Translation from the original instruction

IO-805UFN-EN-20250224

KLIMAWENT

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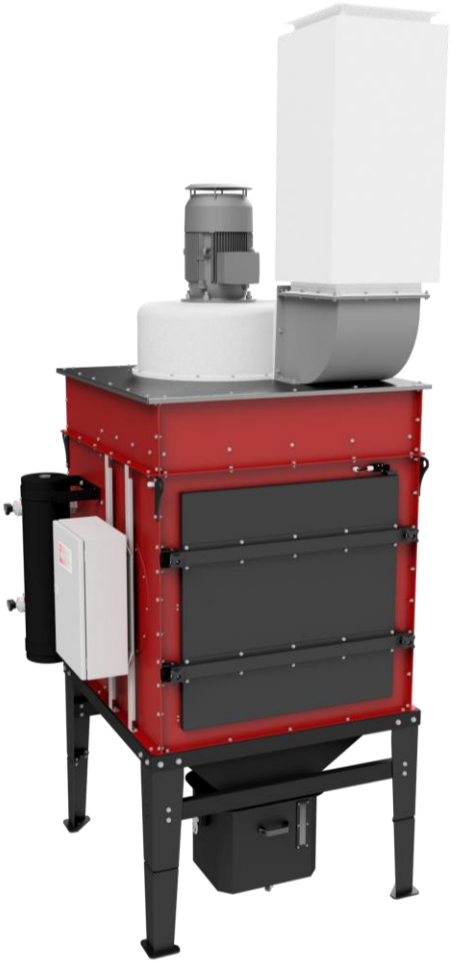
USER'S MANUAL

Filtering device

UFO-A-N and UFO-A-N/R

EN



The user's manual is valid for the following device models:

Catalog No.	Product name
905U20	UFO-A-5000-N
905U21	UFO-A-10000-N
905U22	UFO-A-15000-N
905U23	UFO-A-20000-N
905U24	UFO-A-5000-N/R
905U25	UFO-A-10000-N/R
905U26	UFO-A-15000-N/R
905U27	UFO-A-20000-N/R

User’s manual – title: „Filtering devices UFO-A-N and UFO-A-N/R”

The structure and form of the instructions take into account the principles included:
PN-EN 82079-1, PN-EN ISO 20607, PN-EN ISO 7010, MD 2006/42/WE and other harmonized standards.

KLIMAWENT

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1. INTRODUCTION

1.1. INFORMATION ABOUT THE MANUAL

These operating instructions are intended for the user of **UFO-A-N(/R)**. The purpose of this manual is to provide the user with instructions on the intended use, assembly, installation, start-up, and use of the device, as well as hazards and possible disruptions in operation, but also disassembly, shutdown and disposal.

INFORMATION

Due to the constant improvement of its products, the manufacturer reserves the right to make design changes aimed at increasing the usability and safety of use.

! UWAGA

The user is obliged to comply with the provisions of this manual and the relevant manuals, i.e. the operating manual of the electric motor.
This manual **DOES NOT** contain the operating instructions for the electric motor.

CAUTION!

PLEASE READ THIS MANUAL BEFORE USING THE DEVICE!

KEEP THE USER'S MANUAL FOR THE FUTURE!

1.2. STRUCTURE AND INFORMATION RULES OF THE MANUAL

This manual contains 4 types of articulated messages containing an informational signal combining a word and a symbol in a graphic form depending on the level and probability of the risk, i.e.:

INFORMATION

Danger Level: VERY LOW or NONE
Content, memo, and explanation showing the typical state and appearance, typical action, and behaviour. The content describes important information of general importance that must be implemented by those who read the operating manual.

! CAUTION

Danger level: LOW
Warning content that indicates an elevated level of user attention. The explanation in the text presents a risk that may damage the device but is not destructive, immobilizing or has a minor impact on the user.

! WARNING

Danger level: HIGH
Warning content indicating a high level of user attention. The explanation in the content presents risks that may damage or destroy the equipment or may cause injury to the user.

! DANGER

Threat Level: very high
Warning content indicates a very high level of user attention. The explanation in the content depicts a risk that may cause damage to the device or others in the vicinity or may cause serious injury or death. Repair work must be carried out immediately once the risk is perceived. All activities leading to an increase in risk are prohibited!

1.3. NAME AND ADDRESS OF THE MANUFACTURER

Any requests for information or repair work or questions regarding the technical aspects of this document should be addressed to:

KLIMAWENT S.A.
Chwaszczyńska 194 street
81-571 Gdynia POLAND
Phone: +48 58 629 64 80
Fax: +48 58 629 64 19
e-mail: klimawent@klimawent.com.pl

2. MANUFACTURER'S DECLARATION

The **UFO-A-N(/R)** device has been designed and made with due diligence with the participation of the internal quality management system ISO 9001 and takes into account the current state of knowledge and technological level, and above all ensures safety rules during use.

Producer **KLIMAWENT S.A.** declares that the products: Filtering device types **UFO-A-5000-N(/R)**, **UFO-A-10000-N(/R)**, **UFO-A-15000-N(/R)** and **UFO-A-20000-N(/R)** with a Y-Δ power supply or a power supply via a frequency converter meet the requirements of the following European directives and harmonised standards and other specifications:

- **Directive 2006/42/EC (MD)** – of the European Parliament and of the Council of 17 May 2006 on machinery, amending Directive 95/16 / EC (recast) (Journal of Laws UE L157 of 09.06.2006, p. 24),
- **Regulation of the (Polish) Minister of Economy** of October 21, 2008, on requirements for machines (Journal of Laws No. 199 of 2008, item 1228),
- **Directive 2014/35/EU (LVD)** – Directive of the European Parliament and of the Council of 26 February 2014 on the harmonization 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 UE L96 of March 29, 2014),
- **Directive 2009/125/EC (ErP)** – Directive of the European Parliament and of the Council of October 21, 2009, establishing general principles for setting ecodesign requirements for energy-related products (Journal of Laws L285 of October 31, 2009),
- **Commission Regulation (EU) No 327/2011 of 30 March 2011** implementing Directive 2009/125 / EC of the European Parliament and of the Council with regard to ecodesign requirements for fans powered by an electric motor with a power consumption of 125 W to 500 kW (Journal of Laws L90 of April 6, 2011).

Additionally, the manufacturer declares compliance with harmonized standards and national standards (or their fragments):

- **EN ISO 12100:2010 –** Safety of machinery – General principles of design – Risk assessment and risk reduction;
- **EN 1005-2:2003+A1:2008** – Bezpieczeństwo maszyn – Możliwości fizyczne człowieka – Część 2: Ręczne przemieszczanie maszyn i ich części;
- **EN ISO 13857:2019** – Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design;
- **EN 60204-1:2018** – Safety of machinery – Electrical equipment of machines – Part 1: General requirements;
- **EN IEC 60947-1:2021+AC:2023-01** – Low voltage switchgear and control devices – Part 1: General provisions;
- **EN 61310-1:2008** – Safety of machinery - Indication, marking and actuation - Requirements for visual, acoustic and tactile signals;
- **EN 61310-2:2008** – Safety of machinery - Indication, marking and actuation – Part 2: Requirements for marking;
- **EN IEC 61439-1:2021** – Low-voltage switchgear and controlgear assemblies – Part 1: General rules;

KLIMAWENT

DEKLARACJA ZGODNOŚCI WE UE
EC&EU DECLARATION OF CONFORMITY

1. **Producent** / *Manufacturer:* KLIMAWENT S.A. 81-571 Gdynia, ul. Chwaszczyńska 194, Polska
2. **Opis produktu** / *Product name:* **Urządzenie filtracyjne** *Filtering unit*
3. **Model** / *Model:*
4. **Nr produktu** / *Product number:*

UFO-A-5000-N	UFO-A-10000-N	UFO-A-15000-N	UFO-A-20000-N
905U20	905U21	905U22	905U23

5. **Nr seryjny** / *Serial number:* –
6. **Rok produkcji** / *Year of production:* –
7. **Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.** *This declaration of conformity is issued under the sole responsibility of the manufacturer.*
8. **Wymieniony powyżej wyrób spełnia wymagania następujących dyrektyw europejskich:** *The product mentioned above meets the requirements of the following European directives:*

MD 2006/42/WE	*2006/42/EC*
LVD 2014/35/UE	*2014/35/EU*
ERP 2009/125/WE	*2009/125/EC*

9. **Odniesienia do norm zharmonizowanych oraz norm krajowych (lub ich fragmentów), które zastosowano, w stosunku do których deklarowana jest zgodność:** *References to the harmonized standards and the national standards (or parts thereof) that have been applied and against which conformity is declared:*

PN-EN ISO 12100:2012	*EN ISO 12100:2010*
PN-EN 1005-2+A1:2010	*EN 1005-2:2003+A1:2008*
PN-EN ISO 13857:2020-03	*EN ISO 13857:2019*
PN-EN 60204-1:2018-12	*EN 60204-1:2018*
PN-EN IEC 60947-1:2021-07	*EN IEC 60947-1:2021*
PN-EN IEC 60947-1:2021-07/AC:2023-03	*EN IEC 60947-1:2021/AC:2023-01*
PN-EN 61310-1:2009	*EN 61310-1:2008*
PN-EN 61310-2:2010	*EN 61310-2:2008*
PN-EN IEC 61439-1:2021-10	*EN IEC 61439-1:2021*

10. **Osoba upoważniona do przechowywania i przygotowania dokumentacji technicznej:** *A person authorized to store and prepare technical documentation:* **Teodor Świrbutowicz, KLIMAWENT S.A.**
11. **Niniejsza deklaracja zgodności jest podstawą do oznakowania wyrobu znakiem:** *This declaration of conformity is the basis for marking the product with the mark:* CE

Deklaracja zgodności wystawiona została w oparciu o przeprowadzony proces oceny zgodności. Deklaracja ta odnosi się wyłącznie do maszyny w stanie, w jakim została wprowadzona do obrotu i nie obejmuje części składowych dodanych przez użytkownika końcowego lub przeprowadzonych przez niego późniejszych działań.	*The declaration of conformity was issued based on the conformity assessment process. This declaration relates only to the machine in the state in which it was placed on the market and does not cover components added by the end-user or subsequent actions performed by the end-user.*

CE

W imieniu producenta podpisali / *Signed on behalf of the manufacturer by:*

Michał Kulczyński
CZŁONEK ZARZĄDU / *MEMBER OF THE BOARD*

ISO 9001:2015

Joanna Koniarek
PREZES ZARZĄDU / *CEO*

Data wydania dokumentu: *Date of document release:* 2025-02-24

3. DEVICE DESCRIPTION

3.1. APPLICATION

Filtering device **UFO-A-N(/R)** is designed for cleaning dusty air from pollutants generated during production processes, when removing dry dust (without moisture, sticky, corrosive or explosive pollutants), grinding non-sparking materials, during dusty processes in the chemical, pharmaceutical, food, plastics and other industries.

The device is designed to work indoors or outdoors but is suitably sheltered from the effects of atmospheric conditions, including rainfall. Additionally, the fan motor should be protected from direct sunlight or other heat radiation that may cause heating of the motor body or the device housing.

The **UFO-A-N(/R)** device is designed to operate an installation consisting of stationary extraction, for example, suction arms connected to a bus connecting them to the unit's inlet ports, and general ventilation combined with air filtration, for example, for **PUSH-PULL** operation.

The device is designed for the filtration of smoke and dust. It has 1 filtration stage in the form of cartridge filters made of polyester fabric. During operation, the filters trap the dust on the outer surface, from where they are periodically removed automatically using pulses of compressed air, allowing the device to run without stopping.

INFORMATION
At the customer's request, the device can be equipped with filters adapted to specific working conditions.

! DANGER
Possible damage to the device, fire or explosion!
It is **FORBIDDEN** to use the device for transporting air containing sticky or caustic contaminants that may adversely affect the device!
It is **FORBIDDEN** to use the device for transporting a mixture of air and flammable substances in the form of gases, vapours, mists or dust, which create **an explosive atmosphere** with the air!

3.2. STRUCTURE

3.2.1. DESCRIPTION

Filtering device **UFO-A-N(/R)** consists of 3 modules as standard – see Picture 1 on page 11, i.e. a fan with an expansion chamber at the top of the device (module A), a support frame with a chute and a dust container (module D) and a filter module (module B + C). The structure is self-supporting and equipped with appropriate handles for transport with the use of lifting devices.

The filtration module is equipped with **1 stage of filtration**, i.e. cartridge filters and an automatic cleaning system, which allows the device to be used in a continuous cycle without the need to stop. The number and size of filter modules depend on the device model, i.e. **UFO-A-5000-N(/R)** and **UFO-A-10000-N(/R)** have 1 module; **UFO-A-15000-N(/R)**, **UFO-A-20000-N(/R)** – 2 modules – see below – Picture 2, Picture 3, Picture 4 and Picture 5.

Description of the modules (see Picture 1 on page 11):

A. **A fan in an aluminium casing** with an elbow and a silencer, which includes a flanged **electric motor with a radial impeller** mounted directly on its shaft, balanced to class G6.3.

B. **Filter chamber** [1], which contains the **cartridge filters**. At the front of this chamber, there are hinged doors for inspection and filter replacement.

C. **Regeneration chamber** [1] is separated from the filter chamber, which contains the outlets of cartridge filters, Venturi nozzles and nozzles of the filter regeneration system. On the back and side of this chamber are mounted removable inspection covers.

D. **Support frame** with a chute and a detachable dust container with a capacity of 72 dm³.

In addition, it is possible to section off:

A. **Inspection covers** on the side and rear of the filter chambers for checking the condition of the compressed air system and the interior of the "clean" section of the chamber.

B. **Compressed air installation** (1 set for each filtration chamber), which includes:

   a. **Compressed air tank**, designed to work with working pressure in the range from 0.6 to 0.8 MPa and a capacity of 30.1 N L [2],

   b. **Electromagnetic pulse valves** [3] for generating pulses of compressed air,

   c. **Noise silencers** mounted on impulse valves.

C. **A control unit** (electrical switchgear) that controls the operation of the fan and the filter regeneration system.

INFORMATION

The electrical switchgear for units **with Y-Δ** starting, i.e. **UFO-A-N**, is installed **on the device** in place of the blanked suction connection but is permitted to be installed outside the device.

! CAUTION

In the case of devices **with inverter control**, i.e. **UFO A-N/R** switchgear, **DO NOT** install it on the device. The electrical apparatus in this design is sensitive to the vibrations caused by the device and may be damaged!

A. In the case of the **UFO-A-N** device with the inlet **on the right** (distinguishing mark **RH**), **the electrical switchboard** is on the **left** and the inlet connector on the right, while it is the other way round for the unit with the inlet on the **left** (distinguishing mark **LH**). A cover cap is installed in place of the unused air inlet. In the case of the **UFO-A-N/R** device, the switchboard must be installed away from the unit in a convenient location for use.

B. If the electric switchboard **is located outside the device**, it is recommended to connect the electric motor with the switchgear **through a service switch** disconnecting the power supply during maintenance. This switch should be **placed next to the fan** within the **reach of maintenance personnel**.

C. The fan motor has a weather protection cover as **standard**.

D. Filtering device **UFO-A-N(/R)** is delivered **without air intake silencers**.

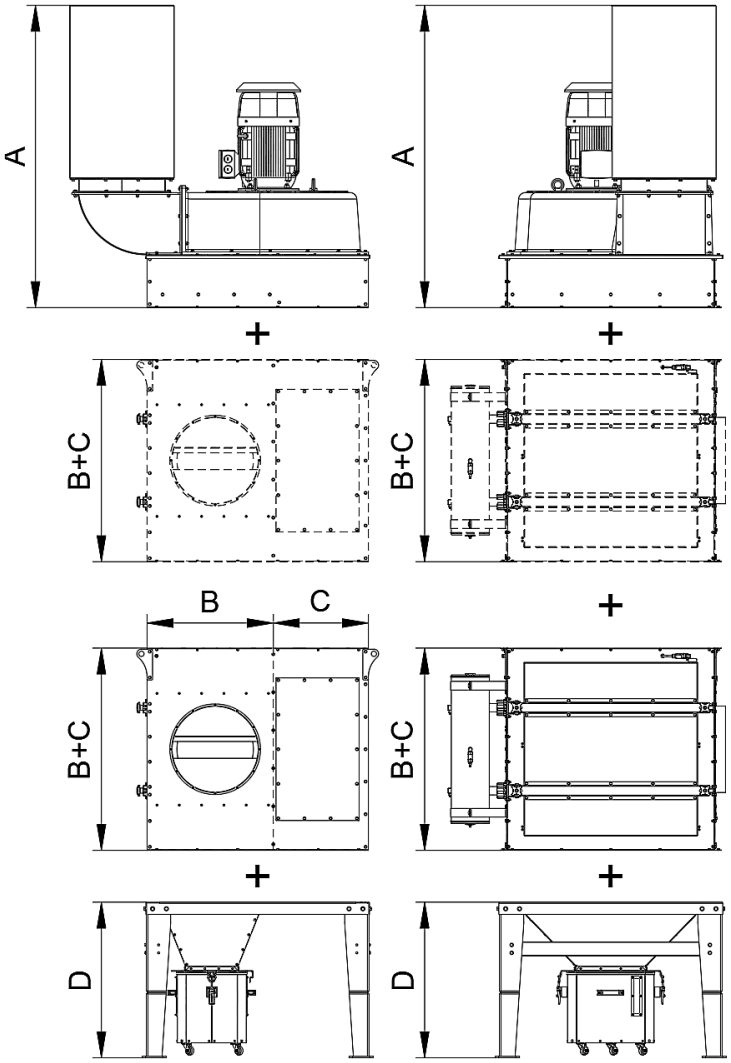
---

*[1] **NOTE: UFO-A-5000-N(/R), UFO-A-10000-N(/R)** has 1 chamber; **UFO-A-15000-N(/R) and UFO-A-20000-N(/R)** - 2 chambers;*

[2] The compressed air tank is not subject to operational supervision of the Technical Inspection Authority UDT (V×P=241 < 300bar×dm3)

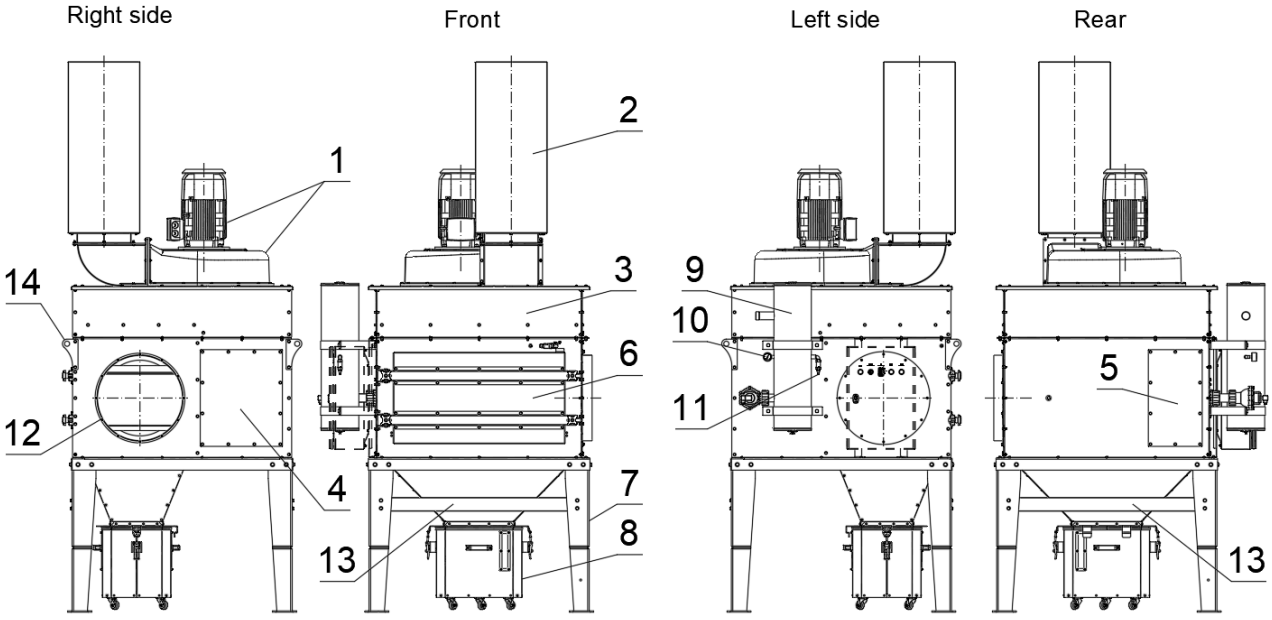
*[3] **CAUTION:** In the case of the **UFO-A-5000-N(/R)** device, the compressed air tank is equipped with only 1 impulse valve. The other port is blanked off.*

E. As standard, a **silencer** is installed at the outlet of the device as shown in the pictures – see below – Picture 2, Picture 3, Picture 4 and Picture 5.

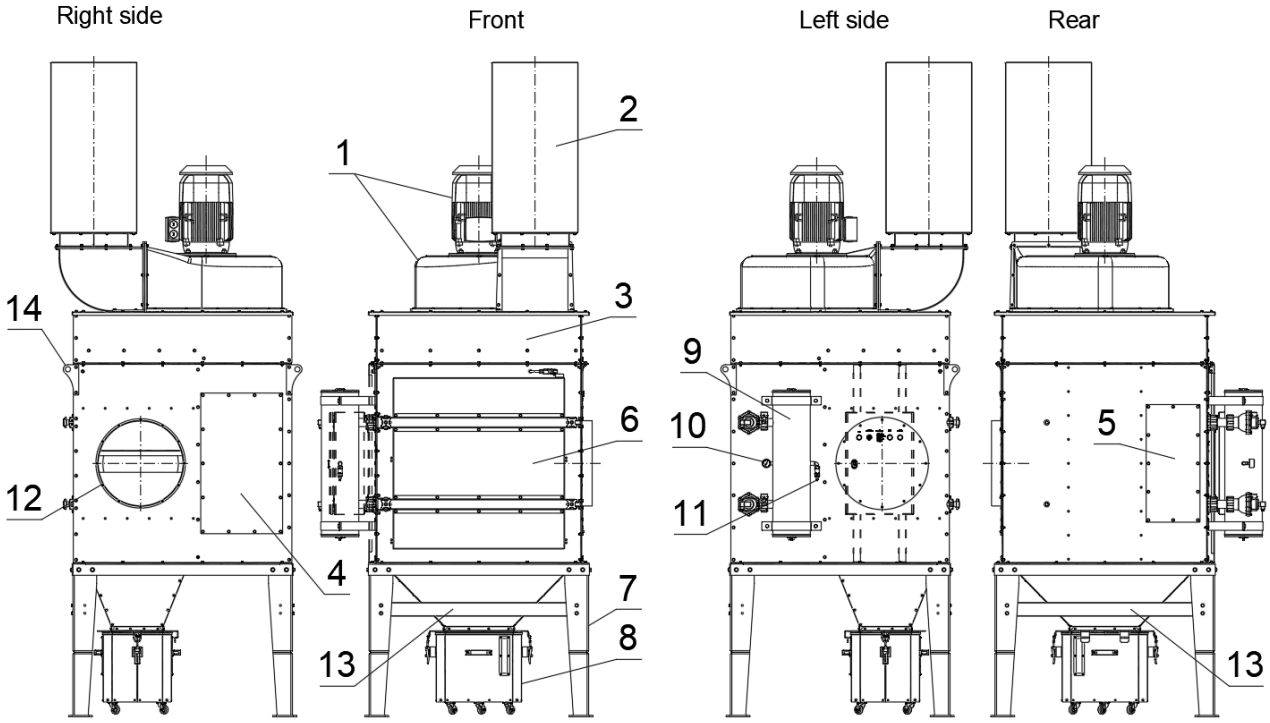


***A** – Fan module;*
***B+C** – Filter module: filtration chamber and regeneration chamber;*
***D** – Support frame with a chute and a dust container*

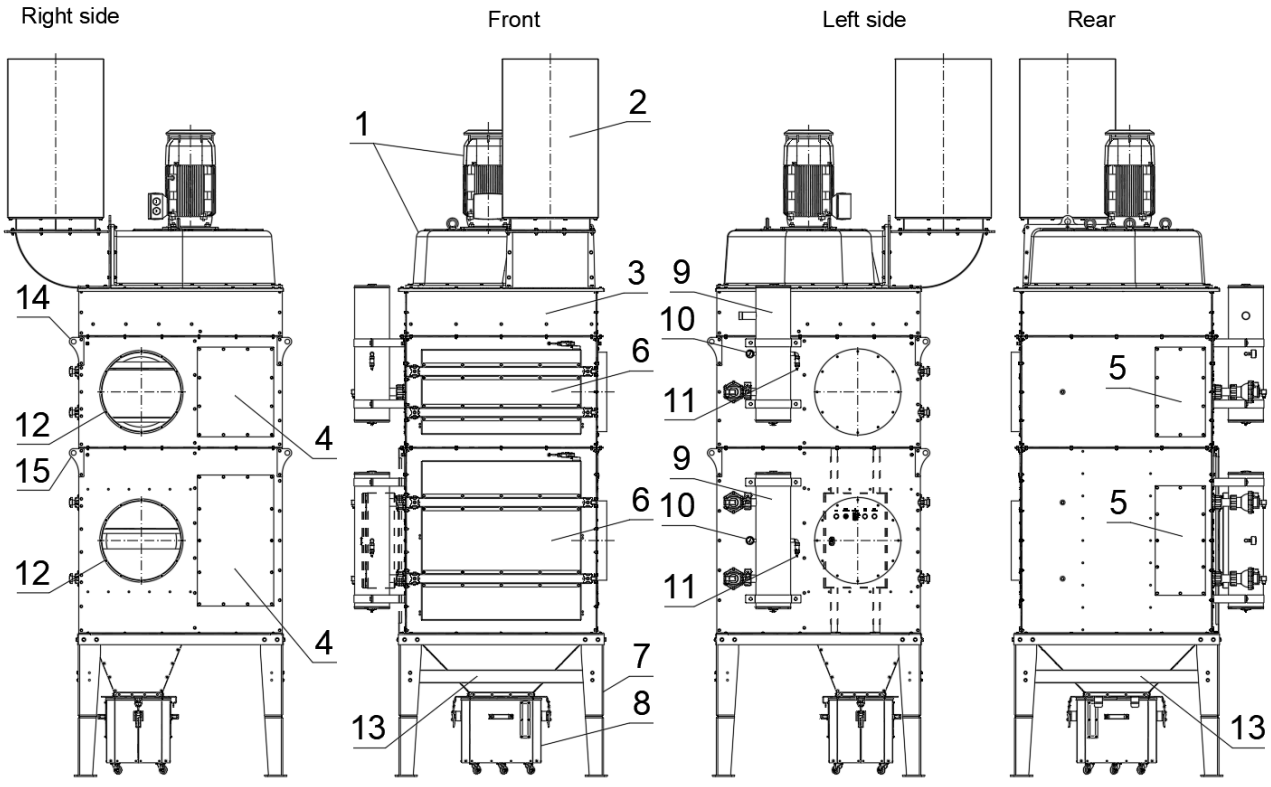
Picture 1 A typical arrangement of the UFO-A-N(/R) device



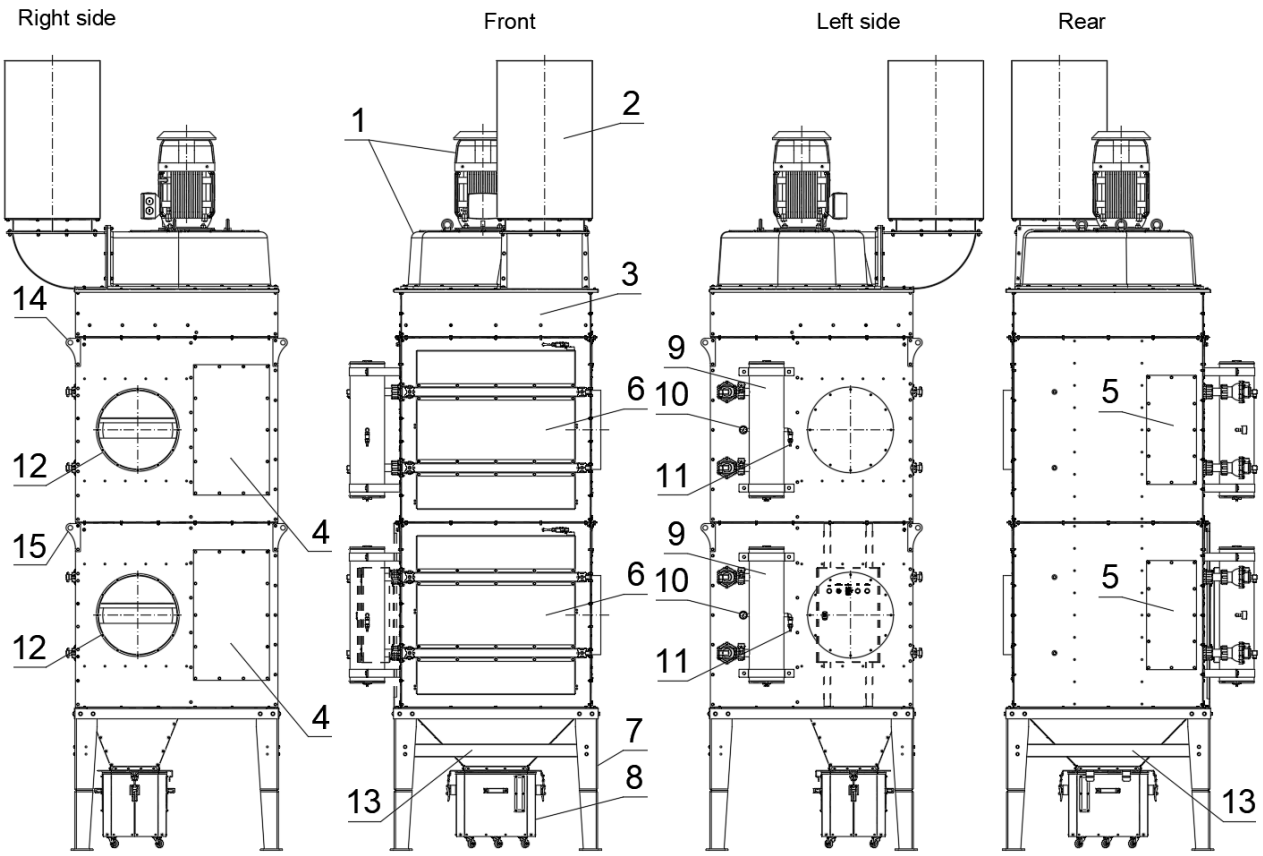
Picture 2 Functional description of the UFO-A-5000-N(/R) device with the inlet on the right side



Picture 3 Functional description of the UFO-A-10000-N(/R) device with the inlet on the right side



Picture 4 Functional description of the UFO-A-15000-N(/R) device with the inlet on the right side



Picture 5 Functional description of the UFO-A-20000-N(/R) device with the inlet on the right side

EXPLANATION TO Picture 2; Picture 3; Picture 4; Picture 5:
***1** – Fan, **2** – Duct silencer, **3** – Expansion chamber, **4** – Regeneration chamber inspection cover, **5** – Regeneration chamber inspection cover, **6** – Filter chamber inspection door, **7** – Support frame, **8** – Dust container, **9** – Compressed air tank, **10** – Manometer, **11** – Compressed air connection Ø12 mm, **12** – Inlet connection Ø500 mm, **13** – Supporting beam, **14** – Hanger*

3.2.2. CONTROL UNIT (ELECTRICAL SWITCHBOARD)

The control unit consists of two basic components (see Picture 6):

A. **Control panel** mounted on the cover of the electrical switchboard,

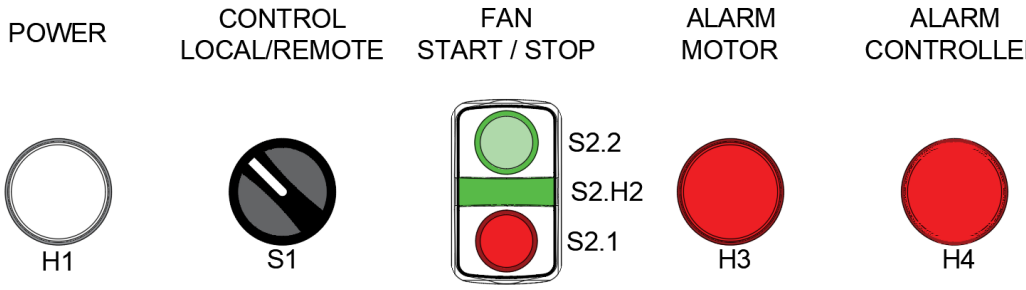
B. **The electrical apparatus** built inside the switchgear serves as a power supply to the device and the controller,

C. **A frequency converter (inverter)** [4] controlling the fan motor,

D. **Differential pressure sensor** [4] mounted on the ventilation system.

3.2.2.1. CONTROL PANEL

The control panel consists of traffic lights and buttons such as signal lamps and illuminated buttons. Their function is to switch on the power supply, start the fan and signal the operating states of the device and alarm in the event of a failure. The switchboard and the apparatus are described in pt. 7.2.1- SWITCH AND CONTROLLER on page 47.



Picture 6 Appearance of the control panel

***H1** – Lamp signalling the appearance of power in the system; **S1** – Mode switch;*
***S2.1** – Fan stop button; **S2.2** – Fan start button; **S2.H2** – Green light indicating fan operation;*
***H3** – Red light indicating engine alarm; **H4** – Red light indicating a controller alarm*

! CAUTION

The device can be controlled from the panel on the electrical switchboard (**LOCAL**) or from another (**REMOTE**) by connecting to terminals **17** and **18** in the switchgear of the **NO** relay signal.

3.2.2.2. INVERTER

The inverter (**UFO-A-N/R** only) controls the motor, its starting and stopping and regulates the speed. To fulfil the motor speed control function, **a differential pressure transmitter** measuring the pressure in the ventilation system must be connected to the inverter.

3.2.2.3. DIFFERENTIAL PRESSURE TRANSMITTER

The differential pressure transmitter (**UFO-A-N/R** only) is used to measure the differential pressure in the ventilation system to maintain a constant negative pressure by frequency control of the fan motor.

[4] *Fittings supplied for **UFO-A-N/R** devices only.*

3.3. SPECIFICATION

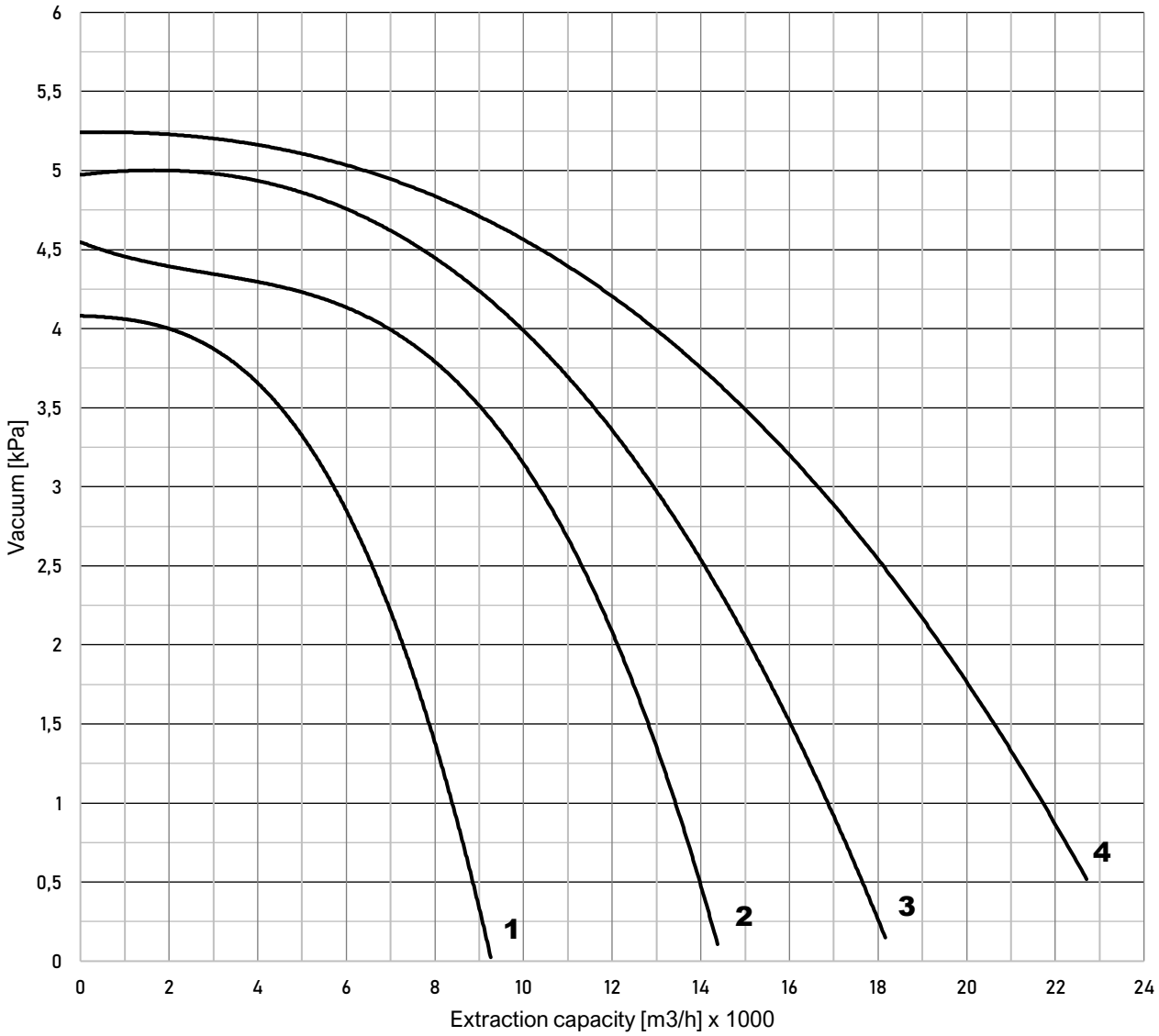
3.3.1. TECHNICAL DATA

Table 1 Technical data of UFO-A-N

Catalogue no. / Type		905U20 UFO-A-5000-N / 905U24 UFO-A-5000-N/R	905U21 UFO-A-10000-N / 905U25 UFO-A-10000-N/R	905U22 UFO-A-15000-N / 905U26 UFO-A-15000-N/R	905U23 UFO-A-20000-N / 905U27 UFO-A-20000-N/R
Nominal capacity		5000 m3/h	10 000 m3/h	15 000 m3/h	20 000 m3/h
Maximum capacity		**9200 m3/h**	**14300 m3/h**	**18100 m3/h**	**22700 m3/h**
Working capacity		4 000-6 000 m3/h	8 000-12 000 m3/h	12 000-16 000 m3/h	16 000-21 000 m3/h
Max. vacuum		**4100 Pa**	**4500 Pa**	**5000 Pa**	**5250 Pa**
Net weight		575 kg	765 kg	1015 kg	1125 kg
Sound pressure level [5], [6]		72 dB(A) [5,6]	76 dB(A) [5,6]	78 dB(A) [5,6]	80 dB(A) [5,6]
Device operating temperature		**from –20ºC to +40ºC**			
Max. dust load		**3 g/m3**			
Electricity supply					
Electric motor power		5,5 kW	11 kW	18,5 kW	22,0 kW
Supply voltage and frequency [7]		3×400 VAC \ 50 Hz [7]			
Synchronous speed		3000 rpm			
Compressed air supply					
Minimal air consumption [8]		3,2 Nm3/h [8] (53 litres/min)	6,3 Nm3/h [8] (105 litres/min)	9,5 Nm3/h [8] (158 litres/min)	12,6 Nm3/h [8] (211 litres/min)
Compressed air pressure		from 0,6 to 0,8 MPa [9]			
Quality conditions [10]		Oil-Solids-Water: **6:4:4** [10]			
Equipment					
Cartridge filters	Filter designation	**POH306638U**			
	Catalogue No.	**900F18**			
	Filter material and surface [11]	Hydrophobic coating [11] \ 30 m2/1 per filtrer			
	Type of contamination [11]	Smoke / Fine dust / Fine chips [11]			
	Number of filters in the device	2	4	6	8
	Dimensions [diameter × height]	Ø380×660 mm			
Compressed air tank	Capacity	30,1 dm3			
	Dimensions [diameter × height]	Ø219×860			
	Working temperature and pressure	from –20ºC to +80ºC / 0,5 – 8 bar			
Pulse valve	Control type	Electric; opened with an electromagnetic coil			
	Diameter and type of flow	Ø1,5'', angeled 90º			
	Control voltage	24V/50-60 Hz (±10%) 19VA			
	Working temperature and pressure	from –20ºC to +80ºC / max 0,8 MPa			

[5] ***CAUTION:*** *Sound pressure measurement made at a distance of 1 m from the unit at nominal flow rate.*
[6] ***CAUTION:*** *The device is a source of impulse noise during the operation of the automatic cartridge filter cleaning system.*
[7] ***CAUTION:*** *It is possible to adjust the rotational speed of the motor with the use of a frequency converter..*
[8] ***CAUTION:*** *Air consumption for factory set regeneration parameters.*
[9] *The compressed air tank is not subject to operational supervision of the Technical Inspection Authority UDT (V×P=241 < 300bar×dm3)*
[10] ***ISO 8573-1:2010 class 6:4:4*** *– see point. 6.3.2 – COMPRESSED AIR CONNECTION. 38.*
[11] ***CAUTION:*** *At the customer's request, the filtration method can be adapted to specific working conditions.*

3.3.2. FLOW CHARACTERISTICS



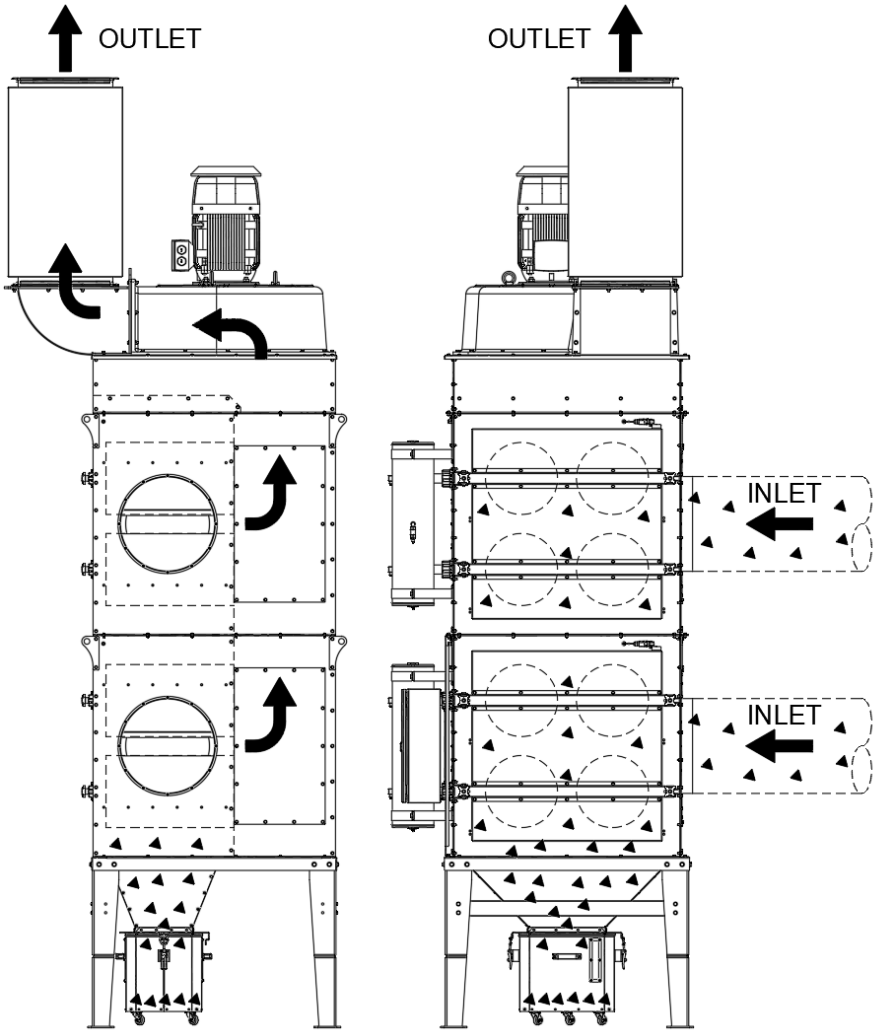
Digram 1 Summary diagram of the efficiency of UFO-A-N(/R) filtering devices

***1** – UFO-A-5000-N(/R); 2 – UFO-A-10000-N(/R); **3** – UFO-A-15000-N(/R); **4** – UFO-A-20000-N(/R)*

3.4. PRINCIPLE OF OPERATION

The purpose of the **UFO-A-N(/R)** device is to clean the conveyed air from dust contamination with the use of cartridge filters with a hydrophobic coating[12].

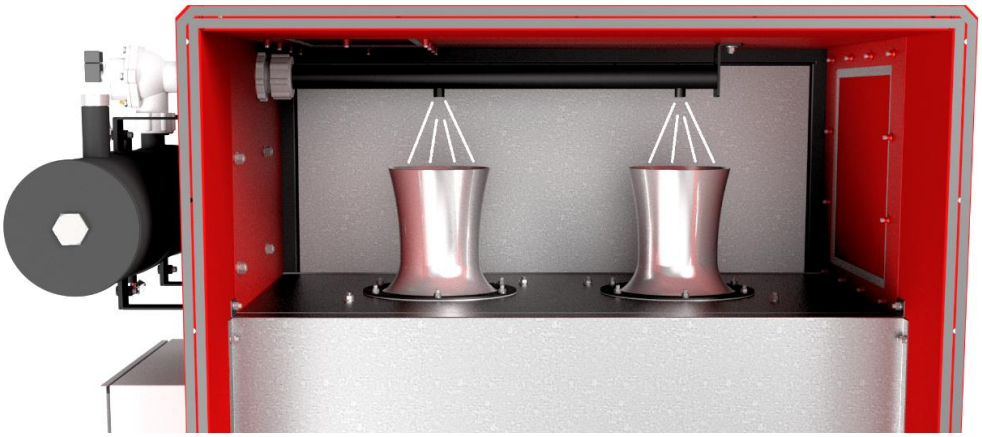
The **UFO-A-N(/R)** device, depending on the model, has from 1 to 2 filtration chambers, which are equipped with 1 suction connector with a diameter of Ø500 mm – see Picture 38 to Picture 45 on page 75 – located on the right or left side of the casing, to which a ventilation system must be connected. Air sucked in through this connection enters the filter chamber, where contaminants in the air precipitate on the surface of **the filters** and the cleaned air continues to flow into the ventilation system – see Picture 7.



Picture 7 Air-flow path

Some of the pollutants fall into the tank and the rest adhere to the external surface of the filters as a result of suction (negative pressure) by the flowing air. Adjacent impurities increase the flow resistance during the operation of the device, so to counteract this phenomenon and reduce the flow resistance, **pulses of compressed air** are generated during the operation of the device, shot through special nozzles (so-called Venturi nozzles) to the filters from the "clean" side, which cleans them from dust – see. Picture 8 on page 18. The removed dust drops off and accumulates at the bottom of the device in a container. Dust in the container must be systematically removed so as not to cause repeated entrainment of the dust from the container.

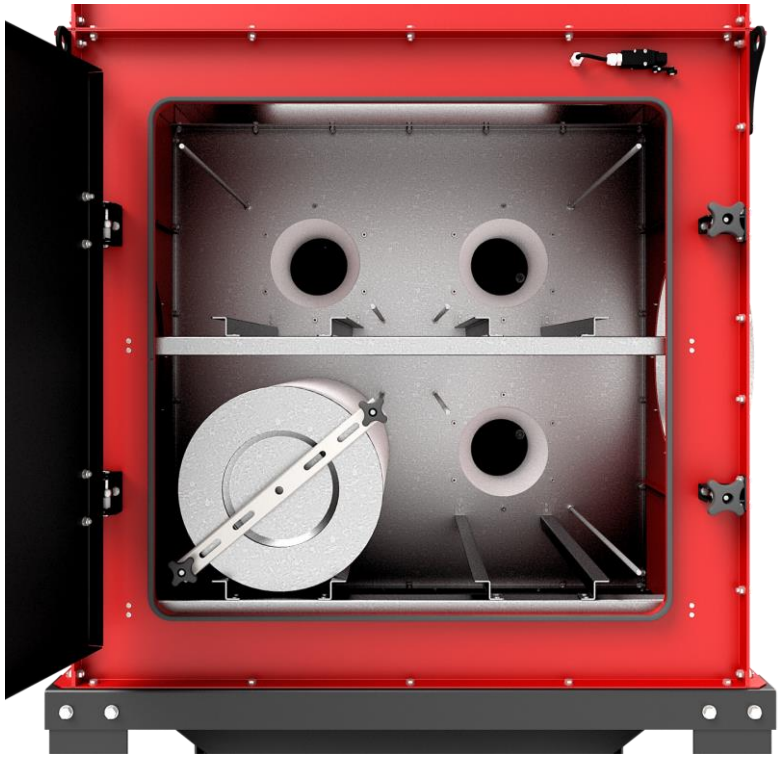
[12] *At the customer's request, the filter material can be adapted to the specific operating conditions of the device.*



Picture 8 View of the inside of the chamber and Venturi nozzles

The filter regeneration process takes place automatically and at specific intervals during the operation of the device, thanks to which the device can work without stopping.

In the case of a high dust load or after a longer period of operation, it is possible to increase the flow resistance and decrease the efficiency of the device, regardless of the operation of the filter regeneration system. This is normal. When a significant drop in efficiency is found, the filters should be removed from the device and cleaned manually or mechanically using a device designed for this purpose.



Picture 9 View of the inside of the filters' chamber

! CAUTION	
	The design and principle of operation of the device allow for continuous operation but require the operator to systematically check the amount of dust accumulated the condition of the cartridge filters, and, above all, the systematic emptying of the accumulated dust from the container.
	To ensure an effective filtration process, it is required to ensure a stable connection of compressed air with the filter cleaning system, and the conditions and minimum parameters of the compressed air are presented in point 3.3.1 – TECHNICAL DATA on page 15.

4. SAFETY OF USE

4.1. MANUFACTURER'S DISCLAIMER

! CAUTION	
	Producer **KLIMAWENT S.A.** conducted a risk analysis only for the **UFO-A-N(/R)**, device, but it does not take into account the impact of additional risks arising from use and application at the installation site.
	Unauthorized modifications to the device and installation of additional elements that are not part of the device or additional equipment are **FORBIDDEN** and may affect the safe use of the device!

4.2. SAFETY RULES AND APPLICATION RESTRICTIONS

! CAUTION	
	**READ** these instructions before putting the device into operation! Keep for future reference in a place accessible to all users.
	**PROTECT** the device against mechanical damage.
	**PROTECT** all markings, descriptions, nameplates and, in particular, warnings against seizure, damage causing illegibility or tearing off.
	The device is intended for **PROFESSIONAL USE**. Before starting work, familiarize yourself with the procedures and principles of operating the device. Service may only be performed by **TRAINED** and **QUALIFIED** personnel.

! WARNING	
Possibility of damaging the device, hurting or serious injury!	
	The manufacturer is not responsible for personal injuries resulting from **IMPROPER USE**. During all operations carried out on the equipment (assembly, maintenance, cleaning, etc.), operators must be equipped with appropriate personal protective equipment (PPE) to prevent or minimise injuries which cannot be prevented by other means.
	Before assembling the device, check the load-bearing capacity of the structural elements to which it will be attached. **IMPROPER**, **CARELESS** or **UNSTABLE MOUNTING** of the device may damage it and also pose a real **THREAT** to people in the surrounding area.
	**DO NOT** start up the device until you have checked the continuity and connection of the **PE** conductor.
	Unauthorized modifications to the device and installation of additional elements that are not part of the device or additional equipment are **FORBIDDEN!**

! WARNING
Possible damage to the device and disruptions in operation.
The temperature of filtered air **CANNOT** exceed **+60ºC**.
The ambient temperature during operation **MUST** be between –20ºC and +40ºC. The fan motor should not be exposed to direct sunlight or other heat radiation that could cause significant heating of the motor body.
Ambient relative humidity **MUST NOT** exceed **95%** without condensation.
The atmospheric pressure **MUST** be between **800 hPa** and **1100 hPa**.
The altitude above sea level **CAN NOT** exceed **1000 m**.
The dust limit of the filtered air **MUST NOT** exceed **3 g/m3**.
The device **CAN NOT** be used for the filtration of moist or sticky dust adhering to the surface of the filters, significantly reducing the filtration efficiency.
The device **MUST** be permanently connected to the compressed air network to ensure the uninterrupted operation of the automatic filter cleaning system. Compressed air **MUST** be prepared by appropriate filtering and reducing unit with a pressure ranging from **0.6** to **0,8 MPa** and meeting the purity conditions specified in point 6.3.2 **–** COMPRESSED AIR CONNECTION on page 38.
The device **CAN** work continuously under certain conditions – see 3.4 – PRINCIPLE OF OPERATION on page 17.
The device **MUST NOT** work in an environment that may cause an accelerated rate of corrosion.
When the device is powered by a frequency converter (inverter) (**UFO-A-N/R execution)**, the maximum speed of the motor **MUST NOT** be greater than the nominal speed of the fan motor. In addition, the frequency variation up and down should be limited so that the frequency is between **15 Hz** and **50 Hz**. This limit **MUST NOT** be exceeded by any unauthorized modification of the fan control system.

! DANGER
Possible damage to the device, fire or explosion!
It is **FORBIDDEN** to use the device for transporting air containing sticky or caustic contaminants that may adversely affect the device!
It is **PROHIBITED** to use devices for cleaning the air of carcinogenic, radioactive dust or contaminated with pathogens and other dangerous substances posing a high risk to human health and life.

! DANGER

Possible damage to the device, fire or explosion!

It is **FORBIDDEN** to use the device for transporting a mixture of air and flammable substances in the form of gases, vapours, mists or dust, which create an **explosive atmosphere** with the air!

4.3. REQUIRED PERSONAL PROTECTION

RECOMMENDED PERSONAL PROTECTION	
	**Use head protection** The warning indicates that personnel must use a protective helmet. Always wear head protection when operating the equipment or during maintenance. The device has protruding housing elements and adjusting elements that can be injured when it is tilted.
	**Use hearing protection** The warning indicates that ear protection must be worn when operating the device. During operation, the device generates noise that may harm people nearby.
	**Use eye protection** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation.
	**Use foot protection** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation and maintenance.
	**Use hand protection** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation and maintenance.
	**Use protective clothing** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation and maintenance.
	**Use face protection** A warning indicates that it must be used by security personnel. Protective measures must always be taken during operation and maintenance.
	**Use dust masks** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation and maintenance.
	**Respiratory protection required** A warning indicates that it must be used by security personnel. Protective measures must always be used during operation and maintenance.
	**The requirement to disconnect the device from the mains** A warning indicates that the appliance must be disconnected from the power supply for maintenance, fault finding and similar operations involving the opening of covers and access to hazardous parts, especially the fan impeller

4.4. WARNINGS

RECOMMENDED MARKINGS ON OR NEAR THE DEVICE	
	**CAUTION: Danger due to sudden noise!** During the regeneration of filters with compressed air, air blows from the nozzles regenerating the filters, which generates **impulse noise**! The warning indicates that ear protection must be worn when operating the device.
	**CAUTION: Danger due to noise!** The warning indicates that ear protection must be worn when operating the device. The device generates noise during operation and may adversely affect people in the vicinity.
	**CAUTION: Danger due to dusty atmosphere!** The device itself is not a source of dust emission and has a sealed housing, but due to the purpose of the device for air purification, dust from the filtration process accumulates inside, on the surfaces of the filters and the chute and in the tank. Each time the device is opened, or the dust container is emptied, the user comes into contact with potentially harmful process dust.

4.5. RESIDUAL RISK INFORMATION

KLIMAWENT S.A. performed a **Risk Assessment** carried out following **EN ISO 12100**. This assessment shows the **residual risk** for the above device (machine) and is illustrated in this chapter. The person who will design the system, together with the company/person who will integrate the above device into the machine/end system, must carry out another residual risk analysis and ensure that the entire installation is safe and complies with **Directive 2006/42/EC**.

The table below presents information on the **residual risk** and the rules of conduct during use in each phase of the device's life.

ATTENTION: THE DEVICE IS SAFE AS THE PROVISIONS SHOWN IN THE TABLE BELOW FOLLOW THE DEVICE.

Table 2 Safety rules and information on residual risks

THREATS AND SAFETY RULE			
No.	**Phase**	**Threats**	**Procedure**
1.	**Unpacking**	**Impact, abrasion, overturning.**	Use personal protective equipment to protect against accidental abrasions, cuts and injuries, in particular anti-cut gloves, protective clothing and work shoes. Pay attention to protruding parts when walking and working next to the device.
2.	**Transporting, lifting and moving**	**Hitting, rubbing, overturning the load, sliding the load**	Lifting, carrying or transporting elements (modules) of the device is allowed only with the use of fastening elements installed on the device and intended for transport – see point. 5.1 – TRANSPORT on p. 27 and 5.2 – STORAGE on p. 27. • in the case of a support frame with a chute – a transport beam with lugs serving as a support for forklifts; • in the case of filtration chambers and chambers with a fan – transport lugs mounted on the edges of the chambers, are used to fasten crane hooks.
3.			Keep hands, hands and other parts of the body away from ropes, lanyards or chains, lifting hooks while lifting, handling, and preventing them from being crushed and sheared as a result of tension in the ropes due to the weight of the load.
4.	**Storage**	**Impact, abrasion, overturning.**	Use personal protective equipment to protect against accidental abrasion, cuts and injuries on protruding elements. Follow the rules described in point 5.2 – STORAGE on page 27, to protect the device structure against damage, leakage, crushing or destruction.
5.	**Assembly**	**Impact, scratch, cut**	When handling cargo, operators must be equipped with personal protective equipment: • helmets, helmets, • anti-cut gloves, • protective clothing, • work boots.
6.			During assembly, keep hands and arms and other parts of the body away from ropes, cables, chains, lifting hooks, and slots, to prevent crushing, and cutting due to the tension of ropes under the weight of the load.
7.	**Installation**	**Impact, fall**	The user must prepare a base suitable for the size and weight of the machine, and the surface must be level to prevent deformations that may affect the frame and the machine housing – see point. 6.3 – INSTALLING on page 35 and 6.1 – WORK AREA AND COMMUNICATION SPACE on page. 29
8.			Make sure that the electric circuit is disconnected from the electricity supply.

THREATS AND SAFETY RULE			
No.	**Phase**	**Threats**	**Procedure**
9.		**Electric shock, concussion**	The design and execution of the electrical connection of the machine to the power supply must be carried out by a qualified electrician (see section 6.3.1 – ELECTRICAL CONNECTION on p. 36) and the electric motor operating manual.
10.			It is necessary to ensure the correctness of the equipotential bonding, and check if the earthing connection with the main earthing bar is made – see section 6.4 – COMMISSIONING / CHECKING / TESTING on page 41.
11.		**Injection, burst, high air pressure**	The device must have a permanent connection to a compressed air network that provides stable pressure for the automatic cleaning of the filters in the device. The condition, pressure and quality of the compressed air must be constantly monitored. The design and execution of connection of the device to such a network must be performed by qualified personnel, following the principles of implementation of this type of installation. Regularly check the tightness of the tightening of the pneumatic elements. No air blows are allowed – they should be removed immediately, and in the event of damage to an element that prevents removal of the fault, disconnect the device from the compressed air system, empty the compressed air tanks and replace the defective element.
12.	**Commissioning / Start-up / Operation**	**Discomfort, noise-induced stress**	We recommend isolating the machine from the ground and the ventilation ducts of the suction and discharge part with elastic shock-absorbing elements and the use of duct silencers at the fan outlet. Do not place the device near corners, near walls or on enclosed metal structures due to the possibility of causing vibrations and resonances. The device is a source of impulse noise generated by the automatic system of filter cleaning with compressed air. **Place appropriate warnings about the impulse noise generated by the device – see section 4.4 – WARNINGS on page 22.**
13.		**Noise, discomfort, fatigue**	The user or the employer must comply with the regulations on protection against the daily exposure of operators to noise generated in the workplace (required by applicable European and national standards) and require the use of personal protective equipment (ear muffs, earplugs, etc.) depending on the overall sound pressure level in individual workplaces and the level of daily personal exposure of workers – see point 4.3 – REQUIRED PERSONAL PROTECTION on pages 21 and 3.3.1– TECHNICAL DATA on p 15. **Place appropriate warnings indicating the impulse noise generated by the equipment - see section 4.4 – WARNINGS on page 22.**
14.		**Electric shock/burns caused by the motor**	All electrical equipment must be designed concerning the electric current consumption times and peaks of the installation and must be performed by qualified personnel.
15.			Make sure that the electric current consumed by the fan does not exceed the value stated on the motor nameplate.
16.			Avoid consecutive engine starts that lead to constant overloads of the starting system that overheat electrical components. Allow the electric motor to cool down before restarting.
17.			The construction of the device is designed to work with frequency converters (inverters). Make sure that the maximum engine speed is not greater than the rated speed of the electric motor. In addition, you should limit the frequency variation from the bottom and top of the frequency value so that **f = (15 – 50) Hz**, where **f** is the inverter output frequency and the larger value (f = 50Hz) is the rated frequency of the electric network.
18.		**Burns**	The company/person installing the machine in the ventilation system must provide adequate ventilation for the electric motor if adequate heat transfer cannot be guaranteed for the motor, such as during idle periods, when the motor is at high temperatures or when used with frequency converters. The

THREATS AND SAFETY RULE			
No.	**Phase**	**Threats**	**Procedure**
			lack of an adequate additional cooling system for the electric motor will adversely affect its properties and may cause its failure.
19.			Do not touch the engine during and after long-term operation. Allow the motor casing and adjacent surfaces to cool down.
20.		**Excessive vibration**	Provide scheduled maintenance to prevent technical failures that may occur over time as a result of excessive vibration.
21.			Excessive vibrations should be avoided, as they may cause deformation or cracks in the rotor structure, seizure of the bearings, increased noise levels, loosening of bolts and nuts of important connections, and ultimately lead to the destruction of the rotating elements and create a situation threatening the safety of operators and people in the vicinity. Where possible, the use of bearing vibration and temperature monitoring systems is recommended.
22.			It is recommended to monitor the fan vibrations with the use of a vibration sensor or to carry out the inspection every **4000 hours of work** and vibration measurement to avoid exceeding **Vrms = 11.8 mm/s** – see point 8.4 – MEASURING VIBRATIONS OF THE FAN on p. 62.
23.		**Overspeed, Overtemperature, Destruction**	The device is designed for operation with frequency converters (inverter) within the limits **f = (15 – 50) Hz**, where **f** is the inverter output frequency and the upper-frequency f = 50Hz is the rated mains frequency. This limit must not be exceeded by unauthorised modifications to the fan control system. The device must be operated under the conditions for which it was designed, in particular, to avoid excessive speed and temperature. Changing the parameters may lead to irreparable damage to the device and consequently endanger people.
24.		**Poisoning, suffocation**	Both the end user and the installer must take into account the risks of pumping air mixtures other than those permitted in this manual. Indicate with appropriate signs all types of dangers related to the situations resulting from non-compliance with the provisions concerning the permitted use of the device.
25.		**Slip, fall**	Keep the minimum gaps of the device from walls or partitions during installation, otherwise, it may cause hazards and inconvenience in confined spaces during operation or maintenance – see pt. 6.3 – INSTALLATION on page. 35.
26.			Properly light the area surrounding the machine.
27.	**Maintenance, Cleaning, Troubleshooting, Disassembly**	**Trip, fall, slip**	Keep the minimum gaps of the device from walls or partitions during installation, otherwise, it may cause hazards and inconvenience in confined spaces during operation or maintenance – see pt. 6.1 – WORK AREA AND COMMUNICATION SPACE on p. 29.
28.			Properly illuminate the area surrounding the device.
29.			Operators must be equipped with appropriate personal protective equipment to prevent slipping: footwear and protective clothing.
30.			It is necessary to ensure the correctness of the earthing connection with the main earthing bar – see point 6.4.2 – EARTHING AND EQUIPPING CONTROL on page 41.
31.		**Injection, burst, high air pressure**	The device must have a permanent connection to the compressed air network, ensuring a stable pressure, and enabling automatic cleaning of the filters in the device. Regularly check the tightness of the tightening of the pneumatic elements. No air blows are allowed – they should be removed immediately, and in the event of damage to an element that prevents removal of the fault, disconnect the

THREATS AND SAFETY RULE			
No.	**Phase**	**Threats**	**Procedure**
			device from the compressed air system, empty the compressed air tanks and replace the defective element.
32.			Before any maintenance work, switch off and disconnect the power supply to the device. Wait until all mechanisms have come to a complete stop. In the event of maintenance of the fan's interior, it is recommended to disconnect the power supply using the service switch located on the fan housing. This prevents the fan from being accidentally started by another person.
33.		**Cut, entanglement, collision, electric shock, Burns**	During maintenance of the rotor or the inside of the fan, even if the electrical supply has been disconnected, the impeller may rotate due to natural or induced air currents flowing through the device, as it is connected to the ventilation system. As a result, there can be a serious risk of cuts and/or entanglement. For this reason, it is necessary to mechanically block the moving parts of the fan. Operators must be equipped with appropriate personal protective equipment such as cut-off gloves and protective clothing.
34.			Be careful not to cut yourself with sharp parts or any manufacturing waste when removing the safety nets.
35.			**It is strictly forbidden to:** • **maintenance of the device during its operation,** • **removing covers and covers during device operation,** • **maintenance of the device without disconnecting the power supply.**
36.		**Cut / Collision / Poisoning / Choking / Cancer**	Operators must be equipped with appropriate personal protective equipment: • (Certified) footwear, • (Certified) clothing, • helmets, helmets, • anti-cut gloves, • protective dust masks, • additional protections required by the safety data sheet of the pumped mixture and other regulations in force in the country of installation.
37.		**Burn**	Do not touch the engine after a long-term operation. Allow the electric motor housing and adjacent surfaces to cool down. Additionally, wait until the temperature inside and outside reaches a value that is not hazardous to touch. Operators must be equipped with appropriate personal protective equipment such as gloves and protective clothing.

5. TRANSPORT AND STORAGE

5.1. TRANSPORT

A. Due to the dimensions of the device, the device is disassembled during transport and divided into several parts, enabling transport. Each of these parts is protected against weather conditions.

B. The temperature during transport should be between **–30ºC** and **+40ºC**.

C. Do not allow moisture to enter or flood the device. The device must be tightly protected against the influence of weather conditions.

During vertical transport, follow the guidelines for safe transport with the use of lifting equipment. Carry out a trial lifting of the load to a height of 0.5 m and check the correctness of the load securing. In addition, it is forbidden to stay under the load during transport.

Only certified slings should be used for vertical transport. Suspend the load on a 4-rope sling ended with hooks using an intermediate traverse that stabilizes the device and relieves the device's hangers from oblique forces – see Picture 15 and Picture 16 on page 32. In addition, the hooks should be fastened with hangers with holes of Ø30 mm, maintaining a safe opening angle between slings max 120 degrees. Use the directional rope to guide the load at height. It is allowed to guide the cargo manually to the structure with which it is to be connected. Keep hands and other parts of the body away from ropes, lanyards chains and hooks while lifting or guiding to prevent them from being crushed or sheared due to tension in the ropes due to the weight of the load.

5.2. STORAGE

A. The device should be stored folded or unfolded. Protect against the influence of moisture and penetration of dust as well as external weather conditions and above all protect against direct sunlight or other heat source or radiation.

B. The storage place should be dry, dust-free, at a temperature from **–30ºC** to **+40ºC**, and the device must be empty and protected against the ingress of moisture. Relative humidity must not exceed **95%**, non-condensing.

C. The device must be protected against any shocks that could compromise its integrity.

D. The device must be protected against the influence of oxidizing or corrosive substances that can adversely affect the sealing materials and the device in general.

E. It is unacceptable to load the device with forces that could deform or destroy the housing of the device.

F. The **electric motor and the fan impeller must not stay stationary for a long time**, both during storage and when the system in which the device will be placed is still under construction or at a standstill. During these periods, the condition of the impeller and fan should be checked periodically by turning the impeller to avoid damage to the motor bearings, especially oxidation of the bearing tracks.

! CAUTION

Producer **KLIMAWENT S.A.** is not responsible for damage to mechanisms as a result of long-term inactivity.

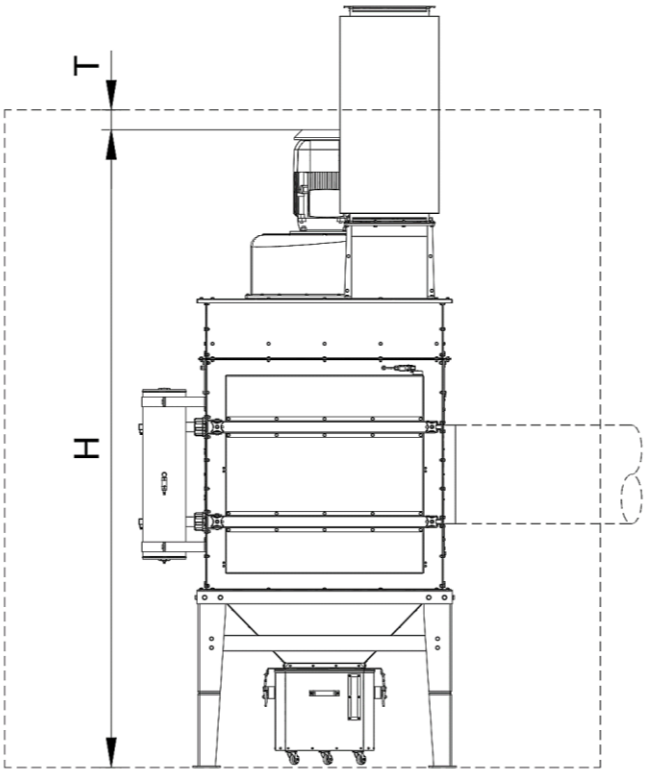
6. ASSEMBLY, INSTALLATION AND COMMISSIONING

6.1. WORK AREA AND COMMUNICATION SPACE

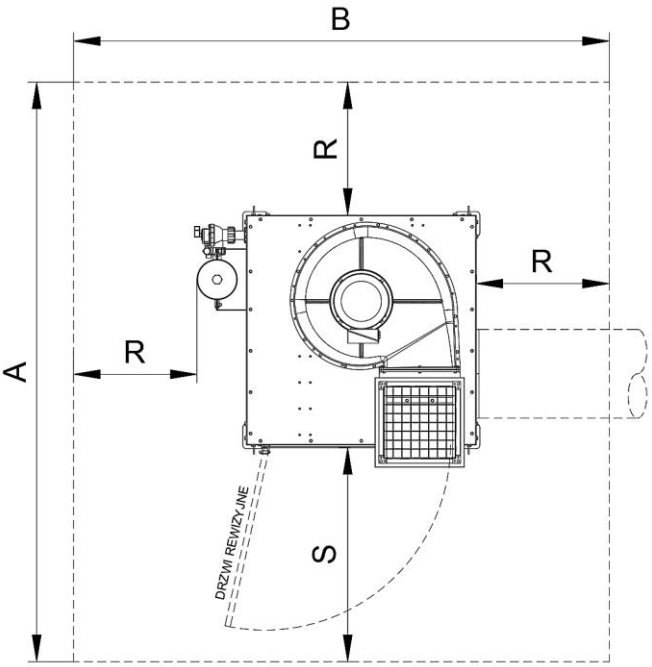
The device must be placed in places protected from unfavourable weather conditions and free from corrosive factors.

For the sake of the safety and convenience of communication and ergonomic operation of the device, it is necessary to provide a free area around the machine to prevent the risk of accidents.

Below are diagrams showing the minimum distances from the device, which should be kept when installing the device. The surrounding areas should also be left free to allow for safe maintenance work. In addition, there must be space above the motor to allow adequate ventilation and heat exchange by the electric motor. **The access of cooling air to the electric motor housing must not be obstructed.**



Picture 10 Workspace – Side view



Picture 11 Workspace – Top view

	A [m]	B [m]	H [m]	R [m] [13]	S [m] [14]	T [mm]
UFO-A-5000-N(/R)	3,3	3,0	2,6	0,75 (1,0)	Min 1,25	Min 50
UFO-A-10000-N(/R)			3,3			
UFO-A-15000-N(/R)			4,1			
UFO-A-20000-N(/R)			4,6			

[13] ***CAUTION:*** *Passages between machines and other devices or walls intended only for the operation of these devices should be at least 0.75 m wide, and if there is two-way traffic in these passages, their width should be at least 1 m.*

[14] ***CAUTION:*** *Dimension on the cartridge filter access door side. If movement around the machine is required while opening the door, it is recommended to increase this value by another 1 m.*

6.2. ASSEMBLY

6.2.1. GENERAL GUIDELINES

During transport to the installation site, the device is divided into several parts. All modules should be connected by a flange connection with a gasket and screwed together. These connections should be made carefully to ensure tightness. It is not allowed to omit any of the bolted joints, which may cause joint leakage, but also result in deformation, damage or instability of the structure and, as a result, a catastrophe.

To assemble the unit, at least 2 hexagon socket wrenches, size 13 (14) are required. When bolting, a specific bolting sequence is not required, but it is required to bolt in a uniform manner that prevents deformation of the flange connection. All connections should be tightened using force, bearing in mind the crush of the gasket and the distortion of the flanges. Do not use high-torque electric, pneumatic or similar screwdrivers! After screwing the device together, check the tightness of the connection during a test run.

6.2.2. ASSEMBLY PROCEDURE

Depending on the model, the device can be divided into 2 or 3 parts for transport.

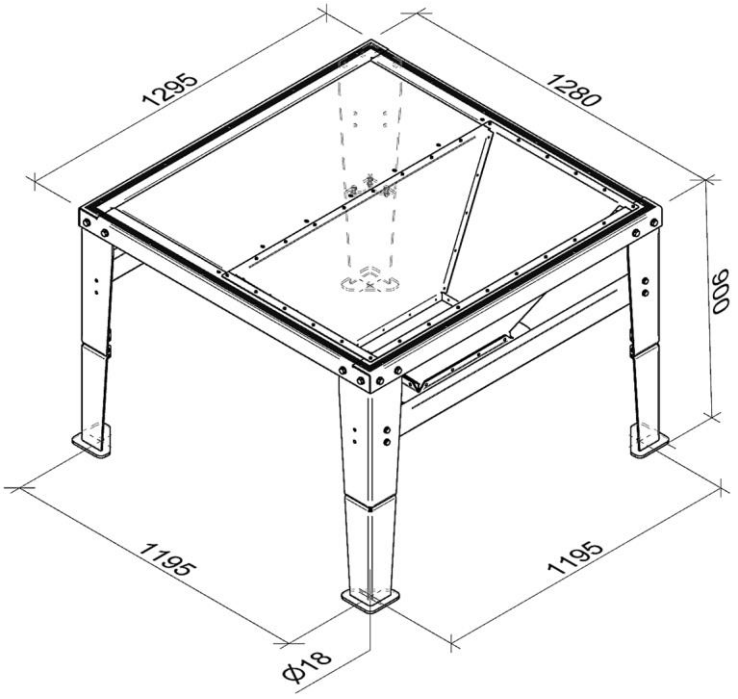
The device should be assembled at the workplace, observing the necessary safety measures, following the guidelines presented in point 6.1 – WORK AREA AND COMMUNICATION SPACE” on page 29 and in pt. 4.5 – RESIDUAL RISK INFORMATION – Table 2 „Safety rules and information on residual risks” on page 23.

Depending on the division of the device, install by selecting the appropriate steps from the list below, and skip the rest.

ASSEMBLY PROCEDURE

A. Place the device supporting frame in the place of installation. A transport beam is used for transport, mounted between the legs of the support frame. The frame should be transported using forklifts.

B. Level the carrying frame. Attach to the ground using the mounting holes in the legs – see below Picture 12. The size and spacing of the mounting holes: Ø18 to □1195×1195 mm [15].



Picture 12 Support frame

C. Apply the gasket on the frame surface as shown above – see Picture 12. Create a square from the gasket evenly spaced from the outer edge of the load-bearing frame, covering the mounting holes in the frame with a strip width of at least 25 mm. Check the quality and condition of the prepared gasket.

D. Place the first filter chamber on the support frame. Use hangers mounted in the corners of the chamber – see Picture 20 on Page 33. Pay attention to the smoothness of the adjacent surfaces and the condition of the sealing. Fix the elements with the M8 screws attached to the device.

! WARNING

When screwing together the chambers of the device on the outer flange, make sure to connect the chambers also inside, in the place of the filtration partition - see Picture 20!

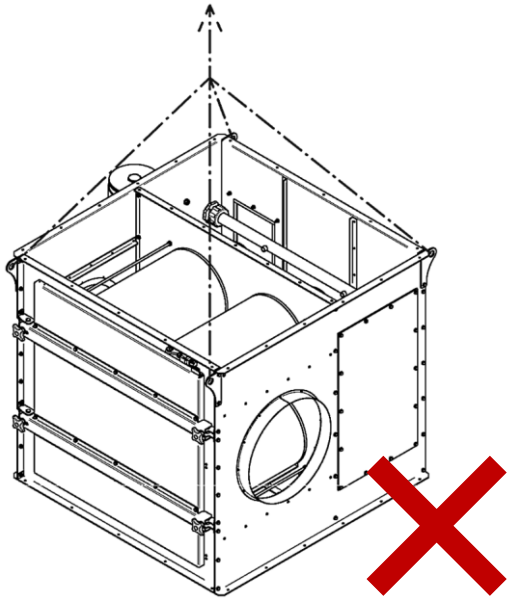
E. When suspending modules, follow the guidelines for the correct suspension of loads with elastic slings – see point. 5.1 – TRANSPORT on page 27. Use appropriate intermediate beams such as crossbeams to protect the body structure from distortion or loss of stability. Diameter and spacing of hanger points: Ø30 by □1210×1345 mm – see Picture 17, Picture 18 and Picture 19 on page. 33.

F. The methods of hanging the filter modules shown in Picture 13 and Picture 14 are not allowed! Recommended methods are shown in Picture 15 and Picture 16 on page 32.

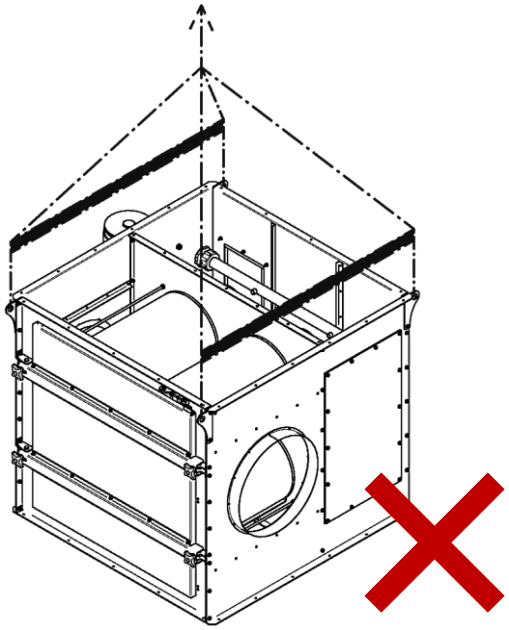
[15] *Nominal dimension of the leg spacing. The design of the frame allows manipulation within small limits.*

G. Put the next modules in the same way, respecting the conditions of transporting loads specified in point E described wyżej on page 31. Fasten the modules with the M8 screws attached to the device.

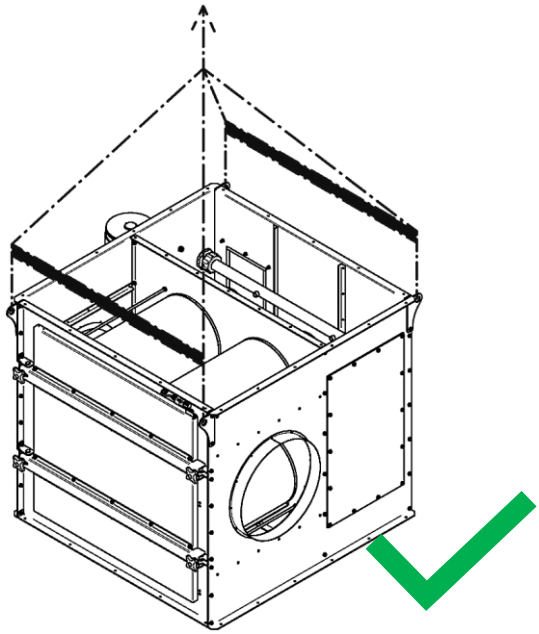
H. Connect all modules with equipotential bonding. For this purpose, use the bolts to connect the modules by placing them under the head of the bolt and the eyelet of the equalizing wire. Check the conductivity of equipotential bonding.



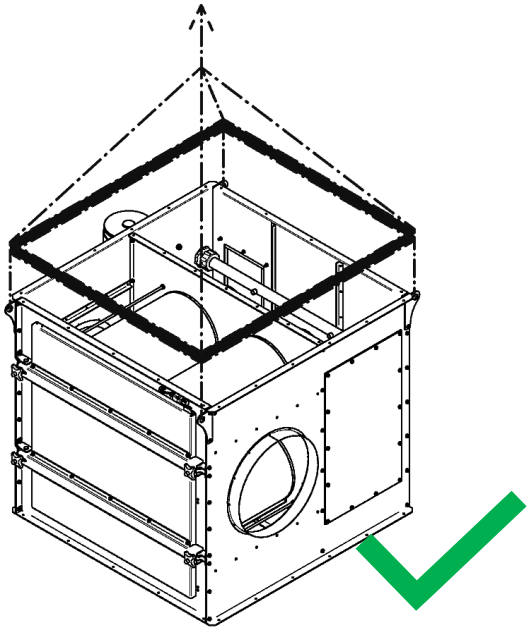
Picture 13



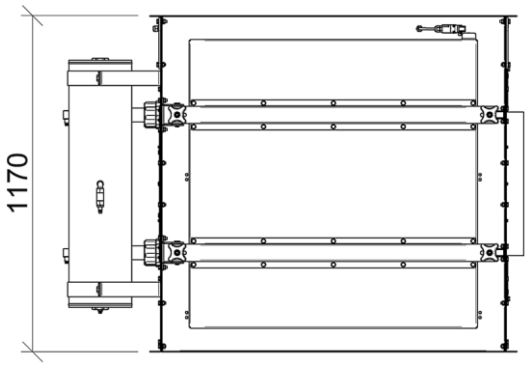
Picture 14



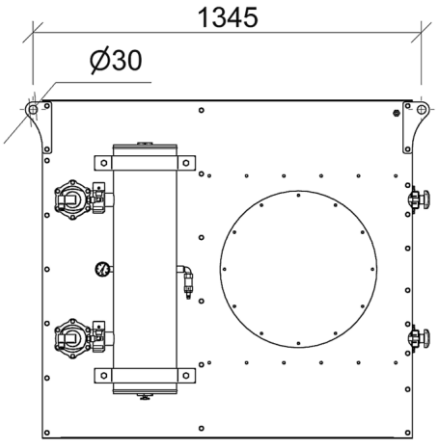
Picture 15



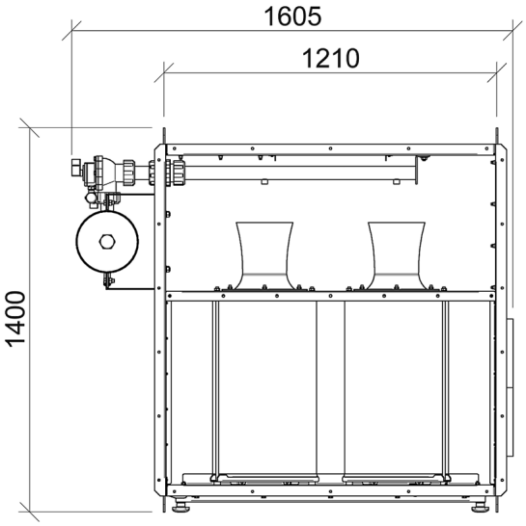
Picture 16



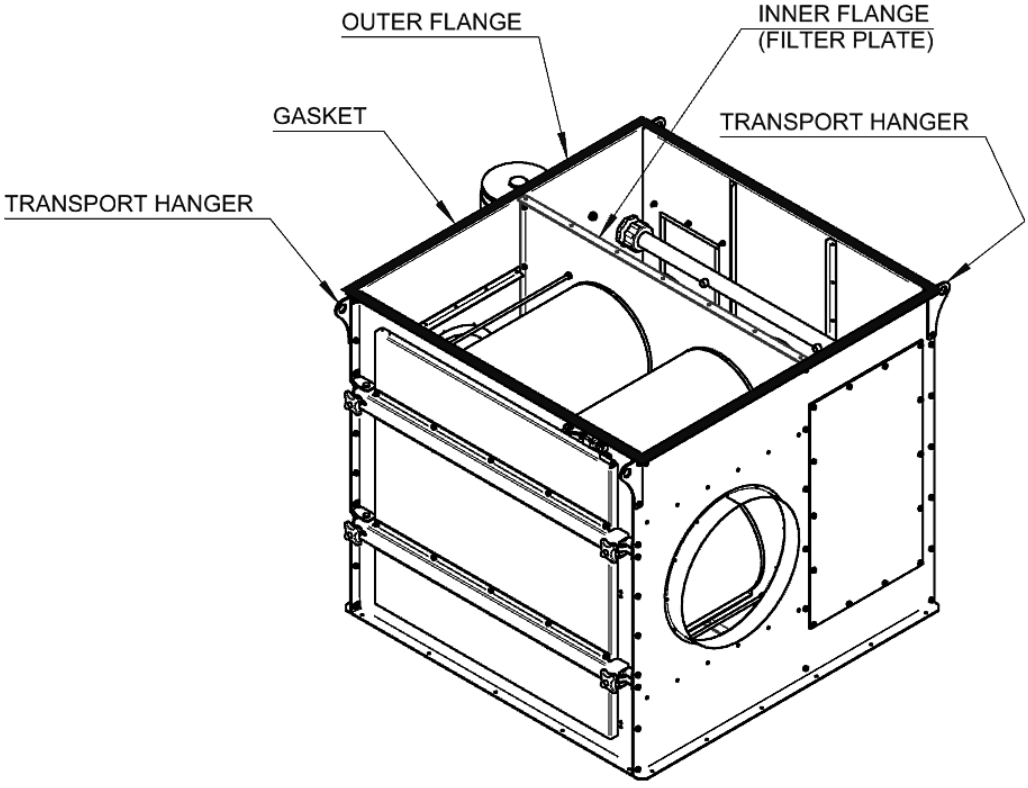
Picture 17



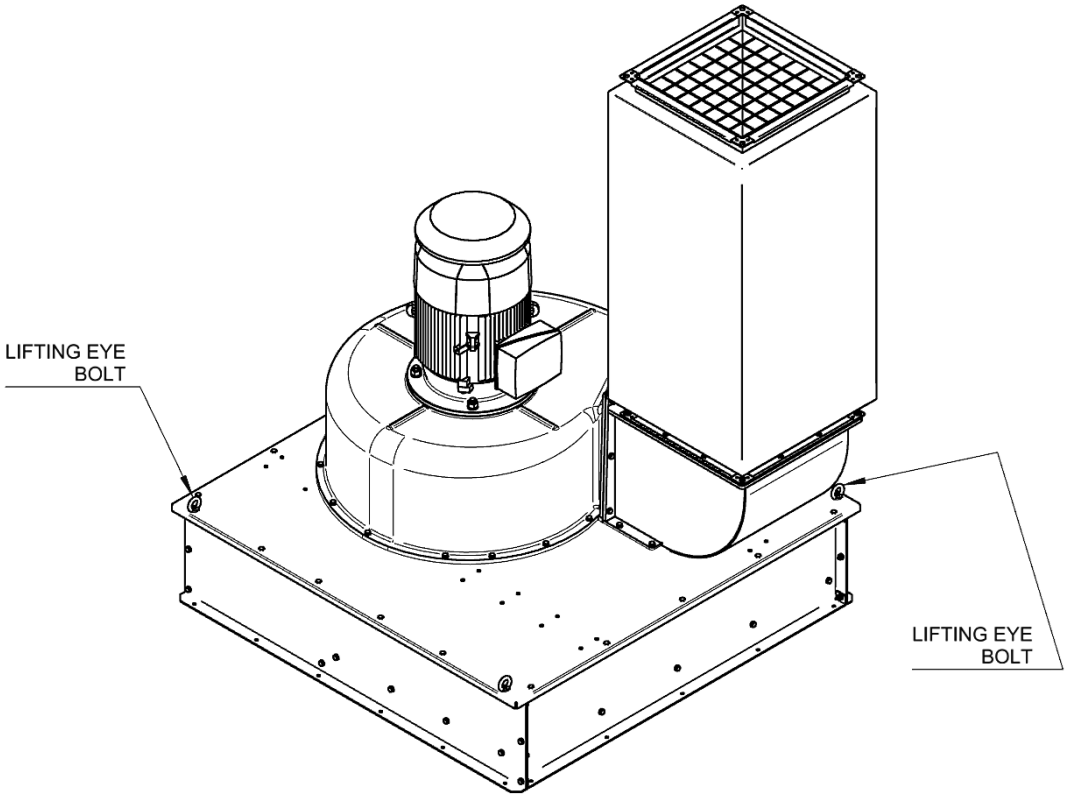
Picture 18



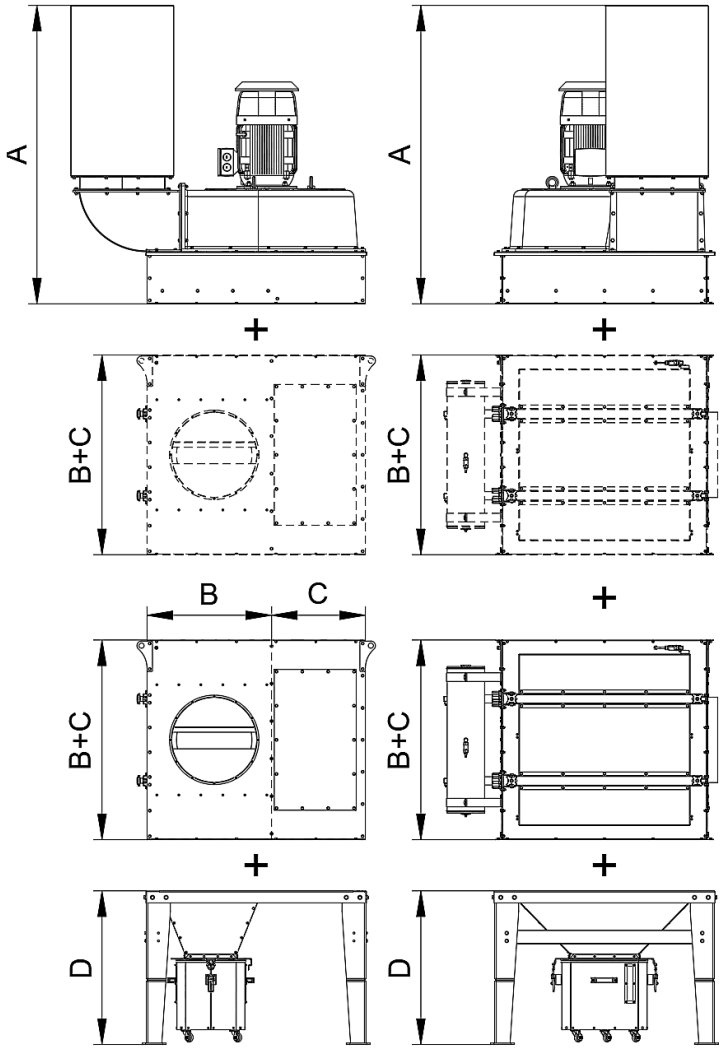
Picture 19



Picture 20 Filter chamber



Picture 21



Picture 22

6.3. INSTALLING

The user must prepare a surface suitable for the size and weight of the machine, and the surface must be level to prevent deformation that may affect the support frame and the machine housing.

The size of the area provided for the ergonomic and safe operation of the device is shown in point. 6.1 – WORK AREA AND COMMUNICATION SPACE – see wyżej – Picture 10 and Picture 11 on page 29.

The device should be connected to:

- **the electric power supply** (see section 6.3.1 – ELECTRICAL CONNECTION on page 36),
- **the compressed air network** (see section 6.3.3 – COMPRESSED AIR CONNECTION on page 38),
- the filtered process **ventilation system** (see section 6.3.3 – CONNECTION TO THE VENTILATION INSTALLATION on page 39) and
- install the differential **pressure transducer** in case of control of the device with frequency control of the motor – see section 6.3.4 – INSTALLATION OF DIFFERENTIAL PRESSURE TRANSMITTER on page 39.

All installation activities must be performed by qualified personnel with confirmed authorizations after familiarizing themselves with the requirements – see section. 4.2 – SAFETY RULES AND APPLICATION RESTRICTIONS – on page 19.

! CAUTION	
	It is necessary to ensure the correctness of the connections to equalize the potentials of all parts of the ventilation system, to check if these connections have been made correctly and to make the earthing connection between the device and the main earthing bar – see section 6.4.2 – EARTHING AND EQUIPPING CONTROL on page 41.
	The device **MUST** be permanently connected to the compressed air network to ensure the uninterrupted operation of the automatic filter cleaning system. Compressed air **MUST** be prepared by appropriate filtering and reducing unit with a pressure ranging from **0.6** to **0.8 MPa** and meeting the purity conditions specified in point 6.3.2 – COMPRESSED AIR CONNECTION on page 38.

! DANGER	
	The user **MUST** ensure that adequate safety measures are taken in the ventilation system where the equipment is to be installed regarding **IGNITION** or **EXPLOSION DANGER** if required.

6.3.1. ELECTRICAL CONNECTION

A. The device requires the connection of an electric power supply that meets, above all, the minimum requirements for the electric motor of the fan drive, i.e. the voltage variation in the network must be within ±5%. The design and execution of the electrical connection with the power supply must be performed by a qualified electrician following the diagrams in point 13 – ELECTRICAL DIAGRAMS on page 82 and the instruction manual for the electric motor.

B. The device **MUST** be powered by the **ZE-UFO-A-N** or **ZE-UFO-A-N/R** electrical switchboard and properly connected to the device – see section 13 – ELECTRICAL DIAGRAMS on page 82. No modifications of any kind are allowed without the approval of the manufacturer KLIMAWENT S.A.

! WARNING

In the case of **inverter**-controlled devices, the electrical assembly **ZE-UFO A-N/R MUST NOT** be installed on the device. The electrical apparatus in this design is sensitive to vibrations caused by the device and may be damaged!

C. The device **MUST** be supplied with electricity adapted to the power consumption of the device - see technical data in point 3.3.1. – TECHNICAL DATA on page 15.

D. The device **MUST** be connected to the main equipotential bar. Threaded studs are provided in the legs of the supporting frame for this purpose.

E. The device **MUST** be powered from a **TN-S** network, that is, from three phases **L1, L2, L3** along with a neutral conductor **N** and a protective conductor **PE**. The power supply must be connected to the terminals of the **X1 strip** marked L1, L2, L3, N, PE accordingly - see the electrical diagrams in section. 13 – ELECTRICAL DIAGRAMS on page 82.

F. If after connecting the power supply and setting the main switch in the **ON** position, the diode **H1 "POWER"** does not light up, pay attention to the indications of the **CKF** monitoring relay. The diode on the **CKF** relay may be on or blinking continuously. If it flashes, it means that the device is not connected properly. This may be due to the wrong phase sequence, a missing phase, or a too-low supply voltage. In this case, check that the voltage values are correct, that the voltage is on all three phases, or reverse the phase sequence. When properly connected, the diode on the **CKF** relay will be lit continuously, and the white lamp **H1 "POWER"** on the switchgear door will light.

G. **It is recommended** to connect the fan's electric motor to the electric switchboard through the **service switch** following the wiring diagram – see point. 13 – ELECTRICAL DIAGRAMS on page 82 by placing it on the unit near the fan. The designation of the terminals on the motor must correspond to the same marked terminals in the service switch and the switchgear, i.e.: the terminal on the **U1** motor must be connected to the **U1** terminal in the switchgear; terminal **V1** on the motor with terminal **V1** in the switchboard etc.

H. The electric motor is adapted to work with frequency converters (inverters) in the frequency range from **15 Hz** to **50 Hz**. This limit **MUST NOT** be exceeded by any unauthorized modification of the fan control system.

I. It is recommended to use a **service switch** that disconnects power from the fan during maintenance works. This switch should be placed next to the fan within the reach of maintenance personnel.

! CAUTION

The user is obliged to follow the conditions written in this manual and the related instructions, i.e. the manual for the electric motor.

This manual does **NOT** include the electric motor manual.

INFORMATION

For manuals on the inverter, see: **IOEXT-EN-SCHNEIDER-ALTIVAR212-201411XX**.

For manuals on the controller, see: **IOEXT-EN-TURBO-E1T16CH-202201XX**.

! WARNING

DO NOT start the unit before ensuring that the continuity and connection of the **PE** protective conductor have been checked.

6.3.2. COMPRESSED AIR CONNECTION

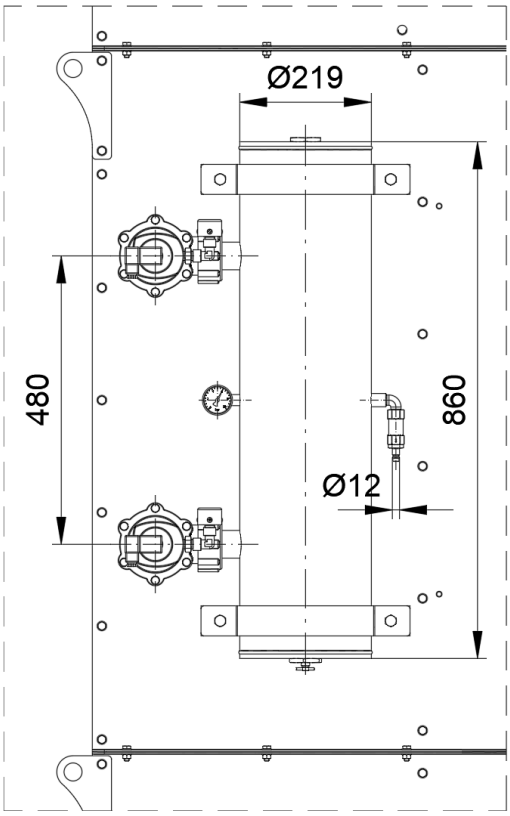
A. The device should be connected to the compressed air network ensuring uninterrupted operation of the automatic filter cleaning system. Compressed air must be prepared by appropriate filtering and reducing unit with a pressure ranging from **0.6** to **0.8 MPa** and ensure appropriate cleanliness classes for individual pollutants, i.e. following ISO 8573-1, air supplied to the filter cleaning system with compressed air should meet the minimum requirements set out in the table below:

The type of contaminants	Purity class according to ISO 8573-1: 2010
Oil	**6**
Solid particulates	**4**
Humidity and liquid water	**4**

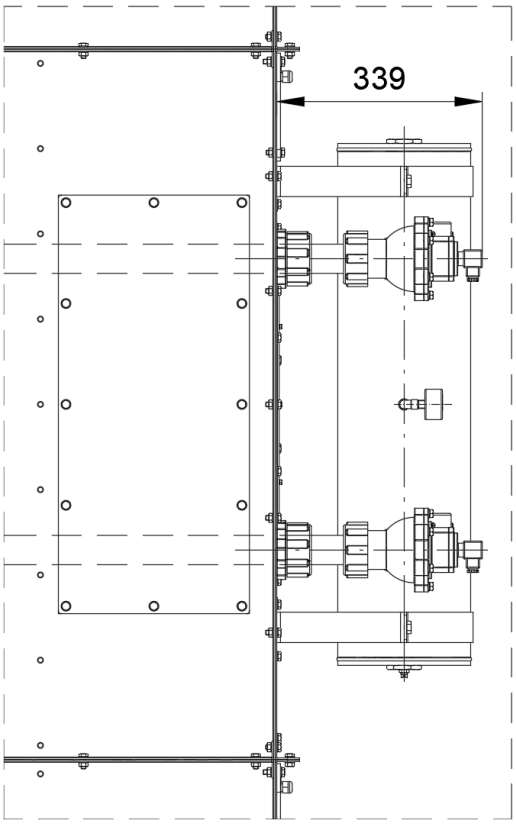
B. The design and construction of the connection of the device must be performed by qualified personnel following the description of the design of this type of device.

C. The device, depending on the model, has 1 to 2 compressed air tanks with **a capacity of 30.1 L** each operating at a **limit pressure of 8 bar (0.8 MPa)**. For the filter regeneration system, the pressure should be provided in the range of **0.6 to 0.8 MPa**. Each tank is equipped with a pressure gauge for monitoring the pressure in the system, **Ø1.5″ impulse valves** on the bleeder stubs, a drain valve at the bottom of the tank and a **Ø12 mm quick coupling connector** with a check valve – see below Picture 23 and Picture 24. The hose with the quick-connect stub should be slid onto the stub and the tightness of the connection checked. The compressed air tank is not subject to UDT operational supervision, as the condition V×P = 241bar×dm3 < 300bar×dm3 is met; V – capacity in dm3; P – overpressure in bars.

D. Compressed air consumption in the filter regeneration process in the case of factory settings of the filter regeneration parameters is specified in point 3.3.1– TECHNICAL DATA – see Table 1 on page 15.



Picture 23



Picture 24

6.3.3. CONNECTION TO THE VENTILATION INSTALLATION

A. The device should be connected to the filtered process ventilation system through appropriate flexible connectors ensuring isolation of the system structure against vibrations.

B. Connect all parts of the ventilation system and the device with equalizing pipes to ensure the flow and equalization of electrostatic charges. For this purpose, suitable threaded pins are located near the stubs.

C. Before starting the device, make sure that the ventilation system has the appropriate safety measures concerning the risk of explosion if required.

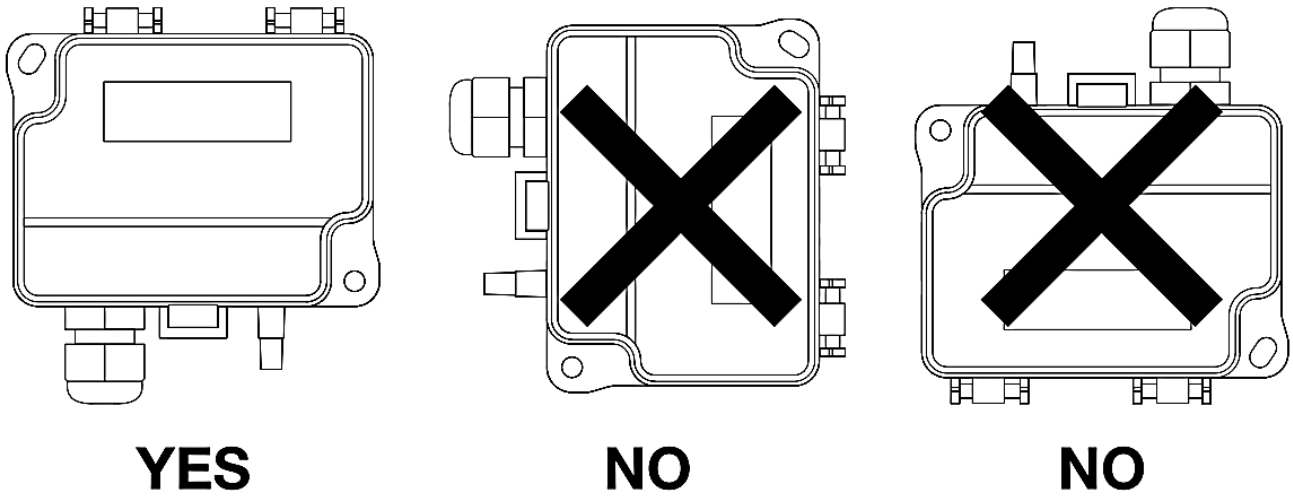
! DANGER
Possible damage to the device and the installation, fire or explosion!
The user **MUST** ensure that adequate safety measures are taken in the ventilation system where the equipment is to be installed regarding **IGNITION** or **EXPLOSION DANGER** if required.

6.3.4. INSTALLATION OF DIFFERENTIAL PRESSURE TRANSMITTER

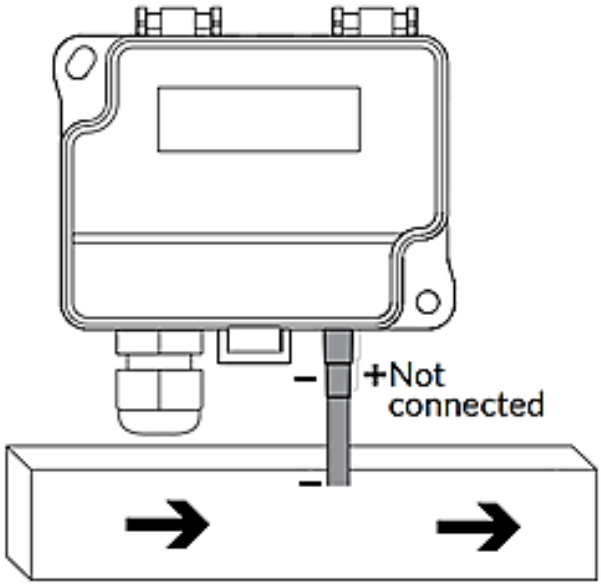
Automation with an inverter and the function of maintaining a constant negative pressure in the ventilation duct cannot be mounted directly on the device and must be mounted in the room on the ventilation system.

The pressure transmitter should be installed so that the **lower pressure stub** (marked with a "-" sign) measures the pressure in the ventilation duct upstream of the device (vacuum), while the **higher pressure stub** (marked with a "+" sign) measures the atmospheric pressure.

Picture 25 Differential pressure transmitter



Picture 26



Picture 27

6.4. COMMISSIONING / CHECKING / TESTING

6.4.1. ELECTRIC MOTOR CHECK

A. Before starting the electric motor:

- ✓ check the condition of the motor winding insulation and temperature sensor circuits, if the measured insulation resistance is too low, the winding should be dried; Insulation resistance measurement should also be performed in the event of a longer stoppage of the motor,
- ✓ check if there is a free flow of cooling air to the ventilator,
- ✓ check the electrical installation, operation of the switch, meters and other auxiliary and protection devices,
- ✓ check the tightness of all fastening screws, the security of the cable connection and all elements affecting the degree of motor protection,
- ✓ check the quality of earthing and neutralization,
- ✓ check that the device is ready for commissioning and conduct a trial run.

B. During the test run of the device, check:

- ✓ value of the supply voltage,
- ✓ current value,
- ✓ motor rotation direction,
- ✓ correct engine cooling,
- ✓ there are no excessive vibrations or other abnormalities in the engine operation,
- ✓ degree of heating of individual engine components, such as bearing shields, bearings, frame,
- ✓ correct operation of starting devices, safety control devices,
- ✓ electrical parameters achieved by the motor.

INFORMATION

The user is obliged to comply with the provisions contained in the non-smaller manual and the relevant manuals, i.e. the operating manual of the electric motor.

This manual **DOES NOT** contain the operating instructions for the electric motor.

INFORMATION

Electric motors powered by frequency converters make a characteristic "chirping" sound and this is normal. This is not a malfunction of the electric motor!

6.4.2. EARTHING AND EQUIPPING CONTROL

Before starting the device, check the condition and correctness of all electrical connections and equipotential bonding on the device. It is recommended to check the conduction of these connections regularly. In addition, check and systematically control the conductivity between the farthest elements and the connection of the device to the structure to which it is attached.

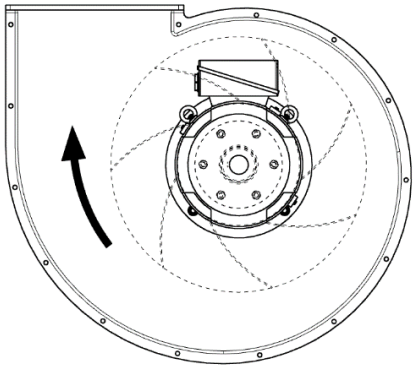
6.4.3. CONTROL OF THE ROTATION DIRECTION OF THE FAN IMPELLER

Check the direction of rotation of the fan impeller (check the direction of rotation of the fan ventilating the electric motor) before starting the device in the ventilation system. It should match the arrow on the fan housing or as shown below – see Picture 28 on page 42.

The control system protects to a very high degree against the possibility of incorrect rotation of the fan impeller, however, if the impeller rotates in the wrong direction despite the correct connection and start-up, immediately contact the manufacturer **KLIMAWENT S.A.** – additionally see point 6.3.1 – ELECTRICAL CONNECTION on page 36.

! CAUTION

The device **MUST NOT** be used with the **wrong direction** of rotation of the fan impeller.



Picture 28 Correct direction of rotation of the impeller. View from above.

6.4.4. INSPECTION OF THE FILTER REGENERATION SYSTEM ELEMENTS

Before switching the device on to work in the dust extraction system, check the correctness of the selection of the capacity of the compressed air installation connected with the filter regeneration system – see the requirements in point 3.3.1 – TECHNICAL DATA – Table 1 – „Compressed air supply: nominal consumption, pressure and quality conditions" on page 15. System capacity and pressure should be at least as specified in this table.

Compressed air parameters should be controlled throughout the lifetime of the device, not allowing the pressure limit to be exceeded, which could lead to the destruction of pneumatic elements not intended for operation with increased pressure.

In the event of damage to the equipment of the device, contact the manufacturer of **KLIMAWENT S.A.**

! WARNING

Possible damage to the device, burns or serious injuries as a result of bursting elements of the pneumatic system!

REGULARLY CHECK the tightness of connections of pneumatic elements.
RECTIFY any leaks immediately and in the event of damage to a component that prevents recovery, **DISCONNECT** the device from the compressed air system, **EMPTY** the compressed air tanks and **REPLACE** the defective component.

6.4.4.1. PULSE VALVES

Pulse valves are designed to work with filtered air with a working pressure not exceeding **8 bar (0,8 MPa)**. Exceeding the pressure may destroy the valve.

The impulse valve during operation, i.e. when opened and closed, bleeds air through an opening located on the side of the valve. This is normal. To eliminate the whistle and noise, a throttle valve acting as a silencer is installed in this place. This silencer should not be permanently disassembled. It should be regularly cleaned and unblocked in case of clogging.

The impulse valve is controlled by a solenoid switch mounted on its top. The switch is powered with 24 V. All impulse valves are connected to the electrical switchboard, which controls their opening in the right order. Regularly check the condition of the connection between electrical sockets and impulse valve plugs.

6.4.4.2. COMPRESSED AIR TANK

Compressed air tanks require the control of the amount of condensate accumulated inside and their systematic emptying. In the event of excessive condensation inside the tank, check the filtration of the compressed air connected to the filter cleaning system – see the conditions specified in point 6.3.2 – COMPRESSED AIR CONNECTION on page 38. Additionally, check pneumatic connections for tightness. Level the leakage by tightening (sealing) or replacing damaged elements with new ones.

6.4.5. VIBRATION CONTROL

All rotors manufactured by **KLIMAWENT S.A.** are balanced following ISO 1940-1 with a balancing degree of G6.3.

During the final acceptance of the device, a fan test is carried out with appropriate control of the vibration level on a fully assembled machine. **KLIMAWENT S.A.** applies the guidelines for the assessment of vibrations provided in the standards PN-ISO 14695:2008 and ISO 14694:2003. Fans built into the **UFO-A-N** type device manufactured by **KLIMAWENT S.A.** belong to fans in category BV-3 and as such do not exceed the residual unbalance during commissioning tests, measured as vibration velocity Vrms = 2.8 mm/s when rigidly mounted or Vrms = 3.5 mm/s – flexibly.

The manufacturer is not responsible for the level of vibrations in the device (fan) in the place of final assembly, because the measured vibration values are influenced by the device levelling and the strength and flexibility of the supporting structure, therefore it should be taken into account when assessing vibrations *"in situ".*

Avoid excessive vibrations in the fan, as they may result in deformation or cracking of the impeller structure, seizure of bearings, increased noise level, loosening of bolts and nuts of important connections, and ultimately lead to the destruction of rotating elements and create a situation threatening the safety of operators or persons in its vicinity.

It is recommended to constantly monitor the fan vibration with a sensor or to carry out vibration measurements during fan inspections every **4,000 operating hours** or in the event of increased noise, vibration and other symptoms indicating a possible defect – see 8.4 – MEASURING VIBRATIONS OF THE FAN on page 62.

The value of the measured vibrations expressed as velocity **Vrms** should not exceed **Vrms = 6.3 mm/s**, the value of **Vrms = 11.8 mm/s** is considered **alarming**, and the value of **Vrms = 12.5 mm/s** qualifies for an **immediate stop** of the device.

6.5. ADDITIONAL EQUIPMENT

! UWAGA	
	The additional equipment is not installed in the device as standard. Additional equipment is delivered on a separate order.
	Contact the manufacturer **KLIMAWENT S.A.** to order additional equipment.

6.5.1. FILTER SPRAY SYSTEM

The **UN-1** sputtering system (spray chamber) is used to sputter the cartridge filters with CaCO3 synthetic calcium carbonate. This process protects the filters by extending their working time by creating a protective layer that protects the filter material against sticking sticky substances. In addition, it increases the safety of operation in dedusting systems installed in many industries.

Type	Part No.	Remarks
UN-1	**940U20**	Spraying chamber with synthetic calcium carbonate CaCO3 (chalk)

7. OPERATION USE

7.1. TERMS OF USE

! WARNING	
Possible damage to the device and disruptions in operation.	
	The temperature of filtered air **CANNOT** exceed **+60°C**.
	The ambient temperature during the operation of the device **MUST** be between **–20°C** and **+40°C**. The fan motor should not be exposed to direct sunlight or other thermal radiation that could significantly heat its body.
	Ambient relative humidity **MUST NOT** exceed **95%** without condensation.
	The atmospheric pressure **MUST** be between **800 hPa** and **1100 hPa**.
	The altitude above sea level **CAN NOT** exceed **1000 m**.
	The dust limit of the filtered air **MUST NOT** exceed **3 g/m³**.
	The device **CAN NOT** be used for the filtration of moist or sticky dust adhering to the surface of the filters, significantly reducing the filtration efficiency.
	The device **MUST** be continuously connected to a compressed air network that ensures uninterrupted operation of the automatic filter cleaning system. The compressed air **MUST** be prepared by a suitable filter-reduction unit **with a pressure** in the range of **0.6** to **0.8 MPa** and meeting the purity conditions specified in point. 6.3.2 – COMPRESSED AIR CONNECTION on page. 38.
	The device **CAN** work continuously under certain conditions – see 3.4 – PRINCIPLE OF OPERATION on page. 17.
	The device **MUST NOT** work in an environment that may cause an accelerated rate of corrosion.
	When the device is powered by a frequency converter (inverter) (design **UFO-A-N/R**), the maximum motor speed **MUST NOT** be greater than the nominal speed of the fan motor. In addition, the frequency variation from below and above must be limited so that the frequency is between 15 Hz and 50 Hz. This limit **MUST NOT** be exceeded by any unauthorized modification of the fan control system.
	Do **NOT** start the device before ensuring that the continuity and connection of the **PE** protective conductor have been checked.

! DANGER	
Possible damage to the device, fire or explosion!	
	It is **FORBIDDEN** to use the device to transport air containing sticky or caustic contaminants that may adversely affect the device!
	It is **PROHIBITED** to use devices for cleaning the air of carcinogenic, radioactive dust or contaminated with pathogens and other dangerous substances posing a high risk to human health and life.
	It is **FORBIDDEN** to use the device for transporting a mixture of air and flammable substances in the form of gases, vapours, mists or dust, which create an **explosive atmosphere** with the air!

7.2. OPERATION

7.2.1. SWITCHGEAR AND CONTROLLER

The device can be controlled (powered) through an electrical switchgear with a **Y-Δ starting** system for **UFO-A-N** devices, or using a frequency converter (**inverter**) for devices of the type **UFO-A-N/R**. In both cases, the control panel of the switchgear is the same – see below Picture 29.

On the cover of the electrical switchboard, there is a control panel with a membrane keyboard for controlling and manipulating the operation of the device, and inside there is a controller and electrical devices.

! WARNING

The device can be controlled from the panel on the electrical switchboard (**LOCAL**) or from another (**REMOTE**) by connecting to **terminals 17** and **18** in the switchgear of the **NO** relay signal.

7.2.1.1. CONTROL PANEL

The **control panel** consists of light signalling elements and membrane buttons, such as:

A. signal lamp **H1 (white lamp) "POWER"**, which signals the switching on of the control voltage – **continuous light**,

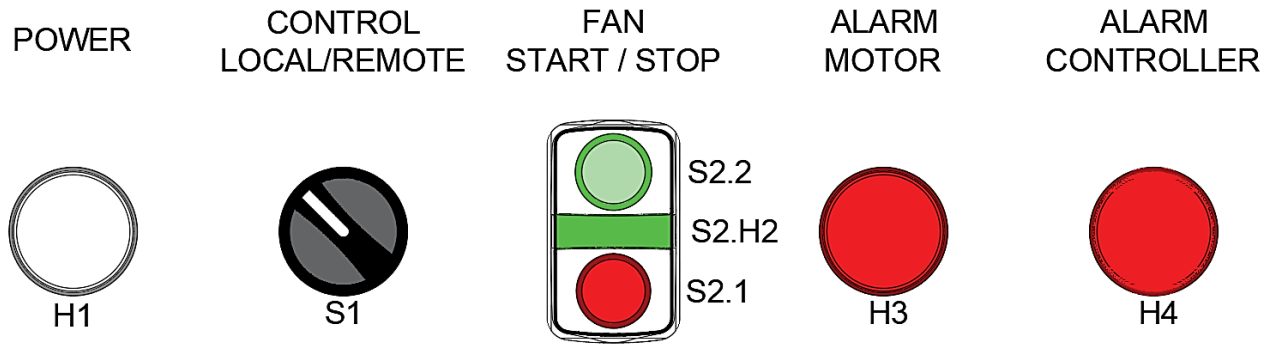
B. signal light **S2.H2 (green light) "FAN"** indicates the fan operation status – **continuous light**,

C. signal lamp **H3 (red lamp) "ALARM FAN"** which signals the alarm of the fan,

D. signal light **H4 (red light) "ALARM CONTROLLER"** which signals the alarm of the controller,

E. red button **S2.1 "STOP"**, which stops the fan motor,

F. green button **S2.2 "START"**, which starts the fan motor.



Picture 29 Control panel appearance

***H1** – Lamp signalling the appearance of power in the system; **S1** – Mode switch;*
***S2.1** – Fan stop button; **S2.2** - Fan start button; **S2.H2** – Green light indicating fan operation;*
***H3** – Red light indicating engine alarm; **H4** – Red light indicating a controller alarm*

7.2.1.2. TURNING THE MAIN POWER ON

Before starting the device, make sure that the inspection doors and the inspection covers of the device are closed and secured. **WK limit switches** are installed in the inspection doors of the filtration chambers, which switch off the device, preventing accidental activation.

A. To turn on the power, set the main switch **Q1** on the side of the switchgear to the **ON** position – see below Picture 30 and Picture 31. The voltage will appear in the power circuit, then the controller will initialize and the white light **H1** located on the control panel will illuminate – see above Picture 29 on page 47 wyżej.

7.2.1.3. TURNING FAN ON

A. Press the **S2.2 „START”** button on the control panel. The fan operation is indicated by the green light **S2.H2**. See Picture 29 on page 47 above.

! CAUTION

CHECK the efficiency of the compressed air system connected to the device.

ENSURE the minimum specified in point 6.3.2 – COMPRESSED AIR CONNECTION on page 38.

7.2.1.4. TURNING FAN OFF

A. Press the **S2.1 "STOP"** button located on the control panel. The fan will stop with **a slow run** in the case of **UFO-A-N** or **after 30 seconds** in the case of **UFO-A-N/R**. The green lamp **S2.H2** will turn off. See Picture 29 on page 47 wyżej.

7.2.1.5. TURNING THE MAIN POWER OFF

! CAUTION

TURN OFF the machine's main power supply **ONLY** after the fan stops.

A. Turn off the power by setting the main switch **Q1** on the side of the switchgear to the **"OFF"** position. The white lamp **H1** will go out. See Picture 30 on page 50 or Picture 31 on page 51.

7.2.1.6. CONTROLLER

See the operating instructions for the TURBO sequencer:

- Title of the manual: **EKONOMIZER E1T**
- Publication date: **01/03/2016**
- User manual version: **1.24**
- Hardware version: **1.3**
- Manufacturer's name and address:

TURBO s.r.l.
Electronic Control Systems For Dust Collectors
e-mail: info@turbocontrols.it
web: www.turbocontrols.eu
Tel. ++39 (0)362 574024 Fax ++39 (0)362 574092

INFORMATION

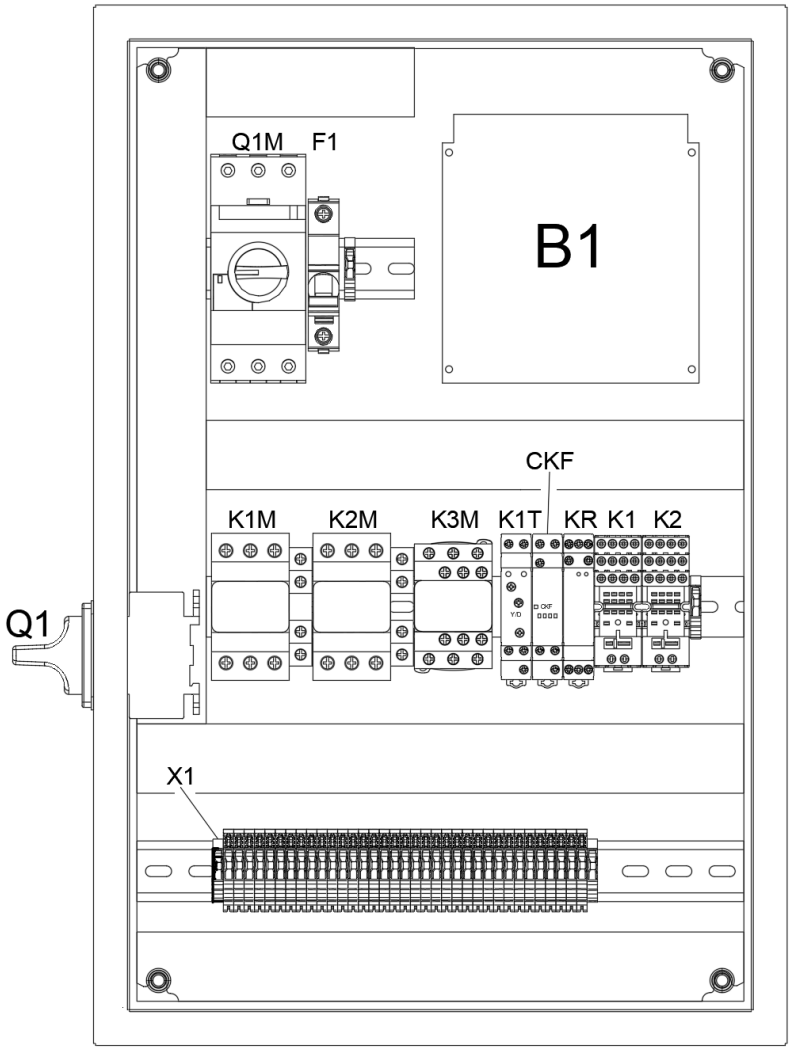
For instructions on how to use the controller, see: **IOEXT-EN-TURBO-E1T16CH-202201XX**.

7.2.1.7. FACTORY SETTING VALUES

Function No	Description	Value			
F02	Time of action	0.20"			
F03	Pause time in normal cycle [16]	240"	120"	80"	60"
F04	Number of outputs [17]	1	2	3	4
F05	Output voltage: 24Vdc, 24Vac, 115Vac, 230Vac.	24 Vac			
F06	Manual activation of the solenoid valve	1			
F13	Number of cycles after the fan has stopped	2			
F14	Pause time during the cycle with the fan off	020"			
F15	Maintenance break in 10 hours. (1 = 10h, 100 = 1000h)	100			
F16	Enable (1) either deactivation or (0) of the maintenance interval alarm	0			
F17	Reset maintenance hour counter: By setting 1, the maintenance counter is reset to zero after confirmation	0			
F24	Valve shutdown during short circuit	1			

[16] The settings for each version of the device are different, i.e .: 240 s for UFO-A-5000-N, 120 s – UFO-A-10000-N, 80 s – UFO-A-15000-N, 60 s – UFO-A-20000-N
[17] The settings for each version of the device are different, i.e .: 1 for UFO-A-5000-N, 2 – UFO-A-10000-N, 3 – UFO-A-15000-N, 4 – UFO-A-20000-N

7.2.1.8. ELECTRICAL APPARATUS – BASIC VERSION



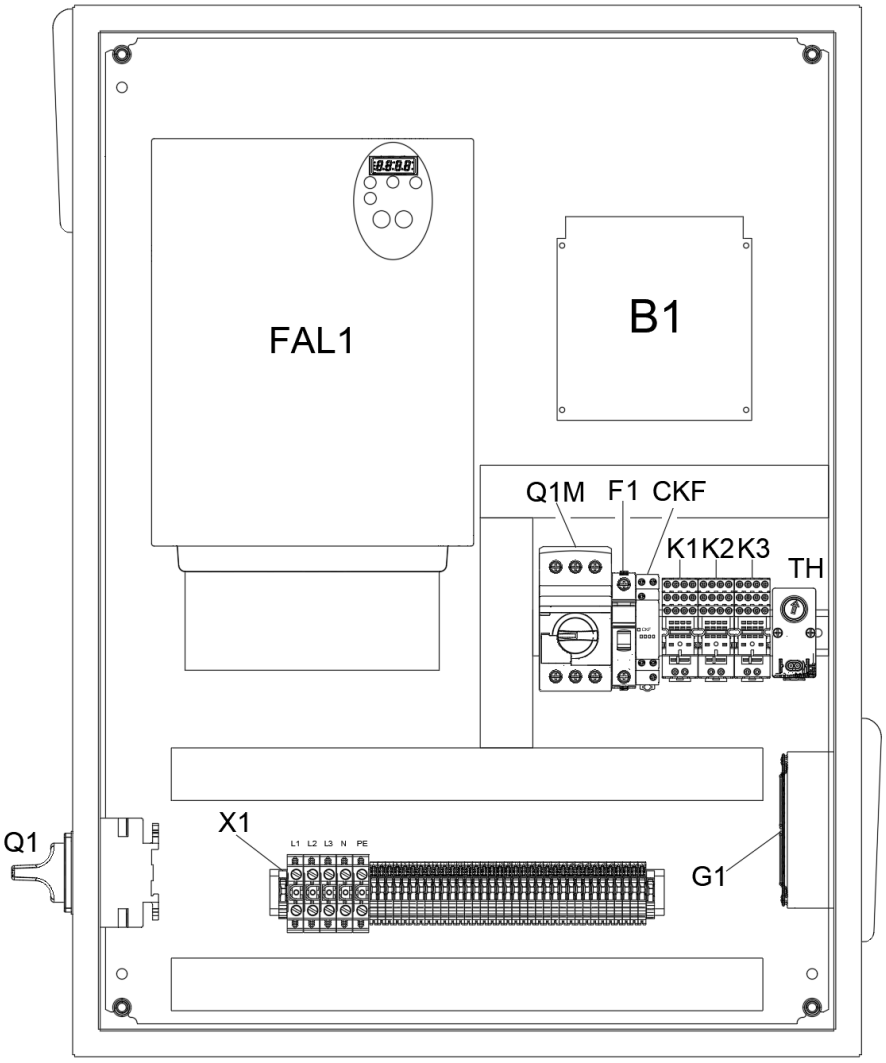
Picture 30 View of the interior of the electrical switchgear with a standard 3x400V power supply and Y-Δ type start-up

Table 3 Functions of the electrical apparatuses located in the UFO-A-N electrical unit

Type of apparatus [18]	Description	Function
Q1	*Power switch*	Provides power to the device, indicated by the **H1** lamp
Q1M	*Motor circuit breaker*	It is used to protect the motor against damage due to blocked start, overload, or short circuit.
F1	*Miniature circuit breaker*	Protects the transformer and driver circuit
K1M, K2M, K3M	*Contactors*	They are used to soft start the star-delta fan
K1	*Electromagnetic relays*	Engine failure relay
K2		Controller failure relay
K1T	*Time transmitter*	Controls the start-up of the fan
B1	*UFO controller*	Control of solenoid valves
CKF	*Monitoring relay*	It is used to detect missing, asymmetry and wrong phase sequence
KR	*Resistance relay*	Controls the temperature of the fan's electric motor

[18] *The electrical diagrams of the device are presented in point. 13 on page 85.*

7.2.1.9. ELECTRICAL APPARATUS – INVERTER VERSION



Picture 31 The interior appearance of the electrical switchgear with 3x400V power supply via frequency converter (inverter)

INFORMATION

The inverter operating instructions can be found in: **IOEXT-EN-SCHNEIDER-ALTIVAR212-201411XX**.

Table 4 Functions of the electrical apparatuses included in the UFO-A-N/R electrical assembly

Type of apparatus [19]	Description	Function
Q1	Power switch	Provides power to the device, indicated by the **H1** lamp
Q1M	Motor circuit breaker	Is used for protection of the motor from damages due to blocked start, overload, short circuit
FAL1	Inverter (frequency converter)	It is used to regulate the efficiency of the system and performs the monitoring function of the motor circuit.
B1	UFO controller	Control of solenoid valves
F1	Overcurrent circuit breaker	Protects the transformer and driver circuit
K1	Electromagnetic relays	Operating relay
K2		Motor failure relay
K3		Controller failure relay
TH	Thermostat	Controls the operation of the switchgear ventilation fan
G1	Ventilation fan	Ventilates the switchboard with automation
CKF	Supervisory relay	It is used to detect absence, asymmetry and wrong phase sequence
KR	Resistance relay	Controls the temperature of the fan motor

7.2.2. PRESSURE FREQUENCY CONTROL

The regulation of operation with the maintenance of constant vacuum is carried out only by automation for **UFO-A-N/R** devices.

7.2.2.1. OPERATION WITH CONSTANT VACUUM

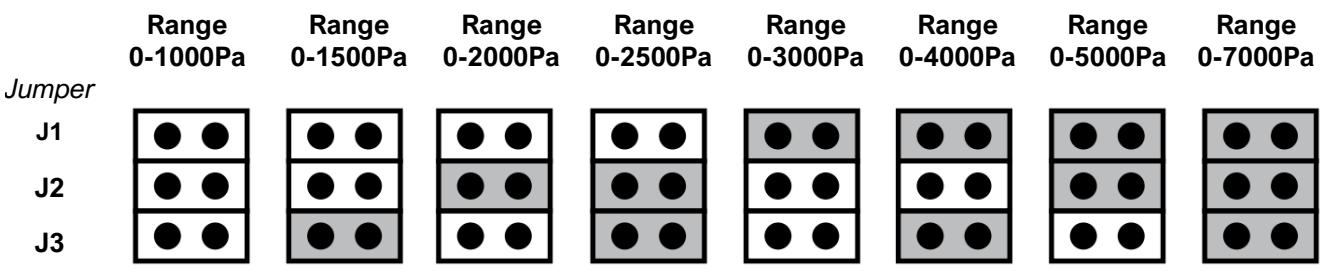
For the **UFO-A-N/R** device to be able to operate while maintaining a constant negative pressure, a differential pressure transmitter must be used for this purpose. The negative pressure measurement using this transmitter must take place on the collective manifold before the filtering ventilation device and must be properly installed - see point 6.3.4 – INSTALLATION OF DIFFERENTIAL PRESSURE TRANSMITTER on page 39.

The automation of the **UFO-A-N/R** device maintains the negative pressure following the diagram below:

TASK VALUE MEASUREMENT → **CONVERSIONS LIMITATIONS** → **INVERTER FREQUENCY CONTROL**

7.2.2.2. TRANSDUCER SETTINGS

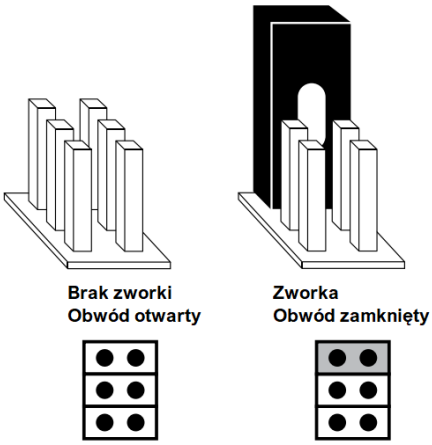
The transducer model used in the device has **8 measuring range settings**. Depending on the tightness of the system and the operating point of the device (i.e. the pressure to be maintained in the channel), the measuring range of the transmitter should be adjusted by selecting one of the jumper configurations.



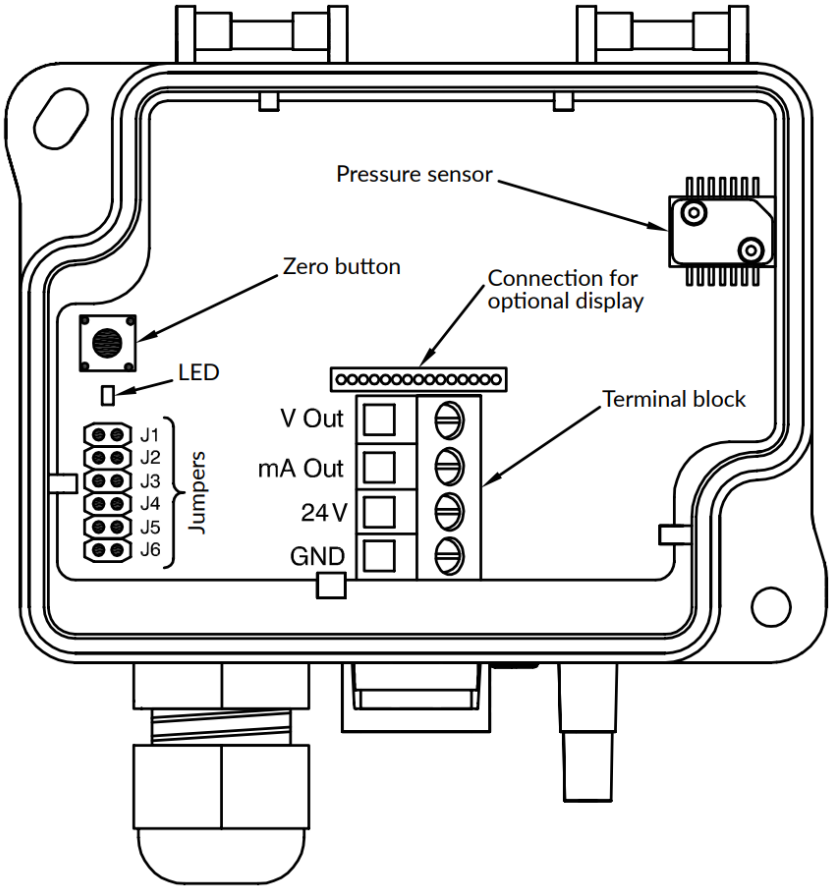
Picture 32 Jumper configuration of the pressure measuring transducer

[19] *The electrical diagrams of the device are presented in point. 13 on page 85.*

The jumper should be attached as shown below:



Picture 33 How to attach the jumper



Picture 34 Functions of transducer components

- Jumpers **J1**, **J2** and **J3** are used to set the operating range of the pressure sensor.
- Jumper **J4** is used to determine the response time to a pressure change – closed circuit 8s, open circuit 0.8s.
- Jumper **J5** is used to change the displayed unit.
- Jumper J6 has *no function*

7.2.2.3. INVERTER SETTINGS

! CAUTION

The inverter's range is set on the display from **0** to **50** units, with the lower value of **0** being the lowest controllable frequency value determined by the **LL** parameter, whose value is set to **15 Hz** by default. Similarly, the **UL** parameter determines the highest controllable frequency value of the inverter set at **50** Hz.

! WARNING

Potential for engine damage

When the unit is powered by a frequency converter (inverter) (version **UFO-A-N/R**), the maximum motor speed **MUST NOT** be higher than the nominal speed of the fan motor. So, limit the frequency variation from below and above so that the frequency is between **15 Hz** and **50 Hz**. This limit **MUST NOT** be exceeded by unauthorized modifications to the fan control system.

Conversion of the inverter range to the desired vacuum

Example:

To maintain a constant negative pressure in the channel at 1500 Pa, we set the transducer range to 4000 Pa.

Conversion of 0 – 50 values to 4000 Pa range.

The value **0** on the inverter display corresponds to a vacuum difference value of **0 Pa** and the value **50** on the inverter display corresponds to a value of **4000 Pa**.

Based on the ratio:

$$\frac{1500Pa}{4000Pa} = \frac{x}{50}$$

Therefore:

$$x = \frac{1500\text{Pa} \times 50}{4000\text{Pa}} = 18{,}75$$

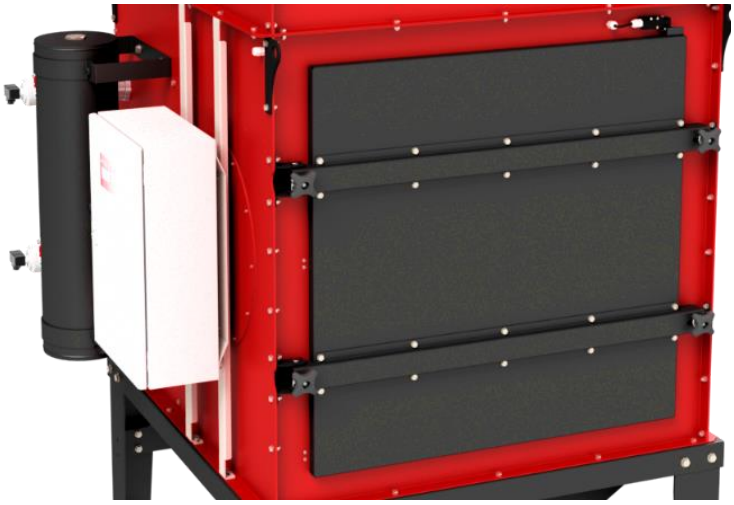
The value **18.75** should be set on the display as the desired controllable frequency value to be maintained by the inverter.

7.2.3. REPLACEMENT OF FILTERS

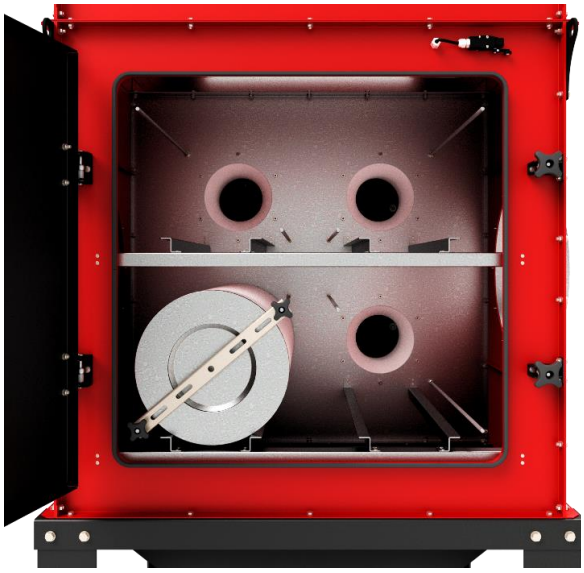
A. Turn off the fan and wait for all mechanisms to stop – see 7.2.1.4 – TURNING FAN OFF on page 48.

B. Wait until the final filter regeneration cycles are completed, then turn off the power with the Q1 main switch – see 7.2.1.5 – TURNING THE MAIN POWER OFF on page 48.

C. Unscrew and open the access door to the cartridge filter chamber. The **WK limit switch** located at the top of the door will disconnect the power from the device and protect it against the blast of compressed air during service work.



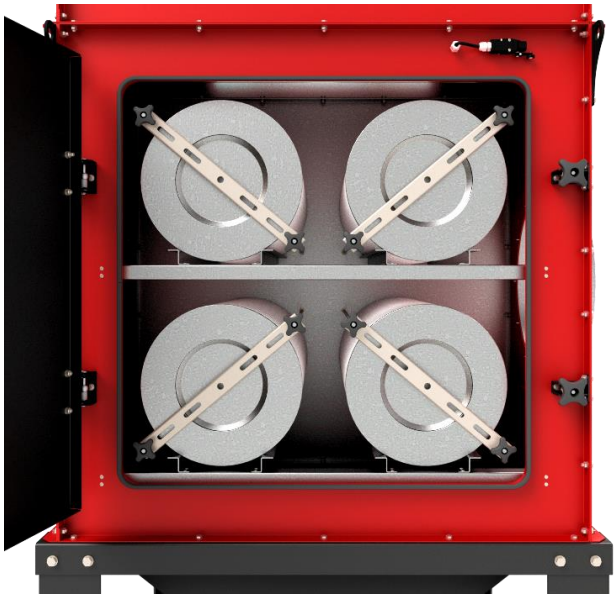
Picture 35



Picture 36

D. Unscrew and remove the star knobs and filter pressers.

E. Remove the filters, replace or regenerate them – see 8.2.1 – MAINTENANCE OF THE CARTRIDGE FILTER on page 60.



Picture 37

F. Put the clean filters back in the same place.

G. Apply a clamp to the threaded studs, tighten and tighten with the star knobs. Tighten so that the filter cannot be turned around its axis. Do not deform the filter paper!

H. Close and tighten the access door. The **WK limit switch** located at the top of the door will switch the power on.

I. Turn on the power with the main switch Q1 – see 7.2.1.5 – TURNING THE MAIN POWER OFF on page. 48.

J. The device is now ready for use.

! CAUTION

Opening the filter access door **SWITCHES OFF** the device!

! WARNING

DO NOT DEFORM the filters when pressing them by excessive squeezing – this may lead to bad adhesion of the gasket and/or damage to the filters in the form of e.g., kinks or perforation of the filter paper!

7.2.4. FILTER REGENERATION

The filter regeneration process takes place automatically during operation and is controlled by the device controller mounted in the device's electrical unit. The process of releasing the impulse of compressed air is determined by the time parameters coded in the controller, and they have been adjusted to the average (standard) operating conditions of **UFO-A-N(/R)** type devices.

! WARNING

DO NOT CHANGE the filter regeneration parameters without consulting the manufacturer. To adjust the parameters to the specific operating conditions of the device, **CONTACT** the manufacturer of **KLIMAWENT S.A.**

7.2.5. EMPTYING DUST CONTAINER

During operation, it is necessary to control the state of filling of the dust tank. For this purpose, there are visors on both sides of the tank. Do not allow overloading with dust - this can cause entrainment of dust during operation.

A. Turn off the fan and wait until the fan stops and the airflow stops – see 7.2.1.4 – TURNING FAN OFF on page 48.

B. Wait until the final filter regeneration cycles are completed and turn off the power with the main switch Q1 – see 7.2.1.5 – TURNING THE MAIN POWER OFF on page 48.

C. Remove the buckles securing the container and slide it out.

D. Empty and clean the container from possible permanent dirt.

E. Slide the container into the same place and tighten the buckles. Check the correctness of pressure and tightness. If necessary, adjust the buckles.

F. Turn on the power with the main switch Q1 – see 7.2.1.2 – TURNING THE MAIN POWER ON on page 48.

G. The device is ready for operation.

7.2.6. ALARM SIGNALS

! WARNING

REACT immediately to alarm signals displayed by the control unit and take immediate **CORRECTIVE ACTION**!

7.2.6.1. ENGINE FAILURE – STANDARD SWITCHGEAR

In the case of **UFO-A-N** type devices (version with standard power supply – see point 7.2.1.8 – ELECTRICAL APPARATUS – BASIC VERSION on page. 50), in the **ZE-UFO-A-N** electrical switchboard, the fan motor is protected by a **Q1M** motor switch installed.

The **Q1M motor switch protects the fan motor** against overload, short circuit and partial-phase operation. In addition, the fan motor is equipped with a **PTC** sensor, which changes its resistance as the temperature of the motor winding changes. The resistance of the **PTC** sensor is controlled by the **KR1** resistance relay.

If the **Q1M switch trips** or the **PTC resistive relay detects excessive heating of the motor windings**, the control system will disconnect the motor power supply circuit and the alarm will be signalled by the illumination of the red **H3 "ALARM ENGINE"** lamp. When this alarm occurs, check the condition of the motor electrically and mechanically.

Triggering the alarm results in blocking the system's operation until the alarm disappears. The system is ready to work again.

7.2.6.2. ENGINE FAILURE – SWITCHGEAR WITH INVERTER

In the case of **UFO-A-N/R** devices (inverter-controlled version – see point 7.2.1.9 – ELECTRICAL APPARATUS – INVERTER VERSIONon page 51), in the **ZE-UFO-A-N/R** electrical switchboard, the inverter power supply circuit is protected by a switch engine **Q1M**.

The **Q1M motor switch protects the inverter** against overload, short circuit and partial-phase operation. Additionally, the fan motor is equipped with a **PTC** sensor that changes its resistance as the motor winding temperature changes. The resistance of the **PTC** sensor is controlled by the **inverter**.

If the **Q1M switch trips** or the **inverter** detects an error, the control system will disconnect the motor power circuit, and the alarm will be signalled by the illumination of the red **H3 "ENGINE ALARM"** lamp. After this alarm occurs, check the motor's electrical and mechanical condition and read the messages displayed on the inverter's screen for a possible error code.

Triggering the alarm results in blocking the system's operation until the alarm disappears. After removing the cause of the failure, the **system should be restarted** by restoring the power supply. The system is ready to work again.

7.2.6.3. INVERTER ERROR CODES

INFORMATION

Description of error codes – **INVERTER** user manual – see:

IOEXT-EN-SCHNEIDER-ALTIVAR212-201411XX.

7.2.6.4. CONTROLLER ALARM CODES

INFORMATION

Description of alarm codes – **CONTROLLER** user manual – see:
IOEXT-EN-TURBO-E1T16CH-202201XX.

7.2.7. EMERGENCY STOP

To stop the device in an emergency, press the **S2.2 „STOP”** button (red field) on the electrical unit panel – see Picture 6 on page 14. The green lamp **S2.H2.** will go out. The fan will stop with **a free run** in case of **UFO-A-N** or **after 30 s** in case of **UFO-A-N/R** or **after 30** s in the case of **UFO-A-N/R**.

7.2.8. RETURN TO NORMAL OPERATION AFTER THE PROBLEM SOLVED

Starting the device after stopping due to a failure requires performing a check of the device's operation - start the device and let it run for **at least 15 minutes** to stabilize its parameters and make sure there are no problems and the failure does not return. After this time, the device can be "*switched on*" back to the technological process.

Restart the following points 7.2.1.2 – TURNING THE MAIN POWER ON on page 49 and 7.2.1.3 – TURNING FAN ON on page 49 and take into account all the guidelines presented in the table "Table 2 Safety rules and residual risk information" – see point 4.5 – RESIDUAL RISK INFORMATION on page 23.

7.2.9. UNPLANNED STOPPING AND RESTARTING

In the event of a power failure, the fan will stop with a free run in both cases for **UFO-A-N** and **UFO-A-N/R**. In the case of **UFO-A-N/R**, despite the inverter control, the fan will stop automatically due to a power failure.

In such a situation, before restarting, first, check the condition of the device to see if the electrical devices in the electrical unit are functional and undamaged and if no **error codes have appeared on the inverter** or **alarm codes on the controller**.

The device should be started and run for **at least 15** minutes to stabilize its parameters and make sure there are no problems. After this time, the device can be "*turned on*" back to the technological process.

Perform the restart according to point. 7.2.1.2 – TURNING THE MAIN POWER ON on page 48 and 7.2.1.3 – TURNING FAN ON on page 48 and take into account all the guidelines provided in table „Table 2 ”Safety rules and information on residual risks – see point 4.5 – RESIDUAL RISK INFORMATION on page 23.

7.3. PERSONAL PROTECTION MEASURES

When operating, maintaining and cleaning, i.e. using, cleaning the container from sludge and deposits, cleaning the inside of the tank and other similar activities, always wear personal protective equipment – see point 4.3 – REQUIRED PERSONAL PROTECTION on page 21.

8. MAINTENANCE AND REPAIR MANUAL

8.1. GENERAL GUIDELINES

! WARNING	
	**DISCONNECT** the unit from the power supply, **TURN OFF** the controls and **WAIT** until all mechanisms stop. **SECURE** the control against uncontrolled start-up!
	**USE** personal protective equipment, protective clothing and work shoes – see point 4.3 – REQUIRED PERSONAL PROTECTION on page 21! **DIRECTLY** follow safety precautions – see guidelines in point 4.5 – RESIDUAL RISK INFORMATION on page 23.

! CAUTION	
	The **USER** is responsible for maintaining the device and its parts. Systematic maintenance is a condition for safe use and fulfilment of the **WARRANTY CONDITIONS**.
	All repairs **ARE PERFORMED BY THE MANUFACTURER** or its **REPRESENTATIVE**. In special cases, this can be done by the USER, but in this case, you should contact the manufacturer **KLIMAWENT**.

8.2. MAINTENANCE SCHEDULE

Table 5 Recommended inspection and maintenance intervals

Period	Procedure
Ongoing control and activities	Regularly clean the device and its components to avoid excessive build-up of dust inside and out. Remove the dust from the container and remove any deposits.
Once every 1 month	Check the condition and tightness of the connections of the ventilation system connecting the device with the installation on the suction and discharge sides. Drain the condensate from the compressed air tank.
Once every 3 ÷ 6 month	Perform a visual inspection of the load-bearing structure and housing, as well as the condition of bolted connections and tightness, and close the inspection covers.
	Clean the noise silencers mounted on the impulse valves.
Once every 12-18 months	Check the condition of the electrical connections and installations of the compressed air network and pressure vessel and the connection of electrical impulse valves.
	Clean and check the condition of the fan and the fan motor following the recommendations of the motor manufacturer.
	Check the continuity of the protective connection and the connection of the device to the main earthing bar.
	Check the condition of the inside of the filter chambers. Additionally, inspect the chambers behind the filters on the "clean" side by unscrewing the inspection covers on the side of the device. Check that there is any contamination on the "clean" side of the device – see 8.2.1 – MAINTENANCE OF THE CARTRIDGE FILTER on page 60. Remove any accumulated deposits.
Once every 18 to 24 months	Check the condition of the electric motor, pneumatic system components and pulse solenoid valves. Carry out maintenance according to the instructions of the pulse valve manufacturer.
	Replace the cartridge filters with new ones or when the filters are worn out, i.e. despite manual or mechanical regeneration of the filters, the device does not return to the rated capacity.

8.2.1. MAINTENANCE OF THE CARTRIDGE FILTER

A. The visual inspection of the cartridge filters should be performed at each operation of removing dust from the container under the chute. Check the correct installation of the filters and the condition of the filtering surface – the degree of contamination, the presence of damage or foreign bodies, sticky and difficult-to-remove deposits, moisture, etc.

B. When you notice a noticeable decrease in the efficiency of the device, which persists for a longer period, regardless of the operation of the filter regeneration system, remove the filters from the device and clean them manually or mechanically using a device designed for this purpose – contact the manufacturer of **KLIMAWENT S.A.**

C. The filter check should also be performed when there are other irregularities in the operation of the device. In the event of normal wear or damage or perforation, replace the cartridge filter with a new one – see 8.5 – SPARE PARTS on page 63.

D. When replacing filters, place them on guides and push them against the rear wall of the chamber. Apply pressure to the threaded studs, tighten and tighten with star-shaped knobs. Tighten so that the filter cannot be turned around its axis. Do not deform the filter paper! Then close the access door tightly and tighten the bolts.

! CAUTION

Both too weak and too strong pressing of the filters may cause dust to get to the "clean" side of the device. Tightening it too lightly will cause dragging of impurities between the filter gasket and the device's partition while pressing too much may distort the filter, damaging the filter paper and leading to its perforation and contamination entering the "clean" side of the device.

! WARNING

MOISTURE or **OIL** contained in the transported air and in the air used to regenerate the filters **CAN DAMAGE** the filters! The device **MUST** be connected to the compressed air network prepared by appropriate filtering and reducing unit with a pressure ranging from **0.6** to **0.8 MPa** and meeting the purity conditions specified in point 6.3.2 – COMPRESSED AIR CONNECTION on page 38.

8.2.2. MAINTENANCE OF THE DUST CONTAINER

The dust container is the most exposed element to the deposition of dust and hard fractions that can permanently stick to internal surfaces therefore, its condition should be regularly checked.

The container has a seal on the edge, which may be damaged during use. If damaged, replace it with a new one. For this purpose, contact the manufacturer **KLIMAWENT S.A.**

8.2.3. MAINTENANCE OF THE COMPRESSED AIR TANK

The compressed air tank must be checked and maintained following the regulations for pressure equipment. All connections of the tank should be checked periodically, and the tank should be drained through a stub pipe installed for this purpose in the lower stub pipe. If damaged, replace it with a new one. For this purpose, contact the manufacturer **KLIMAWENT S.A.**

8.2.4. MAINTENANCE OF PULSE VALVES

The applied solenoid valves do not require ongoing maintenance. You only need to check the condition of electrical connections, grounding and tightness of the pneumatic system. If damaged, replace it with a new one. For this purpose, contact the manufacturer of **KLIMAWENT S.A.**

8.2.5. MAINTENANCE OF THE FAN

A. Check the correctness and accuracy of the tightening of mechanical and electrical connections.

B. Check the condition of the impeller and inside of the fan and detect and remove any accumulated dirt and foreign matter. To do this, dismantle the attached installation and the elbow. Perform a visual inspection of the interior. Secure the device against unintentional switching on or rotation of the impeller as a result of induced airflow!

C. Check the impeller's alignment with the inlet stub (the uniform distance around the entire circumference between the impeller inlet and the fan inlet stub). For this purpose, look under the fan by removing the inspection cover of the regeneration chamber of the fan.

D. If vibrations or noise occur during fan operation, measure the vibrations on the motor (see point 8.4 – MEASURING VIBRATIONS OF THE FAN on page 62) and check whether the rotor elements are in contact with the inlet stub pipe or other housing elements. In the event of excessive vibration, deformation and/or damage, contact the manufacturer of **KLIMAWENT S.A.** without delay to replace parts with new ones.

! WARNING

It is **FORBIDDEN** to use the machine with a damaged motor or impeller or show excessive vibrations during operation. This can lead to impeller or motor damage, fire or explosion due to sparking!

8.3. SERVICE AND REPAIR

! CAUTION

The **USER** is responsible for the maintenance of the device and its parts. Regular maintenance is a prerequisite for safe use and compliance with the **WARRANTY CONDITIONS**.

Any repairs are **MADE BY THE MANUFACTURER** or his **REPRESENTATIVE**. In special cases, it may be performed by the **USER**, but in this case, please contact the manufacturer of **KLIMAWENT S.A.**

8.4. MEASURING VIBRATIONS OF THE FAN

Pomiar Measurement of fan vibrations should always be performed before the first start-up of the device in the installation or during the maintenance inspection according to the schedule for the given type of device. Nevertheless, it is recommended to constantly monitor the fan vibration with a sensor or to carry out vibration measurements during fan inspections every **4,000 operating hours** or in the event of increased noise, vibrations and other symptoms indicating a possible defect.

Before measuring vibrations, allow the device to run for **at least 15 minutes** to stabilize its operating parameters, assuming that the fan is powered by electricity of **rated voltage, frequency** and the appropriate **number of phases.**

8.4.1. DIRECTION AND PLACE OF MEASURING VIBRATIONS

The vibration values should be measured in two mutually perpendicular directions on the motor body in each bearing location and one perpendicular to the other, i.e. one of these directions is to be parallel to the axis of rotation of the motor shaft and the other two directions should be in a plane perpendicular to this axis.

The measurement perpendicular to the axis of rotation should be made in the plane of the lower and upper motor bearings in two or three mutually intersecting directions. It should be noted that the measurement in the plane of the upper bearing should be performed on the housing, i.e. before the measurement, if possible, remove any non-rigid motor covers, and if it is not possible, perform the measurement just below.

The measurement of vibrations parallel to the axis of rotation should be performed on the motor flange or the fan housing right next to the motor.

8.4.2. VIBRATION LIMITS

The measurement result should be compared with the limit values recommended by **ISO 14694:2003**. The value of measured vibrations expressed as velocity **Vrms** should not exceed **Vrms = 6.3 mm/s**. Measured values with a value above **Vrms = 11.8 mm/s** are considered alarming, while values above **Vrms = 12.5 mm/s** qualify for an immediate **stop** of the device.

Fan status		Flexible attachment		Rigid attachment	
		Peak [mm/s]	RMS [mm/s]	Peak [mm/s]	Peak [mm/s]
		↓			
Operation	Start-up	**6.4**	**4.5**	**8.8**	**6.3**
		↓			
	Alarming condition	**10.2**	**7.1**	**16.5**	**11.8**
		Maintenance / Repair			
	Emergency shutdown	**12.7**	**9.0**	**17.8**	**12.5**

8.5. SPARE PARTS

If one of the device parts is worn out, contact the manufacturer of **KLIMAWENT S.A.**

Any requests for information or repair work or inquiries regarding spare parts should be directed to:

KLIMAWENT S.A.
Chwaszczyńska 194 street
81-571 Gdynia POLAND
Phone: +48 58 629 64 80
Fax: +48 58 629 64 19
e-mail: klimawent@klimawent.com.pl

	Type	Catalogue No.	Diameter [mm]	Height [mm]	Mass [kg]	Comments
	POH306638U	**900F18**	Ø380	660	4,5	Standard replacement frequency – 1 to 2 years

! INFORMATION

At the customer's request, the manufacturer **KLIMAWENT S.A.** can equip the device with **filters with non-woven fabric impregnated with active carbon** for additional filtration of gases generated in welding processes! The use of this type of filter increases the absorption of unpleasant odours generated in various technological processes.

At the customer's request, the manufacturer **KLIMAWENT S.A.** can provide the **UN-1** sputtering system (see point 6.5 – ADDITIONAL EQUIPMENT on page 44) for sputtering filters with CaCO3 synthetic calcium carbonate, which protects filters by extending their service life by creating a protective layer that reduces sticking of sticky substances. In addition, it increases the safety of operation in dedusting systems installed in many industries.

! CAUTION

The additional equipment is not installed in the device as standard. Additional equipment is delivered on a separate order.

9. WORK DISRUPTIONS, CAUSES, REMEDIES

Table 6 List of sample errors and problems

L.p.	Disruptions	Potential causes	Remedies
1.	The fan does not start.	Activation of the Q1M switch. Motor overload or short circuit in the motor supply.	Check the condition of the electric motor windings.
2.			Check if the electric motor is not blocked. Unlock the engine.
3.		Incorrect power supply. Activation of the CKF relay.	Check for the presence of voltage on the terminals L1, L2, L3, N and PE of the X1 strip. Correct the electrical supply parameters.
4.		***UFO-A-N***	
		Activation of the KR1 relay. An excessive temperature rise of the motor windings.	Check the condition of the electric motor windings.
5.		***UFO-A-N/R***	
		Start-up interlock via inwerter.	Check the error code displayed on the inverter and verify the system.
6.		No power.	Check for the presence of voltage on the terminals L1, L2, L3, N and PE of the X1 strip. Correct the electrical supply parameters.
7.		Damage to the WK switch (WK1 or WK2) at the inspection door of the filtration chamber.	Replace the electric apparatus with a new one.
8.	No or very low fan draft	Clogged suction port or system.	Check the condition and clean the connector and the installation.
9.		Filters were contaminated significantly.	Check the condition of the filters. Clean manually or mechanically using a device designed for this purpose or replace the filters with new ones.
10.		Adherence of sticky or moist dust to the filter surface.	Drain the compressed air tank and check the condition of the compressed air network.

L.p.	Disruptions	Potential causes	Remedies
11.			Eliminate any source of moisture or sticky substances entering the intake air.
12.			Limit (lower) the temperature of the inlet air below +40ºC.
13.	**No regeneration pulses or pulses of less force**	No power to the solenoid valve.	Check the electrical connections at the valve, electrical switchboard and junction box on the device.
14.		Closed or closed valve supplying compressed air to the tank.	Open the valve.
15.		Too low pressure of compressed air in the tank due to slow filling from the system or low pressure in the system.	Adjust the pressure within the range of 0.6 to 0.8MPa.
16.	**Dust ingress into the discharge system**	Perforation or loosening of the cartridge filter mounting or damage to the pressure seal.	Replace the filters with new ones or correct the mountings.
17.		Too much dust load on the device.	Limit the amount of dust drawn in by the device to 3 g/m3.
18.		Dust type is not provided for in the intended use of the device.	**Contact the manufacturer KLIMAWENT S.A.**

10. DISMANTLING, DECOMMISSIONING AND DISPOSAL

10.1. DISASSEMBLY AND DECOMMISSIONING

After the period of use, when decommissioning the device, the device should be disassembled and disassembled following general health and safety and PP regulations, paying special attention to internal elements and potentially hazardous substances accumulated inside. Use personal protection measures such as those mentioned in point 4.3 – REQUIRED PERSONAL PROTECTION on page 21. Follow the recommendations set out in point 4.2 – SAFETY RULES AND APPLICATION RESTRICTIONS on page 19.

10.2. DISPOSAL, SCRAPPING AND RECYCLING

! CAUTION

At the time the product is taken for disposal, the regulations **must be complied** with for the disposal of end-of-life machinery and/or waste recycling.

! WEEE

The symbol shown here indicates that the product marked with it must not be disposed of as unsorted municipal waste. Such a product must go to a separate collection point, where it will be recovered and recycled. The **WEEE** label is placed on every electrical and electronic equipment placed on the EU market.

Some parts of the **UFO-A-N** device must be treated following the recommendations of the European Parliament Directive **2012/19/EU** on Waste Electrical and Electronic Equipment (**WEEE**). These are the elements included in the electrical switchgear, in particular, the control panel with the microcontroller and the display.

Such parts **MUST NOT** be thrown into the unsorted waste bin but should be taken to a special collection point for used electrical and electronic equipment!

11. TERMS OF WARRANTY

The warranty period is specified in the **Warranty Card** of the device.

! CAUTION

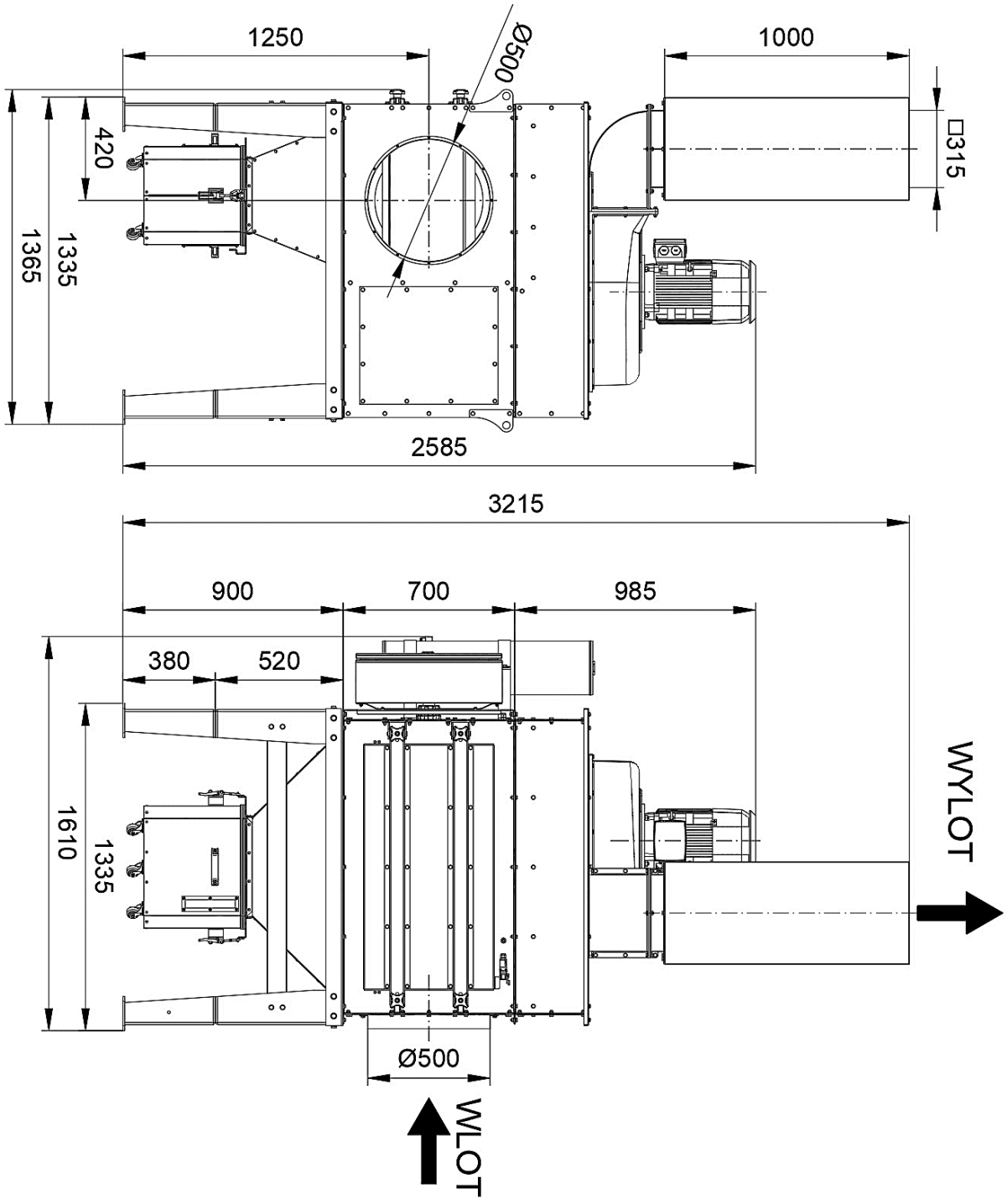
FAILURE TO OBSERVE the recommendations of this manual, and especially if the device is arbitrarily modified or used contrary to its intended use, the **WARRANTY WILL BE LOST**!

! CAUTION

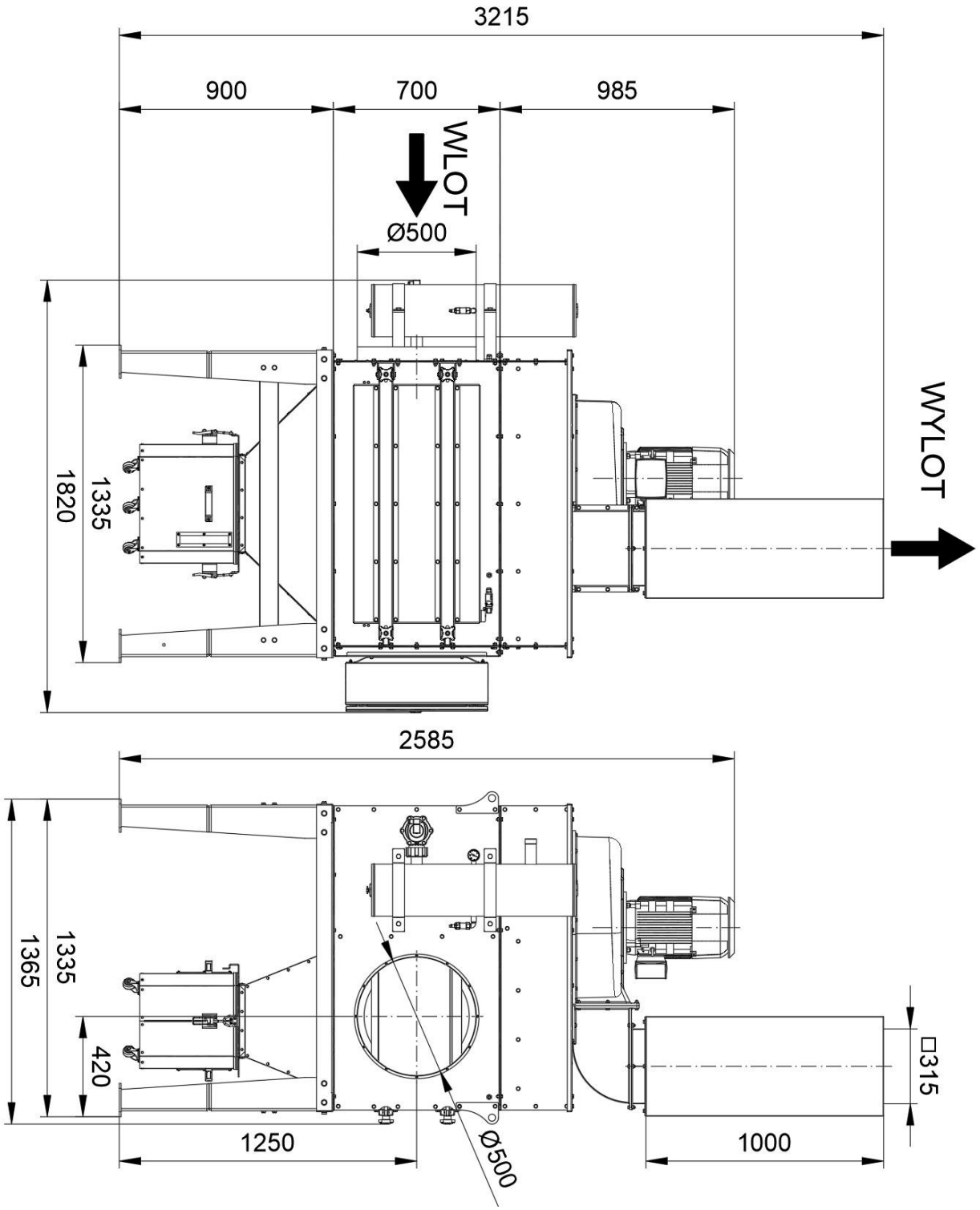
The user is **MANDATORY** to measure the operating parameters of the device during the first start-up. **FILLING IN** and **SENDING** the **STURT-UP PROTOCOL** to the manufacturer is a condition of **FULFILLMENT OF THE WARRANTY CONDITIONS** – see point 14 – START-UP PROTOCOL on page 111.

12. DRAWINGS AND SKETCHES

12.1. DRAWING of UFO-A-5000-N(/R)

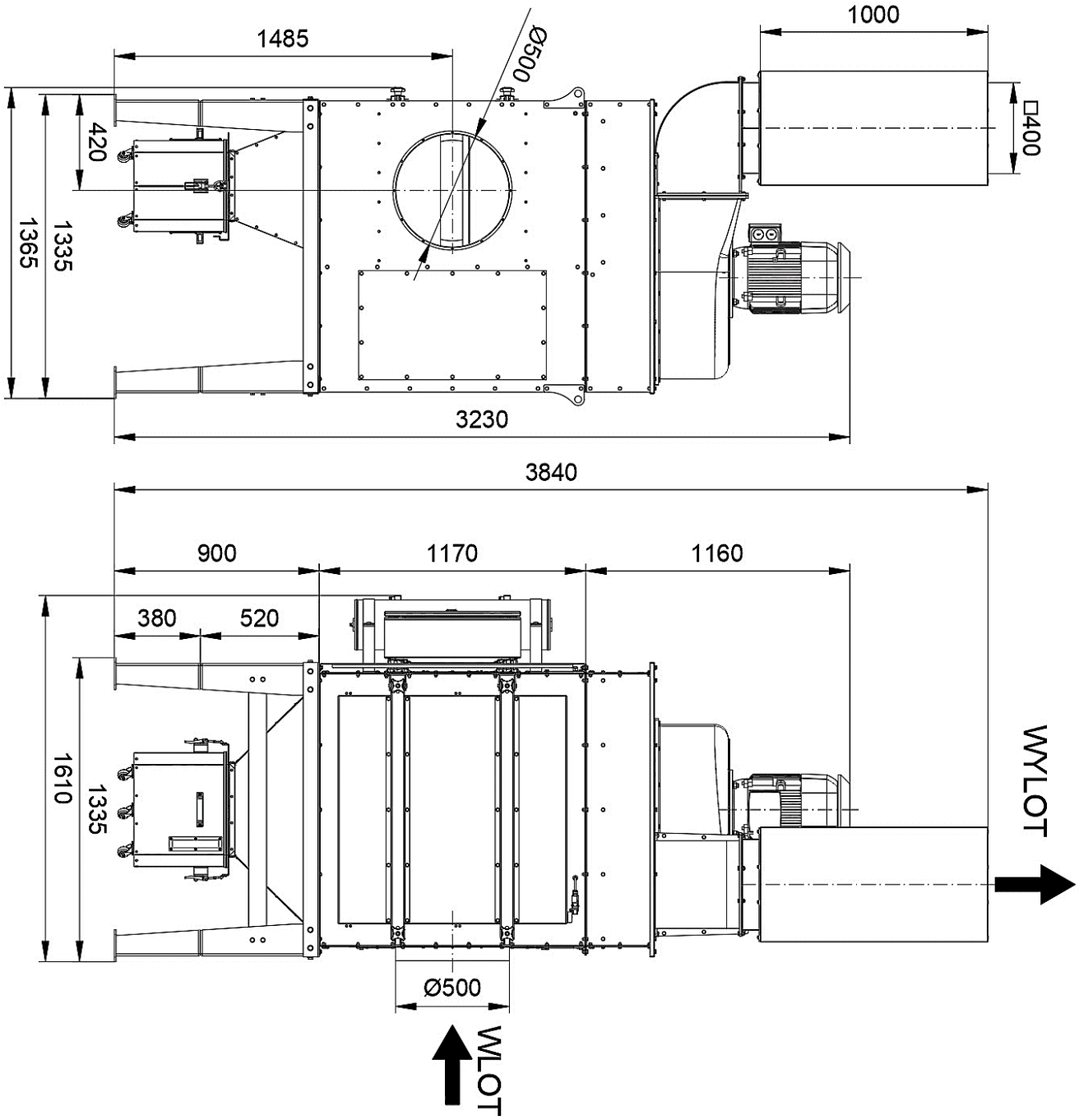


Picture 38 Overall dimensions of the device UFO-A-5000-N(/R)-RH (with an inlet on the right)

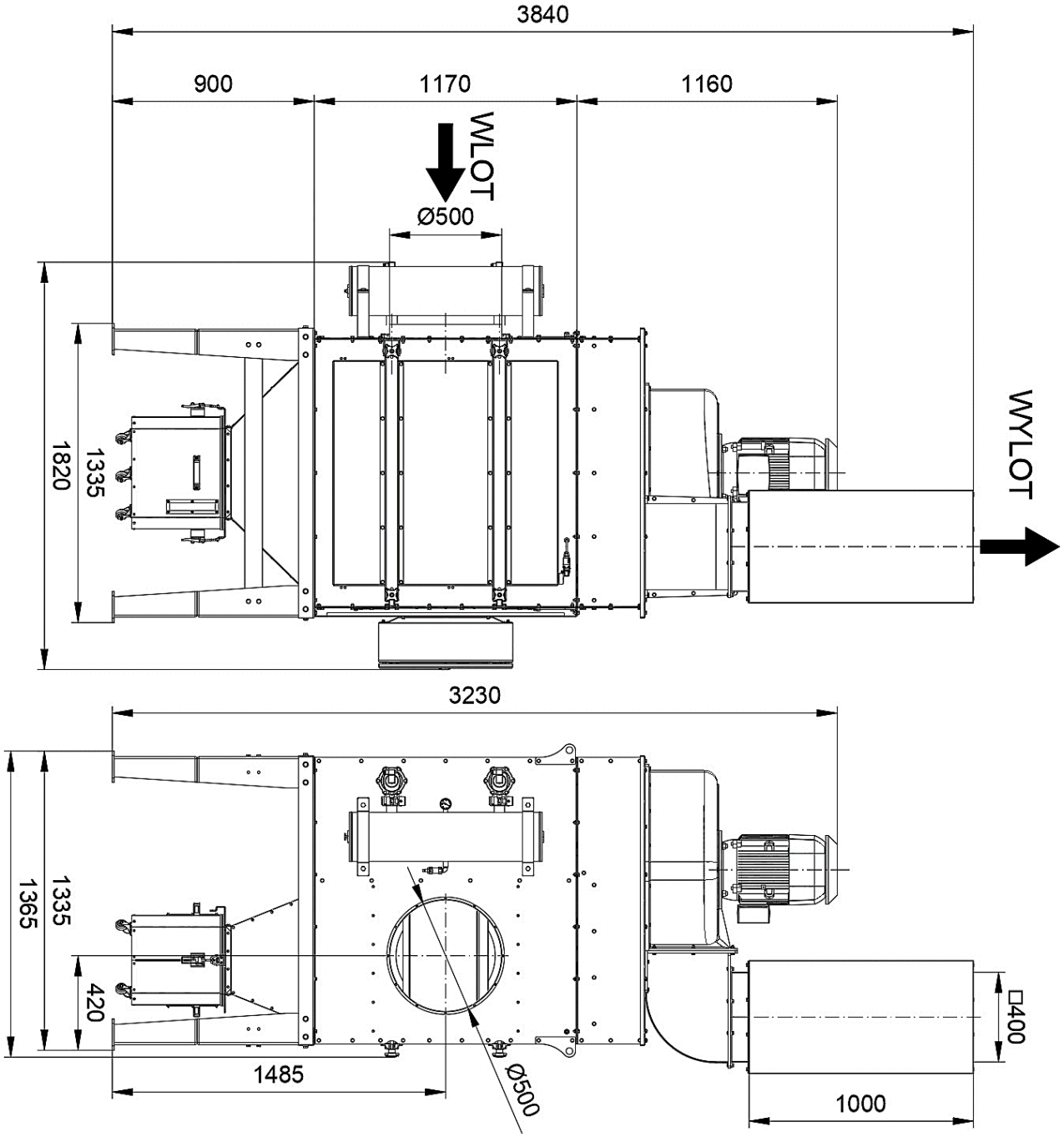


Picture 39 Overall dimensions of the device UFO-A-5000-N(/R)-LH (with an inlet on the left)

12.2. DRAWING of UFO-A-10000-N(/R)

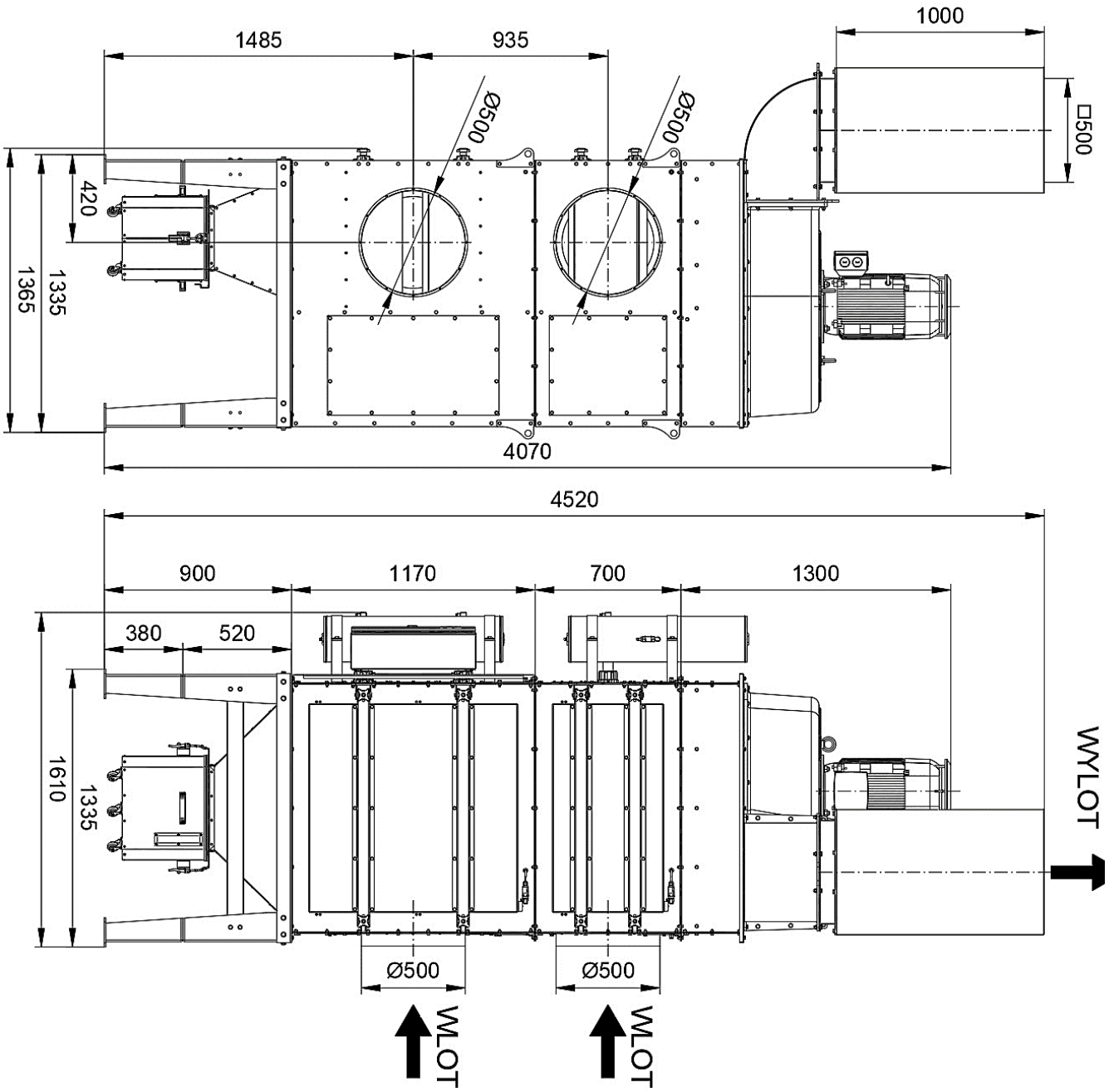


Picture 40 Overall dimensions of the device UFO-A-10000-N(/R)-RH (with an inlet on the right)

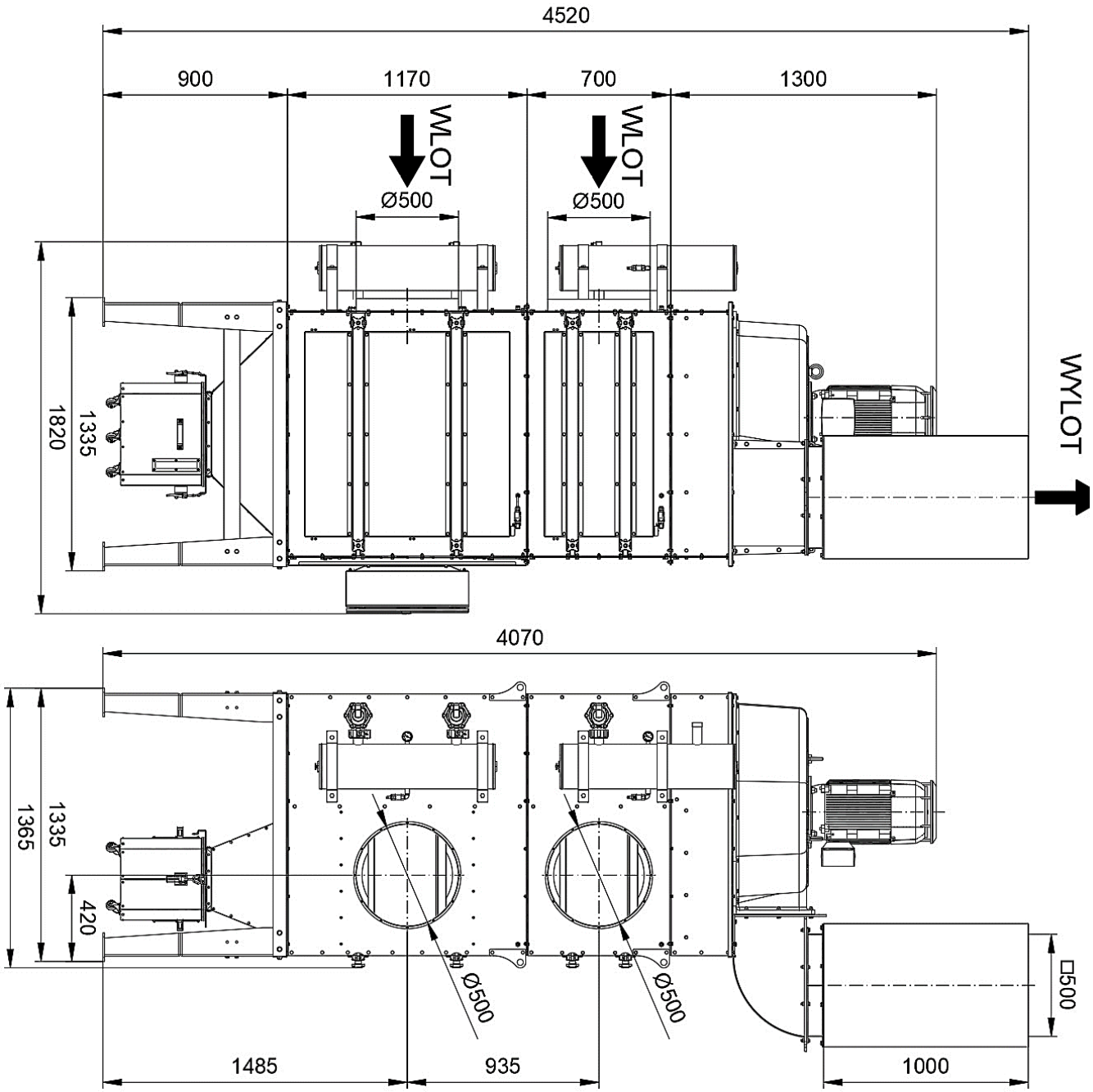


Picture 41 Overall dimensions of the device UFO-A-10000-N(/R)-LH (with an inlet on the left side)

12.3. DRAWING of UFO-A-15000-N(/R)

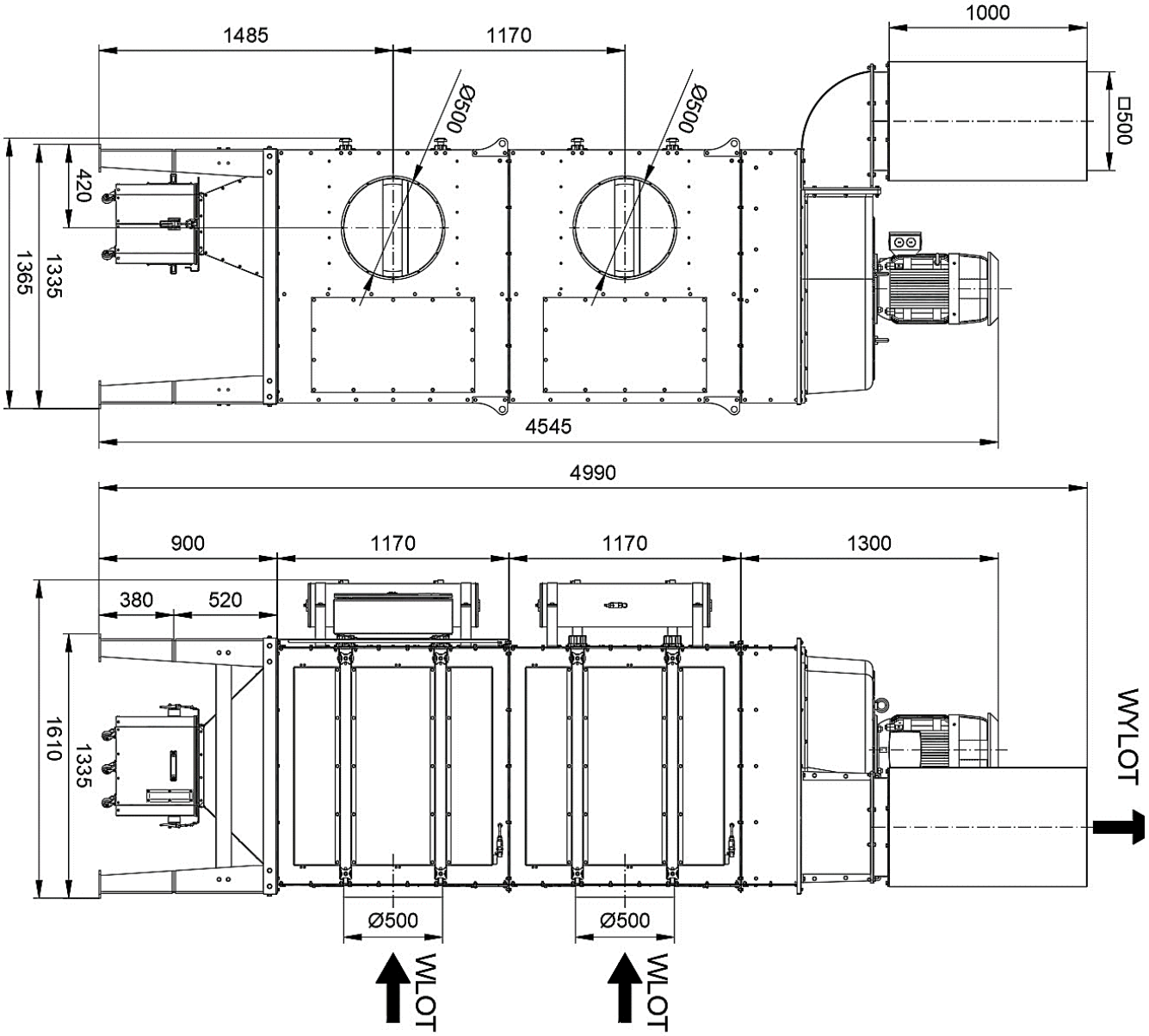


Picture 42 Overall dimensions of the device UFO-A-15000-N(/R)-RH (with an inlet on the right)

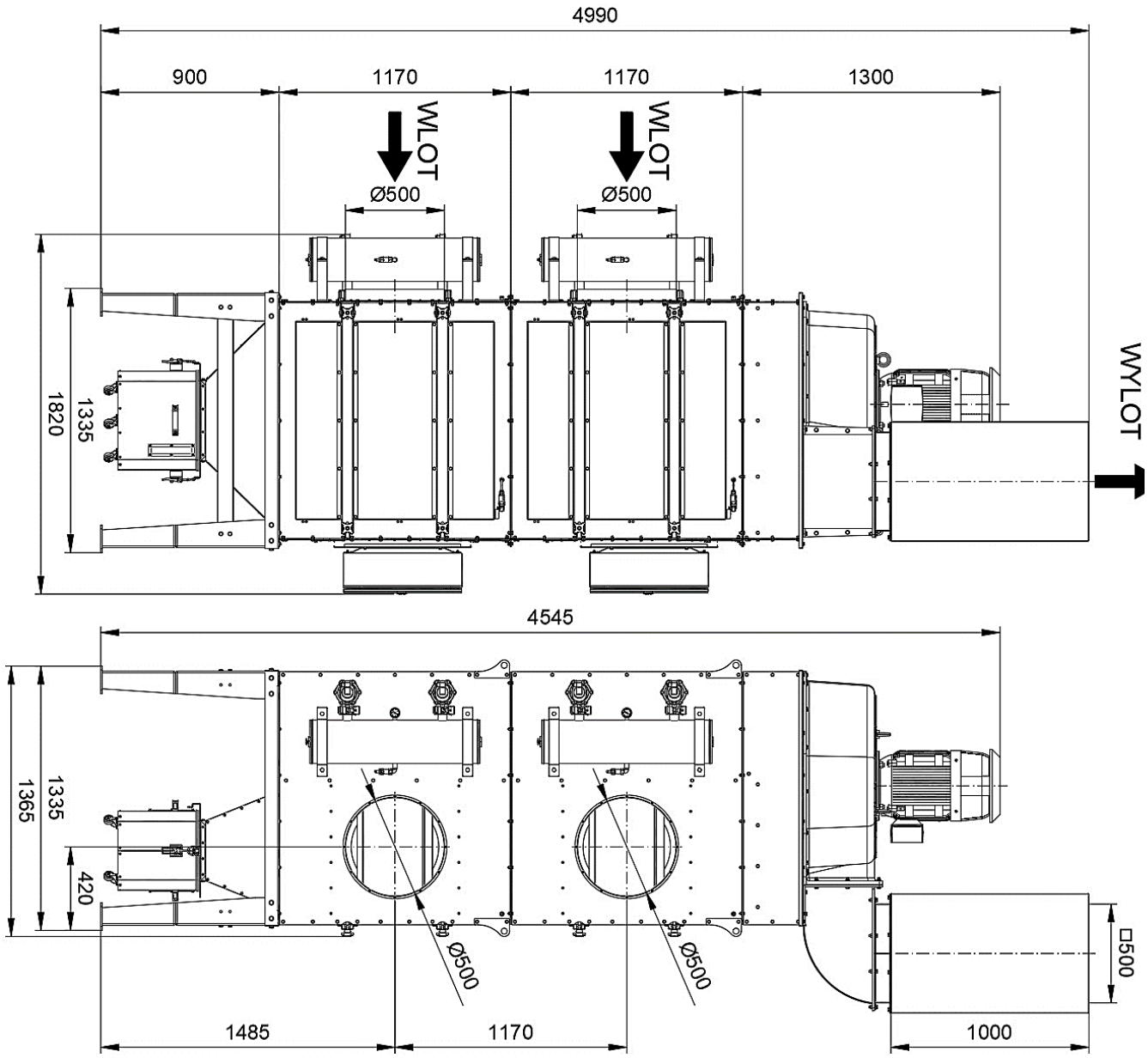


Picture 43 Overall dimensions of the device UFO-A-15000-N(/R)-LH (with an inlet on the left)

12.4. DRAWING of UFO-A-20000-N(/R)



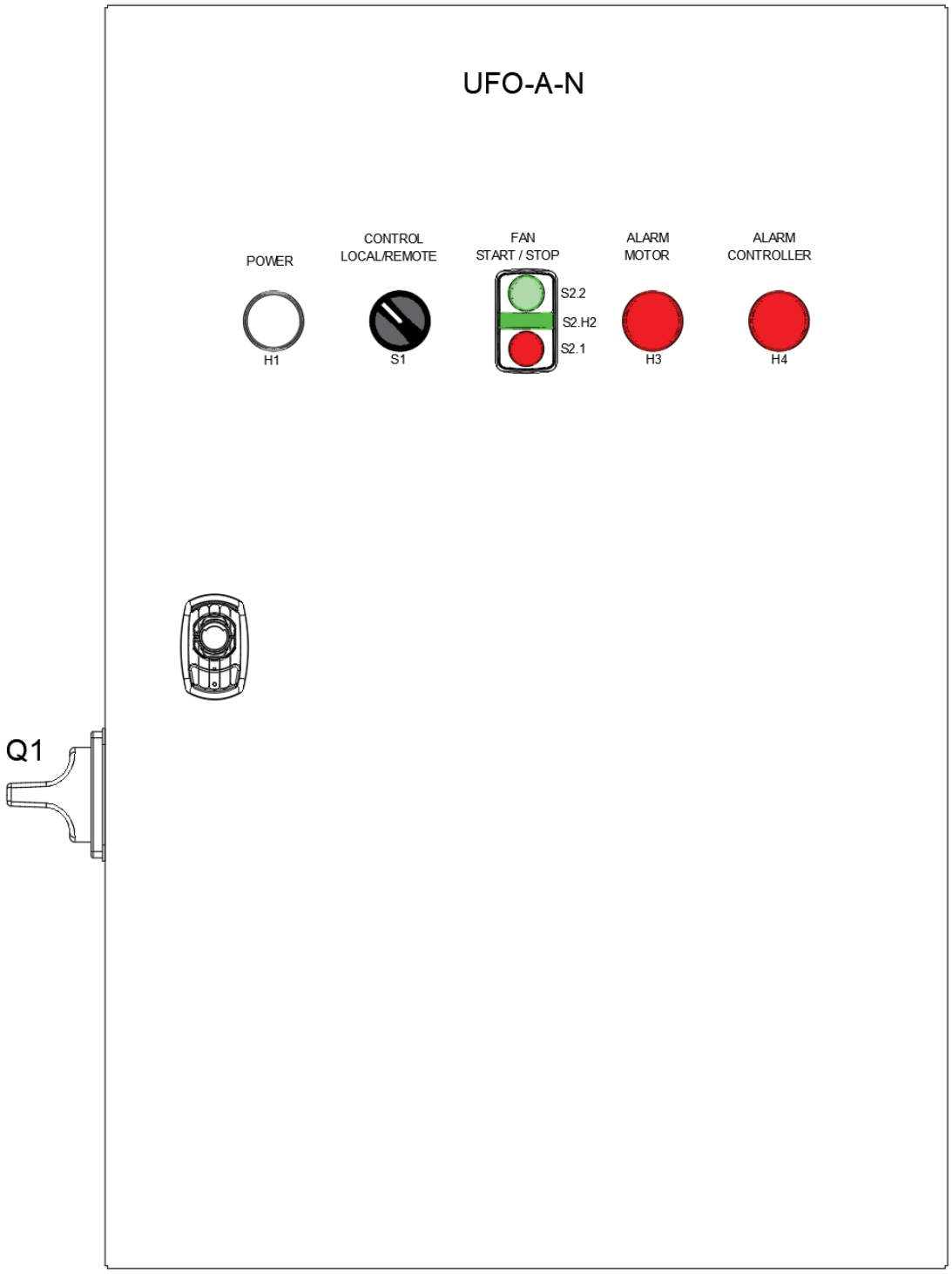
Picture 44 Overall dimensions of the device UFO-A-20000-N(/R)-RH (with an inlet on the right)



Picture 45 Overall dimensions of the device UFO-A-20000-N(/R)-LH (with an inlet on the left)

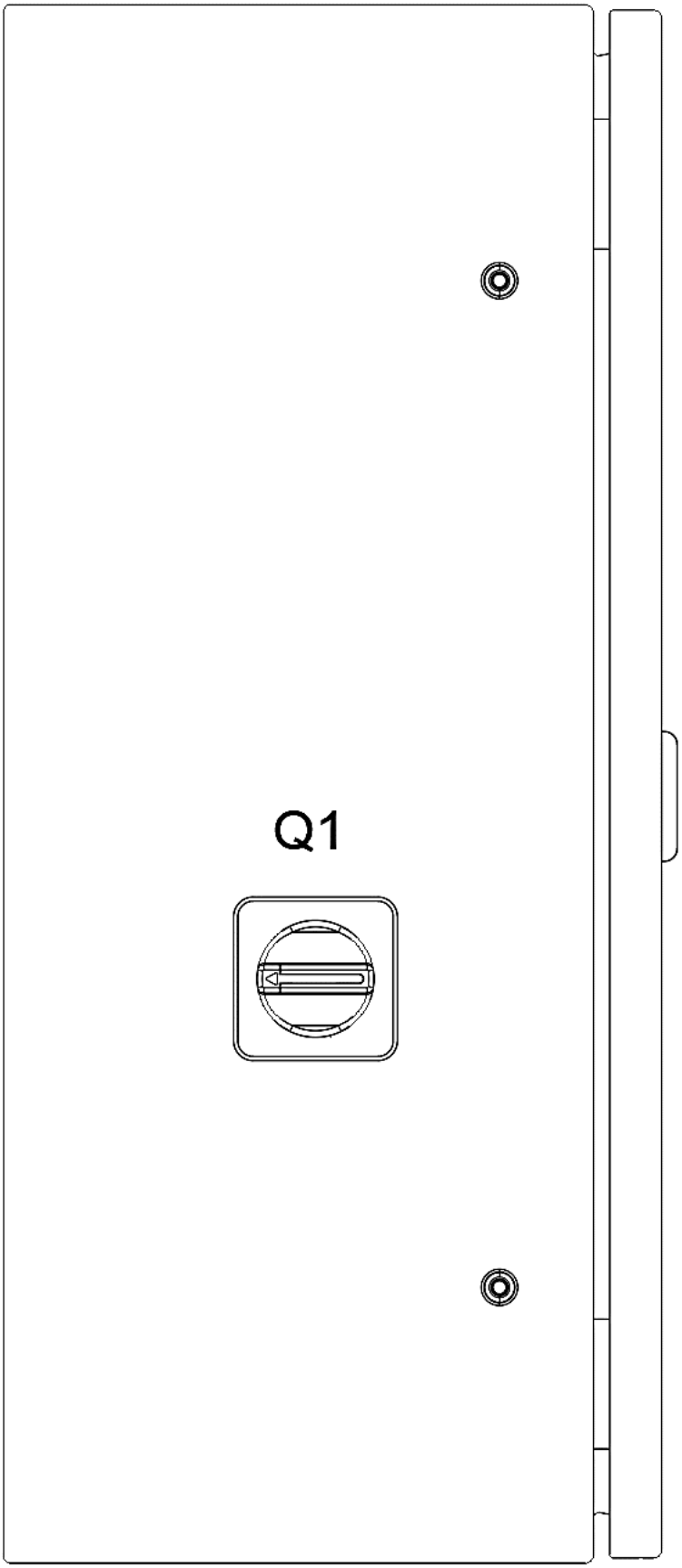
12.5. SKETCH of THE SWITCHBOARD UFO-A-N and UFO-A-N/R

12.5.1. SWITCHBOARD of UFO-A-N



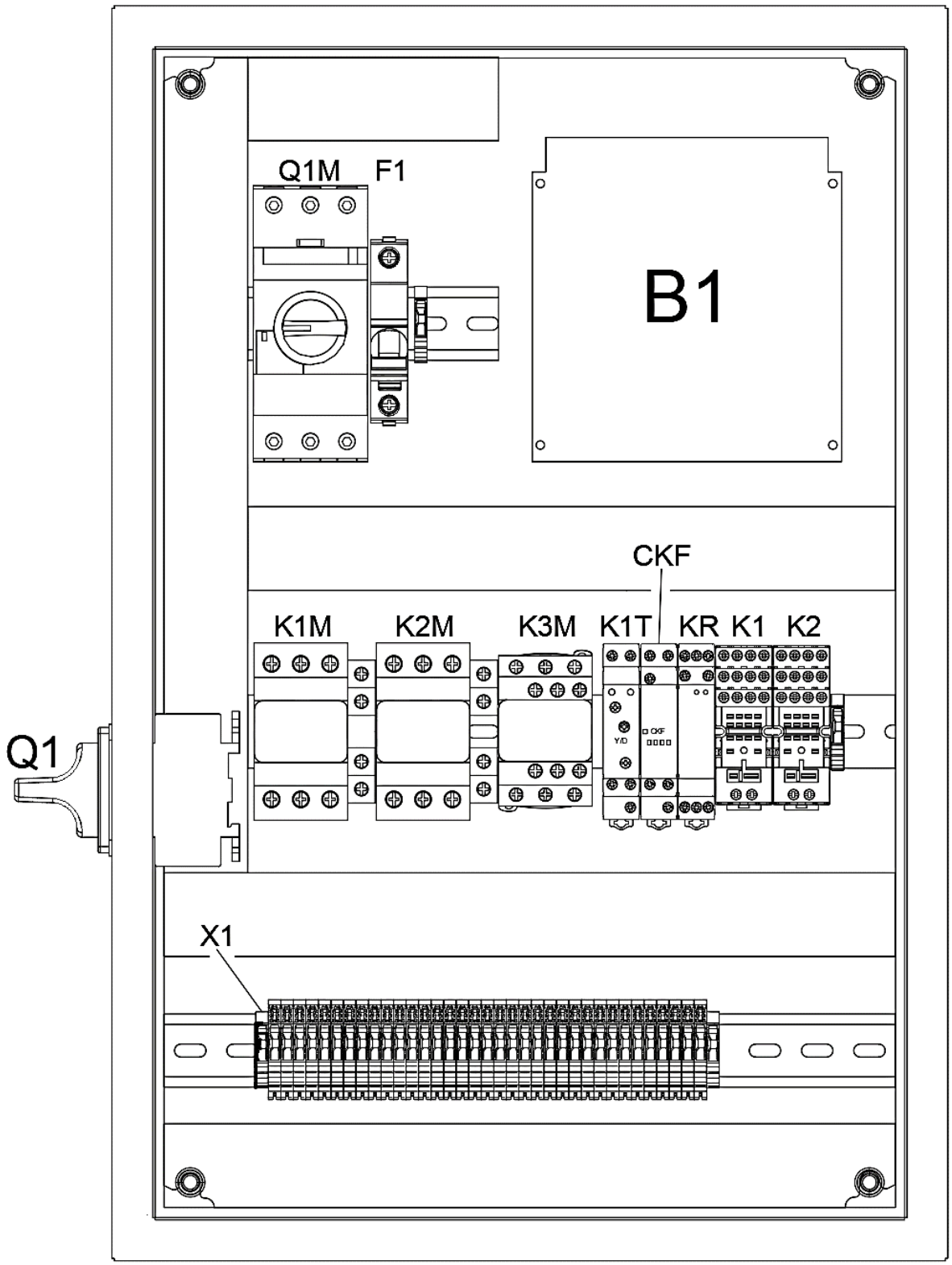
Picture 46 Electrical switchgear facade for equipment type UFO-A-N

Q1 *– Main switch*



Picture 47 LEFT side of electrical switchgear for equipment UFO-A-N

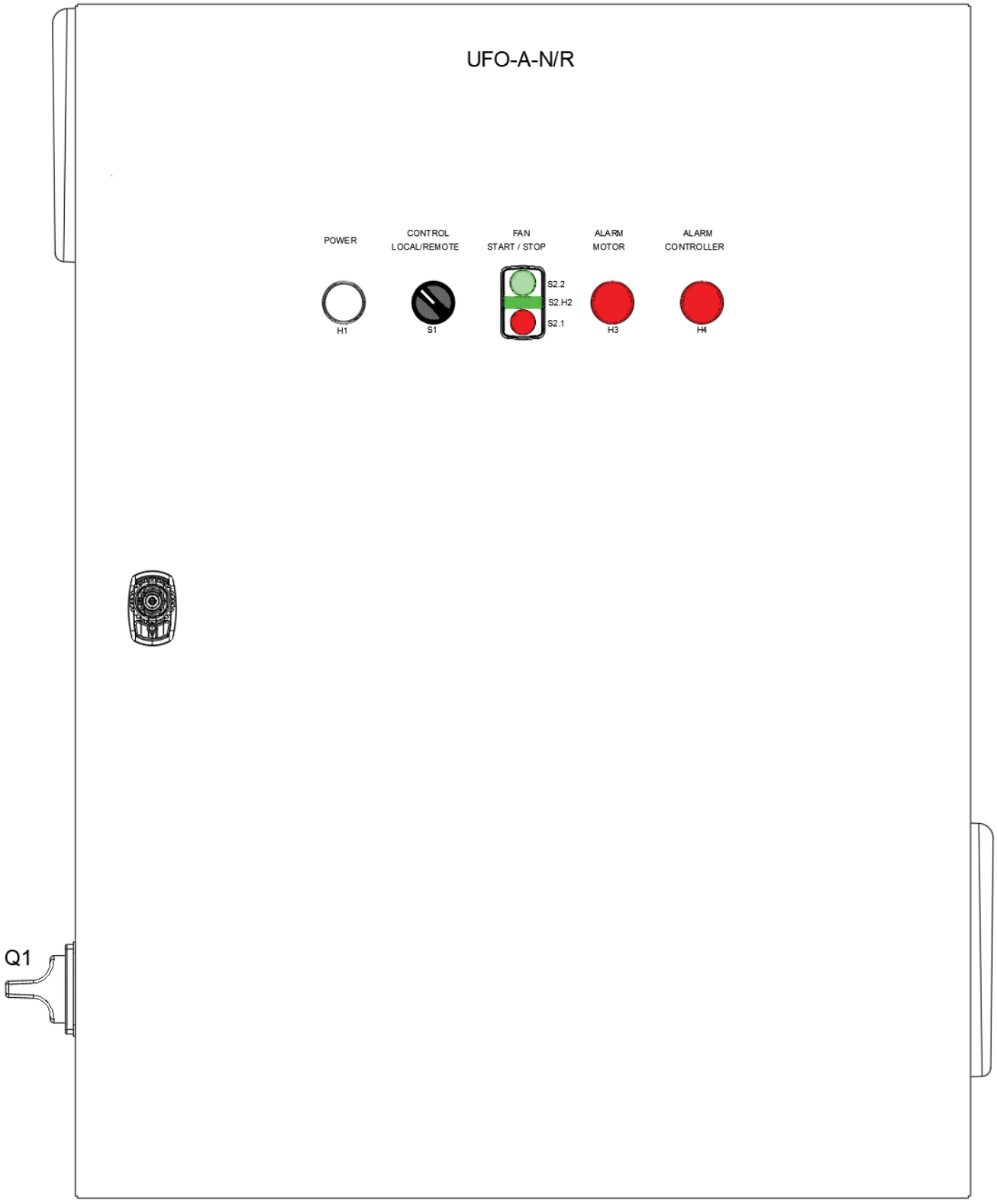
Q1 *– Main switch*



Picture 48 Interior appearance of electrical switchgear with standard 3x400V supply and Y-Δ type start-up for UFO-A-N type device

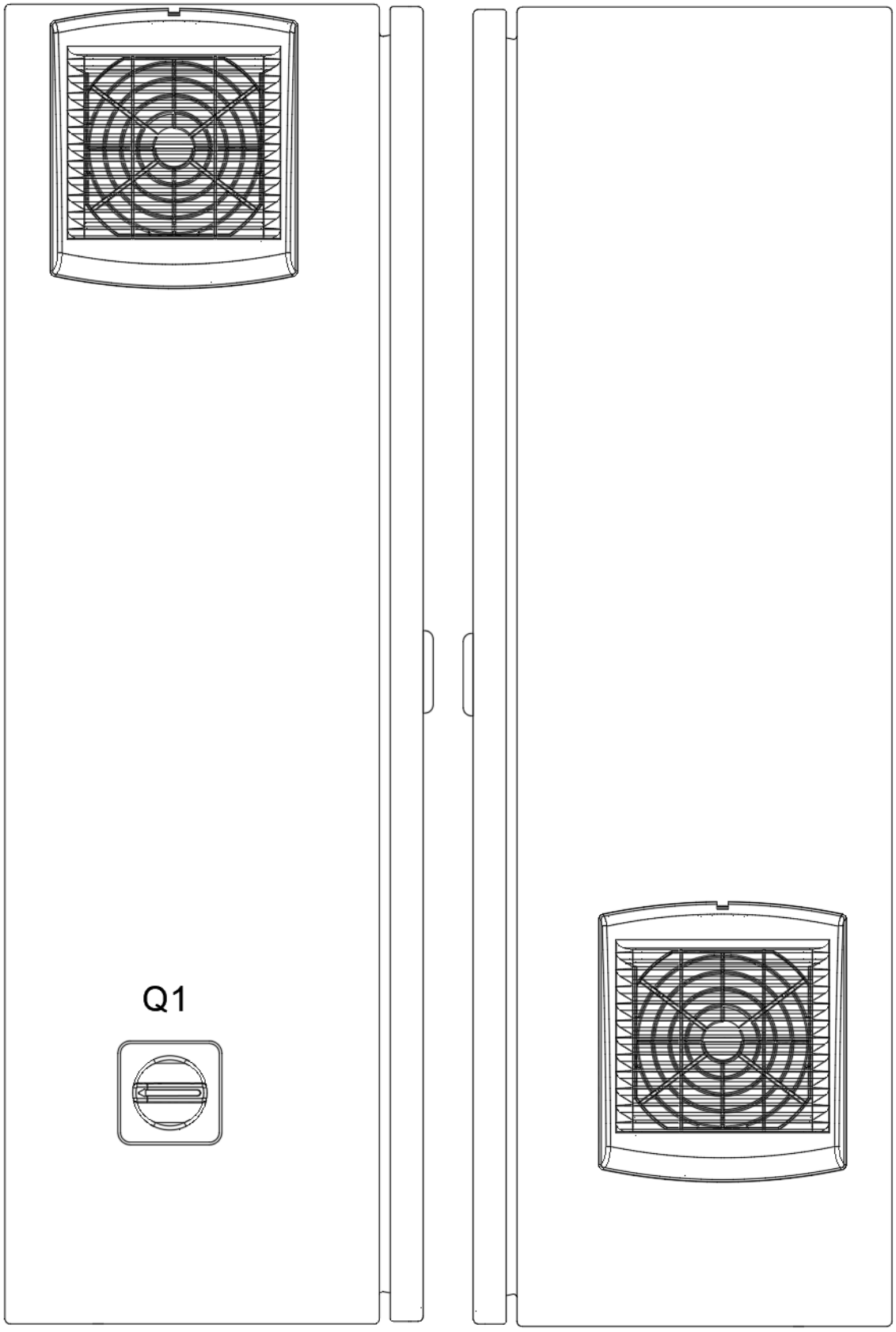
***Q1** – Main switch; **Q1M** – Motor circuit breaker; **F1** – Overcurrent circuit breaker; **K1M**, **K2M**, **K3M** – Contactors; **K1T** – Time transmitter; **CKF** – Phase controller; **KR** – Resistance relay; **K1**, **K2** – Electromagnetic relays; **B1** – Controller*

12.5.2. SWITCHBOARD of UFO-A-N/R



Picture 49 Electrical switchgear facade for devices UFO-A-N type/R

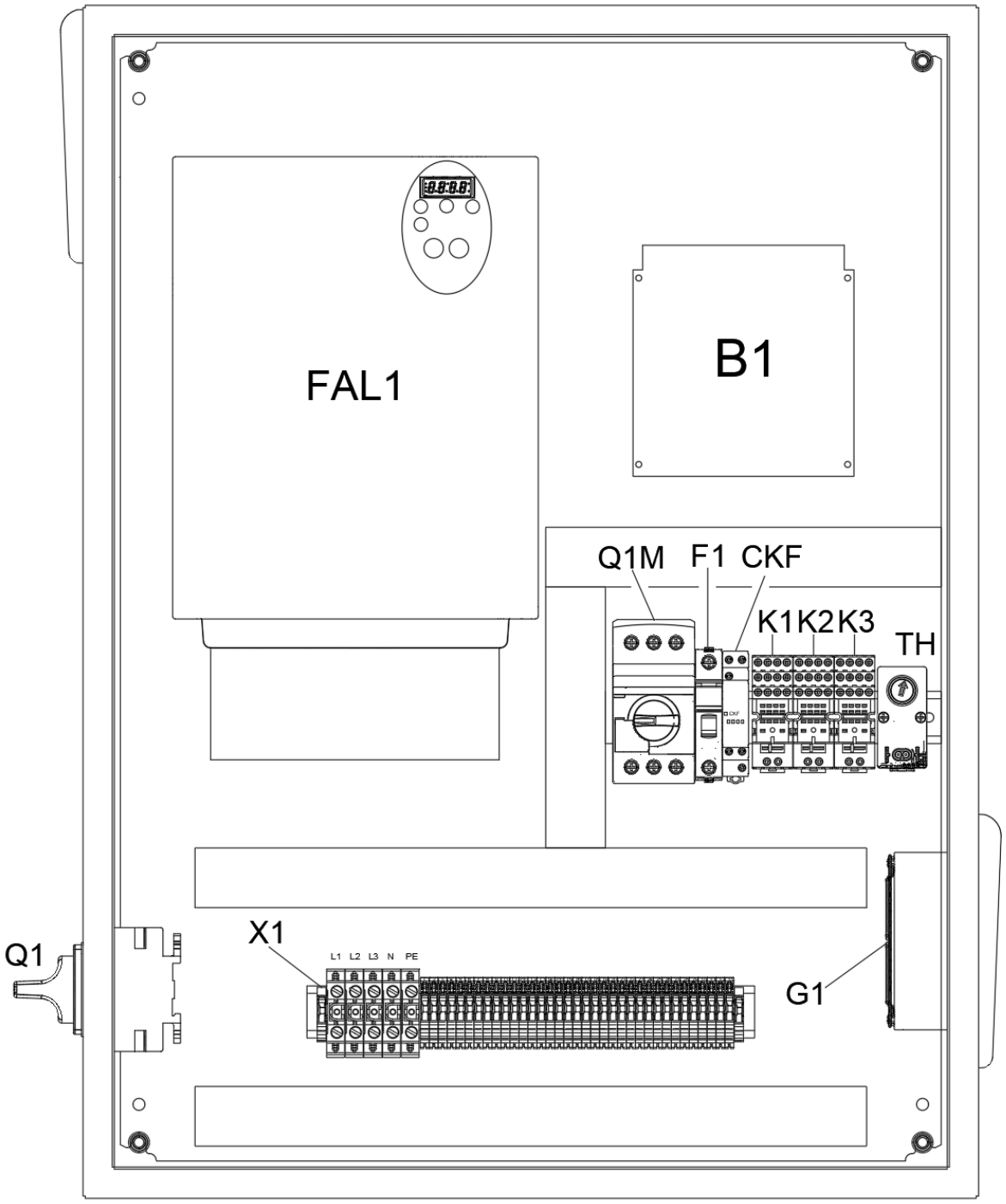
Q1 *– Main switch*



LEFT SIDE ***RIGHT SIDE***

Picture 50 LEFT and RIGHT side of the electrical switchboard for devices UFO-A-N/R type

Q1 – *Main switch*



Picture 51 Interior view of electrical switchgear with standard 3x400V power supply and Y-Δ start for UFO-A-N type device

***Q1** – Main switch; **Q1M** – Motor circuit breaker; **FAL1** – Inverter; **F1** – Overcurrent circuit breaker; **CKF** – Phase control; **K1, K2, K3** - Electromagnetic relays; **TH** – Thermostat; **B1** – Controller; **G1** - Ventilating fan*

13. ELECTRICAL DIAGRAMS

13.1. DIAGRAM of UFO-A-5000-N

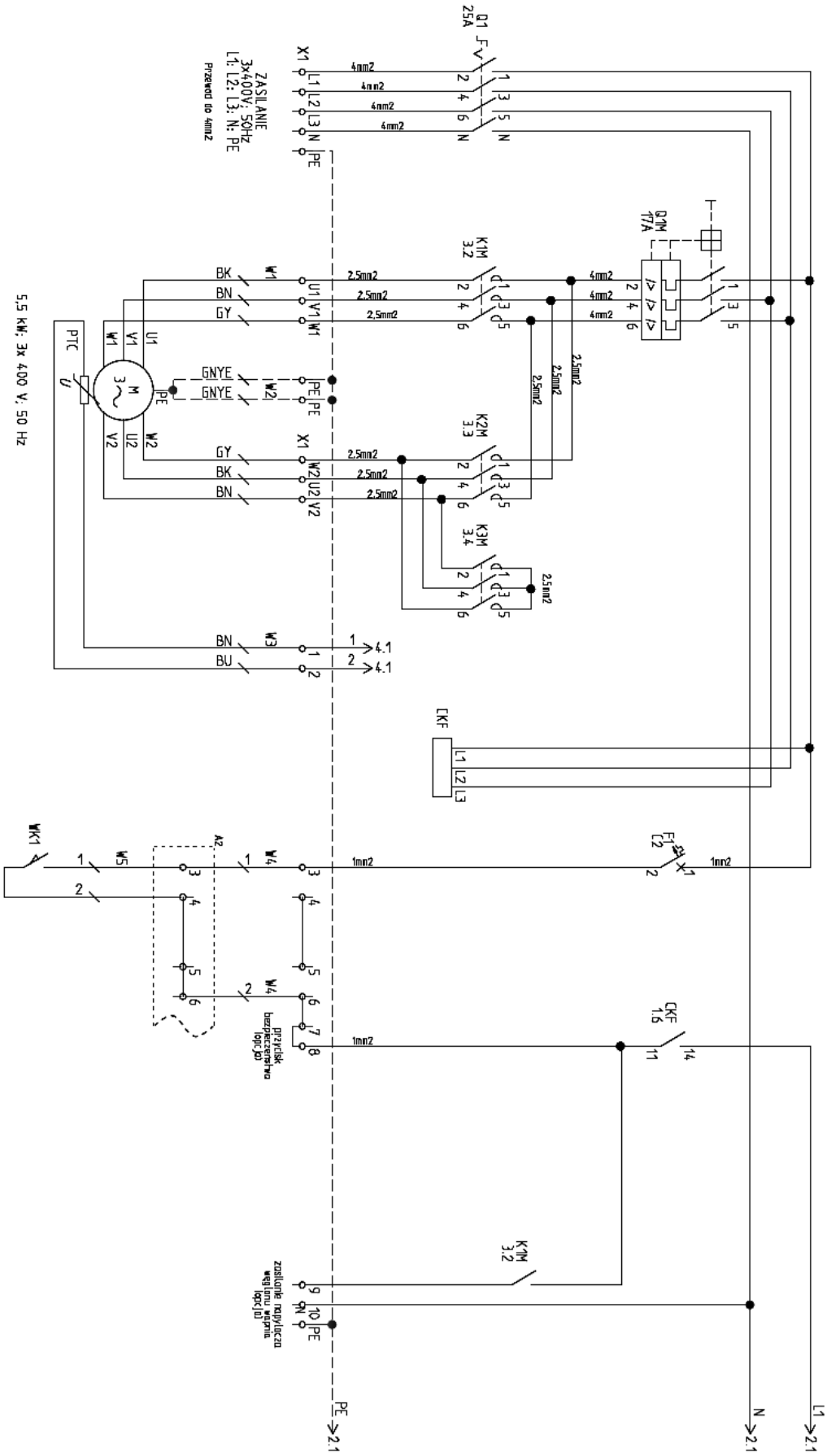


Diagram 1 UFO-A-5000-N, pt. 1 of 4

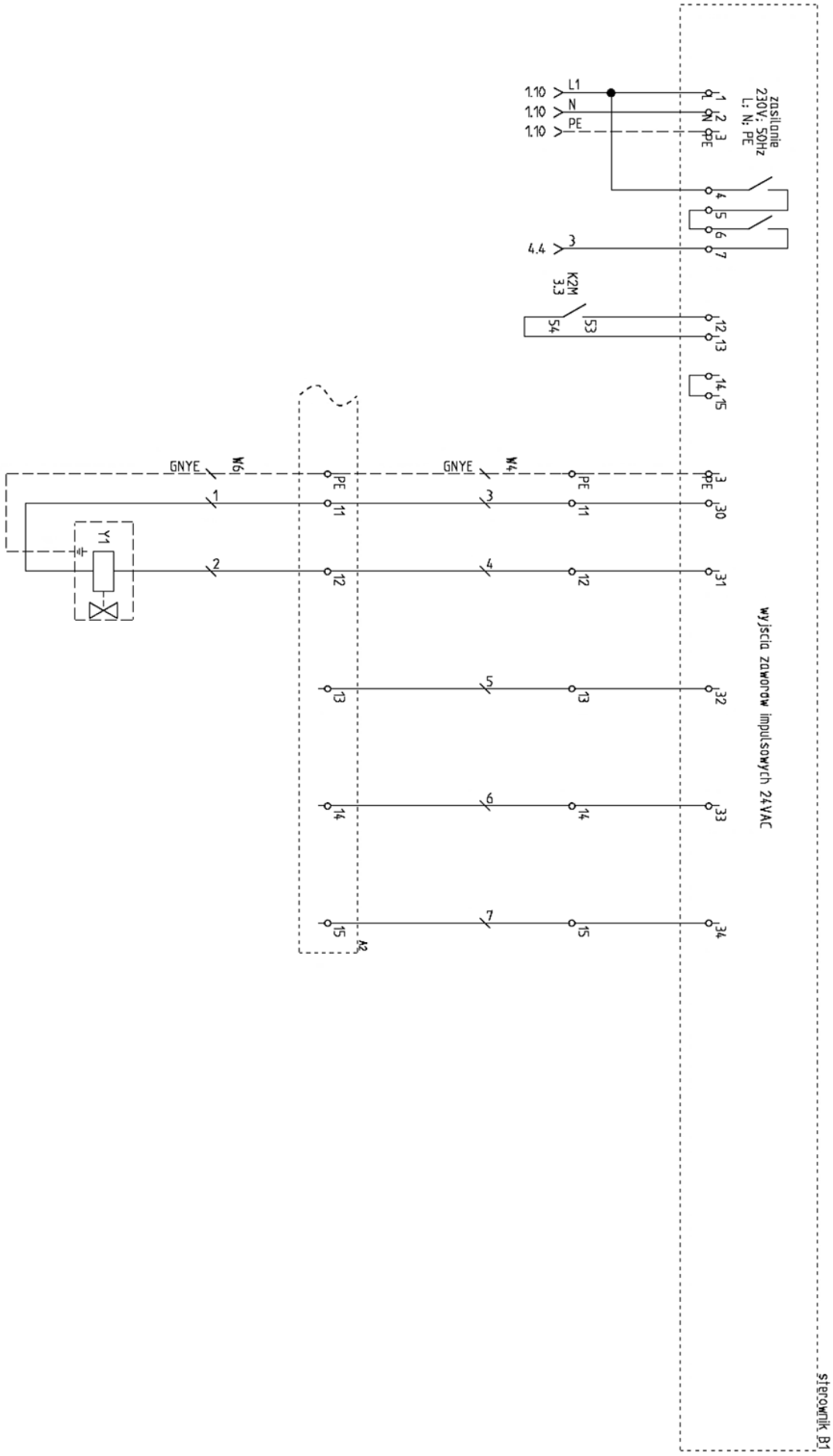


Diagram 2 UFO-A-5000-N, pt. 2 of 4

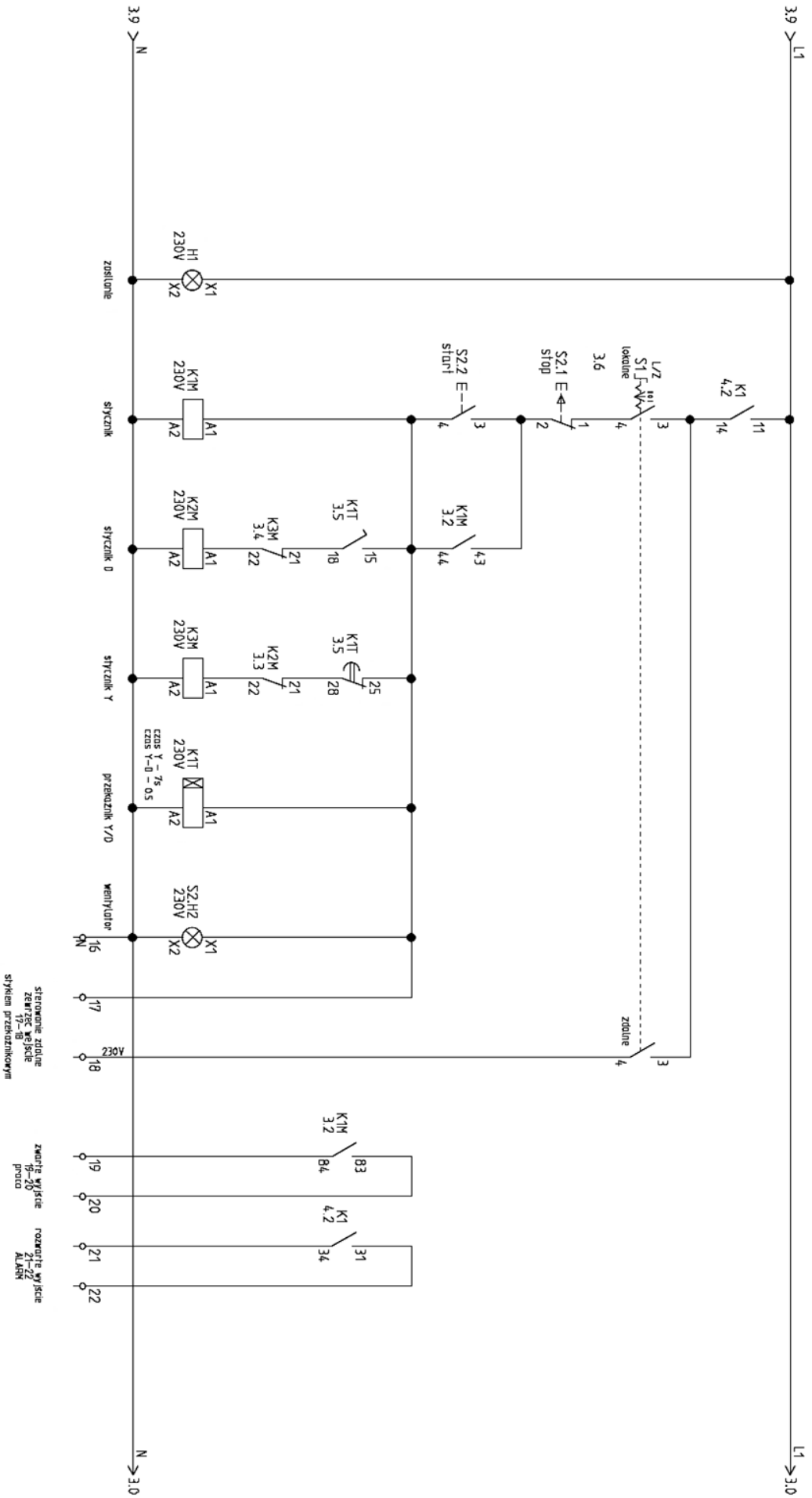


Diagram 3 UFO-A-5000-N, pt. 3 of 4

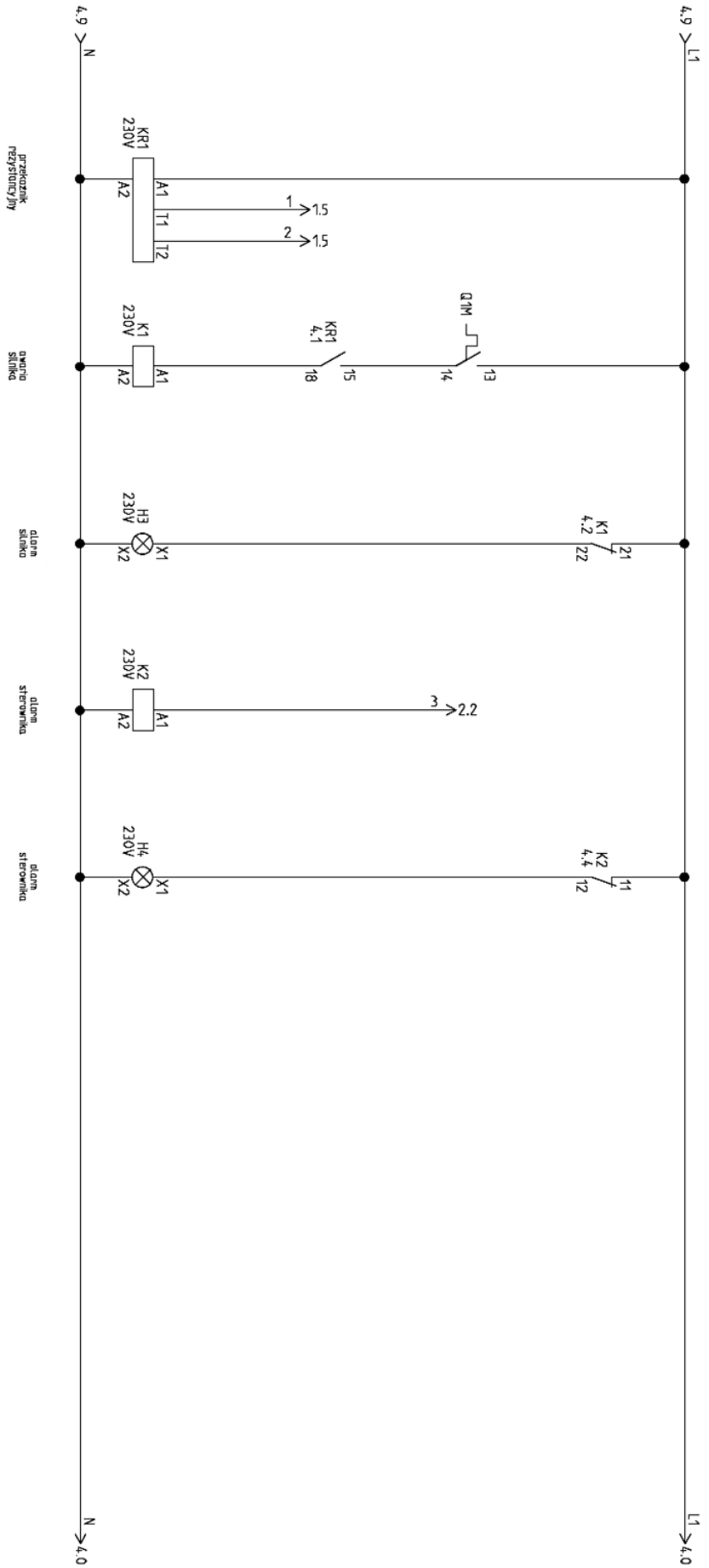


Diagram 4 UFO-A-5000-N, pt.4 of 4

13.2. DIAGRAM of UFO-A-5000-N/R

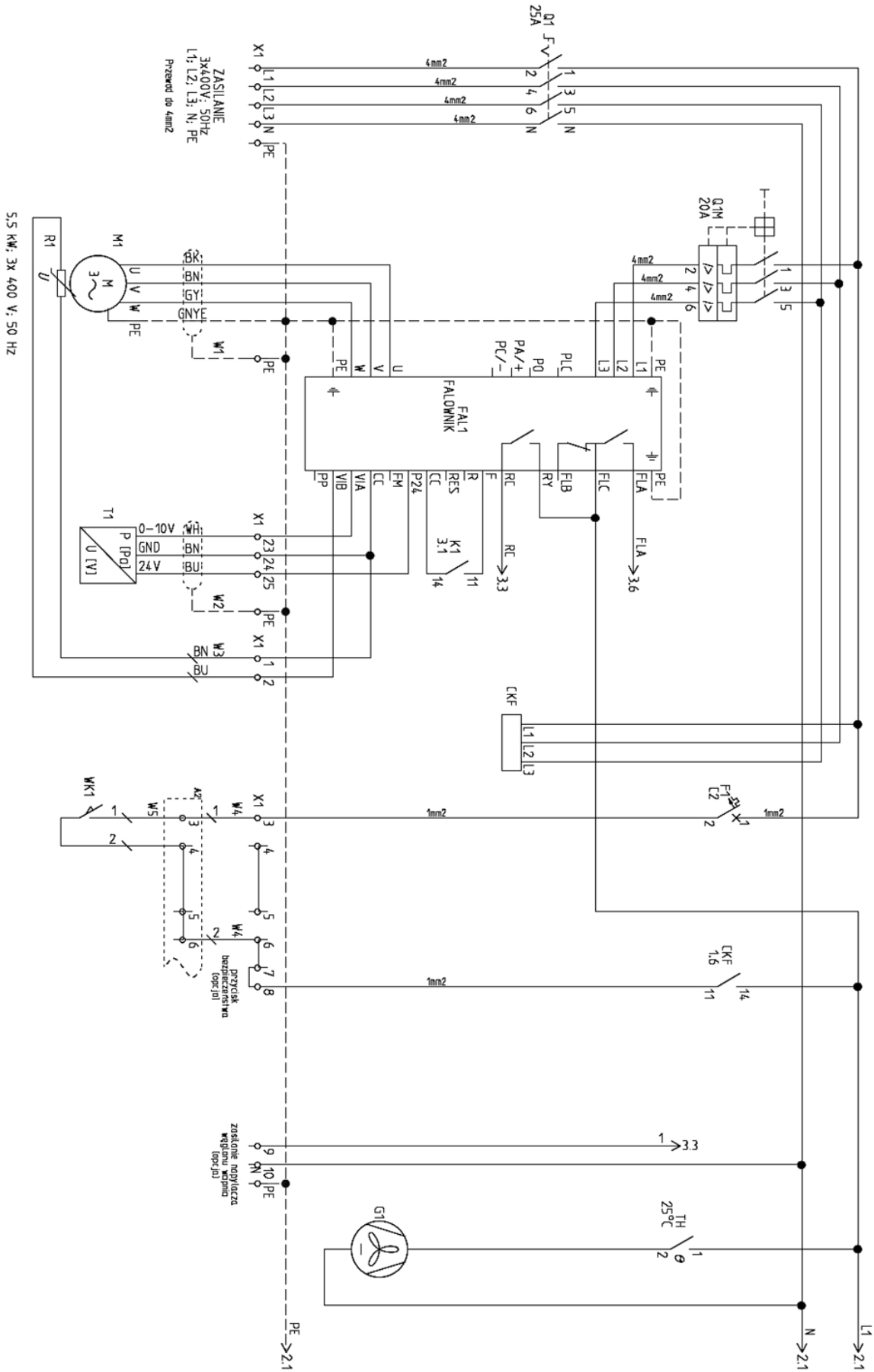


Diagram 5 UFO-A-5000-N/R, pt.1 of 3

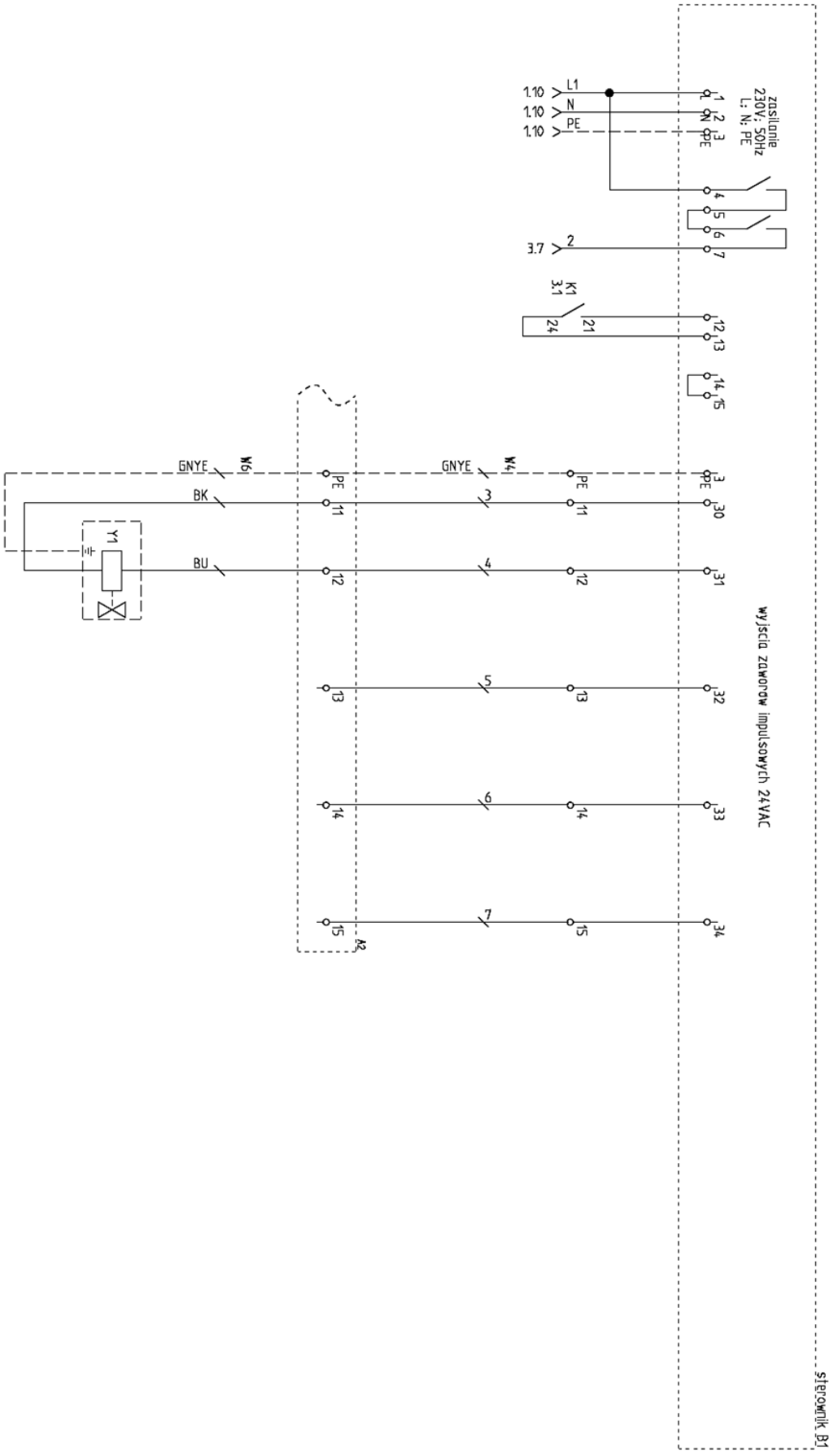


Diagram 6 UFO-A-5000-N/R, pt. 2 of 3

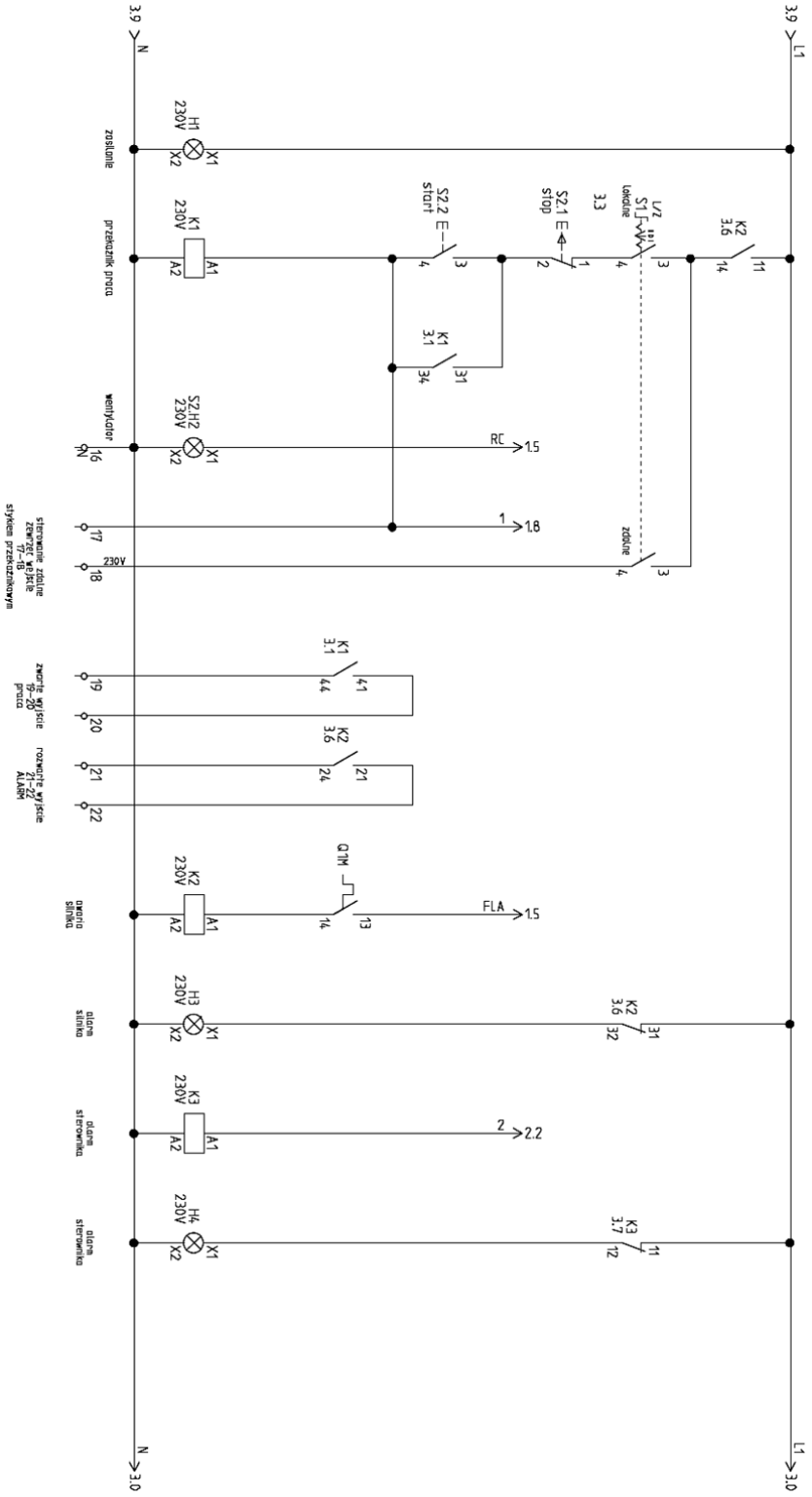


Diagram 7 UFO-A-5000-N/R, pt.3 of 3

13.3. DIAGRAM of UFO-A-10000-N

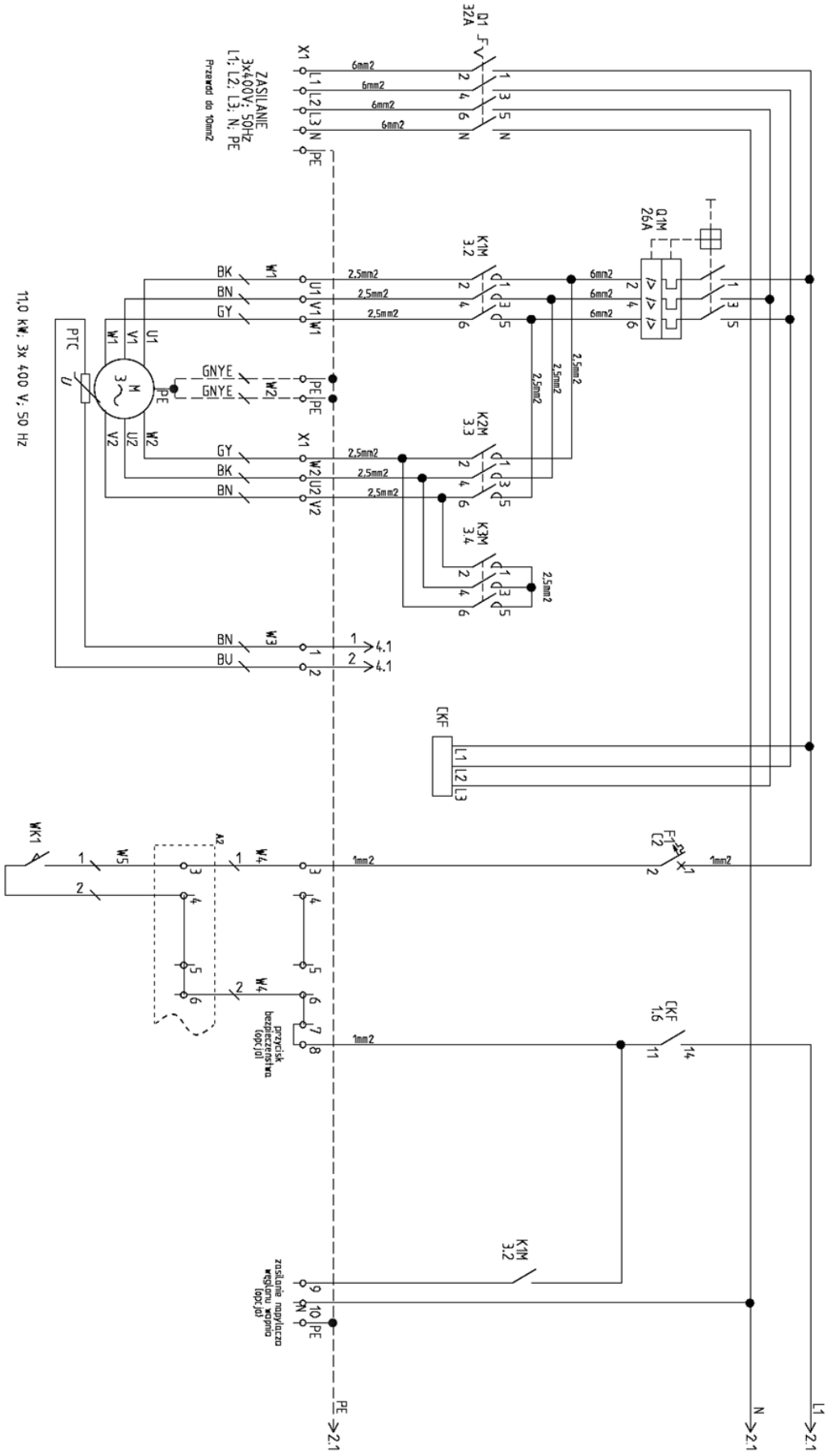


Diagram 8 UFO-A-10000-N, pt. 1 of 4

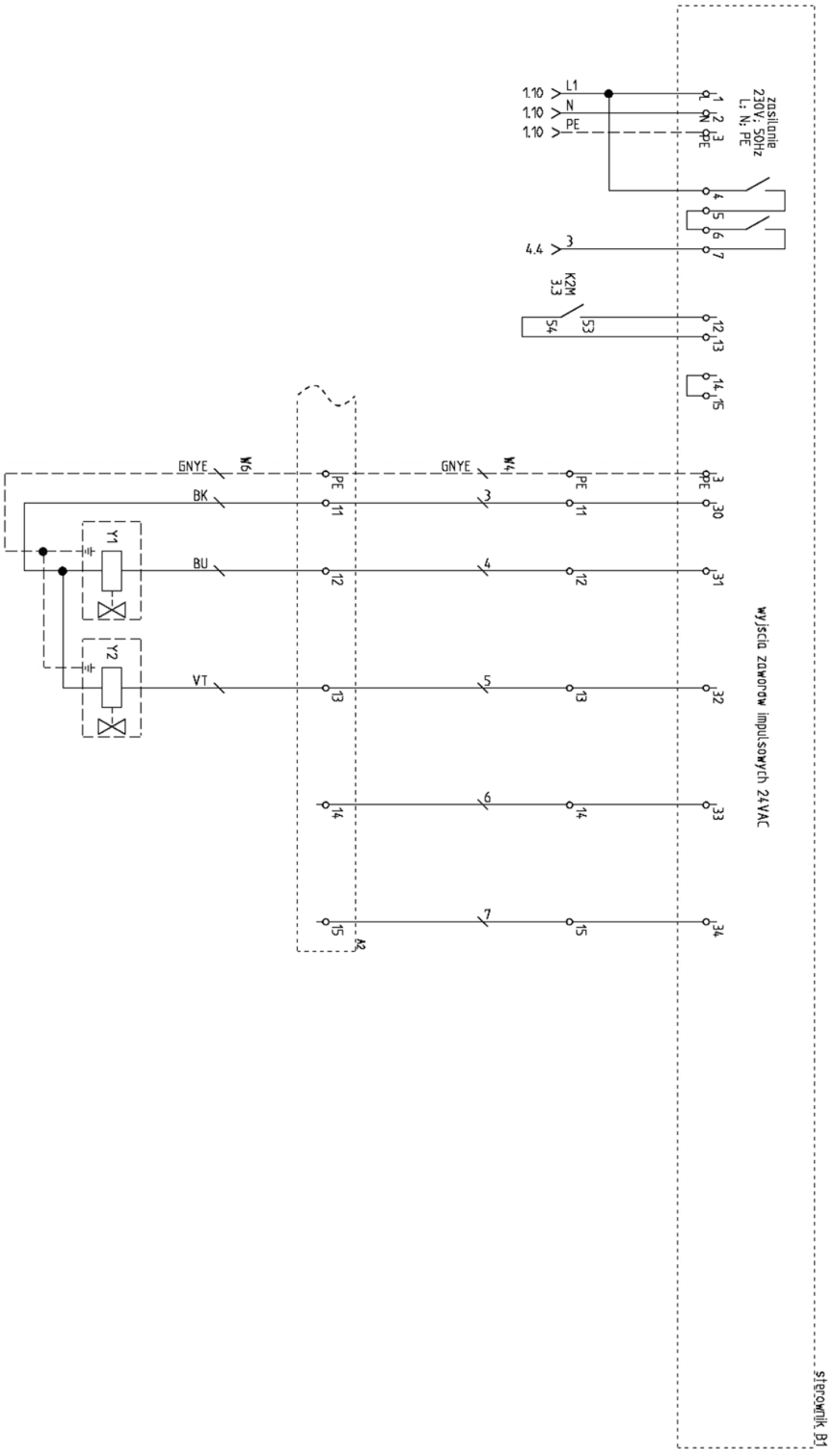


Diagram 9 UFO-A-10000-N, pt. 2 of 4

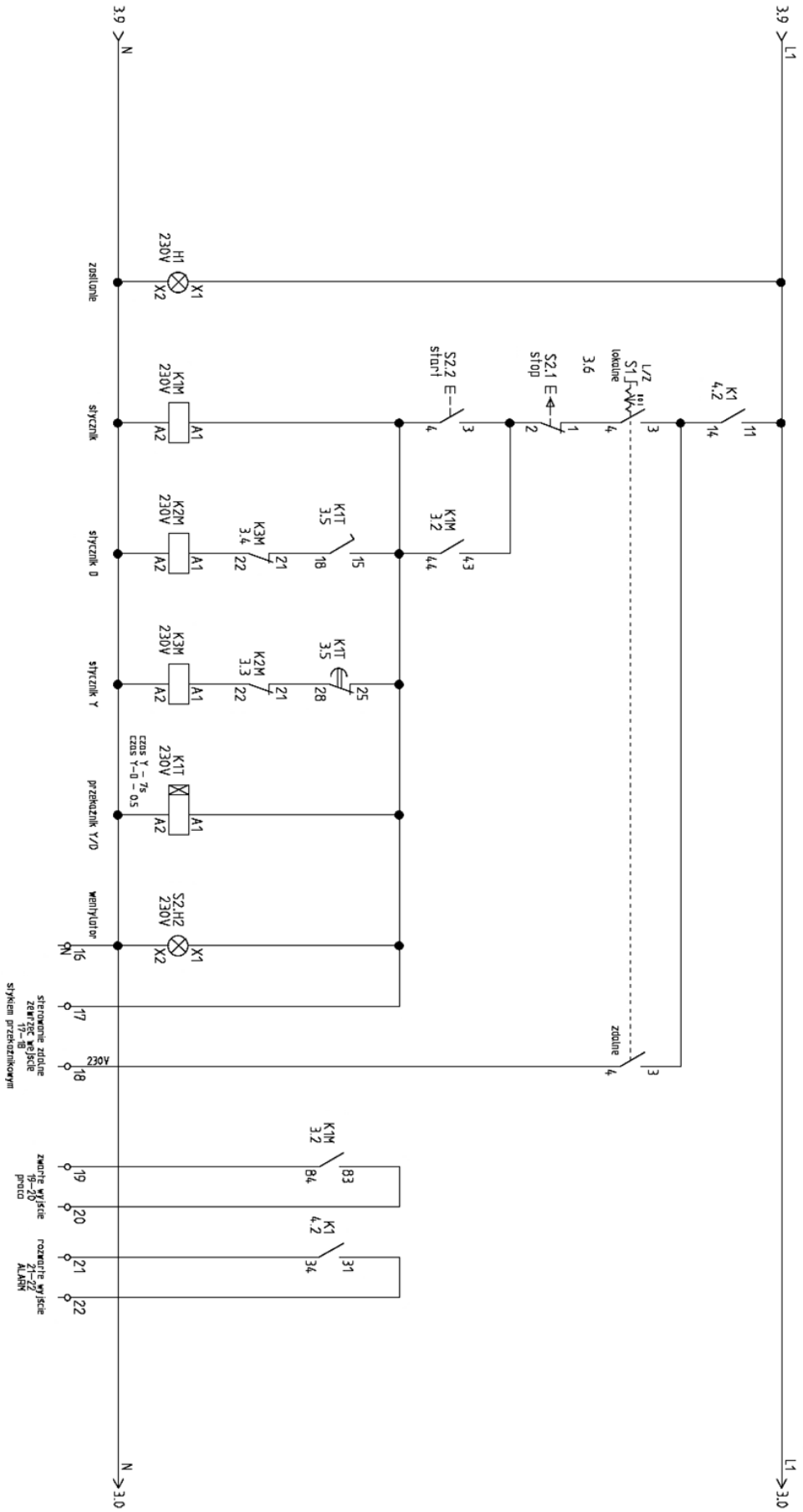


Diagram 10 UFO-A-10000-N, pt. 3 of 4

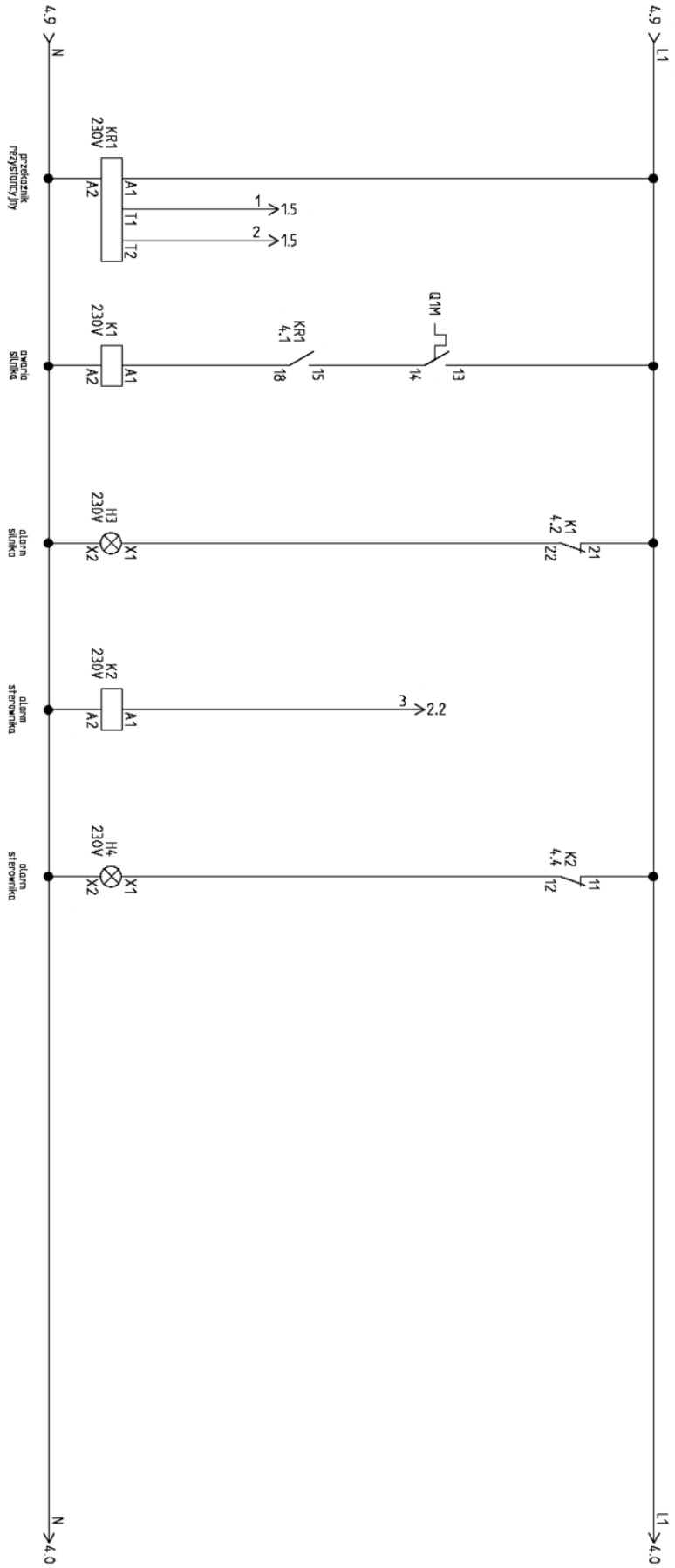


Diagram 11 UFO-A-10000-N, pt. 4 of 4

13.4. DIAGRAM of UFO-A-10000-N/R

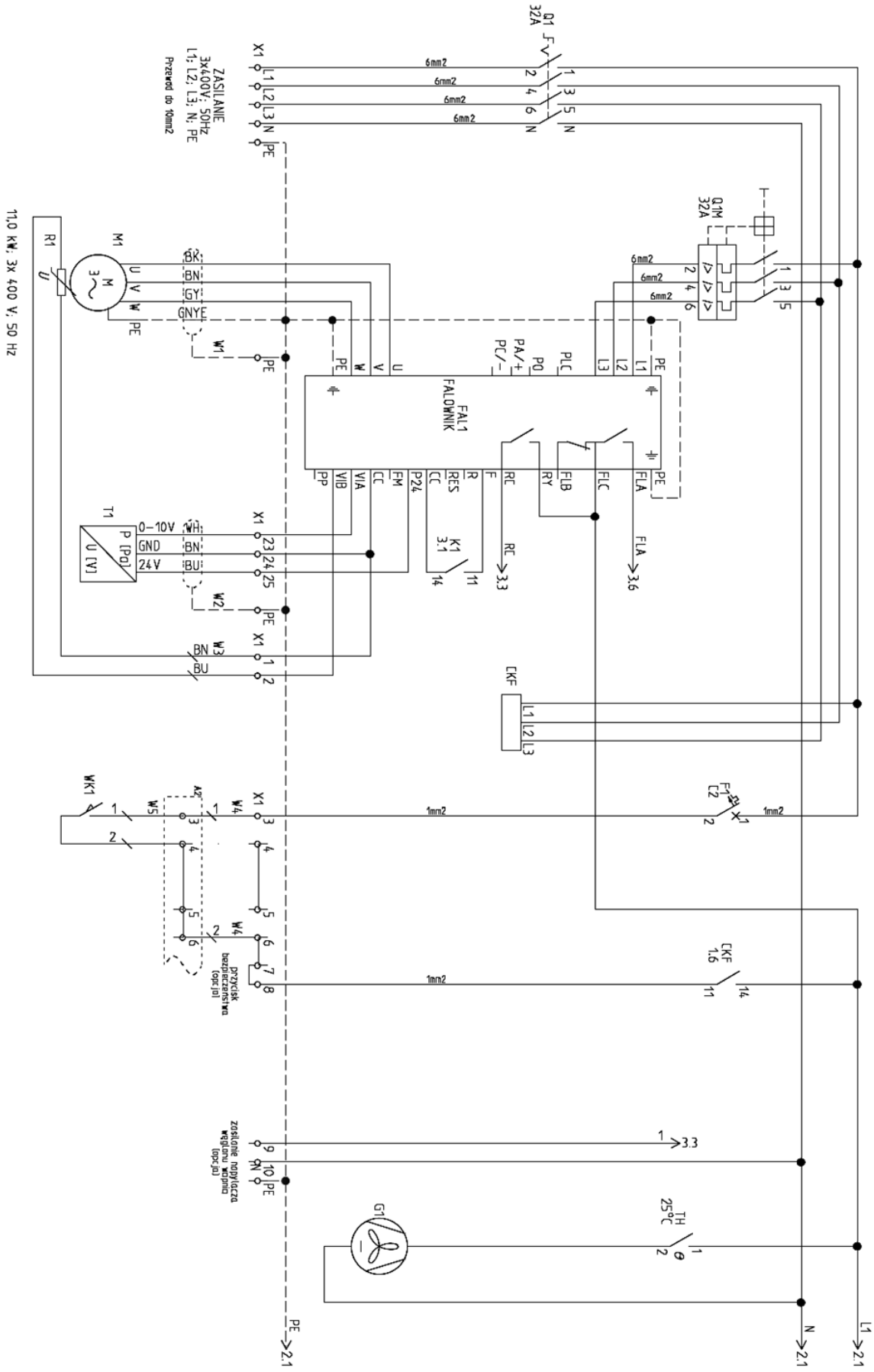


Diagram 12 UFO-A-10000-N/R, pt.1 of 3

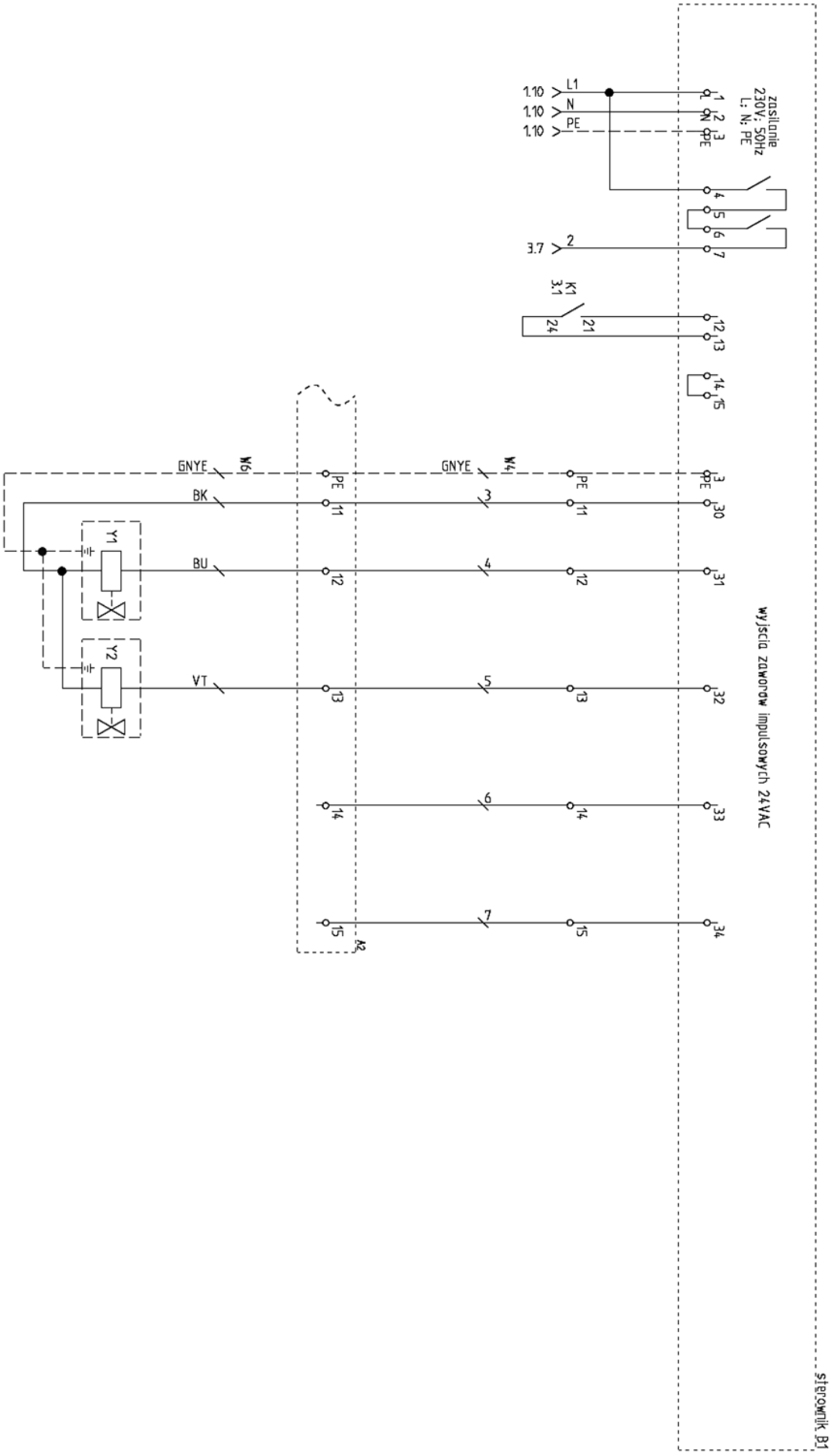


Diagram 13 UFO-A-10000-N/R, pt. 2 of 3

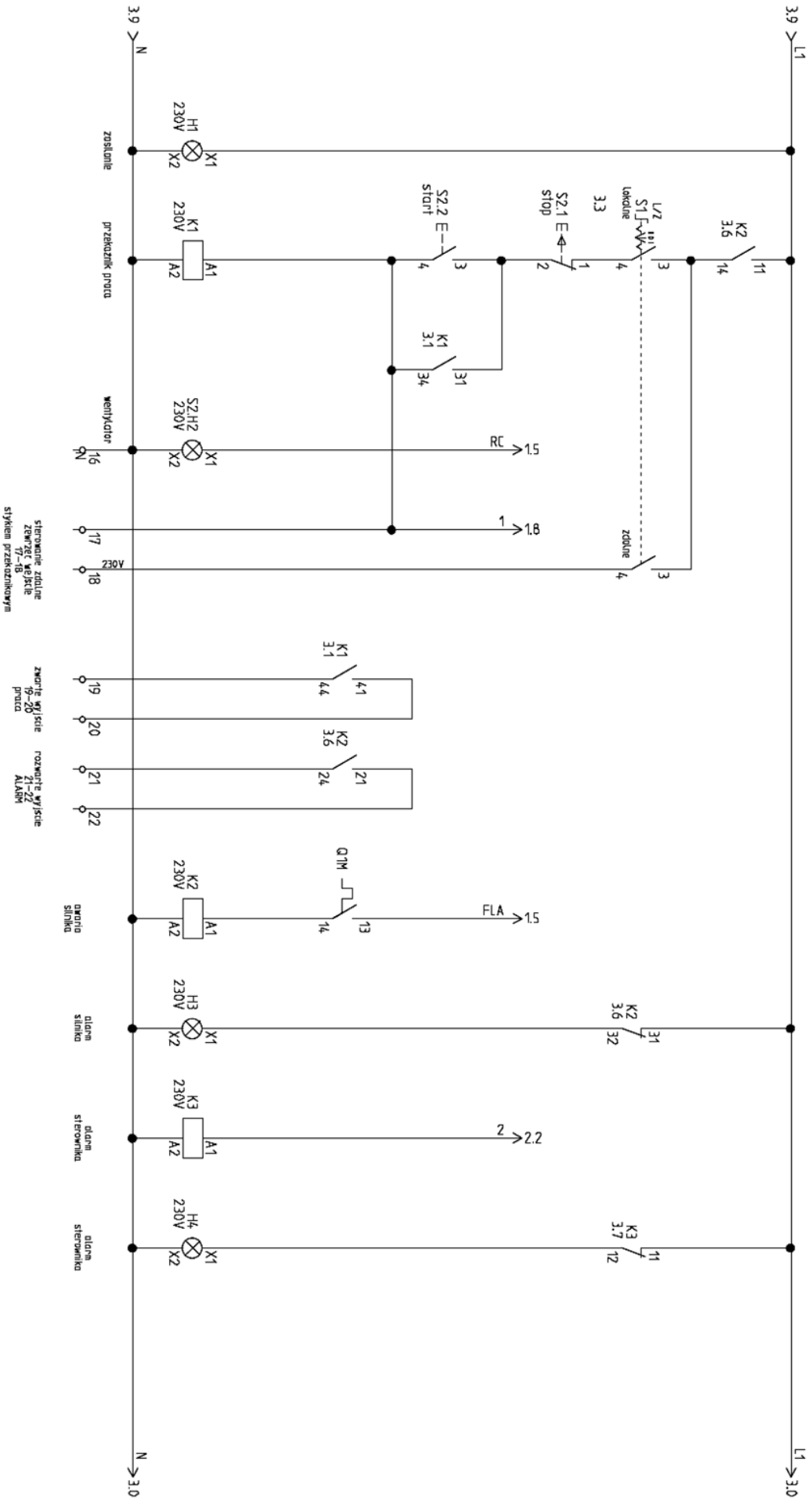


Diagram 14 UFO-A-10000-N/R, pt. 3 of 3

13.5. DIAGRAM of UFO-A-15000-N

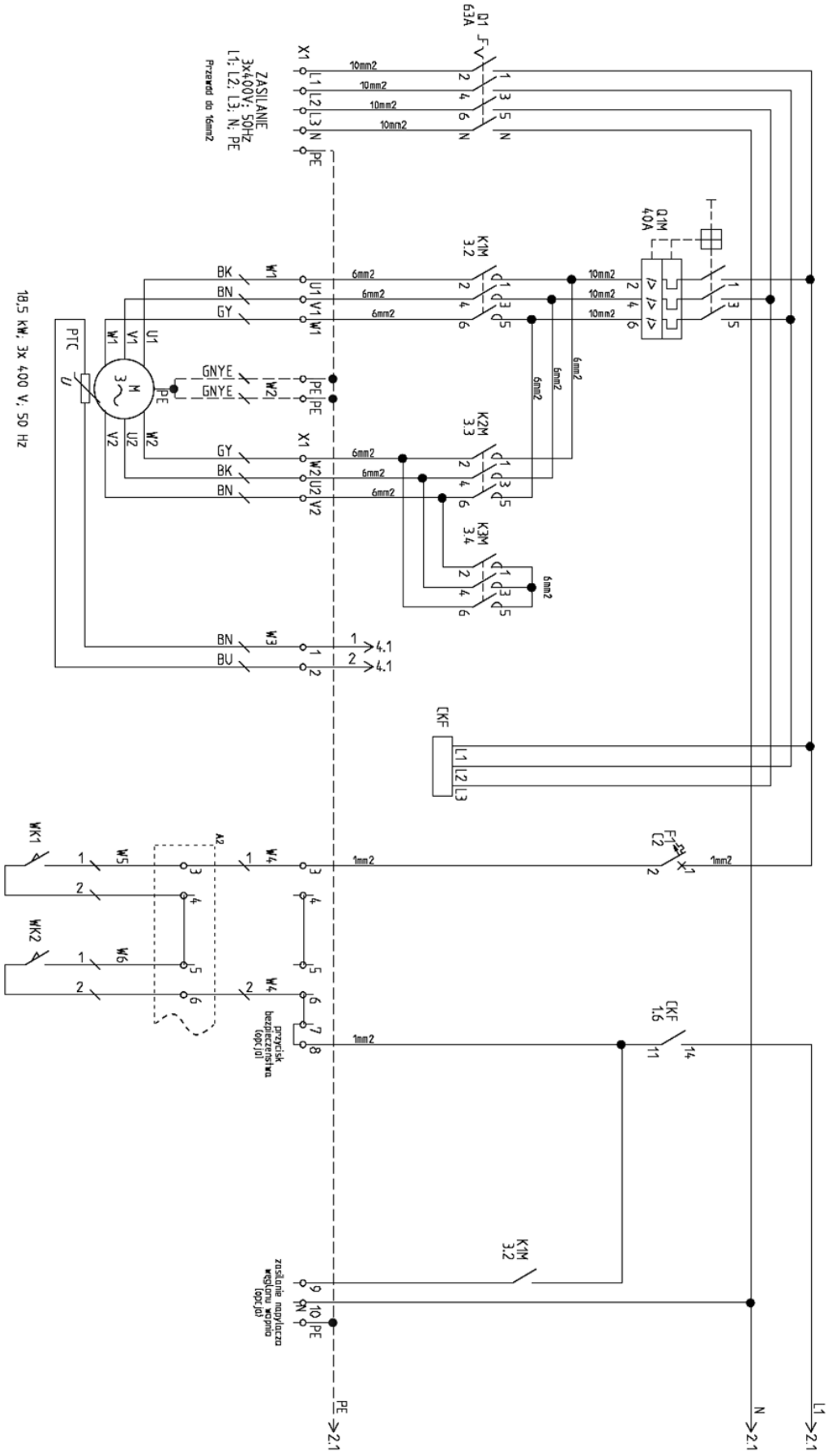


Diagram 15 UFO-A-15000-N, pt. 1 of 4

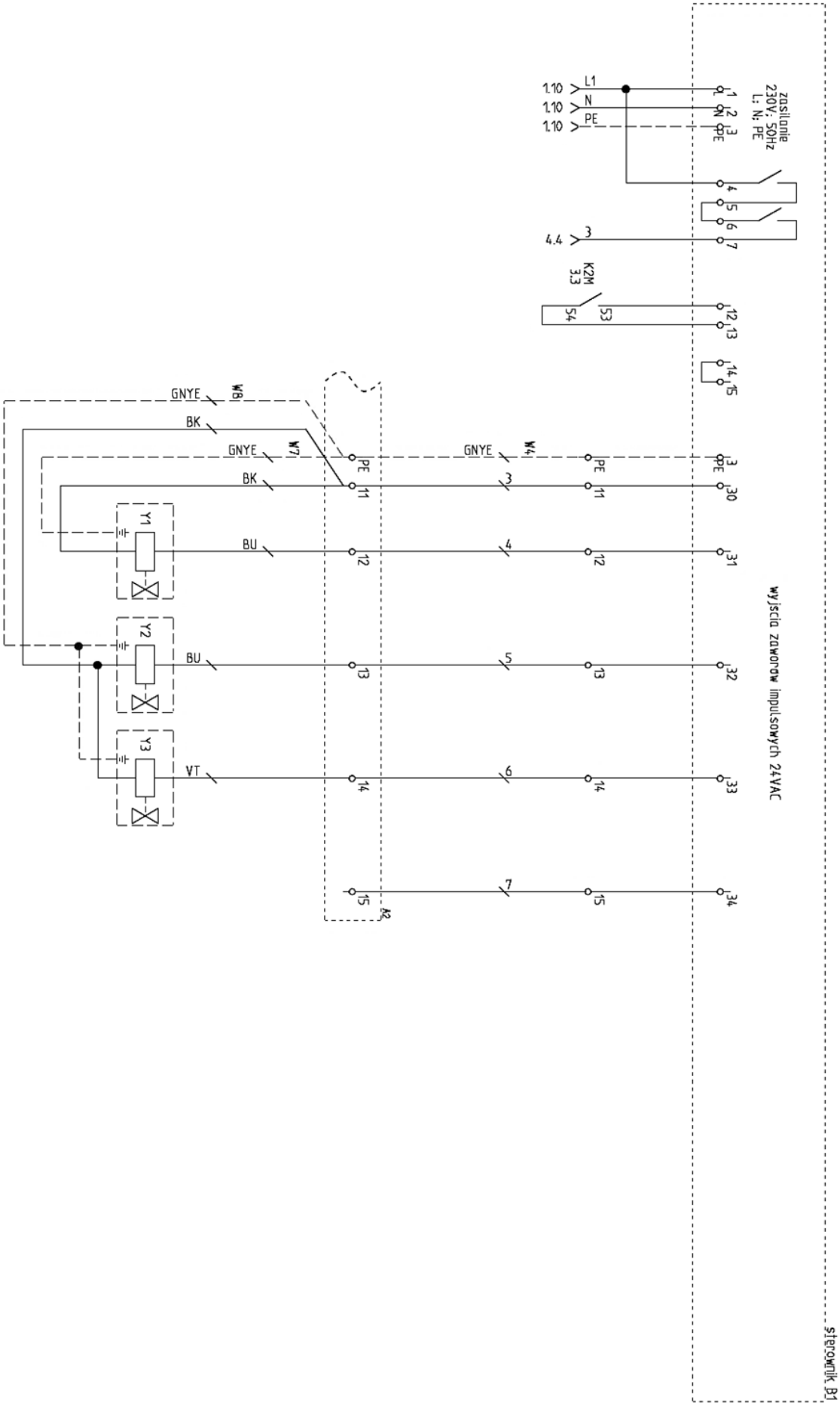


Diagram 16 UFO-A-15000-N, pt. 2 of 4

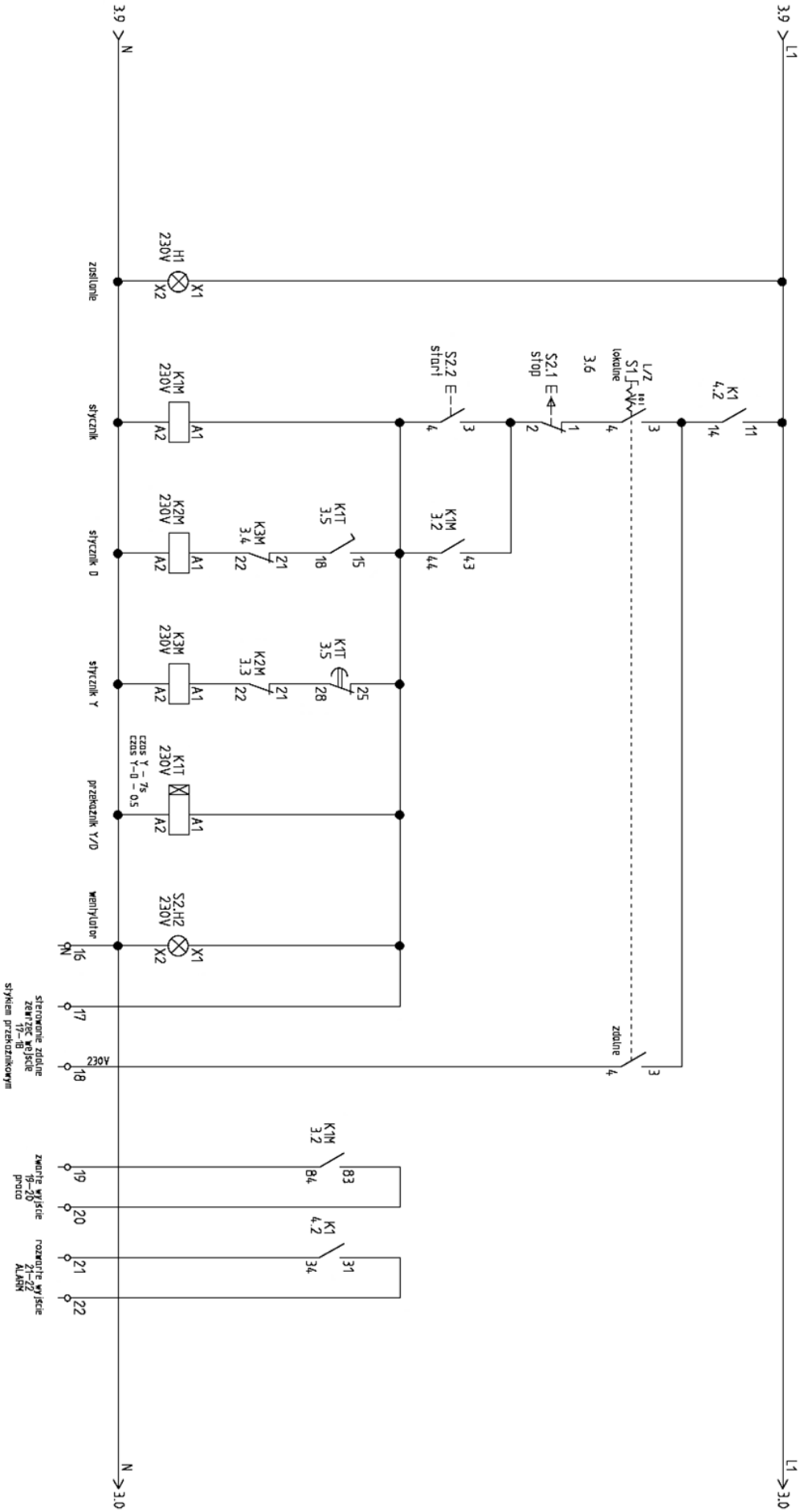


Diagram 17 UFO-A-15000-N, pt. 3 of 4

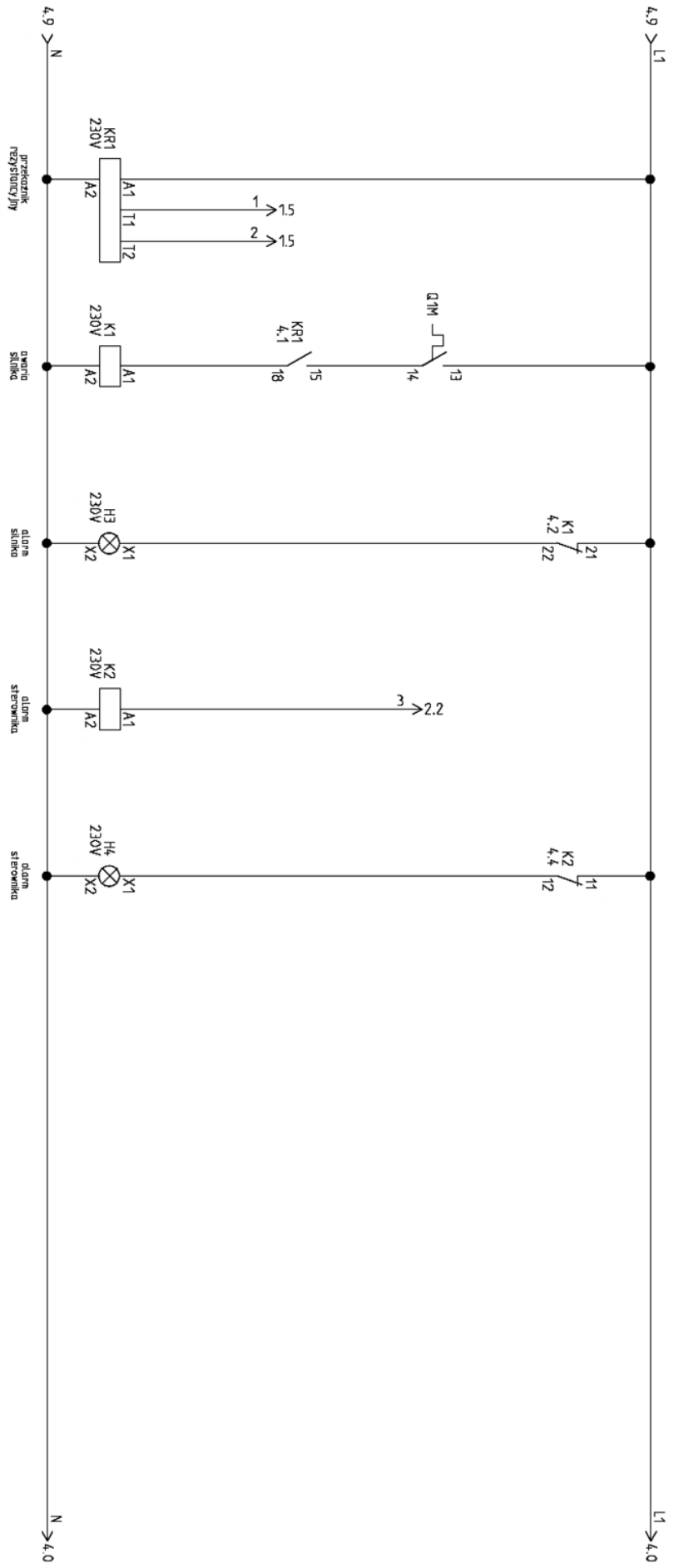


Diagram 18 UFO-A-15000-N, pt. 4 of 4

13.6. DIAGRAM of UFO-A-15000-N/R

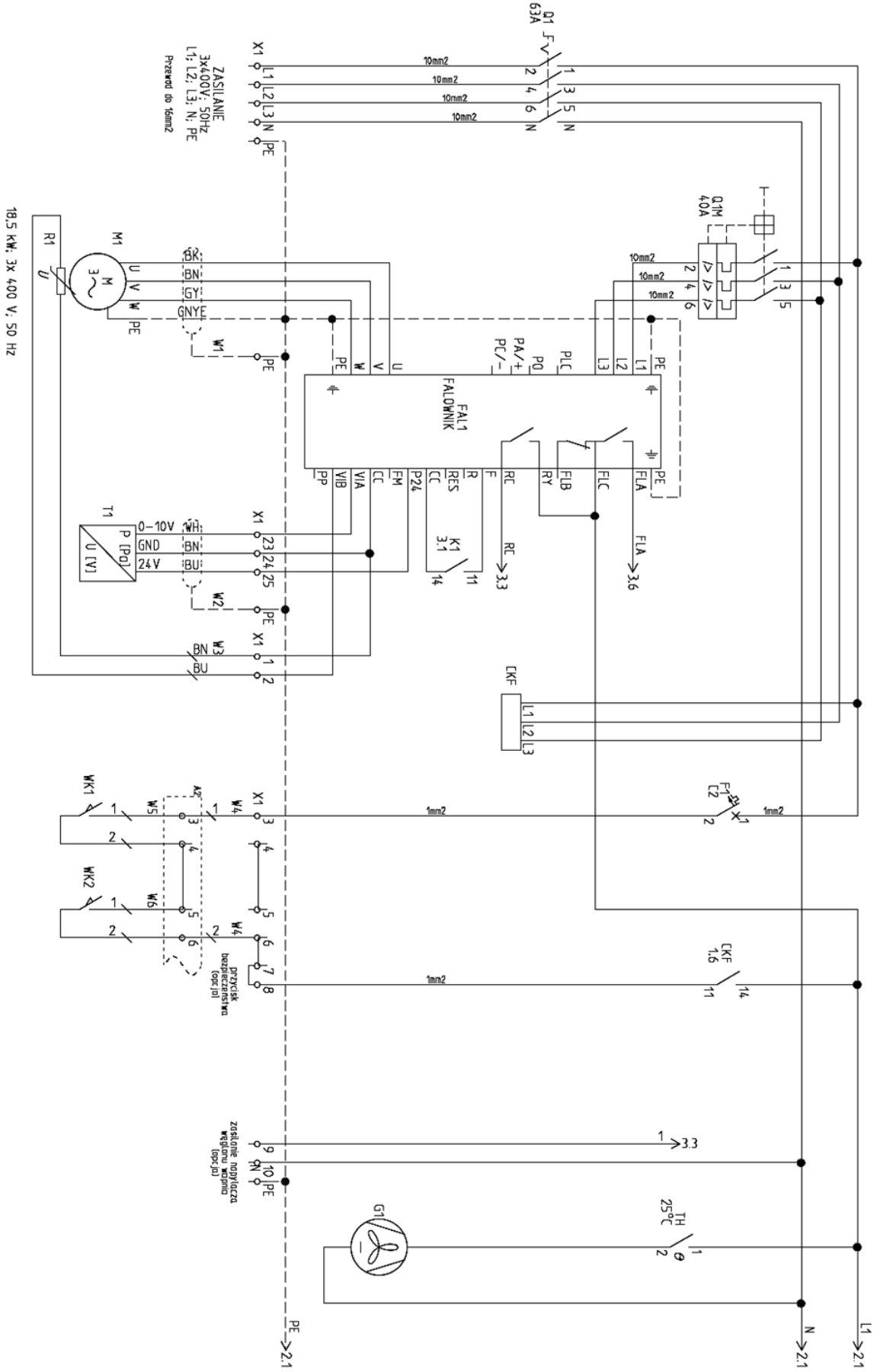


Diagram 19 UFO-A-15000-N/R, pt 1 of 3

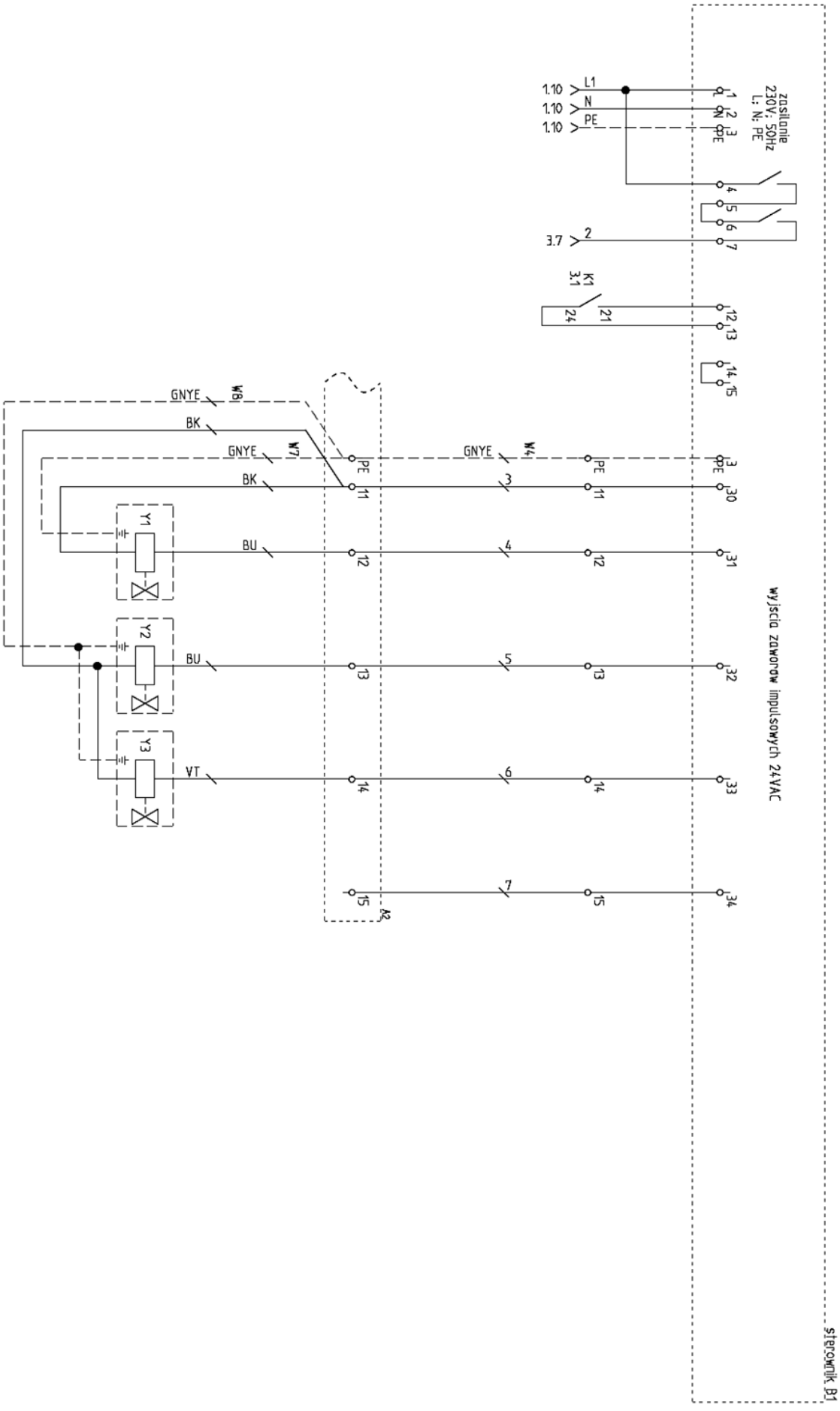


Diagram 20 UFO-A-15000-N/R, pt. 2 of 3

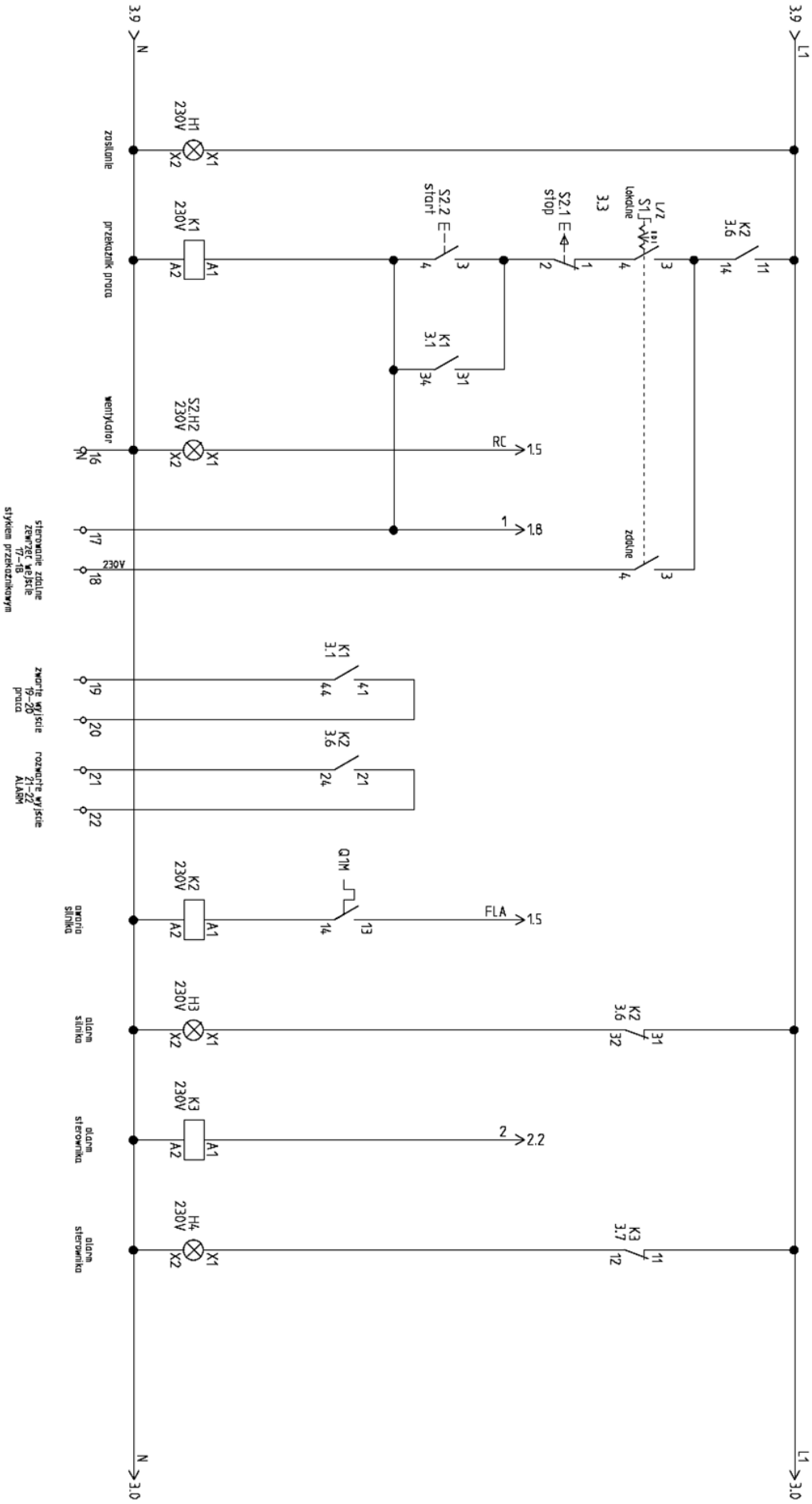


Diagram 21 UFO-A-15000-N/R, pt. 3 of 3

13.7. DIAGRAM of UFO-A-20000-N

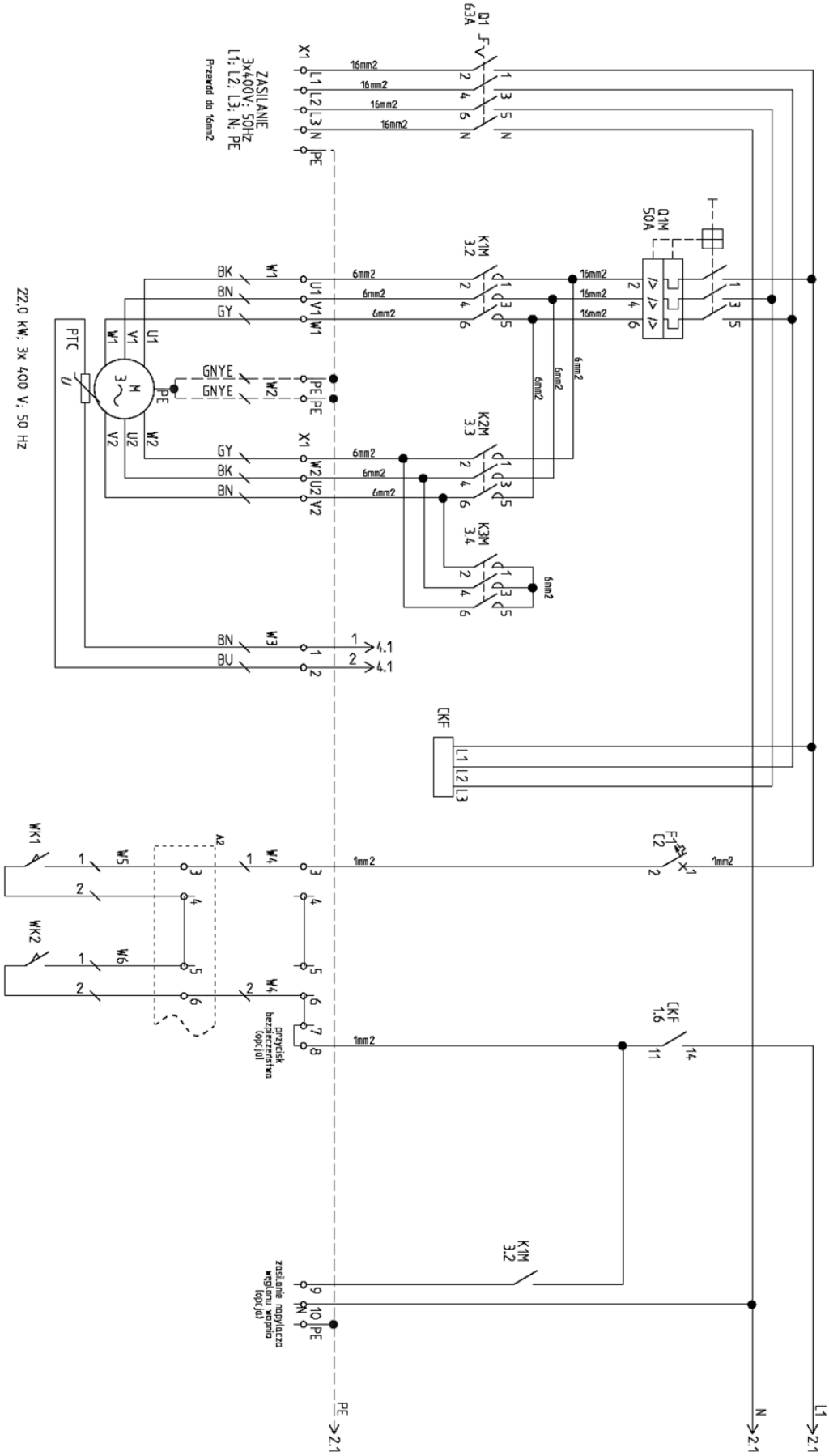


Diagram 22 UFO-A-20000-N, pt. 1 of 4

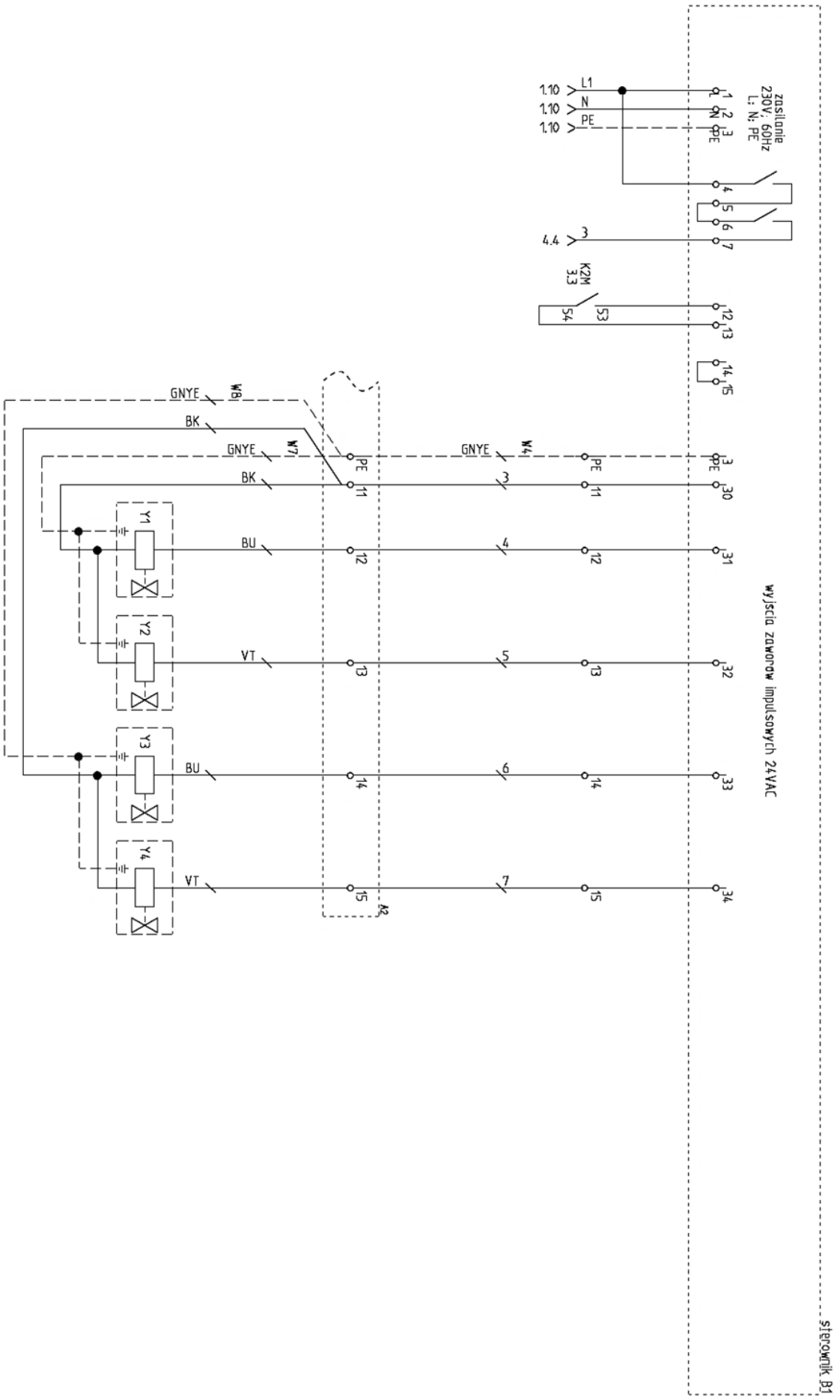


Diagram 23 UFO-A-20000-N, pt. 2 of 4

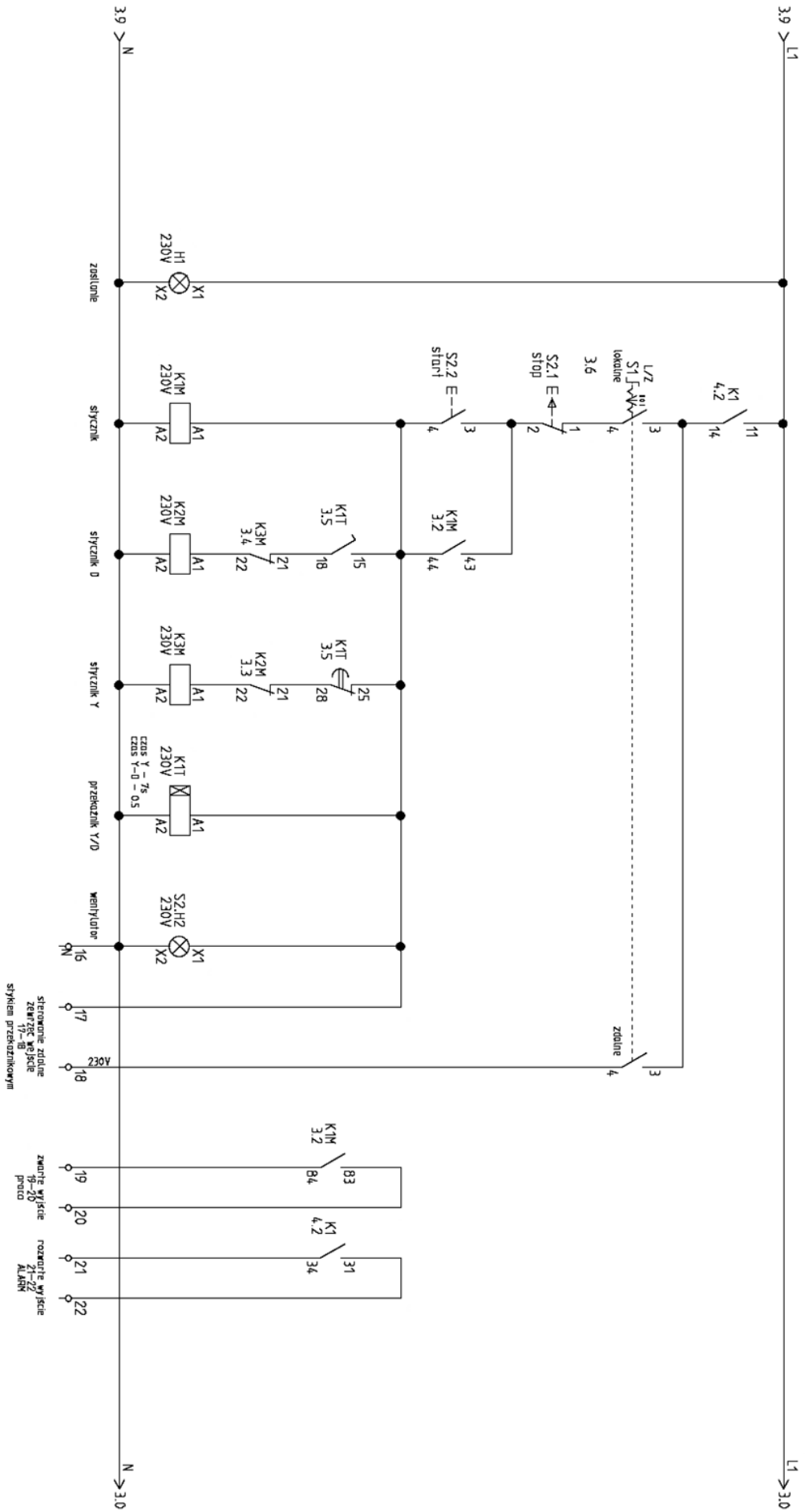


Diagram 24 UFO-A-20000-N, pt. 3 of 4

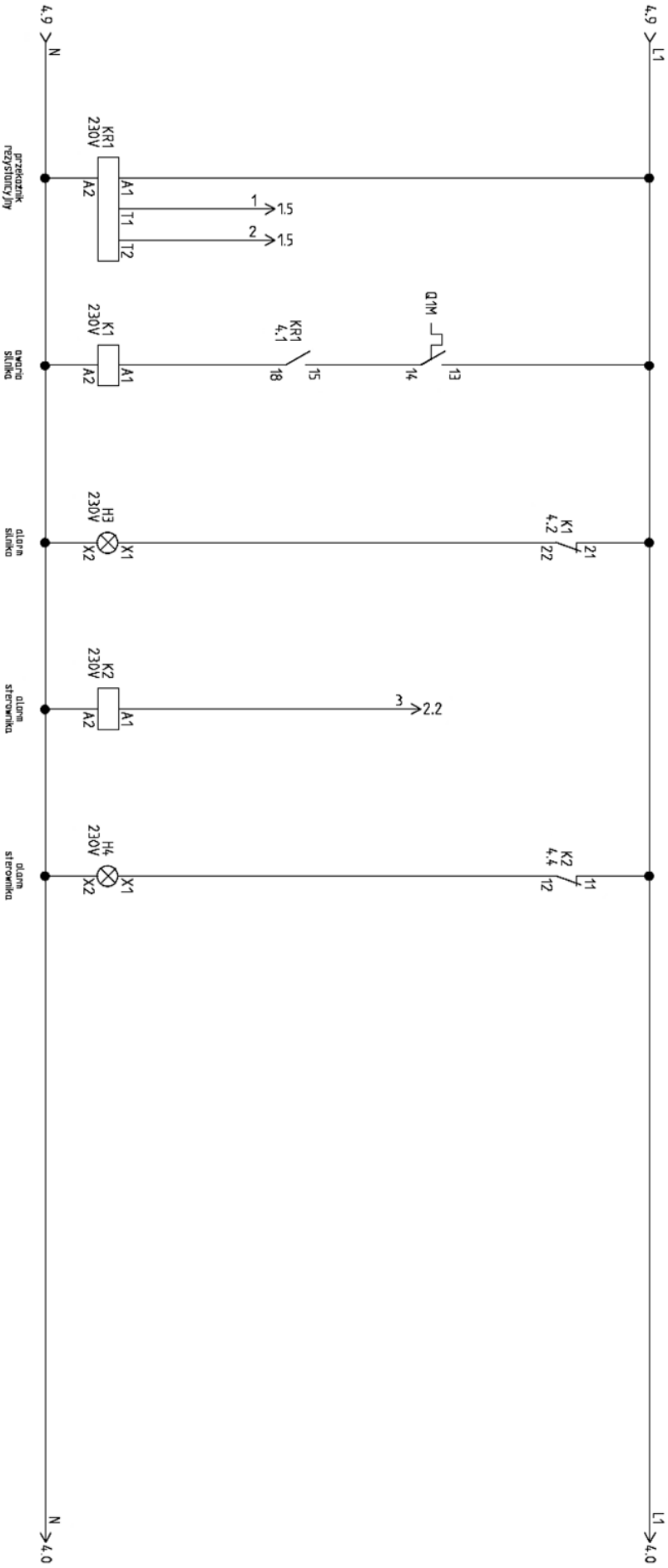


Diagram 25 UFO-A-20000-N, pt. 4 of 4

13.8. DIAGRAM of UFO-A-20000-N/R

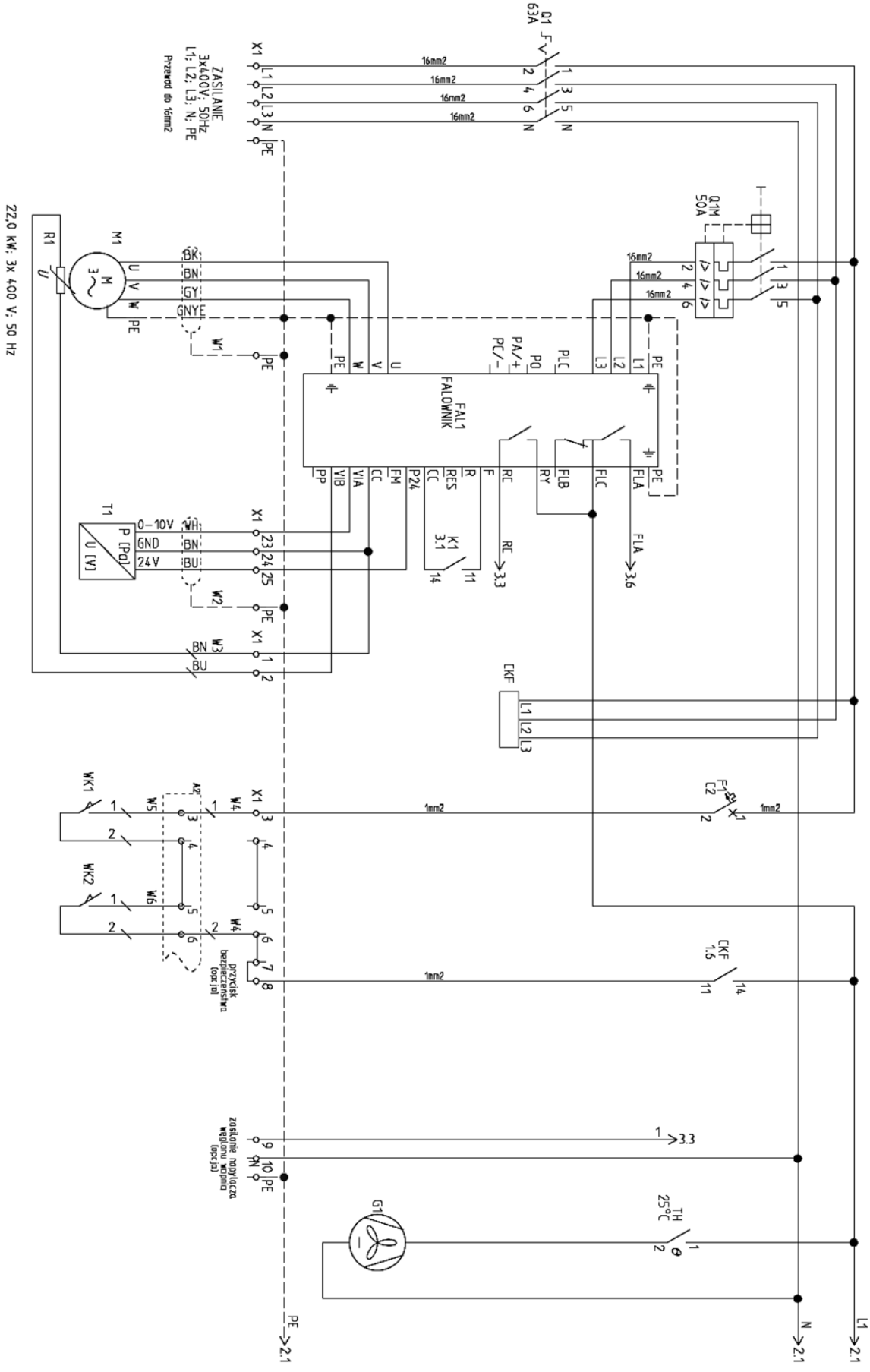


Diagram 26 UFO-A-20000-N/R, pt. 1 of 3

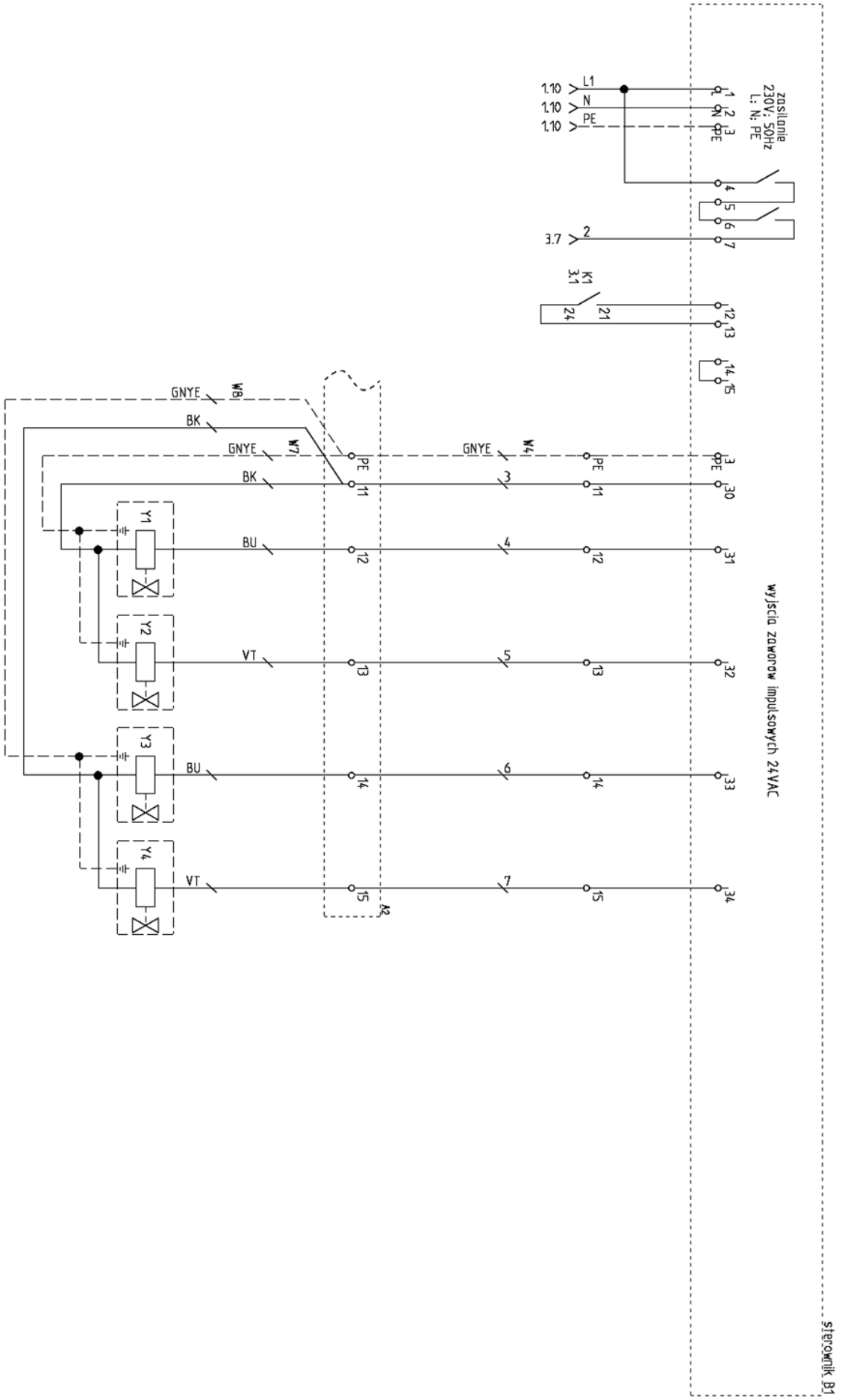


Diagram 27 UFO-A-20000-N/R, pt. 2 of 3

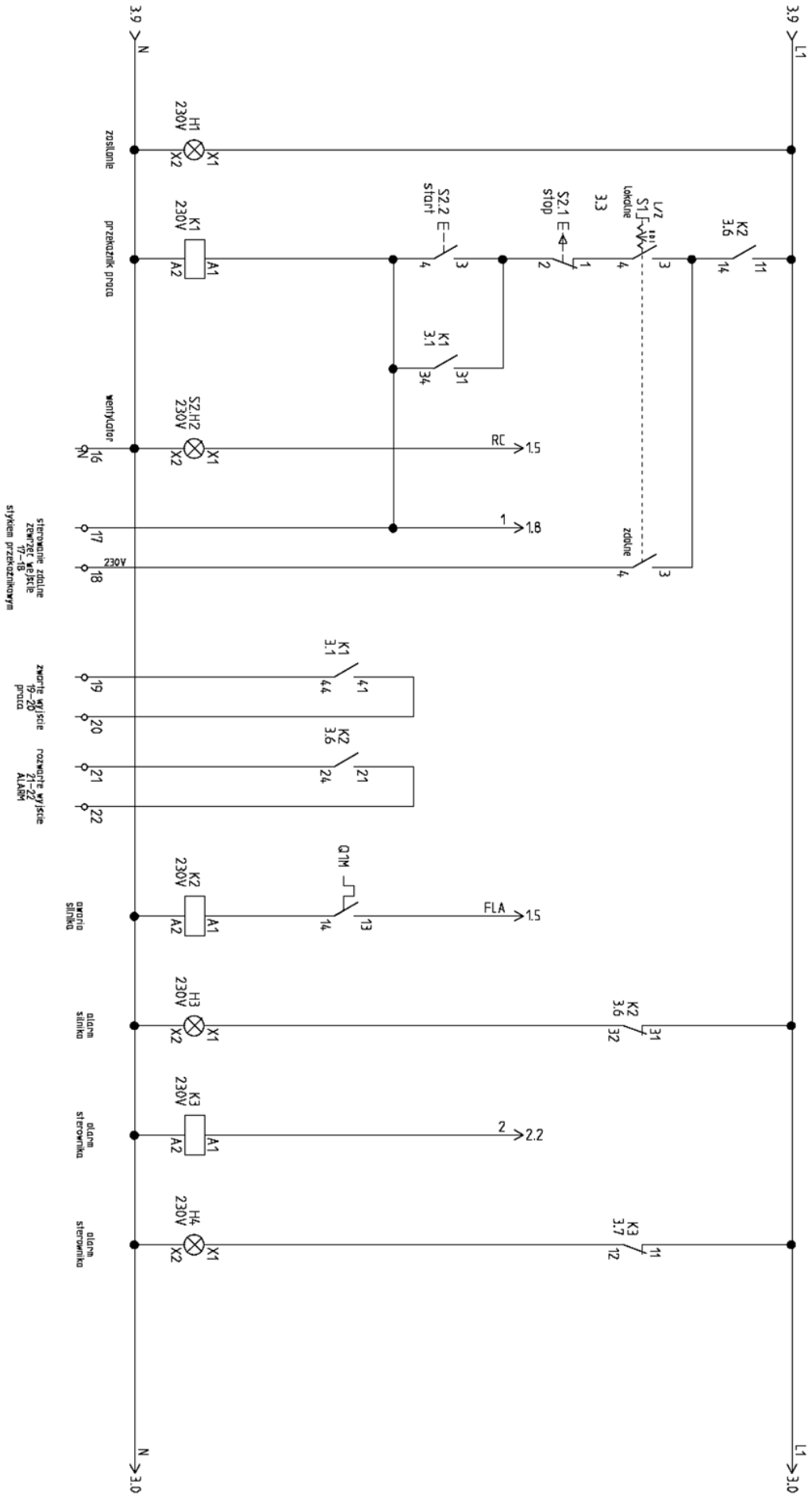


Diagram 28 UFO-A-20000-N/R, pt. 3 of 3

14. START-UP PROTOCOL

! CAUTION

The user is **MANDATORY** to measure the operating parameters of the device during the first start-up. **FILLING IN** and **SENDING** the protocol to the manufacturer is a condition of the **FULFILLMENT OF THE WARRANTY CONDITIONS**.

START-UP PROTOCOL

„Filtering devices and installations"

Date:_____ , hour:_____

The person drawing up the report:	*Structure:*
	Address:
	Contact person:

The name of the device:	*Serial number:*	*Type/model:*

Description of the place of installation of the device, list of supported devices/rooms:

Type of electric unit:

○ integrated ○ internal switchboard ○ switchboard on the device ○ switchgear outside the device

Electric supply:

○ through the power supply and control cabinet ○ direct ○ other: _____

○ **1x230V** measured value _____ **V/50Hz** ○ **3x400V** measured values **L1-L2** _____ **L1-L3**_____ **L2-L3**_____ **V/50Hz**

Checking the operation of the circuit breaker:	○ YES	○ NO	○ not applicable
Checking the fastening of power and control cables:	○ YES	○ NO	○ not applicable
Wiring test performed:	○ YES	○ NO	○ not applicable

Actuators	Supply air damper:	○ works correctly	○ doesn't work properly	○ lack
	Extract air damper:	○ works correctly	○ doesn't work properly	○ lack
	Recirculation air damper:	○ works correctly	○ doesn't work properly	○ lack
	other:	○ works correctly	○ doesn't work properly	○ lack

Pressure switches	Filter pressure switch: _____ setting: _____ ○ works correctly ○ doesn't work properly ○ lack Filter pressure switch: _____ setting: _____ ○ works correctly ○ doesn't work properly ○ lack
Compressed air preparation unit	Filter unit for cleanliness **ISO 8753:2010-6:4:4** ○ YES ○ NO

Pressure transducers	Differential pressure transducer: _____ setting: _____ ○ works correctly ○ doesn't work properly ○ lack
Fan	Fan motor type, designation, manufacturer: _____ Rated power: _____ **kW** Rated current: _____ **A** The connection of the windings on the motor: ○ star Y ○ delta Δ ○ other_____ Electric supply: ○ **1x230V,50Hz** ○ **3x400V,50Hz** ○ other _____ Starting: ○ **direct** ○ **star-delta** ○ **inverter** ○ other, _____ Motor protection switch setting: _____ **A** Inverter settings: - minimum frequency: _____ **Hz** - maximum frequency: _____ **Hz** - thermal protection setting: _____ **A** - setting of the rated motor current: _____ **A** Adjustment: ○ gradual: **gear 1** _____ **Hz, gear 2** _____ **Hz** ○ smooth, of the function: _____ ○ **correct direction of rotation of the rotor** **Measured current consumption: _____ A**
TC/PTC *TC – temperature controller* *PTC - positive temperature coefficient*	TC of the fan ○ connected ○ not connected ○ lack PTC of the fan ○ connected ○ not connected ○ lack

Work simulation	Performance measurement was performed:	○ YES ○ NO
	Full airflow:	_____ **m³/h**
	Minimal airflow:	_____ **m³/h**
	Maximum dustiness:	_____ **g/m³/h**
Working environment	Location	○ inside sheltered from the influence of precipitation ○ outdoors without a roof ○ outdoors with a roof
		The distance between the engine ventilator and the partition is maintained: ○ YES ○ NO Preserved work area and communication space: ○ YES ○ NO

Training

Training ○ carried out ○ not carried out

Leader: Date:

Scope of the training:

○ use of automation	○ filter replacement
○ user's manual of the device	○ user responsibilities
○ health and safety conditions	○ access to controlled points
○ failure reporting procedure	○ complaint protocol

No.	*First name and last name*	*Position*	*Signature*
1.			
2.			
3.			
4.			
5.			
6.			

I declare that all measurements have been made correctly and in compliance with the rules, applicable regulations and technical standards:	*Date and signature of the recording person:*
I declare that I have been acquainted with the use of the device and that I confirm that the device is ready for use:	Date and signature of the person authorized to collect the device:

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