

Use and Maintenance Manual



Dust separator WE-5,5/D

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1. Introductory Remarks

The purpose of the present User's Manual is to supply User with directions within the range of application, installation, start-up and the operational use of the **WE-5,5/D dust separator**.

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 **WE-5,5/D dust separator** 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 21th, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products */Journal of Laws L285 of 31.10.2009/*
- **327/2011 (EU) Commission 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 L90 of 06.04.2011/*

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

- | | |
|-------------------------------|---|
| ● PN-EN ISO 12100:2012 | - "Safety of machinery. Basic concepts, general principles for design. Risk assessment and risk reduction". |
| ● PN-EN 60204-1:2010 | - "Safety of machinery. – Electrical equipment of machines. Part 1: General requirements". |
| ● PN-EN ISO 13857:2010 | - "Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs". |
| ● PN-EN 60529:2003 | - "Degrees of protection provided by enclosures (IP Code)". |
| ● PN-EN 61439:2010 | - "Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions". |
| ● PN-EN 60335-1:2012 | - "Safety of electrical appliances for household and similar use – Part 1: General requirements". |

CAUTION: The fan and the vibration mechanism included in the device as a rotating machine constitute a potential source of risk in case when:

- installation, start up or servicing is not carried out by a qualified personnel,
- the device is not used in compliance with its purpose and designation.

2. Application

The **dust separator WE-5,5/D** has been designed to solve the problems pertaining to the extraction and filtering the health hazardous dry dusts, arising during the grinding of non-sparking materials, cast iron machining, powder painting, packing and re-packing the powdery materials, dust extraction from processing machines being used at various workplaces.

The dust separator captures the impurities arising during the production process, before they reach the breathing zone of the personnel.

In case when the device is used for easy flammable dusts (e.g. wood grinding), it cannot be used simultaneously for other technological processes causing sparking during the work.

Additionally, important are fire protection regulations.

WE-5,5/D is designed for dry dusts, which could not create **explosive atmospheres**, i.e. mixture of flammable substances in a form of dusts with the air, in atmospheric conditions, where the burning mass of the mixture proceeds very fast and is accompanied by a sudden pressure increase.

WE-5,5/D separator is equipped with a unique system for cleaning the internal surface of the filtration bag (from the deposits of light dust fractions).

The cleaning system works within the automatic cycle of the vibration mechanism.

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.
- Installing of any additional elements not belonging to the normal device structure (or accessory set) is not acceptable.
- Any structural changes or modification of the separator, carried out by User on one's own are not permitted.
- Protect the housing from mechanical damage.
- Protect the waste bag and the bag filter from mechanical damage.
- The appliance cannot be used for conveying the air that contains subsequent impurities:
 - viscous or humid, as they could deposit on the device structure, especially clog the filters,
 - fine impurities – of dispersion below 10 microns,
 - aggressive.
- Producer is not responsible for wounds, injuries, body laceration experienced by User or personnel during the improper use.

4. Technical Data

Table No.1

Type	IP	Supply voltage [V / Hz]	Motor rate [kW]	Maximum volume flow [m ³ /h]	Maximum vacuum [Pa]	Acoustic pressure level [dB(A)] from the distance		Weight [kg]
						1 m	5 m	
WE-5,5/D	55	3x400 /50 3x230 /50	5,5	1890	8000	88,7	84,7	280
						(75,5)	(68,7)	

REMARK: In the brackets are given values of noise level at the attached silencer at the outlet

Replaceable bags:

- a) filtration bag – type WF-WE
- b) collecting bag – type WZ-WE

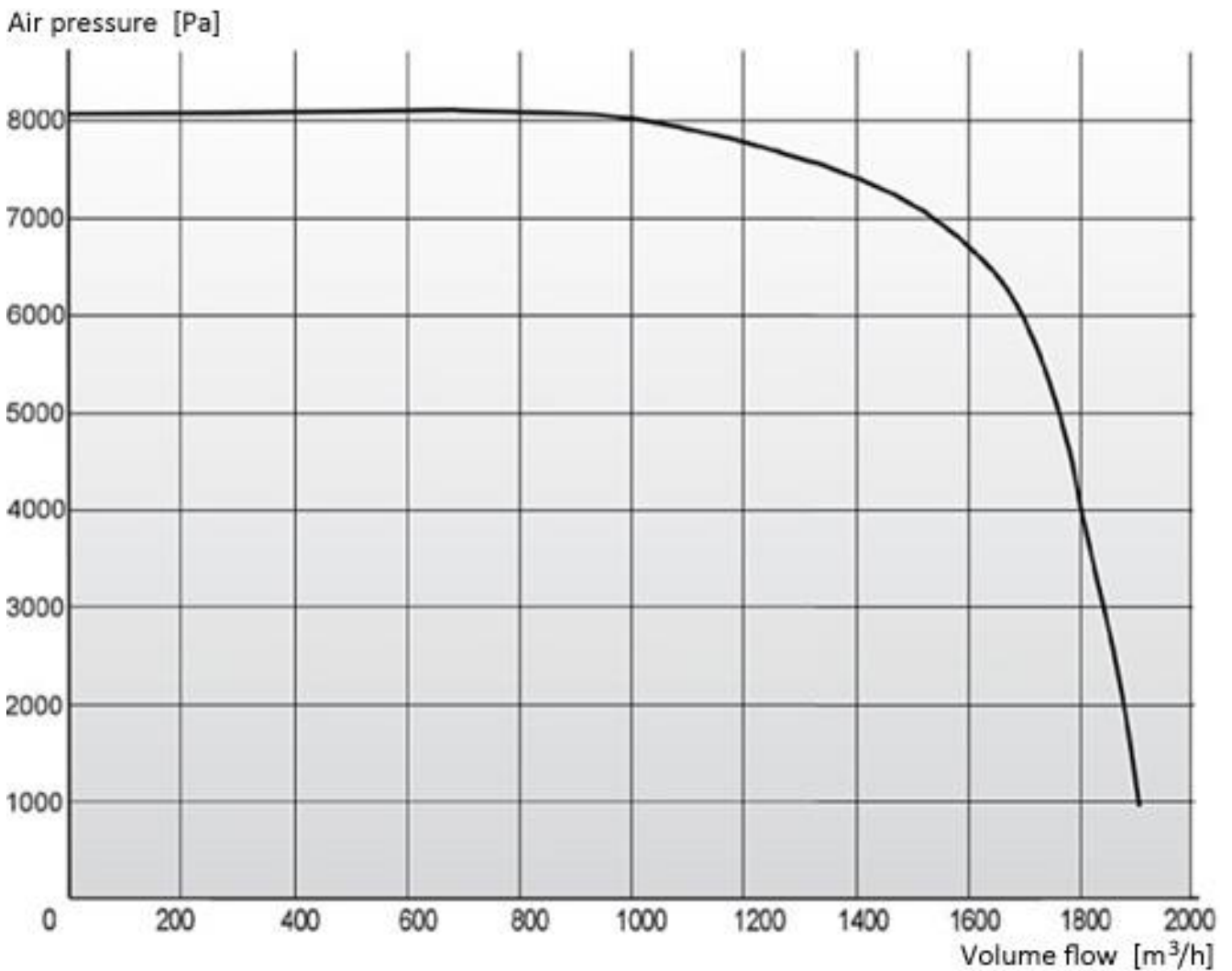


Fig. No. 1 – Flow chart

5. Structure and Function

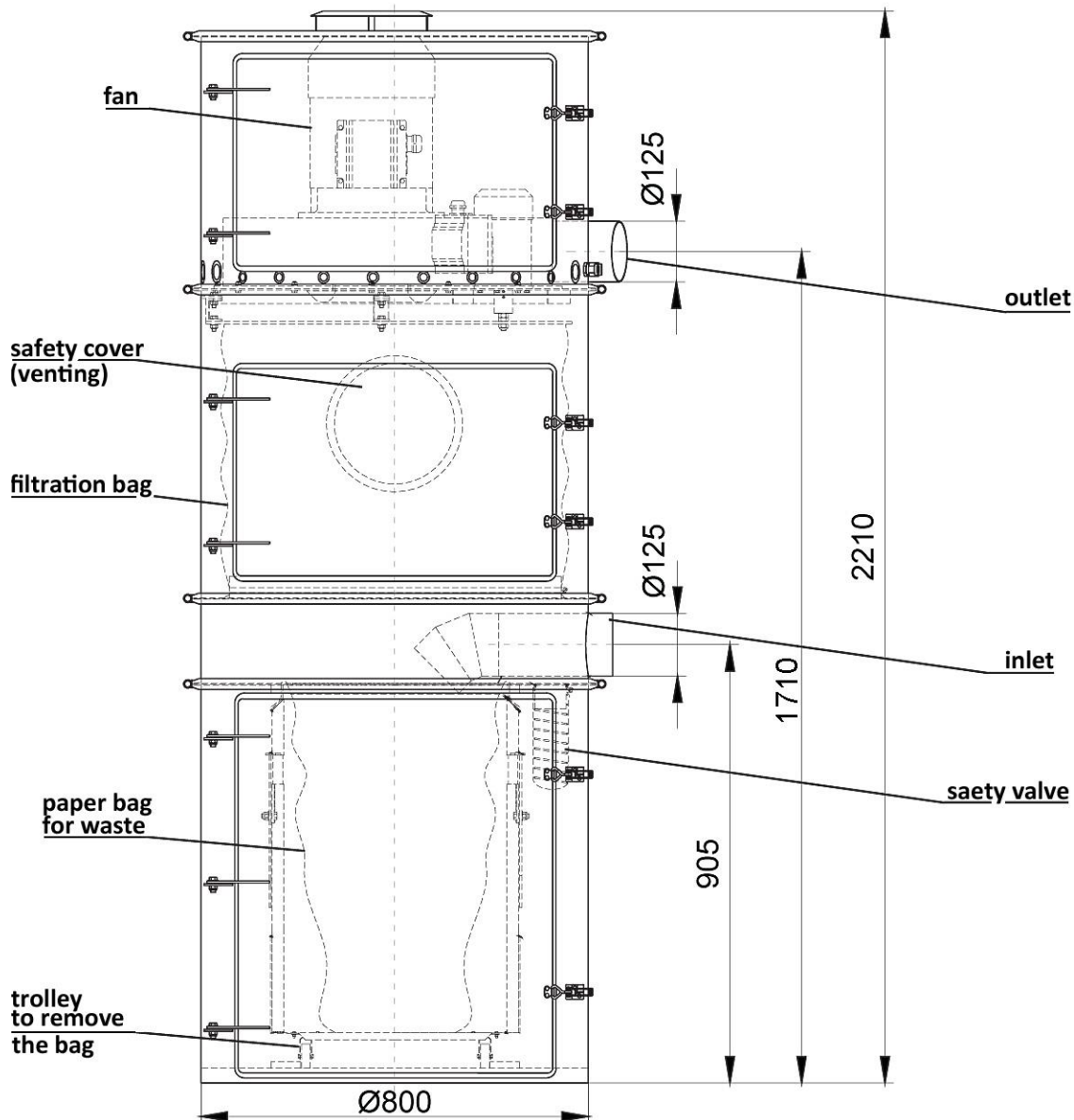


Fig. No.2 – Structure and dimensions of the device WE-5,5/D

The separator consists of a cylindrical housing of four segments, integrated together by means of clamping hoops. In the upper part is located the fan. Under the fan is placed a cloth filtration bag. The polluted air is guided to the cloth filtration bag. The extracted contaminants fall into the lower collecting bag (waste bag).

Fine dust fractions are depositing on the internal surface of the filtration bag, from where they are periodically shaken (by means of a vibration mechanism) down into the paper bag. The motor of the vibration mechanism is operated automatically, at the moment when the fan is switched off.

It is important to connect the suction connection (of the dust separator) with the processing machine, where the dust is being extracted through the polyurethane flexible hoses. Function of the dust separator is operated by the ZE-WE-5,5/D control unit, which can be installed in the randomly chosen place (beyond the device), as convenient for the operator.

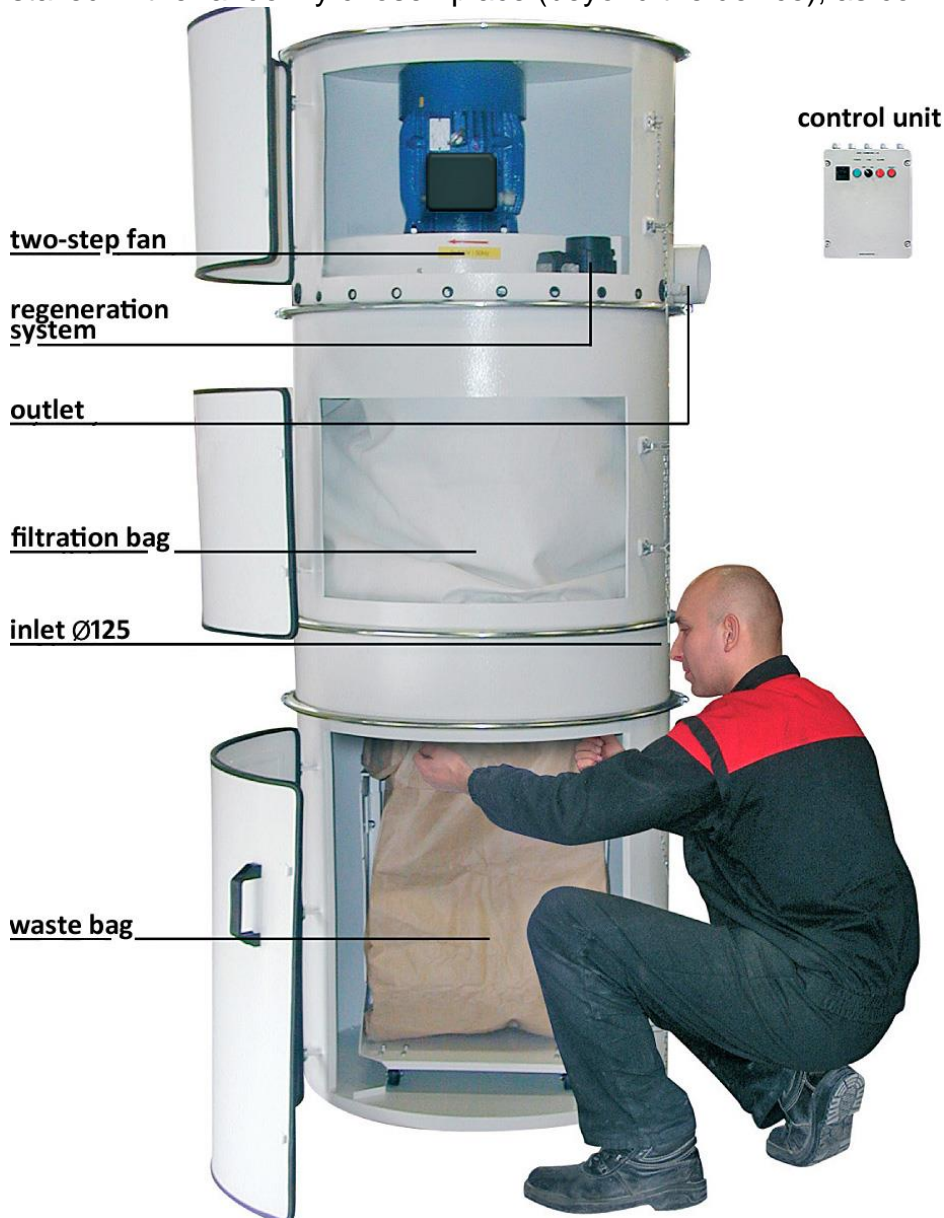


Fig. No.3 – Maintenance of the device WE-5,5/D

6. Assembly and Start-up

WE-5,5/D dust separator is designed for use in a closed room (indoor application). It should be placed stably on an even floor surface. Important is the free access of the cooling air circulation and that User has enough place to replace the bag filter and the waste bag. It is recommended to install a silencer at the outlet, as this significantly reduces the noise. The ZE-WE-5,5/D control unit should be installed in a place that is convenient for User. Additionally, it is important to provide 3x230V, 50Hz or 3x400V, 50Hz power supply, depending on the supply versions. The control unit provides possibility of controlling the device function from the switchgear or from the external closable contact. Additionally, to the X4 terminal strip is supplied a non-potential contact (see Connection Diagrams). The contact is closed during the work of the fan.

The device should be connected to the power supply system by User on one's own, by selecting the appropriate sort and section of the supply cables and a correct protection from the short-circuit- and overload effects – according to the being valid regulations and with reference to the local conditions.

Connection to the power supply system should be carried out by an authorized person with electrical qualifications, according to the valid regulations.

Prior to the device start-up examine subsequent aspects:

- the voltage value of the supply installation,
- connection correctness of the protective cable,
- connection correctness of the electrical installation and selection of the protections,
- mounting and tightness of the bag filter, waste bag and housing covers.

Version of power supply 3x230V

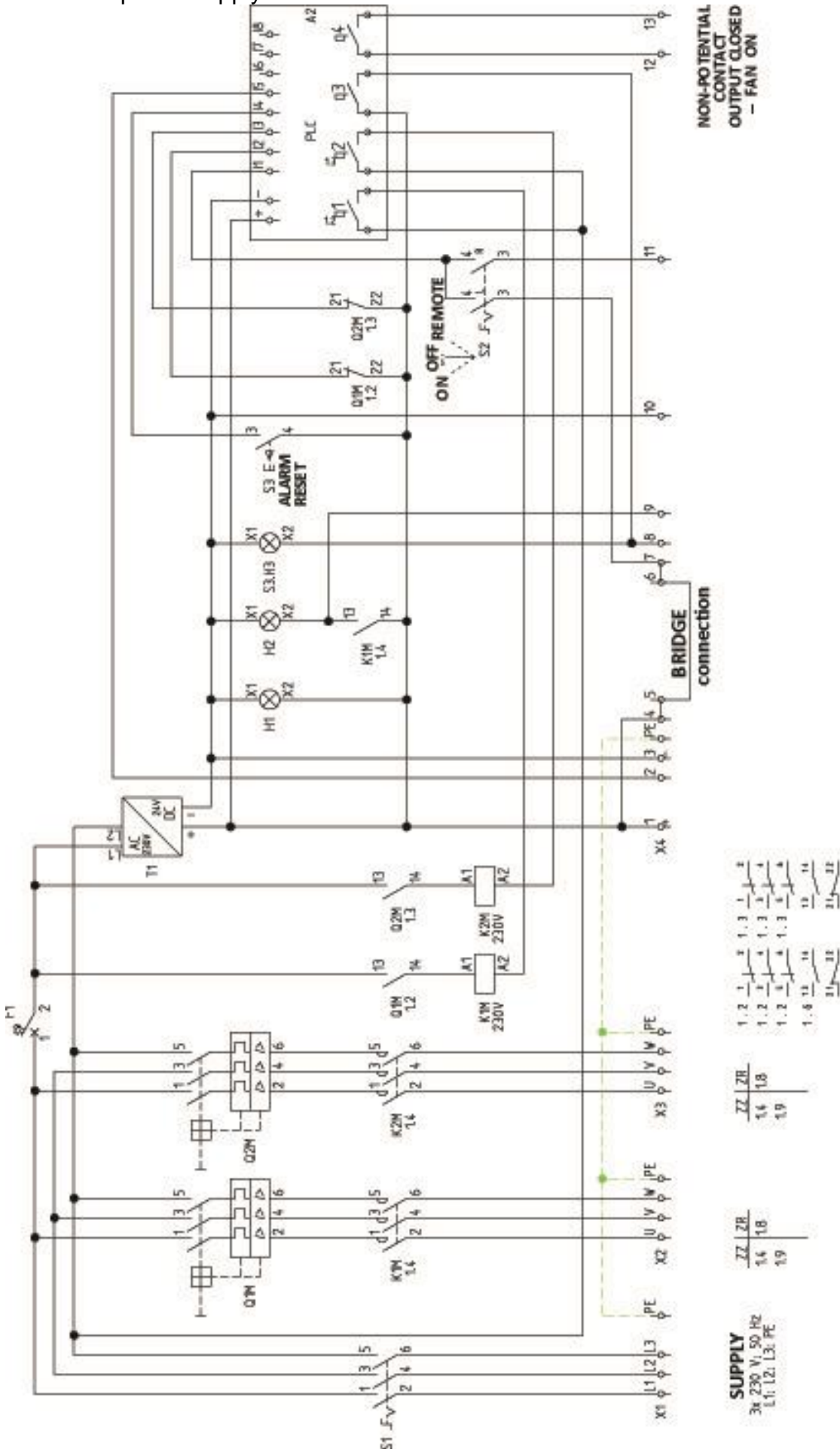


Fig. No.4 – WE-5,5/D main connection diagram 3x230V

Version of power supply 3x230V

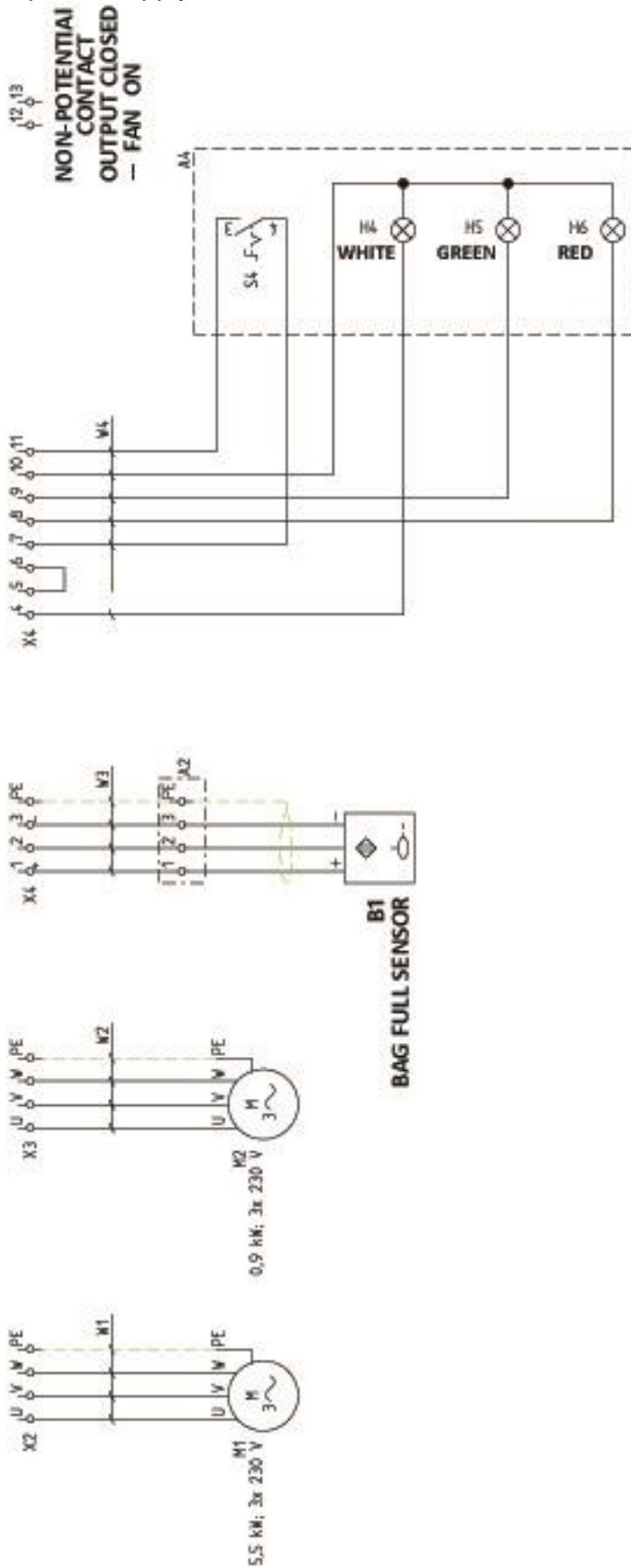


Fig. No.5 – Connection of external elements

Version of power supply 3x400V

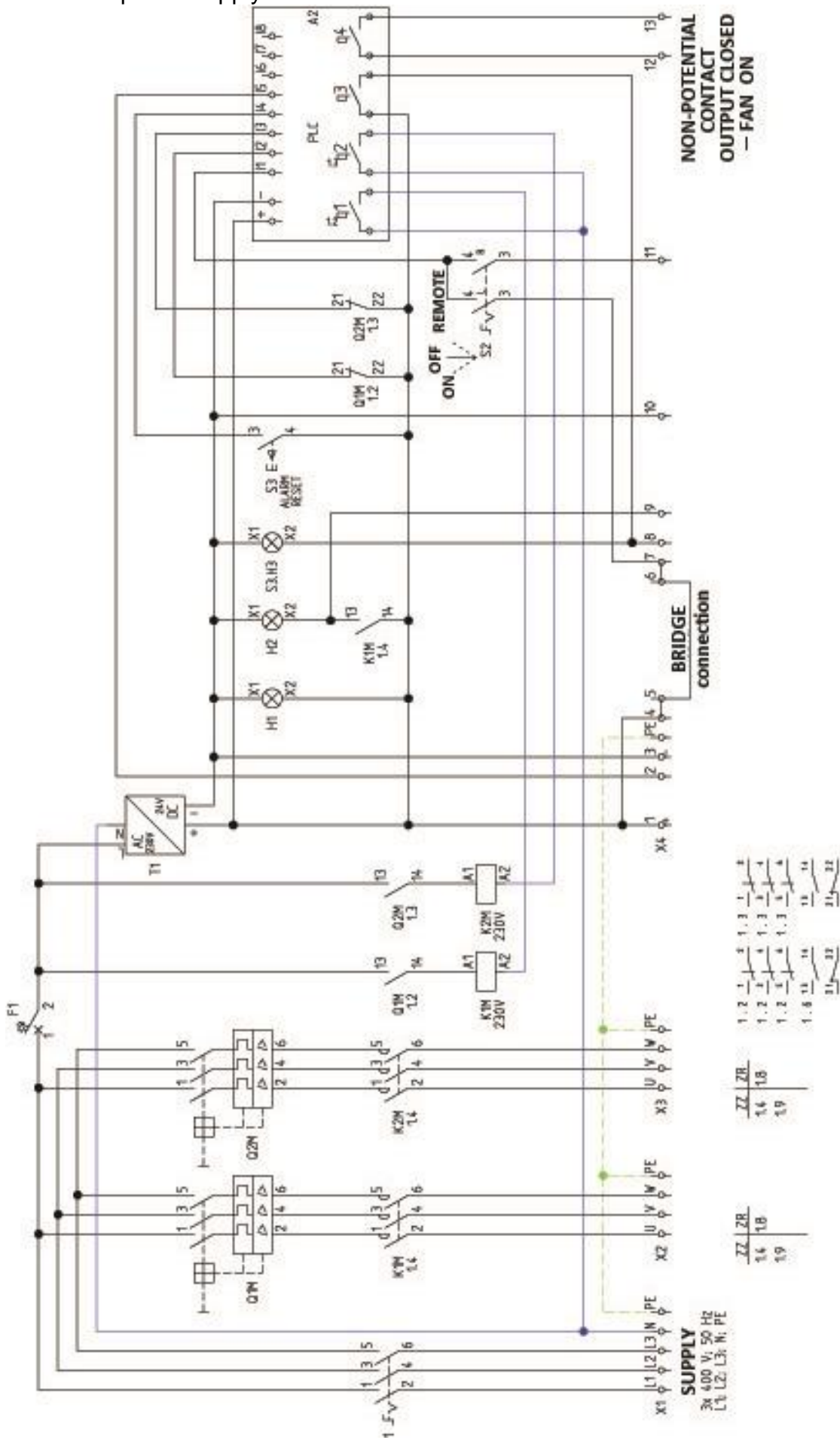


Fig. No.6 – WE-5,5/D main connection diagram 3x400V

Version of power supply 3x400V

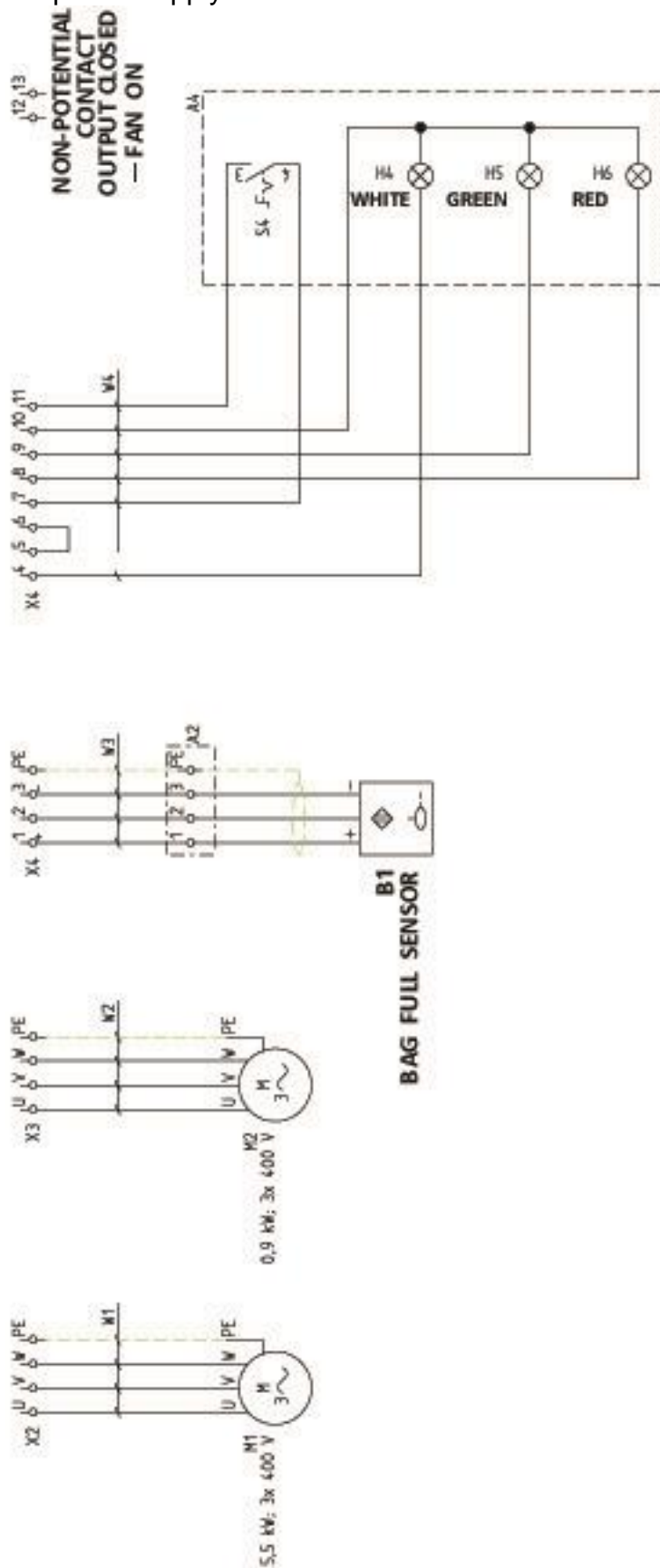


Fig. No.7 – Connection of external elements

7. Operational Use

Control functions with the device work proceeds by means of the ZE-5,5/D control unit. Housing of the control unit is illustrated in the Fig. below.

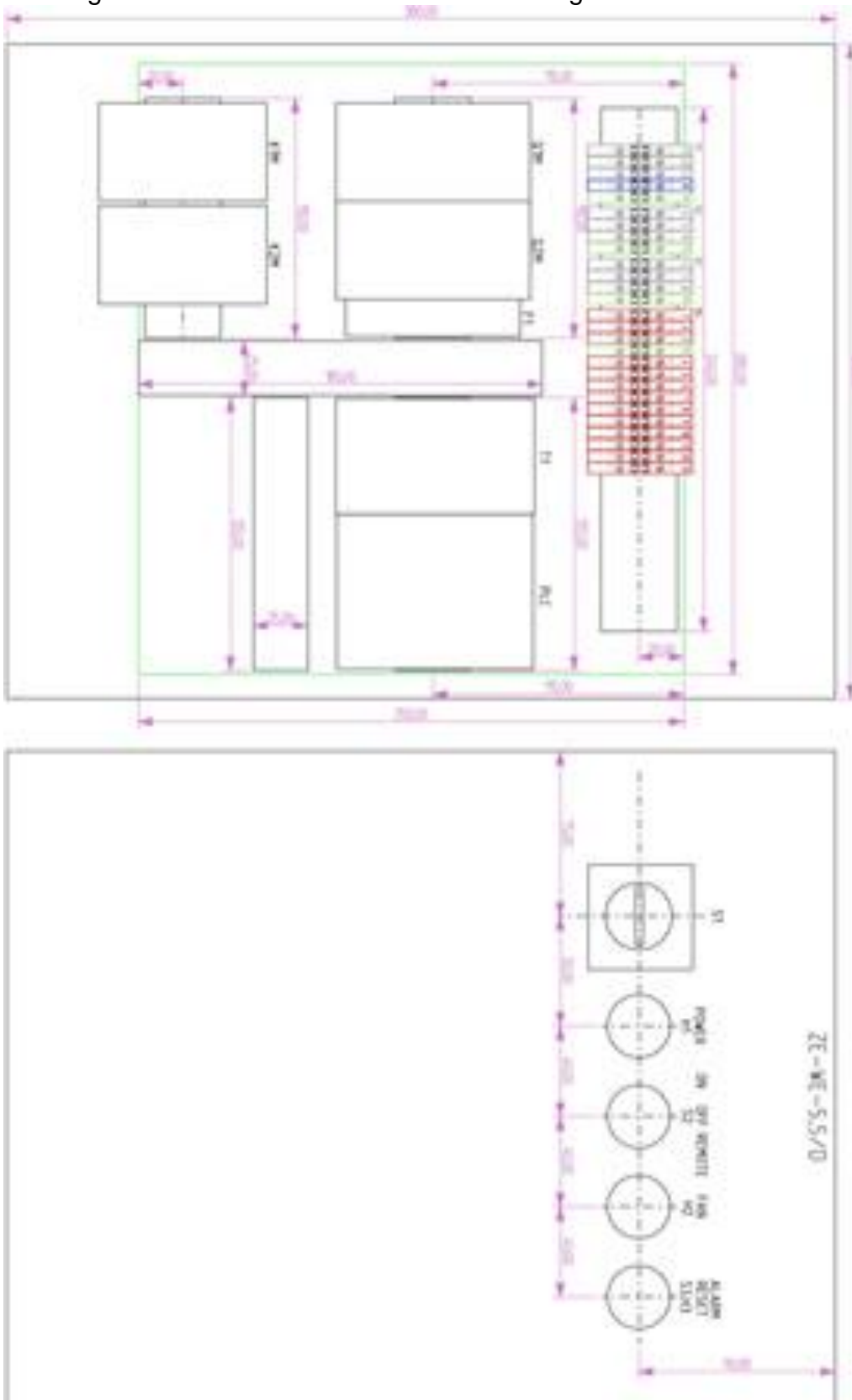


Fig. No.8 – Layout of the control unit

Function of the control devices

(markings are compatible with the Connection Diagrams)

S1	– general disconnecter – switches off and disconnects the separator from the power supply system.
Q1M	– motor protective switch – protects the motor from damage due to the blocked start-up, overload, short-circuit and incomplete-phase run.
Q2M	– motor protective switch – protects the motor from damage due to the blocked start-up, overload, short-circuit and incomplete-phase run. Provides possibility of switching ON and OFF of the device from the power supply system (from the main circuit as well as from the control unit).
F1	– overcurrent switch – protects from short-circuit occurring within the control system.
K1M	– contactor – start-up of the fan.
K2M	– contactor – start-up of the fan.
PLC	– controller – control over the device function.
S1	– illuminated switch “ ON/OFF ” – applies the supply onto the control system. When it is switched into position ON – the supply application is signalised by light in the switch.
S2	– triple-position switch – switches on the switchgear or the remote control.
S3	– illuminated green pushbutton “ RESET ” – carries out the reset after the removal of the reasons of the alarm.

Description of the control lamps on the front panel

(markings are compatible with the Connection Diagrams)

H1	– white lamp – power supply ON
H2	– green lamp – fan ON
S3H3	– red lamp – built in the S3 button – indicates one of the three alarm states

The dust separator function is controlled by the ZE-WE-5,5/D control unit.

SWITCHING ON THE POWER SUPPLY

Turn the **S1** switch into position “**ON**” – this is indicated by the white lamp **H1**.

HOW TO START THE FAN

Turn the **S2** switch into position “**ON**” – the fan starts drawing the impurities through the extraction ducting. The fan function is indicated by the green lamp **H2**.

WHEN THE WASTE BAG IS FILLED UP

The fill-up state is signalised by the red lamp **H3** “**ALARM**”, simultaneously the fan is being switched off. After 10 seconds (for the period of 20 seconds) the shaking vibrator operates to remove the fine dusts from the bag filter, into the waste bag.

After that, open the door in the lower segment, lift the two side levers and slide out the trolley with the waste bag.

Replace the bag for a new, protect it and close tightly the door. To restart the fan press the **S3** button “**RESET**”.

After each fan stop (when the **S2** switch is set into position “**OFF**”), automatically starts the fine dust shaking of the bag filter and the vibrator is running (during the normal function of the device) – after 10 seconds the vibrator switches on and runs for 20 seconds. The fan should be restarted by setting the **S2** switch into “**ON**”.

HOW TO STOP THE DUST SEPARATOR

To switch off the device, set the **S2** switch into position “**OFF**”, and subsequently the **S1** switch into position “**OFF**”.

REMOTE CONTROL (OPTION)

Remote control is provided as a possibility of operating the device. As optional equipment, (for external controlling) is applied an outer panel.

To obtain the remote control follow subsequent steps:

1. Turn the **S2** switch (in the control unit) into position “**REMOTE**”;
 - the fan starts after using the external panel.The fan work is confirmed by the green lamp **H2**.
2. On the external panel, (as ready for use), the white lamp **H4** lights on.
3. Set the **S4** switch into position “**ON**”. The fan of the separator is being operated, and the status **RUN** is signalised by the green lamp **H5** on the panel and the green lamp **H2** in the control unit.

STATES OF FAILURE

In case of malfunction of the **Q1** or **Q2** motor protective switch, the **H3** lamp “**ALARM**” lights in a blinking way (pulsing) and the fan is stopped. Necessarily, remove the switch failure reason, and subsequently start the fan with the **S3** button “**RESET**”.

Consequences of incorrect operational use:

- breaking of the bearings,
- damages being caused by corrosion,
- loss in balance of the rotary elements,
- vibrations,
- deformations,
- damages being caused by friction.

Hazards that may occur due to inappropriate use:

- damages and other defects caused by:
 - rupture of the impeller,
 - breaking of the shaft,
 - fatigue rupture of the material,
 - fire and explosion caused by sparks.

The construction of the device provides its operational use without pre-adjustment and every-day routine maintenance.

In case when any defective function is by noise or visually spotted, follow steps as in the Section 8.

8. Troubleshooting Guide

Table No.2

	Problem	Possible reason	Corrective action
1.	Lack of the air flow suddenly occurs in one of the branches.	Clogging in the ventilation extraction duct takes place.	Unclog the extraction duct.
2.	Sudden vibrations of the fan occur.	Breaking of the bearings	Disconnect the fan from power supply and remove the reason of malfunction.
		Damage of the impeller	Disconnect the motor from the power supply. Remove the motor and send it to the producer or specialised servicing workshop. Impeller replacement for new can be executed exclusively by manufacturer or their representative.
3.	Excessive warming up of the motor, intense unpleasant smell.	Damage of the motor windings	Disconnect the motor from the power supply. Dismantle the whole device and send it to the motor manufacturer or to specialised servicing workshop.
4.	Significant drop in volume flow efficiency of the fan along with the noise rise	Wrong impeller rotation sense.	Change the phase connection sequence.
5.	Impurities are emerging outside the device.	The bag filter or the waste bag is damaged. Released connection of the extraction installation.	Replace the waste bag or the bag filter for a new one. Seal up the installation connection.

9. Maintenance

The construction of the WE-5,5/D dust separator enables its operational use without the continuous technical supervision.

In order to obtain the correct function performances and to observe the safety rules, we recommend to carry out technical revisions on the device in regular periods.

Within the scope of revision examine the function of the fan, of the vibration mechanism and check the technical state of its movable elements.

WARNING Technical revisions ought to be executed by a trained and qualified personnel or by specialised servicing company.

Before the maintenance activities follow subsequent steps:

- Disconnect the dust separator from the power supply with the **S1** switch.
- Make sure that there would be possible a hazard of accidental device starting, during the maintenance (e.g. not controlled using of the above mentioned switch).
If necessary, put a notification “CAUTION! DEVICE UNDER REPAIR – DO NOT SWITCH ON THE POWER SUPPLY” or similar, on the control unit.
- Wait until the motors of the separator drives stop rotating.
- Before the maintenance, remove the accumulated eventual impurities (originating from the conveyed medium) inside the device, in the fan chamber on the fan itself.

The device can be restarted after the activities of safety control are carried out, as described in Section 7 “Operational Use” of the present Use and Maintenance Manual.

Exemption from those are revision activities that must be executed at the running device, and with strict adherence to the Operational Health and Safety regulations, e.g. vibration measurements.

During the maintenance activities, it is important to observe the safety rules, as in case of their infringement, health and life hazard of the maintenance personnel can occur. Maintenance and technical revisions of the fan should be executed strictly in accordance to the recommendations of the fan manufacturer.

10. Occupational Health and Safety

WARNING Start-up and the maintenance are only admissible after getting acquainted with the contents of the present Use and Maintenance Manual. The connection to the electrical power supply should be executed strictly according to the enclosed Connection Diagrams and with reference to the instructions presented in Section 6 of the present manual. **In case when the separator shall be applied for easy flammable dusts (e.g. wood grinding) – the device cannot be simultaneously used for other technological processes, that are causing sparking during the work.**

11. Transport and Storage

The device is delivered in a completely assembled state, in foil and placed on a pallet. During the transport protect the device from slide (displacement) and overturn.

The transport loading and re-loading should be carried out in a way eliminating damages, indents and also package damage. Pay also attention that the markings on the package would not get detached from the surface or obliterated.

During the storing take into account following rules:

- The device must be stored in the transport package, protected from weather conditions,
- The place/area of storage should be dry and without dust,
- Storage temperature: -10°C up to +40°C.

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 dysfunctions caused by User,
- device failures caused during use which was in contradiction with the purpose of operational use and 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 Declaration of Conformity

Declaration of Conformity EC No.

Manufacturer (eventually the authorized representative / importer):

name: **KLIMAWENT S.A.**

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

A person, authorized for issuing the technical documentation:

hereby declares that the appliance:

name: **Dust separator**

type/model: **WE-5,5/D**

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*/
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| ● PN-EN 61439:2010 | – “Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions”. |
| ● PN-EN 60335-1:2012 | – “Safety of electrical appliances for household and similar use – Part 1: General requirements”. |

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place, date

.....
signature of authorised person

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

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District Court Gdańsk-Północ
in Gdańsk, VII Wydział Gospodarczy
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13.779.200 zł paid in total

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REGON: 220631262
Bank Account: **Bank Zachodni WBK S.A.**
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