picture 5

Important		Важливо
Drain Must trap condensate Unit must be level to drain properly		Дренаж Повинен утримувати конден сат. Обладнання повинне бути підключене до дренажу.

Attention!		Увага!
Motor connection is made on a «Star» pattern , 380v For use with single-phase frequency inverter need to reconnect for "triangle" pattern, 230v	 380 V 230 V	Підключення двигуна виконано за схемою «зірка» 380v Для використання двигуна з однофазним частотником необхідно перепідключити по схемі «трикутник», 230v

Attention!		Увага!
When connecting two wrench must be used		Під час підключення повітро-провода необхідно використовувати два ключі

Picture 6

4 Transportation

4.1 Supply List:

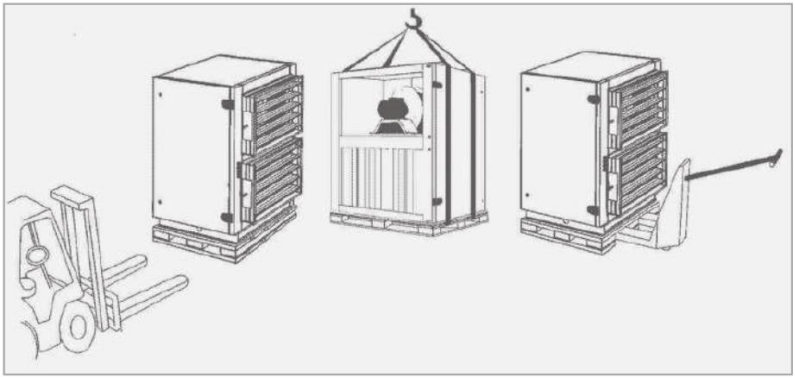
- This manual
- Technical passport of the unit
- Tools and control devices (optional)
- Accessories included with the unit, according to the order
- Technical specifications file
- Connection kit (in case of transportation in section)

4.2 Transportation and Storage

- The unit is supplied without additional tools.
- The unit is equipped with a frame, so it may not be installed on pallets.

4.3 Packaging

The PoolStar unit is packaged in PE film. A crane is used for lifting, and additional openings in the frame can be used for lifting.



Picture 7
Packing of sections

4.4 Lifting and Transportation

The PoolStar units are delivered to the installation site in the form of separate sections or in an assembled form. Loading and unloading are carried out using a forklift or crane. When lifting with a crane, the unit should be protected from damage and deformation using supports inserted between the ropes. During the lift of a section without a supporting frame, the forklift forks should be set so that they exceed the width of the section, and it is lifted along the entire width of the lower panel. When lifting a section with a support frame, the forks of a forklift shall be placed

under the entire width of the section, so that the section can be lifted resting on two side members of the support frame. Before lifting, it is always necessary to slightly raise the section to determine its center of gravity, and during movement, be very careful. Sections with protruding service access (electric and gas heating, as well as water heating with a closed type of connection) are an exception. During lifting and transportation, these sections should be taken from the side opposite the service access (Picture 7).

Attention: during transportation and loading, special attention should be paid to parts protruding from the walls of the transport section (pipes, electrical components). All sections should be transported in the position in which they will be installed later!

4.5 Storage

The unit is delivered to the site packed in thermal shrink film and protected with inserts made of polystyrene and cardboard. It should be stored in enclosed spaces where:

- the maximum relative humidity does not exceed 85%;

- there is no condensation of moisture;

- the temperature ranges from -20 to +40 °C;

- dust, gases, and vapors of corrosive chemicals that contribute to the corrosion of the structure and internal equipment should not penetrate the unit;

- the sections of the unit can only be stored in the position in which they will be operated;

- transport sections can be stacked on top of each other only if the following rules are observed:

1. Only a maximum of 2 sections can be stacked on top of each other;

2. The upper section should be without a supporting frame;

3. The upper section should not exceed the dimensions of the section on which it is placed;

4. Protective pads should be inserted between the sections to avoid damage;

5. The fan section should always be placed at the bottom during stacking;

6. Plate and rotary heat exchanger sections cannot be stacked on top of each other or on top of other sections.

5 Installation

The use of spring-type vibration isolators, which may transfer the load to the connections of the unit, such as the heat exchanger connection, is prohibited for the installation. The only exception is the use of "Vibrofix" type vibration mounts; in all other cases are recommended, regular vibration mounts.

5.1 Positioning

The unit is placed on a horizontal surface, which should have a smooth surface for proper installation and operation of the equipment. The unit does not require special anchoring.

5.2 Providing Service Access

When placing the unit, it is necessary to provide sufficient space for service access. This space depends on the composition of the unit, i.e., the selected functional sections (Picture 4) (Table 1).

Before installation, it is necessary to check the integrity of the cargo (completeness according to the invoice), the rotation of fans, valves, rotary heat exchanger, parameters of electrical equipment, and connecting energy carriers. Any malfunctions detected should be rectified before the start of installation. A passport for the unit is affixed to the inner surface of the doors of the fan section (also inserted into a special pocket). When performing the installation, it is important to use the passport for the correct placement of sections in sequence.

The sections are connected to each other by screw connections. The locations of the screw connections are inside the section and around the perimeter of the section frame. To access the connection points, it is necessary to remove the service panels or open the doors. For the convenience of installation, remove the internal elements of the section (filter, heat exchanger, electric heating frame).

Attention!

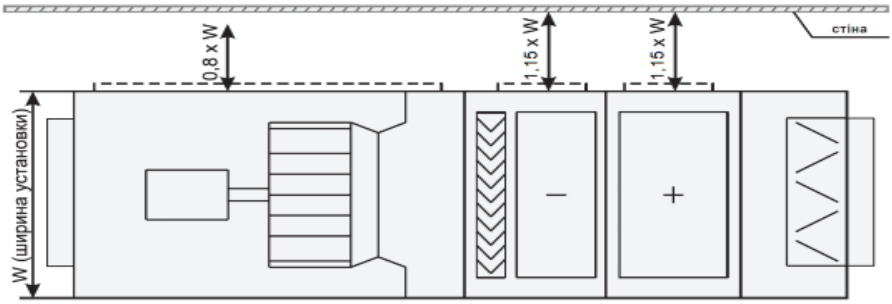
When dismantling or installing heat exchangers, the heat exchangers should not be grabbed by the collectors, as this can lead to the destruction of the collector and heat exchanger connection.

5.3 Identification of Parts of the unit

Each section is equipped with a label and an identification mark (located on the external part of the section doors) (Table 1). The label on each section indicates its belonging to the order, i.e., the unit number and the section position number are marked on the drawing in the passport. The sequence of assembling the unit sections is carried out according to the scheme presented in the passport, as well as according to the identification icons on the unit (Table 1). To ensure service access, it is necessary to provide the following distances from the wall as indicated in Picture 8:

0.8 × the width of the unit (W) = distance between the wall and the unit 0.8 - for such elements as the fan, filter, rotary heat exchanger.

1.15 × the width of the unit (W) = distance between the wall and the unit 1.15 - for such elements as the heater, cooler, droplet separator, plate heat exchanger. Top view:



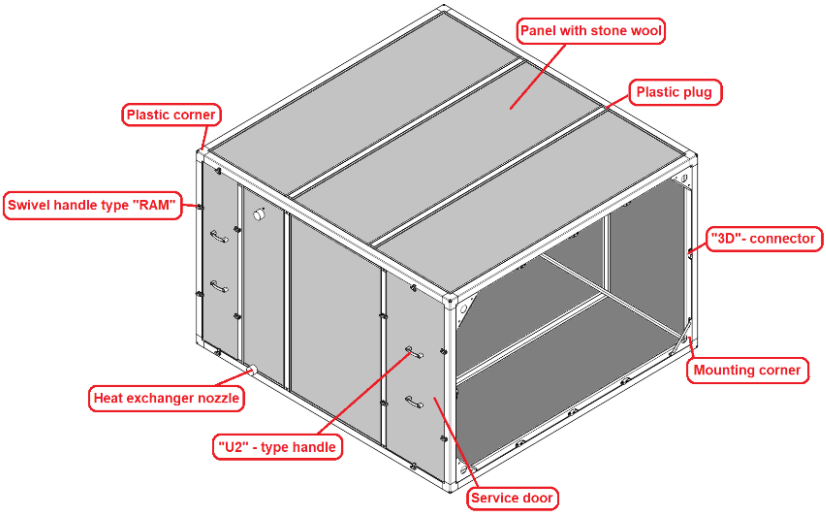
Picture 8
Distance from wall required for service

5.4 Connecting of the sections and support frames:

1. Remove the service panels from one of the connecting sections, or open the doors if they are present in the section.

For ease of installation, remove the internal elements of the section (filter, heat exchanger, electrical frame). Check the integrity of the seal under the panel.

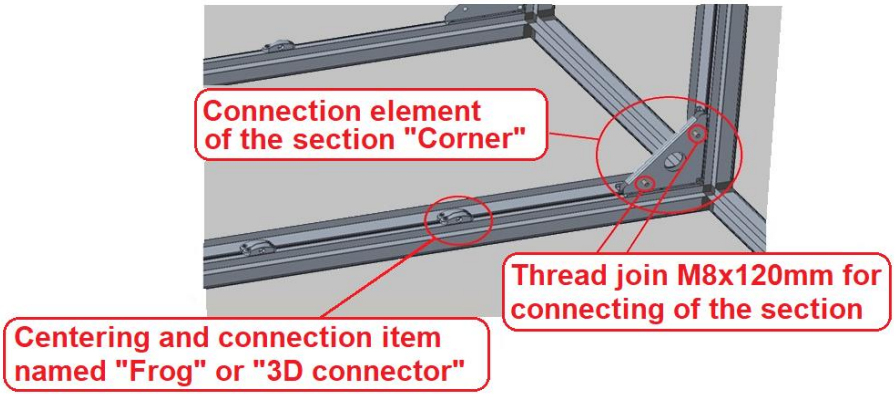
Slide the sections towards each other with the planes of the joint. Align the sections relative to each other. (Picture 9(a))



Picture 9 (a)
Welded frame of section with built-in detachable panels are matched to each other.

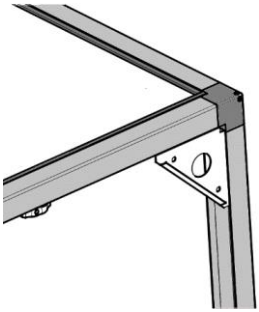
2.Connect the sections through the corner segments of the frame by using M8x130mm DIN933 screws, M8 nuts (two each for each corner connection), and grover type washers along with a flat washer. Rivet nut are installed in the lower corner segments of the frame for ease of assembly.

The lower corner connections are fastened to the frame with a self-tapping screws 5.5x19mm, while the upper corner elements, closer to the central axis, are welded to the frame. When considering the connections in the upper sections of the unit, the welded corner corners will be at the bottom. (Picture 9(b)).

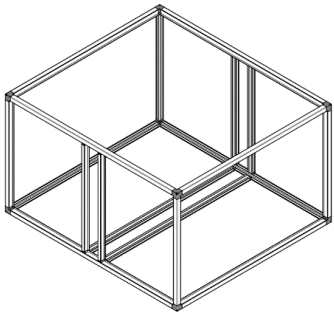


Picture 9 (b)
Mount items of the section

A

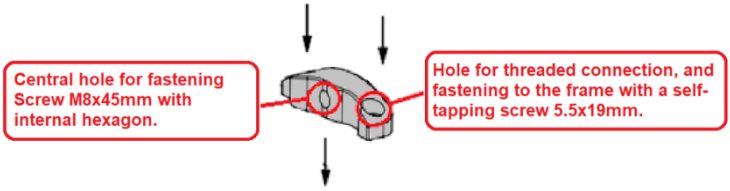


Picture 9 (c)
Elements of the structure connection "Corner"



Picture 9 (d)
Unit frame with fixing

"Corner" elements



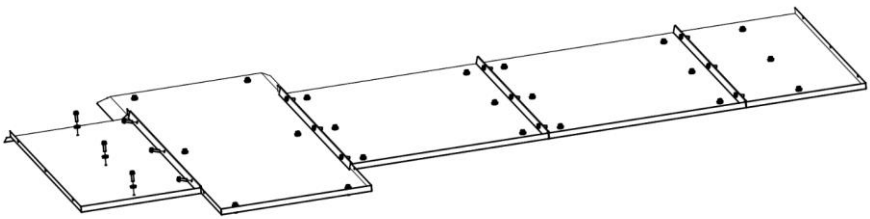
Picture 9 (e)
Fastening element for sections "Cleat" or "3D-connector"

3. In PoolStar units, depending of the modification, two fastenings by screws (cleats) that installed on the frames in horizontal positions (bottom and top) – two cleats on the horizontal frame, and one at the vertical frame. Cleats can be made of either aluminum or plastic. The positioning of these elements is done according to their alignment with the ø4.2mm holes at the frame for the connecting element, namely the self-tapping screws 5.5x19mm. For units with a size less than 10, there is one cleat on the frames in horizontal positions (top and bottom), and for units up to size 5, cleats are not installed. The connection between cleats serves the function of centering and fixing the structure. A screw with a concealed hex head M8x45mm is inserted into the central hole of the cleat, and on the other side, it is secured with a hex nut (Picture (e)).
4. Installation or positioning of the unit at the installation site is carried out by using a specially mounted frame. The frame is fixed to the unit by self-tapping screws 5.5x19mm.
5. Install the panels in the reverse order of the disassembly process.
6. When installing and fix the sections together, the gaps at the joints of sections should be filled and secure to ensure a hermeticity of the unit. To perform this operation, use a silicone gel sealant.

5.5 Roof Installation

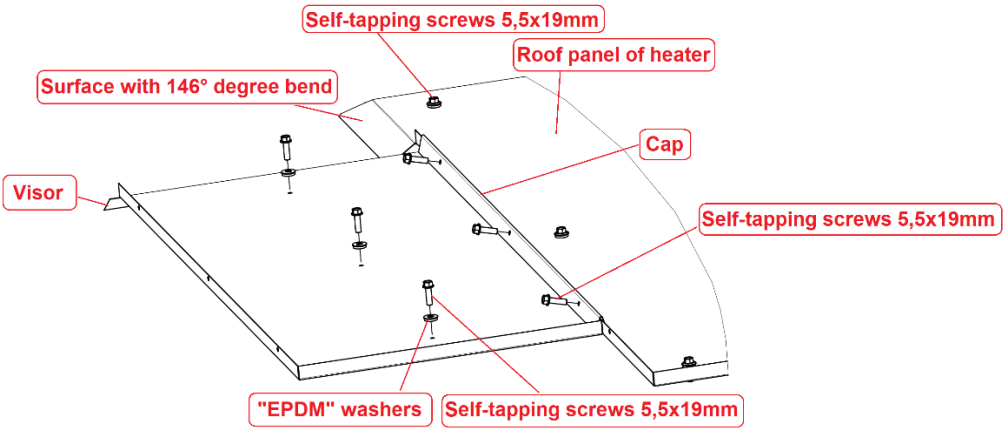
To ensure the stable operation of the external ventilation unit, LLC "Vent-Service" has developed and implemented a "Roof Cover" to ensure water drainage and prevent the entry of external liquids into the internal working area of the unit or damage to the powder coating. The roof cover consists of a metal sheet with edges bent downwards. The sheet is coated with paint. provides an overall view of the roof. Picture 10 (a)

The exception is the edges that are bent upwards and are used for further connection of the sheets to each other, using a lock and a threaded element such as a self-tapping screw

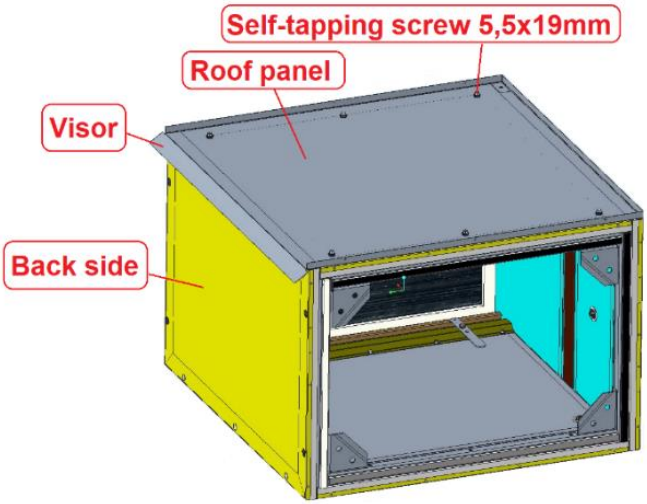


5.5x19mm. The roof sheets are mounted directly to the ventilation unit by using self-tapping screws 5.5x19mm with a prior spacer of special "EPDM" bonding washers.

. **Picture 10 (a)**
General view of the roof



Picture 10 (b)



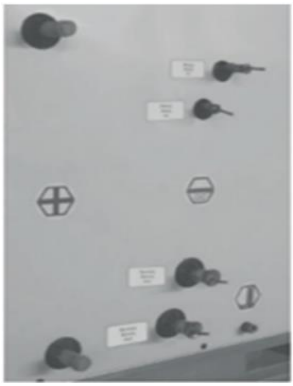
Picture 10 (c)

6 Connection of the Heat Exchanger

All connections of the heat exchangers are performed from the external side of the unit (Picture 11). Internal connections are carried out during the manufacturing of the unit.

6.1 Water Heat Exchangers

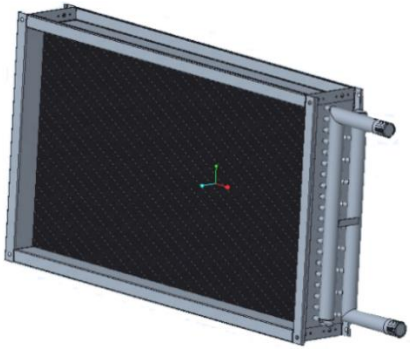
When connecting heat transfer lines, make sure the loads from the lines are not transferred to the unit



Picture 11
Connection of energy carriers.

6.2 Connection of water heat exchangers

To achieve maximum power, it is necessary to connect the heat exchanger in a counter-flow manner. When connecting fittings, it is necessary to tighten by two wrenches (see page 19) to avoid twisting the collector connection. Connection of water heat exchangers in all coolers is made by using an external thread G1. The maximum allowable pressure is 1.5 MPa.



Picture 12

6.3 Heat Exchanger

The cooler undergoes a tightness test conducted by the manufacturer: by air under pressure of 2 MPa for 5 minutes under water. After connecting the heat exchangers and mixing units, it is necessary to create water pressure and remove air from the system, check the tightness of connections and the heat exchanger itself, including an inspection inside the unit section.

Attention! During the dismantling or installation of heat exchangers, the heat exchangers cannot be taken by the collector, as this can lead to damage to the collector connection and the heat exchanger.

The manufacturer does not accept complaints for damage caused by the spillage of liquid due to the lack of tightness of connections or damage to the heat exchanger. It should be noted that frequent changes water in the water heating system accelerate the corrosion process of pipes due to oxidation by oxygen in fresh water. In addition, the air these trapped into the heating system when connecting heat exchangers can stop the circulation of water in its individual part.

6.4 Heat Pump

Each PoolStar model is equipped with a heat pump. When the heat pump is in heating mode, the evaporator located in the exhaust air stream absorbs residual heat, while the hot heat exchanger (condenser) located in the supply air stream additionally heats it. (Picture 13).

PoolStar units are designed to achieve a mode that provides maximum efficiency, whether the unit is operating for heating or cooling. The heat exchangers are designed for optimal performance whether they are used as evaporators or condensers.

This allows using electrical and thermal energy for drying and heating as efficiently as possible (COP = 3.6). The pump does not require an external compressor-condenser unit, reducing installation costs. The heat pump section dehumidifies and maintains the air temperature in the specified range.

- Compact;
- Minimal internal volumes;
- High working pressure;
- Self-cleaning working surfaces;
- Has low resistance.
- Environmental refrigerant R410A;
- High efficiency;
- Individual automation.

Picture 13
Heat pump

6.5 Water Cooling Condenser

A water-cooling condenser can be installed with the heat pump module to transfer excess heat to the pool or shower water. The system connections are already made at the factory, and the connection to the pool or shower water circuit is done on-site.

6.6 Direct Evaporators (Refrigerant Heat Exchanger)

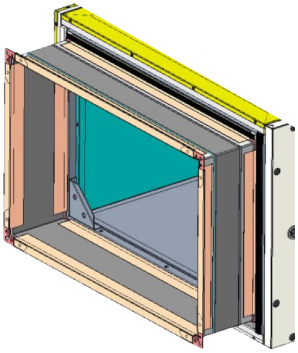
The connection of direct evaporators should be carried out by a company specializing in refrigeration technology. During production, direct evaporators are filled with nitrogen and sealed. In the disconnected state, the evaporators are pressurized. During the depreservation of evaporators, gas is released under pressure, accompanied by a characteristic sound.

6.7 Connection of Direct Evaporators

Installation, operation, and service, including the connection of the compressor-condenser unit, may be carried out by specialized installation personnel in accordance with current legislation. However, under no circumstances should mechanical loads be applied to the evaporators, especially twisting from the connected route. Before installation, a self-adhesive gasket should be applied to the front mating surface of the evaporators flange.

7 Connection of Ventilation Ducts

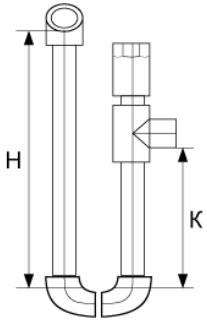
The connection of ventilation ducts is made using a flexible insert that prevents the transfer of vibrations and aligns the position of the duct with the unit (Picture 14). The connection is made in such a way that the duct does not load or deform the installation panel on exit. Accessories are installed in accordance with the specifications and manufacturer's installation instructions. All connections and details should not obstruct the opening of doors and maintenance.



Picture 14

8 Condensate Drainage

Stainless steel condensate collectors with a drain for connecting the condensate drainage system are installed in the cooling, plate heat exchanger, and steam humidification sections (Picture 15). Each section is equipped with an independent system. The height of the siphon depends on the overall fan pressure and ensures its proper operation. The siphon should be selected according to the fan pressure. When the siphon height is higher than the frame height, it is recommended to provide legs under the frame with a height of 150 mm. Legs can be ordered from the manufacturer as a separate element. Before start-up and after a long equipment shutdown, it is necessary to fill the siphon with water. The siphon can be equipped with an odor trap valve and a ball valve (with negative pressure). Such a siphon is not filled before starting operation.



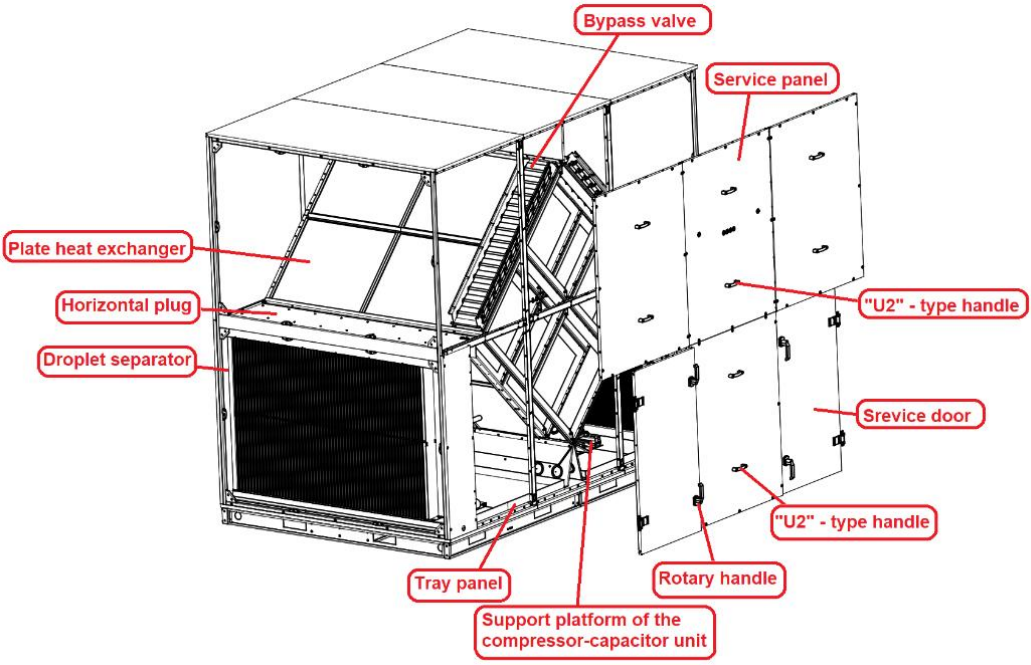
Connection D=25; H=Kx1.875
K=P/10

H - high of siphone
K - siphone outlet height
P - total fan pressure

Picture 15
Condensate Drainage

9 Installation of the Heat Exchanger

The installation of the heat exchanger should be carried out in accordance with the requirements of DSTU B A.3.2-12:2009, DSTU-N B V.2.5-73:2013, project documentation, and this instruction. Conduct an inspection of the heat exchanger (Picture 16). If damages or defects are found, resulting from incorrect transportation or storage, putting the heat exchangers into operation without coordination with the selling company is not allowed. Use "grover" washers during flange connections to ensure electrical conductivity of the connection.

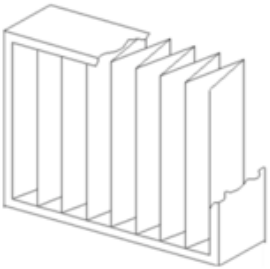


Picture 16
Heat exchanger section

10 Filter Section

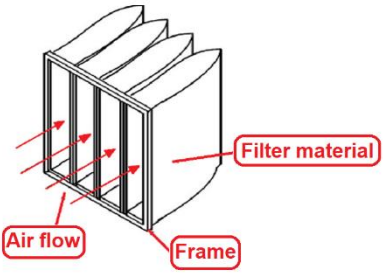
10.1 Filter Replacement

During each filter replacement, it is necessary to inspect the condition of the gaskets. If any damage is found, replace the gasket with a new one. Insert is extracted along the guides. It is recommended to contact the installation organization or the manufacturer's factory for filter replacement.



Picture 17 (a)
Scheme of cassette filters structure.

Picture 17 (b)
General view of a cassette filter in a section



Picture 17 (c)

Picture 17 (d)

Scheme of a pocket filter device

11 Connection of Electrical Equipment

The connection of electrical equipment located inside the unit is carried out through electrical junction boxes located on its body (the service side is chosen during design), with terminals for the electrical equipment. Electrical installation and connection of control and automation elements should be performed by qualified workers with a license for the installation of this type of equipment. Connection should be carried out in accordance with current norms and rules. Before commissioning, an initial inspection of the electrical equipment should be conducted. Before connecting, it is necessary to check:

- Compliance of voltage, frequency, and protection data specified on the section panel to be connected;

- Area of cable connection.

11.1 Requirements for Power Grid Connection

Connection to the power supply of units should be carried out following these recommendations:

- Grounding of the unit should be done according to the "Rules for the Arrangement of Electrical Installations" (RAEI).
- The resistance value between the grounding conductor and each metal and conductive part accessible for touch, which may be under voltage, should not exceed 0.1 Om.
- Necessary protective measures should be applied during electrical installation.
- The specialist performing the electrical installation should have the necessary permit to work with voltage.

During the connection of the unit, it is always necessary to check the direction of rotation of the impeller in the fan section of the unit, access to which is provided through the service panel or doors. The direction of rotation should coincide with the arrow on the impeller housing. Failure to follow the rotation direction can lead to motor overheating. Changing the direction of rotation is achieved by switching the phases of the fan motor.

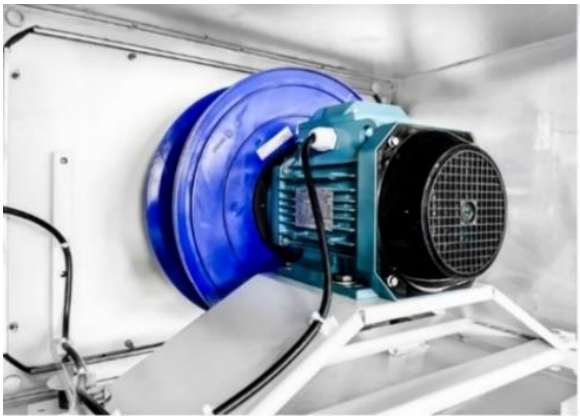
Important: If the power supply voltage has a phase imbalance of more than 5%, contact the electricity supplier. Claims under warranty are not accepted for a phase imbalance exceeding 10%.

11.2 Motor Connection:

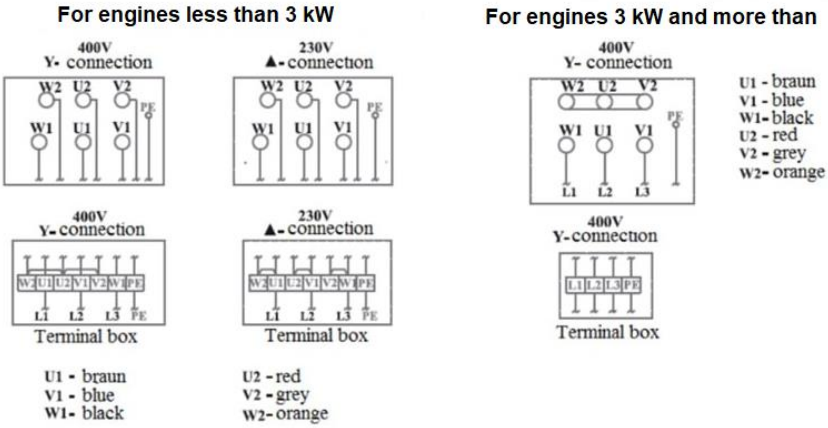
The motor (Picture 18) should be connected according to the diagram indicated on the junction box. A protective circuit breaker or thermal switch is used to protect the motor. Do not connect the motor to the power supply if there is a phase imbalance above 5%.

The main parameters of the motor are always indicated on the nameplate. Use the following formula:

Phase imbalance (%) = (maximum voltage deviation) / (average voltage) * 100%.



Picture 18
Fan Drive Motor



Picture 19
Scheme for Connecting Fan Motors

11.3 Electrical Installation of the Electric Heater

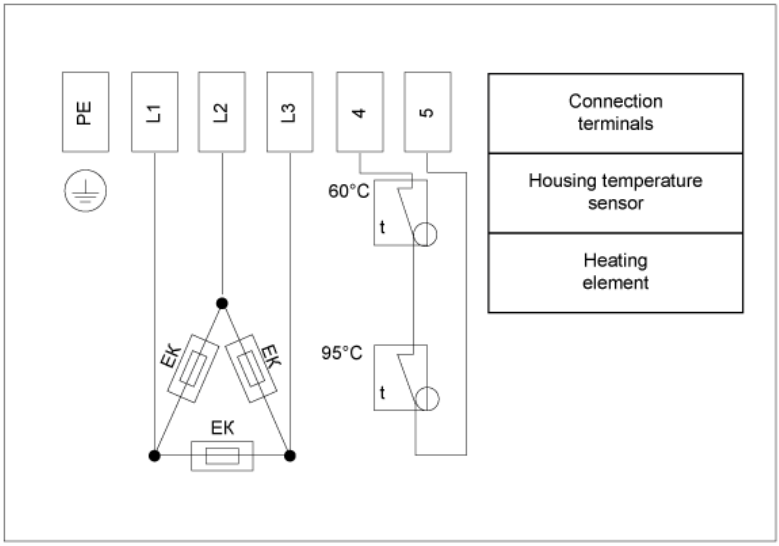
The electrical installation of electric heaters should be carried out according to the electrical scheme (Picture 20). Only qualified, specially trained electrical personnel are allowed to perform the installation and wiring of electric heaters. Before commissioning, a thorough check of the quality and correctness of the connection should be conducted.

Before putting it into operation, it is necessary to control the proper operation of the protective and emergency thermostat circuits connected to the control panel. In case of tripping of the emergency thermostat circuit, the control panel should disconnect the power supply to the heating element and signal an overheating emergency.

Check the reliability of cable fastening in the terminal box and clamps. Verify the reliability of grounding. It is prohibited to use the neutral wire for grounding.

When put into operation for 20 minutes, oil is burned from the surface of heating items with the appearance of smoke and a characteristic odor. When putting into operation, it is also necessary to on the supply engine for to remove smoke and oil combustion products on the heater of the electric heater.

Note: Turn on the supply fan of the units only before connecting the unit to the duct ventilation.



Picture 20
Electric Heater Connection Diagrams

12 Controller

The wall-mounted control panel is designed to manage industrial and household supply and exhaust ventilation units, as well as other air treatment devices. The panel is intended to display measured parameters from sensors, settings, and other adjustments for a ventilation unit with electric and water heating. Information is presented in a text-graphic format on the control panel's display and is divided into screens. The user interface is configured through the controller's program, which controls the ventilation unit. The panel is a Modbus RTU network device.

12.1 Controller

For more detailed information regarding the connection or other settings of the automation system, you can contact the service department at service@ventservice.com.ua or follow the link provided in the QR code on the label located on the automation panel.

12.1.1 Th-Tune

Picture 21 (a)

12.1.2 IQ-HMI 3,5’’

Picture 21 (b)

12.1.3 MCH-1C

Picture 21 (c)

12.1.4 TM172DCLWT

Picture 21 (d)

12.1.5 IQPro4"

Picture 21 (e)

13 Trial Run:

- Close the air valve.

- Close the service door and fan panels.

- Start the fan.

- Check the rotation direction (it should match with the arrows on the housing; if not, swap the motor phases).

- Measure the current in each phase; the values should be below the nominal values.

- Open the air valve.

- Measure the current in each phase again and compare with the nominal values indicated on the motor's factory nameplate.

13.1 Test of automation safety features:

- Voltage loss protection

- Motor overheating protection.

- Motor current protection.

- Protection against freezing of the water heater.

- Protection against the risk of freezing of the heat exchanger.

- Electric heater overheat temperature, etc.

During the trial run, there should be no unusual sounds or vibrations from the unit. The trial run should be last at least 15 minutes. After its completion, inspect the unit and fill out the startup protocol. It is also necessary to adjust the system. Before starting in continuous mode, it is essential to perform regeneration or replace the filtration inserts.

14 Operating Rules

14.1 Ongoing control is conducted for:

- The system's operation, tightness of connections, doors, service panels, temperature of heat carriers and air, and clogging of filters by using sensors.

- The condition and operation of systems related to the ventilation unit, the correctness of functions affecting the operation of the unit and the entire ventilation system.

Primarily:

- Electrical equipment.

- Instrumentation and controls elements

- Pump operation, water filters.

- Cooling systems.

- Condensate drainage systems.

14.2 Regular inspection:

The user defines the inspection frequency depending on the operating conditions. However, inspections shall be carried out at least once at months inspection includes.

14.2.1 General condition control:

- Cleaning all parts of the unit.

14.2.2 Fan control:

- Check the cleanliness of the impeller.

- Check the filters.

14.2.3 Filter control:

The unit use pocket and cassette-type of filters. Filters are installed in the guide slots in the filtration section.

14.2.4 Filter control includes:

- Checking the condition and clogging of filters (replace if clogged).

- Disposal of used inserts should be done considering environmental protection.

- Monitoring of the differential pressure sensor unit.

14.2.5 Heat exchanger control:

- Cleaning of the heat exchange surface by using air blowing or hot water flushing.

- Cleaning should be done carefully to avoid damaging the heat exchanger plates.

- It is crucial to remove air from the heat exchanger.

- Regularly monitoring the condensate drain (cooler).

Note: When disconnecting the heat exchanger in the winter period, it is necessary to completely drain the water, for example, by blowing with compressed air or filling the heat exchanger with a mixture of water and glycol. Residual water can freeze and rupture the copper pipes of the heat exchanger.

15. Possible Malfunctions and Their Remedies

Faults	Probable cause	Ways to eliminate	Notes
Insufficient unit performance.	**1. The network resistance is higher than the design value. 2. The fan wheel turns in the opposite direction. 3. Air leakage due to insufficient density.**	**1. Reduce network resistance. 2. Switch phases on the engine terminals. 3. Tighten screw connections. 4. Eliminate insufficient density.**	
Increased unit performance.	**The resistance of the network is lower than the calculated one.**	**1. Throttle the network. 2. Decrease the speed.**	
Increased vibration of the unit.	**1. Violation of motor-wheel balancing. 2. Dirty motor-wheel**	**1. Clean the motor-wheel.**	
Strong noise during unit operation.	**1. There are no flexible inserts between the unit and the ducts. 2. Poorly tightened screw connections.**	**1. Equip the system with flexible inserts. 2. Tighten screw connections**	
The units fan is independently excluded.	**1. Engine overheating - winding thermal contacts worked. 2. The fan is out of order.**	**1. After cooling the thermal contacts, you need to restart the fan. 2. Replace the fan motor.**	

16 Mandatory routine maintenance for supply and exhaust unit

Routine maintenance is carried out regardless of the technical condition and location conditions of the ventilation unit. Timely and quality execution of routine maintenance prevents malfunctions and equipment failures during its operation and ensures a high level of reliability of the ventilation unit.

According to the operating conditions, the user sets the interval between inspections, but it should be carried out at least once at month. Routine maintenance includes:

16.1 Monthly:

1. External inspection of equipment, checking fasteners, fences, and structures of the supply ventilation unit.

2. Checking the power supply phases (checking voltage imbalance, checking current imbalance).

3. Monitoring and cleaning (replacement) of air filters.

4. Checking the electric drives that control shut-off valves.

5. Monitoring and recording the condition of automation and BMS indications.

6. Checking the vibration isolating supports.

7. Servicing the water pump.

8. Checking the operation of the drainage system. Equipment should be cleaned if necessary.

9. Checking the condition of the drive belts.

10. Checking the condition of the heat exchanger.

16.2 Quarterly:

11. Checking the condition of power and control chains of equipment, tightening threaded connections if necessary.

12. Control and adjustment of the three-way valve of the water air heater.

13. Control and adjustment of the three-way valve of the water air cooler.

14. Servicing the bearings of the supply ventilation unit.

15. Checking and tensioning the drive belts.

16. Checking and centering the impeller on the shaft.

17. Removing deposits from the impeller.
18. Tensioning the shock absorber springs at the base of the fan motor.
19. Checking the flexibility and strength of fasteners.

16.3 Semi-annually:

20. Chemical cleaning of the condensate drain.
21. Checking water strainers for clogging

16.4 Annually:

22. Cleaning the louvers.
23. Inspection of air ducts for tightness.
24. Chemical cleaning of the heat exchanger.
25. Washing and cleaning the internal cavity of the supply ventilation unit.
26. Planned sealing of the air duct.
27. Revision of the bearings of fan motors.
28. Checking the compliance of instrumentation and control.
29. Revision of the impeller of the unit.
30. Checking the electric drives that control shut-off valves.
31. Servicing drain traps.
32. Servicing the water pump.

The buyer undertakes to properly fill out the "Routine Maintenance Journal" after performing such work. Without performing the required technical routine maintenance, the warranty is void the day after such work was supposed to be performed. At the request of the manufacturer's service department, the buyer undertakes to provide the "Routine Maintenance Journal" for review. Confirmation of the buyer's proper operation and maintenance of the equipment is not only the completed Routine Maintenance Journal but also the results of equipment diagnostics carried out by the manufacturer's service department, if necessary, to confirm the records in the Routine Maintenance Journal.

17. WARRANTY CONDITIONS

17.1 WARRANTY PERIOD

The warranty period for the equipment is 36 calendar months from the moment of equipment shipment.

17.2 Warranty does not cover:

• Parts of the equipment and operational materials subject to natural, physical wear and tear (filters, gaskets, V-belts, light bulbs, fuses, etc.).

• Equipment defects arising from causes not determined by the properties and characteristics of the unit.

• Damage to the equipment caused by environmental influences, transportation, and improper storage by the buyer, all mechanical damages and breakdowns resulting from poor equipment operation and maintenance or non-compliance with recommendations and requirements of the technical and operational documentation (hereinafter referred to as TOD).

• All modifications, changes in operating parameters, alterations, repairs, and replacement of equipment parts not agreed upon with the supplier.

• Current routine work, equipment inspections, configuration, and controller programming carried out in accordance with the TOD requirements within the normal operation of the equipment.

• Loss caused by equipment downtime during the period of absence of warranty service and any damage to the buyer's property, except for the equipment under warranty.

• Compensation is not provided for damage caused by downtimes during the wait for warranty service and any damage to the customer's property, except for the manufacturer's installation.

17.3 Warranty Works

The works under this warranty are carried out within 14 days from the date of submitting the complaint. In some cases, this period may be extended, especially when time is needed for the delivery of parts or in case of the service's inability to work on-site.

Parts that service personnel dismantle from the unit as part of warranty repair and replace with new ones are the property of the manufacturer.

Costs arising from unjustified complaints or due to a break in service work at the request of the complainant are the responsibility of the complainant. Repair work is priced according to the price list for service services set by the distributor or manufacturer.

The manufacturer has the right to refuse warranty work or service if the customer delays payment for the equipment or for previous service work.

The customer should assist service personnel in carrying out repair work at the location of the equipment, namely: a) Prepare access to the unit and documentation at the appropriate time. b) Provide security for the service department and its property, as well as comply with all occupational safety and health requirements at the work site. c) Create conditions for a quick start of work immediately after the arrival of service personnel and their execution without any obstacles. d) Provide necessary assistance for work, such as providing lifts, free sources of electrical power.

The customer is obliged to accept the completed warranty work immediately after its completion.

18. Information about Complaints

The acceptance of the products is carried out by the consumer in accordance with the "Procedure for Acceptance of Products of Industrial and Technical Purpose and Consumer Goods for Quality."

In case of quality non-compliance, the consumer is obliged to submit a complaint to the distributor, which serves as the basis for resolving the legitimacy of the claimant's claim. The list of distributors and their contact information is provided on the https://aerostar.ua/ua/page/kontakty

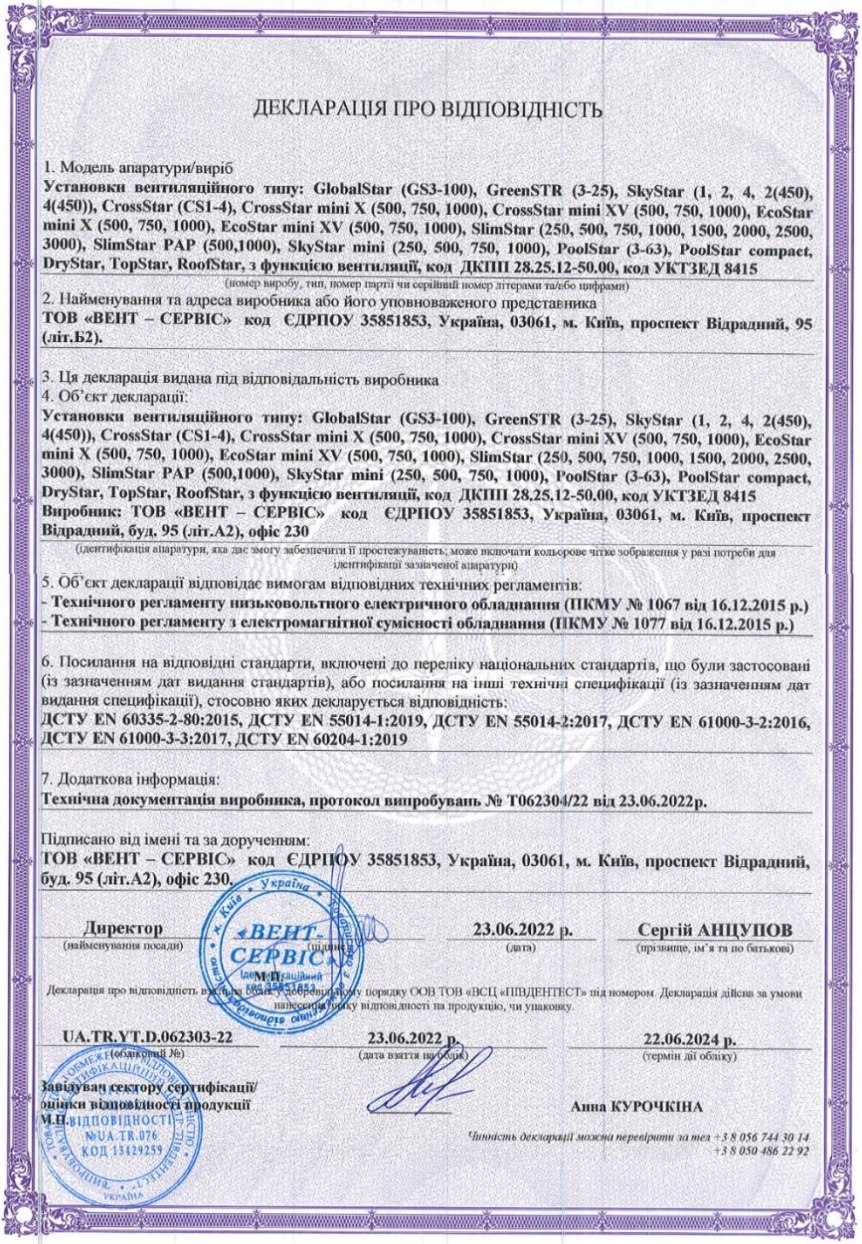
Distributor complaints should be submitted in writing. Complaints can be submitted by fax or email.

The complaint should include: ORDER NUMBER! If possible: type, serial number, and date of transfer of the unit, installation address, phone numbers, and full name of the responsible person.

The complaint should also include a description of the unit problems and, if possible, the names of the damaged parts.

Claims regarding quality will not be accepted if the customer violates the rules of transportation, acceptance, storage, installation, and operation.

Appendix A: Certificates



ДЕКЛАРАЦІЯ ПРО ВІДПОВІДНІСТЬ

1. Модель апаратури/виріб
Установки вентиляційного типу: GlobalStar (GS3-100), GreenSTR (3-25), SkyStar (1, 2, 4, 2(450), 4(450)), CrossStar (CS1-4), CrossStar mini X (500, 750, 1000), CrossStar mini XV (500, 750, 1000), EcoStar mini X (500, 750, 1000), EcoStar mini XV (500, 750, 1000), SlimStar (250, 500, 750, 1000, 1500, 2000, 2500, 3000), SlimStar PAP (500,1000), SkyStar mini (250, 500, 750, 1000), PoolStar (3-63), PoolStar compact, DryStar, TopStar, RoofStar, з функцією вентиляції, код ДКПП 28.25.12-50.00, код УКТЗЕД 8415
(номер виробу, тип, номер партії чи серійний номер літерами та/або цифрами)
2. Найменування та адреса виробника або його уповноваженого представника
ТОВ «ВЕНТ – СЕРВІС» код ЄДРПОУ 35851853, Україна, 03061, м. Київ, проспект Відрадний, 95 (літ.Б2).

3. Ця декларація видана під відповідальність виробника
4. Об'єкт декларації:
Установки вентиляційного типу: GlobalStar (GS3-100), GreenSTR (3-25), SkyStar (1, 2, 4, 2(450), 4(450)), CrossStar (CS1-4), CrossStar mini X (500, 750, 1000), CrossStar mini XV (500, 750, 1000), EcoStar mini X (500, 750, 1000), EcoStar mini XV (500, 750, 1000), SlimStar (250, 500, 750, 1000, 1500, 2000, 2500, 3000), SlimStar PAP (500,1000), SkyStar mini (250, 500, 750, 1000), PoolStar (3-63), PoolStar compact, DryStar, TopStar, RoofStar, з функцією вентиляції, код ДКПП 28.25.12-50.00, код УКТЗЕД 8415
Виробник: ТОВ «ВЕНТ – СЕРВІС» код ЄДРПОУ 35851853, Україна, 03061, м. Київ, проспект Відрадний, буд. 95 (літ.А2), офіс 230
(ідентифікація апаратури, яка дає змогу забезпечити її простежуваність; може включати кольорове чітке зображення у разі потреби для ідентифікації зазначеної апаратури)
5. Об'єкт декларації відповідає вимогам відповідних технічних регламентів:
- Технічного регламенту низьковольтного електричного обладнання (ПКМУ № 1067 від 16.12.2015 р.)
- Технічного регламенту з електромагнітної сумісності обладнання (ПКМУ № 1077 від 16.12.2015 р.)

6. Посилання на відповідні стандарти, включені до переліку національних стандартів, що були застосовані (із зазначенням дат видання стандартів), або посилання на інші технічні специфікації (із зазначенням дат видання специфікації), стосовно яких декларується відповідність:
ДСТУ EN 60335-2-80:2015, ДСТУ EN 55014-1:2019, ДСТУ EN 55014-2:2017, ДСТУ EN 61000-3-2:2016, ДСТУ EN 61000-3-3:2017, ДСТУ EN 60204-1:2019

7. Додаткова інформація:
Технічна документація виробника, протокол випробувань № Т062304/22 від 23.06.2022р.

Підписано від імені та за дорученням:
ТОВ «ВЕНТ – СЕРВІС» код ЄДРПОУ 35851853, Україна, 03061, м. Київ, проспект Відрадний, буд. 95 (літ.А2), офіс 230.

Директор		**23.06.2022 р.**	**Сергій АНЦУПОВ**
(найменування посади)	(підпис)	(дата)	(прізвище, ім'я та по батькові)

М.П.

Декларація про відповідність видана згідно з добровільною схемою сертифікації ООВ ТОВ «ВСЦ «ПРОДЕНТЕСТ» під номером. Декларація дійсна за умови нанесення маркування відповідності на продукцію, чи упаковку.

UA.TR.YT.D.062303-22	**23.06.2022 р.**	**22.06.2024 р.**
(обліковий №)	(дата взяття на облік)	(термін дії обліку)

Завідувач сектору сертифікації/ оцінки відповідності продукції
М.П. **Анна КУРОЧКІНА**

Чинність декларації можна перевірити за тел +3 8 056 744 30 14 +3 8 050 486 22 92

Ventservice

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

Form QAT_10-M05, version 00, effective since March 25th, 2020

Certificate of Compliance

No. 0D220131.VS0Q45

Certificate's Holder:	«Vent-Service» LLC Office 230, 95 (A2) Vidradnyi avenue Kyiv, 03061, Ukraine
Certification ECM Mark:	European Conformity – Type Approved
Product: Model(s):	Air Handling Units *(see the following annex)*
Verification to:	Standard: EN 60335-1:2012/A13:2017, EN 60335-2-80:2003/A2:2009, EN 60204-1:2018, EN 55014-1:2017/A11:2020, EN 55014-2:1997/AC:1997, EN 61000-3-2:2014, EN 61000-3-3:2013 related to CE Directive(s): 2006/42/EC (Machinery) 2014/35/EU (Low Voltage) 2014/30/EU (Electromagnetic Compatibility)

Remark: This document has been issued on a voluntary basis and upon request of the manufacturer. It is our opinion that the technical documentation received from the manufacturer is satisfactory for the requirements of the ECM Certification Mark. The conformity mark above can be affixed on the products accordingly to the ECM regulation about its release and its use.

Additional information and clarification about the Marking:

CE

The manufacturer is responsible for the CE Marking process, and if necessary, must refer to a Notified Body. This document has been issued on the basis of the regulation on ECM Voluntary Mark for the certification of products. RG01_ECM rev.3 available at: www.entecerma.it

Issuance date: 31 January 2022

Expiry date: 30 January 2027

Reviewer
Technical expert
Amanda Payne

Approver
ECM Service Director
Luca Bedonni

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

ACCEPTANCE CERTIFICATE

The “**PoolStar**” ventilation unit

manufactured according to the Order,

has passed acceptance tests, complies with the requirements of

TU U 28.2-35851853-006:2020

and is recognized as suitable for operation..

Date of issue "_." _____ 20___ year

Controller

Signature _____M.P.

Aerostar Ventilation Services LLC
03061, Kyiv,
95 A2 Vydradny Avenue
Tel.: (044) 594 71 08
www.aerostar.ua

Ventservice

START-UP PROTOCOL

type of installation		object	
factory number		address	
manufacturer		Date	
Customer			

EQUIPMENT OPERATION PARAMETERS

	by passport	actually
supply voltage, V		
supply fan motor current, A		
current strength of the exhaust fan motor, A		
air flow rate of the supply system, m3/h		
exhaust air flow, m3/h		
Compressor current (s), A (* optional)		

AUTOMATION TESTING

shutdown in case of fire		supply air temperature sensor	
phase control relay		outside air temperature sensor	
threat of calorifer freezing		exhaust air temperature sensor	
threat of exchanger freezing		room air temperature sensor	
overheating of electric heater		servo drive of supply flap	
humidity converter		coolant temperature sensor	
Gigrostat		servo drive of exhaust flap	
circulation pump		servo drive of recirculation damper	
remote control		servo drive of recuperator flap	
refrigeration unit accident		pressure drop sensors on fans	
servo drive of heater valve		pressure drop sensors on filters	
servo drive of cooler valve		rotation of the rotary recuperator	
switching on the refrigeration unit		accident of the rotary recuperator	

CHECK OF AIR PREPARATION PROCESSES

heating		utilization	
cooling		hydration	
recirculation		draining	

THE PROTOCOL WAS DONE

Full name		Full name	
position		position	
firm		firm	
signature		signature	

Routine maintenance.

№ Order	Name of the person performing scheduled maintenance	Date	Type of work	Signature or seal

Ventservice

Routine maintenance.

№ Order	Name of the person performing scheduled maintenance	Date	Type of work	Signature or seal

Routine maintenance.

№ Order	Name of the person performing scheduled maintenance	Date	Type of work	Signature or seal

Ventservice

Routine maintenance.

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№ Order	Name of the person performing scheduled maintenance	Date	Type of work	Signature or seal

Ventservice

Routine maintenance.

№ Order	Name of the person performing scheduled maintenance	Date	Type of work	Signature or seal

Ventservice

Complaint form

Company name	
Contact (responsible) person	
Product name (type)	
Serial (factory) number	
Date of shipment and invoice number	
Place and address of the product application	
Date of the malfunction	
Circumstances under which the malfunction was detected	
Faulty component	
Description of the problem (nature of the fault, events that preceded the fault – natural phenomena, power voltage drops, etc.). Type, connection diagram, currents on the phases, mains voltage. Rotation direction. Temperature, pressure and composition of the heat-and-cooling agent. Air temperature that is transferred. Place of installation and location in the system	
Measures taken (your actions to identify and solve the problem)	
Note	

Responsible person /_____/

Attention:

If the complaint is found to be unreasonable (the product has no defects, or it is found that the defects resulted of circumstances for which the Distributor/ Manufacturer is not responsible) the Customer/Buyer shall compensate the Distributor/Manufacturer the costs incurred during the consideration of the complaint, including the costs of expert examination.
The cost of claim works is calculated by the following formula:
X= S*Y + Q*Z+M, where
S – cost per man-hour of the Employee for the type of work performed;
Y – the number of man-hours as a measure of the labor intensity of the work performed;
Q – rate per kilometer;
Z – actual number of kilometers;
M – cost of materials used to perform the work.
The cost per man-hour for the work performed is $7.5.
Guarantee obligations do not apply to:
- Equipment parts and operating materials which are subject to natural physical wear and tear (filters, seals, belts, light bulbs, fuses, etc.).
- Damages to the Equipment resulting from:
a) foreign objects or liquids entering the Equipment,
b) natural phenomena,
c) environmental impact,
d) animal activity,
h) unauthorized access to the units and parts of the Equipment by persons not authorized to perform the abovementioned actions,
h) all mechanical damages and breakdowns that occurred as a result of non-compliance with the recommendations and requirements of the documentation, including the "Installation and Operation Manual", passport, norms, standards and rules of works conductions.
- Various modifications, adjustments in operating parameters, alterations, repairs and replacement of parts of the Equipment, carried out without the consent of the Manufacturer or his representative.
- Current routine works, inspections of equipment, configuration and programming of controllers, which are carried out in accordance with the requirements of the "Installation and Operation Manual" within the normal functioning of the Equipment.
- Damages caused by downtime of the Equipment during the waiting period of guarantee service and any damage caused to the client's property, except for the Manufacturer's Equipment, are not subject to compensation.

For note

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Виробничі потужності:
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Сервісна підтримка:
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тел.:+380674464150
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https://aerostar.ua