

# OPERATION MANUAL

PA 01 E

PA 02 E

PA 03 E



**Air Supply Unit**

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## INTRODUCTION

The present Operation Manual consisting of technical details, operating instructions and technical specification for the installation of the PA E air supply unit of VENTS series (hereinafter Unit).

## PURPOSE

The unit is designed to supply heated air in air supply systems of private residences, offices, hotels, cafes, conference halls and other accommodation and public spaces.

PA E is a component unit and is not designed for autonomous operation.

The transported air must not contain any combustible or explosive mixtures, chemical fumes, coarse dust, soot, fat or any environment prolific for the formation of harmful substances (toxic substances, dust and pathogens) as well as sticky substances and fibrous materials.



**The unit is not intended for operation by children or any persons with reduced physical, mental or sensory capacities as well persons lacking the required training.**

**The unit must be handled only by properly qualified personnel after the appropriate safety briefing**

**The installation are of the unit must be chosen to prevent access by unattended children.**

## DELIVERY SET

- Unit
- Operation Manual
- Delivery Packing: wooden box

- 1 pic;
- 1 pic;
- 1 pic.

## DESIGNATION KEY

**PA XX E 3**

**Number of power voltage phases**

**Heater Type**

E - electric heater

**Capacity, m<sup>3</sup>/h**

01, 02, 03

**Unit Type**

PA - air supply unit

### BASIC TECHNICAL DATA

The unit is designed for operation in an enclosed area at ambient temperatures from -25 °C to +55 °C for PA 01 E and from -25 °C to +45 °C for PA 02 E and PA 03 E at relative humidity of up to 80%.

Hazardous parts access and water ingress protection standard:

- unit motors - IP 44;
- unit assembly connected to air ducts - IP 22.

The unit series designations, outside and connecting connections as well and its appearance are given on Fig. 1 and in Table 1 whereas the Table 2 contains the technical parameters.

The units undergo continuous improvements - therefore, some models may slightly differ from the ones described herein.

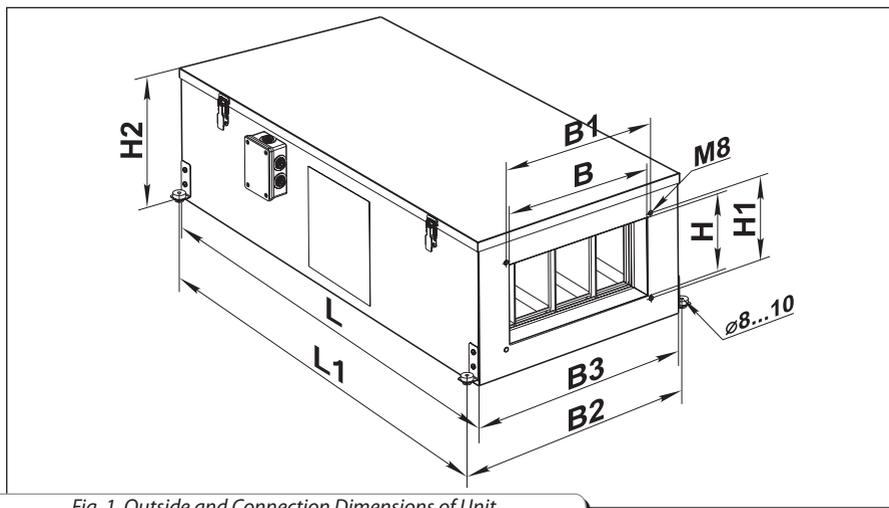


Fig. 1. Outside and Connection Dimensions of Unit

Table. 1. Outside and Connecting Dimensions of Unit

Type	Dimensions, mm								
	B	B1	B2	B3	H	H1	H2	L	L1
PA 01 E	400	420	624	582	200	220	374	1145	1106
PA 02 E	500	520	689	646	300	320	447	1250	1212
PA 03 E	600	620	888	744	350	370	500	1252	1212

Table. 2. Unit Technical Parameters

Model	PA 01 E	PA 02 E	PA 03 E
Supply Voltage, V/50 Hz	3 ~ 400		
Maximum Fan Power, W	320	620	1330
Fan Current, A	0,55	1,05	2,4
Electric Heater Power, kW	12,0	18,0	21,0
Electric Heater Current, A	17,4	26,0	30,0
Total Unit Power, kW	12,4	19,0	22,4
Maximum Unit Current, A	18,0	27,1	32,4
Maximum Air Flow, m <sup>3</sup> /h	1275	2500	3350
Rotation speed, min <sup>-1</sup>	2700	2690	2730
Sound Pressure Level at 3m. , dB(A)	51	54	57
Maximum Transported Air Temperature, °C at T	from -25 to + 55	from -25 to + 45	
Casing Material	Aluzinc		
Insulation	50 mm, mineral wool		
Filter	Panel type G4		
Connected duct size, mm	400x200	500x300	600x350
Weight, kg	56	61	91

### SAFETY REQUIREMENTS

While operating and mounting the unit consider the requirements of the present operation manual as well as general requirements of all applicable local and national building and electrical codes and standards.

The unit must be properly earthed!

Before connecting the unit to power mains make sure that the unit is free of any visible damages or any other foreign objects inside the casing that can damage the impeller blades. Otherwise contact the service center.



#### Warning!

**Disconnect the unit from power supply prior to any mounting, servicing, connection or repair operations with the unit.**



#### Do not!

- **Do not operate the unit beyond the specified temperature range or in an aggressive and explosive medium!**
- **Do not connect clothes dryers or similar equipment to the ventilation system!**
- **Do not operate the unit in the air and dust mixture medium!**

## DESIGN AND OPERATING PRINCIPLE

The unit is designed for supply of purified and heated intake air. The unit design is given on Fig. 2. The basic configuration includes:

- Electric motor with a fan (Item 1).
- Built-in electric heater (Item 2).
- Class G4 filter (Item 3).
- Detachable cover (Item 4).

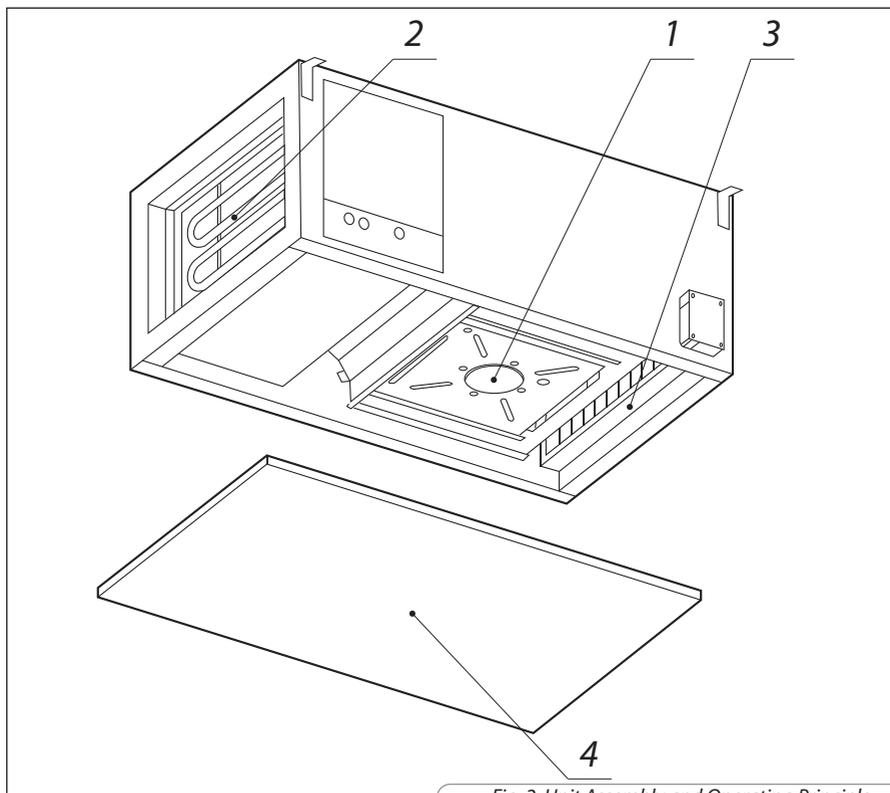


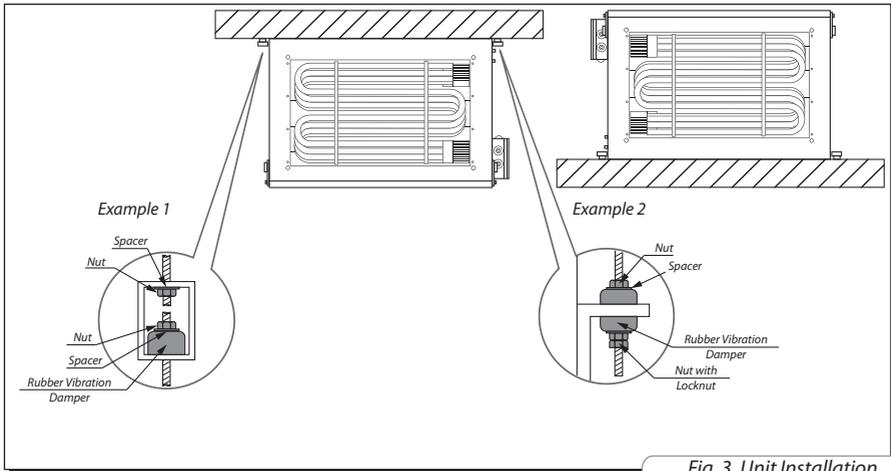
Fig. 2. Unit Assembly and Operating Principle

## INSTALLATION AND SETUP

The unit installation must ensure sufficient access for maintenance, servicing or replacement operations. The arrow on cover must match the air flow direction in the system.

The unit is suspended on a rod threaded into an expansion anchor or, alternatively, securely fixed in a horizontal position (Fig. 3).

The unit is integrated into a ventilation system by connection to rectangular or round air ducts with the appropriate fittings (not included in the basic package).



*Fig. 3. Unit Installation*

For best performance provide a straight section of air duct at least 1 m long on each side while installing the unit.

The unit must be equipped with a grill or other device (maximum mesh size - 12.5 mm) to prevent free access to the fans.

### **SAFETY REQUIREMENTS**

The unit must be mounted on a rigid and stable substructure.

Suspend the unit with bolts. Make sure that the mating structure can withstand the weight of the block.

If necessary, reinforce the installation area with beams etc., and then install the suspension bolts.

Insufficient strength of the structure used for the installation may resonate in response to the block vibrations resulting in noise.

Always arrange for a maintenance zone and an access hole in the ceiling for inspection of the filters, heat exchanger and fans.

Provide a separate access hole for each unit - see more details on the outline drawing (Fig. 1).

Prior to installation make sure that the ambient conditions are suitable for the unit operation.

Insufficient length of the mounting bolts to be used for attaching the unit to the ceiling may cause abnormal noise due to resonance with the ceiling.

To prevent resonance use sufficiently long bolts.

If the abnormal noise is generated at the coiled duct mating replace the coiled duct with a flexible line, or, alternatively, use flexible inserts to eliminate resonance.

**POWER MAINS CONNECTION**

**Disconnect the unit from the power mains prior to any electrical work.  
The power mains connection shall only be performed by professional electricians qualified for unassisted operations with electrical installations up to 1000 V after careful reading of the present operation manual.  
The rated electrical parameters of the unit are given on the manufacturer's label.  
Any tampering with the internal connections is prohibited and will void the warranty.**

The unit is designed for connection to 400 V / 50 Hz three-phase AC mains.

The connection is made using durable, insulated and heat-resistant conductors (cables and wires) with the minimum section of 4 mm<sup>2</sup>.

However, the given section value is tentative.

The choice of the required wire section in each case shall be based on the wire type, its maximum permissible heating temperature, its insulation, length and installation method.

Use only copper core wires.

The unit must be connected to the power mains via an automatic cutout switch built into the stationary wiring with a magnetic breaker. The trip current shall slightly exceed the current consumption (see Table 2).

The fan electric motor connections shall be made on terminal block X1 mounted inside the terminal box on the unit side wall in accordance with the electrical wiring diagram and terminal designations.

Fig. 4 shows the fan motor connection diagram for three-phase mains.

The terminal designation diagram is glued on the inside of the terminal box.

The cables are routed into terminal box on the unit side wall through a sealed lead-in on the box wall to ensure protection class compliance.

The external lead-in (400V/50Hz) must be equipped with an automatic cutout switch with a magnetic breaker built into the stationary wiring to disconnect all the mains phases.

The position of QF external switch must ensure free access for quick power-off.

The electric heater power (contacts L1, L2 and L3) is supplied autonomously to terminal block X2 on the heater side wall according to the electrical wiring diagram (Fig. 4).

The same block terminates the normally closed contacts of thermal switches (TS1 and TS2 — from the automatic reset thermal switch; TS3 and TS4 — from the emergency thermal switch with manual reset) which commutate the electric heater power circuits depending on the customer's needs.



**If the product is equipped with a complete automatic control system the internal electrical connections and the external connections must be made in accordance with «Automatic Control System of Air Supply Unit with Electric Air Heater» operation manual (included in the delivery package).**

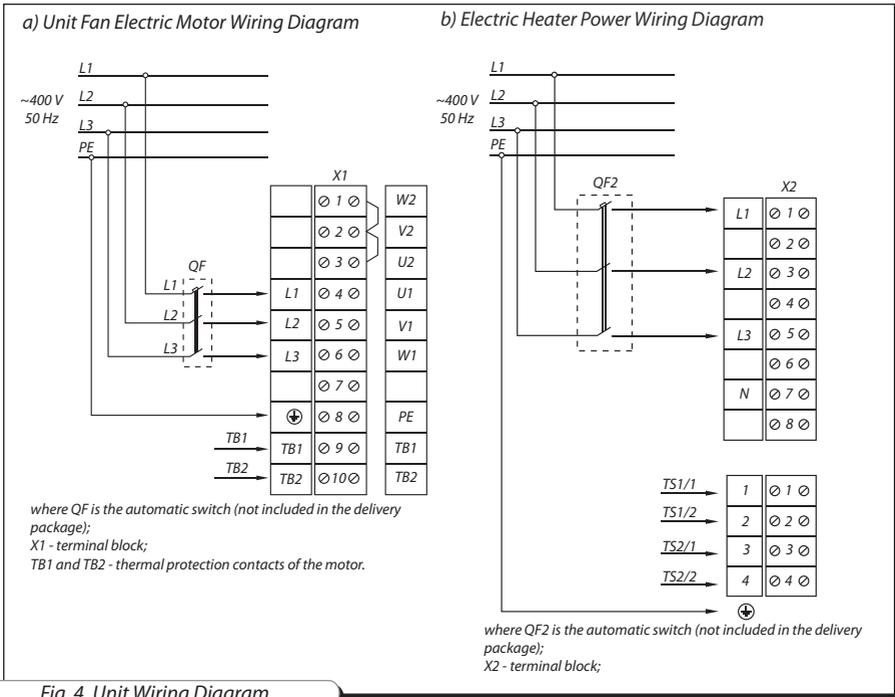


Fig. 4. Unit Wiring Diagram

## TECHNICAL MAINTENANCE

Maintenance operations of the unit are required 3-4 times per year. Maintenance includes regular cleaning and the following operations:

### 1. Filter maintenance (3-4 times per year).

Dirty filters increase air resistance in the system and reduce supply air volume. The filters require cleaning once in 3-4 months. Vacuum cleaning is allowed. Worn out filters should be replaced with the new filters once or twice per year. Contact your local manufacturer representative for new filters. To replace the filter:

1. Remove the cover.
2. Replace the filter.
3. Reinstall the cover.

### 2. Fan inspection (once per year).

Even in case of regular perform regular maintenance of the filter, some dust and grease can get accumulated inside the fan and reduce the unit performance and supply air flow.

Clean the fan with a soft brush or cloth. No water and abrasive detergent, sharp objects or solvents are allowed for cleaning to prevent the impeller damage.

### 3. Ductwork system inspection (once in 5 years).

Even if you follow all the listed maintenance guidelines, some dust can get accumulated inside the air ducts and reduce the unit performance.

Duct maintenance means regular cleaning or replacements.

## TROUBLESHOOTING

### Possible faults and fault handling

Trouble	Possible reasons	Fault handling
The fan does not get started.	No power supply.	Make sure the power supply line is connected correct, otherwise troubleshoot the connection error.
Cold supply air.	Filter is clogged.	Clean or replace the filter.
Low air flow.	Filter or fan is clogged.	Clean or replace the filter; clean the fan.
	Ventilation system is clogged or damaged.	Check the grille and clean it if required. Make sure that the air ducts are not soiled and not damaged.
Noise, vibration.	Fan impeller is clogged.	Clean the fan impeller.
	The fan screws are loose.	Check the screw tightening.

## STORAGE AND TRANSPORTATION RULES

Store the unit in the manufacturer's original packing box in a closed ventilated premise with temperature range from +10°C to +40°C and relative humidity less than 80% (at +20°C).

Vapors or particles which can cause corrosion or damage the insulation or connection tightness are not allowed in the storage environment.

Use hoist machinery for handling and transportation to prevent possible mechanical damages of the unit.

Fulfill the requirements for transportation of the specified cargo type during cargo-handling operations.

Use any vehicle types for the unit transportation provided that it is protected against mechanical or weather damage.

Avoid any mechanical shocks and strokes during handling operations.



**MANUFACTURER'S WARRANTY**

Manufacturer hereby guarantees normal performance of the unit during two years from the date of retail sale provided compliance with transport, storage, mounting and operation regulations.

In case of no confirmation of the sales date the warranty period is calculated from the manufacturing date.

In case of failures in the unit operation during the warranty period the manufacturer will accept reclamations and complaints from the owner of the device only after receiving technically sound act with detailed description of the failure.

Unit damage as a result of unauthorized tampering with the circuit diagram is not a warranty case.

For warranty and post-warranty services of the unit please contact the product manufacturer.

In case of warranty claim please submit the present user's manual with the seller's stamp, filled connection certificate and warranty card.

Warranty repair services and post-warranty services are fulfilled at the manufacturing facility.



**WARRANTY CLAIMS ARE ACCEPTED WITH THIS USER'S MANUAL AND FILLED CONNECTION CERTIFICATE ONLY.**



**The MANUFACTURER is not responsible for any mechanical or physical damages resulting from the manual requirements violence, the unit misuse or gross mechanical effect.**

**Fulfill the requirements set in the user's manual to ensure proper functioning of the unit.**

