Butterfly fire damper

# FDA-BU

## Description

The fire dampers are manufactured in the following nominal sizes: DN100, DN125, DN160, DN200. The fire dampers are equipped with a thermal fuse mechanism ensuring the damper switch to the safe position in case of reaching an ambient temperature equal to or higher than 72°C. The fire dampers allow using limit switches signalling closed position of the damper blade (1 limit switch) or blades (in case of using 2 limit switches).

The casing is made from galvanised steel sheet; the fire damper blade is made from a silicate cement board.

Version: 001/04/21/MC

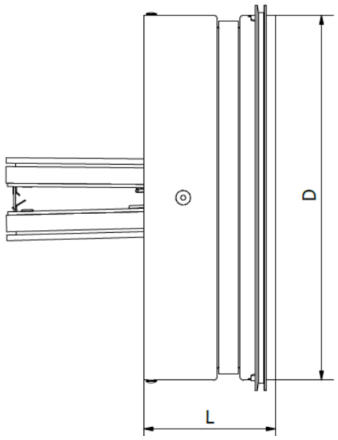
**Available labelling:**
FDA-BU - aaa - bbb - ccc

aaa - nominal size: 100, 125, 160, 200
bbb - fire resistance: EIS120, EIS90, EIS60
ccc - optional accessories:
- No limit switches (standard)
- Z1 - one limit switch (closed position)
- Z2 - two limit switch (closed position)

**Product code example**
Product code: **FDA-BU - 160 - EIS120 - Z2**

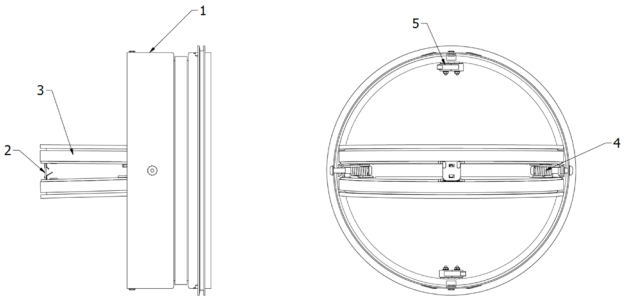
Fire damper
Nominal size
EIS fire resistance rating
Optional accessories

## Dimensions




| Product code | Diameter [mm] | D [mm] | L [mm] | Weight [kg] | Effective area $A_{eff}$ [$m^2$] |
|---|---|---|---|---|---|
| FDA-BU-100 | 100 | 97,5 | 70 | 0,33 | 0,0027 |
| FDA-BU-125 | 125 | 122,5 | 70 | 0,44 | 0,0056 |
| FDA-BU-160 | 160 | 157,5 | 70 | 0,64 | 0,0113 |
| FDA-BU-200 | 200 | 197,5 | 70 | 0,90 | 0,0202 |

## Design




1. casing
2. thermal fuse
3. damper blade
4. torsion spring
5. limit switch

Butterfly fire damper

# FDA-BU

## Tests and certificates

- Fire resistance rating: EIS 120, EIS 90, EIS 60,
- Test method as per EN 1366-2:2015, classification method as per EN 13501-3+A1:2010P,
- Corrosion resistance as per EN 15650,
- EC declaration of conformity (EN 15650).

## Intended use and application

Circular fire dampers used in general ventilation, incorporated in the system at the point of passage through the building partition, are intended to reproduce the characteristics and protective functions of the partition. The fire damper blade remains open under normal operating conditions – it is closed automatically in the event of a fire.

| *Partition type* | *Minimum partition thickness [mm]* |
|---|---|
| *concrete ceiling* | *150* |
| *concrete wall* | *130* |
| *solid brick wall* | *130* |
| *cellular concrete block wall* | *130* |
| *plasterboard wall supported on a steel structure* | *130* |

Possible installation of fire dampers with any position of the rotation axis.

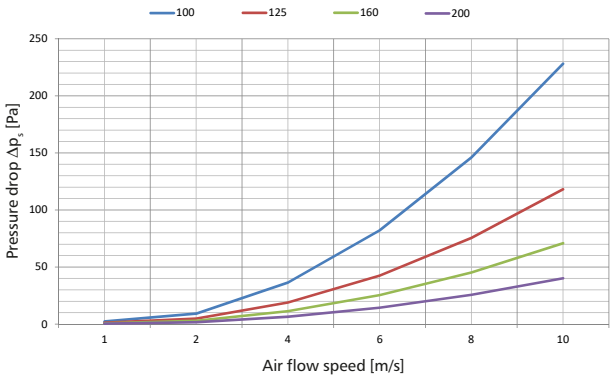
All necessary information is contained in the operation and maintenance manual.

## Characteristics

The FDA-BU circular fire dampers are designed for use in general ventilation systems as a protection to prevent smoke and fire from spreading between separated adjacent fire zones.
The fire dampers are classified according to procedures included in PN-EN 13501-3+A1:2010P standard (Fire classification of construction products and building elements). The fire resistance was tested according to PN-EN 1366-2:2015 standard (Fire resistance tests for service installations - Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010 standard.
The FDA-BU fire dampers can be used in vertical building partitions providing fire resistance up to EI 120 class (ve i↔o )S class (depending on building partition resistance class) and in horizontal building partitions providing fire resistance up to EI 90 class (ho i↔o )S class (depending on building partition resistance class).

## Technical specifications

Pressure losses for air density ρ=1,21 kg/m³




Coefficient of local pressure loss ζ

| *Diameter ØD [mm]* | *Local pressure loss ζ* |
|---|---|
| Ø100 | 3,773 |
| Ø125 | 1,954 |
| Ø160 | 1,171 |
| Ø200 | 0,664 |

TECHNICAL DOCUMENTATION

# Round Shut-off Fire Dampers FDA-BU / FDA-BU-E / FDA-BU-KW / FDA- BU-KN

Wersja / ver. 001/04/21/MC

# FDA-BU

# FDA-BU

CE

2434-CPR-0198

ALNOR Systemy Wentylacji Sp. z o.o.
00-719 Warszawa, ul. Zwierzyniecka 8b
Zakład produkcyjny / place of production:
05-552 Wola Mrokowska,
Aleja Krakowska 10, POLAND

22

2434-CPR-0198

EN 15650:2010
Fire damper
Model / type: FDA-BU

| Lp.<br>No. | Zasadnicze charakterystyki wyrobu | Essential characteristics of the product | Poziomy i/lub klasy mandatowe<br>Mandated levels and/or classes | |
|---|---|---|---|---|
| 1 | Nominalne warunki działania/ skuteczność | Nominal activation conditions/sensitivity | EI 120 (ve i↔o) S (300 Pa) | EI 90 (ve ho i↔o) S (300 Pa) |
| 2 | Nośność czujnika | Sensing element load bearing capacity | - | - |
| 3 | Temperatura zadziałania czujnika | Sensing element response temperature | ≤72˚ | ≤72˚ |
| | Opóźnienie zadziałania (czas zadziałania) | Response delay (response time) | - | - |
| 4 | Czas zamknięcia | Closure time | ≤2 min | ≤2 min |
| | Niezawodność działania | Operational reliability | | |
| 5 | Cykle zadziałania | Cycling | 0 cycles | 0 cycles |
| | Odporność ogniowa | Fire resistance | | |
| 6 | Szczelność ogniowa | Integrity | E120 | E90 |
| 7 | Izolacyjność ogniowa | Insulation | EI120 | EI90 |
| 8 | Dymoszczelność | Smoke leakage | EIS120 | EIS90 |
| 9 | Stabilność mechaniczna (w zakresie E) | Mechanical stability (under E) | E120 | E90 |
| 10 | Zachowanie przekroju poprzecznego (w zakresie E) | Maintenance of the cross section (under E) | E120 | E90 |
| | Trwałość w czasie odpowiedzi | Durability of response delay | | |
| 11 | Reakcja czujnika na temperature oraz nośność | Sensing element response to temperature and load bearing capacity | ≤72˚ | ≤72˚ |
| | Trwałość niezawodności działania | Durability of operational reliability | | |
| 12 | Badania cyklu otwarcia i zamknięcia | Open and closing cycle tests | 0 cycles | 0 cycles |

# FDA-BU

| EN 15650:2010<br>Fire damper<br>Model / type: FDA-BU-E / FDA-BU-KW / FDA-BU-KN | | | | |
|---|---|---|---|---|
| Lp.<br>No. | Zasadnicze charakterystyki wyrobu | Essential characteristics of the product | Poziomy i/lub klasy mandatowe<br>Mandated levels and/or classes | |
| | | | FDA-BU-E | FDA-BU-KW / FDA-BU-KN |
| 1 | Nominalne warunki działania/ skuteczność | Nominal activation conditions/sensitivity | EI 60 (ve i↔o) S (300 Pa) | EI 120 (ve ho i↔o) S (300 Pa) |
| 2 | Nośność czujnika | Sensing element load bearing capacity | - | - |
| 3 | Temperatura zadziałania czujnika | Sensing element response temperature | ≤72˚ | ≤72˚ |
| | Opóźnienie zadziałania (czas zadziałania) | Response delay (response time) | | |
| 4 | Czas zamknięcia | Closure time | ≤2 min | ≤2 min |
| | Niezawodność działania | Operational reliability | | |
| 5 | Cykle zadziałania | Cycling | 0 cycles | 0 cycles |
| | Odporność ogniowa | Fire resistance | | |
| 6 | Szczelność ogniowa | Integrity | E60 | E120 |
| 7 | Izolacyjność ogniowa | Insulation | EI60 | EI120 |
| 8 | Dymoszczelność | Smoke leakage | EIS60 | EIS120 |
| 9 | Stabilność mechaniczna (w zakresie E) | Mechanical stability (under E) | E60 | E120 |
| 10 | Zachowanie przekroju poprzecznego (w zakresie E) | Maintenance of the cross section (under E) | E60 | E120 |
| | Trwałość w czasie odpowiedzi | Durability of response delay | | |
| 11 | Reakcja czujnika na temperature oraz nośność | Sensing element response to temperature and load bearing capacity | ≤72˚ | ≤72˚ |
| | Trwałość niezawodności działania | Durability of operational reliability | | |
| 12 | Badania cyklu otwarcia i zamknięcia | Open and closing cycle tests | 0 cycles | 0 cycles |

# FDA-BU



## *Subject of the documentation*

The subject of this documentation are round butterfly shut-off fire dampers FDA-BU, FDA-BU-E, FDA-BU-KW and FDA-BU-KN series, used in general ventilation systems as protection against penetration of smoke and fire between separated adjacent fire zones.

## *General characteristics*

The shut-off fire dampers can be used for passage of ventilation systems through vertical and horizontal building partitions, providing fire tightness class E, fire insulation class I, smoke tightness class S of:

- FDA-BU EI 120 (ve i↔o) S (300 Pa) and EI 90 (ve ho i↔o) S (300 Pa)
- FDA-BU-E EI 60 (ve i↔o) S (300 Pa)
- FDA-BU-KW EI 120 (ve ho i↔o) S (300 Pa)
- FDA-BU-KN EI 120 (ve ho i↔o) S (300 Pa)

The fire dampers are manufactured in the following nominal sizes: DN100, DN125, DN160, DN200. The fire dampers are equipped with a thermal release mechanism. They are manufactured at ALNOR SYSTEMY WENTYLACJI Sp. z o.o. manufacturing plant in Wola Mrokowska, Aleja Krakowska 10, Poland.

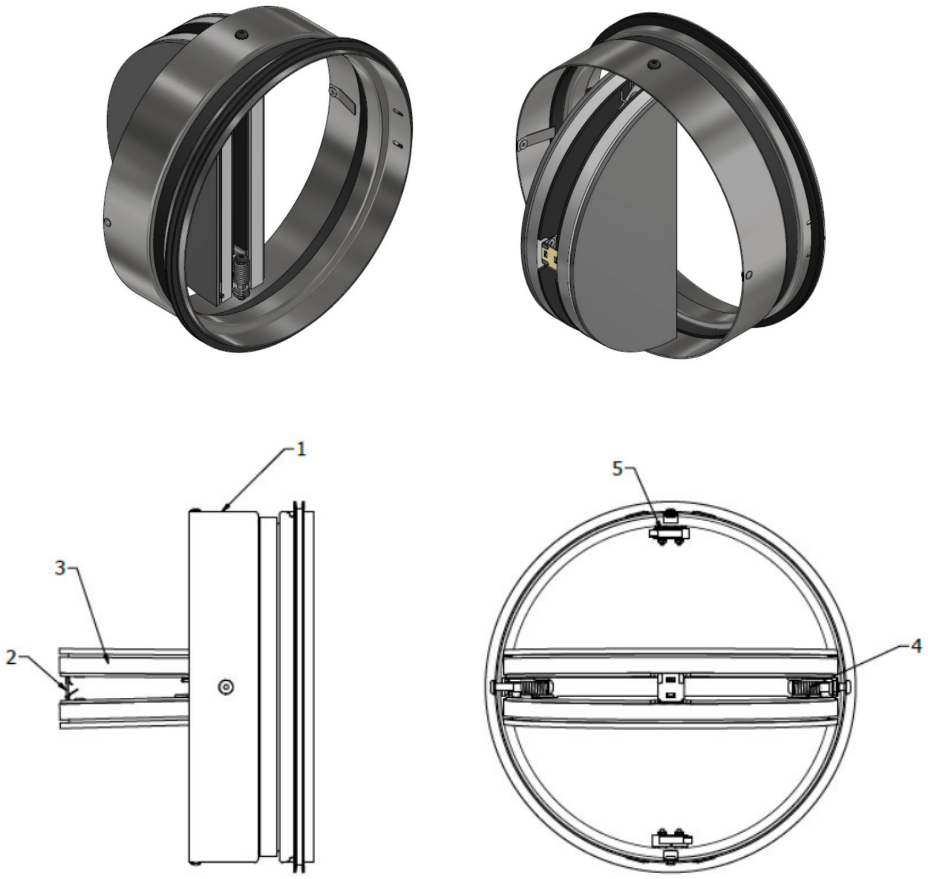
The fire dampers are classified according to procedures included in PN-EN 13501-3+A1:2010P standard (fire classification of construction products and building elements). The fire resistance was tested according to PN-EN 1366-2:2015 standard (fire resistance tests for service systems — Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010 standard.

## *Design of the fire dampers*

The dampers with round cross section.
The round body is made of DX51D + Z275 galvanised steel plate, 0.9 [mm] thick in all diameters. The body is a butt welded structure. The body length in all diameters is 70 [mm] (dimension tolerance ± 2 [mm]). Movable partitions are made of a fire-resistant material, covered on both sides with a 1.8 [mm] swelling gasket for FDA-BU, FDA-BU-KW and FDA-BU-KN. In order to improve the adhesion of the blade in the closed position, a polyurethane foam gasket is bonded on one side. Profiled holders of the fusible release are riveted to the damper blades and made of sheet metal thickness 0.4 [mm]. A fusible release is snap-mounted onto the handles. Stable positioning of the damper in a ventilation duct is ensured by the EPDM rubber gasket fitted around the perimeter of the damper. The blades are mounted inside the housing on hinges made of 1.5 [mm] thick steel. The closing mechanism consists of 2 torsion springs for the DN160 and DN200 dampers or 1 for the DN100 and DN125 ones.

The damper is closed automatically as a result of temperature increase to of about 72°C by breaking the fusible release. The released partition closes immediately – special care must be taken during maintenance.

**Figures 1, 2 and 3 show the construction of the dampers.**




1 - housing; 2 - fusible release; 3 - cut-off blade;
4 - torsion spring; 5 - limit switch

*Fig. 1. FDA-BU, fire damper with thermal fuse mechanism.*

*Rys. 2. FDA-BU-E, fire damper with thermal fuse mechanism.*

# FDA-BU

*Rys. 3. FDA-BU-KW, fire damper with thermal fuse mechanism and air valce.*

The FDA-BU-KN / FDA-BU-KW damper differs in the type of valve.

FDA-BU-KW - butterfly shut-off damper in a set with an exhaust valve
FDA-BU-KN - butterfly shut-off damper in a set with a supply valve

## *Dimensional list of the FDA-BU fire dampers*

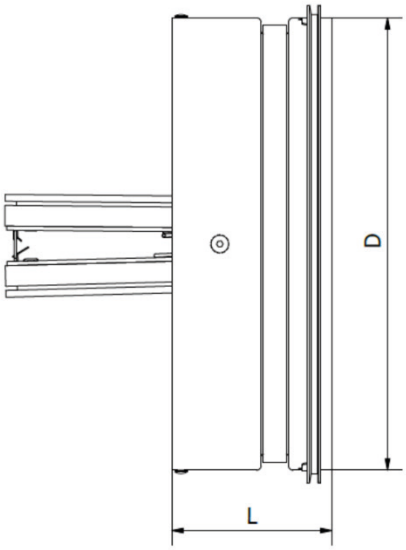



*Fig. 4. FDA-BU damper dimensions*

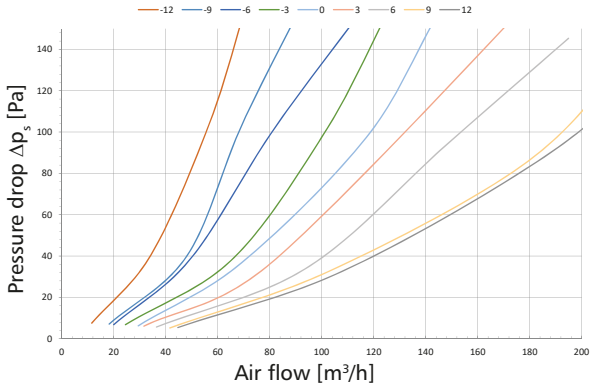
| *Fire damper model* | *DN [mm]* | *D [mm]* | *L [mm]* | *Weight [kg]* | *Effect area $A_{eff}$ [$m^2$]* |
|---|---|---|---|---|---|
| FDA-BU-100<br>FDA-BU-E-100 | 100 | 97,5 | 70 | 0,33 | 0,0027 |
| FDA-BU-125<br>FDA-BU-E-125 | 125 | 122,5 | 70 | 0,44 | 0,0056 |
| FDA-BU-160<br>FDA-BU-E-160 | 160 | 157,5 | 70 | 0,64 | 0,0113 |
| FDA-BU-200<br>FDA-BU-E-200 | 200 | 197,5 | 70 | 0,90 | 0,0202 |

*Table 1. FDA-BU damper dimensions*

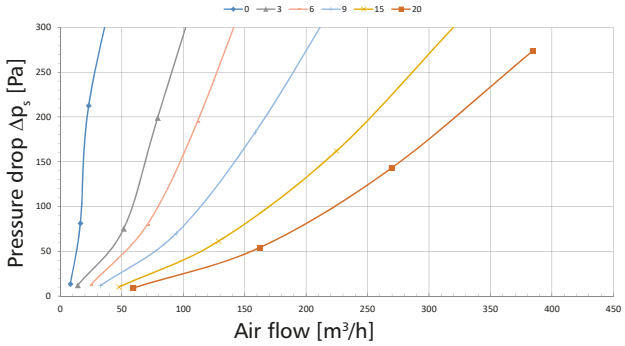
# FDA-BU

## *Specification of hydraulic parameters depending on the position of the FDA-BU damper*

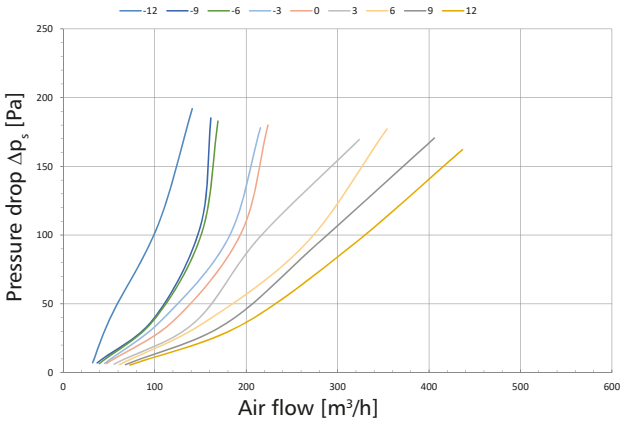
### Diagram FDA-BU-KW-125 - exhaust



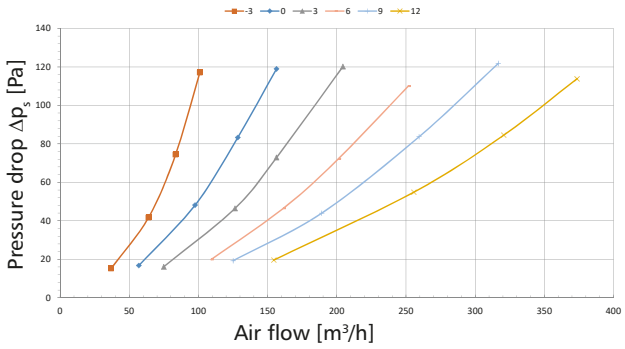

### Diagram FDA-BU-KN-125 - supply



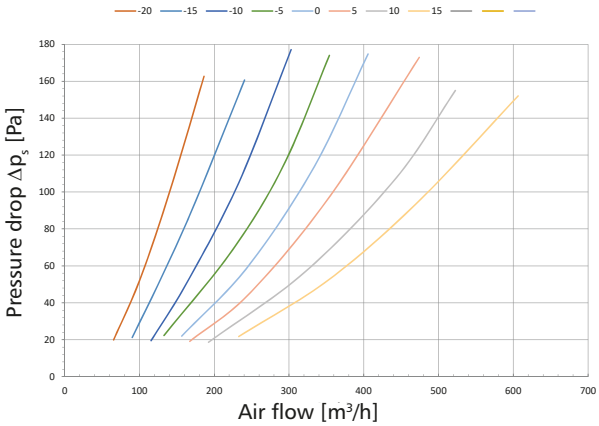

### Diagram FDA-BU-KW-160 - exhaust



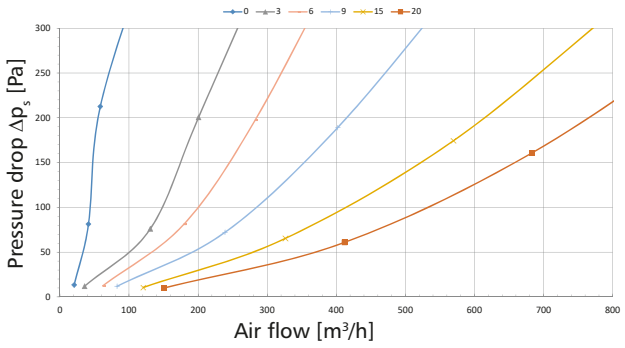

### Diagram FDA-BU-KN-160 - supply




### Diagram FDA-BU-KW-200 - exhaust

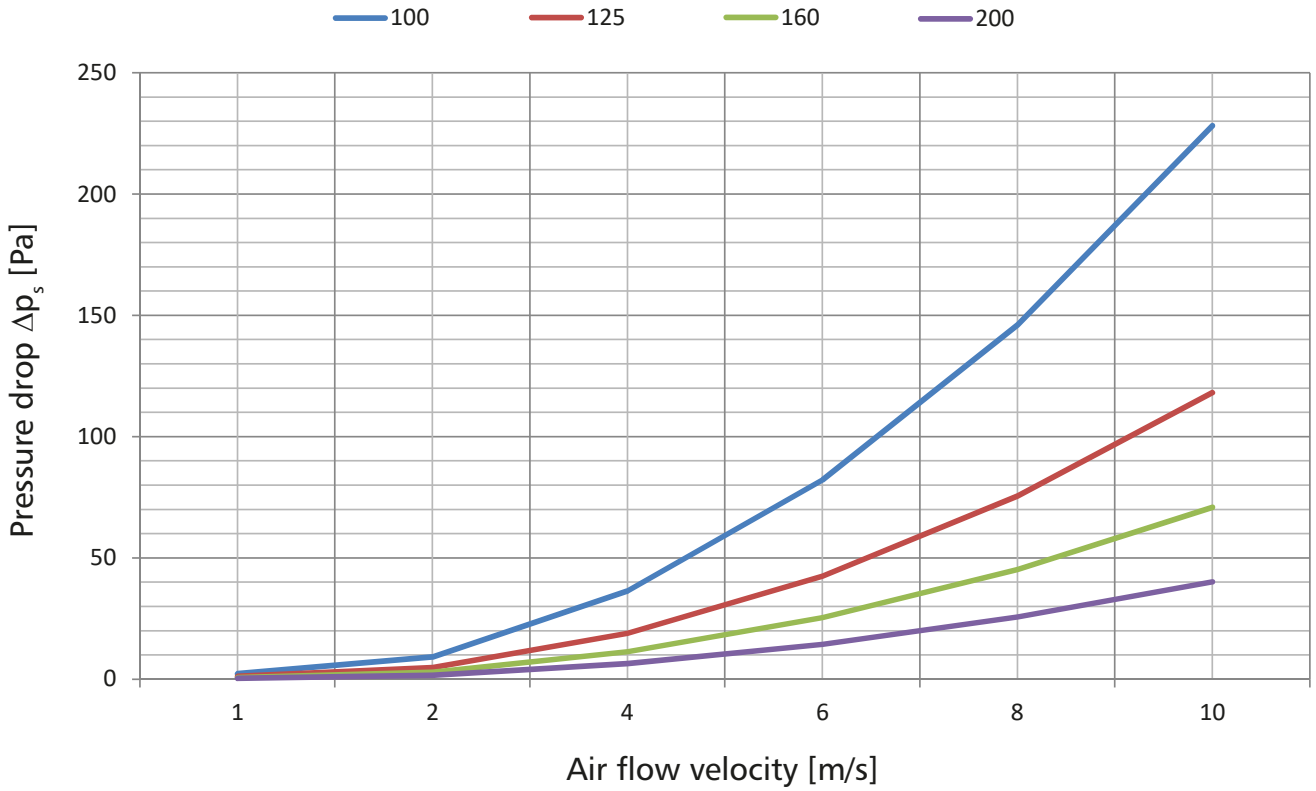



### Diagram FDA-BU-KN-200 - supply



# FDA-BU

## *Pressure drops for air density ρ=1.21 kg/m³*




## *Local loss factor ζ*

| Diameter ØD | Local loss factor ζ |
|---|---|
| Ø100 | 3.773 |
| Ø125 | 1.954 |
| Ø160 | 1.171 |
| Ø200 | 0.664 |

# FDA-BU

## *Limit switch for use with the shut-off FDA-BU, FDA-BU-E, FDA-BU-KW and FDA-BU-KN fire dampers*

The fire dampers can be fitted with one or two limit switches to indicate the closed position of one or two damper blades.

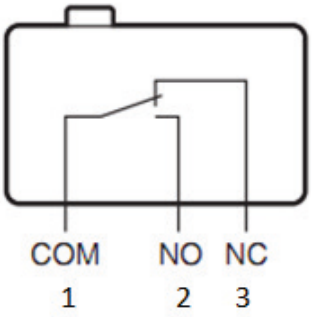
The following damper designations apply:

**FDA-BU-aaa-bbb-ccc**
**FDA-BU-E-aaa-bbb-ccc**
**FDA-BU-KW-aaa-bbb-ccc**
**FDA-BU-KN-aaa-bbb-ccc**

aaa – nominal size: 100, 125, 160, 200;
bbb – fire resistance: EIS120, EIS90, EIS60
ccc – optional accessories:
- no limit switches (standard);
- Z1 – one limit switch (closed position);
- Z2 – two limit switches (closed position);

| Limit switch | |
|---|---|
| Length and cross section of the control cable | 1m / 3x0.5 mm$^2$ |
| Ingress protection | IP40 |
| Contact configuration | SPDT |
| AC contact making capacity | 5A/250 VAC |

**Electrical connection diagram**




1, 2, 3 - designation of conductors in the signalling cabl

*Fig. 5. Wiring connection diagram*

## *Intended use and scope of application*

The round fire dampers are designed for installation in general ventilation systems. When integrated into fire partitions, they provide equivalent protective performance and features as the partitions. The fire damper blade remains open under normal operating conditions – it is closed automatically in the event of a fire.

# FDA-BU

The fire dampers can be installed in the following partitions, according to table 2.

| *Type of partition* | *Minimum partition thickness [mm]* | | |
|---|---|---|---|
| | *FDA-BU* | *FDA-BU-E* | *FDA-BU-KW FDA-BU-KN* |
| Concrete floor | 150 | - | 150 |
| Concrete wall | 130 | 100 | 130 |
| Solid brick wall | 130 | 100 | 130 |
| Cellular concrete block wall | 130 | 100 | 130 |
| Plasterboard wall on steel framing | 130 | 100 | 130 |

Table 2. Permitted types of building partitions.

Installation methods of the dampers in partitions are shown in figures 11-28.

**Possible damper installation options**.

It is allowed to install the dampers in a partition in any position of the axis of rotation from 0° to 360°, and in any direction of airflow through the dampers. The damper has fire resistance on both sides (i↔o) as shown in the figures below.


*Fig. 6. FDA-BU, fire damper. - blade positions allowed.*

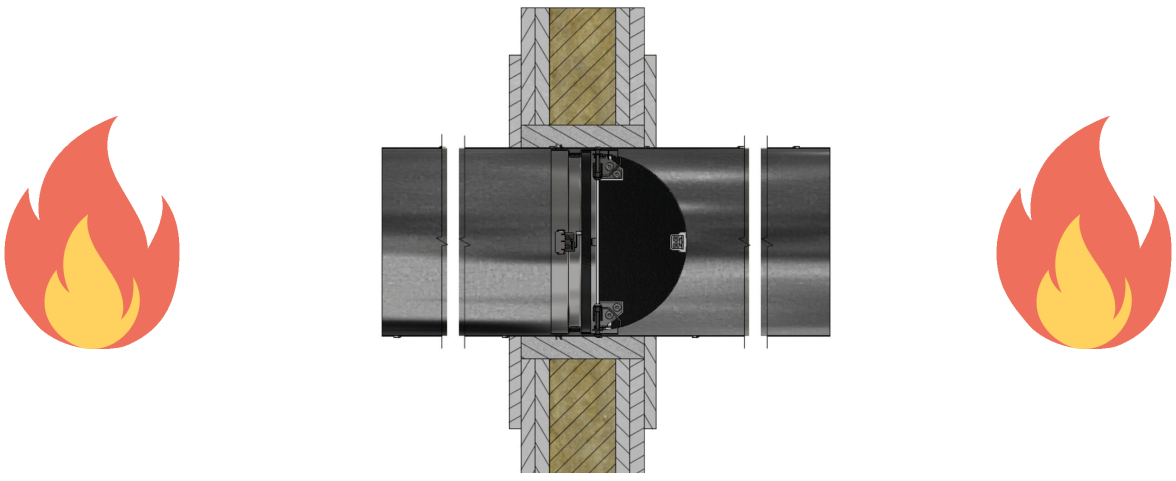


*Fig. 7. FDA-BU, fire damper. - sides of the permitted fire action.*

# FDA-BU



Each time before installing the damper, inspect it visually and set the damper blades in the open position.

The dampers should be used in ventilation systems, where the maximum velocity of air flowing through the damper does not exceed 12 m/s. The air flowing should be free of particles, abrasives, chemicals and adhesive particles.

**Opening and closing the blades in the FDA-BU/ FDA-BU-E/ FDA-BU-KW/ FDA-BU-KN damper:**
The blades can only be opened manually. To open the damper, do the following:

step 1 - press the blade opening stops
step 2 - manually push the blade wings from the opposite side
step 3 - after opening, lock the damper in the open position by hooking the fuse element with a handle on the other blade.

Step 1.

*Fig. 8. FDA-BU, fire damper. - location of the damper opening stops.*

Step 2.

*Fig. 9. FDA-BU, fire damper. - direction of force application to open the blade.*

Step 3.

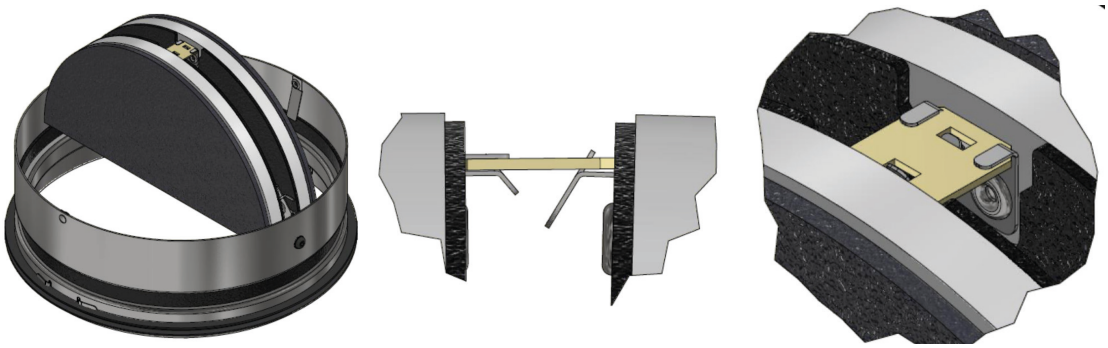


*Fig. 10. FDA-BU, fire damper. - thermal release interlock mechanism.*

UWAGA

Use extreme caution when manually opening and closing the damper. Unlocked fusible release or improperly hooked locking device results in immediate damper closure. There is a risk of trapping fingers.

The FDA-BU, FDA-BU-E, FDA-BU-KW, FDA-BU-KN shut-off dampers should be installed with the following minimum distances:

- 200 mm between the dampers installed in parallel ventilation systems;
- 75 mm between the shut-off damper and the building partition (wall or ceiling).

**Installation in a concrete, cellular concrete block or solid brick wall**

Installation of dampers in a concrete, cellular concrete block or solid brick wall should be done according to figures 11-17. The minimum thickness of the partition is 130 mm. The following guidelines should be noted each time:

- the dampers should be installed in a 0.5 mm thick duct set in the previously prepared openings with dimensions larger by 50 mm than the nominal dimension of the installed fire dampers;
- the sealing of the duct, the building partition (wall) must be made of fire resistant materials (e.g. concrete, mortar) and the joint must be tight, without any gaps, etc. When installing the duct, make sure that it is not deformed so that it retains its nominal size at each point;
- plan the damper installation in such a way, that the fire-protection blade of the damper, inserted into the duct after closing, be located as close to the wall symmetry axis as possible;
- the direction of installation of the fire damper is not important;
- the position of the fire damper blade axis of rotation is optional in the range of 0˚-360˚;
- special care should be taken not to deform the fire dampers duct and to ensure correct operation, both, before and after installation of the dampers;
- after the duct has been installed, apply 12.5 mm thick plasterboard on both sides of the partition wall; the cover should be fixed to the foundation using the appropriate fasteners/screws/anchors for concrete.

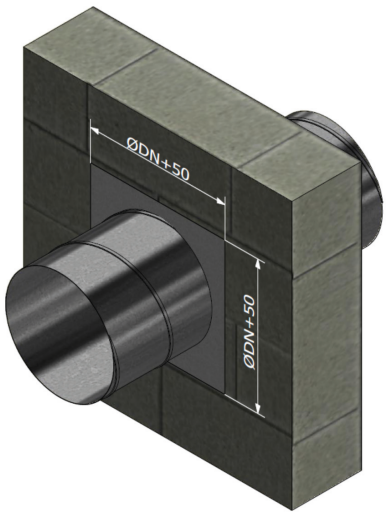



*Fig. 11. FDA-BU / FDA-BU-E, fire damper - dimensions of the sealing of the duct-partition system.*

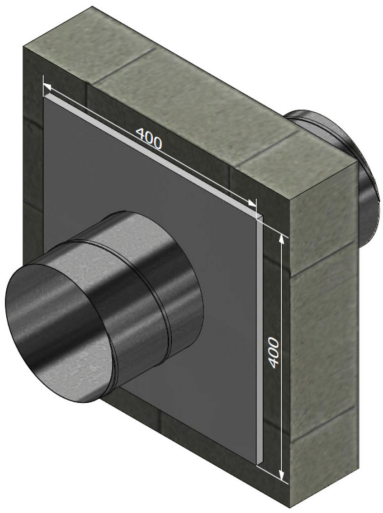
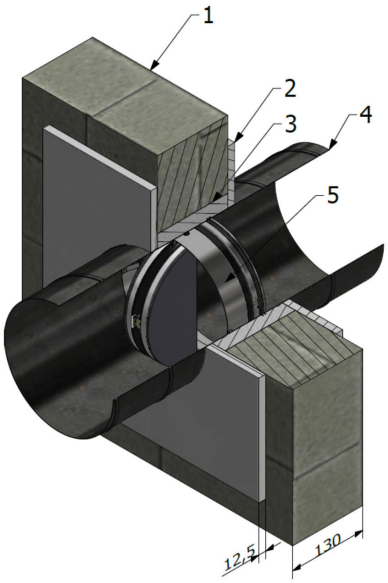
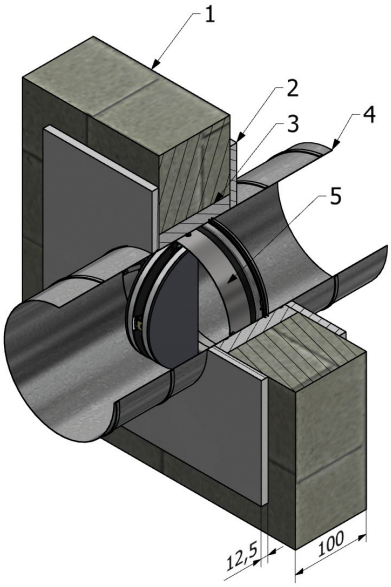



*Fig. 12 FDA-BU / FDA-BU-E, fire damper. - dimensions of plasterboard 12.5 mm.*




1 - Concrete, cellular concrete block or solid brick wall;
2 - 12.5 mm plasterboard cover; 3 - Concrete, mortar or fireproof gypsum
4 - Steel ventilation duct with a wall thickness of 0.5 mm; 5 - FDA-BU damper.

*Fig. 13. FDA-BU, fire damper - FDA-BU damper installation in a wall.*

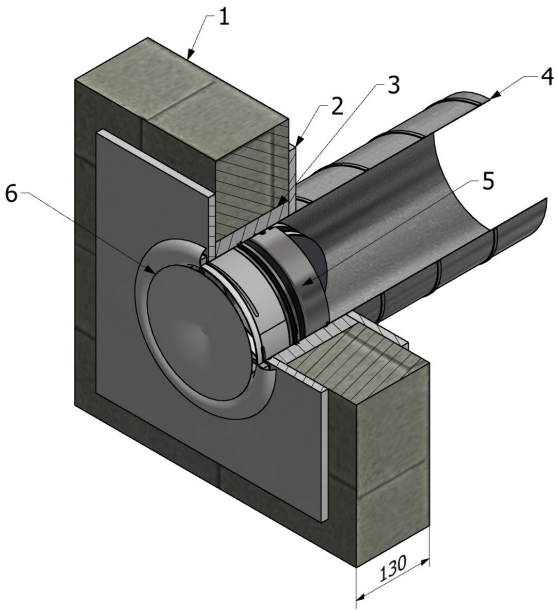



1 - Concrete, cellular concrete block or solid brick wall;
2 - 12.5 mm plasterboard cover; 3 - Concrete, mortar or fireproof gypsum
4 - Steel ventilation duct with a wall thickness of 0.5 mm; 5 - FDA-BU-E damper.

*Fig. 14. FDA-BU-E, fire damper - FDA-BU-E damper installation in a wall.*


*Fig. 15. FDA-BU-KW / FDA-BU-KN, fire damper - dimensions of the sealing of the duct-partition system.*


*Fig. 16. FDA-BU-KW / FDA-BU-KN, fire damper - dimensions of plasterboard 12.5 mm.*




1 - Concrete, cellular concrete block or solid brick wall;
2 - 12.5 mm plasterboard cover; 3 - Concrete, mortar or fireproof gypsum
4 - Steel ventilation duct with a wall thickness of 0.5 mm; 5 - FDA-BU-KW or FDA-BU-KN damper;
6 – exhaust or supply valve with a frame.

*Fig. 17. FDA-BU-KW / FDA-BU-KN, fire damper - installation shut-off damper in a wall*

**NOTE!**
FDA-BU-KW / FDA-BU-KN fire damper, should be mounted with the blades pointing towards the inside of the duct.

**Installation in a structural floor**

Installation of dampers in a structural floor should be done according to figures 18-21. The minimum thickness of the horizontal floor partition is 150 mm. The following guidelines should be noted each time:

- the dampers should be installed in the embedded ventilation ducts, previously set in the ceiling opening with a dimension 50 mm greater than the nominal diameter of the duct;
- the sealing of the duct-floor joint must be made with fire resistant materials (e.g. concrete, mortar) and it must be tight, without any gaps, etc. When installing the duct, care must be taken not to deform it so that it retains its nominal size at each point;
- plan the damper installation in the duct in such a way that the fire-protection blade of the damper in its closed position be located as close to the floor symmetry axis as possible;
- the direction of installation of the fire damper is not important;
- special care should be taken not to deform the fire dampers duct and to ensure correct operation, both, before and after installation of the dampers;

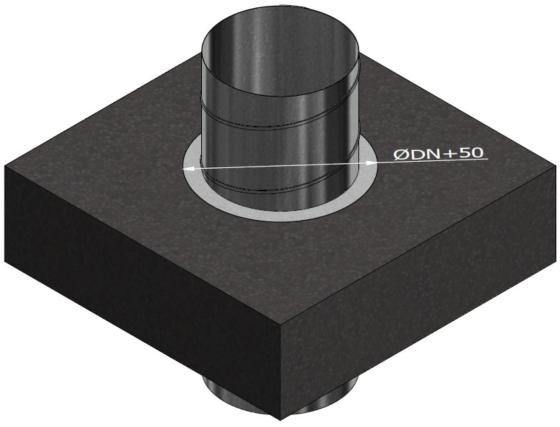
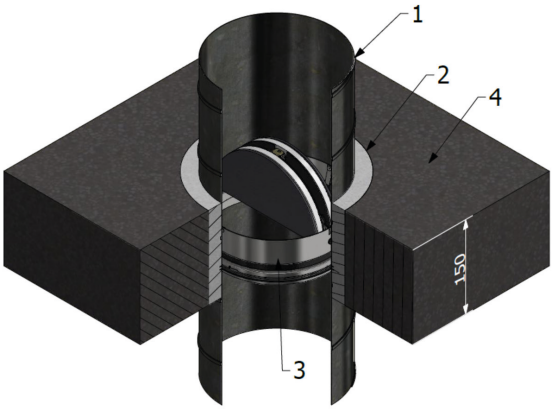



*Fig. 18. FDA-BU, fire damper - dimensions of the sealing of the duct-partition system.*




1 - Steel ventilation duct; 2 - Concrete, mortar or fireproof gypsum;
3 - FDA-BU fire damper; 4 - Concrete floor with a density of 2200±200kg/m³ or above.

*Fig. 19. Installation of the FDA-BU damper in the floor.*

# FDA-BU

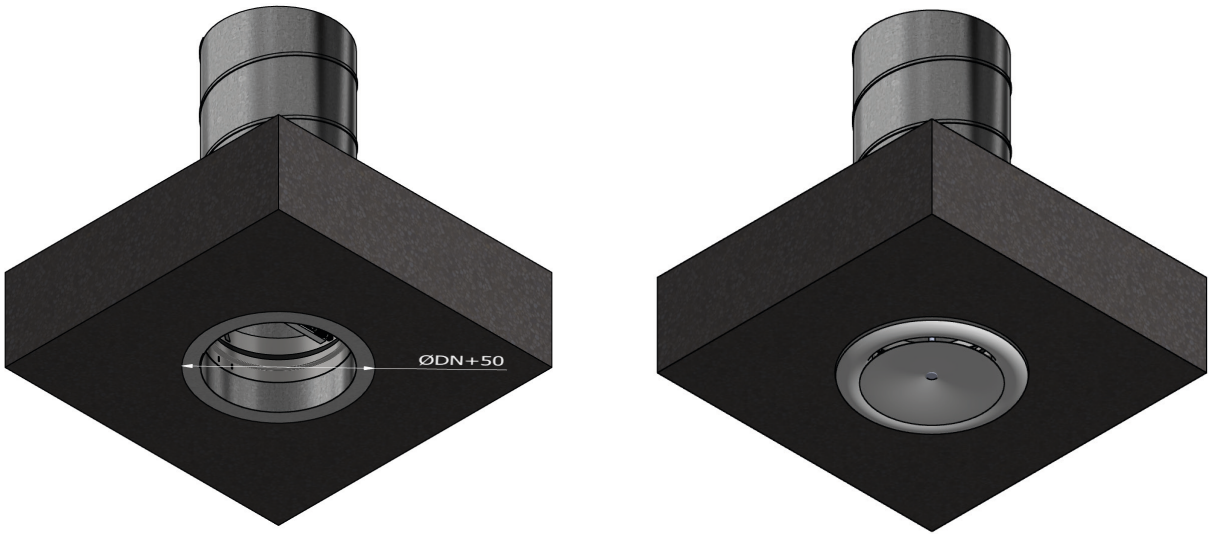
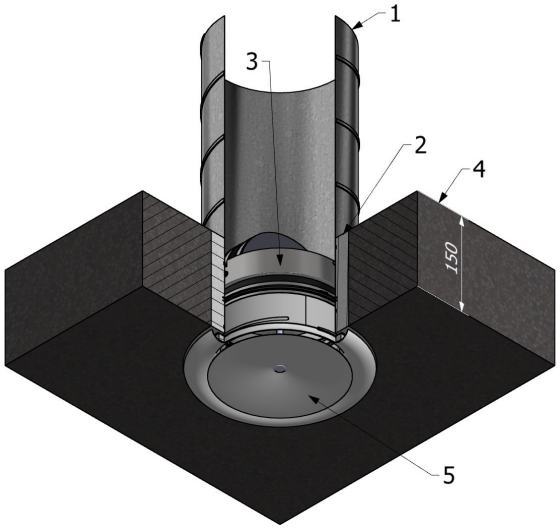



*Fig. 20. FDA-BU-KW / FDA-BU-KN, fire damper - dimensions of the sealing of the duct-partition system.*




1 - Steel ventilation duct; 2 - Concrete, mortar or fireproof gypsum;
3 - FDA-BU-KW or FDA-BU-KN fire damper; 4 - Concrete floor with a density of 2200±200kg/m$^3$ or above.
5 – Exhaust or supply valve with a frame.

*Fig. 21. FDA-BU-KW / FDA-BU-KN, fire damper - installation shut-off damper in a floor.*

**NOTE!**
FDA-BU-KW / FDA-BU-KN fire damper, should be mounted with the blades pointing towards the inside of the duct.

**Installation in a plasterboard wall**

Installation of dampers in the plasterboard wall should be done according to the figures 22-28. The minimum thickness of the partition is 130 mm. The following guidelines should be noted each time:

- the dampers should be installed in a 0.5 mm thick duct set in the previously prepared openings with dimensions larger by 50 mm than the nominal dimension of the installed fire dampers;
- the sealing of the duct, the building partition (wall) must be made of fire resistant materials (e.g. concrete, mortar) and the joint must be tight, without any gaps, etc. When installing the duct, make sure that it is not deformed so that it retains its nominal size at each point;
- plan the damper installation in such a way, that the fire-protection blade of the damper, inserted into the duct after closing, be located as close to the wall symmetry axis as possible;
- the direction of installation of the fire damper is not important;
- the position of the fire damper blade axis of rotation is optional in the range of 0˚-360˚;
- special care should be taken not to deform the fire dampers duct and to ensure correct operation, both, before and after installation of the dampers;
- after the duct has been installed, apply 12.5 mm thick plasterboard on both sides of the partition wall; the cover should be fixed to the foundation using the appropriate fasteners/screws/anchors for concrete.

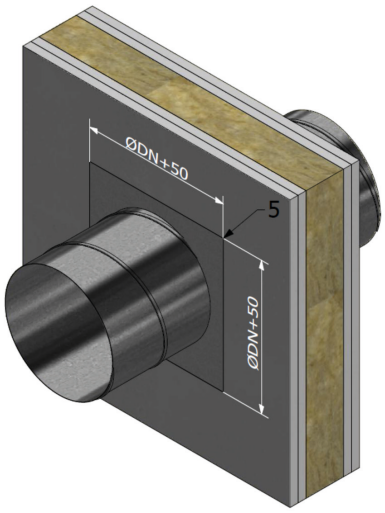



*Fig. 22. FDA-BU, fire damper. - dimensions of the sealing of the duct-partition system.*

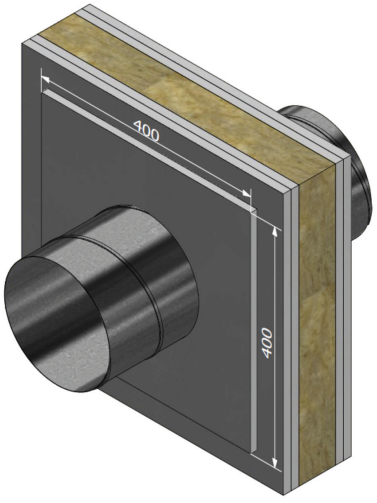
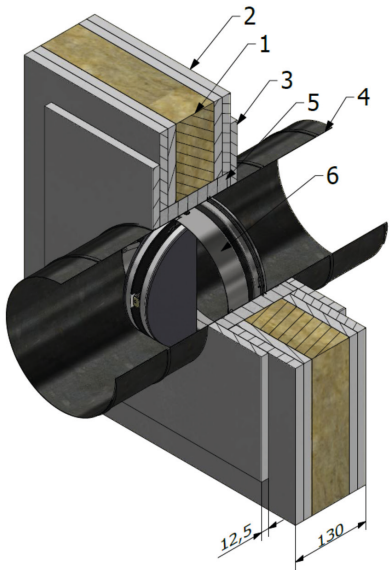
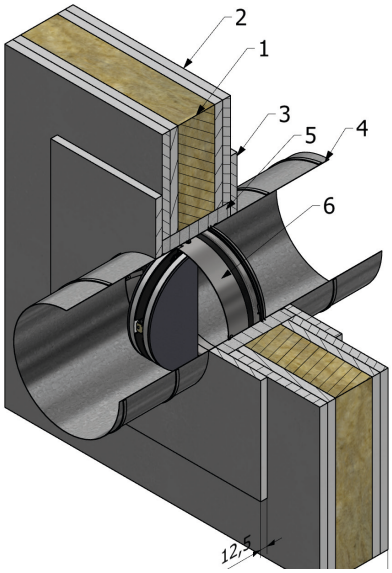



*Fig. 23. FDA-BU, fire damper. - dimensions of 12.5mm plasterboard cover.*




1 - Mineral wool, density >100kg/$^3$; 2 - fire-resistant plasterboard, thickness 15 mm (2x2 pcs.);
3 - fire-resistant plasterboard cover, thickness 12.5 mm (2 pcs)
4 - steel ventilation duct, wall thickness 0.5 mm; 5 - Concrete, mortar or fireproof gypsum;
6 - FDA-BU fire damper

*Fig. 24. Installation of the FDA-BU damper in a plasterboard wall.*

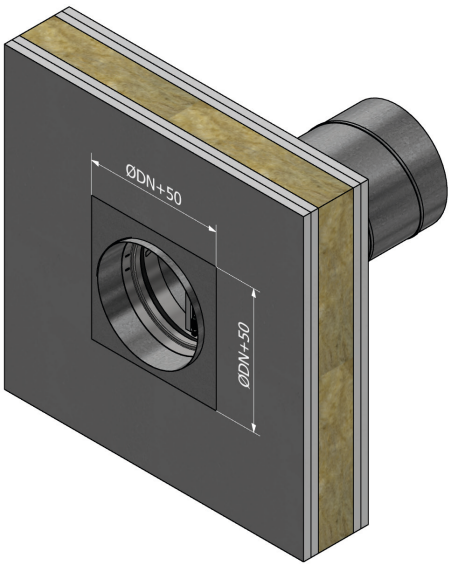



1 - Mineral wool, density >100kg/$^3$; 2 - fire-resistant plasterboard, thickness 15 mm (2x2 pcs.);
3 - fire-resistant plasterboard cover, thickness 12.5 mm (2 pcs)
4 - steel ventilation duct, wall thickness 0.5 mm; 5 - Concrete, mortar or fireproof gypsum;
6 - FDA-BU-E fire damper

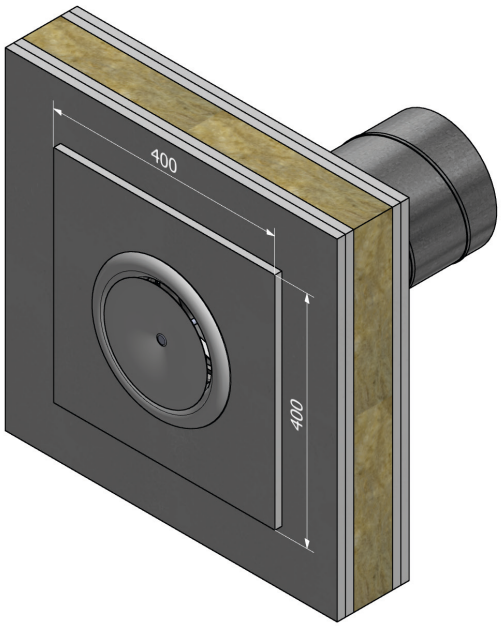
*Fig. 25. Installation of the FDA-BU damper in a plasterboard wall.*

# FDA-BU

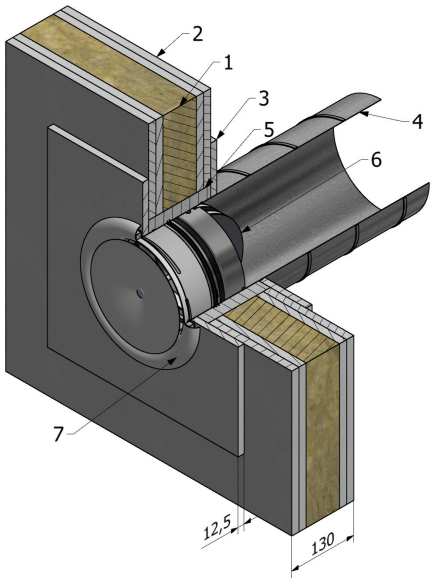





*Rys. 26. FDA-BU-KW / FDA-BU-KN  fire damper - dimensions of the sealing of the duct-partition system.*




*Rys. 27. FDA-BU-KW / FDA-BU-KN fire damper - dimensions of 12.5mm plasterboard cover.*




1 - Mineral wool, density >100kg/$^3$; 2 - Fire-resistant plasterboard, thickness 15 mm (2x2 pcs.);
3 - Fire-resistant plasterboard cover, thickness 12.5 mm (2 pcs)
4 - Steel ventilation duct, wall thickness 0.5 mm; 5 - Concrete, mortar or fireproof gypsum;
6 - FDA-BU-KW / FDA-BU-KN fire damper; 7. Exhaust or supply valve withe frame

*Fig. 28. Installation of the FDA-BU-KW / FDA-BU-KN damper in a plasterboard wall.*

## *Storage and transport conditions*

Each FDA-BU damper, following the marking and testing, depending on the size of the production batch and the planned method of transport, is initially secured with stretch film and then, depending on the size, placed in packaging (carton, pallet, etc.).
FDA-BU-KN / FDA-BU-KW dampers are secured with stretch film with the valve.
Due to the function of the fire damper, it must be protected entirely against the effects of weather and mechanical damage (during transport and installation). The place of storage shall be an enclosed room with normal and dry climate. The dampers should be protected against bumps and dropping.

## *Periodic inspection and condition checks of the fire dampers*

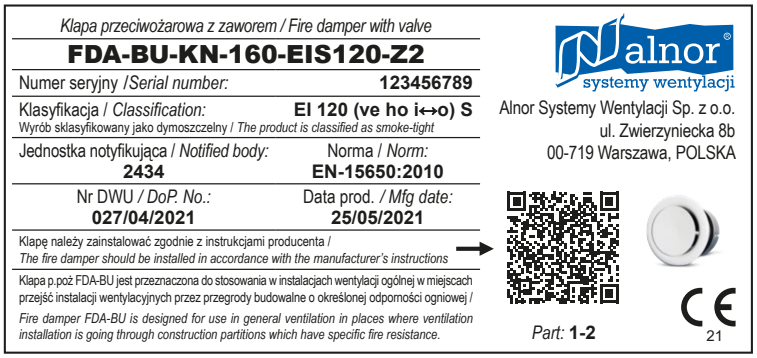
Fire dampers, as safety devices and components of the ventilation system, require periodic inspection and check after installation and commissioning of the entire system. The testing activities should be done at least every six months. The following are the inspection points that the qualified staff should verify and record the inspection results.

| actions to be done | date/result/signature | date/result/signature | date/result/signature | date/result/signature |
|---|---|---|---|---|
| checking the control wiring of limit switches (if provided) | | | | |
| checking the interior of the damper for cleanliness and cleaning if necessary | | | | |
| checking the condition of the partition and seals, possible maintenance | | | | |
| confirm manual blade closing | | | | |
| confirm manual blade opening | | | | |
| confirm operation of limit switches for the blade in closed position | | | | |
| confirm the position of the blades in the operating position | | | | |

During the installation of fire dampers, it is recommended to use revision systems upstream and downstream the dampers for periodic inspection.

## *Product designation*

Each of the manufactured dampers is marked with an individual serial number, which ensures identification of the batch and the production order from which it comes.



For ease of servicing, an additional label should be placed on the blade or duct near the installed damper. An additional label is found in FDA-BU and FDA-BU-E products. In the case of FDA-BU-KW / KN dampers, one label is attached to the fire damper, while the other one identifies the appropriate valve assigned to the set (Part: 1-2 on the label visible above).

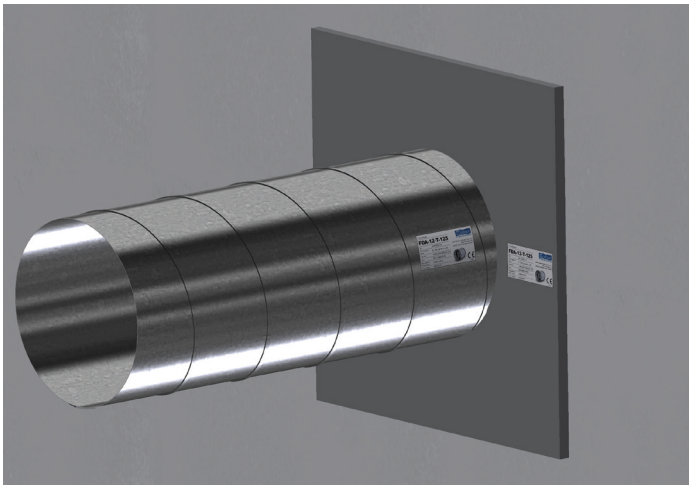


*Fig. 29. FDA-BU, fire damper. - suggested labelling layout.*

## *Terms of warranty*

The product is covered by a 24 month seller's warranty from the date of sale. The Seller guarantees that defects occurring during the warranty period, which prevent the product from operating, will be removed within 21 working days from the date the defect was reported. The warranty shall be extended for the period from the reporting the defect to the date of completion of the repair.
The essential conditions for product transport and storage, required to meet the terms of warranty, are included in this documentation. The manufacturer shall be relieved from any warranty liability and any obligations as a result of: improper transport or unloading of the goods, improper installation, improper use of the purchased elements, defects resulting from improper storage of the product, changes to the design made by the user, defects resulting from improper maintenance.
In case of a complaint, the manufacturer shall deduct the equivalent amount of the components missing or damaged by the buyer or user and the cost of replacement.

Alnor Systemy Wentylacji Sp. z o.o.,
Aleja Krakowska 10, 05-552 Wola Mrokowska,
tel.: + 48 22 737 40 00, fax.: + 48 22 737 40 04,
e-mail: alnor@alnor.com.pl, www.alnor.com.pl.

# DECLARATION OF PERFORMANCE
## No 002/02/22

CE

1. Unique identification code of the product-type: 21

   **Fire dampers type FDA-BU, FDA-BU-E, FDA-BU-KN, FDA-BU-KW.**

2. Intended use:

   **The fire dampers are intended for use in comfort ventilation systems (general ventilation) in places where ventilation systems pass through building partitions with a specific fire resistance. Their function is to prevent the spread of fire and smoke through the ventilation system by meeting the criteria of fire integrity and / or insulation and / or smoke tightness.**

3. Manufacturer:

   **Alnor Systemy Wentylacji Sp. z o.o.**
   **00-719 Warszawa ul. Zwierzyniecka 8b, POLAND**
   **Tel.: + 48 22 737 40 00, Fax.: + 48 22 737 40 04**
   **Manufacturing plant:**
   **05-552 Wola Mrokowska, Aleja Krakowska 10, POLAND**

4. Authorised representative::

   **Not relevant**

5. System/s of AVCP

   **System: 1**

6. Harmonised standard:

   **EN 15650:2010**

   Notified body/ies:
   **Centrum Techniki Okrętowej S.A.**
   **ul. Szczecińska 65, 80-392 Gdańsk**
   **Numer identyfikacyjny: 2434**
   **Body No : 2434**
   has carried out:
   - determination of the product-type on the basis of type testing
   - initial inspection of factory and factory production

Alnor Systemy Wentylacji Sp. z o.o.,
Aleja Krakowska 10, 05-552 Wola Mrokowska,
tel.: + 48 22 737 40 00, fax.: + 48 22 737 40 04,
e-mail: alnor@alnor.com.pl, www.alnor.com.pl.

- continuous surveillance and assessment of factory production control and issued Certificate of Constancy of Performance: **2434-CPR-0198.**

7. Declared performances:

| Essential characteristics and performances of the product | EN 15650:2010<br>Clause | Mandated levels and/or classes | Assessment |
|---|---|---|---|
| **Nominal activation conditions / sensitivity** | | | |
| Nominal activation conditions / sensitivity | 4.2.1.2 | - | pass |
| Sensing element response temperature | 4.2.1.2.2 | - | pass |
| Sensor load capacity | 4.2.1.2.3 | - | pass |
| **Response delay (response time)** | | | |
| Closure time | 4.2.1.3 | ≤ 2 min, acc. EN 15650 5.2.4,<br>EN 1366-2 10.4.6 | pass |
| **Operational reliability** | | | |
| Cycling | 4.3.1 a) | 50 cycles | pass |
| **Fire resistance** | | | |
| Integrity | 4.1.1 a) | Typ FDA-BU:<br>EI 120 (ve), EI 90 (ve, ho), EI 60 (ve, ho), EI 45(ve, ho), EI 30 (ve, ho), EI 20 (ve, ho), EI 15 (ve, ho)<br>Typ FDA-BU-E:<br>EI 60 (ve), EI 45(ve), EI 30 (ve), EI 20 (ve), EI 15 (ve)<br>Typ FDA-BU-KN, FDA-BU-KW:<br>EI 120 (ve, ho), EI 90 (ve, ho), EI 60 (ve, ho), EI 45 (ve, ho), EI 30 (ve, ho), EI 20 (ve, ho), EI 15 (ve, ho) | pass |
| Insulation | 4.1.1 b) | Typ FDA-BU:<br>EI 120 (ve), EI 90 (ve, ho), EI 60 (ve, ho), EI 45(ve, ho), EI 30 (ve, ho), EI 20 (ve, ho), EI 15 (ve, ho)<br>Typ FDA-BU-E:<br>EI 60 (ve), EI 45(ve), EI 30 (ve), EI 20 (ve), EI 15 (ve)<br>Typ FDA-BU-KN, FDA-BU-KW:<br>EI 120 (ve, ho), EI 90 (ve, ho), EI 60 (ve, ho), EI 45 (ve, ho), EI 30 (ve, ho), EI 20 (ve, ho), EI 15 (ve, ho) | pass |
| Smoke leakage | 4.1.1 c) | S | pass |
| Mechanical stability (under E) | 4.1.1 a) | - | pass |
| Maintenance of the cross section (under E) | 4.1.1 a) | - | pass |
| **Durability of response delay** | | | |
| Sensing element response to temperature | 4.2.1.2.2<br>4.2.1.2.3 | - | pass |
| **Durability of operational reliability** | | | |
| Open and close cycle tests | 4.3.3.2 | NPD | pass |

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Alnor Systemy Wentylacji Sp. z o.o.,
Aleja Krakowska 10, 05-552 Wola Mrokowska,
tel.: + 48 22 737 40 00, fax.: + 48 22 737 40 04,
e-mail: alnor@alnor.com.pl, www.alnor.com.pl.

Signed for and on behalf of the manufacturer by:

Piotr Grzechowiak testing and certification coordinator

……

(Name and position)

Wola Mrokowska 23.08.2022

……... ……...

(Place and date of issue) (Signature)

Centrum Techniki Okrętowej S.A.
Ośrodek Certyfikacji Wyrobów
ul. Szczecińska 65, 80-392 Gdańsk
tel.: +48 58 307 45 28
e-mail: certyfikacja@cto.gda.pl

CTO S.A.

Jednostka Notyfikowana Nr 2434

CENTRUM TECHNIKI OKRĘTOWEJ S.A.

OŚRODEK CERTYFIKACJI WYROBÓW

PCA
POLSKIE CENTRUM AKREDYTACJI
CERTYFIKACJA WYROBÓW

AC 170

# CERTIFICATE OF CONSTANCY OF PERFORMANCE
# 2434-CPR-0198

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR) as amended, this certificate applies to the construction product:

**1. Fire damper type FDA-BU basic version**

with fire resistance class acc. to EN 13501-3:2005+A1:2009:

**EI 120 (ve i↔o) S, EI 90 (ve ho i↔o) S, EI 60 (ve ho i↔o) S, EI 45 (ve ho i↔o) S, EI 30 (ve ho i↔o) S, EI 20 (ve ho i↔o) S, EI 15 (ve ho i↔o) S**

**2. Fire damper type FDA-BU-KW basic version with a mushroom valve and fire damper type FDA-BU-KN basic version with a centre valve**

with fire resistance class acc. to EN 13501-3:2005+A1:2009:

**EI 120 (ve ho i↔o) S, EI 90 (ve ho i↔o) S, EI 60 (ve ho i↔o) S, EI 45 (ve ho i↔o) S, EI 30 (ve ho i↔o) S, EI 20 (ve ho i↔o) S, EI 15 (ve ho i↔o) S**

**3. Fire damper type FDA-BU-E budget version**

with fire resistance class acc. to EN 13501-3:2005+A1:2009:

**EI 60 (ve i↔o) S, EI 45 (ve i↔o) S, EI 30 (ve i↔o) S, EI 20 (ve i↔o) S, EI 15 (ve i↔o) S**

placed on the market under the name or trade mark of:

**ALNOR SYSTEMY WENTYLACJI Sp. z o.o.**
**ul. Zwierzyniecka 8B, 00-719 Warszawa**

and produced in the manufacturing plant:

**ALNOR SYSTEMY WENTYLACJI Sp. z o.o.**
**ul. Aleja Krakowska 10, 05-552 Wola Mrokowska**

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard:

**EN 15650:2010**

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the constancy of performance of the construction product.

This certificate was first issued on **13.05.2021** and revised on 30.06.2022, and will remain valid as long as neither the harmonised standard, the construction product, the assessment and verification of constancy of performance methods nor the manufacturing conditions in the plant are modified significantly unless suspended or withdrawn by the notified product certification body.

*Zuzanna Andrzejewska*

Head of Product Certification Division of CTO S.A.

Gdańsk, 30.06.2022

**Certificate of constancy of performance No. 2434-CPR-0198, issued on 30.06.2022**

**Performance of fire damper type FDA-BU, FDA-BU-KW, FDA-BU-KN and FDA-BU-E**

| Essential characteristics | Requirements of EN 15650:2010 Standard | Level, class and/or description | Assessment |
|---|---|---|---|
| Nominal activation conditions/sensitivity | 4.2.1.2 | - | fulfills |
| Sensing element response temperature | 4.2.1.2.2 | - | fulfills |
| Sensing element load bearing capacity | 4.2.1.2.3 | - | fulfills |
| **Response delay (response time)** | | | |
| Closure time | 4.2.1.3 | ≤ 2 min | fulfills |
| **Operational reliability** | | | |
| Cycling | 4.3.1a | 50 cycles | fulfills |
| **Fire resistance** | | | |
| - integrity | 4.1.1a | Type FDA-BU:<br>EI 120 (ve), EI 90 (ve, ho), EI 60 (ve, ho),<br>EI 45 (ve, ho), EI 30 (ve, ho),<br>EI 20 (ve, ho), EI 15 (ve, ho)<br>Type FDA-BU-KW and FDA-BU-KN:<br>EI 120 (ve, ho), EI 90 (ve, ho),<br>EI 60 (ve, ho), EI 45 (ve, ho), EI 30 (ve, ho),<br>EI 20 (ve, ho), EI 15 (ve, ho)<br>Type FDA-BU-E:<br>EI 60 (ve), EI 45 (ve), EI 30 (ve),<br>EI 20 (ve), EI 15 (ve) | fulfills |
| - insulation | 4.1.1.b | Type FDA-BU:<br>EI 120 (ve), EI 90 (ve, ho), EI 60 (ve, ho),<br>EI 45 (ve, ho), EI 30 (ve, ho),<br>EI 20 (ve, ho), EI 15 (ve, ho)<br>Type FDA-BU-KW and FDA-BU-KN:<br>EI 120 (ve, ho), EI 90 (ve, ho),<br>EI 60 (ve, ho), EI 45 (ve, ho), EI 30 (ve, ho),<br>EI 20 (ve, ho), EI 15 (ve, ho)<br>Type FDA-BU-E:<br>EI 60 (ve), EI 45 (ve), EI 30 (ve),<br>EI 20 (ve), EI 15 (ve) | fulfills |
| - smoke leakage | 4.1.1c | S | fulfills |
| - mechanical stability (under E) | 4.1.1a | - | fulfills |
| - maintenance of the cross section (under E) | 4.1.1a | - | fulfills |
| **Durability of response delay** | | | |
| Sensing element response to temperature and load bearing capacity | 4.2.1.2.2<br>4.2.1.2.3 | - | fulfills |
| **Durability of operational reliability** | | | |
| Open and closing cycle tests | 4.3.3.2 | NPD | - |

**Intended use:**
For use in fire ventilation systems, for protection of ventilation ducts in fire safety partitions. Works against spreading of fire and smoke by ventilation installations through maintaining of integrity and/or insulation and/or smoke leakage criteria.

**Technical parameters of fire dampers:**

Shape, dimensions: round, outer diameter: 97,5÷197,4 mm, inner diameter: 95,7÷195,6 mm, length: 70 mm

Housing material: galvanised steel sheet

Damper blade: two-part, made of the following board: Promatect-H, thickness: 10 mm of Promat or Nevpanel Magnesium Oxide Boards, thickness 9 mm of Nevra Yapi

Release mechanism:

- spring trigger and closing mechanism (trigger system with a fuse-link of the following type: "FDA-BU" 72°C by JPCI Controls; closing system – torsion spring of D type)

Valve type KW/KN (optional): round with the outer diameter of 248 mm consisting of frame, crossbar, frame cover and either a mushroom (KW) or centre (KN) valve.

Assembly of damper type: FDA-BU, FDA-BU-KW and FDA-BU-KN:

- in rigid walls of low density (650 ± 200 kg/m$^3$) or higher, thickness: 130 mm or bigger and with fire resistance class of EI 120 or higher,
- in flexible walls, thickness: 130 mm or bigger, with the structure as used in the test and fire resistance class of EI120 or higher (thicker, with higher density, more board layers)
- in ceilings with density of 2200 ± 200 kg/m$^3$ or higher, thickness: 150 mm or bigger and with fire resistance class equal to or higher than the construction partition used in the test
- in partitions, built of cellular concrete blocks, hollow bricks (unless their openings are filled/closed prior to the final sealing of the installation duct) and prefabricated boards with fire resistance equal to or higher than the fire resistance required for cut-off flap installation.
- inside a steel pipe with wall thickness of 0.5 mm, located in vertical or horizontal building partitions.

The minimum distance between the dampers installed in separate ducts: 200 mm

The minimum distance between the damper installed in the construction partition and the nearby wall or ceiling: 75 mm.

Assembly of damper type FDA-BU-E:

- in rigid walls of low density (650 ± 200 kg/m$^3$) or higher, thickness: 100 mm or bigger and with fire resistance class of EI 60 or higher,
- in flexible walls, thickness: 100 mm or bigger, with structure as used in the test and fire resistance class of EI60 or higher (thicker, with higher density, more board layers),
- in partitions, built of cellular concrete blocks, hollow bricks (unless their openings are filled/closed prior to the final sealing of the installation duct) and prefabricated boards with fire resistance equal to or higher than the fire resistance required for cut-off flap installation.
- inside a steel pipe with wall thickness of 0.5 mm, located in vertical or horizontal building partitions.

The minimum distance between the dampers installed in separate ducts: 200 mm

The minimum distance between the damper installed in the construction partition and the nearby wall or ceiling: 75 mm.

The detailed technical parameters and final classification conditions according to EN 13501-3:2005+A1:2009 are listed in the Fire Resistance Classification No. RS-21/T-540 dated 16.12.2021.