

# INDUSTRIAL DAMPER

## M RANGE

Industrial dampers of the **M range** are reinforced and allow to shut-off or control the air volume of large ventilation ductworks (up to H2490 x L2500 mm in one element) subject to high pressures and temperatures (+200 °C). They can withstand to commercial buildings or industrial constraints.


The **M range** dampers are available in ATEX version.



### CODIFICATION

- M** —————> **M range** - Industrial
- X** —————> **O** - Not classified
- G** - Class 1
- S** - Class 3
- E** - Class 4

### CONSTRUCTION

Control		Frame	
<b>Manual</b>	Smooth shaft Ø16 - Length 70 mm Lever and manual locking <i>Option : reinforced blocking lever</i>	<b>Width</b> : 185 mm <b>Thickness</b> : 2.0 mm Galvanized steel <i>Option : stainless steel 304 L or 316 L, or painted steel (RAL standard)</i>	
<b>Motorized</b>	Smooth shaft Ø16 - Length 120 mm <i>Option : actuators supplied on request and factory-mounted</i>	Drilling Ø10 mm in each angle <i>In option : standard drilling F2A with a pitch of 165 mm, spécial drilling</i> Flanges : 50 mm <i>in option</i> 40 mm	
Linkage		Blades	
Linkage in zinc-plated steel with opposed blade operation <i>Option : stainless steel 304 L or 316 L, paralel blade operation</i>		Galvanized steel <i>Option : stainless steel 304 L ou 316 L or painted steel (Standard RAL)</i> Pitch : 165 mm	

### PERFORMANCES

	Volume control O type	Antifrost G type	Shut-off S type	Airtight E type
Upsteam/downstream airtightness (according to EN 1751)	Not classified	Class 1 (EN 1751)	Class 3 (EN 1751)	Class 4 (EN 1751)
Frame's airtightness (according to EN 1751)	Class A <i>Option : class C (EN 1751)</i>			Class C (EN 1751)
Acceptable pressure	3 000 Pa (for L=1m length)			
Operating temperatures	From -20°C to +80°C <i>Option : +200 °C</i>			

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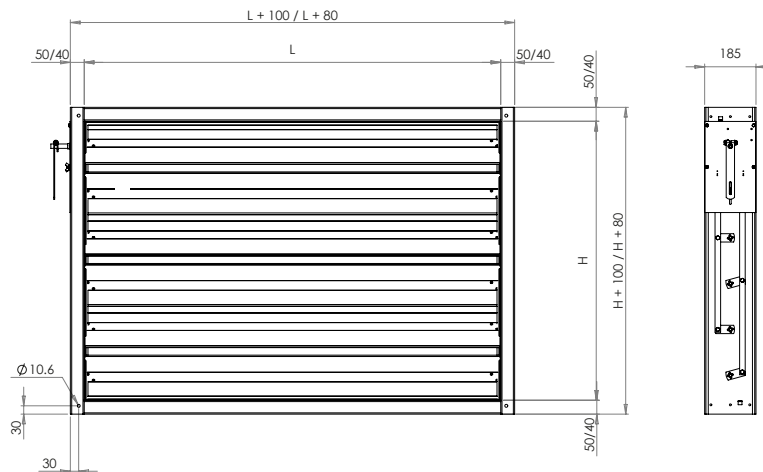
## M RANGE

### DIMENSIONS

Height H from 180 to 2490 mm  
Length L from 200 to 2500 mm

#### ME dampers :

Height H from 345 to 1995 mm  
Length L from 400 to 2000 mm



#### Options :

Circular connection up to Ø1250 mm

Mounted with weather louvre / Can be coupled with other dampers / Actuators in the air flow.

### WEIGHT (kg)

L \ H	200	400	600	800	1000	1200	1400	1600	2000	2500
180	13	17	21	25	28	37	40	44	51	61
510	21	27	32	38	43	58	64	69	80	93
840	30	37	44	51	58	80	87	95	109	127
1170	38	47	56	65	73	102	111	120	138	160
1500	46	57	67	78	88	125	135	146	167	193
1830	55	67	79	91	104	147	159	171	196	226
2160	63	77	91	105	119	169	183	197	224	259
2490	73	88	104	120	135	192	208	223	255	294

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### OPTION ATEX

**M range** ATEX is expected to be used on risk' sites because of explosive atmospheres : groupe II.

However, it is not intended for underground or surface mining installation due to the firedamp and flammable dust (Groupe I).



Moreover, some conditions are required to be compliant with ATEX directive :

#### Technical conditions according to subdivisions gas groups

	Differentiation in gas group		
	IIA	IIB	IIC
Volume control MO	No restriction	If blade length > 1400 mm -> vertical stiffener	If blade length > 280 mm -> vertical stiffener
Antifrost MG	No restriction		
Shut-off MS	No restriction		
Airtight ME	No restriction		

#### Technical conditions according to temperature class

Acceptable operating T°	Acceptable Class T°	Blades seals material	Usable bearings material	Usable construction materials
-20°C ≤ T° ≤ +85°C	T6	EPDM Silicone	Bronze Téflon	Galvanized steel Stainless steel
-20°C ≤ T° ≤ +100°C	T5	Silicone	Bronze	Galvanized steel Stainless steel
-20°C ≤ T° ≤ +135°C	T4	Silicone	Bronze	Galvanized steel Stainless steel
-20°C ≤ T° ≤ +200°C	T3	Silicone	Bronze	Galvanized steel Stainless steel

**NB** : if operating temperature is between -50°C ≤ T° ≤ -20°C => Stainless steel mandatory

**CAUTION** : please consider the temperature of the airflow and not the ignition temperature of gas/dust.

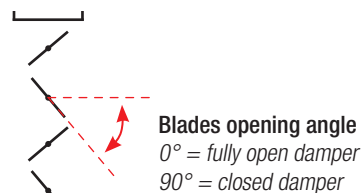
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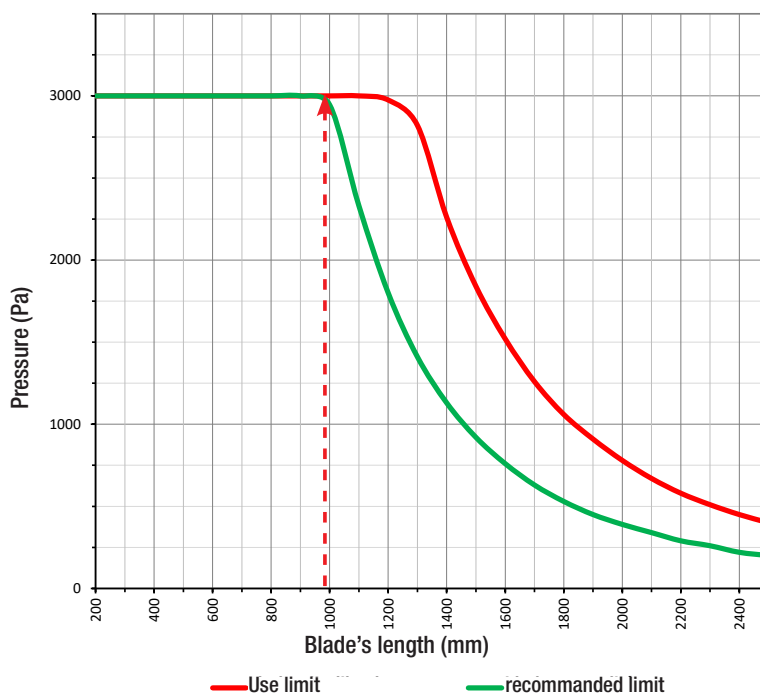
### PRESSURE LOSSES

The following pressure losses (Pa) are given according to the blades opening angle (in °) and air velocity (m/s).

Air velocity (m/s)	Blades opening angle		
	0°	30°	60°
2	< 5	10	175
4	< 5	35	630
6	8	75	-
8	10	135	
10	15	210	
12	20	305	
15	30	485	



### USE LIMITS



We recommend that the differential pressure does not exceed 3000 Pa for a blade length of 1000 mm. Beyond this limite operation, construction is possible with vertical central stiffener.

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### REGENERATED NOISE

The acoustic performances of our U dampers have been tested in an independent laboratory (CTTM) according to ISO 7235: 2009 standard.



#### Air flow noise $L_w$ in dB ( blades opening angle 30°)

- Damper type MO (opposed blade operation) :

Air velocity (m/s)	Frequency (Hz)								Gobal $L_w$ (dB)
	63	125	250	500	1000	2000	4000	8000	
<b>2 m/s</b>	33.5	37.8	39.0	40.7	32.2	27.2	34.8	39.0	46.1
<b>4 m/s</b>	42.9	46.1	48.8	56.1	53.4	47.3	38.3	39.1	59.2
<b>6 m/s</b>	53.7	53.0	54.0	62.0	62.3	58.7	50.9	42.2	66.9
<b>8 m/s</b>	65.3	61.2	59.2	66.5	68.0	66.2	59.8	50.4	73.4
<b>10 m/s</b>	74.3	70.1	63.8	70.1	72.3	71.6	66.2	57.6	79.3
<b>12 m/s</b>	78.7	77.4	68.1	73.4	75.9	76.2	71.3	63.3	84.0
<b>15 m/s</b>	81.9	83.4	76.0	77.8	80.4	82.0	77.8	70.5	89.1

Datas are given for a damper 500 x 500 mm.

From these data, you can calculate the regenerated noise of a damper of different dimensions by applying the formula below for every frequency band :

$$L_{w_{63}} = x_{63} + 10 \log \left( \frac{S}{0.25} \right)$$

$x_{63}$  = air flow noise for a damper 500 x 500 mm at 63 Hz (in dB) for a given air velocity => read the data in the table.

$S$  = damper section (in  $m^2$ ).

$L_{w_{63}}$  = air flow noise required at 63 Hz (in dB) for a given air velocity.

#### Example – Calculation of regenerated noise for a damper MO 1200 x 1500 mm

- Damper section :  $S = 1.2 \times 1.5 = 1.8 m^2$

Calculation of the regenerated noise at 63Hz for an air velocity of 4 m/s :

$$L_{w_{63}} = 42.9 + 10 \log \left( \frac{1.8}{0.25} \right) = 51.5 \text{ dB}$$

Value in the table at a frequency of 63Hz and for an air velocity of 4 m/s.

Repeat this calculation rules to get the regenerated noise for all frequencies (63Hz - 8kHz).

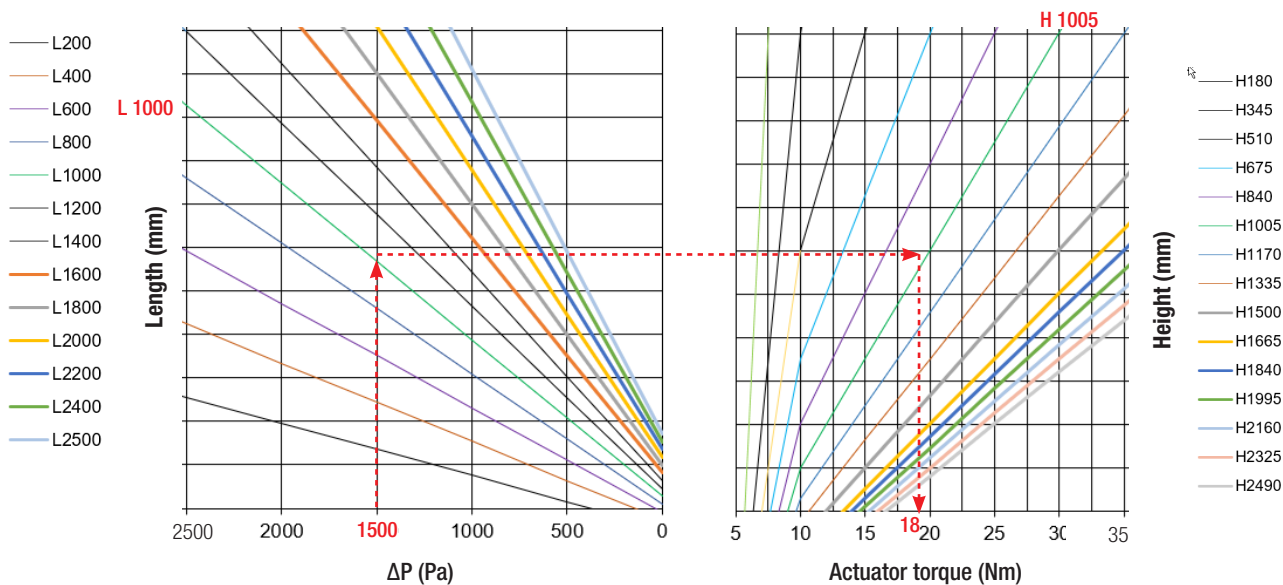
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### ACTUATOR TORQUES

The following actuator torques are given in Nm for a volume control damper type MO.

For a damper antifrost (MG), shut-off (MS) or airtight (ME) A coefficient of 1.3 must be applied to the result.



#### Example :

$\Delta P = 1000 \text{ Pa}$

Damper MO – L = 1000 mm x H = 1005 mm => motor torque = **18 Nm**