AYSU
HVAC SYSTEMS

DAMPERS · TECHNICAL DATASHEET

Product code: **AYS-DMP-BD**

BACK DRAFT DAMPER



Damper whose blades close under their own weight when airflow stops, preventing reverse flow and the entry of outside air.

CONTROL	Gravity
DIRECTION	One-way flow
SIZE	Made to project
POWER	Not required

FEATURES

- Blades open automatically with the airflow
- Blades close under their own weight when flow stops
- Prevents reverse flow and outside air entry
- No actuator or electrical connection required
- Multi-blade design; sizes made to project
- Flanged mounting on fan outlet, duct or outside wall

TECHNICAL SPECIFICATIONS

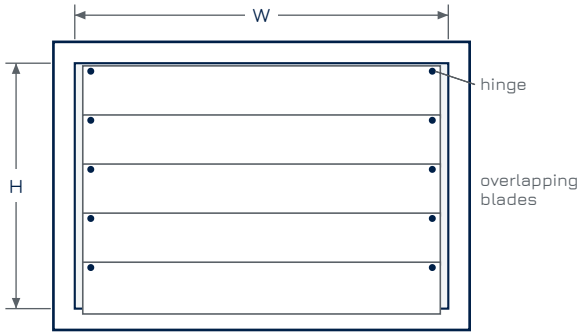
Damper type multi-blade, gravity	**Operation** one-way, opened by airflow
Closing by blade weight	**Control** mechanical, no actuator
Blade axis horizontal, top-hinged	**Connection** flanged, duct / wall
Size made to project, any size	**Installation** horizontal airflow

APPLICATIONS

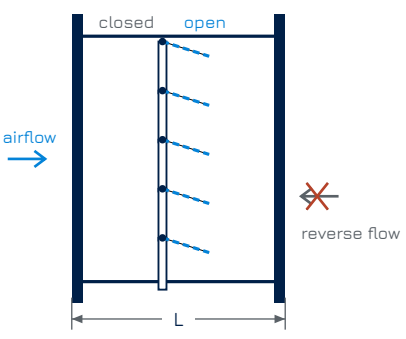
Fan outlets, extract ducts, kitchen and WC extract; stops outside air, wind and odours coming back when the fan is off.

TECHNICAL DRAWINGS

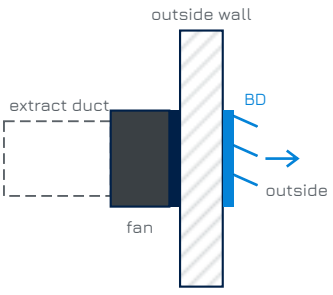
sizes to project · not to scale



FRONT VIEW



SECTION A–A



APPLICATION EXAMPLE

ORDERING INFORMATION

Size	W × H duct / wall opening and L casing length are set to project
Flow direction	per arrow on casing; horizontal blade axes, top-hinged
Installation	fan outlet, in-duct or outside wall; rain hood recommended outdoors
Order code	AYS-DMP-BD-[W×H], e.g. AYS-DMP-BD-500×500

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Product code: **AYS-DMP-BD**

BACK DRAFT DAMPER

OPERATING PRINCIPLE

Back draft damper · AYS-DMP-BD

1. **Fan off:** With no airflow the blades stay closed under their own weight; outside air, wind and odours cannot enter.
2. **Fan on:** The fan airflow pushes the blades open in the flow direction.
3. **Fully open:** As velocity rises the blades open further and air is discharged.
4. **Reverse flow:** When flow stops or reverses the blades close; they do not open in reverse.

APPLICATION NOTES

Sufficient air velocity is needed for the blades to open fully; at very low airflow they stay partly open and pressure drop increases. Install with horizontal, top-hinged blades and flow in the direction of the arrow on the casing. In kitchen extract, grease build-up can hinder blade movement, so clean regularly.

INSTALLATION AND MAINTENANCE

1. **Installation:** Mount the damper level on its flanges at the fan outlet, in the duct or in the outside wall opening, with the correct flow direction.
2. **Position:** Leave space for the blades to open freely; if discharging outdoors, a rain hood and bird mesh are recommended.
3. **Commissioning:** Check that the blades open with the fan running and close fully when it stops.
4. **Maintenance:** Regularly clean blades, hinges and seals and check free movement.

SELECTION TABLE

Blades open · ρ = 1.2 kg/m³ · calculated · sizes are examples

W × H	A m²	AIRFLOW [m³/h] · by face velocity			Δp [Pa] · calculated		
		3 m/s	5 m/s	7 m/s	3 m/s	5 m/s	7 m/s
200 × 200	0.04	430	720	1,010	19.2	53.3	104.5
300 × 200	0.06	650	1,080	1,510	17.3	48.0	94.1
300 × 300	0.09	970	1,620	2,270	15.6	43.2	84.7
400 × 300	0.12	1,300	2,160	3,020	14.8	41.1	80.6
400 × 400	0.16	1,730	2,880	4,030	14.1	39.2	76.8
500 × 400	0.20	2,160	3,600	5,040	13.7	38.1	74.7
500 × 500	0.25	2,700	4,500	6,300	13.3	37.0	72.6
600 × 400	0.24	2,590	4,320	6,050	13.5	37.4	73.3
600 × 500	0.30	3,240	5,400	7,560	13.1	36.4	71.3
600 × 600	0.36	3,890	6,480	9,070	12.9	35.7	70.0
800 × 500	0.40	4,320	7,200	10,080	12.8	35.6	69.7
800 × 600	0.48	5,180	8,640	12,100	12.6	34.9	68.4
800 × 800	0.64	6,910	11,520	16,130	12.3	34.1	66.9
1000 × 800	0.80	8,640	14,400	20,160	12.1	33.7	66.0
1000 × 1000	1.00	10,800	18,000	25,200	12.0	33.2	65.2

VALIDITY

Sizes in the table are examples; the damper is made to project in any size. Airflow and Δp are calculated with fully open blades, a 25 mm frame and 10 % blade blockage (not laboratory tested); at low velocities the blades stay partly open.

SYMBOLS

A	damper face area (W × H)
ζ	pressure loss coefficient
Face velocity	airflow / face area
Δp	damper pressure drop
W × H	opening size