

O.E.MANUFACTURER DAMPER

U RANGE

Original Equipment Manufacturer damper of the **U range** are designed to control or shut off ductworks with airtightness classification going from non-classified to class 4 according to EN1751.

They are perfectly fit to any type of air handling unit



CODIFICATION

U —————> **U range** - Manufacturer

X —————> **W** - Gear wheels
L - Linkage

Y —————> **O** - Not classified
G - Class 1
S - Class 3
E - Class 4

110 —————> Frame's width in mm

CONSTRUCTION

	Control
Manual	Square shaft 12 mm - length 100 mm Lever and manual locking
Motorized	Square shaft 12 mm - length 100 mm <i>In option : actuator supplied and assembled in factory</i>



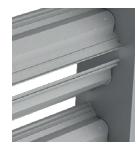
Linkage
Gear wheels for UW type
Linkage for UL type
Opposed blade operation <i>In option: parallel blade operation</i>



Frame
Width : 110 mm <i>in option : Wwidth 130 mm</i>
Thickness : 1.0 mm
Galvanized steel <i>In option : aluminum frame, Stainless steel 316L ou 304L</i>
Drilling Ø10 mm in each angle <i>in option : specific drilling</i>
Flanges : 30 mm



Blades
Galvanized steel <i>In option : profiled aluminum, stainless steel 304L</i>
Pitch : 100 mm



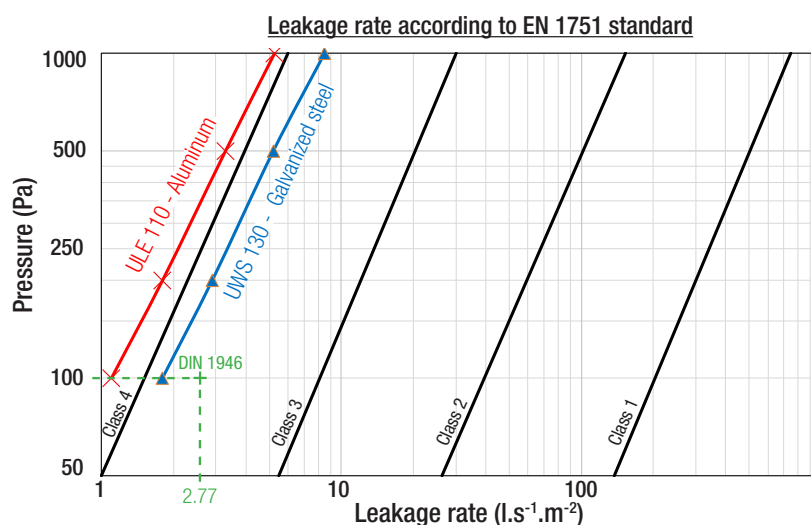
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PERFORMANCES

	Volume control O type	Antifrost G type	Shut-off S type	Airtight E type
Seals	None	Lateral stainless steel seals Top and bottom L shaped profiles	Lateral stainless steel seals Top and bottom L shaped profiles EPDM seals on the blades	Lateral stainless steel seals Top and bottom L shaped profiles EPDM seals on the blades
Upstream/downstream airtightness (according to EN 1751)	Not classified	Class 1	Class 3	Class 4
Frame's airtightness (according to EN 1751)	Class A <i>In option : class B or class C</i>			Class C
Acceptable pressure	1 000 Pa (for length L=1m)			
Maximum air velocity	10 m/s			
Operating temperatures	From -20°C to +80°C			

Upstream/downstream airtightness



Values taken from tests carried out in Cetiat laboratory according to EN 1751.
Test report n°1515 107 et n°1515 107 A1.

ULE dampers : upstream/downstream class 4 airtightness requires special cares in terms of squareness.
Furthermore, class 4 airtightness is only possible with aluminum blades

Frame's airtightness

Damper U with option class C.

Pressure (Pa)	Leakage rate (l.s ⁻¹ .m ⁻²)	Class C requirements according to EN 1751 (l.s ⁻¹ .m ⁻²)
200	0.04	0.1
500	0.08	0.183
1 000	0.13	0.28

Values taken from tests carried out in Cetiat laboratory
according to EN 1751.
Test report n° 1515 107 A1

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DIMENSIONS

Height H from 100 to 1400 mm
Length L from 100 to 1400 mm

ULE dampers :

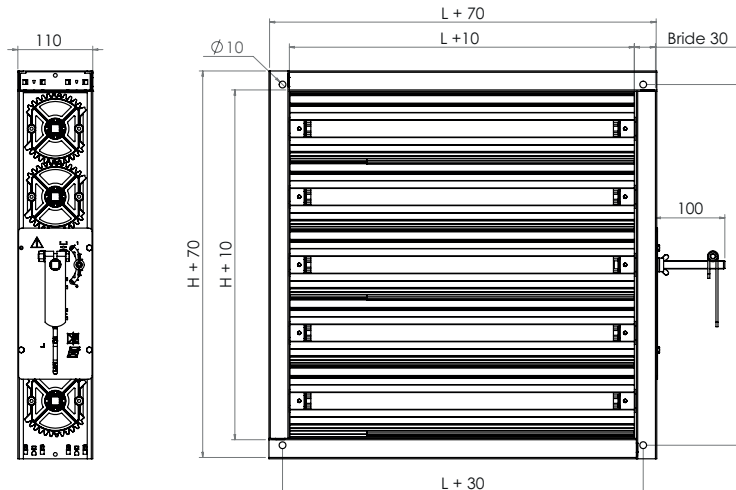
Height H from 400 to 1400 mm
Length L from 400 to 1400 mm

F2A recommends the use of a damper with linkage (ULO / ULG / ULS / ULE type) for dimensions bigger than L 800 x H 800 mm

Other dimensions on request.

In option :

- circular connection up to Ø1120 mm
- by-pass



WEIGHT (kg)

H \ L	200	400	600	800	1000	1200	1400
200	3	5	6	7	8	9	11
400	5	6	8	9	11	13	14
600	6	8	10	12	14	16	18
800	7	10	12	14	17	19	21
1000	9	11	14	17	19	22	25
1200	10	13	16	19	22	25	28
1400	11	15	18	22	25	28	32

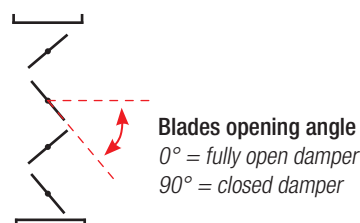
Weights are given for a galvanized steel damper

Apply 0.9 coefficient to above's data for dampers with aluminum blades.

PRESSURE LOSSES

The following pressure losses (Pa) are given according to the blades opening angle (in °) and air velocity (m/s).
Damper type UWO equipped with gear wheels - Opposed blade operation.

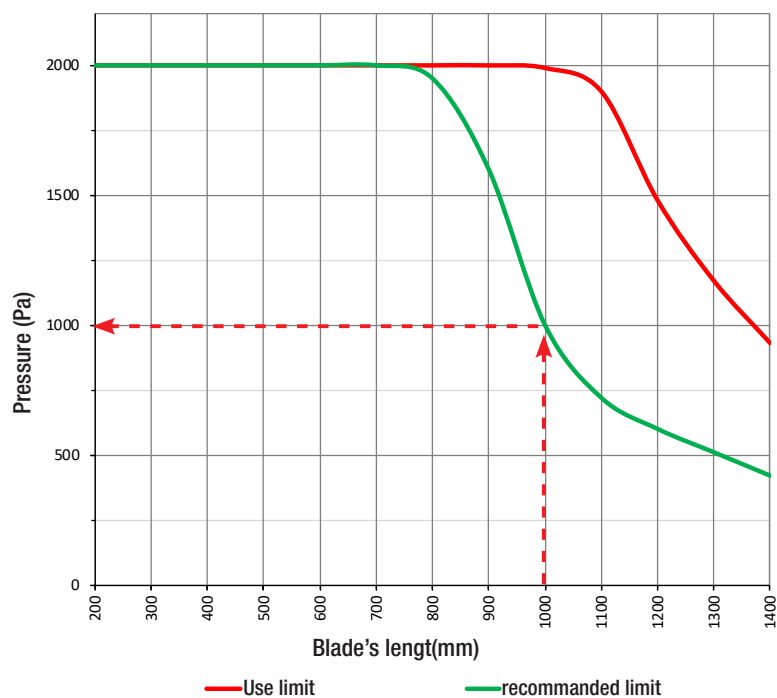
Air velocity (m/s)	Blades opening angle		
	0°	30°	60°
2	< 5	10	315
4	< 5	30	-
6	8	70	
8	10	130	
10	20	200	



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USE LIMITS



We recommend that the differential pressure does not exceed 1000 Pa for a 1000 mm long U damper

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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 UWO blades actuation via gear wheels (opposed blade operation):

Air velocity (m/s)	Frequency (Hz)								Gobal L_w (dB)
	63	125	250	500	1000	2000	4000	8000	
2 m/s	33.9	38.2	32.4	26.4	25.5	26.8	35.0	39.0	43.6
4 m/s	45.8	48.4	46.4	50.2	45.0	39.8	37.7	39.2	54.9
6 m/s	58.2	59.0	54.5	54.7	55.7	51.9	48.5	44.5	64.2
8 m/s	62.8	66.6	61.3	61.4	62.5	59.4	57.8	51.1	71.0
10 m/s	71.8	72.4	67.7	67.3	67.5	65.0	63.1	58.0	77.4

- Damper type ULO blades actuation via linkage (opposed blade operation):

Air velocity (m/s)	Frequency (Hz)								Gobal L_w (dB)
	63	125	250	500	1000	2000	4000	8000	
2 m/s	34.6	37.8	39.7	28.0	25.9	26.8	34.2	38.8	44.8
4 m/s	46.3	49.5	45.7	47.8	48.1	41.9	36.3	39.3	55.1
6 m/s	56.3	58.7	55.1	55.8	56.4	53.7	50.2	41.3	64.2
8 m/s	63.5	69.5	62.6	61.7	62.7	60.8	58.8	50.0	72.7
10 m/s	78.2	73.3	68.9	68.1	67.8	66.1	65.0	57.6	80.6

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 (en m²).

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

Example – Calculation of regenerated noise for a damper UWO 400 x 200 mm

- Damper section damper : $S = 0.4 \times 0.2 = 0.08 \text{ m}^2$

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

$$L_{w_{63}} = 45.8 + 10 \log \left(\frac{0.08}{0.25} \right) = 40.8 \text{ dB}$$

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).

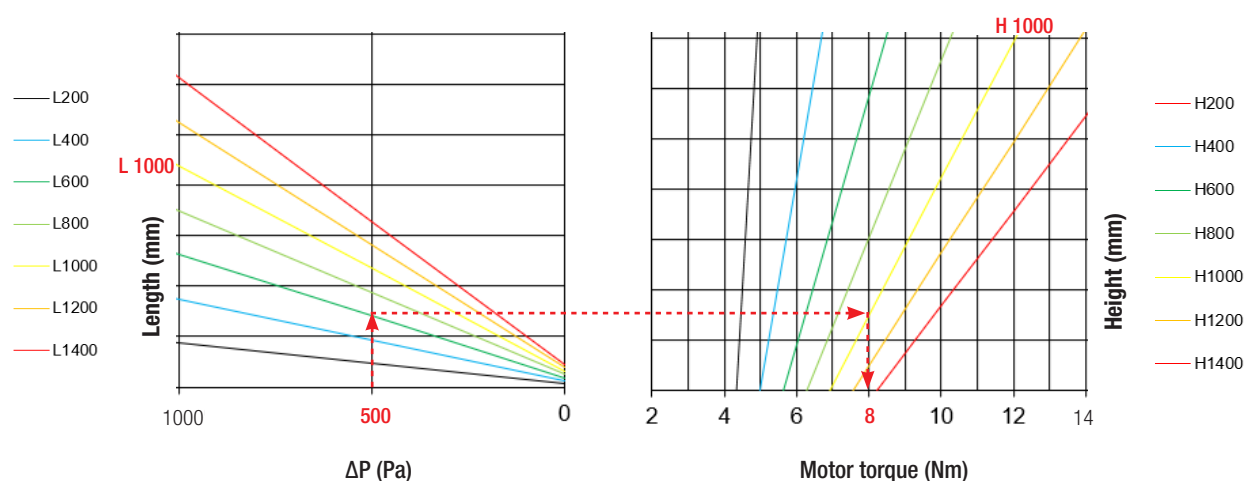
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MOTOR TORQUES

The following motor torques are given in Nm for a volume control damper type UWO or ULO.

A coefficient of 1.3 must be applied to the mentioned data for an G, S or E type damper.



Example :

$\Delta P = 500$ Pa

Damper ULO 130 – L = 1000 mm, H = 1000 mm => motor torque = **8 Nm**