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СУЧАСНІ СИСТЕМИ КОМФОРТУ

ACTIVE VORTEX DEFLECTOR

AVD type

TECHNICAL PASSPORT

AVD–00 OM, PS

The Active Vortex Deflector of AVD Type (hereinafter referred to as "the deflector") is designed and manufactured by CCK TM LLC. It is an aerodynamic unit installed above the ventilation duct of industrial buildings and multi-storey residential buildings, swimming pools, hangars, granaries, livestock complexes (poultry farms, horse breeding farms, pig farms, etc.).

The deflector is manufactured in accordance with the technical documentation. This manual serves as the primary operational document for the deflector.

Each deflector must be accompanied by a technical passport, each technical passport must be certified with the official stamp of «CCK TM» LLC (blue ink). Copies are not valid.

1. PRODUCT APPLICATION

1.1 Deflectors are used to increase the draft in the ventilation duct, effectively remove air from the indoor and under-roof spaces in summer, create comfortable indoor conditions, and prevent atmospheric precipitation, birds, and other foreign objects from entering the ventilation duct.

1.2 The unit has climatic design category U1 in accordance with GOST 15150.

1.3 All threaded connections must be protected against self loosening.

1.4 Complies with the requirements for resistance to mechanical external influencing factors - according to group M1 of GOST 17516.1.

2. DESIGN AND OPERATING PRINCIPLE

2.1 The design of the deflector consists of three main elements: a turbine casing made of thin metal blades with a curved surface; a shaft with a bearing support connected to the casing; and a mounting ring that is installed on the ventilation duct.

The deflectors are made of galvanized or stainless steel and can be powder coated (colors according to the RAL catalog).

2.2 The deflector's principle of operation is based on the effect of asymmetric airflow around the dome-shaped housing of the unit. Regardless of wind direction or speed, the

airflow moving perpendicularly to the axis of rotation flows over the left side of the housing at a lower velocity than over the right side. When interacting with the exposed edges of the blades, the airflow is partially decelerated, while simultaneously imparting rotational motion to the housing. On the right side of the deflector wheel, the blades are oriented in the opposite direction, allowing the incoming airflow to pass over the surface with no resistance and no loss of speed. As a result of the Bernoulli effect and centrifugal force, the air is expelled from the housing at a lower speed than the wind.

2.3 AVD roof-mounted elements with diameters ranging from 100 mm to 630 mm are available with three standard connection types:

- Socket connection – mounted on the outer side of the ventilation duct;
- Flanged connection – bolt-mounted via the flange diameter;
- Nipple connection – mounted on the inner side of the ventilation duct.

2.4 The wind speed for normal operation is 2...12 m/s, the maximum permissible wind speed for stable operation of the deflector is 15 m/s. If the wind speed exceeds 15 m/s, it is necessary to install the protective cover (ordered separately) as shown in Figure 3. Installation manual for the protective cover is supplied with the cover.

Note. The design of the deflectors may be subject to modifications that do not affect its functional performance and are not specified in this document.

3. TECHNICAL SPECIFICATIONS

3.1 The general view, overall dimensions, connection, and installation dimensions of the deflectors shall comply with the dimensions specified in Figures 1–2 and Tables 1–3.

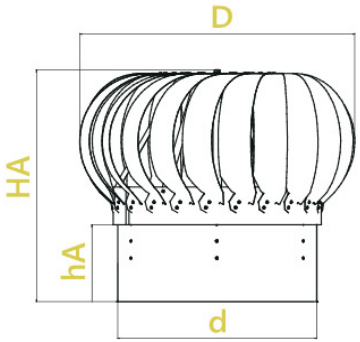

Figure 1. General view of AVD-type deflector with socket connection

Table 1. Overall dimensions of AVD-0

Size	Dimensions, mm				Weight, kg (max)
	d	D	HA	hA	
AVD-100-0	101	280	265	75	2,7
AVD-125-0	126	280	265	75	2,7
AVD-150-0	151	280	265	75	2,83
AVD-160-0	161	285	266	75	2,9
AVD-200-0	201	290	315	90	3
AVD-250-0	251	365	345	115	3,95
AVD-280-0	281	400	365	110	4,5
AVD-315-0	316	415	365	110	5,7
AVD-355-0	356	525	385	115	7,1
AVD-400-0	401	540	465	140	10,3
AVD-500-0	501	700	610	200	14,12
AVD-560-0	561	805	725	225	17,11
AVD-630-0	631	826	772	200	24

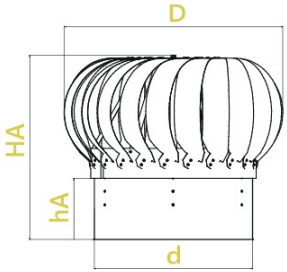

Figure 2. General view of AVD-type deflector with nipple connection

Table 2. Overall dimensions of AVD-1

Size	Dimensions, mm				Adapter size for SP unit		Weight, kg (max)
	d	D	HA	hA	50 мм	100 мм	
AVD-100-1	95,5	280	265	75	3	4	2,6
AVD-125-1	120,5	280	265	75	3	4	2,73
AVD-150-1	144,5	280	265	75	3	4	2,8
AVD-160-1	154,5	285	266	75	3	4	2,85
AVD-200-1	194,5	290	315	90	3	4	2,84
AVD-250-1	244,5	365	345	115	4	5	3,8
AVD-280-1	274,5	400	365	110	4	5	4,4
AVD-315-1	309,5	415	365	110	5	6	5,5
AVD-355-1	349,5	525	385	115	5	6	7
AVD-400-1	394,5	540	465	140	5	6	10,1
AVD-500-1	494,5	700	610	200	6	8	14,05
AVD-560-1	554,5	805	725	225	6	8	17,05
AVD-630-1	624,5	826	772	200	8	9	23,5

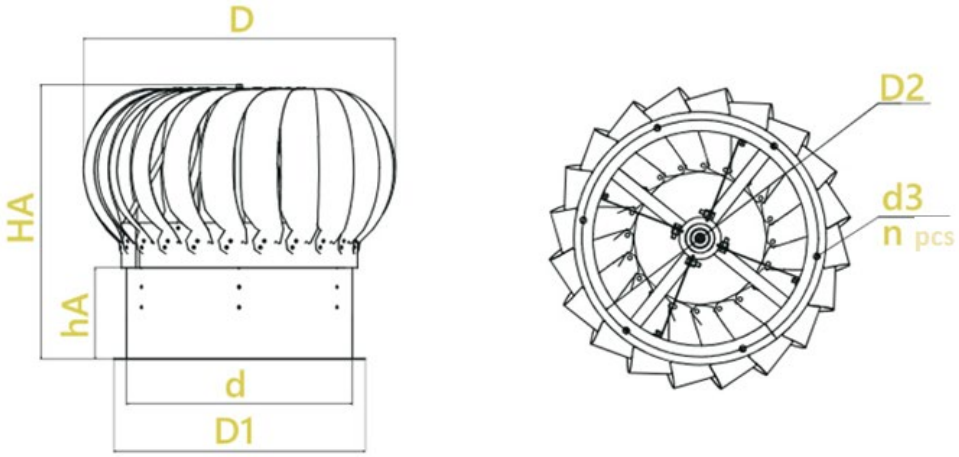

Figure 3. General view of AVD-type deflector with flanged connection

Table 3**.** Overall dimensions of AVD-2

Size	Dimensions, mm								Adapter size for SP unit		Weight, kg (max)
	d	D	D1	D2	HA	hA	d3	n	50 мм	100 мм	
AVD-100-2	101	280	150	125	265	75	8	4	3	4	2,8
AVD-125-2	126	280	175	150	265	75	8	4	3	4	3
AVD-150-2	151	280	201	175	265	75	8	4	3	4	3,02
AVD-160-2	161	285	211	185	266	75	8	6	3	4	3,02
AVD-200-2	201	290	251	225	315	90	8	6	3	4	3,1
AVD-250-2	251	365	301	275	345	115	8	6	4	5	4,12
AVD-280-2	281	400	331	310	365	110	8	6	4	5	4,8
AVD-315-2	316	415	376	345	365	110	8	8	5	6	6
AVD-355-2	356	525	416	395	385	115	8	8	5	6	7,2
AVD-400-2	401	540	461	430	465	140	8	8	5	6	10,5
AVD-500-2	501	700	561	530	610	200	10	10	6	8	14,5
AVD-560-2	561	805	621	590	725	225	10	10	6	8	17,5
AVD-630-2	631	826	691	660	752	200	10	10	8	9	24,3

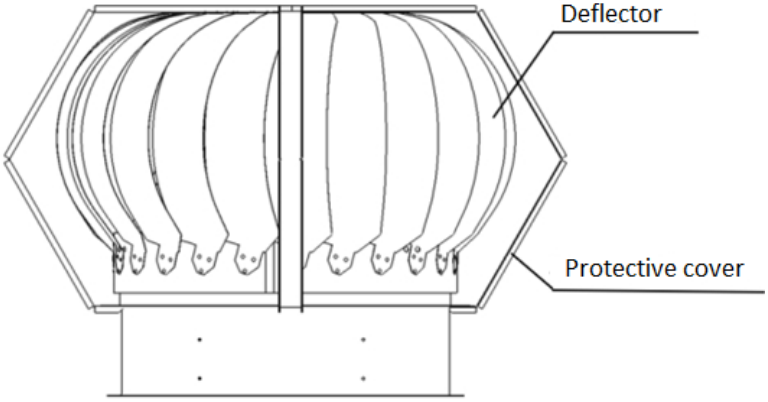

Figure 3. Deflector with protective cover.

3.2 Examples of deflector installation are shown in Figures 4–5:

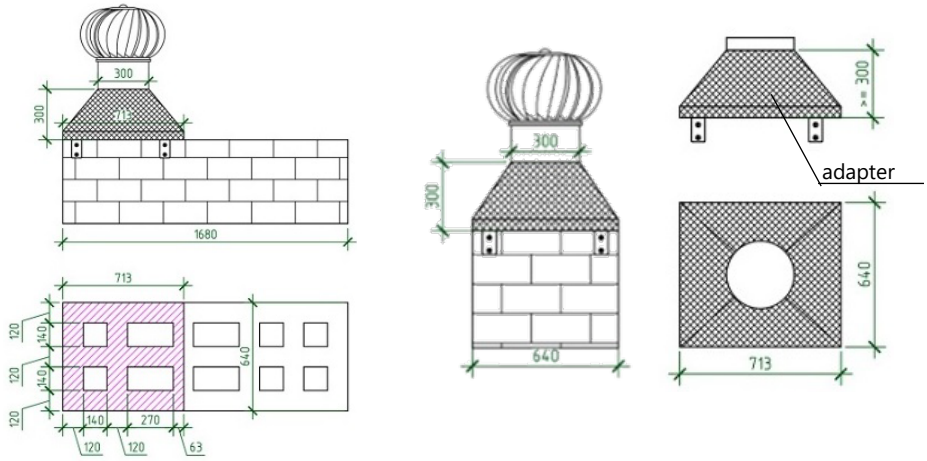

Figure 4. Example of deflector installation on a ventilation duct.

Adapter (not included in the scope of supply).

The inner walls may be lined with self-adhesive thermal insulation to prevent condensation formation.

The adapter dimensions depend on the type of ventilation duct the deflector is connected to.

IMPORTANT: DO NOT BLOCK ADJACENT VENTILATION DUCTS.

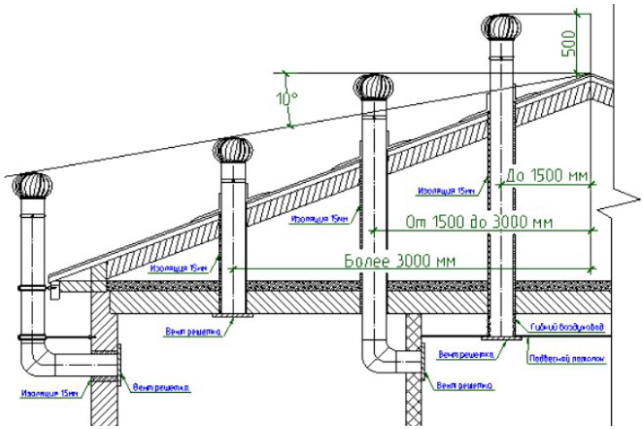

Figure 5. Example of deflector installation on pitched roofs

3. SCOPE OF SUPPLY

Name	Quantity	Factory №	Note
Deflector **AVD**_____	1		
Passport	1		

4. SAFETY INSTRUCTIONS

4.1. When preparing the deflector for operation, as well as during its operation, it is necessary to follow the general safety rules.

4.2. The unit should be installed in accordance with the diagram in Figure 4-5..

4.3 When performing installation work on pitched roofs, appropriate safety precautions must be observed and fall protection systems must be used.

5 INSTALLATION AND PREPARATION PROCEDURE

5.1. The deflector is intended to be installed above a ventilation duct. It may be mounted directly onto a pitched or flat roof, at the outlet of a ventilation shaft. The installation location depends on the application. When installed on a pitched roof, the highest point of the slope should be selected. When upgrading ventilation systems in residential buildings, installation is typically performed at the ventilation shaft outlet.

5.2 Before installation, a visual inspection of the deflector must be carried out. The turbine housing should rotate freely without jamming. If any damage or dents are detected (as a result of improper transportation or storage), the deflector must not be commissioned without the manufacturer's approval.

5.3 Ensure there are no foreign objects inside the deflector.

5.4 Check the tightening force of the bearing bolts and the deflector cap.

6 MAINTENANCE

6.1 To ensure reliable and trouble-free operation throughout the entire service life, regular maintenance must be performed to keep the deflector in proper working condition.

6.2 It is recommended that, once per year (preferably after winter), the cap be removed to inspect and lubricate the bearing. For small-size deflectors, motor oil may be used; other models should be lubricated with Lithol grease or any other high-quality consistency lubricant.

6.3 In the event of unexpected natural disasters (hurricane, tornado, etc.), there is a risk of damage to the unit's structural elements. In this case, it is necessary to check the unit's operation, identify technical faults, check the tightness of threaded connections, bearing assembly, and the reliability of blades' fastening to the housing.

6.4 During the winter season, it is necessary to monitor and prevent icing of moisture condensation along the pipe edge, as this may reduce the deflector's performance..

6.5 The main malfunction of the deflector is the lack of rotation of the housing with blades. The causes of the deflector malfunction may be:

- insufficient or no wind force;
- bearing seizure – check for any mechanical obstructions preventing rotation. Lubricate or replace the bearing with an equivalent model if necessary;
- deflector icing – inspect the unit or wait for ambient temperature to rise;
- mechanical damage – inspect for foreign objects inside the deflector.

7 TRANSPORTATION AND STORAGE INFORMATION

7.1 The deflector is transported in fully assembled condition.

7.2 The deflectors can be transported by any type of transport that ensures their safety and excludes mechanical damage, in accordance with the rules of cargo transportation applicable to this type of transport.

7.3 Deflectors should be stored in areas protected from precipitation and direct sunlight.

8. CERTIFICATE OF ACCEPTANCE

Deflector **AVD**_____ Factory №_____
The unit complies with the technical documentation and is approved for operation.

Head of Q.C.D.

Stamp

_____

_____
personal signature printed name

_____
year, month

9. WARRANTY OBLIGATIONS

9.1 The manufacturer guarantees that the deflectors comply with the design documentation, provided that the consumer follows the operating, transportation, and storage conditions specified in this manual..
9.2 The warranty period is 12 months from the date of commissioning, but no more than 18 months from the date of sale.
9.3 The warranty does not cover:
- defects caused by improper storage and/or transportation, poor installation, handling, connection, maintenance, or intentional damage;
- malfunctions or damage resulting from extreme environmental conditions or force majeure events (fire, natural disasters, etc.);
- damage (malfunction) or disruption of normal operation caused by animals, birds, or insects.

9.4 The manufacturer bears no liability for any potential losses caused to the consumer in case of non-compliance with the instructions provided in this manual, or in cases of misuse, operation not in accordance with its intended purpose, or under conditions not specified in this manual.

10. CLAIMS PROCEDURE

10.1. The recipient must file a claim with the supplier in the event of non-compliance regarding the quality or completeness of the delivered product, labeling or sealing, the terms of the contract, technical specifications, or the accompanying documentation certifying the quality and completeness of the product — either upon receipt, during pre-

installation, or in the process of installation, operation, or storage.

10.2. Claims must be submitted in the form of a claim report (defect report) prepared by a commission. The commission shall include representatives of the recipient, supplier, and, if necessary, component suppliers or contractors. The presence of representatives of the product supplier and manufacturer is mandatory.

If a supplier's or manufacturer's representative fails to appear, a unilateral report must be drawn up with the participation of a Chamber of Commerce and Industry expert.

10.3. The report must include the following:

a) product name and designation, factory number;

b) number and date of the call notification;

c) information on commissioning and startup activities, date of commissioning;

d) mode of operation (continuous or variable, operating pressure drop, temperature of earing housings, etc.);

e) total operating time in hours;

f) description and nature of the malfunction (external manifestations, measures taken to eliminate it);

g) possible cause of the product failure.

The listed information shall be filled in from the product's logbook.

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