

# SMOKE DAMPER

## MO-D / MS-D 400°C/2H

The **MO-D/MS-D** dampers have been designed to withstand pressure up to 3 000 Pa and are suitable for smoke exhaust application in tunnels and metro, commercial or industrial buildings.

The **MO-D / MS-D** dampers have been tested by independent laboratories. These tests confirmed the withstanding of the smoke dampers at temperatures of 400°C for 2h with manoeuvrability. These tests have been carried out by Exova Warrington fire laboratory for dampers in horizontal and vertical position (*Test reports n° 353550 and n° 345508*).



### CODIFICATION

- M** ———> **Gamme M** - Industrial
- X** ———> **O** - Not classified  
**S** - Airtightness Class 3
- Y** ———> **D** - Smoke exhaust application

### CONSTRUCTION

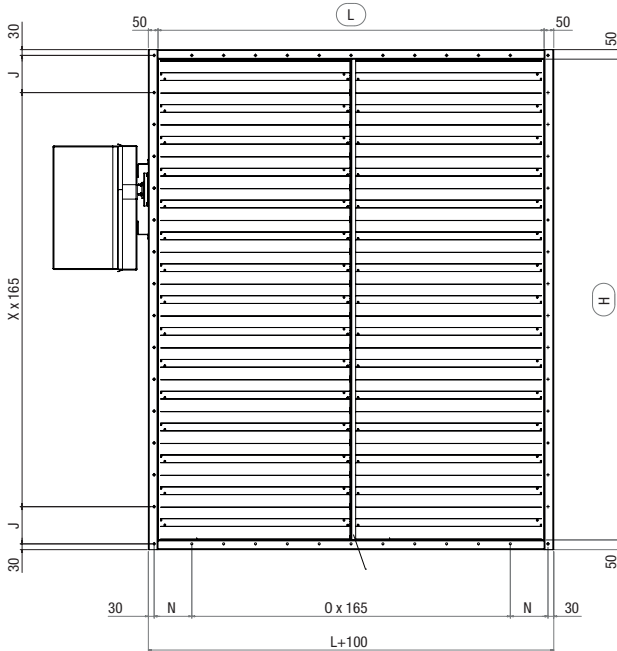
		MO-D	MS-D
Lateral seals		Stainless steel AISI 304 - 1.4301 foil gasket between blades and frame	Stainless steel AISI 304 - 1.4301 foil gasket between blades and frame. + Silicone seals on the edge of blades
Upstream/downstream airtightness		Not classified	Class 3 according to EN 1751
Frame	Material	Galvanized steel Z275 <i>Option : stainless steel AISI 304L - 1.4307 or AISI 316L - 1.4404</i>	
	Thickness	2 mm	
	Drilling	Standard F2A drilling to a pitch of 165 mm <i>Option : special flange drilling</i>	
Blades	Material	Galvanized steel Z275 <i>Option : stainless steel AISI 304L - 1.4307 or AISI 316L - 1.4404</i>	
	Thickness	2 x 0.8 mm	
	Pitch	165 mm	
Shafts		Ø12 mm, Zinc-coated steel <i>Option : stainless steel AISI 304L - 1.4307 or AISI 316L - 1.4404</i>	
Bearings		Bronze	
Linkage		Galvanized steel Z275 <i>Option : stainless steel AISI 304L - 1.4307 or AISI 316L - 1.4404</i>	
Control		Opposed blade operation Manual or motorized <i>Option : actuator supply and factory mounting</i>	
Actuator fireproof protection		F2A also manufactures fireproof enclosure dedicated to actuator protection	

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### DIMENSIONS

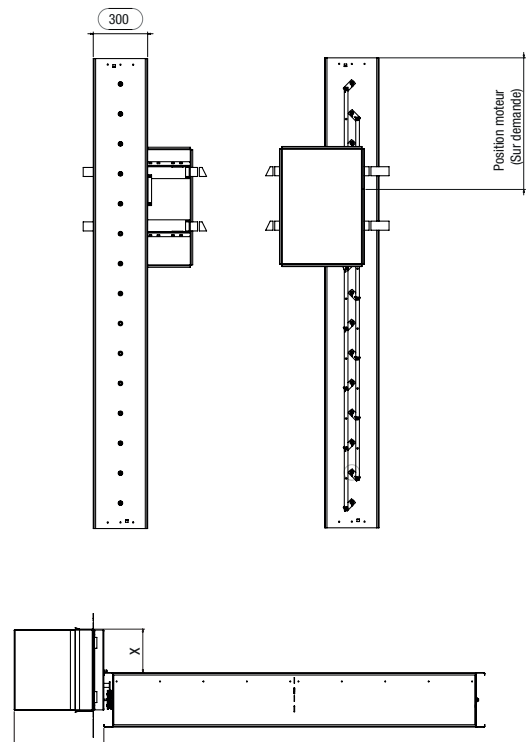
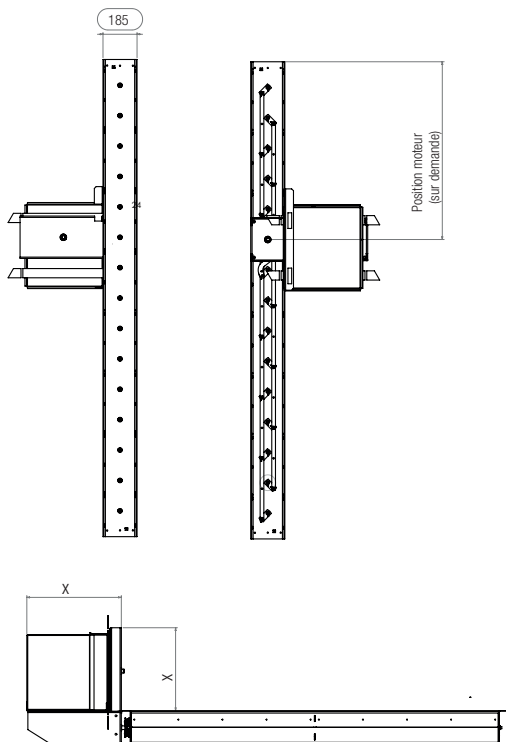
- Height H from 180 to 2490 mm with a pitch of 165 mm
- Length L from 200 to 2000 mm
- Blades pitch = 165 mm
- 2 frame lengths available : 185 mm and 300 mm



Vertical intermediate stiffener when blade's length is above 1000 mm.  
Intermediate dimensions on request. Larger sizes with vertical / horizontal coupling of several dampers.

**185 mm frame : forward position of the actuator outside the airflow d'air**

**300 mm frame : actuator directly on frame**



Dimension X space requirement : on request

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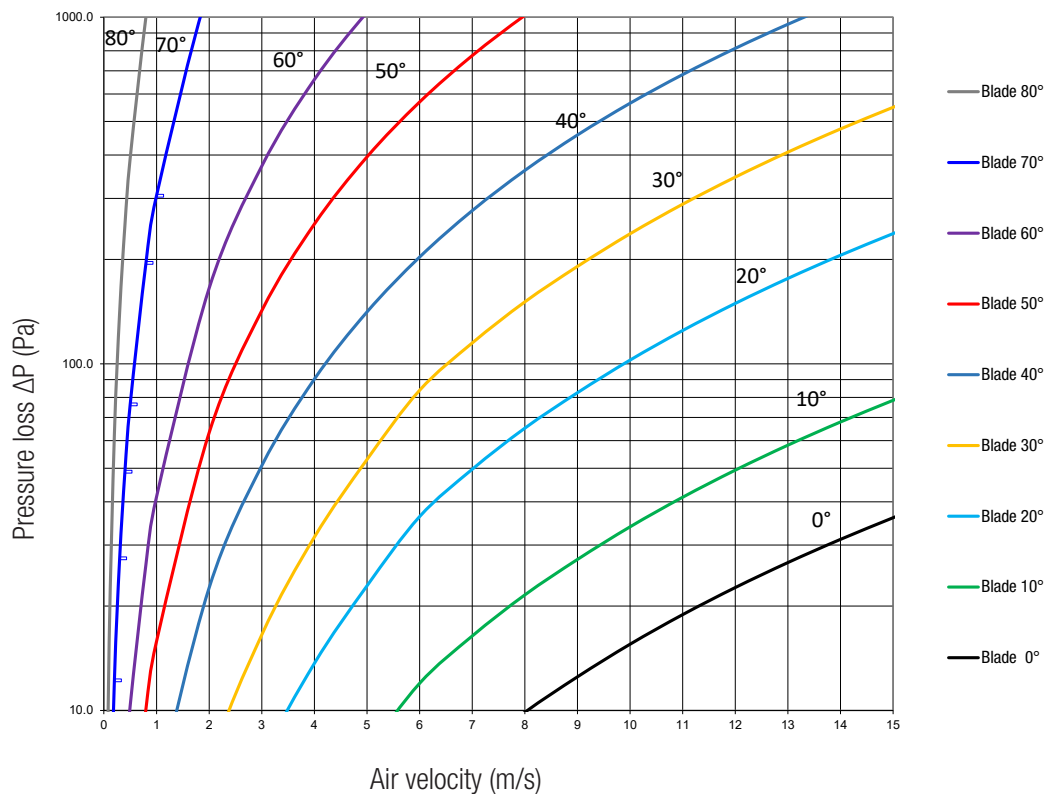
MO-D / MS-D 400°C/2H

## WEIGHT (Kg) (Excluding actuator and accessories)

H \ L	200	400	600	800	1000	1200	1400	1600	1800	2000
180	12	15	18	21	24	27	30	32	35	38
510	22	26	30	34	38	44	48	52	56	60
840	31	37	42	47	52	61	67	71	77	82
1170	41	47	54	60	67	76	86	91	98	105
1500	51	59	66	73	82	96	104	111	119	127
1830	61	70	78	87	96	114	123	130	140	149
2160	70	81	91	100	111	131	141	150	161	171
2490	80	92	103	114	125	149	160	170	181	193

## PRESSURE LOSSES

The MO-D / MS-D dampers pressure losses have been tested in an independent laboratory. Values are given for single-module dampers or multiple-modules dampers with flange-to-flange areas equipped with V-shaped inlet and outlet profiles.



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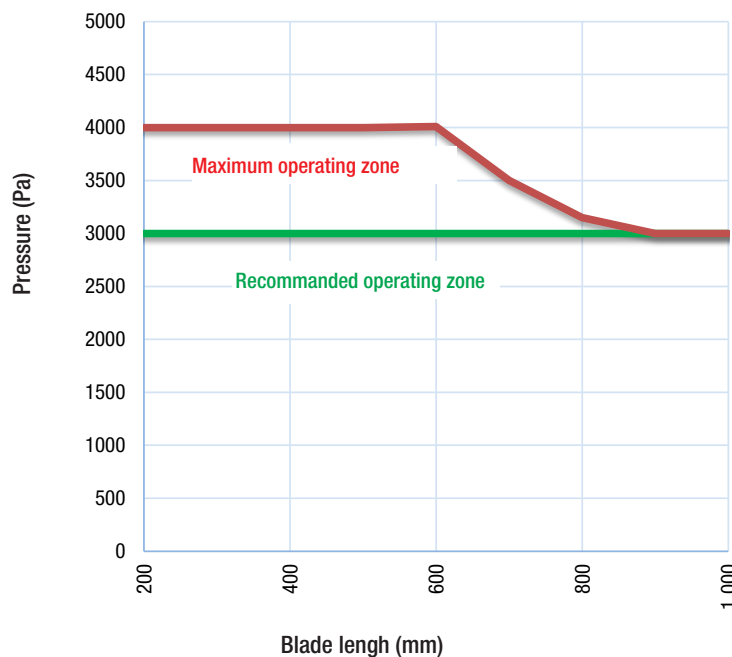
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## FREE AREA

L H	500	700	900	1100	1300	1500	1700	1800	1900	2000
840	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1005	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1170	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1335	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1500	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1665	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1830	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
1995	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
2160	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
2325	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%
2490	83%	83%	83%	80%	81%	81%	81%	81%	81%	81%

## USE LIMITS

This is the difference between the upstream and downstream pressure that dampers of the MO-D / MS-D range can withstand in closed position according to the blade length.



- Use limits : until 15 m/s
- Accidental limits : until 20 m/s

We recommend that the differential pressure does not exceed 3000Pa for a 1000-mm long MO-D/MS-D damper.  
**Beyond the limitation use, on request**

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## ACTUATOR TORQUE

On request

## BLANKET OPTION

The blanket provide thermal properties improvement and the handleability is also improved. It is needed from both sides and possess high strength before and after heating. It do not contains binder or lubricant and do not emits any fumes or smell during the first firing.

		High Temperature blanket
Width		100 mm
Thickness		3 mm
Length		to define
Classification Temperature		1300 °C
Color		White
Density		128 kg/m <sup>3</sup>
Thermal Conductivity, ASTM C-201	200° C	0.04 W/m K
	400° C	0.08 W/m K
	600° C	0.14 W/m K
	800° C	0.23 W/m K
	1000° C	0.34 W/m K
	1200° C	0.48 W/m K
Tensile strength, EN 1094-1		75 kPa
Chemical Analysis	SiO <sub>2</sub>	70-80 %
	CaO + MgO	18-25 %
	Autres oxydes	< 3 %

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## OPTION FIXING CLAMP

