AYSU
HVAC SYSTEMS

DAMPERS · TECHNICAL DATASHEET

Product code: **AYS-DMP-YT**

FIRE DAMPER WITH THERMAL FUSE



Non-motorized fire damper fitted in ducts where they pass through fire-rated walls and floors. At 72 °C the thermal fuse melts and a spring closes the blade.

FIRE RATING EI 90 – EI 120 S	SIZE Made to project
THERMAL FUSE 72 °C	POWER Not required

FEATURES

- Normally open; air passes freely
- Thermal fuse melts when duct air reaches 72 °C
- Spring closes the blade, stopping flame and smoke
- No actuator or electrical connection required
- Rectangular and circular; sizes made to project

TECHNICAL SPECIFICATIONS

Fire resistance
EI 90 S / EI 120 S, per model

Release
72 °C fusible link

Closing
by spring, mechanical

Control
no actuator, no power needed

Size
made to project, any size

Duct connection
flanged

RELATED PRODUCTS

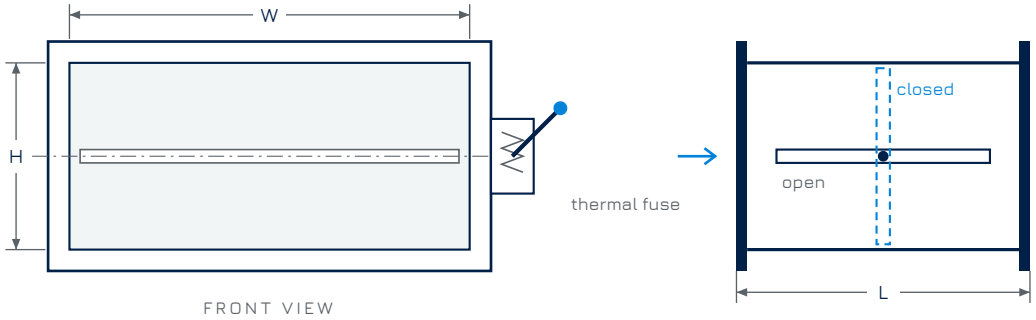
AYS-DMP-VM
Motorized
motorized; closes on signal

AYS-DMP-VS
Calcium silicate
intumescent seal · EI 120 S

AYS-DMP-VR
Circular
circular ducts; motorized or thermal

DIMENSIONS

W × H to project · dimensions in mm



FRONT VIEW

SECTION A–A

H \ W	200	300	400	500	600	800	1000	1200	1500
200	0.024	0.038	0.052	0.066	0.080	0.108	0.136	0.164	0.206
300	0.041	0.065	0.089	0.113	0.137	0.185	0.233	0.281	0.353
400	0.058	0.092	0.126	0.160	0.194	0.262	0.330	0.398	0.500
500	0.075	0.119	0.163	0.207	0.251	0.339	0.427	0.515	0.647
600	0.092	0.146	0.200	0.254	0.308	0.416	0.524	0.632	0.794
700	0.109	0.173	0.237	0.301	0.365	0.493	0.621	0.749	0.941
800	0.126	0.200	0.274	0.348	0.422	0.570	0.718	0.866	1.088

Table: free area with blade open A_f [m²], calculated. W × H: duct inner size, L: casing length (per model).
Sizes in the table are examples; dampers are made to project in any size. Order code: AYS-DMP-YT-[W×H], e.g. AYS-DMP-YT-600×400.

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FIRE DAMPER WITH THERMAL FUSE

OPERATING PRINCIPLE

Fire damper with thermal fuse · AYS-DMP-YT

1. **Normal operation:** The blade is held open by the thermal fuse with the spring loaded. Air passes freely through the duct.
2. **Release:** In a fire the duct air reaches 72 °C; the thermal fuse melts and releases the blade latch.
3. **Closing:** The spring closes the blade onto its stops, stopping flame, hot gas and smoke.
4. **Resetting:** After a fire the melted fuse is replaced, the blade is opened by hand and the spring is reset.

SELECTION TABLE

Blade open · ρ = 1.2 kg/m³ · calculated

W × H	A_f m²	AIRFLOW [m³/h] · by duct velocity			Δp [Pa] · calculated			ζ
		3 m/s	5 m/s	7 m/s	3 m/s	5 m/s	7 m/s	
200 × 200	0.024	430	720	1,010	5.7	15.8	31.0	1.06
300 × 200	0.038	650	1,080	1,510	4.6	12.8	25.1	0.85
300 × 300	0.065	970	1,620	2,270	2.7	7.5	14.8	0.50
400 × 300	0.089	1,300	2,160	3,020	2.4	6.7	13.2	0.45
400 × 400	0.126	1,730	2,880	4,030	1.9	5.2	10.2	0.35
500 × 400	0.160	2,160	3,600	5,040	1.7	4.8	9.5	0.32
600 × 400	0.194	2,590	4,320	6,050	1.7	4.6	9.1	0.31
600 × 500	0.251	3,240	5,400	7,560	1.4	4.0	7.8	0.27
800 × 500	0.339	4,320	7,200	10,080	1.4	3.8	7.4	0.25
800 × 600	0.416	5,180	8,640	12,100	1.2	3.4	6.7	0.23
1000 × 600	0.524	6,480	10,800	15,120	1.2	3.3	6.5	0.22
1000 × 800	0.718	8,640	14,400	20,160	1.1	3.0	5.8	0.20
1200 × 800	0.866	10,370	17,280	24,190	1.0	2.9	5.7	0.19
1500 × 800	1.088	12,960	21,600	30,240	1.0	2.8	5.5	0.19

ENGINEERING CALCULATION

Example: 600 × 400, duct velocity 5 m/s

1. **Airflow:** $V = W \cdot H \cdot v = 0.6 \cdot 0.4 \cdot 5 \cdot 3600 = 4{,}320$ m³/h
2. **Free area:** $A_f = (W - 2{\cdot}15)(H - 2{\cdot}15 - 30) = 0.57 \cdot 0.34 = 0.194$ m²
3. **Loss coefficient:** $\zeta = (A / (0.85 \cdot A_f) - 1)^2 + 0{,}10 = 0{,}31$
4. **Pressure drop:** $\Delta p = \zeta \cdot \rho \cdot v^2 / 2 = 0.31 \cdot 1.2 \cdot 5^2 / 2 = 4.6$ Pa (blade open)

INSTALLATION AND MAINTENANCE

1. **Installation:** The damper is installed to the wall / floor detail defined in its certificate; the gap is filled with mortar or approved fire-stopping.
2. **Duct connection:** Ducts are flange-connected and supported separately; no load on the damper casing, and the blade must rotate freely.
3. **Access:** An access door is provided in the duct to reach the fuse and blade. No electrical connection is needed.
4. **Maintenance and testing:** Check the fuse, spring and seals regularly; test by closing the blade by hand and resetting it.

VALIDITY

Fire resistance class (EI 90 S, EI 120 S) and certificates are stated per model. Airflow and pressure drop are calculated (not laboratory tested).

SYMBOLS

- **E** integrity: no flame or hot gas passes
- **I** insulation: the other side stays cool
- **S** smoke leakage
- A_f free area (m²)
- **ζ** pressure loss coefficient