

# Use and Maintenance Manual



## Fan chamber **WPA-BOX-14**

## Contents:

|     |  |    |
|-----|--|----|
| 1.  | <b>Introductory Remarks</b> .....                    | 3  |
| 2.  | <b>Application</b> .....                             | 4  |
| 3.  | <b>Reservations of Producer</b> .....                | 4  |
| 4.  | <b>Technical Data</b> .....                          | 4  |
| 5.  | <b>Structure and Function</b> .....                  | 8  |
| 6.  | <b>Assembly and Start-up</b> .....                   | 10 |
| 7.  | <b>Operational Use</b> .....                         | 12 |
| 8.  | <b>Troubleshooting Guide</b> .....                   | 12 |
| 9.  | <b>Maintenance</b> .....                             | 12 |
| 10. | <b>Occupational Health and Safety</b> .....          | 13 |
| 11. | <b>Transport and Storage</b> .....                   | 13 |
| 12. | <b>Terms of warranty</b> .....                       | 13 |
| 13. | <b>Sample of the Declaration of Conformity</b> ..... | 14 |

## 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 operational use of the **WPA-BOX-14 fan chamber**.

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

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

The construction of the **WPA-BOX-14 fan chamber** meets the requirements of the current state of technology as well as the safety and health assurances included in:

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

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21<sup>th</sup>, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products / *Journal of Laws L 285 of 31.10.2009 /*
- **327/2011 (EU) Regulation** of March 30<sup>th</sup>, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW / *Journal of Laws L No. 90 of 06.04.2011 /*

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

- |                               |   |
|-------------------------------|---|
| ● <b>PN-EN ISO-12100:2012</b> | - "Safety of machinery. Basic concepts, general principles for design. Risk assessment and risk reduction". |
| ● <b>PN-EN 60204-1:2010</b>   | - "Safety of machinery. – Electrical equipment of machines. Part 1: General requirements".                  |
| ● <b>PN-EN 60034-1:2011E</b>  | - "Rotating electrical machines – Part 1: Rating data and parameters".                                      |
| ● <b>PN-EN ISO 5802:2008E</b> | - "Industrial Fans – Performance testing in situ of installing".  |
| ● <b>PN-EN ISO 13857:2010</b> | "Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs".       |

## 2. Application

Fan chambers are developed for application in installations of mechanical air-supply- and extraction ventilation, of rooms and workplaces with particular requirements of silent work. The chambers can work with filtering units. They are appropriate for installations both – inside- and outside the building.

## 3. Reservations of Producer

- A. Manufacturer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.
- B. Do not install any additional elements not belonging to the normal device structure or accessory set.
- C. Any structural changes or device modifications on one's own are not permitted.
- D. Protect the appliance's housing from mechanical damage.
- E. **The device cannot be used for conveying the air that is contaminated with a mixture of flammable substances in form of gas, vapour, mist and dust that in connection with the air create explosive atmosphere.**
- F. Do not use the device for conveying the air containing viscous impurities that could accumulate (build up) on the device surface, especially on the impeller.
- G. Additionally, do not use the device for forwarding the air with aggressive pollutants which will destructively effect the device structure.
- H. During the use, the maximum impeller rotations should not exceed nominal rotations.
- I. Producer is not responsible for wounds, injuries, body laceration experienced by User or personnel during the improper operational use.

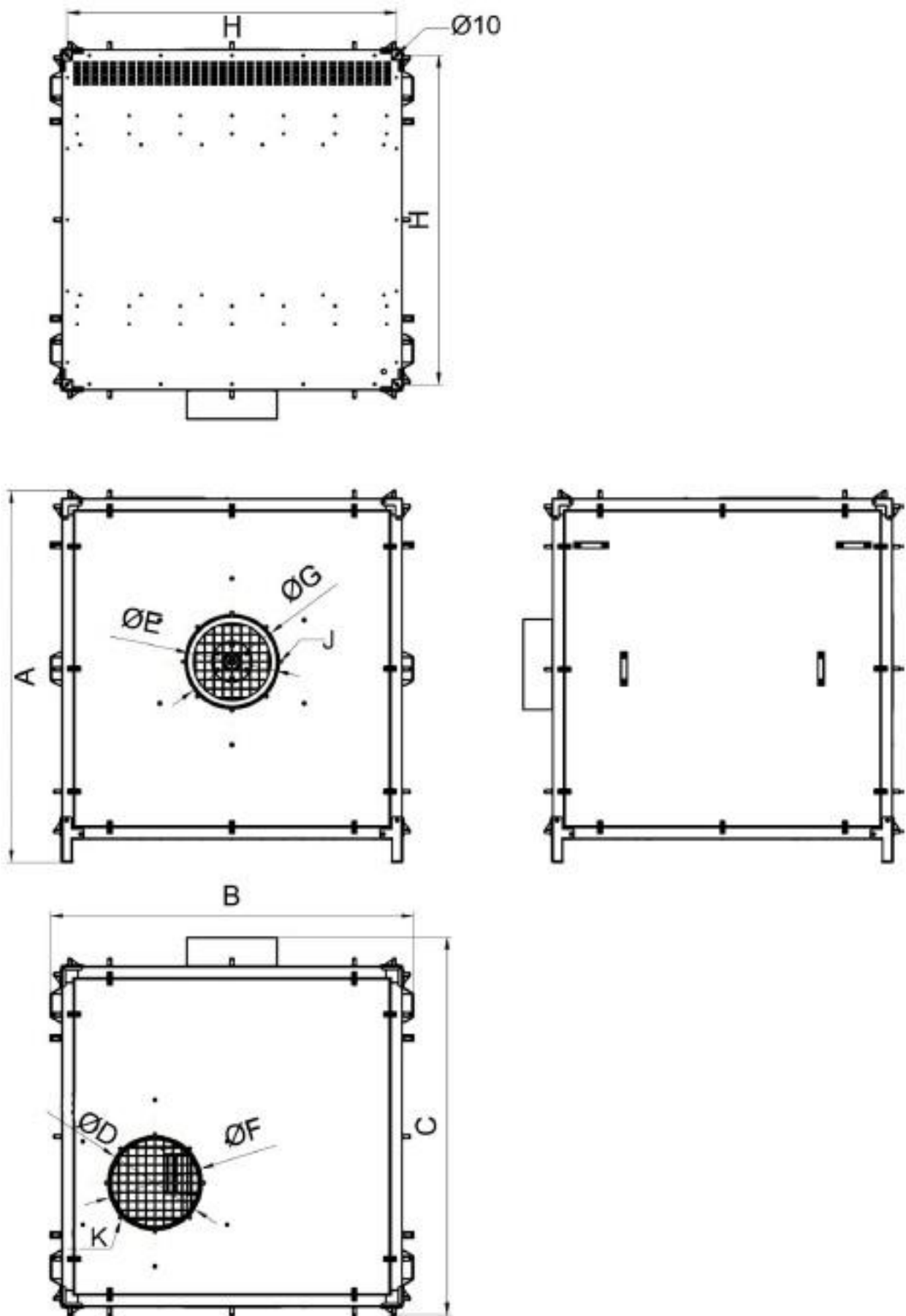
## 4. Technical Data

Table No.1

| Type of the fan   | Synchronous rotations | Supply voltage | Motor rate | Ingress protection | Acoustic pressure level [dB(A)] from distance* |    | Maximum volume flow | Maximum vacuum | Weight |
|-------------------|-----------------------|----------------|------------|--------------------|--|----|---------------------|----------------|--------|
|                   |                       |                |            |                    | 1m   | 5m |                     |                |        |
| <b>WPA-BOX-14</b> | 3000                  | 3x400          | 15         | 54                 | 80   | 71 | 23100               | 4000           | 530    |

\* Measurement has been carried out with the T-WPA-BOX silencer, installed at the inlet and outlet of the fan chamber.

1. Maximum temperature of the conveyed air is +60°C, whereas maximum temperature within the work area +40°C.
2. Maximum dustiness of the conveyed air should not exceed 0,3 g/m<sup>3</sup>.



**Fig. No.1 – Dimensions of the fan chamber – WPA-BOX-14**

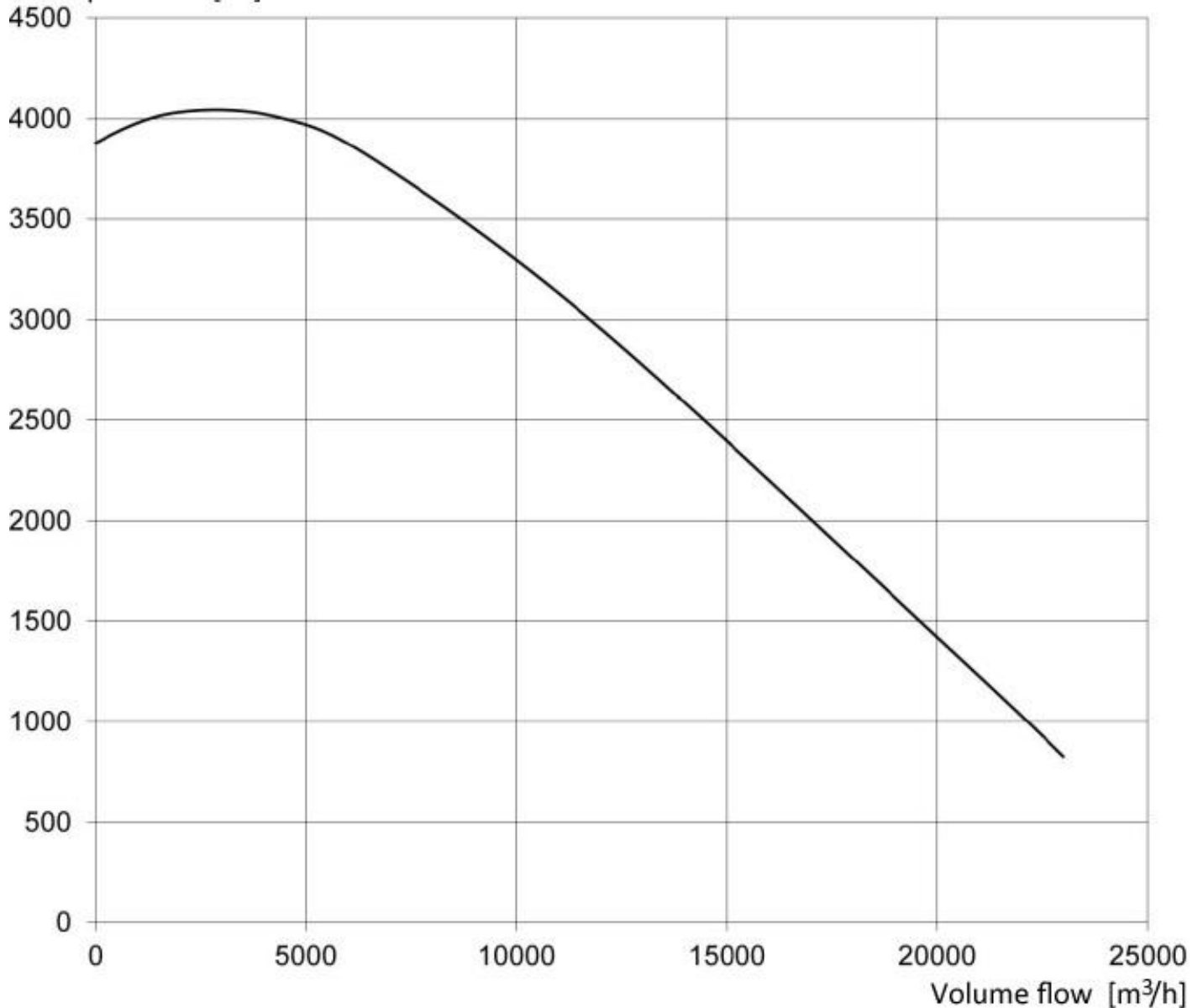
Caution: The dimension H is pertaining to holes spacing Ø10 used for anchorage the chamber

**Table No.2 – Dimensions of the fan chamber**

| Type              | A<br>[mm] | B<br>[mm] | C<br>[mm] | Connection diameters |            | Pitch diameters of the connections |            | H<br>[mm] | J<br>[mm] | K<br>[mm] |
|-------------------|-----------|-----------|-----------|----------------------|------------|------------------------------------|------------|-----------|-----------|-----------|
|                   |           |           |           | ØD<br>[mm]           | ØE<br>[mm] | ØF<br>[mm]                         | ØG<br>[mm] |           |           |           |
| <b>WPA-BOX-14</b> | 1641      | 1605      | 1666      | 400                  | 400        | 430                                | 430        | 766       | M8        | M8        |

**Flow chart**

Static pressure [Pa]

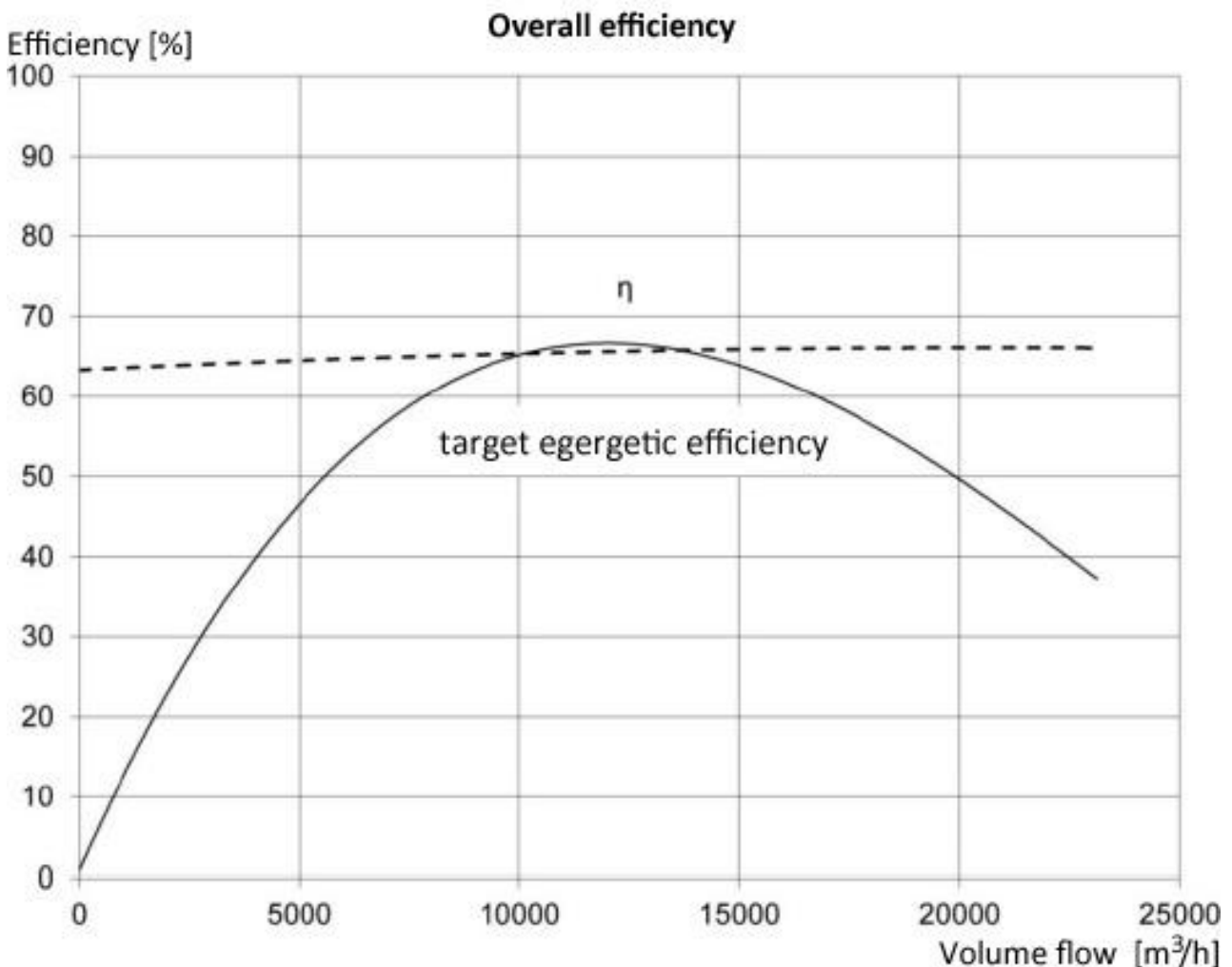

**Fig. No.2 – Flow chart of the fan chamber – WPA-BOX-14**

#### 4.1 Information on energetic efficiency of fans according to Guidelines of European Commission EU No. 327/2011

- 1) Overall efficiency ( $\eta$ ) – see flowcharts and Table No.3,
- 2) Measurement category – **D**,
- 3) Efficiency category – **total**,
- 4) Efficiency coefficient – **N = 64** (according to the Regulation),
- 5) Rotational speed governor – **not applied**,
- 6) Product name, serial number, place of production, year of production – on the nominal data plate of the fan.
- 7) Rated power consumption of the motor [kW] – see **Table No.1**; flow efficiency and pressure in the energy efficiency optimisation point – see **Table No.3**,
- 8) Rotations per minute – see **Table No.1**,
- 9) After the period of operational use, follow steps according to the regulations on waste disposal.
- 10) The fans have been fitted with silencers to reduce their effect on the environment.
- 11) Measurement has been carried out according to PN-EN ISO 5801:2008E “Industrial fans – Performance testing using standardised airways”

**Table No.3 – Parameters in the energy efficiency optimisation point**

| Type of the Fan | Overall efficiency [%] | Flow rate [m <sup>3</sup> /h] | Fan pressure [Pa] |
|-----------------|------------------------|-------------------------------|-------------------|
| WPA-BOX-14      | 66                     | 12650                         | 2710              |



**Fig. No.3 – Chart of the energetic efficiency of the fan chamber – WPA-BOX-14**

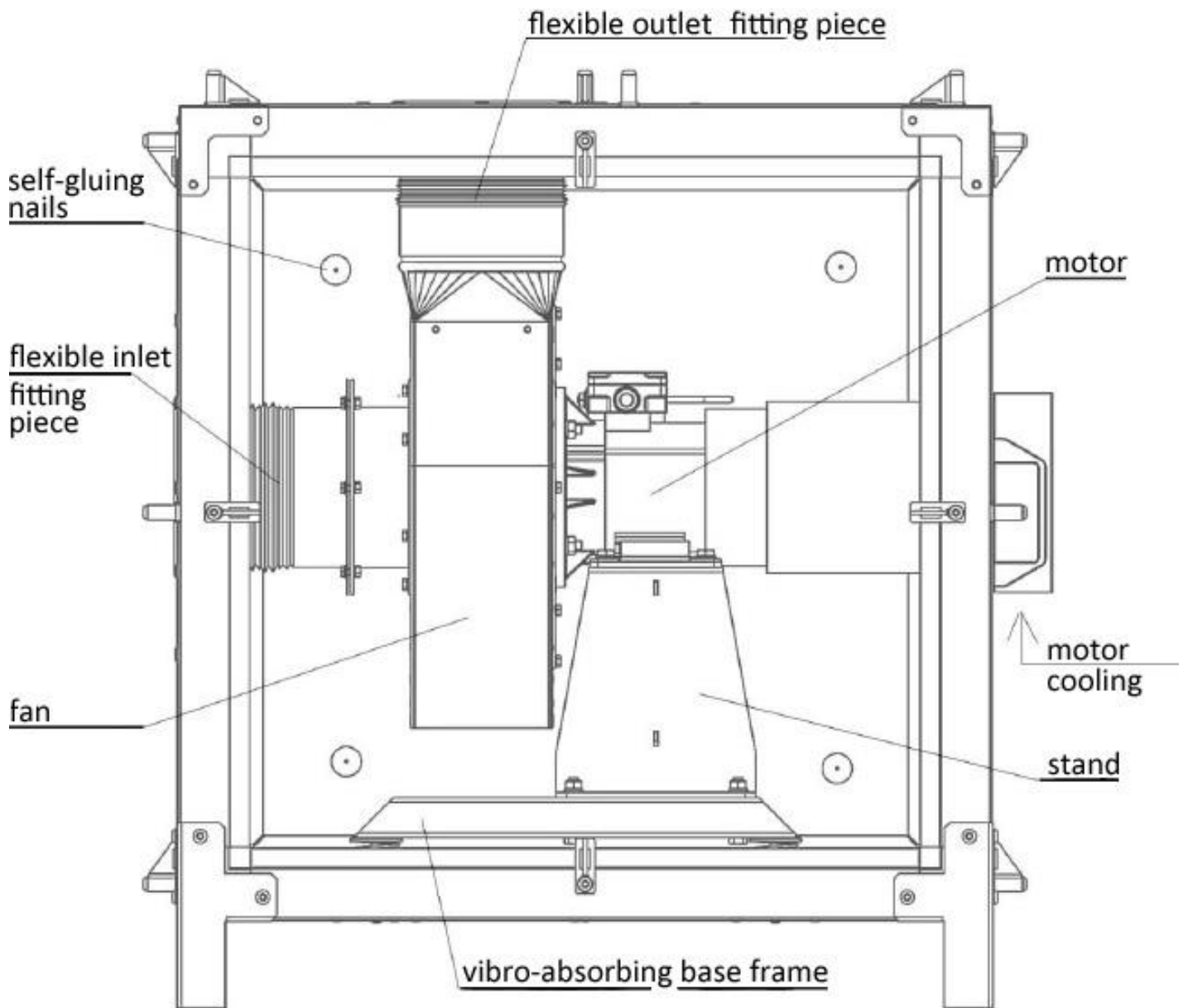
## 5. Structure and Function

The fan consists of a spiral steel housing and motor with an impeller that is directly installed on the motor shaft. The fan is mounted on a stand supported on a vibro-absorbing base frame (see Fig. No.1).

The vibro-absorbing frame interrupts the fan vibration transforming onto the floor and it is selected according to the weight of the fan-stand-frame set.

The fan inlet is equipped with a flange, whereas the outlet is secured with a round fitting piece for attachment of the spiral-seam ducts or for flexible connectors.

For safety reasons, the inlet and outlet are equipped with protective grills. It is recommended to install silencers TK at the inlet and outlet of the fan (see Technical Data Table No.1). The subsequent elements of the fan are assembled together.



**Fig. No.4 – Structure of the fan chamber – WPA-BOX-14**



On demand of Customer we deliver additional silencers to increase the noise reduction degree.



**Fan chamber with a silencer and air discharge (at the silencer outlet)**




**Fan chamber with silencers at the inlet and outlet**

**Photo No.1 – Examples of application of additional silencers**


**ADDITIONAL EQUIPMENT**

**Table No.4 – Silencer**

|  | Type                 | Inlet | Outlet | Height H | Suitable fan chambers |
|---|----------------------|-------|--------|----------|-----------------------|
|   |                      | [mm]  | [mm]   | [mm]     |                       |
|   | <b>T-500-WPA-BOX</b> | 400   | 500    | 1300     | WPA-BOX-14            |

**CAUTION:** The silencer assembly includes: reducer, silencer, support.  
The assembly is installed at the inlet or outlet of the fan chamber WPA-BOX-14.

**Table No.5 – Air discharge**

|   | Type  | Inlet diameter / outlet diameter / height | Weight |
|---|-------|---|--------|
|  | E-500 | 500 / 500 / 1100                          | 24     |

**CAUTION:**

Additional equipment is delivered to Customers upon their order as following items:

- motor protective switches WS – including short-circuit- and overload protection
- safety switches – used during the servicing.

## 6. Assembly and Start-up

Fan chambers are designed for function inside and outside of industrial rooms. They ought to be installed in a place indicated by user.

**Before the connection to the power supply, make sure whether the parameters of the existing electrical installation are corresponding the data on the nominal plate. In case of inconsistency, the connection cannot be executed.**

Connection to the electrical power system has to be executed by User on one's own. On the other hand, it is important to select the right type and section of the supply cable, and choose the appropriate short-circuit- and overload protection, according to the local conditions.

**WARNING** All the activity connected with power supply ought to be carried out by an authorized person with testified electrical qualifications and according to the valid regulations and with conformity to the enclosed Connection Diagram (see Fig. No.6).

Prior to the start-up, check the connection between the motor and the PE protective cable, and the correctness of the electrical connections (the impeller rotation sense ought to be accordingly to the arrow on the housing, in case of incompatibility change the phase connection sequence).

Approaching with loose clothes (garments) or putting the hand near the open inlet of the running fan can cause hazard of accident. Do not look into the working fan as this could cause the face injury of User. In case of any activities carried out on the fan, it is important to disconnect the device from the power supply system.

**Caution:**

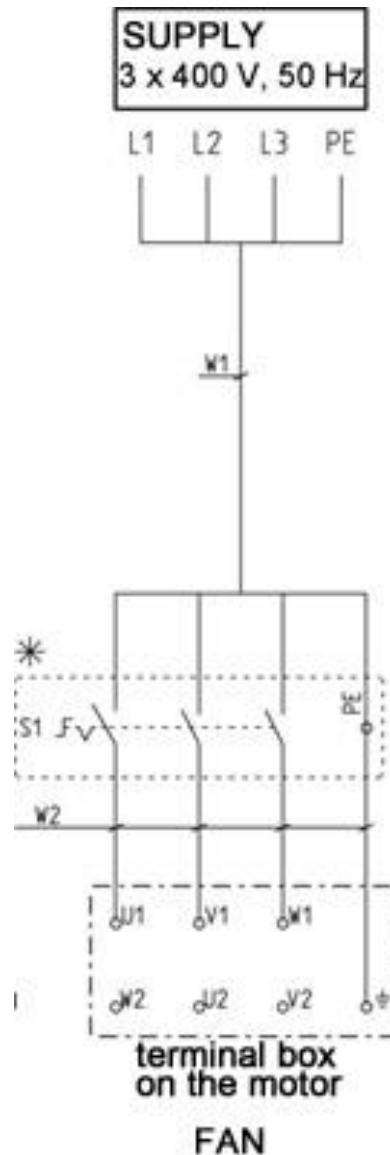
1. Insulation class **I**
2. Ingress protection **IP54**
3. Setting of the motor switch **Q1**:

$$I_t = 1,1 \times I_n$$

where **I<sub>n</sub>** means rated current of the motor.

- \* S1 – isolating switch  
 It is suggested to install it near the fan.  
 Purchase and installing depends on the Investor.

Connect the motor windings according to the Connection Diagram on the terminal box cover.



**Fig. No.5 – Connection Diagram – fan in a chamber type WPA-BOX-14**

## 7. Operational Use

The construction do not require any additional maintenance after the start-up. If the place of operational use is changed – repeat the steps as mentioned in Section 6, according to the installing and adapting the ventilation system to the new conditions.

In case when any defective function of the unit occurs (e.g. improper noises or the outlook of the device) follow steps as in Section 8.

## 8. Troubleshooting Guide

Table No.6

|    | Problem   | Possible reason   | Corrective action  |
|----|---|---|--|
| 1. | Sudden and significant drop in intake volume flow.  | Pollutants, foreign objects (being obstacle do the air flow) have deposited at the inlet grill. | Remove the pollutants; clean the ventilation conduits.                       |
| 2. | Sudden vibrations of the fan are occurring.         | Obstacle objects reducing the air flow got stack at the impeller.                               | Disconnect the fan from the power supply system, and remove the obstacle.    |
|    |   | The impeller is defective.  | Replace the impeller with motor for a new one.                               |
| 3. | Noisy work of the fan along with small volume flow. | Incorrect impeller rotation sense.  | Change the impeller rotation sense by changing the phase connection sequence |

## 9. Maintenance

In the aspect of operational use, the fan construction guarantees its efficient function without continuous routing everyday technical supervision. Nevertheless, to obtain proper function of the device and to follow the safety rules, **manufacturer suggests execution of technical revisions on regular basis**. During the inspection check the function of the fan and the technical state of its elements.



**All the activity connected with power supply ought to be carried out by an authorized person with testified electrical qualifications. The appliance ought to be disconnected from the power supply system during that time.**

**(the exemption from this are activities carried out on the running fan, under strict observing the Occupational and Health Safety rules – e.g. vibration measurement).**

Before the maintenance on the fan, necessarily disconnect it from the power supply system and wait until the impeller stops its rotations.

**Within the scope of inspection execute following activities:**

- check and tighten the mechanical and electrical connections,
- examine the mountings of the motor and the fan, important is that the clearance between the inlet and the impeller is even within the whole circumference.
- remove the impurities accumulated inside the fan, eventually clean it from pollutants originating from the conveyed medium.

During the maintenance activities follow strictly the rules of Occupational Health and Safety, in order not to cause hazard to workers / people in the vicinity.

## 10. Occupational Health and Safety

**Start up and the operational use is only admissible exclusively after getting acquainted with the contents of the present *User's Manual*.**

Connect the fan to the electrical wiring system, strictly according to the enclosed Connection Diagram and the guidelines shown in Section 6 of the present Use and Maintenance Manual. **This ought to be carried out exclusively by a qualified person, and in accordance with the valid regulations being in force.** During the operational use, check the connection between the fan and the PE protective cable.



**Any technical revisions and repair have to be performed exclusively after the device is disconnected from the power supply system.**

**Approaching with loose clothes or putting the hand near the open inlet of the running fan can cause hazard of accident. Do not look into the working fan as this could cause the face injury of User.**

## 11. Transport and Storage

The fan chamber is transported on a pallet. The device has to be firmly fastened to the pallet, to protect it from being overturned or slipped off, and from further damage.

During the loading and transport the package should not be thrown neither knocked down or charged with a load on the top. During the transport, protect the device from atmospheric factors.

The device ought to be stored in dry and well ventilated rooms.

## 12. Terms of warranty

The period of warranty for the purchased device is indicated in the “Card of Warranty”.

The warranty does not comprise:

- mechanical damage and dysfunctions caused by User,
- device failures caused during use which was in contradiction with the purpose of operational use and the present Use and Maintenance Manual,
- damages being effected during improper transport, storage or incorrect maintenance.

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

## 13. Sample of 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:

hereby declares that the appliance:

name: **Fan chamber**

type/model: **WPA-BOX-14**

serial number: ..... year of production: .....

meets the requirements of the subsequent European Directives:

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

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21<sup>th</sup>, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products / *Journal of Laws L 285 of 31.10.2009* /
- **327/2011 (EU) Guideline** of March 30<sup>th</sup>, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW /*Journal of Laws L No. 90 of 06.04.2011*/

The 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 60034-1:2011E** – “Rotating electrical machines – Part 1: Rating data and parameters”.
- **PN-EN ISO 5802:2008E** – “Industrial Fans – Performance testing in situ of installing”.
- **PN-EN ISO 13857:2010** – “Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs”.

.....  
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](mailto:klimawent@klimawent.com.pl)  
[www.klimawent.com.pl](http://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: **Santander Bank Polska S.A.**  
56 1500 1025 1210 2007 8845 0000

**NOTES:**



**Producer:**  
**KLIMAWENT S.A.**  
81-571 Gdynia, ul. Chwaszczyńska 194  
tel. 058 629 64 80  
fax 058 629 64 19  
e-mail: [klimawent@klimawent.com.pl](mailto:klimawent@klimawent.com.pl)  
[www.klimawent.com.pl](http://www.klimawent.com.pl)

814K49 WPA-BOX-14 13.10.2016/EN