Weather-resistant louvre
Multileaf dampers

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To title page:

First-class powder coatings for W weather resistant louvre made of galvanized sheet steel

- **W weather-resistant louvre**
  made of galvanized sheet steel
- **AW and AWK weather resistant louvre**
  made of extruded aluminium profiles

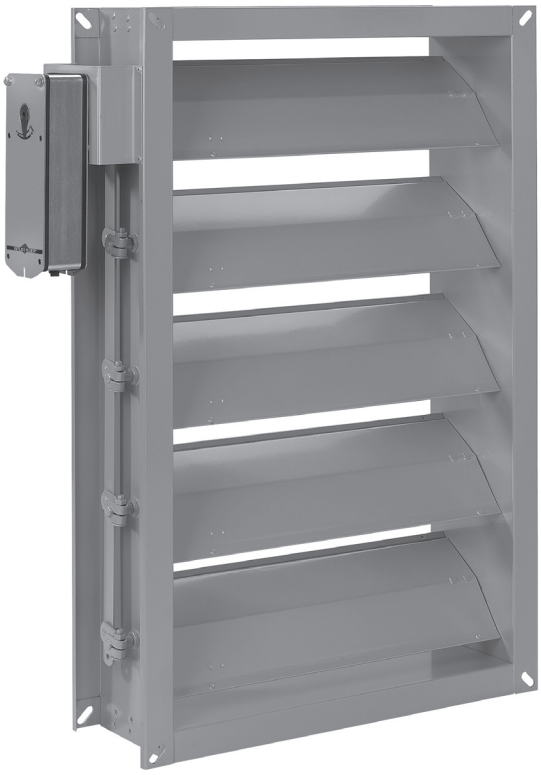
Available for delivery for all sizes and shades

Available for delivery as standard, shades according to RAL CLASSIC

JK multileaf dampers

Galvanized steel

JK multileaf dampers made of galvanized sheet steel are control and shut-off dampers for ventilation and air conditioning systems. With galvanized hollow body blades, profiled to benefit the flow, coupled by linkage to galvanized drive axles in bearing bushes made of plastic or brass, and in frames with a length of 180 mm or 120 mm and bevelled connection flanges. With actuating lever with manual locking device or electric actuators.



JK multileaf damper with electric actuator M6 or M7

Type overview

Blade coupling	Blade bearing	Installation length L 120 mm*)	180 mm
external linkage in the opposite direction	Plastic	**JK-N120G**	**JK-N180G**
	Brass	**JK-M120G**	**JK-M180G**
external linkage in the same direction	Plastic	**JK-N120**	**JK-N180**
	Brass	**JK-M120**	**JK-M180**
internal linkage in the same direction	Plastic	**JK-N120I**	**JK-N180I**
	Brass	**JK-M120I**	**JK-M180I**

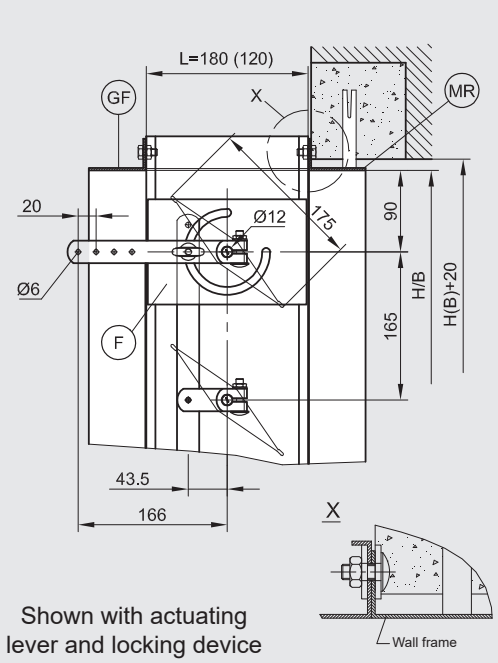
*) **Please note: The blades used are longer than the frames!**

Electric actuators ⇒ see pages 4 and 5

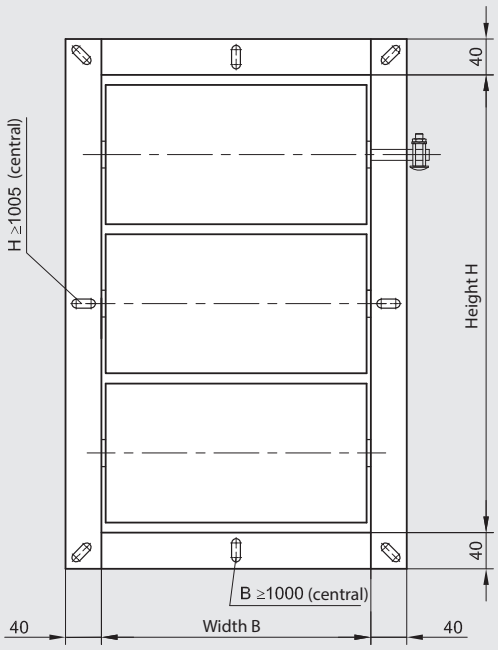
Accessories ⇒ see page 6

MR Wall installation frames made of galvanized sheet steel

GF Counterflanges made of galvanized sheet steel



Shown with actuating lever and locking device



Sizes B x H

Width B [mm]	Height H [mm]
400	180
800	345
1200	510
1400	675
1600	840
1800	1005
2000	1170
	1335
	1500
	1665
	1830
	1995

All B and H dimensions can be combined.

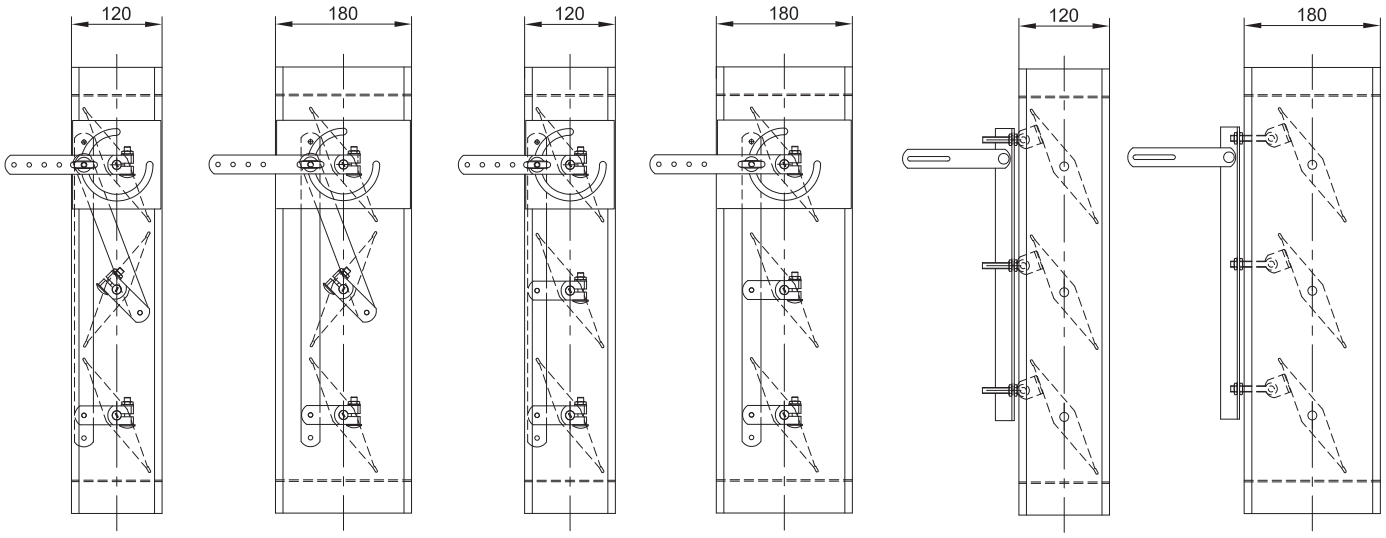
Intermediate dimensions in increments of 1 [mm] are available for delivery for the installation length 180 mm.

JK multileaf dampers

Blade couplings, electric actuators

Coupling for blades

The drive axle is situated on the upper (first) blade. In addition, the fifth blade from H > 840 mm and the seventh blade from H > 1500 mm are designed as drive axles. Adjustment devices can be attached on site!



external linkage
in the opposite direction*)

external linkage
in the same direction*)

internal linkage
in the same direction

*) On the actuator side the blade position can be identified externally by notches in the axle.

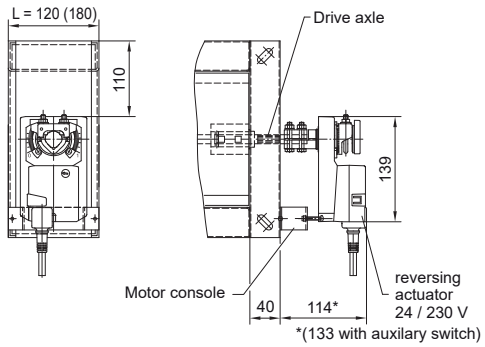
Electric actuators

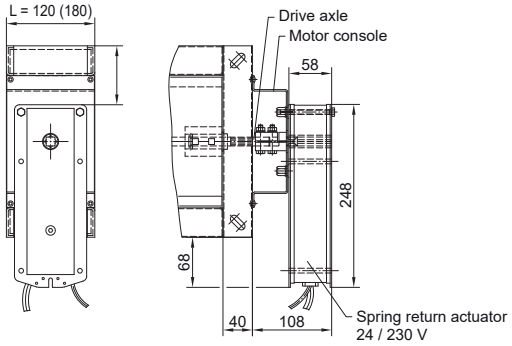
JK multileaf dampers with external linkage are available for delivery from the factory with the following electric actuators attached:

Electrically reversing actuators M0 and M1 open and close the multileaf dampers with 24V DC or AC voltage or with 230V AC voltage. In case of power failure the current actuator position is maintained. 20 [Nm] of drive torque is available for opening and closing*). ⇒ see page 5

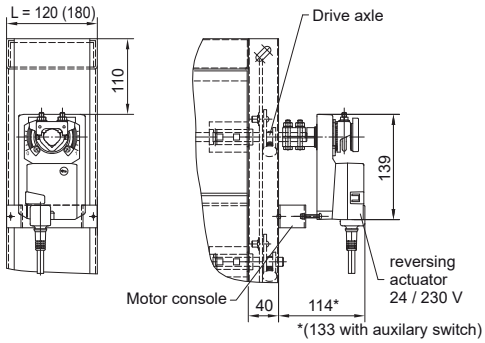
Electric spring return actuators M6 and M7 open the multileaf dampers with 24V DC or AC voltage or with 230V AC voltage. In case of power failure the multileaf dampers are closed by the spring return. 18 [Nm] of drive torque are available for opening, 12 [Nm] are available for closing*). ⇒ see page 5

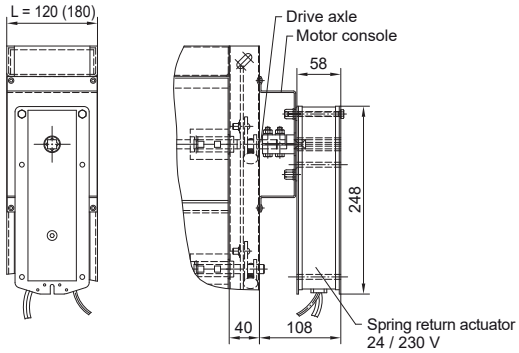
Motor attachment with multileaf damper height H = 180 mm





Motor attachment with multileaf damper height H > 180 mm





*) Required drive torques ⇒ see page 7

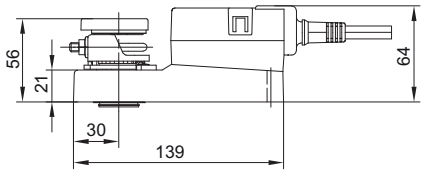
JK multileaf dampers

Technical data of electric actuators

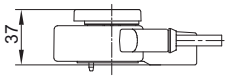
Technical data of factory-installed actuators

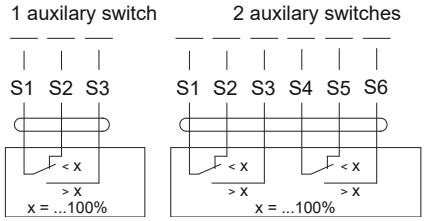
	Reversing actuators		Spring return actuators	
	M0	**M1**	**M6**	**M7**
Supply voltage	100 to 240V AC	24V AC/DC	230V AC	24V AC/DC
Tolerance at AC 50 Hz	–15% to +10%	±20%	±14%	±20%
Tolerance with DC		–10% to +20%		–10% to +20%
Torque				
Motor	≥20 Nm		≥18 Nm	
Spring return	-		≥12 Nm	
Runtime for 90°				
Motor	150 s		140 s	
Spring return	-		~16 s	
Connected load	6 VA	4 VA	12.5 VA	10 VA
Power consumption				
when opening	2.5 W	2 W	8 W	7 W
in stop position	0.6 W	0.2 W	3 W	2 W
Degree of protection	IP 54		IP 54	
Connection cable 0.75 mm²	approx. 1 m long		approx. 1 m long	
Motor	3-wire		2-wire	
with an auxiliary switch	3-wire		-	
with two auxiliary switches	6-wire		6-wire	
Ambient temperature	–30°C to +50°C		–30°C to +50°C	

Electric actuators M0 and M1

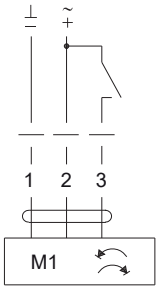


Auxiliary switch



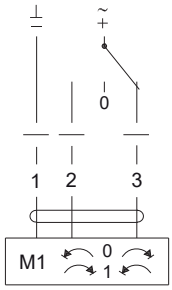


OPEN-CLOSE control

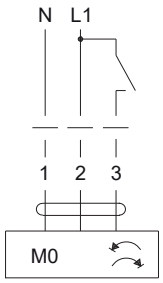


Mains voltage:
AC 24V, 50/60Hz
DC 24 V

3- point control

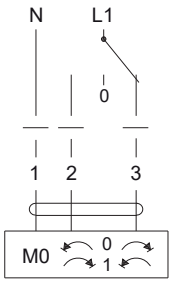


OPEN-CLOSE control



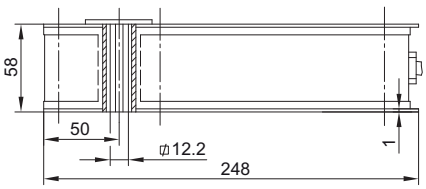
Mains voltage:
AC 100...240V, 50/60Hz

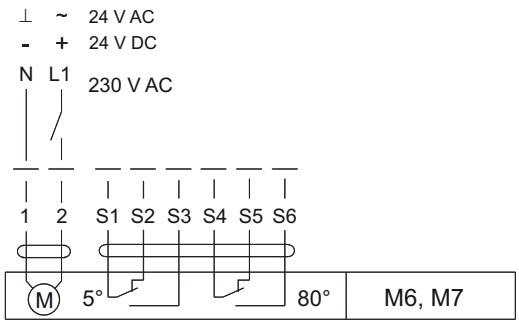
3- point control



Spring return actuators M6 and M7

with integrated limit switches

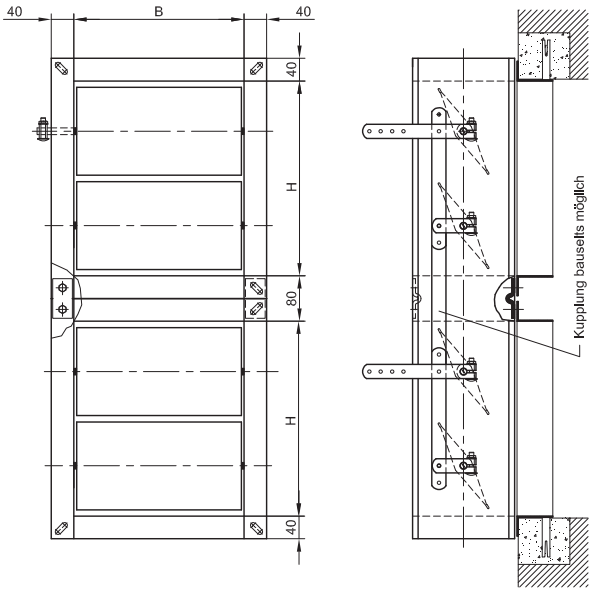


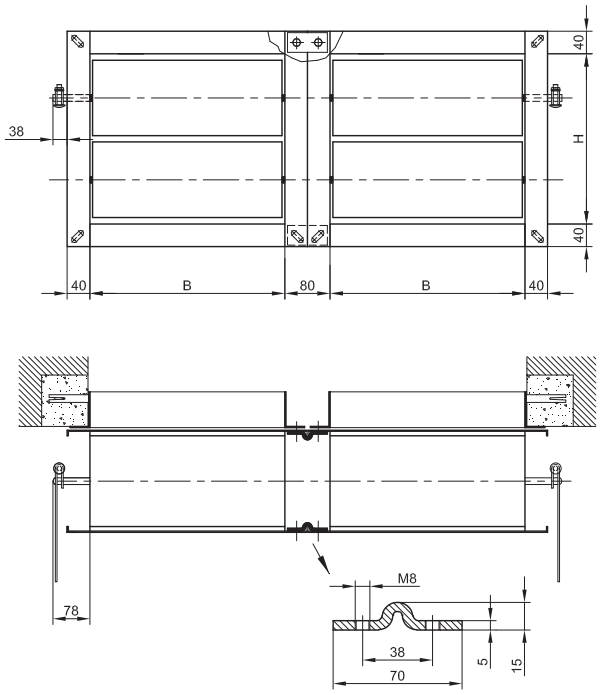


JK multileaf dampers

Installation, details, accessories

Vertical / horizontal assembly with connection brackets

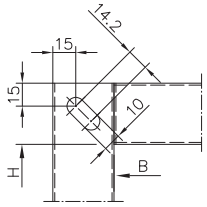




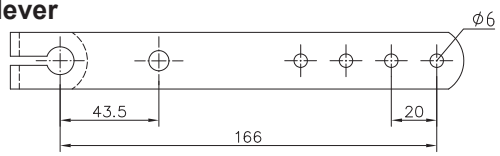
Recommendations:

- Use separate electric actuators for each multileaf damper!
- Install multileaf dampers with horizontally positioned blades!

Corner hole in connecting frame



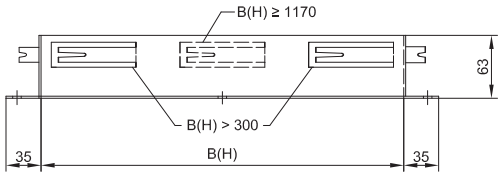
Actuating lever



Accessories

MR Wall installation frame stamped from galvanized sheet steel, bevelled and welded at the corners and with several wall anchors for cementing.

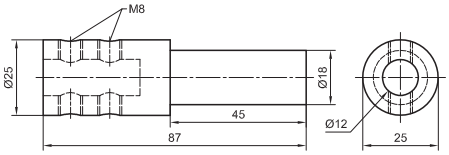
GF Counterflange made of galvanized sheet steel, pressed, bevelled and welded at the corners.



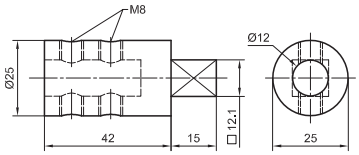
Counterflanges do not have wall anchors.

Axle extensions for on-site actuators

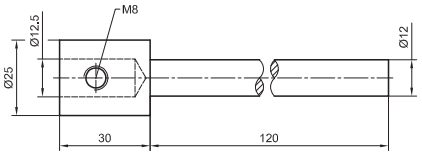
Extension 18 mm ∅



Extension 12 x 12 mm



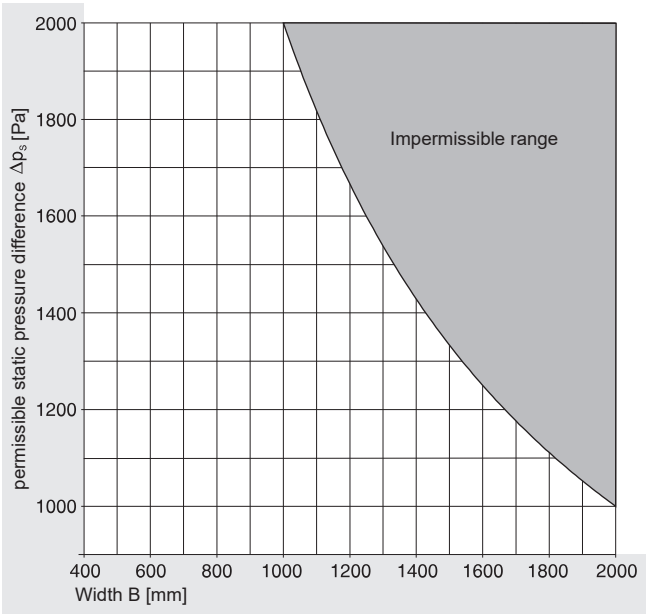
L150 extension for hand lever



JK multileaf dampers

Fields of application, drive torques, leakage

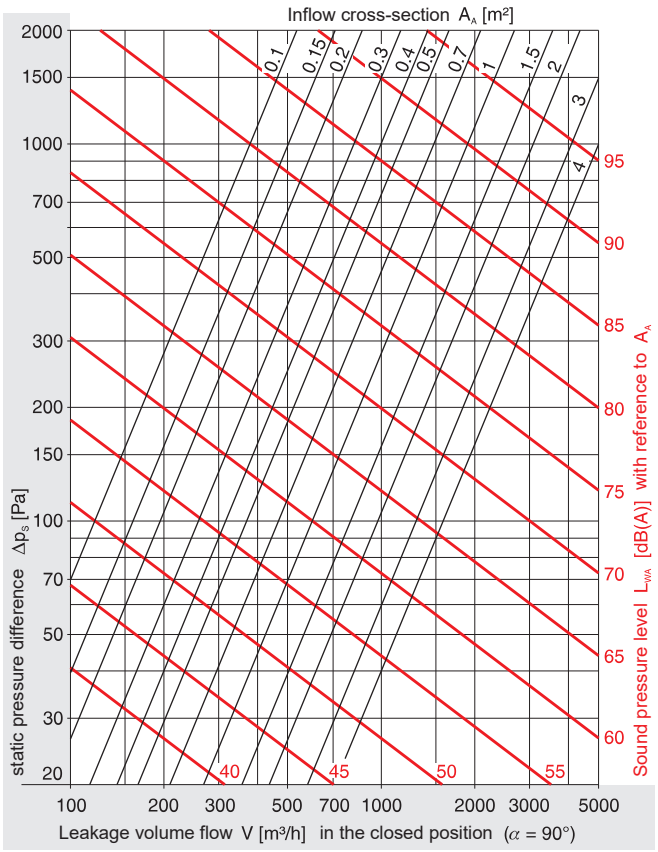
The **permissible pressure difference** is dependent on the width B and the leakage volume flow of the multileaf damper in the closed position:

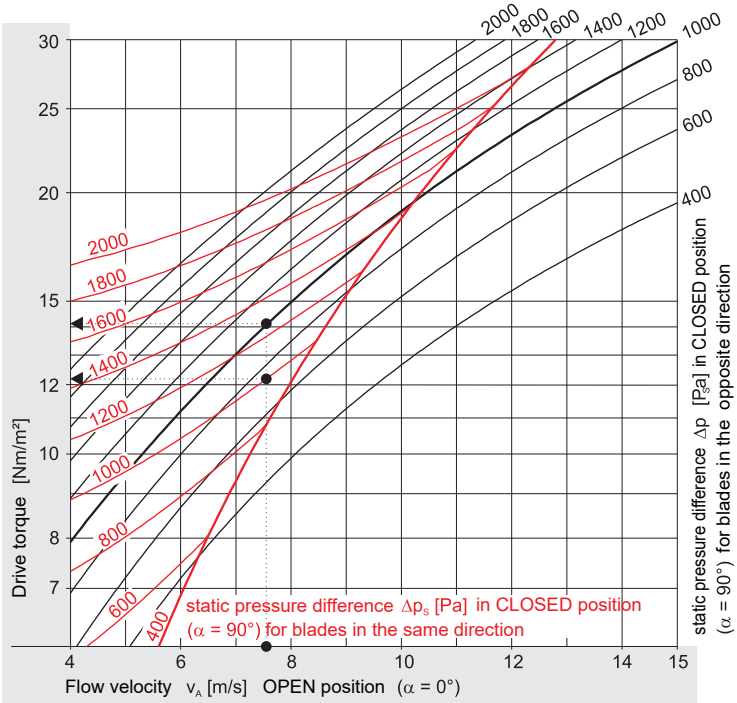


The **permissible temperature** is dependent on the bearing material:

JK-N: -20°C to +100°C

JK-M: -20°C to +110°C





- The drive torques required for closing the multileaf dampers under airflow are generally considerably lower (reference value: 50%) than those specified for opening.
- **The drive torques permitted per drive axle are limited to 35 [Nm].**

The **required drive torque** is dependent on the operation characteristic of the fan and the pipe network. As the volume flow is increasingly throttled by a shut-off damper, the pressure can increase. In general the volume flow decreases at the same time and the flow velocity in the multileaf damper drops in relation to the inflow cross-section; however it increases in relation to the free cross-section. At the operating point which is set in each case, a drive torque which is not constant over the setting angle range $0° \leq \alpha \leq 90°$, is required for actuation of the multileaf damper. An actuator must generate the maximum possible drive torque so that it can run through the entire setting angle range unhindered.

The drive torque which can be read from the nomogram opposite is required for multileaf dampers in ventilation systems with a square actuator operation characteristic and usual fans. The basis variables are the maximum flow velocity in the fully opened multileaf damper and the pressure difference there when in a closed state.

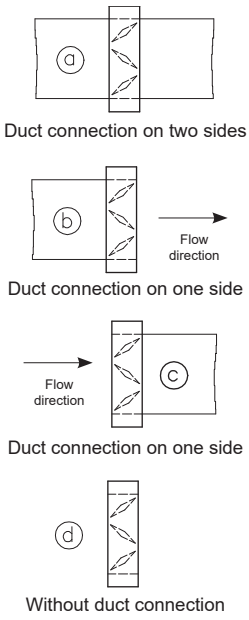
Example

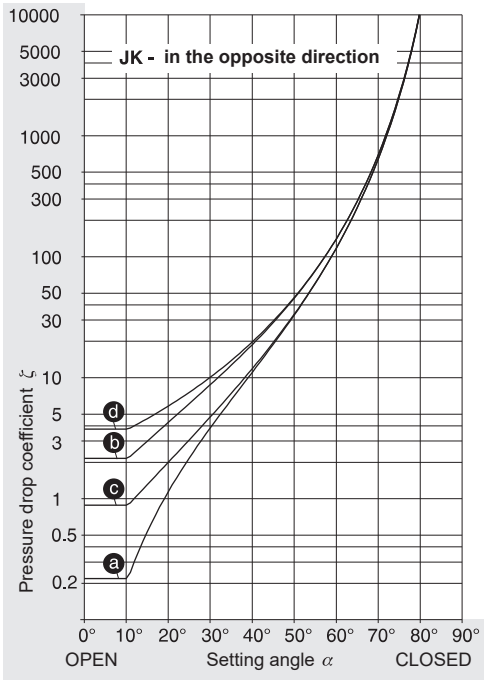
Flow velocity	v_A	=	7.5 [m/s]
Pressure difference	Δp_S	=	1000 [Pa]
Drive torque per m² of inflow cross-section A_A			
• in the opposite direction	M	≈	14 [Nm/m²]
• in the same direction	M	≈	12 [Nm/m²]

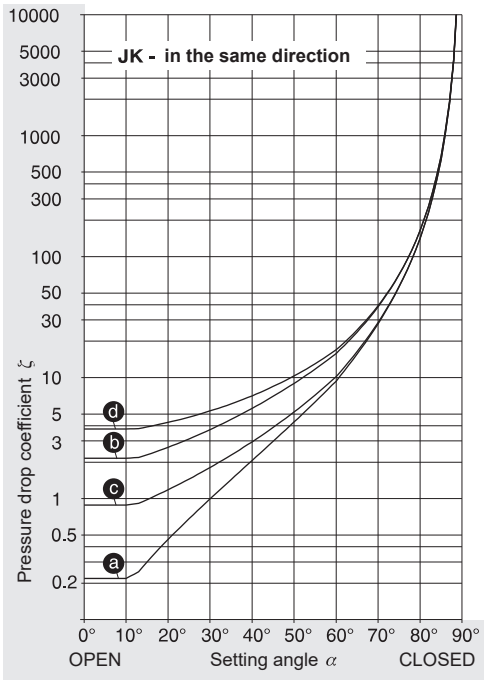
JK multileaf dampers

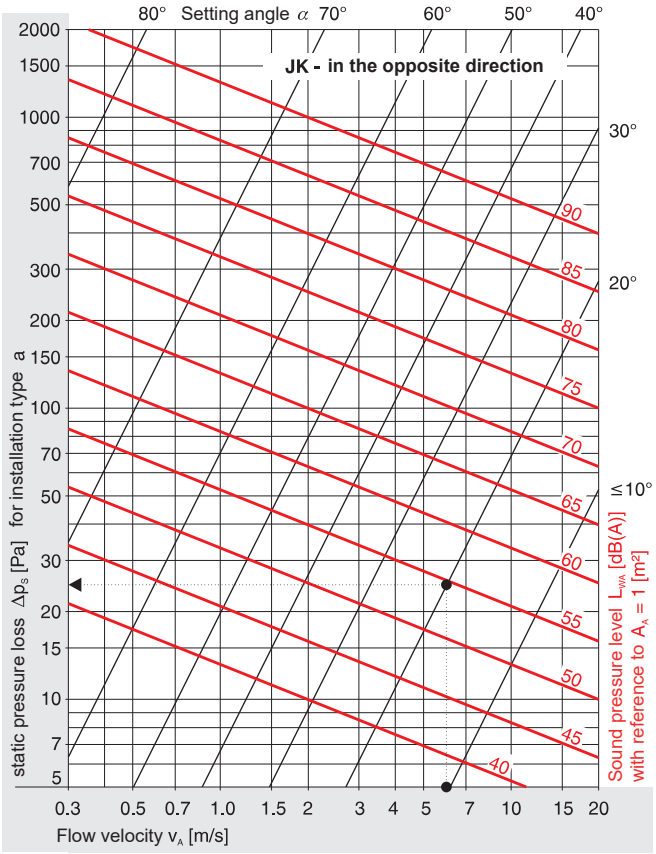
Pressure drop coefficients ζ, pressure drop, sound power level

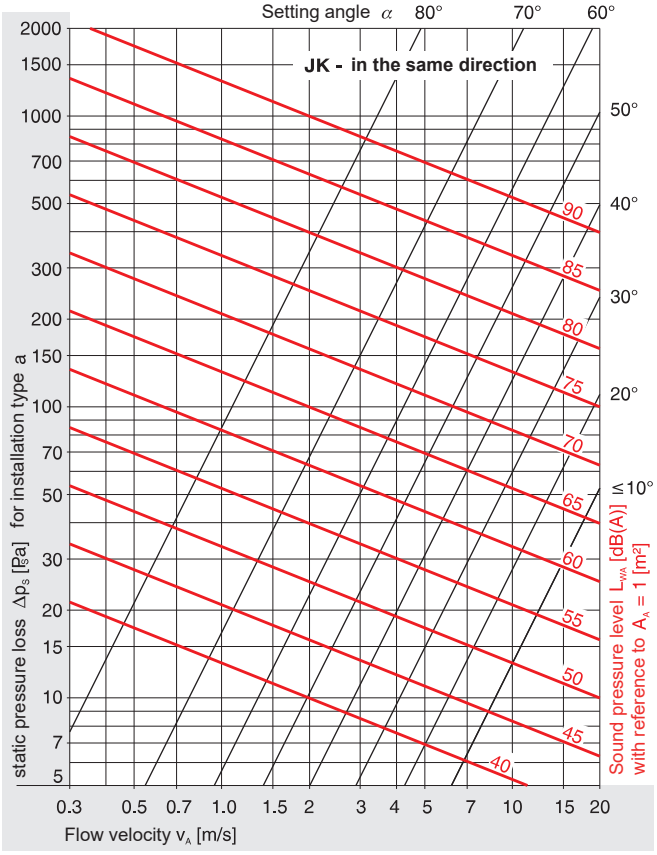
Pressure drop coefficients ζ for installation type:











Example (JK - in the opposite direction)

Setting angle	α	=	20 °	Pressure drop (installation type a)	Δp_S	=	24 [Pa]
Flow velocity	v_A	=	6 [m/s]	Sound power level	L_{WA}	=	55 [dB(A)]*)

*) Sound power levels are in relation to A_A = 1 [m²]; correction values for other inflow cross-sections ⇒ see page 9

JK multileaf dampers

Nomenclature, order data

Nomenclature

A_A [m²] = Inflow cross-section $A_A = B \cdot H$

V [m³/h] = Volume flow, Leakage volume flow

v_A [m/s] = Flow velocity in relation to A_A (Inflow velocity)

α = Multileaf damper setting angle OPEN: $\alpha = 0°$ / CLOSED: $\alpha = 90°$

ζ = Pressure drop coefficient in relation to A_A Pressure drop $\Delta p_S = \zeta \cdot \rho/2 \cdot v_A^2$

ρ [kg/m³] = Media density $\rho_{\text{dry air 20°C, 1 bar}} = 1.188$ kg/m³

Δp_S [Pa] = Static pressure drop, Static pressure difference

L_{WA} [dB(A)] = A-weighted sound power level

ΔL [dB] = Correction to L_{WA} in relation to $A_A = 1$ [m²] $L_{WA} = L_{WA\text{-}1m^2} + \Delta L$ [dB]

M [Nm/m²] = Drive torque per m²

M_{total} [Nm] = M_{1m^2} [Nm/m²] · A_A [m²]

Correction to L_{WA} with inflow cross-sections differing from $A_A = 1$ [m²].

A_A [m²]	ΔL [dB]
0.10	-10
0.25	-6
0.40	-4
0.50	-3
0.60	-2
1.00	0
1.25	+1
1.60	+2
2.00	+3
2.50	+4
3.20	+5
4.00	+6

JK - __ - __ - __ - __ - __ - __ - __ -

Multileaf dampers with bushes made of plastic

made of brass: N / M

Installation length 180 mm[1]: 180

Installation length 120 mm: 120

Size

Nominal dimensions[1] B x H ..... x .....

⇒ see page 3

Linkage in the opposite direction: G

Linkage in the same direction: -

Internal linkage[2]: I

Accessories made of galvanized sheet steel

1GF with 1 x counterflange

2GF with 2 counterflanges

⇒ see page 6

MR with wall installation frame

⇒ see page 6

Adjustment devices and electric actuators[2]

⇒ see pages 4 and 5

F Locking device

Electrically reversing actuators 20 [Nm][3]

M0 100 to 240V AC

M1 24V AC/DC

M2 100 to 240V AC and 1 auxiliary switch

M3 100 to 240V AC and 2 auxiliary switches

M4 24V AC/DC and 1 auxiliary switch

M5 24V AC/DC and 2 auxiliary switches

Spring return actuators 18 [Nm] / 12 [Nm][3]

M6 230V AC and integrated limit switches

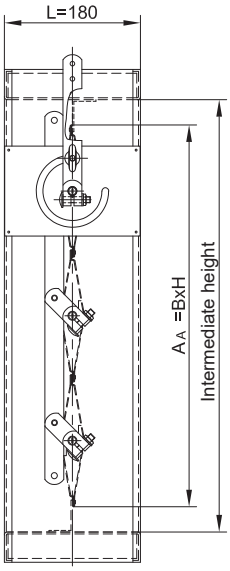
M7 24V AC/DC and integrated limit switches

Axle extensions for on-site actuators

A1 18 mm ∅ (actuators M0 to M5)

A2 12 x 12 mm (actuators M6 and M7)

A3 ∅ 12 mm, 150 mm in length for actuating lever



1) **Intermediate dimensions** are available for delivery with frame of installation length of 180 mm. The blade spacing of 165 mm is maintained and remaining gaps between the upper and lower blade and to the frame are filled with angle profiles.

2) On the version with internal linkage the adjustment devices and actuators are situated in the airflow. These types are not available for delivery from the factory.

3) Electric actuators with greater drive torque provided on site.

Connection brackets for assembly of two JK multileaf dampers must be ordered separately:

ZUB 0123 for widths < 1000 mm
ZUB 0124 for widths ≥ 1000 mm
→ Same widths on top of each other!

ZUB 0123 for heights < 1005 mm
ZUB 0124 for heights ≥ 1005 mm
→ Same heights next to each other!

JK multileaf dampers

Specification text

Multileaf dampers made of galvanized sheet steel, for use as control and shut-off damper in ventilation and air conditioning systems. With hollow body blades, profiled to benefit the flow, external linkage couplings in the opposite direction / external linkage couplings in the same direction / inner linkage couplings in the same direction **, galvanized drive axles in bearing bushes made of** plastic / brass **in an all-round, bevelled frame with installation length of** 120 mm / 180 mm **and with connecting flanges for installation between lines, on walls or on ceilings.** With actuating lever and locking device / electrically reversing actuator and with one / two auxiliary switches / electrical spring return actuator and limit switches. With wall installation frame and counterflange / counterflanges. Furthermore, with the connecting brackets required for installation of two multileaf dampers one above the other / next to each other.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: **JK**

Size B x H ... **x** ... **mm**

complete with fixings **deliver:** .....

install: .....

Delete texts not highlighted in bold as required!

JL multileaf dampers

Galvanized steel

JL multileaf dampers are control and shut-off dampers made of galvanized sheet steel in particular for ventilation and air conditioning systems. They are air tight according to DIN 1946-4 and meet the requirements for leak tightness class 4 according to EN 1751 at 100 [Pa] static pressure difference. The hollow body blades which are profiled to benefit the flow, sealed and coupled in the opposite direction by an external linkage, rotate in special bearing bushes made of brass in frames with a length of 180 mm and bevelled connection flanges. Actuation is performed manually with adjusting levers or electrically with actuators. Type-tested by MPA Braunschweig.

JL multileaf damper with electric actuator M6 or M7

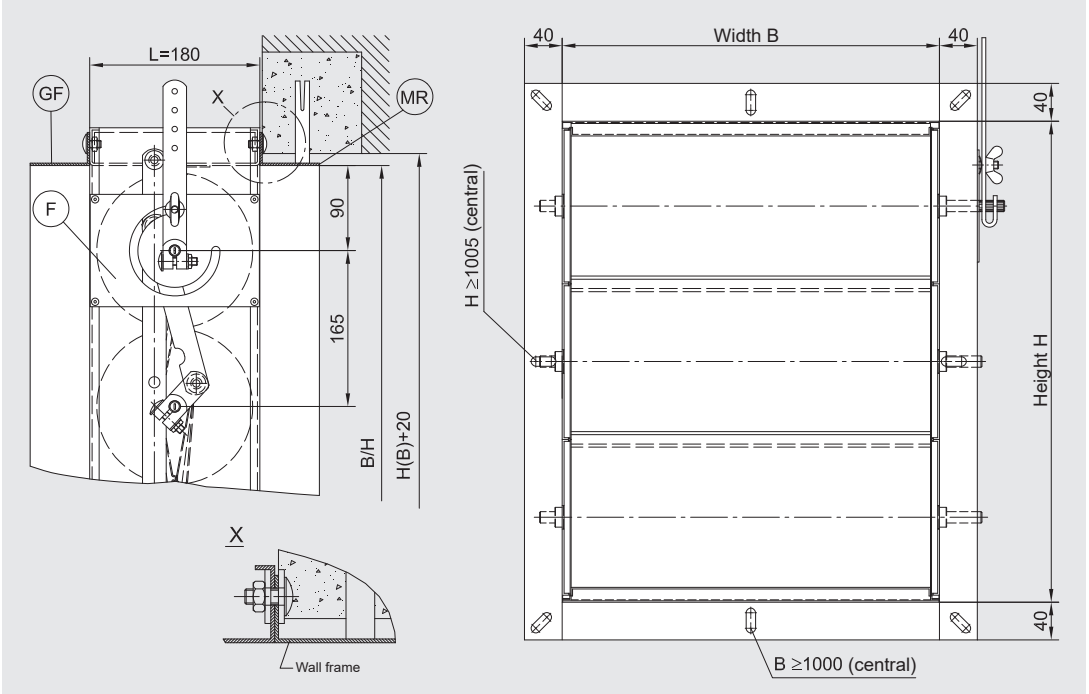
JL multileaf dampers

- meet the **hygiene requirements** according to VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 13779
- do not **promote the growth of microorganisms** [1] **(fungi, bacteria)**. This reduces the risk of infection for people and also the necessary cleaning and disinfection work!
- are **resistant to disinfectants** [2]

www.HYG.de
Geprüfte Qualität
Hygiene-Institut des Ruhrgebiets
Institut für Umwelthygiene und Toxikologie
HY geprüft
Nur gültig in Verbindung mit zugehörigem Zertifikat unter www.wildeboer.de!

[1] The corresponding **resistance of the materials to fungi and bacteria** has been verified by testing the microbial metabolic potential according to DIN EN ISO 846.

[2] The **resistance to disinfectant** has been tested with the active ingredients **alcohol** and **quaternary compounds**. They are on the list by the Robert Koch Institute, and were used in accordance with the specifications in the list of disinfectants by the Disinfectants Commission in the German Association for Applied Hygiene (VAH). It has been verified that JL multileaf dampers can withstand normal use of disinfectants and disinfection methods.



Sizes B x H

Width B [mm]	Height H [mm]
200	180
300	345
400	510
500	675
600	840
700	1005
800	1170
1000	1335
1200	1500
1400	1665
1600	1830
1800	1995
2000	

All B and H dimensions can be combined, but H = 180 [mm] can only be combined with B ≤ 1000 [mm]

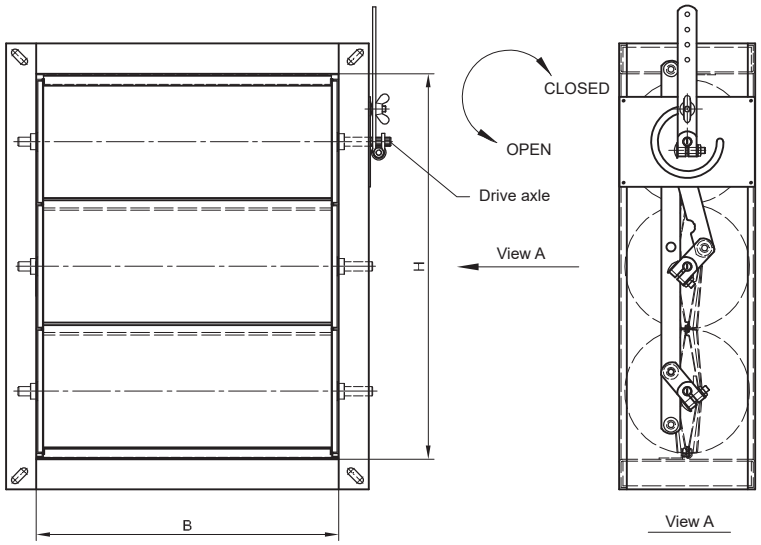
Electric actuators ⇒ see pages 12 and 13, **Wall installation frames, counterflanges** ⇒ see page 14

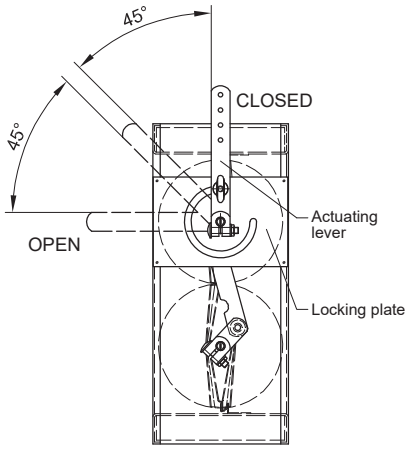
JL multileaf dampers

Drive axles, technical data of electric actuators

Drive axles

The drive axle is situated on the upper (first) blade. In addition, the fifth blade from H > 840 mm and the seventh blade from H > 1500 mm are designed as drive axles. Adjustment devices can be attached on site!





Locking device

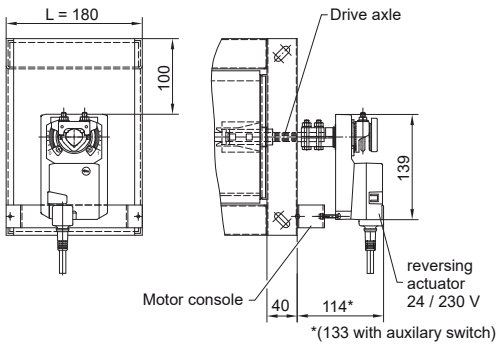
Electric actuators

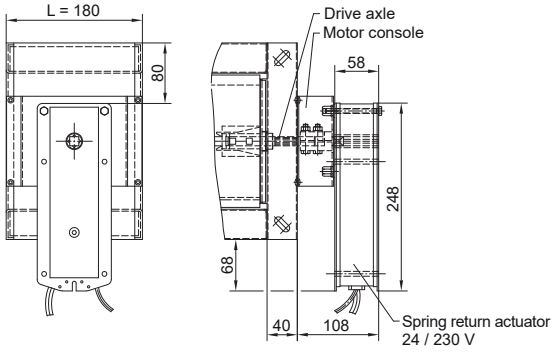
JL multileaf dampers are available for delivery from the factory with the following electric actuators attached:

Electrically reversing actuators M0 and M1 open and close the multileaf dampers with 24V DC or AC voltage or with 230V AC voltage. In case of power failure the current actuator position is maintained. 20 [Nm] of drive torque is available for opening and closing*). ⇒ see page 13

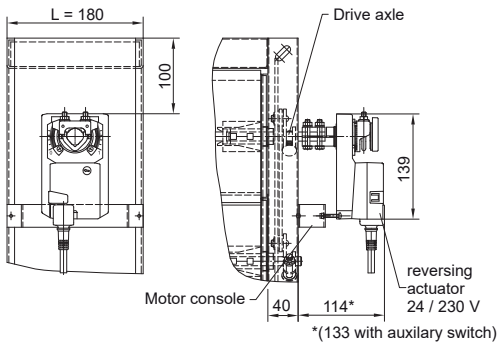
Electric spring return actuators M6 and M7 open the multileaf dampers with 24V DC or AC voltage or with 230V AC voltage. In case of power failure the multileaf dampers are closed by the spring return. 18 [Nm], of drive torque are available for opening, 12 [Nm] are available for closing*). ⇒ see page 13

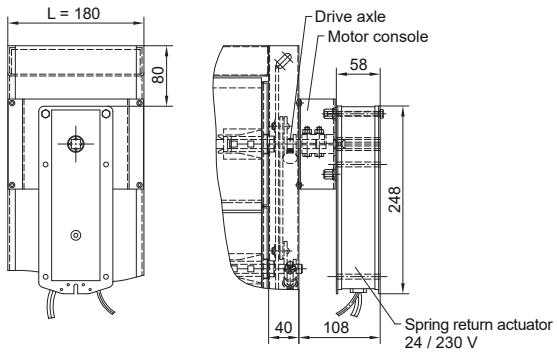
Motor attachment with multileaf damper height H = 180 mm





Motor attachment with multileaf damper height H > 180 mm





*) Required drive torques ⇒ see page 15; for greater drive torques, two electric actuators are required.

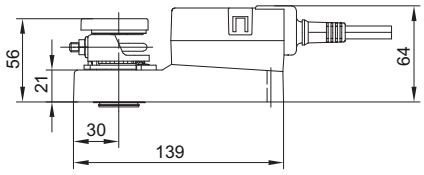
JL multileaf dampers

Technical data of electric actuators

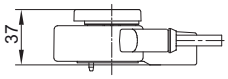
Technical data of factory-installed actuators

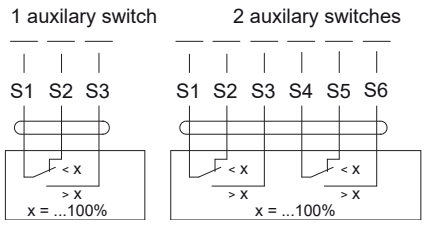
	Reversing actuators		Spring return actuators	
	M0	**M1**	**M6**	**M7**
Supply voltage	100 to 240V AC	24V AC/DC	230V AC	24V AC/DC
Tolerance at AC 50 Hz	–15% to +10%	±20%	±14%	±20%
Tolerance with DC		–10% to +20%		–10% to +20%
Torque				
Motor	≥20 Nm		≥18 Nm	
Spring return	-		≥12 Nm	
Runtime for 90°				
Motor	150 s		140 s	
Spring return	-		~16 s	
Connected load	6 VA	4 VA	12.5 VA	10 VA
Power consumption				
when opening	2.5 W	2 W	8 W	7 W
in stop position	0.6 W	0.2 W	3 W	2 W
Degree of protection	IP 54		IP 54	
Connection cable 0.75 mm²	approx. 1 m long		approx. 1 m long	
Motor	3-wire		2-wire	
with an auxiliary switch	3-wire		-	
with two auxiliary switches	6-wire		6-wire	
Ambient temperature	–30°C to +50°C		–30°C to +50°C	

Electric actuators M0 and M1

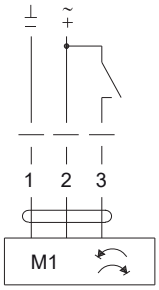


Auxiliary switch



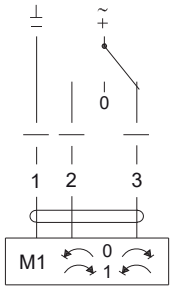


OPEN-CLOSE control

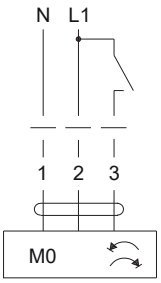


Mains voltage:
AC 24V, 50/60Hz
DC 24 V

3- point control

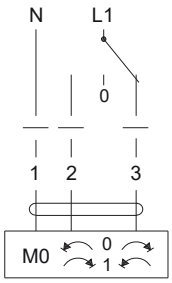


OPEN-CLOSE control

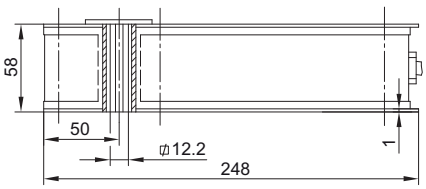


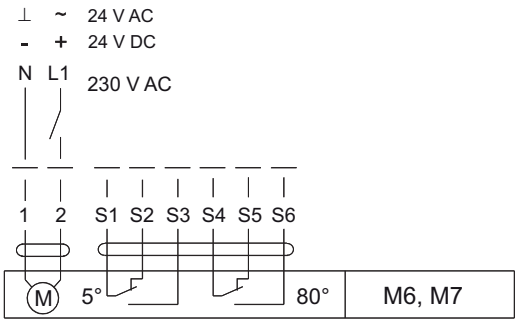
Mains voltage:
AC 100...240V, 50/60Hz

3- point control



Spring return actuators M6 and M7 with integrated limit switches

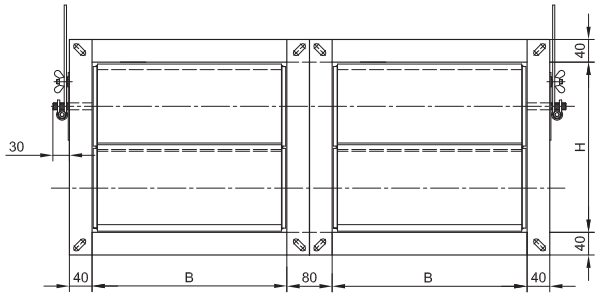


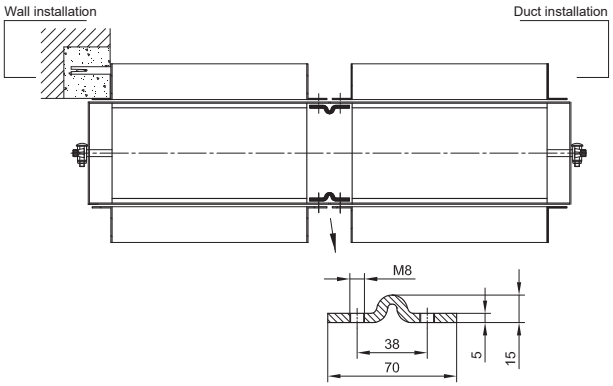


JL multileaf dampers

Installation, details, accessories

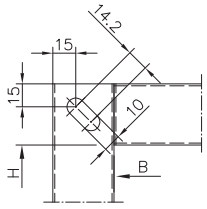
Horizontal assembly with connection brackets



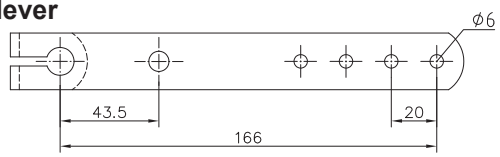


Always use separate electric actuators for each multileaf damper!

Corner hole in connecting frame



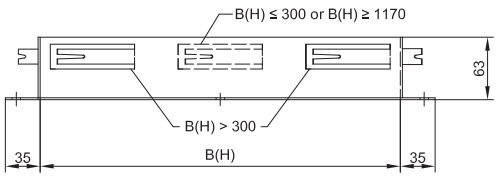
Actuating lever



Accessories

MR Wall installation frame stamped from galvanized sheet steel, bevelled and welded at the corners and with several wall anchors for cementing.

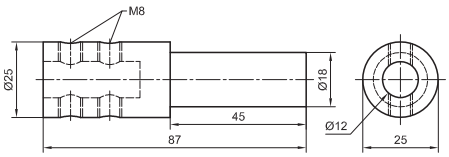
GF Counterflange made of galvanized sheet steel, pressed, bevelled and welded at the corners.



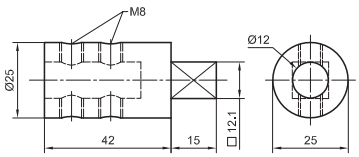
Counterflanges do not have wall anchors.

Axle extensions for on-site actuators

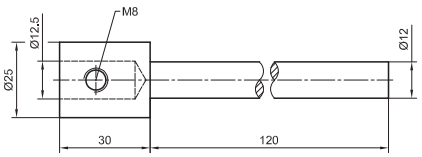
Extension 18 mm ∅



Extension 12 x 12 mm



L150 extension for hand lever



JL multileaf dampers

Drive torques, pressure drop coefficients ζ, pressure drop, sound power level

Actuators

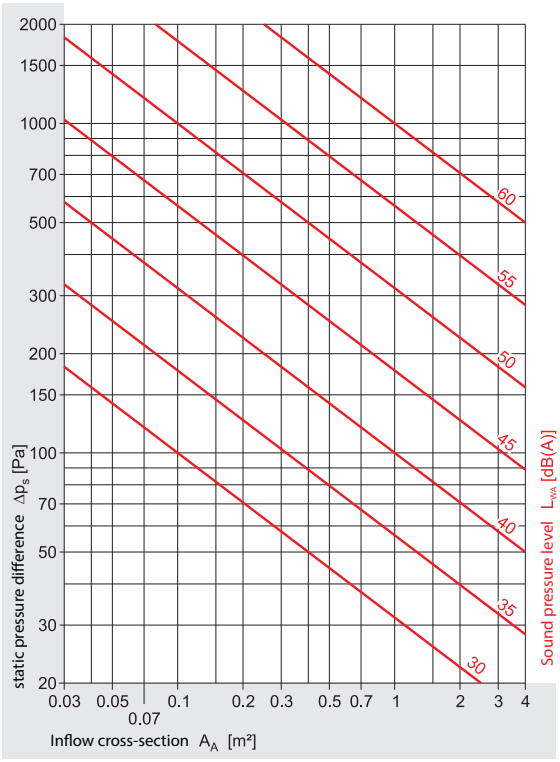
B / H	≤ 840	1005	1170	1335	1500	1665	1830	1995
200								
300								
400		1 actuator						
500								
600								
700								
800								
1000								
1200								
1400						2 actuators		
1600								
1800								
2000								

The specified number of actuators with at least 15 [Nm] of torque each are required for operation of the multileaf dampers.

Example

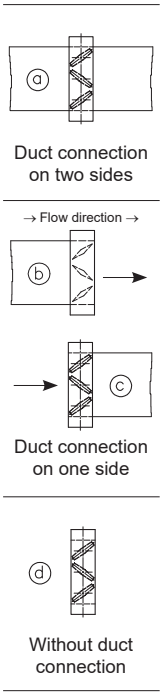
Width B = 800 [mm] Actuators 1 pc
Height H = 840 [mm] Drive torque M ≥ 15 [Nm]

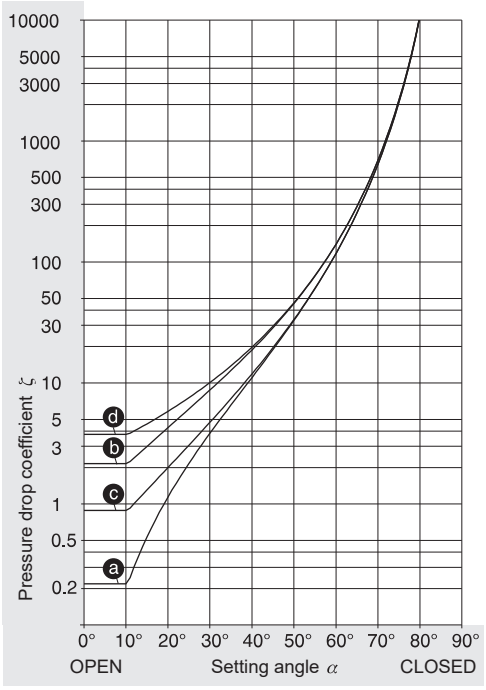
JL closed: Sound power level



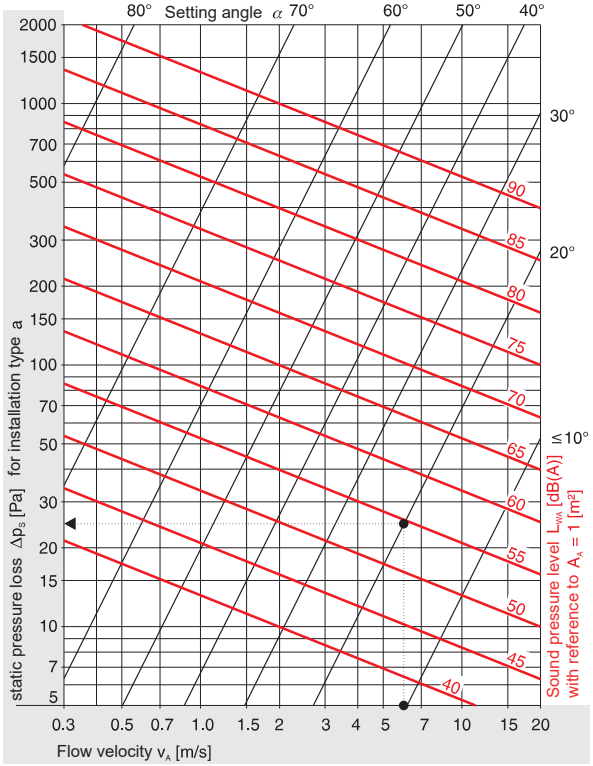
ζ - Coefficients for pressure drop

Installation type:





JL open: Sound power level



Example

Setting angle α = 20°
Flow velocity v_A = 6 [m/s]
Pressure drop (installation type a) Δp_s = 24 [Pa]
Sound power level L_{WA} = 55 [dB(A)]*)

*) Sound power levels are in relation to A_A = 1 [m²]; correction values for other inflow cross-sections ⇒ see page 16

JL multileaf dampers

Nomenclature, order data

Nomenclature

A_A [m²]	=	Inflow cross-section $A_A = B \cdot H$
V [m³/h]	=	Volume flow, Leakage volume flow
v_A [m/s]	=	Flow velocity in relation to A_A (Inflow velocity)
α	=	Multileaf damper setting angle OPEN: $\alpha = 0°$ / CLOSED: $\alpha = 90°$
ζ	=	Pressure drop coefficient in relation to A_A Pressure drop $\Delta p_S = \zeta \cdot \rho/2 \cdot v_A^2$
ρ [kg/m³]	=	Media density $\rho_{dry\ air\ 20°C,\ 1\ bar} = 1.188$ kg/m³
Δp_S [Pa]	=	Static pressure drop, Static pressure difference
L_{WA} [dB(A)]	=	A-weighted sound power level
ΔL [dB]	=	Correction to L_{WA} in relation to $A_A = 1$ [m²] $L_{WA} = L_{WA\text{-}1m^2} + \Delta L$ [dB]
M [Nm/m²]	=	Drive torque per m²
M_{total} [Nm]	=	M_{1m^2} [Nm/m²] · A_A [m²]

Correction to L_{WA} with inflow cross-sections differing from $A_A = 1$ [m²].

A_A [m²]	ΔL [dB]
0.10	-10
0.25	-6
0.40	-4
0.50	-3
0.60	-2
1.00	0
1.25	+1
1.60	+2
2.00	+3
2.50	+4
3.20	+5
4.00	+6

JL - __ - __ - __ - __

Size

Nominal dimension B x H..... x .....

⇒ see page 11

Accessories made of galvanized sheet steel

1GF with 1 x counterflange

2GF with 2 x counterflanges

⇒ see page 14

MR with wall installation frame

⇒ see page 14

Adjustment devices and electric actuators

One or two drive axles are provided depending on the width and height; thus the same number of locking devices or actuators are required.

⇒ see pages 12 and 13

F Locking device (series-production standard)

Electrically reversing actuators 20 [Nm]

M0 100 to 240V AC

M1 24V AC/DC

M2 100 to 240V AC and 1 auxiliary switches

M3 100 to 240V AC and 2 auxiliary switches

M4 24V AC/DC and 1 auxiliary switch

M5 24V AC/DC and 2 auxiliary switches

Spring return actuators 18 [Nm] / 12 [Nm]

M6 230V AC and integrated limit switches

M7 24V AC/DC and integrated limit switches

Axle extensions for on-site actuators

A1 18 mm ∅ (actuators M0 to M5)

A2 12 x 12 mm (actuators M6 and M7)

A3 ∅ 12 mm, 150 mm in length for actuating lever

Connection brackets for assembly of two JL multileaf dampers must be ordered separately:

ZUB 0123 for widths < 1000 mm ZUB 0124 for widths ≥ 1000 mm	Same widths one on top of the other!
ZUB 0123 for heights < 1005 mm ZUB 0124 for heights ≥ 1005 mm	Same heights next to each other!

JL multileaf dampers

Installation instructions, specification text

Installation instructions

JL multileaf dampers can be used for:

Temperatures: -20°C to +90°C

Pressure differences Δp_s: to 2500 [Pa]

The multileaf dampers must be installed with horizontal axle bearings so that they are tension-free and sealed off between counterflanges or on wall installation frames so that the air tightness is guaranteed and the drive torques are adhered to.

Continuous exposure to UV light must be avoided.

Multileaf dampers made of galvanized sheet steel. Air tight according to DIN 1946-4 and leak tightness class 4 according to EN 1751 at 100 Pa static pressure difference. Type-tested. Use as control and shut-off damper in ventilation and air conditioning systems, in particular in hospitals. With hygienically smooth hollow body blades which are profiled to benefit the flow and coupled in the opposite direction in special bearing bushes made of brass and in an all-round, bevelled frame with an installation length of 180 mm. With connection flanges for installation between ducts, on walls or on ceilings. With actuating lever and locking device / electrically reversing actuator and with one / two auxiliary switches / electrical spring return actuator and limit switches. With wall installation frame and counterflange / counterflanges. Furthermore, with the connecting brackets required for installation of two multileaf dampers next to each other / one above the other.

..... pc

Volume flow: ..... m³/h

Manufacturer: WILDEBOER®

Type: JL

Size B x H ....x.... mm

complete with fixings deliver: .....

install: .....

Delete texts not highlighted in bold as required!

JL multileaf dampers

Notes

UK, UE pressure relief dampers

Galvanized steel with aluminium blades

UK

UE

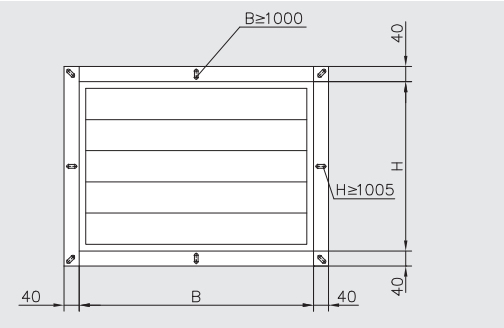
Pressure relief dampers for ventilation and air conditioning systems. Made of galvanized sheet steel, with stable, automatically opening blades made of extruded aluminium profiles with embedded, elastic seals and plastic bearing journals.
The blades are not coupled to each other.

UK With flange frame 120 mm in length
For installation between ventilation ducts and on walls inside a building.

Accessories

MR **Wall installation frames** made of galvanized sheet steel

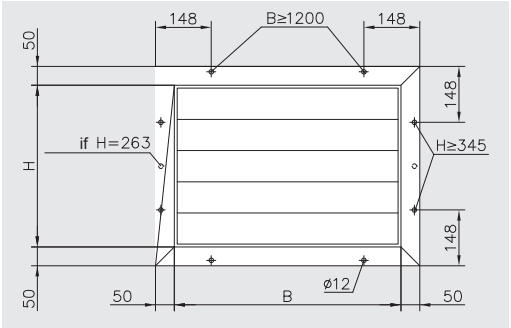
GF **Counterflanges** made of galvanized sheet steel



UE With blind frames for installation in walls.

Accessories

MR **Wall installation frames** made of galvanized sheet steel



Sizes B x H

Width B [mm]	Height H [mm]
200	263
400	345
600	428
800	510
1000	675
1200	840
1400	1005
1600	1170
	1335
	1500
	1665

All B and H dimensions can be combined.

UK, UE pressure relief dampers

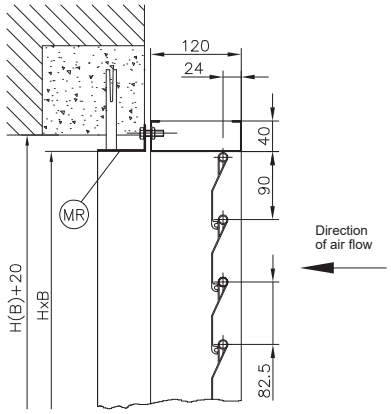
Details, installation, pressure drop, sound power level

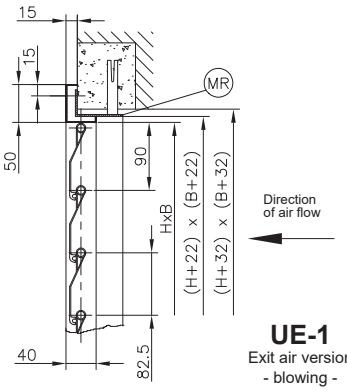
Installation: UK

The opposite air flow direction is achieved on site by turning the pressure relief damper.

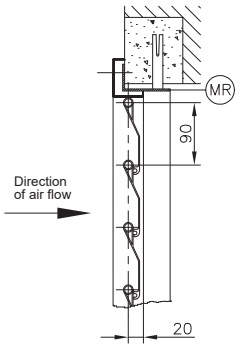
Installation: UE

The specified air flow directions cannot be changed on site; they must be ordered specifically.



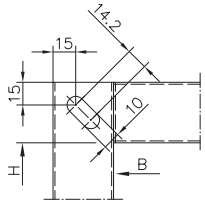


UE-1
Exit air version
- blowing -



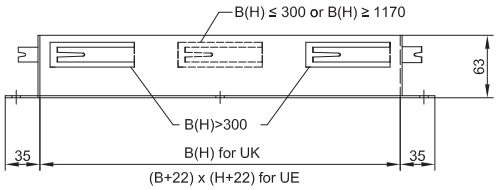
UE-2
Supply air version
- suctioning -

Corner hole in the UK connecting frame

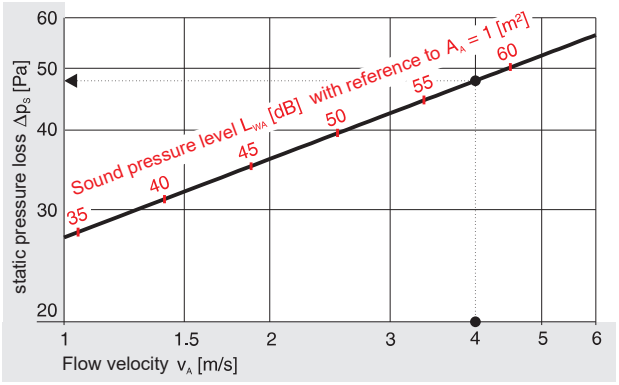


MR wall installation frame for UK and UE

GF counterflange for UK (without wall anchors)



Pressure drop, sound power level



A_A [m²]	ΔL [dB]
0.10	-10
0.25	-6
0.40	-4
0.50	-3
0.60	-2
1.00	0
1.25	+1
1.60	+2
2.00	+3
2.50	+4

The sound power levels in the nomogram relate to A_A = 1 [m²] inflow cross-section.
For other inflow cross-sections, corrections ΔL must be added.

Example

Volume flow	V	=	7775 [m³/h]
Width	B	=	800 [mm]
Height	H	=	675 [mm]
⇒ Inflow area	A_A	=	0.54 [m²]
⇒ Inflow velocity v_A = 7775 / 3600 / 0.54 = 4 [m/s]			
⇒ from the nomogram:			
Pressure drop	Δp_S	=	48 [Pa]
Sound power level in relation to A_A = 1 [m²]	L_{WA}	=	58 [dB(A)]
⇒ from the table:			
Correction value	ΔL	=	-3 [dB]
Sound power level in relation to A_A	L_{WA}	=	55 [dB(A)]

Nomenclature

A_A	[m²]	= Inflow cross-section $A_A = B \cdot H$
V	[m³/h]	= Volume flow V [m³/h] = v_A [m/s] · 3600 [s/h] · A_A [m²]
v_A	[m/s]	= Flow velocity in relation to A_A (Inflow velocity)
Δp_S	[Pa]	= Static pressure drop
L_{WA}	[dB(A)]	= A-weighted sound power level
ΔL	[dB]	= Correction to L_{WA} in relation to A_A = 1 [m²] $L_{WA} = L_{WA\text{-}1m^2} + \Delta L$ [dB]

UK, UE pressure relief dampers

Installation instructions, ordering data

Installation instructions

Pressure relief damper dampers can be used for:

Temperatures:	-20°C	to	+70°C
Pressure differences:		to	500 [Pa]
Inflow velocities:		to	5 [m/s]

Counterpressures from wind or uneven inflows can lead to pressure fluctuations.
In extreme cases disturbing acoustic noises can be caused as a result.

- - - -

Pressure relief damper

with flange frame	UK
with blind frame, for exit air	UE-1
with blind frame, for supply air	UE-2

Size

Nominal dimension B x H..... x .....

⇒ see page 19

Accessories

1GF	with 1 x counterflange*)
2GF	with 2 x counterflanges*)

⇒ see page 20

MR	with wall installation frame

⇒ see page 20

*) for UK only

Connection brackets for assembly of two UK pressure relief dampers must be ordered separately:

ZUB 0123 for widths < 1000 mm	Same widths one on top of the other!
ZUB 0124 for widths ≥ 1000 mm	
ZUB 0123 for heights < 1005 mm	Same heights next to each other!
ZUB 0124 for heights ≥ 1005 mm	

Connection brackets for assembly of two wall installation frames for UE pressure relief dampers must be ordered separately:

ZUB 0129 for widths < 1000 mm	Same widths one on top of the other!
ZUB 0130 for widths ≥ 1000 mm	
ZUB 0129 for heights < 1005 mm	Same heights next to each other!
ZUB 0130 for heights ≥ 1005 mm	

UK, UE pressure relief dampers

Specification text

Pressure relief dampers for ventilation and air conditioning systems with flange frames made of galvanized sheet steel with a length of 120 mm for installation in ventilation ducts and on walls with individual, automatically opening and closing blades made of extruded aluminium profiles in plastic bearing journals and with embedded elastic seals. With wall installation frame and with counterflanges.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: **UK**

Size B x H .... **x** .... **mm**

complete with fixings **deliver:** .....

install: .....

Pressure relief dampers for suction and exhaust air openings on ventilation and air conditioning systems. With blind frames made of galvanized sheet steel for installation in walls with individual, automatically opening and closing blades made of extruded aluminium profiles in plastic bearing journals and with embedded elastic seals. Fastening with screws in the frame holes and with wall installation frames.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: **UE**

Size B x H .... **x** .... **mm**

complete with fixings **deliver:** .....

install: .....

Delete texts not highlighted in bold as required!

AWK weather-resistant louvre

Anodised aluminium

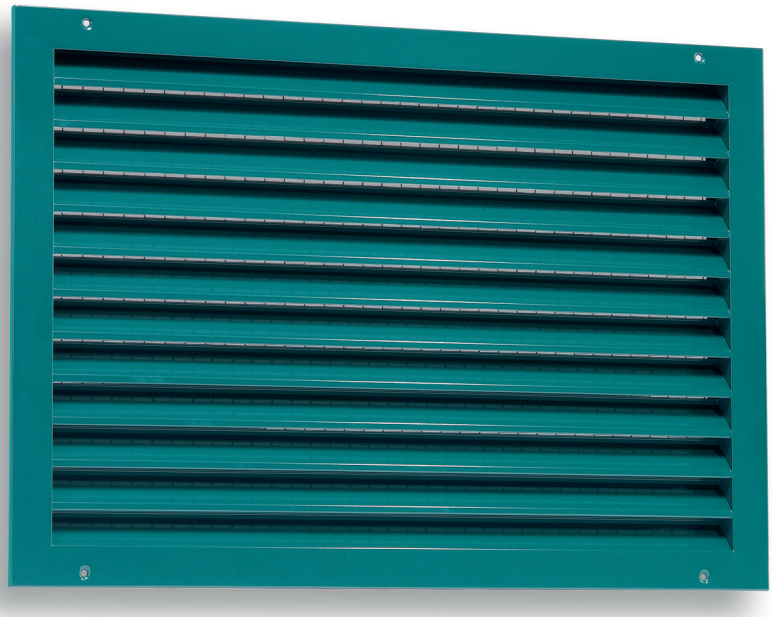
AWK weather-resistant louvre for external air and for exit air of ventilation and air conditioning systems. With profiled, water-resistant blades in an all-round frame for installation in exterior walls. Frames and blades made of extruded aluminium profiles with silver anodised finish, with stainless steel protective grille, with mesh size of around 16 x 18 mm, installed fixedly to the rear, and with counter punched holes.

Special design:

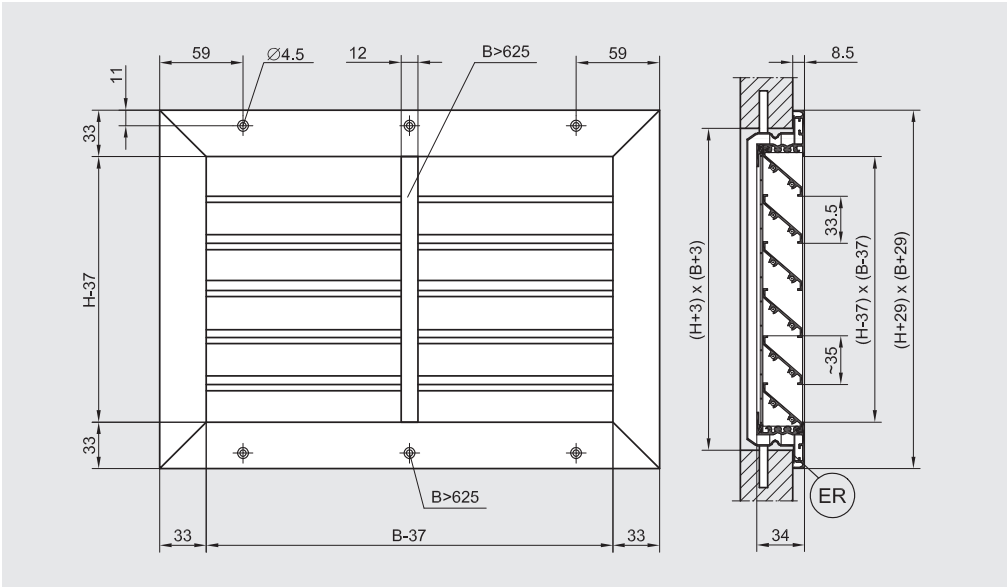
AWK-F with additional fly wire made of aluminium with mesh size of approx. 1 mm.

Accessories:

ER Installation subframes



The illustration shows a powder coated version without centre bar



Installation opening without installation subframe: (B - 10 mm) x (H - 10 mm)

Sizes B x H

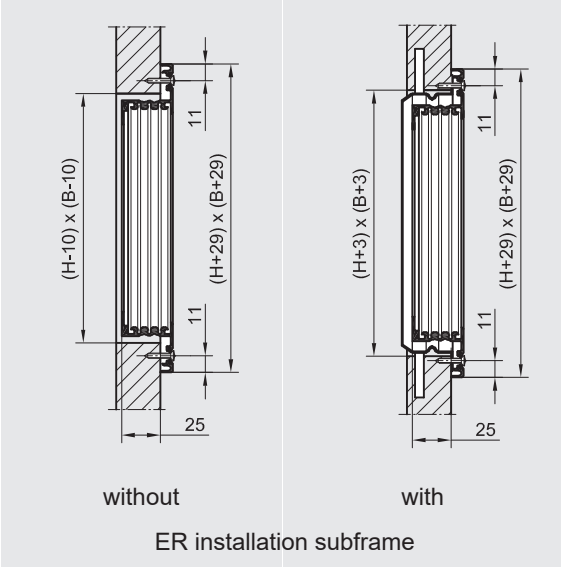
Width B [mm]	Height H [mm]
225	125
325	225
425	325
525	425
625	525
825	
1025	
1225	

All B and H dimensions can be combined.

Note: Weather-resistant louvres protect wall openings from penetration by contamination, as long as it cannot pass through the mesh of the protective grille, and from the direct impact of rain. In case of strong wind, in particular in larger installation heights, a low amount of rain and snow passing through cannot be completely avoided. Thus measures have to be taken in the building for appropriate discharge.

AWK weather-resistant louvre

Installation, installation subframe, nomenclature, pressure drop, sound power level



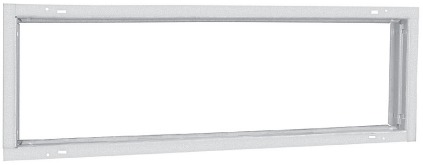
ER installation subframe

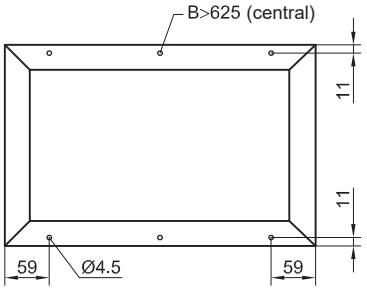
Installation with oval-head screws 4.2 x 16 DIN 7973 in counter punched holes; can be performed with or without installation subframe.

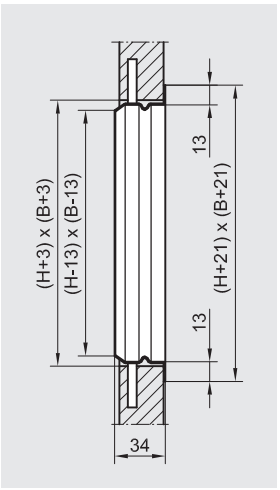
ER installation subframe

Installation subframe with wall anchors, made from profiled, galvanized sheet steel with plug-in corner connections.

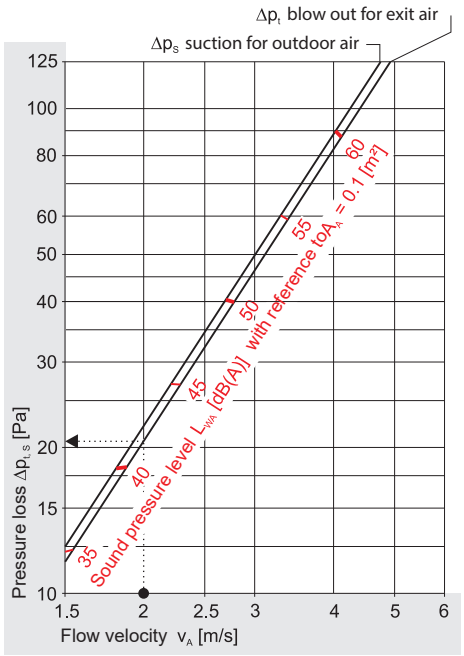
The nominal dimensions B and H match the weather-resistant louvres.







Pressure drop, sound power level



The sound power levels apply for an inflow cross-section A_A = 0.1 [m²]. Corrections ΔL must be added as required.

Free cross-sections A_{free} [m²]

Height H [mm] \ Width B [mm]	225	325	425	525	625	825	1025	1225
125	0.006	0.009	0.013	0.016	0.019	0.025	0.031	0.038
225	0.015	0.023	0.032	0.040	0.048	0.063	0.079	0.095
325	0.025	0.038	0.051	0.063	0.076	0.100	0.126	0.151
425	0.034	0.052	0.069	0.087	0.105	0.138	0.173	0.208
525	0.043	0.066	0.088	0.111	0.133	0.175	0.220	0.265

Inflow cross-sections A_A [m²]

Height H [mm] \ Width B [mm]	225	325	425	525	625	825	1025	1225
125	0.010	0.015	0.021	0.026	0.031	0.042	0.053	0.064
225	0.029	0.044	0.060	0.075	0.090	0.121	0.152	0.182
325	0.048	0.073	0.098	0.124	0.149	0.200	0.250	0.301
425	0.066	0.102	0.137	0.172	0.208	0.278	0.349	0.420
525	0.085	0.131	0.176	0.221	0.267	0.357	0.448	0.539

Correction values ΔL [dB] = L_{WA} - L_{WA} in relation to A_A = 0.1[m²]

Height H [mm] \ Width B [mm]	225	325	425	525	625	825	1025	1225
125	-10.0	-8.1	-6.8	-5.8	-5.0	-3.8	-2.8	-2.0
225	-5.4	-3.5	-2.3	-1.3	-0.4	+0.8	+1.8	+2.6
325	-3.2	-1.4	-0.1	+0.9	+1.7	+3.0	+4.0	+4.8
425	-1.8	+0.1	+1.4	+2.4	+3.2	+4.4	+5.4	+6.2
525	-0.7	+1.2	+2.5	+3.4	+4.3	+5.5	+6.5	+7.3

Nomenclature

Δp_t [Pa] = Total pressure drop (blow out for exit air)

Δp_s [Pa] = Static pressure drop (suction for outdoor air)

A_{free} [m²] = Free cross-section

A_A [m²] = Inflow cross-section
A_A = (B - 0.037 m) · (H - 0.072 m)

v_A [m/s] = Flow velocity in relation to A_A

V [m³/h] = Volume flow

L_{WA} [dB(A)] = A-weighted Sound power level

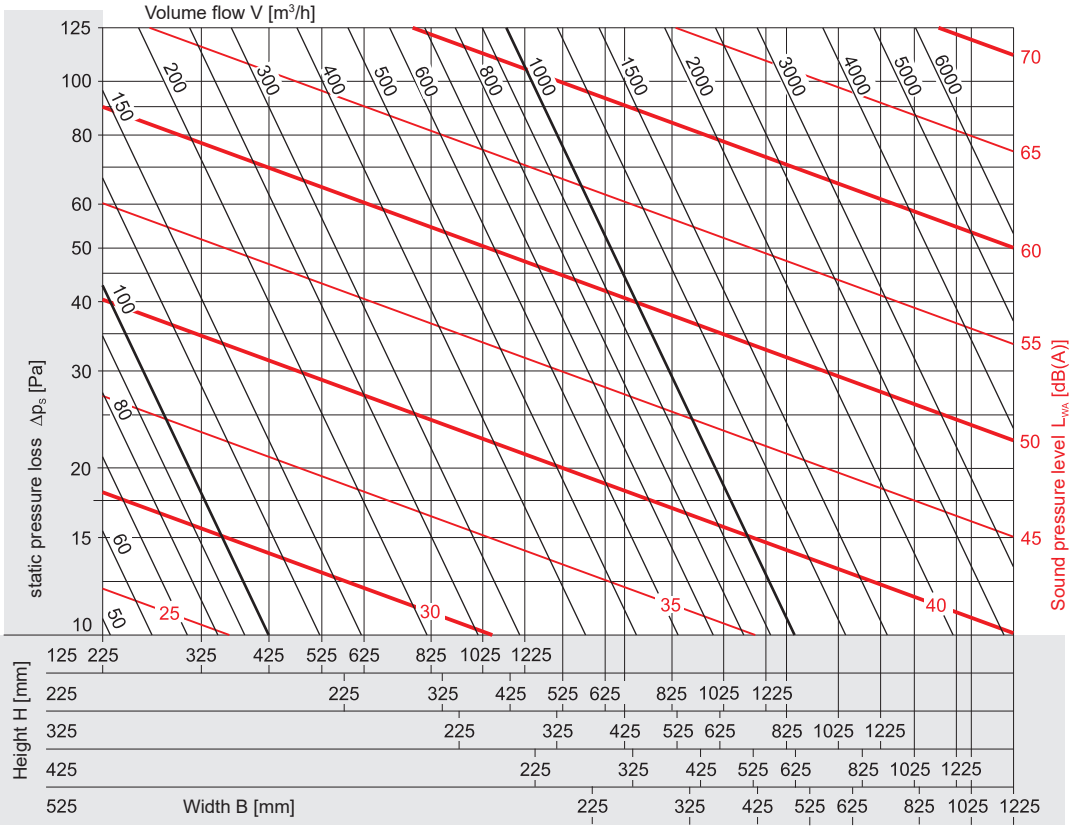
ΔL [dB] = Correction to L_{WA} in relation to A_A = 0.1 [m²]

Subject to change

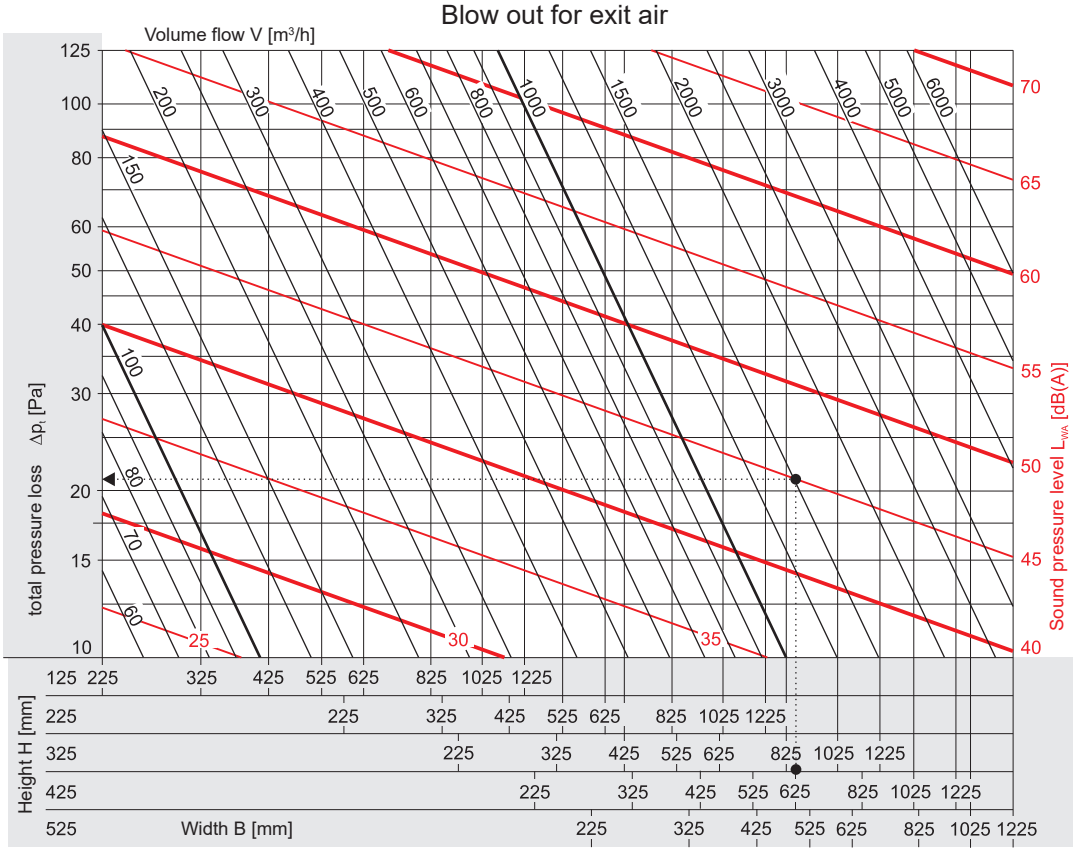
AWK weather-resistant louvre

Dimensioning

Suction for outdoor air



Blow out for exit air



Example

Volume flow

V = 1500 [m³/h]

Sound power level

L_{WA} = 45 [dB(A)]

Width

B = 625 [mm]

Height

H = 425 [mm]

Pressure drop

Δp_t = 21 [Pa]

Alternatively an inflow velocity is calculated with the inflow cross-section

A_A = 0.208 [m²]

v_A = 1500 [m³/h] / 3600 / 0.208 [m²]

v_A = 2.00 [m/s].

From the nomogram on page 24 the result of this inflow velocity v_A is a sound power level

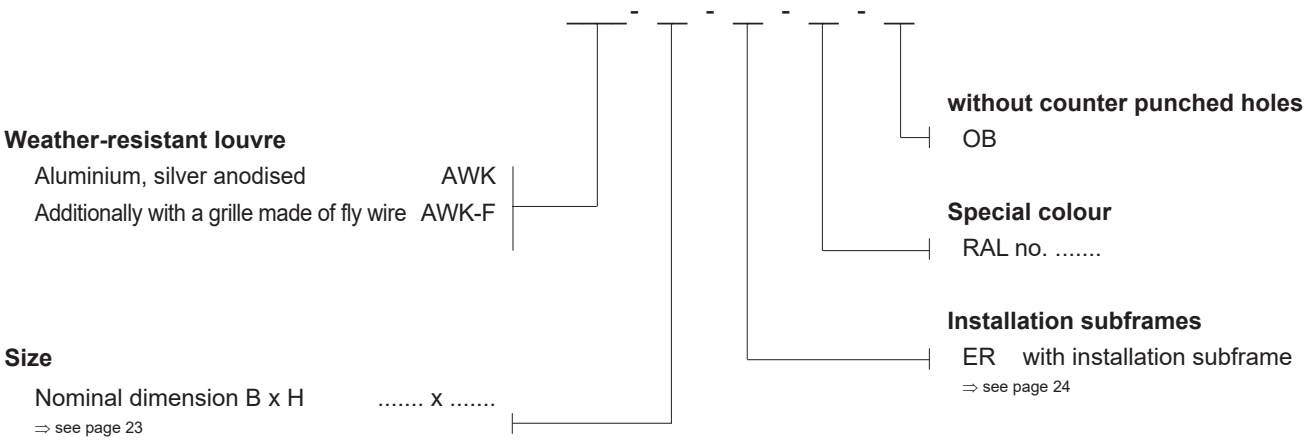
L_{WA} = 41.8 [dB(A)] in relation to A_A = 0.1 [m²], which must be corrected by

ΔL = +3.2 [dB] to

L_{WA} = 45 [dB(A)].

AWK weather-resistant louvre

Order data, specification text



Weather-resistant louvre made of silver anodised aluminium profiles for external air inlets and for exit air. With all-round profile frame, with horizontal, water-resistant profile blades and with stainless steel protective grille, with mesh size of around 16 x 18 mm, installed fixedly to the rear, and with additional fly wire grille made of aluminium with mesh size of around 1 mm. Fastening with screws in counter punched holes and with installation subframes made of galvanized sheet steel.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: **AWK**

Size B x H .....**x**..... **mm**

complete with fixings **deliver:** .....

install: .....

Delete texts not highlighted in bold as required!

W, AW, AWE weather-resistant louvre

Steel / aluminium / anodised aluminium

Weather-resistant louvre for external air and for exit air of ventilation and air conditioning systems. With profiled, water-resistant blades in an all-round frame for installation in exterior walls and with with stainless steel protective grille, with mesh size of around 16 x 18 mm, installed fixedly to the rear. The free cross-section area is around 60% of the inflow cross-section A_A.

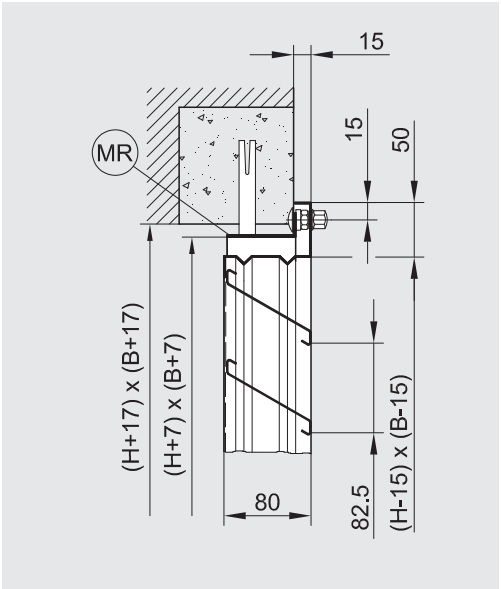
W with frame and blades made of galvanized sheet steel

AW with frame and blades made of extruded aluminium profiles with untreated surfaces

AWE with frame and blades made of extruded aluminium profiles with silver anodised surfaces

Accessories

MR **Wall installation frames** made of galvanized sheet steel



Installation opening without wall installation frame: B x H

Sizes B x H

Width B [mm]	Height H [mm]
(300)	345 (428)
400 (500)	510 (593)
600 (700)	675 (758)
800 (900)	840 (923)
1000 (1100)	1005 (1088)
1200 (1300)	1170 (1253)
1400 (1500)	1335 (1418)
1600 (1700)	1500 (1583)
1800 (1900)	1665 (1748)
2000 (2100)	1830 (1913)
	1995 (2078)

All B and H dimensions can be combined

Dimensions in () are intermediate dimensions especially for combinations

The specified sizes are standard sizes with 82.5 mm blade spacing.

W weather-resistant louvres are also **available as standard** in

- **widths** of **300 to 2100 mm** and
- **heights** of **345 to 2078 mm**

with any dimensions in 1 mm increments and a maximum of 25 **blades.**

The blade spacing is automatically adjusted to the height. Intermediate dimensions can thus feature somewhat larger or smaller blade spacings.

AW and AWE weather-resistant louvres are **also available** as standard in

- **widths** of **300 to 2100 mm**

with any dimensions in 1 mm increments**.**

Note: Weather-resistant louvres protect wall openings from penetration by contamination, as long as it cannot pass through the mesh of the protective grille, and from the direct impact of rain. In case of strong wind, in particular in larger installation heights, a low amount of rain and snow passing through cannot be completely avoided. Thus measures have to be taken in the building for appropriate discharge.

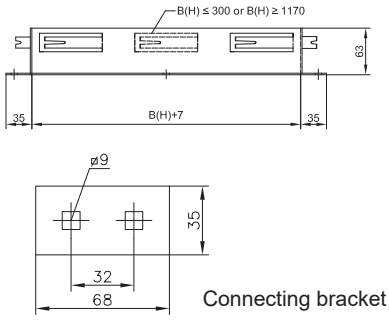
W, AW, AWE weather-resistant louvre

Accessories, pressure drop, sound power level, nomenclature

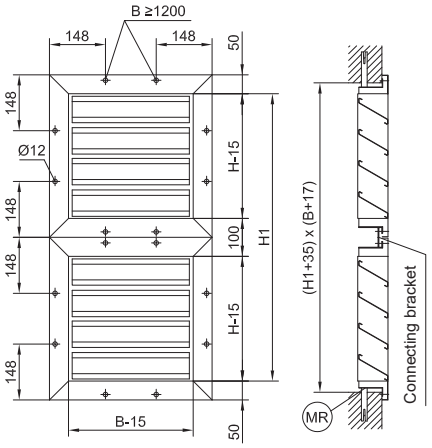
Accessories

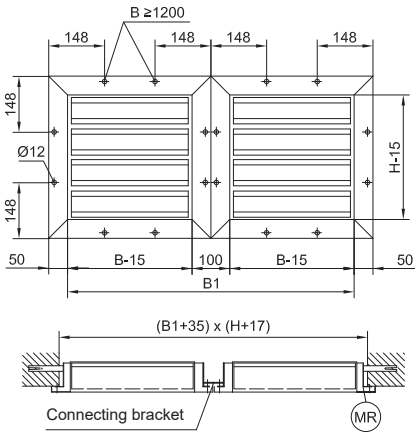
MR Wall installation frame stamped from galvanized sheet steel, bevelled and welded at the corners and with several wall anchors for cementing.

- Connecting brackets with screws for horizontal assembly of two wall installation frames of the same height.
- Connecting brackets with screws for vertical assembly of two wall installation frames of the same width.



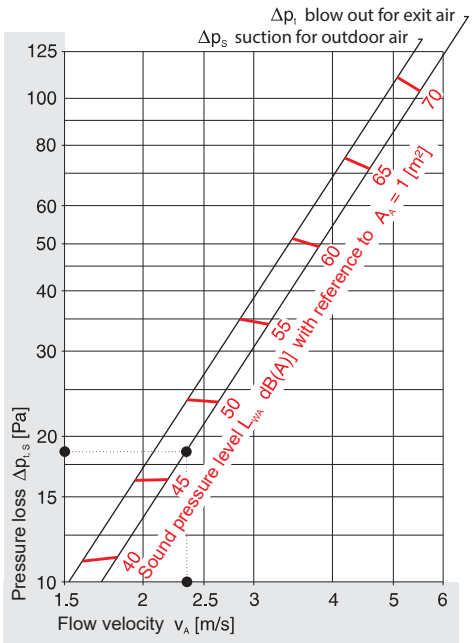
Connecting bracket





Weather-resistant louvres are also available for delivery without holes in the front frame.

Pressure drop, sound power level



The sound power levels relate to A_A = 1 [m²] inflow cross-section. For other inflow cross-sections, corrections ΔL must be added:

A_A [m²]	ΔL [dB]
0.10	-10
0.25	-6
0.40	-4
0.50	-3
0.60	-2
1.00	0
1.25	+1
1.60	+2
2.00	+3
2.50	+4
3.20	+5
4.00	+6

$L_{WA} = L_{WA\text{-}1m^2} + \Delta L$ [dB]

Example

Exit air volume flow V = 5000 [m³/h]
Sound power level L_{WA} = 45 [dB(A)]
⇒ from the nomogram, page 29:
Width B = 800 [mm]
Height H = 840 [mm]
Pressure drop Δp_t = 19 [Pa]

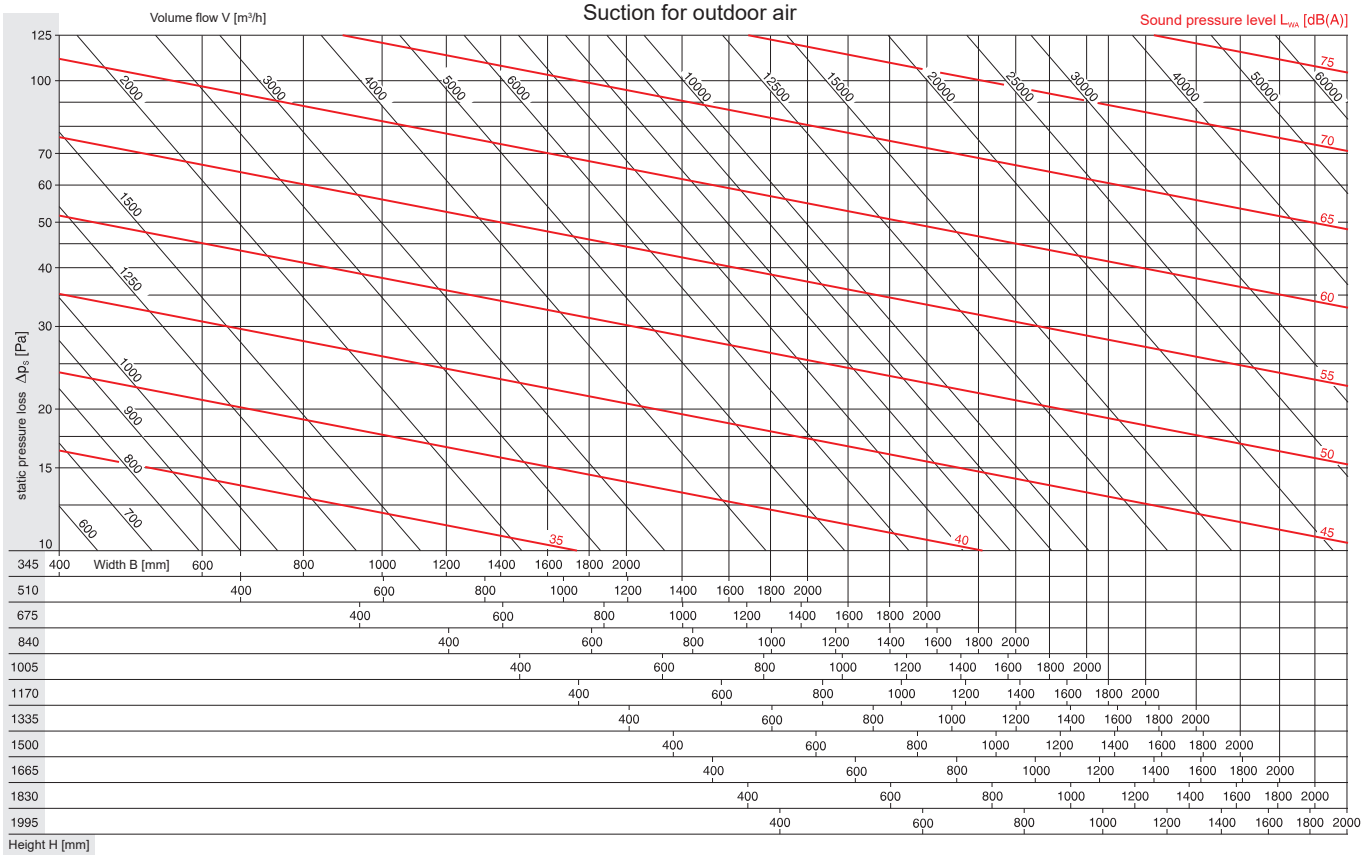
Alternatively an inflow velocity of
v_A = 5000 [m³/h] / 3600 [s/h] / 0.6 [m²] = 2.3 [m/s] is calculated with the inflow area
A_A = 0.8 [m] · (0.84 [m] - 0.1 [m]) = 0.6 [m²].For this inflow velocity v_A and at the same pressure drop Δp a sound power level
L_{WA} = 47 [dB(A)] in relation to A_A = 1 [m²] is read from the nomogram opposite as before; it must be corrected by
ΔL = -2 [dB] to
L_{WA} = 45 [dB(A)] in relation to A_A

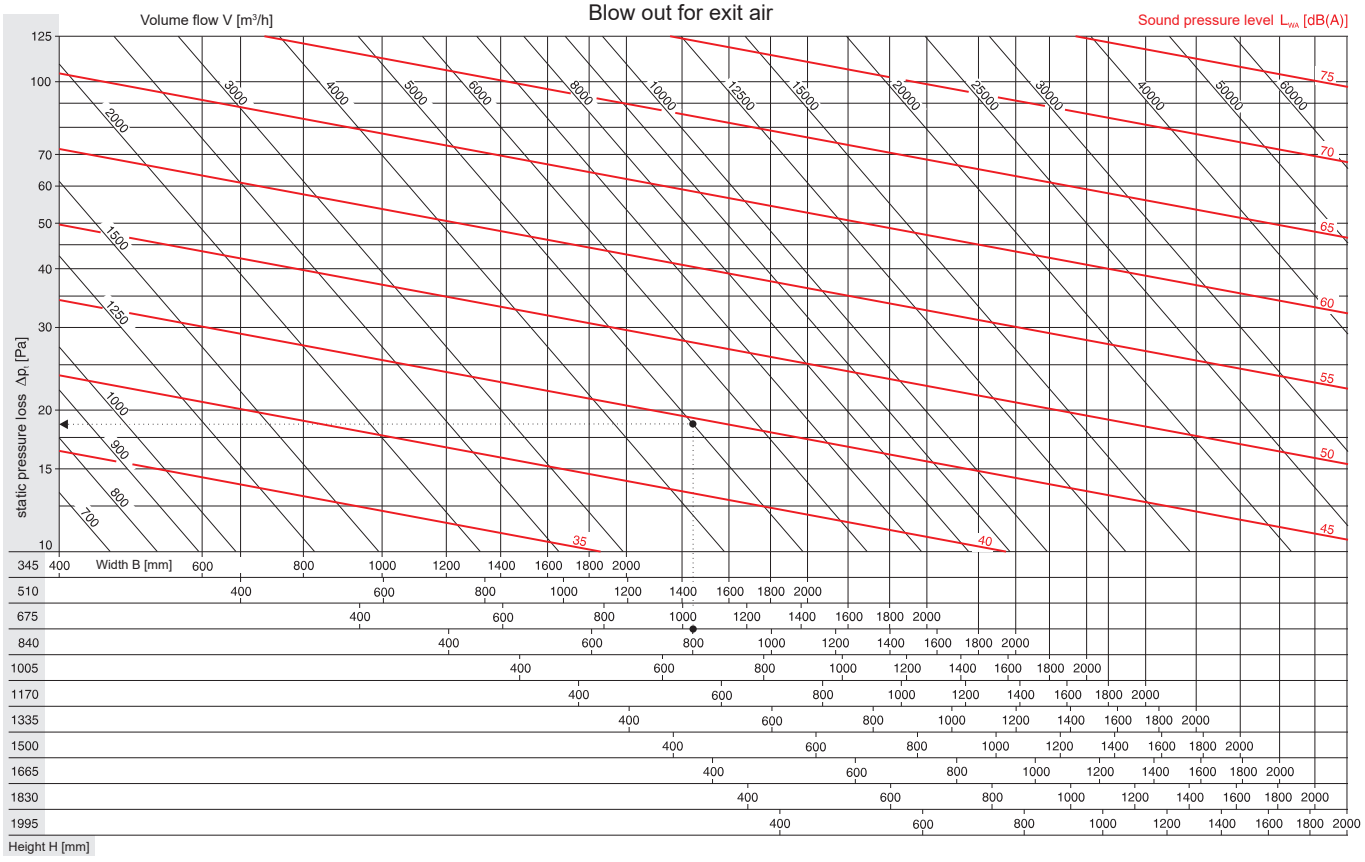
Nomenclature

A_A	[m²]	=	Inflow cross-section A_A = B · (H - 0.1 [m])
V	[m³/h]	=	Volume flow
v_A	[m/s]	=	Flow velocity in relation to A_A
Δp_t	[Pa]	=	total pressure drop (blow out for exit air)
Δp_s	[Pa]	=	static pressure drop (suction for outdoor air)
L_{WA}	[dB(A)]	=	A-weighted sound power level
ΔL	[dB]	=	Correction to L_{WA} in relation to A_A = 1 [m²]

W, AW, AWE weather-resistant louvre

Dimensioning





W, AW, AWE weather-resistant louvre

Order data, specification texts

Weather-resistant louvre*)

Galvanized steel	W
Aluminium, untreated	AW
Aluminium, silver anodised	AWE

Size

Nominal dimension B x H..... x .....

⇒ see page 27

Wall installation frame*)

with wall installation frame MR

⇒ see page 28

Special colour (W and AW only)

RAL no. .....

Front frame holes*)

if not required:
without FB

*) For **fastening** the following is supplied as an accessory kit for weather-resistant louvres:

- with front frame holes and without installation subframe: galvanized hexagon screws and plastic dowels
- with front frame holes and with installation subframe: galvanized carriage bolts and galvanised cap nuts
- without front frame holes: none, the fastening accessories must be provided on site

Connection brackets for assembly of two wall installation frames for weather-resistant louvres must be ordered separately:

ZUB 0129	for widths < 1000 mm	Same widths one on top of the other!
ZUB 0130	for widths ≥ 1000 mm	
ZUB 0129	for heights < 1005 mm	Same heights next to each other!
ZUB 0130	for heights ≥ 1005 mm	

Weather-resistant louvre to prevent penetration from direct impact of rain and coarse contamination, for outdoor air suction and for exit air. Made from galvanized steel, with all-round profile front frame, horizontal, water-resistant profile blades and with stainless steel protective grille, with mesh size of around 16 x 18 mm, installed fixedly to the rear. Fastening with screws in frame holes and with wall installation frames made of galvanized sheet steel.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: **W**

Size B x H .....**x**..... **mm**

complete with fixings **deliver:** .....

install: .....

Weather-resistant louvre to prevent penetration from direct impact of rain and coarse contamination, for outdoor air suction and for exit air. Made from untreated/silver anodised **aluminium, with all-round profile front frame, horizontal, water-resistant profile blades and with stainless steel protective grille, with mesh size of around 16** x 18 mm, installed fixedly to the rear. Fastening with screws in frame holes and with wall installation frames made of galvanized sheet steel.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: AW / AWE

Size B x H .....**x**..... **mm**

complete with fixings **deliver:** .....

install: .....

Delete texts not highlighted in bold as required!

Weather-resistant louvre combinations

Steel / aluminium / anodised aluminium

Weather-resistant louvre combination for external air and for exit air. With profiled, water-resistant blades in an all-round frame for installation in exterior walls. Stainless steel protective grille, with mesh size of around 16 x 18 mm, installed fixedly.

W Weather-resistant louvre with frame and blades made of galvanized sheet steel

AW Weather-resistant louvre with frame and blades made of extruded aluminium profiles with untreated surfaces

AWE Weather-resistant louvre with frame and blades made of extruded aluminium profiles with silver anodised surfaces

Installed at the rear:

JK Multileaf damper made of galvanized sheet steel with hollow body blades, profiled to benefit the flow, coupled by linkage to galvanized axles in plastic or brass bearing bushes and in frames with a length of 180 mm with bevelled connection flanges:

Blade coupling	Blade bearing	Installation length L 180 mm
external linkage in the opposite direction	Plastic	**JK-N180G**
	Brass	**JK-M180G**
external linkage in the same direction	Plastic	**JK-N180**
	Brass	**JK-M180**
internal linkage in the same direction	Plastic	**JK-N180I**
	Brass	**JK-M180I**

JL Multileaf dampers, air tight according to DIN 1946-4 and leak tightness class 4 according to EN 1751 at 100 Pa static pressure difference. Made of galvanized sheet steel. The hollow body blades which are profiled to benefit the flow, sealed and coupled in the opposite direction, rotate in special bearing bushes in frames with a length of 180 mm with bevelled connection flanges.

UK Pressure relief dampers, with automatically opening blades made of extruded aluminium profiles with embedded, elastic seals and plastic bearing journals in frames with a length of 120 mm made of galvanized sheet steel with bevelled connection flanges. The blades are not coupled to each other. Only available for delivery with width of up to B = 1600 mm and height H = 1665 mm.

Sizes B x H

Width B [mm]	Height H [mm]
400	345
600	510
800	675
1000	840
1200	1005
1400	1170
1600	1335
1800*)	1500
2000*)	1665
	1830*)
	1995*)

All B and H dimensions can be combined.

*) Observe the dimensional restrictions!

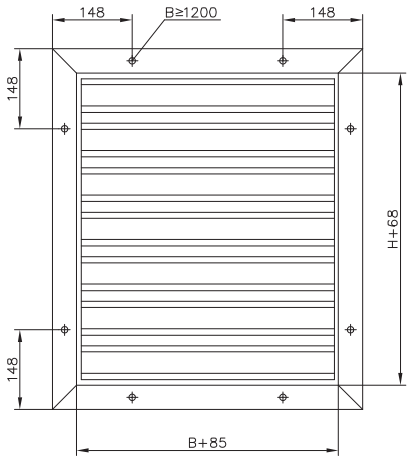
Note:
Weather-resistant louvre combinations protect wall openings from penetration by contamination, as long as it cannot pass through the mesh of the protective grille, and from the direct impact of rain. In case of strong wind, in particular in larger installation heights, a low amount of rain and snow passing through cannot be completely avoided. Thus measures have to be taken in the building for appropriate discharge.

Weather-resistant louvre combinations

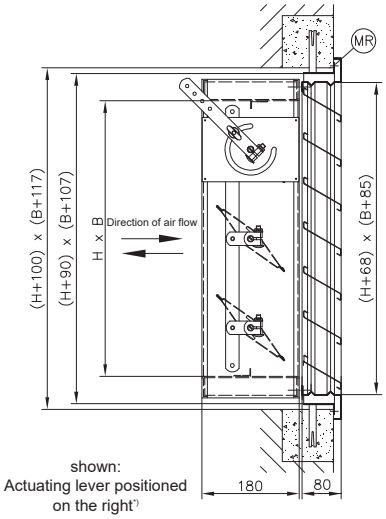
Versions, dimensions

Weather-resistant louvre combinations are made up of W, AW, AWE weather-resistant louvres and JK multileaf dampers, JL multileaf dampers or UK pressure relief dampers installed fixedly to the rear.

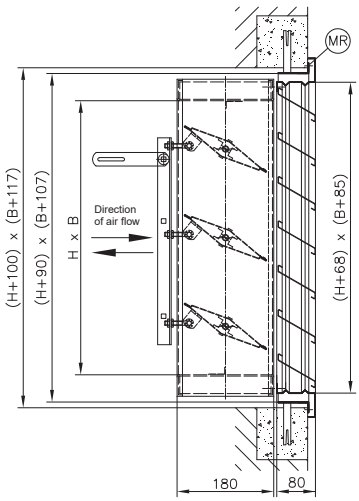
Assembly is performed in the factory using standard products.



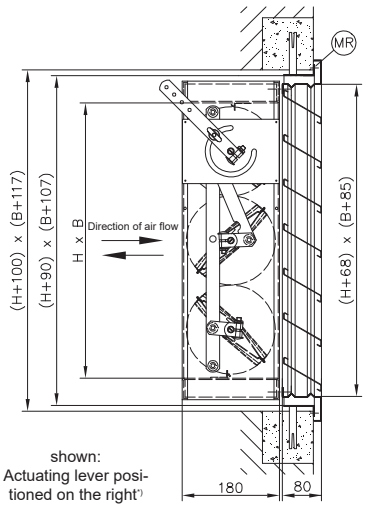
W, AW, AWE weather-resistant louvre



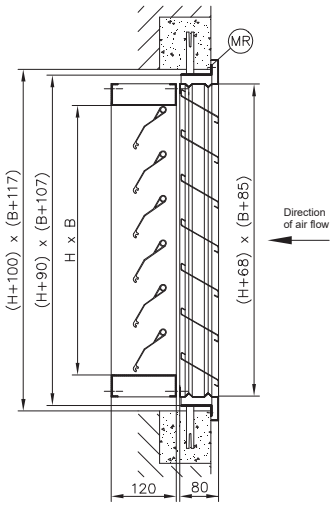
combined **with JK-N (M) 180 (G)**



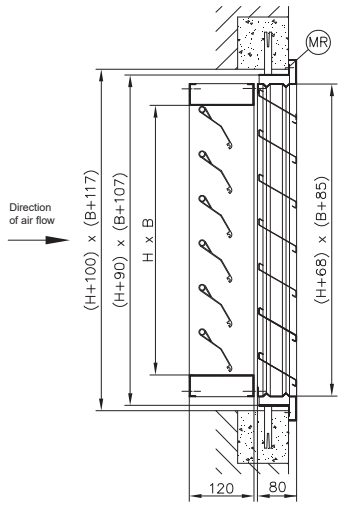
combined **with JK-N (M) 180 I**



combined **with JL**



combined **with UK1**
- suctioning -



combined **with UK2**
- blowing -

*) optionally: Available for delivery with actuating lever positioned on the left.

All figures are shown with MR wall installation frames.

Installation openings without wall installation frame: (B + 100 mm) · (H + 93 mm)

Please note: Actuating lever and motor actuators must be removed temporarily as required.

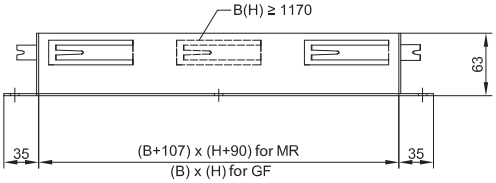
Weather-resistant louvre combinations

Accessories, pressure drop, sound power level, nomenclature

Accessories

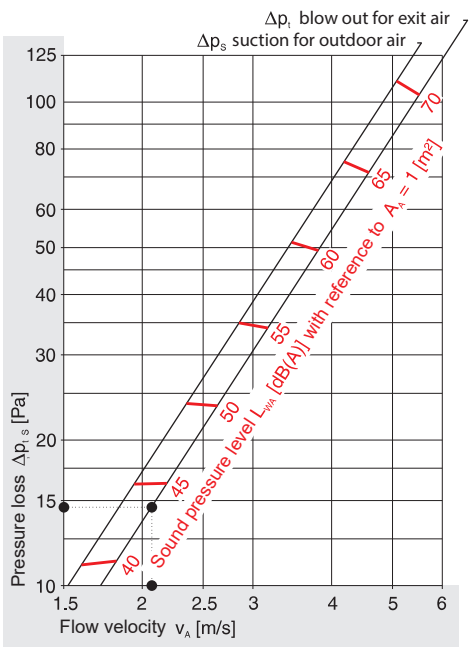
MR Wall installation frame stamped from galvanized sheet steel, bevelled and welded at the corners and with several wall anchors for cementing.

GF Counterflange made of galvanized sheet steel, pressed, bevelled and welded at the corners.



Counterflanges do not have wall anchors.

Pressure drop, sound power level for the weather-resistant louvres



The sound power levels relate to A_A = 1 [m²] inflow cross-section. For other inflow cross-sections, corrections ΔL must be added:

A_A [m²]	ΔL [dB]
0.10	-10
0.25	-6
0.40	-4
0.50	-3
0.60	-2
1.00	0
1.25	+1
1.60	+2
2.00	+3
2.50	+4
3.20	+5
4.00	+6

$L_{WA} = L_{WA\text{-}1m^2} +$ ΔL [dB]

Example

Exit air volume flow	V	=	5000 [m³/h]
Sound power level	L_{WA}	=	45 [dB(A)]
Width	B	=	800 [mm]
Height	H	=	840 [mm]
Pressure drop	Δp_t	=	14 [Pa]

Alternatively an inflow velocity of

v_A = 5000 [m³/h] / 3600 [s/h] / 0.67 [m²] = 2.1 [m/s] is calculated with the inflow area A_A = 0.8 [m] · 0.84 [m] = 0.67 [m²]. For this inflow velocity v_A and at the same pressure drop Δp a sound power level

L_{WA} = 43 [dB(A)] in relation to A_A = 1 [m²] is read from the nomogram opposite as before; it must be corrected by

ΔL = -2 [dB] to

L_{WA} = 41 [dB(A)] in relation to A_A

The pressure drop values of the attached shut-off dampers must be added. Refer to the respective documents for the products for these values and other technical data.

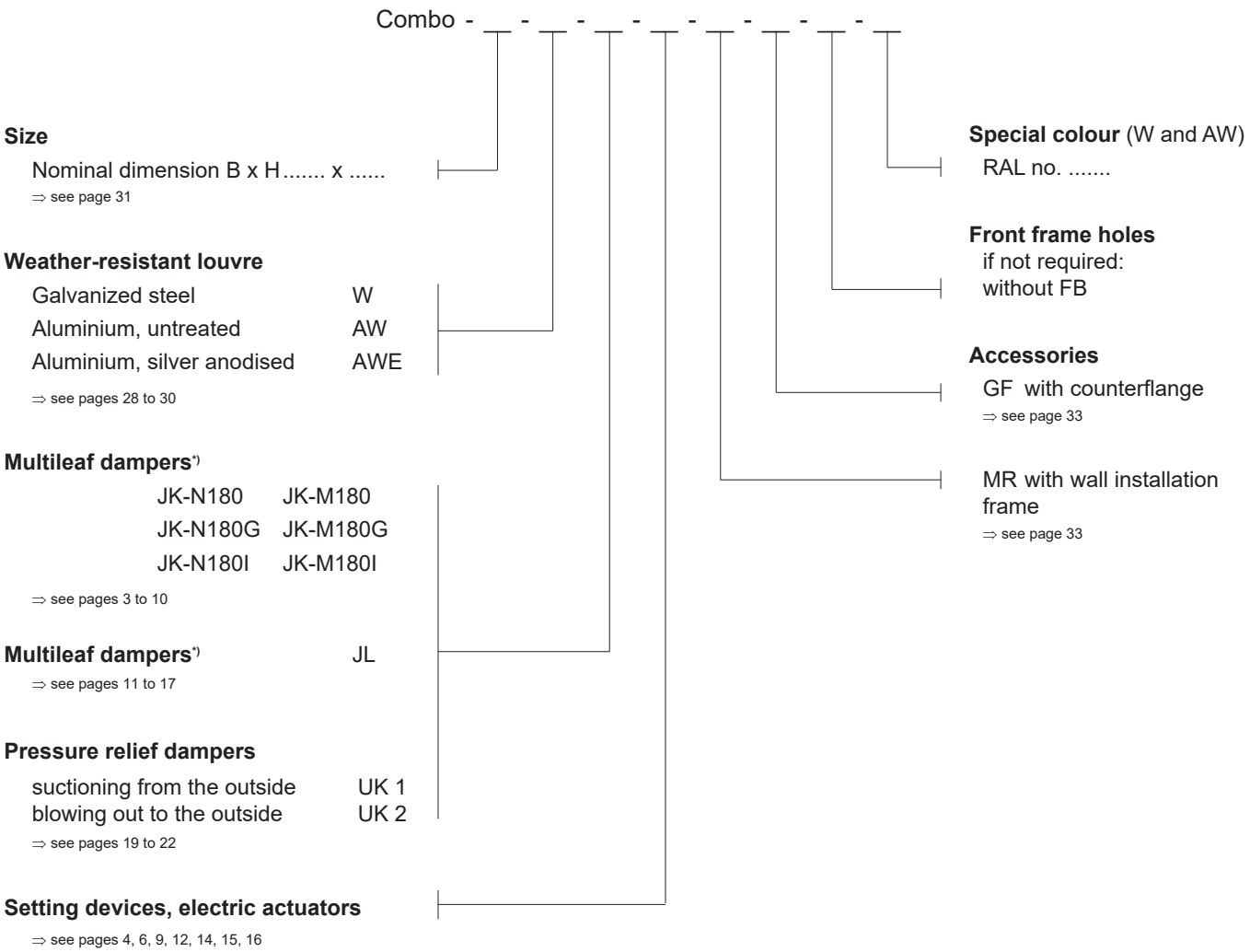
For the sound power levels the highest value in each case must be applied, either from the weather-resistant louvre or from the attached shut-off damper. If both values are roughly equal and do not differ by more than 7 [dB], another 3 [dB] must be added to the highest value in order to arrive at the overall sound power level.

Nomenclature

A_A	[m²]	=	Inflow cross-section $A_A = B \cdot H$
V	[m³/h]	=	Volume flow V [m³/h] = v_A [m/s] · 3600 [s/h] · A_A [m²]
v_A	[m/s]	=	Flow velocity in relation to A_A
Δp_t	[Pa]	=	total pressure drop (blow out for exit air)
Δp_s	[Pa]	=	static pressure drop (suction for outdoor air)
L_{WA}	[dB(A)]	=	A-weighted sound power level
ΔL	[dB]	=	Correction to L_{WA} in relation to A_A = 1 [m²]

Weather-resistant louvre combinations

Order data



*) specify as necessary: Actuating lever left
⇒ see page 32

Weather-resistant louvre combinations

Specification texts

Weather-resistant louvre to prevent penetration from direct impact of rain and coarse contamination, for outdoor air suction and for exit air. Made from galvanized steel / untreated aluminium/ silver anodised **aluminium, with all-round profile front frame, horizontal, water-resistant profile blades and with stainless steel protective grille, with mesh size of around 16** x 18 mm, installed fixedly to the rear. Fastening with screws in frame holes and with wall installation frames made of galvanized sheet steel. **Attached at rear:**

Text for JK

Multileaf damper made of galvanized sheet steel with hollow body blades, profiled to benefit the flow, external linkage couplings in the opposite direction / external linkage couplings in the same direction / inner linkage couplings in the same direction**, galvanized drive axles in bearing bushes made of** plastic / brass **in an all-round, bevelled frame with installation length of 180 mm and with connecting flanges for installation on ducts.** With actuating lever and locking device / electrically reversing actuator and with one / two auxiliary switches / electrical spring return actuator and limit switches. With counterflange made of galvanized sheet steel.

Text for JL

Multileaf damper made of galvanized sheet steel. Air tight according to DIN 1946-4 and leak tightness class 4 according to EN 1751 at 100 Pa static pressure difference. With hygienically smooth hollow body blades which are profiled to benefit the flow and coupled in the opposite direction with special bearing bushes made of brass and in an all-round, bevelled frame with an installation length of 180 mm for installation on ducts. With actuating lever and locking device / electrically reversing actuator and with one / two auxiliary switches / electrical spring return actuator and limit switches. With counterflange made of galvanized sheet steel.

Text for UK

Pressure relief damper with flange frame of 120 mm in length made of galvanized sheet steel, for installation on ventilation ducts. With individual, automatically opening and closing blades made of extruded aluminium profiles in plastic bearing journals and with embedded elastic seals. With counterflange.

..... **pc**

Volume flow: ..... **m³/h**

Manufacturer: **WILDEBOER®**

Type: .....

Size B x H .....**x**..... **mm**

complete with fixings **deliver:** .....

install: .....

Delete texts not highlighted in bold as required!

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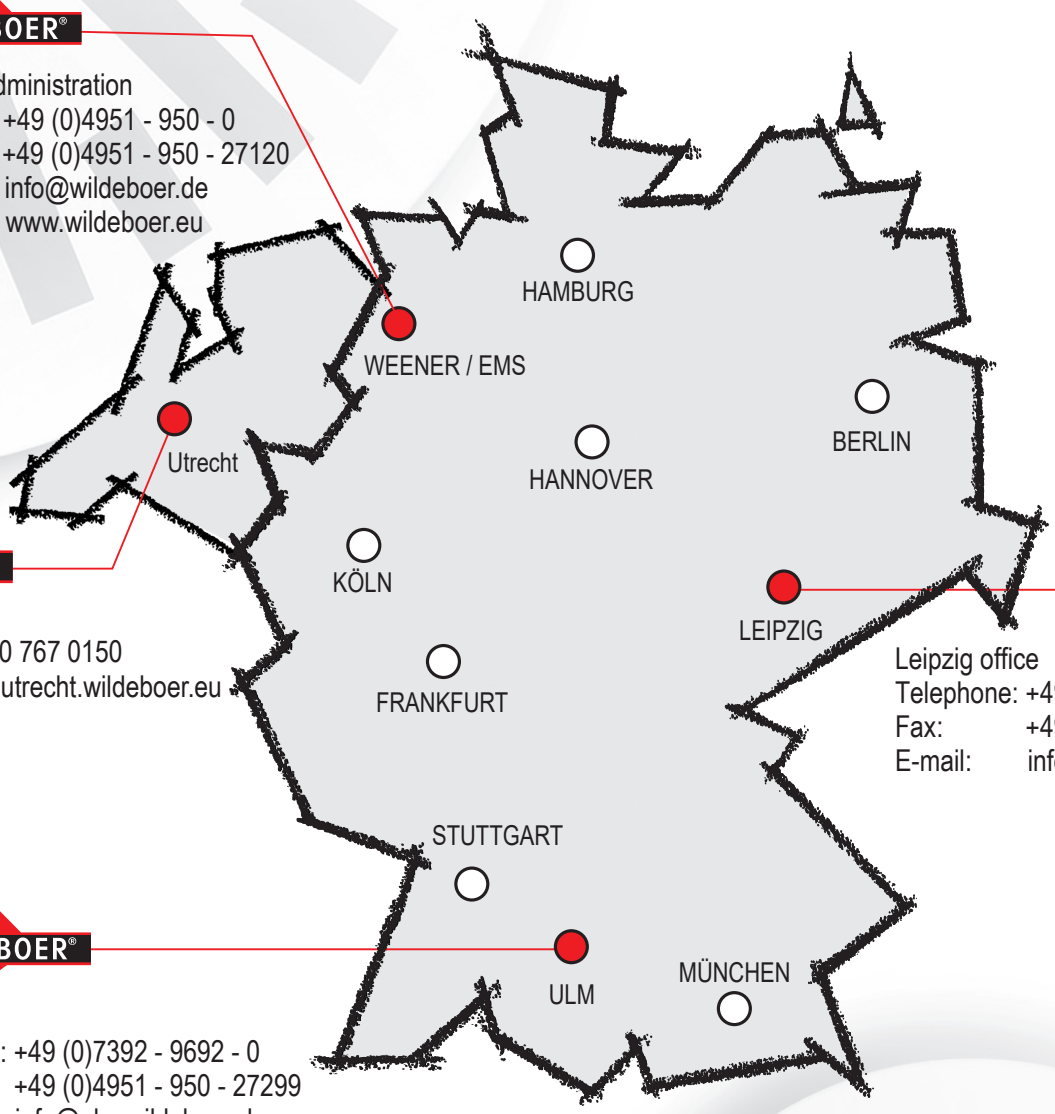
WILDEBOER®

Factory - Administration
Telephone: +49 (0)4951 - 950 - 0
Fax: +49 (0)4951 - 950 - 27120
E-mail: info@wildeboer.de
Internet: www.wildeboer.eu



WILDEBOER®

Utrecht office
Telephone: +31 30 767 0150
E-mail: info@utrecht.wildeboer.eu

WILDEBOER®

Leipzig office
Telephone: +49 (0)34444 - 310 - 0
Fax: +49 (0)4951 - 950 - 27298
E-mail: info@leipzig.wildeboer.de

WILDEBOER®

Ulm office
Telephone: +49 (0)7392 - 9692 - 0
Fax: +49 (0)4951 - 950 - 27299
E-mail: info@ulm.wildeboer.de

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