

Multileaf dampers

Type JZ – Low leakage



Opposed blades



Closed cell side seals



Encased gears

For low-leakage shut-off in air conditioning systems

Rectangular multileaf dampers for volume flow and pressure control as well as for low-leakage shut-off of ducts and openings in walls and ceiling slabs

- Maximum dimensions of steel and stainless steel variants: 2000 × 1995 mm; of aluminium variant: 1200 × 1050 mm
- Closed blade air leakage to EN 1751, classes 1 – 4, depending on variant
- Casing air leakage to EN 1751, class C
- Aerofoil opposed action blades
- Closed cell side seals meet increased hygiene requirements
- Steel and stainless steel variants: blades interconnected by external linkage
- Aluminium variant: blades interconnected by gears
- Available in standard sizes and many intermediate sizes

Optional equipment and accessories

- Actuators: Open/Close actuators, modulating actuators
- Explosion-proof construction with pneumatic actuator or spring return actuator (not for JZ-*L-AL)
- Powder-coated construction
- Aluminium variant also as anodised construction

1

Type		Page
JZ – Low leakage	General information	1.1 – 36
	Order code	1.1 – 40
	Technical data	1.1 – 42
	Quick sizing	1.1 – 45
	Dimensions and weight – JZ-LL	1.1 – 46
	Dimensions and weight – JZ-HL	1.1 – 49
	Dimensions and weight – JZ-LL-A2	1.1 – 52
	Dimensions and weight – JZ-LL-AL	1.1 – 55
	Dimensions and weight – JZ-HL-AL	1.1 – 58
	Dimensions – Duct connection	1.1 – 61
	Dimensions – Drive shafts	1.1 – 63
	Installation details	1.1 – 65
	Specification text	1.1 – 66
Basic information and nomenclature	1.4 – 1	

Variants

Product examples

Multileaf damper, variant JZ-LL



Multileaf damper with explosion-proof actuator

Multileaf damper, variant JZ-HL



Multileaf damper with actuator

Multileaf damper, variant JZ-LL-A2



Multileaf damper with actuator

Multileaf damper, variant JZ-LL-AL



Multileaf damper with actuator

Multileaf damper, variant JZ-HL-AL



Multileaf damper without accessories and attachments

Description

For detailed information on attachments see Chapter K3 – 1.3

For detailed information on accessories see Chapter K3 – 1.2

Application

- Multileaf dampers of Type JZ-Low leakage are used as an acting element in the volume flow and pressure control in air conditioning systems
- For low-leakage shut-off of ducts and openings in walls and ceiling slabs
- Stainless steel and powder-coated constructions with increased corrosion resistance if required
- Temperature resistant up to 100 °C (steel and stainless steel construction variants)
- Steel and stainless steel variants with brass or stainless steel bearings are suitable for use in potentially explosive atmospheres (ATEX)

Classification

Closed blade air leakage to EN 1751

JZ-LL, JZ-LL-A2

Test pressure up to 2000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 1000 mm, class 4

Test pressure up to 1000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 2000 mm, class 4

JZ-HL

Test pressure up to 2000 Pa

- Up to B = 599 mm, class 1
- From B = 600 mm, class 2

JZ-LL-AL

Test pressure up to 2000 Pa

- For all sizes, class 4

JZ-HL-AL

Test pressure up to 2000 Pa

- For all sizes, class 2

Variants

- JZ-LL: Multileaf damper with opposed blade action, made of galvanised sheet steel, to EN 1751, classes 3 – 4
- JZ-HL: Multileaf damper with opposed blade action, made of galvanised sheet steel, to EN 1751, classes 1 – 2
- JZ-LL-A2: Multileaf damper with opposed blade action, made of stainless steel, to EN 1751, classes 3 – 4
- JZ-LL-AL: Multileaf damper with opposed blade action, made of aluminium, to EN 1751, class 4
- JZ-HL-AL: Multileaf damper with opposed blade action, made of aluminium, to EN 1751, class 2

Nominal sizes

JZ-LL, JZ-HL, JZ-LL-A2

- B: 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2000 mm (intermediate sizes: 201 – 1998 mm in increments of 1 mm)
- H: 180, 345, 510, 675, 840, 1005, 1170, 1335, 1500, 1665, 1830 and 1995 mm (intermediate sizes 183 – 1998 mm in increments of 1 mm)
- Any combination of B × H

JZ-LL-AL, JZ-HL-AL

- B: 200, 400, 600, 800, 1000, 1200 mm (intermediate sizes: 201 – 1199 mm, in increments of 1 mm)
- H: 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1050 mm
- Any combination of B × H

Attachments

- Quadrant stays and limit switches: Quadrant stays to adjust the damper blades (stepless adjustment) and for capturing the end positions
- Open/Close actuators: Actuators for opening and closing multileaf dampers
- Modulating actuators: Actuators for stepless blade adjustment
- Pneumatic actuators: Pneumatic actuators for opening and closing multileaf dampers
- Explosion-proof actuators: Actuators for opening and closing multileaf dampers installed in potentially explosive atmospheres

Accessories

- Installation subframe: Installation subframe for the fast and simple installation of multileaf dampers

Special features

- Aerofoil blades
- Low-maintenance, robust construction
- No parts with silicone
- Available in standard sizes and many intermediate sizes
- Closed cell side seals meet increased hygiene requirements

Standards and guidelines

- Casing air leakage to EN 1751, class C
- JZ-LL, JZ-LL-A2, JZ-HL from B = 600 mm, JZ-LL-AL, and JZ-HL-AL meet the general requirements of DIN 1946, part 4, with regard to the maximum closed blade air leakage
- JZ-LL from B = 600 mm, JZ-LL-A2 from B = 600 mm, and JZ-LL-AL meet the general requirements of DIN 1946, part 4, with regard to the maximum closed blade air leakage

Maintenance

- Maintenance-free as construction and materials are not subject to wear
- Contamination should be removed as it may lead to corrosion and to increased closed blade air leakage

Technical data

Nominal sizes	200 × 100 mm – 2000 × 1995 mm
Volume flow rate range	200 – 40,000 l/s
Volume flow rate range	720 – 143,640 m ³ /h
Maximum static differential pressure	Up to 3500 Pa
Operating temperature	0 – 100 °C

Function

Functional description

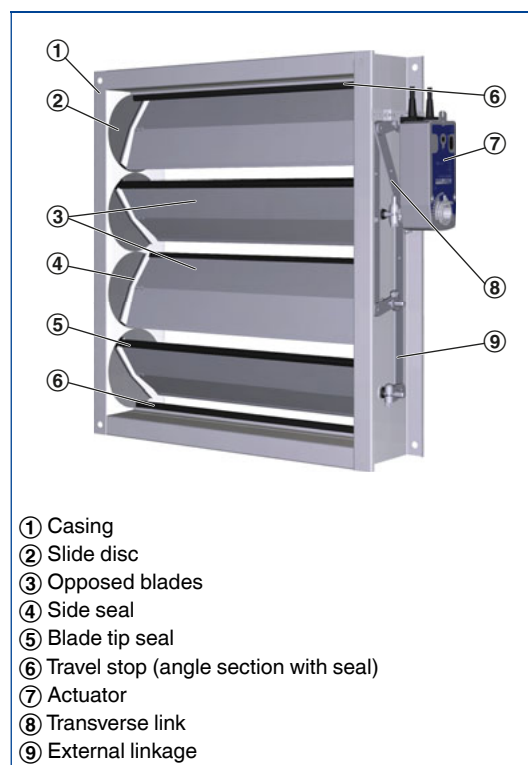
Linkage

Low-leakage multileaf dampers with external linkage have opposed action blades. An external linkage transfers the synchronous rotational movement from the drive arm to the individual blades. Even very large multileaf dampers can be safely opened and closed with this type of linkage. Opposed action blades close at different speeds since the linkage includes a transverse link. This facilitates the closing process and reduces the closed blade air leakage.

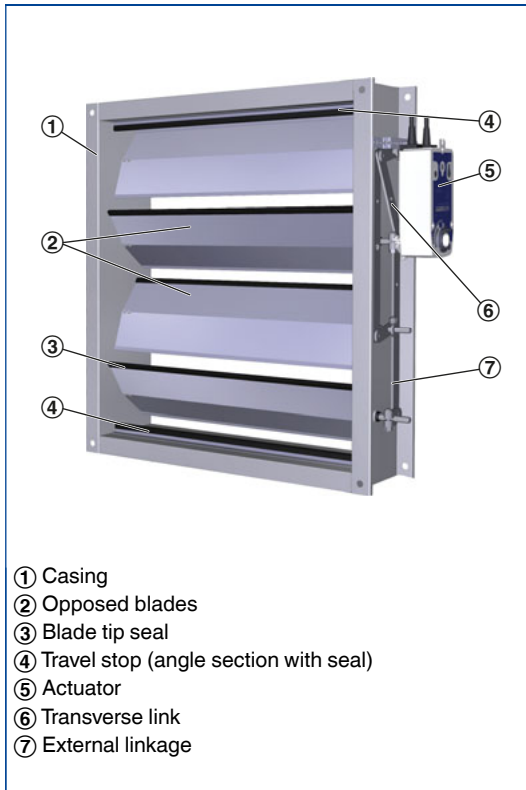
Gears

Multileaf dampers with gears can only have opposed action blades. The internal gears transfer the synchronous rotational movement from the drive arm to the individual blades.

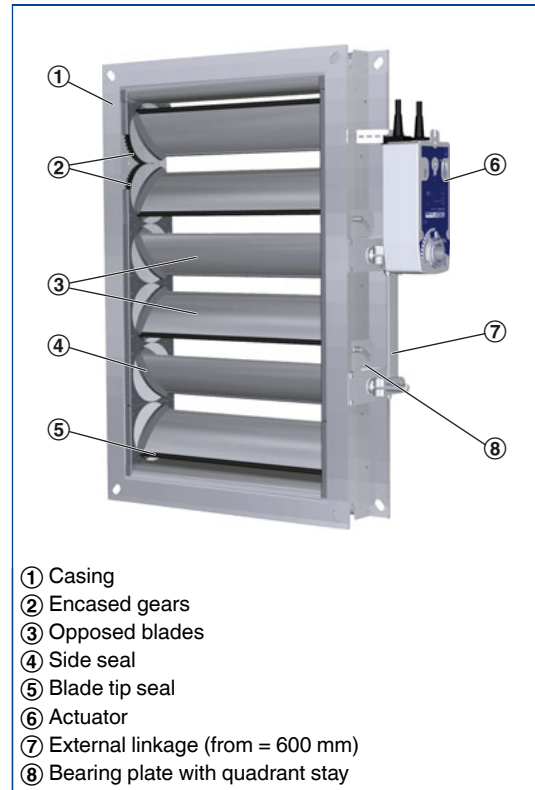
Schematic illustration of JZ-LL and JZ-LL-A2



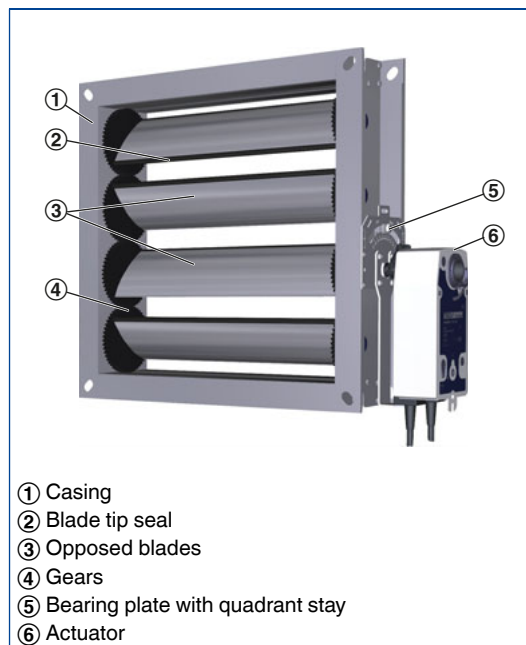
Schematic illustration of JZ-HL



Schematic illustration of JZ-LL-AL



Schematic illustration of JZ-HL-AL



Order code

JZ-LL, JZ-HL

JZ – HL – A2 – G – E – V – L / 1000×1005 / ER / Z64 / NC / P1 – RAL ...

1 2 3 4 5 6 7 8 9 10

1 Type

JZ Multileaf damper

2 Classification

Closed blade air leakage to EN 1751

LL Classes 3 – 4

HL Classes 1 – 2

3 Material

No entry: galvanised steel

A2 Stainless steel (only for classification LL)

4 Construction

No entry: corner holes on both sides;
plastic bearings

G Flange holes on both sides
(no corner holes)

M Brass bearings

E Stainless steel bearings

M-V Brass plain bearings and reinforced blades
(not for JZ-LL-A2)

E-V Stainless steel plain bearings and
reinforced blades (not for JZ-LL-A2)
M, E, M-V, E-V can be combined with G

5 Operating side

No entry: on the right

L Left

6 Nominal size [mm]

B × H

B > 2000 = width subdivided

H > 1998 = height subdivided

7 Installation subframe

No entry: none

ER With (only for construction G)

8 Attachments

No entry: none

Z04 – Z07 Quadrant stay

Z12 – Z51 Actuators

ZF01 – ZF15 Spring return actuators

Z60 – Z77 Pneumatic actuators

Explosion-proof actuators

Z1EX, Z3EX Electric

Z60EX – Z77EX Pneumatic

9 Damper blade safety function

Only for spring return actuators
or pneumatic actuators

NO Pressure off/power off to OPEN

NC Pressure off/power off to CLOSE

10 Surface

No entry: standard construction

P1 Powder-coated,
RAL CLASSIC colour

PS Powder-coated, DB colour

Gloss level:

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

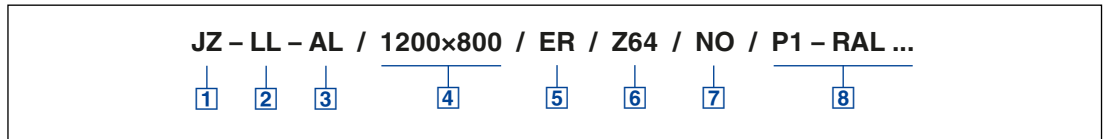
Order example

JZ-LL-G-L/1200×675/ER/ZF06/NC

Classification	Classes 3 – 4
Material	Galvanised steel
Construction	Flange holes on both sides
Operating side	On the left
Nominal size	1200 × 675 mm
Installation subframe	With
Attachments	Spring return actuator SF24A
Damper blade position	Power off to CLOSE
Surface	Standard construction

Order code

JZ-LL-AL, JZ-HL-AL



1 Type

JZ Multileaf damper

2 Classification

Closed blade air leakage to EN 1751

LL Class 4

HL Class 2

3 Material

AL Aluminium

4 Nominal size [mm]

B × H

5 Installation subframe

No entry: none

ER With installation subframe

6 Attachments

Z04 – Z07 Quadrant stay

Z12 – Z51 Actuators

ZF01 – ZF15 Spring return actuators

Z60 – Z77 Pneumatic actuators

7 Damper blade safety function

Only for spring return actuators or pneumatic actuators

NO Pressure off/power off to OPEN

NC Pressure off/power off to CLOSE

8 Surface

No entry: standard construction

P1 Powder-coated, RAL CLASSIC colour

PS Powder-coated, DB colour

S3 Anodised to EURAS standard, E6-C-0

Gloss level:

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

Order example

JZ-LL-AL/800×500/S3

Classification	Class 4
Material	Aluminium
Nominal size	800 × 500 mm
Installation subframe	Without
Attachments	Without
Surface	Anodised to EURAS standard, E6-C-0, natural colour

1 Torque

The torque for closing a multileaf damper must be such that the damper can be safely opened and closed.

For closing, the torque must suffice to ensure complete shut-off by the blades, i.e. the blades must be tightly pressed against the seals.

This is the prerequisite for maintaining the stated closed blade air leakage.

Opening is initiated without aerodynamic forces but then the blades must be moved away from the seals.

When air flows through the damper, the aerodynamic forces of the airflow create a closing force (torque) on the blades; this happens independent of the direction of the airflow.

This closing force must be countered, or overcome. The blade position, or blade angle α , for which there is the largest torque depends, among other factors, on the fan characteristics.

Minimum torque for JZ-LL, JZ-LL-A2

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	Nm									
180	10	10	10	10	10	10	10	10	10	10
345	10	10	10	10	10	10	10	10	10	10
510	10	10	10	10	10	10	15	15	15	15
675	10	10	10	10	10	10	15	15	15	15
840	10	10	10	10	15	15	15	15	15	15
1005	10	10	15	15	15	15	15	15	20	20
1170	15	15	15	15	15	15	20	20	30	30
1335	15	15	15	15	20	20	30	30	30	30
1500	15	15	15	20	20	30	30	30	30	30
1665	20	20	20	20	30	30	30	30	30	30
1830	20	20	20	20	30	30	30	30	30	30
1995	20	20	20	20	30	30	30	30	30	30

Minimum torque for JZ-HL

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	Nm									
180 – 1995	10	10	10	10	10	10	10	10	10	10

Minimum torque for JZ-LL-AL

H	B [mm]									
	200	400	500	600	700	800	900	1000	1100	1200
mm	Nm									
100 – 650	10	10	10	10	10	10	10	10	10	10
700 – 1050	20	20	20	20	20	20	20	20	20	20

Minimum torque for JZ-HL-AL

H	B [mm]									
	200	400	500	600	700	800	900	1000	1100	1200
mm	Nm									
100 – 450	5	5	5	5	5	5	5	5	5	5
500 – 1050	10	10	10	10	10	10	10	10	10	10

Free area

Free area for steel and stainless steel multileaf dampers

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	m ²									
180 – 344	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	0.30
345 – 509	0.06	0.11	0.17	0.23	0.28	0.34	0.40	0.45	0.51	0.57
510 – 674	0.08	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.83
675 – 839	0.11	0.22	0.33	0.44	0.55	0.66	0.77	0.88	0.99	1.10
840 – 1004	0.14	0.27	0.41	0.55	0.69	0.82	0.96	1.10	1.23	1.37
1005 – 1169	0.16	0.33	0.49	0.66	0.82	0.98	1.15	1.31	1.47	1.64
1170 – 1334	0.19	0.38	0.57	0.76	0.95	1.14	1.33	1.52	1.72	1.91
1335 – 1499	0.22	0.43	0.65	0.87	1.09	1.30	1.52	1.74	1.96	2.17
1500 – 1664	0.24	0.49	0.73	0.98	1.22	1.47	1.71	1.95	2.20	2.44
1665 – 1829	0.27	0.54	0.81	1.08	1.36	1.63	1.90	2.17	2.44	2.71
1830 – 1994	0.30	0.60	0.89	1.19	1.49	1.79	2.08	2.38	2.68	2.98
1995	0.32	0.65	0.97	1.30	1.62	1.95	2.27	2.60	2.92	3.25

Intermediate sizes: Intermediate widths can be interpolated

JZ-LL, JZ-HL, JZ-LL-A2

Free area for aluminium multileaf dampers

H	B [mm]										
	200	300	400	500	600	700	800	900	1000	1100	1200
mm	m ²										
100, 150	0.014	0.022	0.030	0.038	0.047	0.055	0.063	0.071	0.079	0.087	0.095
200, 250	0.028	0.045	0.061	0.077	0.093	0.109	0.126	0.142	0.158	0.174	0.19
300, 350	0.043	0.067	0.091	0.115	0.14	0.164	0.188	0.213	0.237	0.261	0.286
400, 450	0.057	0.089	0.122	0.154	0.186	0.219	0.251	0.284	0.316	0.348	0.381
500, 550	0.071	0.111	0.152	0.192	0.233	0.273	0.314	0.354	0.395	0.435	0.476
600, 650	0.085	0.134	0.182	0.231	0.279	0.328	0.377	0.425	0.474	0.522	0.571
700, 750	0.099	0.156	0.213	0.269	0.326	0.383	0.439	0.496	0.553	0.61	0.666
800, 850	0.113	0.178	0.243	0.308	0.373	0.437	0.502	0.567	0.632	0.697	0.761
900, 950	0.128	0.20	0.273	0.346	0.419	0.492	0.565	0.638	0.711	0.784	0.857
1000,1050	0.142	0.223	0.304	0.385	0.466	0.547	0.628	0.709	0.79	0.871	0.952

Intermediate sizes: Intermediate widths can be interpolated

JZ-LL-AL, JZ-HL-AL

Maximum static differential pressure for a closed multileaf damper

Maximum static differential pressure for a closed multileaf damper

Construction	Width [mm]						
	800	1000	1200	1400	1600	1800	2000
	$\Delta p_{st \max}$ Pa						
Standard construction	2500	2000	1650	1400	1250	1100	1000
Brass bearings (-M)	3000	2500	2200	1950	1750	1600	1500
Stainless steel bearings (-E)	3000	2500	2200	1950	1750	1600	1500
Reinforced blades (-M-V, -E-V)	3500	3000	2700	2500	2300	2100	2000

JZ-LL, JZ-HL, JZ-LL-A2

Maximum static differential pressure for a closed multileaf damper JZ-LL-AL or JZ-HL-AL
2000 Pa

1 Sound power level
for a closed
multileaf damper

Sound power level for a closed multileaf damper JZ-LL or JZ-LL-A2

Δp_{st}	Area [m ²]							
	0.14	0.2	0.4	0.6	0.8	1.2	2	4
Pa	L_{WA} dB(A)							
100	<35	35	38	39	41	42	45	48
200	41	42	45	47	48	50	53	56
500	51	52	55	57	58	60	62	65
1000	58	60	63	64	66	68	70	>70
1500	63	64	67	69	>70	>70	>70	>70
2000	65	67	70	>70	>70	>70	>70	>70

Sound power level for a closed multileaf damper JZ-HL

Δp_{st}	Area [m ²]							
	0.14	0.2	0.4	0.6	0.8	1.2	2	4
Pa	L_{WA} dB(A)							
100	43	45	48	50	51	53	55	58
200	51	53	56	58	59	61	63	66
500	62	63	66	68	69	>70	>70	>70
1000	69	>70	>70	>70	>70	>70	>70	>70
1500	>70	>70	>70	>70	>70	>70	>70	>70
2000	>70	>70	>70	>70	>70	>70	>70	>70

Sound power level for a closed multileaf damper JZ-LL-AL

Δp_{st}	Area [m ²]								
	0.04	0.09	0.16	0.25	0.36	0.64	0.81	1	1.2
Pa	L_{WA} dB(A)								
100	<10	<10	<10	<10	10	12	13	14	15
200	<10	14	16	17	19	22	22	23	25
500	22	26	28	30	32	34	35	36	37
1000	32	35	37	39	41	43	44	45	46
1500	37	41	43	44	46	49	50	51	52
2000	41	44	47	49	51	53	54	55	56

Sound power level for a closed multileaf damper JZ-HL-AL

Δp_{st}	Area [m ²]								
	0.04	0.09	0.16	0.25	0.36	0.64	0.81	1	1.2
Pa	L_{WA} dB(A)								
100	28	32	34	36	38	40	41	42	43
200	37	41	44	46	47	50	51	51	52
500	49	53	56	58	59	>60	>60	>60	>60
1000	59	>60	>60	>60	>60	>60	>60	>60	>60
1500	>60	>60	>60	>60	>60	>60	>60	>60	>60
2000	>60	>60	>60	>60	>60	>60	>60	>60	>60

Quick sizing – differential pressure and sound power level

Quick sizing tables provide a good overview of the sound power levels and differential pressures that can be expected. Approximate intermediate values can be interpolated. Precise intermediate values and spectral data can be calculated with our Easy Product Finder design programme.

The sound power levels L_{WA} apply to multileaf dampers with a cross-sectional area ($B \times H$) of 1 m^2 .

The differential pressures apply to multileaf dampers installed in ducts (installation type A).

Quick sizing – differential pressure and sound power level for JZ-LL, JZ-LL-A2 and JZ-HL

v	Damper blade position α									
	OPEN		20°		40°		60°		80°	
	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}
m/s	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
0.5	<5	<30	<5	<30	<5	7.5	22	34	250	63
1	<5	<30	<5	<30	8	26	85	53	1000	83
2	<5	<30	<5	<30	30	46	345	73	>2000	>90
4	<5	41	10	44	120	65	1385	>90	>2000	>90
6	<5	52	24	56	270	77	>2000	>90	>2000	>90
8	10	60	42	64	480	85	>2000	>90	>2000	>90
10	14	67	65	70	750	>90	>2000	>90	>2000	>90

Quick sizing – differential pressure and sound power level for JZ-LL-AL

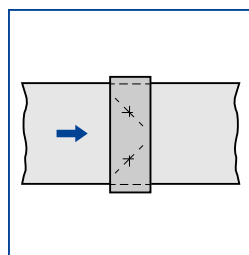
v	Damper blade position α									
	OPEN		20°		40°		60°		80°	
	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}
m/s	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
0.5	<5	<30	<5	<30	<5	15	18	35	146	57
1	<5	<30	<5	<30	9	31	71	51	585	73
2	<5	<30	5	<30	35	47	284	67	>2000	89
4	6	40	20	45	141	63	1136	83	>2000	>90
6	15	49	45	54	316	72	>2000	>90	>2000	>90
8	26	56	80	61	563	79	>2000	>90	>2000	>90
10	40	61	>90	66	879	84	>2000	>90	>2000	>90

Quick sizing – differential pressure and sound power level for JZ-HL-AL

v	Damper blade position α									
	OPEN		20°		40°		60°		80°	
	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}	Δp_{st}	L_{WA}
m/s	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
0.5	<5	<30	<5	<30	<5	<30	22	42	245	67
1	<5	<30	<5	<30	8	35	90	58	985	83
2	<5	<30	<5	32	32	51	350	74	>2000	>90
4	<5	43	12	48	125	67	1390	90	>2000	>90
6	<5	52	24	57	275	76	>2000	>90	>2000	>90
8	10	59	45	64	490	83	>2000	>90	>2000	>90
10	14	64	70	69	765	88	>2000	>90	>2000	>90

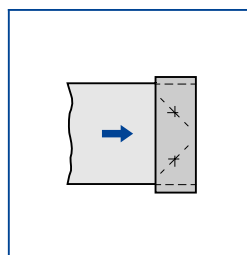
Installation types

Installation type A



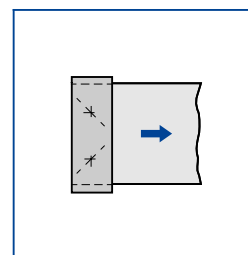
Ducts on both sides

Installation type B



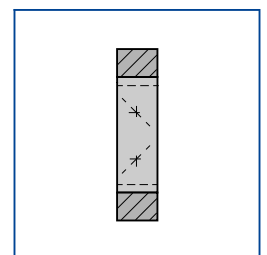
Air discharge

Installation type C



Air intake

Installation type D



Air transfer

Description



Multileaf damper, variant JZ-LL

For ATEX classification see Chapter K3 – 1.3, Explosion-proof actuators

Variant

- JZ-LL: Multileaf damper with opposed blade action, made of galvanised sheet steel

Classification

Closed blade air leakage to EN 1751

Test pressure up to 2000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 1000 mm, class 4

Test pressure up to 1000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 2000 mm, class 4

Construction

- Galvanised sheet steel, corner holes on both sides, plastic bearings, temperature resistant up to 100 °C
- G: Flange holes on both sides
- M: Brass bearings
- E: Stainless steel bearings
- V: Reinforced blades (only for -M, -E)
- BM: Width subdivided
- HM: Height subdivided

Combinations are available, with one exception: M cannot be combined with E

Parts and characteristics

- Ready-to-install shut-off damper
- Blades with external linkage
- Drive arm

Construction features

- Rectangular casing, welded (P1: casing with screws), material thickness 1.25 mm
- Blades, material thickness 1 mm
- Flanges on both sides, suitable for duct connection, either flange holes or corner holes
- External linkage, robust and durable, consisting of the coupling rod and horizontal arms
- Blade shafts, Ø12 mm, with notch to indicate the blade position

- Travel stop (angle section) ensures tight closure of the top and bottom blades
- Blade tip seals and side seals
- The drive arm can be fixed to every blade (by others)
- Construction and materials comply with the EU directive and guidelines for use in potentially explosive atmospheres (ATEX) for variants with brass or stainless steel bearings (-M, -E)

Materials and surfaces

- Casing and blades made of galvanised sheet steel
- Blade shafts, drive arm and external linkage made of galvanised steel
- Blade tip seals made of PP/PTV plastic
- Side seals made of closed cell PE foam
- P1: Powder-coated, RAL CLASSIC colour
- PS: Powder-coated, NCS or DB colour

Installation and commissioning

- With horizontal blades
- JZ-LL with vertical blades upon request
- With or without installation subframe
- Torsion-free installation
- For widths exceeding 2000 mm or heights exceeding 1995 mm install two multileaf dampers side by side or one above the other

Weight

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	kg									
180	4	6	8	9	11	13	14	16	18	19
345	6	8	10	12	15	17	19	21	24	26
510	7	10	13	16	19	22	25	27	30	33
675	10	13	16	20	23	27	30	33	37	40
840	11	15	19	23	28	32	37	41	46	50
1005	11	17	22	27	32	38	43	48	53	59
1170	13	19	25	31	37	43	49	55	61	67
1335	15	22	28	35	41	48	55	61	68	74
1500	16	23	30	37	44	51	59	66	73	80
1665	17	25	33	41	49	57	65	72	80	88
1830	18	27	35	44	52	61	69	78	86	95
1995	19	29	38	47	56	66	75	84	94	103

Dimensions

For detailed information on corner holes and flange holes see
Dimensions – Duct connection

For detailed information on drive shafts see
Dimensions – Drive shafts

Dimensional drawing of JZ-LL standard sizes

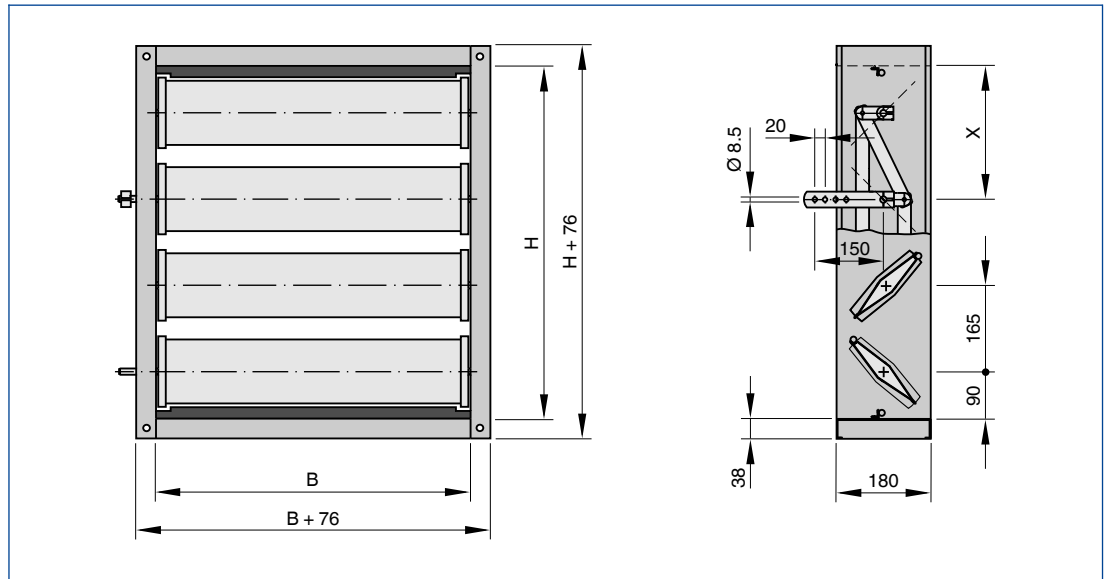


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm	
		X	Blade
mm	–	mm	–
180	1	90	1
345	2	255	2
510	3	255	2
675	4	255	2
840	5	255	2
1005	6	255	2
1170	7	255	2
1335	8	255	2
1500	9	255	2
1665	10	255	2
1830	11	255	2
1995	12	255	2

1

Dimensional drawing of JZ-LL intermediate sizes

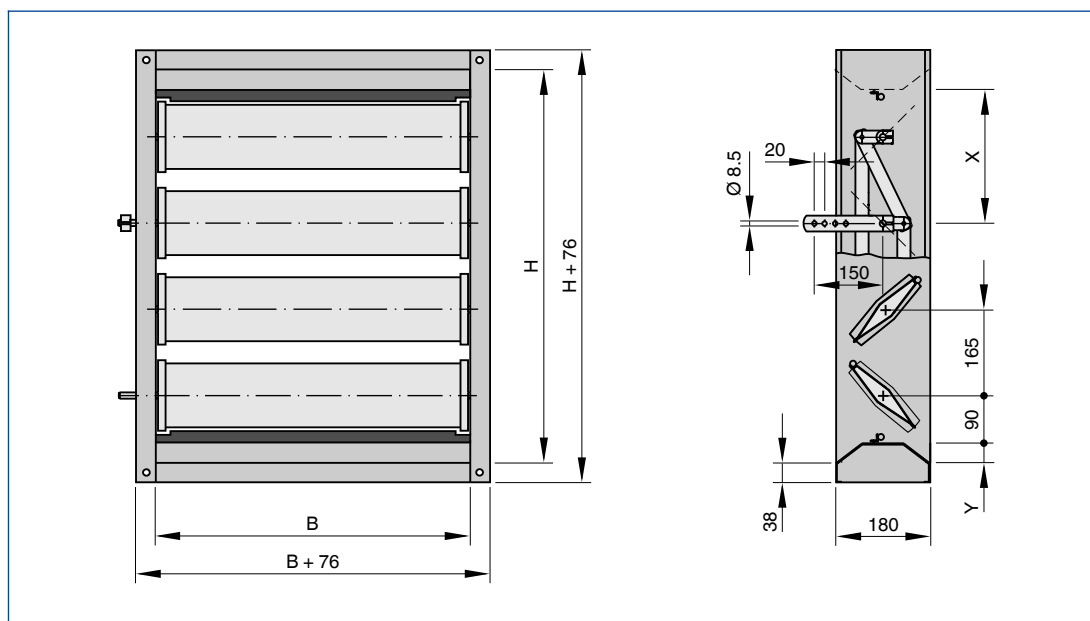


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm		Y
		X	Blade	
mm	-	mm	-	mm
183 – 343	1	90	1	1.5 – 81.5
348 – 508	2	255	2	1.5 – 81.5
513 – 673	3	255	2	1.5 – 81.5
678 – 838	4	255	2	1.5 – 81.5
843 – 1003	5	255	2	1.5 – 81.5
1008 – 1168	6	255	2	1.5 – 81.5
1173 – 1333	7	255	2	1.5 – 81.5
1338 – 1498	8	255	2	1.5 – 81.5
1503 – 1663	9	255	2	1.5 – 81.5
1668 – 1828	10	255	2	1.5 – 81.5
1833 – 1993	11	255	2	1.5 – 81.5
1998	12	255	2	1.5

Description



Multileaf damper, variant JZ-HL

For ATEX classification see Chapter K3 – 1.3, Explosion-proof actuators

Variant

- JZ-HL: Multileaf damper with opposed blade action, made of galvanised sheet steel

Classification

- Closed blade air leakage to EN 1751
- Test pressure up to 2000 Pa
- Up to B = 599 mm, class 1
- From B = 600 mm, class 2

Construction

- Galvanised sheet steel, corner holes on both sides, plastic bearings, temperature resistant up to 100 °C
 - G: Flange holes on both sides
 - M: Brass bearings
 - E: Stainless steel bearings
 - V: Reinforced blades (only for -M, -E)
 - BM: Width subdivided
 - HM: Height subdivided
- Combinations are available, with one exception: M cannot be combined with E

Parts and characteristics

- Ready-to-install shut-off damper
- Blades with external linkage
- Drive arm

Construction features

- Rectangular casing, welded (P1: casing with screws), material thickness 1.25 mm
- Blades, material thickness 1 mm
- Flanges on both sides, suitable for duct connection, either flange holes or corner holes
- External linkage, robust and durable, consisting of the coupling rod and horizontal arms
- Blade shafts, Ø12 mm, with notch to indicate the blade position
- Travel stop (angle section) ensures tight closure of the top and bottom blades
- Blade tip seals
- The drive arm can be fixed to every blade (by others)

- Construction and materials comply with the EU directive and guidelines for use in potentially explosive atmospheres (ATEX) for variants with brass or stainless steel bearings (-M, -E)

Materials and surfaces

- Casing and blades made of galvanised sheet steel
- Blade shafts, drive arm and external linkage made of galvanised steel
- Blade tip seals made of PP/PTV plastic
- P1: Powder-coated, RAL CLASSIC colour
- PS: Powder-coated, NCS or DB colour

Installation and commissioning

- With horizontal or vertical blades
- With or without installation subframe
- Torsion-free installation
- For widths exceeding 2000 mm or heights exceeding 1995 mm install two multileaf dampers side by side or one above the other

Weight

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	kg									
180	4	6	8	9	11	13	14	16	18	19
345	6	8	10	12	15	17	19	21	24	26
510	7	10	13	16	19	22	25	27	30	33
675	10	13	16	20	23	27	30	33	37	40
840	11	15	19	23	28	32	37	41	46	50
1005	11	17	22	27	32	38	43	48	53	59
1170	13	19	25	31	37	43	49	55	61	67
1335	15	22	28	35	41	48	55	61	68	74
1500	16	23	30	37	44	51	59	66	73	80
1665	17	25	33	41	49	57	65	72	80	88
1830	18	27	35	44	52	61	69	78	86	95
1995	19	29	38	47	56	66	75	84	94	103

Dimensions

For detailed information on corner holes and flange holes see Dimensions – Duct connection

For detailed information on drive shafts see Dimensions – Drive shafts

Dimensional drawing of JZ-HL standard sizes

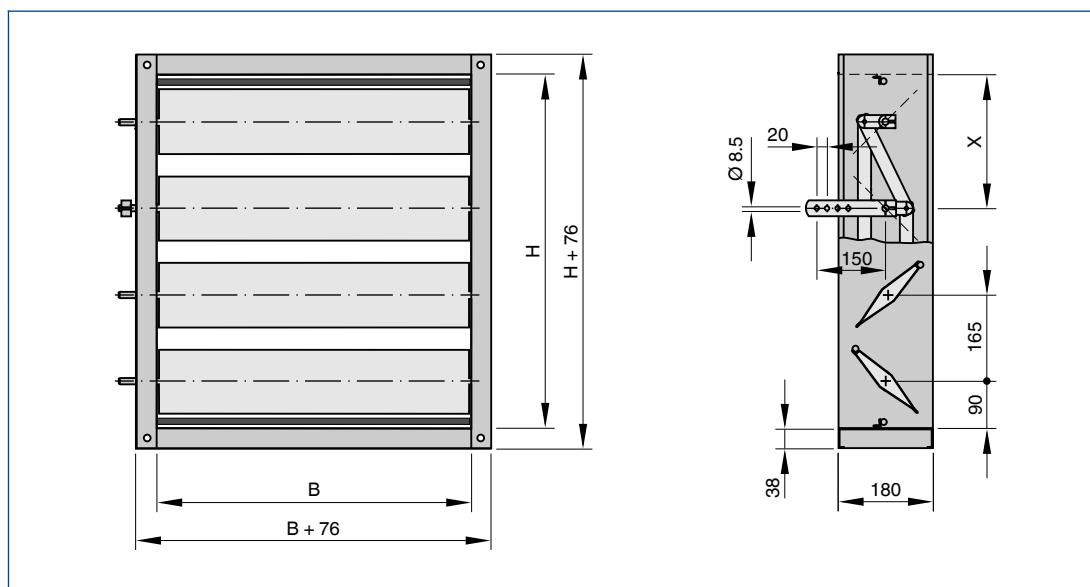


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm	
		X	Blade
mm	-	mm	-
180	1	90	1
345	2	90	1
510	3	90	1
675	4	255	2
840	5	420	3
1005	6	420	3
1170	7	585	4
1335	8	585	4
1500	9	750	5
1665	10	750	5
1830	11	915	6
1995	12	915	6

Dimensional drawing of JZ-HL intermediate sizes

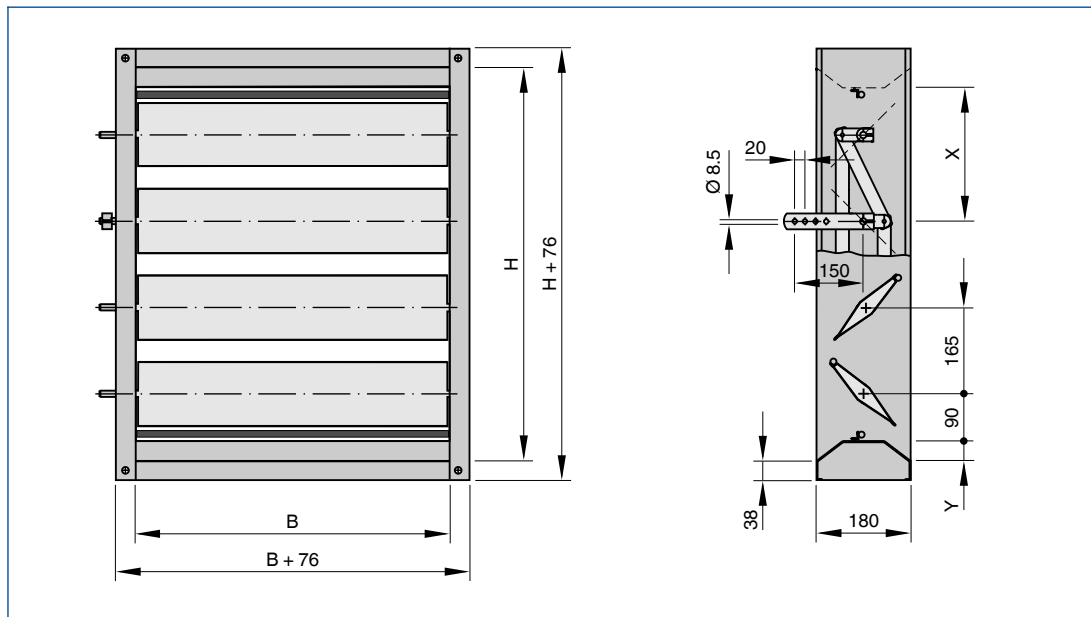


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm		
		X	Blade	Y
mm	-	mm	-	mm
183 – 343	1	90	1	1.5 – 81.5
348 – 508	2	90	1	1.5 – 81.5
513 – 673	3	90	1	1.5 – 81.5
678 – 838	4	255	2	1.5 – 81.5
843 – 1003	5	420	3	1.5 – 81.5
1008 – 1168	6	420	3	1.5 – 81.5
1173 – 1333	7	585	4	1.5 – 81.5
1338 – 1498	8	585	4	1.5 – 81.5
1503 – 1663	9	750	5	1.5 – 81.5
1668 – 1828	10	750	5	1.5 – 81.5
1833 – 1993	11	915	6	1.5 – 81.5
1998	12	915	6	1.5

Description



Multileaf damper, variant JZ-LL-A2

For ATEX classification see Chapter K3 – 1.3, Explosion-proof actuators

Variant

- JZ-LL-A2: Multileaf damper with opposed blade action, made of stainless steel

Classification

Closed blade air leakage to EN 1751

Test pressure up to 2000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 1000 mm, class 4

Test pressure up to 1000 Pa

- Up to B = 599 mm, class 3
- B = 600 – 2000 mm, class 4

Construction

- Stainless steel, corner holes on both sides, plastic bearings, temperature resistant up to 100 °C
 - G: Flange holes on both sides
 - M: Brass bearings
 - E: Stainless steel bearings
- Combinations are available, with one exception: M cannot be combined with E

Parts and characteristics

- Ready-to-install shut-off damper
- Blades with external linkage
- Drive arm

Construction features

- Rectangular casing, with screws, material thickness 1.25 mm
- Blades, material thickness 1 mm
- Flanges on both sides, suitable for duct connection, either flange holes or corner holes
- External linkage, robust and durable, consisting of the coupling rod and horizontal arms
- Blade shafts, Ø12 mm, with notch to indicate the blade position
- Travel stop (angle section) ensures tight closure of the top and bottom blades
- Blade tip seals and side seals
- The drive arm can be fixed to every blade (by others)

- Construction and materials comply with the EU directive and guidelines for use in potentially explosive atmospheres (ATEX) for variants with brass or stainless steel bearings (-M, -E)

Materials and surfaces

- Casing, blades and external linkage made of stainless steel, material no. 1.4301
- Shafts made of stainless steel, material no. 1.4305
- Blade tip seals made of PP/PTV plastic
- Side seals made of closed cell PE foam
- P1: Powder-coated, RAL CLASSIC colour
- PS: Powder-coated, NCS or DB colour

Installation and commissioning

- With horizontal blades
- With or without installation subframe
- Torsion-free installation
- For widths exceeding 2000 mm or heights exceeding 1995 mm install two multileaf dampers side by side or one above the other

Weight

H	B [mm]									
	200	400	600	800	1000	1200	1400	1600	1800	2000
mm	kg									
180	4	6	8	9	11	13	14	16	18	19
345	6	8	10	12	15	17	19	21	24	26
510	7	10	13	16	19	22	25	27	30	33
675	10	13	16	20	23	27	30	33	37	40
840	11	15	19	23	28	32	37	41	46	50
1005	11	17	22	27	32	38	43	48	53	59
1170	13	19	25	31	37	43	49	55	61	67
1335	15	22	28	35	41	48	55	61	68	74
1500	16	23	30	37	44	51	59	66	73	80
1665	17	25	33	41	49	57	65	72	80	88
1830	18	27	35	44	52	61	69	78	86	95
1995	19	29	38	47	56	66	75	84	94	103

Dimensions

For detailed information on corner holes and flange holes see Dimensions – Duct connection

For detailed information on drive shafts see Dimensions – Drive shafts

Dimensional drawing of JZ-LL-A2 standard sizes

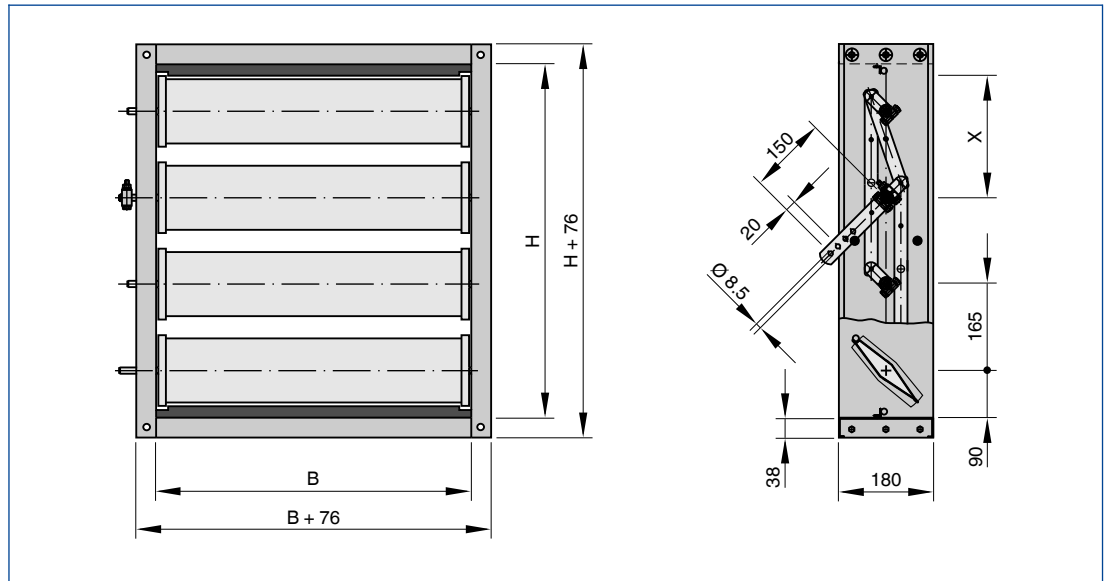


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm	
		X	Blade
mm	-	mm	-
180	1	90	1
345	2	255	2
510	3	255	2
675	4	255	2
840	5	255	2
1005	6	255	2
1170	7	255	2
1335	8	255	2
1500	9	255	2
1665	10	255	2
1830	11	255	2
1995	12	255	2

1

Dimensional drawing of JZ-LL-A2 intermediate sizes

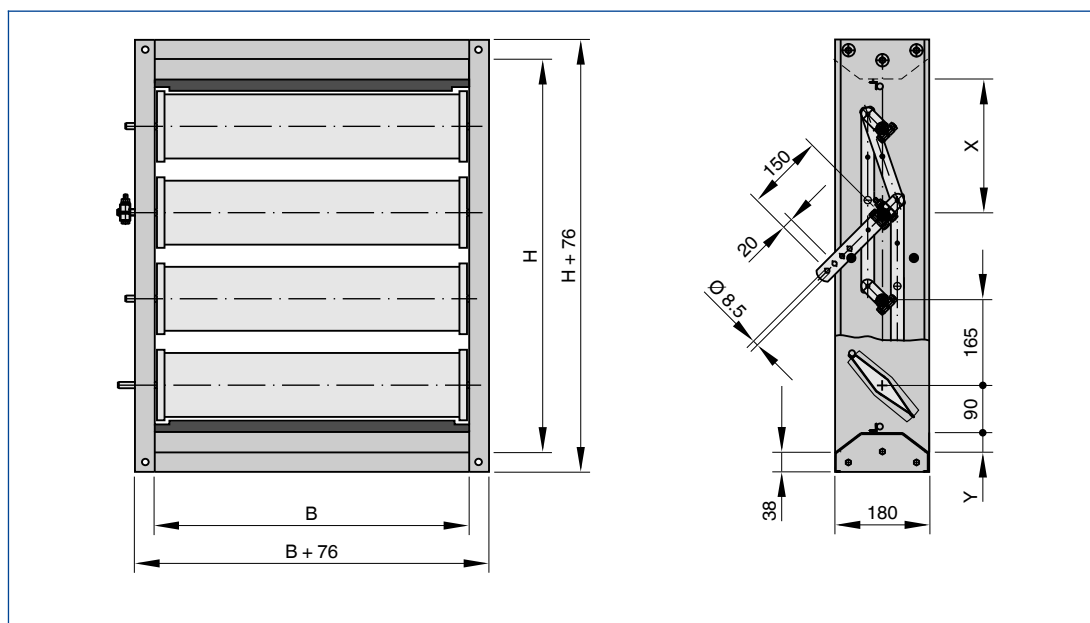


Illustration shows a multileaf damper with drive arm, operating side on the right

Dimensions

H	No. of blades	Position of drive arm		Y
		X	Blade	
mm	-	mm	-	mm
183 – 343	1	90	1	1.5 – 81.5
348 – 508	2	255	2	1.5 – 81.5
513 – 673	3	255	2	1.5 – 81.5
678 – 838	4	255	2	1.5 – 81.5
843 – 1003	5	255	2	1.5 – 81.5
1008 – 1168	6	255	2	1.5 – 81.5
1173 – 1333	7	255	2	1.5 – 81.5
1338 – 1498	8	255	2	1.5 – 81.5
1503 – 1663	9	255	2	1.5 – 81.5
1668 – 1828	10	255	2	1.5 – 81.5
1833 – 1993	11	255	2	1.5 – 81.5
1998	12	255	2	1.5

Description



Multileaf damper, variant JZ-LL-AL

Variant

- JZ-LL-AL: Multileaf damper with opposed blade action, made of aluminium

Classification

- Closed blade air leakage to EN 1751
- Test pressure up to 2000 Pa
- For all sizes, class 4

Parts and characteristics

- Ready-to-install shut-off damper
- Blades with gears
- Drive arm
- Quadrant stay with blade position indicator
- Operating temperature 10 to 50 °C

Construction features

- Rectangular casing, with screws, material thickness 1.5 mm
- Blades, material thickness 1.25 mm
- Flanges on both sides, suitable for duct connection, with corner holes
- Encased gears on both blade ends
- Blade shafts, Ø12 mm, with notch to indicate the blade position
- From H = 600 mm with two drive shafts, with linkage
- Blade tip seals and side seals

Materials and surfaces

- Casing and blades made of extruded aluminium profile
- Blade shafts, bearing plate and drive arm made of galvanised steel
- Linkage (from H = 600 mm) made of galvanised steel
- Gears made of PBS plastic
- Blade tip seals made of PE/PTV plastic
- Side seals made of closed cell EVA foam
- P1: Powder-coated, RAL CLASSIC colour
- PS: Powder-coated, NCS or DB colour
- S3: Anodised to EURAS standard, E6-C-0

Installation and commissioning

- With horizontal or vertical blades
- With or without installation subframe
- Torsion-free installation

Weight

H	B [mm]										
	200	300	400	500	600	700	800	900	1000	1100	1200
mm	kg										
100	2	2	3	3	4	4	4	5	5	6	6
200	2	3	3	4	4	4	5	5	6	6	6
300	4	4	5	5	6	6	6	7	7	8	8
400	4	5	5	6	6	7	7	8	9	9	10
500	4	5	6	6	7	7	8	9	10	10	11
600	5	6	6	7	8	9	9	10	11	12	12
700	6	7	8	8	9	10	11	12	13	13	14
800	7	8	9	10	11	12	13	13	14	15	16
900	8	9	10	11	12	13	14	15	16	17	18
1000	9	10	11	12	13	15	16	17	18	19	21

Dimensions

For detailed information on corner holes and flange holes see Dimensions – Duct connection

For detailed information on drive shafts see Dimensions – Drive shafts

Dimensional drawing of JZ-LL-AL standard sizes

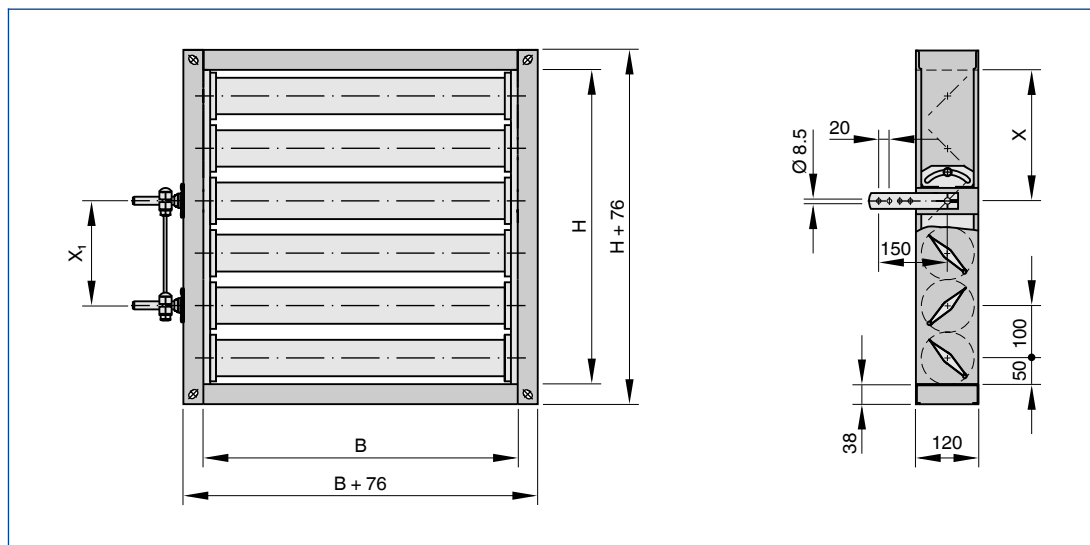


Illustration shows a multileaf damper with drive arm

Dimensions

H	No. of blades	Position of drive arm		Drive shaft 2	
		X	Blade	X ₁	Blade
mm	–	mm	–	mm	–
100	1	50	1	–	–
200	2	50	1	–	–
300	3	50	1	–	–
400	4	250	3	–	–
500	5	250	3	–	–
600	6	250	3	200	5
700	7	250	3	200	5
800	8	250	3	200	5
900	9	250	3	400	7
1000	10	250	3	400	7

Dimensional drawing of JZ-LL-AL intermediate sizes

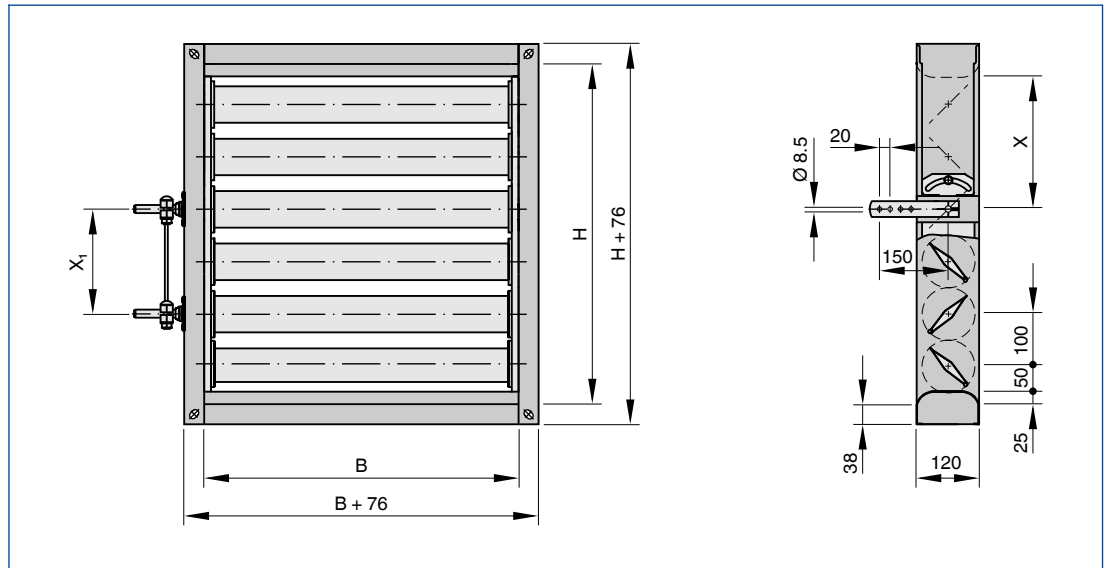


Illustration shows a multileaf damper with drive arm

Dimensions

H	No. of blades	Position of drive arm		Drive shaft 2	
		X	Blade	X ₁	Blade
mm	-	mm	-	mm	-
150	1	50	1	-	-
250	2	50	1	-	-
350	3	50	1	-	-
450	4	250	3	-	-
550	5	250	3	-	-
650	6	250	3	200	5
750	7	250	3	200	5
850	8	250	3	200	5
950	9	250	3	400	7
1050	10	250	3	400	7

Description



Multileaf damper
JZ-HL-AL

Variant

- JZ-HL-AL:
Multileaf damper with opposed blade action,
made of aluminium

Classification

- Closed blade air leakage to EN 1751
- Test pressure up to 2000 Pa
- For all sizes, class 2

Parts and characteristics

- Ready-to-install shut-off damper
- Blades with gears
- Drive arm
- Quadrant stay with blade position indicator
- Temperature resistant up to 90 °C

Construction features

- Rectangular casing, with screws,
material thickness 1.5 mm
- Blades, material thickness 1.25 mm
- Flanges on both sides,
suitable for duct connection, with corner holes
- Gears on both blade ends
- Blade shafts, Ø12 mm,
with notch to indicate the blade position
- Blade tip seals

Materials and surfaces

- Casing and blades
made of extruded aluminium profile
- Shafts, bearing plate and position indicator
made of galvanised steel
- Gears made of PBT plastic
- Blade tip seals made of PE/PTV plastic
- P1: Powder-coated, RAL CLASSIC colour
- PS: Powder-coated, NCS or DB colour
- S3: Anodised to EURAS standard, E6-C-0

Installation and commissioning

- With horizontal or vertical blades
- With or without installation subframe
- Torsion-free installation

Weight

H	B [mm]										
	200	300	400	500	600	700	800	900	1000	1100	1200
mm	kg										
100	2	2	2	3	3	3	4	4	4	5	5
200	2	2	3	3	3	4	4	5	5	5	6
300	3	3	4	4	5	5	5	6	6	7	7
400	4	4	5	5	6	6	7	7	8	8	9
500	4	4	5	5	6	7	7	8	9	9	10
600	5	5	6	7	7	8	9	9	10	11	11
700	6	6	7	8	8	9	10	11	11	12	13
800	6	7	8	9	9	10	11	12	13	13	14
900	7	7	8	9	10	11	12	13	14	15	16
1000	6	7	9	10	11	12	13	14	15	16	17

Dimensions

For detailed information on corner holes and flange holes see Dimensions – Duct connection

For detailed information on drive shafts see Dimensions – Drive shafts

Dimensional drawing of JZ-HL-AL standard sizes

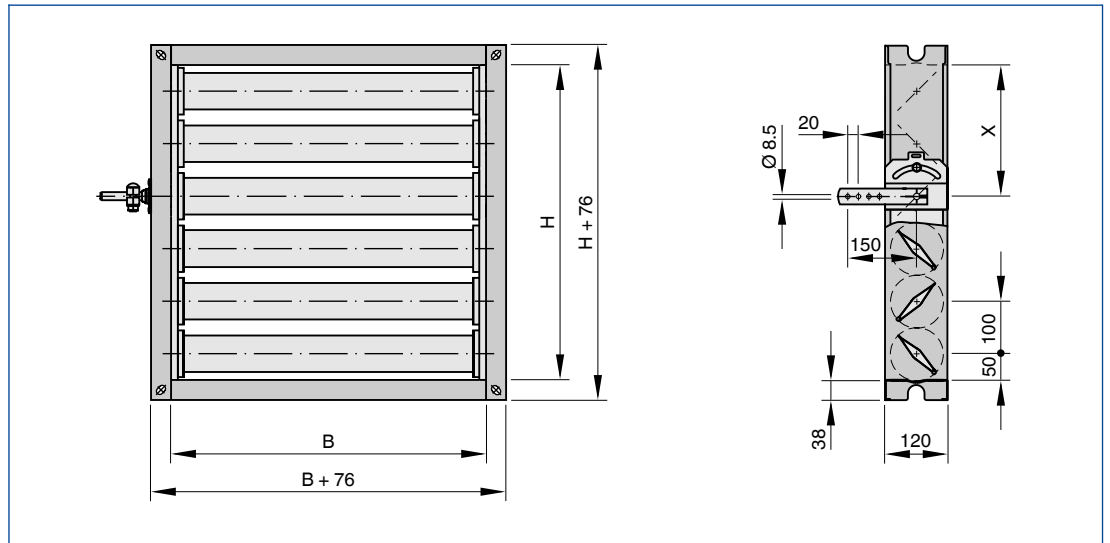


Illustration shows a multileaf damper with drive arm

Dimensions

H	No. of blades	Position of drive arm	
		X	Blade
mm	-	mm	-
100	1	50	1
200	2	50	1
300	3	50	1
400	4	250	3
500	5	250	3
600	6	250	3
700	7	250	3
800	8	250	3
900	9	250	3
1000	10	250	3

1

Dimensional drawing of JZ-HL-AL intermediate sizes

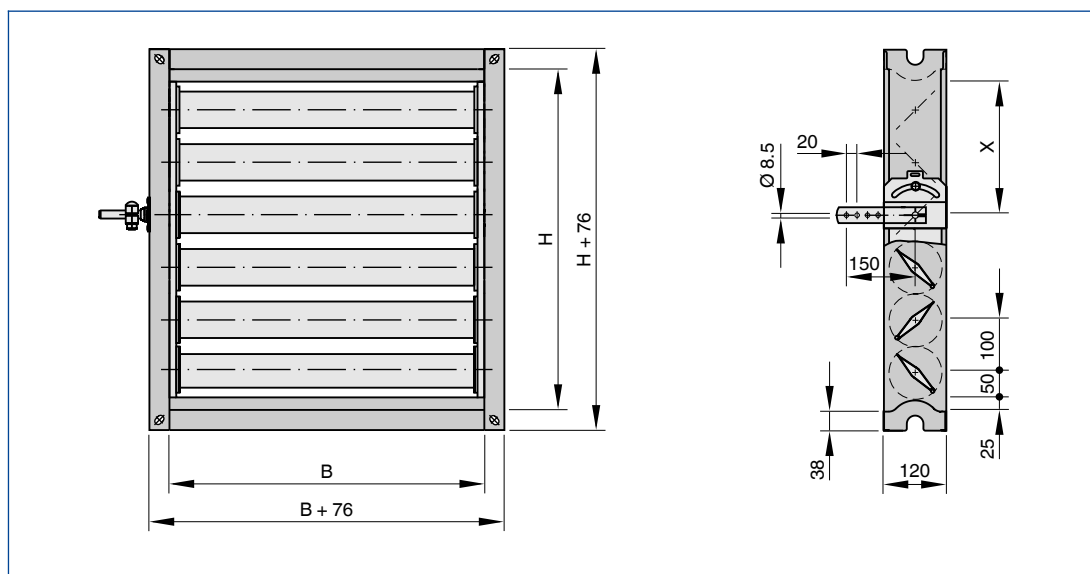


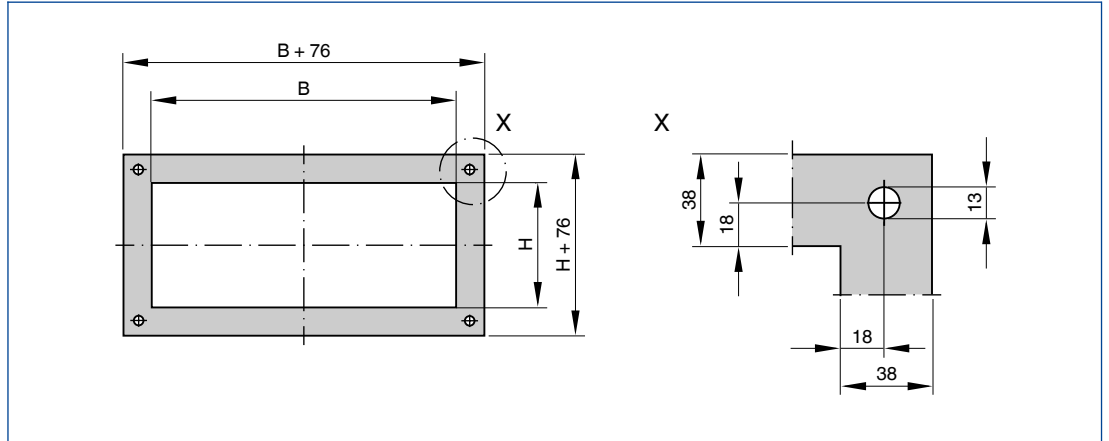
Illustration shows a multileaf damper with drive arm

Dimensions

H	No. of blades	Position of drive arm	
		X	Blade
mm	-	mm	-
150	1	50	1
250	2	50	1
350	3	50	1
450	4	250	3
550	5	250	3
650	6	250	3
750	7	250	3
850	8	250	3
950	9	250	3
1050	10	250	3

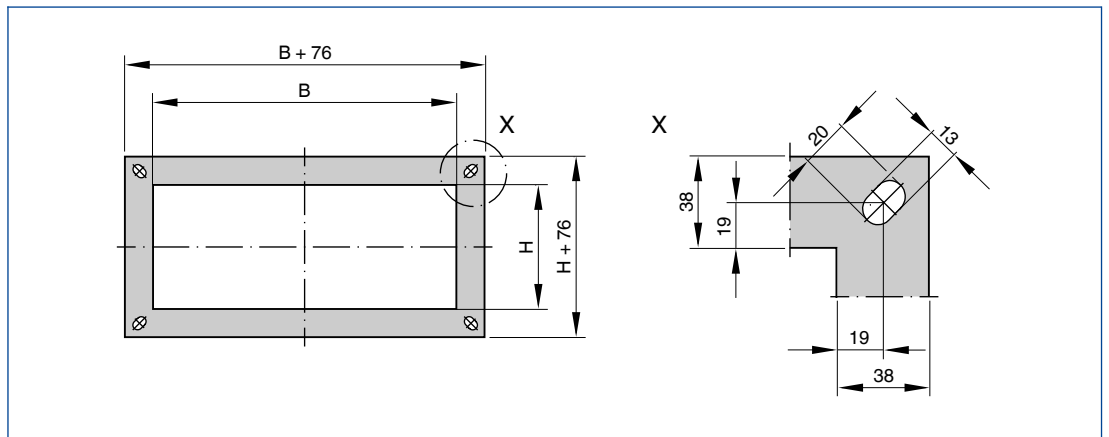
Corner holes

Corner holes – multileaf dampers made of steel or stainless steel



JZ-LL, JZ-HL, JZ-LL-A2

Corner holes – multileaf dampers made of aluminium



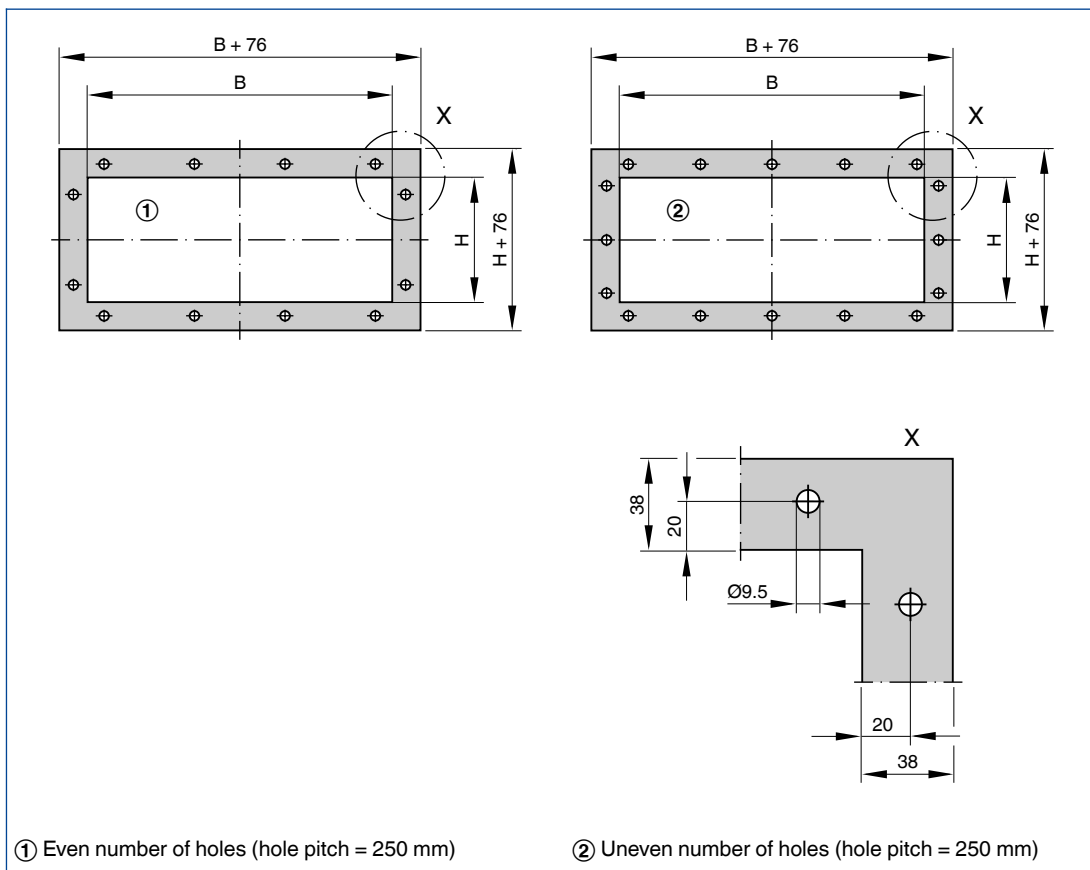
JZ-LL-AL, JZ-HL-AL

Flange holes

Constructions with flange holes (-G) do not have corner holes.

Flange holes on casing sizes from width 288 mm and height 212 mm

Flange holes – multileaf dampers made of steel or stainless steel



JZ-LL, JZ-HL, JZ-LL-A2

No. of holes per side

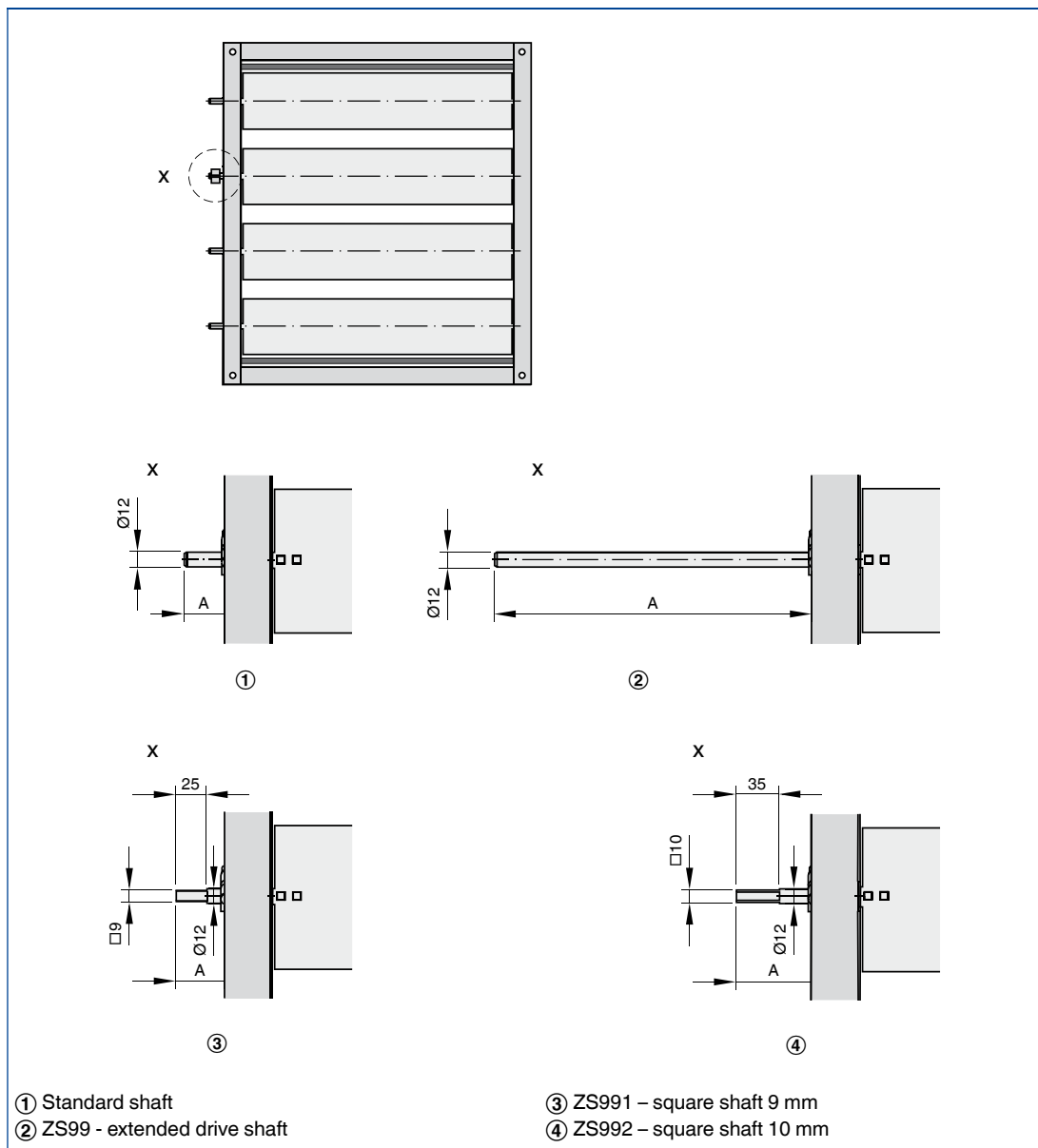
B	No. of holes	
	n	
mm	-	
288 – 537		2
538 – 787		3
788 – 1037		4
1038 – 1287		5
1288 – 1537		6
1538 – 1787		7
1788 – 2000		8

No. of holes per side

H	No. of holes	
	n	
mm	-	
212 – 461		2
462 – 711		3
712 – 961		4
962 – 1211		5
1212 – 1461		6
1462 – 1711		7
1712 – 1961		8
1962 – 1995		9

Drive shafts
(special accessory)
upon request.

Drive shafts for JZ-LL, JZ-HL, JZ-LL-A2

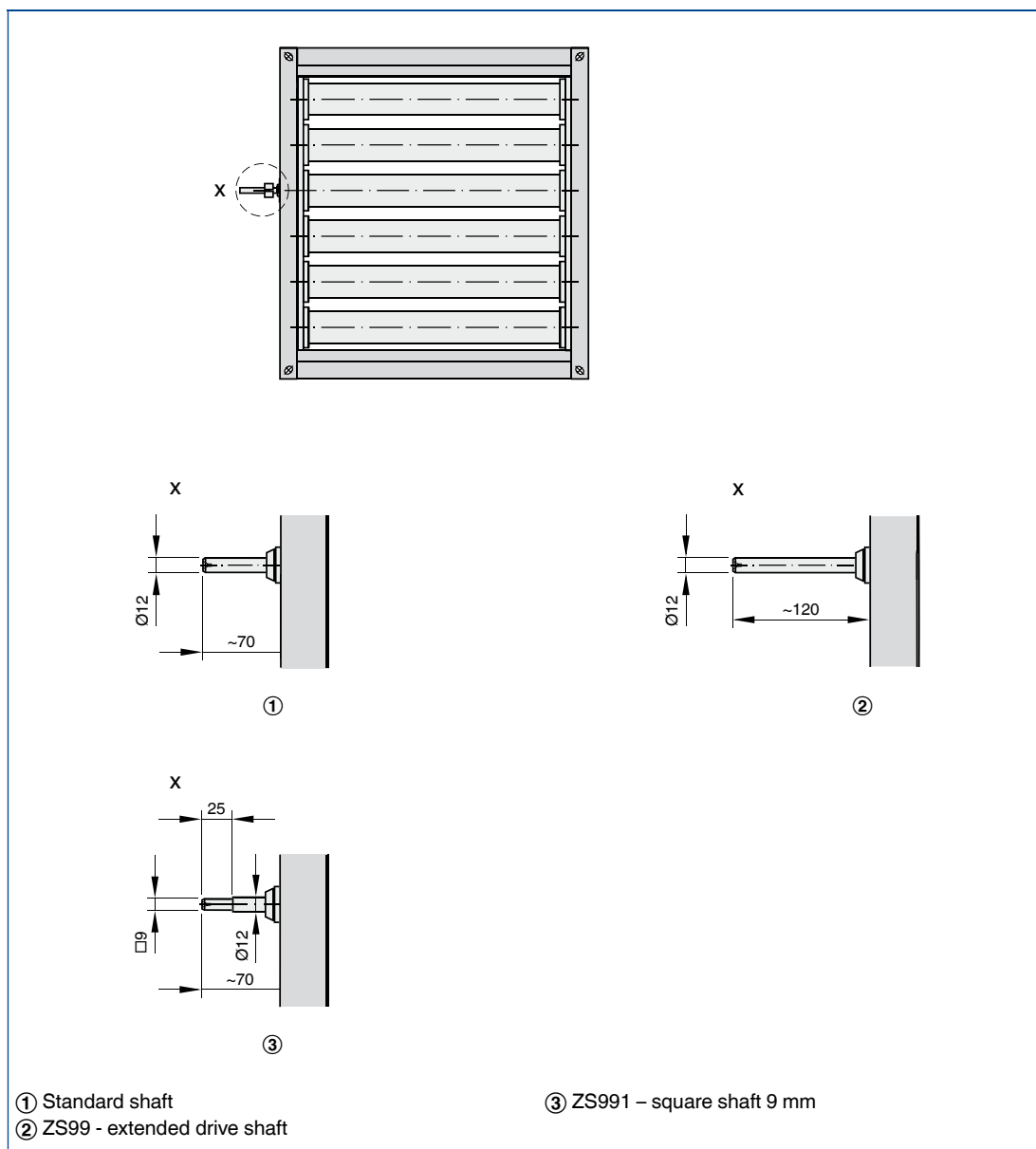


Shaft end projection

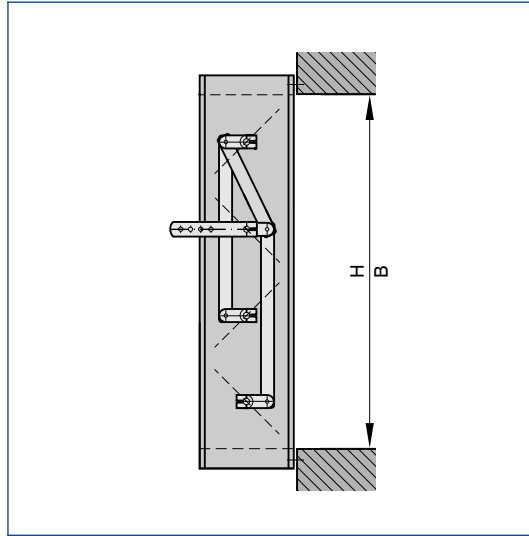
Drive shaft	Multileaf damper		
	JZ-LL	JZ-HL	JZ-LL-A2
	A		
	mm		
① Standard	30	30	26
② Extended	250	250	180
③ Square 9 mm	37	37	37
④ Square 10 mm	70	60	–

1

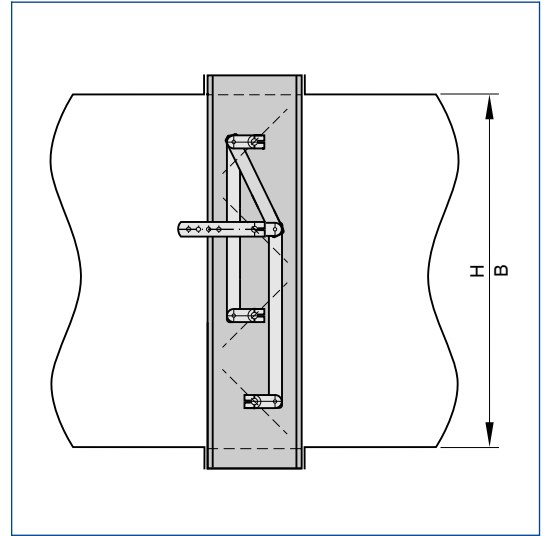
Drive shafts for JZ-*L-AL



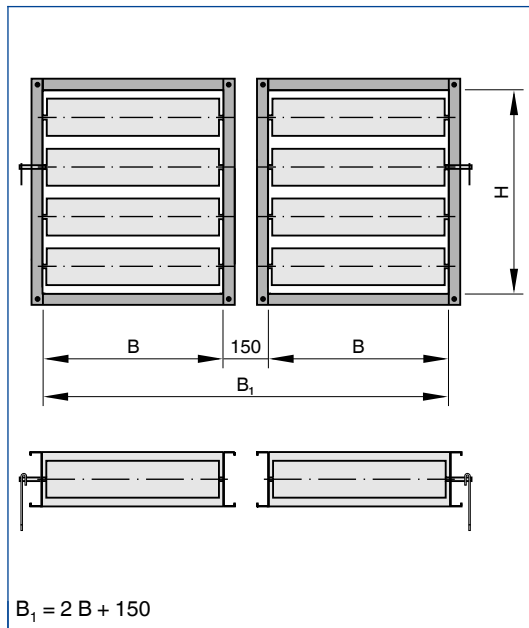
Wall installation without installation subframe



Duct installation

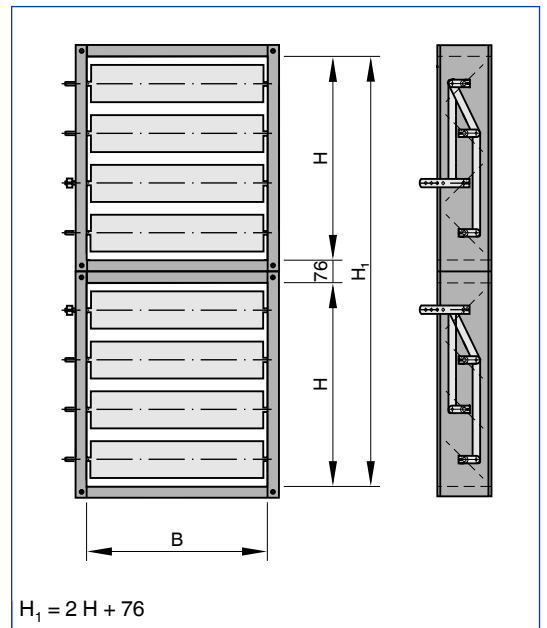


Width subdivided



Steel and stainless steel variants only

Height subdivided



Steel and stainless steel variants only

Dimensions

B_1	B	
mm	mm	mm
2550		1200
2950		1400
3350		1600
3750		1800
4150		2000

Dimensions

H_1	H	
mm	mm	mm
2086		1005
2416		1170
2746		1335
3076		1500
3406		1665
3736		1830
4066		1995

Standard text

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

Rectangular multileaf dampers for volume flow and pressure control as well as for low-leakage shut-off of ducts and openings in walls and ceiling slabs. Suitable for duct pressures up to 1000 Pa. Ready-to-operate unit which consists of the casing, aerofoil blades and the blade mechanism. Flanges on both sides, suitable for duct connection. The blade position is indicated externally by a notch in the blade shaft extension. Closed blade air leakage to EN 1751, class 4. Casing air leakage to EN 1751, class C.

Special features

- Aerofoil blades
- Low-maintenance, robust construction
- No parts with silicone
- Available in standard sizes and many intermediate sizes
- Closed cell side seals meet increased hygiene requirements

Technical data

- Nominal sizes:
200 × 100 mm – 2000 × 1995 mm
- Volume flow rate: 200 – 40,000 l/s
or 720 – 143,640 m³/h at 10 m/s
- Differential pressure range: 5 – 3500 Pa
- Operating temperature 0 to 100 °C

Sizing data

- \dot{V} _____ [m³/h]
- Δp_{st} _____ [Pa]
- L_{PA} air-regenerated noise _____ [dB(A)]

Order options JZ-LL, JZ-LL-A2, JZ-HL

1 Type

JZ Multileaf damper

2 Classification

Closed blade air leakage to EN 1751

- LL** Classes 3 – 4
- HL** Classes 1 – 2

3 Material

No entry: galvanised steel

- A2** Stainless steel
(only for classification LL)

4 Construction

No entry: corner holes on both sides; plastic bearings

- G** Flange holes on both sides
(no corner holes)
- M** Brass bearings
- E** Stainless steel bearings
- M-V** Brass plain bearings and reinforced blades (not for JZ-LL-A2)
- E-V** Stainless steel plain bearings and reinforced blades (not for JZ-LL-A2)
M, E, M-V, E-V can be combined with G

5 Operating side

No entry: on the right

- L** Left

6 Nominal size [mm]

B × H

B > 2000 = width subdivided

H > 1998 = height subdivided

7 Installation subframe

No entry: none

- ER** With (only for construction G)

8 Attachments

- No entry: none
- Z04 – Z07** Quadrant stay
- Z12 – Z51** Actuators
- ZF01 – ZF15** Spring return actuators
- Z60 – Z77** Pneumatic actuators
Explosion-proof actuators
- Z1EX, Z3EX** Electric
- Z60EX – Z77EX** Pneumatic

9 Damper blade safety function

Only for spring return actuators or pneumatic actuators

- NO** Pressure off/power off to OPEN
- NC** Pressure off/power off to CLOSE

10 Surface

No entry: standard construction

- P1** Powder-coated,
RAL CLASSIC colour
- PS** Powder-coated, DB colour

Gloss level:

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

JZ-LL-AL, JZ-HL-AL

1 Type

JZ Multileaf damper

2 Classification

Closed blade air leakage to EN 1751

- LL** Class 4
- HL** Class 2

3 Material

AL Aluminium

4 Nominal size [mm]

B × H

5 Installation subframe

No entry: none

- ER** With installation subframe

6 Attachments

- Z04 – Z07** Quadrant stay
- Z12 – Z51** Actuators
- ZF01 – ZF15** Spring return actuators
- Z60 – Z77** Pneumatic actuators

7 Damper blade safety function

Only for spring return actuators or pneumatic actuators

- NO** Pressure off/power off to OPEN
- NC** Pressure off/power off to CLOSE

8 Surface

No entry: standard construction

- P1** Powder-coated, RAL CLASSIC colour
- PS** Powder-coated, DB colour
- S3** Anodised to EURAS standard, E6-C-0

Gloss level:

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %