USER'S OPERATION MANUAL AND INSTALLATION GUIDELINE

AIR CURTAINS

PVZ Series

2011

Content

PURPOSE

The air curtains are used to protect premises against cold or warm air ingress from outside into the door or gate openings. The curtains are designed for internal installation above or near the gates.

The effective reach distance (height or width) ranges from 2 to 5 m. The air curtains are applied in manufacturing facilities, stockhouses, workshops, garages, car service centers, roofed market halls, exhibition halls, shopping malls and other premises with high traffic and pedestrian load.

The air curtains that produce a warmed-up air stream barrier against cold air ingress through the open opening have the highest efficiency and this design reduces thermal losses while opening the doors or gates.

During hot weather the air curtains create a barrier against hot air ingress from outside in the openings of the conditioned premises and cooling chambers.

DESIGNATION KEY

VENTS PVZ XXXxXXX X X

Outlet section length [m]
2; 2,5; 3; 3,5; 4; 4,5; 5

Heater type
W - water heater
E - electric heater
N - no heater

Rectangular air duct size
600x350, 700x400, 800x500, 900x500

Product name
Rectangular air curtain

Designation key example:

PVZ 600x350 W 2.5 - the air curtain with air duct size 600x350 mm equipped with a water heater; the reach distance is 2.5 m.

PVZ 600x350 E 5 - the air curtain with air duct size 600x350 mm equipped with an electric heater; the reach distance is 5 m.

BASIC TECHNICAL DATA

Overall dimensions and technical data are shown in tables 1,2 and in figures 1, 2, 3.

Air curtain	PVZ 600x350	PVZ 700x400	PVZ 800x500	PVZ 900x500
Voltage [V]	3~400	3~400	3~400	3~400
Air capacity [m3/h]	4000	6000	6200	8400
Fan power [kW]	2,46	3,63	2,79	3,87
Fan current [A]	3,93	6,0	5,18	7,0
Electric heater power [kW]	21	36	36	45
Electric heater current [A]	30	52	52	65
Fan type	VKPF 4D 600x350	VKPF 4D 700x400	VKPF 4D 800x500	VKPF 4D 600x350
Filter type	FB 600x350	FB 700x400	FB 800x500	FB 900x500
Water heater type	NKV 600x350-2	NKV 700x400-2	NKV 800x500-2	NKV 900x500-2
Electric heater type	NK 600x350-21-3	NK 700x400-36-3	NK 800x500-36-3	NK 900x500-45-3

Table 1

Air curtain	PVZ 600x350	PVZ 700x400	PVZ 800x500	PVZ 900x500
B, [mm]	600	700	800	900
L, [mm]	350	400	500	500
H1, [mm]	от 2,0 до 5,0			
H2 (air curtain with no heater) [mm]	1150	1300	1450	1520
H2 (air curtain with water heater) [mm]	1350	1500	1650	1720
H2 (air curtain with electric heater) [mm]	1350	2050	1960	2270

Table 2

AIR CURTAIN STRUCTURE, MOUNTING SEQUENCE

The air curtain is supplied disassembled.
Separate curtain components are connected with flanges.
While mounting the curtain follow the prescribed mounting sequence, fig. 1, fig. 2, fig. 3.
Provide a self-adhesive seal between the flanges and check the connection of separate parts for current conductivity.
The air curtains are available in 4 standard sizes depending on power.
The air curtains and the components are made of galvanized steel. A high-pressure supply fan with rectangular duct connection is used for air supply and a panel G4 filter is used for air filtration. Air is heated with a water or electric heater.

If water serves as a heat medium the air curtains are suitable for indoor installation only in the premises with the internal air temperature above 0°C.

The outlet openings are designed for air distribution.
The standard outlet sections are 1 and 1.5 m long to provide matching with any door opening size.

Depending on the air heating technology the air curtains are classified as follows: PVZ N, PVZ W, PVZ E.

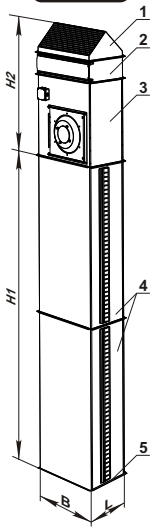
The air curtains PVZ N (fig. 1) consist of the rectangular intake grille 1 with the filter 2 attached thereon and connected to the fan 3. The outlet opening is behind the fan and is covered with the plate 5.
The air curtain components shall be bolted.

The PVZ W air curtains (fig. 2) consist of the rectangular grille 1 with the filter 2 attached thereon and connected to the water heater 6 and the fan 3. The outlet section 4 is behind the fan and is covered with the plate 5.
The air curtain components shall be bolted.

The PVZ E air curtains (fig. 3) consist of the rectangular grille 1 with the filter 2 attached thereon and connected to the electric heater 7 and the fan 3. The outlet section 4 is behind the fan and is covered with the plate 5. The air curtain components shall be bolted.

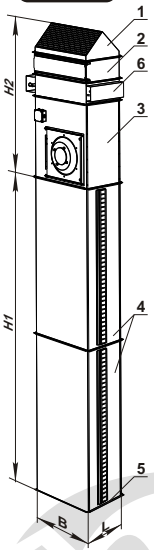
While installing the air curtain PVZ make sure that the arrow on the casing matches the air flow direction in the system.

Figure 1



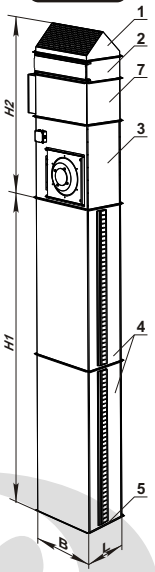
Air curtain with no heater

Figure 2



Air curtain with water heater

Figure 3



Air curtain with electric heater

1 - protecting grille
2 - filter
3 - fan
4 - air outlet section
5 - plate
6 - water heater
7 - electric heater

Nomographic charts for air curtain selection

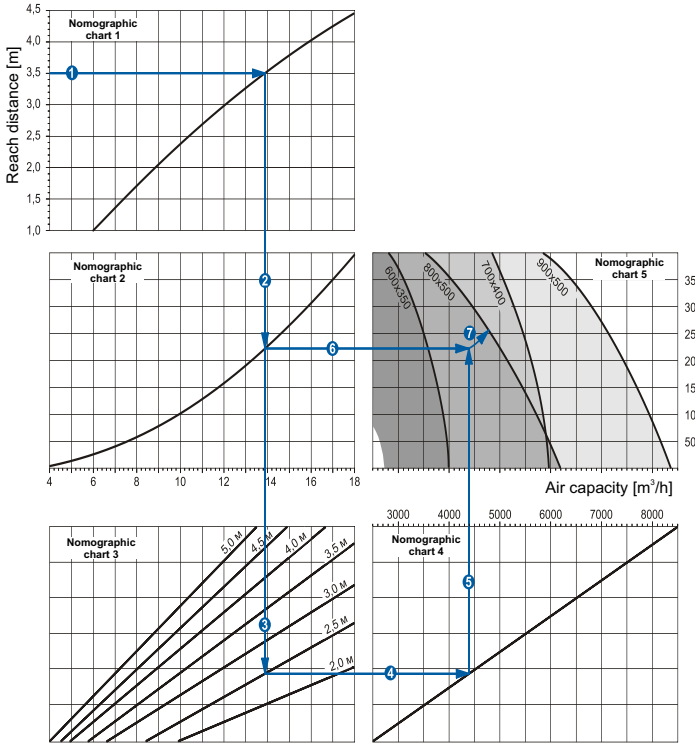


Figure 4

How to use nomographic chart to select an air curtain:

1 - Determine the required air curtain orientation (e.g., Vertical).

2 - Determine the required heating type (W - water heater E - electric heater, N - no heater).

3 - The nomographic chart 1 shows the effective reach distance of the curtain ❶ (e.g., 3.5 m; for vertical orientation that value is equal to the door opening width).

4 - For the outlet air stream speed from the curtain draw a perpendicular line ❷ down to the nomographic chart (e.g., 13.9 m/s).

5 - Using the nomographic chart 3 determine the outlet section length ❸ (e.g., 2.5 m; for vertical orientation that is equal to the height of the door opening).

6 - The nomographic chart 4 shows the minimum required air capacity (lines ❹ and ❺, e.g., 4400 m^3/h).

7 - The intersection of curves ❺ and ❻ lies at one of the colour fields of the nomographic chart 5.

8 - Projection of curve along the parable ❼ up to the point of intersection with the curve that limits the colour field from above, determines the operating point of the air curtain. The air capacity 4800 m^3/h which is somewhat above the minimum required air capacity refers to the effective operating point.

Installation and mounting guidelines

Any installation, connection, adjustment and repair works are allowed after the unit is disconnected from power supply network only.
Only the qualified electricians with the experience of independent electrical works at the electrical installations with the voltage up to 1000 V and instructed on general and fire safety requirements are allowed for mounting and connection of the PVZ unit.
The rated electrical parameters are shown at the manufacturing label.
Any tampering with the internal connection is prohibited and will void the free warranty service.
The PVZ units are suitable for horizontal or vertical mounting above or on the side of the window or door opening.
In case of horizontal mounting the air curtain is fixed above the door opening (fig. 4) and creates the air stream vertically downwards along the whole opening width.
In case of vertical mounting the curtain is fixed at both sides of the opening (fig. 5) or at one side (fig. 6) and the air is streamed horizontally.
The air curtain is fixed to the wall through flanges and specially designed fastening bracket. The mounting shall provide easy access to the servicing, repair and replacement operations.
The air curtain shall be connected to power mains through the automatic circuit breaker in compliance with all applicable local electrotechnical standards.
The installation of the automatic circuit breaker shall provide unhampered access for a quick shutdown of the unit.

WARNING: The PVZ unit design may have sharp edges and corners. Take measures to avoid cutting!

Wiring diagrams are shown in the following user's operation manual:
NK - duct heater
(included into delivery set)
VKPF - rectangular inline fan
(included into delivery set)

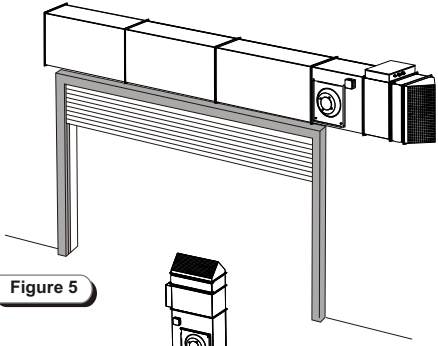


Figure 5

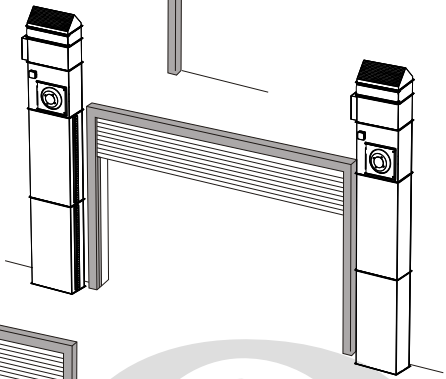


Figure 6

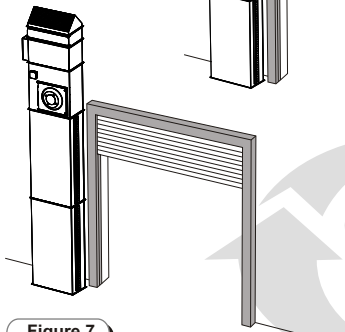


Figure 7

SAFETY REQUIREMENTS

Disconnect the air curtain from power supply before any operations with the unit. Make sure that the fan impeller is not running and the heating elements are cold.

Follow all the recommendations set forth in this manual while mounting and operating the air curtains as well as all the applicable local and national building, electrical and fire safety norms and standards.

Do not power up the electric heater without sufficient air supply to the tubular heating elements.

In case of thermal sensor switch actuation power the PVZ unit off, troubleshoot the malfunction which has triggered the sensor and only after successful troubleshooting restart the unit.

The device is not designed to be used by children, physically or mentally disabled persons, persons with sensory disorder, persons with no appropriate life experience and/or expertise unless they are properly instructed about the device use or supervised by the person in charge for their safety.

WARNING:
The operation of the air curtain heater without thermal switch connection to the external emergency devices to cut off power supply to the heating elements in case of the thermal switch activation, is strictly forbidden.

All servicing operations shall be performed by duly qualified personnel only!

Make sure of no foreign objects in the air curtain duct before connecting the unit to power supply network.

Forbidden:
- operating the unit in premises with the relative air humidity above 80%, in explosive and chemically reactive environment that can damage the metals and insulation;
- operating the unit without grounding;
- starting the air curtain without fan operation;
- operation of the unit close to flammable objects;
- covering the unit and limiting the air circulation at inlet or outlet.
- operating the unit in case of electrical sparking, cable damage, numerous emergency shutoff device triggering.
- misuse of the device, any unauthorized alteration or modification.

Servicing and maintenance

The air curtains require regular and correct servicing for reliable and effective operation and long service life. Servicing and maintenance works are allowed after disconnecting the PVZ units from power supply only.

The air curtain components (intake grille, filter, heating elements, impeller) may get soiled during operation which results in the heating elements overheating and malfunction.

The air curtain elements require regular cleaning from dust and dirt at least once in 6 months

WARNING: The PVZ unit design may have sharp edges and corners. Take measures to avoid cutting!

Storage and transportation rules

Store the PVZ air curtain and its components in the original manufacturer's packing box in a ventilated premise at the temperature from +5°C to + 40°C and relative humidity not exceeding 80% (at +25°C).

Vapors of acid, alkaline and other aggressive admixtures in the ambient air are not allowed.

Use any vehicle types to transport the units provided that they are protected against mechanical and weather damage.
Avoid any mechanical shocks and strokes during handling operations.