



**OPERATING INSTRUCTIONS FILTER PLANT FS-AS  
2/4/6/8/10/12/16/20**



## Contents

<b>1. General information</b> .....	4
<b>1.1 Signs</b> .....	4
<b>1.2 Safety instructions</b> .....	5
<b>1.3 Application of the plant</b> .....	5
<b>1.4 Nameplate</b> .....	7
<b>1.5 Technical specifications</b> .....	8
<b>1.6 Description of available options:</b> .....	8
<b>2. Preparatory measures for installation</b> .....	12
<b>2.1 Tools required</b> .....	12
<b>2.2 Personal protective equipment</b> .....	12
<b>2.3 Contents of the product</b> .....	13
<b>3. Installation</b> .....	13
<b>3.1 Preliminary instructions</b> .....	13
<b>3.2 Positioning</b> .....	13
<b>4. Setup and connection.</b> .....	14
<b>4.1 Electrical connection</b> .....	14
<b>4.2 Connecting the compressed air and setting up the filter cleaning system</b> .....	17
<b>4.3 Connecting the RPB valve control units.</b> .....	19
<b>5. Operation of the plant</b> .....	21
<b>5.1 Operation</b> .....	21
<b>5.2 Operating conditions</b> .....	22
<b>5.3 Cleaning of equipment, cleaning/replacement of filters.</b> .....	23
<b>5.4 Regular inspection</b> .....	24
<b>5.5 Regular maintenance</b> .....	25
<b>5.6 Mounting/dismounting the fan impeller</b> .....	25
<b>5.7 Dismantling the fan impeller caliper</b> .....	25

<b>5.8 Cleaning the impeller .....</b>	<b>26</b>
<b>5.9 Filter elements .....</b>	<b>26</b>
<b>6. Other provisions .....</b>	<b>27</b>
<b>6.1 Inspection .....</b>	<b>27</b>
<b>7. Troubleshooting tips .....</b>	<b>28</b>
<b>7.1 Possible fan malfunctions and how to fix them .....</b>	<b>30</b>
<b>8. Terms of warranty .....</b>	<b>31</b>
<b>9. Marks and notices .....</b>	<b>33</b>
<b>10. Appendices .....</b>	<b>34</b>

# 1. General data

## 1.1 Signs



**Warning sign: ATTENTION! Important information notes for the safety of personnel and the strict observance of these instructions.**



Observe the operating and installation instructions for the equipment.



Wear personal protective equipment for respiratory and eye protection.



Protective gloves. Wear protective gloves to prevent damage from cuts caused by sharp edges of parts.



Work clothes. Wear protective clothing to protect your body from damage during installation.



Work shoes. Wear safety shoes to protect your feet from falling heavy parts during assembly.



Work with additional hearing protection.



Wear a hard hat.



Beware of moving objects (do not carry out repairs or adjustments when the equipment is in operation)



Do not smoke or use flammable materials in the vicinity of the installation.



Beware of high voltage.

## 1.2 Safety instructions

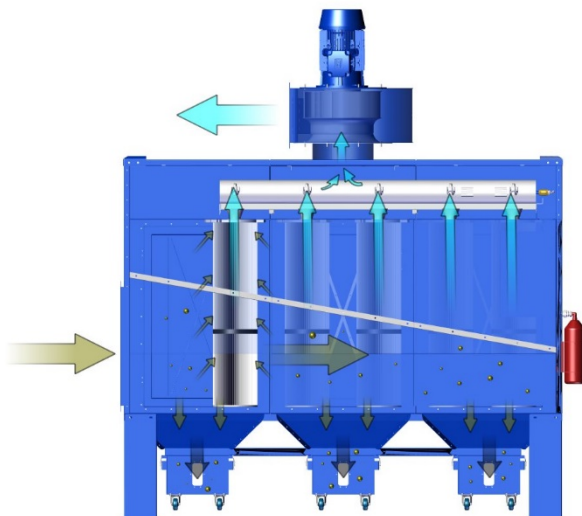
These installation and operating instructions must be read and understood by the person who installs, operates and maintains the system.

The installation of the connection and the initial commissioning of the system may only be carried out by or under the supervision of qualified persons. Observe the installation regulations and standards and the workplace regulations. Wear personal protective equipment when performing any work on the filtering plant and its components.

Do not carry out any work that may cause sparks and open flames within a radius of 2 m near the units with the optional energy saving system.

Always disconnect the unit and all its electrical components from the mains before starting repair work.

## 1.3 Application of the plant



**The FS-AS** filter units are designed to clean the air from solid dust particles, fumes, and particulate matter.

The units can be used in various industries for high-quality air filtration provided that the concentration of solid particles in the polluted air is low.

The design consists of standard modules that are manufactured, assembled and tested at the factory, which reduces assembly operations before commissioning. The unit is made of steel with a thickness of 2 to 3 mm, followed by powder coating.

The contaminated air containing waste particles from the production process is transported to a settling chamber where heavier particles settle, after which the contaminated air is transferred to a filter unit for final purification. The purified air is returned to the work area. Filtered particles are collected in a container

The filter unit can clean the air from particles as small as 0.3 microns.

As standard, it is equipped with an anti-static cartridge filter C2.1000.10.ANT

***Can be optionally equipped with:***

1. Cartridge filters C2.1000.16.WEBFR made of non-combustible polyester and coated with nanofibre for cleaning air from welding fumes;

The filters are made in Italy and comply with EU quality standards.

Purification efficiency is 100%.

2. Cartridge filters C2.1200.20.PTF with PTFE membrane, which has moisture and oil repellency properties, are designed to clean the air from fine particles with a size of 0.3 microns and below.

The filters are manufactured in Italy and comply with EU quality standards.

The degree of air purification from solid particles is 100%, which makes it possible to return the purified air to the workshop or discharge it into the atmosphere without harming the environment.

During operation, the cartridge filters are alternately cleaned by pulses of compressed air, which is accumulated in the built-in receiver at a pressure of 6-6.5 bar. The duration of the pulses and the interval between them are automatically controlled by the controller, which also allows these parameters to be changed to optimise the dust load depending on the specifics of the process.

The FS-AS filter unit includes: filter compartment; sedimentation chamber; fan with high-quality impeller and high aerodynamic efficiency; dust discharge containers; support legs; inlet for air flow containing dust and gases; outlet for filtered air; inspection door of the filter area; inspection hatch of the clean air area; integrated receiver with quick air release valves; integrated automatic control panel; fire extinguisher.

## 1.4 Rating plate





The designation is shown on a nameplate attached to the equipment, which contains information about the equipment. The plate is placed in a conspicuous place.

Identification plate:

**Model/series and model**

Data of manufacture

**Serial number**

<b>Ukraine, Transcarpathian region, Kolchyno village, Lokoty str., 12/16 tel.: 00380445921070 www.aton-service.com.ua</b>					
<b>TYPE:</b>	FS-AS.10.Bd.				
<b>NR.:</b>	2024/0003/03/003				
<b>A</b>	23,2	<b>HZ</b>	50	<b>KG</b>	700
<b>KW</b>	11	<b>PH</b>	3	<b>Rot.</b>	-
<b>RPM</b>	2960	<b>V</b>	230/400		
<b>Year of construction:</b>	2024	<b>ISO 9001:2015</b>			




## 1.5 Technical specifications

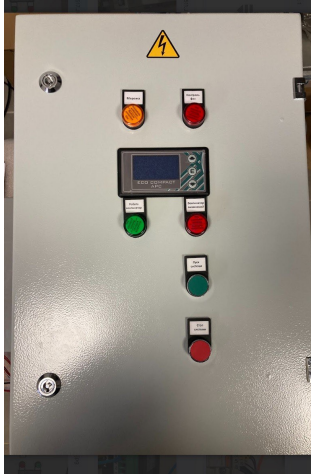
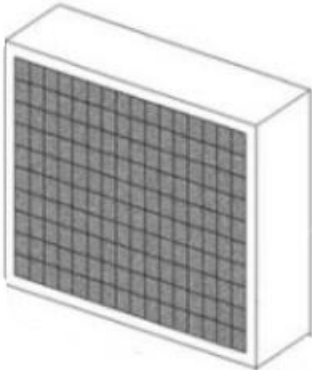
The line of filtering plants of the FS-AS 2/4/6/8/10/12/16/20 type, Aton Service LLC supplies the market with the following sizes of FS-AS 2/4/6/8/10/12/16/20. The characteristics of each unit are given in the table below:

Name	FS-AS 2	FS-AS 4	FS-AS 6	FS-AS 8	FS-AS 10	FS-AS 12	FS-AS 16	FS-AS 20
Capacity, m <sup>3</sup> /h	2000	4000	6000	8000	10000	12000	16000	20000
Fan	RM-AS 350/2/2,2 Es.5	RM-AS 450/2R/5,5 Es.5	RM-AS 450/2/7,5 Es.5	RH-AS 500/2R/11 Es.5	RH-AS 500/2R/11 Es.5	RH-AS 500/2/15 Es.5	RL-AS 500/2/18,5 Es.5	RL-AS 500/2R/15 Es.5 - 2 pcs.
Total pressure, Pa	2750	3150	2750	3250	2950	3100	2700	3090
Power, kW	2,2	5,5	7,5	11	11	15	18,5	30
Noise level, dB	80*	80*	80*	80*	80*	85*	85*	80*
Number of filters, pcs.	2	4	6	8	10	12	16	20
Filter type	C2.500.08ANT/ C2.500.08.WEB FR	C2.1000.10ANT/C2.1000.16.WEBFR/C2.1200.20.PTFE						
Filter surface, m <sup>2</sup>	16/16	40/64/80	60/96/120	80/128/160	100/160/200	120/192/240	160/256/320	200/320/400
Filter particle size, μm	≥5/≥5/≥0,3							
Operating temperature °C	Up to + 45 °C							
Method of accumulation	Removable container							
Number of containers	1	1	2	2	3	3	4	4
Storage volume of containers, m <sup>3</sup>	0,038	0,05	0,1	0,1	0,15	0,15	0,2	0,2
Dimensions AkhVhN (height of the installation with containers), mm	780x780x1783	1200x980x3200	1200x1600x3200	1200x2000x3400	1200x2940x3400	1200x2940x3400	1200x3920x3400	1200x3920x3400
Compressed air consumption per l/min	180							
Compressed air requirements	Compressed air quality requirements - not worse than class 2-3 according to ISO 8573-1. Working pressure 6.0-6.5 bar							
ESU option	-	ESU5,5	ESU7,5	ESU11	ESU11	ESU15	ESU18.5	
Option "remote control"	SA FS AS							
Option "spark arrester"	Sf FS AS							

\*- Noise level measurements, measured with all machines connected and at the air flow rate shown in the table.

## 1.6 Description of the available options:

Article no.	Product name	Photo	Description.
813010.0000.1	<b>ESU - a node for saving energy saving unit</b>		<p>Allows the fan speed to be adjusted according to the currently running machine. When the machine is switched on, a signal is sent to the control panel, the pneumatic damper opens of the machine air duct, and the fan starts. The system automatically controls the fan speed, providing the necessary power according to the machine's requirements. The same thing happens when the machine is switched off. It is recommended to use the energy saving unit in production facilities with a large number of machines (more than five), but when not all machines are running simultaneously.</p>
813020.0000.06	<b>Filter contamination sensor</b>		<p>Controls filter contamination by the pressure difference between the inlet and outlet of the filter unit. Based on its readings, you will be warned in advance of the need to carry out maintenance in accordance with the operating instructions. This will improve the degree of air purification.</p>
813020.0000.08	<b>Pressure control sensor</b>		<p>The filter regulator with pressure gauge is used to purify compressed air. It also regulates the pressure and maintains it at the required level. The combination of a filter and regulator in one unit reduces the size of the unit compared to two separate units. The device is equipped with a pressure gauge for measuring pressure. The filter has a 3/8 internal thread, which is used to attach the connecting elements of the pneumatic line.</p>
830000.0000.04	<b>Connection plug (from 7.5 kW)</b>		<p>The connection plug is designed for quick and safe connection of electrical equipment to power sources.</p>
807161.0204.01	<b>Spark arrester</b>		<p>The spark arrester consists of a separate housing with integrated copper plates. The order of their arrangement determines the repeated rotation of the air flow, which ensures that sparks and molten particles strike the copper plates and lose their energy. The spark trap can be mounted directly on the filter and ventilation unit or integrated into the air duct. The cover facilitates maintenance and cleaning.</p>

<p>813000.0000.01</p>	<p><b>Remote control unit</b></p>		<p><i>All elements of the automatic control system, except for the actuators, are supplied in a separately manufactured metal cabinet with external controls, which can be installed separately from the filter unit. Additional cable and wire products are required for connection to the actuators.</i></p>
<p>8320018.0000</p>	<p><b>Carbon filter CF</b></p>		<p><i>A <b>carbon filter</b> is a filtration element that uses activated carbon to clean the air from various types of contaminants, odours and harmful gases. The basic principle of operation of a carbon filter is the adsorption of harmful substances on the surface of activated carbon. Activated carbon has a very large surface due to its porous structure. Each carbon granule can have millions of pores that have the ability to hold pollutant molecules. When air or gases pass through the activated carbon filter, pollutants and odours are trapped on the surface of the activated carbon, while clean air passes on.</i></p>



## 2. Preparations for installation

### 2.1 Tools required

The set of tools required for the installation of the unit is as follows: a wrench with a set of bits (or a set of ratchet heads), a sealant gun, a set of keys, a ladder.



### 2.2 Personal protective equipment



Protective gloves. Wear protective gloves to prevent damage from cuts caused by sharp edges of the parts



Work clothes. Wear protective clothing to protect your body from damage during installation.



Work shoes. Wear safety shoes to protect your feet from falling heavy parts during assembly.



Personal respiratory and eye protection.

## 2.3 Contents of the product

Before starting the installation work, check that all the required parts and accessories are present in the list of contents of the unit.

Depending on the capacity of the system, it consists of the following main parts:

- Frame made of panels, 2.0 - 4.0 mm thick;
- Cartridge filter C2.1000.10.ANT
- Compressed air tank with solenoid valves;
- High efficiency fan;
- Container for discharging dust;
- Control panel.

The complete equipment of the plant with its full list is reflected in its contract (standard or extended). Standard equipment is the equipment of the manufacturer, extended equipment - additional options provided by the customer of the product.

## 3. Installation

### 3.1 Preliminary instructions

- The unit is delivered pre-assembled and does not require any operations for its installation.
- For easy installation of the unit, use (*see Appendix 1*), drawings and specifications.
- For compressed air and electricity connections to the control cabinet, refer to the installation wiring diagram (*see Appendix 2*).

### 3.2 Installation

- The location of the plant at the place of operation must allow for convenient connection of compressed air and electricity to the control panel, as well as for maintenance of the filtering plant (*see Appendix No. 3*)
- The floor foundation for the plant must be level and of sufficient strength "*minimum 200 mm reinforced concrete*".
- At least 1 m must be left on all sides and on top of the panel of the cleaned air outlet from the plant for maintenance. (*See Appendix 3*)
- The equipment must not be installed near sources of open flame or flammable substances.
- The electrical safety of this equipment is achieved only when properly connected to the grounding system (*in accordance with electrical safety standards*).

## 4. Setup and connection.

### 4.1 Electrical connection

**WARNING:** When the system is switched off and after a fault has been cleared, the system equipment continues to operate until the cycle is complete. For safe work on the equipment, it is necessary to disconnect power from the equipment by means of circuit breakers (input switch) and take measures to prevent the possibility of accidental switching on / in accordance with the Rules for Safe Operation of Consumers (ROSC).



**WARNING. After connection, the control panel and metal parts must be earthed after connection.**

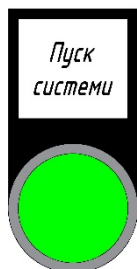
Operation of the aspiration system control panel includes control of the following elements:

- Fan;
- Air valves;

Filter cleaning is controlled (FS-AS) by time relays KT3 and KT4 (CRM-2H), the TIME1 control sets the valve activation time (recommended 0.5 s), the TIME2 control sets the pause time between activations. The KT1 time relay ensures the operation of the cleaning system after the fan is switched off. The time relay KT2 cyclically switches the cleaning operation from one valve to another.

The FS-AS 2/4/6/8/10/12/16/20 models use a controller for the compressed air filter cleaning system.

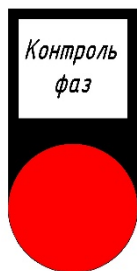
The following control buttons and light indication are located on the front panel of the cabinet:



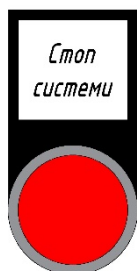
SB2 Button - switch on the aspiration system.



H1 Lamp - signalling the presence of electrical power supply.  
*It is activated when the main dispenser is switched on and there is voltage*



H2 Lamp - signalling of the mains status.  
*It is activated in case of over- or under-voltage or in case of a phase failure*



SB1 Button - switch off the aspiration system.



H4 Filter status alarm.

*Activated in case of excessive pressure loss on the filters*



H3 Aspiration system operation.

*Activated in case of normal trouble-free operation of the system*

The electrical control circuit of the system is shown in (*Appendix 4*) "Without ESU energy saving module" and in (*Appendix 5*) "With ESU energy saving module".

## 4.2 Connecting the compressed air and setting up the filter cleaning system

During operation, the membrane filters are cleaned one by one by pulses of compressed air directed at the inner surface of the filter, which is accumulated in the built-in receiver at a pressure of 4-6.5 bar. The duration of the pulses and the interval between them are automatically controlled by the controller, which also allows you to change these parameters to optimise the dust load depending on the characteristics of the technical process that takes place in the sources of air pollution.



**WARNING. For normal operation of the self-cleaning system, the compressed air must be degreased and dehydrated and comply with class 2 or 3 according to ISO 8573-1.**

If it is not possible to meet these conditions, the manufacturer does not guarantee trouble-free operation of the system!

A G 3/8" (female) connection is provided on the service side of the system for connecting compressed air to the system. The compressed air connection point is shown in (Appendix 2.)

The recommended supply air pressure for normal operation should be in the range of 4-6.5 bar.

The **FS-AS** models use the RPB remote valve control unit and the compressed air filter cleaning system controller.

Standard settings of the self-cleaning system:

- Compressed air pulse duration from the receiver to the filter element - 0.2 seconds
- Delay between consecutive pulses to each filter - 60 seconds

You can change these parameters on the EcoCompass controller.

**WARNING.** Before changing any settings, contact the manufacturer's technical department for advice.

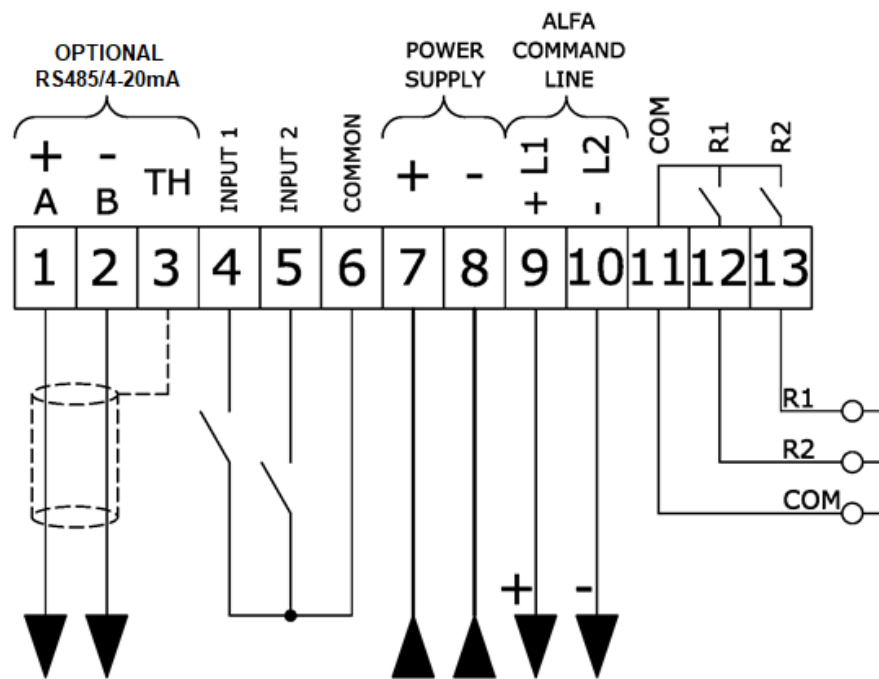


RPB valve control unit






Controller

- 1= RS485 (A) or 4-20 mA ( )+
- 2= RS485 (B) or 4-20 mA ( )-
- 3= SCREEN
- 4= INPUT 1
- 5= INPUT 2
- 6= GENERAL INPUT
- 7= POWER +
- 8= POWER -
- 9 =+ RPB
- 10= - RPB
- 11= COMMON RELAY OUTPUT
- 12= RELAY OUTPUT 1 (NO)
- 13= RELAY OUTPUT 2 (NO)



Power supply of the controller is 24VAC/DC, control units are powered from the controller.

Element	Description/purpose
Display	Backlit. Displays all functions, measured values and alarms of the controller.
	Scrolling through the main menus and programming parameters. Increase the value of programmable parameters.
	Access to the programming menu and values of individual parameters. Confirmation of entry and storage of programmable parameter values.
	Access the alarm reset functions and view the programmable parameters Reducing the value of programmable parameters

### 4.3 Connecting the RPB valve control units.

As standard, the units are mounted, ready for operation and do not require any intervention before commissioning.

Only connect the option modules when the supply voltage is switched off. Failure to observe this requirement may result in:

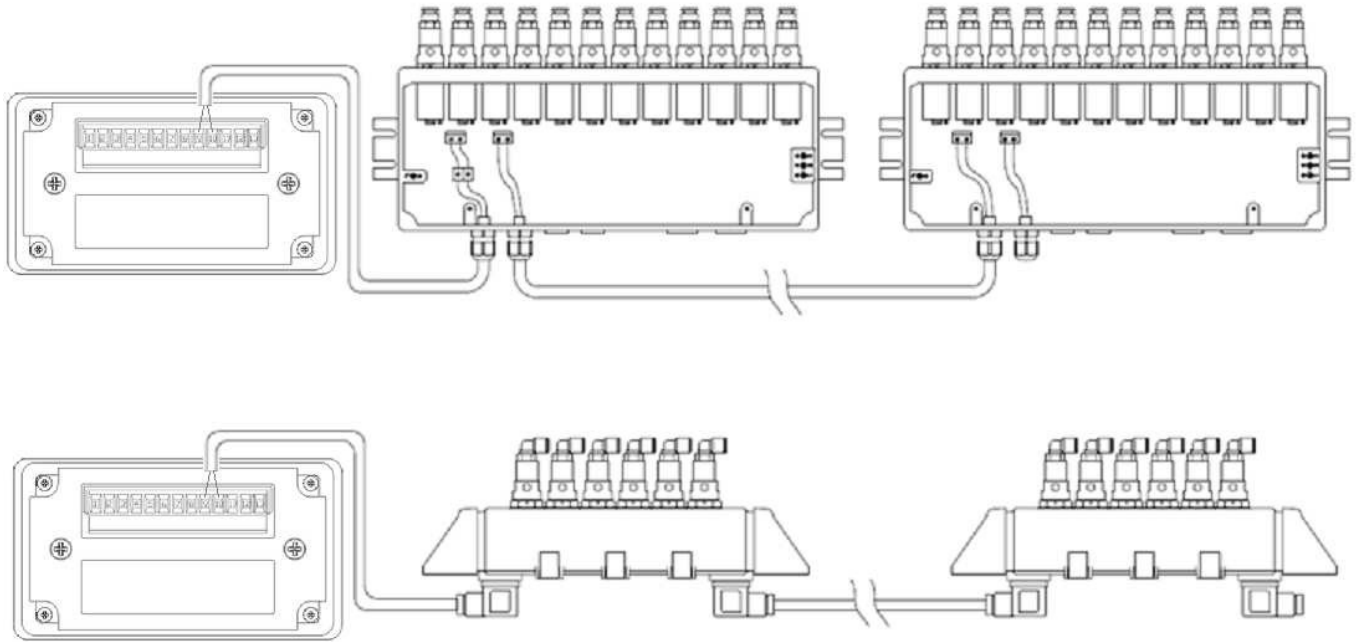
1. Risk of electric shock.
2. Damage to the control board or remote valve control units (RPBs) due to improper wiring or voltage supply before careful inspection.
3. Module recognition error.



**WARNING. If the system includes several RVR units, the pole designations and sequence must be observed when switching them.**

**WIRE SIZE:** The connection between the ECO-COMPACT APC economiser and the REMOTE POWER BOX (RPB) is made with wires with a minimum cross-section of 1.5mm<sup>2</sup>. The maximum length depends on the cross-section of the cable conductors.

Cable length	Cross-section
from 0 to 50 m	1.5
51 to 100 m	2.5
101 to 200 m	4 mm <sup>2</sup>
from 201 to 300 m	6 mm <sup>2</sup>



*The controller must be set up by the manufacturer's personnel before shipment of the equipment or during commissioning!*

## 5. Operation of the installation



**WARNING. Do not start the unit with the air duct system dampers closed and/or without connected air ducts.**



**WARNING! Before starting the aspiration unit, check**

- **compressed air connection and availability;**
- **the dust collecting containers are correctly attached;**
- **availability of electrical power supply;**

### 5.1 Operation

To switch on the unit, press the "System start" button on the control panel, after which the fan motor and self-cleaning system start. The contaminated air is sucked through the rectangular inlet by the fan, which creates a vacuum in the unit housing. M8 press nuts are placed around the perimeter of the opening for mounting the rectangular flange of the air duct system.

The air enters the dust settling chamber, passes over the dust collection containers and is then distributed to the filter elements.

The coarse and medium fraction of dust is immediately discharged into the containers (intermediate hopper). Fine and partially medium dust is filtered out through the filter material. The trapped dust gradually accumulates on the outer surface of the filter element and, according to a predetermined algorithm, is periodically knocked into the container (intermediate hopper) by air pulses from the self-cleaning system.

To stop the operation of the filtering unit, press the "System Stop" button on the control panel. After the fan stops, the self-cleaning system will continue to operate in the "post-cleaning" mode for three cycles.

The collected dust can be unloaded from the containers only after the unit is switched off, the fan stops completely and the "post-cleaning" operation is completed.

To connect the container to the unit, slide it under the seat and secure it with four metal lever clamps by moving their handles to the lower position.

To disconnect the container from the unit, lift the clamp handles to the upper position. The clamps have a threaded force adjustment.

## 5.2 Operating conditions

Indoor environment:

- Air temperature  $-10^{\circ}\text{C}$   $+45^{\circ}\text{C}$
- Air humidity no higher than 90 %.
- Maximum humidity of the incoming air is not higher than 50%
- Maximum altitude above sea level 1000 metres

The equipment is not designed to process gas other than atmospheric gas, unless otherwise provided by the written consent of the Manufacturer.

This unit is designed and manufactured to handle any mixture of air and non-flammable dust.

Other flammable materials may be transported only with the written consent of the manufacturer.

Do not use the filtering units for filtering air containing paint, large and long fractions of sawdust, rags, metal foreign bodies or any other materials that may damage the fan, filters and the unit.

Filter elements and storage containers may only be removed for maintenance or repair purposes and only when the control cabinet is switched off. Do not tamper with the unit while it is in operation.



**WARNING. All work must be carried out with the equipment switched off**

### **5.3 Cleaning the equipment, cleaning/replacing filters.**

To clean the equipment, perform the following operations:

- Disconnect the equipment from the power supply by turning the main switch to the "Off" position or disconnect the power outlet from the 3P+PE+N power supply and wait until the fan stops completely;
- Disconnect the containers, unload the accumulated material.
- Open the inspection door and visually inspect the filter elements, clean the filter if there are dust deposits on it.
- If the filter is damaged, disconnect the filter retaining rings and replace it.
- Clean the system from possible dust deposits.
- Replace the waste containers.

The above activities must be carried out using personal protective equipment.

Protective gloves. Wear protective gloves to prevent damage from cuts caused by sharp edges of parts.



Work clothes. Wear protective clothing to protect your body from damage during installation.



Work footwear. Wear safety shoes to protect your feet from falling heavy parts during assembly.



Personal respiratory and eye protection.





**WARNING. When performing cleaning operations, beware of any sources of ignition (cigarettes, flames, sparks).**

### **5.4 Regular inspection**

Regular inspection of the plant and filter elements is essential to ensure an adequate level of safety and to prevent the risk of explosion and fire, which can be caused by the deposition and accumulation of flammable particles inside the filter plant. Deposits and accumulations of flammable dust particles create a potentially explosive dust cloud when moving, so try to keep the amount of such deposits and accumulations to a minimum. Deposits can also ignite if they come into contact with hot surfaces, sparks and flames.

## **5.5 Regular maintenance**

### **Every 160 operating hours:**

- Remove and clean the filter elements, replace if necessary.
- To remove any possible accumulation of particulate matter in the air ducts, open all dampers and switch on the fan for a few minutes (The connected equipment to the filtering unit must not be running).
- Maintenance of the fire extinguisher - according to DSTU 4297:2004

### **Every 600 hours of operation:**

- Check the noise of the rotating parts of the motor, impeller, bearings.

### **Every 1200 hours of operation:**

- Check for tightness of bolts of connected parts.

### **Every 2400 hours of operation:**

- Check the balance of the fan impeller(s)

## **5.6 Mounting/Dismounting the fan impeller**

- Loosen the bolts and nuts securing the fan and remove the fan.
- Remove the fan inlet nozzle (nozzle).
- Remove the retaining bolt and washer that secure the impeller to the shaft.
- Remove the impeller from the motor shaft using a puller, inserting the washer between the caliper and the shaft to avoid damaging the shaft.
- Reassemble in the reverse order.
- 

## **5.7 Dismantling the fan impeller caliper**

- Remove the impeller as described above.
- Remove the bolts securing the caliper and, if necessary, replace the internal parts of the caliper and bearings.
- Reassemble in the reverse order.

## 5.8 Cleaning the impeller

The impeller is statically and dynamically balanced according to the permissible vibration levels, so it is important to keep it clean to maintain the balance. Oil vapours, resins, air humidity and other factors cause dust, grease and other materials to adhere to the impeller, causing it to become unbalanced, which can damage the motor and fan housing.

This is indicated by increased vibration and noise.

To clean the impeller, first of all, check whether the motor is disconnected from the power supply. All work must be carried out through the fan inspection hatch. In case of a casing without a hatch, it is necessary to remove the fan from the seat to gain access to the impeller through the inlet and outlet openings of the casing. It is recommended to use coarse brushes and dry cloths. During cleaning, it is necessary to remove all contaminants, as their residues can cause imbalance.

Aton Service LLC is not responsible for possible damage to the motor, housing and fan impeller itself in case of lack of maintenance.

## 5.9 Filter elements

- Average shelf life. If the filter element is used to work with air containing dry, crushed, non-fibrous materials, if it is protected from foreign objects that can damage the filter material, and in the absence of moisture, the average service life of the filter elements is 12 - 24 months at a single shift operation of 8 hours/day.

- Damage. The filter material can be damaged mechanically, by excessive temperature or high humidity. Any damage leads to the through passage of contaminated air and loss of performance.

- Installation of filter elements. Filter elements are replaced when worn or damaged through the inspection door on the service side. Each filter has a plastic disc with three slots through which bolts and washers are passed and screwed into the nuts pressed into the filter seat. To remove the filter, unscrew the bolts (8-10 turns) and turn the filter to release the grooves from the bolts. Reinstall the filter in the reverse order. Before installing the filter, check the presence and condition of the rubber O-ring located on the filter neck.

- Maintenance. To maintain the filters in working condition, it is necessary to periodically carry out a visual inspection to detect damage and dust deposits, if any, it is necessary to clean the filter from dust - with compressed air.

## 6. Other provisions

### 6.1 Inspection



**WARNING.** The following operations must be carried out by qualified personnel with the equipment switched off.

Object of inspection	Frequency of maintenance	Work to be performed
Self-cleaning system	Once a month	Checking the functioning of the valves, checking for leaks
The fan	Once a month	Check for extraneous noise and vibrations
Filter elements	Once a month	Visual inspection, removal of dust deposits
Nuts and bolts	After the first 500 hours of operation and then once a year.	Check the tightness
Warning labels	Every six months	Check their integrity and legibility

## 7. Troubleshooting tips



**WARNING.** The following operations must be carried out by qualified personnel with the equipment switched off and only after contacting the Equipment Supplier.

FAULT	POSSIBLE CAUSE	REMEDY
The system does not suck in air.	1. Incorrect direction of fan rotation	1. Check the direction of rotation (see arrow on the fan housing).
	2. Dirty filters	2. Clean or replace the filter elements
	3. There is no power supply	3. Connect the power supply, check the voltage, check the presence of phases
	4. Closed dampers	4. Check and open the dampers
	5. Dust collecting container disconnected	5. Check for leaks and place the container in the operating position
	6. Open the door on the unit	6. Close the door on the unit
	7. The unit is installed in violation of the installation requirements	7. Comply with the installation requirements
	8. The inspection hatch is open	8. Close the inspection hatch
9. Sealed air duct	9. Find and eliminate	

FAULT	POSSIBLE CAUSE		REMEDY
Increased vibration and noise	1. The fan is rotating in the opposite direction	1. Replace the phasing (contact the supplier for detailed instructions)	
	2. Unbalance	2. Clean the impeller	
	3. Bearing failure	3. Replace the bearings	
	4. Disconnected suction air duct	4. Connect the air duct	
	5. The filtering equipment is not installed on a flat surface or is not fixed to it	5. Install on a flat surface and secure it	
	6. Compressed air supply pressure is higher than 6.5 bar	6. Install the control device and adjust according to the instructions ( <i>Appendix 2</i> )	
Dust passes through the filter elements	1. The filter is damaged	1-2. Replace the filter elements	
	2. The filter has expired.		
	3. The filter is not fixed or leaking	3. Attach the filter and seal it	
	4. Compressed air supply pressure is higher than 6.5 bar	4. Install the control device and adjust according to the instructions ( <i>Appendix 2</i> )	
	5. Dust characteristics are outside the operating parameters of the filters	5. Replace the filter elements according to the dust characteristics.	
Dust is coming out of the storage containers and from under the doors/hatches	1. The dust container is damaged.	1. Replace the dust container, check for sealing rubber on the seat.	
	2. Improperly attached to the seat (leakage occurs)	2. Check the correctness of the container fixing	

## 7.1 Possible fan malfunctions and their solutions

FAULT	POSSIBLE CAUSE	REMEDY
The volume of air being exhausted has decreased	1. Incorrect direction of rotation	1. Check the motor phasing
	2. Partial blockage of air ducts or air intake points	2. Clean the air ducts, check the dampers.
	3. Insufficient rotation speed	3. Check the current voltage, condition of electrical contacts.
	4. Dirty filters	4. Clean the impeller
	5. open door or inspection hatch	5. Clean or replace the filter elements
Difficult start-up	1. Excessive power consumption	1. Replace the electric motor
	2. Insufficient motor torque	2. Check the motor data according to the technical documentation
The power consumed by the fan exceeds the power specified in the technical documentation	1. Open inspection	1. Close the audit
	2. The main air duct is disconnected	2. Connect the air ducts
	3. The filter is damaged or missing	3. Replace or install the filter
Noise is too loud	1. Unbalanced impeller, offset from the housing	1. Check correct installation and condition of the impeller
High vibration	1. Unbalanced impeller or other rotating parts	1. Clean the impeller or replace it

## 8. Warranty conditions

• The warranty period for the equipment shall be 12 months from the date of signing of the invoice or acceptance certificate, but not more than 18 months from the date of shipment, unless otherwise specified in the contract.

• The warranty shall mean the Supplier's obligation to transfer to the Buyer a serviceable part (assembly) instead of a defective one free of charge, if the defect arose solely through the fault of the manufacturer. In this case, the replacement of the part (assembly) shall be carried out as soon as possible, but not later than 30 working days from the date of written notification of the Buyer of the defect, on the basis of a complaint report. The request for replacement of a component (part) shall be made by the Buyer exclusively in writing and shall include the equipment model, its serial number and description of the defect.

• The Buyer shall carry out the installation (dismantling) of the part. The Buyer may entrust the Supplier to perform this work. In this case, the terms of performance and payment for the work shall be agreed upon separately.

• Commissioning and installation of the equipment (if required) shall be performed only by the Supplier's specialists or third parties authorised by the Supplier, otherwise, if these works were performed by unqualified personnel and resulted in equipment failure, the warranty shall not apply to the equipment.

• In case of detection of defects in the Goods, the Buyer shall, within 5 (five) working days from the date of detection of defects, notify the Supplier in writing by sending the Supplier (by registered letter with notification) a complaint (defect statement).

• The Supplier shall, within 5 (five) working days after receipt of the complaint, send a specialist to inspect the equipment and draw up a complaint report, if necessary.

• The complaint report shall be signed by the Parties within five (5) working days after its preparation.

• The warranty obligations shall become invalid if the Buyer has violated at least one of the following conditions

○ the equipment is used for its intended purpose or in accordance with the relevant instructions of the Supplier or the manufacturer;

○ Scheduled maintenance of the equipment is carried out in accordance with the requirements of the Operating Manual;

○ any design changes and additions to the equipment shall be made only with the written consent of the Supplier;

○ the integrity of the seals provided for in the operational documents is ensured;

○ the equipment shall be operated by persons who have been trained and familiarised with the operating conditions, permitted and prohibited methods of operation, maintenance procedures, safety rules (for example, trained during commissioning);

○ compliance with all conditions of transport, conservation and transportation of equipment;

○ compliance with the operating and connection conditions of the equipment (electrical and pneumatic connections) and their compliance with the Equipment Operation Manual;

○ use only original spare parts authorised by the manufacturer;

○ compliance with the humidity conditions in the room where the equipment is operated (indoor installations).

• The Supplier's warranty obligations do not apply to cases of damage to the equipment due to force majeure, as well as to components or parts that have natural wear and tear as a result of operation, such as

○ drive belts;

○ rubber blades and plastic products, as well as products made of fabrics;

○ light bulbs, fuses and similar parts;

○ propellers, propeller nuts, gear segments, gears.

• The equipment or its component parts included by the Buyer in the complaint (claim) shall be provided to the Supplier's representative to verify its validity within 14 calendar days from the date of their failure. Otherwise, the part (assembly) will be replaced on a paid basis.

• Equipment defects caused by the following factors are not covered by the warranty

○ unqualified operation or external force (e.g. scratches, dents, other types of deformation);

○ contamination of any origin;

○ repairs and other actions in relation to the equipment, if they were performed by specialists who have not been trained by the Supplier or have not received permission from the Supplier;

○ damage caused during the transport of the equipment by the Buyer.

• The operating instructions for the equipment provided by the Supplier to the Buyer shall be binding. The Buyer shall have the right to request in writing an additional copy of the equipment operating manual, and the Supplier shall have the right to provide it in hard copy or electronic form.

- Claims of the Buyer for compensation for damages that may be related to the stoppage or downtime of the equipment shall not be accepted or considered by the Supplier.

- The warranty covers only the replacement of components or parts that, in the opinion of Aton Service LLC, have a factory defect. Any other obligations, any liability, full or partial, for other losses, damages or losses, direct or indirect, arising from the use or inability to use the equipment are not covered by the warranty.

### ***Safety instructions***

The filter unit removes dust and collects it in a bag/containers. If the dust is flammable (e.g. wood, plastic, aluminium, magnesium, etc.) and comes into contact with an ignition source (open flame, sparks), there is a risk of fire. The buyer must follow the instructions contained in these instructions for use and act in accordance with fire safety regulations. Particular attention must be paid to internal cleaning operations and cleaning of external parts to avoid excessive accumulation of flammable dust. It must also be ensured that no ignition sources such as embers, sparks, open flames, cigarettes or any other sources can enter through the air intake openings.

### ***Transport, packaging and storage***

- Transport (if carried out by the customer). Each equipment is inspected and tested before shipment. The warranty period starts from the date of delivery and covers the quality of workmanship and material. If any damage is detected during transport, the customer is responsible for it. The filtering unit is disassembled and wrapped in stretch film and cardboard. All packaging waste must be disposed of in accordance with the applicable laws. Transport must be carried out carefully to avoid overturning and falling of the equipment. Lifting and transport must be carried out with suitable vehicles and lifting equipment. Transport must be carried out in accordance with the applicable regulations to prevent possible accidents.

- Unloading. For unloading, use professional loaders or personnel with experience in unloading this equipment.

- Do not remove any elements used to lock parts of the equipment during transport until all parts have been unloaded and stowed.

- Follow the instructions when moving parts. Use the lifting and attachment point markings.

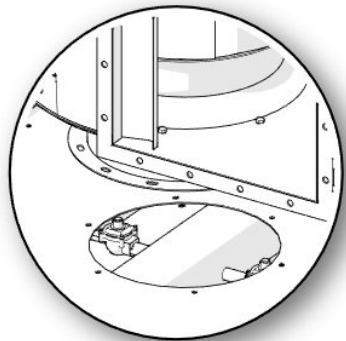
- Storage and handling (if performed by the customer). The equipment must be protected from the weather, dust and possible falling of foreign objects on the equipment. If a long period of time passes between the date of delivery and installation, it is necessary to check the fan periodically (every month) by turning it manually to avoid damage to the bearings; it is not allowed to leave the fan impeller stationary for a long period of time. The manufacturer is not liable for any damage to the equipment caused by prolonged downtime.

- The size and weight are given in the table of technical characteristics in paragraph 1.5.

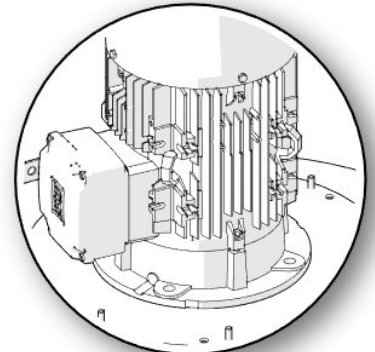
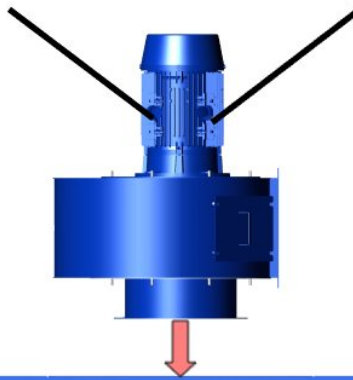


## 10. Appendices

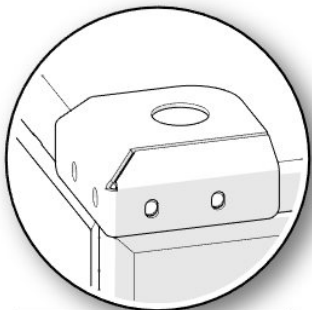
### Appendix 1 - Installation operations before operation



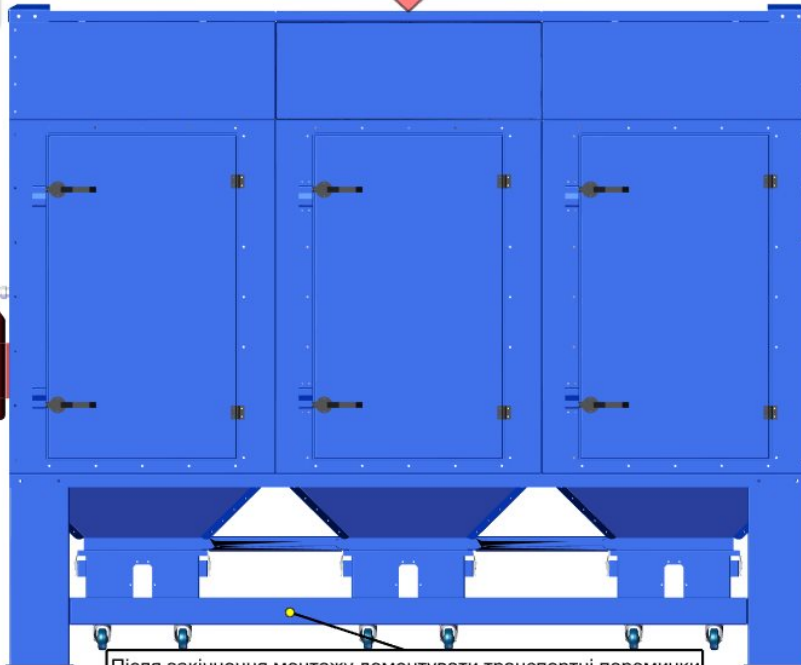
Встановити вентилятор та зафіксувати болтовим кріпленням



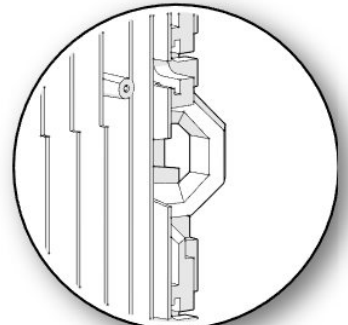
Використайте міні дві точки фіксації при транспортуванні



Транспортні рими для транспортування обладнання

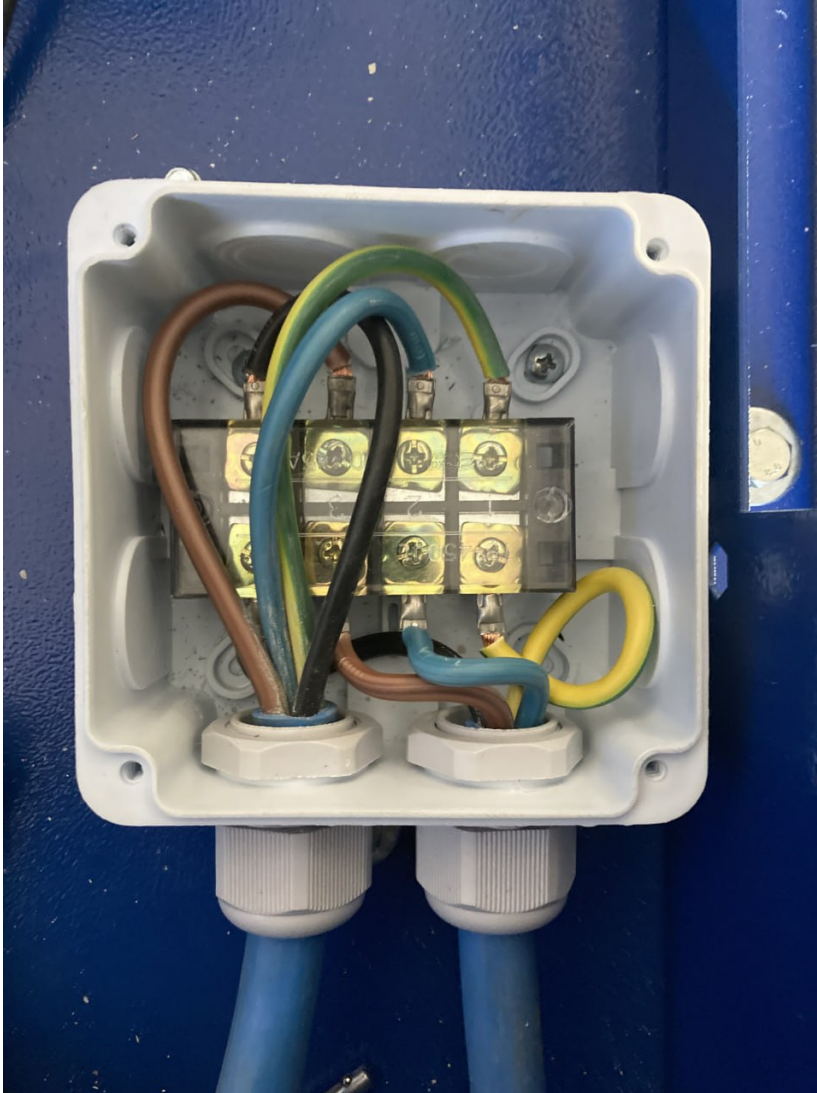


Після закінчення монтажу демонтувати транспортні перемички

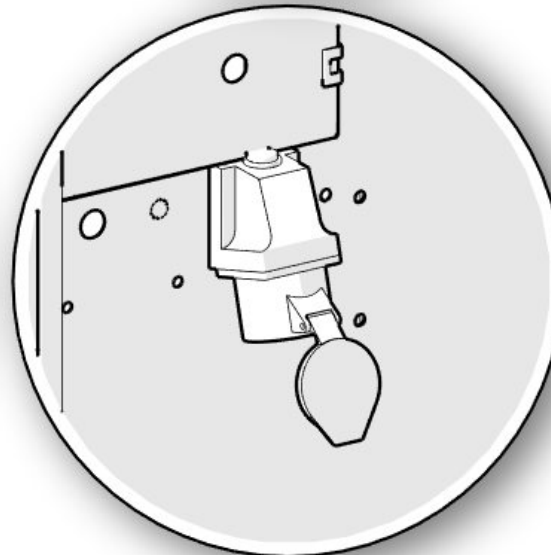
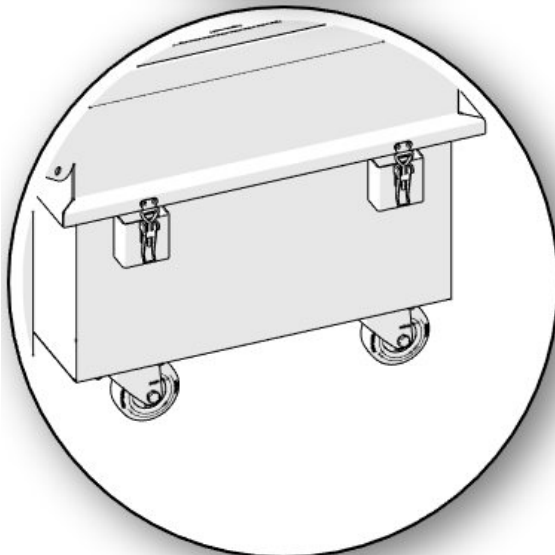
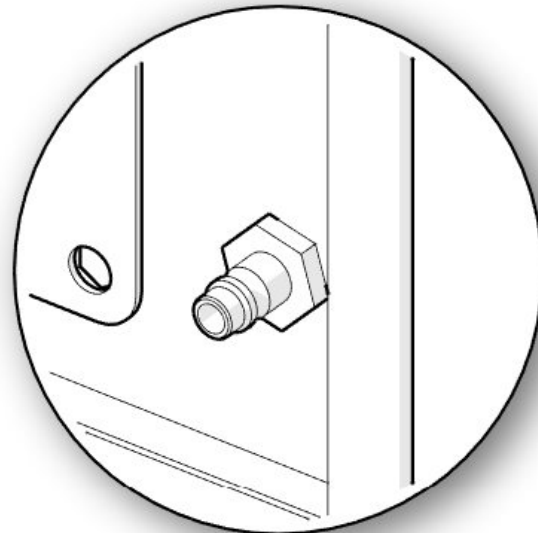
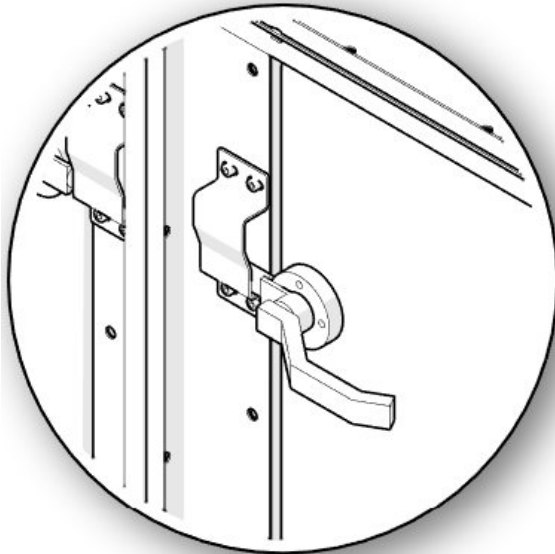


Рим болти, на корпусі електродвигуна

*Appendix 2 - Compressed air and power supply connection diagram (picture)*

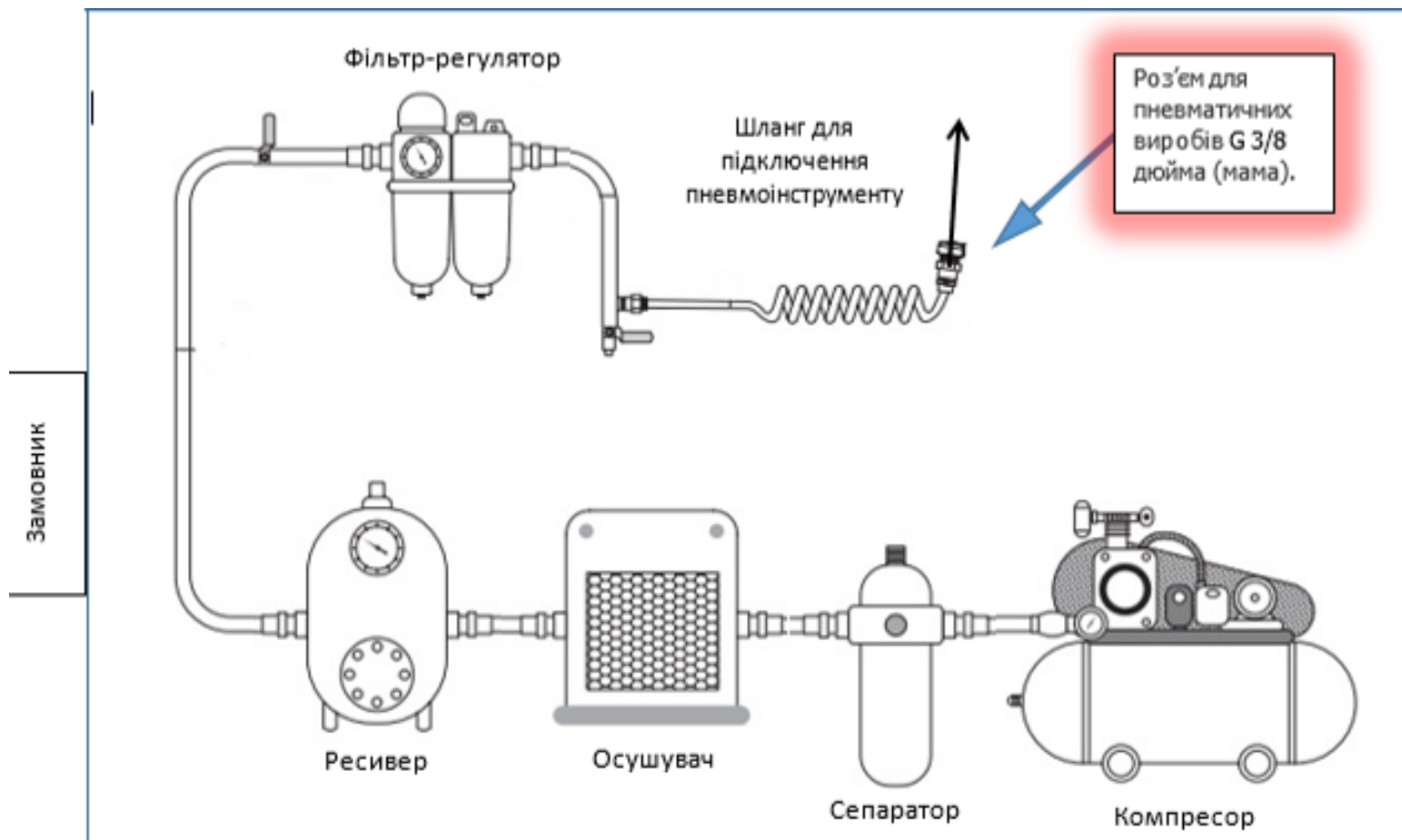


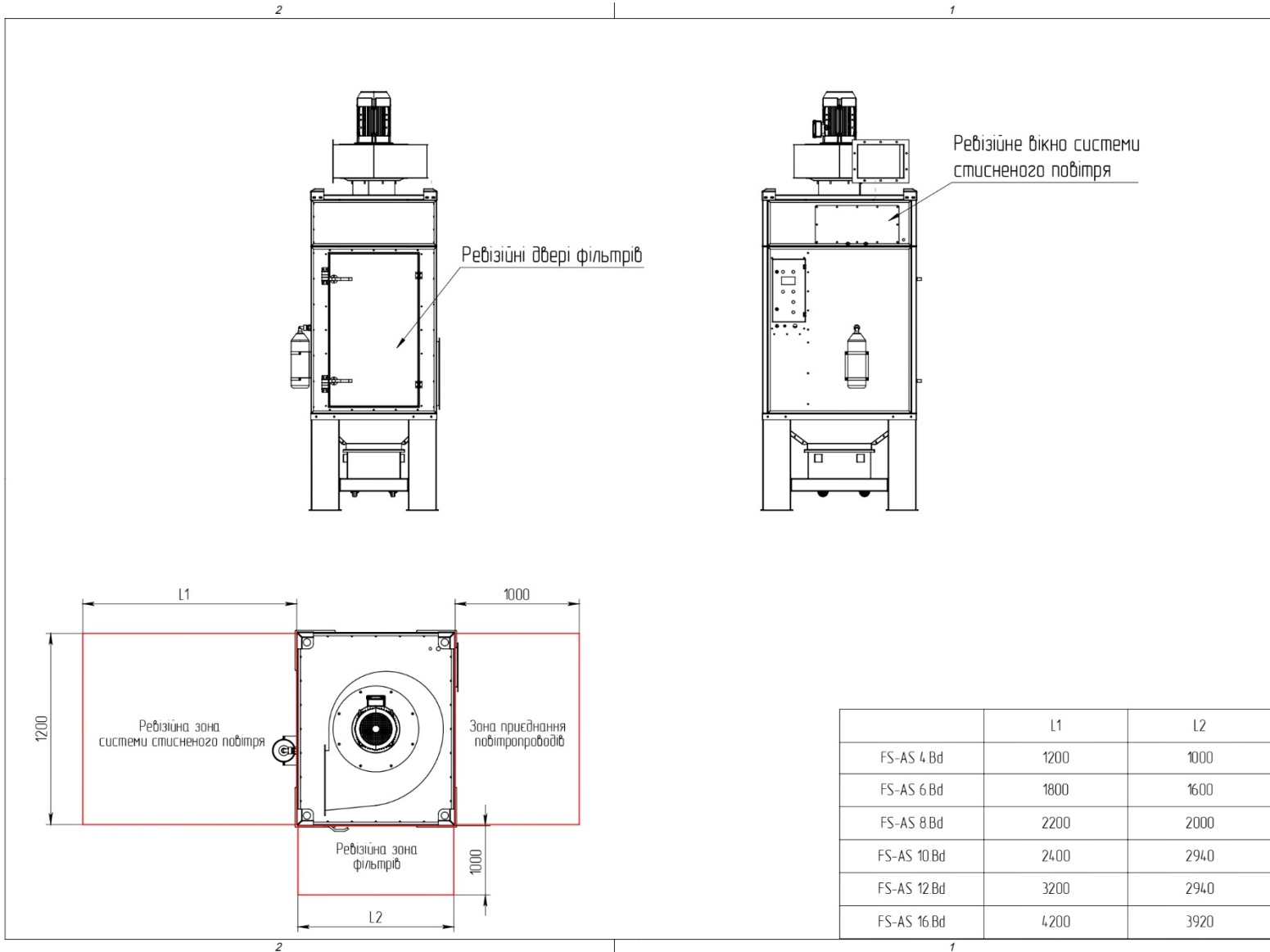
*Note: the power supply wires must be connected according to the colour marking.*



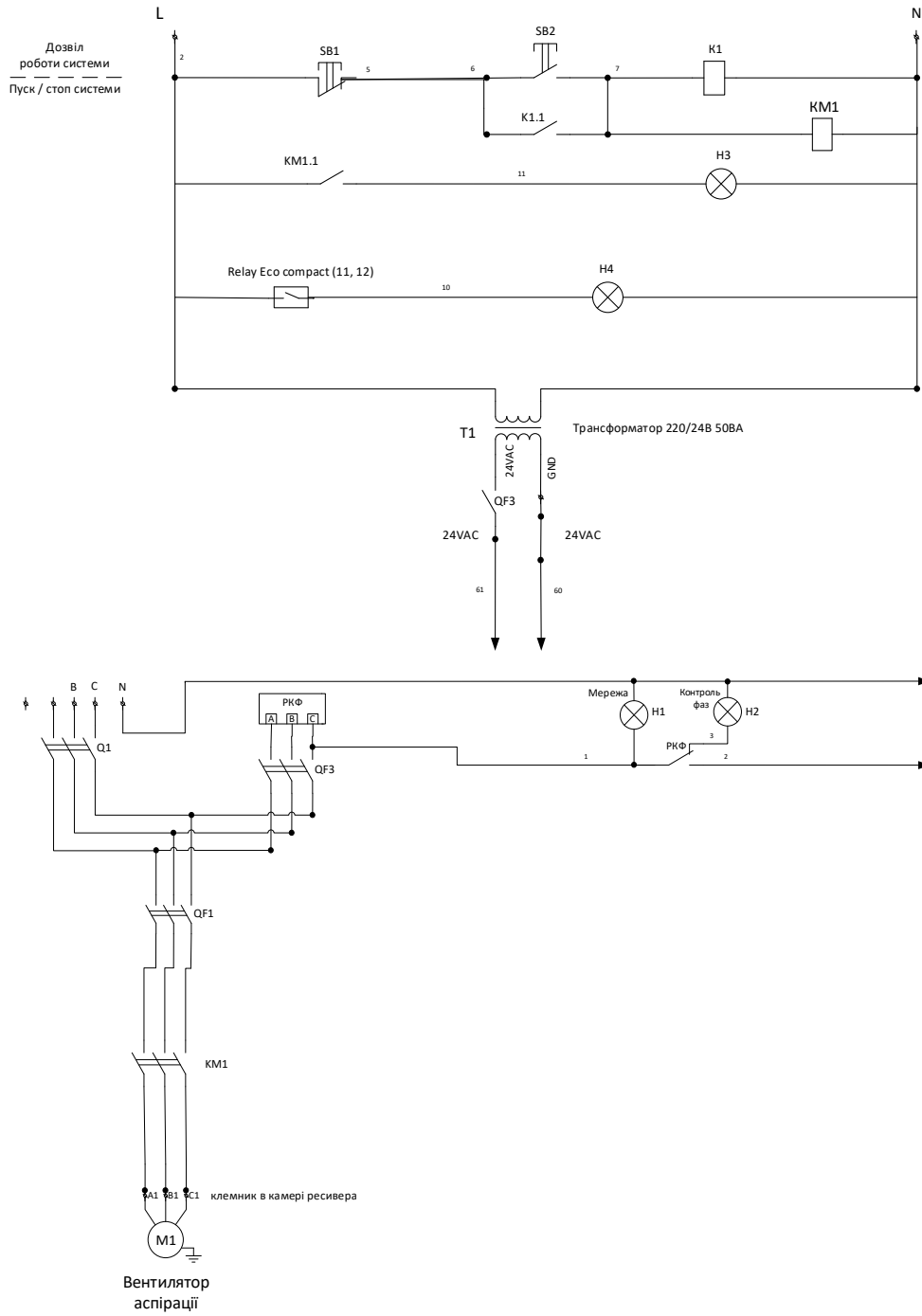
Підключити обладнання до пневмо та електро мережі  
 Перевірити напрямок обертання крильчатки вентилятора  
 Виконати контрольні заміри, шуму, витрат повітря, струм  
 Перевірити можливість поганого прилягання ущільнювачів  
 Відрегулювати ручки та фіксатори

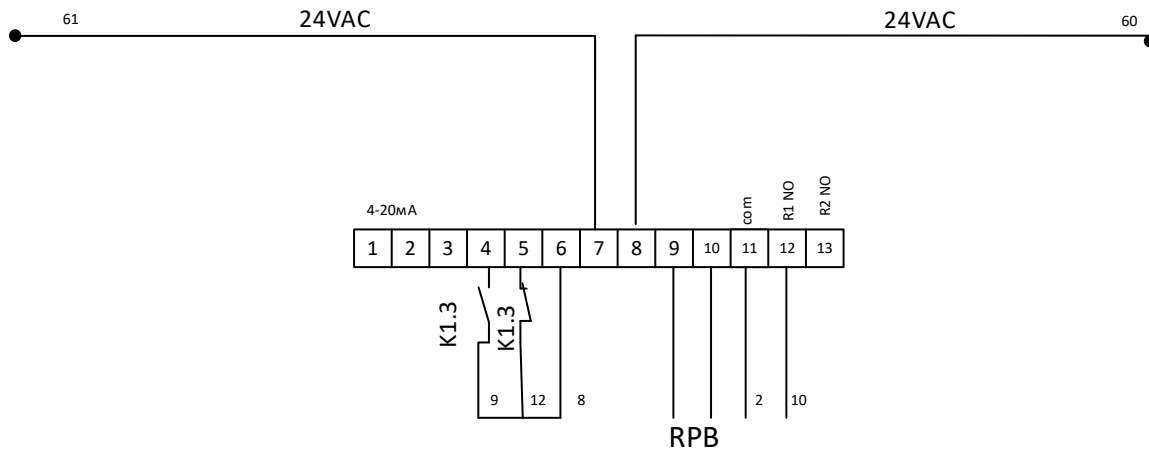
### Appendix 3 - Maintenance diagram





## Appendix 4 - Wiring diagram without ESU





## Appendix 5 - Wiring diagram with ESU

