



Multileaf Dampers, airtight DIN 1946-4  
and leak tightness class 4, EN 1751

# JL Multileaf Dampers

Steel, galvanised

**JL multileaf dampers**, airtight in accordance with DIN 1946-4 and leak tightness class 4 according to EN 1751 at 100 [Pa] static pressure difference, are control and shut-off dampers made of galvanised sheet steel for ventilation and air conditioning systems, especially in hospitals. The sealed, opposed hollow blades profiled for optimum flow and connected via linkage turn in special brass bushings on a 180 mm long frame with canted connection flanges. Actuation is either manual by way of adjusting levers or with electrical actuators.

Type-tested by the Brunswick Institute for Materials Testing.

## Accessories

### MR Wall mounting frame

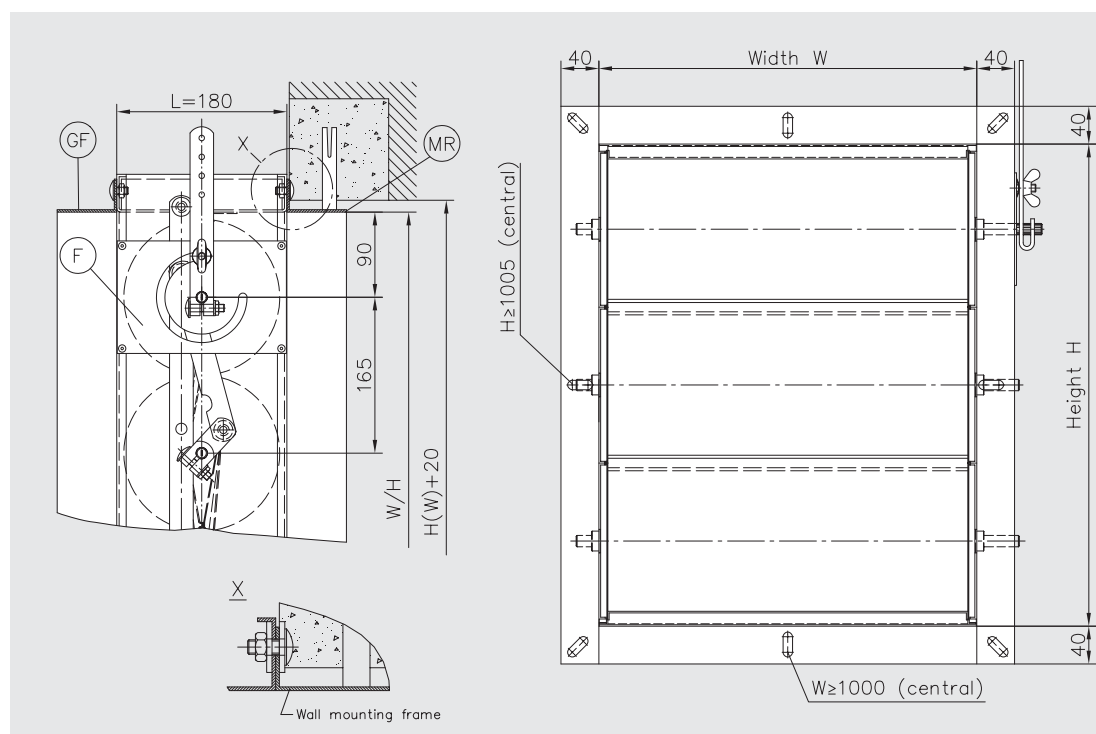
made of galvanised sheet steel

### GF Counter flange

made of galvanised sheet steel



JL multileaf damper  
with electrical actuator FM



## Sizes W x H

Width W [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	

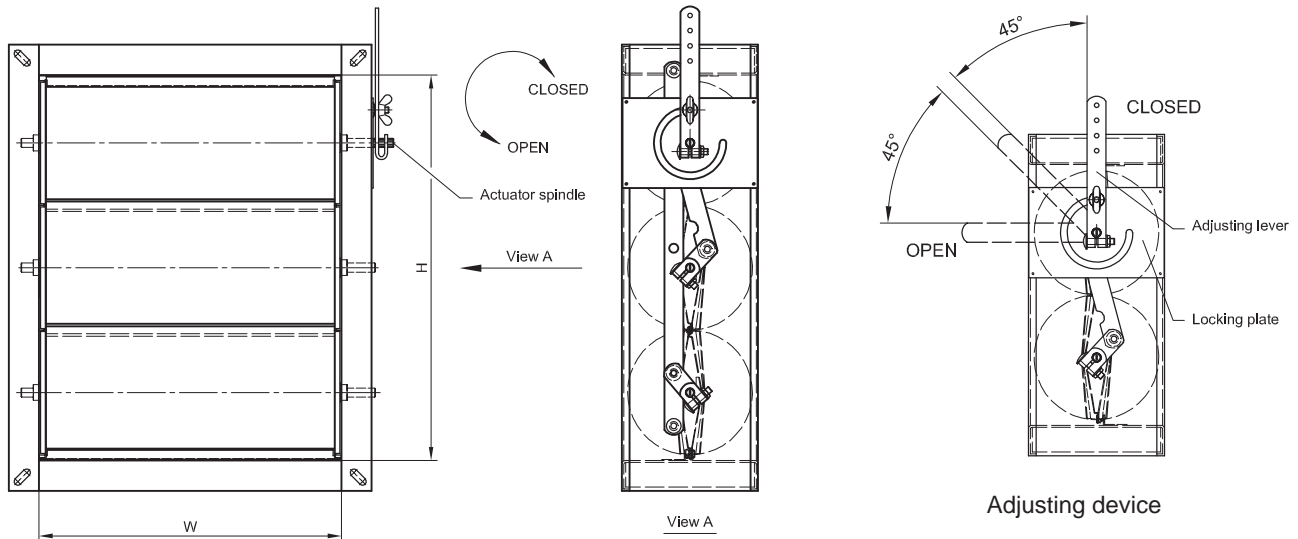
All W and H dimensions  
can be combined,  
but H = 180 [mm] only  
with W ≤ 1000 [mm]

# JL Multileaf Dampers

## Actuators

### Actuator spindles

In the case of JL multileaf dampers which have only one actuator spindle, this is located on the uppermost blade. For heights from 1005 mm there are two actuator spindles; these are suitably distributed between the top and bottom halves; as a result the driving torque is evenly distributed across all blades.



### Electrical actuators

JL multileaf dampers are available with the following factory-installed electrical actuators:

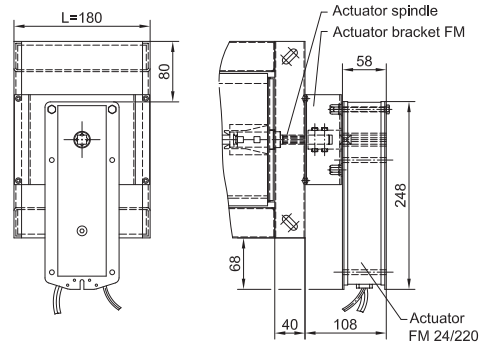
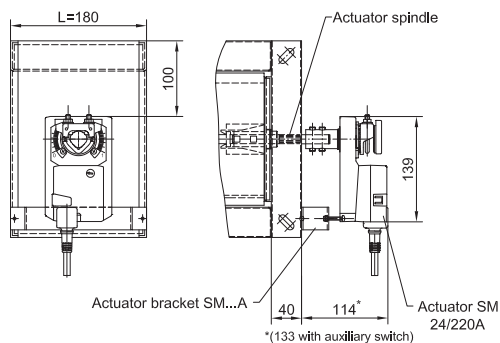
**Electrical reversible actuators SM24A and SM220A**, which open or close the multileaf dampers on 24V direct or alternating voltage or 230V alternating voltage at a driving torque of 20<sup>7</sup> [Nm]. The current actuator setting is retained in the event of a power failure.

Further data ⇒ see page 15

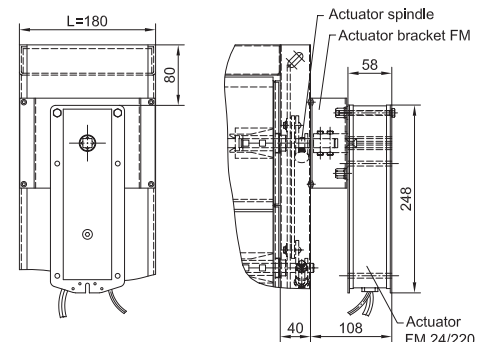
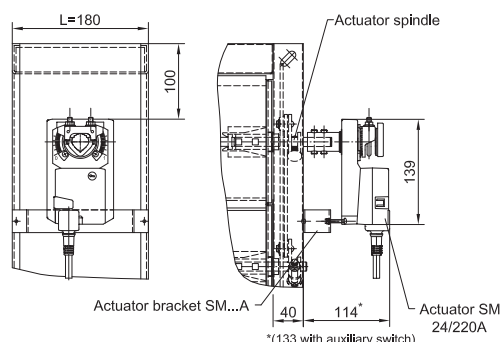
**Electrical spring return actuators FM24 and FM220**, which open the multileaf dampers on 24V direct or alternating voltage or 230V alternating voltage at a driving torque of 18<sup>7</sup> [Nm]. In the event of power failure the multileaf dampers close with a driving torque of 12<sup>7</sup> [Nm].

Further data ⇒ see page 15

Actuator attachment for  
multileaf damper height H = 180 mm



Actuator attachment for  
multileaf damper height H > 180 mm

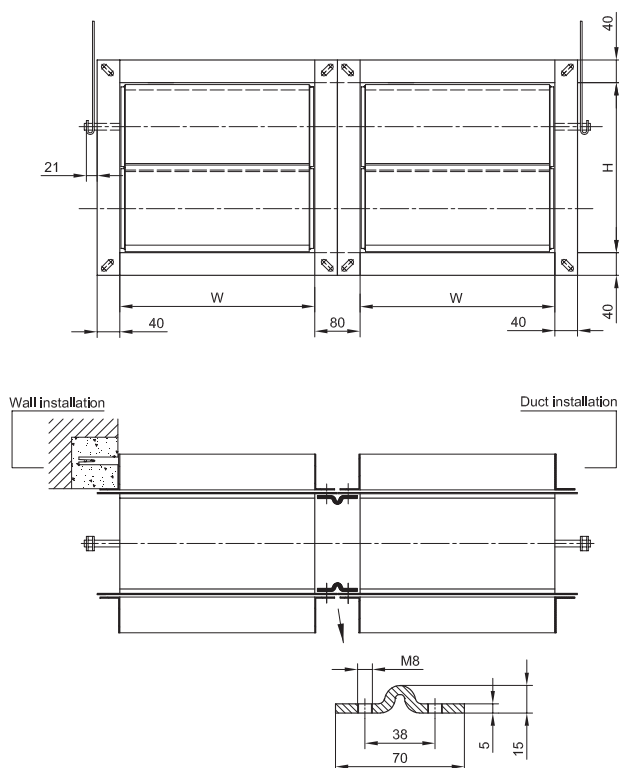


<sup>7</sup> Required driving torques ⇒ see page 14; greater driving torques require two actuators!

# JL Multileaf Dampers

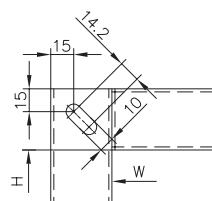
Installation, details, accessories

## Horizontal assembly with straps

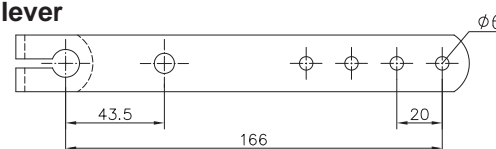


Use always separate actuators for each multileaf damper!

## Corner drill hole in connecting frame



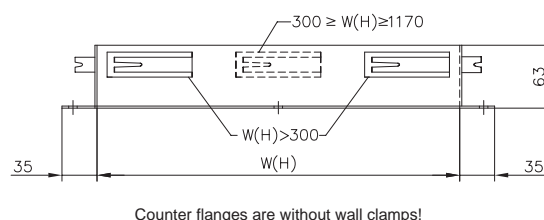
## Adjusting lever



## Accessories

**MR** Wall mounting frame made of galvanised sheet steel, punched, canted, corner welded with several wall clamps for cementing into wall.

**GF** Counter flange made of galvanised sheet steel, punched, canted and corner welded.



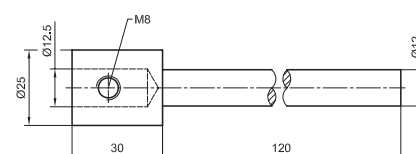
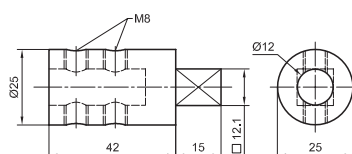
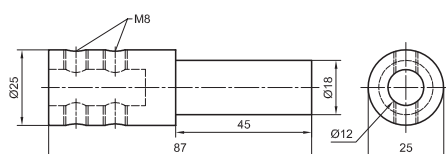
Counter flanges are without wall clamps!

## Spindle extensions for customer-supplied actuators

Extension for SM actuators

Extension for FM actuators

L150 extension for lever



# JL Multileaf Dampers

Driving torques, pressure drop coefficients  $\zeta$ , pressure drop, sound power level

## Actuators

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

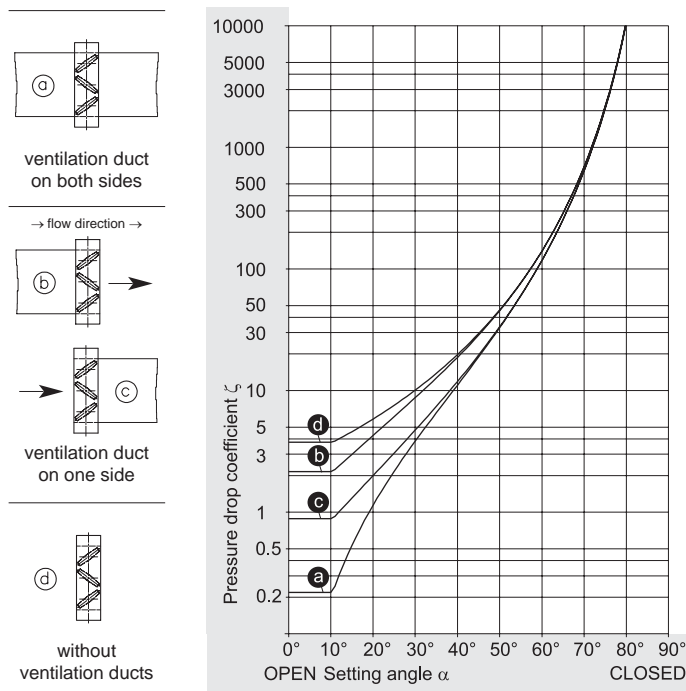
The indicated number of actuators each having a driving torque of at least 15 [Nm] are required to operate the multileaf dampers.

## Example

Width W = 800 [mm]      Actuator      1 piece  
Height H = 840 [mm]      Driving torque       $M \geq 15$  [Nm]

## $\zeta$ - coefficients for pressure drop

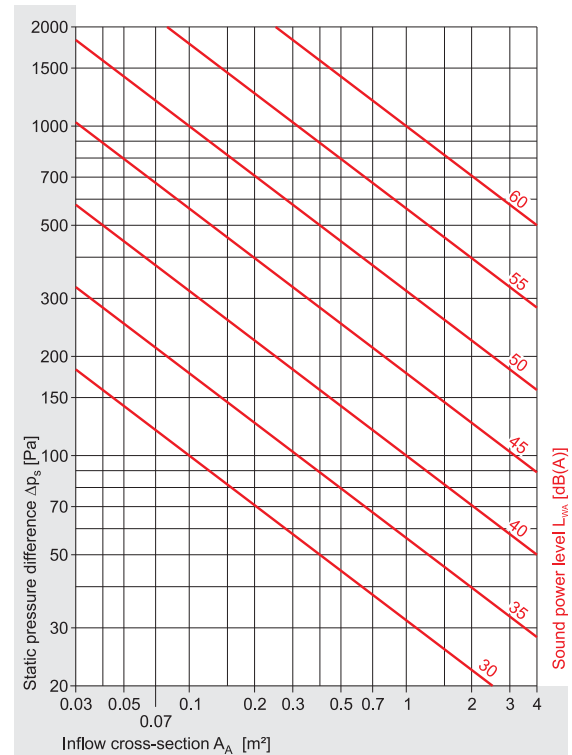
Type of installation:



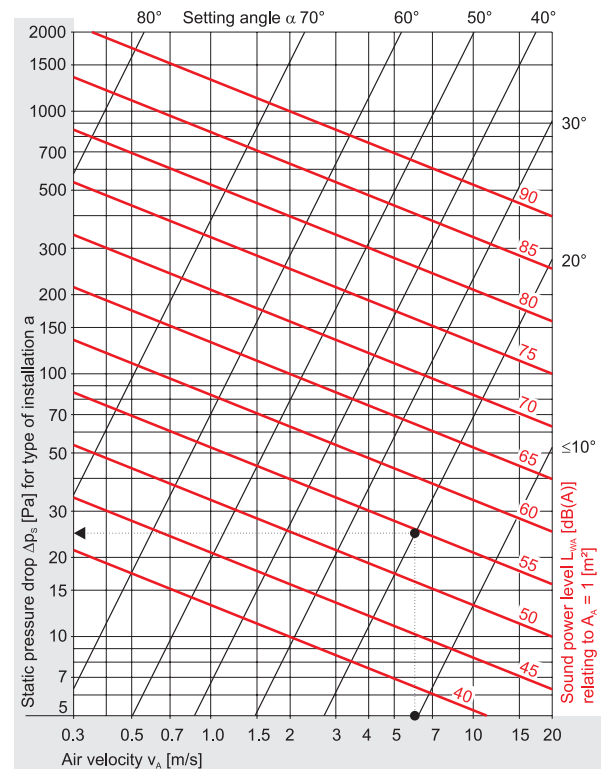
## Example

Setting angle  $\alpha = 20^\circ$       Pressure drop (type of installation a)  $\Delta p_s = 24$  [Pa]  
Air velocity  $v_A = 6$  [m/s]      Sound power level  $L_{WA} = 55$  [dB(A)]<sup>\*)</sup>

## JL closed: sound power level



## JL open: sound power level



<sup>\*)</sup> Sound power levels are referenced to  $A_A = 1$  [m²]; correction values for other inflow cross-sections  $\rightarrow$  see page 15

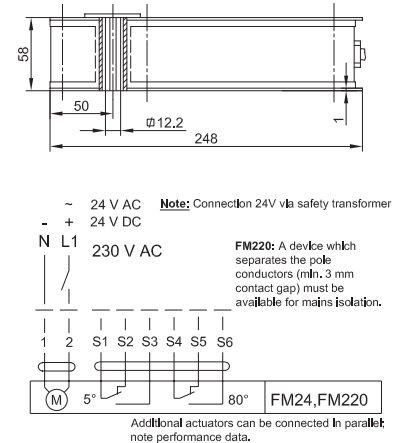
# JL Multileaf Dampers

Electrical actuators, nomenclature

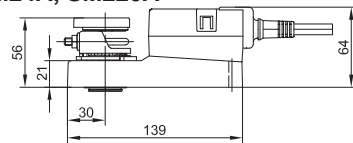
## Technical data for factory installed actuators

	SM24A	SM220A	FM24	FM220
Input voltage	24V AC / DC	100 to 240V AC	24V AC / DC	230V AC
tolerance range AC	± 20%	-15%, +10%	± 20%	±14%
tolerance range DC	± 20%		-10%, +20%	
Torque				
motor	≥20 Nm	≥20 Nm	≥18 Nm	≥18 Nm
spring return			≥12 Nm	≥12 Nm
Running time for 90°				
motor	150 s	150 s	140 s	140 s
spring return			~16 s	~16 s
Power input	4 VA	6 VA	10 VA	12.5 VA
Power consumption				
motoring	2 W	2.5 W	7 W	8 W
holding	0.2 W	0.6 W	2 W	3 W
Degree of protection	IP 54	IP 54	IP 54	IP 54
Connecting cable 0.75 mm <sup>2</sup>	approx. 1 m	approx. 1 m	approx. 1 m	approx. 1 m
motor	3 wire	3 wire	2 wire	2 wire
auxiliary switch			6 wire	6 wire
auxiliary switch S1A	3 wire	3 wire		
auxiliary switch S2A	6 wire	6 wire		
Ambient temperature	-30°C to + 50°C			

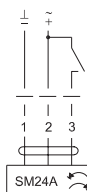
## FM24, FM220 with integrated limit switches



## SM24A, SM220A



### OPEN-CLOSED control



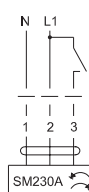
Nominal voltage:  
AC 24V, 50/60Hz  
DC 24 V

Note:  
Connection 24V via safety  
transformer  
Additional actuators can be  
connected in parallel; note  
performance data.

### 3-point control



### OPEN-CLOSED control



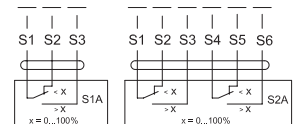
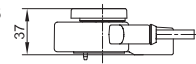
Nominal voltage:  
AC 100...240V, 50/60Hz

Note:  
230V voltage!  
Additional actuators can be  
connected in parallel; note  
performance data.

### 3-point control



## Auxiliary switches S1A, S2A



## Nomenclature

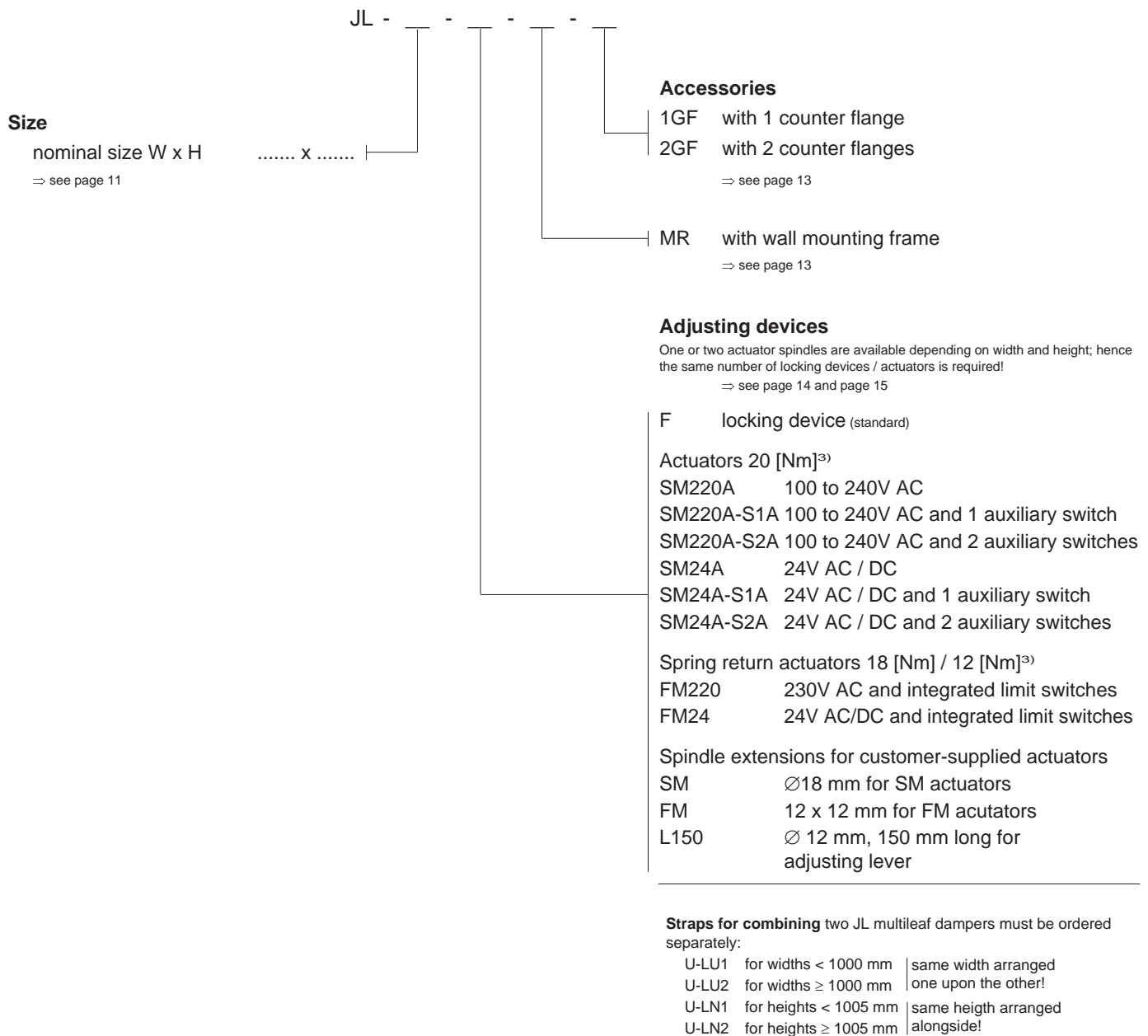
$A_A$ [m <sup>2</sup> ]	= inflow cross-section $A_A = W \cdot H$
$A_{free}$ [m <sup>2</sup> ]	= free cross-section, $A_{free} \approx 82\% A_A$
$V$ [m <sup>3</sup> /h]	= volume flow rate, leakage volume flow rate
$v_A$ [m/s]	= flow velocity relating to $A_A$ (inflow velocity)
$\alpha$	= setting angle multileaf damer OPEN: $\alpha = 0^\circ$ CLOSED: $\alpha = 90^\circ$
$\zeta$	= pressure drop coefficient relating to $A_A$ pressure drop $\Delta p_s = \zeta \cdot \rho / 2 \cdot v_A^2$
$\rho$	= medium density ( $\rho_{dry\ air\ 20^\circ C, 1\ bar} = 1.188$ [kg/m <sup>3</sup> ])
$\Delta p_s$ [Pa]	= static pressure drop, static pressure difference
$L_{WA}$ [dB(A)]	= A-weighted sound power level
$\Delta L$ [dB]	= correction to $L_{WA}$ relating to $A_A = 1$ [m <sup>2</sup> ] $L_{WA} = L_{WA-1m^2} + \Delta L$ [dB]
$M$ [Nm/m <sup>2</sup> ]	= driving torque $M_{total} [Nm] = M_{1m^2} [Nm/m^2] \cdot A_A [m^2]$

For other inflow cross-sections the following  $\Delta L$  corrections must be added in the case of sound power levels relating to an inflow cross-section of  $A_A = 1$  [m<sup>2</sup>]:

$A_A$ [m <sup>2</sup> ]	$\Delta L$ [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 Multileaf Dampers

Order information, installation notes



## Installation notes

JL multileaf dampers can be used for:

temperatures: -20°C to +90°C

pressure differences  $\Delta p_s$ : to 2500 [Pa]

The multileaf dampers must be installed with spindle in horizontal alignment, strain-free and sealed between counter flanges or on wall mounting frame, in order to guarantee air tightness and compliance with the required driving torques.

Avoid constant exposure to the effects of UV light.

# JL Multileaf Dampers

## Specification text

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Multileaf dampers made of galvanised sheet steel. Air-tight in accordance with DIN 1946-4 and leak tightness class 4 according to EN 1751 at 100 Pa static pressure difference. Type-tested. For use as control or shut-off dampers in ventilation and air conditioning systems. Hygienically smooth, opposed hollow blades profiled for optimum flow in special brass bushings and 180 mm long all-around canted frame. Connection flanges for installation between ducts and on walls or ceilings. With adjusting lever and locking device / electrical actuator / electrical spring return actuator / with auxiliary switches. With wall mounting frame and counter flange / counter flanges. Also includes connecting straps required to install two multileaf dampers either one upon the other / alongside.

..... pieces

Volume flow rate: ..... m<sup>3</sup>/h

Manufacturer: WILDEBOER®

Type: JL

Dimension W x H ....x.... mm

Complete with fasteners supply: .....

install: .....

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Delete text in non-bold type as required!



# JL Multileaf Dampers

Notes

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