

Use and Maintenance Manual

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Filtering unit UFO-1-MN-S UFO-1-HN-S



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1. Introductory Remarks

The purpose of the present User's Manual is to supply User with directions within the range of application, installation, start-up and the operational use of the **UFO-1-MN** {**HN**}-**S filtering units**.

Installing, start up and operational use are exclusively admissible after getting acquainted with the contents of the User's Manual.

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

The construction of the **UFO-1-MN** {**HN**}-**S** filtering units meets the requirements of the current state of technology as well as the safety and health assurances included in:

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

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

The appliance meets the requirements included in:

- 2009/125/EC (ErP) Directive of the European Parliament and of the Council of October 21th, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products /*Journal of Laws L285 of 31.10.2009*/
- 327/2011 (EU) Commission Regulation of March 30th, 2011 on implementing the 2009/125/EC Directive of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW /*Journal of Laws L90 of 06.04.2011*/

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

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



2. Application

As a basic appliance **UFO-1-MN** {**HN**}-**S** filtering units have been constructed for cleaning the dust-laden air from the impurities, emitted during manufacturing processes. The device is irreplaceable in the field of removal the dry dust particles (without aggressive compounds or substances creating explosion hazard) as well as fumes arising during the welding processes, gas metal cutting, and other processes in chemical industry, food manufacturing, pharmaceutics, plastic processing.

The appliance is not appropriate for handling humid dusts and aggressive compounds. Maximum temperature of the conveyed air is 60°C.

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 not belonging to the normal device structure (or accessory set) is not acceptable.
- **3**. Any structural changes or modification of the filtering unit, carried out by User on one's own ar not permitted.
- 4. Protect the flexible elements and the suction conduit from mechanical damage.
- 5. Maintenance and repair of the device is exclusively possible to be carried out by an authorised person.
- 6. The appliance is not appropriate for handling the air containing viscous substances neither aggressive substances.
- 7. In the course of operational use, pay attention that any ignition sources i.e. glowing cigarette butts must not get into the filtering chamber.

4. Technical Data

Table No.1

	Dimensions	Supply	Motor	Maximum	Maximum	Aco	ustic	Weight
	(width/length/	voltage	rate	volume flow	vacuum	pressu	re level	
Туре	height)					1m	5m	
	[mm]	[V / Hz]	[kW]	[m ³ /h]	[Pa]	[dB	(A)]	[kg]
UFO-1-MN-S	813/1015/1441	230 / 50	1,1	2000	2500	69	64	160
UFO-1-HN-S	840/942/1282	230 / 50	1,1	2000	2500	69	64	156

- 1 Consumption of compressed air 0,7 Nm³/h
- 2 Maximum rotations of the motor 3000 1/min
- 3 Connection of the external compressed air Ø12 upon quick-connector 12



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Cartridge Filters Table No.2

Туре	Weight [kg]	Filtration efficiency [%]	Remarks
PN105032T	4,2	99.9	Replacement frequency: 1 up to 2 years Quantity of filters: 1

5. Structure and Function

The complete UFO-1-N-S filtering unit consists of subsequent elements:

- a set of filters:
- a set of filters: net filter to capture coarse grained dusts
 - cartridge filter to filtrate fine dusts
 - filter of active carbon impregnated spunbond
 - type ZKG200 absorbing the gaseous contaminants
- filter regeneration system for the cartridge filter
- control unit ZE-UFO-1-N-S
- waste container
- housing on castor wheels in the mobile version UFO-1-MN-S or equipped with bracket beam – hanging version UFO-1-HN-S.

The pneumatic filter regeneration system consists of:

- electromagnetic valve placed on the compressed air tank
- pressure control (pressostat)
- compressed air tank capacity 15 cm³.











The polluted air is sucked in from the place of dust emission, through the extraction arm or extraction installation and forwarded to the filtering chamber. In the filtering chamber the coarse grained dusts are captured by the net filter.

Fine dusts are depositing on the outer surface of the cartridge filter whereas the gaseous contamination is absorbed by the active carbon impregnated spunbond filter. The cleaned air is returned through the fan back to the process room, afterwards.

The pollutant particles are falling into the waste container that ought to be emptied systematically.

The appliance is adapted to be operated with ERGO-L or ERGO-L-R extraction arms or it can be connected directly to the extraction ducting.

6. Assembly and Start-up

The filtering unit is developed for use in closed rooms (indoor application). It is manufactured in two versions: mobile **UFO-1-MN-S** and hanging **UFO-1-HN-S**.

Mobile version UFO-1-MN-S:

- is equipped with castor wheels (fastened to the housing)
- suction duct (see Fig. No.1a) is plugged at the bottom, the ERGO extraction arm must be fastened at the top of the suction duct.
- 1. UFO-1-MN-S has to be placed stably on the even floor surface. Important is free access of user to the control unit and waste container. Additionally the upper cover should be free (no obstacle), as the air outlet of the device must not be blocked.
- 2. Supply dry compressed air, without pollutants, free from oil and humidity, of presssure above 6 bars, but not higher than 8 bars, through the filtration-reduction unit (air dewaterer is not delivered along with the device).
- 3. To energize the device, simply insert the plug into the socket.

The door to the electrical control unit is allowed to be opened by authorized person only.

Hanging version UFO-1-HN-S:

- is equipped with bracket beams (see Fig. No.1b)
- suction duct (see Fig. No.1b) is plugged at the top, the ERGO extraction arm must be fastened at the bottom of the suction duct.
- UFO-1-HN-S filtering unit ought to be installed in vertical position by means of bracket beams, to the wall or supporting column. Holes diameters of the mounting bolts in the bracket beam are Ø18 mm.

The appliance has to be installed at appropriate height in accordance with valid regulations of building construction.

The device will not cause hazard to user, under the condition that it is appropriately and firmly installed. Therefore, before installing check the load carrying capacity of the building element. Additionally, important is free access to the upper cover and revision door in the housing.

- The control unit must be installed in accordance with the current valid regulations. Additionally, important is free access of user to the control unit. Energizing: the hanging version is not equipped with the electrical supply plug.
- **3**. Supply dry compressed air to the device, as it is represented in Point 2 above.



Within the scope of device preparation to the operational use – connect the device to the electrical supply mains and make all the connections to the control unit, according to the enclosed Connection Diagrams (see **Fig. No.2**, **No.3**).

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Connection to the power system should be executed by an authorized person with electrical qualifications.



CAUTION:

- 1. Insulation class: I
- 2. Ingress protection of the device IP44
- **3**. Additional electric shock protection: automatically disconnects the power supply.

Setting of the motor protective switch – Q1M: $I_t = 1,1 \times I_n$ where: I_n means rated current of the motor

Fig. No.2 – UFO-1-MN-S, Connection Diagram



SUPPLY 230V; 50Hz L; N; PE



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Fig. No.3 – UFO-1-HN-S, Connection Diagram





Туре	Data			
	A [mm]	Z [kN]	M _{max} [Nm]	weight [kg]
UFO-1-HN-S	720	5,9	790	165

7. Operational Use

ZE-UFO-1-N-S control unit is delivered along with the device and serves as a control item for the appliance.

CAUTION: The control unit for the mobile version is equipped with 5 metres long power supply lead, ended with a plug

Function of the ZE-UFO-1-N-S control unit (Fig. No.5)

START-UP OF THE DEVICE:

- 1. Open the valve of the external compressed ait installation.
- 2. In the version UFO-1-MN-S insert the XP1 into the supply socket.
- 3. Start the power supply: set the S1 switch into position "ON" this is indicated by the white lamp S1.H1 in the "SUPPLY" switch.
- 4. The filter cleaning system is in operation as long as the power supply of the device is switched on. The time relay **K1T** emits every 4 minutes an impulse 0,5s of opening of the electromagnetic valve **Y1** in order to clean the filter with compressed air.
- 5. By pressing the **S4** button "**MANUAL REGENERATION OF THE FILTER**" user starts the filter regeneration. The quantity of button pressings is up to the device operator.





Fig. No.5 – ZE-UFO-1-MN-HN-S, case of the apparatus

FUNCTION OF THE DEVICE:

- Press the S3.2 button "START"; the extraction fan is starting, this is indicated by the green S3.H2 lamp "FAN".
- 2. The device is in operation, the filter regeneration occurs every 4 minutes.

HOW TO SWITCH OFF THE DEVICE:

- 1. Press the **S3.1** button "**STOP**"; the **S3.H2** lamp "**FAN**" goes off. The filter regeneration system is further in operation.
- 2. Disconnect the power supply; set the S1 switch into position "OFF" the white S1.H1 lamp "SUPPLY" goes off. The filter regeneration system stops its function.
- 3. In the version **MN-S** take out the supply plug **XP1**.
- 4. In case of emergency, press the S2 button "FAILURE STOP".

High efficiency of the automatic filter regeneration system (repeated impulses of compressed air) guarantees durability and reliable, longlife function of the cartridge filters and limits the maintenance to the minimum.

During the operational use the filter is periodically regenerated by impulses of compressed air. The **K1T** time relay is adjusted on subsequent parameters:

- impulse time T1 0.5s
- idle time break between the impulses **T2 4 min**.



CAUTION:

Do not change the pre-adjusted times in the relay. If it is necessary to change, please get into contact with manufacturer – KLIMAWENT S.A.

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In case when decreased intake air volume is noticed, (despite the correctly functioning filter regeneration system), take out the cartridge filter of the device and check if it is not damaged and clean it from the accumulated pollutants.

The filter can be cleaned in a "dry" way – by blowing it with a compressed air stream. **When the filter is damaged, replace it for a new one.** The waste container must be periodically emptied.

Once a week, it is recommended to take out the filters of the device and clean them by means of compressed air stream.

The construction of the fan and the motor enables reliable function of the unit without the everyday maintenance. In case of an incorrect function of the device, it is important to undertake its technical revision (see Section 8). Any repairs and revisions of the device have to be carried out exclusively after its disconnection from the power supply.

Instruction and adjustment for the ERGO extraction arms:

Prior to the operational use, install by screws the ERGO extraction arm to the device and subsequently:

- Set the hood inlet in a suitable position, as appropriate for fume and dust extraction and simultaneously not causing barrier to the operator's movement and not limiting the field of view at the workplace.
- By turning the shut-off damper lever adjust the volume of the extracted air in such a degree that eliminates efficiently the fume and dustiness and not causes excessive draught.
- During the operational use, the position of the hood, extraction arm and the damper can be changed many times in order to adjust the device most accurately to the needs of User.

After the completed work with the ERGO extraction arms

- Leave the extraction arm in the ultimate used position, if this does not cause barrier to the personnel / User.
- Switch off the fan or the extraction ducting. In application where the device works with a stationary extraction system, close the shut-off damper on the hood.

Caution:

In each joint of the ERGO extraction arm is built in a frictional element to obtain the balance and self-supporting properties of the extraction arm, to keep a stable position of the arm during the use.

The adjustment of the elements is executed by increasing or reducing the pressure of the disk springs onto the frictional elements.

To increase the frictional moment tighten up the nuts, whereas releasing of them causes reduction of the moment. **Fig. No.7**



Adjustment of the frictional elements in the subsequent joints ought to be carried out in such a way that guarantees the balance and self-supporting features of the device (which is important to keep a suitable and stable arm position during the operation), and on the other hand, this cannot cause any excessive resistance while User is changing the position of the extraction arm.



8. Troubleshooting Guide

Table No.4

	Problem	Possible reason	Corrective action
1.	Drop in intake volume flow.	The filter is clogged.	Clean the surface of the filter, removing the dusts by a "dry mode" (see Section 7).
2.	Some dust is emerging in the chamber of the electromagnetic valves.	The cartridge filter is damaged.	Replace the faulty filter for a new.
3.	Sudden vibrations of the fan are occurring.	The impeller is damaged.	Replace the impeller for a new one.
4.	The ERGO extraction arm is falling.	Improperly adjusted frictional brake in the joint.	Increase the tension upon the frictio- nal disks of the brake in the joint by tightening the adjustment nuts.
5.	The ERGO extraction arm is automatically setting (tur- ning) always into the same position.	The rotation axis of the swivel is not positioned vertically.	Carry out the positioning of the mounting flange of the ERGO extraction arm to set the rotation axis vertically, or put the whole device stably on the even floor.
6.	The extraction fan is not starting.	Protections Q1M , F1 , F2 are disconnected.	Examine the reasons of activations of the protections. Switch on the mentioned protections.

9. Maintenance

High efficiency of the automatic filter regeneration system (repeated impulses of compressed air) guarantees durability and reliable, longlife function of the cartridge filter and limits the maintenance to the minimum. Filter cleaning proceeds automatically without interruption of the filtering process and, at the same, not reducing its efficiency.

In general, the device construction enables its operational use without the continuous, everyday technical supervision. In case when any defective function is by noise or visually noticed, undertake technical revision, (see Table **No.4**).

Within the scope of periodical controls, every 12 months, check the technical state of the fan, according to the operational rules for the electrical driving devices. During the maintenance check the mechanical, electrical and pneumatic connections.

WARNING Technical revisions have to be carried out exclusively after the device is disconnected from the electrical power supply system.

Periodically, remove the water and pollutants from the compressed air tank.

Once a year control the state of the tank, especially check if there are corrosive changes reducing the thickness of the tank walls or its bottoms. In case of corrosion losses replace the tank for a new one.



To replace the cartridge filter:

- disconnect the power supply cable,
- unscrew the clamps and remove the cover of the filter chamber,
- turn the cartridge filter clockwise in order to disconnect the bayonet joint between the filter and the housing,
- pull out the cartridge filter, filter re-installing proceeds oppositely, in a reverse sequence of the above mentioned steps.

Caution:

After the side cover is taken off, it is also possible to take out, check and eventually clean the net filter.

To replace the filter of active carbon impregnated spunbond (non-woven) make steps:

- unscrew the knob in the upper cover,
- take off the upper cover,
- withdraw the spunbond filter,
- re-installing proceeds in opposite steps sequence.

The replacement frequency of the cartridge filter depends on the technical conditions of the operational use.

The maintenance activities on the ERGO extraction arms consist in periodically executed steps mentioned below:

- In situation when the extraction arm loses the self-supporting properties, it is important to make adjustment according to the rules given in the clause referring the states of failure.
- Lubricate the swivel periodically with a solid grease by pressing it into the lubrication nipple located in the swivel flange.
- Clean the internal surfaces of the extraction ducts (of the ERGO extraction arms) from the deposited impurities. Frequency of the cleanings depends on the intensity of operational use.

Once per 3 months, it is recommended to check the pollution state of the extraction ducts and clean them when necessary.

10. Occupational Health and Safety

Start up and the operation use is only admissible after getting acquainted with the contents of the present manual.

The hanging version – **UFO-1-HN-S** shall not cause any risk under the condition that it is firmly and correctly mounted to the wall or other constructional element of the building. **Prior to installing check the load carrying capacity of constructional element of the building where the device shall be mounted**.

For safety reason the device has to be connected to the power supply in accordance with the being in force regulations within the range personal protection from electrical shock and protection against short-circuit- and overload effects.

WARNING Any activity related to connection to the electrical power system ought to be carried out only by a person with testified qualification. Before opening the housing – necessarily disconnect the ZE-UFO-1-N-S from the power supply



The ERGO extraction arms shall not cause any risks under the condition that they correctly and firmly installed to the housing of the filtering unit.

11. Transport and Storage

The UFO-1-MN/HN-S filtering unit ought to be transported on pallets protected with foil against the atmospheric factors. For the transport time it is important that the device is placed vertically and protected from an uncontrolled slide (displacement), and from overturn.

The device has to be stored in a dry room of proper ventilation.

12. Terms of warranty

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

- device failures caused during use which was in contradiction with the purpose of operational use and the present Use and Maintenance Manual,
- mechanical damage and dysfunctions caused by User, .
- technical changes, modifications, adaptations of the device, introduced by User • on one's own
- damages being effected during improper transport, storage or incorrect maintenance, •
- Inefficiency following from the normal operational exhaustion/wear.

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



Technical data:

The tank has been executed according to the requirements in the standard EN 286 part 1

- Capacity: 15 dm³
 Maximum operating pressure: 12,5 bar
- 3. Test pressure: 18,75 bar
- 4. Maximum operating temperature: +100°C
- 5. Minimum operating temperature: -20°C
- 6. Anti-corrosion protection: internal and external

0.5	
2,5	2,2
2,1	2,0
355J2G3	S355J2G3
	2,5 2,1 355J2G3

Index of the product: 848 001 EN1



Instruction for the compressed air tank

I. Marking of the tank

- The tank has following designations:
- 1. Marking of conformity **CE 0045**
- 2. Data on the nominal plate including:
 - **a.** maximum operating pressure ($\mathbf{P}_s 12,5 \, \text{Pa}$)
 - **b.** test pressure $(\mathbf{P}_{h} 18,75 \text{ Pa})$
 - c. maximum operating temperature (T_{max} +100°C)
 - **d.** minimum operating temperature (**T**_{min} -20°C)
 - **e.** functional capacity of the tank $(V 15 \text{ dm}^3)$
 - f. real thickness of the bottom wall $e_{am} = 2.4$ mm
 - **g.** real thickness of the barrel wall $e_{as} = 2,0 \text{ mm}$
 - **h.** name or company marking of the producer
 - i. year of manufacturing 2006
 - j. internal surfaces protected against corrosion letter "F"
 - **k.** marking **EN 286-1**
 - I. sign KJ-1

II. Range of application

The tank is designed for use in pneumatic installations. The operating medium is the compressed air of operational pressure equal or less then pressure **Ps**.

III. Conditions of installing and maintenance

 The tank can be installed in the pneumatic installations where the operational medium is the compressed air and the highest pressure does not exceed the operational pressure PS of the tank.
 This condition ought to be fulfilled by the company which is

installing the tank.

- **2.** The tank ought to be installed in a way ensuring durability, tightness and in such a configuration that the outlet connection is positioned at the bottom location.
- **3.** The tank has to be fastened to the supporting structure and positioned in such a location where it would not be exposed to outer factors and to direct mechanical destructions and simultaneously during the operational use it should not be exposed to vibrations that could contribute to a fatigue crack.
- 4. During any technical revision or repair of the pneumatic installation it is important to check the correctness and state of the tank mounting (screw connections, welds and their technical state).
- If there is a damage in the wall (crack, indentation, infringement of the mounting stability, etc.) and the tank was relatively exposed to extreme temperatures that could change the structure of the wall material

 it ought to be immediately excluded from operational use.
- 6. Do not disassemble the tank or its structural parts, while it is under pressure or the supply valve of compressed air is open. Any works related to maintenance or cleaning the tank ought to be executed when the tank is emptied and disconnected from the control unit of the installation.
- 7. Do not execute any welding works close to the tank.
- 8. During the technical revisions the tank ought to be emptied from condensate water through the drainage device in the bottom part of the tank.
- **9.** For the operational life of the tank is granted 10 years of warranty due to thickness loss of the walls that under corrosion could occur.

Any changes or modifications on the tank and operational use that is inconsistent to purpose of application are forbidden.



13. Sample of Declaration of Conformity

Declaration of Conformity EC No.

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

A person, authorized for issuing the technical documentation:

hereby declares that the appliance: name: **Filtering unit**

type/model: **UFO-1-MN-S**, **UFO-1-HN-S** serial number: year of production:

meets the requirements of the subsequent European Directives:

- 2006/42/EC Machinery Directive of the European Parliament and of the Council of 17 May, 2006 on machinery – amending the 95/16/EC (recast) /Journal of Laws EC L157 of 09.06.2006, page 24/
- 2014/35/EC Directive of the European Parliament and of the Council of 26 February, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
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• PN-EN ISO 13857:2010	 "Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs". 			
• PN-EN 60529:2003	- "Degrees of protection provided by enclosures (IP Code)"			
• PN-EN 61439-1:2011	 "Switchgear and controlgear assemblies – Part 1: General resolutions" 			
place, date	signature of authorised person	name, surname, function of the signatory		
KLIMAWENT S.A. Supported Employment Enterprise 81-571 Gdynia, ul. Chwaszczyńska 194 phone: +49 58 829 64 80 email: klimawent@klimawent.com.pl www.klimawent.com.pl	District Court Gdańsk-Północ in Gdańsk, VII Wydział Gospodarczy of the National Register of Court KRS 0000308902 company stock 13.779.200 zł paid in total	NIP: 958 159 21 35 REGON: 220631262 Bank Account: Bank Zachodni WBK S.A. 56 1500 1025 1210 2007 8845 0000		

NOTES:





P roducer: KLIMAWENT S.A. 81-571 Gdynia, ul. Chwaszczyńska 194 tel. 058 629 64 80 fax 058 629 64 19 e-mail: <u>klimawent@klimawent.com.pl</u> www.klimawent.com.pl

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