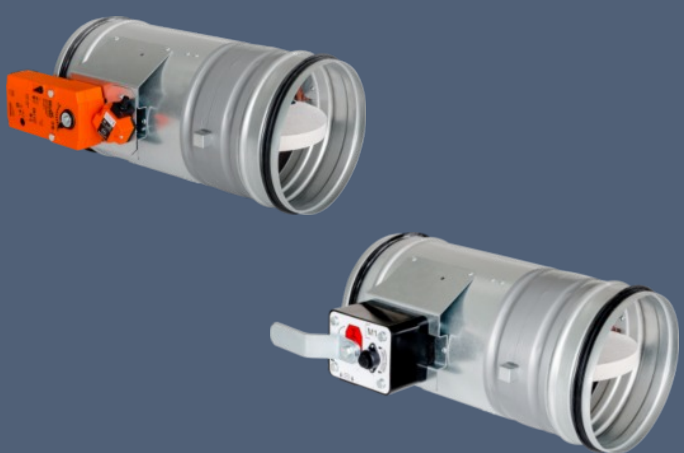
151/19
Valid from 16.9.2019

MANDÍK®

INSTALLATION INSTRUCTIONS

FIRE DAMPER
FDMR

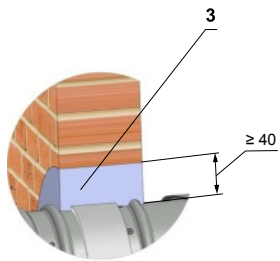


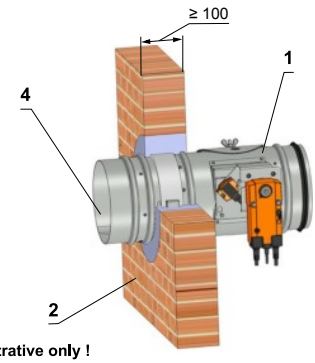
FIRE damper type FDMR, is in all variants classified:
as EI 120 ve, ho (i↔o) S or EI 90 ve, ho (i↔o) S acc. EN 13501-3 and tested acc. EN 1366-2 and acc. EN 15650.

Examples of installation fire dampers in solid wall construction (damper blade inside fire separating construction)

In solid wall construction - mortar or gypsum

EIS 120
EIS 90





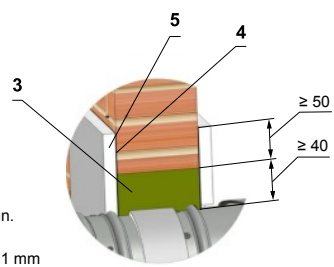
Position:

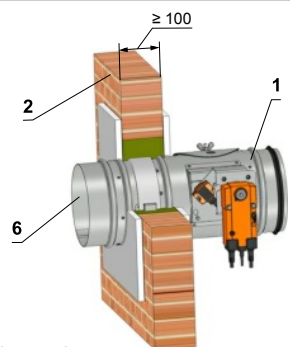
1 Fire damper FDMR
2 Solid wall construction
3 Mortar or gypsum
4 Duct

Shown schemes of incorporation and damper are illustrative only !

In solid wall construction - stuffing box, fire protection mastic and cement lime plate

EIS 90





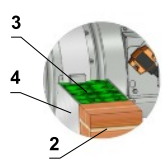
Position:

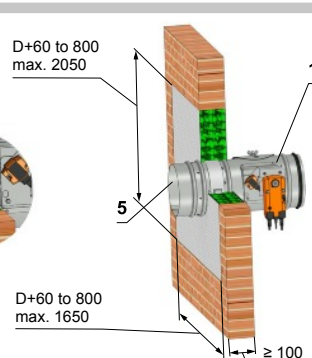
1 Fire damper FDMR
2 Solid wall construction
3 Stuffing box (mineral stone wool min. density 140 kg/m³)
4 Fire protection mastic min. thickness 1 mm
5 Cement lime plate min. thickness 15 mm
6 Duct

Shown schemes of incorporation and damper are illustrative only !

In solid wall construction (Weichschott system)

EIS 90





Used materials - example:

3 Hilti CFS-CT B 1S 140/50
4 Hilti CFS-CT

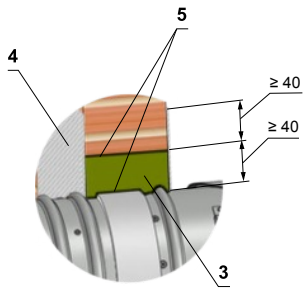
Position:

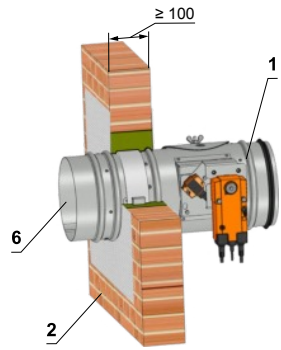
1 Fire damper FDMR
2 Solid wall construction
3 Fire resistant board
4 Fire protection mastic min. thickness 1 mm
5 Duct

Shown schemes of incorporation and damper are illustrative only !

In solid wall construction - stuffing box with fire protection mastic and coating

EIS 90





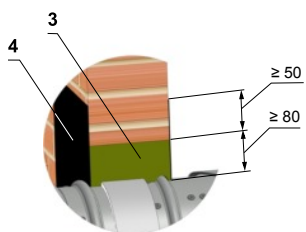
Position:

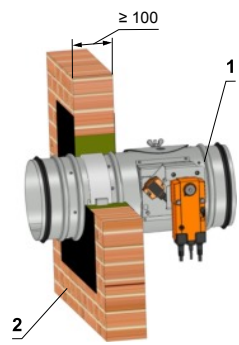
1 Fire damper FDMR
2 Solid wall construction
3 Stuffing box (mineral stone wool min. density 150 kg/m³)
4 Fire protection coating th. 1 mm
5 Fire protection mastic th. 1 mm
6 Duct

Shown schemes of incorporation and damper are illustrative only !

In solid wall construction - stuffing box and fire protection mastic

EIS 60





Position:

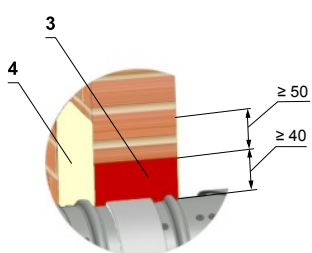
1 Fire damper FDMR
2 Solid wall construction
3 Stuffing box (mineral stone wool min. density 140 kg/m³)
4 Fire protection mastic min. thickness 1 mm

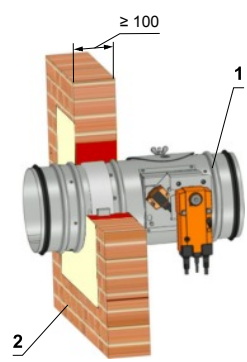
Shown schemes of incorporation and damper are illustrative only !

In solid wall construction - fire protection foam with stucco plaster

EIS 60
EIS 45
EIS 30

Maximal damper dimensions 200 mm.





Used materials - example:

3 HILTI CFS-F FX - **EIS 60**
PROMAFOAM-C - **EIS 45**
SOUDAL, Soudafoam FR-B1 - **EIS 30**
DenBraven, Fire protection foam - **EIS 30**

Position:

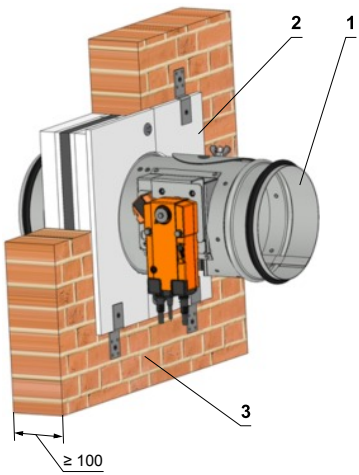
1 Fire damper FDMR
2 Solid wall construction
3 Fire protection foam
4 Stucco plaster

Shown schemes of incorporation and damper are illustrative only !

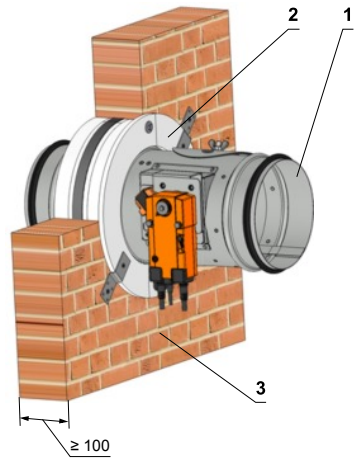
In solid wall construction - installation frame R1, R2, R3, R4, R5

EIS 90

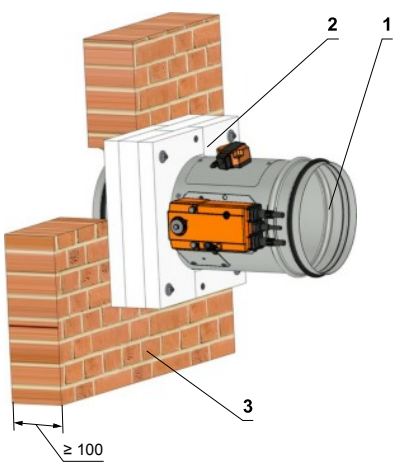
Installation frame R1, R2



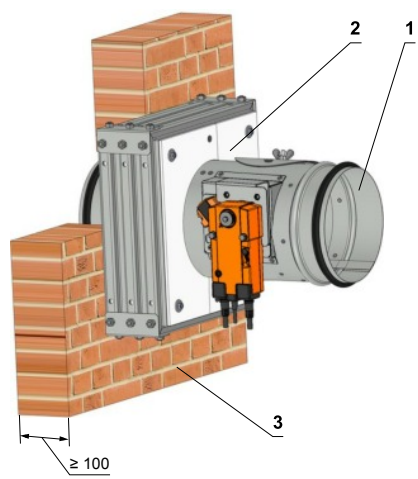
Installation frame R3, R4



Installation frame R5 (DN 100 - 200)



Installation frame R5 (DN 225 - 800)



Position:

1 Fire damper FDMR
2 Installation frame
3 Solid wall construction

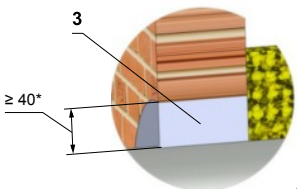
A detailed description of the installation using installation frames is available in TPM 140/19.

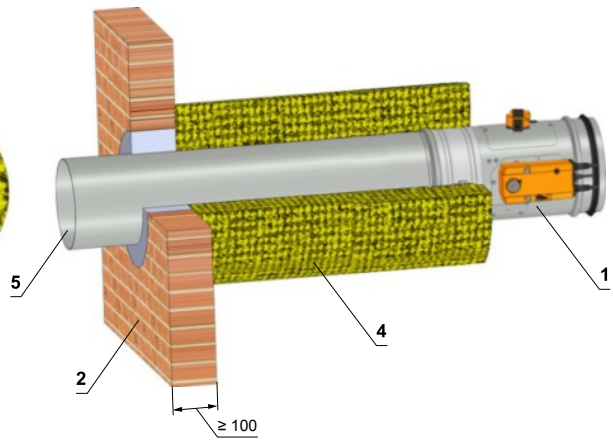
Shown schemes of incorporation and damper are illustrative only !

Examples of installation fire dampers outside solid wall construction (damper blade outside fire separating construction)

Outside solid wall construction - mineral wool - mortar or gypsum

EIS 90
EIS 60





* Around the perimeter

Position:

1 Fire damper FDMR
2 Solid wall construction
3 Mortar or gypsum
4 Stone wool with wired mat on one side, density 66 kg/m³
5 Duct

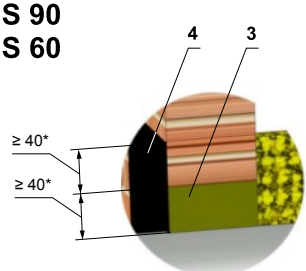
Used materials - example:

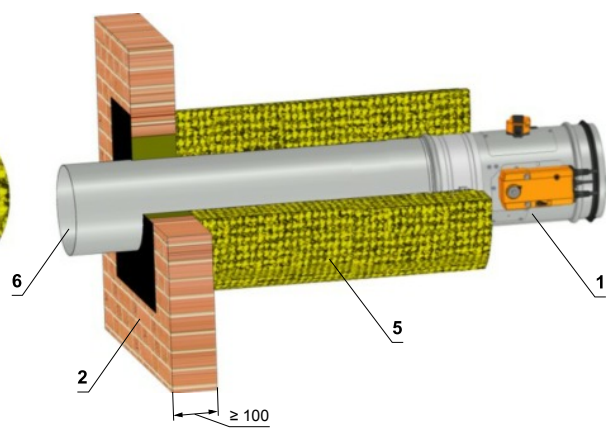
4 DN 100 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 100 mm - **EIS 60**
DN 100 ÷ DN 315 - ISOVER_ULTIMATE PROTECT, th. 120 mm (2x60 mm) - **EIS 90**
DN 350 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 160 mm (100+60 mm) - **EIS 90**

Shown schemes of incorporation and damper are illustrative only !

Outside solid wall construction - mineral wool - stuffing box and fire protection mastic

EIS 90
EIS 60





* Around the perimeter

Position:

1 Fire damper FDMR
2 Solid wall construction
3 Stuffing box (mineral stone wool min. density 150 kg/m³)
4 Fire protection mastic min. thickness 1 mm
5 Stone wool with wired mat on one side, density 66 kg/m³
6 Duct

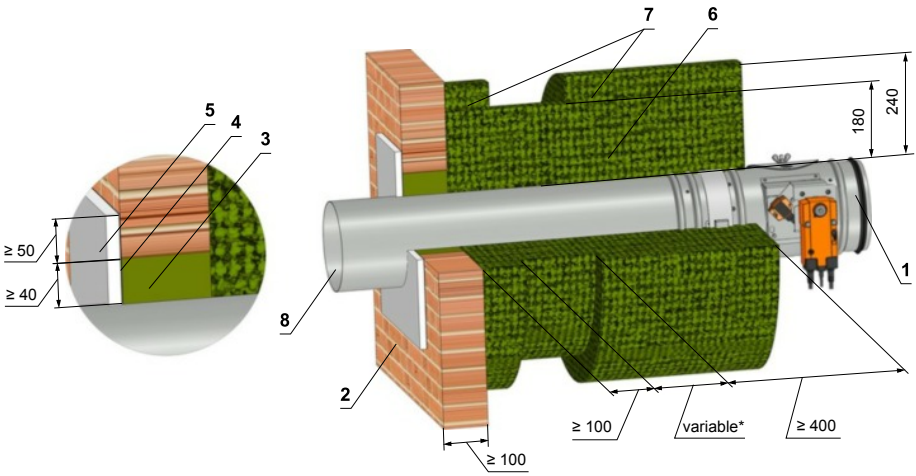
Used materials - example:

3 Promapyr, Rockwool Steprock HD
4 Promastop - P, K
5 DN 100 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 100 mm - **EIS 60**
DN 100 ÷ DN 315 - ISOVER_ULTIMATE PROTECT, th. 120 mm (2x60 mm) - **EIS 90**
DN 350 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 160 mm (100+60 mm) - **EIS 90**

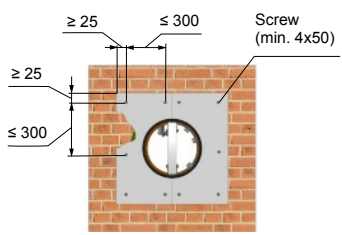
Shown schemes of incorporation and damper are illustrative only !

Outside solid wall construction - mineral wool, stuffing box, fire protection mastic and cement lime plate

EIS 90



* Depends on the damper's distance from the structure



Screws has to be fixed in wall/ceiling construction.
(If it is needed use steel bracket).

Position:

1 Fire damper FDMR

2 Solid wall construction

3 Stuffing box (mineral stone wool min. density 140 kg/m³)

4 Fire protection mastic min. thickness 1 mm

5 Cement lime plate min. thickness 15 mm (min. density 870 kg/m³)

6 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 180 mm (e.g. 3x60 mm)

7 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 60 mm

8 Duct

Used materials - example:

3 Promapyr, Rockwool Steprock HD

4 Promastop - P, K

5 Promatect - H

6 Rockwool Wired Mat 105 th. 3x60 mm

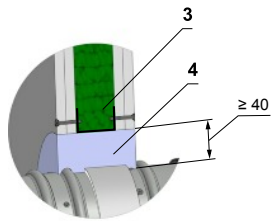
7 Rockwool Wired Mat 105 th. 60 mm

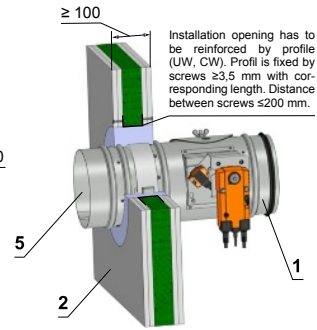
Shown schemes of incorporation and damper are illustrative only !

Examples of installation fire dampers in gypsum wall construction (damper blade inside fire separating construction)

In gypsum wall construction - mortar or gypsum

EIS 120
EIS 90





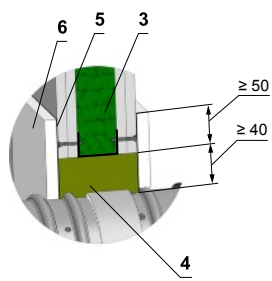
Position:

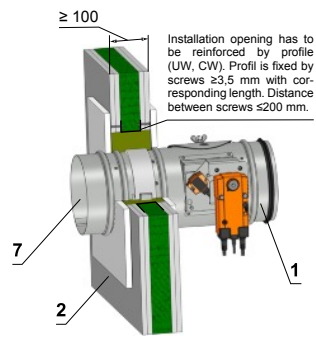
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Mortar or gypsum
5 Duct

Shown schemes of incorporation and damper are illustrative only !

In gypsum wall construction - stuffing box, fire protection mastic and cement lime plate

EIS 90





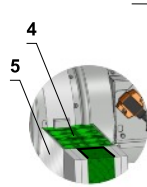
Position:

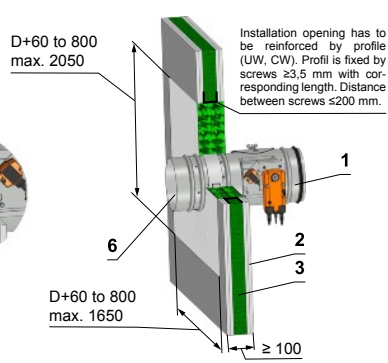
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Stuffing box (mineral stone wool min. density 140 kg/m³)
5 Fire protection mastic min. thickness 1 mm
6 Cement lime plate min. thickness 15 mm
7 Duct

Shown schemes of incorporation and damper are illustrative only !

In gypsum wall construction (Weichschott system)

EIS 90





Used materials - example:

3 Hilti CFS-CT B 1S 140/50
4 Hilti CFS-CT

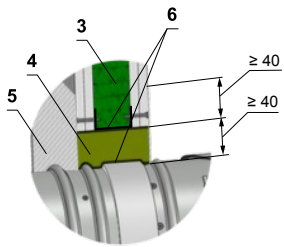
Position:

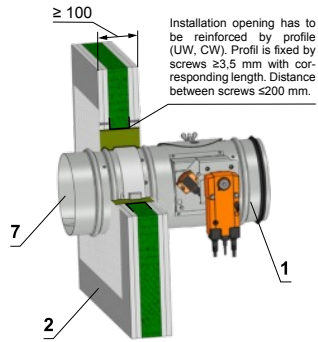
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Fire resistant board
5 Fire stop coating th. 1 mm
6 Duct

Shown schemes of incorporation and damper are illustrative only !

In gypsum wall construction - stuffing box with fire protection mastic and coating

EIS 90





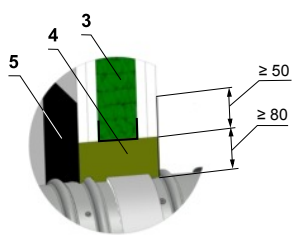
Position:

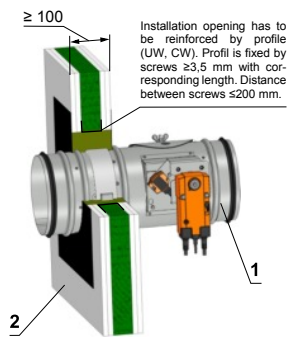
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Stuffing box (mineral stone wool min. density 150 kg/m³)
5 Fire protection coating th. 1 mm
6 Fire protection mastic th. 1 mm
7 Duct

Shown schemes of incorporation and damper are illustrative only !

In gypsum wall construction - stuffing box and fire protection mastic

EIS 60





Position:

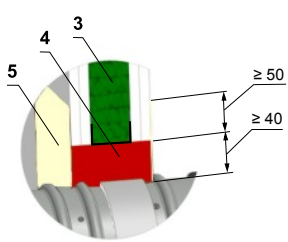
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Stuffing box (mineral stone wool min. density 140 kg/m³)
5 Fire protection mastic min. thickness 1 mm

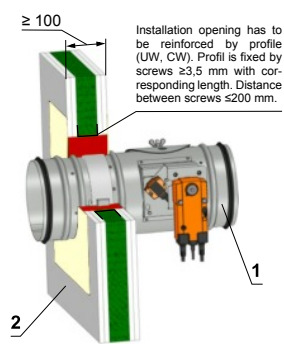
Shown schemes of incorporation and damper are illustrative only !

In gypsum wall construction - fire protection foam with stucco plaster

EIS 60
EIS 45
EIS 30

Maximal damper dimensions 200 mm.





Used materials - example:

4 HILTI CFS-F FX - **EIS 60**
PROMAFOAM-C - **EIS 45**
SOUDAL, Soudafoam FR-B1 - **EIS 30**
DenBraven, Fire protection foam - **EIS 30**

Position:

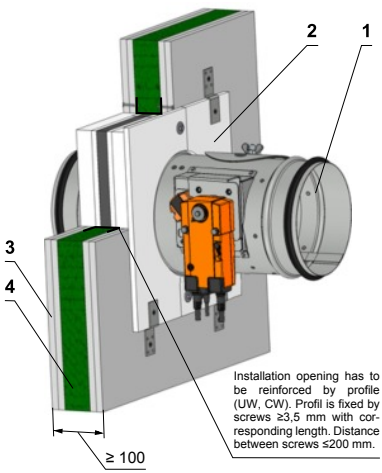
1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Fire protection foam
5 Stucco plaster

Shown schemes of incorporation and damper are illustrative only !

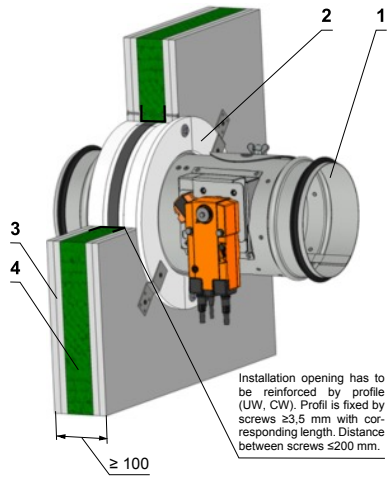
In gypsum wall construction - installation frame R1, R2, R3, R4, R5

EIS 90

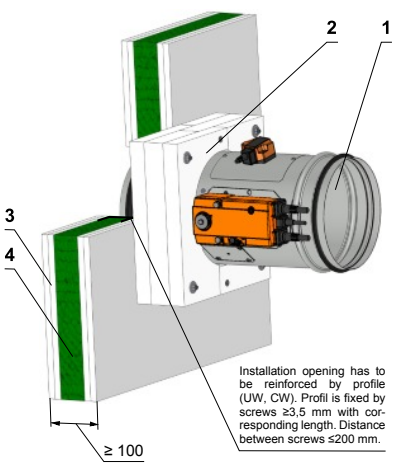
Installation frame R1, R2



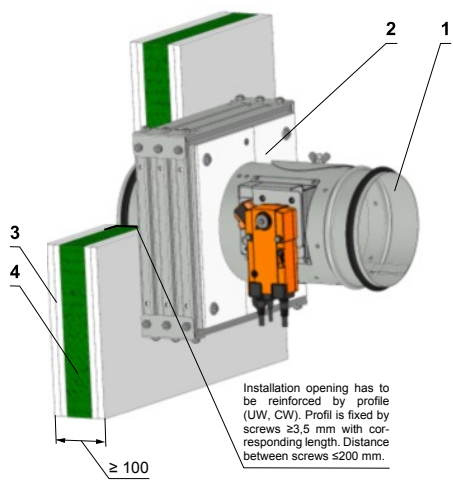
Installation frame R3, R4



Installation frame R5 (DN 100 - 200)



Installation frame R5 (DN 225 - 800)



Position:

1 Fire damper FDMR
2 Installation frame
3 Gypsum plate
4 Mineral wool

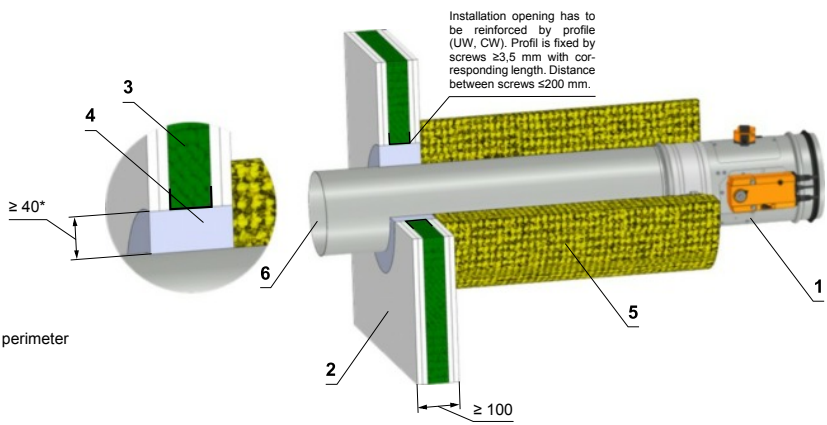
A detailed description of the installation using installation frames is available in TPM 140/19.

Shown schemes of incorporation and damper are illustrative only !

Examples of installation fire dampers outside gypsum wall construction (damper blade outside fire separating construction)

Outside gypsum wall construction - mineral wool - mortar or gypsum

EIS 90
EIS 60



* Around the perimeter

Position:

1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Mortar or gypsum
5 Stone wool with wired mat on one side, density 66 kg/m³
6 Duct

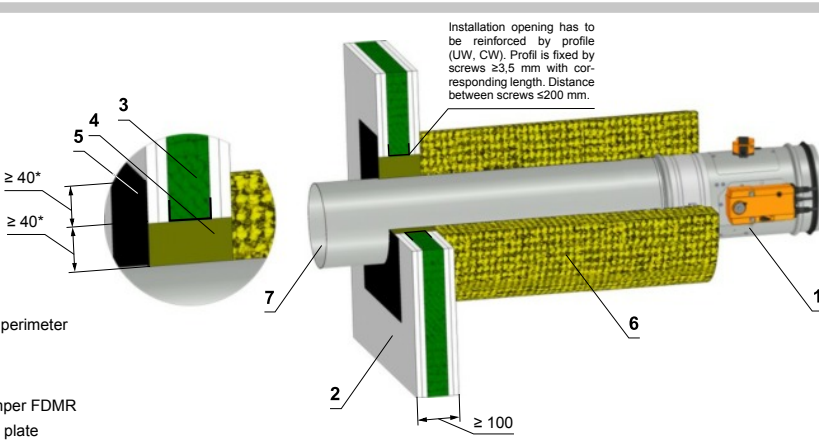
Used materials - example:

5 DN 100 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 100 mm - **EIS 60**
DN 100 ÷ DN 315 - ISOVER_ULTIMATE PROTECT, th. 120 mm (2x60 mm) - **EIS 90**
DN 350 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 160 mm (100+60 mm) - **EIS 90**

Shown schemes of incorporation and damper are illustrative only !

Outside gypsum wall construction - mineral wool - stuffing box and fire protection mastic

EIS 90
EIS 60



* Around the perimeter

Position:

1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Stuffing box (mineral stone wool min. density 150 kg/m³)
5 Fire protection mastic min. thickness 1 mm
6 Stone wool with wired mat on one side, density 66 kg/m³
7 Duct

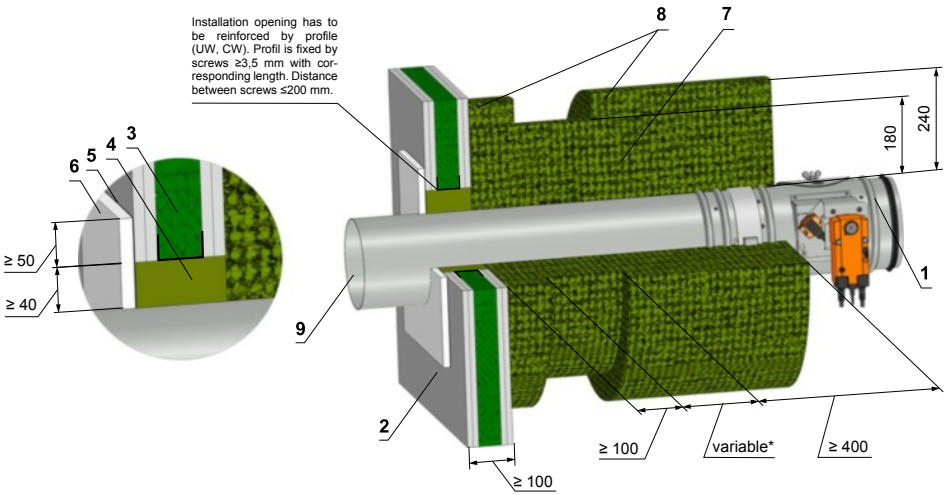
Used materials - example:

4 Promapyr, Rockwool Steprock HD
5 Promastop - P, K
6 DN 100 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 100 mm - **EIS 60**
DN 100 ÷ DN 315 - ISOVER_ULTIMATE PROTECT, th. 120 mm (2x60 mm) - **EIS 90**
DN 350 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 160 mm (100+60 mm) - **EIS 90**

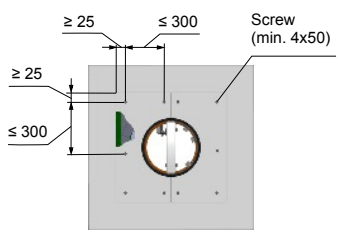
Shown schemes of incorporation and damper are illustrative only !

Outside gypsum wall construction - mineral wool, stuffing box, fire protection mastic and cement lime plate

EIS 90



* Depends on the damper's distance from the structure



Screws has to be fixed in wall/ceiling construction.
(If it is needed use steel bracket).

Position:

1 Fire damper FDMR
2 Gypsum plate
3 Mineral wool
4 Stuffing box (mineral stone wool min. density 140 kg/m³)
5 Fire protection mastic min. thickness 1 mm
6 Cement lime plate min. thickness 15 mm (min. density 870 kg/m³)
7 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 180 mm (e.g. 3x60 mm)
8 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 60 mm
9 Duct

Used materials - example:

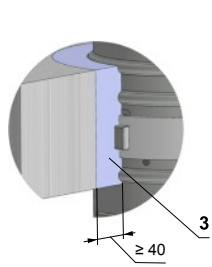
3 Promapyr, Rockwool Steprock HD
4 Promapyr, Rockwool Steprock HD
5 Promastop - P, K
6 Promatect - H
7 Rockwool Wired Mat 105 th. 3x60 mm
8 Rockwool Wired Mat 105 th. 60 mm

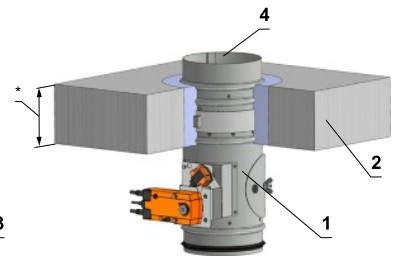
Shown schemes of incorporation and damper are illustrative only !

Examples of installation fire dampers in solid ceiling construction (damper blade inside fire separating construction)

In solid ceiling construction - mortar or gypsum

EIS 120
EIS 90





Position:

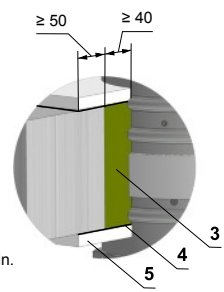
1 Fire damper FDMR
2 Solid ceiling construction
3 Mortar or gypsum
4 Duct

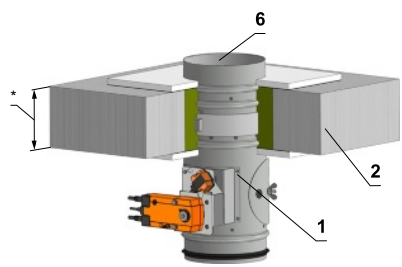
* min. 110 - Concrete/ min. 125 - Aerated Concrete

Shown schemes of incorporation and damper are illustrative only !

In solid ceiling construction - stuffing box, fire protection mastic and cement lime plate

EIS 90





Position:

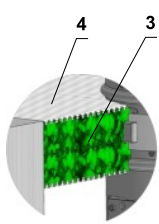
1 Fire damper FDMR
2 Solid ceiling construction
3 Stuffing box (mineral stone wool min. density 140 kg/m³)
4 Fire protection mastic min. thickness 1 mm
5 Cement lime plate min. thickness 15 mm
6 Duct

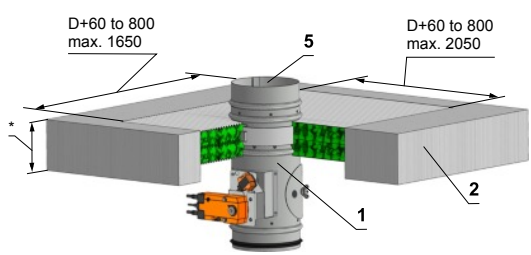
* min. 110 - Concrete/ min. 125 - Aerated Concrete

Shown schemes of incorporation and damper are illustrative only !

In solid ceiling construction (Weichschott system)

EIS 90





Used materials - example:

3 Hilti CFS-CT B 1S 140/50
4 Hilti CFS-CT

Position:

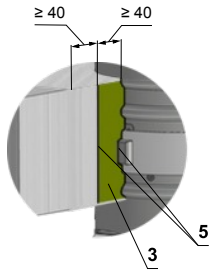
1 Fire damper FDMR
2 Solid ceiling construction
3 Fire resistant board
4 Fire protection mastic min. thickness 1 mm
5 Duct

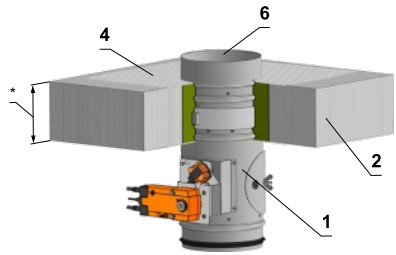
* min. 110 - Concrete/ min. 125 - Aerated Concrete

Shown schemes of incorporation and damper are illustrative only !

In solid ceiling construction - stuffing box with fire protection mastic and coating

EIS 90





Position:

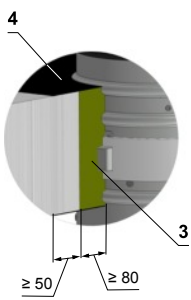
1 Fire damper FDMR
2 Solid ceiling construction
3 Stuffing box (mineral stone wool min. density 150 kg/m³)
4 Fire protection coating th. 1 mm
5 Fire protection mastic th. 1 mm
6 Duct

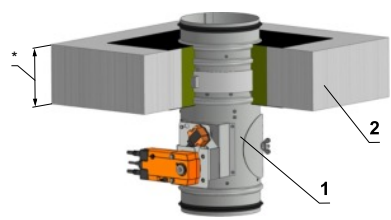
* min. 110 - Concrete/ min. 125 - Aerated Concrete

Shown schemes of incorporation and damper are illustrative only !

In solid ceiling construction - stuffing box and fire protection mastic

EIS 60





Position:

1 Fire damper FDMR
2 Solid ceiling construction
3 Stuffing box (mineral stone wool min. density 140 kg/m³)
4 Fire protection mastic min. thickness 1 mm

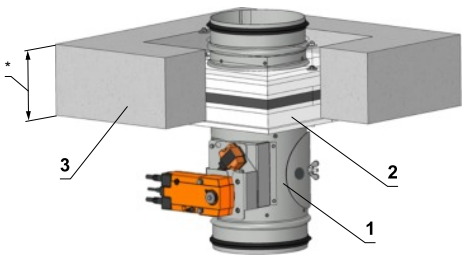
* min. 110 - Concrete/ min. 125 - Aerated Concrete

Shown schemes of incorporation and damper are illustrative only !

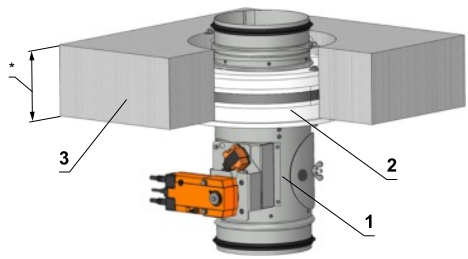
In solid ceiling construction - installation frame R1, R2, R3, R4, R5

EIS 90

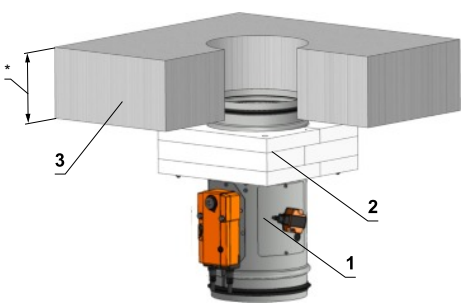
Installation frame R1, R2



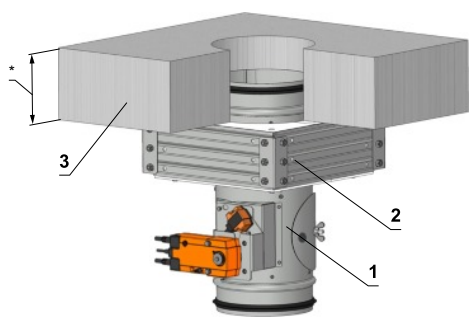
Installation frame R3, R4



Installation frame R5 (DN 100 - 200)



Installation frame R5 (DN 225 - 800)



Position:

1 Fire damper FDMR
2 Installation frame
3 Solid ceiling construction

* min. 110 - Concrete/ min. 125 - Aerated Concrete

A detailed description of the installation using installation frames is available in TPM 140/19.

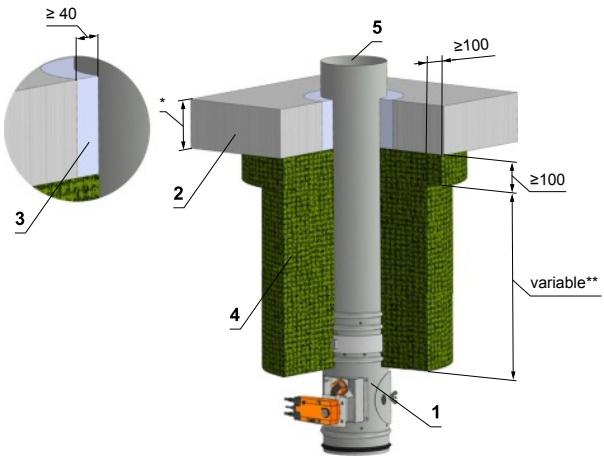
Shown schemes of incorporation and damper are illustrative only !

Examples of installation fire dampers outside solid ceiling construction (damper blade outside fire separating construction)

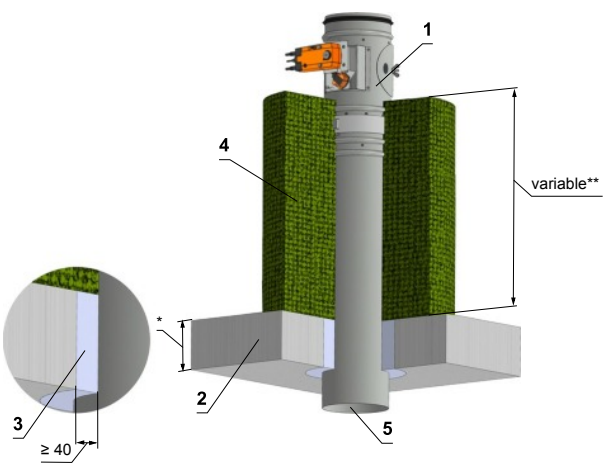
Outside solid ceiling construction - mineral wool - mortar or gypsum

EIS 90
EIS 60

Ceiling installation



Floor installation



* min. 110 - Concrete/ min. 125 - Aerated Concrete

** Depends on the damper's distance from the structure

Position:

1. Fire damper FDMR
2. Solid ceiling construction
3. Mortar or gypsum
4. Stone wool with wired mat on one side, density 66 kg/m³
5. Duct

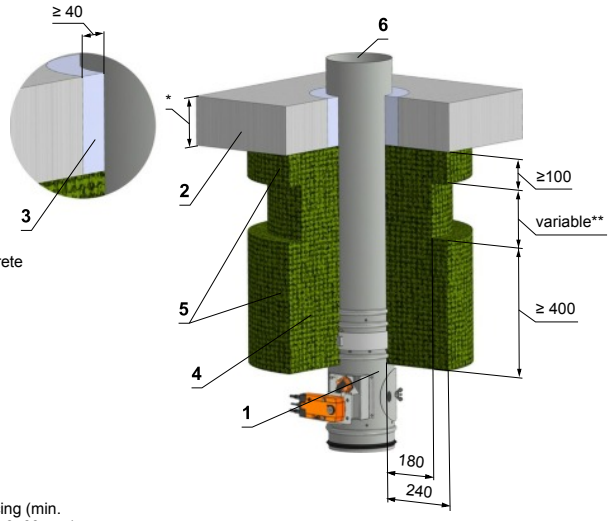
Used materials - example:

4 DN 100 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 100 mm - **EIS 60**
DN 100 ÷ DN 315 - ISOVER_ULTIMATE PROTECT, th. 120 mm (2x60 mm) - **EIS 90**
DN 350 ÷ DN 800 - ISOVER_ULTIMATE PROTECT, th. 160 mm (100+60 mm) - **EIS 90**

Shown schemes of incorporation and damper are illustrative only !

Outside solid ceiling construction - mineral wool - mortar or gypsum

EIS 90



* min. 110 - Concrete/ min. 125 - Aerated Concrete

** Depends on the damper's distance from

Used materials - example:

4 Rockwool Wired Mat 105 th. 3x60 mm

5 Rockwool Wired Mat 105 th. 60 mm

Position:

1 Fire damper FDMR

2 Solid wall construction

3 Mortar or gypsum

4 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 180 mm (e.g. 3x60 mm)

5 Stone wool with one side stitched wire fencing (min. density 105 kg/m³), thickness 60 mm

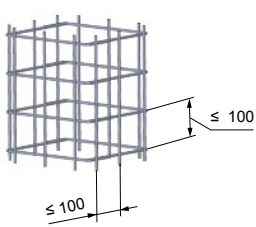
6 Duct

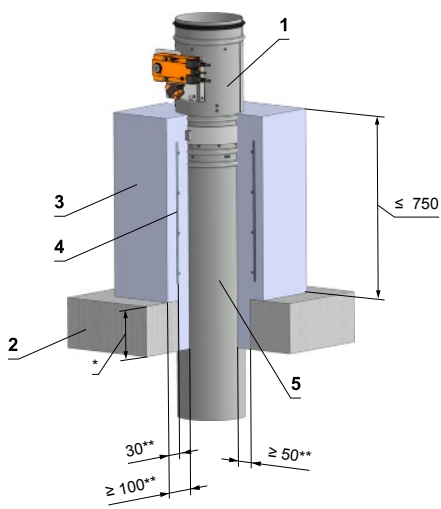
Shown schemes of incorporation and damper are illustrative only !

Outside solid ceiling construction - concrete

EIS 90

Rebar - Steel wire Ø 6 mm





* min. 110 - Concrete/ min. 125 - Aerated Concrete

** Around the perimeter

Position:

1 Fire damper FDMR

2 Solid wall construction

3 Concrete B20

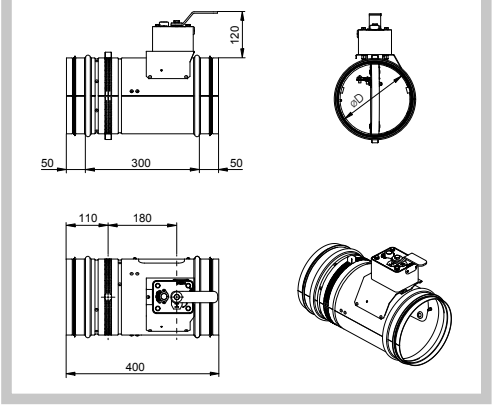
4 Rebar

5 Duct

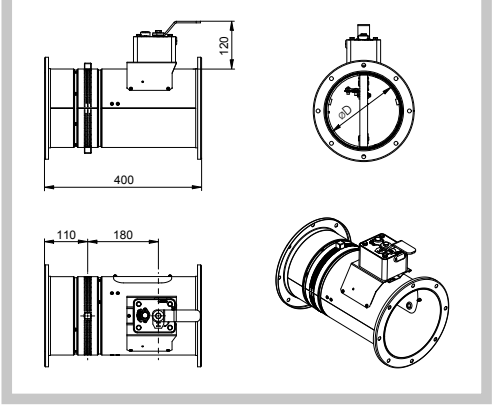
Shown schemes of incorporation and damper are illustrative only !

Damper dimensions

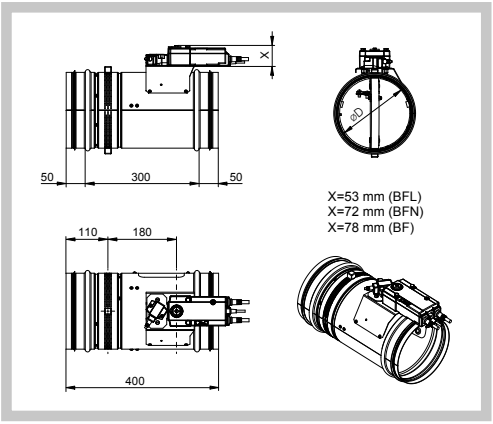
SPIRO design with mechanical control



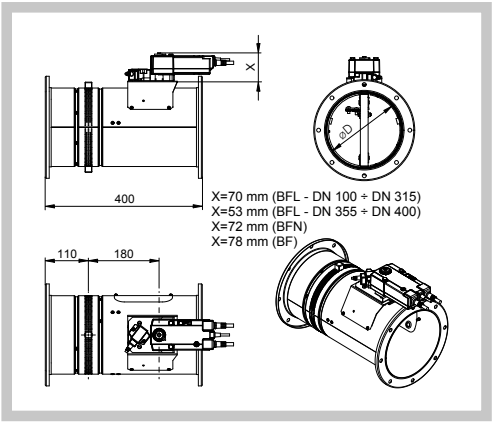
FLANGE design with mechanical control



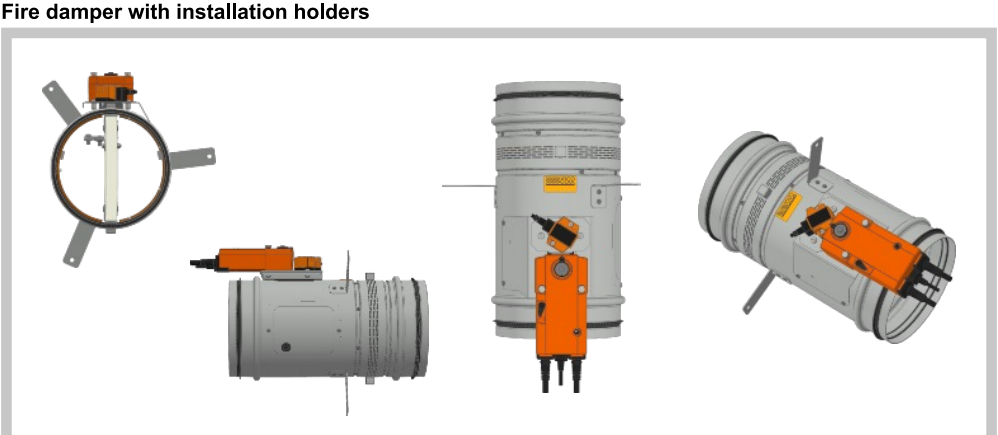
SPIRO design with actuator



FLANGE design with actuator



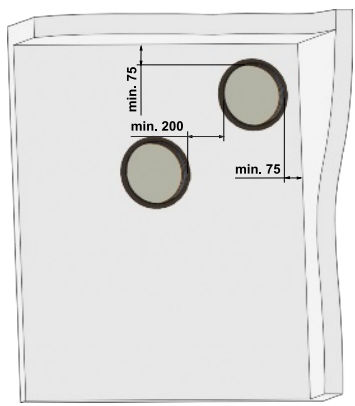
Fire damper with installation holders



Installation instructions

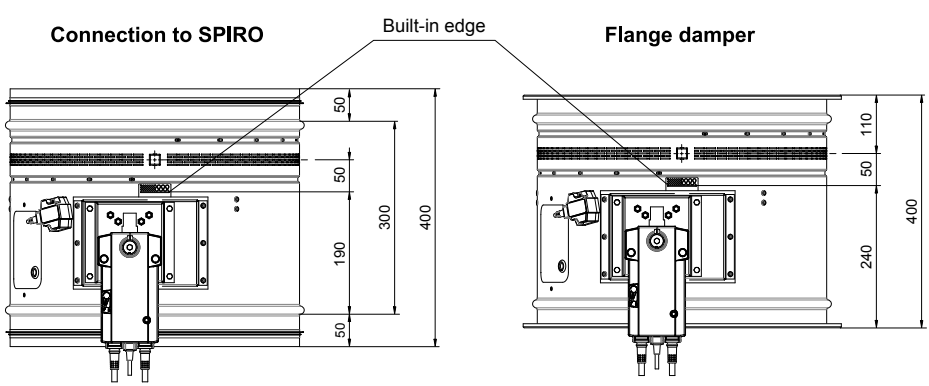
1. During the installation process, the blade position must be “CLOSED”.
2. During the installation process, the control mechanism must be protected against pollution and damage.
3. Fire dampers are suitable for installation in any position in vertical and horizontal passages of fire separating structures.
4. The gap between the installed damper and structure must be completely filled with approved material.
5. The distance between the fire damper and structure (wall, ceiling) must be at least 75 mm. If two or more dampers are to be installed in one fire separating structure, the distance between the adjacent dampers must be at least 200 mm.

Installation of two and more dampers in one fire separating structure



6. The damper blade (in its closed position) must be inside of the fire separating structure. The fire damper may also be installed outside the wall structure. The piping and damper part between the wall structure and damper blade (marked with the BUILT-IN EDGE label on the damper body) must be protected by fire insulation.

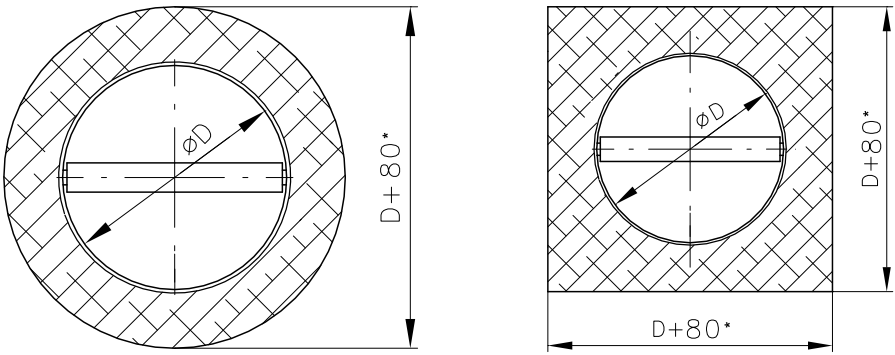
Built-in edge



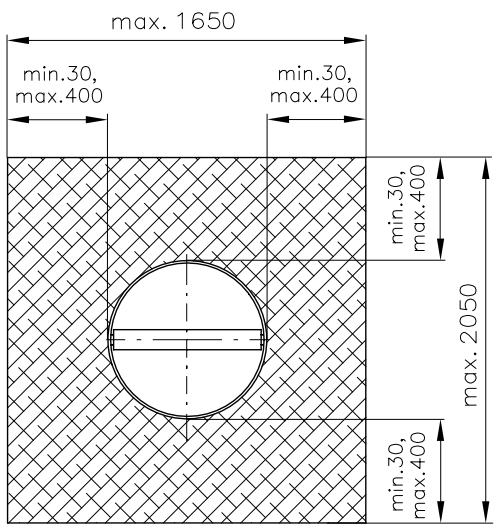
The maximum built-in edge applies to the dampers with holders only

Recommended structure holes

With actuator or manual operation



With actuator or manual operation (Weichschott system)



*** Flange dampers feature their dimension D + 160 mm**

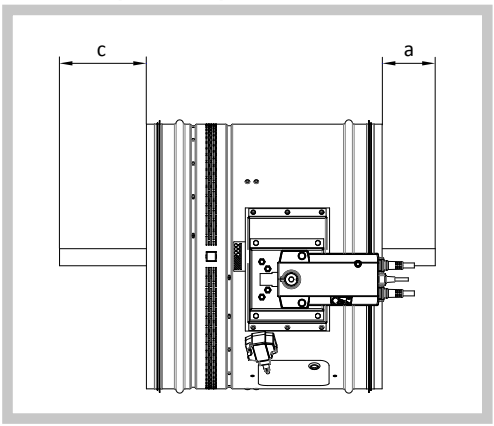
Note
The damper installation procedures must completely exclude any transfer of loads from the fire separating structure to the damper body. The connecting ducting must be suspended or supported in such a way that any transfer of load from the connecting duct to the damper flange is completely excluded.

7. The damper body must not get deformed during its installation process. Once the damper is built installed, its blade must not grind on the damper body during its opening or closing.

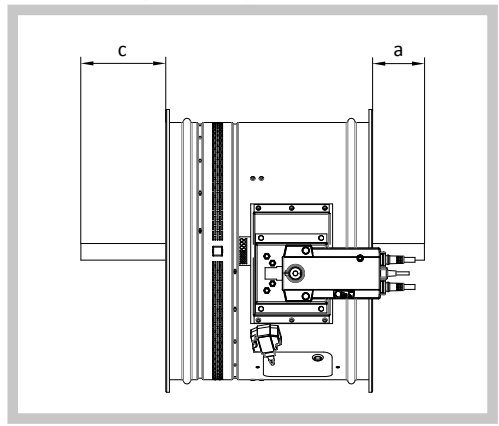
8. To provide needed access space to the control device, all the other objects must be situated at least 350 mm away from the damper control parts. At least one inspection hole must be accessible.

9. Damper blade overlaps

SPIRO damper overlaps



FLANGE damper overlaps

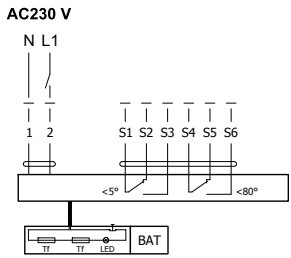


Damper blade overlaps

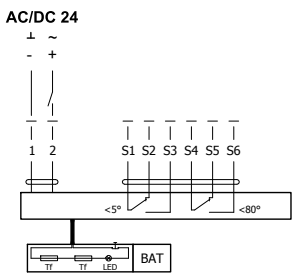
Nom.dimension ØD [mm]	a [mm]	c [mm]
100	-	-
125	-	-
140	-	-
150	-	-
160	-	-
180	-	-
200	-	-
225	-	-
250	-	9
280	-	24
315	-	41,5
355	-	61,5
400	-	84
450	-	109
500	-	134
560	-	164
630	19	199
710	58,5	238,5
800	103,5	283,5

10. Wiring diagrams

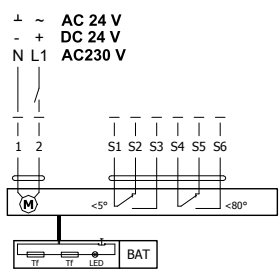
Actuator BELIMO BFL, BFN 230-T



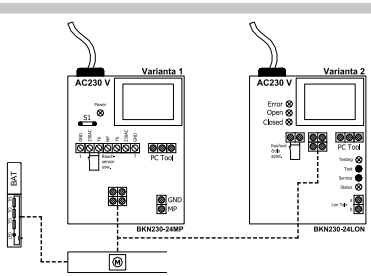
Actuator BELIMO BFL, BFN 24-T(-ST)



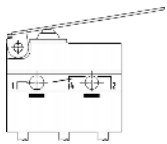
Actuator BELIMO BF 24-TN(-ST), BF 230-TN

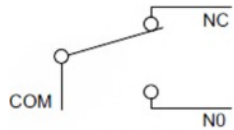


Actuator BELIMO BF 24TL-TN-ST



Limit switch G905-300E03W1





1(COM) - black wire
2(NC) - gray wire
4(NO) - blue wire

Nominal voltage and maximal current	AC 230V / 5A
Class of protection	IP 67
Working temperature	-25°C … +120°C

This limit switch is possible to connect in following two versions:

a) **CUT-OFF** if the arm is moving … connect wire 1+2
b) **SWITCH-ON** if the arm is moving … connect wire 1+4

11. Before commissioning the dampers and during their subsequent operational checks, it is necessary to check and functionally test all the designs, including the operation of any electronic elements. Upon commissioning, these operational checks must be completed at least twice a year. If no defect is found during two consecutive operational checks, then operational checks may be completed once a year.

12. Prior to the commissioning of the dampers and subsequent operational checks, the following checks must be completed with all the designs:

Visual inspection for proper damper installation, damper interior, damper blade, blade seating surfaces, and silicone seal.

Removing the inspection opening cover: Unscrew the pan head screws (2 pcs) and tilt remove the cover.

13. For dampers with mechanical control (designs .01, .11, .80) the following checks must be completed:

Check of the closing mechanism and thermal protective fuse

The mechanism operation is verified as follows:

The damper blade is turned to its “CLOSED” position as follows:

- The damper is in its “OPEN” position.
- By pressing the control mechanism button, you turn the damper into its “CLOSED” position.
- Check the damper blade adjustment in its “CLOSED” position.
- The closing must be strong, and the control lever and damper blade must be in their “CLOSED” positions.

The damper blade is turned to its “OPEN” position as follows:

- Rotate the control lever by 90°.
- The lever gets automatically locked in its “OPEN” position.
- Check the damper blade adjustment in its “OPEN” position.

The thermal fuse function and status get checked as follows:

- To check the thermal fuse function and status, it is possible to remove the whole mechanism from the fire damper body - the mechanism is attached to the damper body with four M6 screws.
- After the thermal fuse removal from its holder in the initiation device, check its proper operation.
- The mechanism size is marked M1 to M4 per the shutting spring force.

14. The actuator design must be checked as follows:

The blade turn to its breakdown “CLOSED” position may be checked upon cutting off the actuator power supply (e.g. by pressing the RESET button at the thermoelectric starting mechanism BAT or by cutting off the fire alarm power supply). The blade turn back to its “OPEN” operating position may be checked upon restoration of power supply (e.g. by releasing the RESET button or restoration of the fire alarm power supply).

15. Actuator control without electric voltage:

A special lever (part of the actuator) may be used to manually set the dampers to any position. When the lever is turned in the direction of the arrow, the damper blade turns to its open position. To stop the damper blade in any position, the actuator gets locked per the actuator instructions. Unlocking is done manually per the actuator instructions or by supply voltage restoration.

WARNING!
If the actuator is manually locked, the damper blade will not close in the event of a fire after the activation of the BAT thermoelectric trigger. To restore correct damper operation, the actuator must be unlocked (manually or by applying power supply)

16. Installation, maintenance, and operational checks of the dampers may only be completed by persons qualified for these activities, i.e. “AUTHORIZED PERSONS: trained by the manufacturer.

The dampers must be installed in compliance with all the applicable safety standards and regulations.

17. Actuator reset after the fuses activation:

If the thermal protection fuse Tf1 (for the temperature around the fire damper) is burned, it is necessary to replace the actuator, including the thermoelectric trigger.

If the thermal protection fuse Tf2 (for the temperature inside the piping) is burned, separate spare part ZBAT72 or ZBAT95 may be replaced (according to the starting temperature).

Material and Surface Finish

- The damper bodies are normally supplied in their galvanized sheet steel design (alternatively stainless steel) without any additional surface finish.
- The damper blades are made of asbestos-free fire-resistant mineral fibre boards.
- The damper control devices are made of galvanized materials (alternatively of stainless steel) without any additional surface finish.
- The springs are galvanized (alternatively made of stainless steel).
- The thermal protection fuses are made of brass sheet 0.5 mm thick.
- The connecting material is galvanized (alternatively made of stainless steel).

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