

Use and Maintenance Manual



Filtering unit UFO-A-20000

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1. Introductory Remarks

The purpose of the present Use and Maintenance Manual is to supply the Purchaser and the future User with directions within the range of application, installation, start-up and the operational use of the **UFO-A-20000 filtering unit**.

Therefore, installing, start up and operational use are exclusively admissible after getting acquainted with the contents of the Use and Maintenance Manual.

With regard to continuity of work carried on improvement of our products, we reserve for ourselves the revision possibility of the draft and technological changes improving their functional features and safety.

The construction of the **UFO-A-20000 filtering unit** meets the requirements of the current state of technology as well as the safety and health assurances included in:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of 17 May, 2006 on machinery – amending the 95/16/EC (recast) /*Journal of Laws EC L157 of 09.06.2006, page 24*/
- **2014/35/EC Directive** of the European Parliament and of the Council of 26 February, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. /*Journal of Laws EC L96 of 29.03.2014*/

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21st, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products / *Journal of Laws L 285 of 31.10.2009* /
- **327/2011 (EU) Regulation** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW / *Journal of Laws L No. 90 of 06.04.2011* /

The device has been constructed and produced on the basis of following harmonized standards:

- | | |
|-----------------------------------|--|
| • EN ISO-12100:2012 | - "Safety of machinery – Basic concepts, general principles for design. Risk assessment and risk reduction". |
| • EN 60204-1:2018-12 | - "Safety of machinery – Electrical equipment of machines. Part 1: General requirements". |
| • EN ISO 13857:2010 | - "Safety of machinery – Safe distances to prevent hazard zones being reached by upper and lower limbs". |
| • EN 60529:2003/A2:2014-07 | - "Degrees of protection provided by enclosures (IP Code)". |
| • EN 61439-1:2011 | - "Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions". |

2. Application

UFO-A-20000 filtering unit is manufactured in two version: UFO-A-20000 RH with the air inlet on the right side and UFO-A-20000 LH with inlet on the left.

UFO-A-20000 gives the possibility of cleaning the dust laden air of the impurities emitted during the manufacturing processes.

The device is efficient in separation of **dry** dust particles (**without aggressive contamination or creating explosion hazard**), arising during the welding, grinding of non-sparking materials, gas- or plasma cutting of metals, or during the dust-emitting processes in industries as: chemical-, pharmaceutical, food production, plastic manufacturing and other lines.

The appliance is equipped with cartridge filters of polyester fabric, separating the dust particles on the external surface of the filter. Periodically, the filter cleaning system (compressed air impulses) strikes off the dust of the filter surface.

Maximum admissible temperature of the conveyed air is +60°C.

3. Reservations of Producer

Manufacturer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.

- A.** Improper installation of the device that is in contradiction with the present Use and Maintenance Manual.
- B.** Incorrect connection to the power supply (energising) or to the external compressed air installation.
- C.** Operational use of the device that is in contradiction with the present Use and Maintenance Manual.
- D.** Installing on the device any additional elements, not belonging to the original device structure, is not accepted.
- E.** Changes and modification of the device carried out by User on one's own or introduction of parts which are not purchased at the manufacturer's – are not acceptable.
- F.** Situations where the rules of maintenance and servicing (according to the User's Manual) is not followed.
- G.** Do not use the device for conveying the air containing viscous and aggressive impurities that would damage the filters, as well as the use in the environment where the temperature is exceeding 60°C.
- H.** In the course of operational use, pay attention that any ignition sources, i.e. glowing cigarette butts (embers) must not get into the filtering chamber.

4. Technical Data

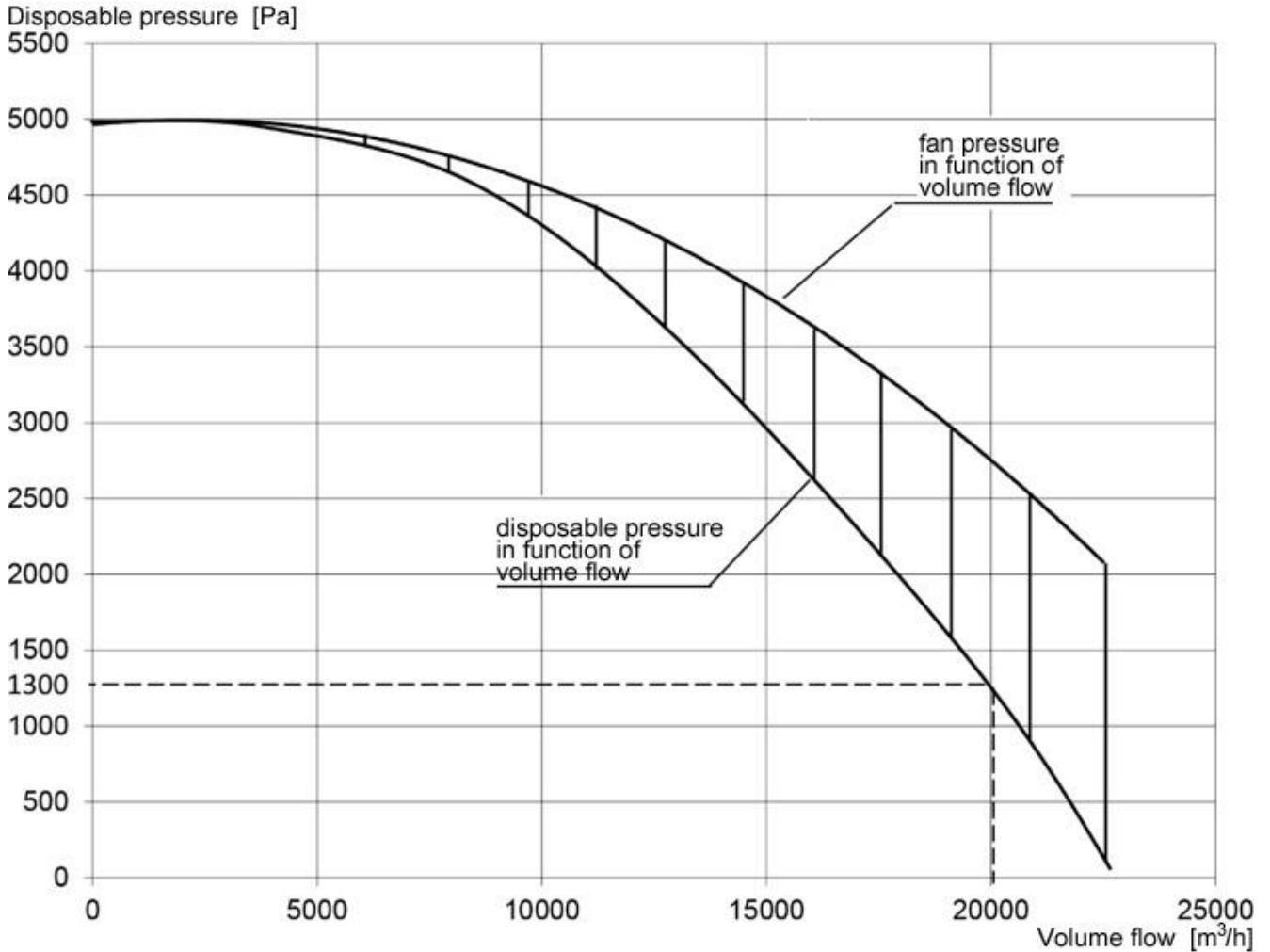
Table No.1

Type	Maximum volume flow	Maximum vacuum	Motor rate	Supply voltage	Quantity of the cartridge filters	Acoustic pressure level	Consumption of the compressed air	Weight
	[m ³ /h]	[Pa]	[kW]	[V/Hz]	[pcs]	[dB(A)]	[Nm ³ /h]	[kg]
UFO-A-20000 RH UFO-A-20000 LH	22 000	5000	22,0	3x400/50	8	80	10,2	1300

Cartridge filters: quantity – 8 pcs
 diameter – Ø380 mm
 height – 660 mm

CAUTION:


1. Diameter of the inlet fitting piece: $\varnothing 500$ mm
2. Required pressure of compressed air: minimum 0,6 MPa
3. Capacity of the waste container: 72 dm³
4. Connection to the external compressed air installation – diameter $\varnothing 12$ mm (quick-connector)



Caution: Flow chart has been carried out for cartridge filters slightly polluted after 1500 shielded electrodes are welded out.

Fig. No.1 – Flow Chart

Table No.2 – Replaceable parts – Cartridge filter – 8 pieces

	Type	Weight [kg]	Filtration efficiency [%]	Remarks
	PN206638U	4,2	99.9	Replacement frequency: 1 up to 2 years

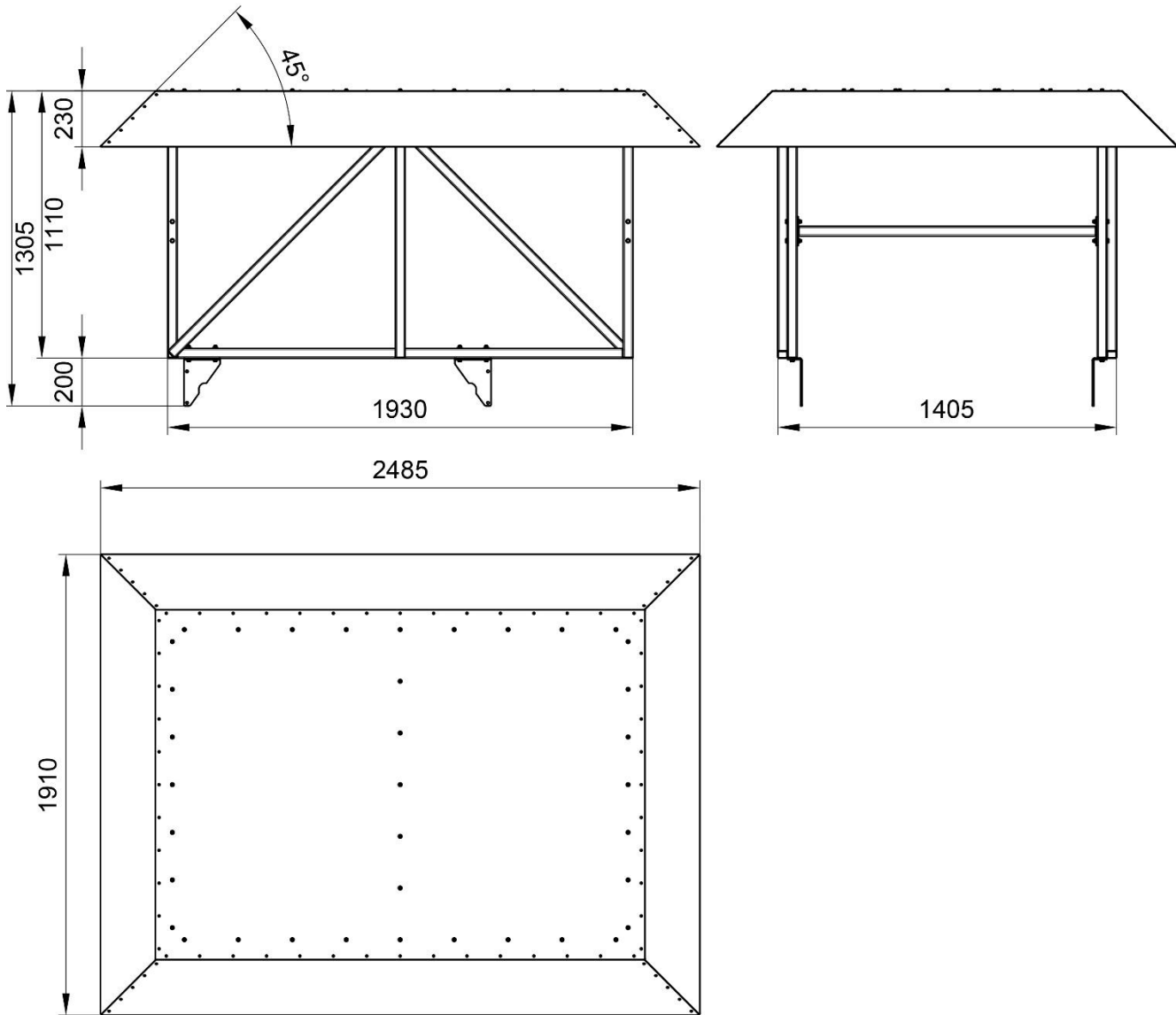


Fig. No.2 – Additional Equipment – Fan cover OW-UFO-A-20000 – to be installed on the device

5. Structure and Function

UFO-A-20000 filtering unit is constructed of subsequent operational assemblies:

- Fan in a sound-absorbing chamber.
- Two filtration chambers – each of them contains 4 cartridge filters. The housing is equipped with servicing doors to replace the filters.

Outside the lower filtration chamber is installed a switchgear (to control the electromagnetic valves and the fan function) – details are described in Section 7.

In both filtration chambers, are formed regeneration chambers – where are introduced the the outlets of cartridge filters and the Venturi orifices. For inspection and maintenance of the compressed air system there are two servicing covers.

Outside the housing of each filtration chamber is installed the compressed air system, consisting of elements:

- Compressed air tank – designed for operational pressure not exceeding 0,8 MPa. The container meets the requirements of the European Union Directive 2009/105/EC and the Guideline of the Minister of Economy of the December 23, 2005 (Journal of Laws 2005 No. 259 Pos. 2171).
- Four electromagnetic valves of diameter 1,5" – to clean / regenerate the cartridge filters.

- four pneumatic silencer 3/8" – placed on electromagnetic valves.
- Supporting structure with the hopper chamber – under the hopper chamber is located a container for dust (capacity 72 dm³).
- As additional equipment, (upon separate order) the device can be equipped with a fan cover, installed on the device (see Fig. No.2).
- Filtering units with a free (not plugged) outlet fitting piece should be equipped with an air guide plate KP-UFO-A-20.

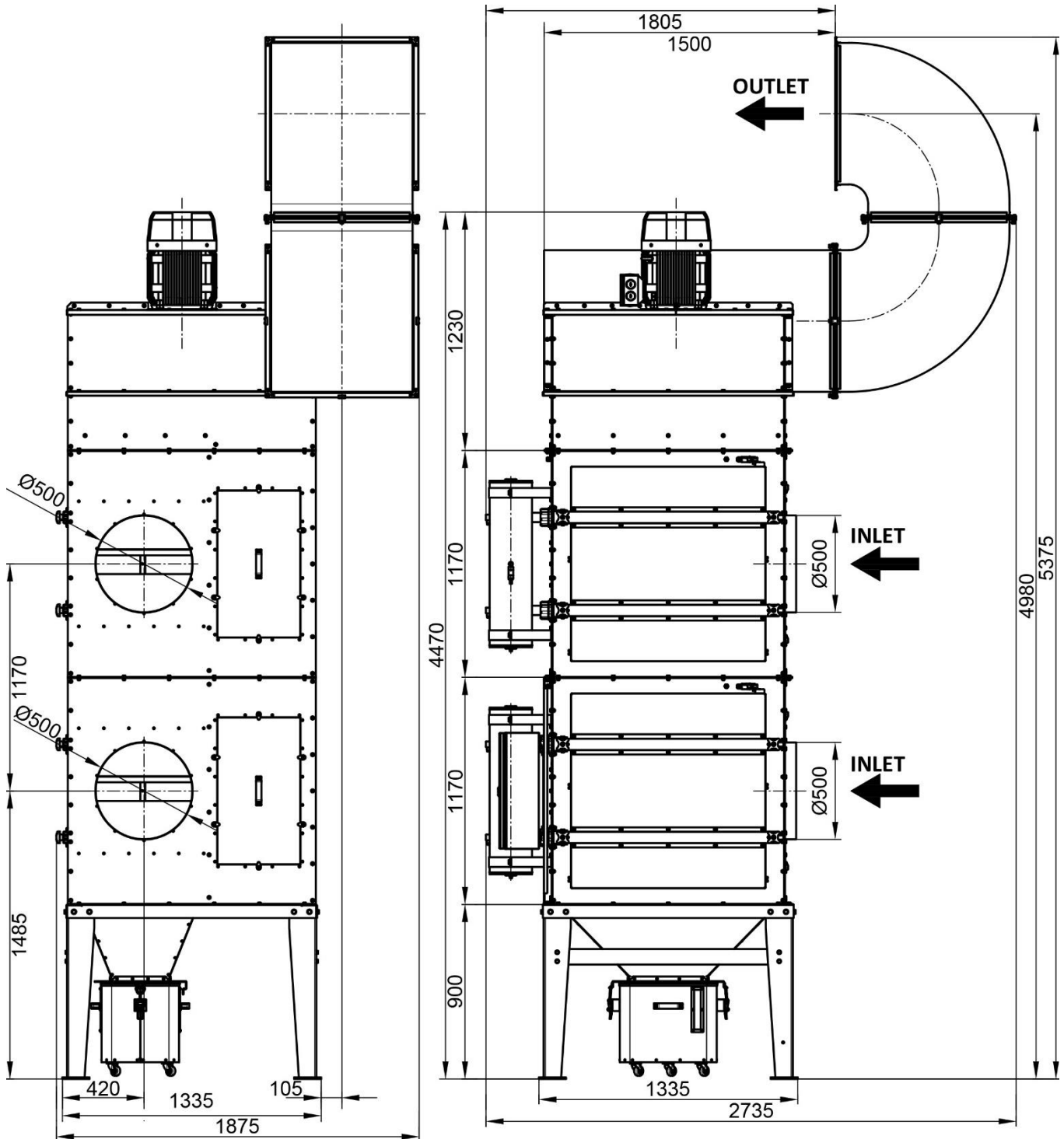


Fig. No.3a – UFO-A-2000 RH – (air inlet on the right) – Dimensions

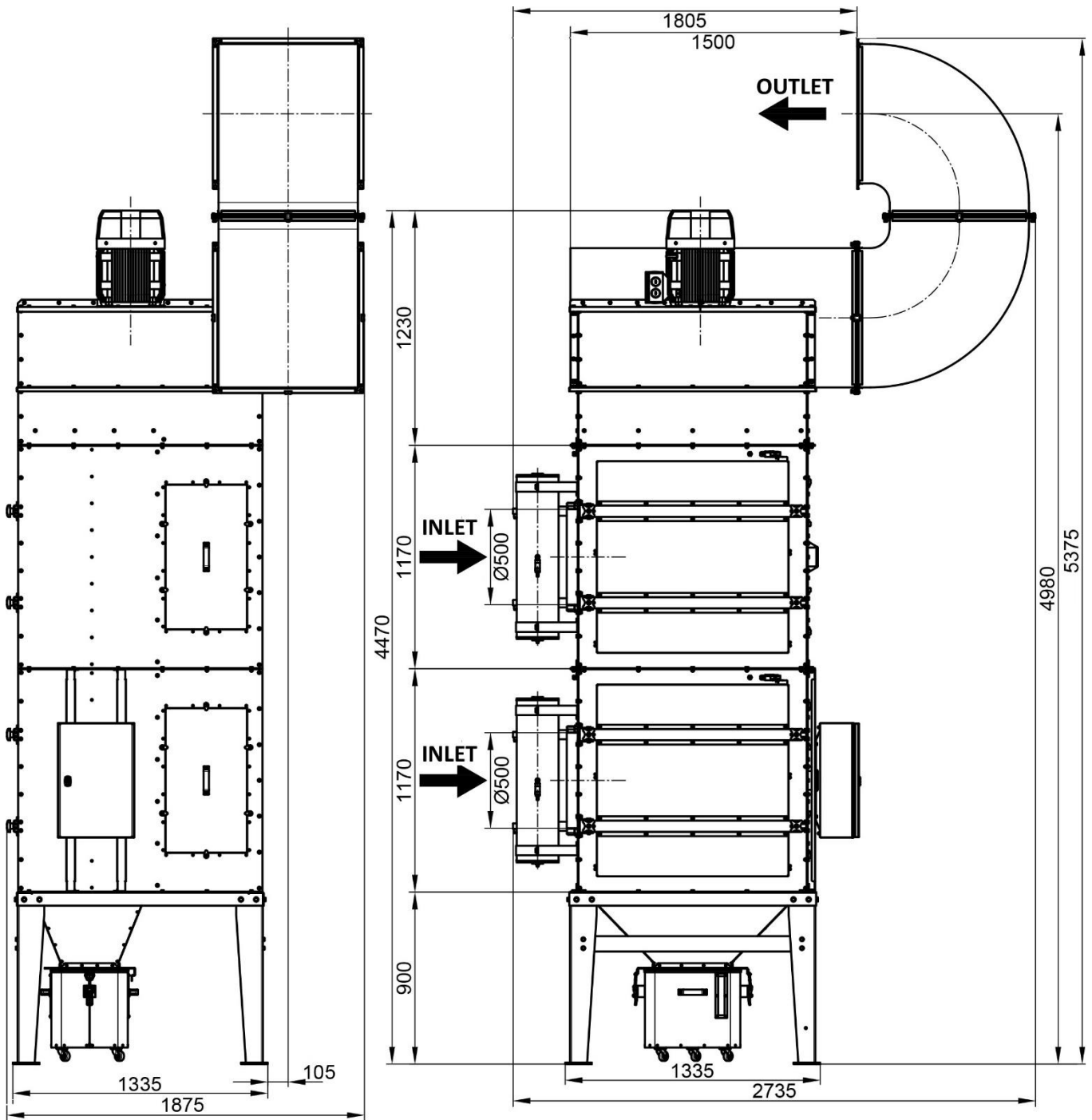


Fig. No.3b – UFO-A-20000 LH – (air inlet on the left) – Dimensions

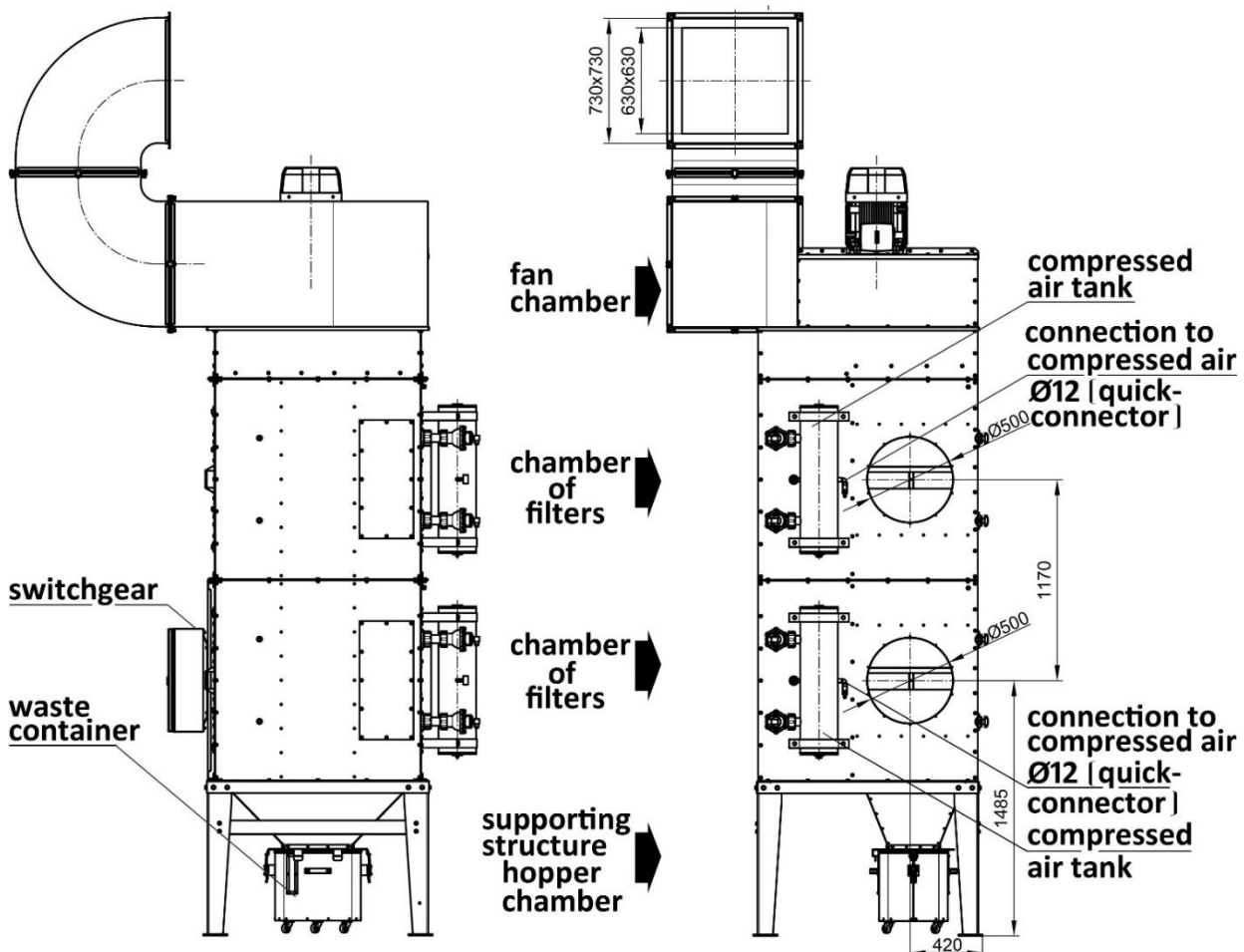


Fig. No.4 – UFO-A-20000 – Structure

UFO-A-20000 is delivered without silencers at the air inlet. As standard, at the outlet, is installed a set of a rectangular silencer and two sound-absorbing elbows (as illustrated in Fig. No.4). The automatic system of filters regeneration has to be supplied from the external technological installation of compressed air of pressure $0,6 \div 0,8$ MPa.

The **switchgear** controls the fan function, and according to the time programme, operates the electromagnetic valves. Switchgear is delivered along with the appliance. On one of the rear leg of the base, is fastened a terminal clamp as a connection between the UFO-A-20000 and the local equilibrating profile.

6. Assembly and Start-up

6.1 Assembly description

It is recommended to install the UFO-A filtering unit inside the rooms. In case of outdoor application it is advisable to introduce a fan cover (see Fig. No.2 “Additional Equipment”).

Before installing in the site of operation, check whether the filtering unit is complete and if all elements are intact and not damaged, without bendings, indents etc.

The filtering unit is delivered in two assemblies, so while installing use adequate lifting devices. All these steps should be carried out by a specialised assembly team.

First, put the supporting structure along with the hopper- and filtration chamber on the floor. The supporting frame must be levelled and its legs fastened firmly to the floor.

After the first assembly is installed, put the fan set (in the sound-absorbing chamber and with the rectangular silencer) on the filtration chamber.

Due to the large dimensions of the assemblies, especially handle with care during the installing. In the upper part of the fan chamber are located handles for lifting during the transport and installing.

During assembling of the filtration chamber (with the supporting structure) and the hopper chamber, their contact surfaces should be sealed with "silicone" and carefully screwed together. The bolts, screws and "silicone" are delivered along with the device.

Having assembled those elements, connect them by means of an equilibrating cable.

Compressed air tank and electromagnetic valves are delivered to Customer, already assembled. After assembling the device, connect it to the external compressed air installation 0,6÷0,8 MPa. The compressed air should be without any pollutants, oil contamination and free of humidity. **The connection should be equipped with a cut off valve, air filter and a dewaterer. Those elements are not delivered with the device.**

Diameter of the compressed air connection is Ø12 (quick-connector).

WARNING

All the activity connected with power supply ought to be carried out by an authorized person with testified electrical qualifications and according to the enclosed Connection Diagram (see Fig. No.5).

Having performed the connections, check **the rotation sense of the fan impeller by observing the motor cooling impeller rotations – (with reference to the arrow)**. If this is not the case, swap two phases in the supply system. This can be carried out exclusively after the device is disconnected from the power supply system.

To load or replace the cartridge filters, open the front door (cover) of the filtration chamber.

WARNING

Prior to opening the filtration chamber door, disconnect the power supply system!

Subsequently, unscrew (release) the screw locks (4 pieces) – to such a swing extent that the locks can be bent fully aside and User can open the door widely up to the right angle.

Insert the subsequent filter cartridges onto the slide-guides and push them tight to the wall of the electro-valve chamber and secure by means of a bar and screw locks. Finally, close the door of the filters chamber tightly and screw up the screw knobs of the door.

Having replaced the cartridge filters, make connection to the power supply.

Prior the operational use, the whole filtering unit ought to be fastened firmly to the floor.

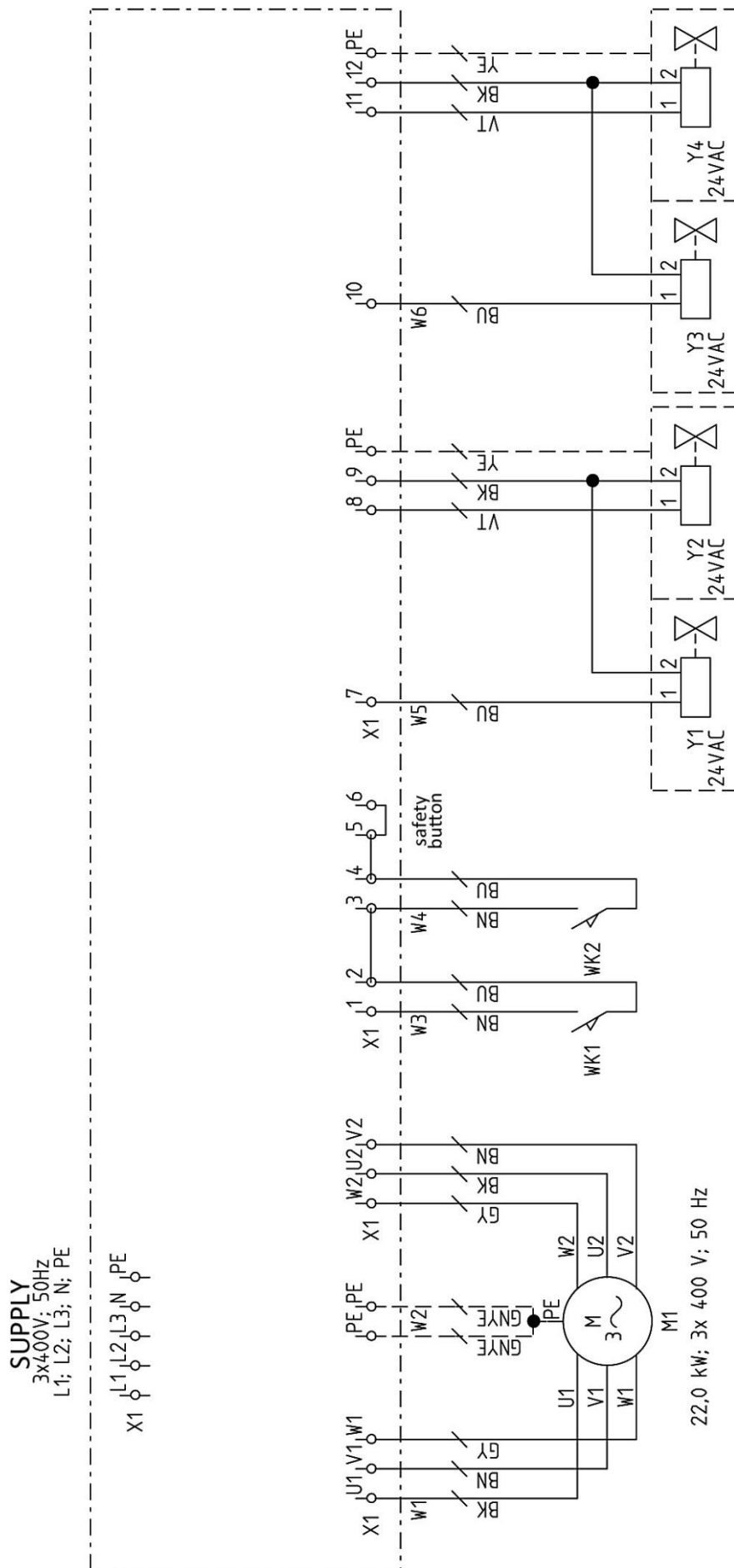
The appliance is designed for:

- cooperation with a system of local exhausts, for example extraction arms (connected to the ducting, joining them to the inlet fittings);
- general ventilation combined with air filtration, for example as a system configuration "push-pull".

After the device start-up, the automation system provides continuous work of the extraction fan and automatic filter cleaning by means of cyclical impulses of compressed air. Cartridge filters ought to be replaced for new after approx. 1÷2 year of use.

REMARKS:

1. In case of application for plasma cutting – take into account that the real flow capacity will be by twice reduced (with reference to the nominal value). For example UFO-A-10000 of nominal volume flow 10.000 m³/h, its real capacity for plasma-cutting will be 5.000 m³/h which covers the request for extraction from one table segment of dimensions 2100 x 500 mm.
2. On demand of Customer the device can be equipped with activated carbon impregnated non-woven (spunbond) filters – for capturing the gas contaminants arising during welding processes.


Fig. No.5 – UFO-A-20000 – Connection Diagram

7. Operational Use

UFO-A-20000 has been developed for cooperation with a system of local exhausts, e.g. extraction arms, connected to the main ducting that is joining them with the inlet fitting pieces.

ZE-UFO-A switchgear is delivered along with the device and controls its overall function providing cleaning of the filters surfaces by cyclical impulses of compressed air.

1. Structure of the switchgear:

a. The external part (cover) constitutes a control module including:

- white lamp **H1** – continuous light: indicates that the system is energized with the supply voltage.
- green lamp **H2** – indicates that the voltage is applied onto the contactor controlling the motor:
continuous light: the contactor (controlling the motor) is switched on;
blinking light: the fan can be started;
- red lamp **H3** – alarm – blinking light during the emergency; after confirmation by pressing the **S2 “STOP”** button, the lamp lights continuously – until the moment when the failure is fixed.
Press the **S2 “STOP”** button one more time, to stop the **H3** light.
- yellow lamp **H4** – signalling of the regeneration of the filters.
- green button **S1 “START”** – applies signal onto the coil of the contactors – operates the fan motor; after the fan is switched on, its work is indicated by the signalling lamp; simultaneously proceeds the regeneration (cleaning) process of the filters.
- red button **S2 “STOP”** – interrupts the circuit of the contactors coil – the fan motor stops;
the control system is further energised and is in readiness for the fan restart; the final regeneration stage of the filters is in progress.
- yellow button **S3**
“MANUAL REGENERATION OF THE FILTERS” – it forces the additional cycle of filters regeneration, while the fan is already switched off.

Controller – serves as a timer controlling the function of the electromagnetic valves.

b. internal part – consisting of subsequent elements:

- supply disconnecter – **Q1** – to switch ON and OFF the power supply system
- motor protective switch – **Q1M** – protects the fan motor from short-circuit- overload and not complete phases function effects
- over-current disconnecter **F1** – protection for the transformer circuit and the controller
- over-current disconnecter **F2** – protection for the circuit of the electromagnetic valves
- contactors **K1M, K2M, K3M**
- **B1** – controller **UFOv5.1** – controls the function of the electromagnetic valves
- supervisory relay **CKF**
- time relay **K1T**
- keyboard
- terminal strip

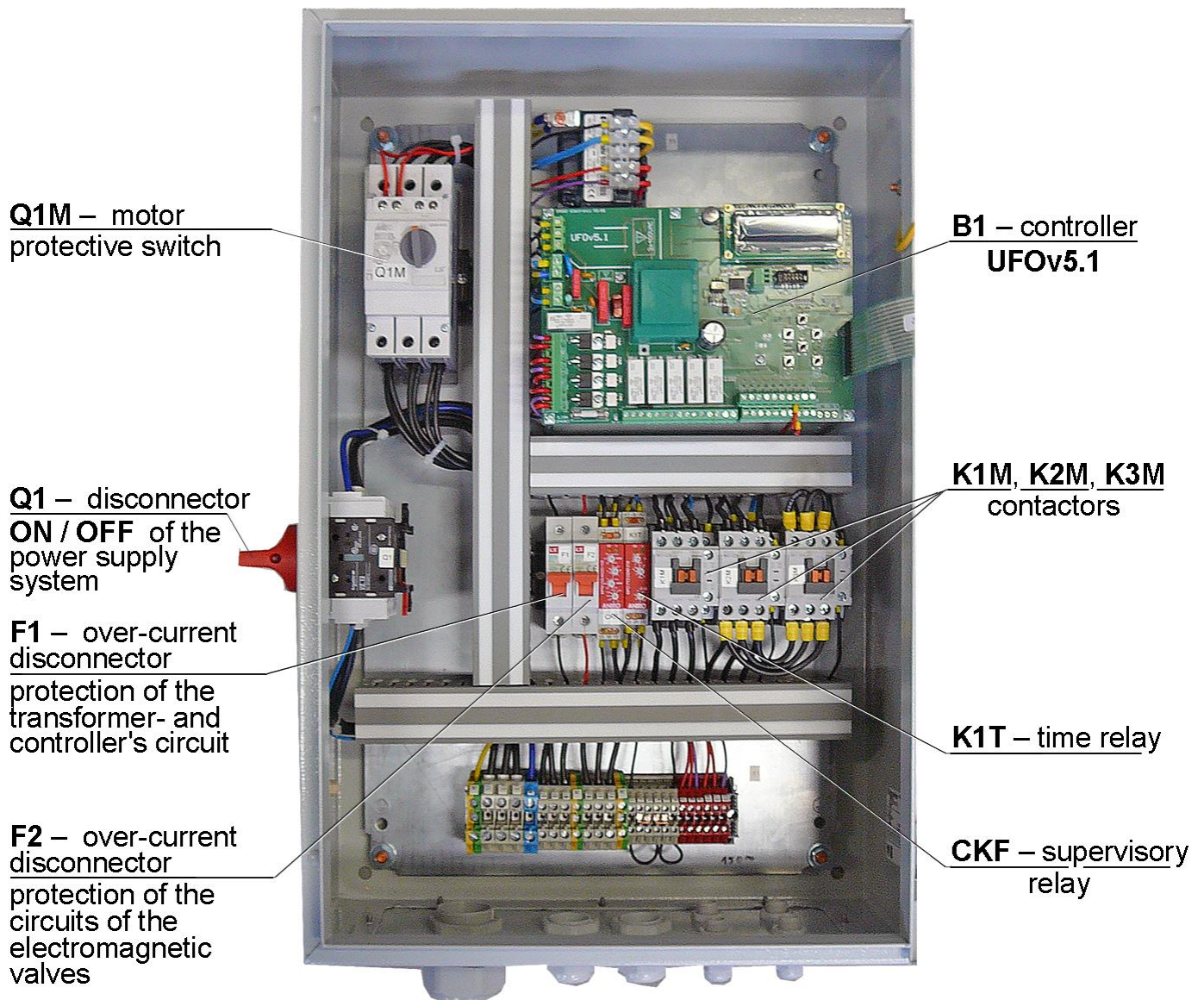
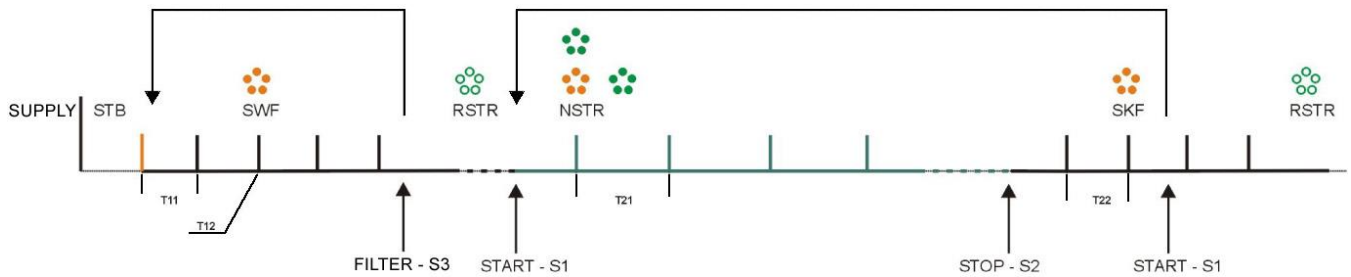


Fig. No.8 – Switchgear ZE-UFO-A – inside

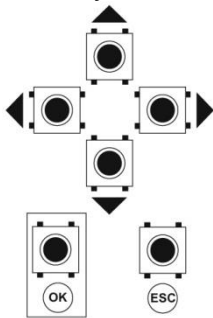
Housing of the switchgear is manufactured of metal, ingress protection **IP54**.

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Fig. No.9 – Time chart of work regimes

NAVIGATION

The **UFOx5.1** controller includes a built-in control keyboard, for setting the work parameters. The keyboard is installed on the right side and consists of 6 micro-switches.



RETURN TO THE MANUFACTURER'S SETTINGS – press the **ESC** button and hold it through 10 seconds.

Navigation on the “linear” menu:

UP – next screen

DOWN – previous screen

Navigation on the “nested” menu:

RIGHT – lower level of the menu

LEFT – higher level of the menu

How to change the editable parameter:

OK – marking (illumination) of the parameter





RIGHT, LEFT – displacing the cursor between the fields that are possible to be marked



UP, DOWN – change the value of the illuminated parameter





OK – to confirm and leave the edition mode





ESC – leave without confirmation editable parameter


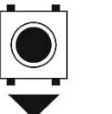
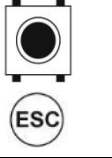

GENERAL MENU

	<table border="1"> <tr> <td>Status = RUN</td> </tr> <tr> <td>Board = OK</td> </tr> </table>	Status = RUN	Board = OK	<p>STATUS screen (Status): RUN – a mode of work NSTR, the OUT1 output is switched on STOP – the state of stop, the OUT1 output is switched off</p> <p>(Board): OK – correct state of the functional elements of the board UFOv5.1 E01 – alarm of the memory of the data E02 – alarm of the sensor of the temperature measuring E03 – alarm of the RTC clock</p>
Status = RUN				
Board = OK				
				
 				





 	<table border="1"> <tr> <td>Tu, 10:00, MANUAL</td> </tr> <tr> <td>stan RUN = NSTR</td> </tr> </table>	Tu, 10:00, MANUAL	stan RUN = NSTR	<p>MASTER screen (Status RUN):</p> <p>STB – state of initialising the controller's work, directly after the power supply is switched on</p> <p>NSTR – normal status of work of the fan power supply</p> <p>RSTR – readiness (stand-by) status for the switching on the status RUN of the NSTR</p> <p>SWF – initial regeneration (shaking) of the filters</p> <p>SKF – final regeneration stage of the filters</p> <p>!STOP – the device is being stopped after the alarm vanishes (operator needs to delete it)</p> <p>ALPR1 – alarm signal of low-pressure 1</p> <p>ALPR2 – alarm signal of low-pressure 2</p> <p>ALPR3 – alarm signal of low-pressure 3</p> <p>ALPR4 – alarm signal of low-pressure 4</p> <p>AL24V – alarm signal of lack of the supply 24VAC for the electromagnetic valves</p> <p>ALRS – alarm signal from the motor disconnecter</p> <p>(MANUAL):</p> <p>MANUAL – mode of continuous work</p> <p>PROG – mode of work as a function of time programmer</p>
Tu, 10:00, MANUAL				
stan RUN = NSTR				


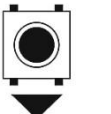



   	<table border="1"> <tr> <td>MODES -></td> </tr> </table>	MODES ->	<p>Screen MODES Sub-menu of the setting groups MODES</p>
MODES ->			

   	<table border="1"> <tr> <td>SETTINGS -></td> </tr> </table>	SETTINGS ->	<p>Screen SETTINGS Sub-menu of the adjustments group: SETTINGS</p>
SETTINGS ->			











   	COMMUNICATION -> <hr/>	Screen COMMUNICATION ¹⁾ Sub-menu of the settings COMMUNICATION
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¹⁾ The function is not active in the program version 2.0 up to 2.2



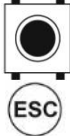


   	INPUTS/ -> OUTPUTS	Screen INPUTS / OUTPUTS Sub-menu of the settings INPUTS / OUTPUTS
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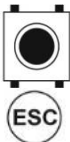


    	Day = Tu hour 10:00 Lang = PL	Screen SETTING OF TIME To adjust the days of the week and time
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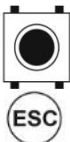


Sub-menu MODES

    	<table border="1"> <tr> <td>MODE = MANUAL</td> </tr> <tr> <td>MODE SWF = ON</td> </tr> </table>	MODE = MANUAL	MODE SWF = ON	<p>Screen MODES 1/6 [MODE]:{MANUAL PROG}</p> <p>MANUAL – work in a continuous mode PROG – work in the function of setting of the time programmer</p> <p>[MODE SWF]:{OFF ON}</p> <p>OFF – blocking the initial regeneration (shaking) SWF ON – activated initial regeneration SWF</p>
MODE = MANUAL				
MODE SWF = ON				
    	<table border="1"> <tr> <td>TEMP REG = NONE</td> </tr> <tr> <td>AL24V akt = OFF</td> </tr> </table>	TEMP REG = NONE	AL24V akt = OFF	<p>Screen MODES 2/6 [TEMP REG]:{NONE HEAT COOL}</p> <p>NONE – disconnected the controlling with output OUT5 in function of temperature HEAT – activated function of heating by means of the output OUT5 COOL – activated function of cooling by means of the output OUT5</p> <p>[AL24V akt.]:{OFF ON}</p> <p>OFF – blocking of the occurring alarm in case of lack of the supporting power supply 24VAC for outputs of electro-valves T1÷T4 ON – alarm AL24V activated</p>
TEMP REG = NONE				
AL24V akt = OFF				


	mPR1 = AS mPR2 = AS mPR3 = AS mPR4 = AS	<p>Screen MODES 3/6 [mPRi]:{AS AL}</p> <p>AS – signalling of the alarm and disconnection of the status NSTR by changing the state at inputs DI0 up to DI3 AL – signalling of the alarm, by changing the status at inputs DI0 up to DI3</p>
		
		
		
		


	ALPR akt = OFF Cons. START = OFF	<p>Screen MODES 4/6 [ALPR AKT.]:{OFF and ON}</p> <p>OFF – blocking of the occurring alarm ALPRi at the inputs DI0 up to DI3 ON – alarm ALPRi at the inputs DI0 up to DI3 activated</p> <p>[Cons. START]:{OFF and ON}</p> <p>OFF – blocking of the possibility of switching on by means of the input DI5 of the status NSTR ON – stop of the status NSTR active</p> <p><u>Input DI4 makes the same function as the button START S1 on the elevation console</u></p>
		
		
		
		






    	Cons. STOP = OFF Cons. REGEN. = OFF	Screen MODES 5/6 [Cons. STOP]:{OFF ON} OFF – blocking the possibility of stop, by means of the input DI5 of the status NSTR ON – stop of the status NSTR active <u>Input DI5 realises the same function as the button STOP S2 on the elevation console</u> [Cons. REGEN.]:{OFF ON} OFF – blocking of the possibility of activation of filters regeneration, by means of the input DI6 ON – the operated regeneration is active <u>Input DI6 fulfils the same function as the button FILTER S3 on the elevation console</u>
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    	DI8 START = OFF DI8 STOP = OFF	Screen MODES 6/6 [DI8 START]{OFF ON} OFF – blocking of the possibility of activation, by means of the input DI8 of the state NSTR (switching on within the level) ON – switching on the status NSTR active (switching on within the level) [DI8. STOP]:{OFF ON} OFF – blocking the possibility of switching off, by means of the input DI8 of the status NSTR (switching on within the level) ON – stop of the status NSTR active (switching on within the level) <u>In case when [DI8. START]=ON and [DI8stop]=ON the input DI8 fulfils the function of remote control ON / OFF of the status NSTR</u>
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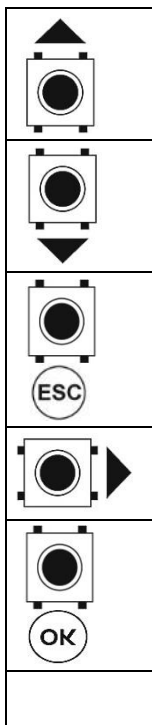
Sub-menu SETTINGS

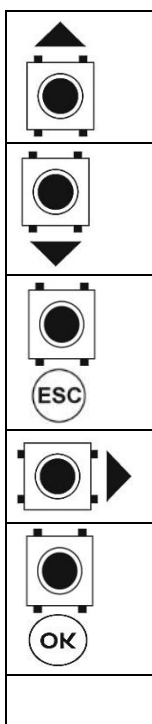
	Time T11 = 10s Lsekwen Lon = 02	<p>Screen SETTINGS 1/6 [Time T11]:{1-99sec}</p> <p>Time T11 – idle time (break) between the supply impulses of the electro-magnetic valves – during the status SWF</p> <p>[Lsekwen Lon]:{0-9 cycles} Lsekwen Lon – number of sequences – 4 cycles of pulsing each</p>
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	Time T12 =0,5s Ton PowPause = 10s	<p>Screen SETTINGS 2/6 [Time T12]:{0,1 – 5 sec}</p> <p>Time T12 – duration of the impulse of the supply of the electro-valves</p> <p>[TonPowPause]:{1 - 50 sec} TonPowPause – duration of the status STB (initialising of the system after the power supply is switched on)</p>
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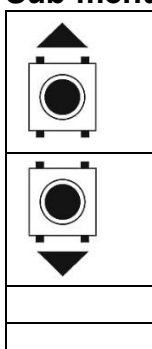
    	Time T21 = 01min Status Zas 24V = ON	Screen SETTINGS 3/6 [Time T21]:{1-90min} Time T21 – duration of the break (idle time) within the status NSTR between the impulses of the power supply of the electromagnetic valves (StanZas 24V) – state of the fuse of the transformer 24VAC of the power supply of the electromagnetic valves
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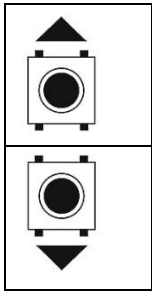
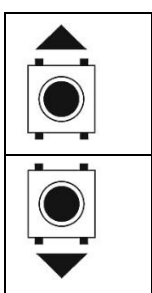
    	Time T22 = 0.5s Lsekwen Loff = 02	Screen SETTINGS 4/6 [Time T22]:{1-99sec} Time T22 – duration of the break (idle time) between the impulses of the power supply of the electro-valves, during the status SKF [Lsekwen Loff]:{0-20} Lsekwen Loff – number of sequences (4 cycles of pulsing each) – of pulsing – for the status SKF
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	<table border="1"> <tr> <td>Time T31 = 20s</td> </tr> <tr> <td>Akt PoziomWe = HI</td> </tr> </table>	Time T31 = 20s	Akt PoziomWe = HI	<p>Screen SETTINGS 5/6 [Time T31]:{1-99sec}</p> <p>Time T31 – delay time of the reading (reception) of the signal, from the inputs of the pressure control, within the circuit of the electro-valves</p> <p>[AktPoziomWe]:{LO HI} AktPoziomWe – the level of signal (from the input of pressure control) is active</p>
Time T31 = 20s				
Akt PoziomWe = HI				

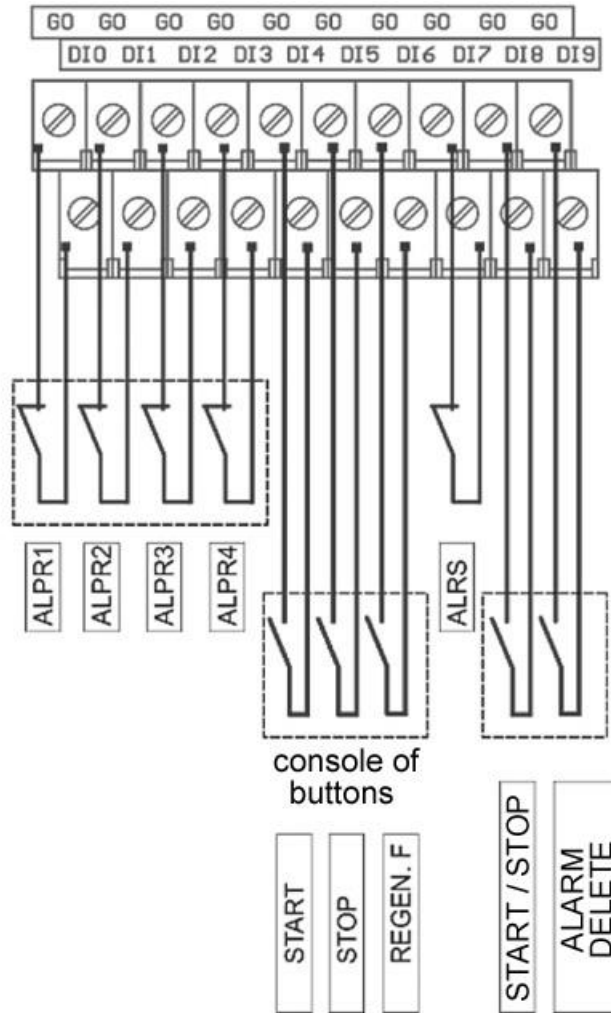
	<table border="1"> <tr> <td>Tset = 21 °C</td> </tr> </table>	Tset = 21 °C	<p>Screen SETTINGS 6/6 [Tset]:{10÷60}</p> <p>Tset – the applied temperature for the controlling with heating or cooling – depending on the parameter [TEMP REG]</p>
Tset = 21 °C			

Sub-menu INPUT / OUTPUT

	<table border="1"> <tr> <td>DI: 000111000</td> </tr> <tr> <td>DO: 101010</td> </tr> </table>	DI: 000111000	DO: 101010	<p>Screen INPUTS / OUTPUTS 1/3</p> <p>(DI) – status of the digital inputs – from DI0 up to DI9 (DO) – status of the digital outputs – from DOUT0 up to DOUT5</p>
DI: 000111000				
DO: 101010				

	<table border="1"> <tr> <td>AIN: -- %</td> </tr> <tr> <td>TO: 0000</td> </tr> </table>	AIN: -- %	TO: 0000	<p>Screen INPUTS / OUTPUTS 2/3</p> <p>(AIN) – status of the analogue input 0-10V (TO) – status of the outputs of impulses T1-T4</p>
AIN: -- %				
TO: 0000				
	<table border="1"> <tr> <td>Tb = +25.5 °C</td> </tr> <tr> <td>StanZas 24 = OK</td> </tr> </table>	Tb = +25.5 °C	StanZas 24 = OK	<p>Screen INPUTS / OUTPUTS 3/3</p> <p>(Tb) – measuring of temperature on the controller (StanZas 24V) – the state of transformer fuse 24VAC of the power supply of the electromagnetic valves</p>
Tb = +25.5 °C				
StanZas 24 = OK				

Digital inputs



- inputs **DI4, DI5, DI6** response to the rising edge (emulation of the elevation keyboard)
- inputs **DI8** and **DI9** response to the level (the inputs functions are activated from the level of the controller menu)
- inputs **DI0-DI13, DI7** are alarm inputs (masking of the alarms for **DI0-DI13** activated from the level of the controller menu)

Digital outputs

All digital outputs are relay outputs.

DOUT0	separable output of the control system of the fan contactor
DOUT1	switchable output, collective signal of the alarm
DOUT2	switchable output, indication of the fan work
DOUT3	switchable output, indication of the filters regeneration
DOUT4	switchable output, indication of the correct supply of the board and of the electromagnetic valves
DOUT5	switchable output, control with the cooling or heating in the function of mode, applied temperature and temperature measured by the sensor on the board of the controller (Screen MODES 2/6 , Screen SETTINGS 6/6 , Screen INPUTS / OUTPUTS 1/3 and 3/3)

States of alarm (emergency)

The alarm from the inputs of the pressure controls (pressostats) **DI0** up to **DI3** (additional signalling by means of **H3**):

Appearance of any of the alarms **ALPR1 – ALPR4** activates the alarm lamp **H3** lighting pulsatively, as well as switches on the acoustic signal (buzzer).

To confirm the alarm, press the **S2 (STOP)** button. The occurrence of the alarm blocks the system function – until the alarm stops. After the alarm reason is fixed, press the **S2 (STOP)** button one more time – this will delete the **H3** lamp.

In case of the adjusted parameter {**Cons. STOP = ON**} the alarm can be confirmed, and subsequently deleted by means of the input **DI5**.

CAUTION: The activated alarms **ALPR1 – ALPR4** can be blocked by a parameter {**ALPR akt. = NIE**} on the Screen **MODES 4/6**.

The alarm from the input that confirms the function of the motor disconnecter (additional signalling by means of H1):

All the time, the system controls the status of the disconnecter of the fan motor. In case of the signal of contact opening – occurs an immediate interruption of the system function. The alarm is signalled by the **H1** lamp lighting in blinking. Whereas, when the alarm appears on the controller display (on the **Master Screen**) – a message **ALRS** emerges.

The **ALRS** alarm activates the **H3** alarm lamp lighting pulsatively. The alarm has to be confirmed with the button **S2 (STOP)**. The alarm effects in blockage of the system, until the alarm disappears. After the alarm reason has vanished, press the **S2 (STOP)** one more time – this will switch off the lamp **H3**.

In case of the adjusted parameter **CONS. STOP = ON** the alarm can be confirmed, and subsequently it can be deleted with input **DI5**.

The alarm indicating the lack of supply of the electro-valves (additional signalling with H3)

The signal controlling the correctness of power supply 24VAC is for operating the electromagnetic valves. The controller indicates on display the lack of supply in case when for example the fuse is burned out.

When the alarm occurs – on the controller display (on the **Master Screen**) appears a message **AL24V**. Alarm of the **24VAC** supply fade is read out with a 10s delay.

When the **AL24V** alarm appears, the **H3** lamp starts blinking and the acoustic signal (buzzer) activates. The alarm has to be confirmed with the **S2 (STOP)** button.

The alarm effects in blockage of the system, until the alarm disappears. After the alarm reason has vanished, press the **S2 (STOP)** one more time – this will switch off the lamp **H3**.

CAUTION: The activated alarms **AL24V** can be blocked by a parameter {**AL24 akt.= NIE**} on the Screen **MODES 2/6**.

High efficiency and filter cleaning executed by the automatic filter regeneration system (repeated air impulses) provide long durability and reliable function of the filter cartridges and limits its maintenance to the minimum.

The impurities are separated (by the pneumatic impulses) from the filter surface. Subsequently they fall through the discharge hopper chamber into the waste container. The waste container must be emptied systematically.

Periodically, the pneumatic installation of filters regeneration ought to be dewatered by opening the discharge valve.

The condensate water (dripping) must be discharged from the system. Subsequently, close the dewatering valve at the moment when the discharging air is **clean** and **dry**.

The construction of the extraction fan and motor guarantees the work of the unit without the routine everyday technical maintenance. In case when defective function of the device is noticed, submit the device to technical revision (see Section 8).

WARNING

Any repair activity and technical revisions are admissible to be carried out only after the device is disconnected from the power supply system.

8. Trouble Shooting Guide

Table No.3 – Malfunctions in operational use

	Problem	Possible reason	Corrective action
1.	Dust particles are emerging outside the device – observed after a period of correct functioning of the device	The cartridge filter is faulty	Replace the defective filter
		Defect or deformation of the sealing (gasket) of the cartridge filter.	Replace the faulty sealing
2.	Dust is emerging outside the appliance	The cartridge filter has got defective or released/un-tight	Replace the faulty cartridge filter or correct its mounting
		Another (as mentioned in the instruction) sort of the dust is noticed	Contact the manufacturer
		Low filtration efficiency	Contact the manufacturer
3.	Decrease of air volume flow efficiency – observed after a period of correct functioning of the device	Filters regeneration proceeds incorrectly – due to too low pressure of the external compressed air	Correct the air pressure to the value of 0,6 – 0,8 MPa in the air supply system.
		The cleaning time and work time are not adjusted appropriately.	Correct the settings of the micro-controller operation according to the present manual
		Too high humidity of the filters, caused by the humid compressed air from the external installation	Dewater the compressed air tank, examine the state of the compressed air system
		Dust is emerging outside – due to temperature higher than +40°C of the inlet air	Limit the temperature of the inlet air

NOTE: Malfunctions of the device and exact and precise corrective actions in such cases are described on page 25 in Clause “**States of alarm (emergency)**”.

9. Maintenance

9.1 Cartridge filters

Upon every emptying of the waste container (under the hopper), examine visually the state of the cartridge filters. First disconnect the power supply.

Through the front revision door, check the mounting correctness of the elements, the state of the filtration surface, pollution degree, search for failures, etc.

At the moment when the suction volume capacity evidently drops, and it keeps low level for a longer time, take out the filters and clean them manually (with compressed air).

Additionally, undertake control when the device is functioning incorrectly in another way. When the cartridge filters are damaged or naturally worn out, replace them for new ones. While replacing, put the filters subsequently on the guide profiles and push them tightly to the wall of the electrovalves chamber. Subsequently tighten the filters with a profile straps and screw knobs. Close tightly the door of the chamber of filters and tighten up the screw locks of the door.

Having replaced the filters connect the device to the power supply again.

Upon normal functional wear out, the cartridge filters must be replaced after 1 to 2 years of operational use.

9.2 Fan

After every year of operational use – clean and examine the impeller, the state of the fan motor itself, according to the instructions of the motor manufacturer. In case of incorrect function of the fan, contact with the manufacturer. When it is necessary to replace the fan or the motor, this can be executed exclusively by a specialised team.

9.3 Compressed air tank

The compressed air tank should be examined and submit to maintenance – according to the regulations on pressure devices. Periodically, check all the connections applied on the tank, and make dewatering through the drainage fitting piece that is installed for this purpose at the bottom part of the tank.

9.4 Electromagnetic valves

The applied electromagnetic valves do not require current maintenance. It is sufficient to check the state of electrical connections, the state of grounding and tightness of the pneumatic installation. It is recommended to replace the valves after 2 years of use, but not later than 4 years. For this purpose contact the manufacturer of the filtering unit.

9.5 Pneumatic silencers

On the electromagnetic valves are placed pneumatic silencers 3/8" to reduce the noise level during the compressed air "shot".

After two months of use, the silencers must be disassembled and cleaned. For control periods see Table No.4 below.

9.6 Suggested periods of control and maintenance of the filtering unit

Table No.4

Current control of the function after the waste container is filled up.	Empty the container from the deposited dust.
Routine (current) control	Systematically clean the device and assemblies, so the dust particles would not deposit on the elements.
Upon each emptying of the waste container	Check visually the cartridge filters, through the door of the chamber of filters.
Once a month	Examine the state of the device grounding and check the conductivity between all the assemblies of the filtering unit.
Every 2 months	Clean the pneumatic silencer (located on the electromagnetic valve) – soak in the extraction naphtha and clean it.
Every 2 ÷ 3 months	General visual inspection of the supporting structure and the housing, check the screw connections.
Every 12 months	Examine the state of electrical connections and the installation of the compressed air, the connections of the electromagnetic valves.
Every 12 ÷ 18 months	Visual inspection of the compressed air tank and its dewatering system. When this is necessary (due to the environmental conditions and the state of the compressed air installation) carry out the inspection more frequently.
Fan – every 12 months	After every year of use, clean and examine the fan and the fan motor – according to the instructions of the motor manufacturer.

10. Occupational Health and Safety

- Installing, start-up and use of the filtering unit are possible – exclusively after getting acquainted with the contents of the present Use and Maintenance Manual.
- For the sake of safety, **connect the device to the power supply system according to the enclosed electrical diagram** and in compliance with the being in force regulations within the range of personal protection from electrical shock.
- **Any activities related to connection to the electrical power system ought to be carried out only by an authorised person with testified qualification.**
- Maximum operational pressure of the supplied compressed air (for safety reasons) should not exceed 0,8 MPa.
- **Any repair activities as well as waste container emptying should be carried out after the fan is switched off and the motor is disconnected from the power supply system.**
- The fan (as a rotary appliance), constitutes a potential source of hazard, therefore installing, start-up and servicing should be carried out by a qualified team.

11. Transport and Storage

The **UFO-A-20000** filtering unit has to be transported in two assemblies in foil, placed on transport pallets. For the transport time the device should be kept in vertical position and protected from an uncontrolled overturn and displacement. The silencer is transported separately too.

As the device is a thin-wall construction, thus safety measures are needed while lifting, unloading, and installing of its subsequent assemblies.

The unit has to be stored in a dry and properly ventilated room.

12. Terms of warranty

The period of warranty for the purchased device is indicated in the “Card of Warranty”. The warranty does not comprise:

- mechanical damage and malfunctions caused by User,
- device failures caused during the operational use that is in contradiction with the purpose of the application and with the present Use and Maintenance Manual,
- damages being effected during improper transport, storage or incorrect maintenance.

Infringement of the Section 3 “Reservations of Producer” of the Use and Maintenance Manual and especially modifications undertaken by User on one’s own shall cause the loss of warranty validity.

13. Sample of the Declaration of Conformity

Declaration of conformity EC No.

Manufacturer (eventually the authorized representative / importer):

name: **KLIMAWENT S.A.**

address: **81-571 Gdynia, Chwaszczyńska 194**

A person, authorized for issuing the technical documentation: Teodor Świrbutowicz, KLIMAWENT S.A.

hereby declares that the appliance:

name: **Filtering unit**

type/model: **UFO-A-20000**

serial number: year of production:

meets the requirements of the subsequent European Directives:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of 17 May, 2006 on machinery – amending the 95/16/EC (recast) */Journal of Laws EC L157 of 09.06.2006, page 24/*
- **2014/35/EC Directive** of the European Parliament and of the Council of 26 February, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. */Journal of Laws EC L96 of 29.03.2014/*

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21st, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products */ Journal of Laws L 285 of 31.10.2009 /*
- **327/2011 (EU) Guideline** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW */Journal of Laws L No. 90 of 06.04.2011/*

The device has been constructed and produced on the basis of following harmonized standards:

- | | |
|-----------------------------------|--|
| • EN ISO-12100:2012 | – “Safety of machinery – Basic concepts, general principles for design. Risk assessment and risk reduction”. |
| • EN 60204-1:2018-12 | – “Safety of machinery – Electrical equipment of machines. Part 1: General requirements”. |
| • EN ISO 13857:2010 | – “Safety of machinery – Safe distances to prevent hazard zones being reached by upper and lower limbs”. |
| • EN 60529:2003/A2:2014-07 | – “Degrees of protection provided by enclosures (IP Code)” |
| • EN 61439-1:2011 | – “Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions”. |

.....
place, date

.....
signature of authorised person

.....
name, surname, function
of the signatory

KLIMAWENT S.A.

Supported Employment Enterprise

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District Court Gdańsk-Północ
in Gdańsk, VII Wydział Gospodarczy
of the National Register of Court
KRS 0000308902 company stock
13.779.200 zł paid in total

NIP: 958 159 21 35

REGON: 220631262

Bank Account: **Santander Bank Polska S.A.**

56 1500 1025 1210 2007 8845 0000

NOTES:



Producer:

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804U25 UFO-A-20000/LH 24.05.2019/EN