

Mechanical self-powered dampers

UL



Frame with fixing holes



Blades with restrictor



For installation into walls or rectangular ducts

Non-return dampers prevent unwanted airflows against the intended airflow direction when the system is not in operation

- Maximum differential pressure: 100 Pa
- Maximum width of 1600 mm, maximum height of 1615 mm
- Frame with fixing holes along the perimeter
- Available in standard sizes and intermediate sizes (in increments of 1 mm)
- Non-return damper with formed aluminium blades for normal requirements; blades are fitted with seals

Optional equipment and accessories

- Installation subframe
- Powder coating, RAL CLASSIC colour

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General information

Application

- Type UL non-return dampers for installation into internal walls and rectangular ducts
- Prevention of unwanted airflows against the intended airflow direction when the system is not in operation
- Blades close automatically when the system is shut down
- Maximum differential pressure: 100 Pa

Special characteristics

- Any intermediate sizes within the standard size range are available
- operating temperature: $-20 - 80\text{ °C}$
- Maximum differential pressure: 100 Pa
- Non-return dampers are opened and closed by the airflow; no actuator is required
- Non-return damper with formed aluminium blades for normal requirements; blades are fitted with seals for sound attenuation

Nominal sizes

- B: 200, 400, 600, 800, 1000, 1200, 1400, 1600 mm (intermediate sizes: 201 – 1599 mm in increments of 1 mm)
- H: 215, 315, 415, 515, 615, 715, 815, 1015, 1215, 1415, 1615 mm (intermediate sizes: 216 – 1614 mm, in increments of 1 mm)
- Any combination of B × H

Variants

- UL-1: Non-return damper for airflows directed towards the installation side
- UL-2: Non-return damper for airflows directed towards the rear side (suction)

Parts and characteristics

- Frame
- Blades with low-friction bearings
- Blade restrictors
- Blade tip seals
- Bottom travel stop (angle section)
- Visible mullion from B = 997 mm

Parts and characteristics

- Border
- Blades with low-friction bearings
- Blade restrictors
- Blade tip seals
- Bottom travel stop (angle section)
- Visible mullion from B = 997 mm

Construction features

- Frame, material thickness 1.75 mm, with fixing holes
- Blades, material thickness 1.0 mm
- Additional side bar with fixing holes to accommodate the blade shafts and integral blade restrictors
- Blade restrictors prevent the blades from opening beyond a certain angle

Accessories

- Installation subframe: Installation subframe for the fast and simple installation of mechanically self-powered dampers

Technical data

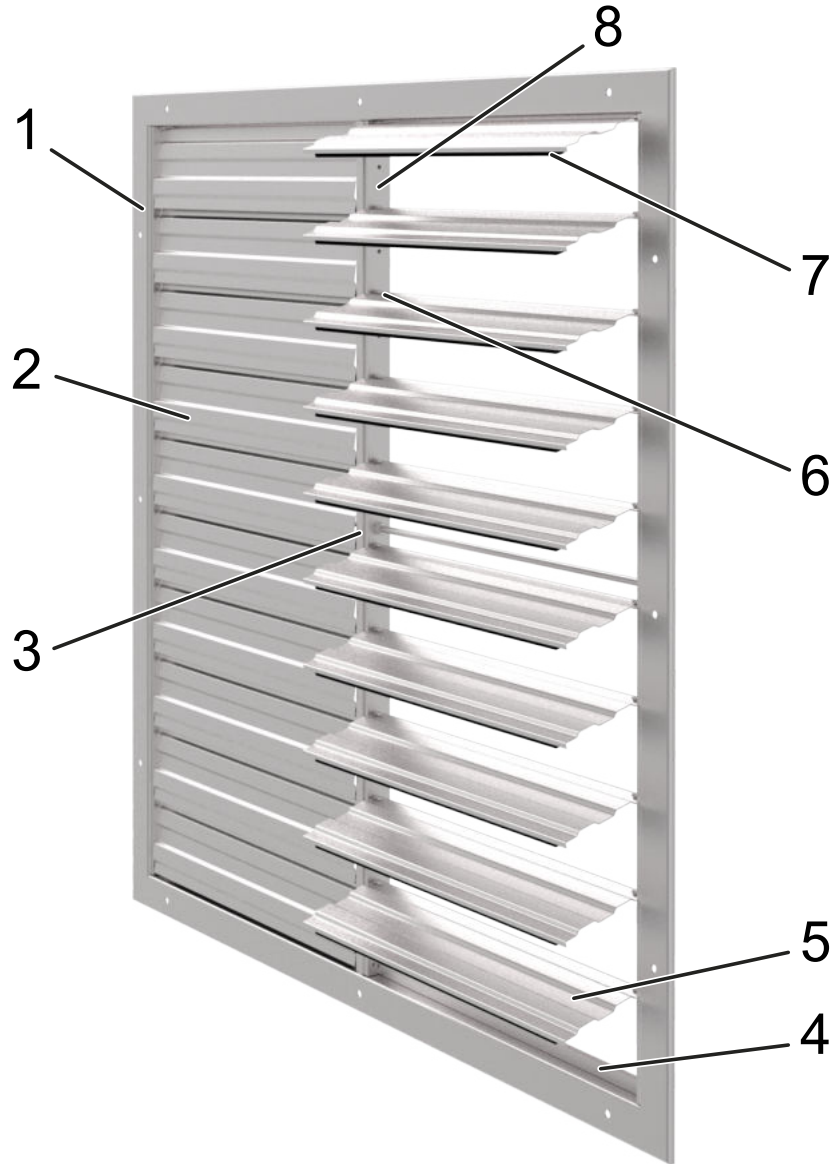
- Nominal sizes: 200×215 to 1600×1615 mm
- Volume flow rate range: 110 – 6460 l/s or 396 – 23256 m³ /h at 2.5 m/s
- Total differential pressure: 25 Pa at 2.5 m/s
- Maximum differential pressure in closing direction: 100 Pa
- Operating temperature: -20 to 80 °C

Function

Non-return dampers open and close automatically. When the system is in operation, the blades open when air flows. When the system is shut down, the blades close due to their weight. They

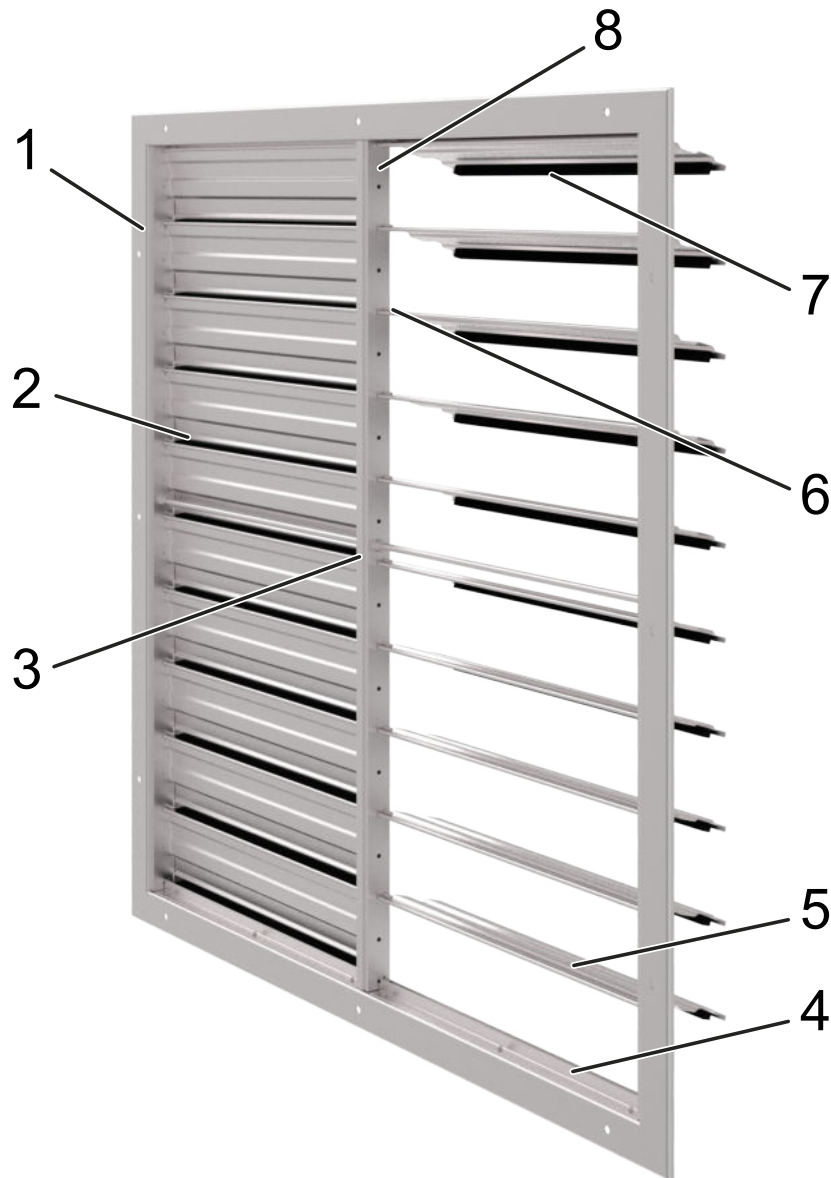
safely prevent air from flowing against the intended airflow direction.

Schematic illustration of UL-1



- 1 Frame
- 2 Blades (closed)
- 3 Mullion from B = 997 mm
- 4 Travel stop (angle section)
- 5 Blades (open)
- 6 Blade restrictor
- 7 Blade tip seals
- 8 Side bar

Schematic illustration of UL-2



- 1 Frame
- 2 Blades (closed)
- 3 Mullion from B = 997 mm
- 4 Travel stop (angle section)
- 5 Blades (open)
- 6 Blade restrictor
- 7 Blade tip seals
- 8 Side bar

Technical data

Nominal sizes	200 × 215 – 1600 × 1615 mm
Volume flow rate range	110 – 6460 l/s or 396 – 23256 m³/h at 2.5 m/s
Total differential pressure	2.5 m/s at 23 Pa (UL-1)
Maximum permissible differential pressure in closing direction	100 Pa
Operating temperature	-20 to 80 °C

Quick sizing

Quick sizing tables provide a good overview of the volume flow rates with an airflow velocity of 2.5 m/s. Intermediate values can be interpolated. Precise intermediate values can be calculated with our Easy Product Finder design program.

UL, width 200 – 600 mm, volume flow rate at 2.5 m/s

H	B									
	200		300		400		500		600	
	l/s	m³/h	l/s	m³/h	l/s	m³/h	l/s	m³/h	l/s	m³/h
215	110	396	160	576	215	774	270	972	325	1170
315	160	576	235	846	315	1134	395	1422	475	1710
415	210	756	310	1116	415	1494	520	1872	625	2250
515	260	936	385	1386	515	1854	645	2322	775	2790
615	310	1116	460	1656	615	2214	770	2772	925	3330
715	360	1296	535	1926	715	2574	895	3222	1070	3852
815	410	1476	610	2196	815	2934	1020	3672	1220	4392
1015	510	1836	760	2736	1020	3672	1270	4572	1520	5472
1215	610	2196	910	3276	1220	4392	1520	5472	1820	6552
1415	710	2556	1060	3816	1420	5112	1770	6372	2120	7632
1615	810	2916	1210	4356	1620	5832	2020	7272	2420	8712

UL, width 800 – 1600 mm, volume flow rate at 2.5 m/s

H	B									
	800		1000		1200		1400		1600	
	l/s	m³/h	l/s	m³/h	l/s	m³/h	l/s	m³/h	l/s	m³/h
215	430	1548	540	1944	645	2322	755	2718	860	3096
315	630	2268	790	2844	945	3402	1100	3960	1260	4536
415	830	2988	1040	3744	1250	4500	1450	5220	1660	5976
515	1030	3708	1290	4644	1550	5580	1800	6480	2060	7416
615	1230	4428	1540	5544	1850	6660	2150	7740	2460	8856
715	1430	5148	1790	6444	2150	7740	2500	9000	2860	10296
815	1630	5868	2040	7344	2450	8820	2850	10260	3260	11736
1015	2030	7308	2540	9144	3050	10980	3550	12780	4060	14616
1215	2430	8748	3040	10944	3650	13140	4250	15300	4860	17496
1415	2830	10188	3540	12744	4250	15300	4950	17820	5660	20376
1615	3230	11628	4040	14544	4850	17460	5650	20340	6460	23256



Differential pressure

v [m/s]	UL-1	UL-2
	Δp_i [Pa]	
0.5	11	11
1	14	15
2	20	25
3	26	34

Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design program.

Rectangular non-return dampers to prevent air from flowing against the intended airflow direction; for installation into internal walls and into rectangular ducts.

Ready-to-install component which consists of a border, blades with low-friction bearings, and travel stop and sealing parts.

Special characteristics

- Any intermediate sizes within the standard size range are available
- operating temperature: $-20 - 80\text{ °C}$
- Maximum differential pressure: 100 Pa
- Non-return dampers are opened and closed by the airflow; no actuator is required
- Non-return damper with formed aluminium blades for normal requirements; blades are fitted with seals for sound attenuation

Accessories

- Installation subframe: Installation subframe for the fast and simple installation of mechanically self-powered dampers

Technical data

- Nominal sizes: 200×215 to 1600×1615 mm
- Volume flow rate range: 110 – 6460 l/s or 396 – 23256 m³/h at 2.5 m/s
- Total differential pressure: 23 Pa at 2.5 m/s
- Maximum differential pressure in closing direction: 100 Pa
- Operating temperature: -20 to 80 °C

Sizing data

- q_v [m³/h] volume flow rate
- Δp_t [Pa] total differential pressure
- v [m/s] airflow velocity

Order code

UL - 1 / 800 × 515 / ER / P1 - RAL 9010
 | | | | |
 1 2 3 4 5

1 Type

UL Non-return damper

No entry required: None

ER With

2 Airflow direction

1 Airflow directed towards the installation side

2 Airflow directed towards the rear side (intake)

5 Surface

No entry: standard construction

P1 powder-coated, RAL CLASSIC colour

3 Nominal size [mm]

B × H

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

4 Installation subframe

Order example: UL-1/800×515/ER/P1-RAL9010

Type	UL
Airflow direction	Airflow directed towards the installation side
Nominal size [mm]	Width 800, height 515
Installation subframe	With installation subframe
Surface	Powder-coated RAL 9010, pure white

Order example: UL-2/600×1615/ER

Type	UL
Airflow direction	Airflow directed towards the rear side (intake)
Nominal size [mm]	Width 600, height 1615
Installation subframe	With installation subframe
Surface	Standard construction

Dimensions

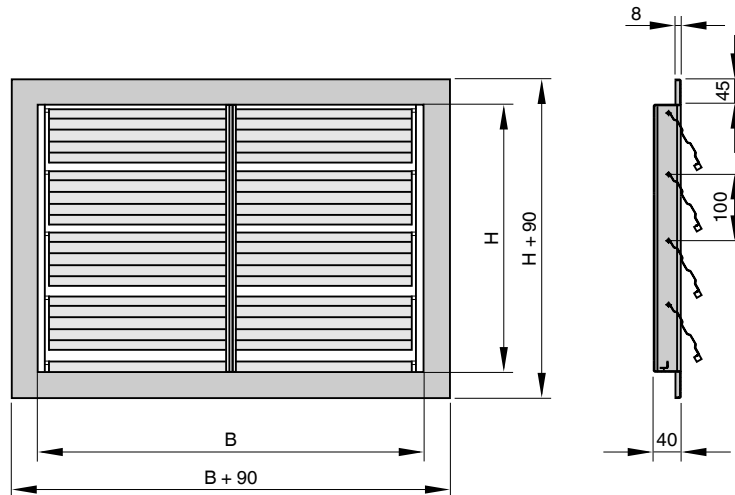
- B: 200 – 1600 mm, intermediate sizes 201 – 1599 in increments of 1 mm
- H: 215 – 1615 mm, intermediate sizes 216 – 1614 mm in increments of 1 mm

Flow cross section to calculate the airflow velocity

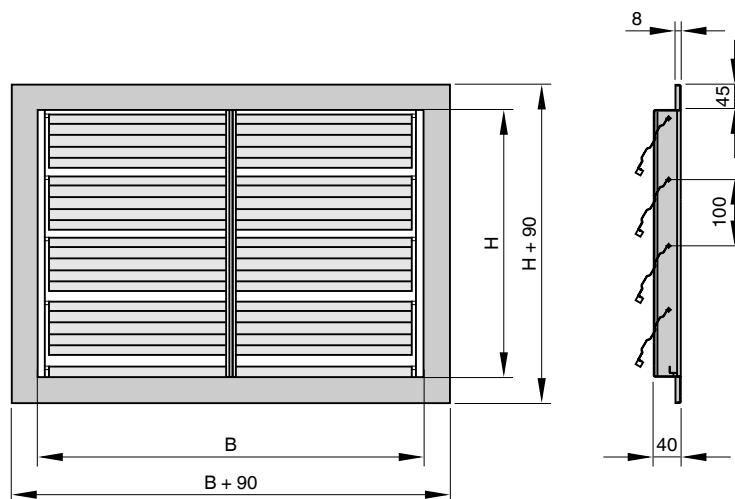
- $A = B \times H$

Unit of measure for B and H: m

UL-1



UL-2



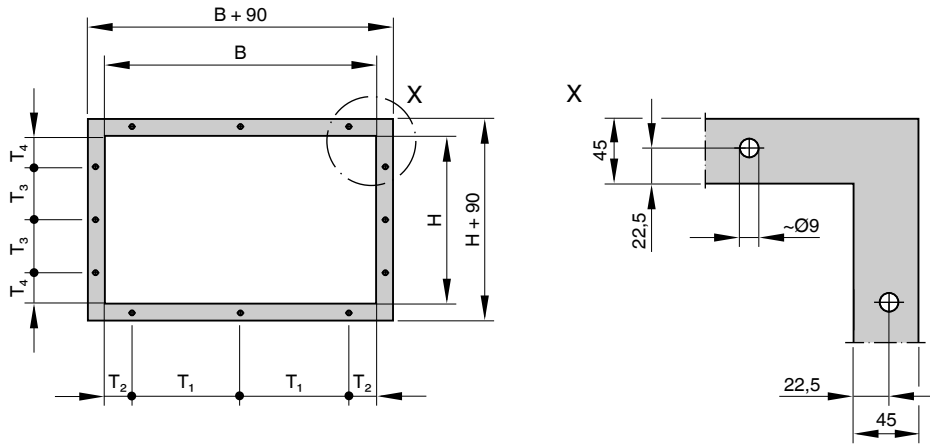


Weight [kg]

H	B									
	200	300	400	500	600	800	1000	1200	1400	1600
215	3	3	3	4	4	5	6	7	8	9
315	3	3	4	4	5	6	7	8	9	10
415	3	4	4	5	5	6	7	8	9	10
515	4	4	5	5	6	7	8	9	10	11
615	4	5	5	6	7	8	9	10	11	12
715	5	5	6	7	8	9	10	11	12	13
815	5	6	7	8	9	10	11	12	13	14
1015	7	8	9	10	11	12	13	14	15	16
1215	9	10	11	12	13	14	15	16	17	18
1415	11	12	13	14	15	16	17	18	19	20
1615	13	14	15	16	17	18	19	20	21	22

Product details

Fixing holes in the frame – UL



UL, standard sizes, width, no. of flange holes

B	No. of holes n	T_1	T_2
200	1	–	100
300	1	–	150
400	2	303	48.5
500	2	403	48.5
600	3	252	48.5
800	3	352	48.5
1000	3	452	48.5
1200	3	552	48.5
1400	3	652	48.5
1600	4	501	48.5

UL, standard sizes, height, no. of flange holes

H	No. of holes n	T_3	T_4
215	1	–	107.5
315	1	–	157.5
415	1	–	207.5
515	1	–	257.5
615	2	320	147.5
715	2	420	147.5
815	3	260	147.5
1015	3	360	147.5
1215	3	460	147.5
1415	3	560	147.5
1615	4	440	147.5

UL, intermediate sizes, width, no. of flange holes

B	No. of holes n	T ₁	T ₂
201 – 396	1	–	B/2
397 – 596	2	B – 97	48.5
597 – 1596	3	(B – 97)/2	48.5
1597 – 1599	4	(B – 97)/3	48.5

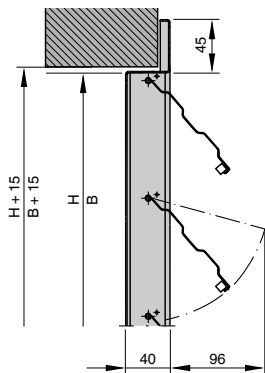
UL, intermediate sizes, height, no. of flange holes

H	No. of holes n	T ₃	T ₄
216 – 614	1	–	H/2
616 – 814	2	H – 295	147.5
816 – 1614	3	(H – 295)/2	147.5

Installation and commissioning

- Horizontal airflow: vertical installation required
- Vertical airflow: installation into ceilings with upward airflow is possible; horizontal installation required
- Straight upstream section required (at least B + H) on the discharge side of fans
- Ensure a gradual start-up of fans to avoid a sudden pressure increase
- Only for installation in internal spaces

Installation into an internal wall, without installation subframe



Installation into an internal wall, with installation subframe

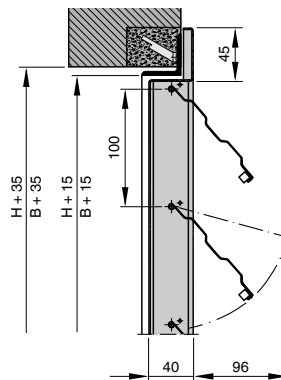
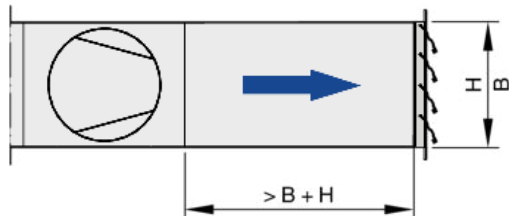


Illustration shows variant UL-1

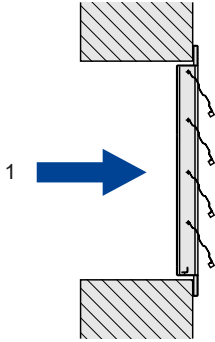
Installation on the discharge side of a fan



The airflow downstream of a fan is characterised by strong turbulence, and there is no uniform velocity profile. As a consequence, the blades of the non-return dampers are not uniformly subject to the airflow, and this may result in individual blades becoming subject to forces that might lead to mechanical damage.

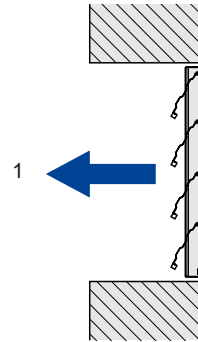
Safe operation requires a straight upstream section of at least $B + H$.

UL-1, airflow direction



1 Positive pressure

UL-2, airflow direction



1 Negative pressure

Nomenclature

Definitions

A [m²]
Upstream cross section

v [m/s]
Airflow velocity based on the upstream cross section

q_v [m³/h]; [l/s]
Volume flow rate

Δp_t [Pa]
Total differential pressure

Principal dimensions

B [mm]

Width

H [mm]
Height

n []
Number of screw holes

T1 – T4 [mm]
Screw hole pitch

m [kg]
Weight

Lengths

All lengths are given in millimetres [mm] unless stated otherwise