

# Use and Maintenance Manual



## Explosion-proof roof fans

## WPA-D-N/Ex

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|--------|---------------|---------------|
| 808W09 | WPA-5-D-N/Ex  | 04.06.2019/EN |
| 808W10 | WPA-6-D-N/Ex  | 04.06.2019/EN |
| 808W11 | WPA-7-D-N/Ex  | 04.06.2019/EN |
| 808W12 | WPA-8-D-N/Ex  | 04.06.2019/EN |
| 808W13 | WPA-9-D-N/Ex  | 04.06.2019/EN |
| 808W14 | WPA-10-D-N/Ex | 04.06.2019/EN |

## 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 **WPA-D-N/Ex explosion-proof roof fans**.

**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 **WPA-D-N/Ex** explosion-proof roof fans 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*/
- **2014/34/EC ATEX Directive** of the European Parliament and of the Council of February 26<sup>th</sup>, 2014 on the harmonisation of the laws of Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres. /*Journal of Laws EC L96 of 29.03.2014*/

Additionally, the appliance meets following harmonized standard:

- |                                    |  |
|------------------------------------|--|
| ● <b>EN ISO-12100:2012</b>         | – “Safety of machinery – Basic concepts, general principles for design. Risk assessment and risk reduction”.   |
| ● <b>EN 60204-1:2018-12</b>        | – “Safety of machinery – Electrical equipment of machines. Part 1: General requirements”.  |
| ● <b>EN ISO 13857:2010</b>         | – “Safety of machinery – Safe distances to prevent hazard zones being reached by upper and lower limbs”.   |
| ● <b>EN 80079-0:2013/A11:2014</b>  | – “Electrical appliances in areas of gas explosion risk. Part 0: General requirements”.  |
| ● <b>EN 60079-7:2016-02</b>        | – “Electrical appliances for areas of gas explosion hazard. Part 7: Increased safety construction “e”.   |
| ● <b>EN 1127-1:2011</b>            | – “Explosive atmospheres. Explosion prevention and protection. Basic terminology and methodology”.   |
| ● <b>EN ISO 80079-36:2016-07</b>   | – “Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres. Methodology and requirements.  |
| ● <b>EN ISO 80079-37:2016-07</b>   | – “Explosive atmospheres – Part 37: Non-electrical equipment for explosive atmospheres. Non-electrical types of protection. Constructional safety “c”, supervised ignition “b”, immersion in a liquid “k”. |
| ● <b>EN 14986:2017-02</b>          | – “Designing of fans applied in areas of explosion hazard”   |
| ● <b>ISO 14694:2003+AMD1:2010</b>  | – “Industrial fans – Guidelines on the quality of balancing and the vibration level.   |
| ● <b>ISO 14695:2008/AC:2017-10</b> | – “Industrial fans – Methods of measurements of vibration of fans.   |

## 2. Application

WPA-D-N/Ex explosion-proof roof fans are intended for use in areas of explosion risk, where explosive atmosphere, (i.e. mixture of flammable substances in form of gas and vapour with the air, whereby after ignition – in atmospheric conditions – the burning mass would expand within the whole non-burning mixture) is likely to occur. The fans have been constructed for application within temperature range -20 up to 40°C. The forwarded air must be dry, of dustiness not exceeding 0,3 g/m<sup>3</sup>, without viscous, aggressive contaminants and of maximum temperature +60°C.

Increased fan pressure guarantees their application in systems with local exhausts and filtering units, and additionally in ventilation ductings of significant flow resistances.


**According to the 2014/34/EC ATEX Directive and EN ISO 80079-36 the device carries the level of protection: “HIGH” – as a device classified for Group II, Category 2, and it can work in areas where explosive atmospheres are likely to occur. The fan can be applied in zones 1, 2 (G).**

The appliance is marked on the nominal data plate:



**II 2 G c Ex e II T3**

**Marking of the operational conditions of the device: group / category / hazard / class.**

-  marking for explosion proof properties of the appliance,
- **group II** – the device is designed for on-ground work, in factories, in areas of explosion hazard, **but this cannot be methane (firedamp) hazard** neither carbon dust occurrence,
- **category 2** – the device is designed for application in areas where **explosive atmospheres are likely to occur**,
- **gas hazard G**,
- **“c”** – a sort of protection against ignition – constructional protection,
- **Ex** – mark of the electrical device – constructed and tested according to the European Standards for work in areas of explosion hazard,
- **execution “e”** – type of construction of the motor (a motor of increased safety)
- gas explosion **group II** – occurring in on-ground factories – the fans are constructed according to the PN-EN 14986:2009, whereby they can be applied for gases in explosion groups **IIA and IIB and hydrogen**,
- **temperature class T3** – the surface temperature of any part of the appliance should not exceed **200°C** (during the normal operation). The device can be used safely in explosive atmospheres belonging to temperature classes **T1, T2, T3**.

## 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. Installing of any additional elements not belonging to the normal device structure (or accessory set) is not acceptable.
- C. Do not undertake any structural changes or constructional modifications on the device on one's own.
- D. Protect the appliance's housing from mechanical damage.
- E. Prior to installing check the load carrying capacity of the building structure where the device will be mounted. Unsure mounting could cause hazard to personnel/people in vicinity and effect in damage of the device.



- F. **Do not use the fan for conveying the air containing viscous impurities that could deposit (build up) on the device surface, especially on the impeller.**
- G. **Neither use it for forwarding the air with aggressive pollutants which will destructively effect the device structure.**

- H. During operation, the maximum impeller rotations should not exceed the nominal rotations.
- I. **Manufacturer is not responsible for wounds, injuries, body laceration experienced by User or personnel during the improper operational use.**

## 4. Technical Data

**CAUTION:** As standard, in case of the WPA series of fans, are installed motors adapted for use in vertical position with their shafts downwards:

- IMV1 [IM3011] in application with flange motors
- IMV15 [IM2011/IM2111] in application with flange-feet motors.

Installing of motors in another position than vertical is possible exclusively on demand of customer.

Table No.1

| Type          | Synchronous rotations<br>[1/min] | Supply voltage<br>[V] | Motor rate<br>[kW] | Ingress protection | Acoustic pressure level<br>[dB(A)] from distance |          | Maximum volume flow<br>[m <sup>3</sup> /h] | Maximum vacuum<br>[Pa] | Weight**<br>[kg] |
|---------------|----------------------------------|-----------------------|--------------------|--------------------|--|----------|--|------------------------|------------------|
|               |                                  |                       |                    |                    | 1m   | 5m       |  |                        |                  |
|               |                                  |                       |                    |                    | 1m   | 5m       |  |                        |                  |
| WPA-5-D-N/Ex  | 3000                             | 3x400                 | 0,55               | 56                 | 73 / 67*   | 59 / 53* | 1900                                       | 1250                   | 25 / 26,8        |
| WPA-6-D-N/Ex  | 3000                             | 3x400                 | 0,75               | 56                 | 78 / 75*   | 64 / 61* | 2500                                       | 1700                   | 26 / 27,8        |
| WPA-7-D-N/Ex  | 3000                             | 3x400                 | 1,1                | 56                 | 81 / 74*   | 67 / 60* | 3100                                       | 1800                   | 31 / 33,4        |
| WPA-8-D-N/Ex  | 3000                             | 3x400                 | 1,5                | 56                 | 82 / 78*   | 68 / 64* | 3900                                       | 2050                   | 38 / 40,4        |
| WPA-9-D-N/Ex  | 3000                             | 3x400                 | 2,2                | 56                 | 86 / 82*   | 72 / 68* | 4500                                       | 2400                   | 42 / 44,4        |
| WPA-10-D-N/Ex | 3000                             | 3x400                 | 4,0                | 56                 | 87 / 81*   | 73 / 67* | 7400                                       | 2600                   | 74 / 81,5        |

\* noise has been measured with the applied silencer TK L=500 mm installed at the fan inlet

\*\* weigh of the fan „a / b”: a – with horizontal outlet  
b – with vertical outlet

1. max temperature of the forwarded air is +60°C; maximum temperature in the work zone +40°C;
2. max dustiness of the forwarded air should not exceed 0,3 g/m<sup>3</sup>.

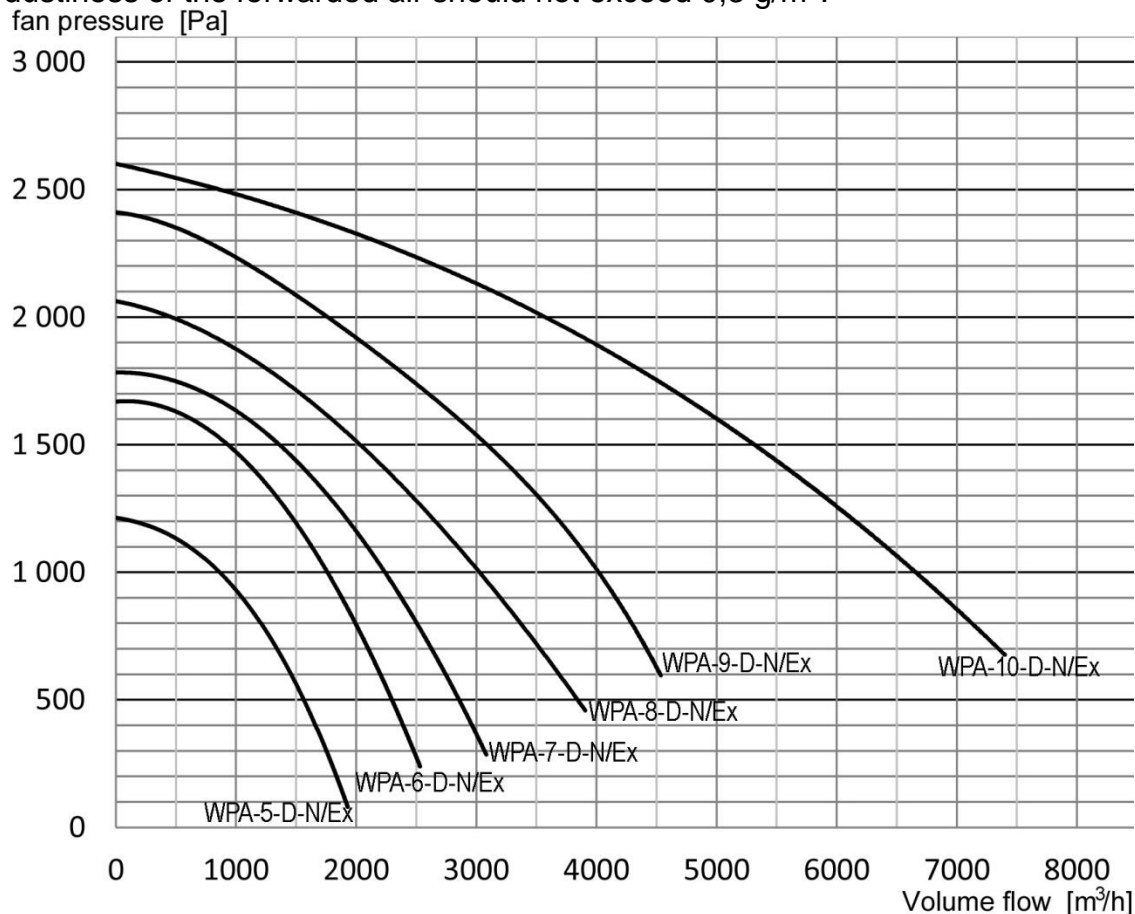


Fig. No.1 – WPA-D-N/Ex – Flow charts

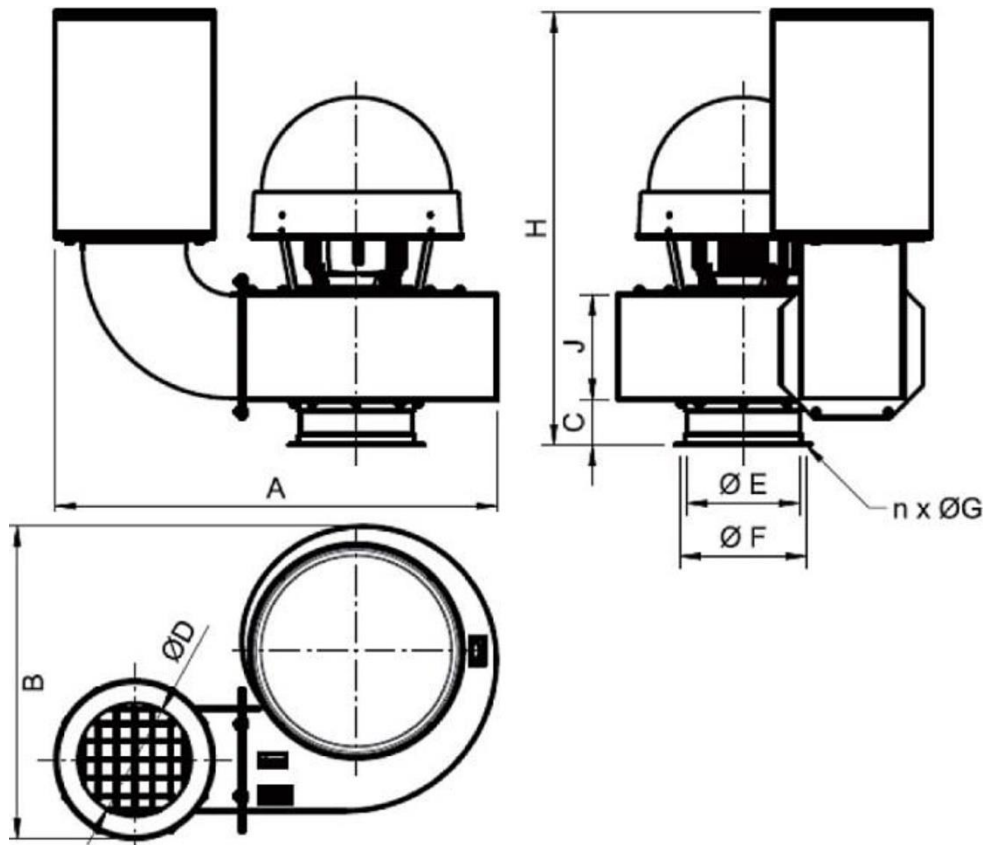
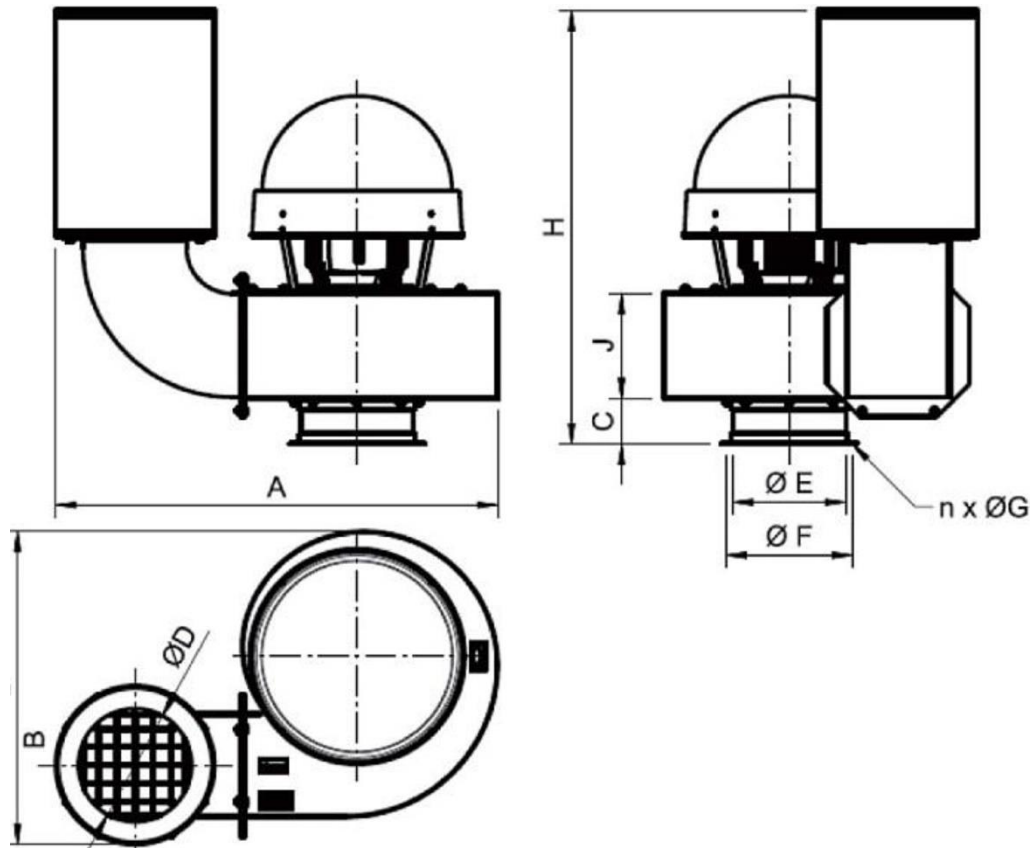


Fig. No.2 – WPA-D-N/Ex with horizontal outlet

Table No.2 – WPA-D-N/Ex with horizontal outlet – Dimensions

| Type          | A<br>[mm] | B<br>[mm] | C<br>[mm] | D<br>[mm] | E<br>[mm] | F<br>[mm] | n<br>[pcs] | G<br>[mm] | H<br>[mm] | J<br>[mm] |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|
| WPA-5-D-N/Ex  | 905       | 525       | 60        | 160       | 160       | 194       | 6          | 6,5       | 500       | 140       |
| WPA-6-D-N/Ex  | 915       | 550       | 60        | 160       | 160       | 194       | 6          | 6,5       | 500       | 140       |
| WPA-7-D-N/Ex  | 965       | 570       | 60        | 200       | 160       | 194       | 6          | 6,5       | 535       | 155       |
| WPA-8-D-N/Ex  | 990       | 600       | 60        | 200       | 200       | 224       | 8          | 9,0       | 535       | 155       |
|               |           |           |           |           |           | 234       | 6          | 6,5       |           |           |
| WPA-9-D-N/Ex  | 1030      | 665       | 60        | 200       | 200       | 224       | 8          | 9,0       | 605       | 155       |
|               |           |           |           |           |           | 234       | 6          | 6,5       |           |           |
| WPA-10-D-N/Ex | 1050      | 675       | 100       | 250       | 250       | 275       | 8          | 9,0       | 720       | 232       |



**Fig. No.3 – WPA-D-N/Ex with vertical outlet**

**Table No.3 – WPA-D-N/Ex with vertical outlet – Dimensions**

| Type          | A<br>[mm] | B<br>[mm] | C<br>[mm] | D<br>[mm] | E<br>[mm] | F<br>[mm] | n<br>[pcs] | G<br>[mm] | H<br>[mm] | J<br>[mm] |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|
| WPA-5-D-N/Ex  | 700       | 525       | 60        | 160       | 160       | 194       | 6          | 6,5       | 810       | 140       |
| WPA-6-D-N/Ex  | 715       | 550       | 60        | 200       | 160       | 194       | 6          | 6,5       | 815       | 155       |
| WPA-7-D-N/Ex  | 815       | 570       | 60        | 200       | 160       | 194       | 6          | 6,5       | 840       | 155       |
| WPA-8-D-N/Ex  | 840       | 600       | 60        | 200       | 200       | 224       | 8          | 9,0       | 840       | 155       |
|               |           |           |           |           |           | 234       | 6          | 6,5       |           |           |
| WPA-9-D-N/Ex  | 880       | 665       | 60        | 200       | 200       | 246       | 8          | 9,0       | 840       | 155       |
|               |           |           |           |           |           | 234       | 6          | 6,5       |           |           |
| WPA-10-D-N/Ex | 960       | 675       | 100       | 250       | 250       | 275       | 8          | 9,0       | 960       | 232       |
|               |           |           |           |           |           | 246       | 8          | 9,0       |           |           |

**Table No.4 – Specification of types of elbows for fans with vertical outlet**

| Type of the fan | Elbow             |             |
|-----------------|-------------------|-------------|
|                 | Type of the elbow | Weight [kg] |
| WPA-5-D-N       | KL-160-WPA        | 1,8         |
| WPA-6-D-N       | KL-160-WPA        | 1,8         |
| WPA-7-D-N       | KL-200-WPA        | 2,4         |
| WPA-8-D-N       | KL-200-WPA        | 2,4         |
| WPA-9-D-N       | KL-200-WPA        | 2,4         |
| WPA-10-D-N      | KL-250-WPA        | 7,5         |

## 5. Structure and Function

The fan consists of a spiral steel housing, Ex motor, aluminium radial impeller (directly installed on the motor shaft) and a steel sheet motor hood. The impeller blades feature a shape of an aeroplane wing and they provide low noise level. The fan inlet is equipped with a flange to install the fan on a roof base or on a wall bracket.

Typical feature of the fan is the silencer, fastened at the outlet of the spiral housing.

For safety reasons, both inlet and outlet are equipped with a protective grill. It is recommended to install the TK silencers at the fan inlet (see acoustic data in Table No.1).

ADDITIONAL EQUIPMENT – delivered on separate order:

- roof bases or wall brackets
- silencers

The fan housing is equipped with a protective cable to dissipate the electrostatic charges away. There is a terminal for the protective cable on the motor housing. Additionally, there is located a terminal box for supply. Hemispheric motor hood is of aluminium sheet and protects from atmospheric factors / weather conditions.

## 6. Assembly and Start-up

The appliance can work outside the industrial rooms (outdoor application). Manufacturer suggests installing the fan on the roof base or on a wall bracket (as an element of optional equipment constructed upon separate documentation).

The inlet- and outlet connection fitting pieces ought to be fastened to the ventilation system by means of flexible connectors (of antistatic material). The way of fastening of the connections depends on the established technologies of the system execution and should be specified at the site of installing. **User performing the assembly is strictly responsible for full compliance with the provisions of EN ISO 13857.**

### 6.1. Guidelines of installing:



a/ VENTILATION SYSTEM – to which the WPA-D-N/Ex fan will be connected, must be designed and executed in accordance with the valid regulations and standards – according to the local conditions of explosion risk.



b/ SUPPLY SYSTEM - to which the WPA-D-N/Ex fan shall be connected must be designed and executed in accordance with the valid regulations and standards – according to the local conditions of explosion risk.

- 
- Prior to connection, make sure if the parameters of the hitherto existing electrical supply system, are in accordance with the parameters on the nominal plate. Otherwise, the connection steps cannot be executed.

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  - Any steps of connection activity can be carried out by an authorised person with qualification – according to the valid regulations and standards.

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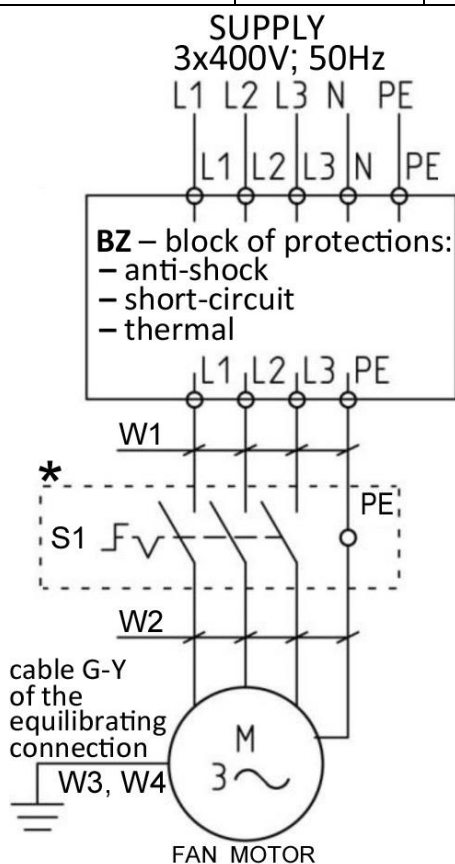
  - The whole ventilation system must have the efficient performed installation dissipating the electrostatic charges. Any joints / connections between ventilation sections should have electrostatic connections made of protective cable.

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  - Check if the metal ducts are grounded correctly. Additionally, provide the grounding to the motor housing, by joining the protective cable with the contact on the motor housing.

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| Fan          | Motor rate [kW] | Current [A] | Motor type  | Cable W1, W2               | G-Y protective cable W3, W4 |
|--------------|-----------------|-------------|---|----------------------------|-----------------------------|
| WP-5-D-N/Ex  | 0,55            | 1,4         | SKh 71-2B; 3x400V; 50 Hz<br>2720 r.p.m.; IMV1; BESEL    | should be selected by User | H05V-K 1G6                  |
| WP-6-D-N/Ex  | 0,75            | 1,8         | SKh 80-2A; 3x400V; 50 Hz;<br>2760 r.p.m.; IMV1; BESEL   |                            |                             |
| WP-7-D-N/Ex  | 1,1             | 2,4         | SKh80-2B; 3x400V; 50 Hz;<br>2780 r.p.m.; IMV1; BESEL    |                            |                             |
| WP-8-D-N/Ex  | 1,5             | 3,5         | SKh 90S-2; 3x400V; 50 Hz;<br>2850 r.p.m.; IMV1; INDUKTA |                            |                             |
| WP-9-D-N/Ex  | 2,2             | 4,7         | SKg 90L-2; 3x400V; 50 Hz;<br>2860 r.p.m.; IMV1; INDUKTA |                            |                             |
| WP-10-D-N/Ex | 4,0             | 7,5         | SKg 112M-2; 3x400V; 50 Hz<br>2875 r.p.m.; IMV1; INDUKTA |                            |                             |



**Caution:** The steel plate for current-equilibrating connections – as in the Fig. No 1012-017078 of mechanical documentation – referring the fans **WPA-10-D-N/Ex**; **WPA-10-E-N/Ex**.

**Caution:**

1. Supply voltage: **3x400V; 50Hz**
2. Continuous work **S1**
3. Ingress protection **IP56**
4. Ambient temperature: **-20°C up to +40°C**
5. Insulation class **F**
6. To the fan housing connect the grounding cable of length 400mm, ended with a **KOI** terminal.
7. Installations and devices for use in areas of explosion risk – should be executed according to – arrangements of the 2014/34/EC ATEX Directive, – valid regulations and standards.

\* **S1** isolating switch – in Ex execution. It is suggested to install it near the fan. The application of the isolating switch is not obligatory and depends on the decision of Investor.

Cables **W1**, **W2** have to be selected by Investor, with reference to the fan motor rate, cable length, outline of the cable, voltage drop.

**W3**, **W4** are cables for local equilibrating connections of cross-section 6mm<sup>2</sup>, length 300 mm, ended with adequately selected eye terminals, designed for connection to the fan fitting pieces.

**CAUTION:** The motor windings must be connected according to the data on the nominal data plate of the motor and the connection diagram (placed on the terminal box of the motor).

**Fig. No. 4 – Connection diagram of the fan WPA-D-N/Ex**



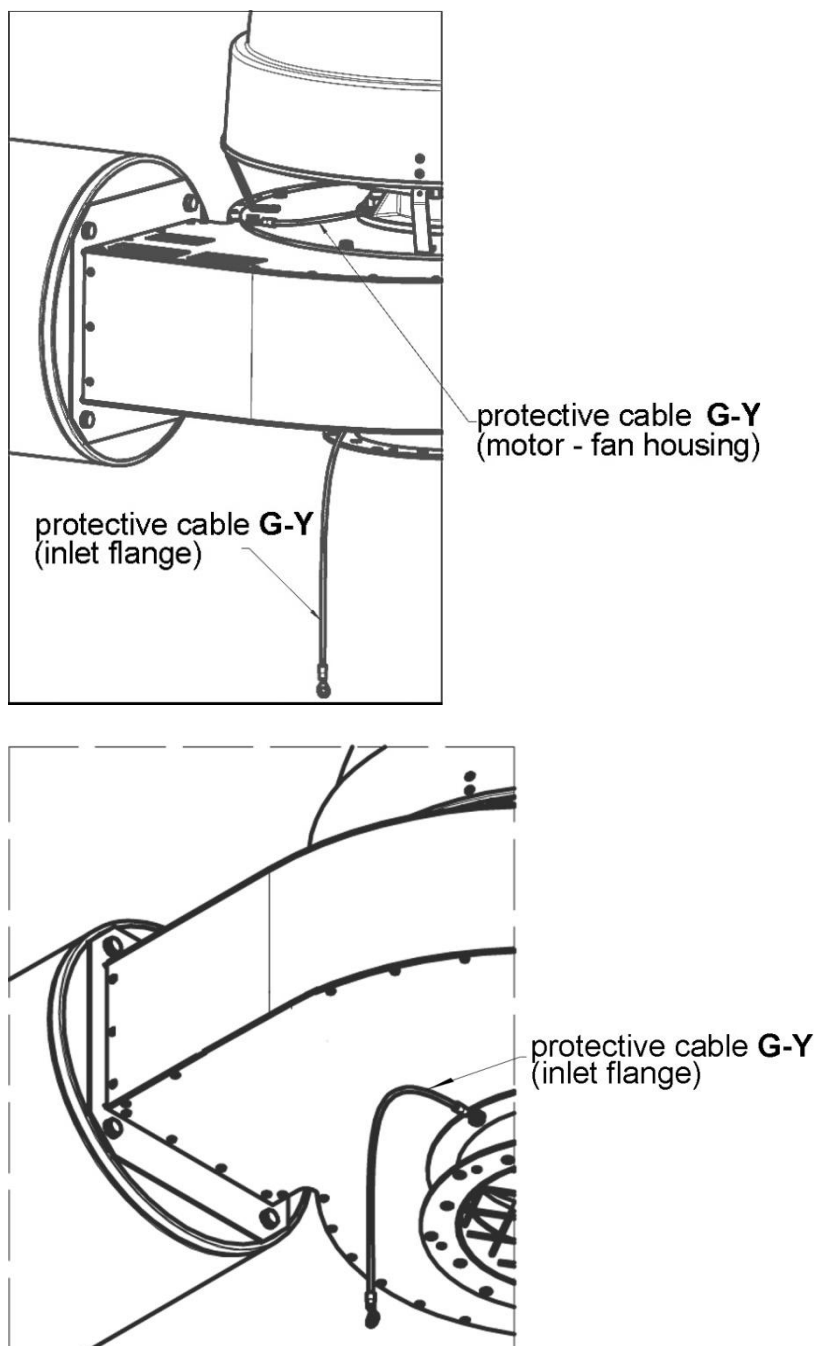
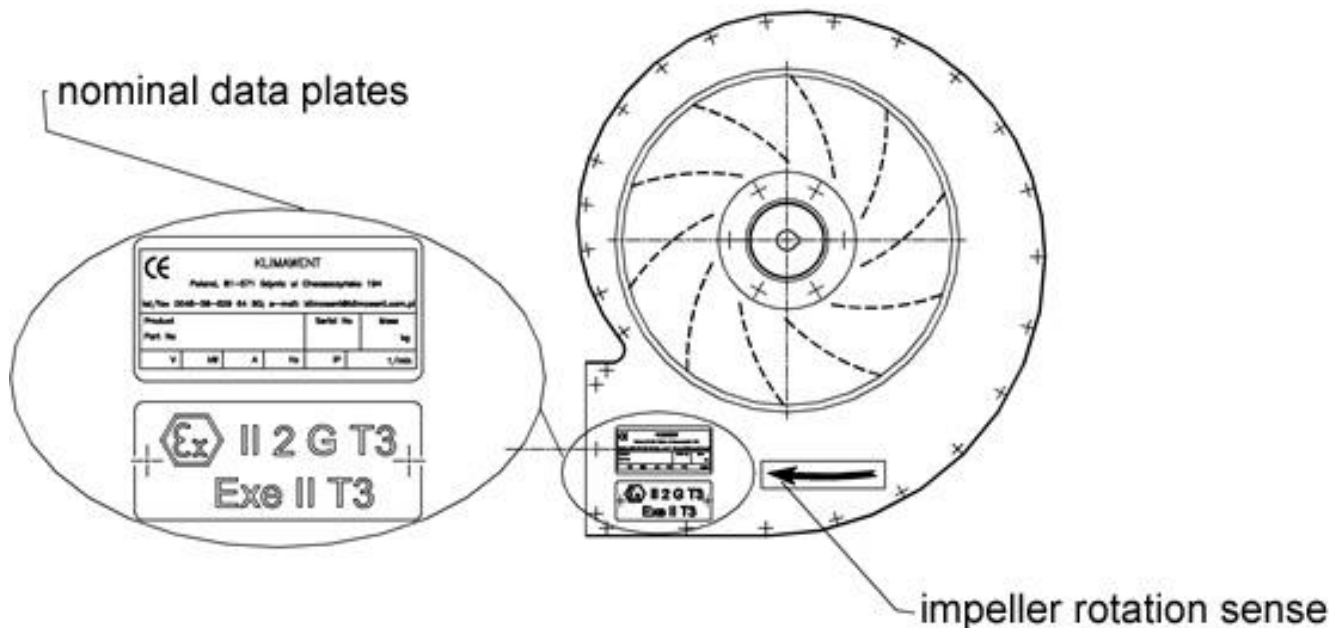


Fig. No.5 – Placement of the protective cables

## 6.2. Safety control before the start-up:

- a/ check if all the mechanical connections are carried out correctly
- b/ check the correctness of electrical connections and phase sequence
- c/ examine the correctness of the connection between the motor and PE protective cable

After the device is started up – check if the impeller rotation sense is according to the arrow on the housing.



**Fig. No.6 – Placement of the nominal data plates and the impeller rotation arrow**

## 7. Operational Use

Construction of the device assures reliable function without continuous routine technical supervision. **Periodically, it is important to check systematically the mechanical and electrical connections, the state of grounding and also to provide efficient cooling to the motor.**

**For incorrect function is considered:**

- a/ forwarding the media exceeding the admissible temperature +60°C
- b/ conveying aggressive media
- c/ conveying the media of high dustiness or with high pollution particles content,
- d/ use of the fan in areas where the ambient temperature exceeds +40°C.

**Consequences of incorrect use:**

- a/ damage of bearings
- b/ damages caused by corrosion
- c/ loss in balance of the rotating elements
- d/ vibrations
- e/ deformations
- f/ damages caused by friction

**Risks which can occur due to improper use** – damages or other defects caused by:

- burst of the impeller
- break of the shaft
- fatigue crack of the material
- ignition and explosion caused by sparks

In case when any symptoms of incorrect device function (noise increase, vibrations, reduced flow efficiency) are noticed, the device should be disconnected from the power system, and thoroughly revised (with reference to the reason of disturbance during the operation).

**WARNING** According to 2014/34/EC Directive, in case of any repair or replacement of a spare part – put a notice on an additional plate and in the enclosed documentation (a register of repair activities, etc.). This is the duty of User!

A list of frequent functional disturbances and ways of their elimination, is exposed below.

## 8. Troubleshooting Guide

Table No.4

|    | Problem  | Possible reason   | Corrective action  |
|----|--|---|--|
| 1. | Significant, sudden decrease of intake air volume. | Pollutants, objects reducing the air flow deposited at the inlet grill. | Clean the ventilation conduits.                                    |
| 2. | Sudden vibrations of the fan occur.                | Obstacle objects got stuck within the impeller.                         | Disconnect the fan from the power system, and remove the obstacle. |
|    |  | The impeller is faulty.   | Replace the impeller and the motor for new.                        |
| 3. | It is not possible to switch on the fan.           | Fade of one of the phases or low voltage.                               | Adjust to gain the correct voltage.                                |
|    |  | The protective block activated.   | Adjust the correct settings of protections.                        |

## 9. Maintenance

To obtain correct functional performances and to meet the safety rules, **it is recommended submit the fan to technical revision in regular periods of time**. During the revision take into account the function of the device as well as the technical state of its elements.



**Technical revisions on the fan must be executed by a qualified person with adequate authorization. Additionally, the fan necessarily should be disconnected from the power supply system.**

### Within the scope of technical revision carry out following steps:

- as a routine, keep clean the inlet grill
- periodically, examine and tighten up the mechanical- and electrical connections; moreover when defective function is by noise or visually spotted – undertake the revision of the assembly.
- execute the revision of the fan (motor – according to the instructions of its manufacturer). Within the scope of maintenance, clean the fan from deposited impurities.

### Before any activities carried out on the fan it is important to:



Before the start-up, follow subsequent steps:

- **Disconnect the fan from the power supply. Exemption from this are activities that must be executed at the running fan, i.e. vibration measurements (especially here are important safety regulations).**
- **Wait until the fan impeller stops rotating.**

The fan can be restarted after the control steps, (described in Section 6 “Assembly and Start-up”), are carried out.

## 10. Occupational Health and Safety

**Start-up and the operational use of the fan are admissible after getting acquainted with the contents of the present Use and Maintenance Manual.** The fan shall not cause any hazard under the condition it is correctly and firmly installed on the roof base or other structural element of the building.

Any installation activities related to the power supply system, have to be carried out strictly according to the enclosed Connection Diagram and in accordance with the instructions given in Section 6 of the present Use and Maintenance Manual.

**WARNING**

Connection to the power supply system ought to be carried out by an authorised person with qualifications, according to the being in force regulations.

The fan motor should be equipped with protection against short-circuit and overload effects. In the course of operational use, examine the fan connection to the PE protective cable.



Any revision activity and repair must be executed after the fan is disconnected from the power supply system.

Approaching with “loose garment/clothing” or putting the hand towards the open inlet of the running fan can cause hazard of accident and severe disability.

## 11. Transport and Storage

Fans: **WPA-5-D-N/Ex**, **WPA-6-D-N/Ex**, **WPA-7-D-N/Ex** and **WPA-8-D-N/Ex**, **WPA-9-D-N/Ex** are wrapped in foil and in cardboard packages. On the package surface is written its weight.

Whereas, large fans as **WPA-10-D-N/Ex** are solely wrapped in foil and placed on pallet.

During loading re-loading and transport, the device neither should be thrown nor knocked down.

Do not put any load on top of the device. It is inadmissible to put one device on top of another (stacking). During the transport protect them from atmospheric factors / weather conditions and from mechanical damage. The fan must be stored in dry rooms and areas of efficient 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:

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

Infringement of the Clause G 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: **Explosion-proof roof fans**

type/model: **WPA-D-N/Ex**

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>th</sup>, 2006 on machinery – amending the 95/16/EC (recast) /*Journal of Laws EC L157 of 09.06.2006, page 24/*
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The appliance meets following harmonized standard:

- |                                    |  |
|------------------------------------|--|
| ● <b>EN ISO-12100:2012</b>         | – “Safety of machinery – Basic concepts, general principles for design. Hazard assessment and risk reduction”.   |
| ● <b>EN 60204-1:2018-12</b>        | – “Safety of machinery – Electrical equipment of machines. Part 1: General requirements”.  |
| ● <b>EN ISO 13857:2010</b>         | – “Safety of machinery – Safe distances to prevent hazard zones from being reached by upper and lower limbs”.  |
| ● <b>EN 80079-0:2013/A11:2014</b>  | – “Electrical appliances in areas of gas explosion risk. Part 0: General requirements”.  |
| ● <b>EN 60079-7:2016-02</b>        | – “Electrical appliances for areas of gas explosion hazard. Part 7: Increased safety construction “e”.   |
| ● <b>EN 1127-1:2011</b>            | – “Explosive atmospheres – Explosion prevention and protection. Basic terminology and methodology”.  |
| ● <b>EN ISO 80079-36:2016-07</b>   | – “Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres. Methodology and requirements.  |
| ● <b>EN ISO 80079-37:2016-07</b>   | – “Explosive atmospheres – Part 37: Non-electrical equipment for explosive atmospheres. Non-electrical types of protection. Constructional safety “c”, supervised ignition “b”, immersion in a liquid “k”. |
| ● <b>EN 14986:2017-02</b>          | – “Designing of fans applied in areas of explosion hazard”   |
| ● <b>ISO 14694:2003+AMD1:2010</b>  | – “Industrial fans – Guidelines on the quality of balancing and the vibration level.   |
| ● <b>ISO 14695:2008/AC:2017-10</b> | – “Industrial fans – Methods of measurements of vibration of fans.   |

The appliance is marked on the nominal data plate:



**II 2 G c Ex e II T3**

.....  
place, date

**KLIMAWENT S.A.**  
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.....  
signature of authorised person

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

.....  
name, surname, function  
of the signatory

NIP: 958 159 21 35  
REGON: 220631262  
Bank Account: **Santander Bank Polska S.A.**  
56 1500 1025 1210 2007 8845 0000

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