

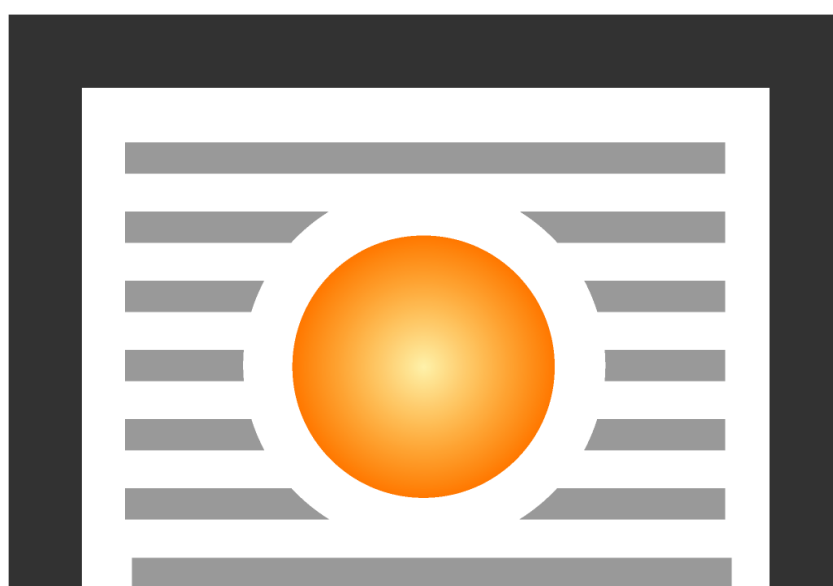
Fire damper:

Multi-blade fire damper



Model WIP PRO S & WIP PRO V

Operation and maintenance manual



SAFE • VENT®



Table of content

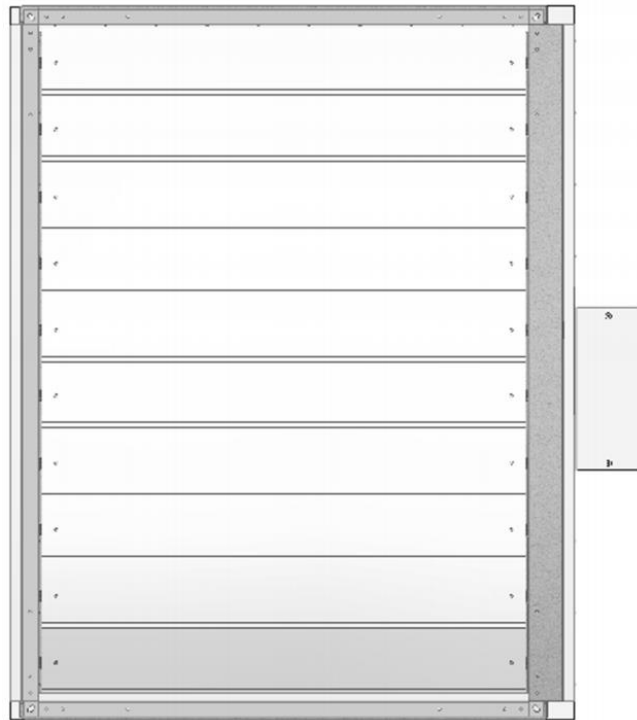
1. Introduction	4
2. Subject of the manual	4
3.1 Application	4
3.2 Fire resistance	4
3.3 Versions	5
3.4 Size range	5
4. Design and operating principle of the fire damper	5
4.1 Design	5
4.2 Operation principle	6
4.3 Trigger control gears	7
4.4 Basic dimensions	8
5. Device identification	9
6. Installation of the fire damper	10
6.1 PRE-ASSEMBLY INSPECTION	10
6.2 Installation opening	10
6.3 EMBEDDING / SETTING THE DAMPER	10
6.3.1 Fig. WIP PRO fire damper installation example in solid walls made of bricks or stone blocks with a minimum fire resistance rating of EI120. Installation gap: 10 mm.	12
6.3.2 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120. Installation gap: 10 mm.	13
6.3.3 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120 with masking grid and duct. Installation gap: 10 mm. ..	14
6.3.4 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120 with masking grid. Installation gap: 10 mm.	15
6.3.5 Fig. Modular masking grill WIP PRO	16
6.3.6 Fig. Example installation of the WIP PRO fire damper in a floor slab, min. thickness 150 mm, min. fire resistance rating: EI120 Installation gap: 10 mm.	17
6.3.7 Fig. Mounting Z-bars, installation of the WIP PRO fire damper in a concrete ceiling slab with min. thickness: 150 mm, min. fire resistance rating: R120	19
6.3.8 Fig. Example installation of the WIP PRO in sets	20
6.3.9 Rys. Installation of ventilation ducts	21
6.4 Electrical connections	22
6.4.1 Electrical actuators – electrical information	22
6.4.2 Connection diagram for the BF24-T, BLF24-T, BF230-T, and BLF230-T actuators	24
6.4.3 Connection diagram for the BFL24-T, BFL230-T, BFN24-T, and BFN230-T actuators	24
6.4.4 Connection diagram for the BE24, BLE24, BE230 and BLE230 actuators	24

6.5 RST/KW1 trigger control gear25

7. Transport and storage conditions.....25

8. Maintenance and servicing26

9. Warrenty conditions26



Technical Manual designation

- Option available
- Option unavailable

NOTE

All previous issues of this Technical Manual expire on the date of issue hereof. The Technical Manual does not apply to the fire dampers manufactured before its date of issue.

1. Introduction

The purpose of this Technical Manual is to present the intended use, design, principle of operation, correct installation and operation of the WIP PRO multi-blade fire damper, intended for fire ventilation systems. The Manual also includes additional information about the operating and transport conditions, and warranty terms and conditions applicable to the product.

2. Subject of the manual

This Manual concerns the entire group of multi-blade fire dampers type WIP PRO. Compliance with the Manual guidelines ensures correct performance of the device in terms of fire protection of rooms as well as safety of the system users

3. Intended use of the fire damper

3.1 Application

Type WIP PRO multi-blade fire dampers may be used as:

- shut-off fire dampers – WIP PRO/S
- shut-off fire dampers for fire ventilation systems –WIP PRO/V
- shut-off fire dampers for mixed fire ventilation systems –WIP PRO/V-M
- transfer fire dampers –WIP PRO/T
- relief fire dampers –WIP PRO/T-G

! Caution:

The dampers cannot be operated in systems exposed to dust, except for when they are included in a special, individually developed program of service and technical inspections.

3.2 Fire resistance




Type WIP PRO fire dampers have the following fire resistance ratings:

<input type="checkbox"/>	EI60S	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G	<input type="checkbox"/>	EI120S	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G
<input type="checkbox"/>	EI60	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G	<input type="checkbox"/>	EI120	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G
<input type="checkbox"/>	E60S	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G	<input type="checkbox"/>	E120S	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G
<input type="checkbox"/>	E60	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G	<input type="checkbox"/>	E120	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G
<input type="checkbox"/>	EI180	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G	<input type="checkbox"/>	E180	<input type="checkbox"/>	/S	<input type="checkbox"/>	/V	<input type="checkbox"/>	/V-M	<input type="checkbox"/>	/T	<input type="checkbox"/>	/T-G

i The fire resistance rating depends on application, method and place of installation of the damper.

3.3 Versions

Multi-blade fire damper WIP PRO is manufactured in below showed versions:

-  rectangular dampers
-  rectangular dampers with round connections
-  round dampers

3.4 Size range

Type	WIP PRO /S WIP PRO /V WIP PRO /V-M	WIP PRO /T	WIP PRO /V WIP PRO /V-M
Width	from 110 to 900 mm	from 110 to 900 mm	from 260 to 1250 mm
Height	from 263 to 1250 mm	from 263 to 1250 mm	from 110 to 1250 mm
Length	135 mm		
Rotation axis	Horizontal	Horizontal/ vertical	Vertical
Max. surface area	1,125 m ²	1,125 m ²	1,56 m ²
Min. surface are	0,029m ²		

4. Design and operating principle of the fire damper

4.1 Design

The WIP PRO multi-blade fire dampers comprise a casing with a rectangular cross-section (depending on the version). Construction of the WIP PRO consist of:

- Casing of the damper, made of galvanized or stainless steel sheet (2 sections divided with fire-retardant board), covered from outside with refractory board and C-shape profiles made of galvanized steel (thickness: 1,25mm); whole casing is reinforced from both sides with corners made of flat steel with thickness: 2 mm
- Damper blades rotating around its own axis. Axis is made from 2 steel pivots - each pivot is placed in a brazen sleeve fastened to the fire damper vertical side wall (H). (each blade is made of 2 refractory boards 20 mm thick, shifted against each other)
- An intumescent gasket and a ventilation gasket, fastened with staples, which is placed on entire length of damper blade
- Release mechanism (actuated by remote control or automatically after activation of the thermal release)
- Vertical side wall of damper with actuator secured with refractory board
- Intumescent and ventilation gaskets (inside of the casing – on the vertical damper side wall “H”)
- A steel shield of actuator in omega letter shape, installed on side “H” of the damper
- Limit profiles made of galvanized or stainless steel, which are restricting movement of the damper blade, placed inside of casing surface. Profiles are covered with ventilation seal.

4.2 Operation principle

The operating principle and way of working of the WIP PRO multi-blade fire dampers depend on their application versions:

shut-off fire dampers – WIP PRO/S

In the normal operating position the dampers are open. Closing of the dampers (to the safety position) follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button on the thermoelectric trigger
- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the voltage supply
- automatically, by tripping the thermal trigger and the driving spring

shut-off fire dampers for fire ventilation systems – WIP PRO/V

In the normal operating position the dampers are closed. Opening of the dampers (to the safety position) follows:

- remotely, by tripping an electric axial actuator without a return spring, as a result of applying the supply voltage to the actuator in the right manner

shut-off fire dampers for mixed fire ventilation systems – WIP PRO/V-M

In normal operation the dampers are closed or open, depending on the function carried out. Opening / closing of the dampers (to the safety position) follows:

- remotely, by tripping an electric axial actuator without a return spring, as a result of applying the supply voltage to the actuator in the right manner

transfer fire dampers – WIP PRO/T

In the normal operating position, the dampers are open. Closing of the dampers (to the safety position) follows:

- automatically, by tripping the thermoelectric trigger
- manually, by pressing the control button on the thermoelectric trigger
- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage
- automatically, by tripping the thermal trigger and the driving spring

relief fire dampers – WIP PRO/T-G

In the normal operating position, the dampers are open or closed, depending on the function carried out. Opening / closing of the dampers (to the safety position) follows:

- remotely, by tripping an electric axial actuator with a return spring caused by isolation from the supply voltage. The actuator has no thermoelectric trigger.

Proper performance manual check of dampers with electrical actuator for maintenance purposes can be done by using a special hex wrench. The key should be placed in marked socket on the actuator. Thanks to the rotation of the key, damper blade can be placed in desired position. Rotate the wrench slowly, smoothly and carefully. Rotating the wrench too fast or too rapidly may damage the internal actuator gear or the power transmission system.

i CAUTION

Never pull directly on the damper blade to open or close the device. This may result in damage of the self-locking driving gear of the damper, and is not covered by warranty.

4.3 Trigger control gears

The following trigger control gears are available for the WIP PRO fire dampers:

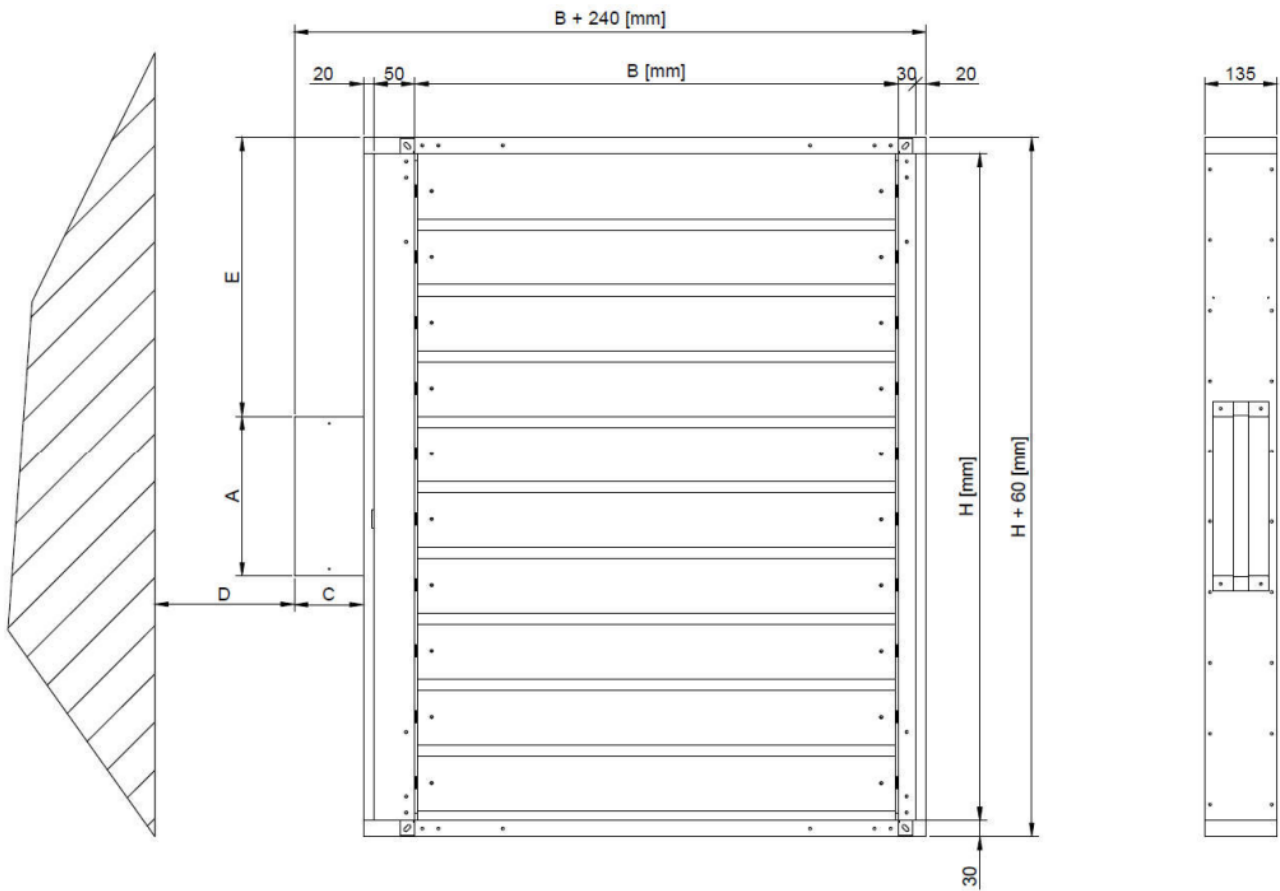
Electrical actuator:

■	BF 230-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BLF 230-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BF 24-T (-ST)	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BLF 24-T (-ST)	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BE 230	□	/S	■	/V	■	/V-M	□	/T	□	/T-G
■	BLE 230	□	/S	■	/V	■	/V-M	□	/T	□	/T-G
■	BFL 230-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BFN 230-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
□	EXBF 24	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	BF 24 (-ST)	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	BFL 24(-ST)	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	BF 230	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	EXBF 230	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	BLF 24 (-ST)	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	BLF 230	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
■	BE 24	□	/S	■	/V	■	/V-M	□	/T	□	/T-G
■	BLE 24	□	/S	■	/V	■	/V-M	□	/T	□	/T-G
■	BFL 24-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BFN 24-T	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	BF 24-T-TL	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
□	BFN 24(-ST)	□	/S	□	/V	□	/V-M	□	/T	□	/T-G

Spring mechanism:

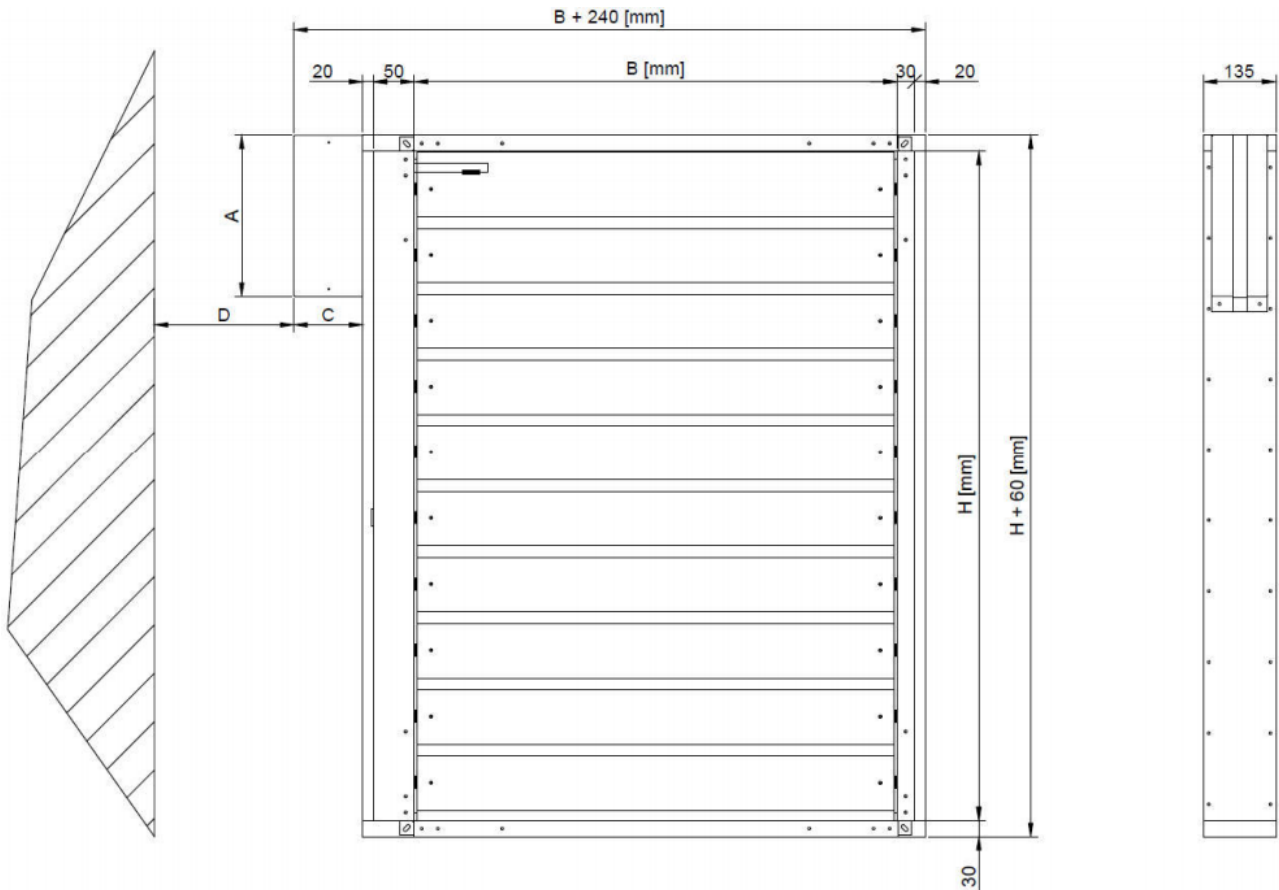
□	RST	□	/S	□	/V	□	/V-M	□	/T	□	/T-G
■	RST/KW1/24P	■	/S	□	/V	□	/V-M	■	/T	□	/T-G
■	RST/KW1/S	■	/S	□	/V	□	/V-M	□	/T	□	/T-G
□	RST/KW1/24I	□	/S	□	/V	□	/V-M	□	/T	□	/T-G

4.4 Basic dimensions



Fire damper WIP PRO with electric actuator BELIMO

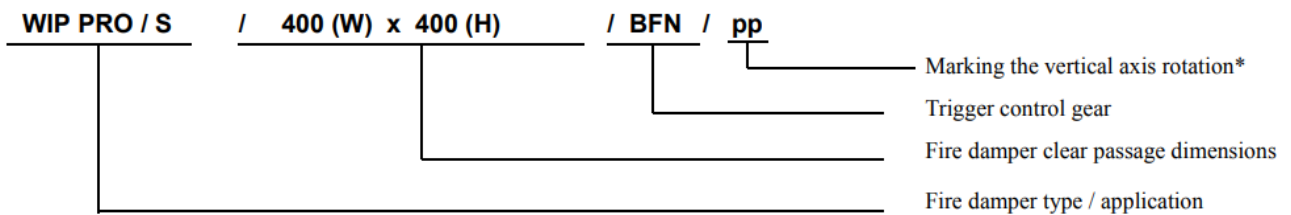
Mechanism	A	C	D	E
BF, BLF, BFL, BFN, BE, BLE	298	120	75	wzór



Fire damper WIP PRO with spring gear.

Mechanism	A	C	D
RST/KW1/S	298	120	75
RST/KW1/24P			

5. Device identification



* in the case of lack of marking the vertical axis rotation, the horizontal axis of rotation is assumed to be the default

6. Installation of the fire damper

ⓘ CAUTION

During the installation of the damper and finishing works with it, there is a need to consider possibility of future access to the device and possibility of disassembly the control-release mechanism in order to perform maintenance or technical review.

The WIP PRO dampers can be installed in the following building partitions (i.e. walls or ceilings):

- masonry concrete walls min. 120 [mm] thick in variants /S, /T, /V, /V-M
- masonry walls made of bricks or blocks min. 120 [mm] thick in variants /S, /T, /V and /V-M
- panel walls min. 125 [mm] thick in variants /S, /T, /V, /V-M
- floor slabs min. 150 [mm] thick in variant /S

**Dampers mounted in the floor slabs, may have a maximum dimension BxH: 1000x1000mm*

Additionally, fire dampers can be installed:

- outside walls
- in batteries (sets of few dampers)

The WIP PRO shut-off fire dampers may also be installed in partitions with a lower class of fire resistance. In such case the damper fire resistance is equal to the partition fire resistance, if the smoke tightness factor is met. When installing the fire damper in a wall, the thickness of which is narrower than required minimum, increase the thickness at the installation location i.e.: by adding an extra board or other suitable construction material on the damper perimeter.

6.1 PRE-ASSEMBLY INSPECTION

Each fire damper is inspected by the manufacturer before packing and shipping. After unpacking the delivered damper, visually examine it for any damage or casing deformations, which could have occurred during transport.

6.2 Installation opening

The minimum dimensions of the installation opening, which allow correct installation of the WIP PRO damper are:

$$B_o = (B + 240) + 40 [\text{mm}] \quad H_o = (H + 60) + 40 [\text{mm}]$$

Dimension “Z” (distance from the fire damper top edge and the trigger control gear guard box) - depends on the dimension H and the applied trigger control gear type:

Gear type	Even number of blades	Odd number of blades
Belimo BF, BLF, BFL, BFN, BE, BLE	$Z [\text{mm}] = (H/2 - 123) + 30$	$Z [\text{mm}] = (H/2 - 61.5) + 30$
RST/KW1/S, RST/KW1/24P	$Z [\text{mm}] = 0$	$Z [\text{mm}] = 0$

6.3 EMBEDDING / SETTING THE DAMPER

The WIP PRO fire damper will work properly if the damper blade rotation axis is horizontal. The control-release gear may be placed on the right or on the left side of the damper for any direction of air flow.

Before mounting/fixing, place the damper axially in the partition (the wall or ceiling which are separating the fire zones) in earlier prepared/finished mounting opening. Level the device and immobilize it. Install struts for fire dampers with sizes above 700x700 mm. Next, manually run the damper blade to verify that the

rotation is correct (i.e. there is no collision with the damper casing parts, etc.). Close the fire damper blade. The blades of fire damper must remain closed until the mortar has cured. Having completed the installation and with the mortar fully cured (if mortar was used), remove the masking covers and the struts, after that open and close the fire damper blades again to verify the correct performance.

In case of installing damper in solid wall – filling the installing gaps with mortar should start from the lowest part of damper, later proceed upward in a way, that will avoid mechanical stress on the trigger control gear guard box with the Y shield.

Carefully fill the gap between the damper casing and the wall with a proper mortar formula that ensures proper wall and damper fire resistance, and do not let the mortar get into the damper main components (i.e. the trigger control gear, the isolation partition, gaskets and stops). To do this, before installation, the fire damper should be covered with plastic film or other suitable material and remain so until the embedding and finishing is done.

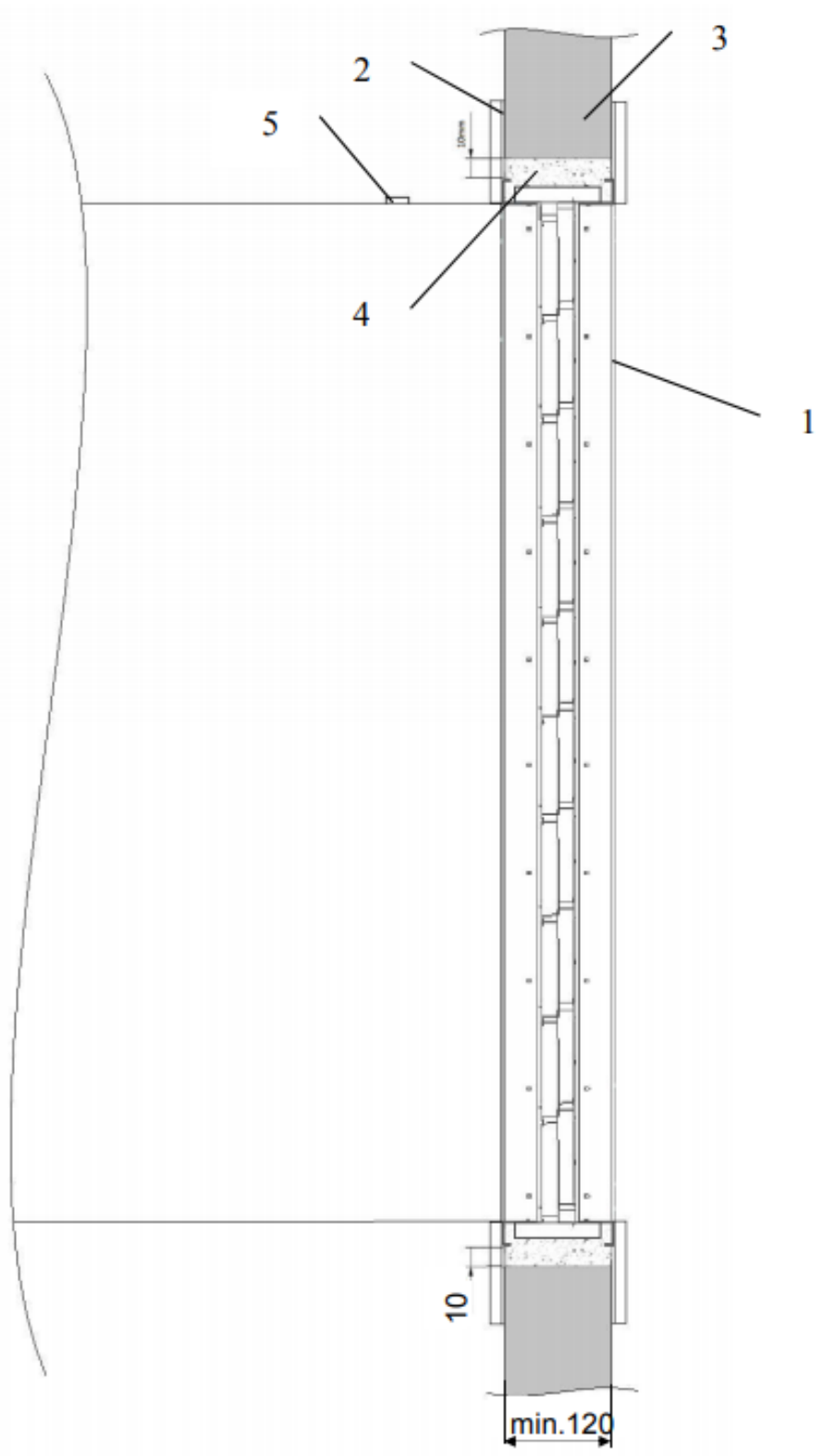
When installing the fire damper in a panel wall, fill the space between the damper casing and the wall with mineral wool certified with A1 grade (non-combustible); the mineral wool density and thickness must ensure fire resistance, at the same level or higher than the fire resistance of the wall in which the fire damper is installed. The filled space additionally should be sealed with a proper mortar or putty that has the fire resistance required for the wall.

During fire damper installation in a floor slab, make a frame from Z-bars and set the fire damper in it. Carefully fill the gap between the damper casing and the floor slab with a proper and certified mortar compound that ensures proper wall and damper fire resistance, and do not let the mortar get into the damper actuation components (i.e. the trigger control gear, the damper blade, gaskets and stops). To do this, the fire damper must be covered with plastic film or other suitable material and remain so until the embedding and finishing is done.

In order to ensure the fire resistance of the fire separation element, the damper blades rotation axis cannot be situated outside the wall face.

If the fire partition (wall) thickness is similar to the length of fire damper, it is recommended to install the fire damper in way, where axis of the damper is aligned with the building partition cross section centre. The embedded fire damper must be coaxially connected to the ventilation duct. Protect the fire damper casing from damage, and specifically from straining the casing during the installation process. The fire damper cannot bear the load of the ventilation duct or the ventilation system in which it is installed. Using drills, screws, bolts or other elements that pierce through the casing to the inside of the damper is prohibited. Once connected to the ventilation ducts, re-verify the fire damper performance. During the installation of the WIP PRO fire damper, keep in mind, that the thermal trigger (a fusible link) must not be damaged or exposed to high temperature (from fire, and welding/soldering equipment), which might release it (it is a single use element and is not subjected to warranty replacement). Do not expose the intumescent gaskets installed in the fire damper casing to high temperature. It is impossible to close the damper, when gaskets are swollen. After installation, carefully clean the fire damper and make sure that there is no debris which could obstruct proper performance of the device.

6.3.1 Fig. WIP PRO fire damper installation example in solid walls made of bricks or stone blocks with a minimum fire resistance rating of EI120. Installation gap: 10 mm.



1 - Fire damper
2 - Plasterboard rim, 100x12.5 mm

3 - Solid wall, min. thickness: 120 mm
4 - Mortar

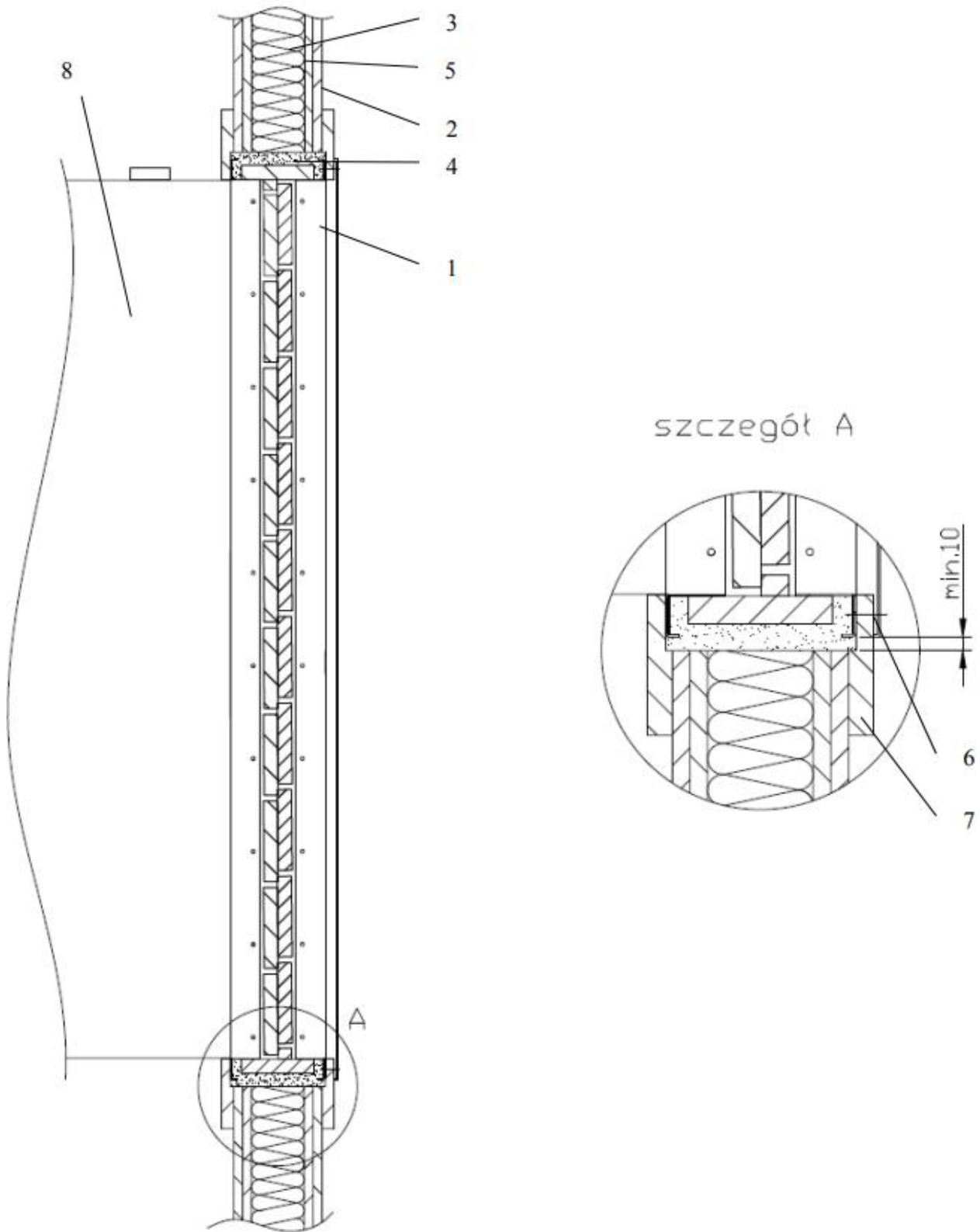
5 - Thermal trigger (installed in the duct 100 mm from the fire damper)

6.3.2 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120. Installation gap: 10 mm.



- | | | |
|--------------------------------------|------------------------|---|
| 1 - Fire damper | 4 - Mortar | 6 - Thermal trigger (installed in the duct 100 mm from the fire damper) |
| 2 - Plasterboard, thickness: 12.5 mm | 5 - Structural profile | 7 - Plasterboard rim, 100x12.5 mm |
| 3 - Mineral wool | | |

6.3.3 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120 with masking grid and duct. Installation gap: 10 mm.

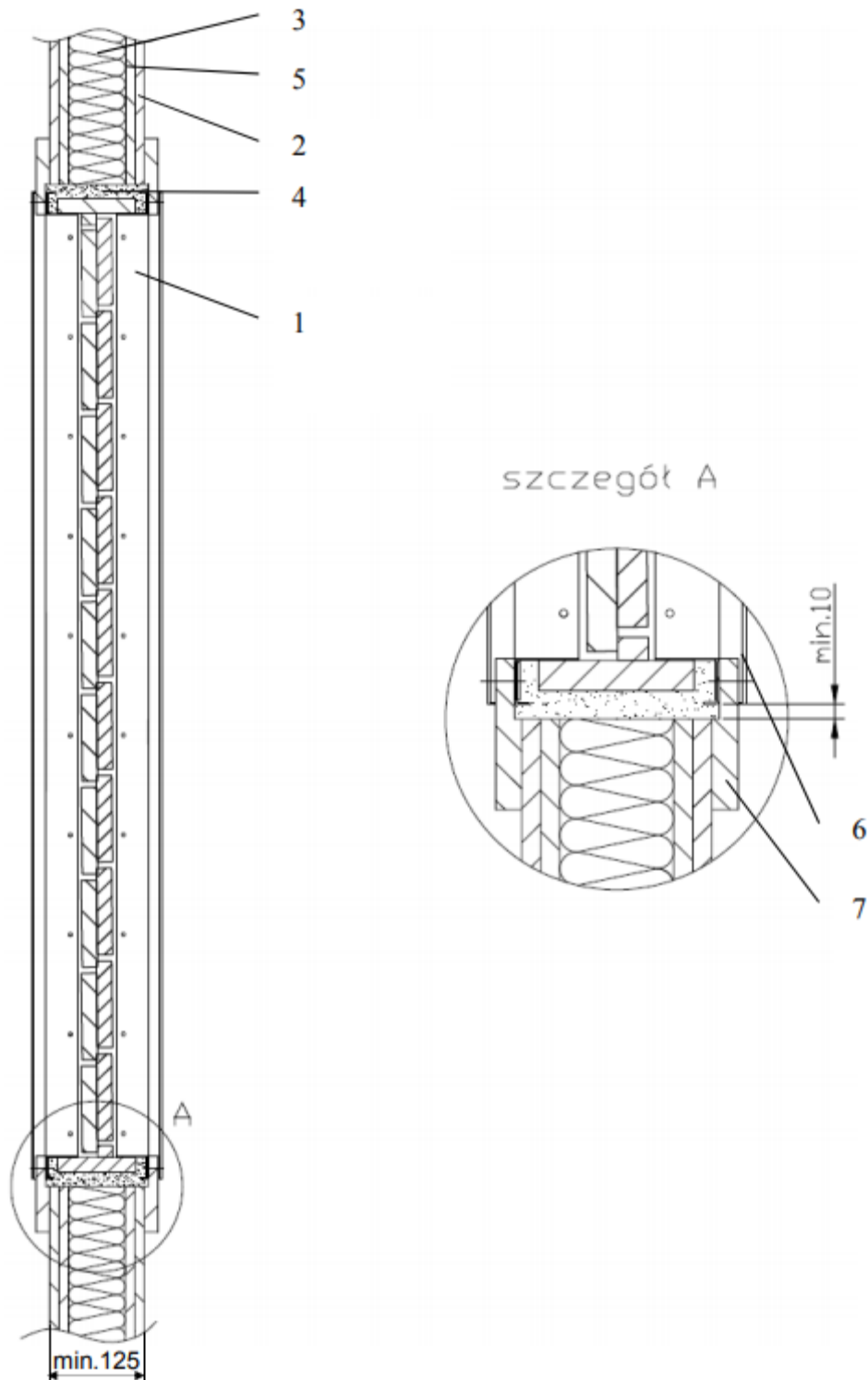


1 - Fire damper
 2 - Plasterboard, thickness: 12.5 mm
 3 - Mineral wool

4 - Mortar
 5 - Structural profile
 6 - Masking grid

7 - Plasterboard rim, 100x12.5 mm
 8 - duct

6.3.4 Fig. Installation example of the WIP PRO fire damper in a drywall structure with a minimum fire resistance rating of EI120 with masking grid. Installation gap: 10 mm.

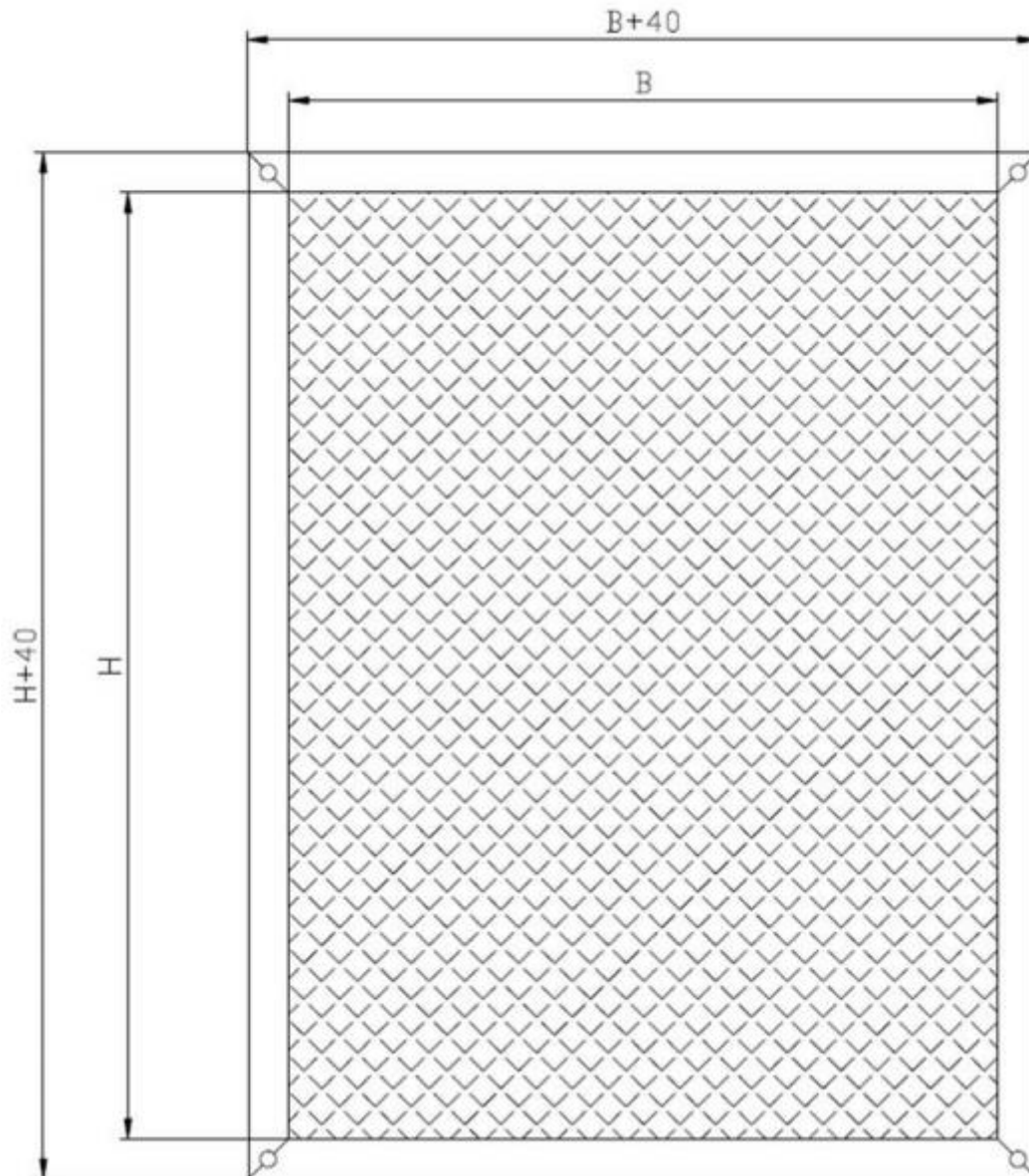


- 1 - Fire damper
- 1 - Plasterboard, thickness: 12.5 mm
- 3 - Mineral wool

- 4 - Mortar
- 5 - Structural profile

- 6 - Masking grid
- 7 - Plasterboard rim, 100x12.5 mm

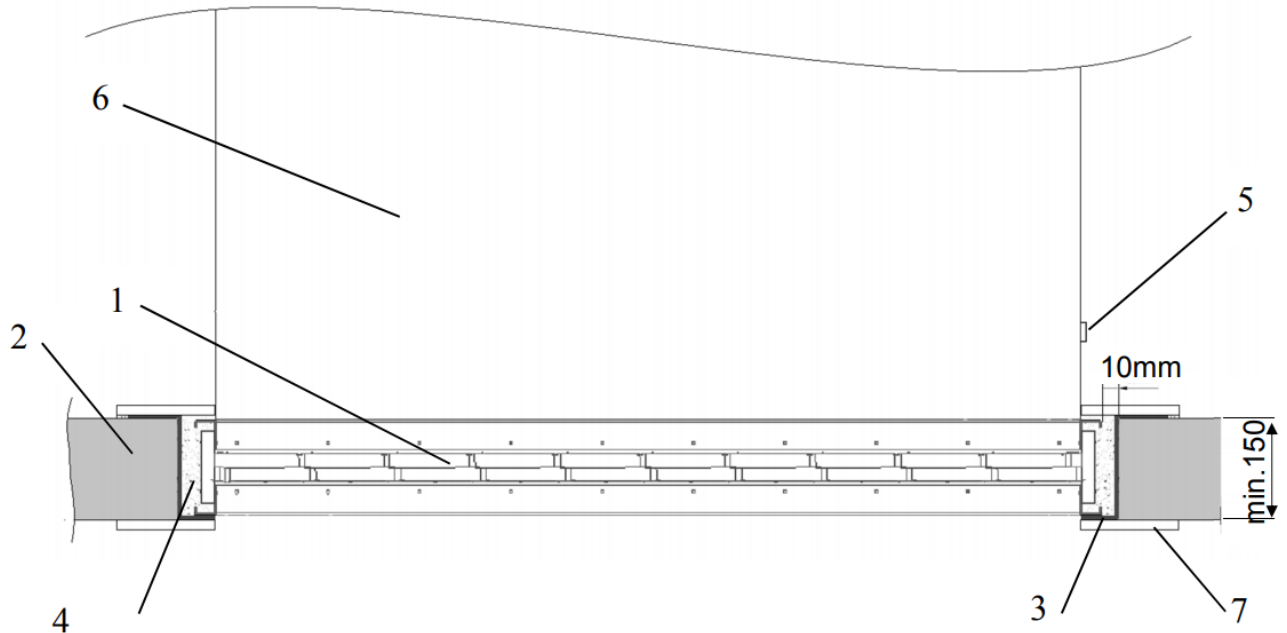
6.3.5 Fig. Modular masking grill WIP PRO



The masking grid can be supplied as a modular by the damper manufacturer. The solution of system masking grates dedicated in particular to usable spaces with high architectural and functional requirements, allows covering additional damper with any other masking grid while meeting the requirements of WIP PRO fire flap classification.

6.3.6 Fig. Example installation of the WIP PRO fire damper in a floor slab, min. thickness 150 mm, min. fire resistance rating: EI120 Installation gap: 10 mm.

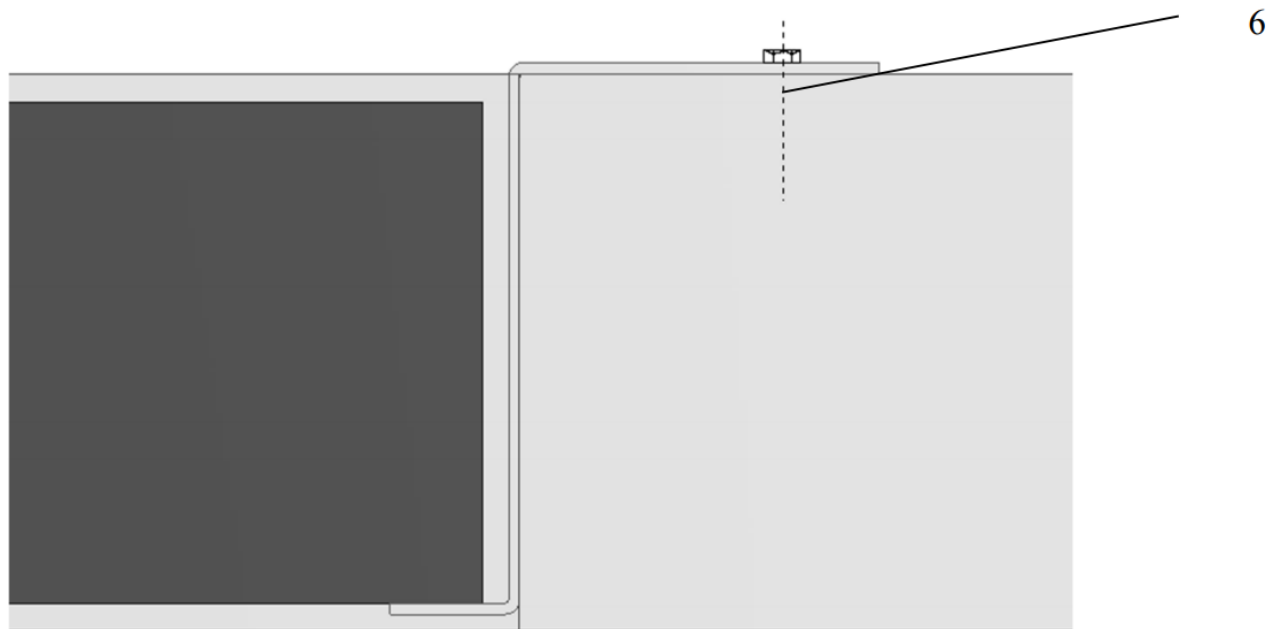
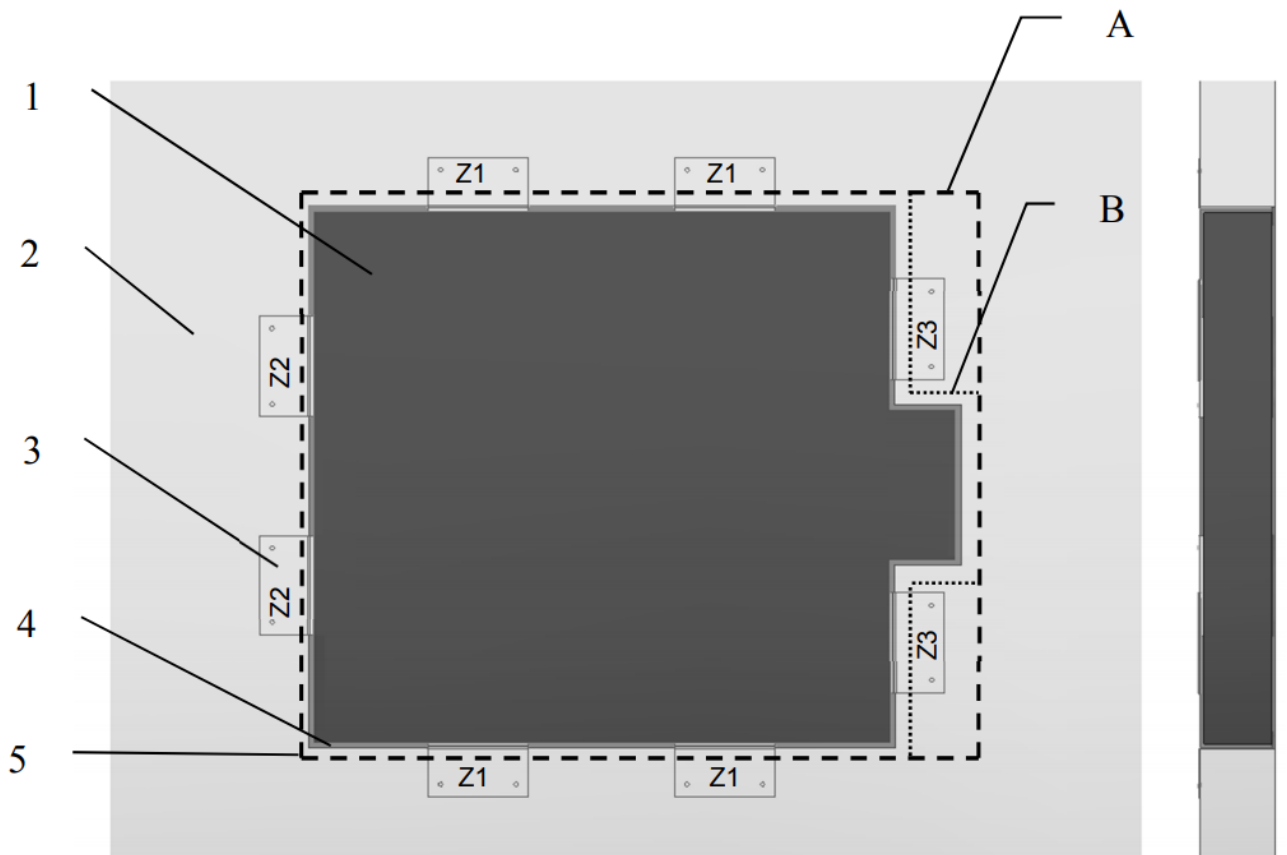
The Z-bars are installed from below of the fire damper, Z-bars are selected accordingly to the fire damper frame width.



- 1 - Fire damper
- 2 - Concrete floor slab, min. thickness: 150 mm
- 3 - Mounting Z-bars

- 4 - Cement mortar
- 5 - Thermal trigger (installed in the duct 100 mm from the fire damper)

- 6 - Steel duct
- 7- Plasterboard rims, 100 mm x 12.5 mm



1 - Fire damper
 2 - Concrete floor slab,
 min. thickness: 150 mm

3 - Mounting Z-bars
 4 - Cement mortar

5 - Installation opening
 6 - Installation plug, M8x80 mm

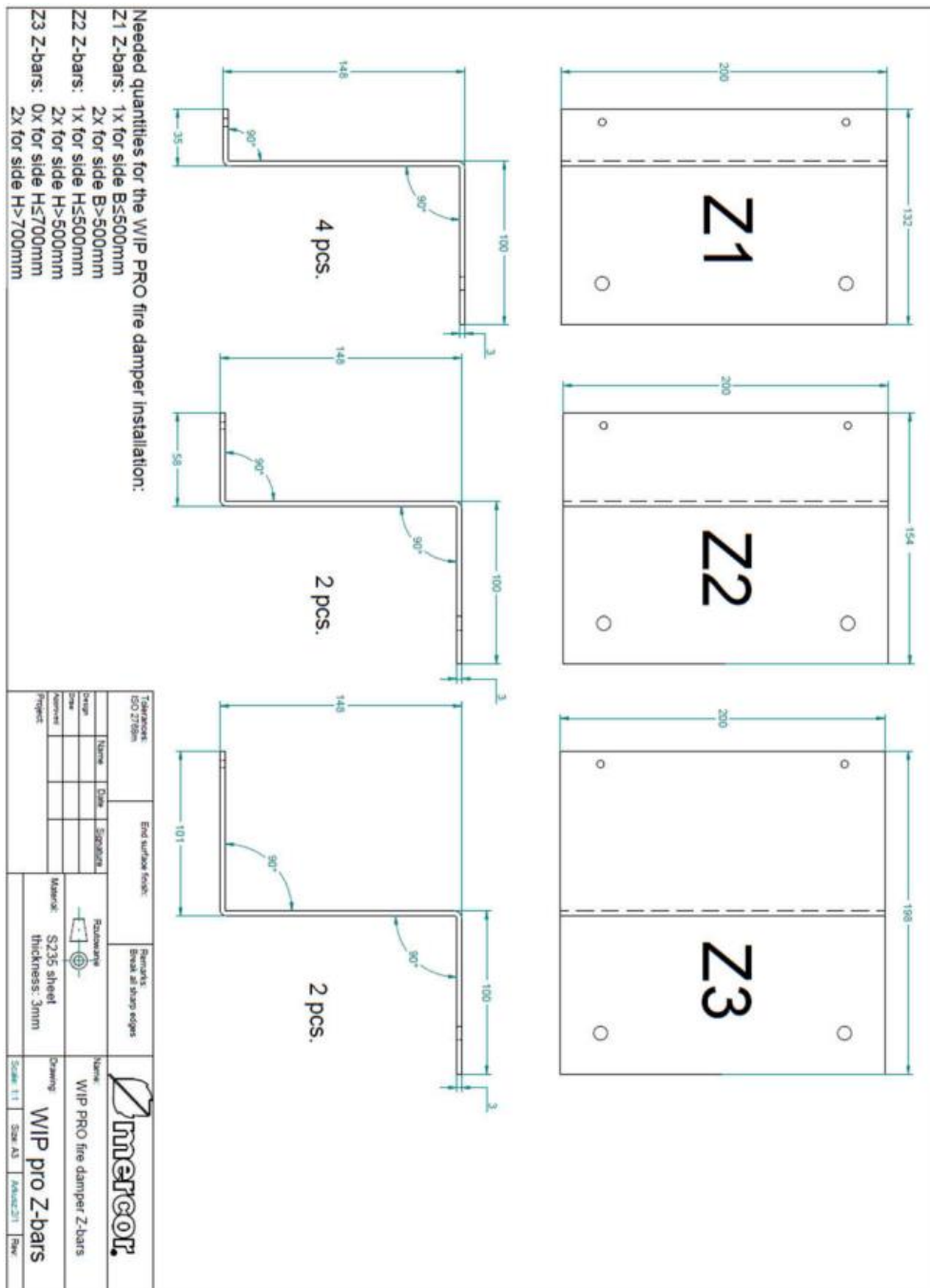
6.3.7 Fig. Mounting Z-bars, installation of the WIP PRO fire damper in a concrete ceiling slab with min. thickness: 150 mm, min. fire resistance rating: R120

⚠ CAUTION:

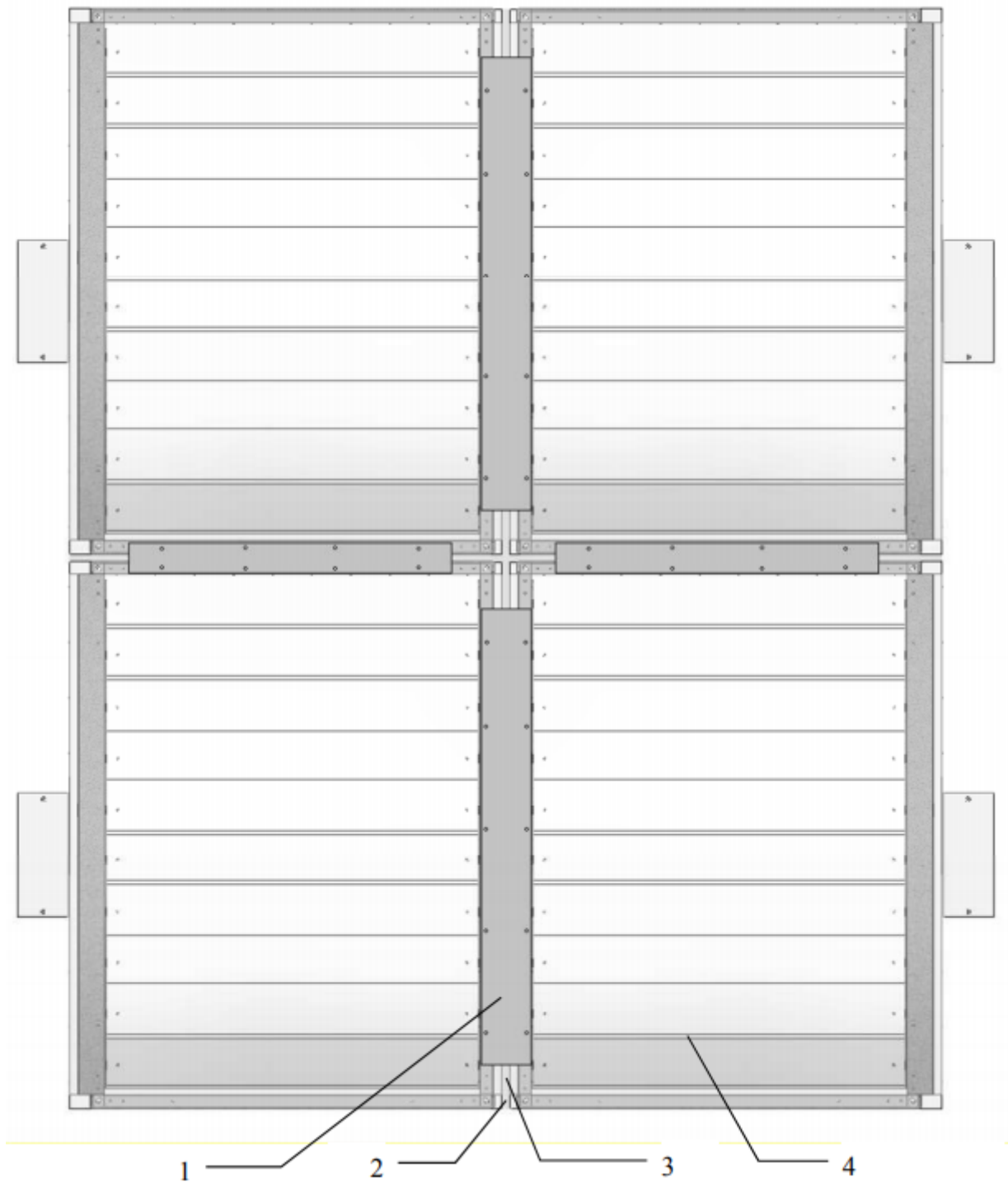
The Z-bars are not delivered in package with fire damper set.

If the installation opening is prepared with a place for control-release mechanism (B), use Z3 Z-bars with dimensions as shown in the figure below.


If the installation opening (A) is prepares in rectangle shape, extend the Z3 Z-bars by 120 mm in relation to the dimensions given in the figure below.



6.3.8 Fig. Example installation of the WIP PRO in sets



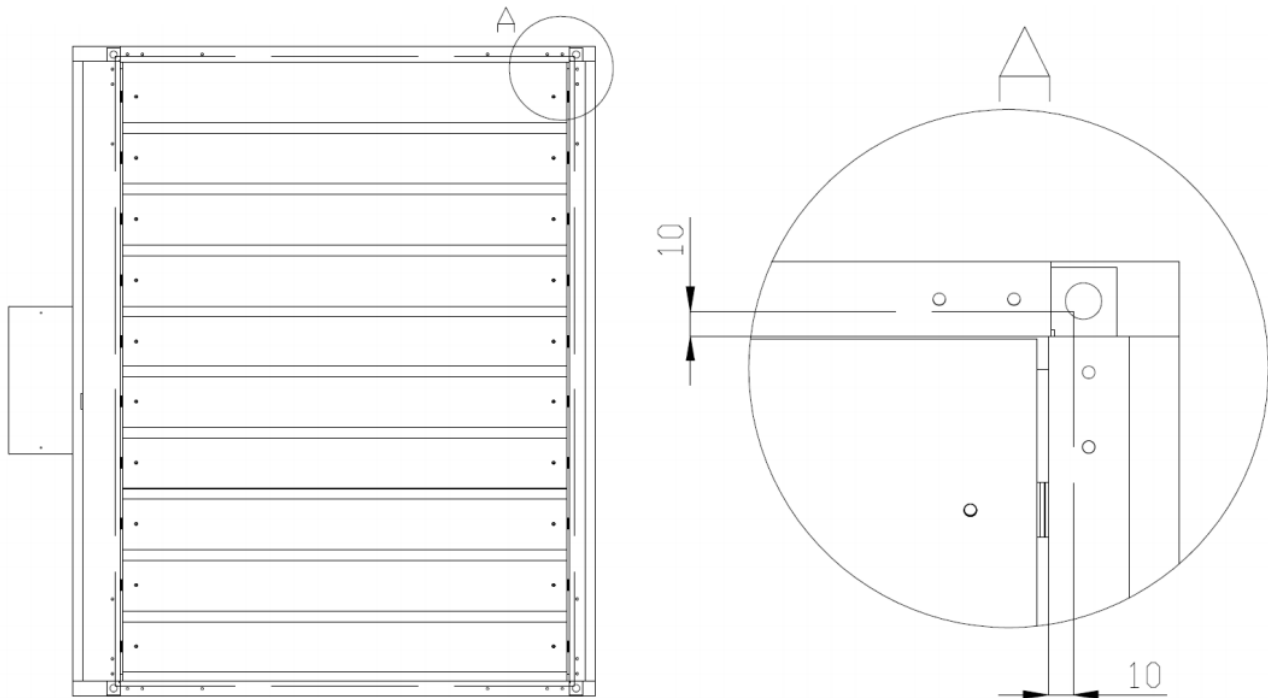
- 1 - Steel flat bar with dimensions:
 - Vertical H: width 110 mm, thk 2 mm
 - Horizontal B: width 70 mm, thk 2 mm
- 2 - 10mm gap between damper flanges
- 3 - Fire resistant material, e.g. mineral wool, min. density: 60 kg/m³
- 4 - WIP PRO fire damper

Bolt the flat bars to the fire damper steel flange with type K hex head self-tapping screws, size ST3.5 / 13 mm, made from galvanized steel accordingly to DIN 7504 

ⓘ CAUTION: These parts are not delivered in package with fire damper set.

6.3.9 Rys. Installation of ventilation ducts.

For the installation of ventilation ducts are provided the rivet nuts in the corners of the damper. In case of need for additional anchorage of the ventilation duct to the damper, it is possible to use hexagon—type self-tapping screws K type ST 3,5x13mm made of galvanized steel according to DIN 7504. The assembly is possible to the steel frame of the damper in distances shown below:



6.4 Electrical connections

If the damper has control elements or other parts which need to be connected to the electrical grid, they should be connected after correct mounting of fire damper in the wall. Below are showed connection diagrams and basic electrical data of control-release mechanisms with which fire dampers WIP PRO are supplied. The thermal trigger is supplied with its baseplate for DIY installation. Fasten the thermal trigger with two sheet screws to the device flange or the duct in a location clear of the fire damper blade rotation radius.

6.4.1 Electrical actuators – electrical information

Actuator type	Location of the damper blade
- Belimo BFL series - Belimo BFN series	Damper blade open – actuator indication 90° Damper blade closed – actuator indication 0°
- Belimo BF series - Mercor MLF series	Damper blade open – actuator indication 90° Damper blade closed – actuator indication 0°
- Belimo BE series - Belimo BLE series	Damper blade open – actuator indication 0° Damper blade closed – actuator indication 90°

Technical specifications - Actuators	BLF24 (BLF24-T)	BLF230 (BLF230-T)	BF24 (BF24-T)	BF230 (BF230-T)
Power supply	AC 24V 50/60Hz DC 24 V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 220-240 V 50/60 Hz
Power demand: - for spring tensioning - for spring holding	5 W 2.5 W	5 W 3 W	7 W 2 W	8 W 3 W
Dimensioning (apparent power)	7 VA	7 VA	10 VA	11 VA
Protection class	III	II	III	II
IP rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker: - activation position [degrees]	2 x SPDT 3 (0.5) A AC 250 V 5°, 80°	2 x SPDT 3 (0.5) A AC 250 V 5°, 80°	2 x EPU 3 (0.5) A 250 V 5°, 80°	2 x EPU 3 (0.5) A 250 V~ 5°, 80°
Torque: - motor - spring	6 Nm 4 Nm	6 Nm 4 Nm	18 Nm 12 Nm	18 Nm 12 Nm
Cable connection: - motor (length 0.9 m) - auxiliary circuit breaker	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²
Movement time: (0-90°) - motor - return spring	40-75 s ≈20 s	40-75 s ≈20 s	120 s ≈16 s	120 s ≈16 s
Ambient temperature	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level: - motor - return spring	max 45 dB (A) ~ 62 dB (A)	max 45 dB (A) ~ 62 dB (A)	max 45 dB (A) ~ 62 dB (A)	max 45 dB (A) ~ 62 dB (A)

Technical specifications – actuators	BFL 24 (BFL24-T)	BFL230 (BFL230-T)	BFN 24 (BFN24-T)	BFN230 (BFN230-T)
Power supply	AC 24 V 50/60 Hz DC 24 V	AC 220–240 V 50/60 Hz	AC 24 V 50/60 Hz DC 24 V	AC 220-240V 50/60 Hz
Power demand: - for spring tensioning - for spring holding	2.5 W 0.7 W	3,5 W 1.1 W	4 W 1.4 W	5 W 2.1 W
Dimensioning (apparent power)	4 VA	6.5 VA	6 VA	10 VA
Protection class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
auxiliary circuit breaker:	2 x SPDT 3 (0.5)A AC 250V	2 x SPDT 3 (0.5) A AC 250V	2 x EPU 3(0.5) A, 250 V	2 x EPU 3(0.5) A, 250 V~
– activation point [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque: – motor – spring	4 Nm 3 Nm	4 Nm 3 Nm	9 Nm 7 Nm	9 Nm 7 Nm
Cable connection: – motor (length: 0.9 m) – auxiliary switch	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²	2 x 0.75 mm ² 6 x 0.75 mm ²
Movement time (0–90°): – motor – return spring	<60 s ~20 s	<60 s ~20 s	<60 s ~20 s	<60 s ~20 s
Operating temperature range	–30 ...+55°C	–30 ...+55°C	–30 ...+55°C	–30 ...+55°C
Sound pressure level: – motor – spring	max 43 dB (A) ~ 62 dB (A)	max 43 dB (A) ~ 62 dB (A)	max 55 dB (A) ~ 67 dB (A)	max 55 dB (A) ~ 67 dB (A)

Technical specifications - Actuators	BE24	BE 230	BLE24	BLE 230
Power supply	AC 24 V 50/60 Hz DC 24 V	AC 220-240V 50/60 Hz	AC 24V 50/60Hz DC 24V	AC 230 V 50/60 Hz
Power demand: - for spring tensioning - for spring holding	12 W 0.5 W	8 W 0.5 W	7.5 W 0.5 W	5 W 0.5 W
Dimensioning (apparent power)	18 VA	15 VA	9 VA	12 VA
Protection class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2 x SPDT 6 (1.5) A AC 250 V	2 x SPDT 6 (1.5) A AC 250 V	2 x EPU 3 (0.5) A 250 V	2 x EPU 3 (0.5) A 250 V~
- activation position [degrees]	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque: - motor	40 Nm	40 Nm	15 Nm	15 Nm
Movement time: (0-90°) - motor	<60 s	<60 s	<30 s	<30 s
Working temperature range	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C	- 30 ...+50°C
Sound pressure level: - motor	max. 62 dB (A)	max. 62 dB (A)	max. 62 dB (A)	max. 55 dB (A)

locations of the limit switches for all types of actuators are showed for the position without the voltage applied. The proper performance of the device with electric actuators requires the rated supply voltage of 24 V \pm 10% or 230 V \pm 10%, as applicable. Other voltage values may cause operating malfunctions, that are not covered by the product warranty.

6.5 RST/KW1 trigger control gear

The RST/KW1/S versions have no electromagnetic release. The gear features integrated limit switches. The electrical connections shall be made by connecting the properly labelled conductors to the electrical supply system. A fusible trigger is installed in the gear.

The RST/KW1/24P version has the electromagnetic release. The gear features integrated limit switches. The electrical connections shall be made by connecting the properly labelled conductors to the electrical supply system. A fusible trigger is installed in the gear.

	RST/KW1/24P (triggered by removal of the supply voltage)
Supply voltage	24 V - 48 V DC
Power demand	1.6W
Holding force	12 daN
Thermal trigger trip point	72°C \pm 2°C
WK1d / WK2d limit switch	NO/NC (switching contact) 5A, 230V AC
Switch trigger	3°, 87°; tolerance: \pm 2°
Limit switch operating temperature	-25 ...+85°C
Electrical connection	- release: 0.6 m, 2x0.5 mm ² cable - limit switch: 0.6 m, 6x0.5 mm ² cable
Rotation angle	92°
Movement time	Max. 2s – spring
Sense of rotation	CCW
Gear weight	1.4kg

KW1 gear power supply:	WK1 limit switch	WK2 limit switch
Wire number: 1-2	Wire number: 3-4 – type NO (normally open)	Wire number: 6-7 – type NO (normally open)
	Wire number: 4-5 – type NC (normally closed)	Wire number: 7-8 – type NC (normally closed)

⚠ Caution! - The location of the limit switches is showed for the fire damper in the safety position.

The RST/KW1 trigger control can work with the MP230/24 module. If the MP230/24 module is installed, the fire damper can be powered/controlled with voltage 230 V AC.

The proper performance of the device with electric actuators requires the rated supply voltage of 24 V \pm 2% or 230 V \pm 2%, as applicable. Other voltage values may cause operating malfunctions, that are not covered by the product warranty.

7. Transport and storage conditions

The fire dampers are packed in cardboard boxes or placed on pallets. The fire dampers are protected against damage with plastic film or another cover type. The fire dampers may be transported on any vehicle, which will assure protection from weather. The fire dampers loaded on the vehicle shall be secured from shifting in transit. Before installing the fire dampers, visually inspect each unit. Do not handle the fire damper by holding the connection cable, or put the damper on its control-release mechanism. Do not strike or drop the fire damper. When handling and installing, place the fire damper on casing sides or edges. Store the fire dampers in sheltered rooms protected from outdoor elements. If the fire dampers are stored on the ground, place them on washers to prevent damage.

8. Maintenance and servicing

The equipment supplied by Safevent ApS requires periodic technical inspection and maintenance at least every 12 months throughout its operating life, i.e. during the warranty and post-warranty period. Inspection and maintenance may only be carried out by the manufacturer or contractors authorised by the manufacturer to service its products.

The obligation to carry out regular service inspections of fire protection devices results from the § 3 Section 3 of the Regulation by the Minister of Internal Affairs and Administration of 7 June 2010 on fire protection of buildings, other civil structures and areas (Dz. U. 2010, no. 109 item 719).

Do these recommended actions in the inspection intervals:

- Check the electrical connections, especially for all mechanical damage.
- Verify the power supply values for the equipment with the following tolerances:
 - 24 V \pm 10% for electric actuators
 - 24 V \pm 2% for electromagnetic triggers
 - 230 V \pm 10% for electric actuators
 - 230 V \pm 2% for electromagnetic triggers
- Check the device casing, especially for mechanical damage.
- Check for any obstructions to proper operation of the equipment.

To facilitate the activities under service inspection, servicing and warranty claim response, e.g. visual inspection or repairs, the equipment user/operator shall provide physical access to the equipment by removing thermal insulation, suspended ceiling, and other installations, as required and applicable to warrant unobstructed access. Inspection ports, e.g. type KRW, are recommended for the equipment installed in ducts. In the case of roof mounted equipment, provide access to the area (via ladders or elevated platforms).

Refer all matters related to technical inspection, maintenance and servicing of this equipment to Safevent ApS. Contact information can be found in English on: www.safevent.dk/en and in Danish on www.safevent.dk/da

9. Warranty conditions

1. Safevent ApS grants 12 months of quality warranty for the equipment from the date of purchase, unless the sales contract states otherwise.
2. If physical defects of equipment are found during the warranty period, Safevent ApS warrants and represents to remove them in 21 days from serving the written warranty claim with the proof of purchase or sales contract, subject to Item 6.
3. Safevent ApS has the right to extend the time of repair if the defect removal is complicated or requires purchasing custom components or spare parts.
4. The warranty liability only covers all defects arising from causes present in the equipment at the date of sale.
5. In the case of defects resulting from incorrect operation of devices or from other causes indicated in point 6, the buyer / party entitled to the warranty will be charged with costs of removing the defects.
6. This warranty does not cover the following:
 - Any damage or failure of the equipment caused by improper operation, tampering, failure to conduct periodic technical inspection and/or maintenance established in the Technical Manual Section “Servicing and Maintenance”.
 - Any damage beyond reasonable control of Safevent ApS, and specifically: caused by force majeure, such as torrential rainfall, flooding, hurricanes, inundation, lightning strike, power grid overvoltage, explosion, hail, collision with aircraft, fire, avalanche, landslide and indirect damage due to those causes. Torrential rainfall is understood as any rainfall with the effectiveness factor of 4 or higher according to the definition of the Polish Institute of Meteorology and Water Management - National Research Institute (IMGW-PIB). If the

effectiveness factor value specified in the preceding sentence cannot be reasonably established, the actual condition and extent of damage shall be considered at the site of their origin as the action of torrential rain. Hurricane is understood as any wind with a minimum speed of 17.5 m/s (and damage shall be recognised as caused by hurricanes if the action of such weather phenomenon has been found in the direct vicinity of the damaged property).

- Damage due to failure to immediately report any defect found.
 - Deterioration in the quality of coatings due to natural weathering/ageing.
 - Defects caused by abrasive or aggressive cleaning agents.
 - Damage caused by aggressive external agents, specifically chemical or biological in nature, or the origin of which is related to the production processing or activity carried out within the facility protected by the equipment or in its direct vicinity.
 - Wearing parts and consumables (e.g. gaskets/seals), unless they have defects of workmanship and/or material.
 - Damage caused by improper transport, handling, unloading and/or storage of the equipment.
 - Damage caused by installation of the equipment in violation of this Technical Manual and/or good construction practice.
 - The equipment and/or parts thereof with removed or damaged nameplate (rating plate) and/or warranty seals.
7. Submit each warranty claim to Safevent ApS in 7 days from the date of discovery of a warranty eligible defect.
 8. Submit warranty claims by calling +45 88 63 89 00, by e-mail: gb@safevent.dk or by mail at the address: Safevent ApS, Mads Clausens Vej 6, 9800 Hjørring, Denmark.
 9. The buyer/warranty rights holder is required to operate the equipment properly and carry out technical inspection and maintenance according to the Technical Manual “Servicing and Maintenance”.
 10. This warranty shall be made immediately void and null if:
 - The buyer/warranty rights holder modifies the product design without prior authorisation from Safevent ApS
 - Periodic technical inspection and/or maintenance is not carried out per schedule and/or is carried out by unauthorised personnel or service providers not authorised to do so by Safevent ApS and/or the equipment has not been properly operated.
 - Unauthorised personnel attempts any intervention in the product outside of the normal operation and maintenance of this equipment.
 11. Any circumstances listed in Item 10 will relieve Safevent ApS from the obligation of surety.
 12. The defects may be removed if the warranty claimant provides free access to facilitate this, especially to the rooms where the equipment has been installed, and provides the necessary inspection access, removal of thermal insulation systems, suspended ceiling, and any other installations which obstruct access to the equipment, etc.

The relevant provisions of the Polish Civil Code shall apply to all matters not regulated in these Warranty Terms & Conditions.