

Use and Maintenance Manual



Fan chamber **WPA-BOX**

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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 fan chambers**.

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 fan chambers** 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 February 26th, 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 /*

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". |

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 operational 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			
	[r.p.m.]	[V]	[kW]	IP			[m ³ /h]	[Pa]	[kg]
WPA-BOX-5-1	3000	230	0,55	54	54	40	1900	1250	130
WPA-BOX-8-3		3x400							
WPA-BOX-6-1	3000	230	0,75	54	61	47	2500	1700	135
WPA-BOX-6-3		3x400							
WPA-BOX-7-1	3000	230	1,1	54	64	50	3100	1800	137
WPA-BOX-7-3		3x400							
WPA-BOX-8-3	3000	3x400	1,5	54	66	52	3900	2050	196
WPA-BOX-9-3	3000	3x400	2,2	54	69	55	4500	2400	204
WPA-BOX-10-3	3000	3x400	3,0	54	69	55	6200	2450	282
WPA-BOX-11-3	3000	3x400	5,5	54	75	61	8050	2950	298
WPA-BOX-13-3	3000	3x400	7,5	54	77	63	10800	3300	318

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

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/m³.

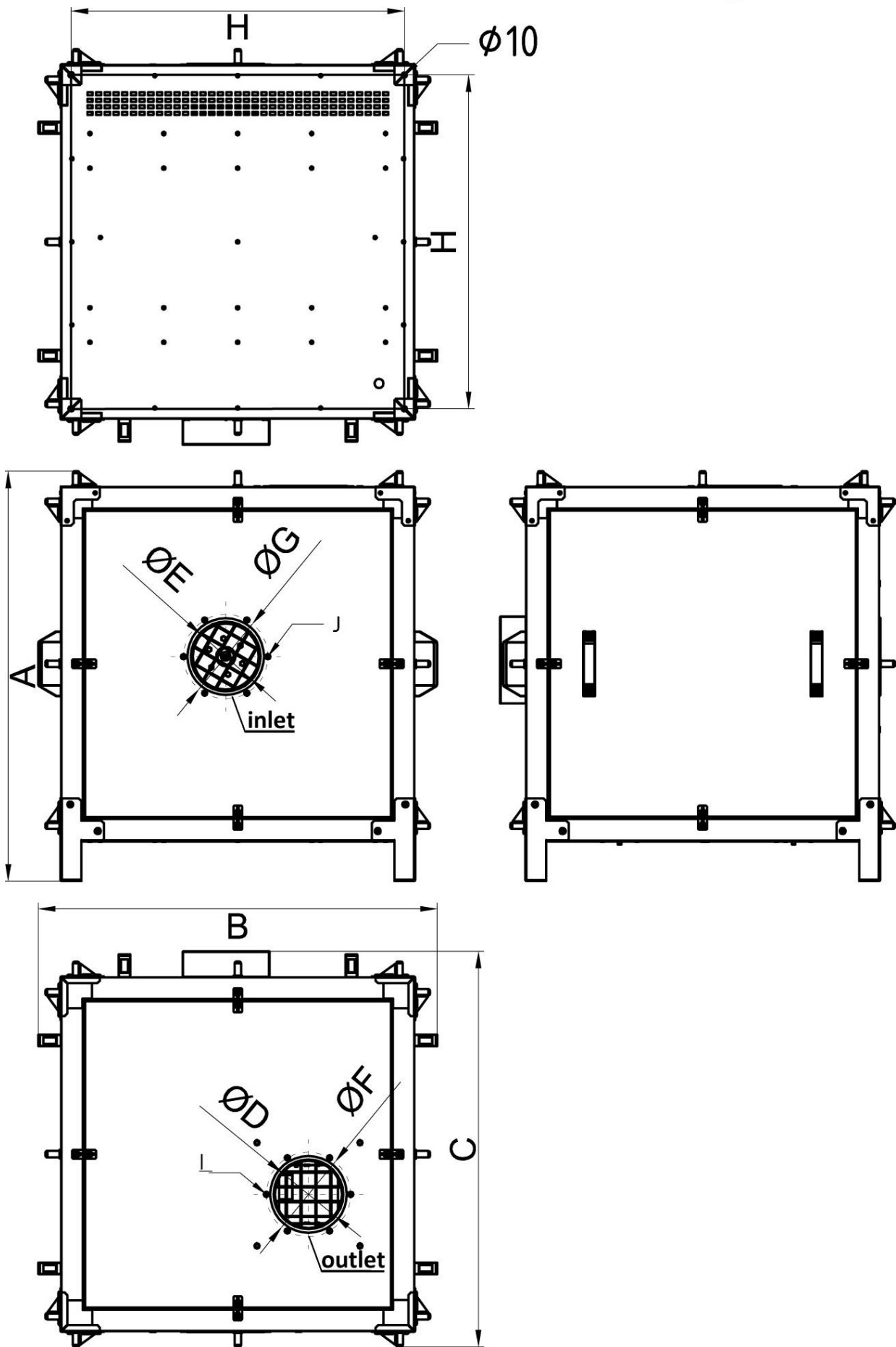
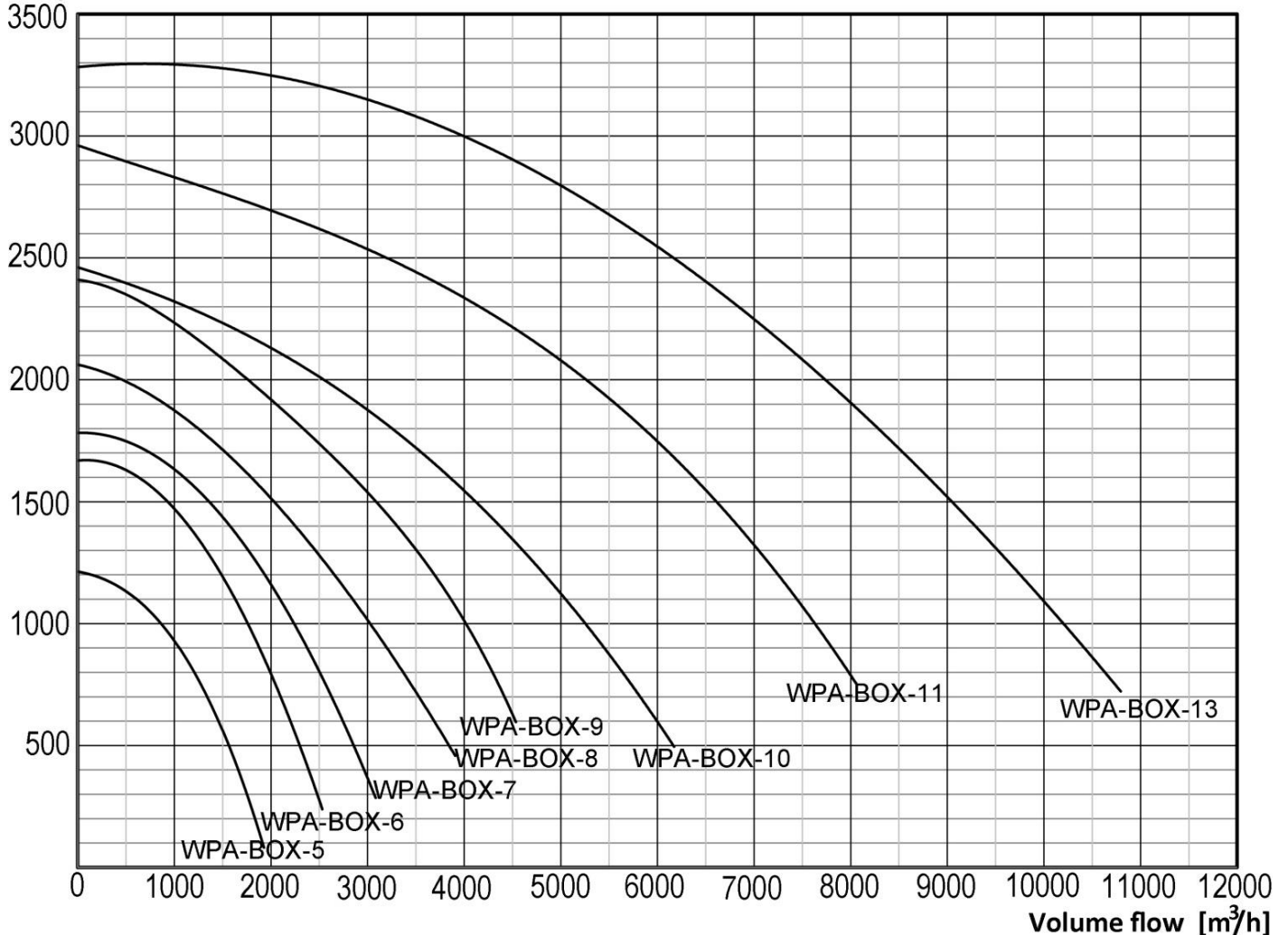


Fig. No.1 – Dimensions of the fan chamber – WPA-BOX

Caution: The dimension H is pertaining to holes spacing $\phi 10$ used for anchorage of the chamber

Table No.2 – Dimensions of the fan chamber

Type	A [mm]	B [mm]	C [mm]	Connection diameters		Pitch diameters of the connections		H [mm]	J [mm]	K [mm]
				ØD [mm]	ØE [mm]	ØF [mm]	ØG [mm]			
WPA-BOX-5	941	918	908	160	160	194	194	766	M6	M6
WPA-BOX-6	941	918	908	160	160	194	194	766	M6	M6
WPA-BOX-7	941	918	908	200	160	224	194	766	M6	M6
WPA-BOX-8	1121	1098	1108	200	200	224	224	947	M8	M8
WPA-BOX-9	1121	1098	1108	200	200	224	224	947	M8	M8
WPA-BOX-10	1329	1306	1336	250	250	274	274	1155	M8	M8
WPA-BOX-11	1329	1306	1336	250	250	274	274	1155	M8	M8
WPA-BOX-13	1329	1306	1336	315	315	344	344	1155	M8	M8

Fan pressure [Pa]

Fig. No.2 – Flow charts of the fan chamber – WPA-BOX

4.1 Information on energetic efficiency for fans in compliance with the Regulation Commission (EU) No. 327/2011

Table No.3

Required information about the product	WPA-5-1	WPA-5-3	WPA-6-1	WPA-6-3	WPA-7-1	WPA-7-3	WPA-8-3	WPA-9-3	WPA-10-3	WPA-11-3	WPA-13-3
1 general efficiency (%)	67,6	70	54,1	61,1	65,1	65,6	62,2	67	66,1	67,1	65,3
2 measuring category	C										
3 efficiency category	static										
4 efficiency factor in the optimum point of the energetic efficiency (%)	47,9	48,1	50,6	48,7	50,5	51,4	52,2	53,3	55,9	56,9	59,4
5 Was the applied rotation speed governor taken into account in the calculations of energetic efficiency?	no										
6 year of manufacturing	see nominal data plate										
7a name of manufacturer	see nominal data plate										
7b serial number	see nominal data plate										
7c place of manufacturing	see nominal data plate										
8 model number	see nominal data plate										
9a power consumption at the input (kW)	0,55	0,55	0,75	0,75	1,1	1,1	1,5	2,2	3,0	5,5	7,5
9b flow intensity in the energetic optimum efficiency point (m ³ /h)	1430	1180	1580	1250	2000	1870	2030	2230	3750	4250	6800
9c pressure in the energetic optimum efficiency point (Pa)	970	1000	1270	1360	1400	1400	1595	2000	1700	2376	2440
10 rotations per minute in the optimum point of the energetic efficiency	2770	2790	2800	2870	2770	2870	2880	2880	2880	2900	2930
11 featured coefficient	1,007										
12 essential information on dismantling (disassembling), recycling and disposal after the termination of operational use	see Sections referring the use and recycling										
13 essential information on minimalizing the influence on the environment and about assurance of the length of operational use	see corresponding Sections in the Use and Maintenance Manual										
14 description of additional elements applied while defining the energetic efficiency of the fan	not delivered along with the extraction fan										

5. Structure and Function

The fan chamber consists of a housing of aluminium profiles, filled with panels equipped with sound-absorbing lining and an extraction fan inside. The fan consists of a spiral steel housing and motor with a radial impeller that is directly installed on the motor shaft. The impeller with radial blades provides low acoustic pressure level of the fan. The fan is mounted on a stand supported on a vi-bro-absorbing base frame.

The vi-bro-absorbing frame interrupts the fan vibration transforming onto the floor. The fan inlet and outlet is equipped with flexible fitting pieces to reduce the fan vibrations.

For safety reasons, the inlet and outlet are equipped with protective grills.

Structure of the fan chamber is illustrated in Fig. No.3 below.

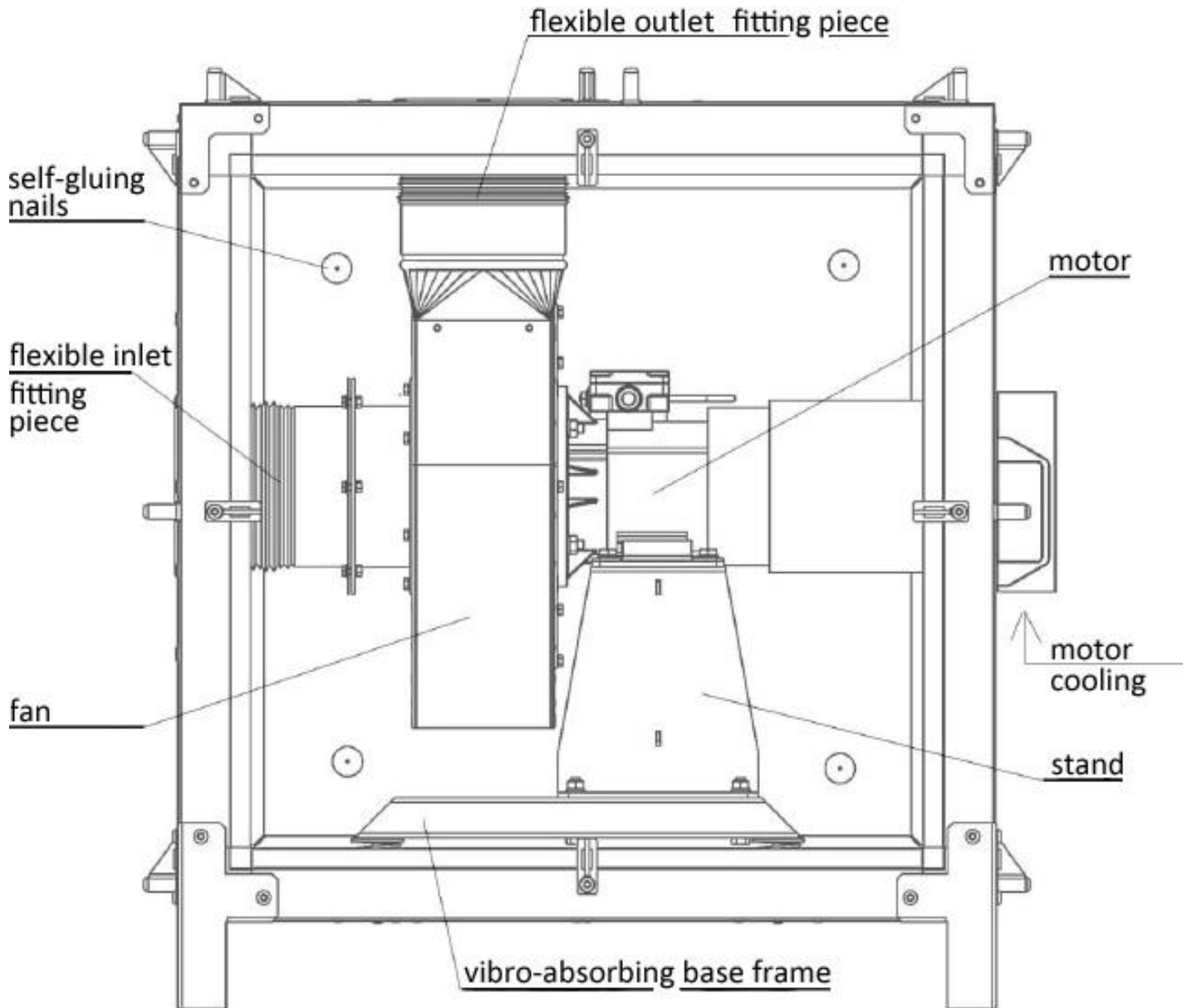


Fig. No.3 – Structure of the fan chamber

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]	
	T-200-WPA-BOX	160	200	1250	WPA-BOX-5, WPA-BOX-6
	T-250-WPA-BOX	200	250	1250	WPA-BOX-7, WPA-BOX-8, WPA-BOX-9
	T-315-WPA-BOX	250	315	1250	WPA-BOX-10, WPA-BOX-11
	T-400-WPA-BOX	315	400	1300	WPA-BOX-13

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

Table No.5 – Air discharge

	Type	Inlet diameter / outlet diameter / height	Weight
	E-200	200 / 200 / 500	6
	E-250	250 / 250 / 600	10
	E-315	315 / 315 / 700	14
	E-400	400 / 400 / 900	18

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

- motor protective switches **WS** – including short-circuit- and overload protection
- isolating 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.4).

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 according to the arrow on the housing, in case of incompatibility change the phase connection sequence)** – three-phase motors only.

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.

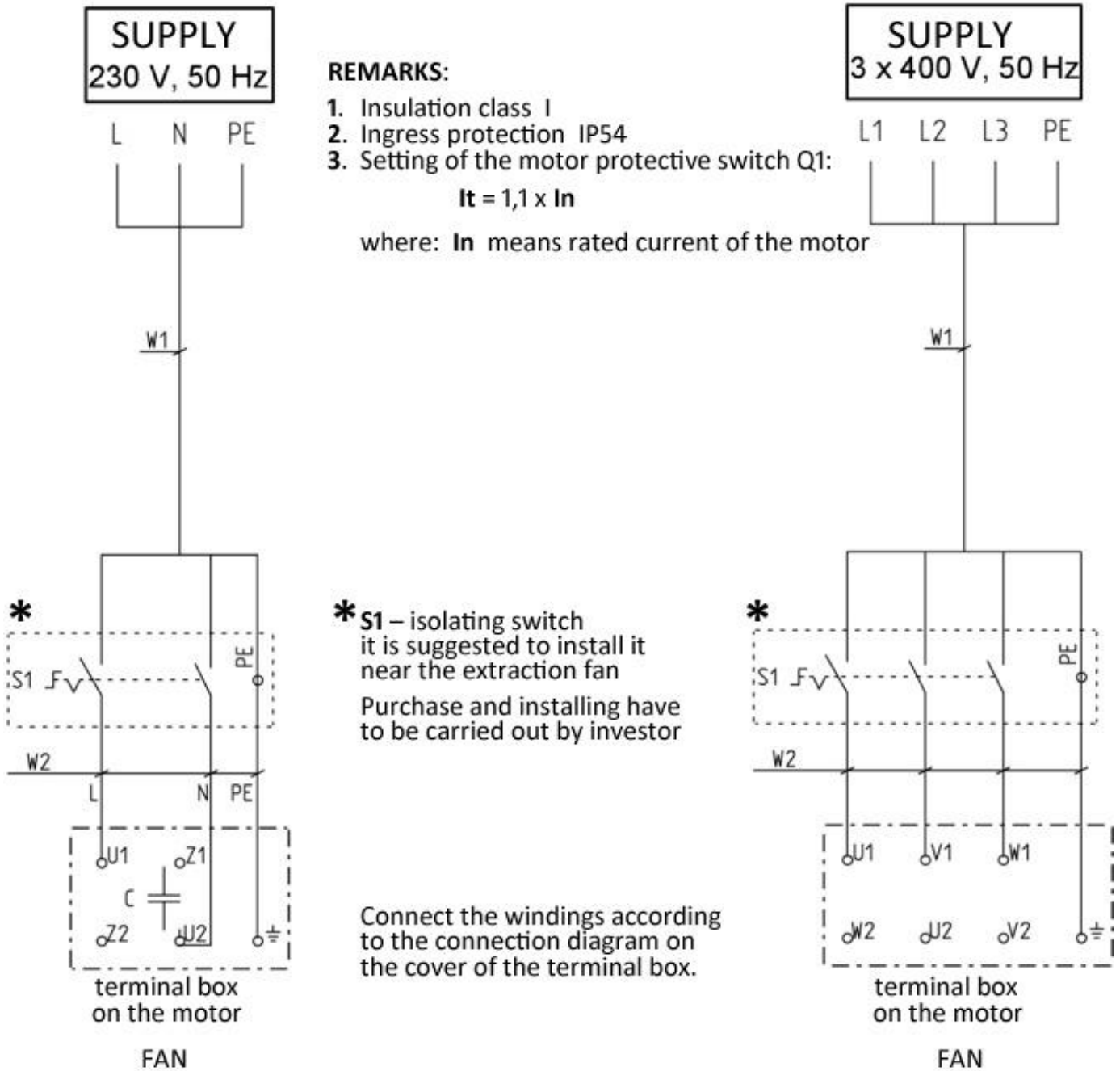


Fig. No.4 – Connection Diagram – fan in a chamber – type WPA-BOX

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 inlet grill.
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 / barrier object.
		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 (this refers three-phase fans only).

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, to avoid hazard of 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 Use and Maintenance 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

Fan chambers are transported in a completely assembled state. They are transported on pallets. The appliance has to be in foil and protected from damage and weather conditions.

During the loading and transport the package should not be thrown neither knocked down or charged with a load on the top. Do not put one package on top of another.

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**

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 17st, 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 26st, 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*/

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- **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.

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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:

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814K31	WPA-BOX-5-1	02.11.2016/EN
814K32	WPA-BOX-5-3	02.11.2016/EN
814K33	WPA-BOX-6-1	02.11.2016/EN
814K34	WPA-BOX-6-3	02.11.2016/EN
814K35	WPA-BOX-7-1	02.11.2016/EN
814K36	WPA-BOX-7-3	02.11.2016/EN
814K37	WPA-BOX-8-3	02.11.2016/EN
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814K40	WPA-BOX-11-3	02.11.2016/EN
814K41	WPA-BOX-13-3	02.11.2016/EN