

# Installation of smoke ducts

Multi compartment  
smoke extraction system



INSTALLATION  
MANUAL

EN

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## 1. INTRODUCTION

The smoke control duct and damper system is designed for the evacuation of smoke, hot air, and gases during a fire (or afterwards). After smoke evacuation, a safe zone is created in the premises, providing conditions for safe evacuation of people, and facilitating the tasks and firefighting operations of the fire services. Komfovent smoke control ducts are used as smoke protection for one or multiple rooms (fire zones). The system can also be part of a general smoke evacuation system.

Komfovent smoke ducts have been tested and comply with the requirements of the following standards:

- LST EN 12101-7:2011 „Smoke and heat control systems. Part 7: Smoke duct sections.“
- LST EN 1366-9:2008 „Fire resistance tests for service installations. Part 9: Single compartment smoke extraction ducts“.
- LST EN 1366-8:2004 „Fire resistance tests for service installations. Part 8: Smoke extraction ducts“.

Smoke ducts meet the requirements of the harmonized standard:

- LST EN 12101-7:2011 “Smoke and heat control systems. Part 7: Smoke duct sections”.

The smoke ducts are classified according to LST EN 13501-4:2007 “Fire classification of construction products and building elements - Part 4: Classification using data from fire resistance tests on components of smoke control systems” standard:

Width B, mm	Height H, mm	Standard length L, mm	Classification
200–1250	100–1000	1250	EI 60 ( $v_e h_o i \leftrightarrow o$ ) S1500 multi EI 120 ( $v_e h_o o \rightarrow i$ ) S1500 multi

### Technical data:

- EI 60 - fire resistance for 60 minutes.
- EI 120 – fire resistance for 120 minutes.
- $v_e$  – suitable for vertical use.
- $h_o$  – suitable for horizontal use.
- $i \leftrightarrow o$  – meets criteria when fire is inside or outside the duct.
- $o \rightarrow i$  – meets criteria when fire is outside the duct.
- S1500 – smoke tightness tested under vacuum at a pressure of -1500 Pa.
- Maximum allowable pressure difference – +500 Pa.
- Made of non-combustible materials that comply with Class A1 of flammability.

Cold-formed and chemically passivated sheet steel DX51D+Z275 is used for the production of rectangular duct components. Both sides of the sheet are coated with a zinc layer of 275 g/m<sup>2</sup>. The thickness of the galvanized steel sheet is 0.9 mm. In the connections of rectangular sections, a flange is installed with holes in the corners for screw connections. A 30 mm high flange profile is used. The connection points are sealed with a fire-resistant sealant that is certified. To ensure the rigidity of the product sidewalls, a special reinforcement and rigidity method is used in the ducts. All flue ducts are insulated with a 60 mm thick fire-resistant mineral wool.

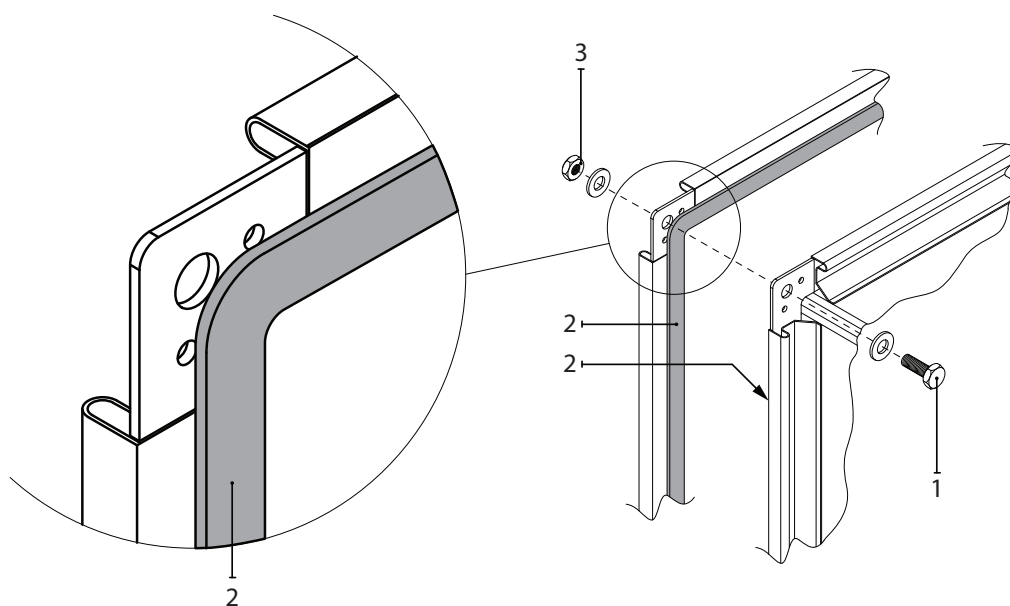
## 2. SMOKE DUCT INSTALLATION



- Each element of the smoke system must be securely fastened with individual brackets and installed in such a way that its weight is not transferred to other connected devices or components of the system.
- Galvanized screws, nuts, and supports should be used for fastening to avoid galvanic corrosion between the connecting metal parts.
- The installation of any duct system should be carried out by a qualified installer. Qualified installers are considered to be individuals with sufficient professional experience and knowledge of smoke duct system installation, as well as an understanding of the requirements of flue duct system design and the ability to work safely without endangering themselves or others.

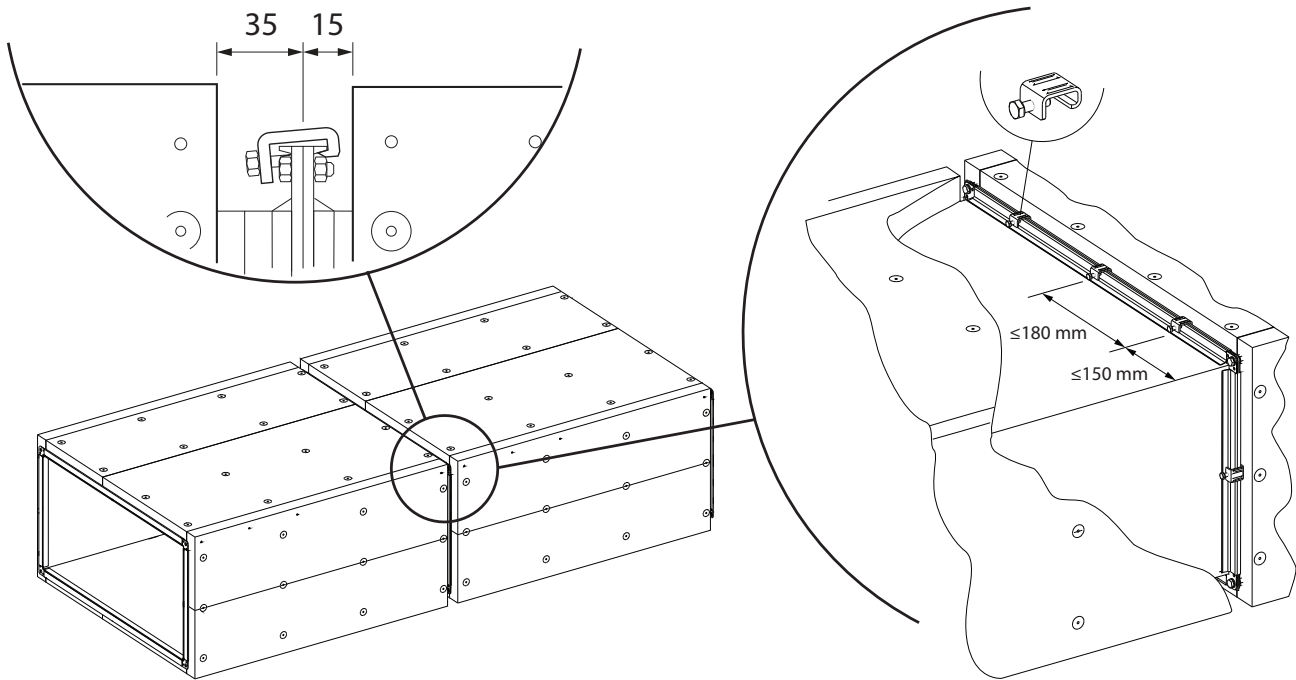
### 2.1. Smoke duct connection

Rectangular smoke ducts are connected to each other using “L” profile flange connections. The flange height is 30 mm and it is marked as L-30. Kerafix 2000 tape (30 × 6 mm) should be used between the flanges to ensure the tightness of the smoke ducts. It is recommended to use the tape in one piece without cutting it into multiple sections. The tape should be glued to both connecting flanges. The corners of the flange connections are tightened with screws, while the sides are connected using universal clamps.



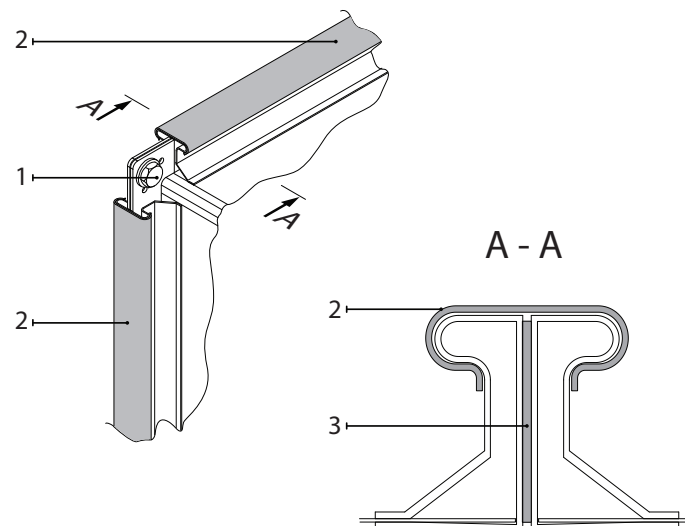
**Pic. 1:** Example of tightening and sealing the flange duct connection:  
1 – M10 screw with washer, 2 – glued 30 × 6 mm Kerafix 2000 gasket, 3 – M10 nut with washer

When connecting the smoke ducts, universal clamps are used. The distance between the insulation and the flange at the ends of the smoke sections may not be the same, as it is designed for sequential system installation, where one section provides space for positioning the clamp screw. To ensure tightness, the clamps should be placed no more than 180 mm apart from each other. The distance from the clamp to the corner of the flange should also be taken into account.



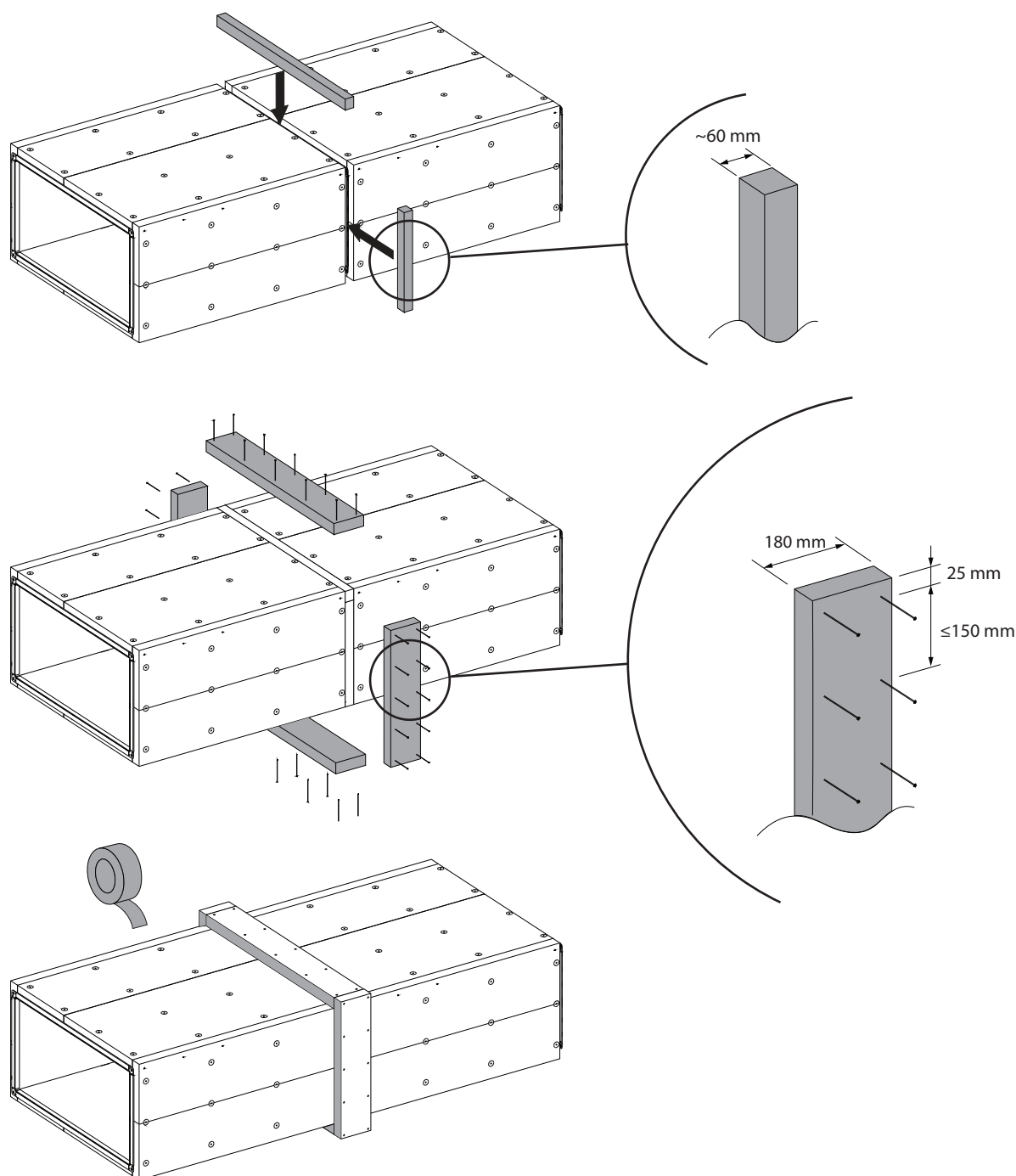
**Pic. 2:** Location of the clamps to join the sections

The flanges at the corners are tightened with M10 screws. All connecting nuts should be located on one side of the flange. In hard-to-reach areas where it is not possible to use universal clamps, smoke ducts are connected using a C-profile that is placed on the edges of the flange.



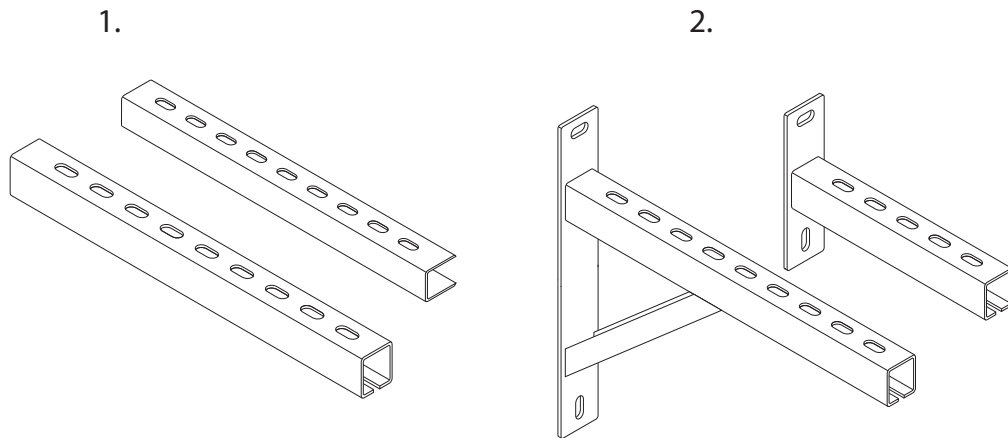
**Pic. 3:** The connection of the smoke ducts using a C-profile  
1 – screw, 2 – C-profile, 3 – Kerafix 2000 tape

The connection points of the smoke ducts should be insulated with layers of fire-resistant mineral wool. Around the flange, 60 mm wide mineral wool insulation layers are installed, followed by 180 mm wide mineral wool insulation layers placed on top and secured with spring screws.



**Pic. 4:** Insulation of the smoke duct connection point

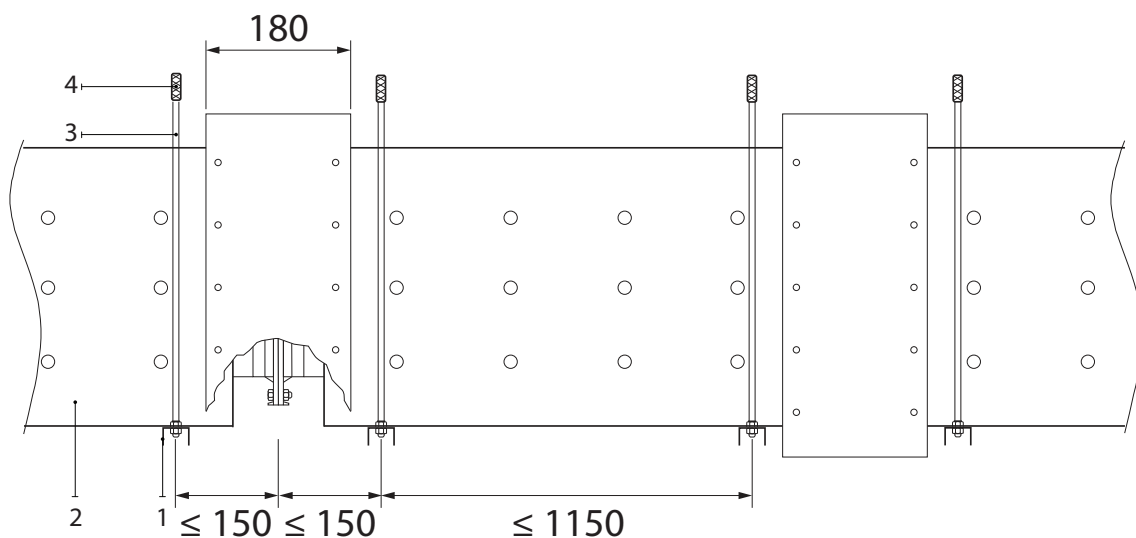
Smoke duct systems can be attached to ceilings, walls, columns, beams, etc. The mounting system should be designed in a way that the weight of the smoke ducts is not transferred to the duct connections (flanges). Different types of fasteners are used depending on the hanging method and the size of the smoke ducts.



**Pic. 5:** Smoke duct support elements:  
1 – profiles, 2 – support brackets

All smoke duct elements should be suspended from profiles (such as U-shaped profile 30 × 30 × 3 mm) or brackets. Profiles are used to attach the ducts to horizontal surfaces (e.g., ceilings), while brackets are used to attach them to vertical surfaces (e.g., walls). Profiles are attached to ceilings using M10 threaded rods, while brackets are fixed with anchor screws.

When securing the horizontal smoke duct system in any way, the distance between the mounting points/supports should not exceed 1150 mm. Only one smoke duct element should be present between the mounting points/supports.

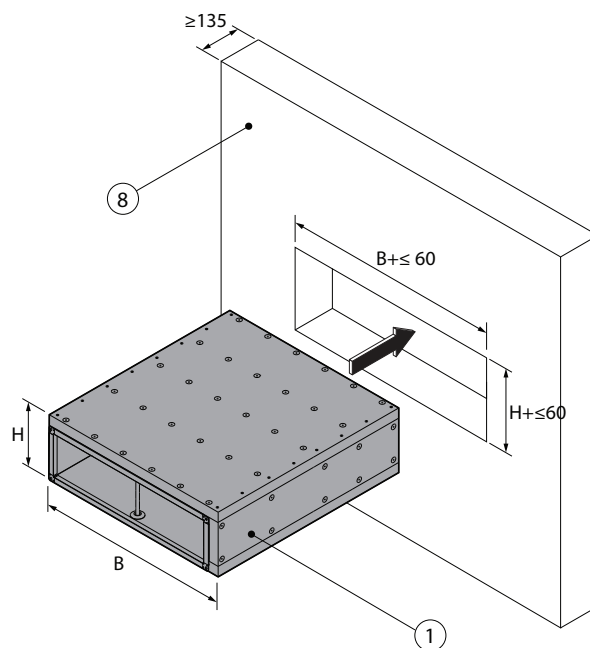


**Pic. 6:** Example of smoke duct fastening system

Vertical smoke ducts are installed in ceilings (refer to “Installing smoke ducts in ceilings”) if the distance between the ceilings does not exceed 5 meters. For longer vertical smoke duct systems, additional attachment to walls, columns, or other designated building structures is required.

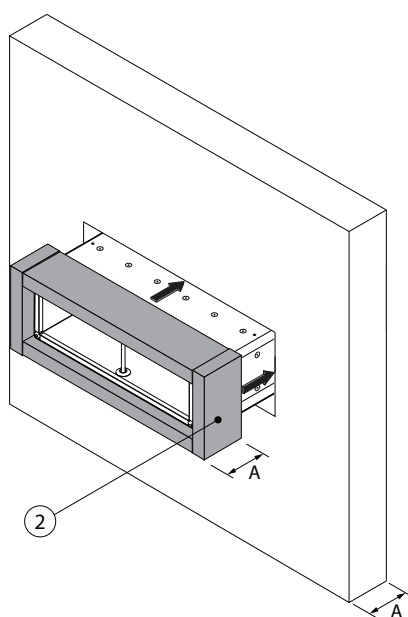
## 2.2. Installation of smoke ducts in partition walls

1



In the partition wall 8, prepare an installation opening that is up to 60 mm larger than the external dimensions of the smoke duct, and insert one segment of the smoke duct 1 into it.

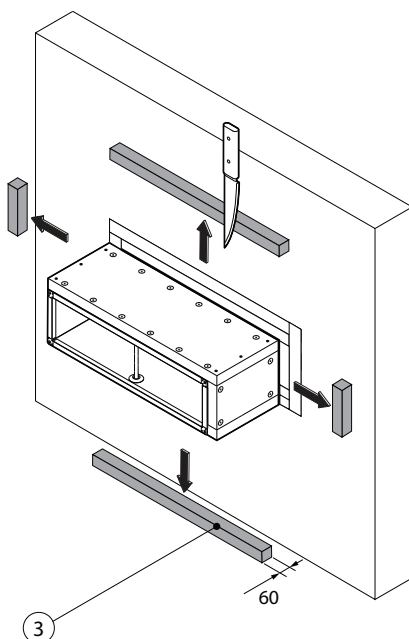
2



Seal the gap on all sides with layers of fire-resistant mineral wool 2, with the same width as the thickness of the partition wall. If it is not possible to fill the opening with fire-resistant mineral wool due to the structural characteristics of the building, fire-resistant sealants or construction materials can be used

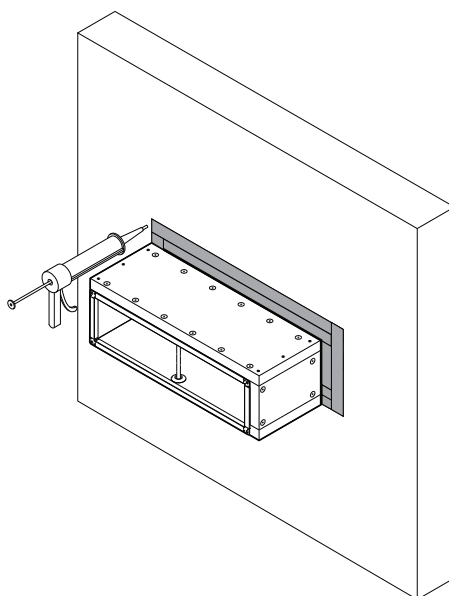


3

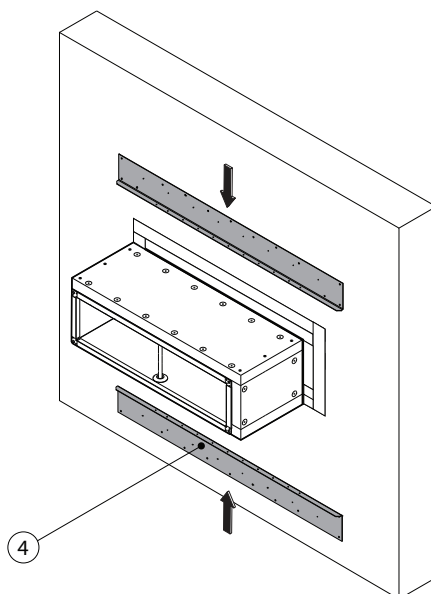


Cut the insulation wool along the entire perimeter of the smoke duct, leaving a 60 mm distance from the partition. Remove the cut section of the insulation wool 3.

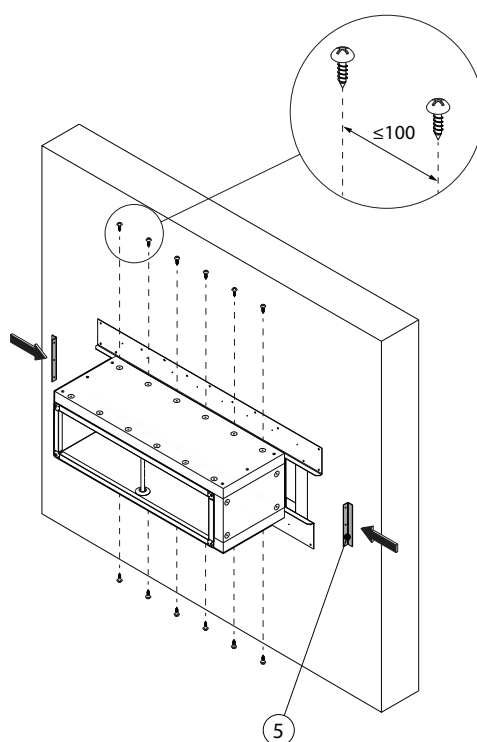
4



Apply fire-resistant adhesive (heat resistance up to 1000°C, Class A1) to the insulation wool closure.

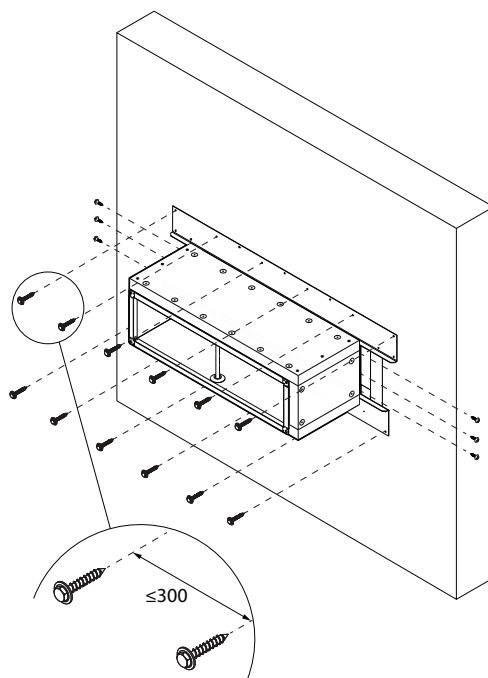


For the smoke duct installation, use horizontal metal profiles 4 for support and attachment.



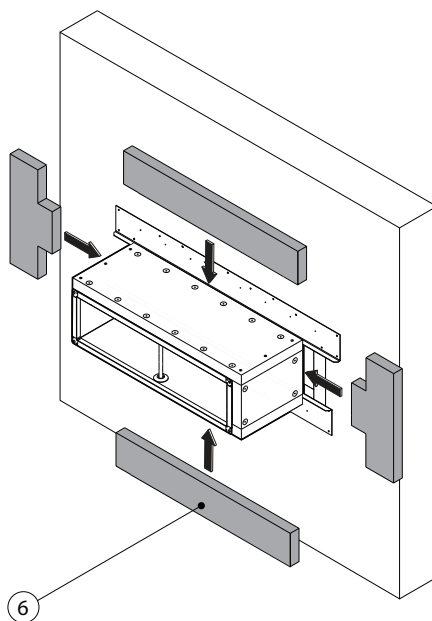
Attach the metal profiles 4 to the inner part of the smoke duct using self-tapping screws. Screw the vertical corner profiles 5 to the sides of the smoke duct.

7

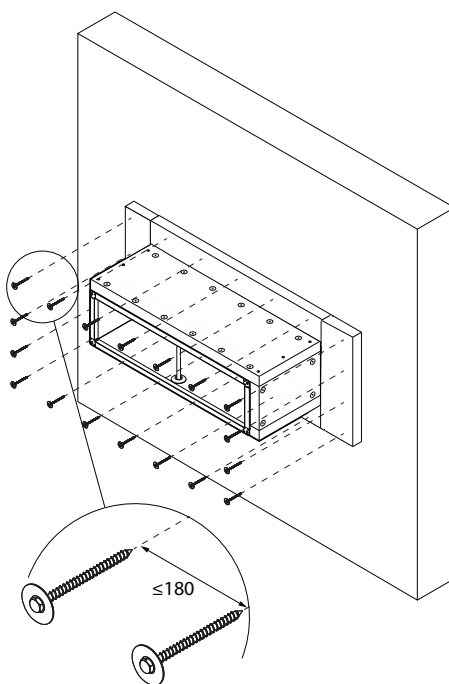


Attach the metal horizontal profiles 4 to the partition using screws specifically designed for use in the respective wall construction.

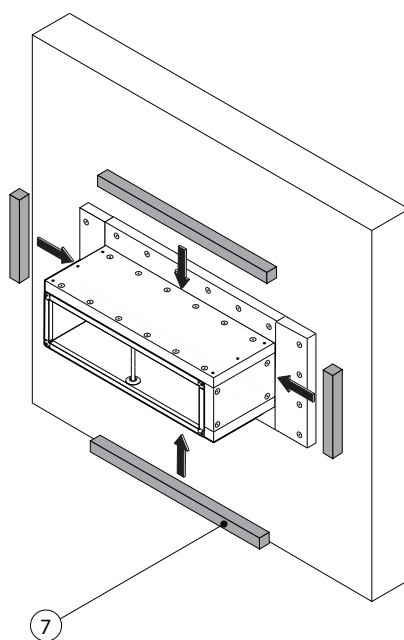
8



On all sides, additionally insulate the openings with 60 mm thick mineral wool strips 6 (the insulation should completely cover the metal profiles).

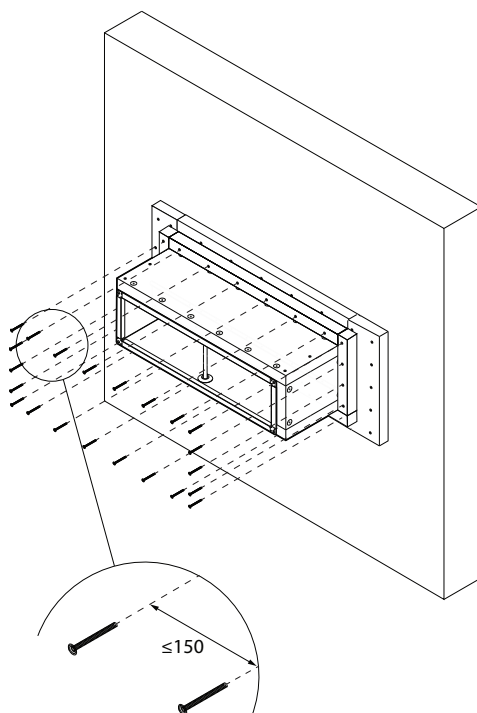


Attach the insulation to the partition using screws and washers designed for use with the corresponding wall construction.



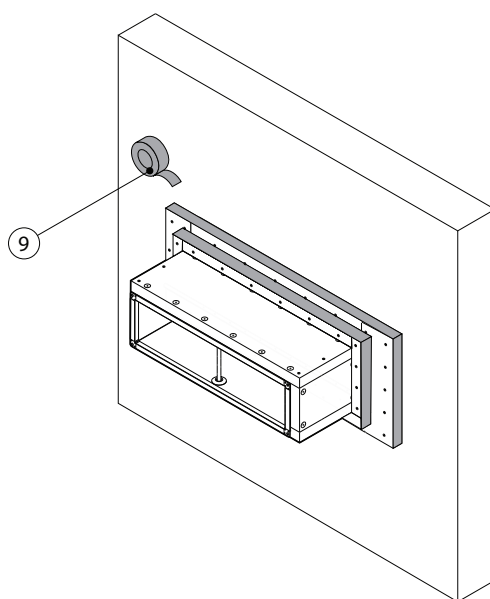
Place 60 × 60 mm fire insulation strips 7 along the entire perimeter of the smoke duct.

11

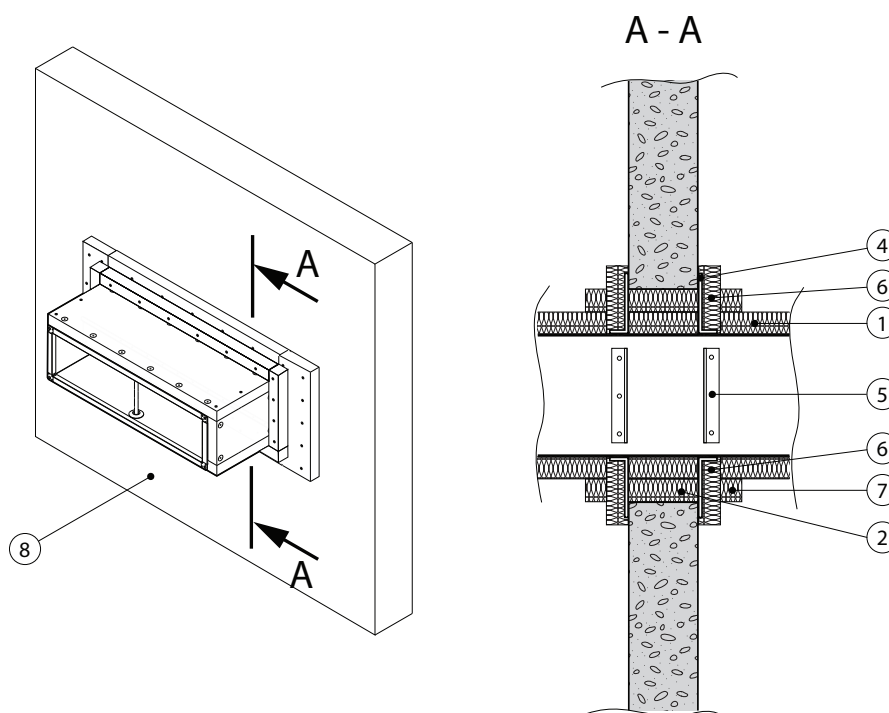


Secure the insulation strips using specialized spring screws.

12



To protect the exposed edges of the insulation wool from dust and deformation, cover them with a 110 mm wide black adhesive tape 9.



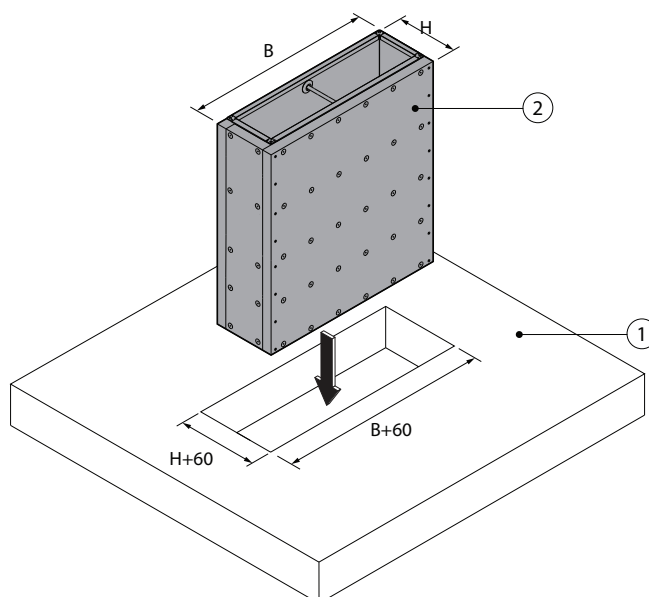
Repeat steps 3-12 on the other side of partition.



**The flange connections of the smoke ducts should remain outside the partition. It is prohibited to connect segments within the opening of the partition.**

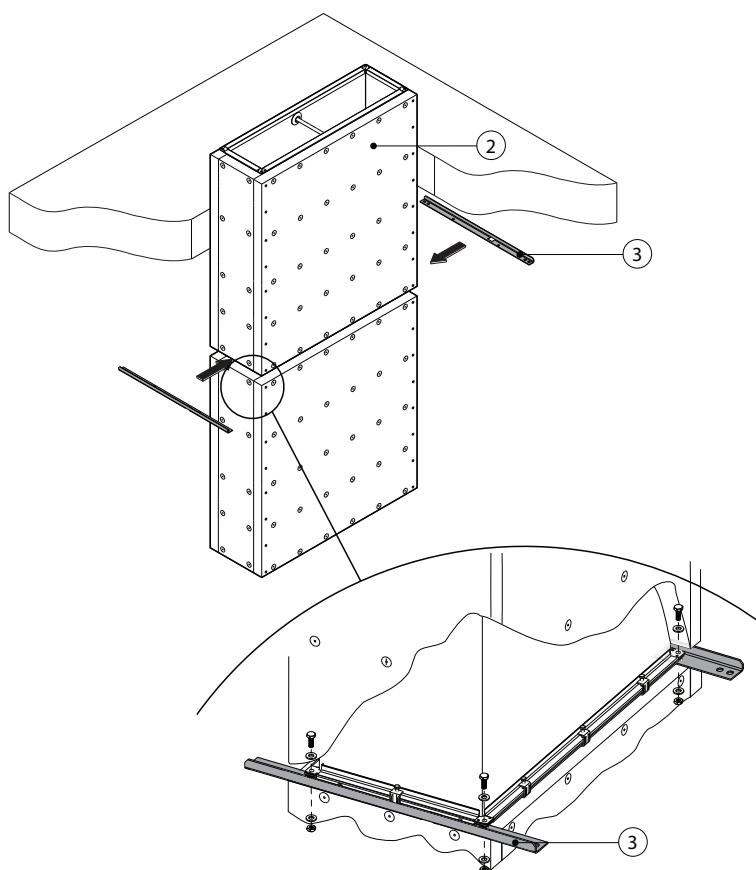
## 2.3. Installation of smoke ducts in ceilings

1

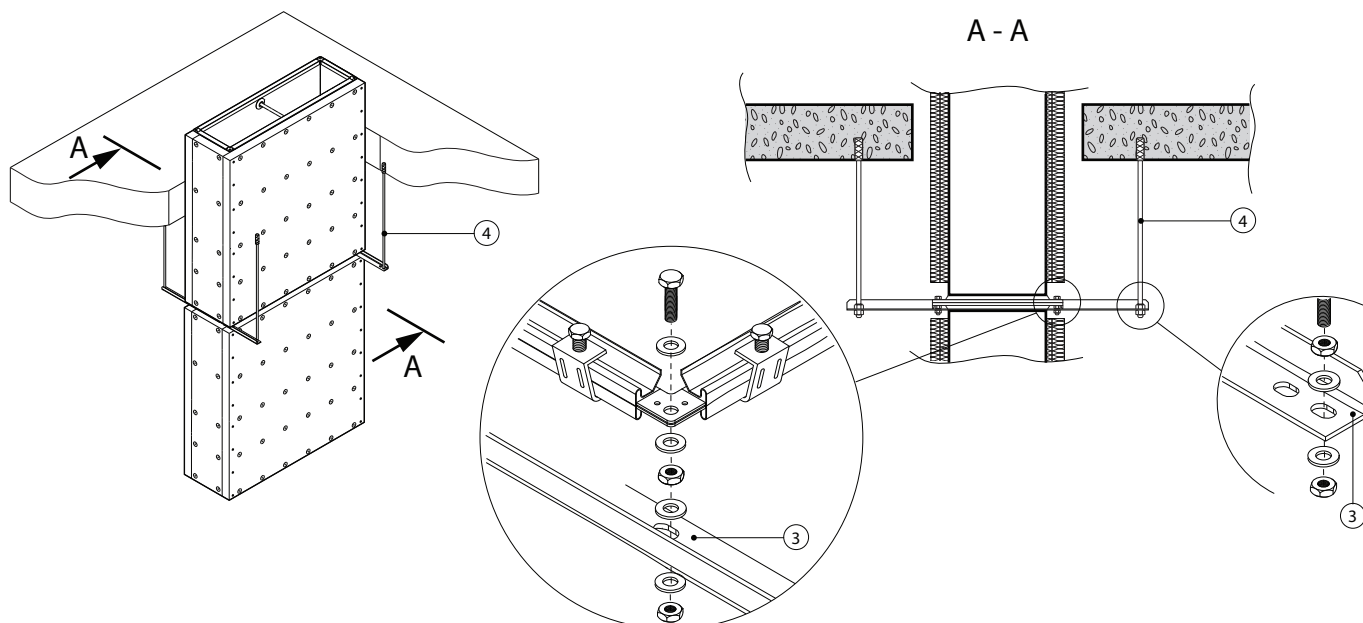


Insert one segment of the smoke duct 2 into panel 1 of the ceiling.

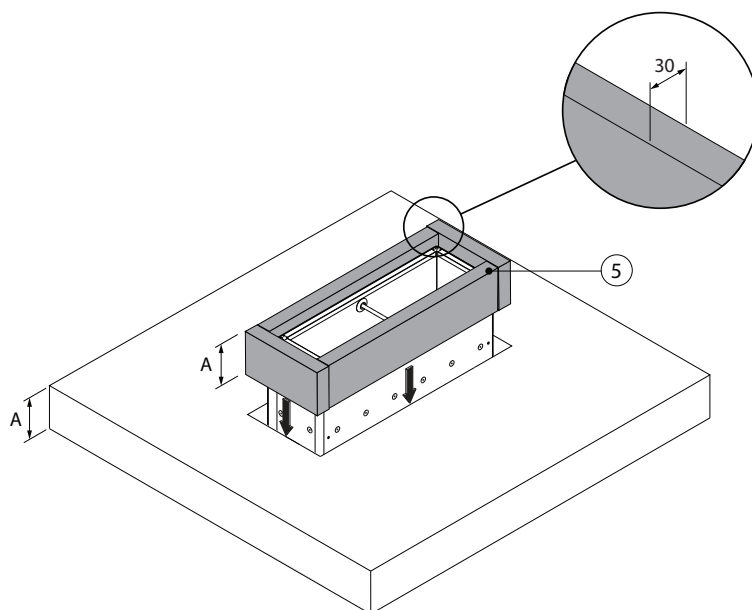
2



Place support profiles below the flange connection between segments 3. Connect the flange connections as described in the "Smoke duct connection" section and screw the support profiles to the corners of the connection flange with screws 3. Do not insulate the connection at this time.



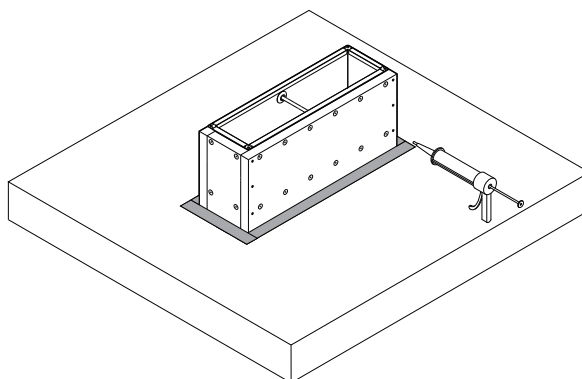
Attach the support profiles 3 to the ceiling using anchor screws and threaded rods 4.



Seal the gap with 30 mm layers of fire-resistant mineral wool 5 on all sides throughout the thickness of the ceiling. If it is not possible to fill the gap with fire-resistant mineral wool due to the structural characteristics of the building, fire-resistant sealants or construction materials can be used.

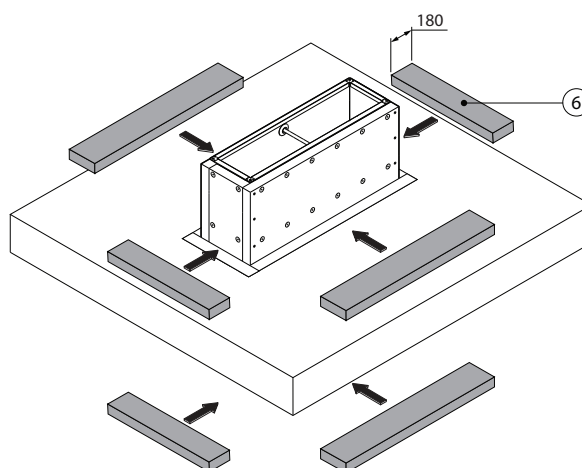


5



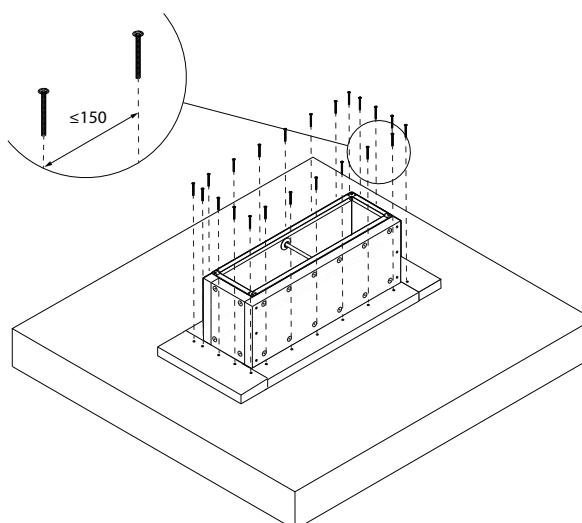
Apply fire-resistant adhesive (with heat resistance up to 1000°C, Class A1) to the insulation wool closure.

6



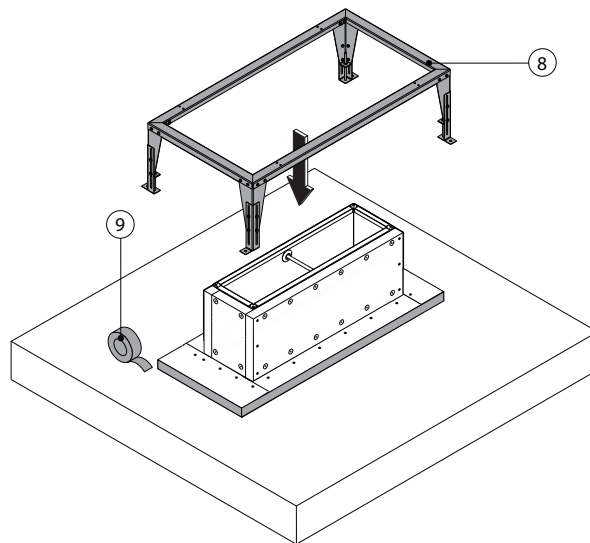
Insulate the openings from all sides with 180 mm thick mineral wool strips 6.

7



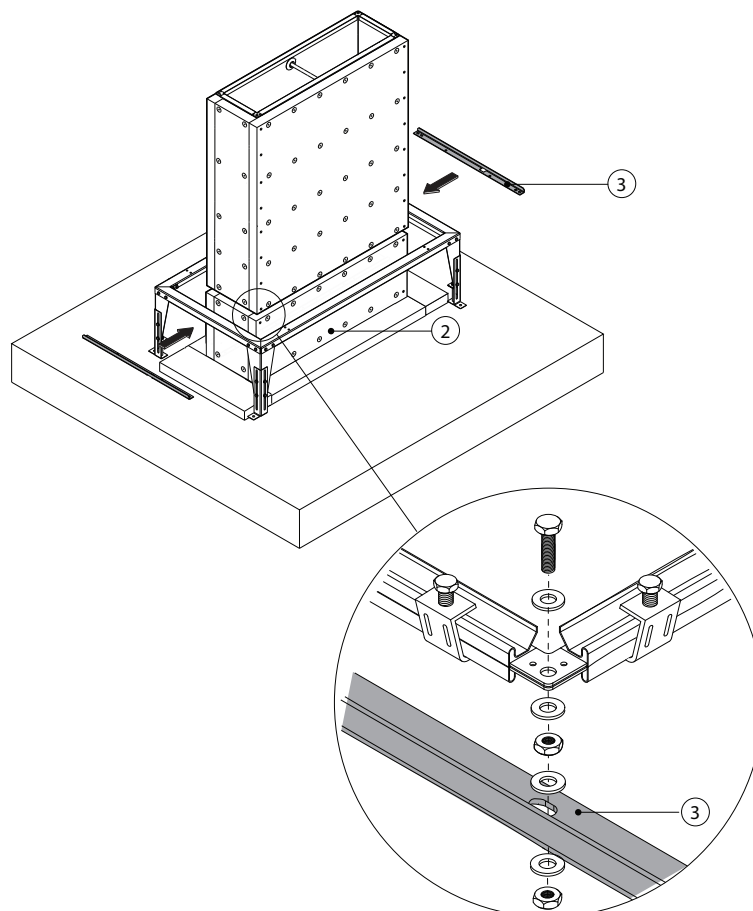
Secure the insulation wool strips to the smoke duct using special spring screws.

8



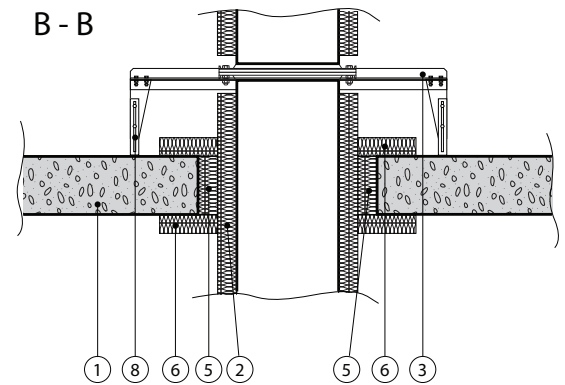
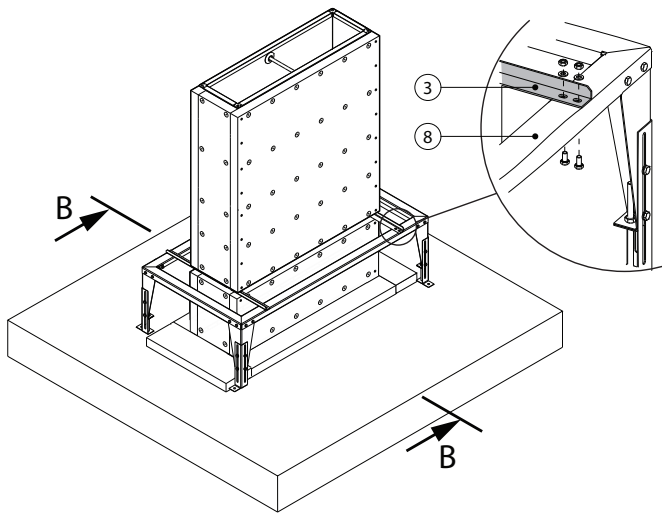
Cover the exposed edges of the insulation with a black adhesive tape 9, 110 mm wide. Install the frame structure 8 in such a way that its upper part aligns closely with the top of the insulation on the smoke duct.

9



Place the metal mounting profiles 3 on the frame structure and below the flange connection. Place another segment of the duct on the secured segment. Connect the flanges of the segments as described in the "Smoke duct connection" section and screw the support profiles 3 to the corners of the connection with screws. Do not insulate the connection at this time.

10



Adjust the height of the frame structure so that the mounting profiles 3 can support the weight of the smoke duct system. Screw the profiles 3 to the frame structure using screws.

11

Insulate the flange connections above and below the ceiling panel as described in the “Smoke duct connection” section.

12

If the distance between the ceiling panels is greater than 5 m, additionally secure the vertical duct system to the walls, columns, or other structures using hanger bars or brackets.



The flange connections of the smoke ducts should be positioned above or below the ceiling panel. It is prohibited to connect the segments of the smoke duct directly in the ceiling panel.

## 2.4. Installation of connections, bends, and lateral offsets

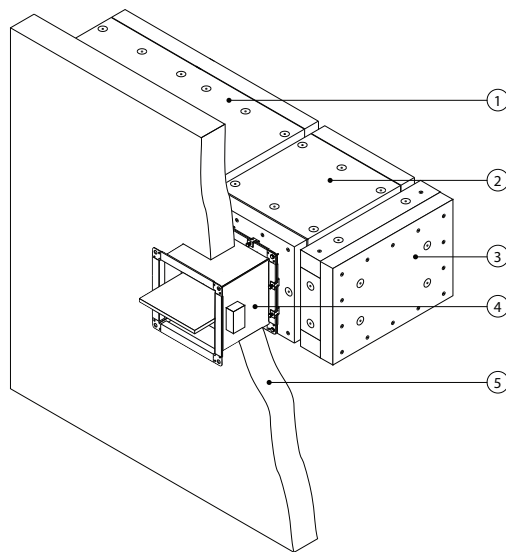
The addition of connections, bends, and offsets is used to change the direction or route of the smoke ducts. The fitting components are attached to the smoke duct sections using flange connections, as described in the section “Connecting Smoke Ducts.”

## 2.5. Installation of smoke exhaust openings

Smoke exhaust openings are installed in locations where they are most effective in case of a fire. For the installation of smoke exhaust openings in smoke ducts, bends and transitions are used, placing them at the end of the smoke duct. If the smoke duct does not continue beyond the exhaust opening, it should be tightly sealed (e.g., with a tight end cap).



- Smoke exhaust openings and dampers should be installed no closer than 500 mm from obstacles that could hinder smoke evacuation (such as partitions, columns, or similar structures).
- A smoke damper should be installed in the smoke outlet (with the same or higher fire resistance than the smoke duct), connected to the duct with a flange connection.
- Smoke dampers should be installed according to the manufacturer's installation instructions.



**Pic. 7:** Example of a smoke exhaust opening:

1 – Smoke duct, 2 – T-piece, 3 – End cap, 4 – Smoke damper, 5 – Partition

All flange connections of the components are connected and insulated as described in the section “Connection of Smoke Ducts”.

**3. TRANSPORTATION AND STORAGE**

Smoke ducts are transported using standard means of transportation, ensuring that they are loaded and secured in a way that prevents deformation or damage during transportation. The transport vehicle should be covered to protect the ducts from weather conditions and dust.

For long-term storage, smoke ducts should be stored in a dry indoor space, additionally protected from direct sunlight and dust (e.g., covered with plastic sheeting).

Before installation at the construction site, the sections should be unloaded onto prepared foundations or structures that are at least 20 cm above the ground. The product should be protected from environmental factors until it is installed (rain, snow, construction debris, dust).

**4. DOCUMENTATION AND LABELLING**

Each certified smoke duct system component is marked with the CE label.

<div>CE</div> <div>1796</div>	ID number of the notified certification body
<div>Komfovent</div> <div>22</div>	Name of the manufacturer
<div>1796-CPR-0020</div>	Last two digits of the year the marking was affixed
<div>EN 12101-7</div>	Number of the EC certificate of conformity
<div>Dūmų šalinimo kanalas</div> <div>DOFM</div>	Number of the European Standard
<div>Klasifikavimas</div> <div>EI 60 (ve h o i ↔ o ) S1500 multi</div>	Description of the product
	Product type/model number
	Full classification to EN 13501-4

**Pic. 8:** Smoke duct labelling

The installation company, which has installed the smoke exhaust system, guarantees that the smoke exhaust system has been installed according to the requirements specified in the installation instructions and fills out the installation certificate.

**Example of the installation certificate:**

Site:

Address:

Installer/Contractor (name, address, phone number):

Identification data for the installation location(s)  
(building part, floor(s), room(s), etc.)

Separate installation certificates can be filled out for  
different parts of the building, ceilings, etc.

Installation date (start/end)  
(YYYY-MM-DD/YYYY-MM-DD)

Classification of the smoke duct system

The smoke ducts are installed according to the installation  
instructions (please check the appropriate).

☐ Yes☐ No

Used materials

Smoke duct system (manufacturer, dimensions, leakage  
class, other information)

\* Notes on the materials used:

Installer/Contractor:

Name, surname

Date and signature

Technical supervisory representative

Name, surname

Date and signature

\* If there are no comments, please indicate "No comments."

## 5. INTERNAL INSPECTION CHECKLIST FOR INSTALLED SYSTEM

The periodic maintenance of the installed smoke duct system is performed once a year. During the maintenance, the smoke duct system is inspected according to the table provided below.

Checks	Yes	No	Notes
Check if the smoke duct is not deformed, mechanically damaged, or affected by corrosion.			
Check if the connections and fastenings are not loose or affected by corrosion. Tighten the elements or replace them if necessary.			
Check the tightness of the connections (check if the gaskets are damaged, replace if necessary).			
If necessary, according to the project requirements, check the internal cleanliness of the smoke ducts. Perform cleaning work if necessary.			
Ensure that the system functions as the smoke extraction component.			

Other notes:

Identification of Smoke Exhaust System	
Date of Inspection	
Maintenance Work Completed	
Company	
Address	
Phone number	
Signature	

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HR	Microclima	www.microclima.hr
HU	AIRVENT Légtechnikai Zrt. Gevent Magyarország Kft. Merkapt	www.airvent.hu www.gevent.hu www.merkapt.hu
IR	Fantech Ventilation Ltd	www.fantech.ie
IS	Blikk & Tækniþjónustan ehf Hitataekni ehf	www.bogt.is www.hitataekni.is
IT	Icaria srl	www.icariavmc.it
NL	Ventilair group DECIPOL-Vortvent CLIMA DIRECT BV	www.ventilairgroup.com www.vortvent.nl www.climadirect.com
NO	Ventilution AS Ventistål AS Thermo Control AS	www.ventilution.no www.ventistal.no www.thermocontrol.no
PL	Ventia Sp. z o.o.	www.ventia.pl
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