



# Multileaf dampers

## Type JZ-\*, explosion-proof construction

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### Product overview



Fig. 1: Schematic illustration of JZ-HL

- |   |   |
|---|---|
| ① Casing  | ⑥ Explosion-proof actuator (optional)                                   |
| ② Opposed blades (JZ-P*: parallel blades)                       | ⑦ Explosion-proof terminal box  |
| ③ Blade tip seal (JZ-HL*, JZ-LL-* only)                         | ⑧ External linkage  |
| ④ Travel stop (angle section with seal) (JZ-HL*, JZ-LL-*, only) | ⑨ Sticker showing approved zones with potentially explosive atmospheres |
| ⑤ Transverse link   |   |

## Important notes

### Information on the installation manual

This manual enables operating or service personnel to correctly install the product described below and to use it safely and efficiently.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

### Qualified staff

The work described in this manual has to be carried out by individuals with the qualification, training, knowledge and experience described below:

#### HVAC technician

HVAC technicians are individuals who have sufficient professional or technical training in the field they are working in to enable them to carry out their assigned duties at the level of responsibility allocated to them and in compliance with the relevant guidelines, safety regulations and instructions. HVAC technicians are individuals who have in-depth knowledge and skills related to HVAC systems; they are also responsible for the professional completion of the work under consideration.

HVAC technicians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on HVAC systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

#### Skilled qualified electrician

Skilled qualified electricians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on electrical systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.



### **Working in areas with potentially explosive atmospheres**

*The system owner may require that work in areas with potentially explosive atmospheres is carried out by individuals with additional qualifications. Any work requires that the system owner has been informed and agreed to it.*

### Limitation of liability

The information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

The manufacturer does not accept any liability for damages resulting from:

- Non-compliance with this manual
- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications

The actual scope of delivery may differ from the information in this manual for special constructions, additional order options or as a result of recent technical changes.

### Copyright

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The violator will be held liable for any damage. Further claims reserved.

### Personal protective equipment

Personal protective equipment must be worn for all work in order to reduce health or safety hazards to the minimum.

The appropriate protective equipment for a job must be worn for as long as the job takes.

**Correct use**

The multileaf damper is used as an acting element in the volume flow and pressure control in air conditioning systems, e.g. in ventilation plant rooms or ducts in areas with potentially explosive atmospheres.

**Approved zones with potentially explosive atmospheres:**

CE  II 2 GD

A sticker on the multileaf damper shows the zones with potentially explosive atmospheres for which the damper has been approved.

**Incorrect use****WARNING!****Danger due to incorrect use!**

Incorrect use of the unit can lead to dangerous situations.

Never use the unit:

- for process air control or shut-off
- outdoors without sufficient protection against the effects of weather
- in humid rooms
- in rooms with aggressive air

**Transport and packaging****Transport****CAUTION!****Danger of injury from sharp edges, sharp corners and thin sheet metal parts!**

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

Use only lifting and transport gear designed for the required load. Always secure the load against tipping and falling.

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness.

**Storage**

Please note:

- Store the unit only in its original packaging
- Protect the unit from the effects of weather
- Protect the unit from humidity, dust and contamination
- Storage temperature: –10 to 50 °C
- Relative humidity: 95 % max., non-condensing

**Installation****General safety notes****CAUTION!****Danger of injury from sharp edges, sharp corners and thin sheet metal parts!**

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

**NOTICE!****Contamination or damage will impair the function of the multileaf damper.**

Protect the multileaf damper from contamination and damage.

## Personnel:

- HVAC technician

## General installation information

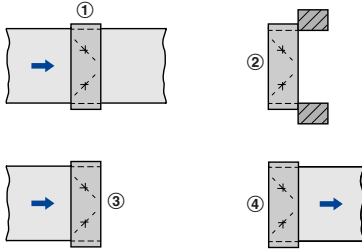


Fig. 2: Installation types

- ① Ducts on both sides
- ② Without duct (air transfer)
- ③ Duct on one side (air outlet)
- ④ Duct on one side (air inlet)

The multileaf damper is installed away from walls (in ducts), or adjacent to or on the face of walls and ceiling slabs.

Please note:

- Installation should be vertical and without torsion
- Installation in vertical or horizontal ducting
- Installation with the blades vertical or horizontal; JZ-LL only with the blades horizontal
- Any airflow direction
- Duct connection on one side or on both sides
- The function of the multileaf damper must be checked before installation.

### CAUTION!

#### Danger of injury!

Danger of injury when reaching into the blades or the linkage of the multileaf damper.

Once the multileaf damper has been installed, people must be prevented from reaching into the damper, for example by a cover grille.

## Duct installation

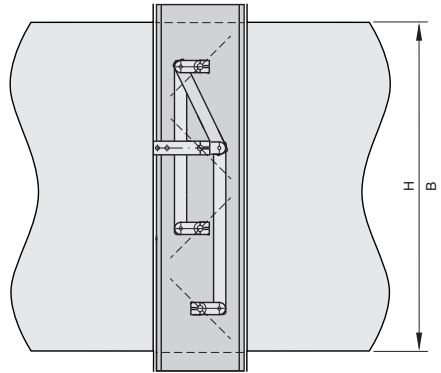


Fig. 3: Duct installation

Use screws (by others) to fix the multileaf damper to the duct. Due to its weight the multileaf damper must be supported, e.g. by a suspension system.

## Wall/ceiling installation

### Screw fix installation

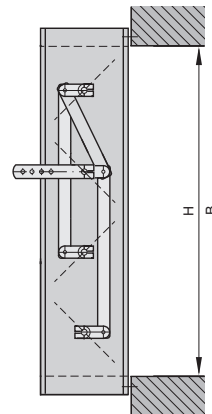


Fig. 4: Wall installation

Use suitable screws (by others) to attach the multileaf damper to the wall or ceiling slab.

Installation with installation subframe

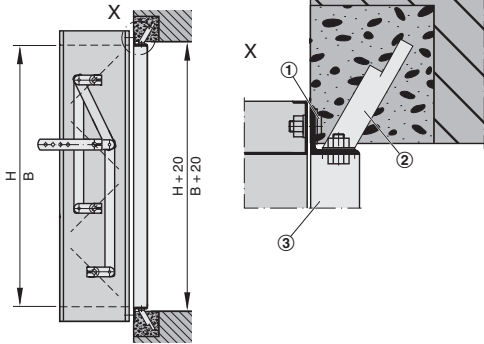


Fig. 5: Wall installation with installation subframe (steel/stainless steel construction)

- ① Threaded stud
- ② Fixing tab
- ③ Installation subframe

Items 1 to 3 are included in the installation subframe supply package

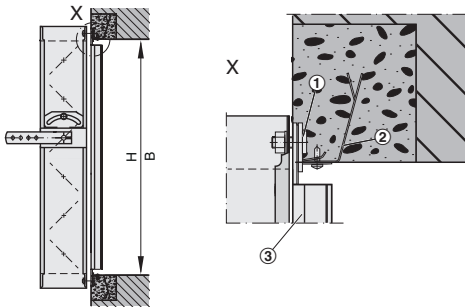


Fig. 6: Wall installation with installation subframe (aluminium construction)

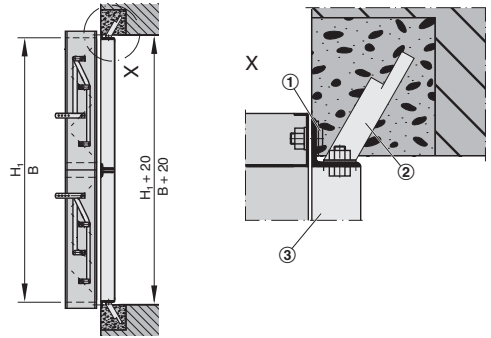


Fig. 7: Wall installation with installation subframe (steel/stainless steel construction), height subdivided

$H_1$  See ↗ 'Dimensions of JZ-\*' on page 10

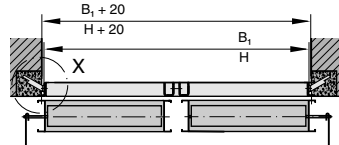


Fig. 8: Wall installation with installation subframe (steel/stainless steel construction), width subdivided

$B_1$  See ↗ 'Dimensions of JZ-\*' on page 10

**Assembling the installation subframe and damper**

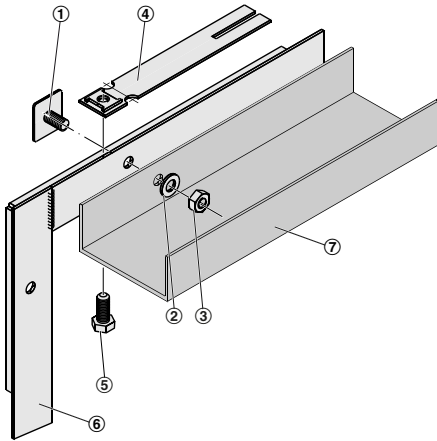


Fig. 9: Installation subframe and damper assembly

- ① Threaded stud
- ② Washer
- ③ Hexagonal nut
- ④ Fixing tab
- ⑤ Hexagon head screw
- ⑥ Installation subframe
- ⑦ Casing of the multileaf damper

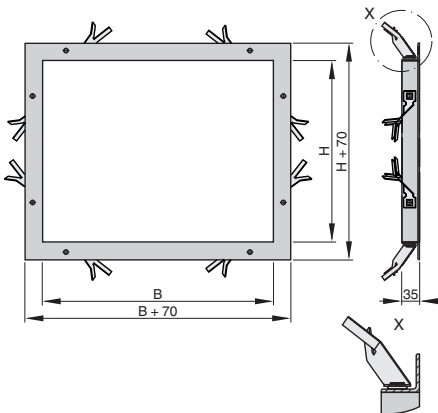


Fig. 10: Bend and spread the fixing tabs before installation

**Connecting the duct**

Use screws to attach the damper to the ducting. The damper casing has flange holes for duct connection.

Seal the joint between the casing flange and the duct in order to avoid pressure loss. Use sealing tape, for example, and clamps or additional screws, if necessary.



The movement of the damper blades must not be obstructed by any attachment.



**CAUTION!**

**Danger of injury when reaching into the multi-leaf damper.**

If only one end is to be ducted on site, the other end must have a cover grille (galvanised steel, mesh aperture ≤ 20 mm) or an external weather louvre.

## Electrical/pneumatic connection

### Actuators provided by others

Multileaf dampers for use in areas with potentially explosive atmospheres must not be fitted or retro-fitted with actuators provided by others.

### Notes on installation according to ATEX

The cables to be used must comply with ATEX. The type of protection for the unit must not be impaired by connecting cables. Independent of the type of protection, use only cables that have been tested and approved according to the code of good practice.

The connections are made in an explosion-proof terminal box that has been certified for the relevant zones.

No loose terminals must be used in the terminal box. Once the cables have been connected, the cable bushings must be tightened firmly in order to ensure IP protection (IP 66).

Unused openings for cable bushings in areas with potentially explosive atmospheres must be plugged with certified dummy plugs.

### Equipotential bonding

The multileaf damper must be connected to the earth bar by a qualified electrician. Equipotential bonding prevents electrostatic ignition hazards.

## Connecting the electric actuator

### Personnel:

- Skilled qualified electrician

Any leads must be designed for the supply voltage for which they will be used. The power rating is given on the actuator rating plate. The length and cross section as well as any contact resistance may increase voltage losses.

The sizing of leads and the selection of lead types must be performed by a skilled qualified electrician.



### DANGER!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

- ▶ Connect the actuator to the explosion-proof terminal box according to the terminal connections indicated on the actuator or in the manufacturer's product documentation.

**Explosion-proof electric actuators**

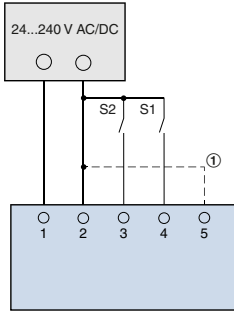


Fig. 11: 2-wire control

- ① Wire link between terminals 2 and 5: Spring return ~3s (only ExMax15-SF)
- S1 open and S2 open: Actuator has stopped (any position)
- S1 closed: Direction of rotation 1
- S1 open, S2 closed: Direction of rotation 2

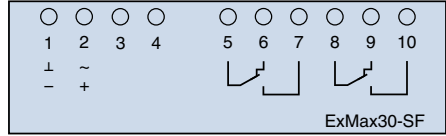


Fig. 13: Terminal connections in terminal box Ex-Max30-SF

- 1 ⊥, -
- 2 ~, +
- 3 Control voltage for direction of rotation 1
- 4 Control voltage for direction of rotation 2
- 5 Common contact
- 6 Mechanical stop 1 < 5°
- 7 Mechanical stop 1 > 5°
- 8 Common contact
- 9 Mechanical stop 2 < 85°
- 10 Mechanical stop 2 > 85°

If both auxiliary switches are used, then the switching voltages must be the same.

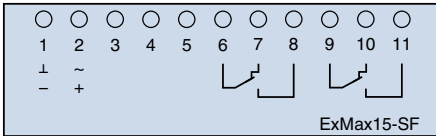


Fig. 12: Terminal connections in terminal box Ex-Max15-SF

- 1 ⊥, -
- 2 ~, +
- 3 Control voltage for direction of rotation 1
- 4 Control voltage for direction of rotation 2
- 5 Input for 2–5 wire link, spring return ~3s
- 6 Common contact
- 7 Mechanical stop 1 < 5°
- 8 Mechanical stop 1 > 5°
- 9 Common contact
- 10 Mechanical stop 2 < 85°
- 11 Mechanical stop 2 > 85°

If both auxiliary switches are used, then the switching voltages must be the same.



**Explosion-proof pneumatic actuators**

**Personnel:**

- Skilled qualified electrician

**Required**

- Control medium: Dry air which is free from dust and oil, or inert gases.
- Supply voltage, depending on the solenoid valve, see rating plate.
- Operating pressure, depending on the actuator, see rating plate.

**⚠ DANGER!**

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

- ▶ Connect the solenoid valve according to the terminal connections indicated on the valve or the manufacturer's product documentation.
- ▶ Connect the tubes according to the tubing diagram.

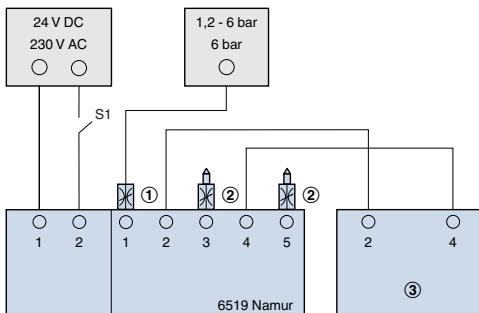


Fig. 14: Pneumatic actuator with solenoid valve

- ① Throttle valve
- ② Flow reducer (noise reduction)
- ③ Double acting or single acting actuator

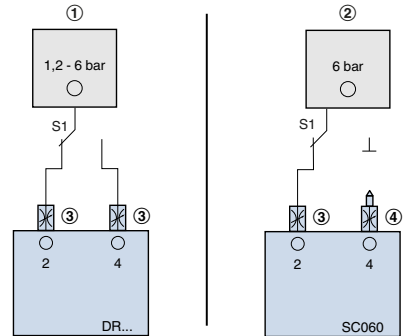


Fig. 15: Pneumatic actuator without solenoid valve

- ① Double acting pneumatic actuator
- ② Single acting pneumatic actuator
- ③ Throttle valve
- ④ Flow reducer (noise reduction)

**Limit switch**

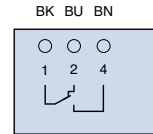


Fig. 16: Connecting cable core identification for limit switch

- 1 Common contact
- 2 NC contact
- 4 NO contact

**Commissioning and maintenance**

**Commissioning**

**Personnel:**

- HVAC technician

- ▶ As part of commissioning of the ventilation system, a functional test of the multileaf damper must be carried out, and it must be checked whether the requirements for use in potentially explosive atmospheres for the relevant zone are met.

**Maintenance**

The multileaf damper and the actuator are maintenance-free with regard to wear but multileaf dampers must still be included in the regular cleaning of the ventilation system.

**Technical data**

Multileaf dampers are manufactured according to the width (B) × height (H) ordered.

Multileaf dampers must be installed according to B × H; turning them is not usually possible, ↻ 'General installation information' on page 4.

**Dimensions of JZ-\***

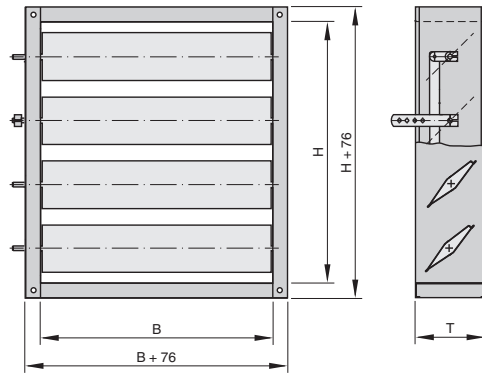


Fig. 17: JZ-\*

T 180 mm for steel/stainless steel construction

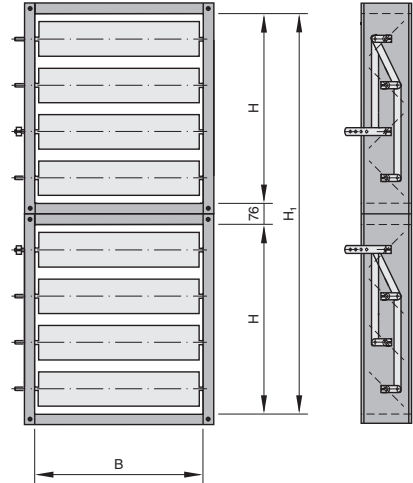


Fig. 18: JZ with height subdivided

$H_1 = 2 H + 76 \text{ mm}$

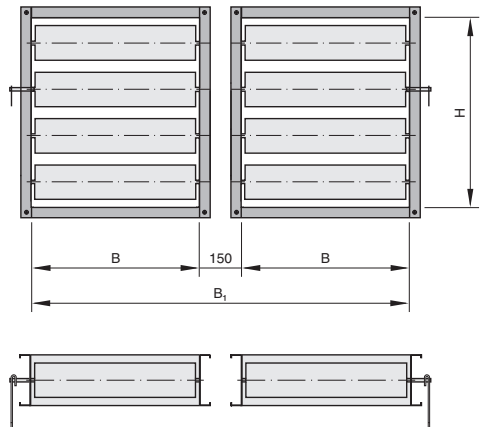


Fig. 19: JZ with width subdivided

$B_1 = 2 B + 150 \text{ mm}$

Attachments	Dimension X [mm]
ZEX1, ZEX60 - ZEX77	200
ZEX3	300

	JZ-S	JZ-P	JZ-S-A2	JZ-P-A2	JZ-LL	JZ-HL	JZ-LL-A2
Steel, galv.	•	•			•	•	
Stainless steel			•	•			•
Aluminium							
Parallel		•		•			
Opposed	•		•		•	•	•
Closed blade air leakage to EN 1751 (class)					3 - 4	1 - 2	3 - 4
Casing air leakage to EN 1751 (class)	C						
Temperature resistance (temperature of the medium)	-20...150 °C				0...100 °C		

For more technical data see the technical leaflet.

