

# Use and Maintenance Manual



## Filtering unit **STRONG-5000-S**

Manufacturer:

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804U59 STRONG-5000-S 01.10.2019/EN

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## 1. Introductory Remarks

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, installation, start-up and the use of the **STRONG-5000-S filtering unit**.

**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.

Construction of the **STRONG-5000-S** 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 May 17<sup>th</sup>, 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 21<sup>th</sup>, 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 30<sup>th</sup>, 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* /

Additionally, the appliance meets following harmonized standard:

- **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 from being reached by upper and lower limbs”
- **EN 60529:2003/A2:2014-07** – “Degrees of protection provided by enclosures (IP Code)”
- **EN 61439:2011** – “Low-voltage switchgear and controlgear assemblies Part 1: General resolutions”

## 2. Application

STRONG-5000-S stationary filtering unit is developed for filtration the air from **dry** dust, arising during various production processes in metal industry, chemical industry, food production, pharmaceuticals, plastic processing and in others areas. Especially, the device is efficient in capturing the dusts during grinding processes.

The maximum admissible temperature of the forwarded air is 60°C.

Due to the automatically cleaned cartridge filters (with Teflon membrane) dust particles (even smaller than 0,4 µm) are captured on the outer filter surface. Here the dust particles are struck off by impulses of compressed air. **Do not use the device to remove the humid dusts, aggressive substances and compounds creating explosion risk.**

## 3. Reservations of Producer

**Manufacturer is not responsible for damages following from one of the subsequent reasons:**

- A. Installing / assembly that is in contradiction with the purpose of use of the appliance
- B. Incorrect connection to the power supply system or to the compressed air installation

- C. Operational use that is not in conformity with the present Use and Maintenance Manual and with the valid regulations
- D. Installing within the device structure any additional elements, not being its original composition
- E. Changes / modification carried out on one's own and application of not original parts
- F. Situations where the rules of control and maintenance are not observed (with reference to the present Use and Maintenance Manual)
- G. Forwarding of air containing viscous and aggressive contaminants, as this would cause damage of the filters, or forwarding the media of temperature exceeding 60°C
- H. **Sources of ignition, e.g. glowing parts, cigarette butts, embers that were drawn into the filtration chamber**

## 4. Technical Data

Table No.1

Type	Voltage [V]	Motor rate [kW]	Consumption of compressed air [Nm <sup>3</sup> /h]	Maximum volume flow [m <sup>3</sup> /h]	Maximum vacuum [Pa]	Acoustic pressure level from distance		Weight [kg]
						1 m	5 m	
						[dB(A)]		
STRONG5000-S	3 x 400	5,5	2,8	7200	4200	73,5	69	619

1. Volume flow has been measured at clean filters.
2. Acoustic pressure level was taken at the filtering unit with the additional silencer applied.
3. Ingress protection of the motor housing IP54.

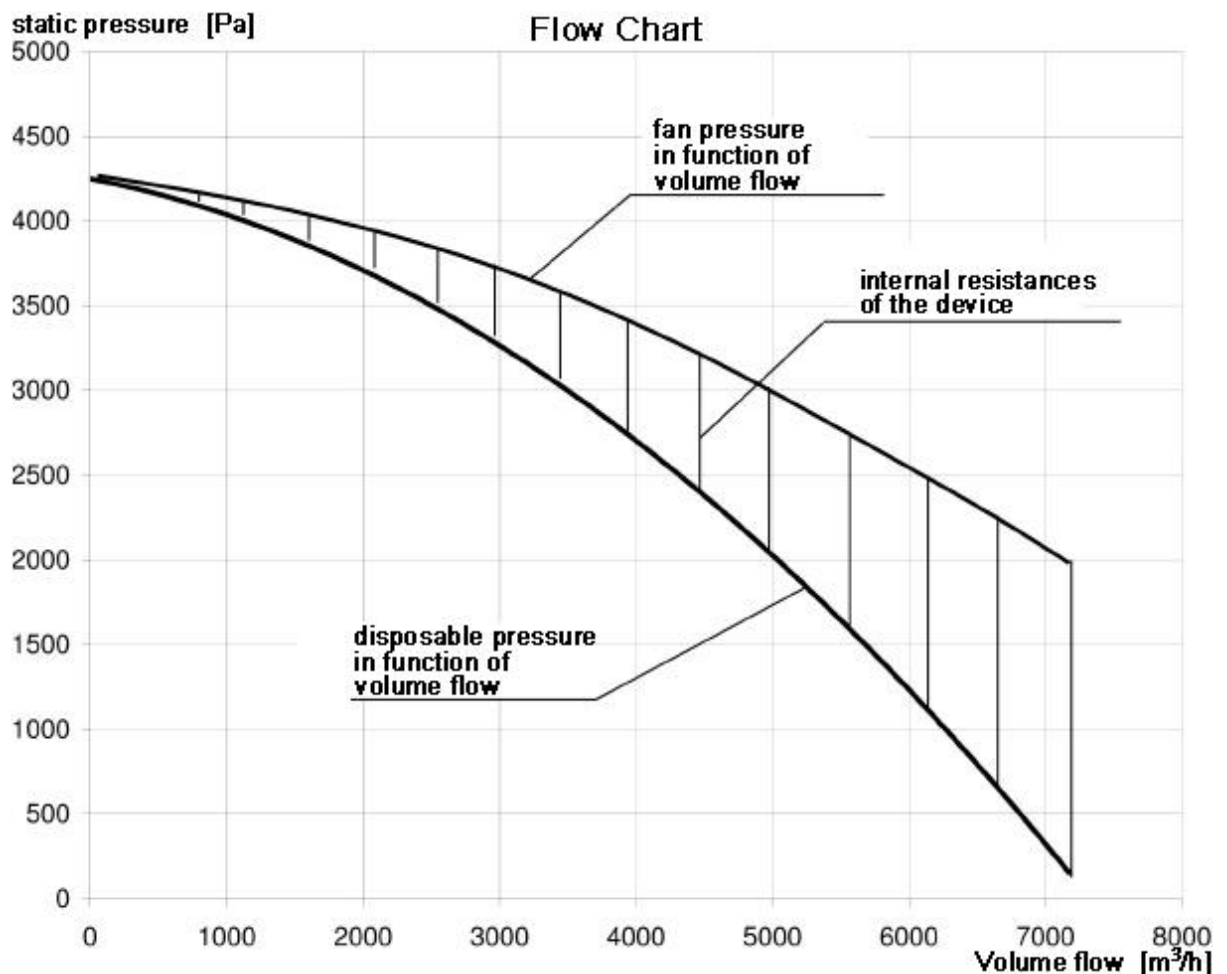






Fig. No.1 – Flow Chart

**Table No.2 – Replaceable Parts – Cartridge filter**

	Type	Weight [kg]	Filtration efficiency [%]	Quantity [pieces]	Remarks
	PN105032T	4,2	99,9	4	replacement frequency 1 – 2 years

**Table No.3 – Additional equipment**

Reducer 400 x 400 / Ø500		Additional silencer		Elbow	
	Type		Type		Type
ZR-UF		TK-UF		KL-UF	

## 5. Structure and Function

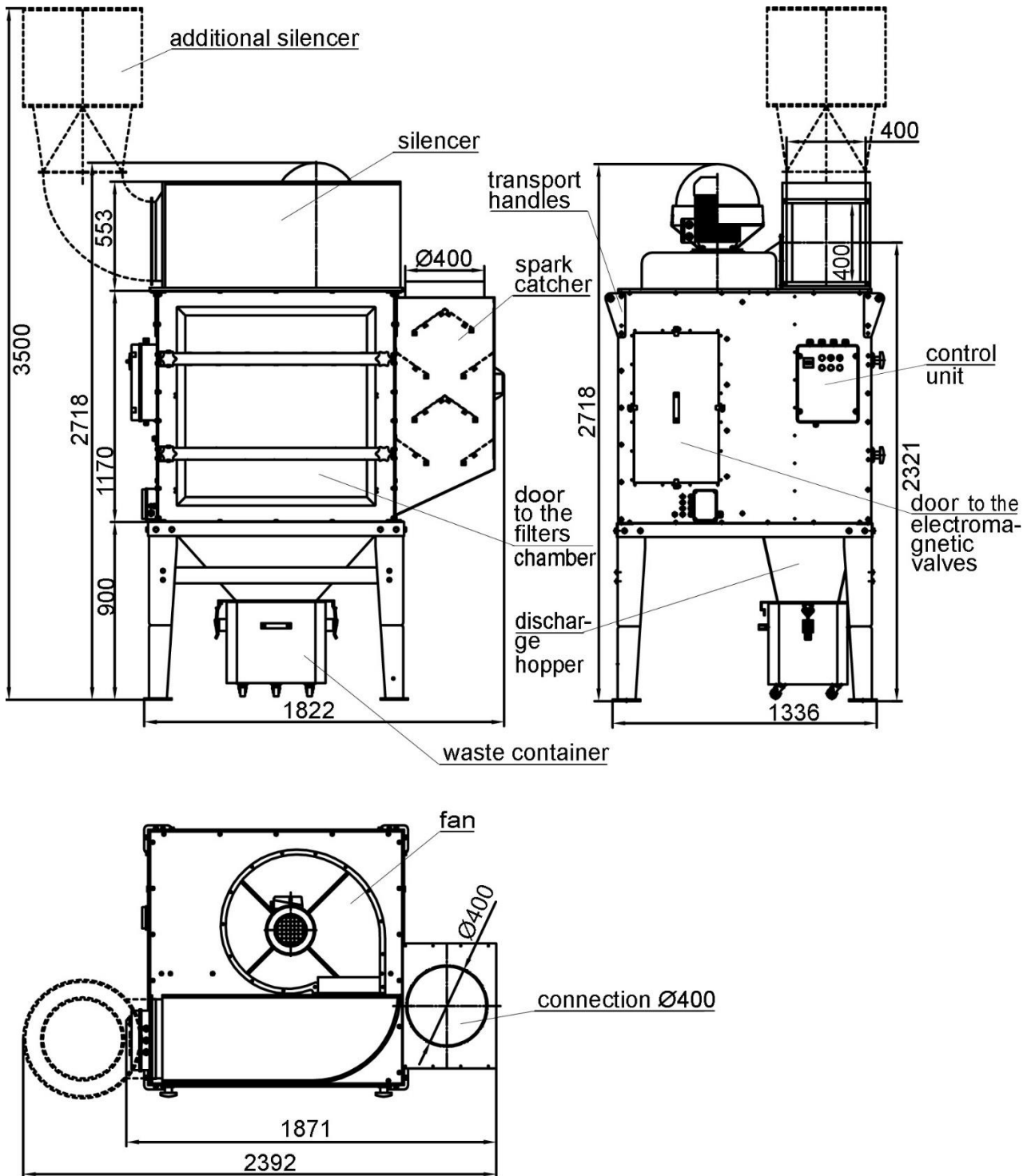
STRONG-5000-S filtering unit consists of subsequent elements:

- fan – horizontal silencer,
- housing – 4 cartridge filters inside,
- pneumatic filters regeneration system – compressed air tank and electromagnetic valves,
- hopper discharge underneath the housing,
- waste container – connected with the hopper discharge, equipped with castor wheels,
- four legs as a base for the housing,
- connection fittings Ø400 – at the suction side along with steel dividers, as “spark-catchers”,
- control unit.

In case when the filtering unit is not connected (at the suction side) to the ventilation installation – i.e. the discharge connection is not closed and the air is expelled back into the process room, it is recommended to apply additional sound absorbing elements (see Fig. No.3).

As optional accessories KLIMAWENT S.A. offers additional sound-absorbing set consisting of:

- connecting fitting piece – an elbow 400x400 mm,
- silencer Ø500 mm with a reducer.



**Fig. No.2 – STRONG-5000-S – Structure and dimensions**

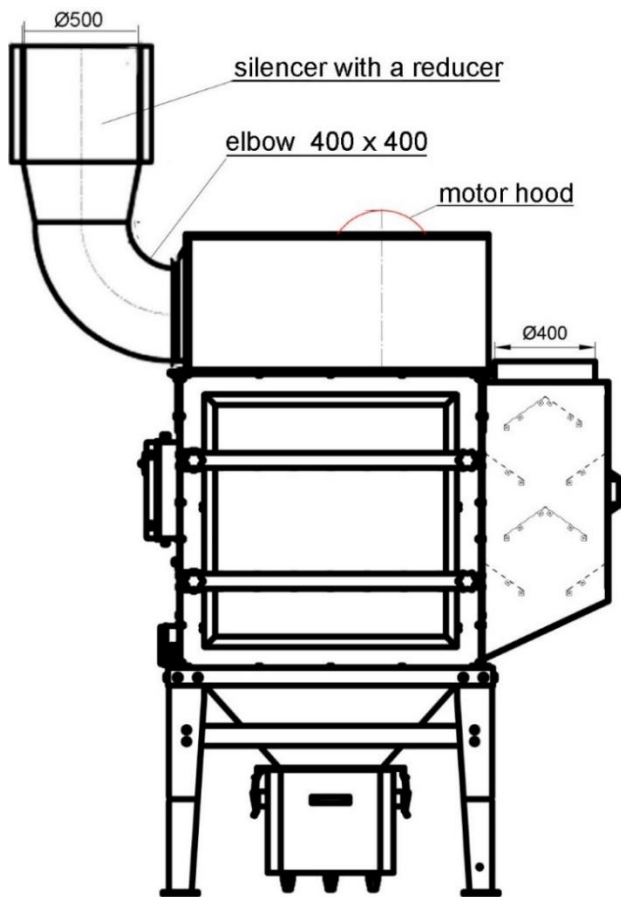


Fig. No.3 – Optional equipment

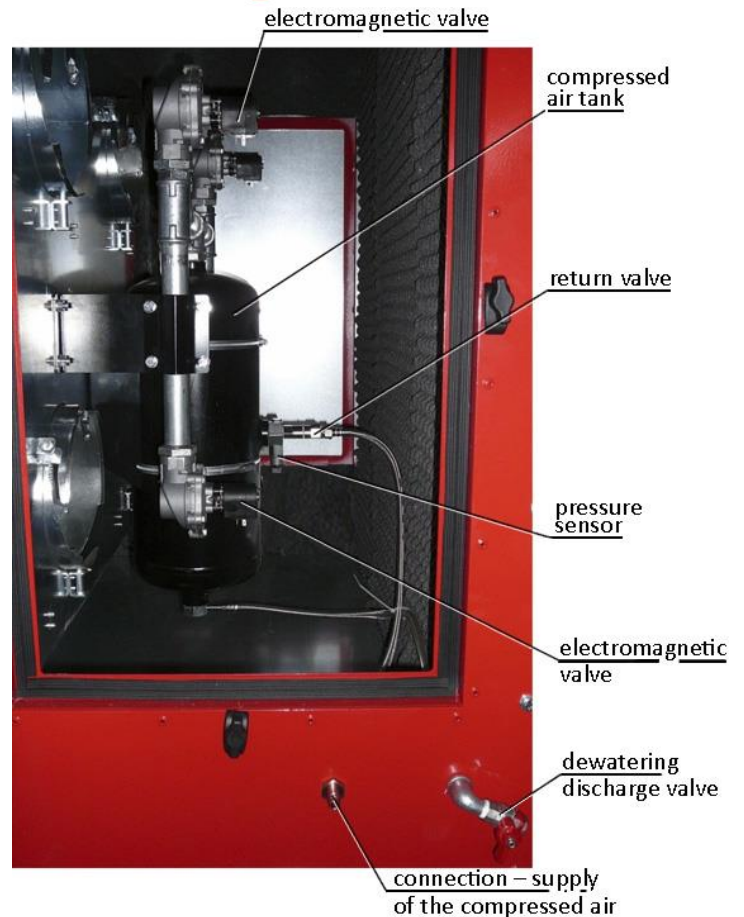


Fig. No.4 – Pneumatic installation

## 6. Assembly and Start-up

Generally, STRONG-5000-S filtering unit is developed for use in closed room (indoor application), but it can also be applied outdoors as the motor is protected by a hood from atmospheric factors (see Fig. No.2).

Put the appliance stably on the even floor surface. Mind that there should be free access to the control unit and to the waste container.

Prior to installing check the load carrying capacity of the floor.

**The legs of the STRONG-5000-S device are divided (sectioned), so the total height of the device can be reduced for transport.** Right after its delivery at the site of use, the legs have to be assembled by screwing up to the base (a set of screws/bolts is delivered by KLIMAWENT S.A.). For the transport time, the appliance is protected with foil and placed on a transport pallet. Having removed the protective foil, put the filtering unit exactly on the foreseen place of use (it is advised to use a fork lift).

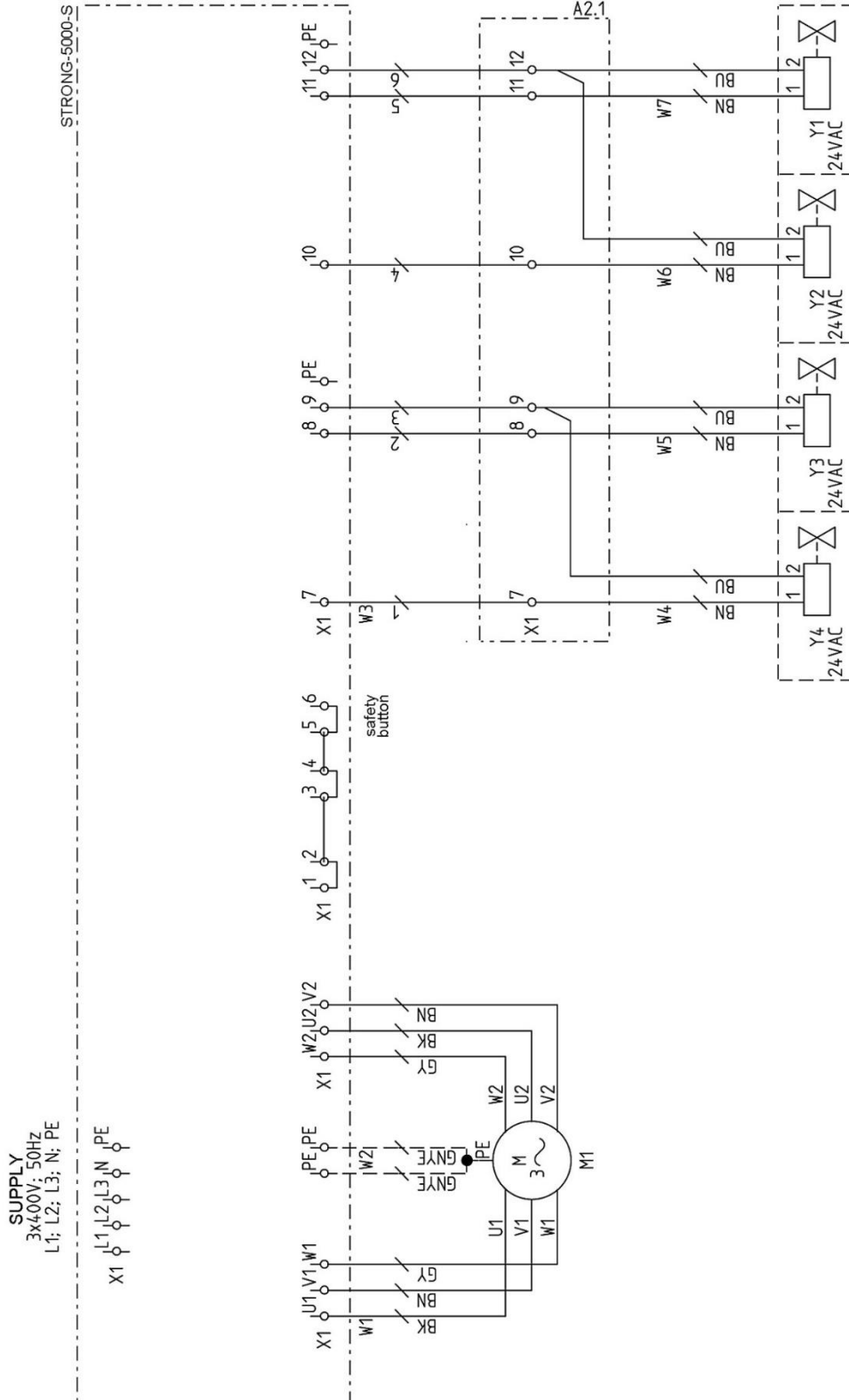
In the device base there are special guide holes to insert the profiles of the fork lift.

**The device is equipped with eye bolt handles to attach the transport ropes for loading / reloading.** Make connections to the external compressed air installation 0,6÷0,8 MPa. The connection point is a connection fitting piece to the ½" hose. The compressed air should be **free from oil**, humidity and any other impurities. **The connection has to be equipped with a valve, air filter and a dewaterer.** All these elements are not delivered along with the device. During the device preparation for the start-up, supply the power by connecting the cables to the control unit **according to the enclosed electrical connection diagram.**

**WARNING**

Connection to the power supply system should be performed exclusively by an authorized person of testified electrical qualifications.

To load/replace the cartridge filters it is important to open the door of the chamber of filters. **Prior to opening the door of filters chamber, necessarily disconnect the power supply!** Subsequently, unscrew (release) the plastic handles of the screw locks (4 pieces) – to such extent that the locks can be bent fully aside and User can open the door widely to the right angle. Insert the subsequent filter cartridges onto the slide-guides and push them to the wall of the electro-valves chamber. Next turn the cartridge filter to the right (clockwise) until the bayonet-joint locks. Finally, close the door of the chamber of filters and tighten up thoroughly the screw locks. Having replaced the cartridge filters, connect the filtering unit to the power supply.



**Fig. No.5 – STRONG-5000-S – Connection Diagram**

## 7. Operational Use

**Control unit, ZE-STRONG-5000-S** energises the fan, and additionally serves for controlling the pneumatic system of filters regeneration. The control unit is delivered along with the device.

### 1. Structure of the control unit

a. external part – consisting of a control panel, containing subsequent elements:

- white lamp **H1** – continuous light: indicates that the system is energized with the supply voltage.
- green lamp **H2** – 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 – to 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 the filters are regenerated.
- 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”** – operates the additional cycle of the filters regeneration while the fan is switched off.

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

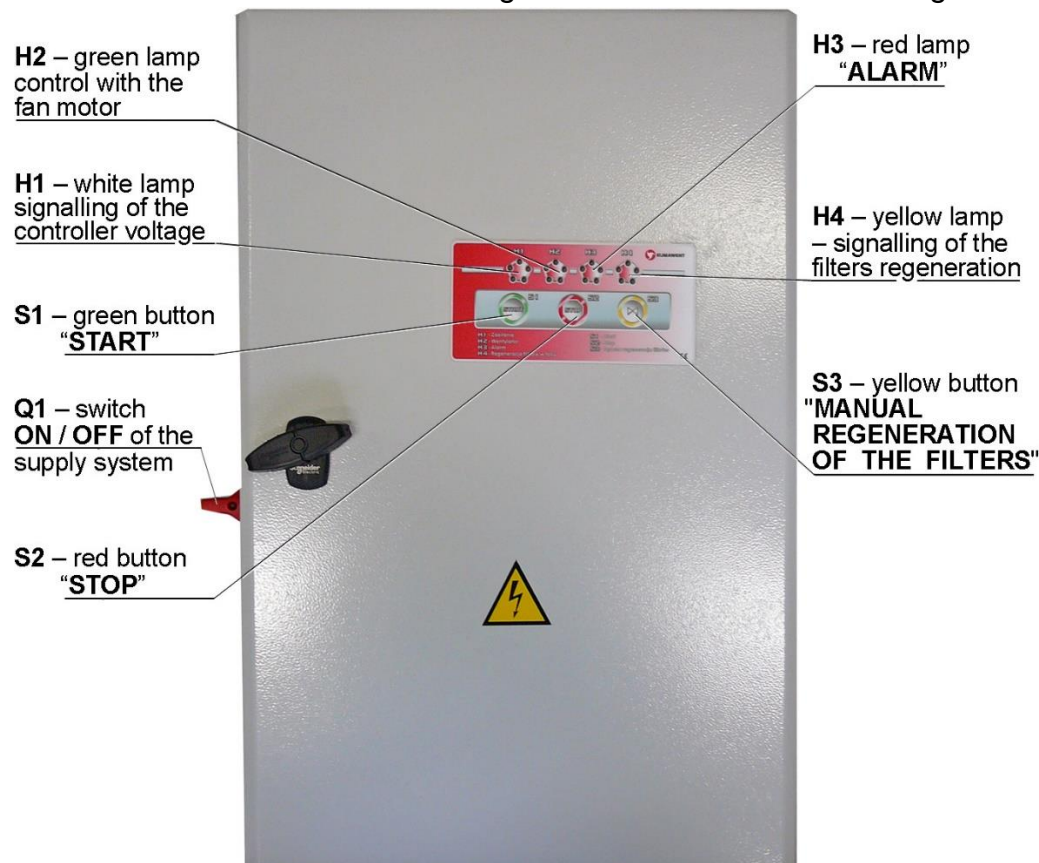
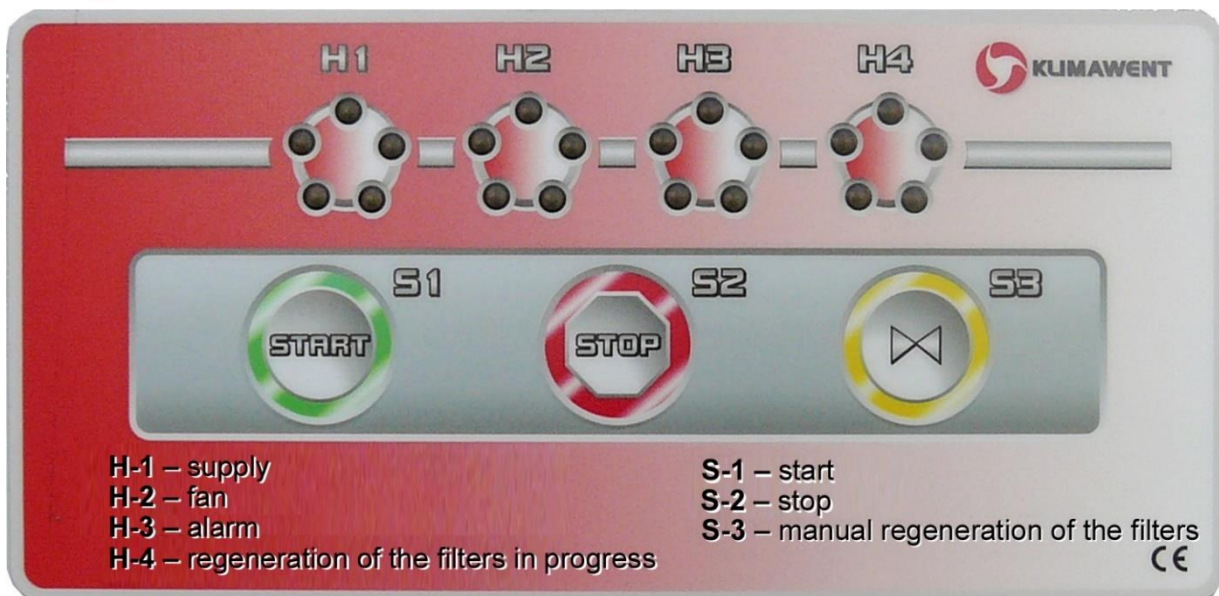


Fig. No.6 – ZE-STRONG-5000-S – front

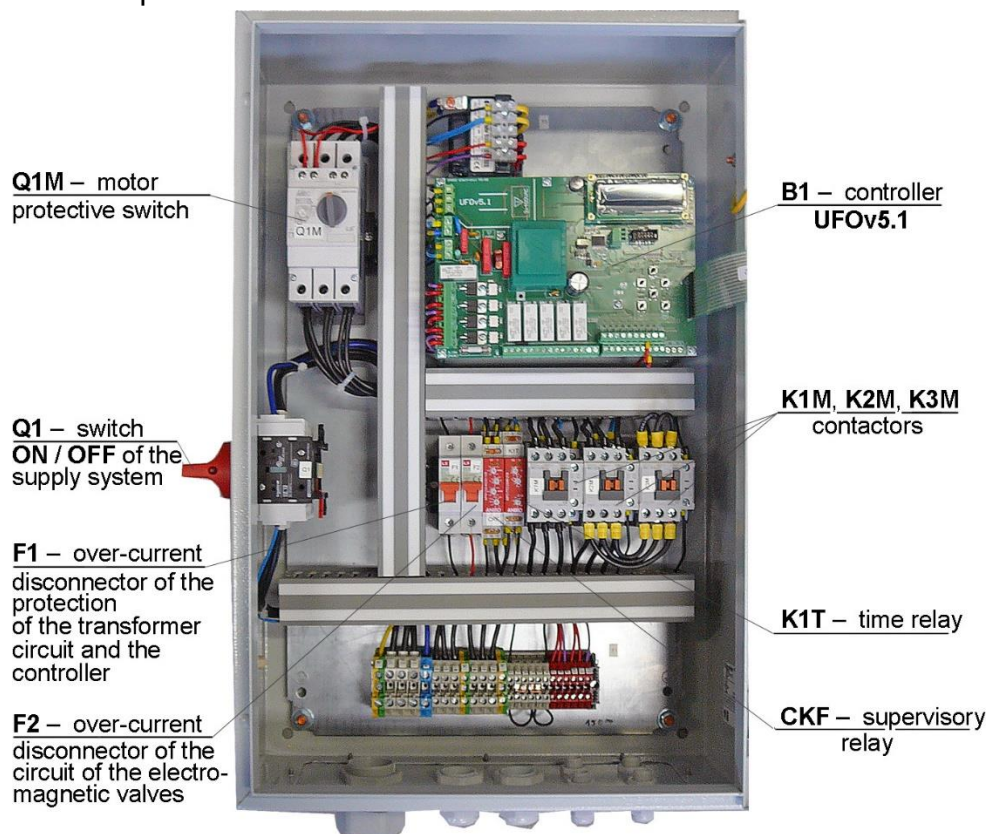




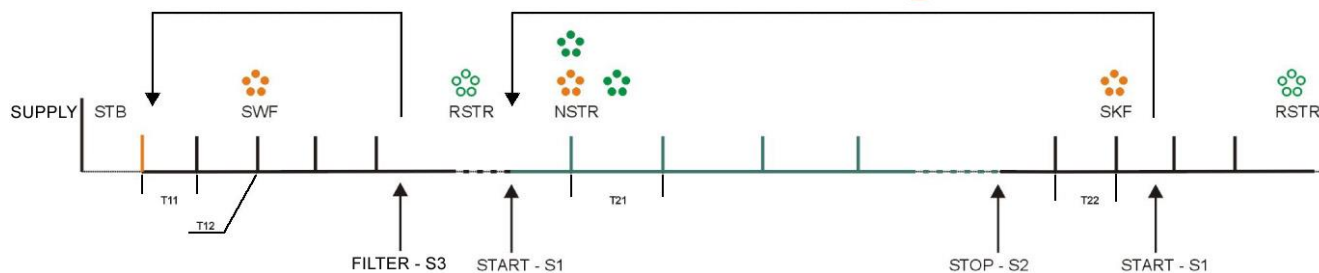
**Fig. No.7 – Control panel**

b. internal part – consisting of subsequent elements:

- supply disconnector – **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 of 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



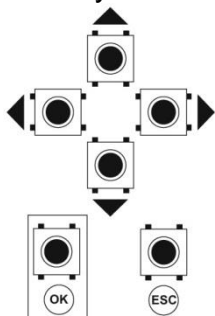
**Fig. No.8 – ZE-STRONG-5000-S – inside**



**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** – confirm and leave the edition mode






**ESC** – leave the parameters without confirmation







**GENERAL MENU**

	<table border="1"> <tr> <td>Status = RUN</td> </tr> <tr> <td>Board = OK</td> </tr> </table>	Status = RUN	Board = OK	<p><b>STATUS screen</b> (Status): <b>RUN</b> – a mode of work <b>NSTR</b>, the <b>OUT1</b> output is switched on <b>STOP</b> – the state of stop, the <b>OUT1</b> output is switched off</p> <p>(Board): <b>OK</b> – correct state of the functional elements of the board <b>UFOv5.1</b> <b>EO1</b> – alarm of the memory of the data <b>EO2</b> – alarm of the sensor of the temperature measuring <b>EO3</b> – alarm of the RTC clock</p>
Status = RUN				
Board = OK				
				
				







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









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

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

















     	<p>COMMUNICATION -&gt;</p>	<p><b>Screen COMMUNICATION</b> <sup>1)</sup>                  Sub-menu of the settings COMMUNICATION</p>
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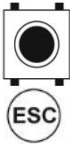


1) The function is not active in the program version 2.0 up to 2.2



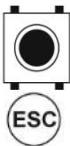

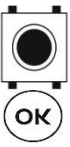
     	<p>INPUTS / -&gt;                  OUTPUTS</p>	<p><b>Screen INPUTS / OUTPUTS</b>                  Sub-menu of the settings INPUTS / OUTPUTS</p>
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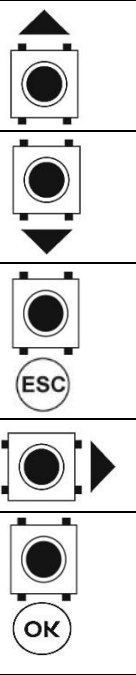
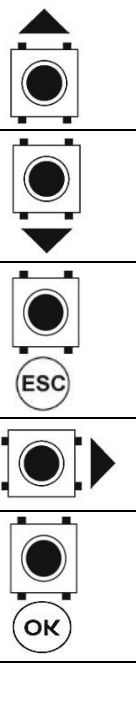
       	<p>Day = Tu hour 10:00                  Lang = ANG</p>	<p><b>Screen SETTING OF TIME</b>                  To adjust the days of the week and the time</p>
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**Sub-menu MODES**






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






    	<table border="1"> <tr> <td>mPR1 = AS mPR2 = AS</td> </tr> <tr> <td>mPR3 = AS mPR4 = AS</td> </tr> </table>	mPR1 = AS mPR2 = AS	mPR3 = AS mPR4 = AS	<p><b>Screen MODES 3/6</b> [mPRi]:{AS   AL}</p> <p><b>AS</b> – signalling of the alarm and disconnection of the status <b>NSTR</b> by changing the state at inputs <b>DI0</b> up to <b>DI3</b>  <b>AL</b> – signalling of the alarm, by changing the status at inputs <b>DI0</b> up to <b>DI3</b></p>
	mPR1 = AS mPR2 = AS			
	mPR3 = AS mPR4 = AS			

    	<table border="1"> <tr> <td>ALPR akt.= OFF</td> </tr> <tr> <td>Cons. START= OFF</td> </tr> </table>	ALPR akt.= OFF	Cons. START= OFF	<p><b>Screen MODES 4/6</b> [ALPR AKT.]:{OFF and ON}</p> <p><b>OFF</b> – blocking of the occurring alarm <b>ALPRi</b> at the inputs <b>DI0</b> up to <b>DI3</b>  <b>ON</b> – alarm <b>ALPRi</b> at the inputs <b>DI0</b> up to <b>DI3</b> activated</p> <p>[Cons. START]:{OFF and ON}</p> <p><b>OFF</b> – blocking of the possibility of switching on by means of the input <b>DI5</b> of the status <b>NSTR</b>  <b>ON</b> – stop of the status <b>NSTR</b> active</p> <p><u>Input <b>DI4</b> makes the same function as the button <b>START S1</b> on the elevation console</u></p>
	ALPR akt.= OFF			
	Cons. START= OFF			

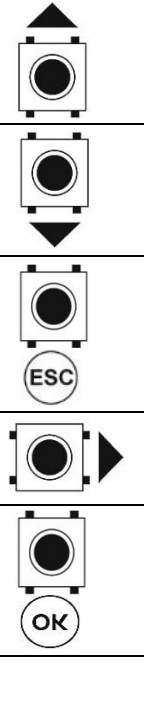
	<table border="1"> <tr> <td>Cons. STOP = OFF</td> </tr> <tr> <td>Cons. REGEN = OFF</td> </tr> </table>	Cons. STOP = OFF	Cons. REGEN = OFF	<p><b>Screen MODES 5/6</b>                  [Cons. STOP]:{OFF   ON}</p> <p><b>OFF</b> – blocking the possibility of stop, by means of the input <b>DI5</b> of the status <b>NSTR</b>  <b>ON</b> – stop of the status z <b>NSTR</b> active</p> <p><u>Input <b>DI5</b> realises the same function as the button <b>STOP S2</b> on the elevation console</u></p> <p>[Cons. REGEN.]:{OFF   ON}</p> <p><b>OFF</b> – blocking of the possibility of activation of filters regeneration, by means of the input <b>DI6</b>  <b>ON</b> – the operated regeneration is active</p> <p><u>Input <b>DI6</b> fulfils the same function as the button <b>FILTER S3</b> on the elevation console</u></p>
Cons. STOP = OFF				
Cons. REGEN = OFF				
	<table border="1"> <tr> <td><b>DI8</b> START = OFF</td> </tr> <tr> <td><b>DI8</b> STOP = OFF</td> </tr> </table>	<b>DI8</b> START = OFF	<b>DI8</b> STOP = OFF	<p><b>Screen MODES 6/6</b>                  [DI8 START]{OFF   ON}</p> <p><b>OFF</b> – blocking of the possibility of activation, by means of the input <b>DI8</b> of the state <b>NSTR</b> (switching on within the level)  <b>ON</b> – switching on the status <b>NSTR</b> active (switching on within the level)</p> <p>[DI8. STOP]:{OFF   ON}</p> <p><b>OFF</b> – blocking the possibility of switching off, by means of the input <b>DI8</b> of the status <b>NSTR</b> (switching on within the level)  <b>ON</b> – stop of the status <b>NSTR</b> activated (switching on within the level)</p> <p><u>In case when [DI8. START]=ON and [DI8stop]=ON input <b>DI8</b> fulfils the function of remote control <b>ON / OFF</b> of the status <b>NSTR</b></u></p>
<b>DI8</b> START = OFF				
<b>DI8</b> STOP = OFF				

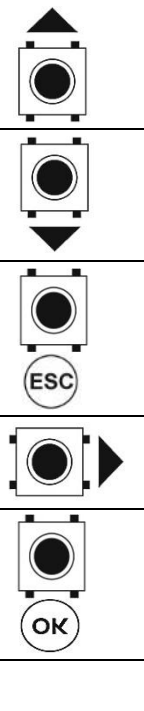
### Sub-menu SETTINGS

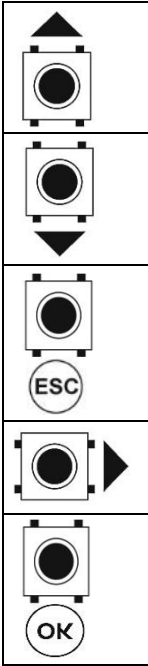
    	<table border="1"> <tr> <td>Time <b>T11</b> = 10s</td> </tr> <tr> <td><b>Lsekwen Lon</b> = 02</td> </tr> </table>	Time <b>T11</b> = 10s	<b>Lsekwen Lon</b> = 02	<p><b>Screen SETTINGS 1/6</b>                  [Time <b>T11</b>]:{1-99sec}</p> <p>Time <b>T11</b> – idle time (break) between the supply impulses of the electro-magnetic valves – during the status <b>SWF</b></p> <p>[<b>Lsekwen Lon</b>]:{0-9 cycles}  <b>Lsekwen Lon</b> – number of sequences – 4 cycles of pulsing each</p>
Time <b>T11</b> = 10s				
<b>Lsekwen Lon</b> = 02				

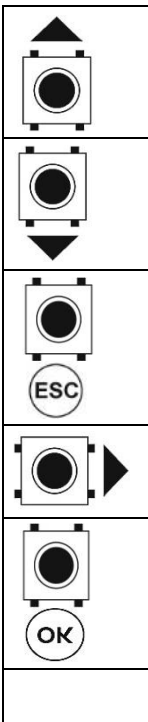
    	<table border="1"> <tr> <td>Time <b>T12</b> = 0,5s</td> </tr> <tr> <td><b>Ton PowPause</b> = 10s</td> </tr> </table>	Time <b>T12</b> = 0,5s	<b>Ton PowPause</b> = 10s	<p><b>Screen SETTINGS 2/6</b>                  [Time <b>T12</b>]:{0,1 – 5 sec}</p> <p>Time <b>T12</b> – duration of the impulse of the supply of the electro-valves</p> <p>[<b>TonPowPause</b>]:{1 - 50 sec}  <b>TonPowPause</b> – duration of the status <b>STB</b> (initialising of the system after the power supply is switched on)</p>
Time <b>T12</b> = 0,5s				
<b>Ton PowPause</b> = 10s				



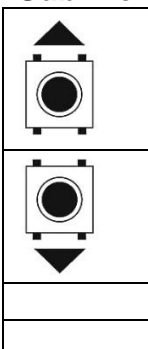
	<table border="1"> <tr> <td><b>Time T21 = 01min</b></td> </tr> <tr> <td><b>Status Zas 24V = ON</b></td> </tr> </table>	<b>Time T21 = 01min</b>	<b>Status Zas 24V = ON</b>	<p><b>Screen SETTINGS 3/6</b> [Time T21]:{1-90min}</p> <p>Time <b>T21</b> – duration of the break (idle time) within the status <b>NSTR</b> between the impulses of the power supply of the electromagnetic valves</p> <p><b>(StanZas 24V)</b> – state of the fuse of the transformer <b>24VAC</b> of the power supply of the electromagnetic valves</p>
<b>Time T21 = 01min</b>				
<b>Status Zas 24V = ON</b>				



	<table border="1"> <tr> <td><b>Time T22 = 0.5s</b></td> </tr> <tr> <td><b>Lsekwen Loff = 02</b></td> </tr> </table>	<b>Time T22 = 0.5s</b>	<b>Lsekwen Loff = 02</b>	<p><b>Screen SETTINGS 4/6</b> [Time T22]:{1-99sec}</p> <p>Time <b>T22</b> – duration of the break (idle time) between the impulses of the power supply of the electro-valves, during the status <b>SKF</b></p> <p><b>[Lsekwen Loff]:{0-20}</b> <b>Lsekwen Loff</b> – number of sequences (4 cycles of pulsing each) – of pulsing – for the status <b>SKF</b></p>
<b>Time T22 = 0.5s</b>				
<b>Lsekwen Loff = 02</b>				



	<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><b>Screen SETTINGS 5/6</b> [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} <b>AktPoziomWe</b> – the level of signal (from the input of pressure control) is activated</p>
Time T31 = 20s				
Akt PoziomWe = HI				

	<table border="1"> <tr> <td>Tset = 21 °C</td> </tr> </table>	Tset = 21 °C	<p><b>Screen SETTINGS 6/6</b> [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			

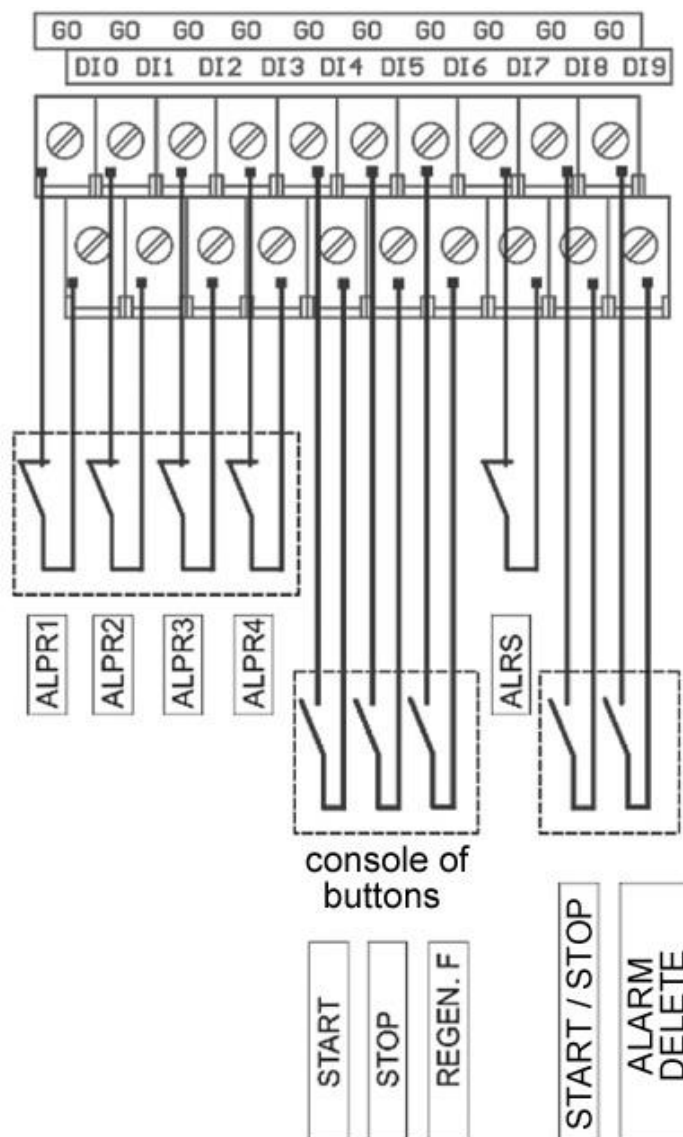
### Sub-menu INPUT / OUTPUT

	<table border="1"> <tr> <td>DI: 000111000</td> </tr> <tr> <td>DO: 101010</td> </tr> </table>	DI: 000111000	DO: 101010	<p><b>Screen INPUTS / OUTPUTS 1/3</b></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				

	<b>AIN: -- %</b>	<b>Screen INPUTS / OUTPUTS 2/3</b>  (AIN) – status of the analogue input 0-10V (TO) – status of the outputs of impulses T1-T4
	<b>TO: 0000</b>	
		

	<b>Tb = +25.5 °C</b>	<b>Screen INPUTS / OUTPUTS 3/3</b>  (Tb) – measuring of temperature on the controller (StanZas 24V) – the state of transformer fuse <b>24VAC</b> of the power supply of the electromagnetic valves
	<b>StanZas 24 = OK</b>	
		

### 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 functions of inputs are activated from the level of the controller menu)
- inputs **DI0-DI3**, **DI7** are alarm inputs (masking of the alarms for **DI0-DI3** activated from the level of the controller menu)

### Digital outputs

All digital outputs are relay outputs.

<b>DOUT0</b>	separable output of the control system of the fan contactor
<b>DOUT1</b>	switchable output, collective signal of the alarm
<b>DOUT2</b>	switchable output, indication of the fan work
<b>DOUT3</b>	switchable output, indication of the filters regeneration
<b>DOUT4</b>	switchable output, indication of the correct supply of the board and of the electromagnetic valves
<b>DOUT5</b>	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 <b>MODES 2/6</b> , Screen <b>SETTINGS 6/6</b> , Screen <b>INPUTS / OUTPUTS 1/3</b> and <b>3/3</b> )

### States of emergency (alarm)

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

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 causes 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 within a 10 seconds of 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. Before emptying the hopper chamber should be tapped to remove the remaining dust, impurities from the hopper surface.

Periodically, the filter regeneration system must be dewatered. Open the drainage valve of the compressed air and release the condensate water from the installation. Close the dewatering valve when exclusively clean and dry air is discharging from the installation. 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 it to technical revision (see Section 8).

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

## 8. Troubleshooting Guide

Table No.4

1.	Drop in the suction volume flow.	Filters are clogged.	Clean the filter surfaces with "dry method"
2.	Some dust is emerging in the chamber of electromagnetic valves.	Defect of the filters.	Replace the defective filters.
3.	Sudden vibrations of the fan.	The impeller is defective.	Replace the impeller for new.
4.	Dust is accumulating at the fan outlet.	Defect of the filter.	Replace the damaged filter for a new one.

Failure in function of the device and exact handling in such cases are described on page 20 Section "States of Emergency".

## 9. Maintenance

The construction of the device does not require any everyday technical supervision, except for periodical verification of the mechanical and electrical connections, especially the connection with the local grounding profile.

From time to time, after the completed work, clean the chambers of electromagnetic valves from the accumulated dust. Every time, before emptying the waste container, it is important to "tap" the discharge hopper chamber (to strike all the pollutants down into the waste container).

Periodically remove the condensate water drippings and the impurities from the dewatering filter of the compression air system and the compression air tank – the valve is placed on the device housing.

In case of non-typical disturbances follow the instructions as in Section 8 of the present Use and Maintenance Manual. Every 12 months of operational use – clean and examine the fan and the motor according to the requirements of the motor manufacturer.

**WARNING** Every three months, check the pollution state of the extraction ductings, clean them when necessary.

## 10. Occupational Health and Safety

Prior to start and use, it is important to get acquainted with the present Manual. For the sake of safety, **connect the device to the power supply system strictly according to the enclosed electrical diagram** and in compliance with the being in force regulations within the range of personal protection from electrical shock.

**WARNING** Any work related to connection to the electrical power system ought to be performed exclusively by an authorized person with testified qualifications.

For safety reasons, the pressure of the supplied compressed air, should not exceed 0,8 MPa – the recommended value is 0,6 MPa.

**WARNING** Repair should be carried out after the fan is switched off and the device is disconnected from the power supply mains.

## 11. Transport and Storage

STRONG-5000-S filtering unit has to be transported in two assemblies protected in foil, placed on transport pallets. For the transport time the device should be placed in vertical position and protected from an uncontrolled overturn and displacement.

While assembling the device at the User's location, follow the guidelines included in Section 6 "Assembly and Start-up". As the device is a thin-wall construction handle with care while lifting the subsequent assemblies during the transport, reloading and installing. The unit has to be stored in dry rooms and areas of efficient ventilation.

## 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 use which is in contradiction with the purpose of application and with the present Use and Maintenance Manual,
- malfunctions resulting from the improper transport, storage or incorrect maintenance.

Infringement of the Section 3 "Reservations of Producer" of the present Use and Maintenance Manual and, especially modifications undertaken by User on one's own or use in contradiction with the purpose of application – shall result in 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: **STRONG-5000-S**

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 May 17<sup>th</sup>, 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 21<sup>th</sup>, 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 30<sup>th</sup>, 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 appliance meets following harmonized standard:

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

.....  
place, date

**KLIMAWENT S.A.**  
**Supported Employment Enterprise**  
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phone: +49 58 829 64 80  
email: [klimawent@klimawent.com.pl](mailto:klimawent@klimawent.com.pl)  
[www.klimawent.com.pl](http://www.klimawent.com.pl)

.....  
signature of authorised person  
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

.....  
name, surname, function  
of the signatory  
NIP: 958 159 21 35  
REGON: 220631262  
Bank Account: **Santander Bank Polska S.A.**  
56 1500 1025 1210 2007 8845 0000

**NOTES:**