Use and Maintenance Manual

Filtering unit MATRIX-1000-W

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800O56	MATRIX-1000-W-1-S	17.10.2019/EN
800O57	MATRIX-1000-W-1-A	17.10.2019/EN
800O58	MATRIX-1000-W-2-S	17.10.2019/EN
800O59	MATRIX-1000-W-2-A	17.10.2019/EN

Contents:

1. Introductory Remarks

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, installation, start-up and the use of the **MATRIX-1000-W filtering unit**.

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

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

Construction of the **MATRIX-1000-W** filtering unit meets the requirements of the current state of technology as well as the safety and health assurances included in:

– **2006/42/EC Machinery Directive** of the European Parliament and of the Council of May 17th, 2006 on machinery – amending the 95/16/EC (recast) /*Journal of Laws EC L157 of 09.06.2006, page 24*/

– **2014/35/EC Directive** of the European Parliament and of the Council of 26 February, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. /*Journal of Laws EC L96 of 29.03.2014*/

The appliance meets the requirements included in:

– **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21th, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products / *Journal of Laws L 285 of 31.10.2009* /

327/2011 (**EU**) **Regulation** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW
/ *Journal of Laws L No. 90 of 06.04.2011* /

Additionally, the appliance meets following harmonized standard:

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

2. Application

In general, MATRIX-1000-W filtering unit is an efficient solution for cleaning the air from dusts, arising at mobile welding stations. Additionally, it can be applied for extraction of other sorts of dust, of not high emission of contaminants (up to 10 dm^3 a day), under the condition that the dust is dry and does not create explosion hazard.

Due to the applied cartridge filter of polyester fabric, very small dust particles (even smaller than 0,4μm) shall be captured.

3. Reservations of Producer

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

2. Installing of any additional elements that are not belonging to the normal device structure (or accessory set) is not acceptable.

3. Do not undertake any structural changes or constructional modifications on the device on one's own.

4. Protect the flexible elements and pipes of the suction conduit from mechanical damage.

5. Servicing and any repair activities can exclusively be carried out by an authorized person.
6. Do not use the device for conveying the air containing viscous and aggressive impurities that would damage the filters, as well as for dusts that would create explosion hazard.
7. **In the course of operational use, pay attention that any ignition sources, i.e. glowing cigarette butts / embers must not get into the filtering chamber**.

4. Technical Data

Table No.1

Type of the device	Control	Motor rate	Supply voltage	Volume flow	Acoustic pressure level	Weight	Quantity and sort of the installed extraction arms
		[kW]	[V]	[m³/h]	[dB(A)]	[kg]	
MATRIX-1000-W-1-S	manual	0,75	230	1000	66	85	1 x ERGO-L/Z-2-R
MATRIX-1000-W-1-A	automatic	0,75	230	1000	66	85	1 x ERGO-L/Z-2-R
MATRIX-1000-W-2-S	manual	0,75	230	2 x 500	67	88	2 x ERGO-L/Z-2-R
MATRIX-1000-W-2-A	automatic	0,75	230	2 x 500	67	88	2 x ERGO-L/Z-2-R

CAUTION: 1) weight of the devices with extraction arms:
- **MATRIX-1000-W-1** – 99 kg
- **MATRIX-1000-W-2** – 110 kg

2) maximum vacuum – 2600 Pa
3) filtration efficiency – 99,5%
4) cartridge filter – type 105032 PU

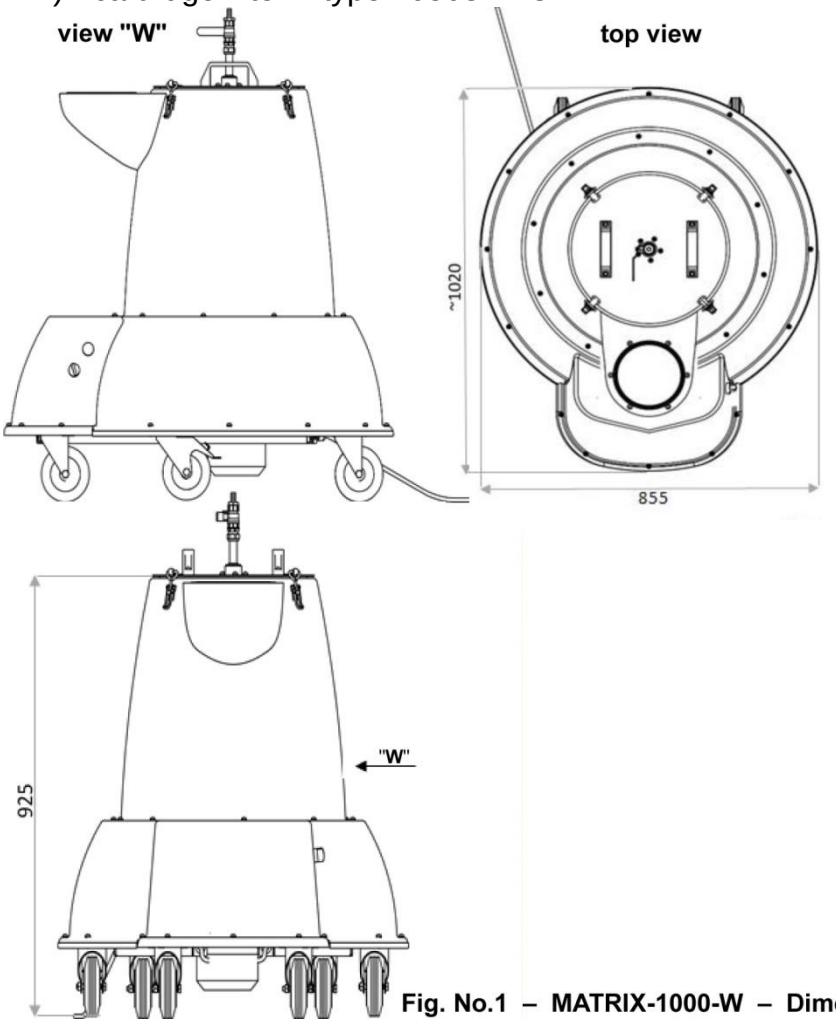


Fig. No.1 – MATRIX-1000-W – Dimensions

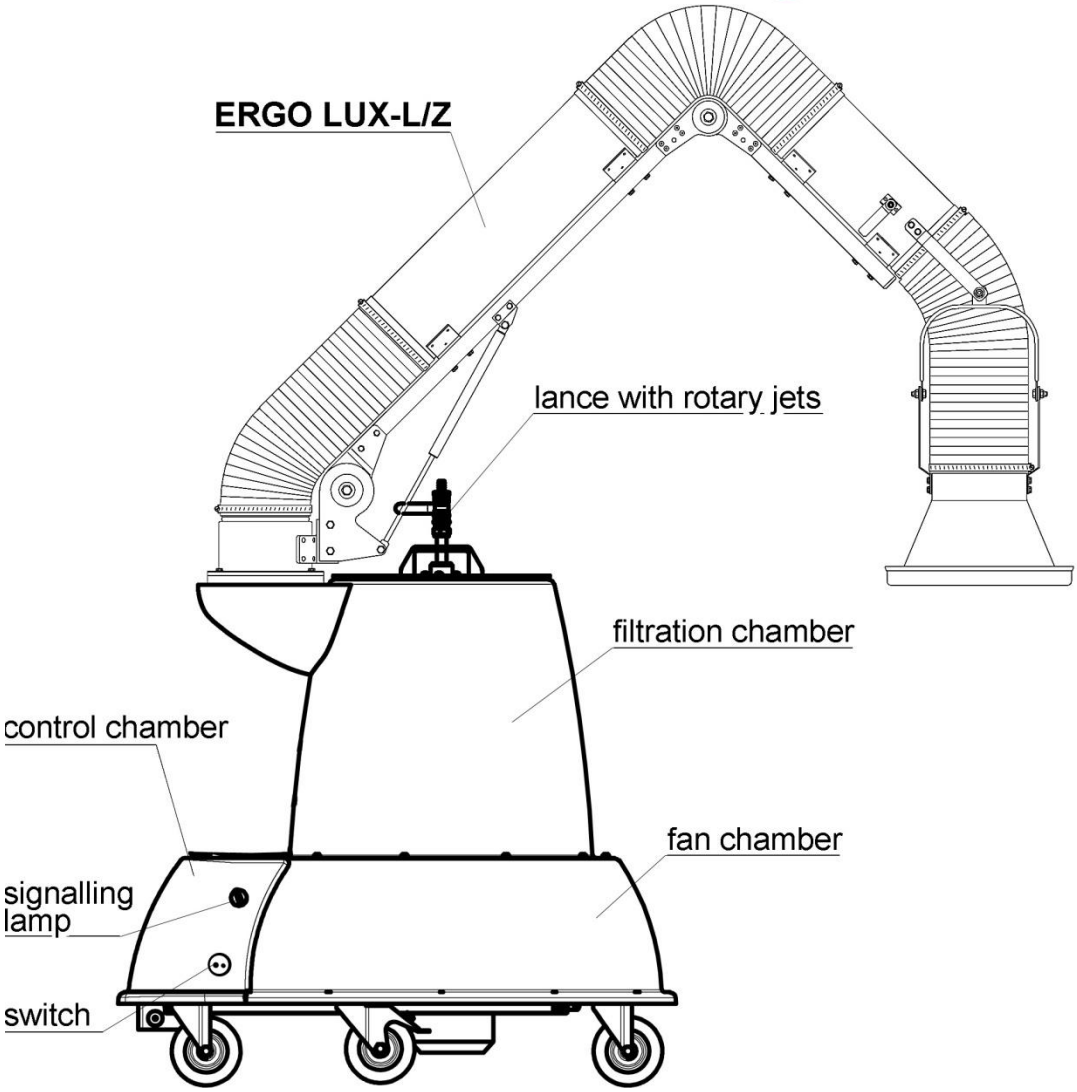


Fig. No.2 – MATRIX-1000-W – Structure

5. Structure and Function

MATRIX-1000-W filtering unit consists of following elements:

- housing – polyester-glass composite,
- radial fan – zinc-coated steel sheet,
- cartridge filter – polyester fabric,
- dust container with a plug,
- rotary jets – to regenerate the cartridge filter,
- bracket to install the extraction arm (two brackets for MATRIX-1000-W-2)
- control unit (version with manual- or automatic control),
- a set of castor wheels – to displace and rotate the filtering unit.

MATRIX-1000-W-1 is designed for installing of one extraction arm of diameter Ø160 mm and workrange 2 metres (ERGO LUX-L/Z-2-R) and generally it is efficient in extraction at one standard welding station (see Fig. No.1).

MATRIX-1000-W-2 is adapted for two extraction arms of diameter Ø160 and workrange 2m (ERGO LUX-L/Z-2-R). This version is appropriate for applications for short time processes of low intensive welding (i.e. for schooling purposes).

MATRIX-1000-W is manufactured in two control options: In the standard version, the fan has to be operated manually. Whereas, in the automatic version, after the appliance is switched on manually, first the electromagnetic valve opens automatically (supplying the compressed air to the rotary jets), subsequently – after several seconds the fan is being switched on automatically.

In the filtering unit is installed a pressure control (pressostat) that activates the signalling lamp – indicating the need of filter regeneration, (in case of manual control), or indicating the necessity of filter replacement, in case of automatic control.
Under the filter is located a fabric container, collecting the dusts dropping from the filter, after regeneration.

6. Assembly and Start-up

Fig. No.3 – MATRIX-1000-W-A Placement of the control elements

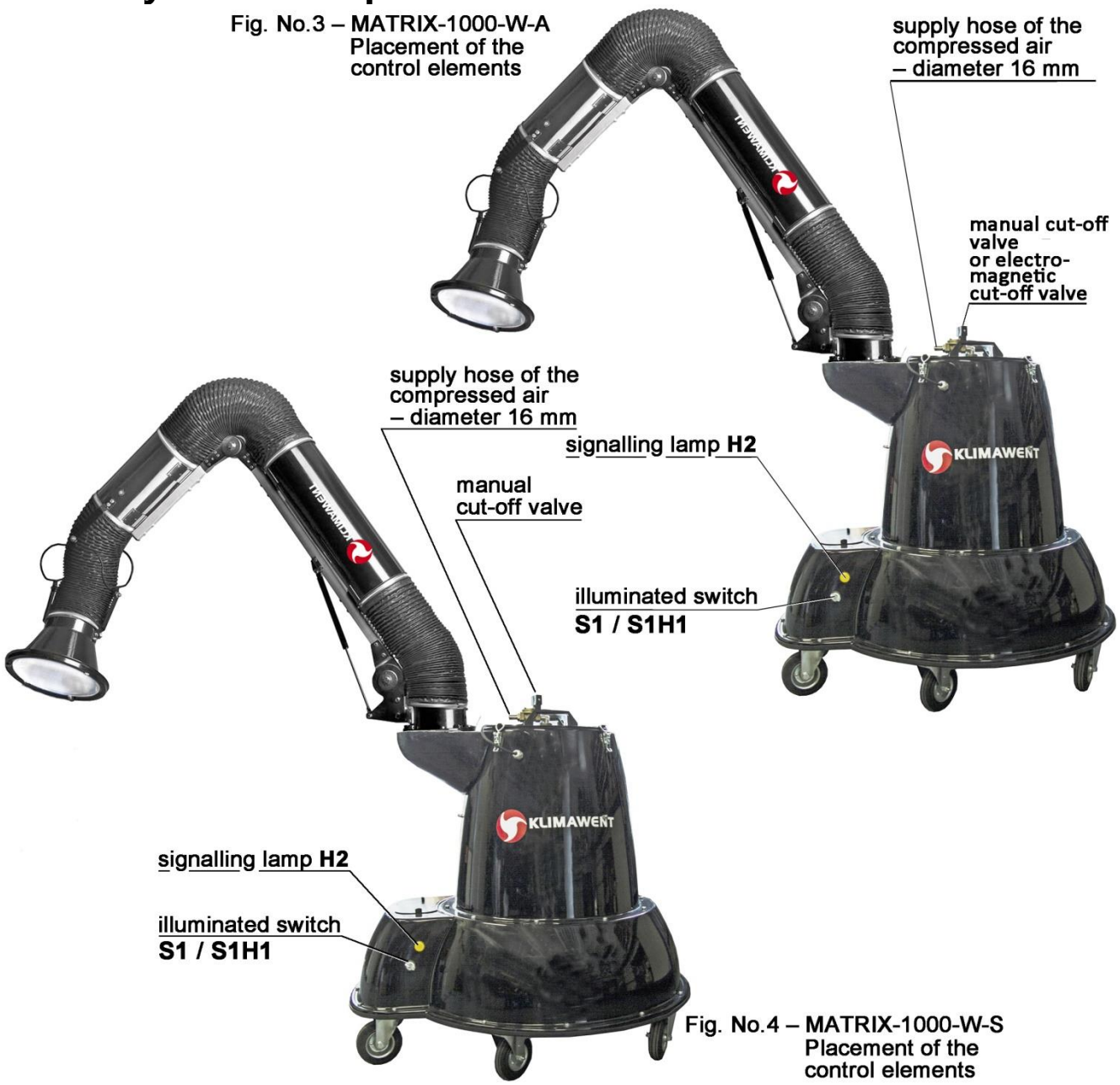


Fig. No.4 – MATRIX-1000-W-S Placement of the control elements

MATRIX-1000-W requires connection to the external compressed air installation of pressure at least 0,6 MPa. The pressure hose ought to be of 16 mm diameter. The appliance is energized with 230V power through a 5 metres long supply cable with a plug.
Prior to operational use, it is important to check the completeness of device and to put it near the workplace. Subsequently, set the hood of the ERGO extraction arm in distance 20 – 30 cm from the emission of contamination. The appliance is started by a switch, installed on the side wall of the control chamber.
In the standard version the fan is operated immediately after the device is switched on, whereas, in the automatic version, the fan starts in 3 seconds (at the same time the filter is regenerated). The outline (placement) of the control elements is illustrate in Fig. No.3, 4.

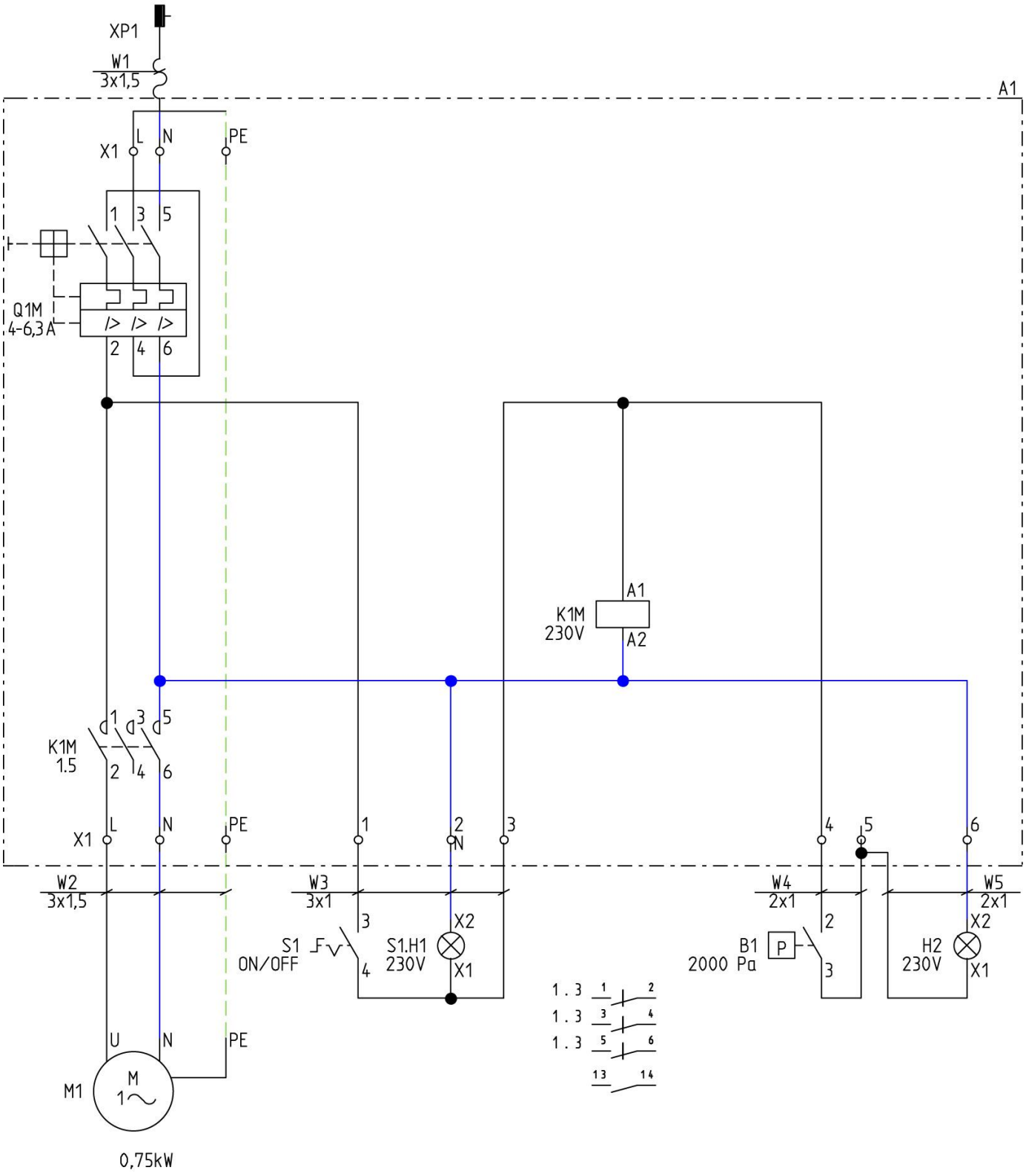


Fig. No.5 – Connection diagram – filtering unit MATRIX-1000-W-S

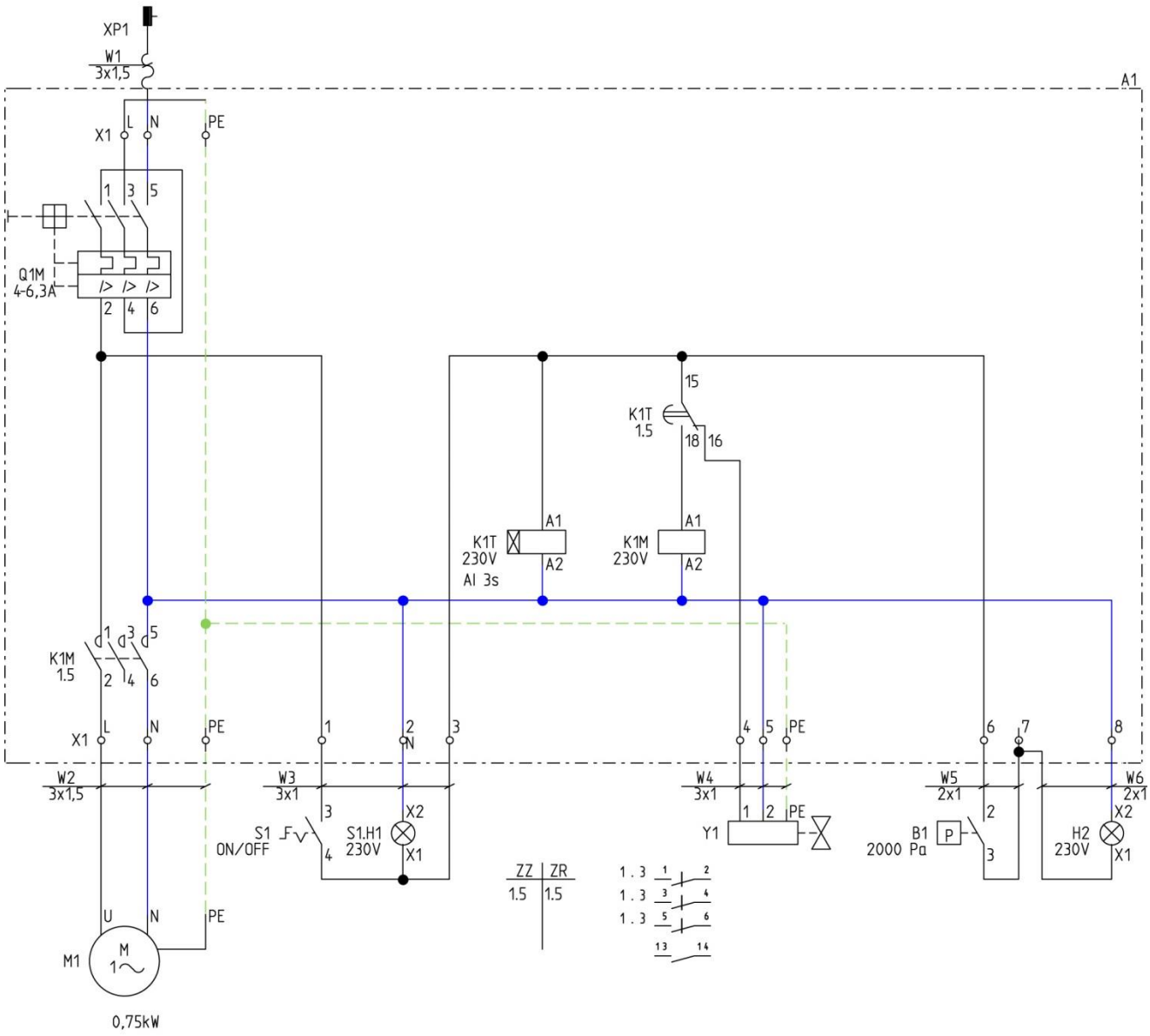


Fig. No.6 – Connection diagram – filtering unit MATRIX-1000-W-A

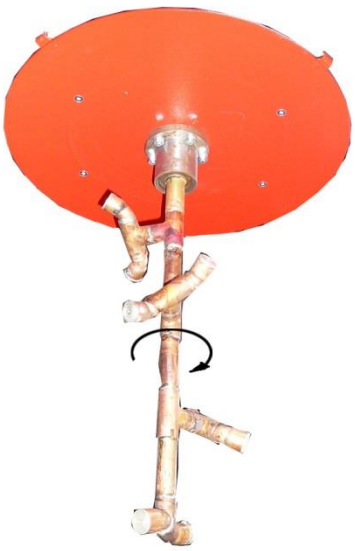
7. Operational Use

For application of the device at a mobile welding post – see Phot. No.1. In to process of filter regeneration, the dust particles are accumulating on the external surface of the filter.
From there the dust particles are periodically truck off by the compressed air, supplied from the rotary jets (nozzles).

Photo No.1 – MATRIX-1000-W-1 – Application

The standard version (**MATRIX-1000-W-1-S** and **MATRIX-1000-W-2-S**) – when the lamp of the pressure control (pressostat) lights on – or the flow efficiency decreases – switch off the device, wait until the fan impeller stops rotating. Subsequently, open the ball valve of the compressed air installation, slide the lance with rotary jets up and down – see Phot. No.2. The lance is placed in the filter cover.

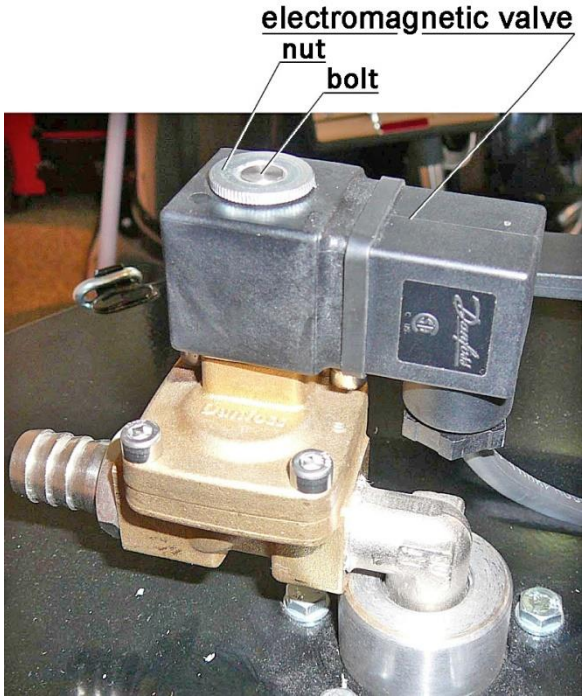
Phot. No.2 System of manual filter cleaning



Phot. No.3 System of automatic filter cleaning

Automatic version (**MATRIX-1000-W-1-A** and **MATRIX-1000-W-2-A**) – when the flow efficiency drops – switch off the device, in two seconds switch it on. The cleaning proceeds automatically (the filters are blown through by eight rotary jets – see Phot. No.3).

The dust accumulated in the container, placed under the filter (in the lower part of the filtration chamber). The container has to be emptied periodically. In order to do this, remove the cover along with the lance (open the 4 clasps). Subsequently, pull out the filter (see Phot. No.5).
In case of automatically controlled device **MATRIX-1000-W-A**, first take off the coil of the electromagnetic valve with the cable and then open the clasp fasteners.



In order to do this, unscrew the nut and take off the electro-valve from the bolt (Phot No.4).

CAUTION:
Do not remove the electromagnetic valve while the power supply is connected, because the electromagnetic valve would burn out.

Necessarily, the cover can be taken off exclusively after disconnection from the power supply.

Photo No.4

Photo No.5 – Withdrawal of the cartridge filter

Having removed the filter, it is important to cover the opening of the dust container with a plug (connected to the container with a hook and loop fasteners). Otherwise the dust would get out of the container.

Take out the bag from the device body by gripping at the four handles (in the upper part of the bag). After the container is emptied of the dust, the cover must be removed and fastened at the device body and additionally secured by hook and loop fasteners. The plug should be stored in the control chamber.
Frequency of container emptying depends on the intensity of operational use of the device and the degree of dustiness / pollution. This should be evaluated during the operation.

8. Troubleshooting Guide

Table No.2

	Problem	Possible reason	Corrective action
1.	The suction efficiency is gradually decreasing	The net of the hood is dirty (the net mesh is clogged)	Clean the net or replace it nor a new
		The filter is not penetrable	Clean the filter – s see Section 7
2.	Sudden vibrations of the fan are occurring	Balance loss	Carry out the impeller balancing
		Impeller damage	Replace the impeller
3.	The ERGO extraction arm is dropping	Improperly adjusted frictional brake	Increase the pressure of the frictional disc of the brake by tightening the adjustment nuts
4.	Inefficient filtration – smoky air is getting out into the room	The lower sealing of the filter is not tight to the bottom of the partition of the filtration chamber	Check the tightness of the sealing, remove the eventual pollution between the sealing and the bottom
5.	Noise (whistle) of the air right beneath the filter cover	Weak clamping force of the filter cover onto the upper sealing of the filter.	Tighten up the clamp yokes until the right tightness of the sealing is obtained.

9. Maintenance

Every 12 months, check the technical state of the fan, according to the principles of the operational use of the electrical driving devices.
Replace the cartridge filter every 12 – 24 months, depending on the intensity of the operational use.
Maintenance of the ERGO LUX extraction arm consists in following steps executed periodically:

- In case when the joint system is losing its self-supporting properties – undertake its adjustment (according to the rules referring the states of failure of the ERGO LUX extraction arms).
- Lubricate periodically the swivel, using solid grease by pressing it into the lubrication nipple placed on the swivel flange).
- Clean the internal surface of the extraction conduits (of the ERGO LUX extraction arms) from the deposited pollutants. Frequency of these operations depends on the intensity of use.

It is recommended to examine the pollution state of the extraction conduits once for 3 months and to clean them when necessary.

10. Occupational Health and Safety

For the safety reasons, connect the device to the power supply according to the being in force regulations within the range of personal protection against the electrical shock and the short-circuit- and overload effects.
Any connection activities ought to be executed by an authorized qualified person.

Before opening the control unit housing, disconnect (unplug) the device from the power supply system.

To get the access to the connection box, it is important to unscrew the mounting screws (fastening the cover of the control chamber) and to disassemble the cover from the device.
ERGO LUX extraction arms shall not cause any hazard, under the condition that they are stably installed on the housing of the filtering unit.
After the work is completed, the filtering unit can be left in the ultimately used position. When it causes barrier or risk to operators/people in the vicinity, set the into the home (not disturbing) position. During the use – observe the regulations of Occupational Health and Safety.

11. Transport and Storage

The device ought to be stored in dry and in areas of efficient ventilation. The space should be free from aggressive substances. During the transport protect the device from overturn and an uncontrol-led displacement/slide. Do not put one device on top of another.
Transport / reloading ought to eliminate the hazard of damage, scratching, indents of the housing. Pay attention that the packages would not get damaged, and the markings on the surface would not get obliterated or detached.

12. Terms of warranty

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

- mechanical damage and dysfunctions caused by User,
- device failures caused during the use which is in contradiction with the purpose of application and with the present Use and Maintenance Manual,
- malfunction resulting from the improper transport, storage or incorrect maintenance.

Infringement of the Section 3 "Reservations of Producer" of the present Use and Maintenance Manual and especially modifications undertaken by User on one's own or use in contradiction with the purpose of application – shall result in the loss of warranty validity.

13. Sample of the Declaration of Conformity

Declaration of conformity EC No. ……..

Manufacturer (eventually the authorized representative / importer):
name: **KLIMAWENT S.A.**
address: **81-571 Gdynia, Chwaszczyńska 194**

A person, authorized for issuing the technical documentation: Teodor Świrbutowicz, KLIMAWENT S.A.
hereby declares that the appliance:
name: **filtering unit**

type/model: **MATRIX-1000-W**
serial number: …….. year of production: ……..

meets the requirements of the subsequent European Directives:

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

The appliance meets the requirements included in:

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- **327/2011** (**EU**) **Guideline** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW */Journal of Laws L No. 90 of 06.04.2011/*

The appliance meets following harmonized standard:

● **EN ISO-12100:2012**	– "Safety of machinery – Basic concepts, general principles for design. Risk assessment and risk reduction"
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place, date

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signature of authorised person

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name, surname, function
of the signatory

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